

P.P.C'S large inventory of urethane compression springs are designed primarily for applications where corrosion, vibration, and magnetism prevent the use of conventional steel springs. Also, urethane springs have proven to be the safest, most efficient and reliable compression springs for punching, stamping and drawing dies.

## Product Features

- High load-carrying capability
- High dielectric strength and non-magnetic
- Protection against marring/galling
- Longer life
- Abrasion resistance
- Oil and solvent resistance
- Low noise
- Vibration damping and shock absorbence
- 100% load-bearing surface
- Bondable to mating parts
- Effectiveness between - 30°F and 180°F

Because of the exceptional load bearing capacity of urethane compression springs in the shape of tubes, cylinders, rectangular pads & sheets, urethane compression springs are used very successfully in various Engineering applications such as seismic bridge bearing blocks.

Urethane compression springs and bearings also outperform rubber in terms of load bearing capacity, abrasion resistance and resistance to ground level ozone.

One of the problems with rubber materials is their susceptibility to liquids and ground level ozone produced by the increasing number of automobiles or by electrical discharges. Over time rubber gradually cracks and deteriorates due to exposure to liquids and ozone.

Polyurethane, however, is far more resistant to liquid and ozone attack. In fact, testing shows that polyurethane can be exposed to at least five times longer to the high levels of ozone specified for rubber in chapter 18 of the AREA manual (ASTM D1149) without deteriorative effects.

P.P.C'S urethane spring material is a polyether-elastomer that reacts similarly to an incompressible fluid. The volume of material moved by compression is displaced laterally in the form of bulging sides. An approximation to the change in diameter of one of our standard cylindrical urethane springs can be made by increasing the diameter by the same amount of compression.

*Example:* A 2.00-inch long spring is to be deflected 15% or .30 inches. The diameter will then also increase approximately by .30 inches. This material's lateral expansion must be considered for many applications, especially when they have to fit inside cavities.

The recommended maximum free (unloaded) length is 2-1/2 times the spring out side diameter, although springs may be stacked with guide rods and washer-shaped spacers, for taller applications.

Conventional heavy-duty steel die spring	Up to 500 Lbs.
Urethane springs	Up to 2,600 Lbs.
Urethane bar stock	Up to 90,000 Lbs.
Urethane slab stock	Unlimited

Suggested maximum cyclic frequencies and deflection percentages of free length are summarized by the following, for 95A spring.

	Maximum Deflection	Cycles Per Hour
Slow speeds or short runs	less than 25%	200
Intermittent	up to 25%	700
Continuous	up to 15%	12,000

Pressure Ratings of Die-Thane Bars				
Height x Width (inches)	Length (inches)	Pressure (LBS.) per 1/8" Deflection		
		DT-35 (80A)	DT-25 (90A)	DT-15 (95A)
1" x 1"	12	4,000	6,700	9,800
	24	8,100	13,750	19,950
	36	12,500	21,000	30,200
	48	16,400	27,800	40,600
2 x 2	12	3,700	6,400	9,300
	24	7,800	13,350	19,350
	36	12,000	21,400	29,700
	48	16,200	27,600	40,000
2 x 3	12	7,700	12,700	18,500
	24	17,200	28,000	41,500
	36	27,200	43,900	65,800
	48	36,500	60,000	90,000
3 x 2	12	2,000	3,500	5,400
	24	4,200	7,000	11,000
	36	6,300	10,600	16,600
	48	8,400	14,300	22,100

Pressure Ratings for DT-25 (90A) Solid Rods			
Cylinder Size	Load for Deflecting by:		
	1/8"	1/4"	3/8"
1/2" Dia.x 1" height	120	220	-
5/8" Dia.x 1-1/4" ht.	170	295	460
3/4" Dia.x 1-1/2" ht.	215	365	520
7/8" Dia.x 1-3/4" ht.	250	430	610
1" Dia. x 2" height	295	595	700
1-1/8" dia.x 2-1/4" ht.	360	590	810
1-1/4" dia.x 2-1/2" ht.	390	670	920
1-1/2" Dia.x 3" height	520	820	1150
2" Dia.x 3" height	920	1460	2000
3" Dia.x 3" height	2060	3300	3650
4" Dia.x 3" height	3700	5800	7100