



# TECHNICAL UPDATE



**SP000**

## FEATURES & INNOVATIVE DESIGNS IN POLYURETHANE

### MATERIAL

The polyurethane that is specifically blended for the SuperPro product has mechanical properties that make it extremely successful in its application.

The properties of extreme resistance to abrasion, low compression set, high tear strength and a resistance to oils and solvents make SuperPro's polyurethane ideal for automotive applications. These properties lead to a resilient product that is highly versatile in its applications.

### STEELWORK

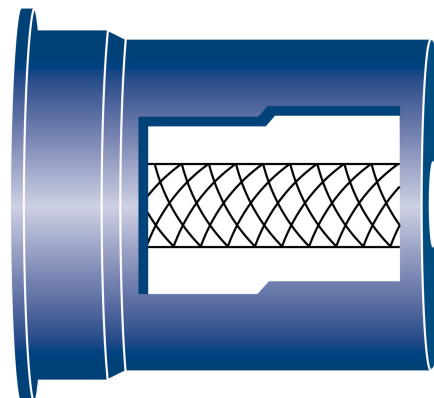
The crush tube is an integral component of the suspension bush system and is necessary for free pivoting. The crush tubes are made to precision tolerances to ensure that the precise fits are maintained.

Wherever an outer shell or sleeve is used in the SuperPro product range you can be assured that it is also made within precise tolerance ranges.

### THE DOUBLE HELIX

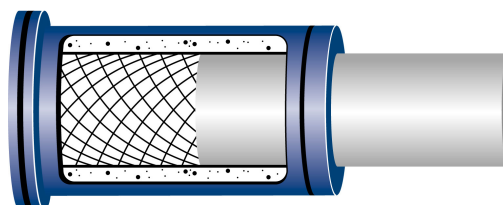
The double helix is a design feature that has led to improvements in the SuperPro product. The double helix is used in two applications. The first is on the inside of the bush and the second is on the outside diameter of the crush tube.

The first design of the double helix is used primarily on shackle bushes. The double helix provides a region for grease to travel along. This allows a boundary layer of grease to form between the inside diameter of the bush and the outside diameter of the tube. The double helix is extremely successful in greaseable shackles as the grease can travel from the center of the bush along the helix and out to the grease grooves in the head of the bush.



### KNURLING

Knurling is used on control arm bushes to enable unrestricted pivoting of the polyurethane bush around the crush tube. The knurling has two inherent design advantages. The knurling reduces the surface area of polyurethane in contact with the crush tube. This reduction in surface area results in less frictional forces being developed.



The SuperPro knurl bore combined with the integral grease retention lips keeps the lubricating grease intact for the life of the bushing, and eliminates the necessity for periodic re-greasing.



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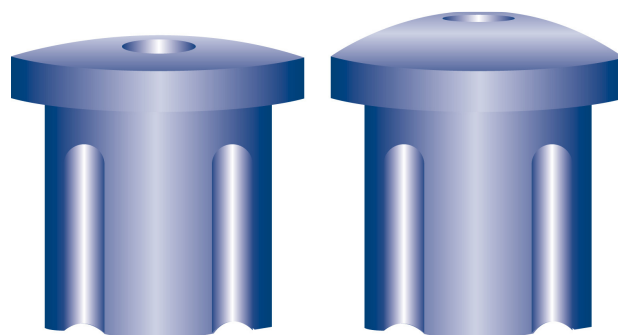
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### BULLET GROOVES

Bullet grooves are incorporated in the design of SuperPro bushes to allow for variances in control arm or spring eyes.

The voiding and bullet grooves also allow for the transgression of displaced polyurethane into the volume of the grooves as load is applied during normal vehicle operation.

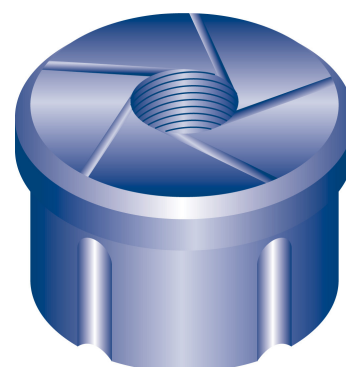


Even though polyurethane is in a solid form when it is manufactured into bushes, its unique properties enable it flow in a manner similar to a liquid when loaded. The action of the bush flowing into its voids prevents the generation of harshness and NVH within the bush and its mount.

### TANGENTIAL GREASE GROOVES IN HEAD

The tangential grease grooves in the heads of shackle bushes have reduced the friction between the head of the bush and the shackle plates.

The grooves store grease, which is smeared around the mating surfaces when the spring shackles rotate forming a lubrication boundary layer. This has the effect of minimising head friction and reducing noise.



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