

## **Q&A for Round vs Square: Linear Guide Rail Basics and Custom Configuration**

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### **Q: Can a profile rail be used in conjunction with a round rail to support the moment of the load?**

A: It is not recommended to use round and square rails in side to side configuration as heights would not match and will not bring any value to the application.

### **Q: How does preload affect the life of the system?**

A: Preload does not affect the life of bearing as once the bearing is loaded which is usually higher than the preload it will offset the load.

### **Q: Why does postal sorting require round rail?**

A: Common sorting applications require self-alignment and need a bearing which is most compliant or forgiving. Also, some applications required linear raceway to be end supported which is not possible with profile/square rails.

### **Q: What about the leading time for standard and custom bearings?**

A: Lead time varies from product to product. Thomson carries a large stock of bearings which can be shipped in 2-3 days. To get a lead time on specific bearing, please contact Thomson customer service at 540-633-3549.

### **Q: Can the guide rail blocks generate vibrations while travelling at a speed of 2000mm per min?**

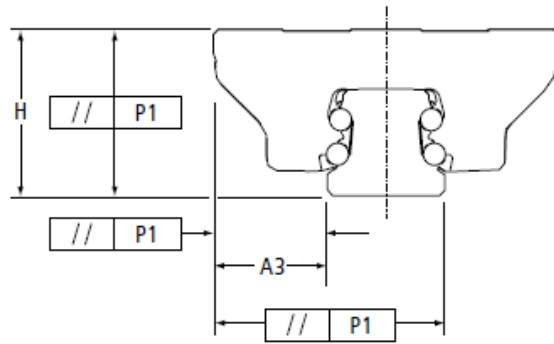
A: In general, bearing motion is very smooth unless there are external factors.

### **Q: We are building a medium duty 5 axis router where the spindle is mounted on a cantilever arm. In very general terms, would you suggest round or profile rail construction?**

A: Profile rail is recommended as a router head needs to be supported which will require bearing to have high moment load capacity. Also, it's ideal for applications where rigidity and accuracy is must.

### **Q: What does accuracy measure? The fit of element clearance?**

A: It's the assembly accuracy and describes the tolerance on H and A3 dimensions as a function of a carriage. Please see the figure below.



**Q: Do the nylon balls carry load or do they just act as spacers?**

A: They do carry some load and bearings load capacity is de-rated by 90%.

**Q: Why doesn't the die set ball bushing come with protection seals?**

A: None of the metal bearings come with seals.

**Q: Can you please explain "preloading"?**

A: Bearings are preloaded by reducing the clearance between the linear race and recirculating element. It is achieved by increasing the ball size or by using an oversized shaft (round rail only). Basically, a bearing is loaded with X% of max load capacity of the bearing.

**Q: What is PV?**

A: It's pressure on the bearing vs. the speed.

**Q: Do the 3d cad models contain the actual mechanical properties of the components, i.e., mass, modulus of elasticity, etc?**

A: 3D Models available on the website don't include the mechanical properties.

**Q: How does a "High Velocity" application affect Life of a Round and Square rail?**

A: Heat could be a concern and bearings will have to be regularly lubricated to prevent them from failing prematurely.

**Q: Would it be that once the preload % has been offset by the actual load, it would then 'unload' & the resultant life would be calculated using the delta between actual & preload?**

A: Load life calculation does not take preload into account as applied load will offset the preload.