



VARIABLE SPRING SUPPORTS

TYPE IVL



C&P USA'S RANGE OF IVL VARIABLE SPRING SUPPORTS



TYPE A



TYPE B



TYPE C



TYPE D



TYPE E



TYPE F



TYPE G

Pipework and/or vessels subject to temperature change or subsidence, etc. which give rise to vertical displacements should be supported by a resilient device which will absorb/accommodate the movement. For relatively small displacements (up to about 3") the variable spring support is recommended. This C&P USA range of variable spring supports is produced in four basic travel ranges; 1 3/8", 2 3/4", 5 1/2" and 8 1/4". These are designated IVL35, IVL70, IVL140 and IVL210 respectively. The travels stated are the maximum working range of the springs. This full travel can be used providing the necessary calculations are carried out to ensure that the connecting equipment and pipework can withstand the large load changes that occur during pipe movement. Most national standards do limit the load variation to maximum of 25%. It is therefore usual to select variable spring supports on this basis.

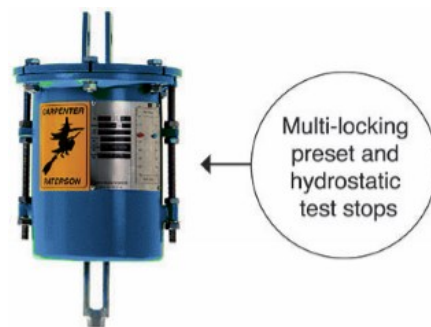
In keeping with generally accepted practice, we recommend that the actual pipe load is correctly supported when the pipe is in its normal working position. This ensures no abnormal or excessive forces, due to out of balance supporting effort, is transferred to the pipework in its stressed working condition.

Whether this or any other principle is followed for the selection of variable spring supports, care must be taken to ensure that sufficient travel is available in the spring assembly to permit free movement of the pipe within the required pipework movement range cold or hot.

This improved range of variable spring supports is supplied with hot-dip galvanized finish as standard. Spring coils are plastic coated. This gives a good level of corrosion resistance and is suitable for most environments. Specialist paint finishes are also available. Our range of variable spring supports can also be manufactured completely from austenitic stainless steel.

The supports are supplied set at the required preset load and multilock preset and hydrostatic test stops are provided as standard - see image. All preset load and hydrostatic test stops must be removed prior to operation of the equipment.

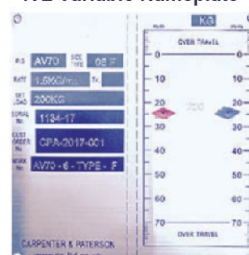
The supports are designed for a hydrostatic test load of twice the rated load for the spring. Special designs for higher test loadings are available.



STANDARD DESIGN FEATURES

1. Precompression of the spring coil into the casing saves headroom and erection time.
2. Removable multi-lock preset and hydrostatic test stops allow the springs to be re-set at any travel position.
3. The preset and hydrostatic test stops are stowed on the outside of the casing after commissioning; they therefore do not impair the free movement of the spring.
4. For each series there is a reserve travel at the upper and lower limits of the unit.
5. All steel construction that is rugged and compact.
6. Grade 316 stainless steel is used for scale plate and name plate.
7. Load indicator clearly visible.

IVL Variable Nameplate



8. Spring Pressure plate serves as a centering device.
9. Finish - hot dip galvanized - specialized coatings are also available.
10. All 'F' type floor units are inclusive of load flange and internal load column guide.
11. Ultimate stops – The C&P USA design prevents excess spring movement or complete release of the spring coil.
12. No maintenance required.



VARIABLE SPRING SUPPORTS - IVL

OPTIONAL DESIGN FEATURES

1. A predesigned range of springs for hydrostatic test loadings up to four times the spring maximum load is available.
2. Limit stops permanently installed to prevent the movement of the pipe beyond predetermined distance or load within the travel range of the spring.
3. Lifting lugs are available on large sizes to facilitate erection and installation.
4. For extreme environmental conditions we are able to manufacture our units in a range of austenitic stainless steels.

ORDERING

When ordering please specify:-

1. Hanger series, type and size. (Example: IVL35 - A - 8.)
2. Operating Load.
3. Vertical movement and direction of movement, cold to hot. (Example: 7/16" up)
4. Thread details (if other than UNC sizes shown in the tables).
5. Protective finish required (if other than hot dip galvanized with spring coils plastic coated).
6. Identification number.
7. Rod Centres and total load for Type 'G'.

SPECIFICATION

C&P USA variable spring supports meet the requirements of the following:-

- U.S. Manufacturers Standardization Society MSS SP-58
- U.S. Manufacturers Standardization Society MSS SP-69
- The ASME Code for Power Piping ASME B31.1
- The ASME Code for Process Piping ASME B31.3
- European Union Pressure Equipment Directive 97/23/EC
- EN 13480 Part 3 Metallic Industrial Piping
- BS1726-1 Cylindrical Helical Springs made from Round Wire and Bar – Part 1: Compression Springs
- EN 13906 Cylindrical Helical Springs made from round wire and bar – Calculation and Design – Part 1: Compression Springs

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.

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

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 (% Load Change) =

$$\frac{\text{Movement} \times \text{Spring Rate} \times 100}{\text{Hot Load}}$$

EXAMPLE:-

Actual Load (Hot Load) = 2425 lbs.

Pipe Movement 13/16" down cold to hot. Maximum variation from cold to hot load = 25%.

Using Selection Table

Enter table at 2475 lbs. This is located in size 12 column. Since the pipe movement is down, move up the column for a distance of 13/16". This travel is acceptable for all travel series, therefore unit size 12 is selected.

Check Variability

Variability (% Load Change) =

$$\frac{\text{Movement} \times \text{Spring Rate} \times 100}{\text{Hot Load}}$$

From lower chart select spring rate for IVL35 Size 12 = 900 lbs/in

$$V = \frac{13/16 \times 900 \times 100}{2475} = 29.5\%$$

This would not be acceptable.

Select spring rate for IVL70 size 12 = 450 lbs/in

$$V = \frac{13/16 \times 450 \times 100}{2475} = 14.8\%$$

This is acceptable

UNIT SELECTED WOULD BE IVL70 SIZE 12

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

Preset Load = 2475 - (13/16 x 450) = 2109 lbs

Unit to be ordered would be IVL70 Size 12.

Preset Load = 2109 lbs

Hot Load = 2475 lbs

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 IVL70/A/16 Preset Load = 7612 lbs.

Firstly, refer to table on page 8. 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 12 1/16". This is at the minimum load position. To this dimension we must add the amount of precompression from the minimum load position to the preset load position.

Refer now to the size selection table, (page 7). Enter the body of the table where the load of 7594 lbs reads in the size 16 column, moving horizontally to the left to read the amount of pre-compression required for a series IVL70 spring. In this example the pre-compression is 1 9/16".

The rod take out = $12 \frac{1}{16}'' + 1 \frac{9}{16}'' = 13 \frac{5}{8}''$. 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 IVL140-F-10, preset load = 1219 lbs. (Ref. to table page 13).

At the intersection of a horizontal line from 'support size' column to a vertical line down from column headed 'Loaded Length X, Type F max.' - we obtain a height of 30 13/16". 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, (page 7), and enter the body of the table where the load of 1219 lbs reads in the size 10 column and moving horizontally to the left read the amount of precompression required for a series IVL140 spring. In this example the precompression is 2 3/8". Therefore the loaded length = $30 \frac{13}{16}'' - 2 \frac{3}{8}'' = 28 \frac{7}{16}''$. Other loads are treated in a similar manner. Intermediate precompression dimensions are obtained by linear interpolation.

CAUTIONARY NOTE BASE-MOUNTED TYPE

IVL35 and IVL70 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. slide pads or rollers (Type 'K').

IVL140 and IVL210 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. slide pads or rollers (Type 'K').

ADDITIONAL INFORMATION FOR ALL VARIABLE SPRING SUPPORTS

INSTALLATION INSTRUCTIONS

Hanging type supports, typically Type A, are installed in position on the supporting steelwork, the sling rod is connected between the pipe attachment (clamp or lug) and the spring hanger turnbuckle. Rotation of the turnbuckle, transfers the pipe load to the spring hanger. Base mounted supports typically Type F are located in the desired position beneath the pipe - load is transferred from the pipe to the support by means of rotating the central column. Detailed installation instructions are available on request.



TYPE A



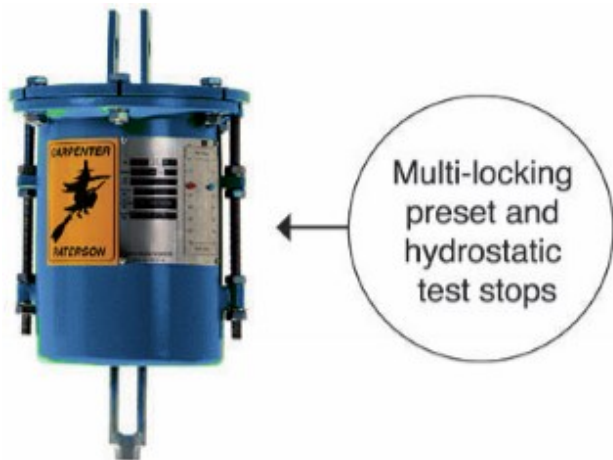
TYPE F

PRESET LOCK AND HYDROSTATIC TEST STOP REMOVAL

This range of variable spring supports is preset to the installed load position prior to dispatch from our works. The preset locks / hydrostatic test stops are fitted with a label drawing attention to the fact that these must be removed prior to system operation.

The preset locks and hydrostatic test stops should be kept in place until completion of the hydrostatic test – this is to prevent deflection of the pipework to the excess weight of water. The preset and hydrostatic test stops should only be removed when the weight of the pipework is as per its usual operating condition, i.e. that pipework insulation work is complete and that if the pipe is a water pipe, it contains water. The preset locks and hydrostatic stops can easily be removed once the support assembly is tensioned to balance the weight of the pipe. This tensioning is accomplished by rotation of the turnbuckle, or in the case of Types F, H & K supports, by rotating the load nut. A detailed procedure is given in the erection and maintenance manual.

PRESET AND HYDROSTATIC TEST STOPS



ADJUSTMENT

When installed, the 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 (preferably in the operating condition). The load indicator should be indicating the operating load. If minor differences are apparent then the units should be adjusted to the operating position; no further adjustments should be necessary. If major differences are noted then either consult the designer or C&P USA's Engineering department for advice, prior to making adjustments.

STANDARD CODE OF PRACTICE

All piping systems shall be supported by means of supports satisfactory to the designing engineer and having an individual means of vertical adjustment for levelling of lines after piping is in place.

Adjustable hanger supports will be provided with either turnbuckle integral with sling rod assembly or threaded rod passing through support structure with rocker washer and nuts.

Roll Supports may be used on piping where there is longitudinal movement due to temperature changes.

Pipe Covering Protection Saddles should be used on steam supply and return piping with a roll of sufficient size to take the saddle.

Supports to be so spaced as to prevent sag of the pipe and to ensure proper drainage of the pipe line.

Variable Spring Supports shall be located at points that are subjected to vertical movement and where minimum variation in supporting force is required.

RANGE OF SITE ADJUSTMENT

Hanging Types:	Base-mounted Types:
Plus and Minus 3"	Plus and Minus 1"

THE FOLLOWING CONDITIONS ARE DESIRABLE:-

- The sum of the pipeline weights must equal the sum of the supporting forces.
- The sum of the moments of piping weight at their center of gravity and the supporting forces shall be equal to zero.
- Constant Support Hangers must be calibrated to support the calculated load of the piping system.

Vibration Controls shall be installed in flexible lines where required to dampen vibration or lateral movement.

Anchors shall be installed to permit the line to take up its expansion and contraction freely in opposite directions away from the anchored point and shall be so designed for the particular location and loading conditions.

Where Expansion Joints are used Pipe Guides shall be installed to allow the expansion and contraction of the pipe line to move freely within the expansion joint.

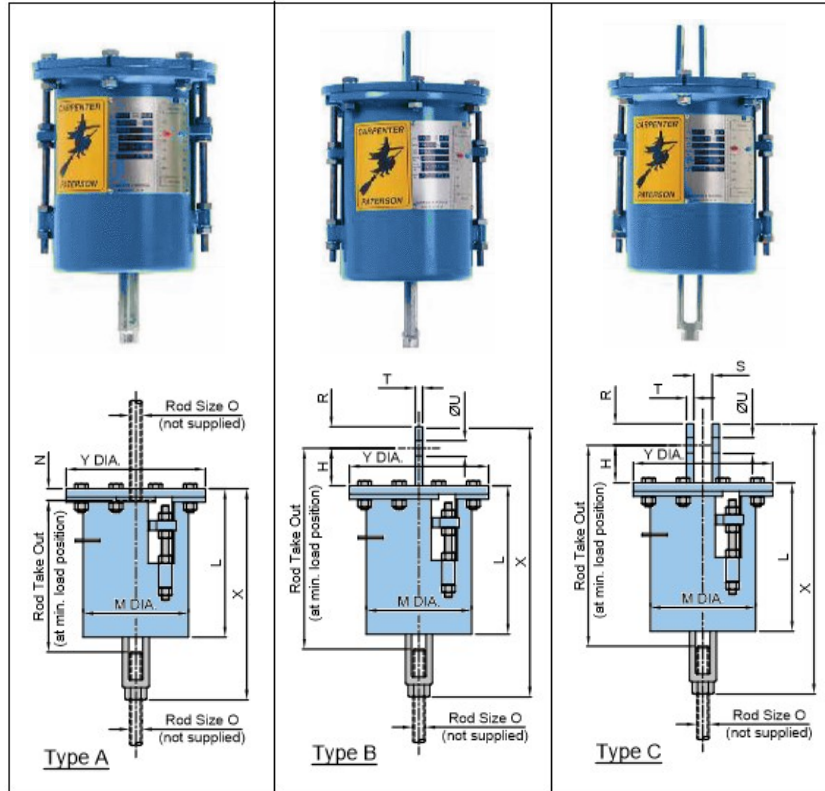
TYPE IVL VARIABLE SPRING SUPPORTS SELECTION TABLE

Loads in lbs. Travel in inches

Size	ML210	ML140	ML70	ML35	000	00	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	1 1/8"	3/4"	3/8"	3/16"	20.5	29.8	44.3	66.1	85.0	109.8	147.4	197.4	263	350	469	625	813	1062	1407	1875	2500	3375	4687	6250	8322	11052	14695	19531	26047
					20.9	30.3	45.2	67.4	86.7	112.0	150.3	201	268	357	478	638	829	1084	1435	1912	2550	3442	4781	6375	8489	11274	14989	19922	26568
					21.3	30.9	46.2	68.7	88.3	114.2	153.3	205	273	364	487	650	845	1105	1463	1950	2600	3510	4875	6500	8655	11495	15283	20312	27089
					21.7	31.5	47.1	70.0	90.0	116.4	156.2	209	278	371	497	663	861	1126	1491	1987	2650	3577	4969	6625	8821	11716	15577	20703	27610
					22.1	32.1	48.0	71.3	91.7	118.6	159.1	213	284	378	506	675	878	1147	1519	2025	2700	3645	5062	6750	8987	11937	15870	21094	28131
Min. Load	0	0	0	0	22.5	32.7	49.0	72.6	93.4	120.8	162.1	217	289	385	516	688	894	1169	1547	2062	2750	3712	5156	6875	9154	12159	16164	21484	28652
					22.9	33.3	49.9	74.0	95.1	123.0	165.0	221	294	392	525	700	910	1190	1575	2100	2800	3780	5250	7000	9320	12380	16458	21875	29173
					23.3	33.9	50.8	75.3	96.8	125.2	167.9	225	299	399	534	713	926	1211	1604	2137	2850	3847	5344	7125	9486	12601	16752	22265	29694
					23.7	34.4	51.8	76.6	98.5	127.3	170.9	229	305	406	544	725	943	1232	1632	2175	2900	3915	5437	7250	9652	12822	17045	22656	30215
					24.2	35.0	52.7	77.9	100.2	129.5	173.8	233	310	413	553	738	959	1254	1660	2212	2950	3982	5531	7375	9819	13044	17339	23047	30736
Working Load	3/4"	1/2"	1/4"	1/8"	24.6	35.6	53.7	79.2	101.8	131.7	176.8	237	315	420	562	750	975	1275	1688	2250	3000	4050	5625	7500	9985	13265	17633	23437	31256
					25.0	36.2	54.6	80.5	103.5	133.9	179.7	241	320	427	572	763	991	1296	1716	2287	3050	4117	5719	7625	10151	13486	17927	23828	31777
					25.4	36.8	55.5	81.9	105.2	136.1	182.6	245	326	434	581	775	1008	1317	1744	2325	3100	4185	5812	7750	10317	13707	18220	24219	32298
					25.8	37.4	56.5	83.2	106.9	138.3	185.6	249	331	441	591	788	1024	1339	1772	2362	3150	4252	5906	7875	10484	13929	18514	24609	32819
					26.2	38.0	57.4	84.5	108.6	140.5	188.5	252	336	448	600	800	1040	1360	1800	2400	3200	4320	6000	8000	10650	14150	18808	25000	33340
Recommended Working Range of Springs					26.6	38.5	58.3	85.8	110.3	142.7	191.4	256	341	455	609	813	1056	1381	1828	2437	3250	4387	6094	8125	10816	14371	19102	25390	33861
					27.0	39.1	59.3	87.1	112.0	144.8	194.4	260	347	462	619	825	1072	1402	1857	2475	3300	4455	6187	8250	10982	14592	19395	25781	34382
					27.4	39.7	60.2	88.4	113.7	147.0	197.3	264	352	469	628	838	1089	1424	1885	2512	3350	4522	6281	8375	11149	14814	19689	26172	34903
					27.8	40.3	61.2	89.7	115.3	149.2	200	268	357	476	637	850	1105	1445	1913	2550	3400	4590	6375	8500	11315	15035	19983	26562	35424
					28.2	40.9	62.1	91.1	117.0	151.4	203	272	362	483	647	863	1121	1466	1941	2587	3450	4657	6469	8625	11481	15256	20277	26953	35945
Max Working Load	8 1/4"	5 1/2"	2 3/4"	1 3/8"	28.6	41.5	63.0	92.4	118.7	153.6	206	276	368	490	656	875	1137	1487	1969	2625	3500	4725	6562	8750	11647	15477	20570	27344	36466
					29.0	42.1	64.0	93.7	120.4	155.8	209	280	373	497	666	888	1154	1509	1997	2662	3550	4792	6656	8875	11814	15699	20864	27734	36987
					29.5	42.7	64.9	95.0	122.1	158.0	212	284	378	504	675	900	1170	1530	2025	2700	3600	4860	6750	9000	11980	15920	21158	28125	37508
					29.9	43.2	65.9	96.3	123.8	160.2	215	288	383	511	684	913	1186	1551	2053	2737	3650	4927	6844	9125	12146	16141	21452	28515	38029
					30.3	43.8	66.8	97.6	125.5	162.3	218	292	389	518	694	925	1202	1572	2081	2775	3700	4995	6937	9250	12312	16362	21745	28906	38550
Over Travel	1 1/8"	3/4"	3/8"	3/16"	30.7	44.4	67.7	99.0	127.2	164.5	221	296	394	525	703	938	1219	1594	2110	2812	3750	5062	7031	9375	12479	16584	22039	29297	39070
					31.1	45.0	68.7	100.3	128.8	166.7	224	300	399	532	712	950	1235	1615	2138	2850	3800	5130	7125	9500	12645	16805	22333	29687	39591
					31.5	45.6	69.6	101.6	130.5	168.9	227	304	404	539	722	963	1251	1636	2166	2887	3850	5197	7219	9625	12811	17026	22627	30078	40112
					31.9	46.2	70.5	102.9	132.2	171.1	230	308	410	546	731	975	1267	1657	2194	2925	3900	5265	7312	9750	12977	17247	22920	30468	40633
					32.3	46.8	71.5	104.2	133.9	173.3	233	312	415	553	741	988	1284	1679	2222	2962	3950	5332	7406	9875	13144	17469	23214	30859	41154
Max Working Load	8 1/4"	5 1/2"	2 3/4"	1 3/8"	32.7	47.3	72.4	105.5	135.6	175.5	235	315	420	560	750	1000	1300	1700	2250	3000	4000	5400	7500	10000	13310	17690	23508	31250	41675
					33.1	47.9	73.4	106.8	137.3	177.6	238	319	425	567	759	1013	1316	1721	2278	3037	4050	5467	7594	10125	13476	17911	23802	31640	42196
					33.5	48.5	74.3	108.2	139.0	179.8	241	323	431	574	769	1025	1332	1742	2306	3075	4100	5535	7687	10250	13642	18132	24095	32031	42717
					33.9	49.1	75.2	109.5	140.7	182.0	244	327	436	581	778	1038	1349	1764	2334	3113	4150	5602	7781	10375	13809	18354	24389	32422	43238
					34.4	49.7	76.2	110.8	142.3	184.2	247	331	441	588	787	1050	1365	1785	2363	3150	4200	5670	7875	10500	13975	18575	24683	32812	43759
Over Travel	1 1/8"	3/4"	3/8"	3/16"	34.8	50.3	77.1	112.1	144.0	186.4	250	335	446	595	797	1063	1381	1806	2391	3188	4250	5737	7969	10625	14141	18796	24977	33203	44280
					35.2	50.9	78.0	113.4	145.7	188.6	253	339	452	602	806	1075	1397	1827	2419	3225	4300	5805	8062	10750	14307	19017	25270	33593	44801
					35.6	51.4	79.0	114.7	147.4	190.8	256	343	457	609	816	1088	1414	1849	2447	3263	4350	5872	8156	10875	14474	19238	25564	33984	45322
					36.0	52.0	79.9	116.1	149.1	193.0	259	347	462	616	825	1100	1430	1870	2475	3300	4400	5940	8250	11000	14640	19460	25858	34375	45843
					36.4	52.6	80.9	117.4	150.8	195.1	262	351	467	623	834	1113	1446	1891	2503	3338	4450	6007	8344	11125	14806	19681	26152	34765	46364
Max Working Load	8 1/4"	5 1/2"	2 3/4"	1 3/8"	36.8	53.2	81.8	118.7	152.5	197.3	265	355	473	630	844	1125	1462	1912	2531	3375	4500	6075	8437	11250	14972	19902	26445	35156	46884
					37.2	53.8	82.7	120.0	154.2	199.5	268	359	478	637	853	1138	1479	1934	2559	3413	4550	6142	8531	11375	15139	20123	26739	35547	47405
					37.6	54.4	83.7	121.3	155.8	202	271	363	483	644	862	1150	1495	1955	2587	3450	4602	6180	8625	11500	15305	20345	27033	35937	47926
					38.0	55.0	84.6	122.6	157.5	204	274	367	488	651	872	1163	1511	1976	2616	3488	4650	6277	8719	11625	15471	20566	27327	36328	48447
					38.4	55.6	85.5	123.9	159.2	206	277	371	494	658	881	1175	1527	1997	2644	3525	4700	6345	8812	11750	15637	20787	27620	36718	48968
Over Travel	1 1/8"	3/4"	3/8"	3/16"	38.8	56.1	86.5	125.3	160.9	208	280	374	499	665	891	1188	1544	2019	2672	3563	4750	6412	8906	11875	15804	21008	27914	37109	49489
					39.2	56.7	87.4	126.6	162.6	210	282	378	504	672	900	1200	1560	2040	2700	3600	4800	6480	9000	12000	15970	21230	28208	37500	50010
					39.7	57.3	88.4	127.9	164.3	213	285	382	509	679	909	1213	1576	2061	2728	3638	4850	6547	9094	12125	16136	21451	28502	37890	50531
					40.1	57.9	89.3	129.2	166.0	215	288	386	515	686	919	1225	1592	2082	2756	3675	4900	6615	9187	12250	16302	21672	28795	38	

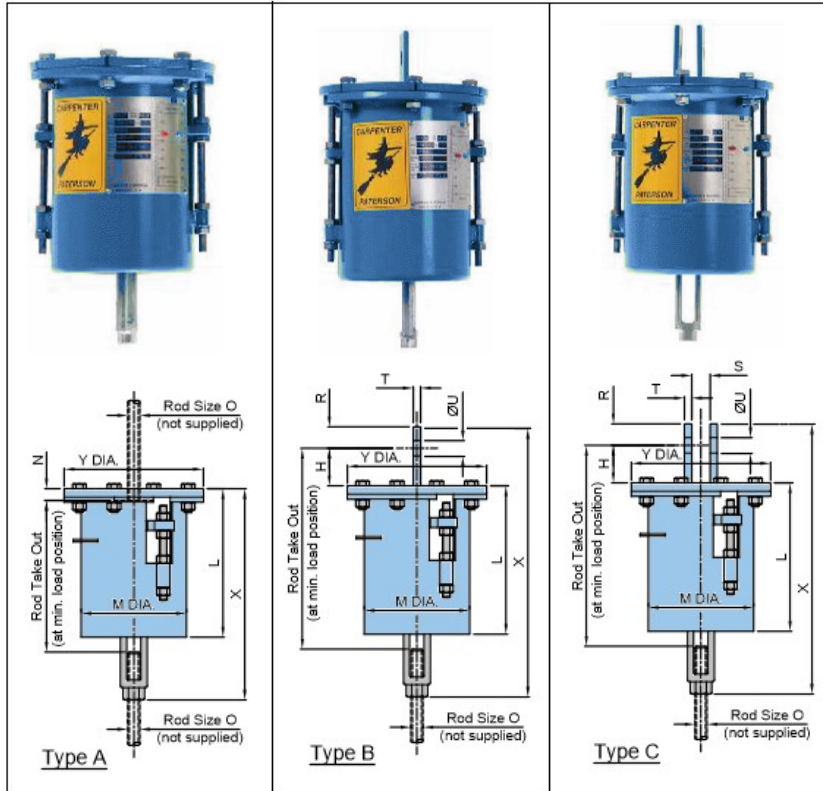
VARIABLE SPRING SUPPORTS - IVL

IVL VARIABLE SPRING SUPPORTS - TYPES A, B & C



Size	Rod Size & Designation	Case Dia.	Flange Dia.	Case Length L	Rod Take Out		Thread Depth Type A	Types B C							Loaded Length X				Weight (approx.) lbs
				Types	Types	Dimensions				Type A		Types B C		Type					
				O	M	Y	A B C	A	B C	N	øU & Pin Size Designation	H	R	S	T	Min.	Max.	Min.	Max.
IVL35-000	3/8" (1)	4 1/8	5 7/8	4 7/16	4 13/16	6 5/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	8 7/8	10 1/4	11 1/4	12 5/8	7.3		
IVL35-00	3/8" (1)	4 1/8	5 7/8	4 1/2	4 13/16	6 5/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	8 7/8	10 1/4	11 1/4	12 5/8	7.4		
IVL35-0	1/2" (2)	4 1/8	5 7/8	5 1/4	5	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 3/8	8		
IVL35-1	1/2" (2)	4 1/8	5 7/8	5 1/2	4 15/16	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 5/16	8.4		
IVL35-2	1/2" (2)	4 1/8	5 7/8	6 1/8	5	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 3/8	8.9		
IVL35-3	1/2" (2)	4 1/8	5 7/8	5 1/8	5	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 3/8	8.4		
IVL35-4	1/2" (2)	4 1/8	5 7/8	5 1/2	5	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 3/8	8.9		
IVL35-5	1/2" (2)	4 1/8	5 7/8	5 9/16	5	6 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 3/16	10 9/16	11 15/16	13 3/8	9.1		
IVL35-6	1/2" (2)	4 1/8	5 7/8	5 11/16	5 3/16	7 5/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	10 7/8	12 5/16	13 11/16	11.9		
IVL35-7	1/2" (2)	4 1/8	5 7/8	6 1/4	5 3/16	7 5/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	10 7/8	12 5/16	13 11/16	12.7		
IVL35-8	1/2" (2)	4 1/8	5 7/8	6 5/8	5 3/16	7 5/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	10 7/8	12 5/16	13 11/16	13.5		
IVL35-9	5/8" (3)	5 11/16	7 1/2	6 3/4	5 1/2	7 11/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	10 3/16	11 9/16	12 15/16	14 5/16	23.4		
IVL35-10	5/8" (3)	5 11/16	7 1/2	6 5/8	5 1/2	7 11/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	10 3/16	11 9/16	12 15/16	14 5/16	23.3		
IVL35-11	5/8" (3)	5 11/16	7 1/2	6 7/8	5 1/2	7 11/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	10 3/16	11 9/16	12 15/16	14 5/16	24.9		
IVL35-12	3/4" (4)	6 11/16	8 1/2	7 7/16	6	8 3/4	13/16	1 (6)	1 15/16	1 3/8	1 1/4	3/8	11	12 3/8	14 3/8	15 3/4	37.7		
IVL35-13	1" (6)	6 11/16	8 1/2	8 5/16	6 1/2	9 13/16	1	1 1/4 (7)	2 3/8	1 9/16	1 5/8	1/2	11 15/16	13 3/8	15 7/8	17 5/16	42.5		
IVL35-14	1 1/4" (7)	6 11/16	8 1/2	9 1/2	7 5/16	11 1/2	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	13 9/16	14 15/16	18 7/16	19 13/16	51.3		
IVL35-15	1 1/4" (7)	8 1/2	10 5/8	10 3/16	7 7/16	11 5/8	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	13 11/16	15 1/16	18 9/16	19 15/16	92.7		
IVL35-16	1 1/2" (9)	8 1/2	10 5/8	11 3/4	7 15/16	12 5/16	1 3/8	1 3/4 (10)	3	2 1/2	2 3/8	13/16	14 9/16	15 15/16	20 1/16	21 7/16	109		
IVL35-17	1 3/4" (10)	8 1/2	11 1/4	12 11/16	8 1/2	13 7/16	1 9/16	2 (11)	3 3/8	2 15/16	2 5/8	13/16	14 5/8	16	20 7/8	22 5/16	134		
IVL35-18	2" (11)	10 13/16	13 9/16	14	9 5/16	15 1/4	1 15/16	2 3/8 (12)	4	3 1/8	2 7/8	13/16	16 3/16	17 9/16	23 3/8	24 3/4	230		
IVL35-19	2 1/4" (12)	10 13/16	14 5/16	15 1/4	10 11/16	17 5/16	2 3/16	2 11/16 (13)	4 1/2	3 1/8	3 1/8	13/16	17 3/4	19 1/8	25 3/8	26 3/4	274		
IVL35-20	2 1/2" (13)	10 13/16	14 5/16	17 5/16	12 1/16	18 15/16	2 3/8	3 (14)	4 1/2	4	3 3/8	1	20 3/8	21 3/4	28 7/8	30 1/4	325		
IVL35-21	2 3/4" (14)	12 13/16	16 3/8	19 13/16	13 9/16	20 13/16	2 3/4	3 5/16 (15)	4 1/2	4	3 5/8	1	23 1/4	24 5/8	31 3/4	33 1/8	516		
IVL35-22	3" (15)	12 13/16	17	24 5/16	18 1/16	25 13/16	2 3/4	3 11/16 (16)	5	4	3 7/8	1	27 11/16	29 1/8	36 3/4	38 1/8	666		
IVL70-000	3/8" (1)	4 1/8	5 7/8	7 5/16	5 1/16	6 7/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	9 3/16	11 15/16	11 9/16	14 5/16	8.7		
IVL70-00	3/8" (1)	4 1/8	5 7/8	7 7/16	5 1/16	6 7/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	9 3/16	11 15/16	11 9/16	14 5/16	8.9		
IVL70-0	1/2" (2)	4 1/8	5 7/8	7 5/16	5 1/4	7 1/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	12 1/4	12 1/4	15	9		
IVL70-1	1/2" (2)	4 1/8	5 7/8	8 1/16	5 1/4	7 1/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	12 1/4	12 1/4	15	9.7		
IVL70-2	1/2" (2)	4 1/8	5 7/8	8 3/4	5 9/16	7 9/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 13/16	12 9/16	12 9/16	15 5/16	10.3		
IVL70-3	1/2" (2)	5 7/16	7 1/4	7 13/16	5 1/4	7 1/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 1/2	12 1/4	12 1/4	15	13.6		
IVL70-4	1/2" (2)	5 7/16	7 1/4	8 9/16	5 3/8	7 3/8	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	9 5/8	12 3/8	12 3/8	15 1/8	14.8		
IVL70-5	1/2" (2)	5 7/16	7 1/4	9 1/8	6	7 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	10 3/16	12 15/16	12 15/16	15 11/16	16.3		
IVL70-6	1/2" (2)	6 5/16	8 1/8	9 1/8	5 3/4	7 7/8	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	10 1/8	12 7/8	12 7/8	15 5/8	25.1		
IVL70-7	1/2" (2)	6 5/16	8 1/8	10 1/16	6 11/16	8 13/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	11 1/16	13 13/16	13 13/16	16 9/16	28		
IVL70-8	1/2" (2)	6 5/16	8 1/8	10 1/2	7 3/16	9 5/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	11 3/16	14 5/16	14 5/16	17 1/16	30.1		
IVL70-9	5/8" (3)	8 3/8	10 3/16	10 9/16	7 1/16	9 5/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	11 3/4	14 1/2	14 1/2	17 5/16	47.4		
IVL70-10	5/8" (3)	8 3/8	10 3/16	11 7/8	8 3/8	10 9/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	13 1/16	15 13/16	15 13/16	18 9/16	51.7		
IVL70-11	5/8" (3)	8 3/8	10 3/16	9 5/8	6 1/8	8 3/8	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	10 13/16	13 9/16	13 9/16	16 5/16	46.9		
IVL70-12	3/4" (4)	8 3/8	10 3/16	10 1/2	6 7/8	9 5/8	13/16	1 (6)	1 15/16	1 3/8	1 1/4	3/8	11 7/8	14 5/8	15 1/4	18	56.9		
IVL70-13	1" (6)	8 3/8	10 3/16	13 3/8	9 7/16	12 3/4	1	1 1/4 (7)	2 3/8	1 9/16	1 5/8	1/2	14 7/8	17 5/8	18 13/16	21 9/16	74.8		
IVL70-14	1 1/4" (7)	8 3/8	10 3/16	13 7/8	9 7/16	13 9/16	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	15 5/8	18 3/8	20 9/16	23 5/16	79.7		
IVL70-15	1 1/4" (7)	8 1/2	10 5/8	13 15/16	9 1/2	13 11/16	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	15 11/16	18 7/16	20 5/8	23 3/8	106		
IVL70-16	1 1/2" (9)	8 1/2	10 5/8	16 5/8	12 1/16	16 7/16	1 3/8	1 3/4 (10)	3	2 1/2	2 3/8	13/16	18 11/16	21 7/16	24 1/16	26 15/16	131		
IVL70-17	1 3/4" (10)	8 1/2	11 1/4	19 1/8	15 1/4	20 3/16	1 9/16	2 (11)	3 3/8	2 15/16	2 5/8	13/16	21 5/16	24 1/8	27 5/8	30 3/8	171		
IVL70-18	2" (11)	12 13/16	15 9/16	18 13/16	14 7/16	20 3/8	1 15/16	2 3/8 (12)	4	3 1/8	2 7/8	13/16	21 5/16	24 1/16	28 7/16	31 1/4	335		
IVL70-19	2 1/4" (12)	12 13/16	16 3/8	21 9/16	17 5/16	23 15/16	2 3/16	2 11/16 (13)	4 1/2	3 1/8	3 1/8	13/16	24 3/8	27 1/8	32	34 3/4	404		
IVL70-20	2 1/2" (13)	12 13/16	16 3/8	25 1/4	20 5/16	27 3/16	2 3/8	3 (14)	4 1/2	4	3 3/8	1	28 9/16	31 5/16	37 1/16	39 13/16	510		
IVL70-21	2 3/4" (14)	12 13/16	16 3/8	29 3/16	23 1/4	30 1/2	2 3/4	3 5/16 (15)	4 1/2	4	3 5/8	1	32 5/16	35 11/16	41 7/16	44 3/16	672		
IVL70-22	3" (15)	12 13/16	17	35 1/2	29 9/16	37 5/16	2 3/4	3 11/16 (16)	5	4	3 7/8	1	39 3/16	41 15/16	48 1/4	51	881		

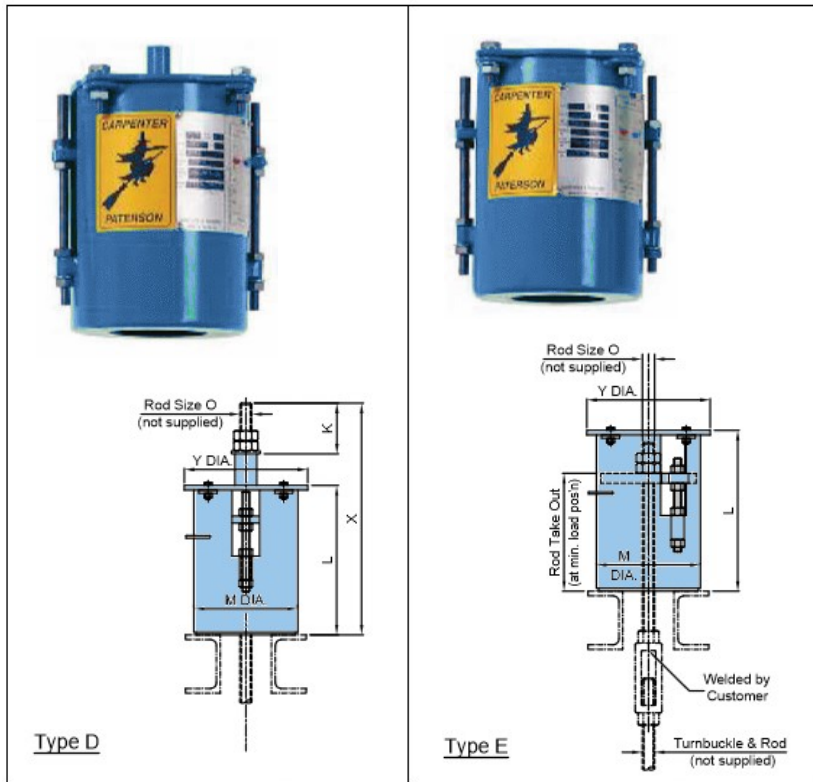
IVL VARIABLE SPRING SUPPORTS - TYPES A, B & C



Size	Rod Size & Designation	Case Dia.	Flange Dia.	Case Length L	Rod Take Out		Thread Depth Type A	Types B C				Loaded Length X				Weight (approx.) lbs	
				Types	Types	Dimensions				Type A		Types B C		Type			
				O	M	Y		A B C	A	B C	N	OU & Pin Size Designation	H	R	S	T	Min.
IVL140-000	3/8" (1)	4 1/8	5 7/8	13 7/16	10 13/16	12 5/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	14 15/16	20 7/16	17 5/16	22 13/16	12
IVL140-00	3/8" (1)	4 1/8	5 7/8	13 11/16	11 1/8	12 15/16	1/2	9/16 (2)	1 5/16	1	7/8	1/4	15 1/4	20 3/4	17 5/8	23 1/8	12.4
IVL140-0	1/2" (2)	4 1/8	5 7/8	13 5/16	10 11/16	12 5/8	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	14 7/8	20 3/8	17 5/8	23 1/8	12.5
IVL140-1	1/2" (2)	4 1/8	5 7/8	14 13/16	12 1/4	14 3/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	16 7/16	21 15/16	19 3/16	24 3/4	14
IVL140-2	1/2" (2)	4 1/8	5 7/8	16 5/16	13 11/16	15 11/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	17 15/16	23 7/16	20 11/16	26 3/16	15.2
IVL140-3	1/2" (2)	5 7/16	7 1/4	14 7/16	11 13/16	13 3/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	16	21 9/16	18 3/4	24 5/16	19.6
IVL140-4	1/2" (2)	5 7/16	7 1/4	15 7/8	13 1/4	15 1/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	17 1/2	23	20 1/4	25 3/4	22.1
IVL140-5	1/2" (2)	5 7/16	7 1/4	17 1/16	14 7/16	16 7/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	18 11/16	24 3/16	21 7/16	26 15/16	25.1
IVL140-6	1/2" (2)	6 5/16	8 1/8	16 7/8	14 1/8	16 1/4	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	18 7/16	24	21 1/4	26 3/4	36
IVL140-7	1/2" (2)	6 5/16	8 1/8	18 3/4	16	18 1/8	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	20 3/8	25 7/8	23 1/8	28 5/8	41.8
IVL140-8	1/2" (2)	6 5/16	8 1/8	19 3/4	16 15/16	19 1/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	21 5/16	26 13/16	24 1/16	29 9/16	46
IVL140-9	5/8" (3)	8 3/8	10 3/16	19 5/8	16 3/4	18 15/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	21 7/16	26 15/16	24 3/16	29 11/16	70.1
IVL140-10	5/8" (3)	8 3/8	10 3/16	22 3/16	19 1/4	21 7/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	23 15/16	29 7/16	26 11/16	32 3/16	78.8
IVL140-11	5/8" (3)	8 3/8	10 3/16	17 3/4	14 13/16	17 1/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	19 1/2	25 1/16	22 5/16	27 13/16	69
IVL140-12	3/4" (4)	8 3/8	10 3/16	19 5/16	16 3/16	19	13/16	1 (6)	1 15/16	1 3/8	1 1/4	3/8	21 1/4	26 3/4	24 9/16	30 1/16	83.9
IVL140-13	1" (6)	8 3/8	10 3/16	24 11/16	21 5/16	24 5/8	1	1 1/4 (7)	2 3/8	1 9/16	1 5/8	1/2	26 3/4	32 5/16	30 11/16	36 1/4	118
IVL140-14	1 1/4" (7)	8 3/8	10 3/16	25 5/16	21 7/16	25 9/16	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	27 5/8	33 1/8	32 9/16	38 1/16	124
IVL140-15	1 1/4" (7)	8 1/2	10 5/8	25 3/8	21 1/2	25 11/16	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	27 11/16	33 1/4	32 5/8	38 1/8	163
IVL140-16	1 1/2" (9)	8 1/2	10 5/8	30 7/16	26 3/8	30 3/4	1 3/8	1 3/4 (10)	3	2 1/2	2 3/8	13/16	33	38 1/2	38 1/2	44	209
IVL140-17	1 3/4" (10)	8 1/2	11 1/4	34 15/16	31 5/8	36 9/16	1 9/16	2 (11)	3 3/8	2 15/16	2 5/8	13/16	37 11/16	43 1/4	44	49 1/2	270
IVL140-18	2" (11)	12 13/16	15 9/16	33 5/8	29 3/4	35 3/4	1 15/16	2 3/8 (12)	4	3 1/8	2 7/8	13/16	36 5/8	42 3/16	43 13/16	49 5/16	515
IVL140-19	2 1/4" (12)	12 13/16	16 3/8	38 11/16	34 15/16	41 9/16	2 3/16	2 11/16 (13)	4 1/2	3 1/8	3 1/8	13/16	42	47 1/2	49 5/8	55 3/16	624
IVL140-20	2 1/2" (13)	12 13/16	16 3/8	45 9/16	41 3/16	48 1/16	2 3/8	3 (14)	4 1/2	4	3 3/8	1	49 7/16	54 15/16	57 15/16	63 7/16	815
IVL140-21	2 3/4" (14)	12 13/16	16 3/8	52 9/16	47 3/16	54 7/16	2 3/4	3 5/16 (15)	4 1/2	4	3 5/8	1	56 7/8	62 3/8	65 3/8	70 7/8	1078
IVL140-22	3" (15)	12 13/16	17	64 15/16	59 9/16	67 5/16	2 3/4	3 11/16 (16)	5	4	3 7/8	1	69 3/16	74 3/4	78 1/4	83 3/4	1459
IVL210-000	3/8" (1)	4 1/8	5 7/8	19 9/16	17 9/16	19 3/8	1/2	9/16 (2)	1 5/16	1	7/8	1/4	21 5/8	29 15/16	24	32 5/16	15.4
IVL210-00	3/8" (1)	4 1/8	5 7/8	19 15/16	17 15/16	19 3/4	1/2	9/16 (2)	1 5/16	1	7/8	1/4	22 1/16	30 5/16	24 7/16	32 11/16	15.9
IVL210-0	1/2" (2)	4 1/8	5 7/8	19 5/16	17 1/4	19 3/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	21 7/16	29 3/4	24 3/16	32 1/2	16.2
IVL210-1	1/2" (2)	4 1/8	5 7/8	21 5/8	19 5/8	21 9/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	23 13/16	32 1/16	26 9/16	34 13/16	18.4
IVL210-2	1/2" (2)	4 1/8	5 7/8	23 13/16	21 3/4	23 3/4	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	26	34 1/4	28 3/4	37	20.2
IVL210-3	1/2" (2)	5 7/16	7 1/4	21	19	20 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	23 3/16	31 7/16	25 15/16	34 3/16	25.7
IVL210-4	1/2" (2)	5 7/16	7 1/4	23 1/8	21 1/8	23 1/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	25 5/16	33 9/16	28 1/16	36 5/16	29.4
IVL210-5	1/2" (2)	5 7/16	7 1/4	24 15/16	22 15/16	24 15/16	1/2	11/16 (3)	1 1/2	1 1/4	7/8	1/4	27 3/16	35 7/16	29 15/16	38 3/16	34
IVL210-6	1/2" (2)	6 5/16	8 1/8	24 5/8	22 7/16	24 9/16	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	26 13/16	35 1/16	29 9/16	37 13/16	46.8
IVL210-7	1/2" (2)	6 5/16	8 1/8	27 1/2	25 1/4	27 3/8	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	29 5/8	37 15/16	32 3/8	40 11/16	55.5
IVL210-8	1/2" (2)	6 5/16	8 1/8	28 15/16	26 3/4	28 7/8	5/8	11/16 (3)	1 1/2	1 1/4	7/8	1/4	31 1/8	39 3/8	33 7/8	42 1/8	61.8
IVL210-9	5/8" (3)	8 3/8	10 3/16	28 3/4	26 3/8	28 9/16	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	31 1/16	39 5/16	33 13/16	42 1/16	92.9
IVL210-10	5/8" (3)	8 3/8	10 3/16	32 1/2	30 3/16	32 3/8	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	34 13/16	43 1/8	37 5/8	45 7/8	106
IVL210-11	5/8" (3)	8 3/8	10 3/16	25 7/8	23 9/16	25 3/4	11/16	7/8 (4)	1 1/2	1 1/4	1 1/16	3/8	28 1/4	36 1/2	31	39 1/4	91.2
IVL210-12	3/4" (4)	8 3/8	10 3/16	28 1/16	25 1/2	28 5/16	13/16	1 (6)	1 15/16	1 3/8	1 1/4	3/8	30 9/16	38 13/16	33 7/8	42 3/16	111
IVL210-13	1" (6)	8 3/8	10 3/16	36	33 3/16	36 9/16	1	1 1/4 (7)	2 3/8	1 9/16	1 5/8	1/2	38 11/16	46 15/16	42 5/8	50 7/8	161
IVL210-14	1 1/4" (7)	8 3/8	10 3/16	36 3/4	33 7/16	37 5/8	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	39 5/8	47 15/16	44 9/16	52 13/16	167
IVL210-15	1 1/4" (7)	8 1/2	10 5/8	36 13/16	33 1/2	37 11/16	1 3/16	1 1/2 (9)	3	1 15/16	1 13/16	1/2	39 3/4	48	44 5/8	52 15/16	220
IVL210-16	1 1/2" (9)	8 1/2	10 5/8	44 3/16	40 11/16	45 1/16	1 3/8	1 3/4 (10)	3	2 1/2	2 3/8	13/16	47 5/16	55 9/16	52 13/16	61 1/8	286
IVL210-17	1 3/4" (10)	8 1/2	11 1/4	50 11/16	48	52 15/16	1 9/16	2 (11)	3 3/8	2 15/16	2 5/8	13/16	54 1/8	62 3/8	60 3/8	68 11/16	370
IVL210-18	2" (11)	12 13/16	15 9/16	48 3/8	45 1/8	51 1/8	1 15/16	2 3/8 (12)	4	3 1/8	2 7/8	13/16	52	60 1/4	59 3/16	67 7/16	695
IVL210-19	2 1/4" (12)	12 13/16	16 3/8	55 3/4	52 9/16	59 3/16	2 3/16	2 11/16 (13)	4 1/2	3 1/8	3 1/8	13/16	59 5/8	67 15/16	67 5/16	75 9/16	843
IVL210-20	2 1/2" (13)	12 13/16	16 3/8	65 13/16	62 1/16	68 7/8	2 3/8	3 (14)	4 1/2	4	3 3/8	1	70 5/16	78 9/16	78 13/16	87 1/16	1119
IVL210-21	2 3/4" (14)	12 13/16	16 3/8	75 7/8	71 1/8	78 3/8	2 3/4	3 5/16 (15)	4 1/2	4	3 5/8	1	80 13/16	89 1/16	88 5/16	97 9/16	1484
IVL210-22	3" (15)	12 13/16	17	94 5/16	89 9/16	97 5/16	2 3/4	3 11/16 (16)	5	4	3 7/8	1	99 3/16	107 1/2	108 1/4	116 1/2	2036

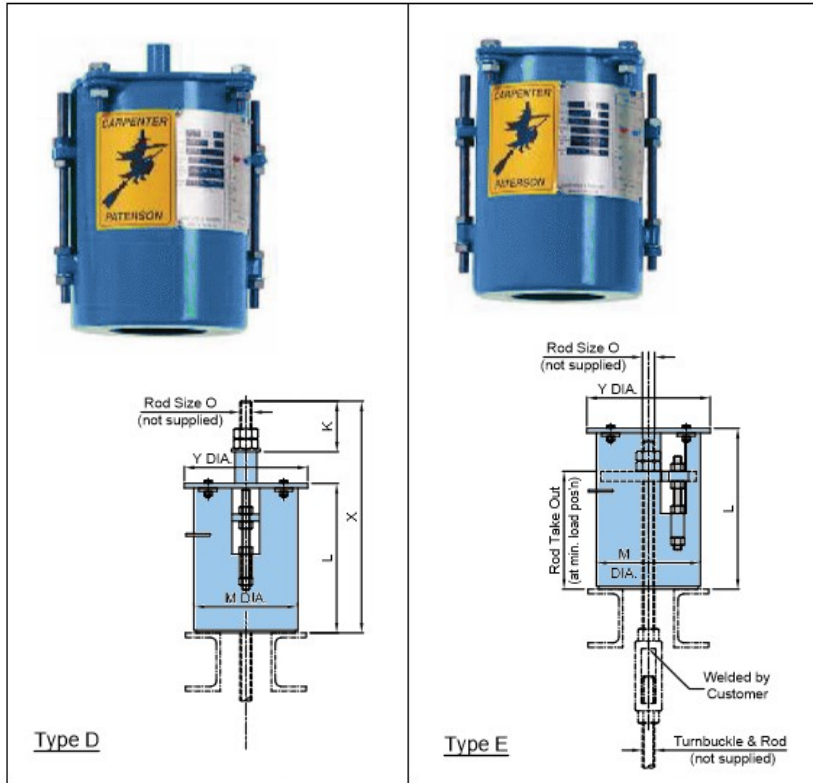
VARIABLE SPRING SUPPORTS - IVL

IVL VARIABLE SPRING SUPPORTS - TYPES D & E



Size	Rod Size & Designation	Case Dia.		Flange Dia.	Case Length	Rod Take Out	Type D			Weight (approx.) lbs
		M	Y	L	Type E		Loaded Length X		K	
							Min.	Max.		
IVL35-000	3/8" (1)	4 1/8	5 7/8	4 5/16	3 3/8	8 1/4	9 5/8	3 15/16	4.9	
IVL35-00	3/8" (1)	4 1/8	5 7/8	4 7/16	3 7/16	8 3/8	9 3/4	3 15/16	5	
IVL35-0	1/2" (2)	4 1/8	5 7/8	5 1/8	4 1/16	9 3/8	10 3/4	4 5/16	5.4	
IVL35-1	1/2" (2)	4 1/8	5 7/8	5 3/8	4 3/8	9 11/16	11 1/16	4 5/16	5.9	
IVL35-2	1/2" (2)	4 1/8	5 7/8	6	4 15/16	10 1/4	11 5/8	4 5/16	6.4	
IVL35-3	1/2" (2)	4 1/8	5 7/8	5	3 15/16	9 1/4	10 5/8	4 5/16	5.9	
IVL35-4	1/2" (2)	4 1/8	5 7/8	5 3/8	4 5/16	9 5/8	11	4 5/16	6.4	
IVL35-5	1/2" (2)	4 1/8	5 7/8	5 1/2	4 7/16	9 3/4	11 1/8	4 5/16	6.6	
IVL35-6	1/2" (2)	4 1/8	5 7/8	5 7/16	4 3/4	10 1/4	11 5/8	4 1/2	7.6	
IVL35-7	1/2" (2)	4 1/8	5 7/8	6	5 5/16	10 13/16	12 3/16	4 1/2	8.4	
IVL35-8	1/2" (2)	4 1/8	5 7/8	6 3/8	5 11/16	11 1/4	12 5/8	4 1/2	9.2	
IVL35-9	5/8" (3)	5 11/16	7 1/2	6 7/16	5 11/16	12 3/16	13 9/16	4 15/16	15.5	
IVL35-10	5/8" (3)	5 11/16	7 1/2	6 5/16	5 1/2	12	13 3/8	4 15/16	15.4	
IVL35-11	5/8" (3)	5 11/16	7 1/2	6 9/16	5 13/16	12 5/16	13 11/16	4 15/16	17	
IVL35-12	3/4" (4)	6 11/16	8 1/2	6 15/16	6 3/16	13 1/16	14 7/16	5 5/16	24.7	
IVL35-13	1" (6)	6 11/16	8 1/2	7 13/16	6 3/4	14	15 3/8	5 11/16	27.4	
IVL35-14	1 1/4" (7)	6 11/16	8 1/2	9	7 11/16	14 15/16	16 5/16	5 11/16	33.1	
IVL35-15	1 1/4" (7)	8 1/2	10 5/8	9 9/16	8 9/16	15 13/16	17 3/16	5 11/16	65	
IVL35-16	1 1/2" (9)	8 1/2	10 5/8	11 3/16	9 3/4	17 5/8	19	6 5/16	76.2	
IVL35-17	1 3/4" (10)	8 1/2	11 1/4	11 7/8	10 1/4	19 1/8	20 1/2	6 11/16	82.7	
IVL35-18	2" (11)	10 13/16	13 9/16	13	11	20 1/4	21 5/8	7 1/16	143	
IVL35-19	2 1/4" (12)	10 13/16	14 5/16	14 1/4	12	22 1/4	23 5/8	8 1/16	166	
IVL35-20	2 1/2" (13)	10 13/16	14 5/16	16 1/16	13 9/16	24 3/16	25 9/16	8 7/16	194	
IVL35-21	2 3/4" (14)	12 13/16	16 3/8	18 5/16	15 11/16	26 5/8	28	9 1/16	323	
IVL35-22	3" (15)	12 13/16	17	22 13/16	20 5/16	31 7/8	33 1/4	9 5/8	447	
IVL70-000	3/8" (1)	4 1/8	5 7/8	7 3/16	5 7/8	11	13 3/4	3 15/16	6.3	
IVL70-00	3/8" (1)	4 1/8	5 7/8	7 5/16	6 1/16	11 3/16	13 15/16	3 15/16	6.4	
IVL70-0	1/2" (2)	4 1/8	5 7/8	7 3/16	5 13/16	11 5/16	14 1/8	4 5/16	6.6	
IVL70-1	1/2" (2)	4 1/8	5 7/8	7 15/16	6 9/16	12 1/16	14 13/16	4 5/16	7.3	
IVL70-2	1/2" (2)	4 1/8	5 7/8	8 11/16	7 5/16	12 13/16	15 9/16	4 5/16	7.9	
IVL70-3	1/2" (2)	5 7/16	7 1/4	7 11/16	6 3/8	11 7/8	14 5/8	4 5/16	10.6	
IVL70-4	1/2" (2)	5 7/16	7 1/4	8 7/16	7 1/16	12 5/8	15 3/8	4 5/16	11.8	
IVL70-5	1/2" (2)	5 7/16	7 1/4	9	7 11/16	13 3/16	15 15/16	4 5/16	13.3	
IVL70-6	1/2" (2)	6 5/16	8 1/8	8 13/16	7 7/8	13 9/16	16 5/16	4 1/2	18.3	
IVL70-7	1/2" (2)	6 5/16	8 1/8	9 3/4	8 13/16	14 1/2	17 5/16	4 1/2	21.2	
IVL70-8	1/2" (2)	6 5/16	8 1/8	10 1/4	9 5/16	15	17 3/4	4 1/2	23.3	
IVL70-9	5/8" (3)	8 3/8	10 3/16	10 1/4	9 3/16	16 1/16	18 13/16	4 15/16	34.8	
IVL70-10	5/8" (3)	8 3/8	10 3/16	11 1/2	10 7/16	17 5/16	20 1/16	4 15/16	39	
IVL70-11	5/8" (3)	8 3/8	10 3/16	9 5/16	8 1/4	15 1/8	17 7/8	4 15/16	34.3	
IVL70-12	3/4" (4)	8 3/8	10 3/16	10 1/16	8 15/16	16 1/4	19	5 5/16	40	
IVL70-13	1" (6)	8 3/8	10 3/16	12 7/8	11 1/2	19 3/16	21 15/16	5 11/16	55.5	
IVL70-14	1 1/4" (7)	8 3/8	10 3/16	13 3/8	11 3/4	19 7/16	22 3/16	5 11/16	57.3	
IVL70-15	1 1/4" (7)	8 1/2	10 5/8	13 3/8	12	19 7/8	22 5/8	5 11/16	78.1	
IVL70-16	1 1/2" (9)	8 1/2	10 5/8	16 1/16	14 5/16	22 13/16	25 9/16	6 5/16	96.9	
IVL70-17	1 3/4" (10)	8 1/2	11 1/4	18 5/16	16 3/8	25 1/4	28	6 11/16	116	
IVL70-18	2" (11)	12 13/16	15 9/16	17 13/16	15 9/16	25 3/8	28 1/8	7 1/16	232	
IVL70-19	2 1/4" (12)	12 13/16	16 3/8	20 9/16	18 1/16	28 7/8	31 5/8	8 1/16	276	
IVL70-20	2 1/2" (13)	12 13/16	16 3/8	24 1/16	21 1/4	32 1/2	35 1/4	8 7/16	354	
IVL70-21	2 3/4" (14)	12 13/16	16 3/8	27 11/16	24 3/4	35 13/16	38 9/16	9 1/16	465	
IVL70-22	3" (15)	12 13/16	17	34	31 3/16	42 13/16	45 9/16	9 5/8	640	

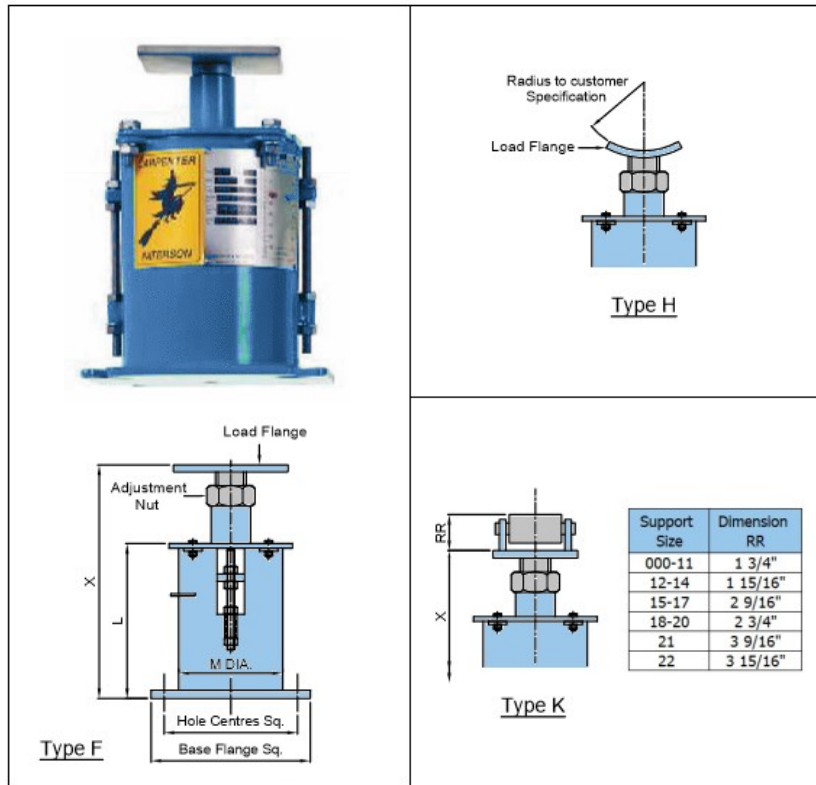
IVL VARIABLE SPRING SUPPORTS - TYPES D & E



Size	Rod Size & Designation	Case Dia.	Flange Dia.	Case Length	Rod Take Out	Type D			Weight (approx.) lbs
						Loaded Length X		K	
						O	M		Y
IVL140-000	3/8" (1)	4 1/8	5 7/8	13 5/16	11 1/2	16 7/8	22 3/8	3 15/16	9.6
IVL140-00	3/8" (1)	4 1/8	5 7/8	13 9/16	11 3/4	17 1/8	22 5/8	3 15/16	9.9
IVL140-0	1/2" (2)	4 1/8	5 7/8	13 3/16	11 5/16	17 1/16	22 5/8	4 5/16	10.2
IVL140-1	1/2" (2)	4 1/8	5 7/8	14 3/4	12 13/16	18 5/8	24 1/8	4 5/16	11.6
IVL140-2	1/2" (2)	4 1/8	5 7/8	16 3/16	14 1/4	20 1/16	25 9/16	4 5/16	12.8
IVL140-3	1/2" (2)	5 7/16	7 1/4	14 5/16	12 3/8	18 3/16	23 11/16	4 5/16	16.6
IVL140-4	1/2" (2)	5 7/16	7 1/4	15 3/4	13 13/16	19 5/8	25 1/8	4 5/16	19
IVL140-5	1/2" (2)	5 7/16	7 1/4	16 15/16	15 1/16	20 13/16	26 5/16	4 5/16	22
IVL140-6	1/2" (2)	6 5/16	8 1/8	16 9/16	15 1/16	21 1/16	26 9/16	4 1/2	29.1
IVL140-7	1/2" (2)	6 5/16	8 1/8	18 7/16	16 15/16	22 15/16	28 7/16	4 1/2	34.8
IVL140-8	1/2" (2)	6 5/16	8 1/8	19 7/16	17 15/16	23 15/16	29 7/16	4 1/2	39
IVL140-9	5/8" (3)	8 3/8	10 3/16	19 5/16	17 11/16	25 1/16	30 9/16	4 15/16	57.1
IVL140-10	5/8" (3)	8 3/8	10 3/16	21 13/16	20 3/16	27 9/16	33 1/16	4 15/16	65.6
IVL140-11	5/8" (3)	8 3/8	10 3/16	17 3/8	15 13/16	23 1/8	28 11/16	4 15/16	56.2
IVL140-12	3/4" (4)	8 3/8	10 3/16	18 13/16	17 1/8	24 7/8	30 3/8	5 5/16	66.4
IVL140-13	1" (6)	8 3/8	10 3/16	24 3/16	22 1/4	30 3/8	35 7/8	5 11/16	97.2
IVL140-14	1 1/4" (7)	8 3/8	10 3/16	24 13/16	22 5/8	30 3/4	36 1/4	5 11/16	98.7
IVL140-15	1 1/4" (7)	8 1/2	10 5/8	24 13/16	22 7/8	31 1/8	36 5/8	5 11/16	133
IVL140-16	1 1/2" (9)	8 1/2	10 5/8	29 13/16	27 1/2	36 3/8	41 7/8	6 5/16	170
IVL140-17	1 3/4" (10)	8 1/2	11 1/4	34 1/8	31 5/8	40 7/8	46 3/8	6 11/16	208
IVL140-18	2" (11)	12 13/16	15 9/16	32 5/8	29 3/4	40 3/16	45 11/16	7 1/16	404
IVL140-19	2 1/4" (12)	12 13/16	16 3/8	37 11/16	34 1/2	45 7/8	51 7/16	8 1/16	481
IVL140-20	2 1/2" (13)	12 13/16	16 3/8	44 3/8	41	52 3/4	58 1/4	8 7/16	636
IVL140-21	2 3/4" (14)	12 13/16	16 3/8	51 1/16	47 1/2	59 5/16	64 13/16	9 1/16	838
IVL140-22	3" (15)	12 13/16	17	63 7/16	60 1/16	72 3/8	77 15/16	9 5/8	1163
IVL210-000	3/8" (1)	4 1/8	5 7/8	19 7/16	17 1/16	22 11/16	31	3 15/16	13
IVL210-00	3/8" (1)	4 1/8	5 7/8	19 13/16	17 7/16	23 1/8	31 3/8	3 15/16	13.5
IVL210-0	1/2" (2)	4 1/8	5 7/8	19 3/16	16 3/4	22 13/16	31 1/8	4 5/16	13.8
IVL210-1	1/2" (2)	4 1/8	5 7/8	21 9/16	19 1/16	25 1/8	33 3/8	4 5/16	15.9
IVL210-2	1/2" (2)	4 1/8	5 7/8	23 11/16	21 1/4	27 5/16	35 9/16	4 5/16	17.6
IVL210-3	1/2" (2)	5 7/16	7 1/4	20 7/8	18 7/16	24 1/2	32 3/4	4 5/16	22.7
IVL210-4	1/2" (2)	5 7/16	7 1/4	23 1/16	20 9/16	26 5/8	34 15/16	4 5/16	26.2
IVL210-5	1/2" (2)	5 7/16	7 1/4	24 13/16	22 3/8	28 7/16	36 11/16	4 5/16	30.7
IVL210-6	1/2" (2)	6 5/16	8 1/8	24 3/8	22 5/16	28 9/16	36 13/16	4 1/2	39.9
IVL210-7	1/2" (2)	6 5/16	8 1/8	27 3/16	25 1/8	31 3/8	39 5/8	4 1/2	48.4
IVL210-8	1/2" (2)	6 5/16	8 1/8	28 11/16	26 9/16	32 13/16	41 1/8	4 1/2	54.7
IVL210-9	5/8" (3)	8 3/8	10 3/16	28 3/8	26 3/16	34	42 5/16	4 15/16	79.5
IVL210-10	5/8" (3)	8 3/8	10 3/16	32 3/16	29 15/16	37 13/16	46 1/16	4 15/16	92.2
IVL210-11	5/8" (3)	8 3/8	10 3/16	25 9/16	23 3/8	31 3/16	39 7/16	4 15/16	78.1
IVL210-12	3/4" (4)	8 3/8	10 3/16	27 9/16	25 5/16	33 9/16	41 13/16	5 5/16	92.8
IVL210-13	1" (6)	8 3/8	10 3/16	35 1/2	33	41 5/8	49 7/8	5 11/16	139
IVL210-14	1 1/4" (7)	8 3/8	10 3/16	36 1/4	33 7/16	42 1/16	50 3/8	5 11/16	140
IVL210-15	1 1/4" (7)	8 1/2	10 5/8	36 1/4	33 3/4	42 1/2	50 13/16	5 11/16	188
IVL210-16	1 1/2" (9)	8 1/2	10 5/8	43 9/16	40 11/16	50 1/16	58 3/8	6 5/16	243
IVL210-17	1 3/4" (10)	8 1/2	11 1/4	49 15/16	46 7/8	56 5/8	64 7/8	6 11/16	300
IVL210-18	2" (11)	12 13/16	15 9/16	47 3/8	44	55 5/16	63 9/16	7 1/16	575
IVL210-19	2 1/4" (12)	12 13/16	16 3/8	54 3/4	51 1/16	63 3/8	71 5/8	8 1/16	686
IVL210-20	2 1/2" (13)	12 13/16	16 3/8	64 5/8	60 11/16	73 7/16	81 11/16	8 7/16	918
IVL210-21	2 3/4" (14)	12 13/16	16 3/8	74 7/16	70 5/16	82 13/16	91 1/8	9 1/16	1210
IVL210-22	3" (15)	12 13/16	17	92 13/16	88 7/8	102	110 1/4	9 5/8	1686

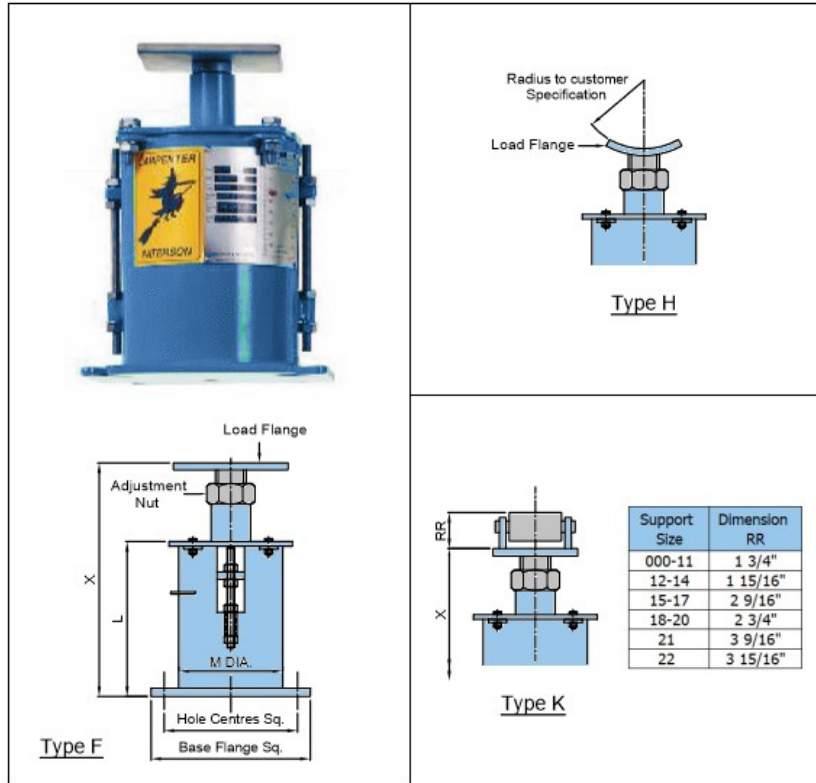
VARIABLE SPRING SUPPORTS - IVL

IVL VARIABLE SPRING SUPPORTS - TYPES F, H & K



Size	Case Dia.	Flange Dia.	Types F, H & K									
			Case Length	Base Plate Sq.	Base Plate Hole Crs. Sq.	Base Bolt	Base Plate Thk.	Load Pad Sq.	Load Pad Thk.	Loaded Length X (Type F)		Weight (Type F Approx.) lbs
										Min.	Max.	
M	Y	L										
IVL35-000	4 1/8	5 7/8	4 1/8	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	6 1/2	7 7/8	10.2
IVL35-00	4 1/8	5 7/8	4 3/16	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	6 9/16	7 15/16	10.3
IVL35-0	4 1/8	5 7/8	4 13/16	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	7 3/16	8 9/16	10.7
IVL35-1	4 1/8	5 7/8	5 1/16	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	7 1/2	8 7/8	11.2
IVL35-2	4 1/8	5 7/8	5 11/16	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	8 1/8	9 1/2	11.6
IVL35-3	4 1/8	5 7/8	4 11/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	7 1/8	8 1/2	12.8
IVL35-4	4 1/8	5 7/8	5 1/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	7 1/2	8 7/8	13.3
IVL35-5	4 1/8	5 7/8	5 3/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	7 9/16	8 15/16	13.5
IVL35-6	4 1/8	5 7/8	5 7/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	7 7/8	9 1/4	18.9
IVL35-7	4 1/8	5 7/8	6	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	8 3/8	9 3/4	19.8
IVL35-8	4 1/8	5 7/8	6 3/8	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	8 13/16	10 3/16	20.8
IVL35-9	5 11/16	7 1/2	6 5/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	9 1/8	10 1/2	35.3
IVL35-10	5 11/16	7 1/2	6 3/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	9	10 3/8	35.2
IVL35-11	5 11/16	7 1/2	6 7/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	9 3/16	10 9/16	36.9
IVL35-12	6 11/16	8 1/2	6 13/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	9 5/8	11	44.2
IVL35-13	6 11/16	8 1/2	7 3/8	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	10 3/16	11 9/16	48.4
IVL35-14	6 11/16	8 1/2	8 5/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	11 1/8	12 1/2	54.8
IVL35-15	8 1/2	10 5/8	9 3/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	12 3/16	13 9/16	91.3
IVL35-16	8 1/2	10 5/8	10 7/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	13 7/16	14 13/16	103.0
IVL35-17	8 1/2	11 1/4	10 15/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	13 15/16	15 5/16	109.0
IVL35-18	10 13/16	13 9/16	11 5/8	13 3/4	11 1/8	1"	1/2	9 13/16	13/16	14 15/16	16 5/16	201.0
IVL35-19	10 13/16	14 5/16	12 11/16	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	16 1/16	17 7/16	231.0
IVL35-20	10 13/16	14 5/16	14 5/16	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	17 11/16	19 1/16	261.0
IVL35-21	12 13/16	16 3/8	16 5/16	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	19 13/16	21 3/16	402.0
IVL35-22	12 13/16	17	21	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	24 9/16	25 15/16	521.0
IVL70-000	4 1/8	5 7/8	6 15/16	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	9 5/8	12 3/8	11.8
IVL70-00	4 1/8	5 7/8	7 1/16	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	9 3/4	12 1/2	11.9
IVL70-0	4 1/8	5 7/8	6 7/8	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	9 1/2	12 5/16	11.9
IVL70-1	4 1/8	5 7/8	7 5/8	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	10 5/16	13 1/16	12.7
IVL70-2	4 1/8	5 7/8	8 3/8	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	11	13 3/4	13.3
IVL70-3	5 7/16	7 1/4	7 3/8	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	10 1/16	12 13/16	17.3
IVL70-4	5 7/16	7 1/4	8 1/8	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	10 13/16	13 9/16	18.5
IVL70-5	5 7/16	7 1/4	8 11/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	11 7/16	14 3/16	20.0
IVL70-6	6 5/16	8 1/8	8 13/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	11 1/2	14 1/4	29.8
IVL70-7	6 5/16	8 1/8	9 3/4	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	12 7/16	15 3/16	33.0
IVL70-8	6 5/16	8 1/8	10 1/4	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	12 15/16	15 11/16	35.1
IVL70-9	8 3/8	10 3/16	10 1/8	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	13 1/8	15 7/8	55.0
IVL70-10	8 3/8	10 3/16	11 3/8	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	14 7/16	17 3/16	60.1
IVL70-11	8 3/8	10 3/16	9 3/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	12 3/16	14 15/16	53.9
IVL70-12	8 3/8	10 3/16	9 7/8	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	12 15/16	15 11/16	59.8
IVL70-13	8 3/8	10 3/16	12 7/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	15 1/2	18 1/4	80.1
IVL70-14	8 3/8	10 3/16	12 11/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	15 3/4	18 1/2	81.4
IVL70-15	8 1/2	10 5/8	13	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	16 1/4	19	107.0
IVL70-16	8 1/2	10 5/8	15 5/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	18 9/16	21 5/16	128.0
IVL70-17	8 1/2	11 1/4	17 3/8	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	20 5/8	23 3/8	149.0
IVL70-18	12 13/16	15 9/16	16 7/16	13 3/4	11 1/8	1"	1/2	9 13/16	13/16	20 1/16	22 13/16	292.0
IVL70-19	12 13/16	16 3/8	19	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	22 11/16	25 7/16	344.0
IVL70-20	12 13/16	16 3/8	22 1/4	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	25 7/8	28 11/16	424.0
IVL70-21	12 13/16	16 3/8	25 11/16	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	29 7/16	32 3/16	571.0
IVL70-22	12 13/16	17	32 3/16	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	36	38 3/4	737.0

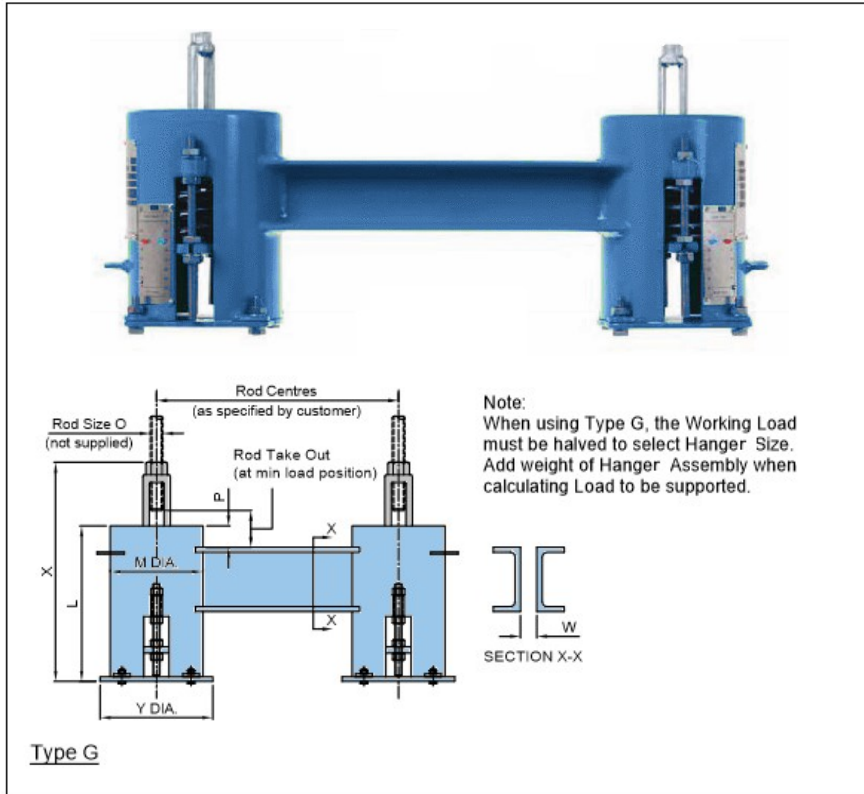
IVL VARIABLE SPRING SUPPORTS - TYPES F, H & K



Size	Case Dia.	Flange Dia.	Types F, H & K									
			Case Length	Base Plate Sq.	Base Plate Hole Crs. Sq.	Base Plate Bolt	Base Plate Thk.	Load Pad Sq.	Load Pad Thk.	Loaded Length X (Type F)		Weight (Type F Approx.) lbs
										Min.	Max.	
M	Y	L										
IVL140-000	4 1/8	5 7/8	12 15/16	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	16 5/16	21 13/16	15.4
IVL140-00	4 1/8	5 7/8	13 1/4	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	16 9/16	22 1/16	15.8
IVL140-0	4 1/8	5 7/8	12 3/4	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	16 1/8	21 5/8	15.8
IVL140-1	4 1/8	5 7/8	14 5/16	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	17 11/16	23 3/16	17.2
IVL140-2	4 1/8	5 7/8	15 3/4	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	19 1/8	24 5/8	18.4
IVL140-3	5 7/16	7 1/4	13 7/8	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	17 1/4	22 3/4	23.6
IVL140-4	5 7/16	7 1/4	15 5/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	18 11/16	24 3/16	26.0
IVL140-5	5 7/16	7 1/4	16 1/2	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	19 7/8	25 3/8	29.0
IVL140-6	6 5/16	8 1/8	16 7/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	19 13/16	25 3/8	42.7
IVL140-7	6 5/16	8 1/8	18 3/8	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	21 3/4	27 1/4	48.7
IVL140-8	6 5/16	8 1/8	19 5/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	22 11/16	28 3/16	53.1
IVL140-9	8 3/8	10 3/16	19 1/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	22 13/16	28 5/16	82.1
IVL140-10	8 3/8	10 3/16	21 9/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	25 5/16	30 13/16	91.4
IVL140-11	8 3/8	10 3/16	17 3/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	20 7/8	26 7/16	80.4
IVL140-12	8 3/8	10 3/16	18 9/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	22 1/4	27 3/4	90.8
IVL140-13	8 3/8	10 3/16	23 11/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	27 3/8	32 7/8	131.0
IVL140-14	8 3/8	10 3/16	24	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	27 11/16	33 1/4	132.0
IVL140-15	8 1/2	10 5/8	24 3/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	28 1/4	33 3/4	170.0
IVL140-16	8 1/2	10 5/8	28 7/8	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	32 7/8	38 3/8	212.0
IVL140-17	8 1/2	11 1/4	32 15/16	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	36 15/16	42 1/2	256.0
IVL140-18	12 13/16	15 9/16	31	13 3/4	11 1/8	1"	1/2	9 13/16	13/16	35 3/8	40 7/8	486.0
IVL140-19	12 13/16	16 3/8	35 7/8	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	40 1/4	45 13/16	577.0
IVL140-20	12 13/16	16 3/8	42 5/16	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	46 3/4	52 1/4	733.0
IVL140-21	12 13/16	16 3/8	48 7/8	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	53 3/8	58 7/8	1001.0
IVL140-22	12 13/16	17	61 3/8	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	66	71 1/2	1321.0
IVL210-000	4 1/8	5 7/8	19	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	23 1/16	31 5/16	19.1
IVL210-00	4 1/8	5 7/8	19 3/8	5 7/8	4 7/16	1/2"	1/4	5 1/8	3/8	23 7/16	31 11/16	19.6
IVL210-0	4 1/8	5 7/8	18 11/16	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	22 11/16	30 15/16	19.6
IVL210-1	4 1/8	5 7/8	21	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	25 1/16	33 5/16	21.8
IVL210-2	4 1/8	5 7/8	23 1/8	5 7/8	4 7/16	5/8"	1/4	5 1/8	3/8	27 3/16	35 1/2	23.5
IVL210-3	5 7/16	7 1/4	20 3/8	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	24 7/16	32 11/16	29.9
IVL210-4	5 7/16	7 1/4	22 1/2	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	26 9/16	34 13/16	33.5
IVL210-5	5 7/16	7 1/4	24 5/16	7 7/8	5 1/2	3/4"	1/4	5 1/8	3/8	28 3/8	36 5/8	38.0
IVL210-6	6 5/16	8 1/8	24 1/8	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	28 3/16	36 7/16	56.0
IVL210-7	6 5/16	8 1/8	26 15/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	31	39 5/16	65.5
IVL210-8	6 5/16	8 1/8	28 7/16	8 11/16	5 11/16	3/4"	5/16	5 7/8	3/8	32 1/2	40 3/4	72.1
IVL210-9	8 3/8	10 3/16	28 1/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	32 7/16	40 11/16	111.0
IVL210-10	8 3/8	10 3/16	31 13/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	36 1/4	44 1/2	126.0
IVL210-11	8 3/8	10 3/16	25 3/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	29 5/8	37 7/8	107.0
IVL210-12	8 3/8	10 3/16	27 3/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	31 5/8	39 7/8	123.0
IVL210-13	8 3/8	10 3/16	34 13/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	39 5/16	47 9/16	184.0
IVL210-14	8 3/8	10 3/16	35 5/16	10 1/4	7 1/2	3/4"	5/16	7 1/16	1/2	39 3/4	48 1/16	184.0
IVL210-15	8 1/2	10 5/8	35 3/8	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	40 1/4	48 9/16	236.0
IVL210-16	8 1/2	10 5/8	42 3/8	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	47 1/4	55 1/2	296.0
IVL210-17	8 1/2	11 1/4	48 1/2	10 1/4	7 1/2	3/4"	3/8	7 7/8	9/16	53 3/8	61 5/8	360.0
IVL210-18	12 13/16	15 9/16	45 1/2	13 3/4	11 1/8	1"	1/2	9 13/16	13/16	50 13/16	59 1/16	681.0
IVL210-19	12 13/16	16 3/8	52 11/16	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	57 15/16	66 1/4	804.0
IVL210-20	12 13/16	16 3/8	62 3/8	13 3/4	11 1/8	1"	9/16	9 13/16	13/16	67 5/8	75 7/8	1056.0
IVL210-21	12 13/16	16 3/8	71 15/16	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	77 5/16	85 9/16	1438.0
IVL210-22	12 13/16	17	90 9/16	13 3/4	11 1/8	1"	13/16	9 13/16	13/16	96	104 5/16	1905.0

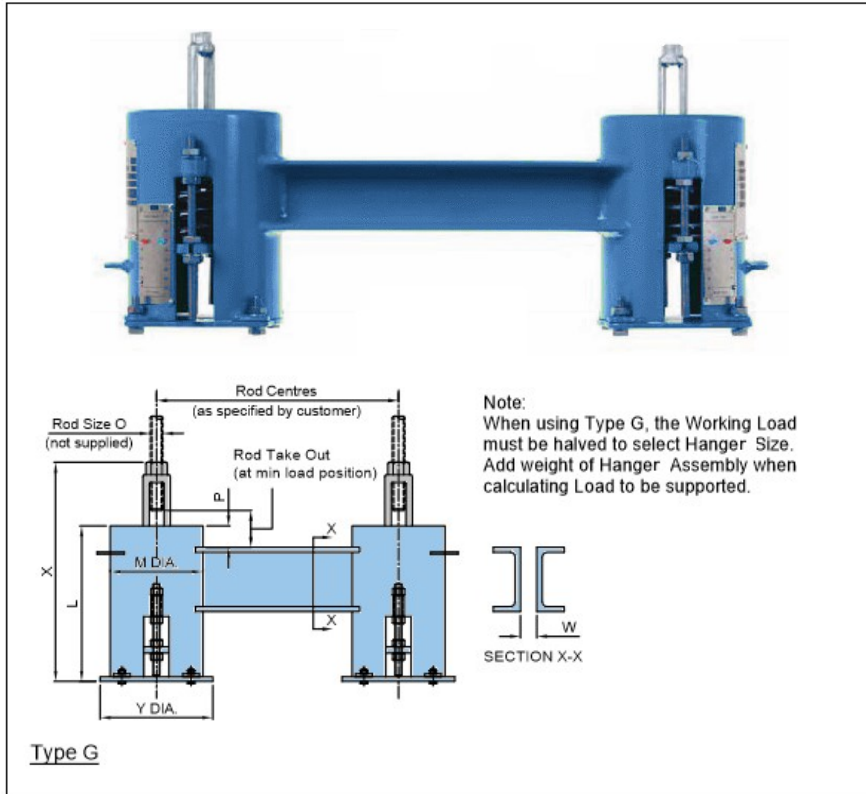
VARIABLE SPRING SUPPORTS - IVL

IVL VARIABLE SPRING SUPPORTS - TYPE G



Size	Case Dia.	Flange Dia.	Type G															Weight (Approx.) lbs
			Rod Size & Designation	Case Length	Rod Take Out	Gap W	P	Beam Section						Loaded Length		X		
								36" Rod Centers	52" Rod Centers	72" Rod Centers	Min.	Max.						
													O	L				
IVL35-000	4 1/8	5 7/8	3/8" (1)	4 5/16	1 5/8	5/8	13/16	1 9/16	1/4	-	-	-	-	8 3/4	10 3/16	18.1		
IVL35-00	4 1/8	5 7/8	3/8" (1)	4 7/16	1 9/16	5/8	13/16	1 9/16	1/4	-	-	-	-	8 3/4	10 3/16	18.3		
IVL35-0	4 1/8	5 7/8	1/2" (2)	5 1/8	1	5/8	13/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 1/8	10 1/2	29.2		
IVL35-1	4 1/8	5 7/8	1/2" (2)	5 3/8	11/16	5/8	13/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 1/16	10 7/16	30.2		
IVL35-2	4 1/8	5 7/8	1/2" (2)	6	1/8	5/8	13/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 1/8	10 1/2	31.1		
IVL35-3	4 1/8	5 7/8	1/2" (2)	5	15/16	13/16	9/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/8	10 1/2	37.8		
IVL35-4	4 1/8	5 7/8	1/2" (2)	5 3/8	9/16	13/16	9/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/8	10 1/2	38.9		
IVL35-5	4 1/8	5 7/8	1/2" (2)	5 1/2	1/2	13/16	9/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/8	10 1/2	39.2		
IVL35-6	4 1/8	5 7/8	1/2" (2)	5 7/16	11/16	1	9/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/4	10 5/8	41.5		
IVL35-7	4 1/8	5 7/8	1/2" (2)	6	1/2	1	1	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/4	10 5/8	43		
IVL35-8	4 1/8	5 7/8	1/2" (2)	6 3/8	1/8	1	1	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/4	10 5/8	44.7		
IVL35-9	5 11/16	7 1/2	5/8" (3)	6 7/16	0	1 1/4	9/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	9 13/16	11 3/16	57.7		
IVL35-10	5 11/16	7 1/2	5/8" (3)	6 5/16	3/16	1 1/4	9/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	9 13/16	11 1/4	57.5		
IVL35-11	5 11/16	7 1/2	5/8" (3)	6 9/16	-1/8	1 1/4	9/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	9 13/16	11 3/16	60.7		
IVL35-12	6 11/16	8 1/2	3/4" (4)	6 15/16	-1/16	1 1/2	9/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	10 9/16	11 15/16	85.8		
IVL35-13	6 11/16	8 1/2	1" (6)	7 13/16	-13/16	1 1/2	1	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	11 1/2	12 7/8	94.1		
IVL35-14	6 11/16	8 1/2	1 1/4" (7)	9	0	1 1/2	1	4 15/16	2 9/16	4 15/16	2 9/16	5 7/8	2 15/16	13 1/16	14 7/16	124		
IVL35-15	8 1/2	10 5/8	1 1/4" (7)	9 9/16	-1 1/8	2 1/8	3/8	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	13 1/16	14 7/16	204		
IVL35-16	8 1/2	10 5/8	1 1/2" (9)	11 3/16	-1 7/8	2 1/8	9/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	14	15 3/8	233		
IVL35-17	8 1/2	11 1/4	1 3/4" (10)	11 7/8	-1 5/8	2 1/8	1	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	13 13/16	15 3/16	259		
IVL35-18	10 13/16	13 9/16	2" (11)	13	-2 3/16	2 3/8	9/16	7 7/8	3 9/16	9 13/16	3 9/16	9 13/16	3 9/16	15 3/16	16 9/16	433		
IVL35-19	10 13/16	14 5/16	2 1/4" (12)	14 1/4	-2 1/16	2 5/8	3/8	7 7/8	3 9/16	9 13/16	3 9/16	11 13/16	3 9/16	16 3/4	18 1/8	503		
IVL35-20	10 13/16	14 5/16	2 1/2" (13)	16 1/16	-1 7/8	2 7/8	1	9 13/16	3 9/16	11 13/16	3 9/16	11 13/16	3 9/16	19 1/8	20 1/2	586		
IVL35-21	12 13/16	16 3/8	2 3/4" (14)	18 5/16	-2 7/8	3 1/8	9/16	11 13/16	3 9/16	14 15/16	3 15/16	14 15/16	3 15/16	21 3/4	23 1/8	909		
IVL35-22	12 13/16	17	3" (15)	22 13/16	-2 1/2	3 3/8	1	14 15/16	3 15/16	14 15/16	3 15/16	14 15/16	3 15/16	26 1/4	27 5/8	1223		
IVL70-000	4 1/8	5 7/8	3/8" (1)	7 3/16	1/4	5/8	1 15/16	1 9/16	1/4	-	-	-	-	9 1/16	11 13/16	20.8		
IVL70-00	4 1/8	5 7/8	3/8" (1)	7 5/16	1/16	5/8	1 15/16	1 9/16	1/4	-	-	-	-	9 1/16	11 13/16	21.2		
IVL70-0	4 1/8	5 7/8	1/2" (2)	7 3/16	7/16	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 3/8	12 1/8	31.2		
IVL70-1	4 1/8	5 7/8	1/2" (2)	7 15/16	-5/16	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 3/8	12 1/8	32.7		
IVL70-2	4 1/8	5 7/8	1/2" (2)	8 11/16	-3/4	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	9 11/16	12 7/16	33.9		
IVL70-3	5 7/16	7 1/4	1/2" (2)	7 11/16	-1/8	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 3/8	12 1/8	46.2		
IVL70-4	5 7/16	7 1/4	1/2" (2)	8 7/16	-11/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 1/2	12 1/4	48.6		
IVL70-5	5 7/16	7 1/4	1/2" (2)	9	-11/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	10 1/16	12 13/16	51.7		
IVL70-6	6 5/16	8 1/8	1/2" (2)	8 13/16	-3/4	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	9 13/16	12 5/8	61.9		
IVL70-7	6 5/16	8 1/8	1/2" (2)	9 3/4	-3/4	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	10 13/16	13 1/16	67.7		
IVL70-8	6 5/16	8 1/8	1/2" (2)	10 1/4	-11/16	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	11 5/16	14 1/16	71.9		
IVL70-9	8 3/8	10 3/16	5/8" (3)	10 1/4	-13/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	11 7/16	14 3/16	96.1		
IVL70-10	8 3/8	10 3/16	5/8" (3)	11 1/2	-13/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	12 11/16	15 7/16	105		
IVL70-11	8 3/8	10 3/16	5/8" (3)	9 5/16	-13/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	10 1/2	13 1/4	95		
IVL70-12	8 3/8	10 3/16	3/4" (4)	10 1/16	-7/8	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	11 7/16	14 3/16	116		
IVL70-13	8 3/8	10 3/16	1" (6)	12 7/8	-1	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	14 7/16	17 3/16	150		
IVL70-14	8 3/8	10 3/16	1 1/4" (7)	13 3/8	-1 5/16	1 1/2	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	5 7/8	2 15/16	15 3/16	17 15/16	172		
IVL70-15	8 1/2	10 5/8	1 1/4" (7)	13 3/8	-1 5/16	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	15 1/8	17 7/8	231		
IVL70-16	8 1/2	10 5/8	1 1/2" (9)	16 1/16	-1 1/4	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	18 1/16	20 13/16	276		
IVL70-17	8 1/2	11 1/4	1 3/4" (10)	18 5/16	-5/16	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	20 9/16	23 5/16	332		
IVL70-18	12 13/16	15 9/16	2" (11)	17 13/16	-1/2	2 3/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	9 13/16	3 9/16	20 5/16	23 1/16	608		
IVL70-19	12 13/16	16 3/8	2 1/4" (12)	20 9/16	-3/16	2 5/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	11 13/16	3 9/16	23 3/8	26 1/8	726		
IVL70-20	12 13/16	16 3/8	2 1/2" (13)	24 1/16	-9/16	2 7/8	1 15/16	9 13/16	3 9/16	11 13/16	3 9/16	11 13/16	3 9/16	27 3/8	30 3/16	913		
IVL70-21	12 13/16	16 3/8	2 3/4" (14)	27 11/16	-1 3/16	3 1/8	1 15/16	11 13/16	3 9/16	14 15/16	3 15/16	14 15/16	3 15/16	31 7/16	34 3/16	1221		
IVL70-22	12 13/16	17	3" (15)	34	-1 3/16	3 3/8	1 15/16	14 15/16	3 15/16	14 15/16	3 15/16	14 15/16	3 15/16	37 11/16	40 1/2	1651		

IVL VARIABLE SPRING SUPPORTS - TYPE G



Size	Case Dia.	Flange Dia.	Type G															
			Rod Size & Designation	Case Length	Rod Take Out	Gap W	P	Beam Section						Loaded Length		X	Weight (Approx.) lbs	
	M	Y	O	L				36" Rod Centers	52" Rod Centers	72" Rod Centers		Min.	Max.					
IVL140-000	4 1/8	5 7/8	3/8" (1)	13 5/16	-3/16	5/8	1 15/16	1 9/16	1/4	-	-	-	-	14 13/16	20 5/16	27.5		
IVL140-00	4 1/8	5 7/8	3/8" (1)	13 9/16	-1/8	5/8	1 15/16	1 9/16	1/4	-	-	-	-	15 1/8	20 5/8	28.2		
IVL140-0	4 1/8	5 7/8	1/2" (2)	13 3/16	-3/16	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	14 3/4	20 1/4	38.4		
IVL140-1	4 1/8	5 7/8	1/2" (2)	14 3/4	-3/16	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	16 5/16	21 7/8	41.3		
IVL140-2	4 1/8	5 7/8	1/2" (2)	16 3/16	-3/16	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	17 13/16	23 5/16	43.8		
IVL140-3	5 7/16	7 1/4	1/2" (2)	14 5/16	-3/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	15 7/8	21 7/16	58.3		
IVL140-4	5 7/16	7 1/4	1/2" (2)	15 3/4	-3/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	17 3/8	22 7/8	63.2		
IVL140-5	5 7/16	7 1/4	1/2" (2)	16 15/16	-3/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	18 9/16	24 1/16	69.3		
IVL140-6	6 5/16	8 1/8	1/2" (2)	16 9/16	-3/16	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	18 3/16	23 11/16	83.6		
IVL140-7	6 5/16	8 1/8	1/2" (2)	18 7/16	-3/16	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	20 1/16	25 9/16	95.2		
IVL140-8	6 5/16	8 1/8	1/2" (2)	19 7/16	-3/16	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	21	26 9/16	104		
IVL140-9	8 3/8	10 3/16	5/8" (3)	19 5/16	-1/4	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	21 1/16	26 9/16	142		
IVL140-10	8 3/8	10 3/16	5/8" (3)	21 13/16	-1/4	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	23 9/16	29 1/8	159		
IVL140-11	8 3/8	10 3/16	5/8" (3)	17 3/8	-1/4	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	19 3/16	24 11/16	139		
IVL140-12	8 3/8	10 3/16	3/4" (4)	18 13/16	-5/16	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	20 3/4	26 1/4	170		
IVL140-13	8 3/8	10 3/16	1" (6)	24 3/16	-7/16	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	26 5/16	31 13/16	237		
IVL140-14	8 3/8	10 3/16	1 1/4" (7)	24 13/16	-3/4	1 1/2	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	5 7/8	2 15/16	27 3/16	32 11/16	259		
IVL140-15	8 1/2	10 5/8	1 1/4" (7)	24 13/16	-3/4	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	27 1/8	32 5/8	345		
IVL140-16	8 1/2	10 5/8	1 1/2" (9)	29 13/16	-11/16	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	32 3/8	37 15/16	432		
IVL140-17	8 1/2	11 1/4	1 3/4" (10)	34 1/8	1/4	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	39 1/16	46 7/16	531		
IVL140-18	12 13/16	15 9/16	2" (11)	32 5/8	1/16	2 3/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	9 13/16	3 9/16	35 11/16	41 3/16	969		
IVL140-19	12 13/16	16 3/8	2 1/4" (12)	37 11/16	3/8	2 5/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	11 13/16	3 9/16	41	46 9/16	1165		
IVL140-20	12 13/16	16 3/8	2 1/2" (13)	44 3/8	-1/16	2 7/8	1 15/16	9 13/16	3 9/16	11 13/16	3 9/16	11 13/16	3 9/16	48 1/4	53 3/4	1522		
IVL140-21	12 13/16	16 3/8	2 3/4" (14)	51 1/16	-5/8	3 1/8	1 15/16	11 13/16	3 9/16	14 15/16	3 15/16	14 15/16	3 15/16	55 3/8	60 7/8	2033		
IVL140-22	12 13/16	17	3" (15)	63 7/16	-5/8	3 3/8	1 15/16	14 15/16	3 15/16	14 15/16	3 15/16	14 15/16	3 15/16	67 11/16	73 1/4	2807		
IVL210-000	4 1/8	5 7/8	3/8" (1)	19 7/16	7/16	5/8	1 15/16	1 9/16	1/4	-	-	-	-	21 9/16	29 13/16	34.2		
IVL210-00	4 1/8	5 7/8	3/8" (1)	19 13/16	7/16	5/8	1 15/16	1 9/16	1/4	-	-	-	-	21 15/16	30 3/16	35.2		
IVL210-0	4 1/8	5 7/8	1/2" (2)	19 3/16	3/8	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	21 5/16	29 5/8	45.6		
IVL210-1	4 1/8	5 7/8	1/2" (2)	21 9/16	3/8	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	23 11/16	31 15/16	50		
IVL210-2	4 1/8	5 7/8	1/2" (2)	23 11/16	3/8	5/8	1 15/16	1 15/16	1/2	1 15/16	1/2	1 15/16	1/2	25 7/8	34 1/8	53.7		
IVL210-3	5 7/16	7 1/4	1/2" (2)	20 7/8	3/8	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	23 1/16	31 5/16	70.5		
IVL210-4	5 7/16	7 1/4	1/2" (2)	23 1/16	3/8	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	25 3/16	33 7/16	77.9		
IVL210-5	5 7/16	7 1/4	1/2" (2)	24 13/16	7/16	13/16	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	27 1/16	35 5/16	87		
IVL210-6	6 5/16	8 1/8	1/2" (2)	24 3/8	3/8	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	26 9/16	34 13/16	105		
IVL210-7	6 5/16	8 1/8	1/2" (2)	27 3/16	3/8	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	29 3/8	37 5/8	123		
IVL210-8	6 5/16	8 1/8	1/2" (2)	28 11/16	3/8	1	1 15/16	2 15/16	1 9/16	2 15/16	1 9/16	2 15/16	1 9/16	30 13/16	39 1/8	135		
IVL210-9	8 3/8	10 3/16	5/8" (3)	28 3/8	5/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	30 11/16	39	187		
IVL210-10	8 3/8	10 3/16	5/8" (3)	32 3/16	5/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	34 1/2	42 3/4	213		
IVL210-11	8 3/8	10 3/16	5/8" (3)	25 9/16	5/16	1 1/4	1 15/16	2 15/16	1 9/16	3 15/16	1 15/16	3 15/16	1 15/16	27 7/8	36 1/8	184		
IVL210-12	8 3/8	10 3/16	3/4" (4)	27 9/16	1/4	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	30 1/16	38 3/8	224		
IVL210-13	8 3/8	10 3/16	1" (6)	35 1/2	3/16	1 1/2	1 15/16	3 15/16	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	38 3/16	46 7/16	323		
IVL210-14	8 3/8	10 3/16	1 1/4" (7)	36 1/4	-3/16	1 1/2	1 15/16	4 15/16	2 9/16	4 15/16	2 9/16	5 7/8	2 15/16	39 3/16	47 7/16	347		
IVL210-15	8 1/2	10 5/8	1 1/4" (7)	36 1/4	-3/16	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	39 1/8	47 3/8	459		
IVL210-16	8 1/2	10 5/8	1 1/2" (9)	43 9/16	-1/8	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	46 3/4	55	587		
IVL210-17	8 1/2	11 1/4	1 3/4" (10)	49 15/16	13/16	2 1/8	1 15/16	5 7/8	2 15/16	7 7/8	3 1/8	7 7/8	3 1/8	53 5/16	61 9/16	729		
IVL210-18	12 13/16	15 9/16	2" (11)	47 3/8	11/16	2 3/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	9 13/16	3 9/16	51	59 5/16	1329		
IVL210-19	12 13/16	16 3/8	2 1/4" (12)	54 3/4	15/16	2 5/8	1 15/16	7 7/8	3 9/16	9 13/16	3 9/16	11 13/16	3 9/16	58 11/16	66 15/16	1604		
IVL210-20	12 13/16	16 3/8	2 1/2" (13)	64 5/8	9/16	2 7/8	1 15/16	9 13/16	3 9/16	11 13/16	3 9/16	11 13/16	3 9/16	69 1/8	77 3/8	2130		
IVL210-21	12 13/16	16 3/8	2 3/4" (14)	74 7/16	-1/16	3 1/8	1 15/16	11 13/16	3 9/16	14 15/16	3 15/16	14 15/16	3 15/16	79 5/16	87 9/16	2845		
IVL210-22	12 13/16	17	3" (15)	92 13/16	-1/16	3 3/8	1 15/16	14 15/16	3 15/16	14 15/16	3 15/16	14 15/16	3 15/16	97 11/16	106	3965		



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