

Description

Design Principle

The variable spring unit as manufactured by QPS is designed to support pipework which is subject to vertical movements due to temperature changes or subsidence. It is recommended that a variable spring support be used only when the load variation is less than 25% as calculated between the pre-set (cold) load and the operating (hot) load. The spring units should only be used where the pipework is subject to minor vertical displacements up to approximately 75mm.

Where the vertical movements are greater than 75mm and the load variation exceed 25%, then consideration should be given to using a QPS constant support unit; practical and technical advice is always available from QPS to assist with choosing the correct type of support.

Construction

All our variable spring units are substantially constructed with a wide range of top fixing arrangements available for attachment to supporting steelwork. All materials have been selected to provide a high safety factor, and the helical coil is housed in a casing which prevents the ingress of construction debris, thus reducing the danger of damage or restriction to the function of the unit. All variable units are principally manufactured form carbon steel as standard, but stainless steel units are available for extreme corrosive conditions. Stainless steel scale plates are fitted to each unit and include operating (Red) and pre-set (Blue) load button indicators.

Model Range

The variable support units are available in eight top suspension type arrangements, and one floor mounted pedestal type unit.

Four model ranges are available; these are QV1, QV2, QV3, and QV4, and respectively have a working range of 35mm, 70mm, 140mm and 210mm.

The variable units range in size from 0 to 22, with a maximum load of 24,000kg; all units incorporate a low maintenance design and are supplied with two pre-set travel blocks as standard.

In addition to our standard variable spring supports, we manufacture a range of small compact spring supports for travels up to 150mm and loads up to 270.N (27Kg). See page 76 for details and selection table.

Specials

Our standard range of variable supports will cater for most design conditions, but we can provide special units for higher operating loads than shown in our standard selection table; please contact our technical department for advice.

Pre-setting

The variable spring units are supplied to site in the pre-set load condition by the use of two locking stops, each located either side of the spring casing. These locking stops should only be removed once the complete spring assembly has been attached between the pipework and the supporting steelwork.

Hydrostatic Test Loads

Every variable spring unit is capable of withstanding a hydrostatic test load of up to two times the maximum load shown in the selection table for a particular size.

Surface Protection

Standard finish for spring supports is hot dip galvanised. Multi-coat protective finishes are available if required to suit client specifications.

Description

Ordering

The following information is required when ordering a variable spring unit

- Support / tag number
- Variable type (e.g. Fig QV1)
- Size (0-22)
- Mounting type (e.g. A, B, C, etc.)
- Operating load (Kg or kN)
- Pre-set load (QPS can calculate this if required)
- Hydrostatic test load (if known)
- Vertical movement (mm)
- Direction of movement (up / down)
- Quantity required
- Surface finish specification (standard is hot dip galvanised)
- If hydrostatic test stops are required
- Distance between rod centres and total operating load (for model 'G' only)

Selection Procedure

How to select the appropriate Variable Spring Unit

Initial Information required:

- Operating load at support point
- Load calculated when pipe is in the operating (hot) position including pipe weight, insulation, contents, and ancillary equipment
- Pipe movement (mm)
- Direction of movement (up / down)

Method of Selection

Once the above information has been defined, select the actual spring type attachment that will suit the complete assembly (e.g. Type A, B, C, etc.).

Pre-set Load

The pre-set (cold) load is calculated by adding (up movement) or subtracting (down movement) the resultant figure of 'spring rate' x 'movement' to the operating (hot) load.

Pre-set load for movement up = operating load + (movement x spring rate)

Pre-set load for movement down = operating load - (movement x spring rate)

Example

QV1 size 8

Supported load = 366 kg

Movement up 3mm x spring rate 5.4kg/mm = 16.2 kg

Pre-set load = 366 kg + 16.2kg = 382.2 kg

Selection Procedure

1. Select the operating load in the variable spring selection table
2. Check that the movement can be accommodated within the recommended working range of the spring unit selected
3. If the movement can be accommodated, then check the model type required by using 25% as the maximum load change variability figure (pre-set to operating)

Example where first selection is CORRECT

- Operating load 366kg
- Movement 3mm
- Direction of movement: up

From the selection table it can be seen that model QV1 size 8 will theoretically accommodate the operating load and movement.

Check variability:

$$\frac{\text{Movement} \times \text{Spring Rate}}{\text{Operating Load}} \times 100 = \text{Variability}$$

From the selection table, model QV1 size 8 has been selected (spring rate = 5.4)

$$\frac{3 \times 5.4}{366} \times 100 = 4.42\%$$

4.42 % (this is acceptable) pre-set load will be 366 kg + (3 x 5.4) = 382.2 kg

Selection Procedure

Example where first selection is INCORRECT

- Operating load 366kg
- Movement 50mm
- Direction of movement: up

From the selection table it can be seen that model QV1 size 8 will theoretically accommodate the operating load and movement.

Check variability for QV1 (spring rate 5.4kg / mm)

$$\frac{\text{Movement} \times \text{Spring Rate}}{\text{Operating Load}} \times 100 = \text{Variability}$$

$$\frac{50 \times 5.4}{366} \times 100 = 73\% \text{ (This is not acceptable)}$$

Check variability for QV2 (spring rate 2.7kg / mm)

$$\frac{50 \times 2.7}{366} \times 100 = 36.8\% \text{ (This is also not acceptable)}$$

Check variability for QV3 (spring rate 1.4kg / mm)

$$\frac{50 \times 1.4}{366} \times 100 = 19.12\% \text{ (This is acceptable)}$$

Acceptable spring unit will be QV3 size 8. Preset load will be $366 + (50 \times 1.4) = 436 \text{ kg}$

NOTE: The pre-set load above is within the 'over travel', which is acceptable in this case. Spring units should not be selected when the operating load lies within the over travel. All variable units have been designed to perform within the working range.

To Calculate Rod Take Out:

- Locate the minimum rod take out in the table for model size and type selected, this is the dimension in the "minimum load position".
- Then determine on working range scale where the preset load is positioned or add to dimension shown in tables, using the above as an example.

QV3 say type A, size 8 look up table	=	463mm
Preset load at 431 read on scale	=	141mm
Rod take out	=	604mm

To Calculate Loaded Length of Model F:

- Look up maximum loaded length in table for model, size and type selected.
- Then determine on working range scale where preset load is positioned and subtract from dimension shown.

Example QV2 size 16 Pre-set load	=	3506.5 Kg
Maximum dimension from table	=	543mm
Pre-set load read on scale at	=	42
Loaded length	=	501mm

Installation Instructions

Variable spring units are pre-set to a specific load in our works that takes into account the operating load and movement at each specific support point.

In the event that the pipework system is subject to hydraulic testing prior to normal service, then the spring units should be ordered with down travel hydrostatic test stops. These should remain in position until after the hydraulic test has been carried out.

In the event that the pipework service is not subject to hydrostatic testing then the standard pre-set stops supplied with the variable units will be sufficient.

Once removed, the pre-set stops on all units should be retained in case of a requirement for future use. If it becomes obvious that an incorrect load is being applied to any supports in the system, it is advisable to contact our technical support team who would be pleased to give you advice.

Adjustment

Once installed the variable spring units should be adjusted until the load indicators point to the installed load position. The units should be checked following a reasonable period of operation. The load indicator should be indicating the operating load. If minor differences are apparent then the units should be adjusted to the correct operating position. No further adjustments should be necessary.

If major differences are noted then either consult the designer or QPS for further advice, prior to making any adjustments.

Range of site adjustment:

Hanging type's $\pm 75\text{mm}$

Base mounted type's $\pm 25\text{mm}$

Installation of Spring Units Type A, B & C

The spring unit is fitted between the pipe/duct/bracket to be supported and the steelwork above the unit. The hanger rod coming up from the pipe/duct/bracket is connected with a turnbuckle which is fitted to all three types of spring units.

Rotation of the turnbuckle transfers the operating load of the pipe to the spring unit, thus allowing withdrawal of the pre-set stops. No further adjustment should be required unless it becomes obvious that incorrect loads are being applied to adjacent supports in the system.

Installation of Spring Units Type D & E

Both of these units are mounted on top of the steelwork.

Installation of Spring Units Type D

The hanger rod passes through the unit and is secured to the spring unit at the top of the load tube by two nuts. The hanger rod should be of adequate length and threaded sufficiently to take into account any deviation in the pipe or duct elevation since these units are not supplied with a turnbuckle. Adjustment of the two nuts transfers the load to the spring unit, thus allowing withdrawal of the pre-set stops.

Installation of Spring Units Type E

The hanger rod passes through the unit and is secured by two nuts which prevent it passing through the spring pressure plate. Adjustment in length is provided by a turnbuckle at a convenient situation in the hanger assembly. Rotation of the turnbuckle transfers the load to the spring unit allowing withdrawal of the pre-set stops.

Installation Instructions

Installation of Spring Units Type F, H & K

These units are base mounted and should be aligned directly below the point of support. The height of the load flange is adjusted to contact the lower surface of the support point by rotation of the adjustment nut on the load column. Further rotation of this nut will transfer the load onto the spring unit and the pre-set stops can then be withdrawn.

Installation of Spring Units Type G

These units are fitted with turnbuckles so that hanger rods which have been previously connected to the steelwork above can be inserted into them. The rotation of the turnbuckle transfers the load to the spring unit. When the load is correctly supported the pre-set stops can be withdrawn.

Inspection During Operation

Following commissioning, the variable support should be examined to ensure the correct movement has been achieved in the operating (hot) position. If the internal load plate is shown to be against the stop at either end of the scale, an investigation should be made at once.

Subsequently the spring support should be examined at regular intervals to ensure that no change has occurred either in application or condition. The frequency of examination intervals will depend on the environmental and operating conditions and will range from annual examinations for land based, dry atmospheres, to monthly examinations for hostile offshore conditions with the possibility of salt corrosion.

Maintenance

If an excessive build-up of foreign matter or corrosion is observed it is important that the spring support is cleaned either by hand or with a pressure washer to ensure uninhibited operation.





Variable Spring Supports – Selection Table in kg. Travel in mm

	QV4	QV3	QV2	QV1	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					20	29	38	49	66	88	118	158	211	282	366	479	634	845	1127	1521	2113	2818	3752	4983	6625	8806	11744	
	30	20	10	5	20.5	30.5	39	51	68	91	121	162	216	289	376	491	650	867	1155	1560	2167	2889	3847	5109	6793	9029	12042	
					21	31	40	52	70	93	124	166	222	296	385	503	666	888	1184	1599	2221	2960	3942	5236	6961	9252	12340	
					21.5	32	41	53	71	95	127	170	227	303	394	515	682	909	1213	1637	2274	3032	4037	5362	7129	9475	12637	
					22	32.5	42	54	73	97	130	174	232	310	403	528	698	931	1241	1676	2328	3103	4132	5489	7297	9699	12935	
Minimum Working Load	0	0	0	0	22.5	33.5	43	56	75	100	133	178	238	317	413	540	714	952	1270	1714	2381	3175	4227	5615	7465	9922	13233	
	30	20	10	5	23	34.5	44	57	76	102	136	182	243	324	422	552	730	974	1298	1753	2435	3246	4322	5742	7633	10145	13531	
					23.5	35	45	58	78	104	139	186	248	332	431	564	746	995	1327	1791	2488	3318	4417	5886	7801	10368	13828	
					24	36	46	59	80	107	142	190	254	339	441	576	762	1017	1355	1830	2542	3389	4512	5995	7968	10592	14126	
					24.5	36.5	47	61	81	109	145	194	259	346	450	588	779	1038	1384	1869	2596	3461	4607	6121	8136	10815	14424	
					25	37.5	48	62	83	111	148	198	265	353	459	600	795	1059	1413	1907	2649	3532	4702	6247	8304	11038	14721	
	30	20	10	5	25.5	38	49	63	85	113	151	202	270	360	468	613	811	1081	1441	1946	2703	3603	4797	6374	8472	11261	15019	
					26	39	50	64	87	116	154	206	275	367	478	625	827	1102	1470	1984	2756	3675	4892	6500	8640	11485	15317	
					27	39.5	50.5	66	88	118	157	210	281	374	487	637	843	1124	1498	2023	2810	3746	4987	6627	8808	11708	15614	
	60	40	20	10	27.5	40.5	51.5	67	90	120	160	214	286	382	496	649	859	1145	1527	2061	2863	3818	5082	6753	8976	11931	15912	
					28	41	52.5	68	92	122	163	218	291	389	506	661	875	1167	1556	2100	2917	3889	5177	6880	9144	12154	16210	
					28.5	42	53.5	69	93	125	166	222	297	396	515	673	891	1188	1584	2139	2971	3961	5272	7006	9311	12378	16508	
					29	42.5	54.5	71	95	127	169	226	302	403	524	685	907	1209	1613	2177	3024	4032	5367	7133	9479	12601	16805	
					29.5	43.5	55.5	72	97	129	172	230	307	410	533	698	923	1231	1641	2216	3078	4103	5462	7259	9647	12824	17103	
	90	60	30	15	30.5	45	57.5	74	100	134	178	238	318	424	552	722	955	1274	1698	2293	3185	4246	5652	7512	9983	13271	17698	
					31	45.5	58.5	76	102	136	181	242	323	432	561	734	971	1295	1727	2331	3239	4318	5747	7638	10151	13494	17996	
					31.5	46.5	59.5	77	103	138	184	246	329	439	571	746	988	1317	1756	2370	3292	4389	5843	7765	10319	13717	18294	
					32	47	60.5	78	105	140	187	250	334	446	580	758	1004	1338	1784	2409	3346	4461	5938	7891	10487	13940	18591	
	120	80	40	20	32.5	48.5	61.5	79	107	143	190	254	340	453	589	771	1020	1359	1813	2447	3399	4532	6033	8018	10655	14164	18889	
					33.5	48.5	62.5	81	108	145	193	258	345	460	598	783	1036	1381	1841	2486	3453	4604	6128	8144	10822	14387	19187	
					34	49.5	63.5	82	110	147	196	262	350	467	608	795	1052	1402	1870	2524	3506	4675	6223	8271	10990	14610	19484	
					34.5	50	64	83	112	149	199	266	356	474	617	807	1068	1424	1898	2563	3560	4746	6318	8397	11158	14833	19782	
					35	51	65	84	113	152	202	270	361	482	626	819	1084	1445	1927	2602	3614	4818	6413	8524	11326	15057	20080	
	150	100	50	25	35.5	51.5	66	86	115	154	205	274	366	489	636	831	1100	1497	1956	2640	3667	4889	6508	8650	11494	15280	20378	
					36	52.5	67	87	117	156	208	278	372	496	645	843	1116	1488	1984	2679	3721	4961	6603	8776	11662	15503	20675	
					36.5	53	68	88	118	158	211	282	377	503	654	856	1132	1509	2013	2717	3774	5032	6698	8903	11830	15726	20973	
					37	54	69	89	120	161	214	286	382	510	664	868	1148	1531	2041	2756	3828	5104	6793	9029	11988	15950	21271	
					37.5	54.5	70	91	122	163	217	290	388	517	673	880	1164	1552	2070	2794	3881	5175	6888	9156	12166	16173	21568	
					38	55.5	71	92	123	165	220	294	393	524	682	892	1180	1574	2098	2833	3935	5247	6983	9282	12333	16396	21866	
	180	120	60	30	38.5	56	72	93	125	167	223	298	398	532	691	904	1196	1595	2127	2872	3989	5318	7078	9409	12501	16619	22164	
					39	57	73	94	127	170	226	302	404	539	701	916	1213	1617	2156	2910	4042	5389	7173	9535	12669	16843	22461	
					39.5	57.5	74	96	128	172	229	306	409	546	710	928	1229	1638	2184	2949	4096	5461	7268	9662	12837	17066	22759	
					40	58.5	75	97	130	174	232	310	415	553	719	941	1245	1660	2213	2987	4149	5532	7363	9788	13005	17289	23057	
					40.5	59	76	98	132	176	235	314	420	560	729	953	1261	1681	2241	3026	4203	5604	7458	9915	13173	17512	23354	
					41.5	60	77	99	134	179	238	318	425	567	738	965	1277	1702	2270	3064	4257	5675	7553	10041	13341	17735	23652	
					42	60.5	77.5	101	135	181	241	322	431	574	747	977	1293	1724	2298	3103	4310	5747	7648	10167	13509	17959	23950	
	30	20	10	5	42.5	61.5	78.5	102	137	183	244	326	436	582	756	989	1309	1745	2327	3142	4364	5818	7743	10294	13676	18182	24248	
					43	62	79.5	103	139	185	247	330	441	589	766	1001	1325	1767	2356	3180	4417	5889	7838	10420	13844	18405	24545	
					43.5	63	80.5	104	140	188	250	334	447	596	775	1013	1341	1788	2384	3219	4471	5961	7933	10547	14012	18629	24843	
					44	64	81.5	106	142	190	253	338	452	603	784	1026	1357	1810	2413	3257	4524	6032	8028	10673	14180	18852	25141	
					Size	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
					Spring Rate - Kg per Millimetre	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	



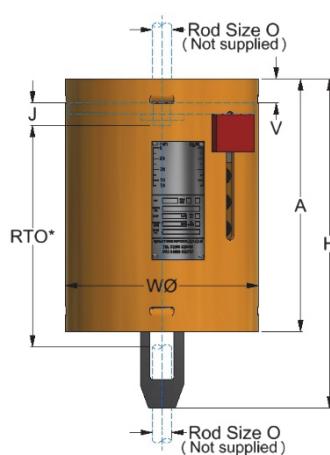
Variable Spring Supports

Variable Spring Supports – Selection Table in N. Travel in mm.

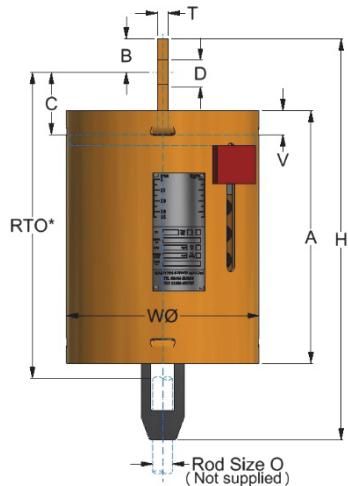
	QV4	QV3	QV2	QV1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Over Travel					196	292	375	468	652	873	1161	1548	2073	2764	3593	4698	6218	8291	11054	14923	20726	27635	36799	48869	64978	86359	115171
	30	20	10	5	201	300	385	498	668	895	1190	1587	2125	2834	3684	4817	6375	8501	11334	15301	21252	28356	37731	50109	66624	88549	118091
					207	307	394	510	685	917	1220	1626	2178	2904	3775	4936	6533	8711	11614	15679	21777	29036	38662	51349	68270	90738	121010
					212	314	404	523	701	939	1249	1665	2230	2974	3866	5055	6691	8921	11895	16058	22302	29737	39544	52589	69916	92927	123929
					217	322	413	535	717	961	1287	1704	2283	3044	3957	5174	6848	9131	12175	16436	22828	30437	40526	53829	71563	95116	126849
Minimum Working Load	0	0	0	0	222	329	423	547	734	983	1308	1744	2335	3114	4048	5293	7006	9341	12455	16814	23353	31138	41457	55069	73209	97305	129768
	30	20	10	5	228	337	432	559	750	1005	1337	1783	2388	3184	4138	5412	7164	9551	12735	17193	23879	31838	42389	56309	74855	99494	132687
					233	344	441	572	767	1027	1367	1822	2440	3254	4230	5532	7321	9762	13015	17571	24404	32539	43321	57549	76501	101683	135607
					238	351	451	584	783	1049	1396	1861	2493	3324	4321	5651	7479	9972	13296	17650	24929	33239	44252	58789	78147	103872	138526
					243	359	460	596	800	1071	1426	1901	2545	3394	4412	5770	7636	10182	13576	18327	24455	33940	45184	60029	79974	106061	141445
					249	366	470	608	816	1093	1455	1940	2598	3464	4503	5889	7794	10392	13856	18706	25980	34640	46116	61268	81440	108250	144365
Recommended Working Range of Spring					254	373	479	621	833	1115	1484	1979	2651	3534	4594	6008	7952	10602	14136	19084	26505	35341	47047	62508	83086	110439	147284
					259	381	489	633	849	1138	1514	2018	2703	3604	4685	6127	8109	10812	14416	19462	27031	36041	47979	63748	84372	112628	150204
					264	388	498	645	866	1160	1543	2058	2756	3674	4776	6246	8267	11022	14697	19840	27556	36742	48911	64988	86378	114818	153123
					270	395	508	657	882	1182	1573	2097	2808	3744	4867	6365	8424	11233	14977	20219	28082	37442	49842	66228	88025	117007	156042
					275	403	517	670	899	1204	1602	2136	2861	3814	4959	6484	8582	11433	15257	20597	28607	38143	50774	67468	89671	119196	158962
					280	410	527	682	915	1226	1631	2175	2913	3384	4505	6603	8740	11653	15537	20975	29132	38843	51706	68708	91317	121385	161881
					285	417	536	694	931	1248	1661	2214	2966	3954	5141	6722	8897	11863	15817	21354	29658	39544	52638	69948	92963	123574	164800
					291	425	546	706	948	1270	1690	2254	3018	4024	5232	6842	9055	12073	16098	21732	30183	40244	53569	71188	94609	125763	167720
					296	432	555	719	964	1292	1720	2293	3071	4094	5233	6961	9213	12283	16378	22110	30708	40945	54501	72428	96256	127952	170639
					301	438	564	731	981	1314	1749	2323	3123	4165	5414	7080	9370	12494	16658	22488	31234	41645	55433	73667	97902	130141	173558
					306	446	574	743	997	1336	1779	2371	3176	4235	5555	7199	9528	12704	16938	22867	31759	42346	56364	74907	99548	132330	176478
					312	454	583	756	1014	1358	1808	2411	3228	4305	5596	7318	9685	12914	17218	23245	32285	43046	57296	76147	101194	134519	179397
					317	462	593	768	1030	1380	1837	2450	3281	4375	5687	7437	9843	13124	17499	23623	32810	43747	58228	77387	102840	136708	182317
					322	469	602	780	1047	1402	1867	2489	3334	4445	5778	7556	10001	13334	17779	24001	33335	44447	59159	78627	104486	138897	185236
					327	476	612	792	1063	1424	1896	2528	3366	4515	5869	7675	10158	13544	18059	24380	33861	45148	60091	79867	106133	141087	188155
					333	484	621	805	1080	1446	1926	2567	3439	4585	5960	7794	10316	13754	18339	24758	34386	45848	61023	81107	107779	143276	191075
					338	491	631	817	1096	1469	1955	2607	3491	4655	6051	7913	10473	13965	18619	25136	34912	46549	61954	82347	109425	145465	193994
					343	498	640	829	1113	1491	1984	2646	3544	4725	6142	8032	10631	14175	18900	25515	35437	47249	62886	83587	111071	147654	196913
					348	506	650	841	1129	1513	2014	2685	3596	4795	6233	8151	10789	14385	19180	25893	35962	47950	63818	84827	112717	149843	199833
					354	513	659	854	1146	1535	2043	2724	3649	4865	6325	8271	10946	14595	19460	26271	36488	48650	64749	86066	114364	152032	202753
					359	520	668	866	1162	1557	2073	2764	3701	4935	6416	8390	11104	14805	19740	26649	37013	49351	65681	87306	116010	154221	205671
					364	528	678	878	1178	1579	2102	2803	3754	5005	6507	8509	11262	15015	2020	27028	37538	50051	66613	88546	117656	156410	208591
					370	535	687	890	1195	1601	2132	2842	3806	5075	6598	8628	11419	15226	20301	27406	38064	50752	67544	89786	119302	158599	211510
					375	542	697	903	1211	1623	2161	2881	3859	5145	6689	8747	11577	15436	20581	27784	38589	51452	68476	91026	120948	160788	214430
					380	550	706	915	1228	1645	2190	2921	3911	5215	6780	8866	11734	15646	20861	28162	39115	52153	69408	92266	122595	162977	217349
					385	557	716	927	1244	1667	2220	2960	3964	5285	6871	8985	11892	15856	21141	28541	39640	52853	70339	93506	124241	165166	220268
					391	564	725	939	1261	1689	2249	3000	4017	5355	6962	9104	12050	16066	21422	28919	40165	53554	71271	94746	125887	167356	223188
					396	572	735	952	1277	1711	2279	3039	4069	5425	7053	9223	12207	16276	21702	29297	40691	54254	72203	95986	127533	169545	226107
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					406	587	754	976	1310	1755	2338	3117	4174	5666	7235	9461	12522	16697	22262	30054	41741	56565	74066	98465	130826	173923	231946
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					417	601	772	1001	1343	1799	2396	3195	7279	5706	7417	9700	12838	17117	22823	30810	42792	57056	75929	100945	134118	178301	237784
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Variable Spring Supports – QV1

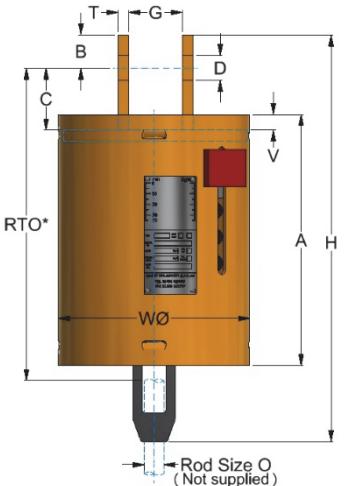
Variable Spring Supports



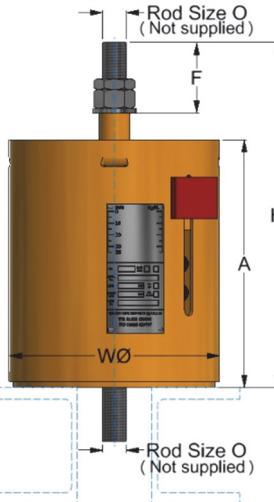
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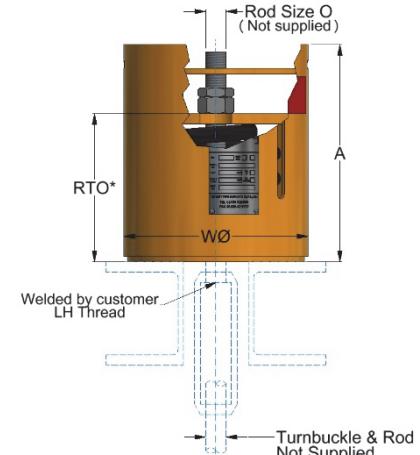
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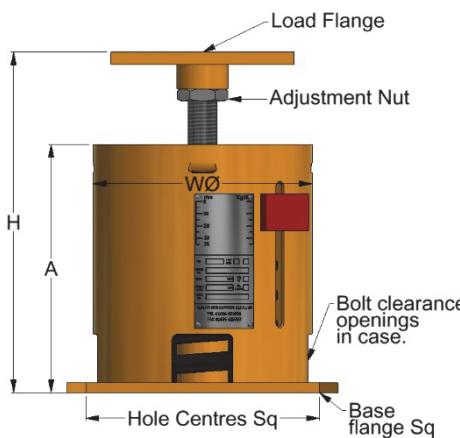
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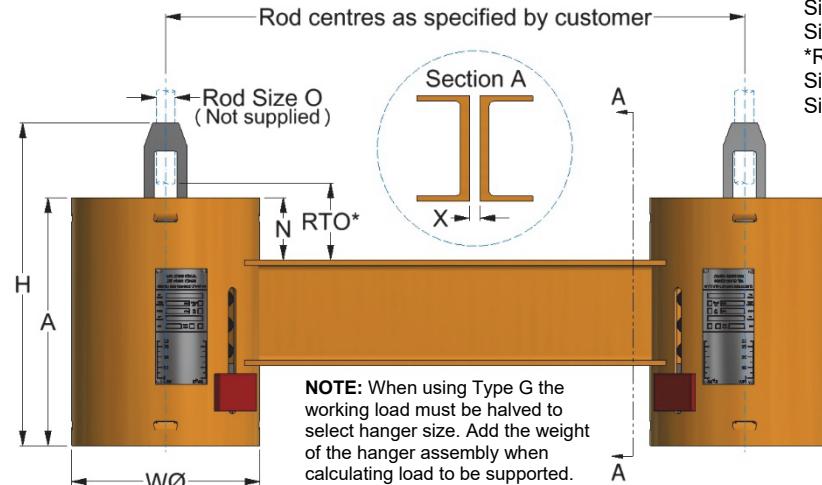
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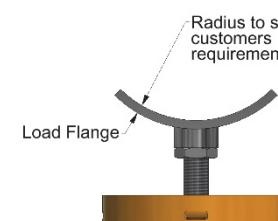
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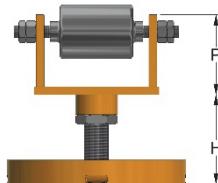
Type F



Type G



Type H



Type K

Size	Dim. 'P'
0 - 5	54
6 - 14	54
15 - 17	70
18 - 20	84
21	115
22	131



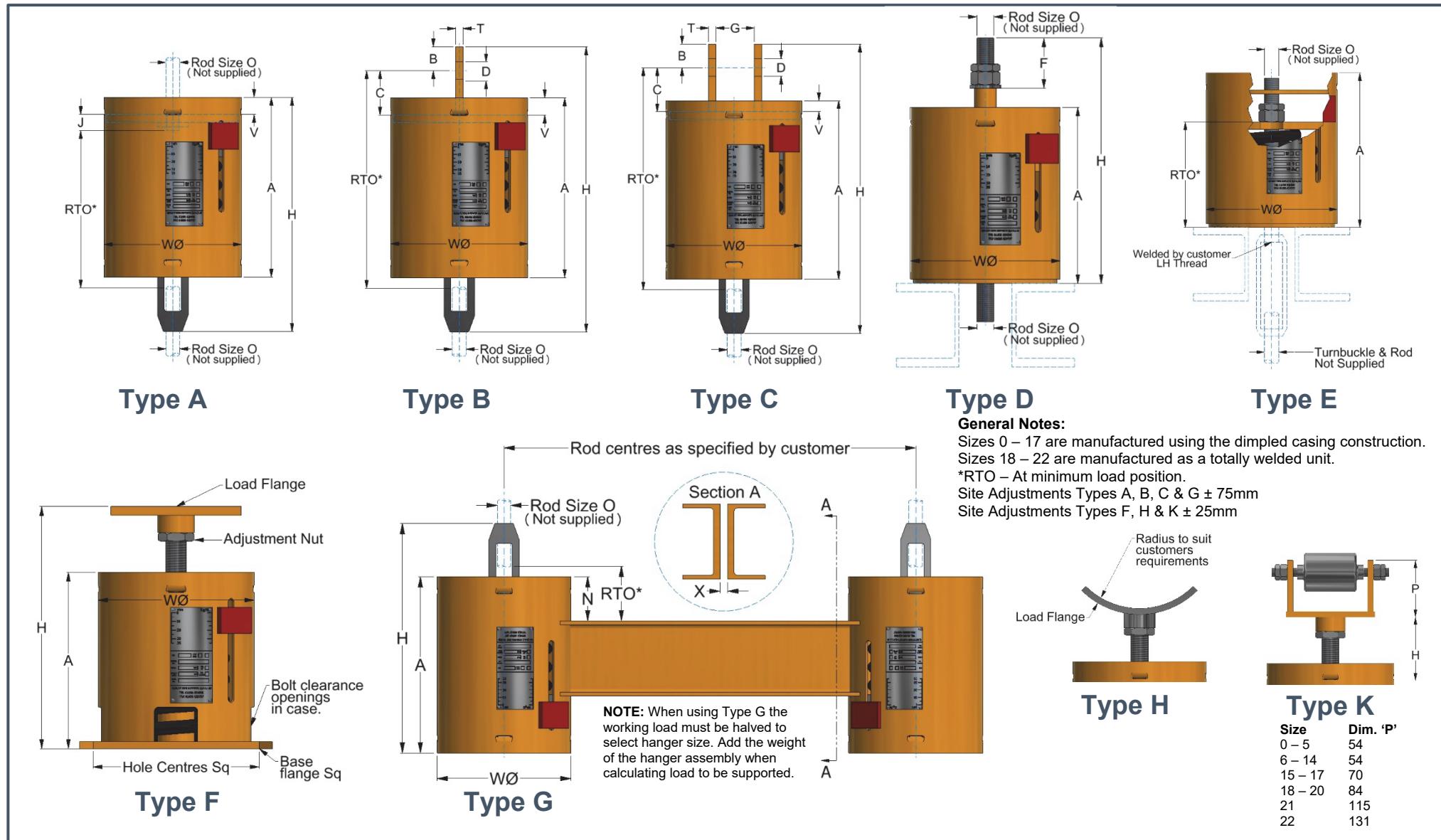
Variable Spring Supports

Variable Spring Supports – QV1

Size	Rod Size	Case Ø	Casing Length A		Rod Take Out		J - Thread Depth Type A	Type BC					Type F					Type G					Loaded Length H								Weight (approx.) Kgs														
			Types		Types			Dimensions					Base Plate Square					Beam Sections					Type A		Type B & C		Type D		Type F		Type G		Types												
			O	W	A B C	D E G	F	A	B C	E	G	D	C	B	G	T	V	Base Plate Hole Centres Square	Base Plate Bolts	Base Plate Thickness	Load Pad Square	Load Pad Thickness	Gap Width X	N	900mm Rod Centres	1300mm Rod Centres	1800mm Rod Centres	Min	Max	Min	Max	Min	Max	F	Min	Max	Min	Max	A B C	D E	F	G			
0	M12	120	170	129	128	130	200	103	25	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	25	50	12	50	12	50	12	245	280	315	350	182	217	54	182	217	224	259	2.5	2	5	11
1	M12	120	180	136	135	130	203	110	18	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	25	50	12	50	12	50	12	248	283	318	353	189	224	54	188	223	224	259	3	2.5	5	11
2	M12	120	195	152	151	142	212	126	24	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	25	50	12	50	12	50	12	269	304	339	374	205	240	54	204	239	246	281	3	3	5	12
3	M12	160	180	139	138	127	197	113	24	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	25	76	38	76	38	76	38	254	289	324	359	192	227	54	193	228	233	268	4	4	8	13
4	M12	160	190	149	148	139	209	123	26	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	25	76	38	76	38	76	38	266	301	336	371	202	237	54	203	238	245	280	5	4	8	14
5	M12	160	200	159	158	144	214	132	21	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	25	76	38	76	38	76	38	271	306	341	376	211	246	54	212	247	250	285	5	5	9	15
6	M16	180	215	167	165	151	225	138	38	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	281	316	351	386	217	252	54	223	258	255	290	8	7	14	21
7	M16	180	235	182	180	156	230	158	23	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	286	321	356	391	232	267	54	238	273	255	290	9	9	15	23
8	M16	180	235	189	187	149	223	153	23	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	286	321	356	391	239	274	54	245	280	262	297	10	9	15	24
9	M20	240	260	203	201	162	245	166	25	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	51	76	38	100	50	100	50	314	349	384	419	260	295	54	271	306	284	319	21	19	31	48
10	M20	240	270	216	214	151	234	179	-2	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	51	76	38	100	50	100	50	297	332	367	402	273	308	54	283	318	270	305	24	22	34	53
11	M20	240	240	184	182	152	247	147	35	20	26	75	35	37	10	25	260	190	M20	8	180	12	32	51	76	38	100	50	100	50	304	339	389	424	241	276	54	250	285	275	310	21	19	30	46
12	M24	240	255	198	196	152	257	157	17	30	32	75	35	41	12	25	260	190	M20	8	180	12	38	38	100	50	125	65	125	65	321	356	406	441	251	286	54	258	293	291	326	22	20	31	51
13	M30	240	300	233	231	183	314	192	41	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	76	100	50	125	65	125	65	366	401	491	526	286	321	54	293	328	326	361	27	24	32	61
14	M30	240	300	239	237	192	323	198	50	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	76	100	50	125	65	125	65	375	410	500	535	292	327	54	299	334	341	376	28	25	37	63
15	M30	250	320	266	261	215	351	211	5	35	38	101	49	51	12	25	260	190	M20	10	200	15	54	25	150	75	200	75	200	75	403	438	528	563	321	356	70	308	343	374	409	34	30	39	78
16	M36	250	360	298	293	240	376	243	16	35	46	101	64	60	20	25	260	190	M20	10	200	15	54	51	150	75	200	75	200	75	433	468	573	608	353	388	70	340	375	394	429	40	35	45	92
17	M42	250	380	311	306	268	414	256	24	35	51	111	74	67	20	25	260	190	M20	10	200	15	54	51	150	75	200	75	200	75	471	506	631	666	380	415	70	372	407	427	462	48	41	51	108
18	M48	320	360	311	303	276	423	281	-27	45	60	102	80	73	20	-	350	283	M24	12	250	20	60	12	200	90	260	90	300	90	446	481	628	663	420	456	84	393	428	397	432	104	89	112	222
19	M56	320	395	337	329	309	473	307	-11	50	68	114	80	79	20	-	350	283	M24	12	250	20	67	25	200	90	260	90	300	90	484	519	678	713	446	481	84	418	453	426	461	116	98	114	245
20	M64	320	460	393	388	365	534	357	-15	55	75	114	102	86	25	-	350	283	M24	15	250	20	73	25	200	90	260	90	300	90	555	590	771	806	496	531	84	472	507	488	523	145	124	146	304
21	M72	320	495	423	413	347	526	393	-58	65	84	114	102	92	25	-	350	283	M24	15	250	20	79	25	300	90	300	100	380	100	562	597	778	813	556	591	115	499	534	490	525	169	141	149	377
22	M80	320	620	536	526	459	651	501	-20	65	94	127	102	98	25	-	350	283	M24	15	250	20	86	76	300	90	300	100	380	100	699	734	928	963	680	715	131	607	642	615	650	210	186	190	458

Variable Spring Supports

Variable Spring Supports – QV2





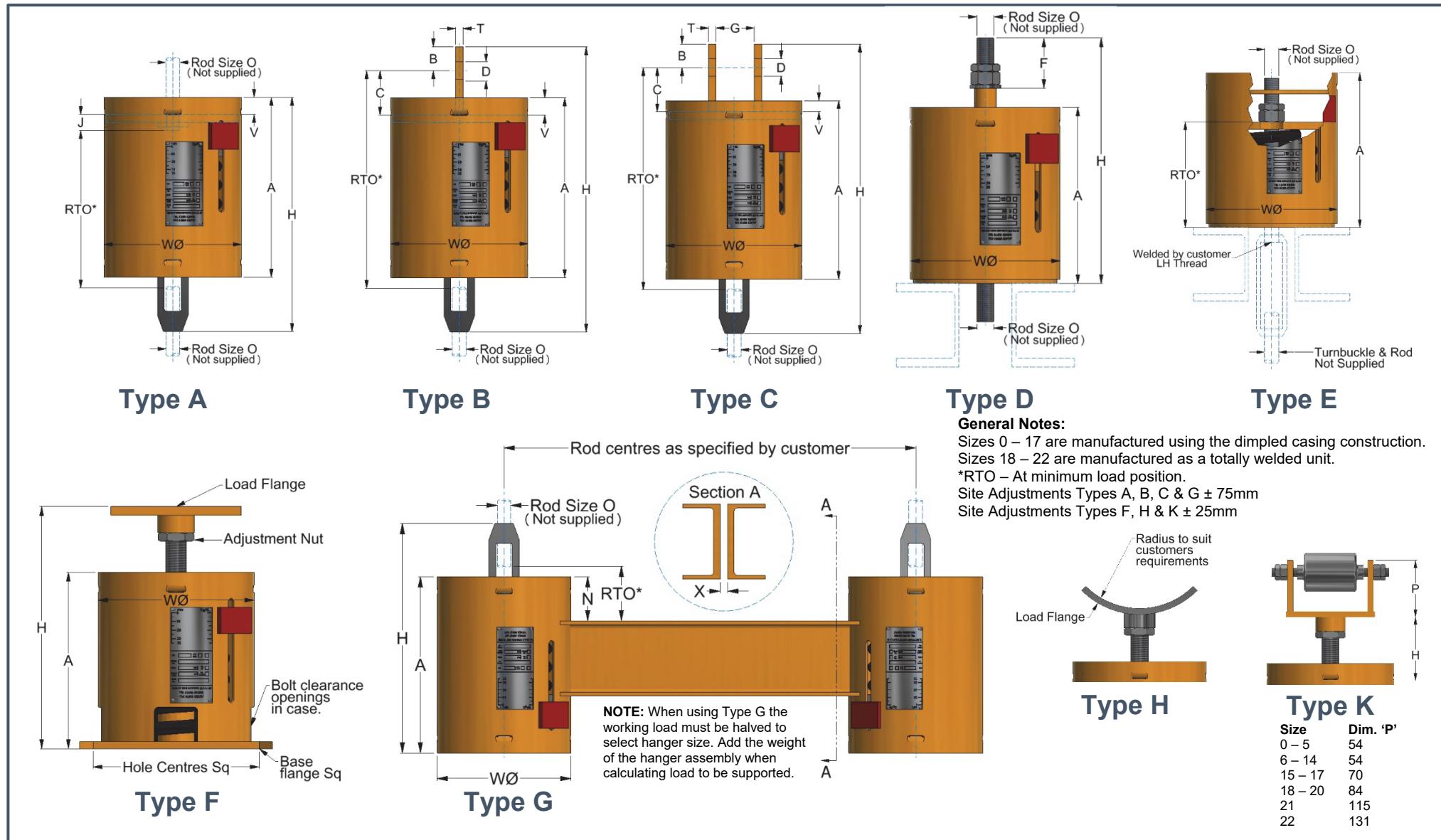
Variable Spring Supports

Variable Spring Supports – QV2

Size	Rod Size	Case Ø	Casing Length A		Rod Take Out		J - Thread Depth Type A	Type BC					Type F					Type G					Loaded Length H								Weight (approx.) Kgs														
	O	W	Types		Types			Dimensions					Base Plate Square		Base Plate Hole Centres Square			Base Plate Bolts		Load Pad Square		Load Pad Thickness		Gap Width X		N	Beam Sections			Type A		Type B & C		Type D		Type F		Type G		Types					
			A B C	D E G	F	A		B C	E	G	D	C	B	G	T	V	Base Plate Square	Base Plate Hole Centres Square	Base Plate Bolts	Load Pad Square	Load Pad Thickness	Gap Width X	N	900mm Rod Centres	1300mm Rod Centres	1800mm Rod Centres	Min	Max	Min	Max	Min	Max	Min	Max	A B C	D E	F	G							
0	M12	120	220	181	180	149	219	150	19	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	50	12	276	346	346	416	234	304	54	233	303	257	327	3	3	6	13
1	M12	120	240	198	197	169	239	167	19	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	50	12	296	366	366	436	251	321	54	255	325	274	344	3	3	6	13
2	M12	120	260	217	216	187	257	186	17	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	50	12	314	384	384	454	270	340	54	274	344	291	361	4	4	7	14
3	M12	160	235	193	192	166	236	162	34	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	76	38	293	363	363	433	246	316	54	252	322	271	341	6	5	10	17
4	M12	160	255	209	208	178	248	178	26	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	76	38	305	375	375	445	262	332	54	268	338	284	354	6	7	11	17
5	M12	160	270	227	226	202	272	196	35	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	76	38	329	399	399	469	280	350	54	285	355	306	376	7	7	11	18
6	M16	180	280	234	232	207	281	200	36	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	344	414	414	484	284	354	54	294	364	328	398	11	10	17	26
7	M16	180	305	258	256	230	304	224	34	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	367	437	437	507	308	378	54	320	390	342	412	12	12	20	29
8	M16	180	320	270	268	243	317	236	32	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	76	38	380	450	450	520	320	390	54	331	401	352	422	13	12	20	31
9	M20	240	330	275	273	243	326	233	61	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	395	465	465	535	337	407	54	347	417	367	437	25	23	37	56
10	M20	240	360	307	305	277	360	265	65	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	429	499	499	569	369	439	54	379	449	403	473	28	26	40	62
11	M20	240	305	251	249	250	345	209	93	20	26	75	35	37	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	402	472	487	557	313	383	54	323	393	375	445	25	28	36	57
12	M24	240	335	273	271	210	315	227	59	30	32	75	35	41	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	379	449	464	534	331	401	54	339	409	344	414	28	25	39	62
13	M30	240	395	338	336	287	418	291	76	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	470	540	595	665	396	466	54	404	474	440	510	36	33	48	80
14	M30	240	400	341	339	294	425	295	78	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	477	547	602	672	399	469	54	407	477	448	518	38	35	50	83
15	M30	250	415	360	355	326	462	300	98	35	38	101	49	51	12	25	260	190	M20	10	200	15	54	102	150	75	200	75	200	75	514	584	639	709	425	495	70	417	487	476	546	44	40	53	102
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17	M42	250	545	471	466	429	575	411	71	35	51	111	74	67	20	25	260	190	M20	10	200	15	54	102	150	75	200	75	200	75	632	702	792	862	536	606	70	528	598	583	653	67	60	72	148
18	M48	320	480	430	422	406	554	395	73	45	60	102	80	73	20	-	350	283	M24	12	250	20	60	102	200	90	260	90	300	90	577	647	759	829	549	619	84	523	593	526	596	136	119	146	286
19	M56	320	545	488	480	472	636	453	79	50	68	114	80	79	20	-	350	283	M24	12	250	20	67	102	200	90	260	90	300	90	647	717	841	911	607	677	84	580	650	590	660	157	136	163	328
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21	M72	320	735	658	648	607	786	623	39	65	84	114	102	92	25	-	350	283	M24	15	250	20	79	102	300	90	300	100	380	100	822	892	1038	1108	789	859	115	733	803	745	815	251	219	228	543
22	M80	320	900	817	807	765	957	777	32	65	94	127	102	98	25	-	350	283	M24	15	250	20	86	102	300	90	300	100	380	100	1005	1075	1234	1304	959	1029	131	887	957	922	992	323	242	296	675

Variable Spring Supports

Variable Spring Supports – QV3





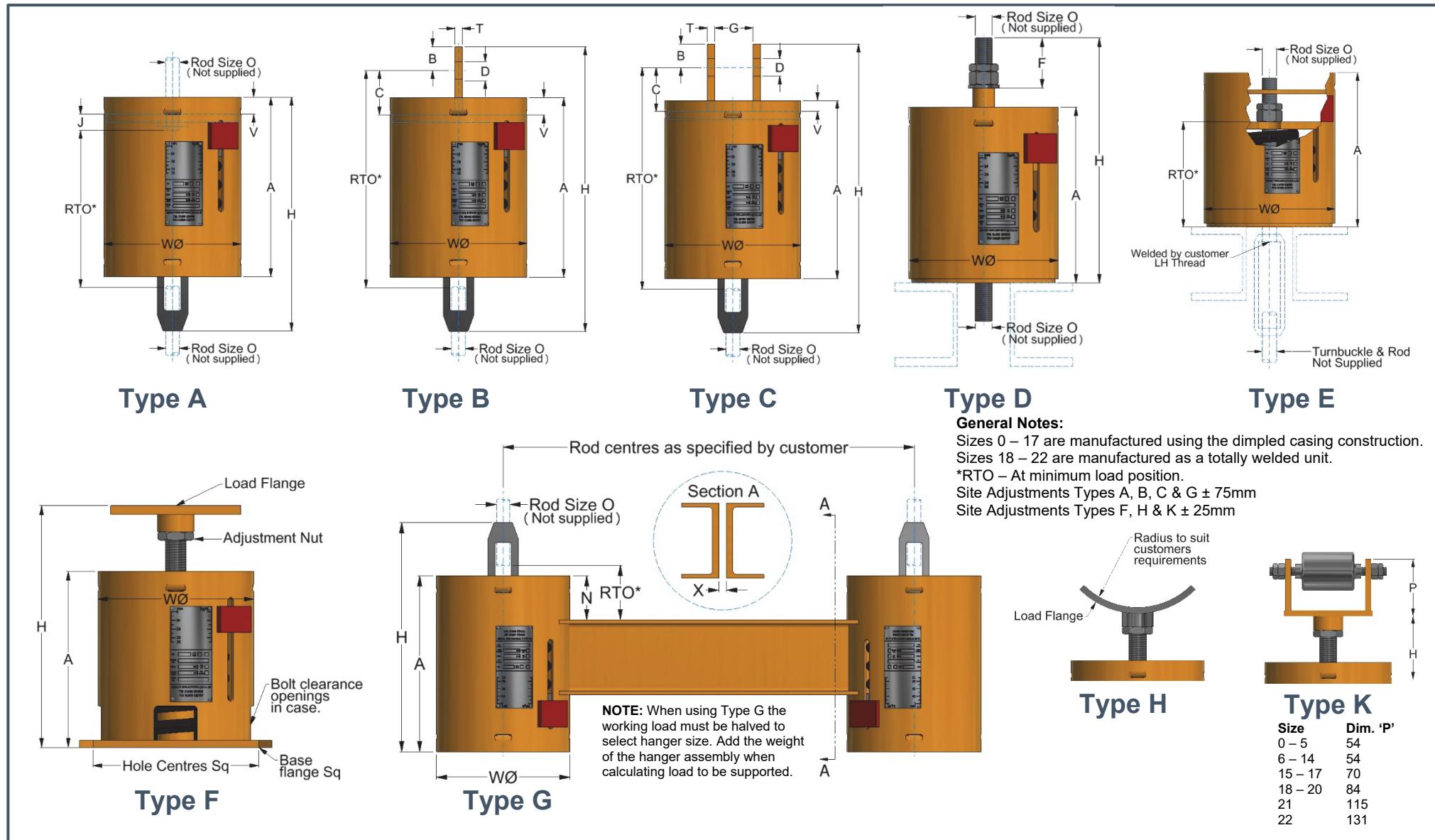
Variable Spring Supports

Variable Spring Supports – QV3

Size	Rod Size	Case Ø	Casing Length A			Rod Take Out			J - Thread Depth Type A	Type BC			Type F			Type G			Loaded Length H								Weight (approx.) Kgs																		
	O	W	Types		Types		Dimensions					Base Plate Square		Base Plate Hole Centres Square		Base Plate Bolts		Base Plate Thickness		Load Pad Square		Load Pad Thickness		Gap Width X		N	Beam Sections			Type A		Type B & C		Type D		Type F		Type G		Types					
			A B C	D E G	F	A	B C	E	G	D	C	B	G	T	V										900mm Rod Centres	1300mm Rod Centres	1800mm Rod Centres	Min	Max	Min	Max	Min	Max	Min	Max	A B C	D E	F	G						
0	M12	120	370	329	328	294	364	294	14	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	421	561	491	631	387	527	54	380	520	400	540	3	5	9	16		
1	M12	120	405	363	362	338	408	328	23	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	465	605	535	675	422	562	54	423	563	443	583	6	6	9	18		
2	M12	120	445	401	400	367	455	366	12	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	38	50	12	50	12	494	634	582	722	460	600	54	461	601	470	610	7	7	10	20		
3	M12	160	400	354	353	322	392	318	25	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	449	589	519	659	413	553	54	415	555	423	563	9	9	15	23		
4	M12	160	430	386	385	364	434	350	37	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	491	631	561	101	445	585	54	447	587	467	607	11	10	17	26		
5	M12	160	465	421	420	397	467	385	35	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	51	76	38	76	38	524	664	594	734	480	620	54	482	622	500	640	12	11	18	26		
6	M16	180	470	424	422	399	473	386	38	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	536	676	606	746	480	620	54	489	629	512	652	18	17	27	40		
7	M16	180	520	472	470	459	533	434	48	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	596	736	666	806	528	668	54	538	678	570	710	22	21	32	47		
8	M16	180	540	496	494	465	539	458	34	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	51	76	38	76	38	602	742	672	812	552	692	54	562	702	580	720	27	22	33	58		
9	M20	240	555	494	496	467	550	452	60	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	619	759	689	829	571	711	54	576	716	589	729	40	38	57	85
10	M20	240	615	562	560	531	614	516	64	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	683	823	753	893	634	774	54	638	778	657	797	47	45	64	100
11	M20	240	505	450	448	428	523	404	71	20	26	75	35	37	10	25	260	190	M20	8	180	12	32	76	76	38	100	50	100	50	580	720	665	805	523	663	54	527	667	552	692	40	39	56	86
12	M24	240	545	488	486	413	518	438	52	30	32	75	35	41	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	582	722	667	807	556	696	54	559	699	552	692	45	43	61	97
13	M30	240	675	618	616	572	703	568	81	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	755	895	880	1020	687	827	54	689	829	725	865	61	59	78	130
14	M30	240	685	624	622	585	716	574	84	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	102	100	50	125	65	125	65	768	908	893	1033	693	833	54	695	836	734	874	65	62	81	138
15	M30	250	695	640	635	595	731	580	87	35	38	101	49	51	12	25	260	190	M20	10	200	15	54	102	150	75	200	75	200	75	783	923	908	1048	721	861	70	702	842	753	893	72	68	86	155
16	M36	250	815	757	752	715	851	698	87	35	46	101	64	60	20	25	260	190	M20	10	200	15	54	102	150	75	200	75	200	75	908	1048	1048	1188	838	978	70	819	959	873	1013	93	86	103	217
17	M42	250	930	862	857	830	976	802	87	35	51	111	74	67	20	25	260	190	M20	10	200	15	54	102	150	75	200	75	200	75	1033	1173	1193	1333	943	1083	70	924	1064	990	1130	118	106	124	247
18	M48	320	850	795	787	790	938	750	87	45	60	102	80	73	20	-	350	283	M24	12	250	20	60	102	200	90	260	90	300	90	961	1101	1143	1283	925	1065	84	897	1037	905	1045	219	203	241	452
19	M56	320	965	911	903	923	1087	866	110	50	68	114	80	79	20	-	350	283	M24	12	250	20	67	102	200	90	260	90	300	90	1098	1238	1292	1432	1040	1180	84	1011	1151	1044	1184	259	235	274	531
20	M64	320	1145	1080	1075	1077	1246	1031	89	55	75	114	102	86	25	-	350	283	M24	15	250	20	73	102	200	90	260	90	300	90	1267	1407	1483	1623	1205	1345	84	1177	1317	1202	1347	351	315	357	714
21	M72	320	1315	1241	1231	1178	1357	1196	30	65	84	114	102	92	25	-	350	283	M24	15	250	20	79	102	300	90	300	100	380	100	1393	1533	1609	1749	1386	1526	115	1310	1450	1319	1459	413	370	382	864
22	M80	320	1640	1550	1540	1481	1673	1504	8	65	94	127	102	98	25	-	350	283	M24	15	250	20	86	102	300	90	300	100	380	100	1721	1861	1950	2090	1710	1850	131	1520	1760	1631	1771	549	504	524	1137

Variable Spring Supports – QV4

Variable Spring Supports





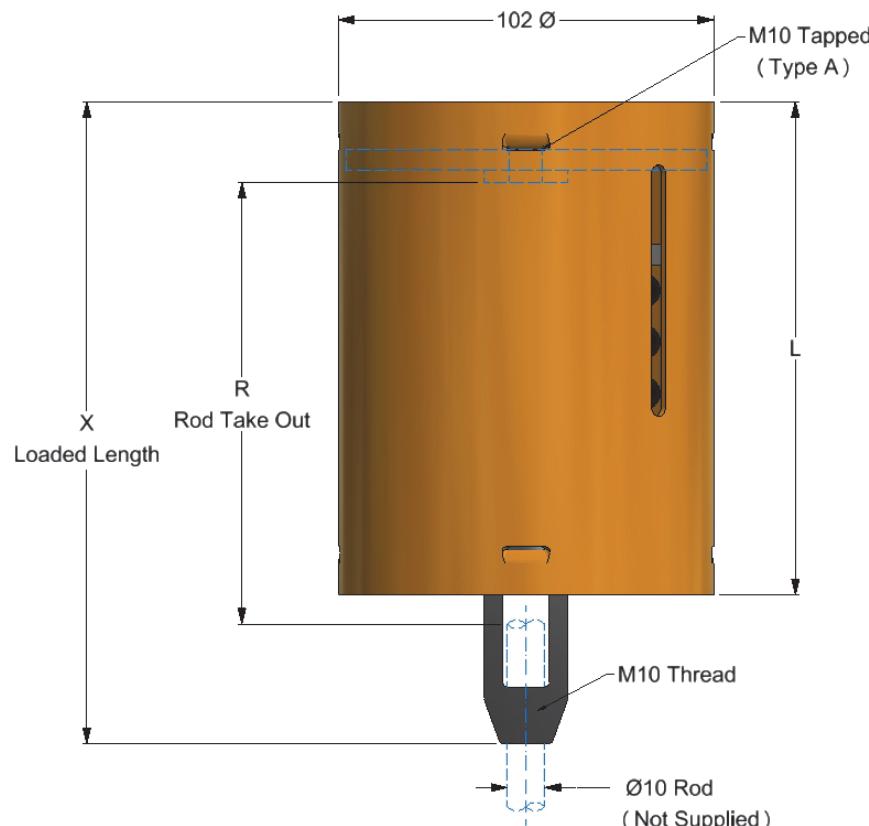
Variable Spring Supports

Variable Spring Supports – QV4

Size	Rod Size	Case Ø	Casing Length A			Rod Take Out			J - Thread Depth Type A	Type BC			Type F			Type G			Loaded Length H								Weight (approx.) Kgs																		
	O	W	Types		Types		Dimensions					Base Plate Square		Base Plate Hole Centres Square		Base Plate Bolts		Base Plate Thickness		Load Pad Square		Load Pad Thickness		Gap Width X	N	Beam Sections			Type A		Type B & C		Type D		Type F		Type G		Types						
			A B C	D E G	F	A	B C	E	G	D	C	B	G	T	V								900mm Rod Centres	1300mm Rod Centres	1800mm Rod Centres	Min	Max	Min	Max	Min	Max	Min	Max	A B C	D E	F	G								
0	M12	120	530	492	485	465	535	440	34	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	40	50	12	50	12	592	802	662	872	550	760	54	560	770	571	781	7	7	12	19		
1	M12	120	580	542	535	525	595	490	43	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	40	50	12	50	12	652	862	722	932	605	815	54	620	830	640	850	9	9	12	23		
2	M12	120	635	602	595	570	640	545	42	12	18	58	32	22	6	20	150	113	M16	6	130	6	16	40	50	12	50	12	697	907	767	977	660	870	54	680	890	699	909	10	10	13	26		
3	M12	160	565	527	520	500	570	475	50	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	50	76	38	76	38	627	837	697	907	590	800	54	610	820	622	832	12	13	20	29		
4	M12	160	615	577	570	560	630	525	55	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	50	76	38	76	38	687	897	757	967	640	850	54	655	865	677	887	16	13	23	35		
5	M12	160	665	632	625	610	680	575	52	12	18	58	32	22	6	20	200	139	M20	6	130	6	20	50	76	38	76	38	737	947	807	1017	695	905	54	710	920	729	939	17	15	25	35		
6	M16	180	670	635	625	605	680	575	47	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	50	76	38	76	38	742	952	813	1023	690	900	54	710	920	733	943	25	22	37	54		
7	M16	180	740	705	695	690	765	645	57	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	50	76	38	76	38	827	1037	898	1108	760	970	54	785	995	813	1023	32	30	44	65		
8	M16	180	775	740	730	710	785	680	43	16	22	58	32	27	10	20	220	144	M20	8	150	10	25	50	76	38	76	38	847	1057	918	1128	795	1005	54	820	1030	834	1044	41	32	46	85		
9	M20	240	785	735	725	710	795	670	75	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	75	76	38	100	50	862	1072	934	1144	810	1020	54	830	1040	842	1052	55	53	77	114		
10	M20	240	880	835	825	805	890	770	78	20	26	63	32	32	10	25	260	190	M20	8	180	12	32	75	76	38	100	50	957	1167	1029	1239	910	1120	54	920	1130	945	1155	66	64	88	135		
11	M20	240	710	665	655	645	740	600	85	20	26	75	35	37	10	25	260	190	M20	8	180	12	32	75	76	38	100	50	797	1007	882	1092	740	950	54	760	970	786	996	55	50	76	115		
12	M24	240	775	725	715	690	795	650	112	30	32	75	35	41	12	25	260	190	M20	8	180	12	38	100	100	50	125	65	125	65	859	1069	944	1154	790	1000	54	805	1015	851	1061	62	61	83	132
13	M30	240	975	915	905	880	1010	845	122	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	100	100	50	125	65	125	65	1063	1273	1187	1397	990	1200	54	1000	1210	1065	1275	86	85	108	180
14	M30	240	980	930	920	890	1020	855	125	30	38	101	49	46	12	25	260	190	M20	8	180	12	38	100	100	50	125	65	125	65	1073	1263	1197	1407	1000	1210	54	1010	1220	1083	1293	92	89	112	193
15	M30	250	990	945	930	900	1035	860	138	35	38	101	49	51	12	25	260	190	M20	10	200	15	54	100	150	75	200	75	200	75	1088	1298	1212	1422	1020	1230	70	1015	1225	1111	1321	100	96	119	208
16	M36	250	1175	1120	1105	1080	1215	1040	138	35	46	101	64	60	20	25	260	190	M20	10	200	15	54	100	150	75	200	75	200	75	1273	1483	1412	1622	1200	1410	70	1190	1400	1291	1501	132	129	144	311
17	M42	250	1335	1280	1265	1245	1390	1195	139	35	51	111	74	67	20	25	260	190	M20	10	200	15	54	100	150	75	200	75	200	75	1448	1658	1607	1817	1360	1570	70	1350	1560	1462	1672	169	152	176	346
18	M48	320	1230	1168	1160	1180	1330	1110	87	45	60	102	80	73	20	-	350	283	M24	12	250	20	60	100	200	90	260	90	300	90	1350	1560	1535	1745	1315	1525	84	1285	1495	1288	1498	302	287	336	618
19	M56	320	1395	1336	1330	1380	1550	1290	110	50	68	114	80	79	20	-	350	283	M24	12	250	20	67	100	200	90	260	90	300	90	1555	1765	1755	1965	1485	1695	84	1442	1652	1498	1708	361	334	385	734
20	M64	320	1660	1595	1590	1605	1775	1540	88	55	75	114	102	86	25	-	350	283	M24	15	250	20	73	100	200	90	260	90	300	90	1795	2005	2010	2220	1735	1945	84	1705	1915	1730	1940	498	462	510	1004
21	M72	320	1910	1835	1825	1760	1930	1780	3	65	84	114	102	92	25	-	350	283	M24	15	250	20	79	100	300	90	300	100	380	100	1975	2185	2182	2392	1985	2195	115	1905	2115	1900	2110	575	521	536	1185
22	M80	320	2395	2295	2285	2210	2400	2245	6	65	94	127	102	98	25	-	350	283	M24	15	250	20	86	100	300	90	300	100	380	100	2450	2660	2680	2890	2465	2675	131	2360	2570	2350	2560	775	766	752	1599

Variable Spring Supports

Variable Spring Supports – QV38, QV75 & QV150



Loads N		Loads Kg		Travels mm		
Size 01	Size 02	Size 01	Size 02	QV150	QV75	QV38
88.97	177.95	9.07	18.14	0	0	0
95.15	184.13	9.70	18.77	10	5	2.5
101.33	190.31	10.33	19.40	20	10	5
107.51	196.49	10.96	20.03	30	15	7.5
113.69	202.67	11.59	20.66	40	20	10
119.87	208.85	12.22	21.29	50	25	12.5
126.05	215.03	12.85	21.92	60	30	15
132.23	221.21	13.48	22.55	70	35	17.5
138.41	227.39	14.11	23.18	80	40	20
144.59	233.57	14.74	23.81	90	45	22.5
150.77	239.75	15.37	24.44	100	50	25
156.96	245.93	16.00	25.07	110	55	27.5
163.14	252.11	16.63	25.70	120	60	30
169.32	258.29	17.26	26.33	130	65	32.5
175.50	264.47	17.89	26.96	140	70	35
181.68	270.66	18.52	27.59	150	75	37.5
Spring Rate		Kg/mm		0.063	0.125	0.25
		N/mm		0.618	1.226	2.45

Fig No	QV150		QV75		QV38	
	mm		mm		mm	
	01	02				
Rod Takeout 'R'	416	416	202	120		
Can Length 'L'	450	450	270	200		
Loaded Length 'X'	Min	539	539	330	245	
	Max	689	689	405	283	

This range of spring supports is available for the following types:-
A, B, C, D, E & F.

These units are not pre-set unless required.