THE XTEK Difference

Roll End Casing Design Features

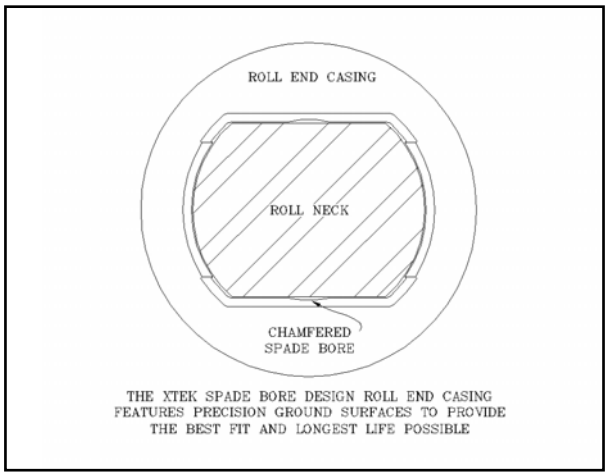
As a leading manufacturer of geared couplings, Xtek has many years of experience supplying geared couplings for rolling mill applications. Ranging from small high speed cold mill to large roughing mill applications, our geared couplings have proven to be the most reliable in the industry. An important factor contributing to this reliability is the performance of our integral spade bore roll end casing. When used in a **u-joint system**, our casing design will provide the most reliable and cost effective design available for u-joint applications.

Roll End Casing design:

The ***Xtek TSP*** roll end casing features a deep, case hardened spade bore. The specifications include AISI 8620 forged material, carburized and hardened to 56 HRC min, achieving typical case depths of .150" min. After hardened, the spade bore is finished machined to exact tolerances to insure proper fit with the roll neck connection.

The opening of the spade bore has a large chamfer to aid the roll insertion during roll change. This can vary depending upon the accuracy of a specific roll change system. Pilot rings, both internal and external, can also be used to provide added support during operation.

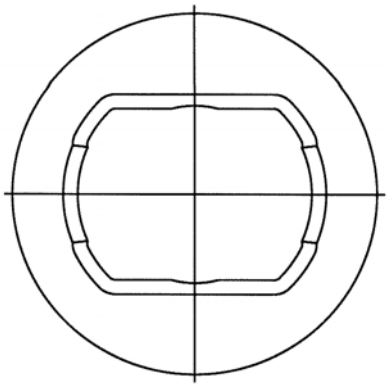
The overall design of the roll end casing can also vary depending upon the connection to a u-joint drive system to include flanged, hirth serrations and others.

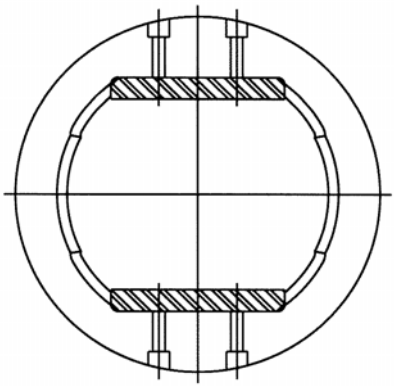


THE XTEK SPADE BORE DESIGN ROLL END CASING FEATURES PRECISION GROUND SURFACES TO PROVIDE THE BEST FIT AND LONGEST LIFE POSSIBLE

TSP Roll End Casing design benefits:

As with any power transmission system, it is important to minimize or eliminate sources that can contribute to mechanical vibration. Loose connections between the roll neck and casing often produce the leading cause for vibration in a drive train system. Depending upon the operation, this source of vibration can be significant. Typical u-joint applications use a casing that includes replaceable inserts or "keys". Over time, the inherent mechanical looseness of this type of design will increase. Contributing to this is the wear that will develop in the spade after inserts are periodically changed. The bolts used to fasten the inserts to the casing can also work loose and cause maintenance as well safety related issues. The Xtek integral spade design virtually eliminates these issues by providing a solid spade void of any inherent looseness. See below for design types.


Integral Spade


Replaceable Insert Design

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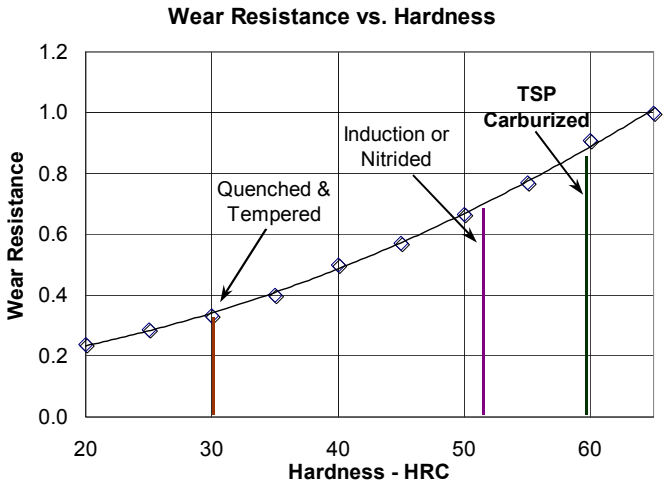
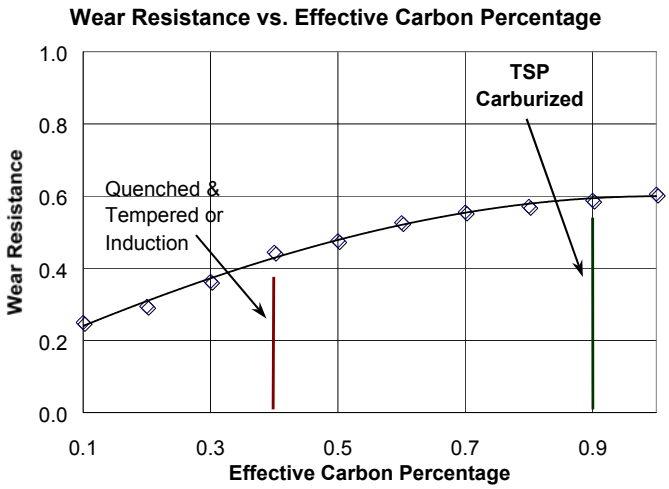
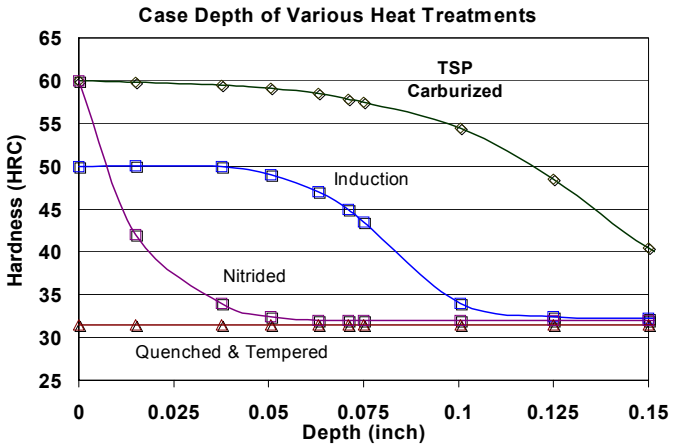
THE XTEK Difference

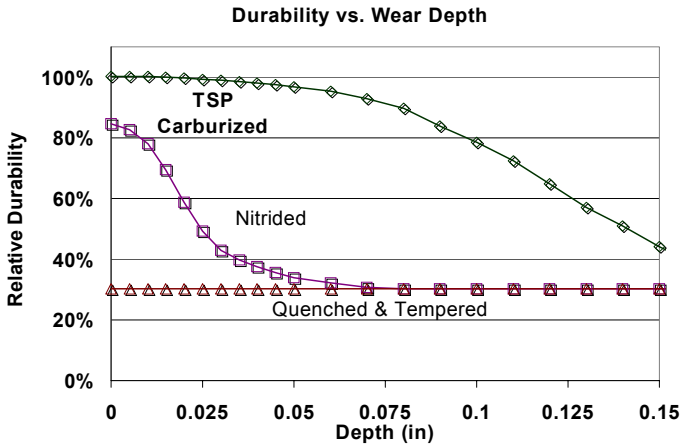
Typical specifications for a replaceable insert design casing calls for a casing to be manufactured from medium carbon alloy, AISI 4140, heat treated to 280 BHN min. The inserts are manufactured from the same material and then an additional hardening process is added to provide improved wear resistance. Nitriding and induction hardening are some examples of the case harden processes used. The figures below illustrate the relative differences in wear resistance between case hardening methods. Note that 4140 steel hardened to BHN 300 (HRC 32) has a significantly lower wear resistance than the much harder TSP carburized steels.





While induction hardened and nitrided steel have comparable hardness, the case depth of these types of treatments are relatively shallow and as the spade bore wears, the wear rate accelerates. The figure below at left shows typical case depths of various heat-treat methods. Note that carburizing leads to a dramatically greater case depth than other methods. In the figure below at right, durability with respect to wear depth of materials commonly used for spade bores is shown.





In summary, the Xtek TSP integral spade bore casing provides the most reliable and cost effective design for use on u-joint applications available. To gain a better appreciation of the cost effectiveness, we would ask that the following associated costs be reviewed.

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$ Current cost of roll end casing and components

$ Annual costs and consumption of replaceable inserts

$ Costs associated with unplanned downtime as a result of failures

$ Costs associated with preventive maintenance

We are confident that after a thorough review, the Xtek TSP integral casing will offer a dramatic improvement in performance compared to other designs. We welcome the opportunity to share some of our positive history and experience in more detail.

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