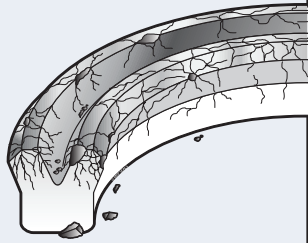


MFP Seals' Guide to Identifying Seal Failures

DETERIORATION



IDENTIFICATION

The seal has lost all elasticity, is cracked and easily crumbles.

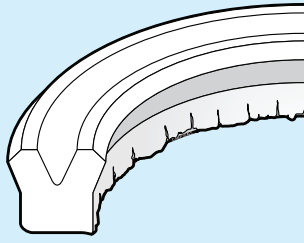
CONDITION

Excessive fluid temperature. Prolonged exposure to sunlight or ozone.

RESOLUTION

Reduce oil temperature. Check that seals are stored away from sources of ozone (electrical) and direct sunlight.

EXTRUSION



IDENTIFICATION

The dynamic side heal shows signs of extrusion.

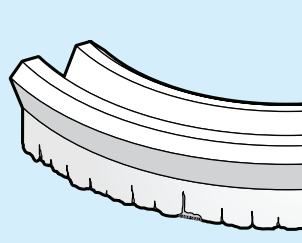
CONDITION

Excessive gaps in mated surfaces (extrusion gaps). Worn bearings/wear rings. Excessive system pressure.

RESOLUTION

Use a backup ring. Inspect and replace worn bearings or wear rings. Find a seal better suited for this application.

EXTRUSION



IDENTIFICATION

The static side heal shows signs of extrusion.

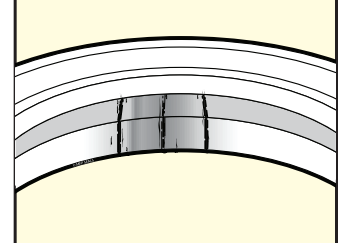
CONDITION

Support surface is uneven. Backup ring used is the wrong size.

RESOLUTION

Check surfaces and machine to spec. Use correct size backup ring.

GROOVING



IDENTIFICATION

The dynamic lip shows signs of axial cuts and grooves.

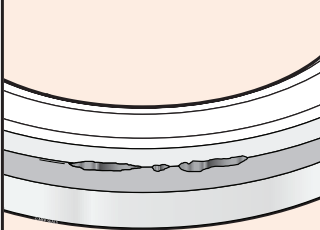
CONDITION

Sharp foreign matter is present in the system fluid. May also be caused by imploding air bubbles.

RESOLUTION

Bleed air from system and/or flush system of contaminants.

FRACTURING



IDENTIFICATION

The dynamic side of the seal has missing material.

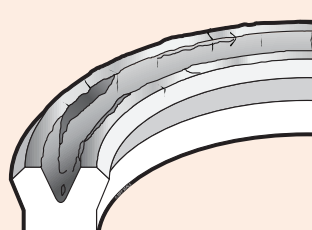
CONDITION

Excessive back pressure.

RESOLUTION

Inspect pressure relief valves.

FRACTURING



IDENTIFICATION

The pressurized surfaces of the seal are burned or broken.

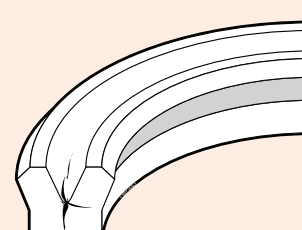
CONDITION

Dieseling, or an explosion of residual air at high pressure, may have occurred.

RESOLUTION

Inspect maximum pressure settings. Bleed air from system.

FRACTURING



IDENTIFICATION

The V portion of the seal shows long cracks or splits.

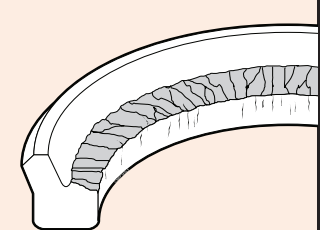
CONDITION

Temperature too low at startup. Frequent shock from excessive pressure spikes.

RESOLUTION

Increase startup temp. Find a seal better suited for this application.

FRACTURING



IDENTIFICATION

The dynamic side of the seal has broken off.

CONDITION

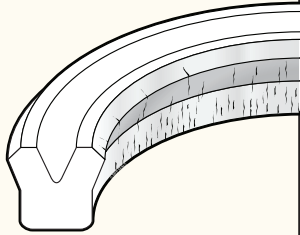
Material and/or fluid break-down.

RESOLUTION

Replace fluid. Find a seal better suited for this application.

MFP Seals' Guide to Identifying Seal Failures

HARDENING



IDENTIFICATION

The dynamic face of the seal is hardened showing cracks and glazing of the seal material.

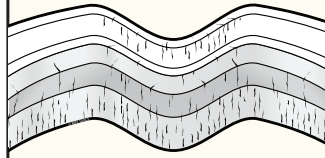
CONDITION

High stroke speed generating excessive heat.

RESOLUTION

Reduce stroke speed, or use a material designed for speed and heat requirements.

HARDENING



IDENTIFICATION

The entire seal is hardened showing cracks and glazing, with loss of material elasticity.

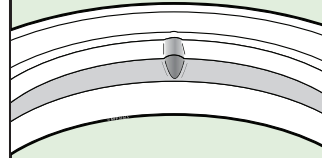
CONDITION

Excessive fluid temperature. Fluid break-down. Incompatible fluid for seal material used.

RESOLUTION

Reduce Oil Temp. Replace Fluid. Use fluid compatible to seal material.

SCARRING



IDENTIFICATION

The lip is cut or dented.

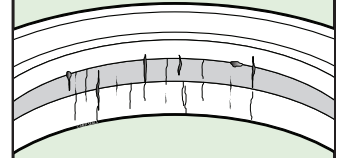
CONDITION

Damaged from use of improper installation tool or storage of seal on a peg or nail.

RESOLUTION

Store seals in plastic bags enclosed in a cardboard box. Inspect installation tools and make sure they have smooth edges.

SCARRING



IDENTIFICATION

The dynamic side of the seal shows excessive scratches.

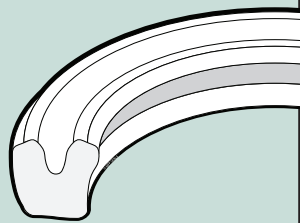
CONDITION

Damage to the Rod or Cylinder Bore. Foreign material present in the fluid.

RESOLUTION

Hone, polish, or deburr rod and cylinder. Flush system of contaminants.

SWELLING



IDENTIFICATION

Seal material has become softened and misshapen.

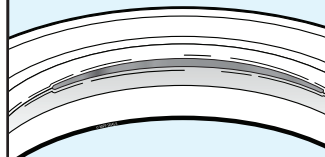
CONDITION

Fluid has been absorbed by the seal material. Incompatible fluid or water in fluid.

RESOLUTION

Use fluid compatible to seal material. Flush system of contaminants.

WEAR



IDENTIFICATION

Only one side of the dynamic lip is showing excessive wear.

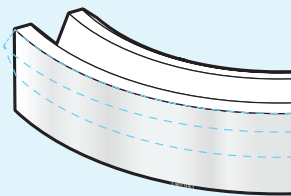
CONDITION

Excessive lateral load caused by worn wear ring or bearing.

RESOLUTION

Inspect and replace worn bearings or wear rings. Bearing/Wear Ring surface area may need to be increased.

WEAR



IDENTIFICATION

The dynamic face of the seal is worn to a glossy mirror like shine.

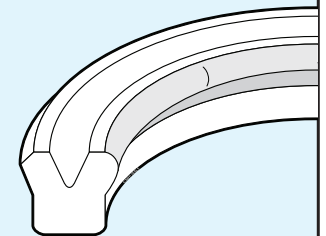
CONDITION

Not enough lubrication.

RESOLUTION

Check viscosity of oil. Find a seal better suited for this application.

WEAR



IDENTIFICATION

The dynamic lip is worn to a rounded, egg-shape.

CONDITION

The rod and cylinder bore are off-center, non-concentric.

RESOLUTION

Check for, and replace, worn rod or cylinder. Machine to seal specifications.