

MaxLife® Die Springs

Product Applications

Dayton MaxLife® Die Springs are made to exact specifications, and are manufactured to outperform and outlast other major brands. Dayton die springs are designed for press and mold dies, and ensure optimum operation in heavy industry applications, including: automotive, aircraft, appliance, electrical, and electronic.

Corrosion-resistant Dayton die springs are made from pre-tempered chrome silicon wire to improve dimensional accuracy, minimize high-stress cracking, optimize the working life of press and mold dies, and help reduce downtime.

Consistent Quality

From the incoming raw material (tested for tensile strength, dimensional accuracy, and surface quality) to the finished product, every Dayton die spring undergoes continuous quality control to ensure optimum product performance.

All Dayton die springs are stress relieved after coiling, then compressed to solid to enhance fatigue life. Further, they are precision-ground at both ends, then shot-peened. (Shot-peening introduces supplemental compressive strength to reduce stress and extend the service life of the springs.)

Finally, all finished springs are electrostatically coated with a durable, anti-corrosive vinyl, and color-coded in four solid colors for easy identification of load ranges.

In addition, all Dayton MaxLife® Die Springs are designed to meet or exceed technical specifications and other criteria as established by industry guidelines and/or The International Organization for Standardization (ISO).

Ordering Information

Dayton die springs are ordered according to: the amount of pressure applied to the spring (see load usage categories); the hole diameter (which determines the rod diameter of the spring); and, the free length of the spring (see drawing at the top of each usage category page).

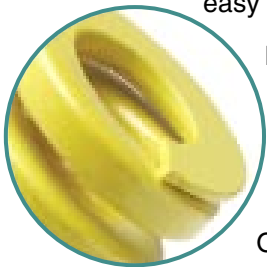
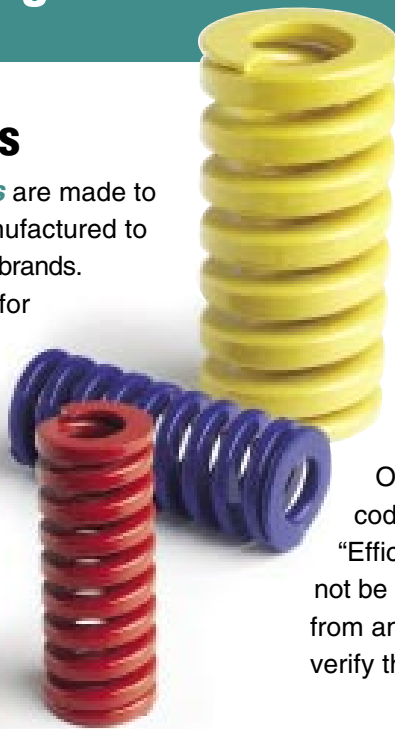
On each order specify quantity and product code (based on hole size and free length). The "Efficient Operating Range" of any spring should not be exceeded. For safe operation, when changing from another manufacturer to a Dayton die spring, verify that the travel of both springs is the same.

Worldwide Distribution, On-time Delivery

Dayton Progress sells its complete line of quality MaxLife® Die Springs in the US through 500+ distributor reps from over 200 independent firms with representation in all 50 states. In addition, Dayton die springs are sold and supported internationally through a network of 35 companies operating in 28 countries.

We maintain a large inventory of Dayton MaxLife® Die Springs in all standard categories throughout our system. In addition, we utilize best-in-class US and international freight carriers who assure rapid turn-around and delivery on all shipments.

There are no minimum size orders on Dayton die springs, and on-time delivery is a top priority with all Dayton employees and authorized Dayton Distributor associates.



Other Dayton Products

Punches, Guides, Matrixes, and Retainers

Dayton offers a wide range of precision punches, guides, matrixes, and retainers—available in both inch and metric sizes. All products are built to exact tolerances, and ensure longer tool life and superior finished part quality.

Dayton **Ball Lock Punches and Matrixes** are recommended for high-demand applications, and Dayton **True Position® Retainers** are

recognized as the industry standard for ball lock retainers.

Dayton **Jektole® Punches** (slug ejection punches) provide increased punch to matrix clearance.

Heavy-duty TuffPunch™ Punches and Punch Blanks

Dayton **TuffPunch™ Punches** and **Punch Blanks** are Kommercial quality products with thicker, larger, and 10° angled diameter heads, and are designed to reduce punch load and significantly lower failure rates. TuffPunch™ products are well-suited for high-demand industries where frequency and heavier-than-normal impact punch activity occurs.

DayKool™—a cryogenic steel conditioning process used primarily with hard, thick materials to improve toughness and dimensional stability—is standard on all TuffPunch™ products.

Self-Lubricating Bushings, Wear Plates, and Other Die Mold Products

Dayton provides a full line of self-lubricating slide and guide components (inch and metric); NAAMS™ compliant components; cams (die mounted, aerial, and reverse); lifters; guide components; and dry and metal bearings. Products are particularly well-suited for industries with high-demand applications.

In self-lubricating products, lubrication is provided by a specially formulated solid lubricant (graphite), which is compressed into dense cylinders, then inserted as a thin film on the wear surfaces. This assures a smooth operation of slide

surfaces (no galling); minimizes surface abrasion and distortion under various loads; allows operation without additional lubrication; and helps reduce downtime.

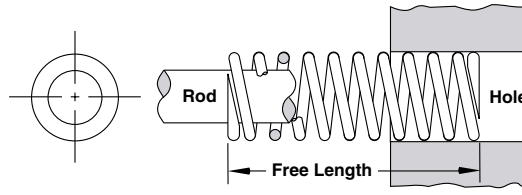
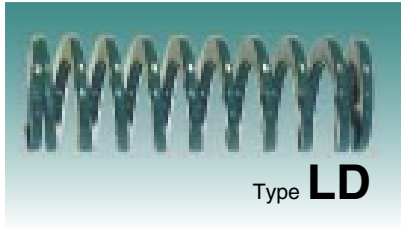
Urethane Stripping and Forming Products

Durable, yet flexible, Dayton urethane stripping and forming products provide superior stripping over conventional strippers; develop higher load-bearing capacity; are tear- and oil-resistant; provide exceptional dampening; and are easy to install and replace.

Dayton dual durometer **SMARTStrip™ Strippers**—available only from Dayton Progress—are manufactured with a proprietary curing agent that molds two elastomers into a solid, pliable, single piece.

Dayton provides a full range of leading-edge die component products: headed punches, guides, and matrixes; positive-locking Ball Lock products; retainers; slug-ejection punches; retaining systems; die springs; self-lubricating bearings and plates; and others. For details, contact Dayton Progress or your nearest Dayton Progress Distributor.

Light Duty Die Springs



HOW TO ORDER

Specify:	Qty.	Catalog #
Example:	40	LD10-44
	58	LD20-305

Note: Efficient Operating Range is 25% to 35% of the free length. (Maximum deflection = 35%; long life = 30%; and optimum life = 25%.) Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.



Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load @ 1 mm Deflection (*N)
				35% Deflection)		30% Deflection		25% Deflection		**Travel to Solid	
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	
10.0	5.0	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
		76	LD10-76	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	
12.5	6.3	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
		76	LD12-76	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	
16.0	8.0	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	
20.0	10.0	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
		76	LD20-76	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		

* Newtons

** For reference only. Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

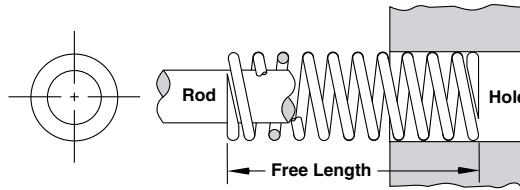
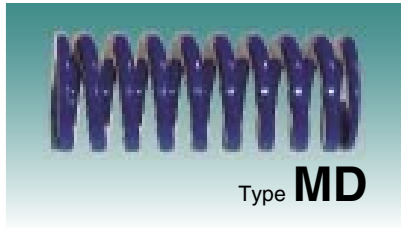
Light Duty Die Springs

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load at 1 mm Deflection (N*)
				35% of free length		30% of free length		25% of free length		**Travel to Solid	
				Load (N*)	Deflection (mm)	Load (N*)	Deflection (mm)	Load (N*)	Deflection (mm)	Deflection (mm)	
25.0	12.5	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		
32.0	16.0	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		
40.0	20.0	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		
50.0	25.0	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
63.0	38.0	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		

* Newtons

** For reference only. Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

Medium Duty Die Springs



HOW TO ORDER

Specify:	Qty.	Catalog #
Example:	16	MD10-305
	27	MD20-102

Note: Efficient Operating Range is 20% to 30% of the free length. (Maximum deflection = 30%; long life = 25%; and optimum life = 20%.) Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

FDS
FIRM DELIVERY SCHEDULE
1 Day

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE						Load @ 1 mm Deflection (*N)	
				30% Deflection		25% Deflection		20% Deflection			**Travel to Solid
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)		Deflection (mm)
10.0	5.0	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	
12.5	6.3	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
		76	MD12-76	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	
16.0	8.0	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	
20.0	10.0	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	

* Newtons

** For reference only. Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

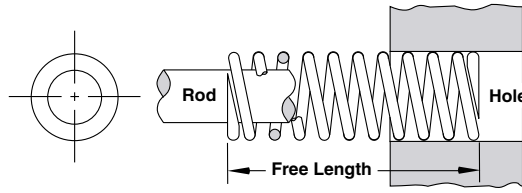
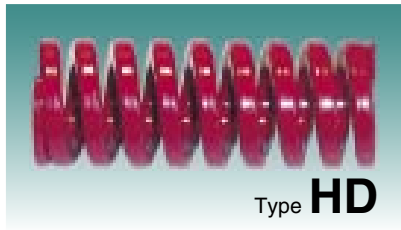
Medium Duty Die Springs

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load @ 1 mm Deflection (*N)
				30% Deflection		25% Deflection		20% Deflection		**Travel to Solid	
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	
25.0	12.5	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		
32.0	16.0	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		
40.0	20.0	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
		50.0	25.0	64	MD50-64	4012.8	19.2	3344.0	16.0	2675.2	12.8
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
63.0	38.0			76	MD63-76	7113.6	22.8	5928.0	19.0	4742.4	15.2
		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
305	MD63-305	5920.1	91.5	4936.6	76.3	3946.7	61.0	114.0	64.7		

* Newtons

** For reference only. Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

Heavy Duty Die Springs



HOW TO ORDER

Specify:	Qty.	Catalog #
Example:	78	HD10-64
	12	HD12-305

Note: Efficient Operating Range is 15% to 25% of the free length. (Maximum deflection = 25%; long life = 20%; and optimum life = 15%.) Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.



Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE						Load @ 1 mm Deflection (*N)	
				25% Deflection		20% Deflection		15% Deflection			**Travel to Solid
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)		Deflection (mm)
10.0	5.0	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
12.5	6.3	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
16.0	8.0	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
20.0	10.0	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

* Newtons

** For reference only. Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.

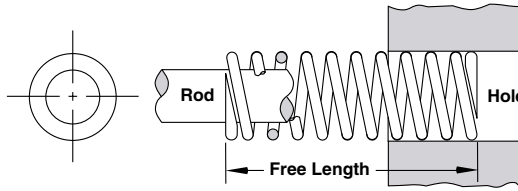
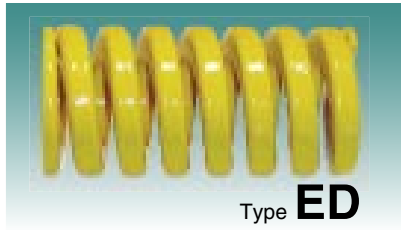
Heavy Duty Die Springs

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load @ 1 mm Deflection (*N)		
				25% Deflection		20% Deflection		15% Deflection		**Travel to Solid			
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)			
25.0	12.5	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				
32.0	16.0	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		
40.0	20.0	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		
		50.0	25.0	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		

* Newtons

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Extra Heavy Duty Die Springs



HOW TO ORDER

Specify:	Qty.	Catalog #
Example:	18	ED25-115
	24	ED32-127

Note: Efficient Operating Range is 15% to 20% of the free length. (Maximum deflection = 20%; long life = 17%; and optimum life = 15%.) Deflection beyond the Efficient Operating Range could create a safety hazard and result in premature spring failure.



Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load @ 1 mm Deflection (*N)
				20% Deflection		17% Deflection		15% Deflection		**Travel to Solid	
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	
10.0	5.0	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
12.5	6.3	305	ED10-305	170.8	61.0	145.3	51.9	128.2	45.8	76.0	2.8
		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
16.0	8.0	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
		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
20.0	10.0	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
		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		

* Newtons

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Extra Heavy Duty Die Springs

Hole Dia. (mm)	Rod Dia. (mm)	Free Length (mm)	Catalog #	LOAD DEFLECTION TABLE							Load @ 1 mm Deflection (*N)
				20% Deflection		17% Deflection		15% Deflection		**Travel to Solid	
				Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Load (*N)	Deflection (mm)	Deflection (mm)	
25.0	12.5	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		
32.0	16.0	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		
40.0	20.0	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		
50.0	25.0	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		

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