






III. Failures, Causes and Countermeasures

6 Rust and Corrosion

	Phenomena, causes and countermeasures	Examples of failures
Phenomena	<ul style="list-style-type: none"> ■ Rust is a film of oxide, hydroxide, or carbonate produced on a metallic surface by chemical action. ● Corrosion is the phenomena of oxidation or dissolution occurring on the surface and is produced by chemical action (electric chemical action including combination or cell restructuring) with acid or alkali. 	<ul style="list-style-type: none"> ■ Rust on outer ring raceway surface of Double-Row Angular Ball Bearing Rust on raceway surface of one row.  (A-6194) ■ Rust on outer ring raceway surface of Double-Row Cylindrical Roller Bearing Rust on roller pitch.  (A-6172)
Causes	<ul style="list-style-type: none"> ■ Rust <ol style="list-style-type: none"> 1) When equipment is stopped and its temperature decreases to the dew point, humidity in the housing turns into drops of water. The water drops often contaminate the lubricant. As a result, rust is generated on the bearing surface. 2) When bearings are stored in a humid place for a long time, rust is generated on the raceway surface at intervals equal to the rolling elements spacing. ● Corrosion <ol style="list-style-type: none"> 1) Corrosion occurs when a sulfur or chlorine compound contained in lubricant additives decomposes under high temperature. 2) Corrosion occurs when water gets inside bearings. 	<ul style="list-style-type: none"> ■ Rust on roller rolling surface of Cylindrical Roller Bearing Rust at one position the rollers.  (A-6479) ■ Rust on inner and outer rings and on roller of Tapered Roller Bearing Rust on roller pitch of one row.  (A-7130)
Countermeasures	<ul style="list-style-type: none"> ■ Rust ● Corrosion <ol style="list-style-type: none"> a) Enhancement of sealing capability. b) Periodic inspection of lubricant. c) Provision for adequate rust prevention during storage of bearings. 	<ul style="list-style-type: none"> ■ Rust on outer ring raceway surface of Tapered Roller Bearing  (A-7051)