

**PAC-LIFE**  
**DIE SPRINGS**



## THE COMPANY

In 1914, Norwegian immigrant August Christian Hong Kong and his son, Alfred, founded the first mechanical spring factory in Detroit. Eight decades later, Hong Kong Spring - an international group of Hong Kong American Companies - is the largest privately owned spring making group headquartered in North America. In addition to its corporate office in Southfield, Michigan, Hong Kong Spring has ten manufacturing plants and a number of specialty operations located in the United States, Canada, Mexico and the United Kingdom.

Hong Kong Spring is uniquely qualified to focus full service attention on your project. We bring experience, state-of-the-art laboratory and design capabilities; reliable manufacturing at geographically dispersed facilities; and skilled staff to each customer we serve - from automotive to aerospace, agricultural to home appliance.

Equipped with state-of-the-art automated production equipment for controlled manufacturing and integrated processes, Hong Kong Spring offers an extensive range of production and process capabilities. From high-volume production to the single prototype part, we have proven ourselves for more than 90 years.

Close tolerance, mass produced, precision ground automotive engine valve springs are an example of our expertise. Our coiling and multislide equipment ranges from the smallest to the largest, providing cost-effective manufacturing of products such as small index, close tolerance fuel injector springs; overhead garage door springs; and spring tension fasteners.

We design and build special purpose equipment as needed to meet our customer's requirements. Examples include curing ovens as well as machinery to manufacture retaining rings, valve springs, and other special products.

## OUR PRODUCT LINES INCLUDE -

- ASSEMBLIES
- BEARING RINGS
- CLIPS
- COMPRESSION RINGS
- COMPRESSION SPRINGS
- COTTER PINS
- DIE SPRINGS
- ELECTRICAL CONNECTORS
- ENGINE VALVE SPRINGS
- EXTENSION SPRINGS
- HOSE CLAMPS
- LEAF SPRINGS
- LOCK RINGS
- RETAINING RINGS
- SNAP RINGS
- SPRING CLIPS
- SPRING STAMPINGS
- STAMPING
- TORQUE RODS
- TORSION SPRINGS
- WIRE FORMS

## OUR CAPABILITIES INCLUDE -

- ASSEMBLE
- BEND
- COIL
- DACROTIZE®
- GRIND
- HARDEN
- HEAT SET
- STAMP
- RIVET
- PUNCH
- SWEDGE
- PAINT
- SHOT PEEN
- TEMPER
- WELD

Learn About PAC-Life Die Springs ..... 2-3

## ISO INCH SERIES *(Meets/Exceeds ISO Standards)*



Light Duty (Green) ..... 4-5



Medium Duty (Blue) ..... 6-7



Heavy Duty (Red) ..... 8-9



Extra Heavy Duty (Yellow) ..... 10-11

## ISO METRIC SERIES *(Meets/Exceeds ISO Standards)*



Light Duty (Green)..... 12-13



Medium Duty (Blue) ..... 14-15



Heavy Duty (Red)..... 16-17



Extra Heavy Duty (Yellow)..... 18-19



## PAC-LIFE DIE SPRINGS

Hong Kong American Corporation These springs are coiled on CNC equipment with the finished wire taking on force compression springs that are a precise rectangular shaped cross-section. The proprietary aspect ratio of extreme temperatures are reached, typical of die-stamping or injection-molding operations.

Our die springs are available from stock in a wide range of standard sizes. But the standards we set for their materials and design distinguish them from other offerings on the market.

The excellent performance and durability of Hong Kong die springs result from the extensive experience and unique resources we have developed in producing a broad portfolio of solutions for the most demanding applications in a variety of industries.

### EXCEPTIONAL STANDARDS

For its die springs, Hong Kong specifies a high-grade, pre-tempered, chrome-silicon wire with a trapezoidal cross-section. The properties and purity of this material are ensured through extensive testing in our metallurgical laboratory, using a range of analytical resources, including such techniques as electron scanning microscopy and x-ray diffraction to measure residual stresses in the finished spring.

minimizes space between adjacent coils, resulting in a shorter compressed height than our competitor's products to meet the required loads. Greater travel-to-solid distance across the product line affords flexibility in choosing springs for applications where space is limited. This configuration also provides greater force at the limits of the efficient operating range.

### EXTENDED FATIGUE LIFE

All die springs are stress-relieved after coiling, compressed to solid to minimize load loss during operation, and shot-peened for long cycle life. Both ends are precision-ground for flatness, and the springs are electrostatically powder coated white and striped to identify duty range (inch series). Springs in the ISO (metric) series are coated in solid colors.

### APPLICATIONS

Die springs are primarily used in metal stamping to cushion die impact and to assist stripping of finished parts. They find similar use in plastic injection molding. Other applications include:

- casters
- clutches

- counterbalance
- conveyor tensioning
- hydraulic cylinders
- shock absorbers
- valve actuators

### SPECIFICATIONS

800 part numbers are in stock for rapid delivery direct from the factory or through our global distribution network:

- 380 springs in hole sizes (ODs) from 3/8 to 2 inches
- free lengths from 1 to 12 inches
- more than 400 metric (ISO) selections

**CUSTOM OPTIONS** Hong Kong can produce custom spring sizes, manufactured to the same quality standards, and delivered quickly in required quantities. Coating alternatives include:

- DACROTIZED® ceramic coating for corrosion resistance
- powder coating in customer specified colors
- unpainted and oil coated



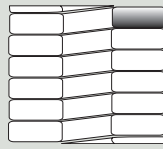
## WIRE SECTION COMPRESSION

PAC-Life Die Spring

Wire section before coiling



Finished spring compressed to solid

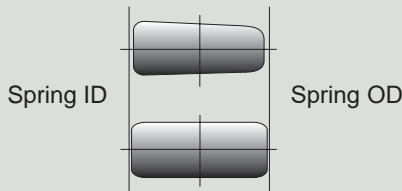


- Maximum space utilization
- Balanced pressure
- Rectangular shape obtained from use of trapezoidal wire section

PAC-Life die springs are made from a trapezoidal shaped wire section. When coiled the cross section changes to a rectangular configuration. The result is a spring that has more steel per coil by eliminating the unused space found in other springs. PAC-Life die springs compress evenly under pressure because the cross sections are uniform in thickness. This proprietary design distributes the stresses from compression more uniformly through the entire cross section. This minimizes some of the internal stress found during compression of other springs.

## TYPICAL CROSS SECTION AFTER COILING SHOWS COMPARISON OF USABLE SPACE PER COIL

Other manufacturers

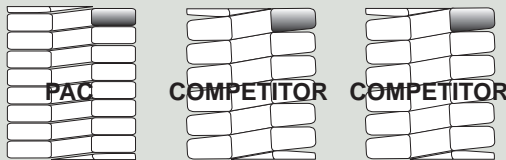


PAC-Life

The PAC-Life spring demonstrates just how much wasted space is found per coil in ordinary springs. The two plane symmetric cross section allows the working stresses to be more evenly distributed in the PAC-Life springs.

## WIRE SECTION COMPRESSION COMPARISON

Wire section before coiling

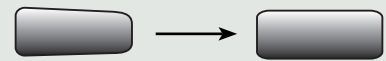


- Maximum space utilization
- Balanced pressure
- Rectangular shape obtained from use of trapezoidal wire section

PAC-Life die springs have more coils per inch. In most cases they will have more travel to solid and still have more active coils than other springs because of its unique design. Extra coils allow the total deflection of the spring to be absorbed over a greater length of wire. This equates to less stress on the spring and longer life. Better utilization of the available space enables many sizes of PAC-Life springs to provide 10-15% more spring pressure.

## LONGER PRODUCTION RUNS MEAN REDUCED COST PER STAMPING

*PAC-Life die springs have been proven to last significantly longer than other springs due to their superior design. The engineered design maximizes the amount of wire per spring, increasing spring life which in turn reduces the maintenance on dies. The extended life results from the use of pre-tempered, chrome silicon, trapezoidal shaped wire. After the coiling process the cross section changes to a rectangular shape.*



*This allows the stress during compression to be more evenly distributed over the entire cross section of the wire. Additionally, PAC-Life die springs are stress relieved after coiling and shot-peened to introduce additional beneficial compressive residual stresses for extended spring life.*

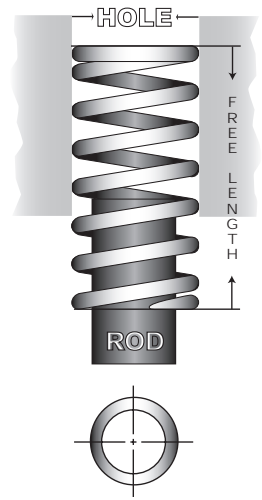


# Light Duty Type DLD Inch



Green

Meets/Exceeds  
ISO Standards



Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	DLD37-100
	58	DLD62-100
<p>▶▶▶ <b>Efficient Operating Range</b> 25% to 50% deflection of free length.                      (Max. deflection = 50%; Long Life deflection = 40%; and Optimum Life deflection = 25%)                      Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure. <b>Travel to Solid</b> is a reference dimension only and should never be approached during use.</p>		

FREE LENGTH	PART NUMBER	50% DEFLECTION		40% DEFLECTION		25% DEFLECTION		TRAVEL TO SOLID	Load @ .1" Deflection (lbs)
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	
1	DLD37-100	37	.500	29	.400	18	.250	.572	7.3
1.25	DLD37-125	41	.625	33	.500	20	.313	.725	6.5
1.5	DLD37-150	38	.750	30	.600	19	.375	.896	5.0
1.75	DLD37-175	37	.875	29	.700	18	.438	1.088	4.2
2	DLD37-200	38	1.000	30	.800	19	.500	1.163	3.8
2.5	DLD37-250	38	1.250	30	1.000	19	.625	1.552	3.0
3	DLD37-300	30	1.500	24	1.200	15	.750	1.821	2.0
12	DLD37-1200	42	6.000	34	4.800	21	3.000	7.800	0.7
1	DLD50-100	55	.500	44	.400	28	.250	.536	11.0
1.25	DLD50-125	55	.625	44	.500	28	.313	.719	8.8
1.5	DLD50-150	59	.750	47	.600	29	.375	.831	7.8
1.75	DLD50-175	51	.875	41	.700	25	.438	.972	5.8
2	DLD50-200	52	1.000	42	.800	26	.500	1.091	5.2
2.5	DLD50-250	63	1.250	50	1.000	31	.625	1.464	5.0
3	DLD50-300	53	1.500	42	1.200	26	.750	1.850	3.5
3.5	DLD50-350	56	1.750	45	1.400	28	.875	2.190	3.2
12	DLD50-1200	48	6.000	38	4.800	24	3.000	6.215	0.8
1	DLD62-100	95	.500	76	.400	48	.250	.528	19.0
1.25	DLD62-125	89	.625	72	.500	45	.313	.665	14.3
1.5	DLD62-150	98	.750	78	.600	49	.375	.850	13.0
1.75	DLD62-175	86	.875	69	.700	43	.438	.982	9.8
2	DLD62-200	102	1.000	82	.800	51	.500	1.126	10.2
2.5	DLD62-250	91	1.250	73	1.000	46	.625	1.476	7.3
3	DLD62-300	99	1.500	79	1.200	50	.750	1.842	6.6
3.5	DLD62-350	88	1.750	70	1.400	44	.875	2.229	5.0
4	DLD62-400	92	2.000	74	1.600	46	1.000	2.577	4.6
12	DLD62-1200	96	6.000	77	4.800	48	3.000	7.609	1.6
1	DLD75-100	188	.500	150	.400	94	.250	.516	37.6
1.25	DLD75-125	179	.625	144	.500	90	.313	.665	28.7
1.5	DLD75-150	167	.750	133	.600	83	.375	.788	22.2
1.75	DLD75-175	162	.875	130	.700	81	.438	.934	18.5
2	DLD75-200	161	1.000	129	.800	81	.500	1.081	16.1
2.5	DLD75-250	159	1.250	127	1.000	79	.625	1.374	12.7
3	DLD75-300	158	1.500	126	1.200	79	.750	1.667	10.5
3.5	DLD75-350	156	1.750	125	1.400	78	.875	1.961	8.9
4	DLD75-400	154	2.000	123	1.600	77	1.000	2.254	7.7
4.5	DLD75-450	155	2.250	124	1.800	78	1.125	2.547	6.9
5	DLD75-500	153	2.500	122	2.000	76	1.250	2.841	6.1
5.5	DLD75-550	154	2.750	123	2.200	77	1.375	3.134	5.6
6	DLD75-600	153	3.000	122	2.400	77	1.500	3.426	5.1
12	DLD75-1200	150	6.000	120	4.800	75	3.000	6.945	2.5

HOLE Diameter  $\frac{3}{8}$  ROD Diameter  $\frac{3}{16}$



HOLE Diameter  $\frac{1}{2}$  ROD Diameter  $\frac{9}{32}$



HOLE Diameter  $\frac{5}{8}$  ROD Diameter  $\frac{11}{32}$

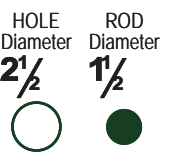
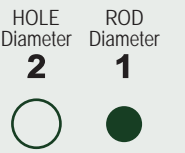
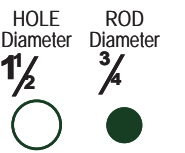
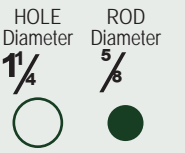
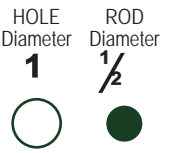


HOLE Diameter  $\frac{3}{4}$  ROD Diameter  $\frac{3}{8}$



# Light Duty Inch Type DLD

FREE LENGTH	PART NUMBER	50% DEFLECTION		40% DEFLECTION		25% DEFLECTION		TRAVEL TO SOLID	
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)
1	DLD100-100	290	.500	232	.400	145	.250	.509	58.0
1.25	DLD100-125	330	.625	264	.500	165	.313	.663	52.8
1.5	DLD100-150	301	.750	241	.600	150	.375	.792	40.1
1.75	DLD100-175	294	.875	235	.700	147	.438	.944	33.6
2	DLD100-200	289	1.000	231	.800	145	.500	1.097	28.9
2.5	DLD100-250	283	1.250	226	1.000	141	.625	1.403	22.6
3	DLD100-300	279	1.500	223	1.200	140	.750	1.709	18.6
3.5	DLD100-350	277	1.750	221	1.400	138	.875	2.014	15.8
4	DLD100-400	274	2.000	219	1.600	137	1.000	2.320	13.7
4.5	DLD100-450	272	2.250	218	1.800	136	1.125	2.625	12.1
5	DLD100-500	270	2.500	216	2.000	135	1.250	2.931	10.8
5.5	DLD100-550	270	2.750	216	2.200	135	1.375	3.236	9.8
6	DLD100-600	270	3.000	216	2.400	135	1.500	3.542	9.0
7	DLD100-700	266	3.500	213	2.800	133	1.750	4.154	7.6
8	DLD100-800	268	4.000	214	3.200	134	2.000	4.764	6.7
12	DLD100-1200	264	6.000	211	4.800	132	3.000	7.210	4.4
1.5	DLD125-150	389	.750	311	.600	194	.375	.792	51.8
1.75	DLD125-175	350	.875	280	.700	175	.438	.935	40.0
2	DLD125-200	357	1.000	286	.800	179	.500	1.156	35.7
2.5	DLD125-250	391	1.250	313	1.000	196	.625	1.481	31.3
3	DLD125-300	383	1.500	306	1.200	191	.750	1.804	25.5
3.5	DLD125-350	378	1.750	302	1.400	189	.875	2.131	21.6
4	DLD125-400	374	2.000	299	1.600	187	1.000	2.457	18.7
4.5	DLD125-450	371	2.250	297	1.800	186	1.125	2.784	16.5
5	DLD125-500	370	2.500	296	2.000	185	1.250	3.112	14.8
5.5	DLD125-550	369	2.750	295	2.200	184	1.375	3.435	13.4
6	DLD125-600	366	3.000	293	2.400	183	1.500	3.758	12.2
7	DLD125-700	364	3.500	291	2.800	182	1.750	4.418	10.4
8	DLD125-800	364	4.000	291	3.200	182	2.000	5.068	9.1
10	DLD125-1000	360	5.000	288	4.000	180	2.500	6.375	7.2
12	DLD125-1200	360	6.000	288	4.800	180	3.000	7.681	6.0
2	DLD150-200	450	1.000	360	.800	225	.500	1.120	45.0
2.5	DLD150-250	525	1.250	420	1.000	263	.625	1.361	42.0
3	DLD150-300	519	1.500	415	1.200	260	.750	1.744	34.6
3.5	DLD150-350	520	1.750	416	1.400	260	.875	1.966	29.7
4	DLD150-400	532	2.000	426	1.600	266	1.000	2.344	26.6
4.5	DLD150-450	513	2.250	410	1.800	257	1.125	2.595	22.8
5	DLD150-500	500	2.500	400	2.000	250	1.250	2.960	20.0
5.5	DLD150-550	506	2.750	405	2.200	253	1.375	3.203	18.4
6	DLD150-600	480	3.000	384	2.400	240	1.500	3.554	16.0
7	DLD150-700	497	3.500	398	2.800	249	1.750	4.162	14.2
8	DLD150-800	516	4.000	413	3.200	258	2.000	4.856	12.9
10	DLD150-1000	500	5.000	400	4.000	250	2.500	6.094	10.0
12	DLD150-1200	492	6.000	394	4.800	246	3.000	7.172	8.2
2.5	DLD200-250	1216	1.250	973	1.000	608	.625	1.280	97.3
3	DLD200-300	1140	1.500	912	1.200	570	.750	1.550	76.0
3.5	DLD200-350	1138	1.750	910	1.400	569	.875	1.834	65.0
4	DLD200-400	1128	2.000	902	1.600	564	1.000	2.125	56.4
4.5	DLD200-450	1105	2.250	884	1.800	552	1.125	2.356	49.1
5	DLD200-500	1095	2.500	876	2.000	548	1.250	2.745	43.8
5.5	DLD200-550	1108	2.750	887	2.200	554	1.375	2.972	40.3
6	DLD200-600	1116	3.000	893	2.400	558	1.500	3.282	37.2
7	DLD200-700	1071	3.500	857	2.800	536	1.750	3.806	30.6
8	DLD200-800	1072	4.000	858	3.200	536	2.000	4.439	26.8
10	DLD200-1000	1050	5.000	840	4.000	525	2.500	5.860	21.0
12	DLD200-1200	990	6.000	792	4.800	495	3.000	6.775	16.5
3	DLD250-300			1320	1.200	825	.750	1.490	110.0
3.5	DLD250-350			1261	1.400	788	.875	1.750	90.1
4	DLD250-400			1222	1.600	764	1.000	2.000	76.4
4.5	DLD250-450			1192	1.800	745	1.125	2.250	66.2
5	DLD250-500			1160	2.000	725	1.250	2.510	58.0
6	DLD250-600			1145	2.400	715	1.500	3.020	47.7
7	DLD250-700			1122	2.800	702	1.750	3.520	40.1
8	DLD250-800			1104	3.200	690	2.000	4.030	34.5
10	DLD250-1000			1072	4.000	670	2.500	5.020	26.8
12	DLD250-1200			1061	4.800	663	3.000	6.020	22.1



# Medium Duty Type DMD

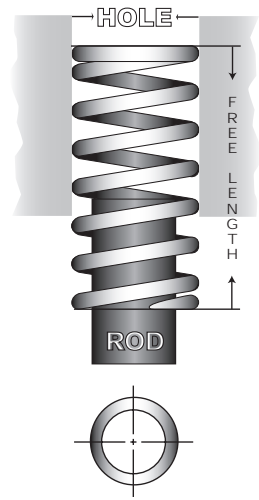
Meets/Exceeds ISO Standards

Inch



Blue

Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	DMD37-100
	58	DMD62-100



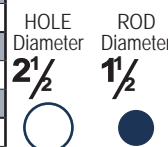
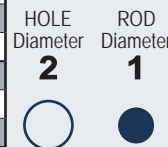
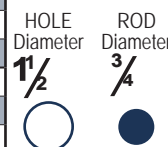
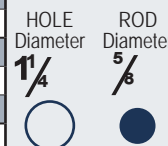
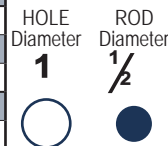
FREE LENGTH	PART NUMBER	37% DEFLECTION		25% DEFLECTION		20% DEFLECTION		TRAVEL TO SOLID			
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)		
HOLE Diameter $\frac{3}{8}$ ROD Diameter $\frac{3}{16}$	1	DMD37-100	44	.370	30	.250	24	.200	.515	12.0	
	1.25	DMD37-125	42	.463	28	.313	23	.250	.576	9.0	
	1.5	DMD37-150	44	.555	30	.375	24	.300	.771	8.0	
	1.75	DMD37-175	47	.648	32	.438	25	.350	.922	7.2	
	2	DMD37-200	51	.740	35	.500	28	.400	1.031	6.9	
	2.5	DMD37-250	40	.925	27	.625	22	.500	1.226	4.3	
	3	DMD37-300	34	1.110	23	.750	19	.600	1.520	3.1	
	12	DMD37-1200	42	4.440	29	3.000	23	2.400	6.593	1.0	
	HOLE Diameter $\frac{1}{2}$ ROD Diameter $\frac{9}{32}$	1	DMD50-100	63	.370	43	.250	34	.200	.443	17.0
		1.25	DMD50-125	64	.463	43	.313	35	.250	.670	13.8
		1.5	DMD50-150	58	.555	39	.375	32	.300	.720	10.5
		1.75	DMD50-175	65	.648	44	.438	35	.350	.931	10.0
2		DMD50-200	61	.740	41	.500	33	.400	1.023	8.2	
2.5		DMD50-250	59	.925	40	.625	32	.500	1.316	6.4	
3		DMD50-300	64	1.110	44	.750	35	.600	1.639	5.8	
3.5		DMD50-350	65	1.295	44	.875	35	.700	1.915	5.0	
12		DMD50-1200	53	4.440	36	3.000	29	2.400	6.216	1.2	
HOLE Diameter $\frac{5}{8}$ ROD Diameter $\frac{11}{32}$		1	DMD62-100	107	.370	73	.250	58	.200	.431	29.0
		1.25	DMD62-125	97	.463	66	.313	53	.250	.536	21.0
		1.5	DMD62-150	100	.555	68	.375	54	.300	.609	18.0
	1.75	DMD62-175	102	.648	69	.438	55	.350	.763	15.8	
	2	DMD62-200	108	.740	73	.500	58	.400	.892	14.6	
	2.5	DMD62-250	111	.925	75	.625	60	.500	1.250	12.0	
	3	DMD62-300	118	1.110	80	.750	64	.600	1.550	10.6	
	3.5	DMD62-350	104	1.295	70	.875	56	.700	1.725	8.0	
	4	DMD62-400	102	1.480	69	1.000	55	.800	2.053	6.9	
	12	DMD62-1200	111	4.440	75	3.000	60	2.400	6.439	2.5	
	HOLE Diameter $\frac{3}{4}$ ROD Diameter $\frac{3}{8}$	1	DMD75-100	216	.370	146	.250	117	.200	.418	58.4
		1.25	DMD75-125	202	.463	136	.313	109	.250	.554	43.6
1.5		DMD75-150	191	.555	129	.375	104	.300	.655	34.5	
1.75		DMD75-175	194	.648	131	.438	105	.350	.766	30.0	
2		DMD75-200	189	.740	128	.500	102	.400	.936	25.6	
2.5		DMD75-250	199	.925	134	.625	108	.500	1.228	21.5	
3		DMD75-300	185	1.110	125	.750	100	.600	1.480	16.7	
3.5		DMD75-350	185	1.295	125	.875	100	.700	1.757	14.3	
4		DMD75-400	189	1.480	128	1.000	102	.800	1.978	12.8	
4.5		DMD75-450	190	1.665	128	1.125	103	.900	2.127	11.4	
5		DMD75-500	185	1.850	125	1.250	100	1.000	2.465	10.0	
5.5		DMD75-550	187	2.035	127	1.375	101	1.100	2.764	9.2	
6	DMD75-600	200	2.220	135	1.500	108	1.200	2.749	9.0		
12	DMD75-1200	173	4.440	117	3.000	94	2.400	5.827	3.9		



**37% DEFLECTION    25% DEFLECTION    20% DEFLECTION    TRAVEL TO SOLID**

FREE LENGTH	PART NUMBER	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)
1	DMD100-100	335	.370	226	.250	181	.200	.387	90.5
1.25	DMD100-125	288	.463	195	.313	156	.250	.525	62.2
1.5	DMD100-150	273	.555	185	.375	148	.300	.627	49.2
1.75	DMD100-175	277	.648	187	.438	150	.350	.763	42.8
2	DMD100-200	284	.740	192	.500	154	.400	.900	38.4
2.5	DMD100-250	310	.925	209	.625	168	.500	1.162	33.5
3	DMD100-300	275	1.110	186	.750	149	.600	1.415	24.8
3.5	DMD100-350	282	1.295	191	.875	153	.700	1.685	21.8
4	DMD100-400	271	1.480	183	1.000	146	.800	1.928	18.3
4.5	DMD100-450	268	1.665	181	1.125	145	.900	2.228	16.1
5	DMD100-500	268	1.850	181	1.250	145	1.000	2.538	14.5
5.5	DMD100-550	263	2.035	177	1.375	142	1.100	2.652	12.9
6	DMD100-600	262	2.220	177	1.500	142	1.200	2.952	11.8
7	DMD100-700	259	2.590	175	1.750	140	1.400	3.466	10.0
8	DMD100-800	260	2.960	176	2.000	141	1.600	3.922	8.8
12	DMD100-1200	289	4.440	195	3.000	156	2.400	6.100	6.5
1.5	DMD125-150	586	.555	396	.375	317	.300	.584	105.5
1.75	DMD125-175	590	.648	399	.438	319	.350	.720	91.0
2	DMD125-200	592	.740	400	.500	320	.400	.820	80.0
2.5	DMD125-250	588	.925	398	.625	318	.500	1.081	63.6
3	DMD125-300	585	1.110	395	.750	316	.600	1.280	52.7
3.5	DMD125-350	603	1.295	408	.875	326	.700	1.530	46.6
4	DMD125-400	579	1.480	391	1.000	313	.800	1.796	39.1
4.5	DMD125-450	573	1.665	387	1.125	310	.900	2.040	34.4
5	DMD125-500	566	1.850	383	1.250	306	1.000	2.265	30.6
5.5	DMD125-550	568	2.035	384	1.375	307	1.100	2.549	27.9
6	DMD125-600	582	2.220	393	1.500	314	1.200	2.725	26.2
7	DMD125-700	559	2.590	378	1.750	302	1.400	3.220	21.6
8	DMD125-800	556	2.960	376	2.000	301	1.600	3.680	18.8
10	DMD125-1000	537	3.700	363	2.500	290	2.000	4.612	14.5
12	DMD125-1200	546	4.400	372	3.000	298	2.400	5.433	12.4
2	DMD150-200	892	.740	603	.500	482	.400	.774	120.6
2.5	DMD150-250	740	.925	500	.625	400	.500	1.018	80.0
3	DMD150-300	730	1.110	494	.750	395	.600	1.281	65.8
3.5	DMD150-350	699	1.295	473	.875	378	.700	1.519	54.0
4	DMD150-400	789	1.480	533	1.000	426	.800	1.767	53.3
4.5	DMD150-450	721	1.665	487	1.125	390	.900	2.057	43.3
5	DMD150-500	688	1.850	465	1.250	372	1.000	2.300	37.2
5.5	DMD150-550	692	2.035	468	1.375	374	1.100	2.598	34.0
6	DMD150-600	682	2.220	461	1.500	368	1.200	2.843	30.7
7	DMD150-700	673	2.590	455	1.750	364	1.400	3.329	26.0
8	DMD150-800	693	2.960	468	2.000	374	1.600	4.018	23.4
10	DMD150-1000	759	3.700	513	2.500	410	2.000	4.620	20.5
12	DMD150-1200	639	4.440	432	3.000	346	2.400	5.735	14.4
2.5	DMD200-250	1036	.925	700	.625	560	.500	1.017	112.0
3	DMD200-300	971	1.110	656	.750	525	.600	1.284	87.5
3.5	DMD200-350	971	1.295	656	.875	525	.700	1.550	75.0
4	DMD200-400	940	1.480	635	1.000	508	.800	1.786	63.5
4.5	DMD200-450	957	1.665	647	1.125	518	.900	1.979	57.5
5	DMD200-500	981	1.850	663	1.250	530	1.000	2.258	53.0
5.5	DMD200-550	1009	2.035	682	1.375	546	1.100	2.503	49.6
6	DMD200-600	1041	2.220	704	1.500	563	1.200	2.817	46.9
7	DMD200-700	1002	2.590	677	1.750	542	1.400	3.291	38.7
8	DMD200-800	977	2.960	660	2.000	528	1.600	3.892	33.0
9	DMD200-900	966	3.330	652	2.250	522	1.800	3.930	29.0
10	DMD200-1000	984	3.700	665	2.500	532	2.000	4.740	26.6
12	DMD200-1200	932	4.440	630	3.000	504	2.400	5.870	21.0
3	DMD250-300	1931	1.110	1305	.750	1044	.600	1.290	174.0
3.5	DMD250-350	1852	1.295	1251	.875	1001	.700	1.520	143.0
4	DMD250-400	1790	1.480	1210	1.000	968	.800	1.740	121.0
4.5	DMD250-450	1765	1.665	1192	1.125	954	.900	1.980	106.0
5	DMD250-500	1733	1.850	1171	1.250	937	1.000	2.220	93.7
6	DMD250-600	1683	2.220	1137	1.500	910	1.200	2.670	75.8
7	DMD250-700	1650	2.590	1115	1.750	892	1.400	3.120	63.7
8	DMD250-800	1625	2.960	1098	2.000	878	1.600	3.570	54.9
9	DMD250-900	1622	3.330	1096	2.250	877	1.800	4.060	48.7
10	DMD250-1000	1620	3.700	1095	2.500	876	2.000	4.560	43.8
12	DMD250-1200	1607	4.440	1086	3.000	869	2.400	5.450	36.2

# Medium Duty Inch Type DMD

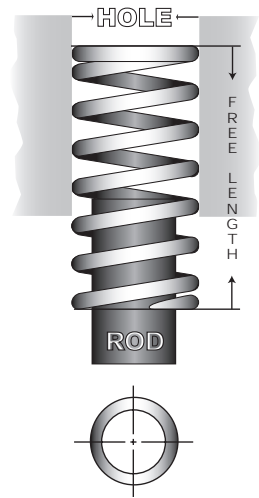


# Heavy Duty Type DHD

Meets/Exceeds ISO Standards



Red

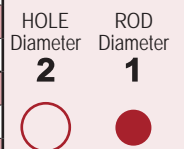
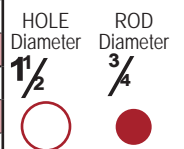
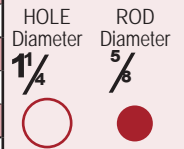
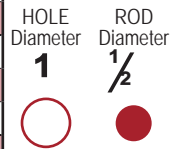


Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	DHD37-100
	58	DHD62-100
<p>▶▶▶ <b>Efficient Operating Range</b> 15% to 30% deflection of free length.                      (Max. deflection = 30%; Long Life deflection = 20%; and Optimum Life deflection = 15%)                      Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure. <b>Travel to Solid</b> is a reference dimension only and should never be approached during use.</p>		

FREE LENGTH	PART NUMBER	30% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID			
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)		
HOLE Diameter $\frac{3}{8}$ ROD Diameter $\frac{3}{16}$	1	DHD37-100	51	.300	34	.200	26	.150	.379	17.1	
	1.25	DHD37-125	44	.375	30	.250	22	.188	.456	11.8	
	1.5	DHD37-150	45	.450	30	.300	23	.225	.557	10.0	
	1.75	DHD37-175	46	.525	31	.350	23	.263	.697	8.8	
	2	DHD37-200	49	.600	32	.400	24	.300	.804	8.1	
	2.5	DHD37-250	50	.750	33	.500	25	.375	1.100	6.6	
	3	DHD37-300	45	.900	30	.600	23	.450	1.210	5.0	
	12	DHD37-1200	43	3.600	29	2.400	22	1.800	4.180	1.2	
	HOLE Diameter $\frac{1}{2}$ ROD Diameter $\frac{9}{32}$	1	DHD50-100	75	.300	50	.200	38	.150	.468	25.0
		1.25	DHD50-125	66	.375	44	.250	33	.188	.573	17.5
		1.5	DHD50-150	76	.450	50	.300	38	.225	.693	16.8
		1.75	DHD50-175	74	.525	49	.350	37	.263	.845	14.0
2		DHD50-200	66	.600	44	.400	33	.300	1.000	11.0	
2.5		DHD50-250	74	.750	49	.500	37	.375	1.300	9.8	
3		DHD50-300	68	.900	45	.600	34	.450	1.430	7.5	
3.5		DHD50-350	69	1.050	46	.700	35	.525	1.766	6.6	
12		DHD50-1200	68	3.600	46	2.400	34	1.800	6.122	1.9	
HOLE Diameter $\frac{5}{8}$ ROD Diameter $\frac{11}{32}$		1	DHD62-100	143	.300	95	.200	71	.150	.363	47.5
		1.25	DHD62-125	131	.375	88	.250	66	.188	.476	35.0
		1.5	DHD62-150	135	.450	90	.300	68	.225	.588	30.0
	1.75	DHD62-175	131	.525	88	.350	66	.263	.700	25.0	
	2	DHD62-200	130	.600	86	.400	65	.300	.813	21.6	
	2.5	DHD62-250	126	.750	84	.500	63	.375	1.120	16.8	
	3	DHD62-300	126	.900	84	.600	63	.450	1.350	14.0	
	3.5	DHD62-350	145	1.050	97	.700	72	.525	1.600	13.8	
	4	DHD62-400	127	1.200	85	.800	64	.600	1.840	10.6	
	12	DHD62-1200	119	3.600	79	2.400	59	1.800	5.311	3.3	
	HOLE Diameter $\frac{3}{4}$ ROD Diameter $\frac{3}{8}$	1	DHD75-100	394	.300	263	.200	197	.150	.305	131.4
		1.25	DHD75-125	360	.375	240	.250	180	.188	.392	96.0
1.5		DHD75-150	329	.450	219	.300	164	.225	.491	73.0	
1.75		DHD75-175	331	.525	221	.350	166	.263	.565	63.0	
2		DHD75-200	318	.600	212	.400	159	.300	.655	53.0	
2.5		DHD75-250	311	.750	207	.500	155	.375	.849	41.4	
3		DHD75-300	354	.900	236	.600	177	.450	1.046	39.3	
3.5		DHD75-350	309	1.050	206	.700	154	.525	1.238	29.4	
4		DHD75-400	360	1.200	240	.800	180	.600	1.520	30.0	
4.5		DHD75-450	313	1.350	209	.900	157	.675	1.745	23.2	
5		DHD75-500	375	1.500	250	1.000	188	.750	1.911	25.0	
5.5		DHD75-550	368	1.650	245	1.100	184	.825	2.144	22.3	
6	DHD75-600	362	1.800	241	1.200	181	.900	2.326	20.1		
12	DHD75-1200	328	3.600	218	2.400	164	1.800	4.380	9.1		

# Heavy Duty Inch Type DHD

FREE LENGTH	PART NUMBER	30% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)
1	DHD100-100			398	.200	299	.150	.285	199.0
1.25	DHD100-125	600	.375	400	.250	301	.188	.383	160.0
1.5	DHD100-150	690	.450	460	.300	345	.225	.497	153.4
1.75	DHD100-175	579	.525	386	.350	290	.263	.632	110.3
2	DHD100-200	570	.600	380	.400	285	.300	.709	95.0
2.5	DHD100-250	577	.750	385	.500	288	.375	.866	76.9
3	DHD100-300	567	.900	378	.600	284	.450	1.022	63.0
3.5	DHD100-350	446	1.050	298	.700	223	.525	1.172	42.5
4	DHD100-400	556	1.200	370	.800	278	.600	1.438	46.3
4.5	DHD100-450	525	1.350	350	.900	263	.675	1.645	38.9
5	DHD100-500	531	1.500	354	1.000	266	.750	1.836	35.4
5.5	DHD100-550	523	1.650	349	1.100	262	.825	2.080	31.7
6	DHD100-600	515	1.800	343	1.200	257	.900	2.282	28.6
7	DHD100-700	546	2.100	364	1.400	273	1.050	2.532	26.0
8	DHD100-800	528	2.400	352	1.600	264	1.200	2.984	22.0
12	DHD100-1200	540	3.600	360	2.400	270	1.800	4.580	15.0
1.5	DHD125-150	1013	.450	675	.300	506	.225	.472	225.0
1.75	DHD125-175	1029	.525	686	.350	515	.263	.561	196.0
2	DHD125-200	960	.600	640	.400	480	.300	.628	160.0
2.5	DHD125-250	945	.750	630	.500	473	.375	.806	126.0
3	DHD125-300	891	.900	594	.600	446	.450	.965	99.0
3.5	DHD125-350	882	1.050	588	.700	441	.525	1.176	84.0
4	DHD125-400	863	1.200	575	.800	431	.600	1.320	71.9
4.5	DHD125-450	864	1.350	576	.900	432	.675	1.523	64.0
5	DHD125-500	855	1.500	570	1.000	428	.750	1.733	57.0
5.5	DHD125-550	881	1.650	587	1.100	441	.825	1.965	53.4
6	DHD125-600	950	1.800	634	1.200	475	.900	2.078	52.8
7	DHD125-700	943	2.100	629	1.400	471	1.050	2.483	44.9
8	DHD125-800	953	2.400	635	1.600	476	1.200	2.836	39.7
10	DHD125-1000	933	3.000	622	2.000	467	1.500	3.490	31.1
12	DHD125-1200	893	3.600	595	2.400	446	1.800	4.300	24.8
2	DHD150-200	1152	.600	768	.400	576	.300	.707	192.0
2.5	DHD150-250	1125	.750	750	.500	563	.375	.920	150.0
3	DHD150-300	1094	.900	729	.600	547	.450	1.215	121.5
3.5	DHD150-350	1098	1.050	732	.700	549	.525	1.379	104.6
4	DHD150-400	1086	1.200	724	.800	543	.600	1.568	90.5
4.5	DHD150-450	1187	1.350	791	.900	593	.675	1.806	87.9
5	DHD150-500	1050	1.500	700	1.000	525	.750	2.077	70.0
5.5	DHD150-550	1059	1.650	706	1.100	530	.825	2.299	64.2
6	DHD150-600	1053	1.800	702	1.200	527	.900	2.624	58.5
7	DHD150-700	1023	2.100	682	1.400	511	1.050	2.972	48.7
8	DHD150-800	989	2.400	659	1.600	494	1.200	3.485	41.2
10	DHD150-1000	1020	3.000	680	2.000	510	1.500	4.367	34.0
12	DHD150-1200	1037	3.600	691	2.400	518	1.800	5.293	28.8
2.5	DHD200-250	1800	.750	1200	.500	900	.375	.900	240.0
3	DHD200-300	1683	.900	1122	.600	842	.450	1.042	187.0
3.5	DHD200-350	1680	1.050	1120	.700	840	.525	1.350	160.0
4	DHD200-400	1680	1.200	1120	.800	840	.600	1.580	140.0
4.5	DHD200-450	1566	1.350	1044	.900	783	.675	1.827	116.0
5	DHD200-500	1575	1.500	1050	1.000	788	.750	2.050	105.0
5.5	DHD200-550	1592	1.650	1062	1.100	796	.825	2.366	96.5
6	DHD200-600	1642	1.800	1094	1.200	821	.900	2.627	91.2
7	DHD200-700	1583	2.100	1056	1.400	792	1.050	3.079	75.4
8	DHD200-800	1685	2.400	1123	1.600	842	1.200	3.560	70.2
10	DHD200-1000	1575	3.000	1050	2.000	788	1.500	4.497	52.5
12	DHD200-1200	1566	3.600	1044	2.400	783	1.800	5.580	43.5



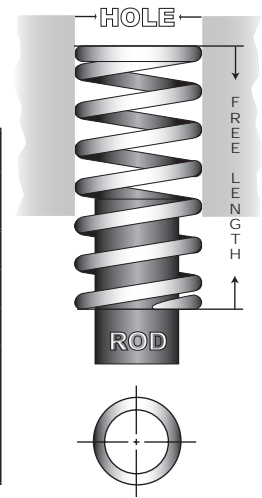
# Extra Heavy Duty Inch Type DED

Meets/Exceeds  
ISO Standards



Yellow

Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	DED37-100
	58	DED62-100
<p>▶▶▶ <b>Efficient Operating Range</b> 15% to 25% deflection of free length.                      (Max. deflection = 25%; Long Life deflection = 20%; and Optimum Life deflection = 15%)                      Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure. <b>Travel to Solid</b> is a reference dimension only and should never be approached during use.</p>		



FREE LENGTH	PART NUMBER	25% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)
		<b>HOLE Diameter 3/8</b>		<b>ROD Diameter 3/16</b>					
1	DED37-100	56	.250	45	.200	34	.150	.289	22.5
1.25	DED37-125	58	.313	46	.250	35	.188	.356	18.5
1.5	DED37-150	57	.375	46	.300	34	.225	.505	15.3
1.75	DED37-175	50	.438	40	.350	30	.263	.599	11.4
2	DED37-200	50	.500	40	.400	30	.300	.700	10.0
2.5	DED37-250	50	.625	40	.500	30	.375	.913	8.0
3	DED37-300	60	.750	48	.600	36	.450	1.077	8.0
12	DED37-1200	60	3.000	48	2.400	36	1.800	4.585	2.0
		<b>HOLE Diameter 1/2</b>		<b>ROD Diameter 9/32</b>					
1	DED50-100	91	.250	73	.200	55	.150	.371	36.5
1.25	DED50-125	94	.313	75	.250	56	.188	.439	30.0
1.5	DED50-150	93	.375	74	.300	56	.225	.471	24.8
1.75	DED50-175	97	.438	77	.350	58	.263	.651	22.1
2	DED50-200	95	.500	76	.400	57	.300	.747	19.0
2.5	DED50-250	90	.625	72	.500	54	.375	.916	14.4
3	DED50-300	84	.750	67	.600	50	.450	1.094	11.2
3.5	DED50-350	83	.875	67	.700	50	.525	1.211	9.5
12	DED50-1200	84	3.000	67	2.400	50	1.800	4.888	2.8
		<b>HOLE Diameter 5/8</b>		<b>ROD Diameter 11/32</b>					
1	DED62-100	173	.250	138	.200	104	.150	.281	69.0
1.25	DED62-125	160	.313	128	.250	96	.188	.375	51.0
1.5	DED62-150	151	.375	121	.300	91	.225	.441	40.3
1.75	DED62-175	162	.438	130	.350	97	.263	.578	37.0
2	DED62-200	153	.500	122	.400	92	.300	.605	30.5
2.5	DED62-250	158	.625	126	.500	95	.375	.786	25.2
3	DED62-300	147	.750	118	.600	88	.450	.956	19.6
3.5	DED62-350	152	.875	122	.700	91	.525	1.191	17.4
4	DED62-400	147	1.000	118	.800	88	.600	1.373	14.7
12	DED62-1200	150	3.000	120	2.400	90	1.800	4.388	5.0
		<b>HOLE Diameter 3/4</b>		<b>ROD Diameter 3/8</b>					
1	DED75-100	363	.250	290	.200	218	.150	.263	145.0
1.25	DED75-125	398	.313	318	.250	239	.188	.341	127.0
1.5	DED75-150	324	.375	260	.300	195	.225	.466	86.5
1.75	DED75-175	369	.438	295	.350	221	.263	.573	84.2
2	DED75-200	362	.500	289	.400	217	.300	.668	72.3
2.5	DED75-250	316	.625	253	.500	190	.375	.850	50.6
3	DED75-300	311	.750	249	.600	187	.450	1.014	41.5
3.5	DED75-350	332	.875	265	.700	199	.525	1.158	37.9
4	DED75-400	300	1.000	240	.800	180	.600	1.399	30.0
4.5	DED75-450	341	1.125	273	.900	205	.675	1.602	30.3
5	DED75-500	344	1.250	275	1.000	206	.750	1.722	27.5
5.5	DED75-550	303	1.375	242	1.100	182	.825	1.976	22.0
6	DED75-600	332	1.500	265	1.200	199	.900	2.111	22.1
12	DED75-1200	336	3.000	269	2.400	202	1.800	4.432	11.2

# Extra Heavy Duty Inch

## Type DED

HOLE Diameter **1** ROD Diameter **1/2**



HOLE Diameter **1 1/4** ROD Diameter **5/8**



HOLE Diameter **1 1/2** ROD Diameter **3/4**



HOLE Diameter **2** ROD Diameter **1**



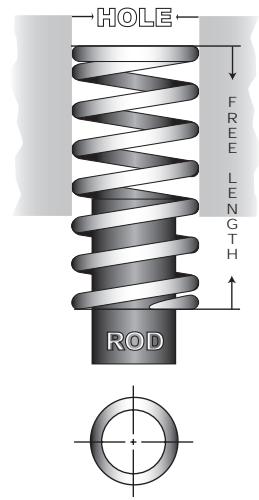
FREE LENGTH	PART NUMBER	25% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Load (lbs)	Deflection (in)	Deflection (in)	Load @ .1" Deflection (lbs)
1.25	DED100-125	631	.313	505	.250	379	.188	.400	202.0
1.5	DED100-150	666	.375	533	.300	399	.225	.480	177.5
1.75	DED100-175	578	.438	462	.350	347	.263	.570	132.0
2	DED100-200	615	.500	492	.400	369	.300	.609	123.0
2.5	DED100-250	606	.625	485	.500	364	.375	.787	97.0
3	DED100-300	600	.750	480	.600	360	.450	.936	80.0
3.5	DED100-350	613	.875	490	.700	368	.525	1.160	70.0
4	DED100-400	570	1.000	456	.800	342	.600	1.320	57.0
4.5	DED100-450	585	1.125	468	.900	351	.675	1.493	52.0
5	DED100-500	651	1.250	521	1.000	391	.750	1.704	52.1
5.5	DED100-550	523	1.375	418	1.100	314	.82	1.910	38.0
6	DED100-600	648	1.500	518	1.200	389	.900	2.013	43.2
7	DED100-700	513	1.750	410	1.400	308	1.05	2.48	29.3
8	DED100-800	510	2.000	408	1.600	306	1.20	2.84	25.5
12	DED100-1200	642	3.000	514	2.400	385	1.800	4.366	21.4
1.5	DED125-150	1046	.375	837	.300	628	.225	.440	279.0
1.75	DED125-175	1011	.438	809	.350	606	.263	.530	231.0
2	DED125-200	975	.500	780	.400	585	.300	.542	195.0
2.5	DED125-250	1058	.625	846	.500	635	.375	.818	169.2
3	DED125-300	1027	.750	821	.600	616	.450	.983	136.9
3.5	DED125-350	910	.875	728	.700	546	.525	1.148	104.0
4	DED125-400	875	1.000	700	.800	525	.600	1.310	87.5
4.5	DED125-450	872	1.125	698	.900	523	.675	1.524	77.5
5	DED125-500	881	1.250	705	1.000	529	.750	1.718	70.5
5.5	DED125-550	880	1.375	704	1.100	528	.820	1.850	64.0
6	DED125-600	863	1.500	690	1.200	518	.900	2.078	57.5
7	DED125-700	858	1.750	686	1.400	515	1.05	2.33	49.0
8	DED125-800	986	2.000	789	1.600	592	1.200	2.749	49.3
10	DED125-1000	948	2.500	758	2.000	569	1.500	3.383	37.9
12	DED125-1200	825	3.000	660	2.400	495	1.800	4.047	27.5
2	DED150-200			1416	.400	1062	.300	.440	354.0
2.5	DED150-250	1672	.625	1338	.500	1003	.375	.633	267.5
3	DED150-300			1320	.600	990	.450	.735	220.0
3.5	DED150-350	1641	.875	1313	.700	984	.525	.933	187.5
4	DED150-400	1650	1.000	1320	.800	990	.600	1.237	165.0
4.5	DED150-450	1592	1.125	1274	.900	955	.675	1.312	141.5
5	DED150-500	1625	1.250	1300	1.000	975	.750	1.514	130.0
5.5	DED150-550	1348	1.375	1078	1.100	809	.820	1.810	98.0
6	DED150-600	1575	1.500	1260	1.200	945	.900	1.857	105.0
7	DED150-700	1314	1.750	1051	1.400	789	1.05	2.310	75.1
8	DED150-800	1740	2.000	1392	1.600	1044	1.200	2.690	87.0
10	DED150-1000	1680	2.500	1344	2.000	1008	1.500	3.470	67.2
12	DED150-1200	1560	3.000	1248	2.400	936	1.800	4.260	52.0
2.5	DED200-250					1538	.375	.480	410.0
3	DED200-300			1740	.600	1305	.450	.650	290.0
3.5	DED200-350			1925	.700	1444	.525	.800	275.0
4	DED200-400	2400	1.000	1920	.800	1440	.600	1.010	240.0
4.5	DED200-450	2447	1.125	1958	.900	1468	.675	1.230	217.5
5	DED200-500	2250	1.250	1800	1.000	1350	.750	1.410	180.0
5.5	DED200-550	2214	1.375	1771	1.100	1328	.820	1.750	161.0
6	DED200-600	2310	1.500	1848	1.200	1386	.900	1.770	154.0
7	DED200-700	2153	1.750	1722	1.400	1292	1.05	2.210	123.0
8	DED200-800	2370	2.000	1896	1.600	1422	1.200	2.480	118.5
10	DED200-1000	2200	2.500	1760	2.000	1320	1.500	3.190	88.0
12	DED200-1200	2598	3.000	2078	2.400	1559	1.800	3.900	86.6

# Light Duty Type LD Metric



Green

Meets/Exceeds  
ISO Standards



## Hong Kong SPRING

HOW TO ORDER: Specify Quantity and Part Number

Example:	40	LD10-25
	58	LD16-102

Loads are shown in Newtons.

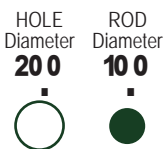
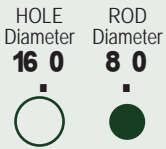
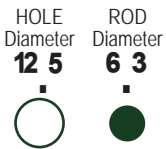
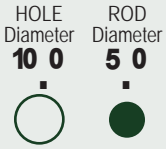
▶▶▶ **Efficient Operating Range** 25% to 35% deflection of free length.

(Max. deflection = 35%; Long Life deflection = 30%; and Optimum Life deflection = 25%)

**Deflection** beyond the Efficient Operating Range could result in premature spring failure.

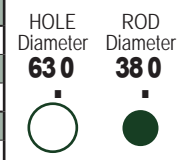
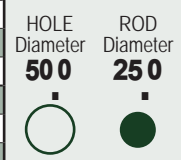
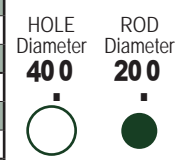
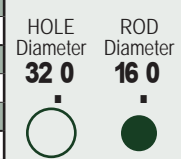
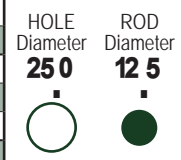
**Travel to Solid** is a reference dimension only and should never be approached during use.

FREE LENGTH	PART NUMBER	35% DEFLECTION		30% DEFLECTION		25% DEFLECTION		TRAVEL TO SOLID	
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)
25	LD10-25	88.0	8.8	75.0	7.5	63.0	6.3	10.3	10.0
32	LD10-32	95.2	11.2	81.6	9.6	68.0	8.0	13.1	8.5
38	LD10-38	90.4	13.3	77.5	11.4	64.6	9.5	15.6	6.8
44	LD10-44	92.4	15.4	79.2	13.2	66.0	11.0	18.0	6.0
51	LD10-51	89.5	17.9	76.5	15.3	64.0	12.8	20.9	5.0
64	LD10-64	96.3	22.4	82.6	19.2	68.8	16.0	26.0	4.3
78	LD10-78	85.1	26.6	73.0	22.8	60.8	19.0	31.2	3.2
305	LD10-305	117.5	106.8	100.7	91.5	83.9	76.3	125.0	1.1
25	LD12-25	157.5	8.8	134.3	7.5	112.8	6.3	10.3	17.9
32	LD12-32	183.7	11.2	157.4	9.6	131.2	8.0	13.1	16.4
38	LD12-38	180.9	13.3	155.0	11.4	129.2	9.5	15.6	13.6
44	LD12-44	186.3	15.4	159.7	13.2	133.1	11.0	18.0	12.1
51	LD12-51	204.1	17.9	174.4	15.3	145.9	12.8	20.9	11.4
64	LD12-64	208.3	22.4	178.6	19.2	148.8	16.0	26.3	9.3
78	LD12-78	188.9	26.6	161.9	22.8	134.9	19.0	31.2	7.1
89	LD12-89	168.5	31.2	144.2	26.7	120.4	22.3	36.5	5.4
305	LD12-305	149.5	106.8	128.1	91.5	106.8	76.3	125.0	1.4
25	LD16-25	205.9	8.8	175.5	7.5	147.4	6.3	10.3	23.4
32	LD16-32	256.5	11.2	219.8	9.6	183.2	8.0	13.1	22.9
38	LD16-38	256.7	13.3	220.0	11.4	183.4	9.5	15.6	19.3
44	LD16-44	263.3	15.4	225.7	13.2	188.1	11.0	18.0	17.1
51	LD16-51	281.0	17.9	240.2	15.3	201.0	12.8	20.9	15.7
64	LD16-64	239.7	22.4	205.4	19.2	171.2	16.0	26.3	10.7
76	LD16-76	266.0	26.6	228.0	22.8	190.0	19.0	31.2	10.0
89	LD16-89	268.3	31.2	229.6	26.7	191.8	22.3	36.5	8.6
102	LD16-102	278.5	35.7	238.7	30.6	198.9	25.5	41.8	7.8
305	LD16-305	267.0	106.8	228.8	91.5	190.8	76.3	125.0	2.5
25	LD20-25	491.0	8.8	418.5	7.5	351.5	6.3	10.2	55.8
32	LD20-32	504.0	11.2	432.0	9.6	360.0	8.0	12.5	45.0
38	LD20-38	442.9	13.3	379.6	11.4	316.4	9.5	15.0	33.3
44	LD20-44	462.0	15.4	396.0	13.2	330.0	11.0	18.0	30.0
51	LD20-51	438.6	17.9	374.9	15.3	313.6	12.8	20.0	24.5
64	LD20-64	448.0	22.4	384.0	19.2	320.0	16.0	25.0	20.0
78	LD20-78	478.8	26.6	410.4	22.8	342.0	19.0	30.0	18.0
89	LD20-89	436.8	31.2	373.8	26.7	312.2	22.3	35.0	14.0
102	LD20-102	428.4	35.7	367.2	30.6	306.0	25.5	41.0	12.0
115	LD20-115	439.3	40.3	376.1	34.5	313.9	28.8	46.0	10.9
127	LD20-127	422.8	44.5	362.0	38.1	302.1	31.8	51.0	9.5
139	LD20-139	409.1	48.7	350.3	41.7	292.3	34.8	56.0	8.4
152	LD20-152	399.0	53.2	342.0	45.6	285.0	38.0	61.0	7.5
305	LD20-305	427.2	106.8	366.0	91.5	305.2	76.3	122.0	4.0



# Light Duty Metric

## Type LD



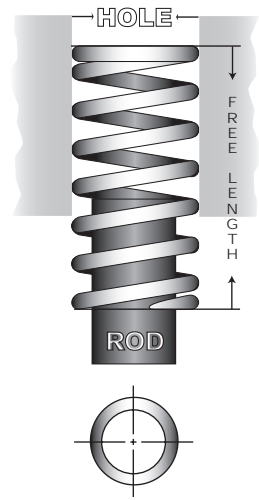
FREE LENGTH	PART NUMBER	35% DEFLECTION		30% DEFLECTION		25% DEFLECTION		TRAVEL TO SOLID	
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)
25	LD25-25	880.0	8.8	750.0	7.5	630.0	6.3	10.2	100.0
32	LD25-32	899.4	11.2	770.9	9.6	642.4	8.0	12.5	80.3
38	LD25-38	884.5	13.3	758.1	11.4	631.8	9.5	15.0	66.5
44	LD25-44	814.7	15.4	698.3	13.2	581.9	11.0	18.0	52.9
51	LD25-51	834.1	17.9	713.0	15.3	596.5	12.8	20.0	46.6
64	LD25-64	788.5	22.4	675.8	19.2	563.2	16.0	25.0	35.2
76	LD25-76	800.7	26.6	686.3	22.8	571.9	19.0	30.0	30.1
89	LD25-89	792.5	31.2	678.2	26.7	566.4	22.3	35.0	25.4
102	LD25-102	781.8	35.7	670.1	30.6	558.5	25.5	41.0	21.9
115	LD25-115	769.7	40.3	659.0	34.5	550.1	28.8	46.0	19.1
127	LD25-127	769.9	44.5	659.1	38.1	550.1	31.8	51.0	17.3
139	LD25-139	769.5	48.7	658.9	41.7	549.8	34.8	56.0	15.8
152	LD25-152	760.8	53.2	652.1	45.6	543.4	38.0	61.0	14.3
178	LD25-178	778.8	62.3	667.5	53.4	556.3	44.5	71.0	12.5
203	LD25-203	739.4	71.1	633.4	60.9	528.3	50.8	81.0	10.4
305	LD25-305	747.6	106.8	640.5	91.5	534.1	76.3	122.0	7.0
38	LD32-38	1250.2	13.3	1071.6	11.4	893.0	9.5	15.0	94.0
44	LD32-44	1119.6	15.4	959.6	13.2	799.7	11.0	18.0	72.7
51	LD32-51	1199.3	17.9	1025.1	15.3	857.6	12.8	20.0	67.0
64	LD32-64	1187.2	22.4	1017.6	19.2	848.0	16.0	25.0	53.0
76	LD32-76	1170.4	26.6	1003.2	22.8	836.0	19.0	30.0	44.0
89	LD32-89	1160.6	31.2	993.2	26.7	829.6	22.3	35.0	37.2
102	LD32-102	1142.4	35.7	979.2	30.6	816.0	25.5	41.0	32.0
115	LD32-115	1168.7	40.3	1000.5	34.5	835.2	28.8	46.0	29.0
127	LD32-127	1112.5	44.5	952.5	38.1	795.0	31.8	51.0	25.0
139	LD32-139	1120.1	48.7	959.1	41.7	800.4	34.8	56.0	23.0
152	LD32-152	1143.8	53.2	980.4	45.6	817.0	38.0	61.0	21.5
178	LD32-178	1133.9	62.3	971.9	53.4	809.9	44.5	71.0	18.2
203	LD32-203	1123.4	71.1	962.2	60.9	802.6	50.8	81.0	15.8
254	LD32-254	1111.3	88.9	952.5	76.2	793.8	63.5	102.0	12.5
305	LD32-305	1100.0	106.8	942.5	91.5	785.9	76.3	122.0	10.3
51	LD40-51	1435.6	17.9	1227.1	15.3	1026.6	12.8	20.0	80.2
64	LD40-64	1635.2	22.4	1401.6	19.2	1168.0	16.0	25.0	73.0
76	LD40-76	1675.8	26.6	1436.4	22.8	1197.0	19.0	30.0	63.0
89	LD40-89	1591.2	31.2	1361.7	26.7	1137.3	22.3	35.0	51.0
102	LD40-102	1535.1	35.7	1315.8	30.6	1096.5	25.5	41.0	43.0
115	LD40-115	1595.9	40.3	1366.2	34.5	1140.5	28.8	46.0	39.6
127	LD40-127	1646.5	44.5	1409.7	38.1	1176.6	31.8	51.0	37.0
139	LD40-139	1558.4	48.7	1334.4	41.7	1113.6	34.8	56.0	32.0
152	LD40-152	1489.6	53.2	1276.8	45.6	1064.0	38.0	61.0	28.0
178	LD40-178	1570.0	62.3	1345.7	53.4	1121.4	44.5	71.0	25.2
203	LD40-203	1614.0	71.1	1382.4	60.9	1153.2	50.8	81.0	22.7
254	LD40-254	1511.3	88.9	1295.4	76.2	1079.5	63.5	102.0	17.0
305	LD40-305	1580.6	106.8	1354.2	91.5	1129.2	76.3	122.0	14.8
64	LD50-64	3494.4	22.4	2995.2	19.2	2496.0	16.0	25.0	156.0
76	LD50-76	3325.0	26.6	2850.0	22.8	2375.0	19.0	30.0	125.0
89	LD50-89	3400.8	31.2	2910.3	26.7	2430.7	22.3	35.0	109.0
102	LD50-102	3355.8	35.7	2876.4	30.6	2397.0	25.5	41.0	94.0
115	LD50-115	3264.3	40.3	2794.5	34.5	2332.8	28.8	46.0	81.0
127	LD50-127	3159.5	44.5	2705.1	38.1	2257.8	31.8	51.0	71.0
139	LD50-139	3238.6	48.7	2773.1	41.7	2314.2	34.8	56.0	66.5
152	LD50-152	3192.0	53.2	2736.0	45.6	2280.0	38.0	61.0	60.0
178	LD50-178	3239.6	62.3	2776.8	53.4	2314.0	44.5	71.0	52.0
203	LD50-203	3128.4	71.1	2679.6	60.9	2235.2	50.8	81.0	44.0
254	LD50-254	3111.5	88.9	2667.0	76.2	2222.5	63.5	102.0	35.0
305	LD50-305	3043.8	106.8	2607.8	91.5	2174.6	76.3	122.0	28.5
76	LD63-76	5027.4	26.6	4309.2	22.8	3591.0	19.0	30.0	189.0
89	LD63-89	4929.6	31.2	4218.6	26.7	3523.4	22.3	35.0	158.0
102	LD63-102	4676.7	35.7	4008.6	30.6	3340.5	25.5	41.0	131.0
115	LD63-115	4755.4	40.3	4071.0	34.5	3398.4	28.8	46.0	118.0
127	LD63-127	4583.5	44.5	3924.3	38.1	3275.4	31.8	51.0	103.0
152	LD63-152	4484.8	53.2	3844.1	45.6	3203.4	38.0	61.0	84.3
178	LD63-178	4454.5	62.3	3818.1	53.4	3181.8	44.5	71.0	71.5
203	LD63-203	4386.9	71.1	3757.5	60.9	3134.4	50.8	81.0	61.7
254	LD63-254	4178.3	88.9	3581.4	76.2	2984.5	63.5	102.0	47.0
305	LD63-305	4079.8	106.8	3495.3	91.5	2914.7	76.3	122.0	38.2

# Medium Duty Type MD Metric



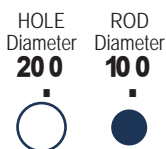
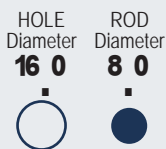
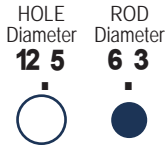
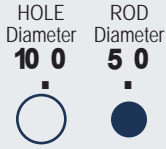
Blue

Meets/Exceeds  
ISO Standards



Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	MD10-25
	58	MD16-100
Loads are shown in Newtons.		
▶▶▶ <b>Efficient Operating Range</b> 20% to 30% deflection of free length. (Max. deflection = 30%; Long Life deflection = 25%; and Optimum Life deflection = 20%)		
<b>Deflection</b> beyond the Efficient Operating Range could result in premature spring failure.		
<b>Travel to Solid</b> is a reference dimension only and should never be approached during use.		

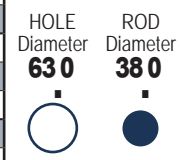
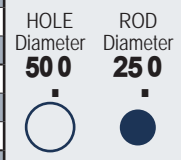
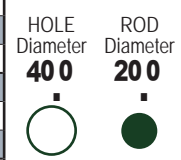
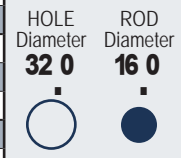
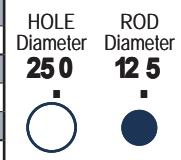
FREE LENGTH	PART NUMBER	30% DEFLECTION		25% DEFLECTION		20% DEFLECTION		TRAVEL TO SOLID	
		Load (°N)	Deflection (mm)	Load (°N)	Deflection (mm)	Load (°N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (°N)
25	MD10-25	120.0	7.5	100.8	6.3	80.0	5.0	9.5	16.0
32	MD10-32	124.8	9.6	104.0	8.0	83.2	6.4	12.2	13.0
38	MD10-38	135.7	11.4	113.1	9.5	90.4	7.6	14.4	11.9
44	MD10-44	136.0	13.2	113.3	11.0	90.6	8.8	16.7	10.3
51	MD10-51	136.2	15.3	113.9	12.8	90.8	10.2	19.4	8.9
64	MD10-64	144.0	19.2	120.0	16.0	96.0	12.8	24.3	7.5
76	MD10-76	120.8	22.8	100.7	19.0	80.6	15.2	28.9	5.3
305	MD10-305	164.7	91.5	137.3	76.3	109.8	61.0	116.0	1.8
25	MD12-25	225.0	7.5	189.0	6.3	150.0	5.0	9.5	30.0
32	MD12-32	238.1	9.6	198.4	8.0	158.7	6.4	12.2	24.8
38	MD12-38	244.0	11.4	203.3	9.5	162.6	7.6	14.4	21.4
44	MD12-44	244.2	13.2	203.5	11.0	162.8	8.8	16.7	18.5
51	MD12-51	237.2	15.3	198.4	12.8	158.1	10.2	19.4	15.5
64	MD12-64	232.3	19.2	193.6	16.0	154.9	12.8	24.3	12.1
78	MD12-78	232.6	22.8	193.8	19.0	155.0	15.2	28.9	10.2
89	MD12-89	224.3	26.7	187.3	22.3	149.5	17.8	33.8	8.4
305	MD12-305	192.2	91.5	160.2	76.3	128.1	61.0	116.0	2.1
25	MD16-25	370.5	7.5	311.2	6.3	247.0	5.0	9.5	49.4
32	MD16-32	356.2	9.6	296.8	8.0	237.4	6.4	12.2	37.1
38	MD16-38	386.5	11.4	322.1	9.5	257.6	7.6	14.4	33.9
44	MD16-44	396.0	13.2	330.0	11.0	264.0	8.8	16.7	30.0
51	MD16-51	403.9	15.3	337.9	12.8	269.3	10.2	19.4	26.4
64	MD16-64	393.6	19.2	328.0	16.0	262.4	12.8	24.3	20.5
76	MD16-76	405.8	22.8	338.2	19.0	270.6	15.2	28.9	17.8
89	MD16-89	405.8	26.7	339.0	22.3	270.6	17.8	33.8	15.2
102	MD16-102	413.1	30.6	344.3	25.5	275.4	20.4	38.8	13.5
305	MD16-305	439.2	91.5	366.2	76.3	292.8	61.0	116.0	4.8
25	MD20-25	735.0	7.5	617.4	6.3	490.0	5.0	9.4	98.0
32	MD20-32	697.0	9.6	580.8	8.0	464.6	6.4	12.0	72.6
38	MD20-38	638.4	11.4	532.0	9.5	425.6	7.6	14.0	56.0
44	MD20-44	627.0	13.2	522.5	11.0	418.0	8.8	16.5	47.5
51	MD20-51	638.0	15.3	533.8	12.8	425.3	10.2	19.0	41.7
64	MD20-64	620.2	19.2	516.8	16.0	413.4	12.8	24.0	32.3
76	MD20-76	572.3	22.8	476.9	19.0	381.5	15.2	28.0	25.1
89	MD20-89	587.4	26.7	490.6	22.3	391.6	17.8	33.0	22.0
102	MD20-102	605.9	30.6	504.9	25.5	403.9	20.4	38.0	19.8
115	MD20-115	624.5	34.5	521.3	28.8	416.3	23.0	43.0	18.1
127	MD20-127	632.5	38.1	527.9	31.8	421.6	25.4	48.0	16.6
139	MD20-139	629.7	41.7	525.5	34.8	419.8	27.8	52.0	15.1
152	MD20-152	601.9	45.6	501.6	38.0	401.3	30.4	57.0	13.2
305	MD20-305	741.2	91.5	618.0	76.3	494.1	61.0	114.0	8.1





# Medium Duty Metric

## Type MD



FREE LENGTH	PART NUMBER	30% DEFLECTION		25% DEFLECTION		20% DEFLECTION		TRAVEL TO SOLID	
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)
25	MD25-25	1102.5	7.5	926.1	6.3	735.0	5.0	9.4	147.0
32	MD25-32	1132.8	9.6	944.0	8.0	755.2	6.4	12.0	118.0
38	MD25-38	1060.2	11.4	883.5	9.5	706.8	7.6	14.0	93.0
44	MD25-44	1066.6	13.2	888.8	11.0	711.0	8.8	16.5	80.8
51	MD25-51	1049.6	15.3	878.1	12.8	699.7	10.2	19.0	68.6
64	MD25-64	1017.6	19.2	848.0	16.0	678.4	12.8	24.0	53.0
76	MD25-76	985.0	22.8	820.8	19.0	656.6	15.2	28.0	43.2
89	MD25-89	1019.9	26.7	851.9	22.3	680.0	17.8	33.0	38.2
102	MD25-102	1009.8	30.6	841.5	25.5	673.2	20.4	38.0	33.0
115	MD25-115	966.0	34.5	806.4	28.8	644.0	23.0	43.0	28.0
127	MD25-127	986.8	38.1	823.6	31.8	657.9	25.4	48.0	25.9
139	MD25-139	967.4	41.7	807.4	34.8	645.0	27.8	52.0	23.2
152	MD25-152	948.5	45.6	790.4	38.0	632.3	30.4	57.0	20.8
178	MD25-178	950.5	53.4	792.1	44.5	633.7	35.6	67.0	17.8
203	MD25-203	962.2	60.9	802.6	50.8	641.5	40.6	76.0	15.8
305	MD25-305	933.3	91.5	778.3	76.3	622.2	61.0	114.0	10.2
38	MD32-38	2109.0	11.4	1757.5	9.5	1406.0	7.6	14.0	185.0
44	MD32-44	2085.6	13.2	1738.0	11.0	1390.4	8.8	16.5	158.0
51	MD32-51	2050.2	15.3	1715.2	12.8	1366.8	10.2	19.0	134.0
64	MD32-64	1900.8	19.2	1584.0	16.0	1267.2	12.8	24.0	99.0
76	MD32-76	1835.4	22.8	1529.5	19.0	1223.6	15.2	28.0	80.5
89	MD32-89	1845.0	26.7	1540.9	22.3	1230.0	17.8	33.0	69.1
102	MD32-102	1799.3	30.6	1499.4	25.5	1199.5	20.4	38.0	58.8
115	MD32-115	1776.8	34.5	1483.2	28.8	1184.5	23.0	43.0	51.5
127	MD32-127	1706.9	38.1	1424.6	31.8	1137.9	25.4	48.0	44.8
139	MD32-139	1763.9	41.7	1472.0	34.8	1175.9	27.8	52.0	42.3
152	MD32-152	1723.7	45.6	1436.4	38.0	1149.1	30.4	57.0	37.8
178	MD32-178	1735.5	53.4	1446.3	44.5	1157.0	35.6	67.0	32.5
203	MD32-203	1820.9	60.9	1518.9	50.8	1213.9	40.6	76.0	29.9
254	MD32-254	1630.7	76.2	1358.9	63.5	1087.1	50.8	95.0	21.4
305	MD32-305	1674.5	91.5	1396.3	76.3	1116.3	61.0	114.0	18.3
51	MD40-51	2778.5	15.3	2324.5	12.8	1852.3	10.2	19.0	181.6
64	MD40-64	2688.0	19.2	2240.0	16.0	1792.0	12.8	24.0	140.0
76	MD40-76	2462.4	22.8	2052.0	19.0	1641.6	15.2	28.0	108.0
89	MD40-89	2421.7	26.7	2022.6	22.3	1614.5	17.8	33.0	90.7
102	MD40-102	2478.6	30.6	2065.5	25.5	1652.4	20.4	38.0	81.0
115	MD40-115	2477.1	34.5	2067.8	28.8	1651.4	23.0	43.0	71.8
127	MD40-127	2388.9	38.1	1993.9	31.8	1592.6	25.4	48.0	62.7
139	MD40-139	2397.8	41.7	2001.0	34.8	1598.5	27.8	52.0	57.5
152	MD40-152	2353.0	45.6	1960.8	38.0	1568.6	30.4	57.0	51.6
178	MD40-178	2354.9	53.4	1962.5	44.5	1570.0	35.6	67.0	44.1
203	MD40-203	2235.0	60.9	1864.4	50.8	1490.0	40.6	76.0	36.7
254	MD40-254	2293.6	76.2	1911.4	63.5	1529.1	50.8	95.0	30.1
305	MD40-305	2250.9	91.5	1877.0	76.3	1500.6	61.0	114.0	24.6
64	MD50-64	4012.8	19.2	3344.0	16.0	2675.2	12.8	24.0	209.0
76	MD50-76	3830.4	22.8	3192.0	19.0	2553.6	15.2	28.0	168.0
89	MD50-89	3738.0	26.7	3122.0	22.3	2492.0	17.8	33.0	140.0
102	MD50-102	3641.4	30.6	3034.5	25.5	2427.6	20.4	38.0	119.0
115	MD50-115	3657.0	34.5	3052.8	28.8	2438.0	23.0	43.0	106.0
127	MD50-127	3695.7	38.1	3084.6	31.8	2463.8	25.4	48.0	97.0
139	MD50-139	3627.9	41.7	3027.6	34.8	2418.6	27.8	52.0	87.0
152	MD50-152	3648.0	45.6	3040.0	38.0	2432.0	30.4	57.0	80.0
178	MD50-178	3711.3	53.4	3092.8	44.5	2474.2	35.6	67.0	69.5
203	MD50-203	3641.8	60.9	3037.8	50.8	2427.9	40.6	76.0	59.8
229	MD50-229	3496.8	68.7	2916.6	57.3	2331.2	45.8	86.0	50.9
254	MD50-254	3345.2	76.2	2787.7	63.5	2230.1	50.8	95.0	43.9
305	MD50-305	3531.9	91.5	2945.2	76.3	2354.6	61.0	114.0	38.6
76	MD63-76	7113.6	22.8	5928.0	19.0	4742.4	15.2	28.0	312.0
89	MD63-89	6942.0	26.7	5798.0	22.3	4628.0	17.8	33.0	260.0
102	MD63-102	6762.6	30.6	5635.5	25.5	4508.4	20.4	38.0	221.0
115	MD63-115	6451.5	34.5	5385.6	28.8	4301.0	23.0	43.0	187.0
127	MD63-127	6400.8	38.1	5342.4	31.8	4267.2	25.4	48.0	168.0
152	MD63-152	6201.6	45.6	5168.0	38.0	4134.4	30.4	57.0	136.0
178	MD63-178	6087.6	53.4	5073.0	44.5	4058.4	35.6	67.0	114.0
203	MD63-203	6090.0	60.9	5080.0	50.8	4060.0	40.6	76.0	100.0
229	MD63-229	6128.0	68.7	5111.2	57.3	4085.4	45.8	86.0	89.2
254	MD63-254	5974.1	76.2	4978.4	63.5	3982.7	50.8	95.0	78.4
	MD63-305	5920.1	91.5	4936.6	76.3	3946.7	61.0	114.0	64.7

# Heavy Duty Metric Type HD

## Meets/Exceeds ISO Standards



Red

### Hong Kong SPRING

HOW TO ORDER: Specify Quantity and Part Number

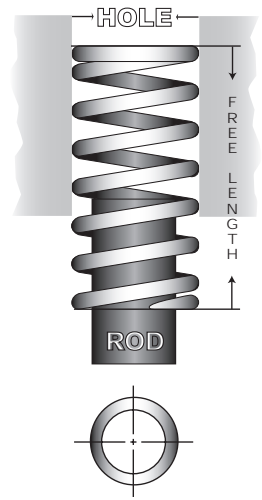
Example:	40	HD10-25
	58	HD16-102

Loads are shown in Newtons.

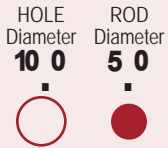
▶▶▶ **Efficient Operating Range** 15% to 25% deflection of free length.

(Max. deflection = 25%; Long Life deflection = 20%; and Optimum Life deflection = 15%)

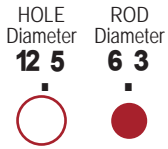
Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure. **Travel to Solid** is a reference dimension only and should never be approached during use.



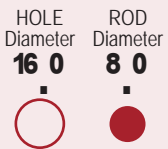
FREE LENGTH	PART NUMBER	25% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)



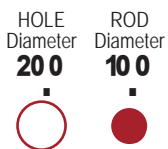
25	HD10-25	139.2	6.3	110.5	5.0	84.0	3.8	7.5	22.1
32	HD10-32	140.0	8.0	112.0	6.4	84.0	4.8	9.6	17.5
38	HD10-38	162.5	9.5	130.0	7.6	97.5	5.7	11.4	17.1
44	HD10-44	165.0	11.0	132.0	8.8	99.0	6.6	13.2	15.0
51	HD10-51	163.8	12.8	130.6	10.2	98.6	7.7	15.3	12.8
64	HD10-64	171.2	16.0	137.0	12.8	102.7	9.6	19.2	10.7
76	HD10-76	142.5	19.0	114.0	15.2	85.5	11.4	22.8	7.5
305	HD10-305	160.2	76.3	128.1	61.0	96.2	45.8	91.5	2.1



25	HD12-25	265.2	6.3	210.5	5.0	160.0	3.8	7.5	42.1
32	HD12-32	265.6	8.0	212.5	6.4	159.4	4.8	9.6	33.2
38	HD12-38	278.4	9.5	222.7	7.6	167.0	5.7	11.4	29.3
44	HD12-44	272.8	11.0	218.2	8.8	163.7	6.6	13.2	24.8
51	HD12-51	253.4	12.8	202.0	10.2	152.5	7.7	15.3	19.8
64	HD12-64	240.0	16.0	192.0	12.8	144.0	9.6	19.2	15.0
76	HD12-76	250.8	19.0	200.6	15.2	150.5	11.4	22.8	13.2
89	HD12-89	254.2	22.3	202.9	17.8	152.8	13.4	26.7	11.4
305	HD12-305	213.6	76.3	170.8	61.0	128.2	45.8	91.5	2.8




25	HD16-25	472.5	6.3	375.0	5.0	285.0	3.8	7.5	75.0
32	HD16-32	422.4	8.0	337.9	6.4	253.4	4.8	9.6	52.8
38	HD16-38	460.8	9.5	368.6	7.6	276.5	5.7	11.4	48.5
44	HD16-44	470.8	11.0	376.6	8.8	282.5	6.6	13.2	42.8
51	HD16-51	474.9	12.8	378.4	10.2	285.7	7.7	15.3	37.1
64	HD16-64	484.8	16.0	387.8	12.8	290.9	9.6	19.2	30.3
76	HD16-76	488.3	19.0	390.6	15.2	293.0	11.4	22.8	25.7
89	HD16-89	483.9	22.3	386.3	17.8	290.8	13.4	26.7	21.7
102	HD16-102	492.2	25.5	393.7	20.4	295.3	15.3	30.6	19.3
305	HD16-305	541.7	76.3	433.1	61.0	325.2	45.8	91.5	7.1




25	HD20-25	1360.8	6.3	1080.0	5.0	820.8	3.8	7.5	216.0
32	HD20-32	1504.0	8.0	1203.2	6.4	902.4	4.8	9.6	188.0
38	HD20-38	1225.5	9.5	980.4	7.6	735.3	5.7	11.0	129.0
44	HD20-44	1232.0	11.0	985.6	8.8	739.2	6.6	13.0	112.0
51	HD20-51	1203.2	12.8	958.8	10.2	723.8	7.7	15.0	94.0
64	HD20-64	1153.6	16.0	922.9	12.8	692.2	9.6	19.0	72.1
76	HD20-76	1134.3	19.0	907.4	15.2	680.6	11.4	23.0	59.7
89	HD20-89	1126.2	22.3	898.9	17.8	676.7	13.4	27.0	50.5
102	HD20-102	1127.1	25.5	901.7	20.4	676.3	15.3	31.0	44.2
115	HD20-115	1105.9	28.8	883.2	23.0	664.3	17.3	35.0	38.4
127	HD20-127	1084.4	31.8	866.1	25.4	651.3	19.1	38.0	34.1
139	HD20-139	1078.8	34.8	861.8	27.8	647.9	20.9	42.0	31.0
152	HD20-152	1071.6	38.0	857.3	30.4	643.0	22.8	46.0	28.2
305	HD20-305	1144.5	76.3	915.0	61.0	687.0	45.8	91.0	15.0

# Heavy Duty Metric Type HD


HOLE Diameter **250** ROD Diameter **125**




HOLE Diameter **320** ROD Diameter **160**



HOLE Diameter **400** ROD Diameter **200**



HOLE Diameter **500** ROD Diameter **250**



FREE LENGTH	PART NUMBER	25% DEFLECTION		20% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Load (N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (N)
25	HD25-25	2362.5	6.3	1875.0	5.0	1425.0	3.8	7.5	375.0
32	HD25-32	2376.0	8.0	1900.8	6.4	1425.6	4.8	9.6	297.0
38	HD25-38	2080.5	9.5	1664.4	7.6	1248.3	5.7	11.0	219.0
44	HD25-44	2057.0	11.0	1645.6	8.8	1234.2	6.6	13.0	187.0
51	HD25-51	1996.8	12.8	1591.2	10.2	1201.2	7.7	15.0	156.0
64	HD25-64	1968.0	16.0	1574.4	12.8	1180.8	9.6	19.0	123.0
76	HD25-76	1881.0	19.0	1504.8	15.2	1128.6	11.4	23.0	99.0
89	HD25-89	1873.2	22.3	1495.2	17.8	1125.6	13.4	27.0	84.0
102	HD25-102	1861.5	25.5	1489.2	20.4	1116.9	15.3	31.0	73.0
115	HD25-115	1872.0	28.8	1495.0	23.0	1124.5	17.3	35.0	65.0
127	HD25-127	1834.9	31.8	1465.6	25.4	1102.1	19.1	38.0	57.7
139	HD25-139	1834.0	34.8	1465.1	27.8	1101.4	20.9	42.0	52.7
152	HD25-152	1816.4	38.0	1453.1	30.4	1089.8	22.8	46.0	47.8
178	HD25-178	1824.5	44.5	1459.6	35.6	1094.7	26.7	53.0	41.0
203	HD25-203	1818.6	50.8	1453.5	40.6	1091.9	30.5	61.0	35.8
305	HD25-305	1747.3	76.3	1396.9	61.0	1048.8	45.8	91.0	22.9
38	HD32-38	3686.0	9.5	2948.8	7.6	2211.6	5.7	11.0	388.0
44	HD32-44	3564.0	11.0	2851.2	8.8	2138.4	6.6	13.0	324.0
51	HD32-51	3481.6	12.8	2774.4	10.2	2094.4	7.7	15.0	272.0
64	HD32-64	3392.0	16.0	2713.6	12.8	2035.2	9.6	19.0	212.0
76	HD32-76	3268.0	19.0	2614.4	15.2	1960.8	11.4	23.0	172.0
89	HD32-89	3144.3	22.3	2509.8	17.8	1889.4	13.4	27.0	141.0
102	HD32-102	3111.0	25.5	2488.8	20.4	1866.6	15.3	31.0	122.0
115	HD32-115	3081.6	28.8	2461.0	23.0	1851.1	17.3	35.0	107.0
127	HD32-127	2957.4	31.8	2362.2	25.4	1776.3	19.1	38.0	93.0
139	HD32-139	2992.8	34.8	2390.8	27.8	1797.4	20.9	42.0	86.0
152	HD32-152	3340.2	38.0	2672.2	30.4	2004.1	22.8	46.0	87.9
178	HD32-178	3310.8	44.5	2648.6	35.6	1986.5	26.7	53.0	74.4
203	HD32-203	3291.8	50.8	2630.9	40.6	1976.4	30.5	61.0	64.8
254	HD32-254	3232.2	63.5	2585.7	50.8	1939.3	38.1	76.0	50.9
305	HD32-305	3258.0	76.3	2604.7	61.0	1955.7	45.8	91.0	42.7
51	HD40-51	4480.0	12.8	3570.0	10.2	2695.0	7.7	15.0	350.0
64	HD40-64	4304.0	16.0	3443.2	12.8	2582.4	9.6	19.0	269.0
76	HD40-76	4161.0	19.0	3328.8	15.2	2496.6	11.4	23.0	219.0
89	HD40-89	4237.0	22.3	3382.0	17.8	2546.0	13.4	27.0	190.0
102	HD40-102	4156.5	25.5	3325.2	20.4	2493.9	15.3	31.0	163.0
115	HD40-115	4089.6	28.8	3266.0	23.0	2456.6	17.3	35.0	142.0
127	HD40-127	4070.4	31.8	3251.2	25.4	2444.8	19.1	38.0	128.0
139	HD40-139	4002.0	34.8	3197.0	27.8	2403.5	20.9	42.0	115.0
152	HD40-152	3990.0	38.0	3192.0	30.4	2394.0	22.8	46.0	105.0
178	HD40-178	3960.5	44.5	3168.4	35.6	2376.3	26.7	53.0	89.0
203	HD40-203	3911.6	50.8	3126.2	40.6	2348.5	30.5	61.0	77.0
254	HD40-254	3873.5	63.5	3098.8	50.8	2324.1	38.1	76.0	61.0
305	HD40-305	3891.3	76.3	3111.0	61.0	2335.8	45.8	91.0	51.0
64	HD50-64	6608.0	16.0	5286.4	12.8	3964.8	9.6	19.0	413.0
76	HD50-76	6441.0	19.0	5152.8	15.2	3864.6	11.4	23.0	339.0
89	HD50-89	6422.4	22.3	5126.4	17.8	3859.2	13.4	27.0	288.0
102	HD50-102	6247.5	25.5	4998.0	20.4	3748.5	15.3	31.0	245.0
115	HD50-115	6192.0	28.8	4945.0	23.0	3719.5	17.3	35.0	215.0
127	HD50-127	6105.6	31.8	4876.8	25.4	3667.2	19.1	38.0	192.0
139	HD50-139	5846.4	34.8	4670.4	27.8	3511.2	20.9	42.0	168.0
152	HD50-152	5852.0	38.0	4681.6	30.4	3511.2	22.8	46.0	154.0
178	HD50-178	5963.0	44.5	4770.4	35.6	3577.8	26.7	53.0	134.0
203	HD50-203	5943.6	50.8	4750.2	40.6	3568.5	30.5	61.0	117.0
254	HD50-254	5651.5	63.5	4521.2	50.8	3390.9	38.1	76.0	89.0
305	HD50-305	5569.9	76.3	4453.0	61.0	3343.4	45.8	91.0	73.0

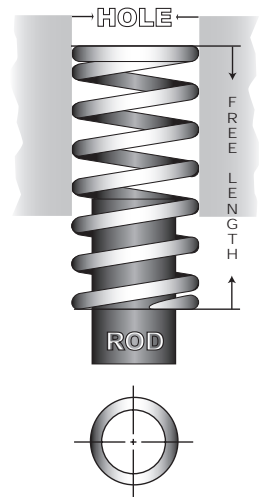
# Extra Heavy Duty Metric Type ED

Meets/Exceeds ISO Standards



Yellow

Hong Kong SPRING		
HOW TO ORDER: Specify Quantity and Part Number		
Example:	40	ED10-25
	58	ED16-305
Loads are shown in Newtons.		
▶▶▶ <b>Efficient Operating Range</b> 15% to 20% deflection of free length. (Max. deflection = 20%; Long Life deflection = 17%; and Optimum Life deflection = 15%)		
<b>Deflection</b> beyond the Efficient Operating Range could result in premature spring failure.		
<b>Travel to Solid</b> is a reference dimension only and should never be approached during use.		




FREE LENGTH	PART NUMBER	20% DEFLECTION		17% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID		
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)	
HOLE Diameter <b>10 0</b> ROD Diameter <b>5 0</b>	25	ED10-25	184.0	5.0	158.2	4.3	139.8	3.8	6.2	36.8
	32	ED10-32	178.6	6.4	150.7	5.4	133.9	4.8	8.0	27.9
	38	ED10-38	180.1	7.6	154.1	6.5	135.1	5.7	9.5	23.7
	44	ED10-44	169.0	8.8	144.0	7.5	126.7	6.6	11.0	19.2
	51	ED10-51	168.3	10.2	143.6	8.7	127.1	7.7	13.0	16.5
	64	ED10-64	169.0	12.8	143.9	10.9	126.7	9.6	16.0	13.2
	76	ED10-76	165.7	15.2	140.6	12.9	124.3	11.4	19.0	10.9
	305	ED10-305	170.8	61.0	145.3	51.9	128.2	45.8	76.0	2.8
HOLE Diameter <b>12 5</b> ROD Diameter <b>6 3</b>	25	ED12-25	292.5	5.0	251.6	4.3	222.3	3.8	6.2	58.5
	32	ED12-32	281.0	6.4	237.1	5.4	210.7	4.8	8.0	43.9
	38	ED12-38	273.6	7.6	234.0	6.5	205.2	5.7	9.5	36.0
	44	ED12-44	266.6	8.8	227.3	7.5	200.0	6.6	11.0	30.3
	51	ED12-51	267.2	10.2	227.9	8.7	201.7	7.7	13.0	26.2
	64	ED12-64	271.4	12.8	231.1	10.9	203.5	9.6	16.0	21.2
	76	ED12-76	259.9	15.2	220.6	12.9	194.9	11.4	19.0	17.1
	89	ED12-89	258.1	17.8	219.0	15.1	194.3	13.4	22.0	14.5
305	ED12-305	262.3	61.0	223.2	51.9	196.9	45.8	76.0	4.3	
HOLE Diameter <b>16 0</b> ROD Diameter <b>8 0</b>	25	ED16-25	590.0	5.0	507.4	4.3	448.4	3.8	6.2	118.0
	32	ED16-32	569.6	6.4	480.6	5.4	427.2	4.8	8.0	89.0
	38	ED16-38	548.0	7.6	468.7	6.5	411.0	5.7	9.5	72.1
	44	ED16-44	535.9	8.8	456.8	7.5	401.9	6.6	11.0	60.9
	51	ED16-51	533.5	10.2	455.0	8.7	402.7	7.7	13.0	52.3
	64	ED16-64	527.4	12.8	449.1	10.9	395.5	9.6	16.0	41.2
	76	ED16-76	518.3	15.2	439.9	12.9	388.7	11.4	19.0	34.1
	89	ED16-89	525.1	17.8	445.5	15.1	395.3	13.4	22.0	29.5
102	ED16-102	522.2	20.4	442.9	17.3	391.7	15.3	26.0	25.6	
305	ED16-305	512.4	61.0	436.0	51.9	384.7	45.8	76.0	8.4	
HOLE Diameter <b>20 0</b> ROD Diameter <b>10 0</b>	25	ED20-25	1465.0	5.0	1259.9	4.3	1113.4	3.8	6.2	293.0
	32	ED20-32	1433.6	6.4	1209.6	5.4	1075.2	4.8	8.0	224.0
	38	ED20-38	1345.2	7.6	1150.5	6.5	1008.9	5.7	9.5	177.0
	44	ED20-44	1311.2	8.8	1117.5	7.5	983.4	6.6	11.0	149.0
	51	ED20-51	1305.6	10.2	1113.6	8.7	985.6	7.7	13.0	128.0
	64	ED20-64	1267.2	12.8	1079.1	10.9	950.4	9.6	16.0	99.0
	76	ED20-76	1241.8	15.2	1053.9	12.9	931.4	11.4	19.0	81.7
	89	ED20-89	1237.1	17.8	1049.5	15.1	931.3	13.4	22.0	69.5
	102	ED20-102	1236.2	20.4	1048.4	17.3	927.2	15.3	26.0	60.6
	115	ED20-115	1219.0	23.0	1038.8	19.6	916.9	17.3	29.0	53.0
	127	ED20-127	1206.5	25.4	1026.0	21.6	907.3	19.1	32.0	47.5
	139	ED20-139	1195.4	27.8	1014.8	23.6	898.7	20.9	35.0	43.0
	152	ED20-152	1185.6	30.4	1006.2	25.8	889.2	22.8	38.0	39.0
	305	ED20-305	1293.2	61.0	1100.3	51.9	971.0	45.8	76.0	21.2


# Extra Heavy Duty Metric

Type ED


HOLE Diameter **250**  
 ROD Diameter **125**




HOLE Diameter **320**  
 ROD Diameter **160**



HOLE Diameter **400**  
 ROD Diameter **200**



HOLE Diameter **500**  
 ROD Diameter **250**



FREE LENGTH	PART NUMBER	20% DEFLECTION		17% DEFLECTION		15% DEFLECTION		TRAVEL TO SOLID	
		Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	Load @ 1 mm Deflection (*N)
32	ED25-32	2396.2	6.4	2021.8	5.4	1797.1	4.8	8.0	374.4
38	ED25-38	2196.4	7.6	1878.5	6.5	1647.3	5.7	9.5	289.0
44	ED25-44	2147.2	8.8	1830.0	7.5	1610.4	6.6	11.0	244.0
51	ED25-51	2116.5	10.2	1805.3	8.7	1597.8	7.7	13.0	207.5
64	ED25-64	2060.8	12.8	1754.9	10.9	1545.6	9.6	16.0	161.0
76	ED25-76	1988.2	15.2	1687.3	12.9	1491.1	11.4	19.0	130.8
89	ED25-89	1966.9	17.8	1668.6	15.1	1480.7	13.4	22.0	110.5
102	ED25-102	1964.5	20.4	1666.0	17.3	1473.4	15.3	26.0	96.3
115	ED25-115	1971.1	23.0	1679.7	19.6	1482.6	17.3	29.0	85.7
127	ED25-127	1938.0	25.4	1648.1	21.6	1457.3	19.1	32.0	76.3
152	ED25-152	1930.4	30.4	1638.3	25.8	1447.8	22.8	38.0	63.5
178	ED25-178	1918.8	35.6	1633.2	30.3	1439.1	26.7	44.0	53.9
203	ED25-203	1908.2	40.6	1621.5	34.5	1433.5	30.5	51.0	47.0
305	ED25-305	1884.9	61.0	1603.7	51.9	1415.2	45.8	76.0	30.9
38	ED32-38	4014.3	7.6	3433.3	6.5	3010.7	5.7	9.5	528.2
44	ED32-44	3734.7	8.8	3183.0	7.5	2801.0	6.6	11.0	424.4
51	ED32-51	3600.6	10.2	3071.1	8.7	2718.1	7.7	13.0	353.0
64	ED32-64	3445.8	12.8	2934.3	10.9	2584.3	9.6	16.0	269.2
76	ED32-76	3321.2	15.2	2818.7	12.9	2490.9	11.4	19.0	218.5
89	ED32-89	3209.3	17.8	2722.5	15.1	2416.0	13.4	22.0	180.3
102	ED32-102	3162.0	20.4	2681.5	17.3	2371.5	15.3	26.0	155.0
115	ED32-115	3220.0	23.0	2744.0	19.6	2422.0	17.3	29.0	140.0
127	ED32-127	3149.6	25.4	2678.4	21.6	2368.4	19.1	32.0	124.0
152	ED32-152	3100.8	30.4	2631.6	25.8	2325.6	22.8	38.0	102.0
178	ED32-178	3139.9	35.6	2672.5	30.3	2354.9	26.7	44.0	88.2
203	ED32-203	3507.8	40.6	2980.8	34.5	2635.2	30.5	51.0	86.4
254	ED32-254	3088.6	50.8	2626.6	43.2	2316.5	38.1	64.0	60.8
305	ED32-305	2989.0	61.0	2543.1	51.9	2244.2	45.8	76.0	49.0
51	ED40-51	6405.6	10.2	5463.6	8.7	4835.6	7.7	13.0	628.0
64	ED40-64	6233.6	12.8	5308.3	10.9	4675.2	9.6	16.0	487.0
76	ED40-76	5760.8	15.2	4889.1	12.9	4320.6	11.4	19.0	379.0
89	ED40-89	5713.8	17.8	4847.1	15.1	4301.4	13.4	22.0	321.0
102	ED40-102	5732.4	20.4	4861.3	17.3	4299.3	15.3	26.0	281.0
115	ED40-115	5635.0	23.0	4802.0	19.6	4238.5	17.3	29.0	245.0
127	ED40-127	5613.4	25.4	4773.6	21.6	4221.1	19.1	32.0	221.0
152	ED40-152	5107.2	30.4	4334.4	25.8	3830.4	22.8	38.0	168.0
203	ED40-203	5359.2	40.6	4554.0	34.5	4026.0	30.5	51.0	132.0
254	ED40-254	5435.6	50.8	4622.4	43.2	4076.7	38.1	64.0	107.0
305	ED40-305	5355.8	61.0	4556.8	51.9	4021.2	45.8	76.0	87.8
64	ED50-64	9075.2	12.8	7728.1	10.9	6806.4	9.6	16.0	709.0
76	ED50-76	8694.4	15.2	7378.8	12.9	6520.8	11.4	19.0	572.0
89	ED50-89	8455.0	17.8	7172.5	15.1	6365.0	13.4	22.0	475.0
102	ED50-102	8262.0	20.4	7006.5	17.3	6196.5	15.3	26.0	405.0
115	ED50-115	8096.0	23.0	6899.2	19.6	6089.6	17.3	29.0	352.0
127	ED50-127	8026.4	25.4	6825.6	21.6	6035.6	19.1	32.0	316.0
152	ED50-152	7265.6	30.4	6166.2	25.8	5449.2	22.8	38.0	239.0
203	ED50-203	7592.2	40.6	6451.5	34.5	5703.5	30.5	51.0	187.0
254	ED50-254	7772.4	50.8	6609.6	43.2	5829.3	38.1	64.0	153.0
305	ED50-305	7747.0	61.0	6591.3	51.9	5816.6	45.8	76.0	127.0





