LOAD SELECTION PROCEDURE - ENGLISH UNITS

Variability is the key principle in selecting the figure and size of a variable spring support. Variability is determined by calculating the change in percentage of the supporting force of a variable spring between the hot (operating) and cold (installed) loads using the following formula:

$$\text{Variability} = \frac{\text{Movement} \times \text{Spring rate}}{\text{Hot (operating) load}}$$

If the variability is in question, a lower variability is more desirable. The lower variability does not transfer as much stress to the adjacent equipment at the cold (installed) position than a spring with higher variability. To comply with requirements of MSS SP-58 specifications, variability should not exceed 25%. If the design conditions cause the variability to exceed the recommended maximum, RILCO strongly suggests the use of one of our Constant Supports instead of a variable.

SPRING HANGER FIGURE AND SIZE SELECTION

Once hot (operating) or cold (installed) load and travel have been determined in order to select the correct Spring Hanger Figure and size selection:

1. Select a spring figure (RVS-82, 268, etc.) with a working range which will accommodate the travel.

2. Find a spring size where the load is approximately in the middle of the working range loads.

3. Calculate the missing load (either Hot or Cold) by using the following formulas:

Hot (operating) load = Cold (installed) load - (Travel x Spring rate)

or

Cold (installed) load = Hot (operating) load + (Travel x Spring rate)

4. Verify that both loads are within the working range, preferably equidistance from the center of the load chart.

Variable Spring Load Chart (lbs)

	Working Range (in)					Size											
	RVS-					RVS-268		RVS-82, 268, 98, Triple & Quadruple Spring									
	Quadruple	Triple	98	268	82	000	00	0	1	2	3	4	5	6	7	8	9
						7	19	43	63	81	105	141	186	252	336	450	600
Overtravel						7	20	44	66	84	109	147	197	263	350	469	625
	2	1-1/2	1	1/2	1/4	8	22	46	68	88	114	153	206	273	364	488	650
						9	24	48	71	91	118	159	213	284	378	506	675
	0	0	0	0	0	10	26	50	74	95	123	165	221	294	392	525	700
						11	28	52	76	98	127	170	228	305	406	544	725
						12	30	54	79	101	131	176	236	315	420	563	750
						12	31	56	81	105	136	182	244	326	434	581	775
	2	1-1/2	1	1/2	1/4	14	34	58	84	108	140	188	252	336	448	600	800
						14	35	59	87	111	144	194	260	347	462	619	825
						15	38	61	89	115	149	200	268	357	476	638	850
						16	40	63	92	118	153	206	276	368	490	656	875
	4	3	2	1	1/2	17	41	65	95	122	158	212	284	378	504	675	900
						18	43	67	97	125	162	217	291	389	518	694	925
						19	45	69	100	128	166	223	299	399	532	713	950
						20	47	71	102	132	171	229	307	410	546	731	975
	6	4-1/2	3	1-1/2	3/4	21	49	73	105	135	175	235	315	420	560	750	1000
						21	50	74	108	138	179	241	323	431	574	769	1025
						22	53	76	110	142	184	247	331	441	588	788	1050
						23	55	78	113	145	188	253	339	452	602	806	1075
	8	6	4	2	1	24	56	80	116	149	193	258	347	462	616	825	1100
						25	58	82	118	152	197	264	354	473	630	844	1125
						26	60	84	121	155	201	270	362	483	644	863	1150
						27	62	86	123	159	206	276	370	494	658	881	1175
	10	7-1/2	5	2-1/2	1-1/4	28	64	88	126	162	210	282	378	504	672	900	1200
						28	66	89	129	165	214	288	386	515	686	919	1225
Overtravel						29	68	91	131	169	219	294	394	525	700	938	1250
	2	1-1/2	1	1/2	1/4	30	70	93	134	172	223	300	402	536	714	956	1275
						31	72	95	137	176	228	306	410	546	728	975	1300
						Spring Rate (lbs/In)											
					82	-	-	30	42	54	70	94	126	168	224	300	400
				268		7	15	15	21	27	35	47	63	84	112	150	200
			98			-	-	7	10	13	17	23	31	42	56	75	100
		TRIPLE				-	-	5	7	9	12	16	21	28	37	50	67
	QUADRIPLE					-	-	4	5	7	9	12	16	21	28	38	50

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5. If the loads are at either extreme, select a new spring size and re-calculate the missing load until both the loads are satisfactory.

6. Calculate the variability, which should not exceed 25%.

When Hot (operating) and Cold (installed) loads are known:

1. Select a spring size where both loads are ideally equidistance from the center of the load chart.

2. Calculate the movement with the following formula:

$$\text{Movement} = \frac{\text{Cold (installed) load - Hot (operating) load}}{\text{Spring rate}}$$

3. Select a Spring figure (RVS-82, 268 etc.) which will give a variability lower than 25%.

NOTE: The lower the variability the better the result.

Your RILCO "Support Team" is always available to assist you with these calculations or to recommend product choices.

Variable Spring Load Chart (lbs)

Size													Working Range (in)				
RVS-82, 268, 98, Triple & Quadruple Spring													RVS-				
10	11	12	13	14	15	16	17	18	19	20	21	22	82	268	98	Triple	Quad
780	1020	1350	1800	2400	3240	4500	6000	7990	10610	14100	18750	25005					
813	1063	1406	1875	2500	3375	4688	6250	8322	11053	14588	19531	26047	1/4	1/2	1	1-1/2	2
845	1105	1463	1950	2600	3510	4875	6500	8655	11495	15275	20313	27089					
878	1148	1519	2025	2700	3645	5063	6750	8987	11938	15863	21094	28313					
910	1190	1575	2100	2800	3780	5250	7000	9320	12380	16450	21875	29173	**0**	**0**	**0**	**0**	**0**
943	1233	1631	2175	2900	3915	5438	7250	9652	12823	17038	22656	30215					
975	1275	1688	2250	3000	4050	5625	7500	9985	13265	17625	23438	31256					
1008	1318	1744	2325	3100	4185	5813	7750	10317	13708	18213	24219	32298					
1040	1360	1800	2400	3200	4320	6000	8000	10650	14150	18800	25000	3340	**1/4**	**1/2**	**1**	**1-1/2**	**2**
1073	1403	1865	2475	3300	4455	6188	8250	10982	14592	19388	25781	34382					
1105	1445	1913	2550	3400	4590	6375	8500	11315	15035	19975	26563	35424					
1138	1488	1969	2625	3500	4725	6563	8750	11647	15477	20563	27344	36466					
1170	1530	2025	2700	3600	4860	6750	9000	11980	15920	21150	28125	37508	**1/2**	**1**	**2**	**3**	**4**
1203	1573	2081	2775	3700	4995	6938	9250	12312	16362	21738	28906	38549					
1235	1615	2138	2850	3800	5130	7125	9500	12645	16805	22325	29688	39591					
1268	1658	2194	2925	3900	5265	7313	9750	12977	17247	22913	30469	40633					
1300	1700	2250	3000	4000	5400	7500	10000	13310	17690	23500	31250	41675	**3/4**	**1-1/2**	**3**	**4-1/2**	**6**
1333	1743	2306	3075	4100	5535	7688	10250	13642	18132	24088	32031	42717					
1365	1785	2363	3150	4200	5670	7875	10500	13975	18575	24675	32813	43759					
1398	1828	2419	3225	4300	5805	8063	10750	14307	19017	25263	33594	44801					
1430	1870	2475	3300	4400	5940	8250	11000	14640	19460	25850	34375	45843	**1**	**2**	**4**	**6**	**8**
1463	1913	2531	3375	4500	6075	8438	11250	14972	19902	26438	35156	46885					
1495	1955	2588	3450	4600	6210	8625	11500	15305	20345	27025	35938	47926					
1528	1998	2644	3525	4700	6345	8813	11750	15637	20787	27613	36719	48968					
1560	2040	2700	3600	4800	6480	9000	12000	15970	21230	28200	37500	50010	**1-1/4**	**2-1/2**	**5**	**7-1/2**	**10**
1593	2083	2756	3675	4900	6615	9188	12250	16302	21672	28788	38281	51052					
1625	2125	2813	3750	5000	6750	9375	12500	16635	22115	29375	39063	52094	**1/4**	**1/2**	**1**	**1-1/2**	**2**
1658	2168	2869	3825	5100	6885	9563	12750	16967	22557	29963	39844	53136					
1690	2210	2925	3900	5200	7020	9750	13000	17300	23000	30550	40625	54178					
Spring Rate (lbs/In)																	
520	680	900	1200	1600	2160	3000	4000	5200	7080	9400	12500	16670	**82**				
260	340	450	600	800	1080	1500	2000	2660	3540	4700	6250	8335	**268**				
130	170	225	300	400	540	750	1000	1330	1770	2350	3125	4167	**98**				
87	113	150	200	267	360	500	667	887	1180	1567	2083	2778	**TRIPLE**				
65	85	113	150	200	270	375	500	665	885	1175	1563	2084	**QUADRUPLE**				

Overtravel

Overtravel