

GENERAL

Variable spring supports are used for supporting pipework, vessels, columns and pipe connections to large tanks, that are subject to thermal movement and/or subsidence.

They are used when it is not possible to use rigid hangers and Constant effort spring supports would be uneconomical

For small vertical movements up to about 75mm the variable effort spring support is recommended. The Binder Group manufactures four basic travel range units. These are BV35, BV70, BV140 and BV210 and have a maximum working range of 35mm, 70mm, 140mm and 210mm respectively.

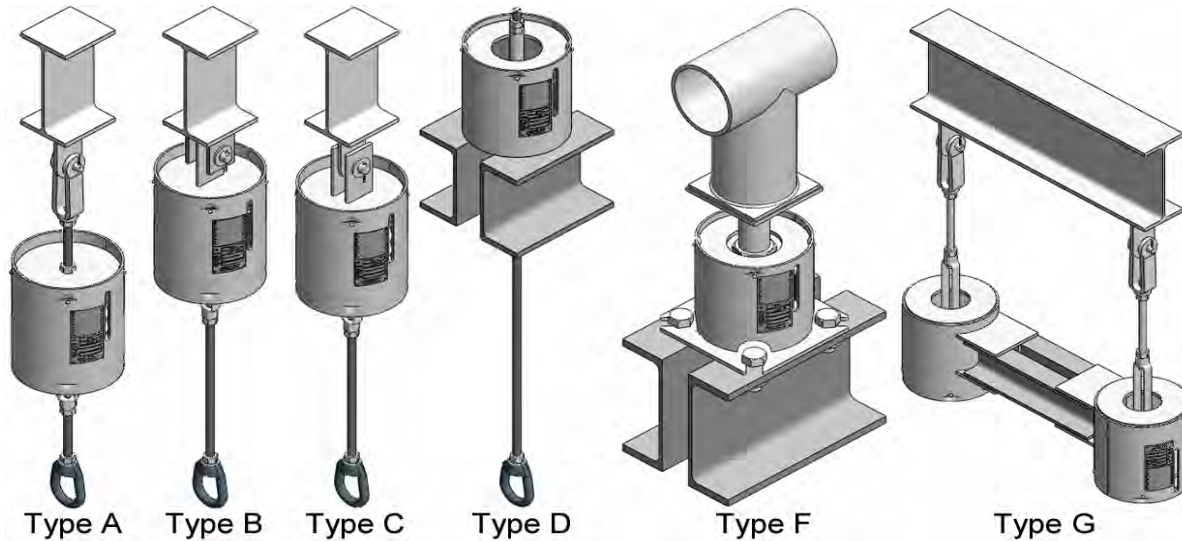
This full travel may be used provided the necessary calculations are carried out to ensure that the pipework and nozzle connections can withstand the large changes that occur during pipe movement.

Most international standards advise a maximum load variation of 25%, it is therefore recommended to select a variable effort spring support on this basis. Care should always be taken to ensure that the selected unit has sufficient travel available to permit the free vertical movement of the pipe when moving from the cold to hot position.

In keeping with generally accepted practice, we recommend that the pipe load is correctly supported when the pipe is in its normal working position. This ensures that no abnormal or excessive forces, due to out of balance supporting effort, is transferred to the pipework in its stressed working condition.

STANDARD DESIGN

- All units are easily adjusted, Types A, B, C and G being supplied with a Turnbuckle built into the unit. Type F units use a threaded load column.
- Carbon Steel construction with Stainless Steel scale plate.
- Ideally suited for highly corrosive environments such as Offshore and Refining installations. Standard design allows surface protection system on all internal and external surfaces limiting potential corrosion.
- Scale plate fitted with Hot (Red) and Cold (Blue) load indicators.





VARIABLE SPRING SUPPORTS

BV35, BV70, BV140, BV210

STANDARD DESIGN

- Compact design saving headroom, this is particularly important in Offshore applications where space is a premium.
- Load indicator visible from both sides of the unit.
- Spring pressure plate ensures the coil is always centred in the can.
- Every size has a reserve of travel at the upper and lower limits.
- Type F units supplied inclusive of load flange.
- Pre Set Stops - The Binder units are supplied as standard with Pre-Set travel stops locking the unit in the cold position.
- Low maintenance design.

CORROSION PROTECTION

- Standard finish is Hot Dip Galvanised to ASTM A153.
- For offshore or highly corrosive environments, the units are available in the Binder system 1 paint system. Units are blast cleaned to AS1627 Part 4 Class 2.5, followed by a 3 coat epoxy paint system to 275 micron DFT. Final colour is Binder Blue (AS27000 B23). Other colours available.
- Helical spring coils are acrylic painted for Standard HDG units. Marine grade plastic coated coils are available as an option.

OPTIONAL FEATURES

- If the unit is to be subject to a hydrostatic test load, this should be nominated at the time of ordering and a factory fitted hydrostatic test stop will be installed. Hydrostatic test stop allows up to twice the normal load to be applied during the test.
- Lifting lugs may be fitted if requested at time of order.
- Client nominated corrosion protection systems are available if required.
- Type F units can be provided with a low friction PTFE slide plate mounted on the load flange

SPECIFICATION

- Binder Group Spring Supports conform to the requirements of the following international specifications:
British Standard BS 3974.
MSS SP 58, 69 and 89.
ASME B31.1
ASME B31.3

QUALITY ASSURANCE & QUALITY CONTROL

- Binder Group maintains a quality system that conforms to Australian Standard AS/NZS ISO 9002.
- Inspection & Test Plans and Quality Plans are available for all orders if required. These should be nominated by the client at time of inquiry or order.
- Quality and Spring unit performance reports are available for all units manufactured and supplied by Binder Group.

WHEN ORDERING

When ordering please nominate:

- Support model, size and type. Typically, BV70-F-15. Then go to Page 84 and Page 85 to select the corresponding Part Number. If in doubt, our Engineers will be happy to assist in selection.
- To help our Engineers select the correct size, please supply Hot (or Cold) load (kg or kN), movement (mm) and direction of movement up or down (+ or -).
- Whether hydrostatic stops are required and if so hydrostatic load.
- Corrosion protection system required.
- Support identification reference for inclusion on the scale, generally called a Tag Number.



VARIABLE SPRING SUPPORTS

BV35, BV70, BV140, BV210

TYPE SELECTION

The type of spring to be used is normally determined by the physical characteristics of the structure to which the spring assembly will be attached, as shown by the typical applications.

METHOD OF SELECTION

In order to select the correct spring hanger size it is necessary to know the actual load which the spring is to support (inclusive of pipe weight, insulation, contents and ancillary equipment). Also the magnitude and direction of the pipe line movement from the cold to the hot position, the actual load is the hot load. The cold load (preset load) is calculated by adding (up movement) or subtracting (down movement) the product of the spring rate times the movement to the hot load, e.g.:
Cold Load (MVT.UP) = Hot Load + (MVT. x Spring Rate).
Cold Load (MVT.DN) = Hot Load - (MVT. x Spring Rate).

USING THE SELECTION TABLE (EITHER N or kg)

1. Select the actual support load in the body of the table.
2. Check that the support travel can be accommodated within the recommended working range of the unit size selected by reading the table up or down, dependent on the pipe movement direction. It should be noted that the chart must be read opposite from the direction of the pipe movement.
3. If the movement can be accommodated then by using 25% as the maximum load change cold to hot the travel series can be established.

Variability = Movement x Spring Rate x 100
(%Load Change) Hot Load

EXAMPLE:-

- Actual Load (Hot Load) = 10789 N.
- Pipe Movement 20 mm down cold to hot.
- Maximum variation from cold to hot load = 25%.

USING N SELECTION TABLE

Enter table at 10789 N. This is located in size 12 column. Since the pipe movement is down, move up the column for a distance of 20 mm. This travel is acceptable for all travel series, therefore unit size 12 is selected.

CHECK VARIABILITY

Variability = $\frac{\text{Movement x Spring Rate x 100}}{\text{Hot Load}}$
(% Load Change)

From lower chart select spring rate for BV35, Size 12 = 157.6 N/mm

$$V = \frac{20 \times 157.6 \times 100}{10789} = 29.2\%$$

This would NOT be acceptable.

Now select spring rate for BV70, Size 12 = 78.8 N/mm

$$V = \frac{20 \times 78.8 \times 100}{10789} = 14.6\%$$

This is acceptable.

UNIT SELECTED WOULD BE BV70 SIZE 12

Preset Load = Actual Load - (Movement x Spring Rate)

Preset Load = 10789 - (20 x 78.8) = 9213 N

Unit to be ordered would be BV70 Size 12.

Preset Load = 9213 N. Hot Load = 10789 N.

CALCULATING THE ROD TAKE OUT FOR A HANGING TYPE SUPPORT

Having selected the support type, series and size, the next step is to calculate the rod take out. Note that the rod take out dimension listed in the various tables is given for specific types, the dimension is always given at the minimum load position. To calculate the rod take out for example BV70-A-16 Preset Load = 33861 N

At the intersection of a horizontal line from size column to a vertical line down from column headed rod take out type A - we obtain a rod take out of 376 mm. This is at the minimum load position. To this dimension we must add the amount of pre-compression from the minimum load position to the preset load position. Return now to size selection table. Enter the body of the table where the load of 33861 N reads in the Size 16 column, moving horizontally to the left to read the amount of precompression required for a series BV70 spring. In this example the precompression is 40 mm. The rod take out = 376 + 40 = 416 mm. Other loads are treated in a similar manner. Intermediate precompression dimensions are obtained by linear interpolation.

TO CALCULATE LOADED LENGTH 'X' FOR 'F' TYPE BASE MOUNTED SUPPORT

Having selected the support type, series and size, the next step is to calculate the loaded length. Note that the loaded length dimension listed in the various tables is given as minimum and maximum.

The maximum figure should be used for calculation purposes.

EXAMPLE:-

Calculate the loaded length for BV140-F-10, preset load =5414N.

At the intersection of a horizontal line from "hanger size" column to a vertical line down from column headed "Loaded Length X, Type Fmax." -we obtain a height of 778mm. This is at the minimum load position. From this dimension we must subtract the amount of precompression from the minimum load position to the preset load position. Refer now to size selection table, and enter the body of the table where the load of 5414N reads in the size 10 column and moving horizontally to the left to read the amount of precompression required for a series BV140 spring. In this example the precompression is 60mm. Therefore the loaded length = 778-60 = 718mm. Other loads are treated in a similar manner. Intermediate precompression dimensions are obtained by linear interpolation.

CAUTIONARY NOTE FOR BASE MOUNTED TYPE

BV35 and BV70 all sizes.

Lateral loads on Base Mounted Supports shall be limited to **25% of the maximum working load**. Where higher loads are envisaged, consideration shall be given to the fitting of P.T.F.E. slider pads or rollers (Type 'K').

BV140 all sizes.

Lateral loads on Base Mounted Supports shall be limited to **15% of the maximum working load**. Where higher loads are envisaged, consideration shall be given to the fitting of P.T.F.E. slider pads or rollers (Type 'K').



VARIABLE SUPPORT SELECTION TABLE

Loads in Newtons. Travel in mm.

	BV 210	BV 140	BV 70	BV 35	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Over travel	30	20	10	5	196	292	375	468	652	873	1,161	1,548	2,073	2,764	3,293	4,698	6,218	8,291	11,054	14,923	20,726	27,635	36,799	48,869	64,987	86,359	115,171
					212	314	404	523	701	939	1,249	1,665	2,230	2,974	3,866	5,055	6,91	9,921	11,895	16,058	22,302	29,737	39,544	52,589	69,916	92,927	123,929
					217	322	413	535	717	961	1,287	1,704	2,283	3,044	3,957	5,174	6,848	9,131	12,175	16,436	22,828	30,437	40,526	53,829	71,563	95,116	126,849
Min	0	0	0	0	222	329	423	547	734	983	1,308	1,744	2,335	3,114	4,048	5,293	7,006	9,341	12,455	16,814	23,353	31,138	41,457	55,069	73,209	97,305	129,768
Working Load	6	4	2	1	228	337	432	559	750	1,005	1,337	1,783	2,388	3,184	4,138	5,412	7,164	9,551	12,735	17,193	23,879	31,838	42,389	56,309	74,855	99,494	132,687
Recommended Working Range of Springs	12	8	4	2	233	344	441	572	767	1,027	1,367	1,822	2,440	3,254	4,230	5,532	7,321	9,762	13,015	17,571	24,404	32,539	43,321	57,549	76,501	101,683	135,607
	18	12	6	3	238	351	451	584	783	1,049	1,396	1,861	2,493	3,324	4,321	5,651	7,479	9,972	13,296	17,950	24,929	33,239	44,252	58,789	78,147	103,872	138,526
	24	16	8	4	243	359	460	596	800	1,071	1,426	1,901	2,545	3,394	4,412	5,770	7,636	10,182	13,576	18,327	24,455	33,940	45,184	60,029	79,974	106,061	141,445
	30	20	10	5	249	366	470	608	816	1,093	1,455	1,940	2,598	3,464	4,503	5,889	7,794	10,392	13,856	18,706	25,980	34,640	46,116	61,268	81,440	108,250	144,365
	36	24	12	6	254	373	479	621	833	1,115	1,484	1,979	2,651	3,534	4,594	6,008	7,952	10,602	14,136	19,084	26,505	35,341	47,047	62,508	83,086	110,439	147,284
	42	28	14	7	259	381	489	633	849	1,138	1,514	2,018	2,703	3,604	4,685	6,127	8,109	10,812	14,416	19,462	27,031	36,041	47,979	63,748	84,372	112,628	150,204
	48	32	16	8	264	388	498	645	866	1,160	1,543	2,058	2,756	3,674	4,776	6,246	8,267	11,022	14,697	19,840	27,556	36,742	48,911	64,988	86,378	114,818	153,123
	54	36	18	9	270	395	508	657	882	1,182	1,573	2,097	2,808	3,744	4,867	6,365	8,424	11,233	14,977	20,219	28,082	37,442	49,842	66,228	88,025	117,007	156,024
	60	40	20	10	275	403	517	670	899	1,204	1,602	2,136	2,861	3,814	4,959	6,484	8,582	11,533	15,257	20,597	28,607	38,143	50,774	67,468	89,671	119,196	158,926
	66	44	22	11	280	410	527	682	915	1,226	1,631	2,175	2,913	3,884	5,050	6,603	8,740	11,653	15,537	20,975	29,132	38,843	51,706	68,708	91,317	121,385	161,881
	72	48	24	12	285	417	536	694	931	1,248	1,661	2,214	2,966	3,954	5,141	6,722	8,897	11,863	15,817	21,354	29,658	39,544	52,638	69,948	92,963	123,574	164,800
	78	52	26	13	291	425	546	706	948	1,270	1,690	2,254	3,018	4,024	5,323	6,842	9,055	12,073	16,098	21,732	30,183	40,244	53,569	71,188	94,609	125,763	167,720
	84	56	28	14	296	432	555	719	964	1,292	1,720	2,293	3,071	4,094	5,323	6,961	9,213	12,283	16,378	22,110	30,708	40,945	54,501	72,428	96,256	127,952	170,639
	90	60	30	15	301	438	564	731	981	1,314	1,749	2,332	3,123	4,165	5,414	7,080	9,370	12,494	16,658	22,488	31,234	41,645	55,433	73,667	97,902	130,141	173,558
	96	64	32	16	306	446	574	743	997	1,336	1,779	2,371	3,176	4,235	5,555	7,199	9,528	12,704	16,938	22,867	31,759	42,346	56,364	74,907	99,548	132,330	176,478
	102	68	34	17	312	454	583	756	1,014	1,358	1,808	2,411	3,228	4,305	5,596	7,318	9,685	12,914	17,218	23,245	32,285	43,046	57,296	76,147	101,194	134,519	179,397
	108	72	36	18	317	462	593	768	1,030	1,380	1,837	2,450	3,281	4,375	5,687	7,437	9,843	13,124	17,499	23,623	32,810	43,747	58,228	77,387	102,840	136,708	182,317
	114	76	38	19	322	469	602	780	1,047	1,402	1,867	2,489	3,334	4,445	5,778	7,556	10,001	13,334	17,779	24,001	33,335	44,447	59,159	78,627	104,486	138,897	185,236
	120	80	40	20	327	476	612	792	1,063	1,424	1,896	2,528	3,386	4,515	5,869	7,675	10,158	13,544	18,059	24,380	33,861	45,148	60,091	79,867	106,133	141,087	188,155
	126	84	42	21	333	484	621	805	1,080	1,446	1,926	2,567	3,439	4,585	5,960	7,794	10,316	13,754	18,339	24,758	34,386	45,862	61,023	81,107	107,779	143,276	191,075
	132	88	44	22	338	491	631	817	1,096	1,469	1,955	2,607	3,491	4,655	6,051	7,913	10,473	13,965	18,619	25,136	34,912	46,549	61,954	82,347	109,425	145,465	193,994
	138	92	46	23	343	498	640	829	1,113	1,491	1,984	2,646	3,544	4,725	6,142	8,032	10,631	14,175	18,900	25,515	35,437	47,249	62,886	83,587	111,071	147,654	196,913
	144	96	48	24	348	506	650	841	1,129	1,513	2,014	2,685	3,596	4,795	6,233	8,151	10,789	14,385	19,180	25,893	35,962	47,950	63,818	84,827	112,717	149,846	199,833
	150	100	50	25	354	513	659	854	1,146	1,535	2,043	2,724	3,649	4,865	6,325	8,271	10,946	14,595	19,460	26,271	36,488	48,650	64,749	86,066	114,364	152,032	202,753
	156	104	52	26	359	520	668	866	1,162	1,557	2,073	2,764	3,701	4,935	6,416	8,390	11,104	14,805	19,740	26,649	37,013	49,351	65,681	87,306	116,010	154,221	205,671
	162	108	54	27	364	528	678	878	1,178	1,579	2,102	2,803	3,754	5,005	6,507	8,509	11,262	15,015	20,020	27,028	37,538	50,051	66,613	88,546	117,656	156,410	208,591
	168	112	56	28	370	535	687	890	1,195	1,601	2,132	2,842	3,806	5,075	6,598	8,628	11,419	15,226	20,301	27,406	38,064	50,752	67,544	89,786	119,302	158,599	211,510
	174	116	58	29	375	542	697	903	1,211	1,623	2,161	2,881	3,859	5,145	6,689	8,747	11,577	15,436	20,581	27,784	38,589	51,452	68,476	91,026	120,948	160,788	214,430
	180	120	60	30	380	550	706	915	1,228	1,645	2,190	2,921	3,911	5,215	6,780	8,866	11,734	15,646	20,861	28,162	39,115	52,153	69,408	92,266	122,595	162,977	217,349
	186	124	62	31	385	557	716	927	1,244	1,667	2,220	2,960	3,964	5,285	6,871	8,985	11,892	15,856	21,141	28,541	39,640	52,853	70,339	93,506	124,241	165,166	220,268
	Max Working Load	192	128	64	32	391	564	725	939	1,261	1,689	2,249	3,000	4,017	5,355	6,962	9,104	12,050	16,066	21,422	28,919	40,165	53,554	71,271	94,746	125,887	167,356
198	132	66	33	396	572	735	952	1,277	1,711	2,279	3,039	4,069	5,425	7,053	9,223	12,207	16,276	21,702	29,297	40,691	54,254	72,203	95,986	127,533	169,545	226,107	
204	136	68	34	401	579	744	964	1,294	1,733	2,308	3,077	4,122	5,495	7,144	9,342	12,365	16,486	21,982	29,676	41,216	54,955	72,134	97,226	129,179	171,734	229,026	
210	140	70	35	406	587	754	976	1,310	1,755	2,338	3,117	4,174	5,566	7,235	9,461	12,522	16,697	22,262	30,054	41,741	55,655	74,066	98,465	130,826	173,923	231,946	
Over travel	30	20	10	5	412	594	763	968	1,327	1,777	2,367	3,156	4,227	5,636	7,326	9,580	12,680	16,907	22,542	30,432	42,267	56,356	74,998	99,705	132,472	176,112	234,865
					417	601	772	1,001	1,343	1,799	2,396	3,195	4,279	5,706	7,417	9,700	12,838	17,117	22,823	30,810	42,792	57,056	75,929	100,945	134,118	178,301	237,784
					422	609	782	1,013	1,360	1,822	2,426	3,234	4,332	5,776	7,508	9,819	13,000	17,327	23,103	31,189	43,318	57,757	76,861	102,185	135,746	180,490	240,704
					427	616	791	1,025	1,376	1,844	2,455	3,274	4,384	5,846	7,559	9,938	13,153	17,537	23,833	31,567	43,843	58,457	77,793	103,425	137,410	182,679	243,623
					433	623	801	1,037	1,392	1,866	2,485	3,313	4,437	5,916	7,691	10,157	13,310	17,747	23,663	31,945	44,368	59,158	78,724	104,665	139,057	184,868	246,543

Spring Rate - N per millimeter

Figure BV35	5.3	7.4	9.4	
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VARIABLE SUPPORT SELECTION TABLE

Loads in kg. Travel in mm.

	BV 210	BV 140	BV 70	BV 35	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Over travel	30	20	10	5	20	30	38	48	67	89	118	158	211	282	336	479	634	845	1,127	1,521	2,113	2,817	3,751	4,982	6,625	8,803	11,740
					22	32	41	53	72	96	127	170	227	303	394	515	70	909	1,213	1,637	2,273	3,031	4,031	5,361	7,127	9,473	12,633
					22	33	42	55	73	98	131	174	233	310	403	527	698	931	1,241	1,675	2,327	3,103	4,131	5,487	7,295	9,696	12,931
Min	0	0	0	0	23	34	43	56	75	100	133	178	238	317	413	540	714	952	1,270	1,714	2,381	3,174	4,226	5,614	7,463	9,919	13,228
Working Load	6	4	2	1	23	34	44	57	77	102	136	182	243	325	422	552	730	974	1,298	1,753	2,434	3,246	4,321	5,740	7,631	10,142	13,526
	12	8	4	2	24	35	45	58	78	105	139	186	249	332	431	564	746	995	1,327	1,791	2,488	3,317	4,416	5,866	7,798	10,365	13,823
Recommended Working Range of Springs	18	12	6	3	24	36	46	60	80	107	142	190	254	339	441	576	762	1,017	1,355	1,830	2,541	3,388	4,511	5,993	7,966	10,588	14,121
	24	16	8	4	25	37	47	61	82	109	145	194	259	346	450	588	778	1,038	1,384	1,868	2,493	3,460	4,606	6,119	8,152	10,812	14,419
	30	20	10	5	25	37	48	62	83	111	148	198	265	353	459	600	795	1,059	1,412	1,907	2,648	3,531	4,701	6,246	8,302	11,035	14,716
	36	24	12	6	26	38	49	63	85	114	151	202	270	360	468	612	811	1,081	1,441	1,945	2,702	3,603	4,796	6,372	8,470	11,258	15,014
	42	28	14	7	26	39	50	65	87	116	154	206	276	367	478	625	827	1,102	1,470	1,984	2,756	3,674	4,891	6,498	8,601	11,481	15,311
	48	32	16	8	27	40	51	66	88	118	157	210	281	375	487	637	843	1,124	1,498	2,022	2,809	3,745	4,986	6,625	8,805	11,704	15,609
	54	36	18	9	28	40	52	67	90	121	160	214	286	382	496	649	859	1,145	1,527	2,061	2,863	3,817	5,081	6,751	8,973	11,927	15,905
	60	40	20	10	28	41	53	68	92	123	163	218	292	389	506	661	875	1,176	1,555	2,100	2,916	3,888	5,176	6,878	9,141	12,151	16,200
	66	44	22	11	29	42	54	70	93	125	166	222	297	396	515	673	891	1,188	1,584	2,138	2,970	3,960	5,271	7,004	9,309	12,374	16,502
	72	48	24	12	29	43	55	71	95	127	169	226	302	403	524	685	907	1,224	1,612	2,177	3,023	4,031	5,366	7,130	9,476	12,597	16,799
	78	52	26	13	30	43	56	72	97	130	172	230	308	410	543	698	923	1,231	1,641	2,215	3,077	4,102	5,461	7,257	9,644	12,820	17,097
	84	56	28	14	30	44	57	73	98	132	175	234	313	417	543	710	939	1,252	1,670	2,254	3,130	4,174	5,556	7,383	9,812	13,043	17,394
	90	60	30	15	31	45	58	75	100	134	178	238	318	425	552	722	955	1,274	1,698	2,292	3,184	4,245	5,651	7,509	9,980	13,266	17,692
	96	64	32	16	31	46	59	76	102	136	181	242	324	432	566	734	971	1,295	1,727	2,331	3,237	4,317	5,746	7,636	10,148	13,489	17,990
	102	68	34	17	32	46	59	77	103	138	184	246	329	439	570	746	987	1,316	1,755	2,370	3,291	4,388	5,841	7,762	10,315	13,712	18,287
	108	72	36	18	32	47	60	78	105	141	187	250	335	446	580	758	1,003	1,338	1,784	2,408	3,345	4,459	5,936	7,889	10,483	13,936	18,585
	114	76	38	19	33	48	61	80	107	143	190	254	340	453	589	770	1,020	1,359	1,812	2,447	3,398	4,531	6,031	8,015	10,651	14,159	18,882
	120	80	40	20	33	49	62	81	108	145	193	258	345	460	598	782	1,036	1,381	1,841	2,485	3,452	4,602	6,126	8,141	10,819	14,382	19,180
	126	84	42	21	34	49	63	82	110	147	196	262	351	467	608	795	1,052	1,402	1,869	2,524	3,505	4,675	6,221	8,268	10,987	14,605	19,478
	132	88	44	22	35	50	64	83	112	150	199	266	356	475	617	807	1,068	1,424	1,898	2,562	3,559	4,745	6,315	8,394	11,154	14,828	19,775
	138	92	46	23	35	51	65	85	114	152	202	270	361	482	626	819	1,084	1,445	1,927	2,601	3,612	4,816	6,410	8,521	11,322	15,051	20,073
	144	96	48	24	36	52	66	86	115	154	205	274	367	489	635	831	1,100	1,466	1,955	2,639	3,666	4,888	6,505	8,647	11,490	15,275	20,370
150	100	50	25	36	52	67	87	117	157	208	278	372	496	645	843	1,116	1,488	1,984	2,678	3,720	4,959	6,600	8,773	11,658	15,498	20,668	
156	104	52	26	37	53	68	88	119	159	211	282	377	503	654	855	1,132	1,509	2,012	2,717	3,773	5,031	6,695	8,900	11,826	15,721	20,965	
162	108	54	27	37	54	69	90	120	161	214	286	383	510	663	867	1,148	1,531	2,041	2,755	3,827	5,102	6,790	9,026	11,994	15,944	21,263	
168	112	56	28	38	55	70	91	122	163	217	290	388	517	673	880	1,164	1,552	2,069	2,794	3,880	5,174	6,885	9,153	12,161	16,167	21,561	
174	116	58	29	38	55	71	92	123	165	220	294	393	525	682	892	1,180	1,574	2,098	2,832	3,934	5,245	6,980	9,279	12,329	16,390	22,439	
180	120	60	30	39	56	72	93	125	168	223	298	399	532	691	904	1,196	1,595	2,127	2,871	3,987	5,316	7,075	9,405	12,497	16,613	22,156	
Max Working Load	186	124	62	31	39	57	73	95	127	170	226	302	404	539	700	916	1,212	1,616	2,155	2,909	4,041	5,388	7,170	9,532	12,665	16,837	22,453
	192	128	64	32	40	58	74	96	129	172	229	306	410	546	710	928	1,228	1,638	2,184	2,948	4,094	5,459	7,265	9,658	12,833	17,060	22,751
Over travel	198	132	66	33	40	58	75	97	130	174	232	310	415	553	719	940	1,244	1,659	2,212	2,986	4,148	5,531	7,360	9,785	13,000	17,283	23,049
	204	136	68	34	41	59	76	98	132	177	235	314	420	560	728	952	1,260	1,681	2,241	3,025	4,201	5,602	7,353	9,911	13,168	17,506	23,346
	210	140	70	35	41	60	77	100	134	179	238	318	426	567	738	964	1,277	1,702	2,269	3,064	4,255	5,673	7,550	10,037	13,336	17,729	23,644
	30	20	10	5	42	61	78	99	135	181	241	322	431	575	747	977	1,293	1,723	2,298	3,102	4,309	5,745	7,645	10,164	13,504	17,952	23,941
					43	61	79	102	137	183	244	326	436	582	756	989	1,309	1,745	2,327	3,141	4,362	5,816	7,740	10,290	13,672	18,175	24,239
					43	62	80	103	139	186	247	330	442	589	765	1,001	1,325	1,766	2,355	3,179	4,416	5,888	7,835	10,416	13,838	18,399	24,537
					44	63	81	105	140	188	250	334	447	596	771	1,013	1,341	1,788	2,430	3,218	4,469	5,959	7,930	10,543	14,007	18,622	24,834
	44	64	82	106	142	190	253	338	452	603	784	1,035	1,357	1,809	2,412	3,256	4,523	6,030	8,025	10,669	14,175	18,845	25,132				

Spring Rate - kg per millimeter

Figure BV35	0.53	0.75	0.96	1.25	1.6	2.2	3	4	5.4	7.1	9.2	12.1	16	21.4	28.6	38.6	53.6	71.4	95	126.4	168	223.2	297.6
Figure BV70	0.26	0.37	0.48	0.62	0.8	1.1	1.5	2	2.7	3.6	4.6	6	8	10.7	14.3	19.3	26.8	35.7	47.5	63.2	84	111.6	148.8
Figure BV140	0.13	0.18	0.24	0.31	0.4	0.5	0.7	1	1.3	1.8	2.3	3	4	5.3	7.1	9.6	13.4	17.8	23.7	31.6	42	55.8	74.4
Figure BV210	0.09	0.12	0.16	0.2	0.29	0.41	0.5	0.66	0.9	1.2	1.5	2	2.7	3.6	4.8	6.4	8.9	11.9	15.8	21.1	28	37.2	49.6
Size	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22



VARIABLE SUPPORT PART ID TABLE

		Size																						
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Type A	BV 35	710000	710001	710002	710003	710004	710005	710006	710007	710008	710009	710010	710011	710012	710013	710014	710015	710016	710017	710018	710019	710020	710021	710022
	BV 70	720000	720001	720002	720003	720004	720005	720006	720007	720008	720009	720010	720011	720012	720013	720014	720015	720016	720017	720018	720019	720020	720021	720022
	BV 140	730000	730001	730002	730003	730004	730005	730006	730007	730008	730009	730010	730011	730012	730013	730014	730015	730016	730017	730018	730019	730020	730021	730022
	BV 210	740000	740001	740002	740003	740004	740005	740006	740007	740008	740009	740010	740011	740012	740013	740014	740015	740016	740017	740018	740019	740020	740021	740022
Type B	BV 35	710100	710101	710102	710103	710104	710105	710106	710107	710108	710109	710110	710111	710112	710113	710114	710115	710116	710117	710118	710119	710120	710121	710122
	BV 70	720100	720101	720102	720103	720104	720105	720106	720107	720108	720109	720110	720111	720112	720113	720114	720115	720116	720117	720118	720119	720120	720121	720122
	BV 140	730100	730101	730102	730103	730104	730105	730106	730107	730108	730109	730110	730111	730112	730113	730114	730115	730116	730117	730118	730119	730120	730121	730122
	BV 210	740100	740101	740102	740103	740104	740105	740106	740107	740108	740109	740110	740111	740112	740113	740114	740115	740116	740117	740118	740119	740120	740121	740122
Type C	BV 35	710200	710201	710202	710203	710204	710205	710206	710207	710208	710209	710210	710211	710212	710213	710214	710215	710216	710217	710218	710219	710220	710221	710222
	BV 70	720200	720201	720202	720203	720204	720205	720206	720207	720208	720209	720210	720211	720212	720213	720214	720215	720216	720217	720218	720219	720220	720221	720222
	BV 140	730200	730201	730202	730203	730204	730205	730206	730207	730208	730209	730210	730211	730212	730213	730214	730215	730216	730217	730218	730219	730220	730221	730222
	BV 210	740200	740201	740202	740203	740204	740205	740206	740207	740208	740209	740210	740211	740212	740213	740214	740215	740216	740217	740218	740219	740220	740221	740222
Type D	BV 35	710300	710301	710302	710303	710304	710305	710306	710307	710308	710309	710310	710311	710312	710313	710314	710315	710316	710317	710318	710319	710320	710321	710322
	BV 70	720300	720301	720302	720303	720304	720305	720306	720307	720308	720309	720310	720311	720312	720313	720314	720315	720316	720317	720318	720319	720320	720321	720322
	BV 140	730300	730301	730302	730303	730304	730305	730306	730307	730308	730309	730310	730311	730312	730313	730314	730315	730316	730317	730318	730319	730320	730321	730322
	BV 210	740300	740301	740302	740303	740304	740305	740306	740307	740308	740309	740310	740311	740312	740313	740314	740315	740316	740317	740318	740319	740320	740321	740322

Part ID = 6 Digits					
1st	2nd	3rd	4th	5th	6th
7	1	0	2	1	5

Product 7=Variable

Travel
1=BV35
2=BV70
3=BV140
4=BV210

Type
00 = A
01 = B
02 = C
03 = D
04 = F
05 = G (up to 900mm)
06 = G1 (901mm-1300mm)
07 = G2 (1301mm-1800mm)
08 = H
09 = K

Size 0 to 22



Type A



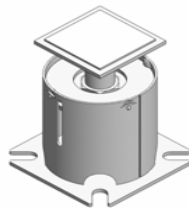
Type B



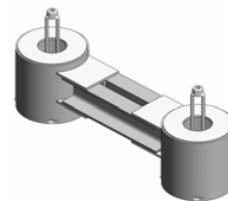
Type C



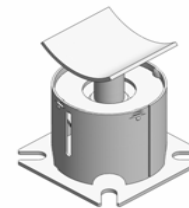
Type D



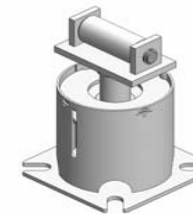
Type F



Type G



Type H



Type K

Notes :

- G Type units available in three width ranges.
- Please supply rod centre dimension with order.
- F Type units. Client to advise if a PTFE slide plate is required.

Ordering Information

Please select Part ID from table for required Variable Type and Size, and specify required surface finish.



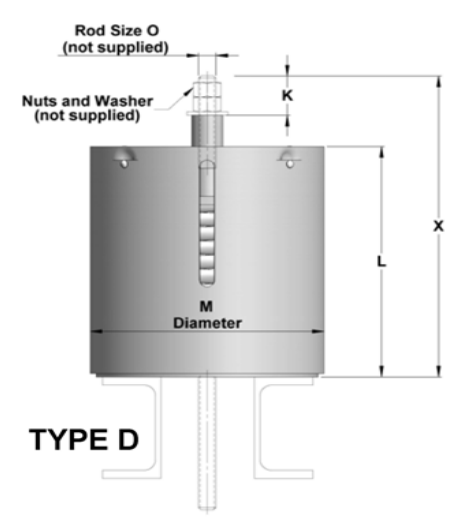
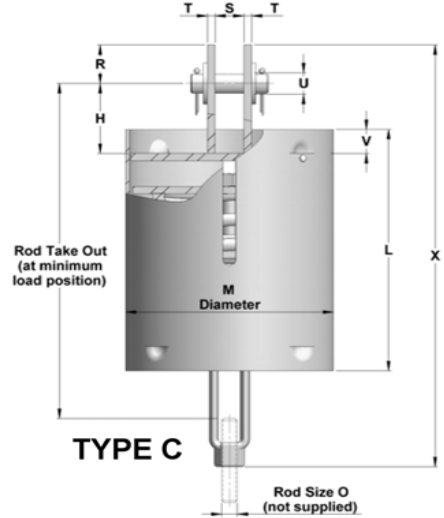
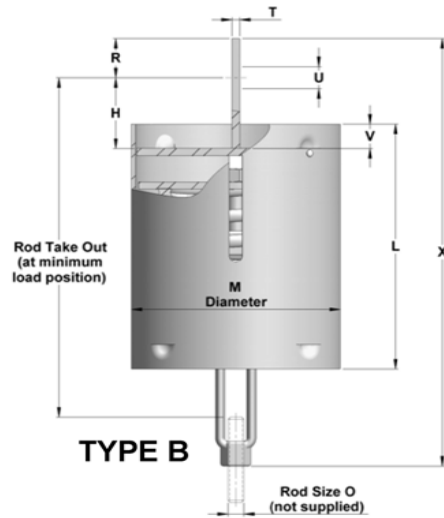
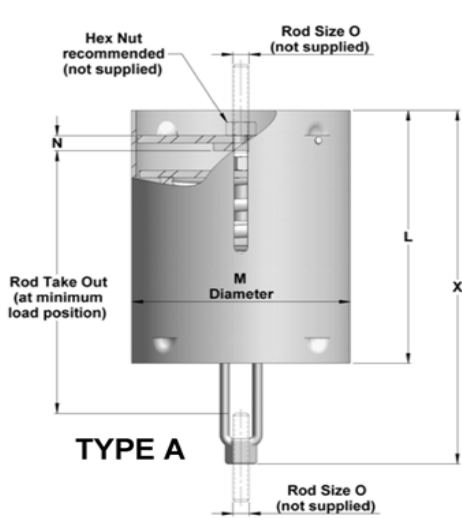
VARIABLE SUPPORT PART ID TABLE

		Size																						
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Type F	BV 35	710400	710401	710402	710403	710404	710405	710406	710407	710408	710409	710410	710411	710412	710413	710414	710415	710416	710417	710418	710419	710420	710421	710422
	BV 70	720400	720401	720402	720403	720404	720405	720406	720407	720408	720409	720410	720411	720412	720413	720414	720415	720416	720417	720418	720419	720420	720421	720422
	BV 140	730400	730401	730402	730403	730404	730405	730406	730407	730408	730409	730410	730411	730412	730413	730414	730415	730416	730417	730418	730419	730420	730421	730422
	BV 210	740400	740401	740402	740403	740404	740405	740406	740407	740408	740409	740410	740411	740412	740413	740414	740415	740416	740417	740418	740419	740420	740421	740422
Type G = For rod centres upto 900mm / light duty beam																								
Type G	BV 35	710500	710501	710502	710503	710504	710505	710506	710507	710508	710509	710510	710511	710512	710513	710514	710515	710516	710517	710518	710519	710520	710521	710522
	BV 70	720500	720501	720502	720503	720504	720505	720506	720507	720508	720509	720510	720511	720512	720513	720514	720515	720516	720517	720518	720519	720520	720521	720522
	BV 140	730500	730501	730502	730503	730504	730505	730506	730507	730508	730509	730510	730511	730512	730513	730514	730515	730516	730517	730518	730519	730520	730521	730522
	BV 210	740500	740501	740502	740503	740504	740505	740506	740507	740508	740509	740510	740511	740512	740513	740514	740515	740516	740517	740518	740519	740520	740521	740522
Type G1 = For rod centres between 901mm and 1300mm / medium duty beam																								
Type G1	BV 35	710600	710601	710602	710603	710604	710605	710606	710607	710608	710609	710610	710611	710612	710613	710614	710615	710616	710617	710618	710619	710620	710621	710622
	BV 70	720600	720601	720602	720603	720604	720605	720606	720607	720608	720609	720610	720611	720612	720613	720614	720615	720616	720617	720618	720619	720620	720621	720622
	BV 140	730600	730601	730602	730603	730604	730605	730606	730607	730608	730609	730610	730611	730612	730613	730614	730615	730616	730617	730618	730619	730620	730621	730622
	BV 210	740600	740601	740602	740603	740604	740605	740606	740607	740608	740609	740610	740611	740612	740613	740614	740615	740616	740617	740618	740619	740620	740621	740622
Type G2 = For rod centres between 1301mm and 1800mm / heavy duty beam																								
Type G2	BV 35	710700	710701	710702	710703	710704	710705	710706	710707	710708	710709	710710	710711	710712	710713	710714	710715	710716	710717	710718	710719	710720	710721	710722
	BV 70	720700	720701	720702	720703	720704	720705	720706	720707	720708	720709	720710	720711	720712	720713	720714	720715	720716	720717	720718	720719	720720	720721	720722
	BV 140	730700	730701	730702	730703	730704	730705	730706	730707	730708	730709	730710	730711	730712	730713	730714	730715	730716	730717	730718	730719	730720	730721	730722
	BV 210	740700	740701	740702	740703	740704	740705	740706	740707	740708	740709	740710	740711	740712	740713	740714	740715	740716	740717	740718	740719	740720	740721	740722
Type H	BV 35	710800	710801	710802	710803	710804	710805	710806	710807	710808	710809	710810	710811	710812	710813	710814	710815	710816	710817	710818	710819	710820	710821	710822
	BV 70	720800	720801	720802	720803	720804	720805	720806	720807	720808	720809	720810	720811	720812	720813	720814	720815	720816	720817	720818	720819	720820	720821	720822
	BV 140	730800	730801	730802	730803	730804	730805	730806	730807	730808	730809	730810	730811	730812	730813	730814	730815	730816	730817	730818	730819	730820	730821	730822
	BV 210	740800	740801	740802	740803	740804	740805	740806	740807	740808	740809	740810	740811	740812	740813	740814	740815	740816	740817	740818	740819	740820	740821	740822
Type K	BV 35	710900	710901	710902	710903	710904	710905	710906	710907	710908	710909	710910	710911	710912	710913	710914	710915	710916	710917	710918	710919	710920	710921	710922
	BV 70	720900	720901	720902	720903	720904	720905	720906	720907	720908	720909	720910	720911	720912	720913	720914	720915	720916	720917	720918	720919	720920	720921	720922
	BV 140	730900	730901	730902	730903	730904	730905	730906	730907	730908	730909	730910	730911	730912	730913	730914	730915	730916	730917	730918	730919	730920	730921	730922
	BV 210	740900	740901	740902	740903	740904	740905	740906	740907	740908	740909	740910	740911	740912	740913	740914	740915	740916	740917	740918	740919	740920	740921	740922



Variable Spring Supports

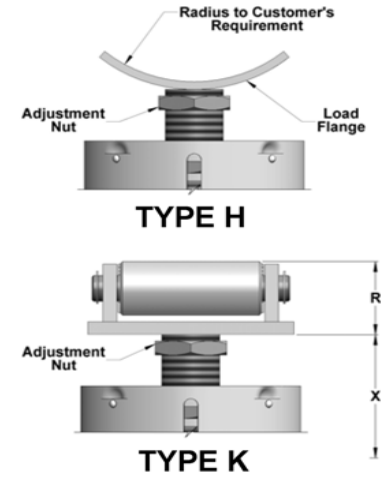
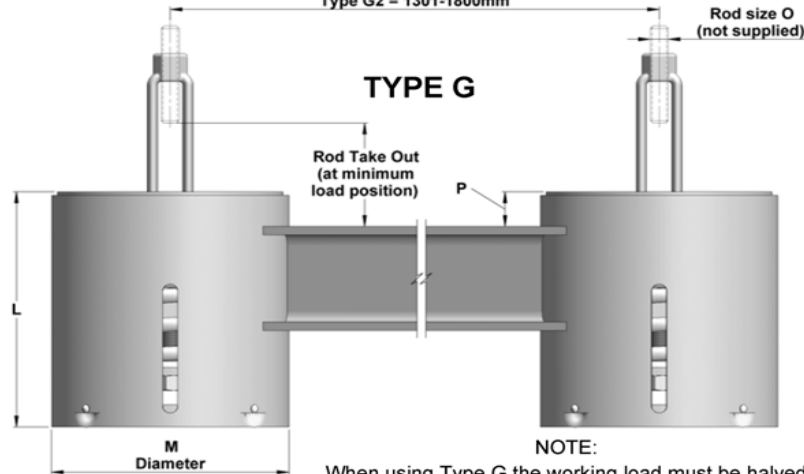
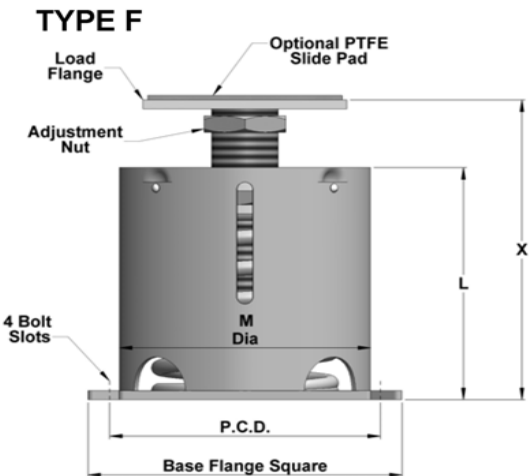
BV35-BV70-BV140-BV210



GENERAL NOTE:
 Sizes 0-17 are manufactured utilising the dimpled casing construction.
 Sizes 18-22 are manufactured as a totally welded unit.

SITE ADJUSTMENT:
 TYPES A, B, C & G ± 75 mm
 TYPES F, H & K ± 25 mm

Rod Centres as Specified by Customer
 Type G = 0-900mm
 Type G1 = 901-1300mm
 Type G2 = 1301-1800mm



Support Size	Dimension R
0-12	57
13-17	71
18-20	84
21	115
22	131



TABLE OF DIMENSIONS

BV35

HANGER SIZE	ROD SIZE	CASING DIA	CASING LENGTH 'L'						ROD TAKE OUT			THRD DEPTH TYPE A	TYPES B & C						TYPE F						TYPE G			LOADED LENGTH 'X'								WEIGHT (APPROX) kgs							
			TYPES						TYPES				DIMENSIONS						BASE FLANGE SQUARE	PCD BASE FLANGE	BASE FLANGE BOLTS	BASE FLANGE THICK	LOAD FLANGE SQUARE	LOAD FLANGE THICK	SPACE BETWEEN CHANNEL 'W'	P	BEAM SECTION			TYPE A & G		TYPE B & C		TYPE D			TYPE F			TYPES			
			A,B,&C	D & G	F	A	B & C	G	N	U	H		R	S	T	V	900MM ROD CENTRES	1300MM ROD CENTRES									1800MM ROD CENTRES	MIN	MAX	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G			
			O	M																																							
0	M12	114	170	140	128	151	221	58	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	25	75 PFC	75 PFC	75 PFC	253	288	323	358	187	222	24	182	217	2.5	3	5	11				
1	M12	114	180	150	135	154	224	51	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	25	75 PFC	75 PFC	75 PFC	256	291	326	361	194	229	24	188	223	3	4	5	11				
2	M12	114	195	165	151	175	245	57	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	25	75 PFC	75 PFC	75 PFC	277	312	347	382	210	245	24	204	239	3	4	6	12				
3	M12	160	180	150	138	160	230	57	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	25	75 PFC	75 PFC	75 PFC	262	297	332	367	197	232	24	193	228	4	5	7	13				
4	M12	160	190	160	148	172	242	59	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	25	75 PFC	75 PFC	75 PFC	274	309	344	379	207	242	24	203	238	5	5	7	14				
5	M12	160	200	170	158	178	248	55	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	25	75 PFC	75 PFC	75 PFC	280	315	350	385	217	252	24	212	247	5	6	8	15				
6	M16	180	215	188	165	169	243	61	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	279	314	349	384	231	266	33	223	258	8	9	12	21				
7	M16	180	235	208	180	174	248	46	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	284	319	354	389	246	281	33	238	273	9	9	13	23				
8	M16	180	235	208	187	174	248	46	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	284	319	354	389	253	288	33	245	280	10	10	13	24				
9	M20	240	260	228	201	184	279	45	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	51	75 PFC	75 PFC	100 PFC	306	341	391	426	288	323	39	271	306	21	19	23	48				
10	M20	240	270	238	214	166	261	17	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	51	75 PFC	75 PFC	100 PFC	288	323	373	408	301	336	39	283	318	24	20	24	53				
11	M20	240	240	208	182	173	268	54	20	26	87	35	37	10	25	260	268	M20	8	180	12	32	51	75 PFC	75 PFC	100 PFC	295	330	380	415	269	304	39	250	285	21	19	24	46				
12	M24	240	255	223	196	174	281	39	32	32	91	35	41	12	25	260	268	M20	8	180	12	38	38	100 PFC	100 PFC	125 PFC	318	353	403	438	285	320	47	258	293	22	20	25	51				
13	M30	240	300	268	231	199	332	57	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	76	100 PFC	100 PFC	125 PFC	346	381	471	506	330	365	57	293	328	27	23	34	61				
14	M30	240	300	268	237	208	341	66	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	76	100 PFC	100 PFC	125 PFC	355	390	480	515	337	372	57	299	334	28	25	36	63				
15	M30	250	320	295	261	233	370	24	36	38	127	49	51	12	25	265	278	M20	10	200	16	45	25	150 PFC	150 PFC	200 PFC	384	419	509	544	349	384	57	308	343	34	33	45	78				
16	M36	250	360	335	293	254	401	31	36	46	131	74	60	20	25	265	278	M20	10	200	16	45	51	150 PFC	150 PFC	200 PFC	411	446	571	606	392	427	68	340	375	40	39	51	92				
17	M42	250	380	355	306	290	437	47	36	50	131	74	67	20	25	265	278	M20	10	200	16	45	51	150 PFC	150 PFC	200 PFC	465	500	625	660	427	462	75	372	407	48	43	55	108				
18	M48	320	360	360	303	312	440	-6	45	60	127	80	73	20	-5	350	400	M24	12	250	20	60	12	200 PFC	250 PFC	300 PFC	463	498	631	666	456	491	85	393	428	104	83	98	222				
19	M56	320	395	395	329	357	496	10	50	68	139	80	79	20	-5	350	400	M24	12	250	20	67	25	200 PFC	250 PFC	300 PFC	546	581	720	755	496	531	99	418	453	116	94	109	245				
20	M64	320	460	460	385	401	547	4	57	78	146	102	86	25	-5	350	400	M24	12	250	20	73	25	200 PFC	250 PFC	300 PFC	605	640	801	836	560	595	112	472	507	145	112	126	304				
21	M72	320	495	495	413	722	872	292	68	84	150	102	92	25	-10	350	400	M24	16	250	20	79	25	300 PFC	300 PFC	380 PFC	946	981	1140	1175	602	637	126	499	534	169	145	158	377				
22	M80	320	620	620	526	874	1037	371	68	94	163	102	98	25	-10	350	400	M24	16	250	20	86	76	300 PFC	300 PFC	380 PFC	1115	1150	1322	1357	722	757	138	607	642	210	170	186	458				



TABLE OF DIMENSIONS

BV70

HANGER SIZE	ROD SIZE	CASING DIA	CASING LENGTH 'L'			ROD TAKE OUT			THRD DEPTH TYPE A	TYPES B & C							TYPE F					TYPE G			LOADED LENGTH 'X'								WEIGHT (APPROX) kgs							
			TYPES			TYPES				DIMENSIONS							BASE FLANGE SQUARE	PCD BASE FLANGE	BASE FLANGE BOLTS	BASE FLANGE THICK	LOAD FLANGE SQUARE	LOAD FLANGE THICK	SPACE BETWEEN CHANNEL 'W'	P	BEAM SECTION			TYPE A & G		TYPE B & C		TYPE D		TYPE F		TYPES				
			A,B,&C	D & G	F	A	B & C	G		N	U	H	R	S	T	V									900MM ROD CENTRES	1300MM ROD CENTRES	1800MM ROD CENTRES	MIN	MAX	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G
			O	M																																				
0	M12	114	220	190	180	182	252	52	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	284	354	354	424	274	344	24	233	303	5	4	6	17	
1	M12	114	240	210	197	202	272	52	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	304	374	374	444	291	361	24	255	325	6	5	6	18	
2	M12	114	260	230	216	220	290	50	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	322	392	392	462	310	380	24	274	344	7	5	7	20	
3	M12	160	235	205	192	199	269	67	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	301	371	371	441	286	356	24	252	322	7	6	8	21	
4	M12	160	255	225	208	211	280	59	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	313	383	382	452	302	372	24	268	338	7	7	9	22	
5	M12	160	270	240	226	235	305	68	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	337	407	407	477	320	390	24	285	355	8	7	9	22	
6	M16	180	280	253	232	232	306	59	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	342	412	412	482	333	403	33	294	364	13	10	14	31	
7	M16	180	305	278	256	255	329	57	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	365	435	435	505	357	427	33	320	390	14	11	15	33	
8	M16	180	320	293	268	268	342	55	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	378	448	448	518	369	439	33	331	401	15	13	17	35	
9	M20	240	330	298	273	265	360	81	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	387	457	472	542	400	470	39	347	417	29	22	27	64	
10	M20	240	360	328	305	298	393	84	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	420	490	505	575	432	502	39	379	449	27	23	28	59	
11	M20	240	305	273	249	271	366	112	20	26	87	35	37	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	393	463	478	548	376	446	39	323	393	26	21	26	56	
12	M24	240	335	303	271	232	339	81	32	32	91	35	41	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	376	446	461	531	400	470	47	339	409	31	25	30	66	
13	M30	240	395	363	336	303	436	92	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	450	520	575	645	475	545	57	404	474	37	30	44	78	
14	M30	240	400	368	339	310	442	94	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	457	527	581	651	478	548	57	407	477	40	33	47	85	
15	M30	250	415	390	355	344	481	117	36	38	127	49	51	12	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	495	565	620	690	488	558	57	417	487	51	43	57	118	
16	M36	250	480	455	414	390	537	98	36	46	131	74	60	20	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	547	617	707	777	558	628	68	475	545	64	53	68	141	
17	M42	250	545	520	466	452	599	95	36	50	131	74	67	20	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	627	697	787	857	617	687	75	528	598	73	59	75	160	
18	M48	320	480	480	422	443	570	95	45	60	127	80	73	20	-5	350	400	M24	12	250	20	60	102	200 PFC	250 PFC	300 PFC	594	664	761	831	620	690	85	523	593	131	114	126	275	
19	M56	320	545	545	480	520	659	100	50	68	139	80	79	20	-5	350	400	M24	12	250	20	67	102	200 PFC	250 PFC	300 PFC	709	779	883	953	692	762	99	580	650	159	136	147	324	
20	M64	320	640	640	567	598	744	98	57	78	146	102	86	25	-5	350	400	M24	12	250	20	73	102	200 PFC	250 PFC	300 PFC	802	872	998	1068	787	857	112	663	733	196	163	173	378	
21	M72	320	735	735	648	1006	1157	414	68	84	150	102	92	25	-10	350	400	M24	16	250	20	79	102	300 PFC	300 PFC	380 PFC	1230	1300	1425	1495	870	940	126	733	803	270	207	216	522	
22	M80	320	900	900	807	1203	1366	446	68	94	163	102	98	25	-10	350	400	M24	16	250	20	86	102	300 PFC	300 PFC	380 PFC	1444	1514	1651	1721	1037	1107	138	887	957	327	247	258	648	



TABLE OF DIMENSIONS

BV140

HANGER SIZE	ROD SIZE	CASING DIA	CASING LENGTH 'L'			ROD TAKE OUT			THRD DEPTH TYPE A	TYPES B & C						TYPE F						TYPE G			LOADED LENGTH 'X'										WEIGHT (APPROX) kgs					
			TYPES			TYPES				DIMENSIONS						BASE FLANGE SQUARE	PCD BASE FLANGE	BASE FLANGE BOLTS	BASE FLANGE THICK	LOAD FLANGE SQUARE	LOAD FLANGE THICK	SPACE BETWEEN CHANNEL 'W'	P	BEAM SECTION			TYPE A & G		TYPE B & C		TYPE D			TYPE F		TYPES				
			A,B,&C	D & G	F	A	B & C	G		N	U	H	R	S	T									V	900MM ROD CENTRES	1300MM ROD CENTRES	1800MM ROD CENTRES	MIN	MAX	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G
			O	M																																				
0	M12	114	370	340	328	328	398	48	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	430	570	500	640	497	637	24	380	520	7	6	9	22	
1	M12	114	405	375	362	371	441	56	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	473	613	543	683	532	672	24	423	563	8	7	10	24	
2	M12	114	445	415	400	410	480	55	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	512	652	582	722	570	710	24	461	601	9	8	11	27	
3	M12	160	400	370	353	362	432	65	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	464	604	534	674	523	663	24	415	555	10	9	12	28	
4	M12	160	430	400	385	397	467	70	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	499	639	569	709	555	695	24	447	587	11	10	13	29	
5	M12	160	465	435	420	430	500	68	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	532	672	602	742	590	730	24	482	622	11	10	14	30	
6	M16	180	470	443	422	424	498	62	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	534	674	604	744	599	739	33	489	629	18	16	21	43	
7	M16	180	520	493	470	484	558	71	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	594	734	664	804	647	787	33	538	678	20	17	23	46	
8	M16	180	540	513	494	490	564	57	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	600	740	670	810	671	811	33	562	702	22	20	25	51	
9	M20	240	555	523	496	489	584	80	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	611	751	696	836	704	844	39	576	716	37	32	40	80	
10	M20	240	615	583	560	553	648	84	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	675	815	760	900	767	907	39	638	778	40	36	43	86	
11	M20	240	505	473	448	449	544	90	20	26	87	35	37	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	571	711	656	796	656	796	39	527	667	37	36	40	79	
12	M24	240	545	513	486	435	542	74	32	32	91	35	41	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	579	719	664	804	696	836	47	559	699	44	39	46	95	
13	M30	240	675	643	616	589	722	98	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	736	876	861	1001	835	975	57	689	829	56	50	70	117	
14	M30	240	685	653	622	601	744	100	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	748	888	883	1023	842	982	57	696	836	63	58	77	131	
15	M30	250	695	670	635	613	750	106	36	38	127	49	51	12	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	764	904	889	1029	854	994	57	702	842	79	69	92	175	
16	M36	250	815	790	752	730	877	102	36	46	131	74	60	20	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	887	1027	1047	1187	982	1122	68	819	959	101	91	113	219	
17	M42	250	930	905	857	853	1000	111	36	50	131	74	67	20	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	1028	1168	1188	1328	1094	1234	75	924	1064	117	100	125	253	
18	M48	320	860	860	787	828	955	99	45	60	127	80	73	20	-5	350	400	M24	12	250	20	60	102	200 PFC	250 PFC	300 PFC	979	1119	1146	1286	1075	1215	85	897	1037	211	186	201	436	
19	M56	320	975	975	903	971	1110	121	50	68	139	80	79	20	-5	350	400	M24	12	250	20	67	102	200 PFC	250 PFC	300 PFC	1160	1300	1334	1474	1205	1345	99	1011	1151	264	230	245	521	
20	M64	320	1114	1155	1072	1155	1260	99	57	78	146	102	86	25	-5	350	400	M24	12	250	20	73	102	200 PFC	250 PFC	300 PFC	1359	1499	1514	1654	1382	1522	112	1177	1317	324	275	289	653	
21	M72	320	1325	1325	1231	1686	1836	503	68	84	150	102	92	25	-10	350	400	M24	16	250	20	79	102	300 PFC	300 PFC	380 PFC	1910	2050	2104	2244	1517	1657	126	1299	1439	443	355	368	868	
22	M80	320	1650	1650	1540	2046	2209	539	68	94	163	102	98	25	-10	350	400	M24	16	250	20	86	102	300 PFC	300 PFC	380 PFC	2287	2427	2494	2634	1839	1979	138	1607	1747	551	434	449	937	



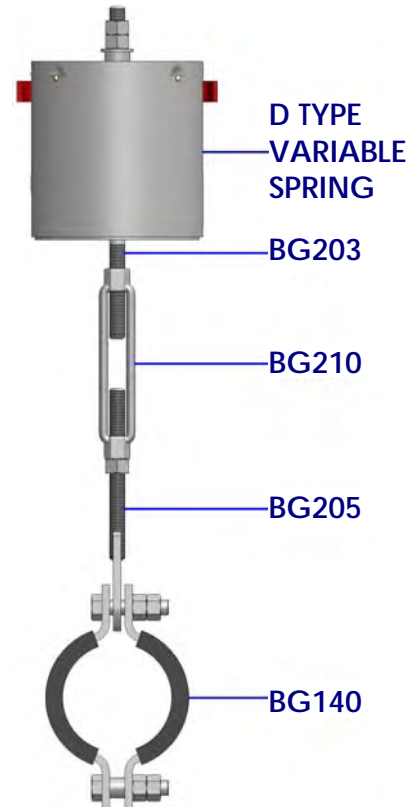
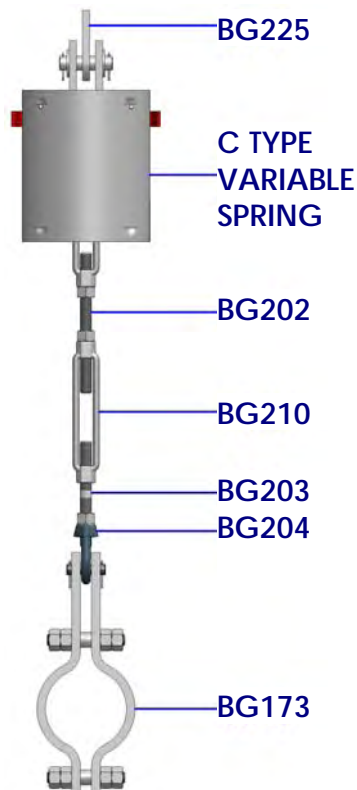
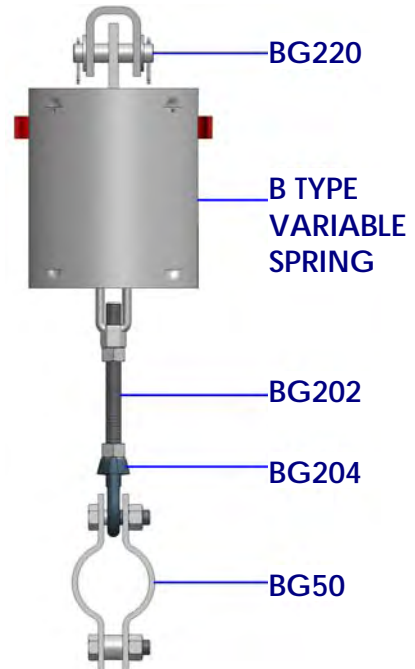
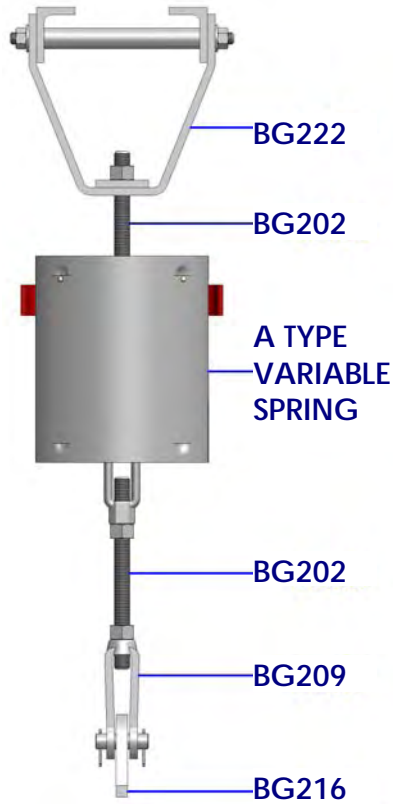
TABLE OF DIMENSIONS

BV210

HANGER SIZE	ROD SIZE	CASING DIA	CASING LENGTH 'L'			ROD TAKE OUT			THRD DEPTH TYPE A	TYPES B & C							TYPE F					TYPE G			LOADED LENGTH 'X'								WEIGHT (APPROX) kgs													
			TYPES			TYPES				DIMENSIONS							BASE FLANGE SQUARE	PCD BASE FLANGE	BASE FLANGE BOLTS	BASE FLANGE THICK	LOAD FLANGE SQUARE	LOAD FLANGE THICK	SPACE BETWEEN CHANNEL 'W'	P	BEAM SECTION			TYPE A & G		TYPE B & C		TYPE D			TYPE F			TYPES								
			A	B	C	D	E	F		G	H	I	J	K	L	M									N	O	P	Q	R	S	T	U	V	MIN	MAX	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G
			A,B & C	D & G	F	A	B & C	G		U	H	R	S	T	V	900MM ROD CENTRES									1300MM ROD CENTRES	1800MM ROD CENTRES	MIN	MAX	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G							
O	M	A,B & C	D & G	F	A	B & C	G	N	U	H	R	S	T	V	BASE FLANGE SQUARE	PCD BASE FLANGE	BASE FLANGE BOLTS	BASE FLANGE THICK	LOAD FLANGE SQUARE	LOAD FLANGE THICK	SPACE BETWEEN CHANNEL 'W'	P	900MM ROD CENTRES	1300MM ROD CENTRES	1800MM ROD CENTRES	MIN	MAX	MIN	MAX	K	MIN	MAX	A,B,C	D,E	F	G										
0	M12	114	530	495	484	488	558	48	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	590	800	660	870	721	931	24	466	676	9	8	12	27							
1	M12	114	580	545	535	546	616	56	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	648	858	718	928	773	983	24	526	736	11	10	13	30							
2	M12	114	635	605	592	599	669	55	12	18	64	32	22	6	20	150	160	M16	6	130	6	16	38	75 PFC	75 PFC	75 PFC	701	911	771	981	831	1041	24	583	793	13	12	16	34							
3	M12	160	565	535	520	527	597	65	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	629	839	699	909	759	969	24	512	722	14	13	16	35							
4	M12	160	615	580	568	582	652	70	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	684	894	754	964	807	1017	24	560	770	14	13	17	36							
5	M12	160	665	635	622	630	700	68	12	18	64	32	22	6	20	200	197	M20	6	130	6	20	51	75 PFC	75 PFC	75 PFC	732	942	802	1012	860	1070	24	614	824	15	14	18	38							
6	M16	180	670	640	621	625	699	62	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	735	945	805	1015	864	1074	33	618	828	24	21	27	55							
7	M16	180	740	710	693	703	777	71	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	813	1023	883	1093	938	1148	33	691	901	27	24	30	60							
8	M16	180	775	745	729	725	799	57	16	22	68	32	27	10	20	220	203	M20	8	150	10	25	51	75 PFC	75 PFC	75 PFC	835	1045	905	1115	973	1183	33	727	937	30	28	34	67							
9	M20	240	785	750	725	719	814	80	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	841	1051	926	1136	1003	1213	39	735	945	49	44	53	104							
10	M20	240	880	845	821	818	913	84	20	26	87	35	32	10	25	260	268	M20	8	180	12	32	76	75 PFC	75 PFC	100 PFC	940	1150	1025	1235	1098	1308	39	829	1039	53	52	58	113							
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12	M24	240	775	735	711	705	812	113	32	32	91	35	41	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	849	1059	934	1144	986	1196	47	710	920	59	53	61	124							
13	M30	240	975	930	902	888	1021	97	32	38	117	49	46	12	25	260	268	M20	8	180	12	38	102	100 PFC	100 PFC	125 PFC	1035	1245	1160	1370	1160	1370	57	905	1115	76	65	96	157							
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15	M30	250	990	960	930	911	1048	109	36	38	127	49	51	12	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	1062	1272	1187	1397	1173	1383	57	922	1132	108	94	126	233							
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17	M42	250	1335	1305	1263	1257	1404	110	36	50	131	74	67	20	25	265	278	M20	10	200	16	45	102	150 PFC	150 PFC	200 PFC	1432	1642	1592	1802	1524	1734	75	1255	1465	164	140	176	347							
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20	M64	320	1675	1675	1577	1635	1778	100	57	78	146	102	86	25	-5	350	400	M24	12	250	20	73	102	200 PFC	250 PFC	300 PFC	1839	2049	2032	2242	1977	2187	112	1897	2107	452	392	405	843							
21	M72	320	1920	1920	1814	2370	2520	592	68	84	150	102	92	25	-10	350	400	M24	16	250	20	79	102	300 PFC	300 PFC	380 PFC	2594	2804	2788	2998	2164	2374	126	2115	2325	616	509	521	1075							
22	M80	320	2405	2405	2273	2894	3041	632	68	94	163	102	98	25	-10	350	400	M24	16	250	20	86	102	300 PFC	300 PFC	380 PFC	3135	3345	3326	3536	2641	2851	138	2579	2789	774	631	641	1318							

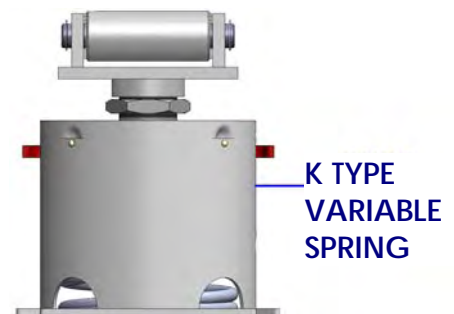
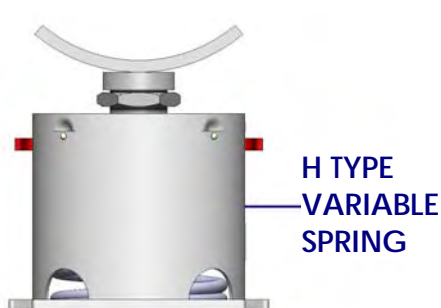
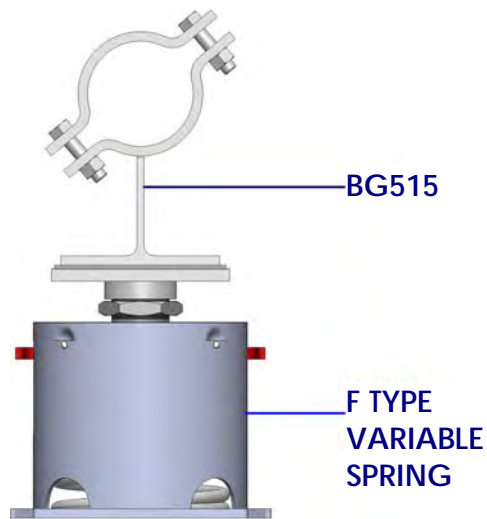
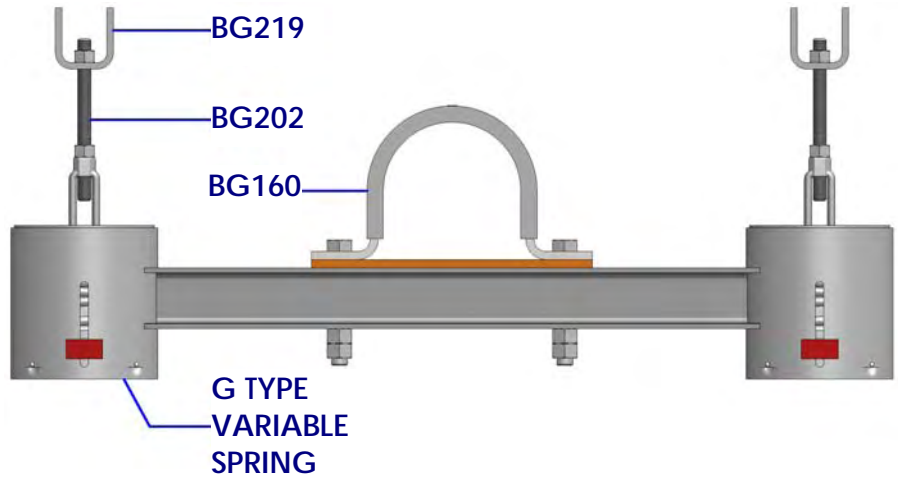
VARIABLE SPRING SUPPORTS

TYPICAL EXAMPLES



VARIABLE SPRING SUPPORTS

TYPICAL EXAMPLES





VARIABLE EFFORT SUPPORTS

BV35, BV70, BV140, BV210

REQUEST FOR QUOTATION FORM

CUSTOMER DETAILS

Table with 4 columns: Customer Name, Project Reference, Contact, BPG No. (Binder Use only); Phone No., Fax No., Email, Date.

INFORMATION REQUIRED FOR QUOTATION ("COLD" means Non-operating, "HOT" means Operating)

A Variable Effort Model, Type, Size and Finish e.g. 730202 HDG is required to be nominated by the Customer. OR the Customer shall nominate a Model, Type and Finish, and BINDER determine the size based on customers specific Load and Travel requirements :

Supply Cold Load and Travel – Hot load calculated (Travel is always Cold to Hot)

"COLD" LOAD or (Kg) or (N) or (lbs); VERTICAL TRAVEL (Y) (mm) or (mm) or (mm); Up or +ve or +ve; Down or -ve or -ve

OR Supply Hot Load and Travel – Cold load calculated

"HOT" LOAD or (Kg) or (N) or (lbs); VERTICAL TRAVEL (Y) (mm) or (mm) or (mm); Up or +ve or +ve; Down or -ve or -ve

HYDROSTATIC TEST LOAD YES / NO (Kg)

PTFE SLIDE YES / NO Only available on F Type load flange. Load flange is square.

TO BE HOT INSTALLED YES / NO Spring will be set to Hot Load, Travel will still be shown as Cold to Hot

Support Type (A, B, C, D, F ..etc) _____ PREFERRED SPRING RATE _____ N/mm _____ kg/mm

SURFACE FINISH (Select Required Finishes)

Variable Unit (Casing, Turnbuckle etc)

HDG (Standard)
Paint – Binder System 1
Blast and Prime
Client paint spec:
Top Coat Color:

Spring Coil

Acrylic Paint (Standard)
Marine Grade Plastic
Other :

Threaded Load Tube on F, H and K

Types (Painting not recommended)
HDG
Zinc Plated
Other (Please specify):
PAINT
Paint Spec Number:
Amount of Coats:
Top Coat Colour:

INFORMATION REQUIRED FOR VARIABLE EFFORT SUPPORT 'HANGER ASSEMBLY'

Envelope for Hanger Assembly

Bottom of Support Steel Elevation 1: mm
Pipe Centreline Elevation 2: mm
Or Length of Drop Rod: mm
Pipe Size: NB Clamp Finish (HDG/Paint/Mill)
Pipe Operating Temp: °C Hanger Components Finish (HDG/Mill)
Insulation Thickness: mm Locknuts are usually supplied 1 per forging

NOTE : Variable Effort Supports can be manufactured without load and travel data, as long as correct model is selected. Support will be pre-set at mid range. Binder will not take any responsibility for spring's suitability where Client does not provide any load and travel data.

Binder Group Pty. Ltd. Email : sales@bindergrp.com Phone +61 8 9353 2208 Fax : +61 8 9353 2806