Ultra-Class™ Ball Bearing Mounted Units

What is Ultra-Class?

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.

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.

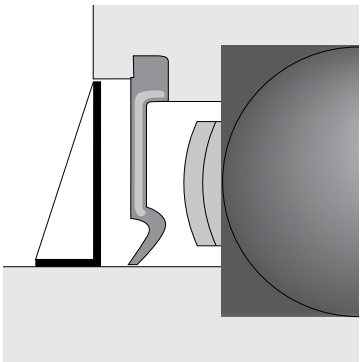
Black oxide coating

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.

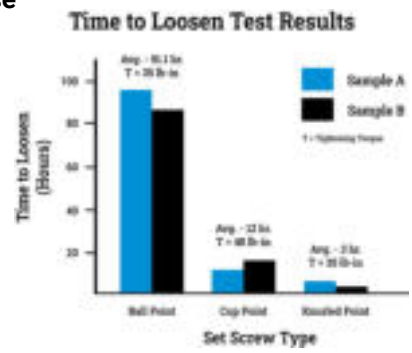


Flinger Seal

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 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.

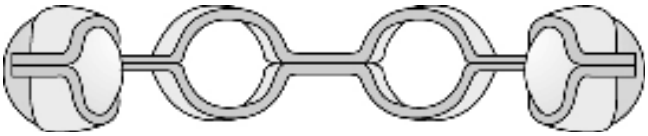
- **Needs no flat on the shaft** — The ball point set screw makes a point contact and therefore does not require a flat on the shaft. The cup point set screw cannot make full contact unless there is a flat machined onto the shaft.

- **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, reducing vibration and noise, and improving reliability.

Cage material

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



Solid lubrication available

- Solid lube is made up of a microporous carrier material infused with lubricating oil.
- The carrier material fills entire free space in the bearing cavity. This encapsulation helps to protect the rolling elements and races from fine contaminants and moisture.
- 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

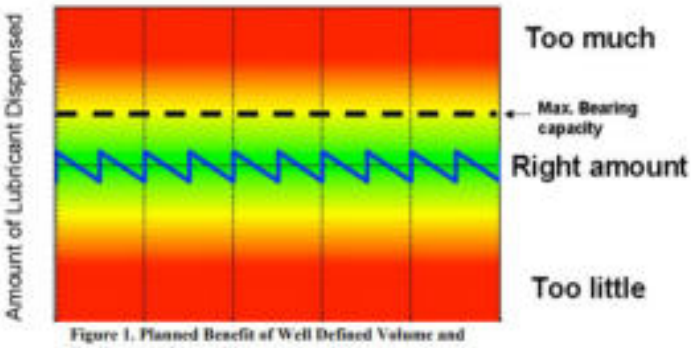


Figure 1. Planned Benefit of Well Defined Volume and Replacement Intervals

Please contact your local NTN Sales Representative for more details.

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