

**KING RACING**

HIGH PERFORMANCE BEARINGS

*The science of speed*

**2020-2021 RACING APPLICATION GUIDE**

## Choose The Right Material

	HP SERIES	XP SERIES	XPC SERIES	TFC SERIES	GPC SERIES
Metal Structure	Bi-Metal Aluminum Silicon Alloy	Tri-Metal Copper-lead, Hardened Overlay	Tri-Metal Copper-lead, Hardened Overlay, Coated	Tri-Metal Strengthened Steel, Ductile Copper-lead, Coated	Tri-Metal Silver Overlay, Coated
Competition Type	For applications requiring a harder than Babbitt top layer to better resist extrusion & material migration (drag racing, monster truck, tractor pull). Also for all other applications using nodular cast iron crankshafts.	Circle track, drag racing, off-shore, and other applications using steel crankshafts.	Circle track, drag racing, off-shore, and other applications using steel crankshafts. Polymer Coated.	Top Fuel Dragster, Top Alcohol Dragster, Funny Car, Pro Mod	Diesel Performance, Sprint Cars
Load Characteristics	High load/short duration or medium load/long duration	High load/long duration	High load/long duration	Extra high load/short duration	Very high load/long duration
Melting Temperature	450 F°	350 F°	350 F°	480 F°	350 F°
Load Capacity	Medium	Medium	Medium	High	High
Conformability Embeddability	Medium	Medium	Medium	Medium	Medium
Anti-seizure	Medium	Medium	Medium	Medium	Medium
Special Attributes	Designed for high loads for short durations	Race geometrical features like U-groove™, ElliptiX™, RadiaLock™	pMaxKote™ polymer coating operates as a solid lubricant	Contains special ductile bronze, extra thick Babbitt & K-40 polymer	Lead-free copper, silver overlay & polymer coating

## Continuously pushing the limits

Today's race engines make more power than ever before. Yesterday's engine bearing load capacity no longer works today... and tomorrow's race engines will be even more powerful. There's a need to meet these demands with higher bearing design standards and improved materials.

King Racing's XP series of rod and main bearings was developed to meet these challenges through technologically advanced geometrical features and a unique metal structure. Together, they drive the industry to a new level of durability and performance.



### pMaxBlack™ Superior load capacity

A unique tri-metal structure developed to meet the ongoing demand for increased engine bearing load capacity.

- 24% stronger overlay
- 17% more fatigue resistance
- SecureBond™ - A micro-etch process that improves multi-layer adhesion and structural integrity
- Compatible with all crankshafts

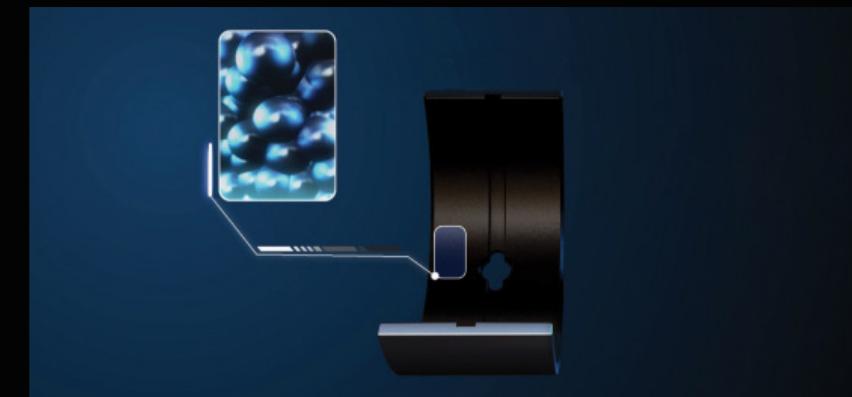
#### Intermediate layer:

- Copper based alloy strengthened by 4.5% tin
- Industry's highest hardness level - 115HV
- Load capacity - 17,000 PSI

#### Overlay:

- Strengthened by 5% copper
- Industry's highest hardness level - up to 18.1HV
- Fatigue resistance - 10,200 PSI

#### Breakthrough hardening technology



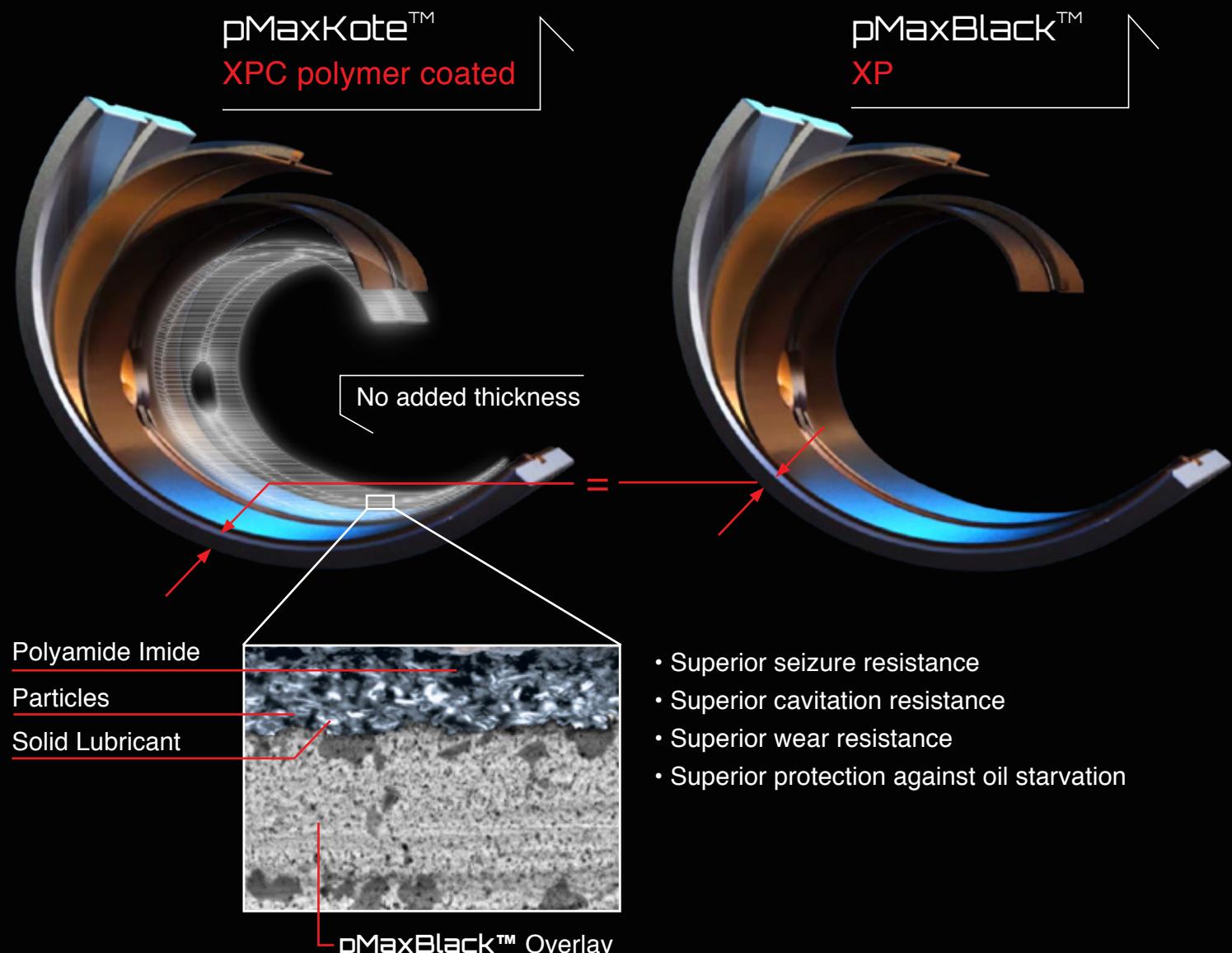
King Racing's new hardening technology modifies the overlay's molecular structure and creates a fatigue resistant shield, capable of carrying 24% more load.

# King Racing Coating Solutions

## pMaxKote™

### King's factory applied nano-composite polymer coating

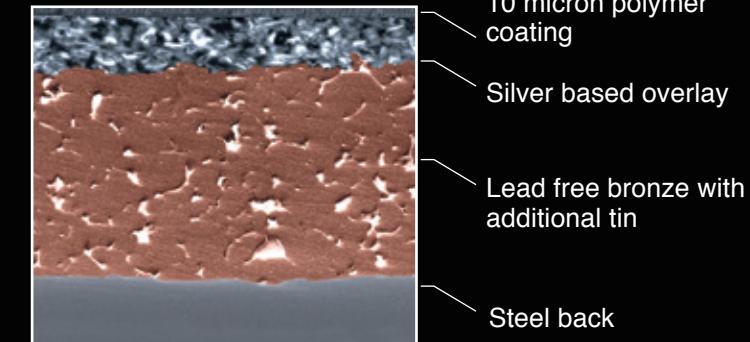
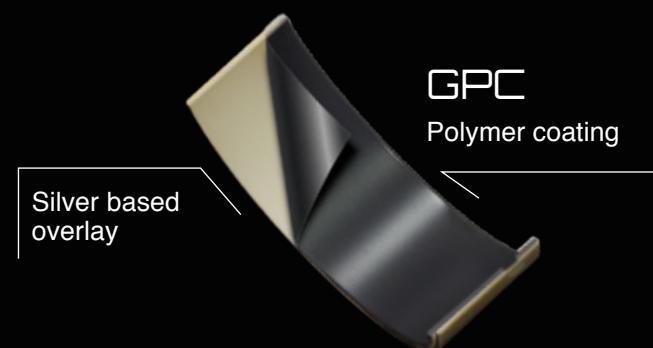
King's factory applied nano-composite polymer coating (pMaxKote™) is a revolutionary approach to coated bearings. It improves wear resistance and protects bearings during periods of marginal lubrication. pMaxKote™ contains ceramic nano-composite particles and solid lubricant. It functions as a fourth layer over the pMaxBlack™ tri-metal bearing structure without changing the original wall thickness dimensions.



## GPC - Silver Composite, Polymer Coated

### The solution for extreme loads

King's new GPC is a tri-metal material that handles 17,000 PSI compared to available race materials that peak at 11,000 PSI. GPC, the polymer coated version of the SV composite, features an intermediate lead-bronze layer over steel, topped by a silver overlay containing solid lubricant particles. GPC's polymer coating helps protect the bearings in case of oil starvation and metal-to-metal contact.



## TFC - Top Fuel Coated

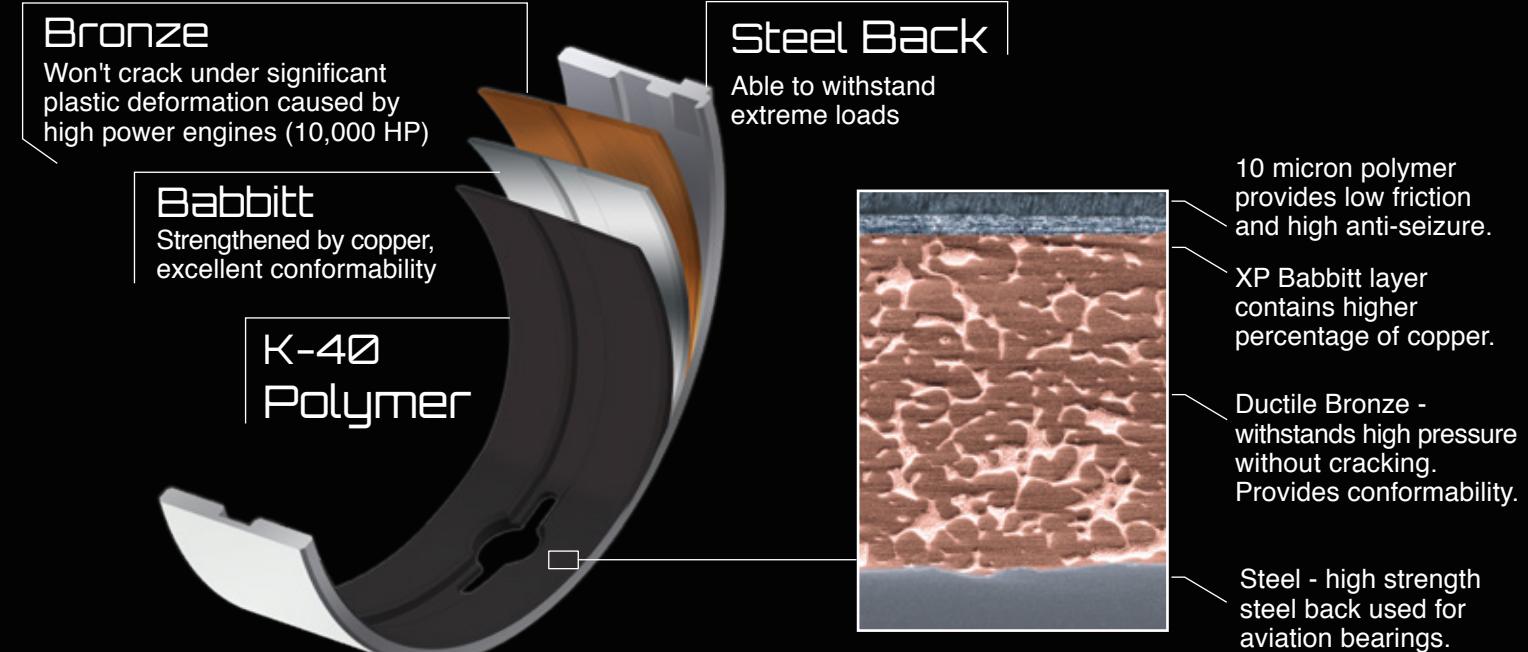
### Withstands the metal-to-metal extremes of drag racing

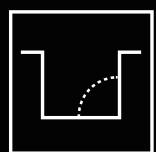
Ultra high horsepower developed in 500 cubic inch Top Fuel engines can cause havoc with regular engine bearings. Under heavy loads, engine bearings are required to resist fatigue and deformation. Any deformation or fatigue can cause the oil film to become weak and break down, allowing contact between the bearing and crankshaft surfaces. Maintaining a strong oil film is crucial to the life of any engine bearing.

By contrast, King TFC bearings are designed to withstand the metal-to-metal contact and extreme loading from 10,000 HP Top Fuel engines. Their unique metallurgic structure and composition were developed by King specifically for Top Fuel, Pro Mod and similar applications.

### Top fuel bearings with K-40 polymer coating

#### TFC Structure

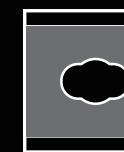
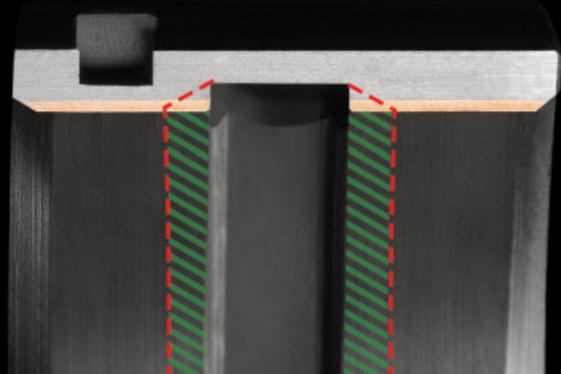




## U-Groove™ Greater load surface

A unique oil groove design with a 90° groove shape. U-Groove™ increases bearing load capacity by expanding the effective surface area, while keeping oil flow capacity intact.

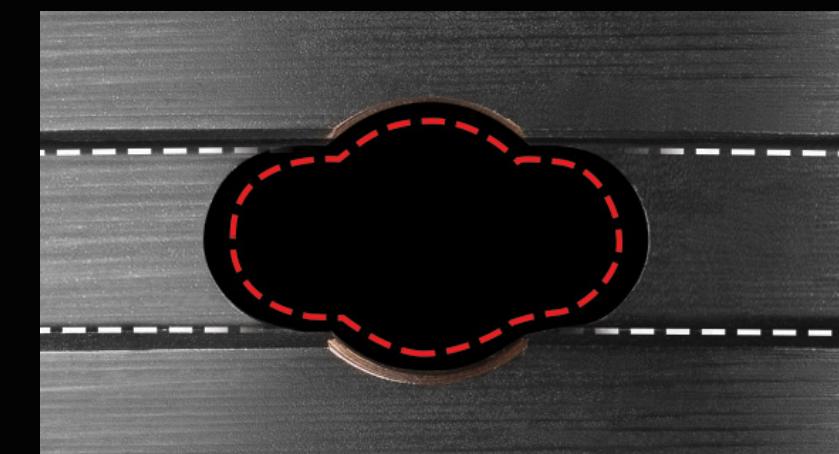
- Better load distribution across the bearing surface
- More stable hydrodynamic lubrication regime
- Greater bearing durability at high RPM's



## ElliptiX™ Improved oil ingress

ElliptiX™ is a newly designed oil slot / oil hole hybrid. It improves oil ingress without affecting the bearing's surface or compromising the load capacity.

- Increases oil passage capacity
- Higher oil supply reliability
- Eliminates need for custom-made oil hole enlargement



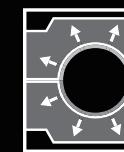
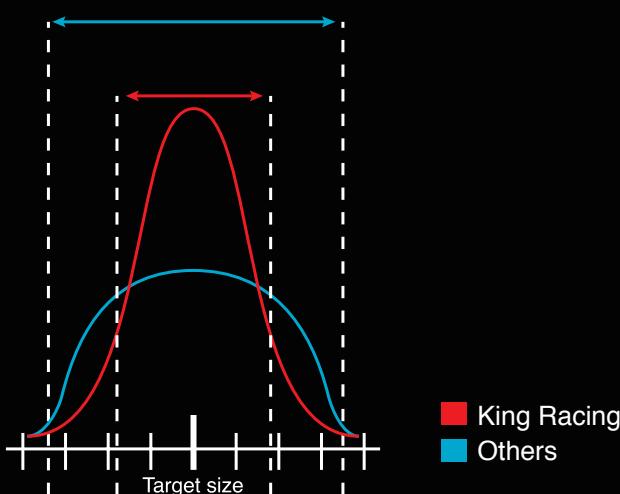
## Bull's Eye Tolerance™ Perfect clearance in every set

Bull's Eye Tolerance™ sets new standards in bearing thickness consistency. It outperforms the industry's wall thickness tolerance, ensuring the least thickness variation.

- No more purchasing multiple sets or "fishing" for bearings to reach the right clearance
- No need to grind cranks "fat" or "thin"
- No need to adjust housing diameter
- Less taper across the bearing face

The most accurate clearance in the industry

### Wall Thickness Variation



## RadiaLock™ Optimal crush height and heat transfer

RadiaLock™ is an optimal crush height value determined by a robust R&D process that customizes each bearing crush height to its specific performance demands.

- Optimal press fit
- Improves bearing spin and fretting prevention
- Better heat transfer
- Reduces bearing and housing distortion



## EccentriX™ A superior hydrodynamic regime

EccentriX™ is an optimized eccentricity value reached through elastohydrodynamic analysis and dynamic calculations. Each bearing's eccentricity value is custom designed to meet specific performance requirements.

- Better oil wedge formation
- More stable hydrodynamic lubrication regime
- Reduces vibration and wear
- Prevents oil film "wiping" under high RPM conditions
- Optimizes load distribution across the bearing surface

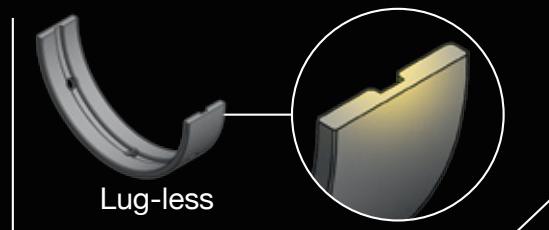
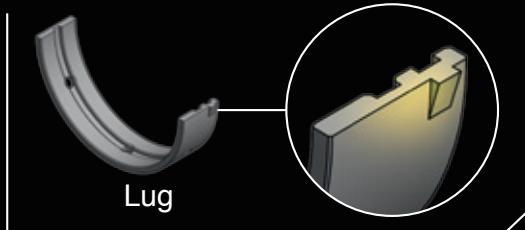
## Bearing Lug Innovation

### New lug-less bearing design

The growing trend among OE engine manufacturers to use robotic equipment for engine block assembly has eliminated their need for locating lugs in engine bearings.

The locating lug has no function in preventing the bearing from spinning. Engine bearings are retained in place as a result of the crush height - a parameter completely unaffected by the presence or absence of a locating lug.

This new lug-less bearing design leaves the aftermarket bearing installer without the traditional visual marker of the bearing location in its housing.



For aftermarket installers, placing a lug-less bearing into its correct position requires additional accuracy and attention to details. Shell and housing should be aligned for unimpeded oil hole orientation and for proper centering to avoid bearing-to-crank fillet ride.

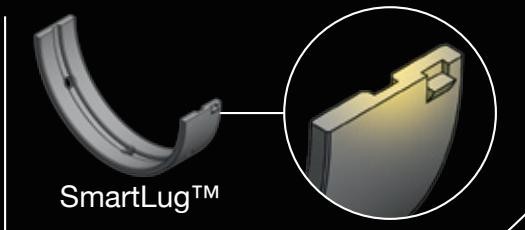
Generally, the proper initial procedure for installing a lug-less bearing is to line up the center of the bearing with the center of the connecting rod or main bore. Slight adjustments can then be performed for final optimal location.

### SmartLug™ by King

#### Developed for high performance bearings

SmartLug™ prevents lug generated oil leaks and maintains full bearing surface in the parting line area for better load capacity and oil film distribution.

Traditional locating lug designs reduce available load carrying surface area and can cause oil leak paths, especially when located adjacent to an oil groove. SmartLug™ features a locating lug protruding only from the back of the bearing, leaving the bearing work surface intact.



## Powersports

### Unique tailor made solution for powersports vehicle racing & cruising

Following in-depth research on performance powersports engine needs, King is proud to introduce the industry's first high performance Powersports engine bearing line.

King's Powersports line utilizes pMaxBlack™, a superior performance bearing structure and overlay, developed by King specifically for professional race teams in various demanding race platforms such as NASCAR, drift, drag, rally and more.

#### Smart design

King Powersports connecting rod bearings and main bearings are designed with tight, graded tolerances to preserve the exacting hydrodynamic regime required by high RPMs. They are available in thicker and thinner 5 grades of STD to produce less or more clearance as well as 5 grades of 0.25mm to fit ground/resized crankshafts! These bearings are perfectly suited for both on-track competition and touring/cruising riders.

#### Want to make the most of your ride?

**Don't compromise with ordinary bearings... choose King Powersports bearings.**



#### King 5 grade range for Powersports:

Make	Application	Years	King Nbr	Min Thickness	Max Thickness	OE Ref	Make	Application	Years	King Nbr	Min Thickness	Max Thickness	OE Ref
Kawasaki	ZX-14	2006-2011	CR1710XP STD-1	1.472	1.476		Suzuki	GSX-R1000	2001-2011	CR1712XP STD-1	1.476	1.480	12164-41G01-0A0
			CR1710XP STD-2	1.476	1.480	92139-0131				CR1712XP STD-2	1.480	1.484	12164-40F00-0A0
			CR1710XP STD-3	1.480	1.484	92139-0130				CR1712XP STD-3	1.484	1.488	12164-41G01-0B0
			CR1710XP STD-4	1.484	1.488	92139-0129				CR1712XP STD-4	1.488	1.492	12164-41G01-0D0
			CR1710XP STD-5	1.488	1.492					CR1712XP STD-5	1.492	1.496	12164-47H10-0B0
		2006-2011	MB1336XP STD-1	1.486	1.490					MB1333XP STD-1	1.488	1.492	12229-41G00-0A0
			MB1336XP STD-2	1.490	1.494					MB1333XP STD-2	1.492	1.496	12229-41G00-0B0
			MB1336XP STD-3	1.494	1.498	92139-0133				MB1333XP STD-3	1.496	1.500	12229-41G00-0C0
			MB1336XP STD-4	1.498	1.502					MB1333XP STD-4	1.500	1.504	12229-41G00-0D0
			MB1336XP STD-5	1.502	1.506					MB1333XP STD-5	1.504	1.508	12229-41G00-0E0
Kawasaki	ZX-14R	2012-	CR1710XP STD-1	1.472	1.476		Suzuki	Hayabusa GSX1300R	1999-2017	CR1711XP STD-1	1.480	1.484	12164-46E01-0A0
			CR1710XP STD-2	1.476	1.480	92139-0131				CR1711XP STD-2	1.484	1.488	12164-46E01-0B0
			CR1710XP STD-3	1.480	1.484	92139-0130				CR1711XP STD-3	1.488	1.492	12164-46E01-0C0
			CR1710XP STD-4	1.484	1.488	92139-0828				CR1711XP STD-4	1.492	1.496	12164-46E01-0D0
			CR1710XP STD-5	1.488	1.492	92139-0129				CR1711XP STD-5	1.496	1.500	
		2012-	MB1334XP STD-1	1.486	1.490					MB1332XP STD-1	1.491	1.495	12229-15H00-0A0
			MB1334XP STD-2	1.490	1.494	92139-0740				MB1332XP STD-2	1.495	1.499	12229-15H10-0B0
			MB1334XP STD-3	1.494	1.498	92139-0739				MB1332XP STD-3	1.499	1.503	12229-15H10-0C0
			MB1334XP STD-4	1.498	1.502	92139-0738				MB1332XP STD-4	1.503	1.507	12229-15H10-0D0
			MB1334XP STD-5	1.502	1.506					MB1332XP STD-5	1.507	1.511	

• King thickness values may differ from OE values by up to 0.004mm/.00015"  
• All Powersports bearings are also available in 5 grades of 0.25mm/.010"

Engine	Race Rod Bearing		Race Main Bearing		Thrust Washer	Cam Bearing
	Non-Coated	Polymer Coated	Non-Coated	Polymer Coated		
<b>CUSTOM</b>						
1	1.888" Rod Journal w/ 0.792" length	CR1708XPDC (1 pair) CR8028XP (8 pairs)	CR1708XPDC (1 pair) CR8028XPC (8 Pairs) CR8028GPC (8 Pairs)			
2	327 Crank Journal w/ 350 rod	CR 867XPN				
3	Ford Stroker Kit Chevy 2.100" pin w/ .712" width	CR8005XP				
4	400 Spacer Bearing (use Chevy 350 crank in 400)		MB5224AM (spacer set)			
5	Top Fuel Engines Chrysler Hemi 3 Inch Main Journals			MB5650TFC20L (20 lowers, housing 3.1922- 3.1930) MB5650TFC20U (20 uppers, housing 3.1922- 3.1930) MB5860TFC20L (20 lowers, housing 3.1910- 3.1915) MB5860TFC20U (20 uppers, housing 3.1910- 3.1915)		
<b>ALFA ROMEO</b>						
6	1.3L DOHC 8v 101, 105/31, 115	CR4595XP		MB 511XP		
7	1.6L DOHC 8v 105	CR4595XP		MB 511XP		
8	1.8L DOHC 8v 105.48	CR4595XP		MB 511XP		
9	2.0L DOHC 8v AR016	CR4595XP		MB 511XP		
10	2.0L DOHC 8v AR64103, AR67201	CR4595XP		MB 511XP		
11	3.2L JTS V6 159, Brera, Spider	CR6826XP		MB4272XP		
<b>AUDI / VOLKSWAGEN</b>						
12	1.6L SOHC/OHC 8v AEA		MB5028XP		TW2010AM	
13	1.6L SOHC ABB, ABM, ADA, ADP, DT, JU, PP, RN, SA ('83-'01)	CR4104XP (w/ lug)		MB5566XP		TW2010AM
14	1.6L 8v AFT	CR4104XP (w/ lug)		MB5269XP		TW2010AM
15	1.6L SOHC/OHC 8v AKS	CR4104XP (w/ lug)		MB5269XP		TW2010AM
16	1.6L 8v APF	CR4104XP (w/ lug)		MB5661XP		TW2010AM
17	1.6L SOHC/OHC 8v AEH, AKL, AWH, AUR, AHL, ARM	CR4104XP (w/ lug)		MB5661XP		TW2010AM
18	1.8L DOHC 20v AVC	CR4104XP (w/ lug)		MB5269XP		TW2010AM
19	1.8L DOHC 20v AJL (till '99)	CR4104XP (w/ lug)	MB5566XP (360° oil groove in pos. 4) MB5269XP (180° oil groove)		TW2010AM	
20	1.8L DOHC 20v AJL (from '99)	CR4104XP (w/ lug)		MB5661XP		TW2010AM
21	1.8L 20v APH	CR4104XP (w/ lug)		MB5269XP		TW2010AM
22	1.8L SOHC 10v 4B, DR, DS, DZ, JN, JV, JW, NE, NP, PH, PM, PV, RS, RU, SF, SH ('82-'91)	CR4104XP (w/ lug)		MB5566XP		TW2010AM
23	1.8L DOHC 20v AFY, ADR, ARK	CR4104XP (w/ lug)	MB5566XP (360° oil groove in pos. 4) MB5269XP (180° oil groove)		TW2010AM	
24	1.8L DOHC 20v AQE, ARH, AVV ('97-'04)	CR4104XP (w/ lug)		MB5269XP		TW2010AM
25	1.8L DOHC Turbo AEB ('95-'01)			MB5566XP		TW2010AM
26	1.8L DOHC Turbo AJQ, AMK, APP, APY, AQA, ARZ, AUL, BFV ('97-'06)			MB5661XP		TW2010AM
27	1.8L DOHC Turbo AMB, ARX, ARY, AUM, AUQ, AVJ, AWT, BEX, BFB ('00->)	CR4597XP (w/o lug)		MB5661XP		TW2010AM
28	1.8L 8v AAM, ANN, ANP, ADF	CR4104XP (w/ lug)		MB5661XP		TW2010AM
29	1.8L DOHC 20v ARG, APT, ANB, APG, AWG, AGN, APX	CR4104XP (w/ lug)		MB5661XP		TW2010AM
30	1.8L 20v BAM	CR4104XP (w/ lug)		MB5661XP		TW2010AM
31	1.8L SOHC/OHC 8v ADZ	CR4104XP (w/ lug)		MB5661XP		TW2010AM
32	2.0L 8v AGG, AKR, AWF, AWG	CR4104XP (w/ lug)		MB5269XP		TW2010AM
33	2.0L SOHC 8v 3A, AAD, AAE, ABK, ABT, ADW ('88-'98)	CR4104XP (w/ lug)		MB5566XP		TW2010AM
34	2.0L DOHC 16v 6A, ACE ('90-'96)	CR4104XP (w/ lug)		MB5566XP		TW2010AM
35	2.0L DOHC 20v ALT ('00-'08)	CR4597XP (w/ lug)		MB5661XP		TW1004AM
36	2.0L DOHC16v AWA, AXW, BMB ('00-'08)	CR4597XP (w/o lug)		MB5661XP		TW1004AM
37	2.0L DOHC 16v Turbo AXX, BGB, BUL, BWA, BWE ('04->)	CR4597XP (w/o lug)		MB5661XP		TW1004AM
38	2.0L 10v JL, PS, KP, RT, SK, SL	CR 505XP		MB 605XP		TW2009AM
39	2.0L 20v NM	CR 505XP		MB 605XP		TW2009AM

Engine	Race Rod Bearing		Race Main Bearing		Thrust Washer	Cam Bearing
	Non-Coated	Polymer Coated	Non-Coated	Polymer Coated		
<b>BMW</b>						
40	2.0L SOHC/OHC, 10v HP, JS	CR 505XP			MB 605XP	
41	2.0L 8v AXA, AUZ, AVA	CR4104XP (w/ lug)			MB5661XP	
42	2.0L SOHC/OHC 8v AQY, AEG, BHY, ASU, APK	CR4104XP (w/ lug)			MB5661XP	
43	2.2L SOHC/OHC 10v KM, KX, HY, HX, KU, KZ, PX, KV, JT	CR 505XP			MB 605XP	
44	2.3L SOHC/OHC 10v NF, NG, PR, AAR	CR 505XP			MB 605XP	
45	2.3L DOHC 20v 7A	CR 505XP			MB 605XP	
46	2.5L 10v AAF, AEN, AET, AEU, AVT	CR 505XP			MB 605XP	
47	2.5L SOHC/OHC 10v ACU, APL	CR 505XP			MB 605XP	
48	2.8L VR6 R30 AAA, AES , AQP , AUE , AYL , BDE	CR6764XP			MB7089XP	
49	3.2L VR6 R32 AZZ , AXJ , BDL , BFH , BJS , BKK , BKJ , BUB , CFLA	CR6764XP			MB7089XP	
50	4.2L Audi R8 / RS6 FSI V8	CR 227XP	CR 227XPC	MB1322XP	MB1322XPC	
51	5.2L Audi R8 V10 / Lamborghini Galardo / Huracan V10	CR 227XP	CR 227XPC	MB1322XP	MB1322XPC	
<b>CHRYSLER</b>						
82	2.4L 16v G4KC, F4KE "World Engine"	CR4668XP			MB5707SI*	
83	2.4L 146 DOHC 16v EDZ SRT4 ('02-'05)	CR4256XP			MB5270XP	
84	3.5L 215 OHV 12v	CR6672XP			MB7723XP	
85	4.0L 245 OHV 12v	CR6672XP			MB7723XP	
86	4.3L 265 OHV 12v	CR6672XP			MB7723XP	
87	4.5L 273 OHV 16v V8	CR 805XPN	CR 805XPNC	MB 558XP	MB 558XPC	CS 512HP
88	5.2L 318 OHV 16v V8	CR 805XPN	CR 805XPNC	MB 558XP	MB 558XPC	CS 512HP
89	5.6L 340 OHV 16v V8	CR 805XPN	CR 805XPNC	MB 558XP	MB 558XPC	CS 512HP
90	5.7L 345 OHV 16v V8 Hemi ('03->)	CR8032XPN	CR8032XPC	MB5840XP	MB5840XPC	TW1003AM

\* Normal street bearings \*\* HPT - Fluoropolymer Coated

• XPC pMaxKote, polymer coated • GPC silver based polymer coated • TFC Top Fuel/ Pro Mod, polymer coated

\* Normal street bearings \*\* HPT - Fluoropolymer Coated

• XPC pMaxKote, polymer coated • GPC silver based polymer coated • TFC Top Fuel/ Pro Mod, polymer coated















[www.kingracebearings.com](http://www.kingracebearings.com)

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ENGINE BEARING SPECIALISTS