

NTN®

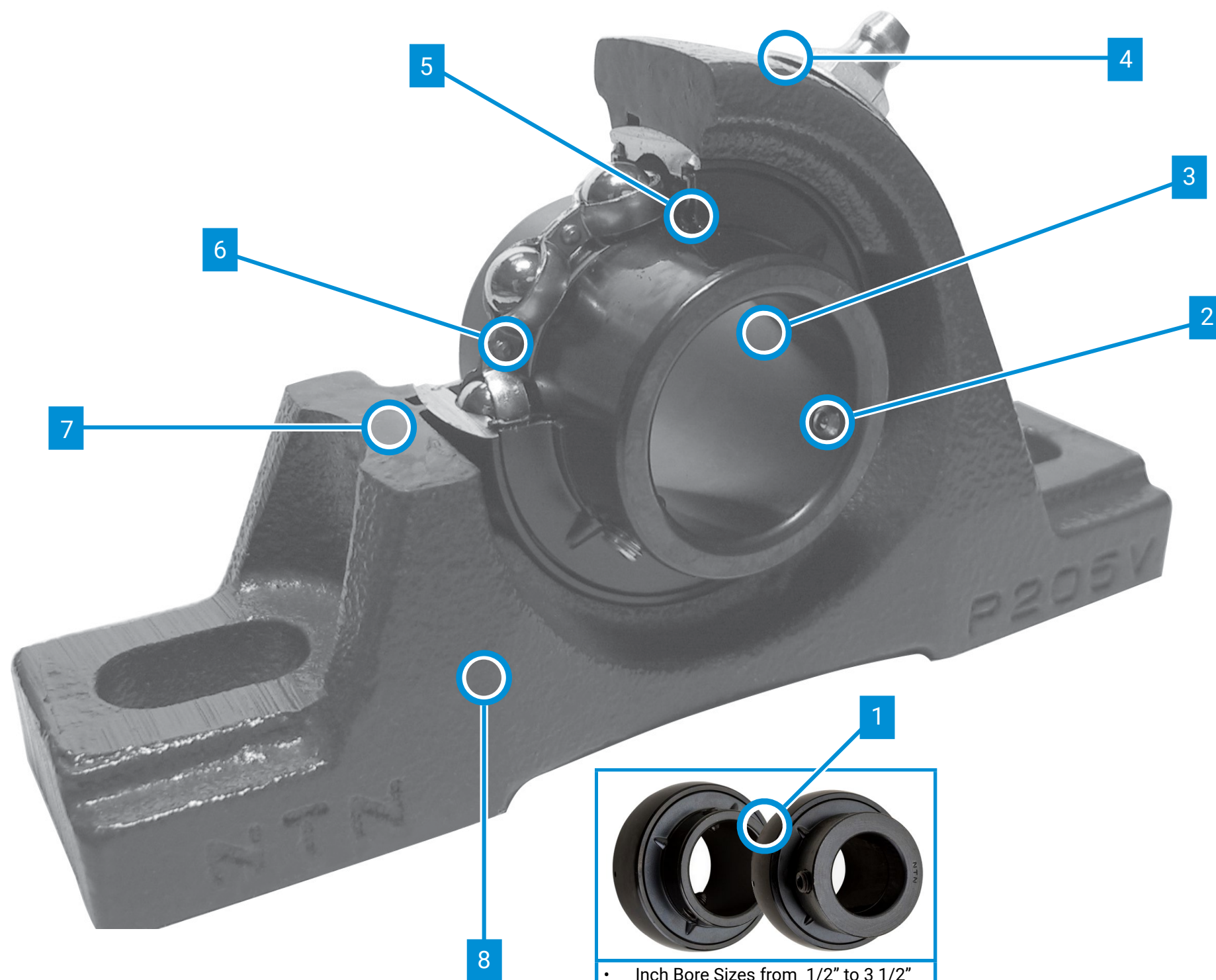
NTN®

ULTRA-CLASS



NTN ULTRA-CLASS™

IN A CLASS OF ITS OWN



- Inch Bore Sizes from 1/2" to 3 1/2"
- Standard and Medium Duty
- Set Screw and Eccentric Locking
- Wide and Narrow Inner Ring

The Better Option

Less downtime.
More profitability.

NTN's ULTRA-CLASS is the original solid base offering in our mounted bearing unit portfolio. As our flagship bearing unit line, it symbolizes our commitment to performance and reliability. Ideal for applications where elements such as dry particle contamination and moisture are of concern, ULTRA-CLASS provides a wealth of features and benefits to address these challenges.

Product Features & Benefits

- 1 Electric motor quality insert bearings manufactured with consistently tight tolerances ensure smooth and efficient operation by optimizing rolling element contact and load distribution, and improve performance under various loads (radial and axial), speeds, and operating conditions
- 2 Exclusive ball point set screw secures bearing to shaft better than any competitor, minimizing shaft damage and increasing bearing life, while still allowing for quick and easy removal
- 3 Black oxide coated insert bearing improves durability and lubricity, and enhances corrosion resistance
- 4 Metallic name plate is durable and resistant to environmental factors and allows for easy NTN part number identification
- 5 Land riding seal includes exclusive metallic inner ring flinger with fins to actively repel contamination during operation, leading to consistent sealing performance and longer bearing life
- 6 Heavy-duty steel cage is highly durable, improves load capacity, and allows for FG1 solid lubricant to be added
- 7 Heavy-duty solid base housings resist cracking and dampen vibration
- 8 Electro-statically painted housing establishes a smooth, uniform finish that is highly resistant to chipping, fading, and corrosion



Heavy-duty housings with solid base

NTN mounted units have a solid base which dampens vibration by providing smooth and rigid mounting for the bearing. Stress in the feet of the pillow block due to bolt tension is also reduced and the chance of cracking is minimized.

Housings are made of high grade cast iron and designed to provide high rigidity and strength for heavy load applications. All housings are electrostatically painted using machinery gray powder paint. The electrostatic paint provides long term durability and resists rust and corrosion.

Housing deflections often create high stress in the bearing due to uneven load distribution and misalignment. NTN ULTRA-CLASS housings are designed to provide rigid mounting for the bearing insert and minimize the effects of housing deflection.

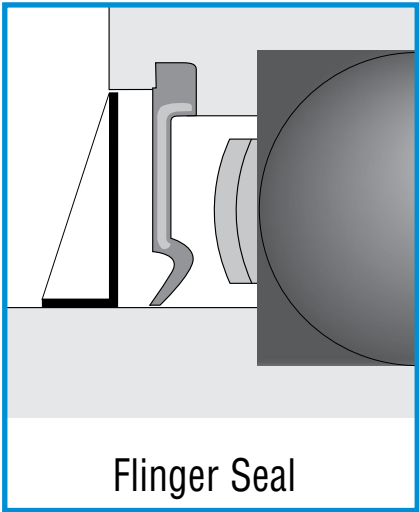
Black oxide coating

ULTRA-CLASS inserts feature a black oxide coating to prevent corrosion and extend bearing life. Bearing surfaces coated with black oxide film include the inner ring, outer ring, flinger and set screws. The tough black oxide finish enhances corrosion resistance by creating a corrosion-resistant barrier to protect the steel surface from all types of corrosive environments.

Flinger & seal

ULTRA-CLASS inserts utilize a full contact molded rubber seal that is bonded to a steel backing plate. The seal lip rides on the inner ring which has been precision ground to provide a very smooth contacting surface.

The metal flinger that protects the seal lip is pressed onto the inner ring. There are triangular fins (protrusions) on the outside face of the flinger; these fins create an outward flow of air from the bearing as the bearing rotates. In this way, the flinger acts as a fan which keeps dust and water away from the bearing. The labyrinth effect between the flinger/seal combination is very effective in highly contaminated applications.

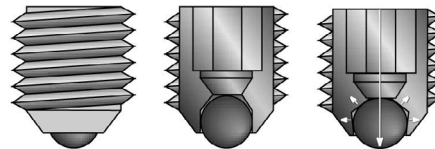


Flinger Seal

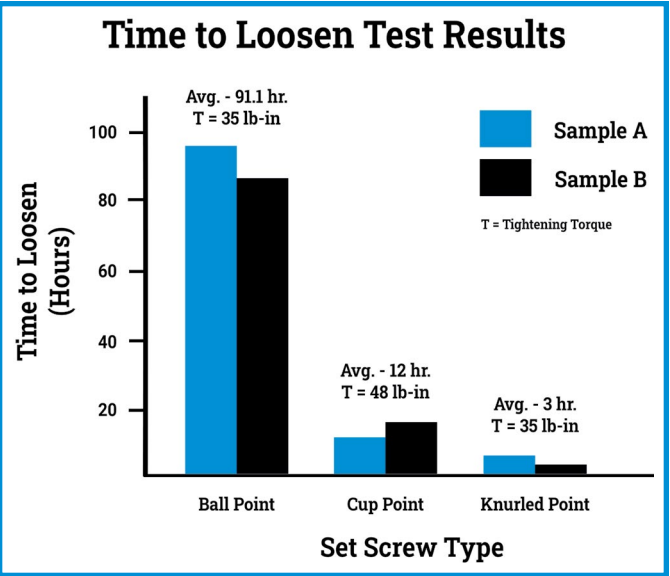
Ball point set screw

The ball point set screw is an NTN exclusive design. The design features a hardened steel ball (HRC 62) that is retained in the end of the set screw. This set screw has several advantages over competitive set screw designs.

- **Difficult to work loose** — Upon tightening, the steel ball is squeezed back into the tapered portion of the set screw, causing the threads to spread. This expansion of the threads makes it extremely difficult for the set screw to loosen when exposed to vibration and/or shock loads.
- **Develops larger holding force** — The ball point set screw makes a point contact with the shaft allowing easy tightening and complete transmission of force to the shaft. The cup point and knurled cup point on the other hand make a circular contact with the shaft. In those designs, a portion of the tightening torque is used for cutting a circular groove on the shaft, effectively reducing the holding force.



- **Can be used repeatedly** — The hardened steel ball does not plastically deform when tightened. Additionally, it only leaves a small contact print on the shaft. The cup point set screw not only marks the shaft, but the screw itself becomes damaged, making it difficult to retighten if removed.
- **Needs no flat on the shaft** — The ball point set screw makes a point contact and therefore does not require a flat on the shaft. The cup point set screw cannot make full contact unless there is a flat machined onto the shaft.



- **Reduced fretting corrosion at the tip of the set screw** — Due to the hardened steel ball of the ball point set screw, fretting corrosion is considerably reduced. Cup point and knurled cup point set screws can cause substantially more fretting since they are generally not hardened.
- **The set screws in the NTN design are spaced 120 degrees apart** — This three-point contact minimizes inner ring distortion, reduces vibration and noise, and improves reliability.

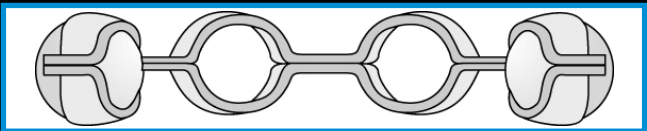
Solid lubrication available

- Solid lube is made up of a microporous carrier material infused with lubricating oil.
- The carrier material is spot packed on the cage along the ball path and in contact with rolling elements to provide proper lubrication in-service and reduced friction.
- The oil lubricant in the pores of the carrier material is released when the rolling elements start to move.
- The lubricant creates an optimal oil surface film over the rolling elements and raceway.
- Superior in providing consistent, long-lasting lubrication – the right amount at the right time - for optimal performance and longevity

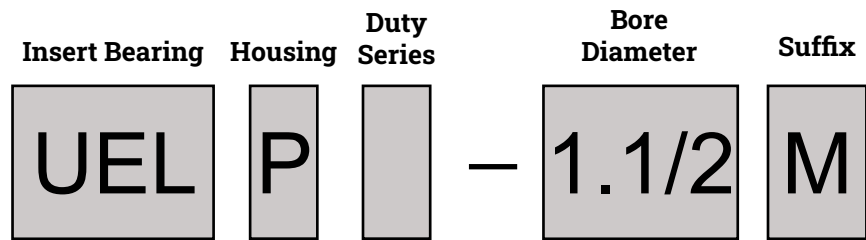


Cage material

NTN wide inner ring units use precision steel cages. The stamped steel cage makes them suitable for wide temperature range applications.



ULTRA-CLASS Mounted Bearing Unit Numbering System



1. BEARING INSERTS

- AR: Narrow inner ring, set screw type
- JEL: Narrow inner ring, eccentric locking collar
- UC: Wide inner ring, set screw type w/flinger
- UEL: Wide inner ring, eccentric locking collar w/flinger

2. HOUSING

- FLU: Flanged unit, cast, 2-bolt housing
- FU: Flanged unit, cast, 4-bolt square bearing
- P: Pillow block, cast housing
- PL: Pillow block, cast housing, low center height

3. DUTY SERIES

- No Symbol: Standard duty (equivalent to 2 series)
- X: Medium duty (equivalent to X series)

4. BORE DIAMETER

- X.X/X: Bore diameter in inches (ex. 1.1/2 = 1.1/2")
- nn: Bore diameter in mm (ex. 25 = 25mm)

5. SUFFIX

- M: Black oxide coating
- FG1: Food grade solid lube, no relube feature included
- LP03: Standard solid lube
- S: Smaller size if same bore offered in larger unit
- R: Non-industry dimensions

ULTRA-CLASS Interchanges

STANDARD DUTY (200-SERIES) UNITS-CAST IRON							
MOUNTING TYPE	SHAFT HEIGHT	NTN	FAFNIR	SEAL MASTER	DODGE	BROWNING	SKF
Pillow Block							
Set Screw	High Base	UCP	YAS, RASC*	NP, RP	P2B-SC	MPS-2, VPS-2	SY-TM
	Low Base	UCPL	YAK	NPL, RPL	P2B-SCB	MPLS-2, VPLS-2	SYM-TM
Eccentric	High Base	UELP	RAS	RP-E	P2B-SXR	MPE-2, VPE-2	SY-WM
	Low Base	UELPL	RAK	RPL-E	P2B-SXRB	MPLE-2, VPLE-2	SYH-WM
4-Bolt Flange							
Set Screw		UCFU	YCJ, RCJC*	SF, RF	F4B-SC	MF4S-2, VF4S-2	FY-TM
Eccentric		UELFU	RCJ	RF-E	F4B-SXR	MF4E-2, VF4E-2	FY-WM
2-Bolt Flange							
Set Screw		UCFLU	YCJT, RCJTC*	SFT, RFT	F2B-SC	MF2S-2, VF2S-2	FYT-TM
Eccentric		UELFLU	RCJT	RFT-E	F2B-SXR	MF2E-2, VF2E-2	FYT-WM
MEDIUM DUTY (X-SERIES) UNITS-CAST IRON							
MOUNTING TYPE	HOUSING TYPE	NTN	FAFNIR	SEAL MASTER	DODGE	BROWNING	SKF
Set Screw	Pillow Block	UCPX	YASM	MP, MRP	P2B-SCM	VPS-3	SYM-TM
Set Screw	4-Bolt Flange	UCFUX	YCJM	MSF, MRF	F4B-SCM	VF4S-3	FYM-TM
Set Screw	2-Bolt Flange	UCFLUX	YCJTM	MSFT	F2B-SCM	VF2S-3	FYTM-TM

*Uses setscrew locking collar

NTN knows dirt

Heavy industry is not a clean place. The critical bearings you depend on to keep your facility running smoothly must perform flawlessly for long run times while dealing with dirt and dust. NTN knows this fact and developed robust ball bearing mounted units to deal with this prominent bearing killer.

NTN's ULTRA-CLASS line is fitted with heavy-duty, full-contact molded rubber seals that ride on black oxide coated bearing inserts to help reduce corrosion. In addition to the seals, steel flingers are pressed onto the inserts creating a labyrinth effect. These standard components and materials combine to keep out damaging dirt, dust and moisture, for maximum performance.

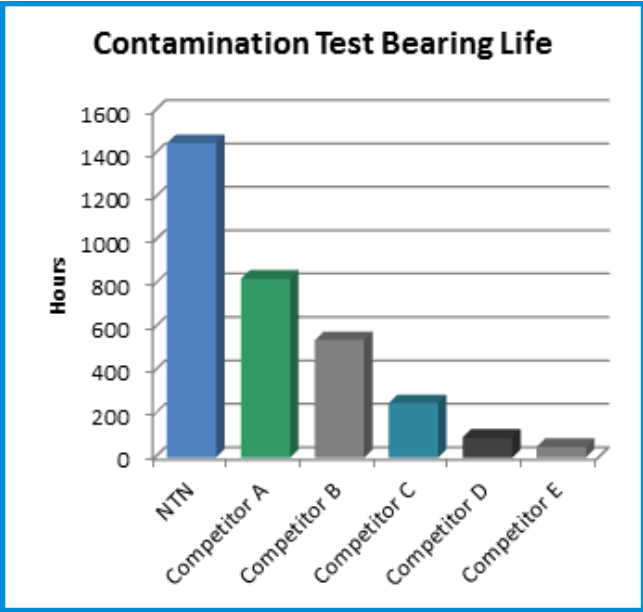
Putting it to the test

NTN tested ULTRA-CLASS against multiple samples from each of the leading bearing manufacturers. They were run on the NTN Test Laboratory's Contamination Machine involving:

- Dust/water slurry mixture
- Continuous start/stop cycling

Dozens of tests were conducted yielding each product's resistance to contamination.

NTN's ULTRA-CLASS design significantly outperformed all the competitor designs, with a life 76% longer than the closest competitor.



Turning results into customer success

Beyond the lab in the real world, ULTRA-CLASS units prove their value to outlast other designs in challenging services plagued with dust, dirt, and moisture.

When a major US-based hardwood sawmill was experiencing repetitive bearing failures on their drying kiln rollers - causing downtime at a rate of over \$1,900 per week and impacting promised ship dates - it reached out to NTN's engineering and sales support team for a comprehensive diagnosis of the mill's drying kilns. Our team discovered that the competitor's bearings were only lasting an average of **two to four months** due to the wide temperature swings and very humid nature of these kilns.

The NTN solution—our ULTRA-CLASS bearing units with eccentric locking collars and heavy-duty riveted steel cages—was designed to function perfectly after repeated drying cycles. Additionally, the standard corrosion-resistant black-oxide coated ball bearing inserts easily withstand the moist environment without seizing to the roller shafts.

ULTRA-CLASS lasted three times longer and resulted in **nearly \$200,000 in uptime improvement and reduced maintenance savings** over a two-year conversion time frame.



Scan Here to Read the Success Report

Beyond Bearings

Training. Installation Support.
Trouble-shooting. And more.

When you choose NTN, your team is equipped with all the necessary tools and resources to get the job done right. From installation to problem-solving, we'll be there with the hands-on support you need to take on your toughest challenges. This includes extra services such as:



Technical Training Unit

On-site, mobile training unit offering specialized, hands-on instruction from NTN engineers



Product Training School

Three days of in-depth instruction from NTN engineers at NTN headquarters or other regional locations around the country
(go.ntnamericas.com/trainingschool)



eKnowledge

WEB-BASED TRAINING PROGRAM

Eight online product training modules covering different bearing types and nomenclature
(www.ntnamericas.com/eknowledge)



NTN Bearing Finder

Customizable search tool featuring exhaustive data sets, comprehensive part interchanges and interactive CAD drawings
(bearingfinder.ntnamericas.com)



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