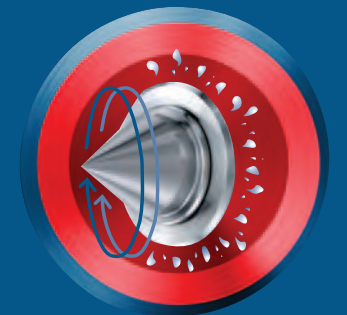




LIVE AND DEAD CENTERS

ROYAL MAKES THE BEST LIVE CENTERS ON EARTH



ROYAL
PRODUCTS
Optimize everything.

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, lubricants and seals. Manufactured to exacting tolerances, 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

Only Available on Royal Live Centers



**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 a standard feature on the following Royal Live Center models:



- High Precision Quad Bearing
- High Precision CNC Quad Bearing
- Heavy-Duty Spindle Type
- Heavy-Duty CNC Spindle Type
- The Ultimate™ Multi-Tasking Center
- High-Speed Precision
- All "Standard Specials"



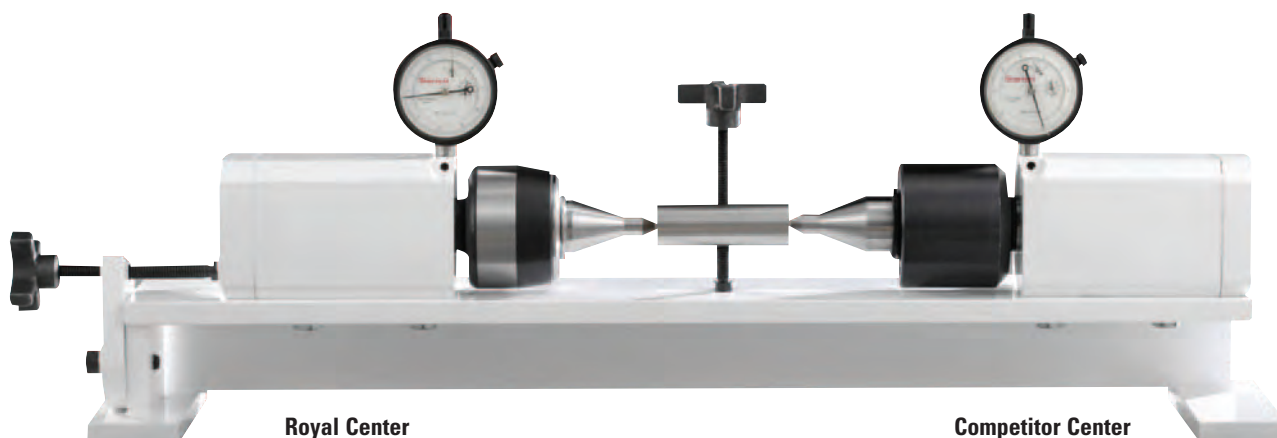
**✓ High-Pressure
Coolant Approved**

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



**Check out the Royal Live Center
Video at www.livecenters.com**

WHAT MAKES ROYAL LIVE CENTERS THE MOST RIGID?



One of the most common misconceptions regarding live centers relates to the internal length of the rotating point.

Some manufacturers believe that a long, thin point provides more rigidity than a short, thick point. But in fact, the opposite is true.

In order to verify that Royal's short, thick point provides superior rigidity over a long, thin point, we built the test fixture pictured above.

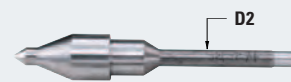
Here's how it works:

- Both live centers have holes drilled in their shanks corresponding to the indicator locations.
- As radial force is applied evenly to the point tips by turning a centrally-located screw, the indicators are able to measure the internal deflection of each point.
- Almost immediately upon application of the load, the indicators show that **the competitor's point flexes 600% more than the Royal point!**

Point Analysis of 4MT Spindle Type Live Centers



Royal Point



Other Brand Point

D1 = Diameter of Royal Point = .603"

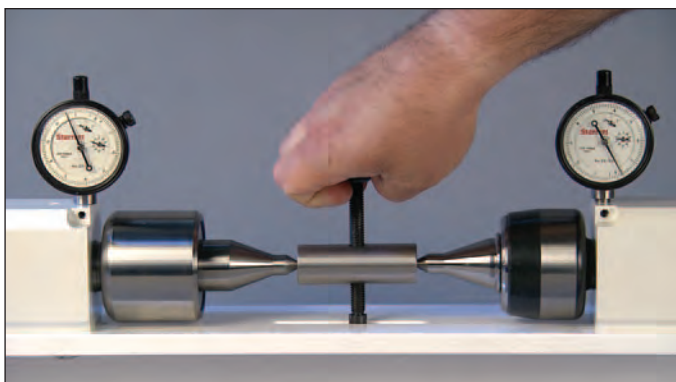
D2 = Diameter of Other Brand Point = .465"

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.



See the test in action at
www.livecenters.com



One Size Does Not Fit All – So We Turned Special Centers Into Standards!

One of Royal's strengths as a leading live center manufacturer is our ability to design and build custom centers to address non-standard applications. However, there are two major **drawbacks that are almost always associated with custom-made centers: longer lead times and higher prices.**

As an ISO company dedicated to continuous improvement, we decided to see if it might be possible to categorize special centers according to their similarities, and then offer a few new standard models that could handle most jobs.

Our engineers analyzed the prints of hundreds of special centers that we had manufactured over several years, and the results were shocking – **over 90% of our customers' special needs could be covered with just five new point styles.** These are:



Full-diameter long point for shaft work and parts with large center holes.



A reduced-diameter long point for use when greater clearance is needed.



A small bull-nose point for use with tubes or parts with large center holes.



A female point with a 90° included angle for locating on OD part chamfers.



A male point with a 90° included angle for locating on internal part chamfers.

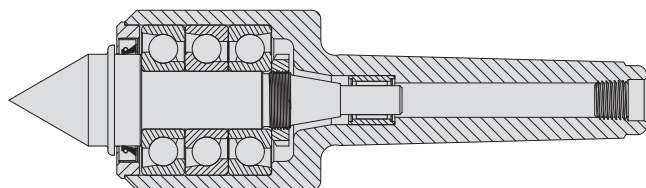


**See pages 90-91 for
ordering information**

Royal maintains a full inventory of each model to ensure **same-day delivery, and because we manufacture them in quantity, they are **very aggressively-priced.****



ROYAL OFF-THE-SHELF "SPECIALS"



Deciding which live center model to use as a platform for Royal's new off-the-shelf "special" program was easy. We chose the High-Precision Quad-Bearing model for the following reasons:

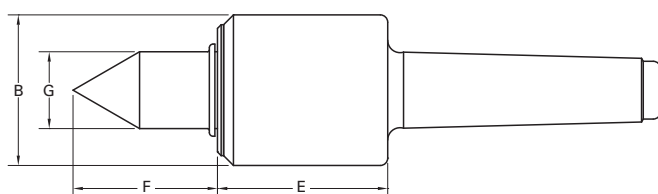
- 1- Very Rigid Bearing Arrangement
- 2- Exclusive Roto-Shield™ Technology
- 3- Low-Profile Head

All Models In Stock for Immediate Delivery



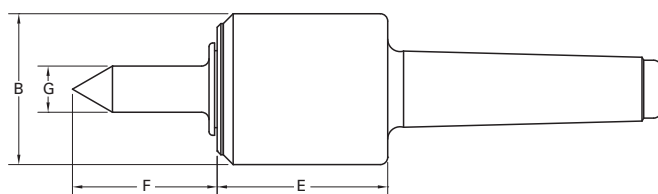
**EXCLUSIVE ROYAL
ROTO-SHIELD™
TECHNOLOGY**

**✓ High-Pressure
Coolant Approved**



Royal High-Precision Quad-Bearing Live Centers – Full Diameter Long Point

TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.75	0.88	6,000	465	1,270	10478	\$1,155
3 MT	1.70	2.12	1.75	0.88	6,000	465	1,270	10479	1,155
4 MT	2.45	2.78	2.35	1.25	5,000	1,230	2,150	10480	1,435
5 MT	2.45	2.78	2.35	1.25	5,000	1,230	2,150	10481	1,505

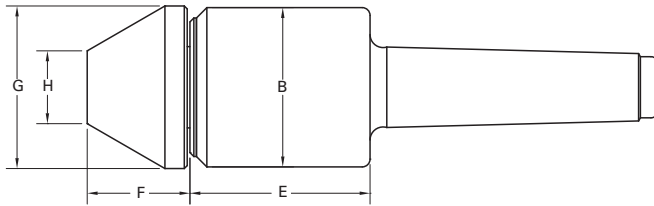


Royal High-Precision Quad-Bearing Live Centers – Small Diameter Long Point

TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.75	0.50	6,000	350	1,270	10482	\$1,155
3 MT	1.70	2.12	1.75	0.50	6,000	350	1,270	10483	1,155
4 MT	2.45	2.78	2.35	0.75	5,000	925	2,150	10484	1,435
5 MT	2.45	2.78	2.35	0.75	5,000	925	2,150	10485	1,505

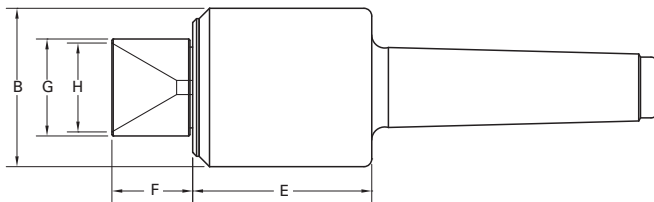
* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

ROYAL OFF-THE-SHELF "SPECIALS"



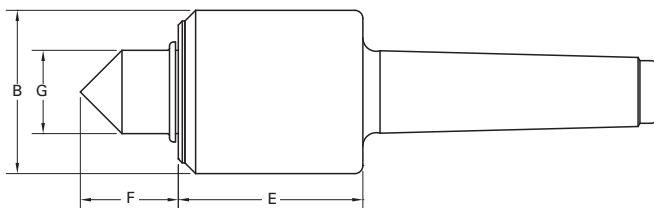
Royal High-Precision Quad-Bearing Live Centers – Bull Nose Point

TAPER	B	E	F	G	H	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.25	1.75	0.75	6,000	750	1,270	10490	\$1,185
3 MT	1.70	2.12	1.25	1.75	0.75	6,000	750	1,270	10491	1,185
4 MT	2.45	2.78	1.58	2.50	1.12	5,000	1,905	2,150	10492	1,505
5 MT	2.45	2.78	1.58	2.50	1.12	5,000	1,905	2,150	10493	1,590



Royal High-Precision Quad-Bearing Live Centers – 90° Female Point

TAPER	B	E	F	G	H	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.00	1.12	0.15–1.00	6,000	885	1,270	10494	\$1,155
3 MT	1.70	2.12	1.00	1.12	0.15–1.00	6,000	885	1,270	10495	1,155
4 MT	2.45	2.78	1.25	1.50	0.21–1.38	5,000	2,240	2,150	10496	1,435
5 MT	2.45	2.78	1.25	1.50	0.21–1.38	5,000	2,240	2,150	10497	1,505



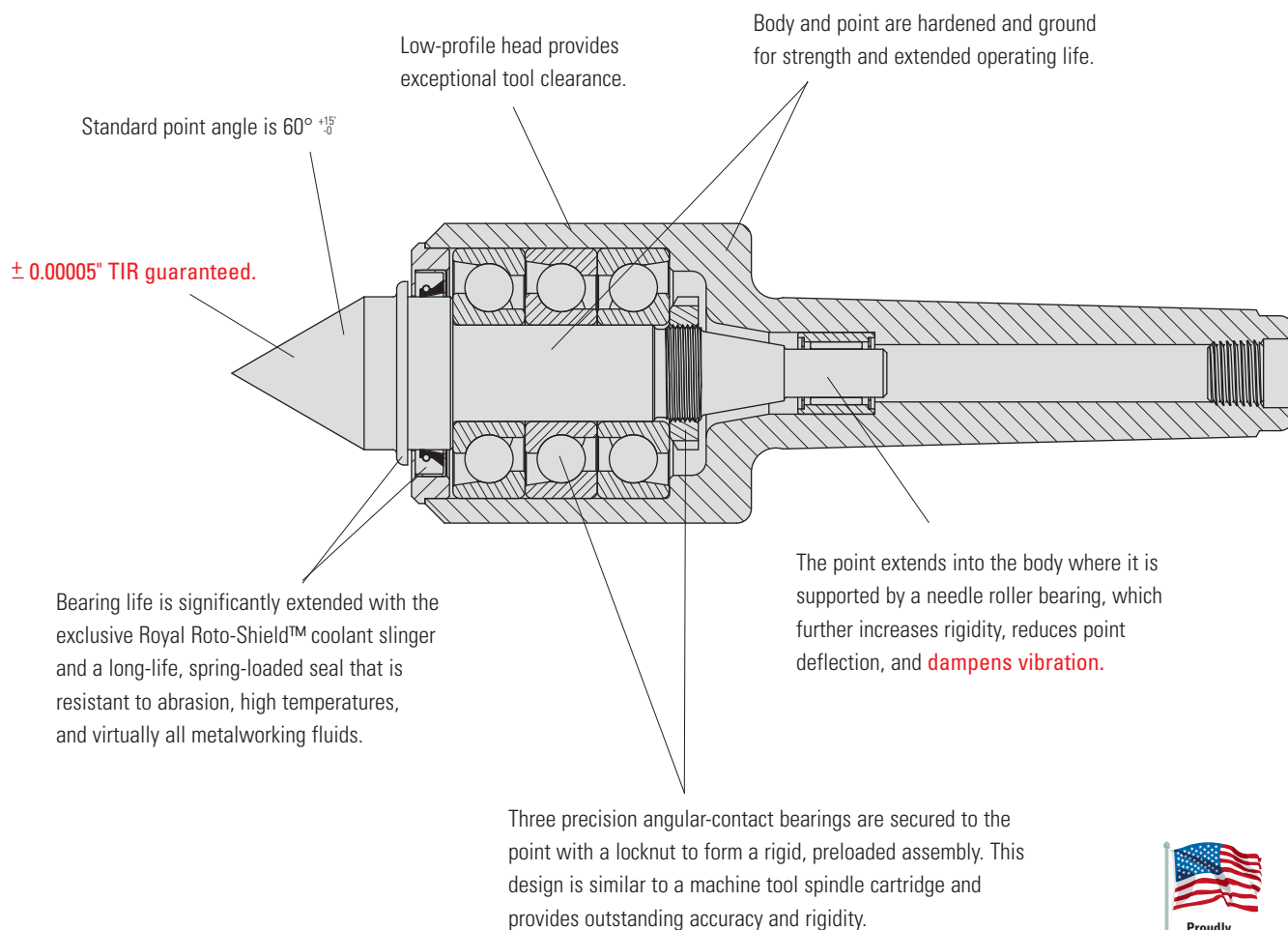
Royal High-Precision Quad-Bearing Live Centers – 90° Male Point

TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.07	0.88	6,000	885	1,270	10486	\$1,145
3 MT	1.70	2.12	1.07	0.88	6,000	885	1,270	10487	1,145
4 MT	2.45	2.78	1.47	1.25	5,000	2,240	2,150	10488	1,420
5 MT	2.45	2.78	1.47	1.25	5,000	2,240	2,150	10489	1,505

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.



ROYAL HIGH-PRECISION QUAD-BEARING LIVE CENTERS



- ❑ An excellent choice for precision turning, grinding, and hard-turning.
- ❑ Precision, preloaded bearing assembly provides exceptional rigidity and accuracy.
- ❑ Low-profile head offers superior tool clearance.
- ❑ Exclusive Roto-Shield™ coolant slinger and upgraded seal provide outstanding bearing protection for extended operating life.
- ❑ Body and point are hardened and ground for strength and long life.



**Check out the Royal Live Center
Video at www.livecenters.com**

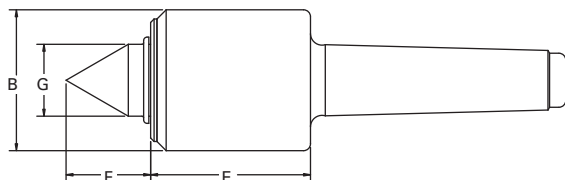
ROYAL HIGH-PRECISION QUAD-BEARING LIVE CENTERS



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TECHNOLOGY**



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Royal High-Precision Quad-Bearing Live Centers - Standard Point

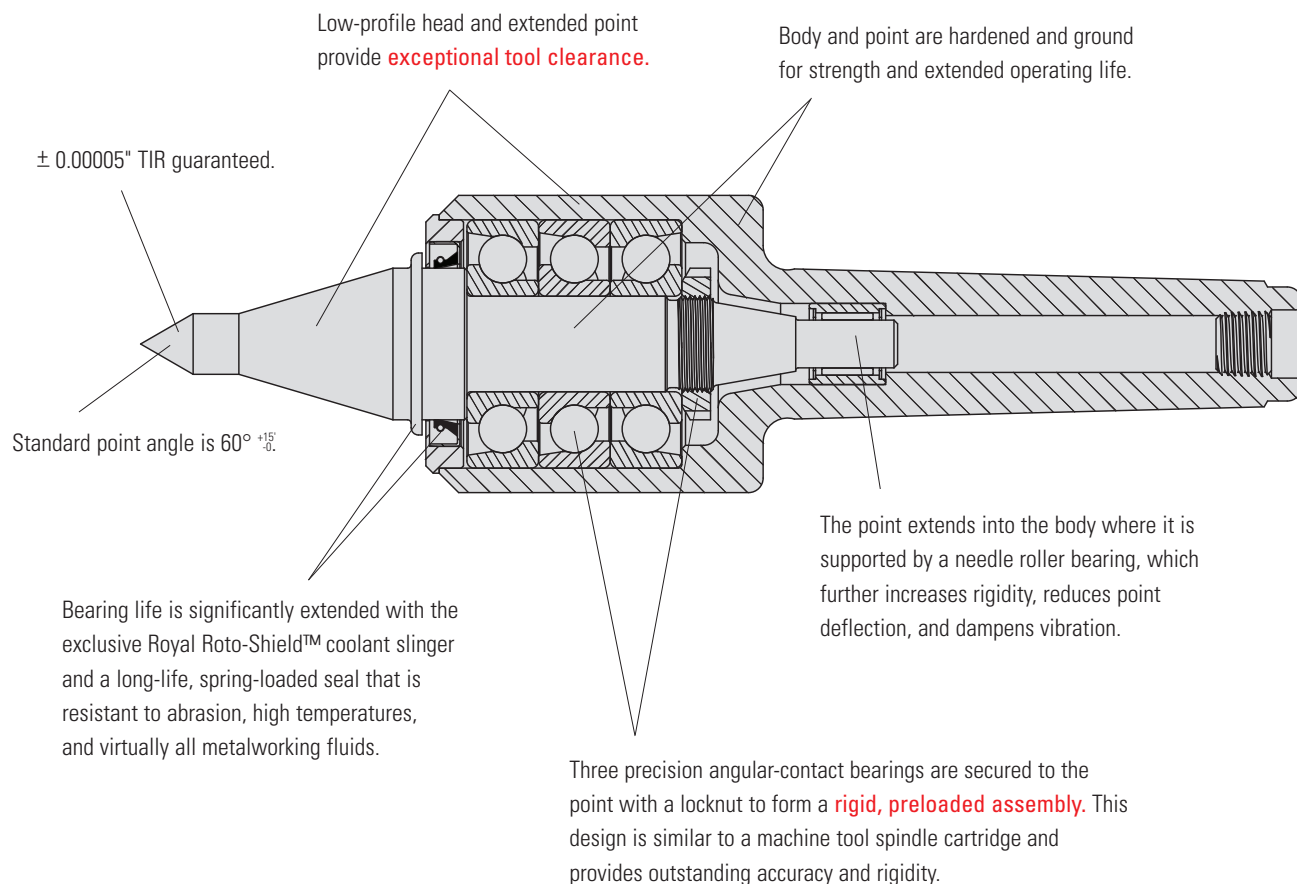
TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.07	0.88	6,000	885	1,270	10412	\$1,050
3 MT	1.70	2.12	1.07	0.88	6,000	885	1,270	10413	1,050
4 MT	2.45	2.78	1.47	1.25	5,000	2,240	2,150	10414	1,250
5 MT	2.45	2.78	1.47	1.25	5,000	2,240	2,150	10415	1,315
5 MT HD	3.82	3.89	2.31	2.00	3,000	5,240	5,300	10445	2,640
6 MT HD	3.82	3.89	2.31	2.00	3,000	5,240	5,300	10446	3,235

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

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



ROYAL HIGH-PRECISION CNC QUAD-BEARING LIVE CENTERS



- ❑ An excellent choice for precision turning, grinding, and hard-turning.
- ❑ Precision, preloaded bearing assembly provides exceptional rigidity and accuracy.
- ❑ Low-profile head and extended point combine to offer superior tool clearance.
- ❑ Exclusive Roto-Shield™ coolant slinger and upgraded seal provide **outstanding bearing protection** for extended operating life.
- ❑ Body and point are hardened and ground for strength and long life.

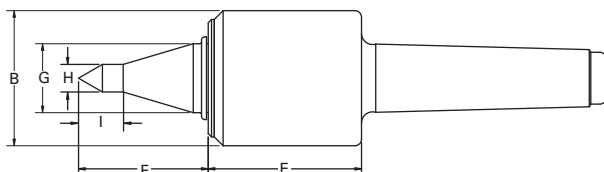


**Check out the Royal Live Center
Video at www.livecenters.com**

ROYAL HIGH-PRECISION CNC QUAD-BEARING LIVE CENTERS



**EXCLUSIVE ROYAL
ROTO-SHIELD™
TECHNOLOGY**



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Royal High-Precision Quad-Bearing Live Centers – CNC Point

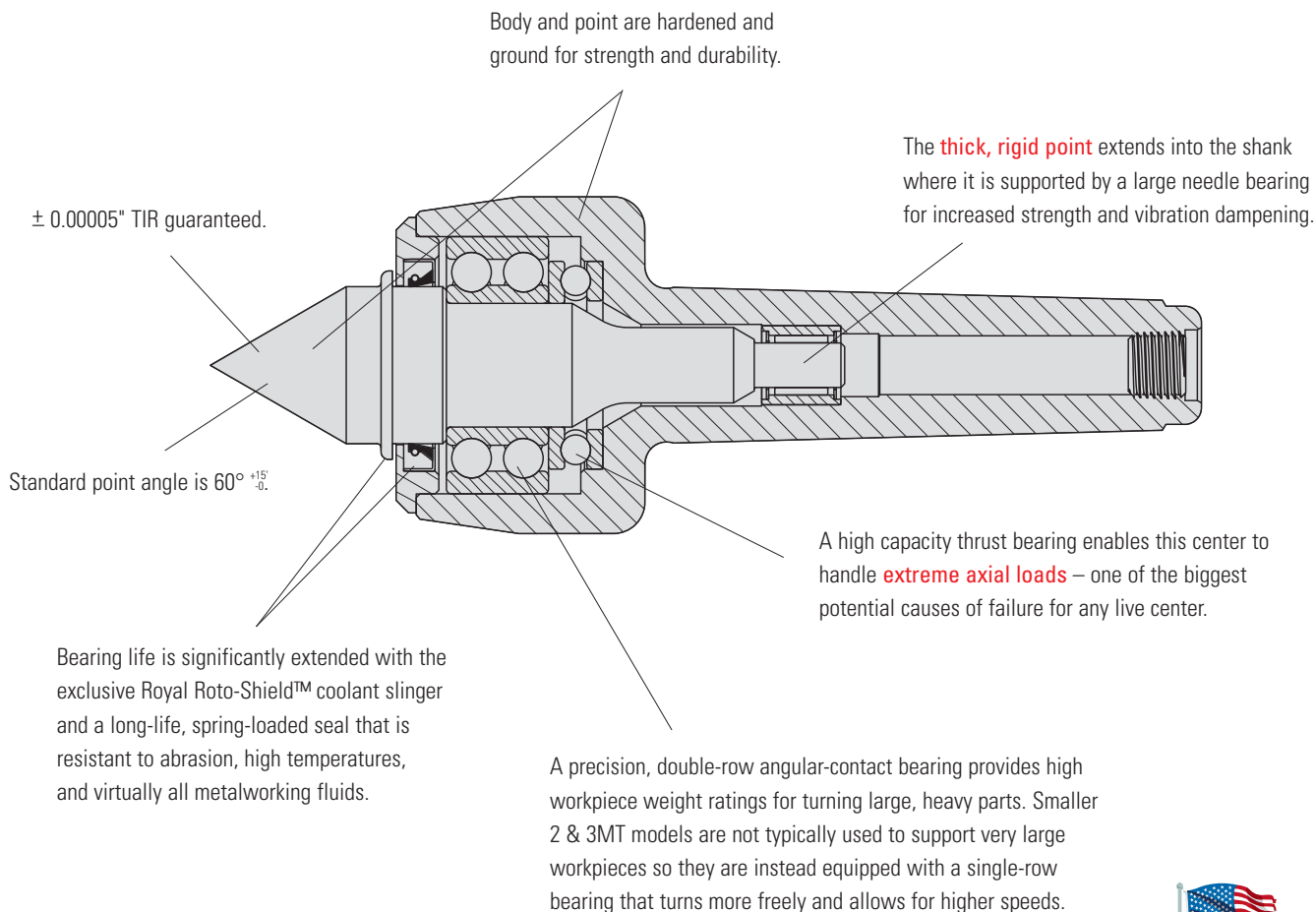
TAPER	B	E	F	G	H	I	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.70	2.12	1.75	0.88	0.38	0.63	6,000	465	1,270	10662	\$1,020
3 MT	1.70	2.12	1.75	0.88	0.38	0.63	6,000	465	1,270	10663	1,020
4 MT	2.45	2.78	2.35	1.25	0.50	0.81	5,000	1,230	2,150	10664	1,250
5 MT	2.45	2.78	2.35	1.25	0.50	0.81	5,000	1,230	2,150	10665	1,315
5 MT HD	3.82	3.89	3.34	2.00	0.75	1.28	3,000	2,210	5,300	10475	2,640
6 MT HD	3.82	3.89	3.34	2.00	0.75	1.28	3,000	2,210	5,300	10476	3,235

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

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



ROYAL HEAVY-DUTY SPINDLE TYPE LIVE CENTERS

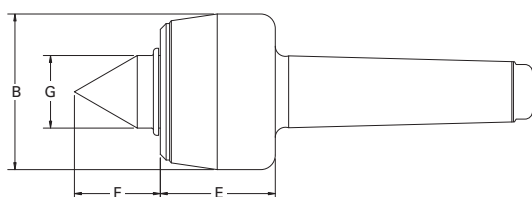


- ❑ One of our most popular models – an excellent **heavy-duty live center** designed to handle almost all CNC and manual turning jobs.
- ❑ Heavy-duty precision bearings provide exceptional radial and thrust load capacities.
- ❑ The thick, rigid point extends into the shank where it is supported by a large needle bearing for increased strength and vibration dampening.
- ❑ Exclusive Roto-Shield™ coolant slinger and upgraded seal provide outstanding bearing protection for extended operating life.
- ❑ Body and point are hardened and ground for accuracy and durability.

ROYAL HEAVY-DUTY SPINDLE TYPE LIVE CENTERS



**EXCLUSIVE ROYAL
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TECHNOLOGY**



**✓ High-Pressure
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Royal Heavy-Duty Spindle Type Live Centers

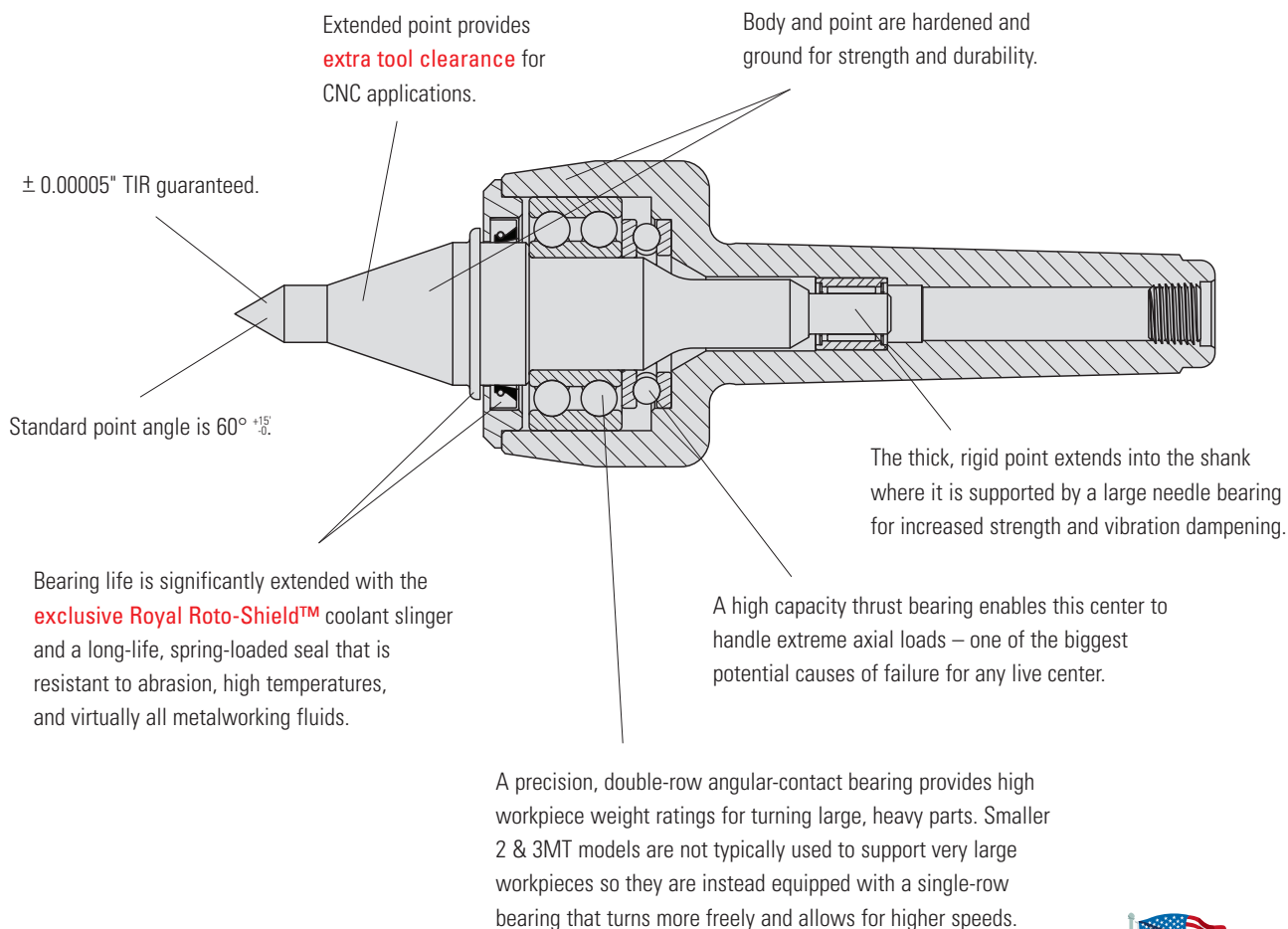
TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.75	1.47	1.01	0.88	6,000	725	2,360	10102	\$877
3 MT	2.33	1.75	1.22	1.00	5,000	970	3,900	10103	877
4 MT	2.68	1.98	1.48	1.25	4,500	1,720	4,050	10104	1,145
5 MT	3.45	2.81	1.84	1.50	3,500	3,260	5,700	10105	1,570
6 MT	4.00	3.15	2.31	2.00	3,500	4,080	6,000	10106	2,950

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

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



ROYAL HEAVY-DUTY CNC SPINDLE TYPE LIVE CENTERS



- ❑ One of our most popular models – an excellent heavy-duty live center designed to handle almost all manual and CNC turning jobs.
- ❑ Heavy-duty precision bearings provide exceptional radial and thrust load capacities.
- ❑ The thick, rigid point extends into the shank where it is supported by a large needle bearing for **increased strength and vibration dampening**.
- ❑ Exclusive Roto-Shield™ coolant slinger and upgraded seal provide outstanding bearing protection for extended operating life.
- ❑ Body and point are hardened and ground for accuracy and durability.

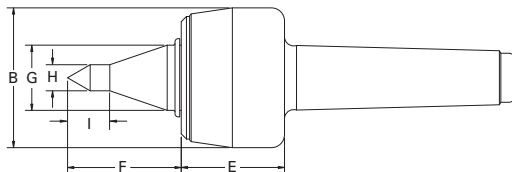
ROYAL HEAVY-DUTY CNC SPINDLE TYPE LIVE CENTERS



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TECHNOLOGY**



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Coolant Approved**

Royal Heavy-Duty CNC Spindle Type Live Centers

TAPER	B	E	F	G	H	I	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	1.75	1.47	1.35	0.88	0.38	0.63	6,000	375	2,360	10212	\$923
3 MT	2.33	1.75	1.86	1.00	0.38	0.63	5,000	740	3,900	10213	923
4 MT	2.68	1.98	2.18	1.25	0.50	0.81	4,500	1,120	4,050	10214	1,170
5 MT	3.45	2.81	2.58	1.50	0.50	0.81	3,500	1,930	5,700	10215	1,570
6 MT	4.00	3.15	3.00	2.00	0.75	1.28	3,500	2,420	6,000	10216	3,040

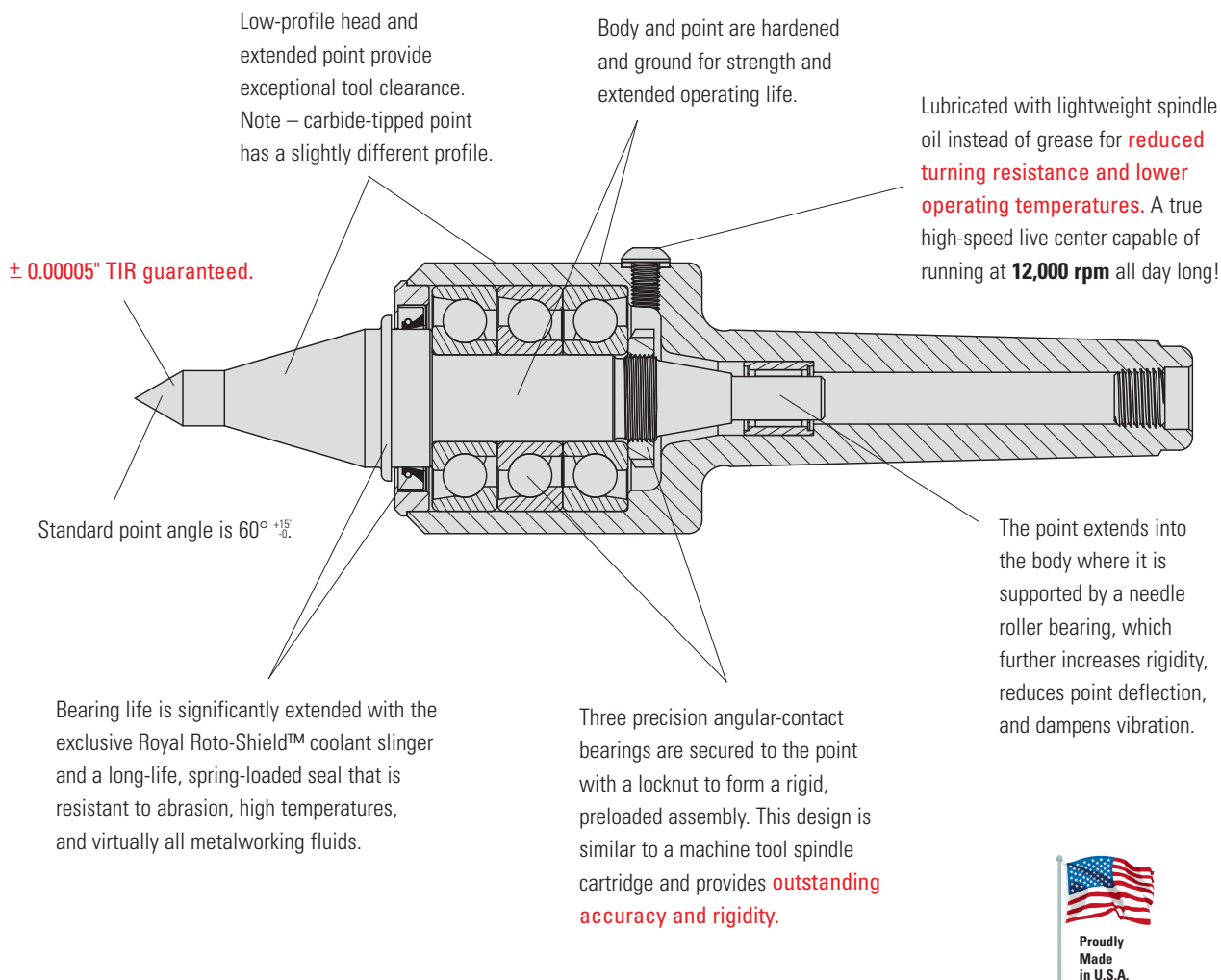
* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

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



ROYAL HIGH-SPEED PRECISION LIVE CENTERS

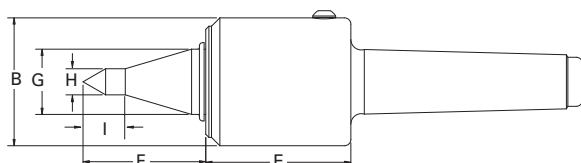
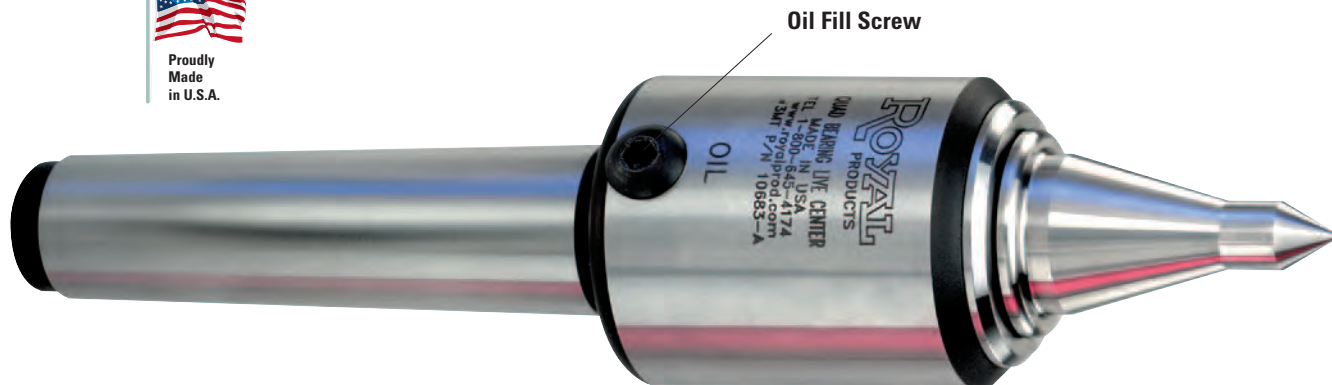
Up to 12,000 RPM!



- ❑ A true high-speed live center – **up to 12,000 rpm**.
- ❑ Lubricated with lightweight spindle oil instead of grease for reduced turning resistance and lower operating temperatures.
- ❑ Precision, preloaded bearing assembly provides exceptional rigidity and accuracy.
- ❑ **Low-profile head** and extended point combine to offer superior tool clearance.
- ❑ Exclusive Roto-Shield™ coolant slinger and upgraded seal provide outstanding bearing protection for extended operating life.
- ❑ Body and point are hardened and ground for strength and long life.
- ❑ Available in both steel and carbide-tipped point models.

ROYAL HIGH-SPEED PRECISION LIVE CENTERS

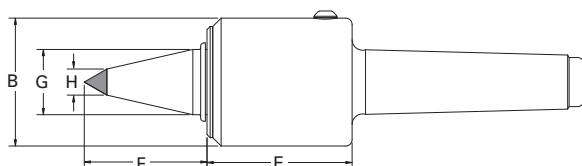
Up to 12,000 RPM!



**EXCLUSIVE ROYAL
ROTO-SHIELD™
TECHNOLOGY**

Royal High-Speed Precision Live Centers (Steel-Tipped)

TAPER	B	E	F	G	H	I	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
3 MT	1.70	2.12	1.75	0.88	0.38	0.63	12,000	180	650	10683	\$1,360
4 MT	2.45	2.78	2.35	1.25	0.50	0.81	12,000	525	1,380	10684	1,620
5 MT	2.45	2.78	2.35	1.25	0.50	0.81	12,000	525	1,380	10685	1,675



**✓ High-Pressure
Coolant Approved**

Royal High-Speed Precision Live Centers (Carbide-Tipped)

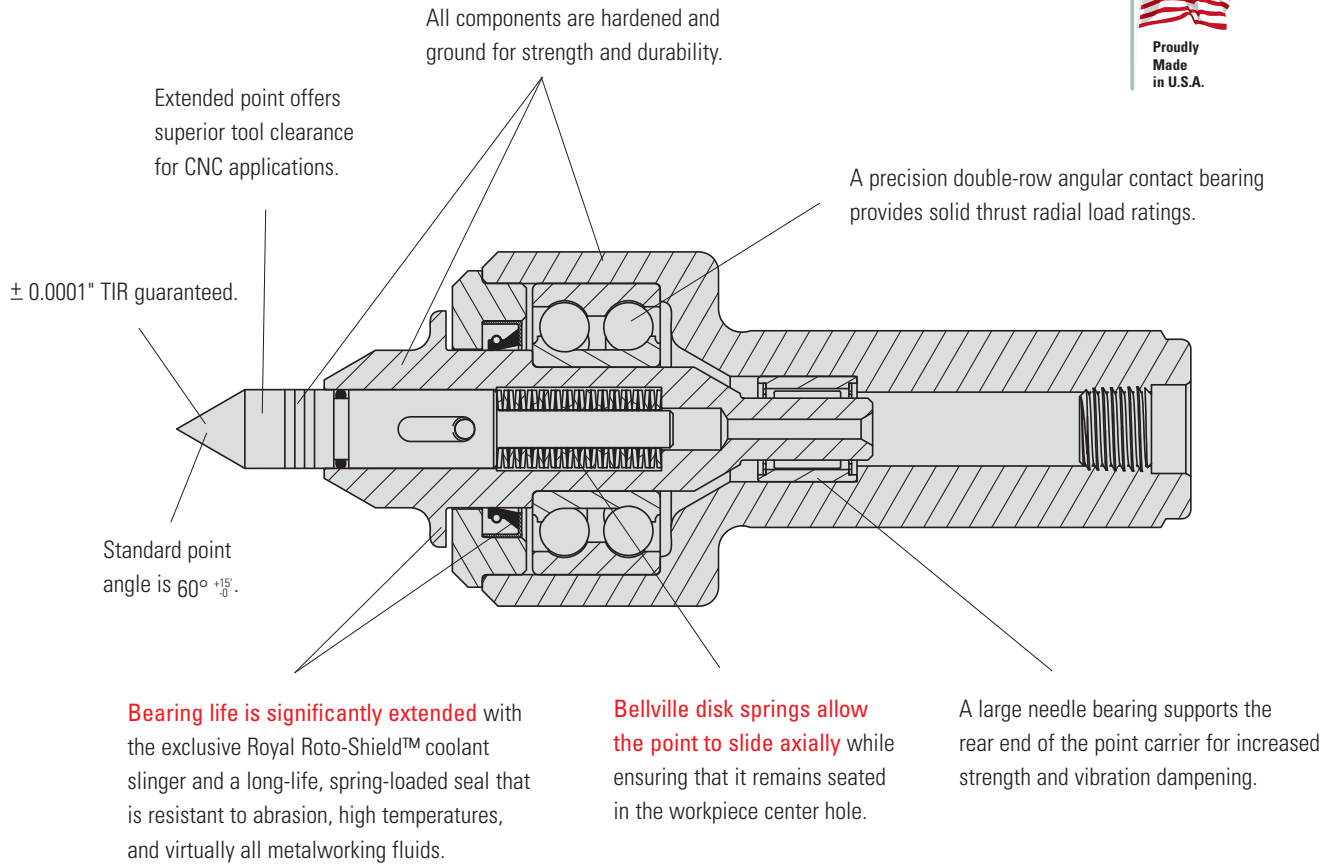
TAPER	B	E	F	G	H	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
3 MT	1.70	2.12	1.75	0.88	0.38	12,000	180	650	10693	\$1,515
4 MT	2.45	2.78	2.35	1.25	0.50	12,000	525	1,380	10694	1,845
5 MT	2.45	2.78	2.35	1.25	0.50	12,000	525	1,380	10695	1,910

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

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



ROYAL ULTIMATE™ MULTI-TASKING LIVE CENTER



Spring-Loaded Point for Lower Turret and Sub-Spindle Applications

- ❑ Designed specifically for use on the latest multi-tasking **CNC machines with lower turrets and/or sub-spindles**.
- ❑ Spring-loaded point overcomes the lack of hydraulic compensation found on tailstocks, protecting lower turrets and sub-spindles from overloading and/or crashes.
- ❑ Much longer operating life than other spring-type live centers due to the outstanding sealing characteristics of the exclusive Royal Roto-Shield™ coupled with a long-life spring-loaded neoprene seal.
- ❑ Heavy-duty bearing configuration and **optimized spring-pak** make the Royal Ultimate™ the perfect choice for all multi-tasking machines.

ROYAL ULTIMATE™ MULTI-TASKING LIVE CENTER



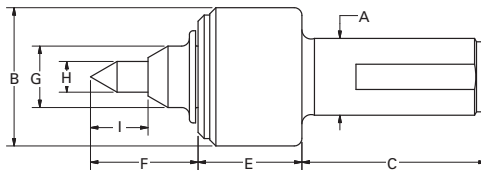
Spring-Loaded Point for Lower Turret and Sub-Spindle Applications



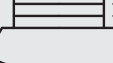
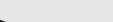


**EXCLUSIVE ROYAL
ROTO-SHIELD™
TECHNOLOGY**

**✓ High-Pressure
Coolant Approved**

A graphical representation laser-marked onto the body of each Ultimate™ Multi-Tasking Live Center takes the guesswork out of the setup process by clearly identifying optimal working parameters.



	SPRING PRESSURE	MAX WORKPIECE WEIGHT
	lbs (kgs)	lbs (kgs)
	206 (93)	355 (161)
	159 (72)	275 (125)
	110 (50)	190 (86)
	58 (26)	100 (45)

The Royal Ultimate™ Multi-Tasking Live Center

A SHANK STYLE	B	C	E	F	G	H	I	SPRING TRAVEL	MAX. SUGGESTED RPM ¹	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.) ²	PART NUMBER	PRICE
1 1/4 SS	2.25	3.00	1.69	1.75	1.00	0.50	0.94	0.25	5,000	350	200	10590	\$1,750

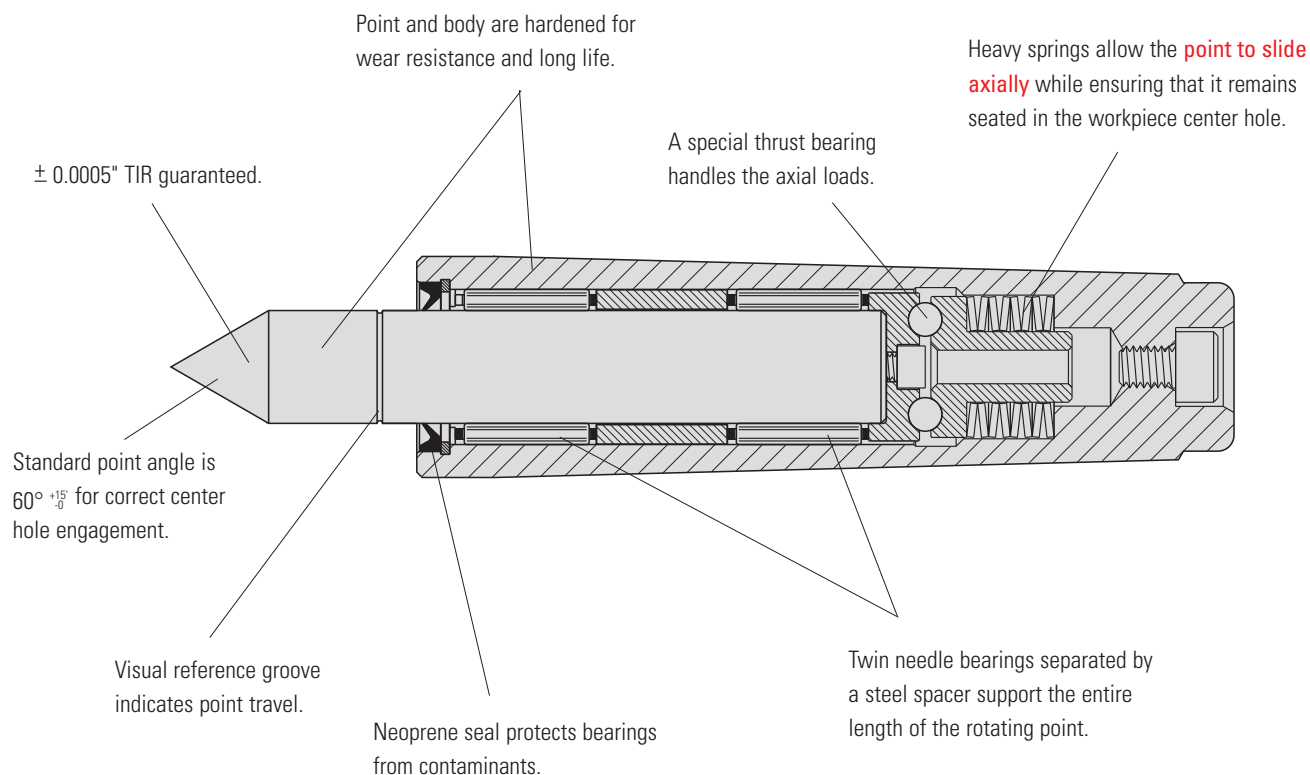
¹ Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

² Exceeding this value will bottom-out springs.

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



ROYAL SPRING TYPE LIVE CENTERS

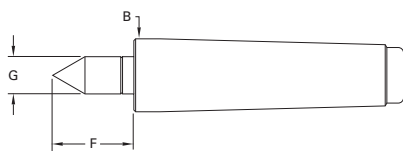
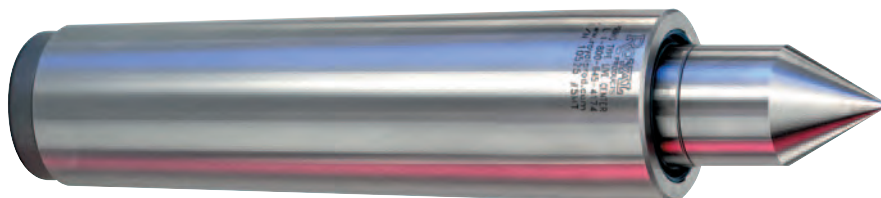


- ☐ Unique spring-loaded point compensates for workpiece thermal expansion.
- ☐ Low-profile design provides **outstanding tool clearance**.
- ☐ Available with standard and extended points.
- ☐ Can be used in the turret **of sub-spindle machines** to overcome a lack of hydraulic compensation.



Check out the Royal Live Center Video at www.livecenters.com

ROYAL SPRING TYPE LIVE CENTERS



Royal Spring Type Live Centers — Standard Point

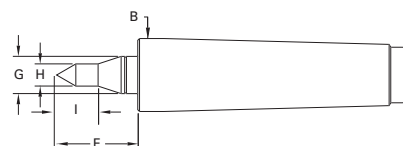
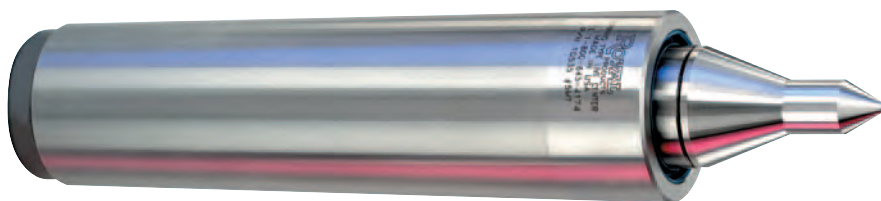
TAPER	B	F	G	SPRING TRAVEL	MAX. SUGGESTED RPM ¹	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.) ²	PART NUMBER	PRICE
2 MT	0.700	0.88	0.39	0.11	5,000	540	150	10522	\$976
3 MT	0.938	1.16	0.55	0.14	5,000	940	315	10523	976
4 MT	1.231	1.38	0.63	0.18	4,500	1,400	435	10524	1,160
5 MT	1.748	2.00	1.10	0.19	4,500	2,340	785	10525	1,710

Straight Shank Models

1" Dia.	1.00	1.16	0.55	0.14	5,000	940	315	10526	\$976
1 1/4" Dia.	1.25	1.38	0.63	0.18	4,500	1,400	435	10527	1,160

¹ Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

² Exceeding this value will bottom-out springs.



Royal Spring Type Live Centers — CNC Point

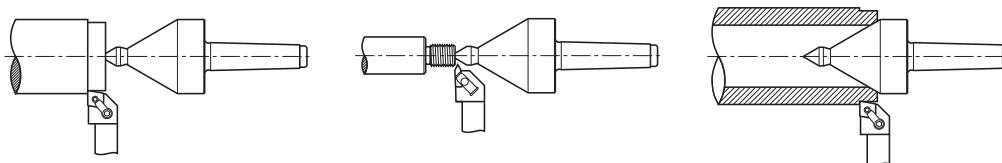
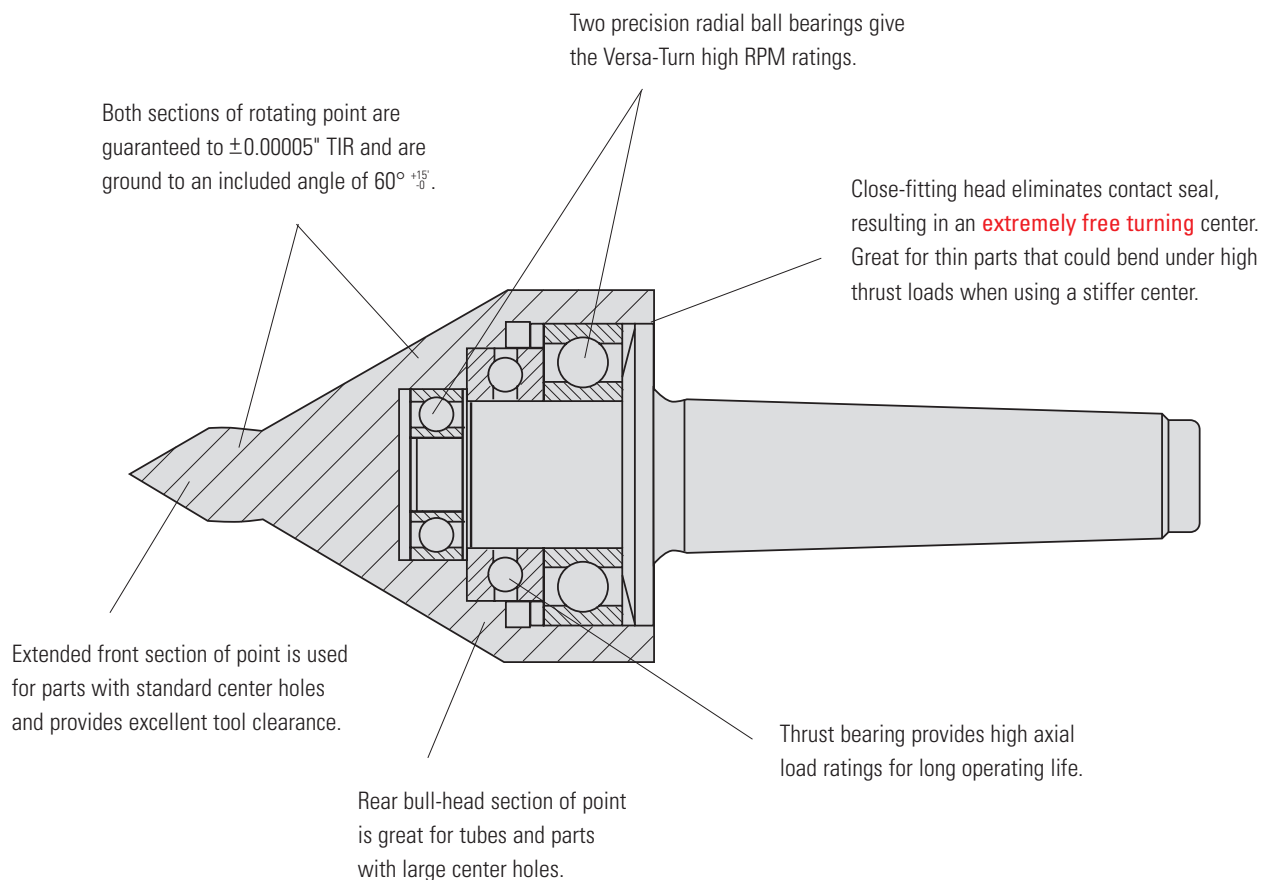
TAPER	B	F	G	H	I	SPRING TRAVEL	MAX. SUGGESTED RPM ¹	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.) ²	PART NUMBER	PRICE
2 MT	0.700	0.88	0.39	0.19	0.35	0.11	5,000	150	150	10532	\$1,030
3 MT	0.938	1.16	0.55	0.25	0.47	0.14	5,000	260	315	10533	1,030
4 MT	1.231	1.38	0.63	0.38	0.70	0.18	4,500	580	435	10534	1,230
5 MT	1.748	2.00	1.10	0.50	0.93	0.19	4,500	1,050	785	10535	1,710

¹ Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

² Exceeding this value will bottom-out springs.



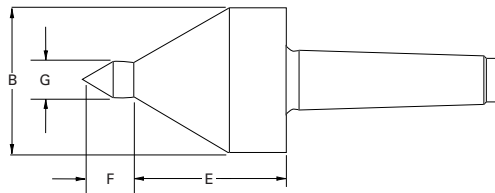
ROYAL VERSA-TURN LIVE CENTERS



- ❑ An excellent **multi-purpose live center** designed to handle most common turning jobs.
- ❑ The Royal Versa-Turn™ is extremely free turning, making it an **ideal choice for thin parts** that could bend when subjected to high thrust loads.
- ❑ The unique design is really two centers in one, providing great value for cost-conscious manufacturers.



ROYAL VERSA-TURN LIVE CENTERS



**Extremely Free Turning –
Great for Thin Parts**

Royal Versa-Turn Live Centers

TAPER	B	E	F	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
3 MT	2.13	2.22	0.74	0.50	5,000	330	2,160	10832	\$722
3 MT HD	2.50	2.60	0.93	0.63	4,000	685	5,000	10833	815
4 MT	2.50	2.60	0.93	0.63	4,000	685	5,000	10834	838
4 MT HD	3.38	3.15	1.12	0.75	3,500	1,165	5,700	10835	1,140
5 MT	3.38	3.15	1.12	0.75	3,500	1,165	5,700	10836	1,195

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.



ROYAL “OIL COUNTRY” BIG-BORE BULL HEAD LIVE CENTERS

The major and minor diameters of each head extend above and below nominal sizing – enabling each head to **cover a wider range of workpieces**.

Large capacity modular heads securely locate on a precision tapered shaft for maximum accuracy and rigidity.

$\pm 0.00025"$ TIR guaranteed.

Head angle is $60^\circ \begin{smallmatrix} +15^\circ \\ -0^\circ \end{smallmatrix}$ for proper part engagement.

Steel shield and neoprene seal protect bearing assembly from coolant and chips for extended operating life.

Body and heads are hardened for strength and durability.

A heavy-duty tapered roller bearing, large axial thrust bearing, and two precision needle bearings combine for high load-carrying capability.



- ❑ Designed **specifically for machining large diameter pipes for the oil and gas industry**, but suitable for all large-bore applications.
- ❑ In contrast to standard bull head live centers, the modular head design of Royal “Oil Country” Big-Bore centers positions the workpiece closer to the bearing assembly for greater rigidity and longer operating life.
- ❑ Interchangeable **heads are relieved to achieve the optimal strength/mass ratio**, and are sized to cover a wider range of bore sizes with fewer models.
- ❑ Bearing configuration consisting of a heavy-duty tapered roller bearing, a large axial thrust bearing, and two precision needle bearings provides exceptional accuracy and rigidity under the most demanding production conditions.

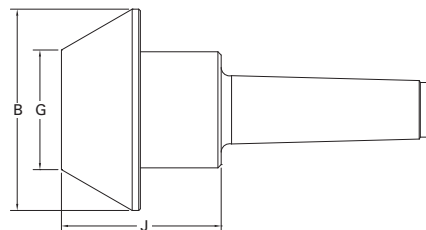
ROYAL “OIL COUNTRY” BIG-BORE BULL HEAD LIVE CENTERS



Specifications

TAPER	HEAD PART NUMBER	B	G	J	MAX SUGGESTED RPM*	WEIGHT OF WORKPIECE (LBS.)	THRUST LOAD (LBS.)
5 MT	10791	4.62	1.63	5.31	2,050	4,500	2,650
5 MT	10792	7.37	4.38	4.59	1,300	4,500	2,650
5 MT	10793	10.12	7.13	4.59	950	4,500	2,650
5 MT	10794	12.87	9.88	4.59	750	4,500	2,650
5 MT	10795	15.62	12.63	4.59	600	4,500	2,650

TAPER	HEAD PART NUMBER	B	G	J	MAX SUGGESTED RPM*	WEIGHT OF WORKPIECE (LBS.)	THRUST LOAD (LBS.)
6 MT	10791	4.62	1.63	6.57	2,050	11,000	3,500
6 MT	10792	7.37	4.38	5.85	1,300	11,000	3,500
6 MT	10793	10.12	7.13	5.85	950	11,000	3,500
6 MT	10794	12.87	9.88	5.85	750	11,000	3,500
6 MT	10795	15.62	12.63	5.85	600	11,000	3,500



Royal “Oil Country” Big-Bore Bull Head Live Centers

TAPER	PART NUMBER	PRICE*
5 MT	10782	\$2,045
6 MT	10784	2,995

* Head not included. Order Separately.

Modular Heads for Royal “Oil Country” Big-Bore Bull Head Live Centers

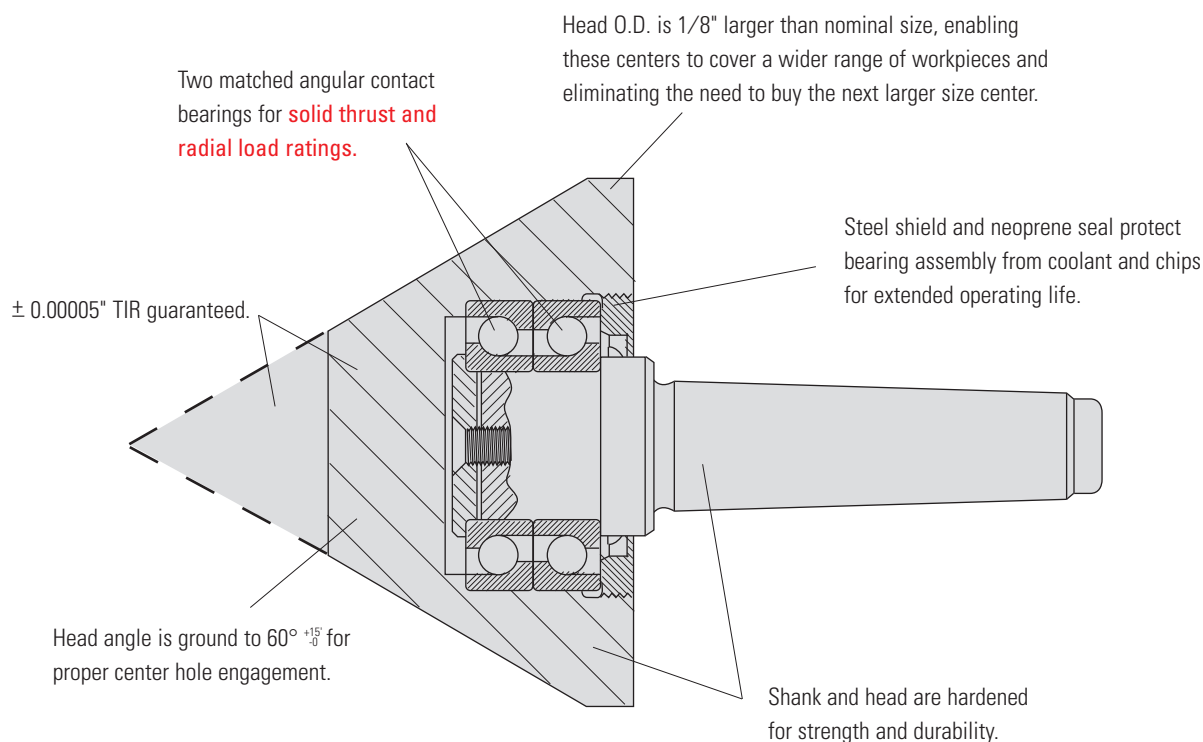
HEAD MODEL	B	G	HEAD WEIGHT (LBS.)	PART NUMBER	PRICE
A	4.62	1.63	7	10791	\$995
B	7.37	4.38	18	10792	1,555
C	10.12	7.13	33	10793	2,410
D	12.87	9.88	51	10794	3,445
E	15.62	12.63	65	10795	5,995



“Oil Country” Big-Bore Bull Head Dead Centers Also Available – See Page 115

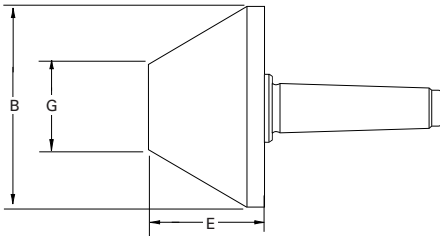
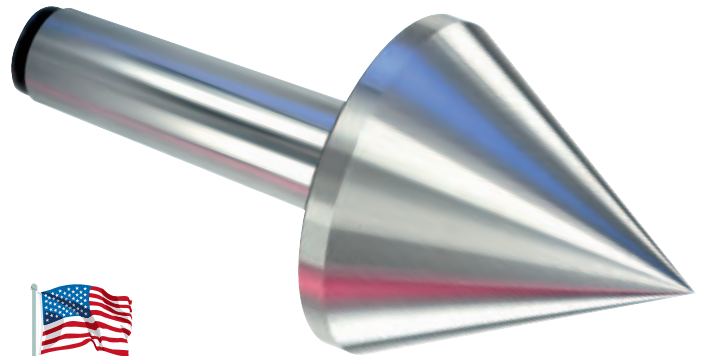
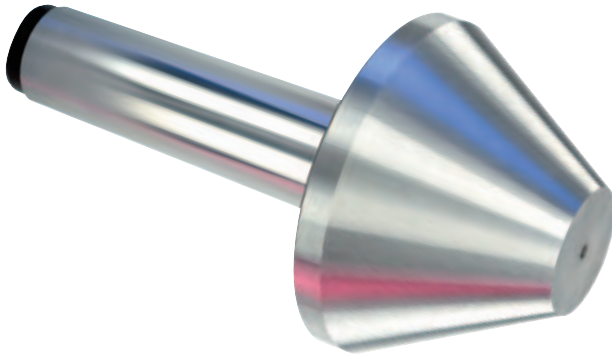


ROYAL STANDARD PIPE & BULL HEAD LIVE CENTERS



- ❑ Designed for turning pipes, tubes, and parts with extra-large center holes.
- ❑ Two matched angular contact bearings provide good thrust and radial load ratings.
- ❑ Head diameter is 1/8" over nominal size, enabling these centers to cover a wider range of workpieces.
- ❑ Bull Head design is shorter than a pipe head, reducing potential interference in blind center hole applications and ensuring that the **load is positioned over the bearings for optimum strength.**
- ❑ Extra large capacity models also available – see previous page.

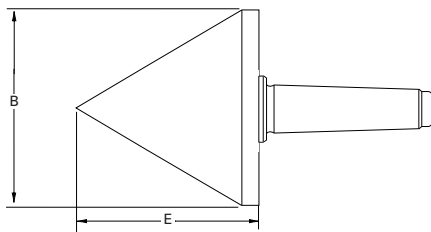
ROYAL STANDARD PIPE & BULL HEAD LIVE CENTERS



Royal Standard Bull Head Live Centers

TAPER	B	E	G	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
3 MT	3.15	2.52	1.00	5,000	615	1,780	10902	\$1,295
4 MT	4.15	3.01	1.25	4,500	860	2,550	10904	1,615
5 MT	4.15	3.01	1.25	4,500	860	2,550	10905	1,615
5 MT	5.15	3.17	2.00	4,000	1,145	3,450	10907	1,995
5 MT	6.15	3.60	2.50	3,500	1,450	4,500	10909	2,775

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.



Royal Standard Pipe Head Live Centers

TAPER	B	E	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
3 MT	3.15	3.39	5,000	475	1,780	10702	\$1,350
4 MT	4.15	4.10	4,500	630	2,550	10704	1,535
5 MT	4.15	4.10	4,500	630	2,550	10705	1,535

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

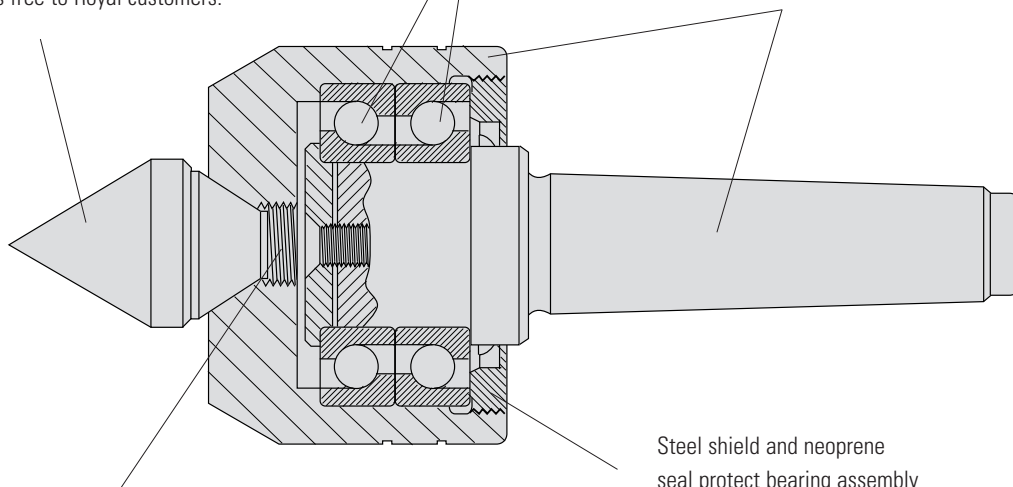


ROYAL CHANGEABLE-POINT LIVE CENTERS

*Accuracy is guaranteed to be $\pm 0.00005"$ TIR as long as the points are installed on the live center to which they have been match-ground. When a customer purchases a new point, we recommend sending the live center back to our factory so we can grind the new point to it. This service is free to Royal customers.

Two precision angular contact bearings help achieve good rpm and load ratings.

Shank, head, and points (except #4 blank point), are hardened for wear resistance and long life.



Precision ground tapers and single-lead threads ensure that **points consistently seat in the same location** when they are interchanged, providing maximum accuracy.

Steel shield and neoprene seal protect bearing assembly from coolant and chips for extended operating life.

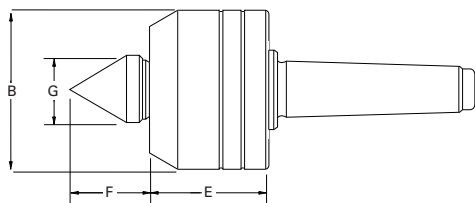


- This versatile live center uses interchangeable points to handle many common turning jobs.
- Each center includes a #3 standard 60° male point. Other points sold separately.
- $\pm 0.00005"$ TIR guaranteed.*
- Unique taper/thread design allows points to be easily interchanged and ensures accuracy.



Check out the Royal Live Center Video at www.livecenters.com

ROYAL CHANGEABLE-POINT LIVE CENTERS



Royal Changeable-Point Live Centers

TAPER	B	E	F	G	POINT THREADS	MAX. SUGGESTED RPM*	WEIGHT OF WORKPIECE (lbs.)	THRUST LOAD (lbs.)	PART NUMBER	PRICE
2 MT	2.00	1.85	1.13	0.88	$\frac{5}{8}$ " - 18	6,000	390	960	10002	\$1,110
3 MT	2.38	2.07	1.25	1.00	$\frac{5}{8}$ " - 18	5,000	500	1,140	10003	1,210
4 MT	3.50	2.64	1.79	1.50	$\frac{3}{4}$ " - 16	3,500	1,070	1,810	10004	1,820
5 MT	3.50	2.64	1.79	1.50	$\frac{3}{4}$ " - 16	3,500	1,070	1,810	10005	1,945

* Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.



1



2



3



4



5

1. Pipe point for pipe and tubing work.
2. Extra-long male point for additional tool clearance.
3. Standard male point.
4. Blank point made of unhardened 4140 steel.
5. Female point for work not having a center-hole.

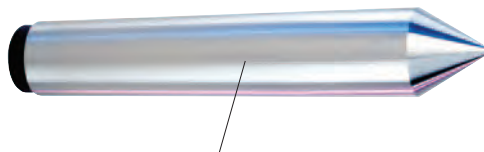
Individual Points for Changeable-Point Live Centers

POINT	2 MT				3 MT				4 & 5 MT			
	DIA.	"F" DIM.	PART NUMBER	PRICE	DIA.	"F" DIM.	PART NUMBER	PRICE	DIA.	"F" DIM.	PART NUMBER	PRICE
1	0.75-2.12	1.67	10061	\$565	0.88-2.38	1.75	10071	\$456	1.38-3.50	2.38	10091	\$712
2	0.88	1.66	10062	393	1.00	1.88	10072	392	1.38	2.34	10082	490
3	0.88	1.13	10063	364	1.00	1.25	10073	378	1.50	1.79	10083	388
4	0.88	1.13	10064	224	1.00	1.25	10074	178	1.38	1.66	10084	247
5	0.19-0.91	0.92	10065	355	0.25-1.06	1.15	10075	477	0.25-1.38	1.28	10085	447



ROYAL DEAD CENTERS

- Dead centers are typically used for **grinding** and are also sometimes used in **high-precision turning** applications.
- Royal manufactures a wide range of standard dead centers to suit most applications, including: full, half, carbide-tipped, and extended-point models.
- All solid dead centers are made from ball bearing steel and are hardened to Rc 61-63 for wear resistance and durability.
- On carbide-tipped models, the carbide blank is brazed into a **close-tolerance socket for maximum strength and rigidity**.
- All Royal dead centers are ground to an angle of $60^{\circ} \begin{smallmatrix} +15^{\circ} \\ -0 \end{smallmatrix}$ and guaranteed to $\pm 0.00005"$ TIR.



Ball bearing steel hardened and ground to Rc 61-63 for long life.

Type 1

Standard Dead Center
add "1" to part number below.



Carbide blank is brazed into a close-tolerance socket for maximum strength and rigidity.

Type 2

Standard Dead Center with carbide tip
add "2" to part number below.



Half centers are relieved for grinding wheel clearance.

Type 3

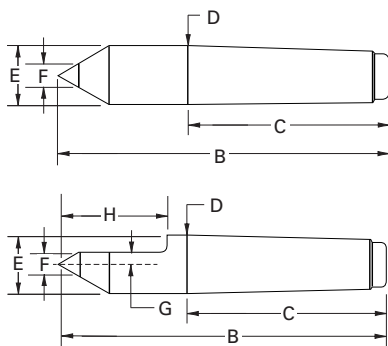
1/2 Dead Center
add "3" to part number below.
Note – Type 3 models are being phased out. Please call for availability.



A safety groove shows the maximum allowable regrind range for carbide-tipped models.

Type 4

1/2 Dead Center with carbide tip
add "4" to part number below.



Royal Dead Centers

Example: A 2 MT dead center with a carbide tip is PART NUMBER 11012.

TAPER A	B	C	D	E	F	G	H	PART NUMBER	TYPE 1	TYPE 2	PRICE	TYPE 3	TYPE 4
2 MT	4.19	2.56	.700	0.700	0.38	0.19	1.38	1101-	\$211	\$281		CALL	\$327
3 MT	5.25	3.19	.938	0.938	0.50	0.22	1.69	1102-	327	381		CALL	430
4 MT	6.75	4.06	1.231	1.231	0.50	0.25	2.25	1103-	470	498		CALL	549
5 MT	8.50	5.19	1.748	1.748	0.63	0.38	2.75	1104-	698	775		CALL	816

ROYAL "OIL COUNTRY" BULL HEAD DEAD CENTERS



- Designed for turning large tubes and pipes on lathes with live tailstocks.
- Can also be used in large-diameter grinding applications.
- Interchangeable heads (sold separately) offer maximum versatility.
- $\pm 0.0002"$ TIR guaranteed.
- Extraction nut (included) allows for easy removal from tailstock.
- Special extended models offered for Mazak** lathes.



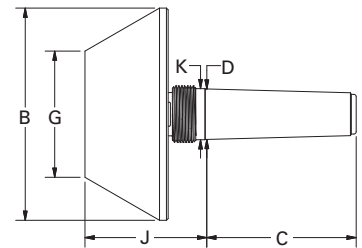
Modular Heads for Royal "Oil Country" Bull Head Dead Center

HEAD MODEL	B	G	HEAD WEIGHT (lbs.)	PART NUMBER	PRICE
A	4.62	1.63	7	10791	\$995
B	7.37	4.38	18	10792	1,555
C	10.12	7.13	33	10793	2,410
D	12.87	9.88	51	10794	3,445
E	15.62	12.63	65	10795	5,995



Royal "Oil Country" Bull Head Dead Center Shanks*

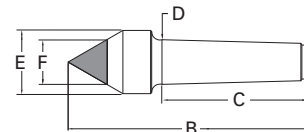
TAPER	MODEL	C	D	K	J WITH HEAD A	J WITH HEADS B-E	THREAD	PART NUMBER	PRICE
4 MT	Standard	4.06	1.231	N/A	4.63	3.91	M42 x 1.5	11576*	\$718
4 MT	Mazak**	4.06	1.231	1.260	4.85	4.13	M42 x 1.5	11577*	718
5 MT	Standard	5.19	1.748	N/A	4.63	3.91	M50 x 1.5	11578*	789
5 MT	Mazak**	5.19	1.748	1.772	5.06	4.34	M50 x 1.5	11579*	789
6 MT	Standard	7.25	2.494	N/A	4.69	3.97	M70 x 2	11580*	1,520
6 MT	Mazak**	7.25	2.494	2.500	5.29	4.57	M70 x 2	11581*	1,520



* Head not included – order separately

** Mazak is a registered trademark of Yamazaki Mazak Corporation

OVERSIZED CARBIDE POINT DEAD CENTERS



Royal Oversized Carbide Point Dead Centers

- Excellent for grinding and high precision turning applications.
- Oversized carbide point covers a wider range of center holes and provides great wear resistance.

TAPER A	B	C	D	E	CARBIDE DIAMETER F	PART NUMBER	PRICE
4 MT	6.75	4.06	1.231	1.75	1.25	11526	\$873
5 MT	8.50	5.19	1.748	1.75	1.25	11527	1180



ROYAL CNC THREADED DEAD CENTERS

Great For Live Tailstocks and Precision Grinding

4140 steel hardened and ground to Rc 61-63 for long life.

Wrench flats for easy removal.



Extended length provides great tool clearance. Taper maintains strength and rigidity.

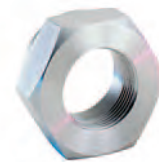
All points are ground to an angle of $60^{\circ} \begin{smallmatrix} +15 \\ -0 \end{smallmatrix}$ and guaranteed to $\pm 0.00005''$ TIR.

Carbide blank is brazed into a close-tolerance socket for maximum strength and rigidity.

Extended length for optimum tool clearance.

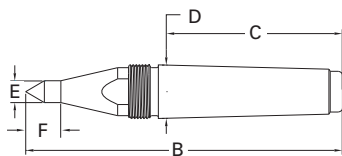
Full diameter point covers a wide range of center holes.

- ❑ Royal threaded dead centers are designed for use in CNC turning centers with **live tailstocks**.
- ❑ These dead centers are also widely used in precision grinding applications.
- ❑ Available in several styles to suit a wide range of applications.
 - CNC Point
 - Carbide-Tipped CNC Point
 - Full Diameter Extended Point
- ❑ Longer than normal gage length on all models provides outstanding clearance.
- ❑ Extraction nut and wrench flats enable easy removal from tailstock/spindle.



Extraction nut allows for easy removal from spindle. Order separately.

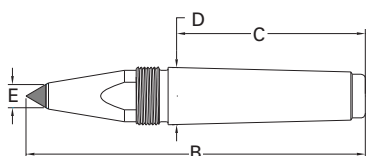
ROYAL CNC THREADED DEAD CENTERS



Royal CNC Threaded Dead Centers



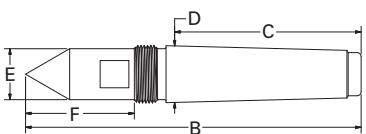
TAPER A	B	C	D	E	F	THREAD	DEAD CENTER		EXTRACTION NUT	
							PART NUMBER	PRICE	PART NUMBER	PRICE
3 MT	5.94	3.19	0.938	0.38	0.63	1"-14	11530	\$393	11550	\$98
4 MT	7.31	4.06	1.231	0.50	0.81	1 1/4"-14	11531	475	11551	118
4 MT	7.31	4.06	1.231	0.75	1.18	1 1/4"-14	11535	475	11551	118
5 MT	8.44	5.19	1.748	0.50	0.81	1 3/4"-12	11532	678	11552	135
5 MT	8.44	5.19	1.748	0.75	1.18	1 3/4"-12	11537	678	11552	135



Royal CNC Threaded Dead Centers with Carbide-Tipped Point



TAPER A	B	C	D	E	THREAD	DEAD CENTER		EXTRACTION NUT	
						PART NUMBER	PRICE	PART NUMBER	PRICE
3 MT	5.94	3.19	0.938	0.38	1"-14	11540	\$532	11550	\$98
4 MT	7.31	4.06	1.231	0.50	1 1/4"-14	11541	640	11551	118
5 MT	8.44	5.19	1.748	0.50	1 3/4"-12	11542	823	11552	135



Royal Full Diameter Extended Point Threaded Dead Centers

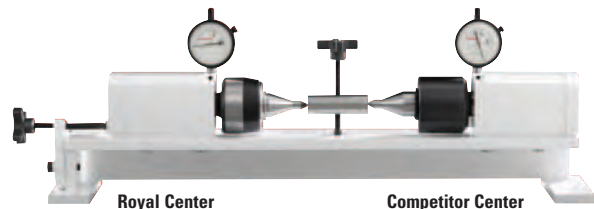


TAPER A	B	C	D	E	F	THREAD	DEAD CENTER		EXTRACTION NUT	
							PART NUMBER	PRICE	PART NUMBER	PRICE
3 MT	5.94	3.19	0.938	0.86	1.88	1"-14	11534	\$393	11550	\$98
4 MT	7.31	4.06	1.231	1.11	2.37	1 1/4"-14	11536	475	11551	118
5 MT	8.44	5.19	1.748	1.25	2.36	1 3/4"-12	11539	678	11552	135

IN CASE YOU MISSED IT.....



**ROYAL
ROTO-SHIELD™
TECHNOLOGY**



See video at www.livecenters.com

WHY TOP MANUFACTURERS INSIST ON ROYAL LIVE CENTERS

Highest Quality

Every Royal Live Center is a finely crafted tool, incorporating the highest quality steels, bearings, seals, and lubricants. For more than 75 years Royal has been the brand that top manufacturers know and trust for their workholding needs. **For the thousands of parts that your centers will support, can you afford to go with anything less than a Royal?**

Longest Life

Royal's exclusive Roto-Shield™ coolant deflector provides unmatched bearing protection by keeping contaminants out and clean grease in. It's not uncommon for a Royal center to last up to 3x longer than the competition.

Exceptional Rigidity

Royal live centers are significantly more rigid than the competition – resulting in superior accuracy, part finish, and bearing life. Check out the test results at www.livecenters.com.

High-Pressure Coolant Approved

Our hardened steel coolant deflector is integral with the rotating point and has been optimized for high-pressure coolant applications.

A Model for Every Application

Between our broad standard line, our "off-the-shelf" specials, and complete custom center capabilities, Royal has all of your center needs covered.

Same-Day Shipping

We maintain thousands of centers in stock to meet our goal of same-day shipping on all orders. **Order it today – you'll have it tomorrow.**

Proudly Made in USA

Every Royal Live Center is made in USA in our modern, highly-automated factory. **We are extremely proud to be an American manufacturer supporting American manufacturers!**

Once you try a Royal Center, you'll never settle for anything less!