

Cause of failure and its corrective action

Problem	Cause	Corrective action
(1) Leakage	<p>Damage or abrasion of lip Eccentric movement of shaft</p> <p>Improper installation Excessively small contact of lip with shaft Excess of lubricant at the time of installation Damage of spring Incomplete bonding of shaft or housing</p> <p>Damage of metal case Folding and distort of lip Adhesion of painting on shaft or housing</p>	<p>Refer to (2). Precisely machine the housing and sleeve. Install appropriate bearings. Attach an oil seal in close contact with the bearing. Make efforts to conduct proper insertion. Arrange the dimensions of the shaft and seal.</p> <p>Reduce the amount of lubricant applied at the time of installation. Refer to (7) Sufficiently finish the housing bore. Pay careful attention during insertion. Use a part with plasticizer coating such as rubber-covered oil seal. Refer to (6). Refer to (8). Apply coating by covering the seal or the adjacent shaft portion.</p>
(2) Damage or abrasion of lip	<p>Irregularity of shaft face Keyways of shaft, screw, sharp edge, and rough handling</p>	<p>Smoothly finish the shaft face. By using an appropriate jig, insert the shaft so as not to damage the part of the sealing lip in contact with the shaft. During storage or transportation of the oil seal, handle it carefully by housing it in a package.</p>
(3) Excessive abrasion of sealing lip or hardening of seal	<p>Pressure</p> <p>Firm installation Lack of lubrication oil</p> <p>Improper finish roughness of shaft</p>	<p>Provide the housing with a bore to release pressure in order to prevent the pressure from being sealed during installation. Consider the dimensions of the seal and the shaft. Give consideration to ensure that the lubrication oil spreads all over the seal. Finish the shaft surface roughness to the recommended value.</p>
(4) Abrasion of shaft	<p>Abrasion</p>	<p>Thoroughly clean parts in advance, and then attach the oil seal by applying a slight amount of lubrication oil to the shaft and the seal. In a dusty condition, use a seal with protection lip, and ensure that the hardness of the shaft is HRC30 or higher. (When the sealing material is made of PTFE, the hardness must be HRC50 or higher.)</p>
(5) Flaw on seal outside diameter	<p>Rough machining finish</p> <p>Sharp edge on housing bore Excessively small housing bore diameter</p>	<p>Finish the housing bore to the specified roughness. (Refer to "Housing bore surface roughness.") Round the edges to eliminate sharp edges. Check the diameter.</p>
(6) Breakage of metal case	<p>Improper insertion</p>	<p>Uniformly press-fit the oil seal by using an appropriate insertion tool.</p>
(7) Breakage of spring	<p>Extremely rough handling</p>	<p>Pay attention during storage and transportation of the seal.</p>
(8) Distort of sealing lip	<p>Improper lead-in chamfering on shaft end</p> <p>Excessively large lead-in chamfering angle Inadvertent handling</p>	<p>Chamfer the edges on the shaft end to give them roundness of 0.3 to 0.5 mm, and smooth the joint portion with the shaft. Chamfer at the angle of 30 degrees or less with respect to the shaft face. Use a correct jig, and maintain the correct shape of the sealing lip during its insertion.</p>