

How to use hanger selection table: In order to choose a proper size hanger, it is necessary to know the actual load which the spring is to support and the amount and direction of the pipe line movement from the cold to the hot position.

Find the actual load of the pipe in the load table. As it is desirable to support the actual weight of the pipe when the line is hot, the actual load is the hot load. To determine the cold load, read the spring scale, up or down, for the amount of expected movement.

The chart must be read opposite from the direction of the pipe's movement. The load arrived at is the cold load.

If the cold load falls outside of the working load range of the hanger selected, relocate the actual or hot load in the adjacent column and find the cold load. When the hot and cold loads are both within the working range of a hanger, the size number of that hanger will be found at the top of the column.

LOAD TABLE (NEWTONS) FOR SELECTION OF HANGER SIZE (sizes 11 through 22 on next page)																	
Working Range (mm) Unshaded Shaded Rows Show Overtravel					Hanger Size												
Figure No.					Fig. 82, Fig. B-268, Fig. 98, Triple & Quadruple Spring												
Quad.	Triple	98	B-268	82	000	00	0	1	2	3	4	5	6	7	8	9	10
					31	85	191	280	360	467	627	841	1121	1495	2002	2669	3470
					36	94	201	296	381	493	662	888	1183	1577	2112	2816	3660
					40	104	212	312	402	520	698	935	1244	1659	2222	2963	3851
0	0	0	0	0	45	115	222	329	423	547	734	983	1308	1744	2335	3114	4048
10	7.5	5	2.5	1.25	48	122	229	338	435	562	755	1011	1345	1793	2401	3202	4162
20	15	10	5	2.50	51	128	235	347	447	578	775	1038	1382	1842	2466	3289	4276
30	22.5	15	7.5	3.75	54	135	242	357	458	593	796	1066	1418	1891	2532	3377	4389
40	30	20	10	5	57	142	248	366	470	608	816	1093	1455	1940	2598	3464	4503
50	37.5	25	12.5	6.25	60	148	255	375	482	624	837	1121	1492	1989	2663	3552	4617
60	45	30	15	7.50	63	155	261	384	494	639	857	1148	1529	2038	2729	3639	4731
70	52.5	35	17.5	8.75	66	161	268	393	506	654	878	1176	1565	2087	2795	3727	4845
80	60	40	20	10	69	168	275	403	518	670	899	1204	1602	2136	2860	3815	4959
90	67.5	45	22.5	11.25	72	175	281	412	529	685	919	1231	1639	2185	2926	3902	5072
100	75	50	25	12.50	75	181	288	421	541	700	940	1259	1676	2234	2992	3990	5186
110	82.5	55	27.5	13.75	78	188	294	430	553	716	960	1286	1713	2283	3057	4077	5300
120	90	60	30	15	81	195	301	439	565	731	981	1314	1749	2332	3123	4165	5414
130	97.5	65	32.5	16.25	84	201	307	449	577	746	1001	1341	1786	2381	3189	4252	5528
140	105	70	35	17.50	87	208	314	458	589	762	1022	1369	1823	2430	3254	4340	5642
150	112.5	75	37.5	18.75	90	214	321	467	600	777	1043	1397	1860	2479	3320	4428	5755
160	120	80	40	20	93	221	327	476	612	792	1063	1424	1896	2528	3386	4515	5869
170	127.5	85	42.5	21.25	96	228	334	485	624	808	1084	1452	1933	2577	3451	4603	5983
180	135	90	45	22.50	99	234	340	495	636	823	1104	1479	1970	2626	3517	4690	6097
190	142.5	95	47.5	23.75	102	241	347	504	648	838	1125	1507	2007	2675	3583	4778	6211
200	150	100	50	25	105	248	354	513	660	854	1146	1535	2044	2725	3649	4866	6325
210	157.5	105	52.5	26.25	108	254	360	522	671	869	1166	1562	2080	2774	3714	4953	6438
220	165	110	55	27.50	111	261	367	531	683	884	1187	1590	2117	2823	3780	5041	6552
230	172.5	115	57.5	28.75	114	267	373	541	695	899	1207	1617	2154	2872	3846	5128	6666
240	180	120	60	30	117	274	380	550	707	915	1228	1645	2191	2921	3911	5216	6780
					120	281	387	559	719	930	1249	1673	2228	2970	3977	5304	6894
					123	287	393	568	730	945	1269	1700	2264	3019	4043	5391	7007
					129	301	406	587	754	976	1310	1755	2338	3117	4174	5566	7235
					136	317	420	610	785	1015	1360	1825	2430	3240	4340	5785	7520
					Spring Rate (N/mm)												
				82	-	-	5.25	7.36	9.46	12.26	16.46	22.06	29.42	39.23	52.54	70.05	91.07
				B-268	1.201	2.652	2.63	3.68	4.73	6.13	8.23	11.03	14.71	19.61	26.27	35.03	45.53
				98	-	-	1.315	1.84	2.365	3.065	4.115	5.515	7.355	9.805	13.135	17.515	22.765
				Triple	-	-	0.877	1.227	1.577	2.043	2.743	3.677	4.903	6.537	8.757	11.677	15.177
				Quadruple	-	-	0.658	0.920	1.183	1.533	2.058	2.758	3.678	4.903	6.568	8.758	11.383

Note: General rule for series selection use Fig. 82 for up to 13 mm of movement, up to 25 mm use Fig. B-268, up to 51 mm use Fig. 98, up to 76 mm use a Triple, up to 102 mm use a Quadruple. Double check to assure desired variability is achieved.

Spring Hanger Size and Series Selection



How to use hanger selection table (cont.): Should it be impossible to select a hanger in a particular series such that both loads occur within the working range, consideration should be given to a variable spring hanger with a wider working range or a constant support hanger. The cold load is calculated by adding (for up movement) or subtracting (for down movement) the product of spring rate times movement to or from the hot load.

$$\text{Cold load} = (\text{hot load}) \pm (\text{movement}) \times (\text{spring rate})$$

A key criteria in selecting the size and series of a variable spring is a factor known as variability. This is a measurement of the percentage change in supporting force between the hot and cold positions of a spring and is calculated from the formula:

$$\text{Variability} = (\text{Movement}) \times (\text{Spring Rate}) / (\text{Hot Load})$$

If an allowable variability is not specified, good practice would be to use 25% as recommended by MSS-SP-58.

LOAD TABLE (NEWTONS) FOR SELECTION OF HANGER SIZE (Continued from previous page)																
Hanger Size												Spring Deflection (mm)				
Fig. 82, Fig. B-268, Fig. 98, Triple & Quadruple Spring												Figure No.				
11	12	13	14	15	16	17	18	19	20	21	22	82	B-268	98	Triple	Quad.
4537	6005	8007	10676	14412	20017	26689	35541	47196	62720	83404	111228	0	0	0	0	0
4787	6335	8447	11263	15205	21118	28157	37494	49794	66168	87993	117347	2	3.75	7.5	11.25	15
5036	6666	8887	11850	15998	22219	29625	39446	52393	69617	92582	123466	4	7.50	15	22.5	30
5293	7006	9341	12455	16815	23354	31138	41458	55070	73170	97310	129770	6	11.50	23	34.5	46
5442	7203	9604	12805	17288	24011	32014	42623	56620	75228	100046	133419	7.25	14	28	42	56
5591	7400	9866	13156	17761	24668	32889	43787	58170	77290	102780	137070	8.50	16.50	33	49.5	66
5740	7597	10129	13506	18234	25324	33765	44952	59720	79343	105519	140718	9.75	19	38	57	76
5888	7794	10392	13856	18706	25981	34641	46117	61270	81410	108250	144370	11	21.50	43	64.5	86
6037	7991	10655	14206	19179	26638	35516	47281	62820	83459	110992	148016	12.25	24	48	72	96
6186	8188	10917	14557	19652	27295	36392	48446	64369	85520	113730	151670	13.50	26.5	53	79.5	106
6335	8385	11180	14907	20125	27951	37268	49610	65919	87574	116465	155315	14.75	29	58	87	116
6484	8582	11443	15257	20598	28608	38143	50775	67469	89640	119200	158960	16	31.50	63	94.5	126
6633	8779	11705	15607	21071	29265	39019	51940	69019	91690	121938	162613	17.25	34	68	102	136
6782	8976	11968	15958	21544	29922	39895	53104	70569	93750	124670	166260	18.50	36.50	73	109.5	146
6930	9173	12231	16308	22016	30578	40770	54269	72119	95806	127410	169912	19.75	39	78	117	156
7079	9370	12493	16658	22489	31235	41646	55434	73669	97870	130140	173560	21	41.50	83	124.5	166
7228	9567	12756	17008	22962	31892	42521	56598	75219	99921	132883	177211	22.25	44	88	132	176
7377	9764	13019	17359	23435	32549	43397	57763	76769	101980	135620	180860	23.50	46.50	93	139.5	186
7526	9961	13282	17709	23908	33205	44273	58927	78319	104037	138356	184509	24.75	49	98	147	196
7675	10158	13544	18059	24381	33862	45148	60092	79868	106100	141090	188160	26	51.50	103	154.5	206
7823	10355	13807	18409	24853	34519	46024	61257	81418	108152	143829	191808	27.25	54	108	162	216
7972	10552	14070	18760	25326	35176	46900	62421	82968	110210	146560	195460	28.50	56.50	113	169.5	226
8121	10749	14332	19110	25799	35832	47775	63586	84518	112268	149302	199106	29.75	59	118	177	236
8270	10947	14595	19460	26272	36489	48651	64751	86068	114330	152030	202760	31	61.50	123	184.5	246
8419	11144	14858	19810	26745	37146	49527	65915	87618	116383	154774	206405	32.25	64	128	192	256
8568	11341	15120	20161	27218	37803	50402	67080	89168	118450	157510	210050	33.50	66.50	133	199.5	266
8717	11538	15383	20511	27691	38459	51278	68244	90718	120499	160247	213703	34.75	69	138	207	276
8865	11735	15646	20861	28163	39116	52154	69409	92268	122560	162980	217350	36	71.50	143	214.5	286
9014	11932	15909	21212	28636	39773	53030	70574	93818	124616	165718	221001	37.25	74	148	222	296
9163	12129	16171	21562	29109	40430	53905	71738	95367	126672	168456	224651	38.5	76.50	153	229.5	306
9461	12523	16697	22262	30055	41243	55656	74068	98467	130788	173929	231950	41.75	81.50	163	244.5	326
9830	13010	17350	23130	31230	43370	57830	76955	102310	135895	180710	241000	43.6	87.7	175.4	263.1	350.8
Spring Rate (N/mm)																
119.09	157.62	210.16	280.21	378.28	525.39	700.52	931.69	1239.92	1646.22	2189.12	2919.42	82				
59.54	78.81	105.08	140.1	189.14	262.7	350.26	465.85	619.96	823.11	1094.56	1459.71	B-268				
29.77	39.405	52.54	70.05	94.57	131.35	175.13	232.925	309.98	411.555	547.28	729.85	98				
19.847	26.270	35.027	46.700	63.047	87.567	116.753	155.283	206.653	274.370	364.853	486.570	Triple				
14.885	19.703	26.270	35.025	47.285	65.675	87.565	116.463	154.990	205.778	273.640	364.928	Quadruple				

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