

WHY DO TOP MANUFACTURERS INSIST ON ROYAL LIVE CENTERS?



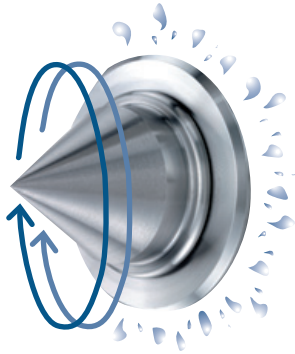
Royal live centers are widely regarded by top metalworking professionals as the best live centers available anywhere in the world. Each Royal live center is a finely crafted tool, incorporating the highest quality steels, bearings, and seals. Manufactured to exacting tolerances, all Royal live centers are guaranteed accurate to **$\pm 0.00005"$ TIR** or better.

Royal Products offers a broad range of standard live center models to suit virtually all turning applications. We also design and build hundreds of custom centers each year to meet special customer requirements. Custom live centers from Royal Products are competitively priced and are held to the same high manufacturing tolerances as our standard models.

EXCLUSIVE ROTO-SHIELD™ TECHNOLOGY

Significantly Improves Bearing Life

NEW



**ROYAL
ROTO-SHIELD™
TECHNOLOGY**

The new, exclusive Royal Roto-Shield™ represents a **breakthrough in live center technology**, significantly increasing the effective operating life.

Royal Roto-Shield™ Technology consists of two main components:

- A live center point machined from a solid bar which incorporates a specially-shaped steel coolant slinger
- A long-life, spring-loaded seal that is resistant to abrasion, high temperatures, and virtually all metalworking fluids

A **dramatic increase in operating life** is achieved through the following effects:

- Coolant is deflected, keeping it from penetrating the center
- Bearings are protected from harmful fines and dust
- Seal wear is minimized
- Lubricating grease lasts longer and retains consistency

The Royal Roto-Shield™ is now a standard feature on the following Royal Live Center models:

- | | |
|-----------------------------------|-------------------------------|
| - High Precision Quad Bearing | - Heavy-Duty CNC Spindle Type |
| - High Precision CNC Quad Bearing | - High-Speed Precision |
| - Heavy-Duty Spindle Type | - Super Quad Extra Heavy-Duty |

**✓ High-Pressure
Coolant Approved**



Insist on Roto-Shield™ Technology – Only Available on Royal Live Centers

Outstanding Bearing Protection

The **exclusive Royal Roto-Shield™** is a steel coolant slinger that is machined into the live center point. This shield deflects coolant and debris, protects bearings from harmful fines and dust, minimizes seal wear, and helps the grease last longer and retain consistency.

Excellent Thrust Load Capacities

A high-capacity thrust bearing protects the center from **excessive axial loads**, one of the biggest enemies of any live center.

Highest Accuracy

The point on every Royal Live Center is guaranteed to $\pm 0.00005"$ TIR. This guaranteed accuracy is the best in the industry.

Long Life Seal

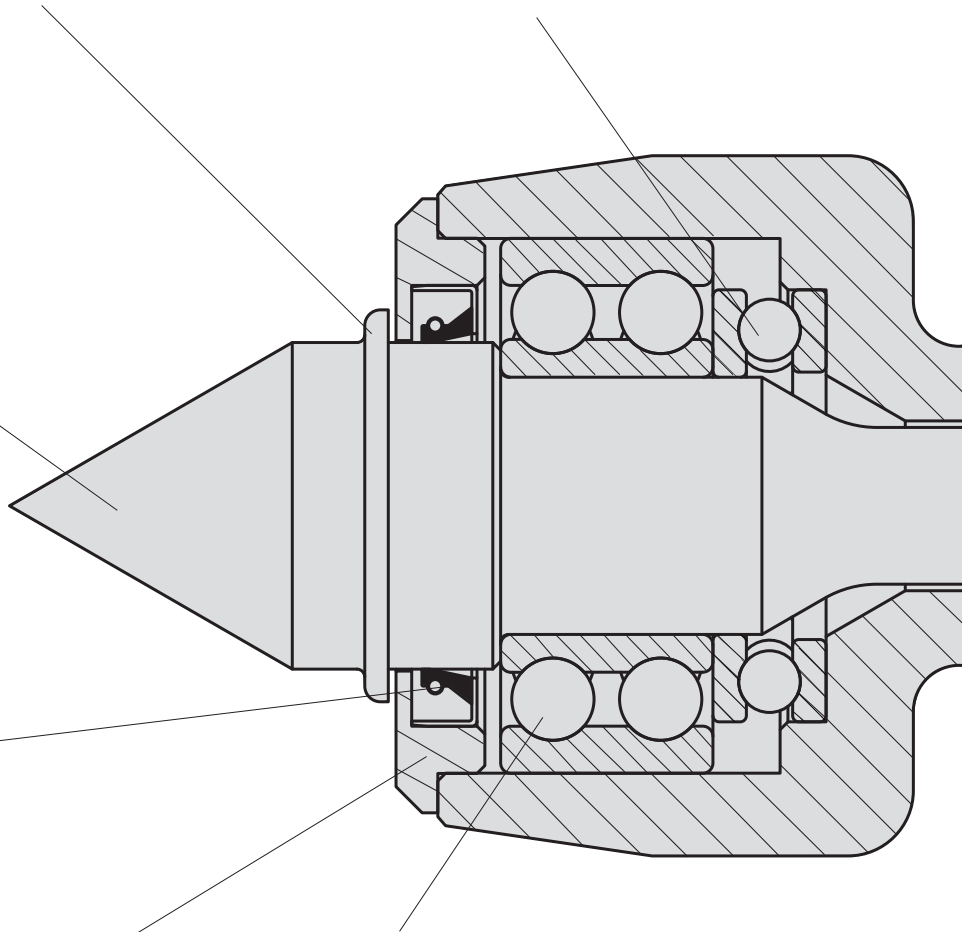
A long-life, spring-loaded seal that is resistant to abrasion, high temperatures, and virtually all metalworking fluids is standard on many Royal live center models.

Concentric Seal Contact

A close-tolerance press-fit between the seal retainer and live center body is superior to a threaded fit because it ensures that the seal makes **even, concentric contact** with the rotating point. Threaded retainers push the seal off-center by the very nature of their design.

High Workpiece Weight Ratings

A precision, double-row angular-contact bearing provides high workpiece weight ratings for turning large, heavy parts. Our 2&3 MT models are equipped with a single-row bearing for **reduced turning resistance and higher operating speeds**. The single-row bearing on the smaller models also allows for a shorter head length, keeping the load concentrated closer to the tailstock for rigidity. Some manufacturers promote the fact that they use double-row bearings on all models, but the gain in workpiece weight capacity for such a small center is overshadowed by reduced operating speeds, increased point drag, and increased risk of flexing.



LIVE CENTER ADVANTAGES

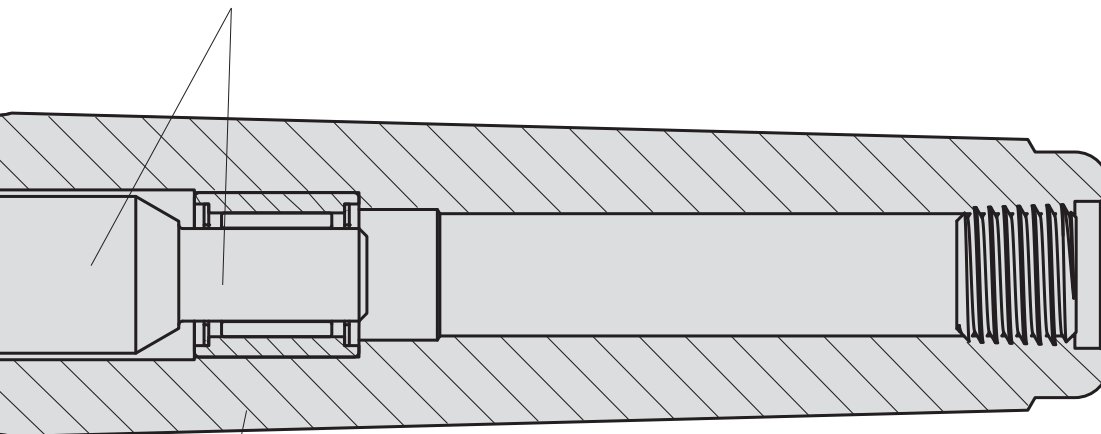
Maximum Rigidity

A large needle bearing positioned within the tapered shank **increases rigidity and dampens vibration**. The location of this bearing is very important. On all of our centers, the location of the needle bearing has been optimized for maximum vibration dampening while maintaining substantial point thickness for rigidity.

Some other manufacturers locate the needle bearing much deeper within the shank. In fact, many years ago Royal offered a center called the Imperial model that was made this way. The problem with this design is that the point must become much longer and thinner in order to reach the bearing. By having such a thin cross-section, we found that the point loses much of its rigidity and flexes under load, resulting in poor surface finishes and out-of-tolerance parts.

The main reason other manufacturers make centers that way is because they can't hold concentricity on deep bores. Royal has invested in very high-end turning and grinding equipment to ensure that all bearing surfaces are bored and ground from the front side in one chucking so they are perfectly concentric to each other.

**✓ High-Pressure
Coolant Approved**



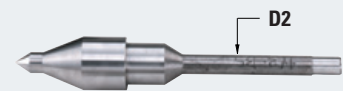
Best Warranty

All Royal Live Centers carry a one-year warranty against failure due to manufacturing defects. Other U.S. manufacturers only offer a 90-day warranty, and most imported centers carry no warranty at all. Fortunately, Royal Products accepts all brands of centers for our Rebuild/Exchange Program so it is very easy for you to **upgrade to a Royal Live Center**. See page 50 for details.

Point Analysis of 4MT Spindle Type Live Centers



Royal Point



Other Brand Point

D1 = Diameter of Royal Point = .603"

D2 = Diameter of Other Brand Point = .465"

Cross-Sectional Area of Royal Point = .285 sq. in.

Cross-Sectional Area of Other Brand Point = .170 sq. in.

The cross-sectional area of the point on the Royal Center is 68% larger than that of the other brand, making the Royal point much more rigid and less likely to deflect under load.

Royal's thick, beefy point offers superior rigidity, resulting in tighter part tolerances and chatter-free surface-finishes.