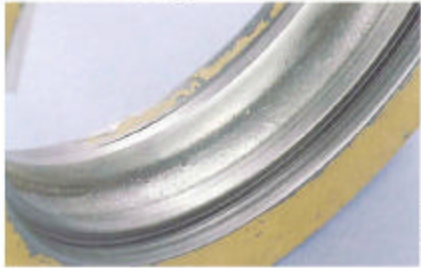



### III. Failures, Causes and Countermeasures

#### 4 Brinelling and Nicks

	Phenomena, causes and countermeasures	Examples of failures
Phenomena	<ul style="list-style-type: none"> <li>■ Brinelling is depressions created on the part of the raceway surface which comes into contact with the rolling element, and is due to plastic deformation. Brinelling is also small depressions on the rolling surface caused by contamination by solid foreign matters.</li> <li>● Nicks are a flaw caused by the direct impact received when bearings are hit by a hammer or other solid tool.</li> </ul>	<ul style="list-style-type: none"> <li>■ Brinelling on outer ring raceway surface of Deep Groove Ball Bearing   <span style="float: right; font-size: small;">(A-6474)</span> </li> <li>■ Brinelling on inner ring raceway surface of Tapered Roller Bearing   <span style="float: right; font-size: small;">(A-6617)</span> </li> </ul>
Causes	<ul style="list-style-type: none"> <li>■ Brinelling               <ol style="list-style-type: none"> <li>1) Extremely heavy load (static load, impact load) applied to bearing.</li> <li>2) Solid foreign matter caught in bearing parts.</li> </ol> </li> <li>● Nicks               <ol style="list-style-type: none"> <li>1) Faulty bearing mounting or dismounting.</li> <li>2) Mis-handling of bearings.</li> </ol> </li> </ul>	
Countermeasures	<ul style="list-style-type: none"> <li>■ Brinelling               <ol style="list-style-type: none"> <li>a) Investigation followed by countermeasures for excessively heavy load or impact.</li> <li>b) Enhancement of sealing capability.</li> <li>c) Careful washing of shaft and housing to remove foreign matter.</li> <li>d) Filtering of oil.</li> <li>e) Investigation of flaking in target bearing together with other bearings.</li> </ol> </li> <li>● Nicks               <ol style="list-style-type: none"> <li>a) Improvement of bearing mounting and dismounting.</li> <li>b) Improvement of bearing handling.</li> </ol> </li> </ul>	