

2. Abnormal operations, their causes and countermeasures

Causes and countermeasures of abnormal operations are categorized and listed in Table 1-2.

Table 1-2 Abnormal Operations, their Causes and Countermeasures

Abnormal operation		Causes	Countermeasures (supplementary countermeasures)
Increase in temperature		1. Excessively tight bearing internal clearance 2. Creep on bearing ring	Replace with a new bearing. (Correct bearing internal clearance and interference.) Replace with a new bearing. (Correct interference.)
		3. Excessively heavy load 4. Improper centering in mounting	Remounting (Correct load by adjusting housing.) Remounting (Correct centering, or widen mounting clearance.)
		5. Defect in bearing 6. Improper volume of lubricant	Replace with a new bearing. (Take proper countermeasures, after inspecting the causes.) Correct lubricant volume.
		7. Improper lubricant 8. Improper lubrication method	Change to proper lubricant. Correct lubrication method by remounting or replacement with new parts.
		9. Oil seal – Excessive interference – Shortage of lubricant – Improper oil seal 10. Abnormal contact with labyrinth seal or other parts	Correct interference by installing new seal or changing seal type. Supply lubricant. Correct oil seal type or sealing method. Remounting or modify parts.
		Excessively loud noise or foreign noise	
1. Flaws including scratches, brinelling, etc. 2. Electric pitting	Repair bearings or replace with new ones. (Care should be taken in handling bearings.) Repair bearings or replace with new ones. (Prevent electricity from passing through bearings by modifying their design.)		
3. Cracking of inner or outer ring(s) 4. Flaking of raceway surface 5. Raceway surface roughened by foreign matter(s)	Replace with a new bearing. Replace with a new bearing. Repair bearings or replace with new ones.		
High-pitched metallic noise			
1. Excessively narrow internal clearance 2. Shortage of lubricant 3. Sliding of rolling element	Replace with a new bearing or widen internal clearance. Supply lubricant. Change to proper lubricant or decrease operational clearance.		
Noise at nonuniform intervals			
1. Contamination by foreign matter(s) 2. Contact with another rolling part	Change to proper lubricant. Remounting or modify parts.		
3. Flaw or flaking on rolling element 4. Wear of cage	Replace with a new bearing. Replace with a new bearing.		
Excessively high vibration			
Excessively large rotational torque		1. Improper mounting 2. Improper sealing device 3. Improper lubricant	Remounting (Widen internal clearance. Care should be taken with centering.) Remounting (Reduce interference of oil seal.) Decrease lubricant volume. (Care should be taken not to supply an excessive amount of lubricant.)