

“Ball screws are essential components in industrial machinery, but failures are a constant concern for both production and maintenance staff. From premature wear to structural deformations, these defects can lead to costly production stoppages and compromise the quality of the final product. This article outlines the most common failures in ball screws and strategies to prevent and mitigate these issues.”

5 COMMON FAILURES IN BALL SCREWS

1- Common Failures

- 1.- Excessive Wear: Constant friction between the ball and the screw's raceway can lead to premature wear, especially in high-load or high-speed applications.
- 2.- Corrosion: Exposure to corrosive environments can cause damage to the surface of the screw and nut, reducing their lifespan and affecting optimal performance.
- 3.- Structural Deformation: High loads or impacts can cause deformations in the screw or nut, negatively impacting the precision and smoothness of linear movement.
- 4.- Overload: Exceeding the screw's nominal load capacity can lead to deformations or breakages, particularly in demanding applications.
- 5.- Misalignment: Poor alignment between the screw and the nut can result in uneven wear and inefficient system operation.



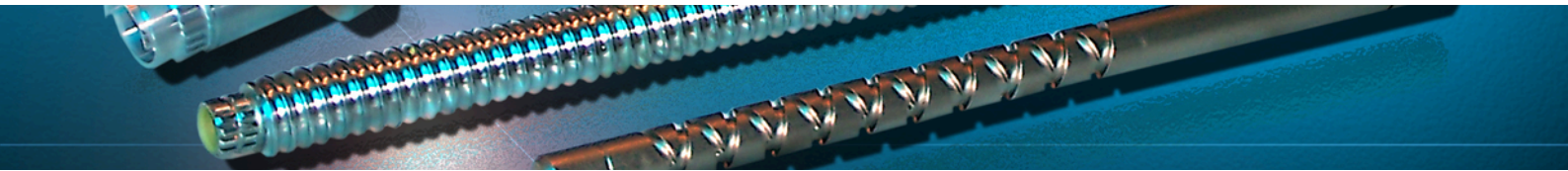
**PRECISION
ACCURACY AND
ATTENTION TO
DETAIL**

“In conclusion, to ensure optimal performance of ball screws, it is essential to proactively address potential failures. By adopting preventive maintenance measures, carefully selecting materials, and conducting regular monitoring, users can minimize obstacles and ensure the efficiency and reliability of their operations. **Prioritizing attention to these details enhances productivity, reduces downtime, and maintains the integrity of operations.**”

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2- Prevention Strategies

- 1.- Excessive Wear:** Prioritize high-quality materials and wear-resistant coatings for screws and nuts. Additionally, appropriate lubrication is essential to ensure good performance.
- 2.- Corrosion:** Select corrosion-resistant materials or apply protective coatings to screws and nuts when exposed to corrosive environments. Regular maintenance to clean and protect the screw and nut surfaces is also crucial.
- 3.- Structural Deformation:** Use screws and nuts designed to withstand the expected loads and impacts in the specified application.
- 4.- Overload:** Adhere to the nominal load specifications and continuously monitor through sensors that provide visual or audible alerts. Proper training of operating personnel and strictly adhering to preset load limits are essential.
- 5.- Misalignment:** Use precise mounting and alignment devices during installation and conduct regular maintenance to check and correct any inaccuracies that may occur due to vibrations, unbalanced loads, or incorrect adjustments.



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