
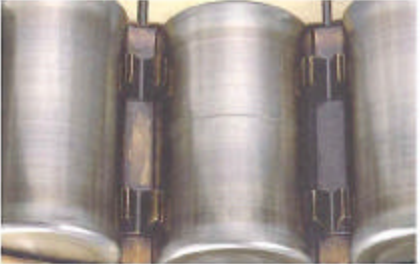

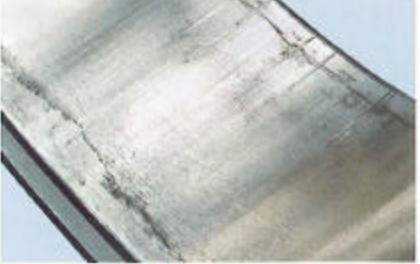



5 Scratches and Scuffing

	Phenomena, causes and countermeasures	Examples of failures
Phenomena	<ul style="list-style-type: none"> ■ A scratch is a relatively shallow flaw caused by sliding contact. ● Scuffing is a flaw caused by high contact pressure and heat on the rolling surface. <p>In general, more serious scratches are regarded as scuffing.</p> <ol style="list-style-type: none"> 1) Flaw in the axial direction (flaw occurring in mounting) <p>In the mounting of bearings whose outer rings and inner rings are separable, a flaw in the axial direction is sometimes caused by contact with the edge of rollers or raceway surfaces.</p> <p>These are referred to as flaws in the axial direction.</p> 2) Scuffing on roller end face and rib face <p>Cycloidal flaws can occur on the roller end or rib face of the bearing ring, which guides rollers.</p> <p>Flaws such as scratches, which occur on these parts are called scuffing.</p> 	<ul style="list-style-type: none"> ■ Scratch on roller rolling surface of Cylindrical Roller Bearing  <p>(A-6451, 6453)</p> ■ Scratch on roller rolling surface of Cylindrical Roller Bearing <p>Scratch occurring in circumference direction</p>  <p>(A-6452)</p>
Causes	<ol style="list-style-type: none"> (1) Flaw generated during mounting. <ol style="list-style-type: none"> 1) Careless handling in mounting or dismounting. (2) Scuffing on roller end face and rib face. <ol style="list-style-type: none"> 1) Improper lubrication at contact face. 2) Excessive preload. 3) Intrusion of foreign matter. 4) Abnormal axial load. (3) Scratches and scuffing on raceway surface and rolling surface. <ol style="list-style-type: none"> 1) Improper rotation of rolling element. 2) Improper lubrication. 3) Intrusion of foreign matter. 	<ul style="list-style-type: none"> ■ Scratch on outer ring raceway surface of Double-Row Cylindrical Roller Bearing <p>Roller which slides when running</p>  <p>(A-6470)</p> ● Scuffing on inner ring bore surface of Tapered Roller Bearing  <p>(A-6736)</p>
Countermeasures	<ol style="list-style-type: none"> (1) Flaw generated during mounting. <ol style="list-style-type: none"> a) Improvement in operations involved in mounting and dismounting. (Implementation of accurate center adjustment.) (2) Scuffing on roller end face and rib face. <ol style="list-style-type: none"> a) Review and improvement of lubricant and lubrication method. b) Inspection and countermeasures for abnormal load. c) Enhancement of sealing capability. (3) Scratches and scuffing on raceway surface and rolling surface. <ol style="list-style-type: none"> a) Review and improvement of lubricant and lubrication method. b) Enhancement of sealing capability. c) Sufficient cleaning of shaft and housing. 	<ul style="list-style-type: none"> ● Scuffing on inner ring rib face and roller and face of Cylindrical Roller Bearing with rib  <p>(A-6669)</p>