


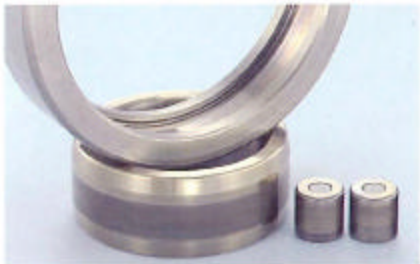



7 Pear skin, Discoloration

Phenomena, causes and countermeasures	Examples of failures
<p>Phenomena</p> <ul style="list-style-type: none"> ■ Pear skin is a condition of the rolling surface where small depressions are created entirely as a result of many foreign matters being caught between parts. A rolling surface suffering from pear skin appears dim and is rough in texture. In the worst case, the surface is discolored by heat. ● Discoloration is a phenomena in which the bearing surface is discolored by staining or heat generated during operation. 	<ul style="list-style-type: none"> ■ Pear skin on inner ring raceway surface of Double-Row Cylindrical Roller Bearing  <p>(A-6556)</p> <ul style="list-style-type: none"> ■ Pear skin on inner ring raceway surface of Deep Groove Ball Bearing  <p>(A-6960)</p>
<p>Causes</p> <ul style="list-style-type: none"> ■ Pear skin <p>Since pear skin is mainly caused by contamination by foreign matter or lack of lubricant, these two points should be inspected most carefully.</p> ● Discoloration <ol style="list-style-type: none"> 1) Discoloration (staining) is caused by deterioration of the lubricant or adhesion of colored substances to the bearing surface. Some of these substances can be removed by scrubbing or wiping with a solvent. 2) A brown discoloration of the rolling or sliding surface is caused by adhesion of acidic powders generated by abrasion during operation. In general, these powders adhere uniformly to the bearing circumference. 	<ul style="list-style-type: none"> ● Discoloration on ball surface of Deep Groove Ball Bearing  <p>(A-6639)</p> <ul style="list-style-type: none"> ● Discoloration on raceway surface, roller rolling surface of Cylindrical Roller Bearing  <p>(A-6725)</p>
<p>Countermeasures</p> <ul style="list-style-type: none"> ■ Pear skin <ol style="list-style-type: none"> a) Careful washing of shaft and housing. b) Enhancement of sealing capability. c) Filtering of oil. d) Review of lubricant and lubrication method. ● Discoloration <p>Discoloration can be classified as follows: staining, electric pitting, rust, corrosion, and temper color. Stains can be removed by wiping with an organic solvent (acetone). When observed by microscope, electric pitting is small depressions caused by electric discharge. If unevenness remains on the surface after wiping with sand paper, the phenomena are judged to be rust and corrosion. If unevenness is completely removed, the phenomena is judged to be temper color caused by heat.</p> <ol style="list-style-type: none"> a) Improvement of heat dissipation from bearings. b) Improvement of lubrication. c) Review followed by countermeasures for bearing operating conditions. 	<ul style="list-style-type: none"> ● Discoloration on inner ring and roller of Tapered Roller Bearing  <p>Staining (A-5962)</p>