

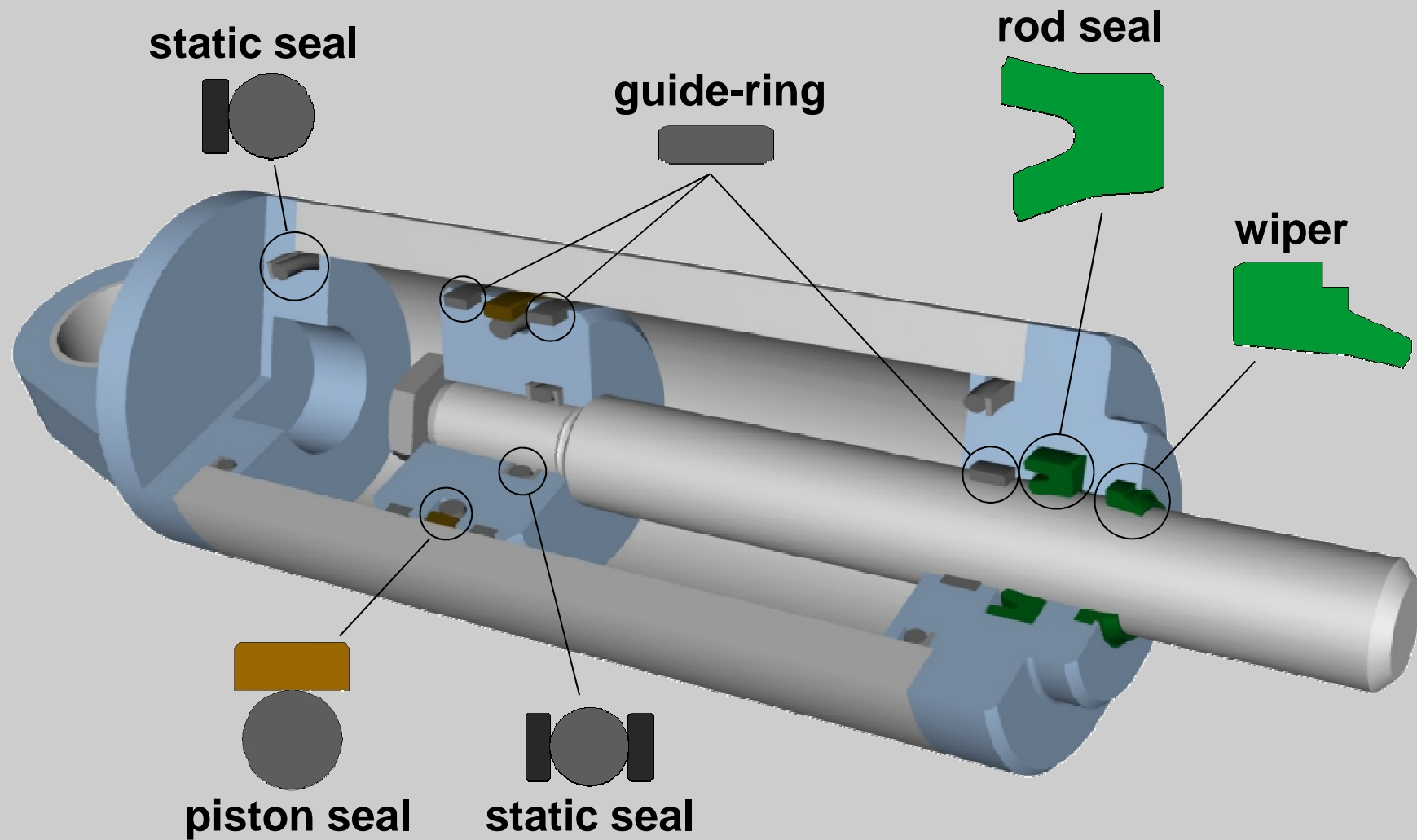
ECONOMOS[®]

quality sealing and engineering plastics solutions

BASIC SEALING TECHNOLOGY

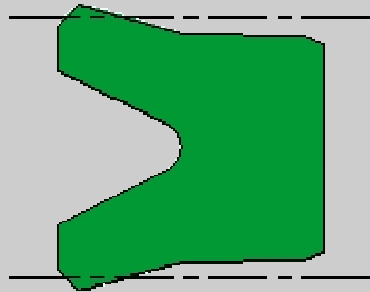
Hydraulic cylinder

Definition of components

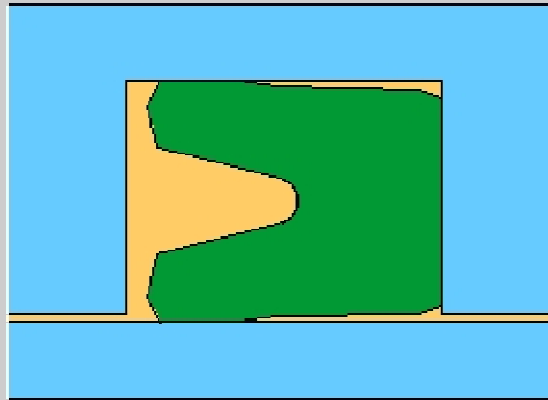


Basic seal design

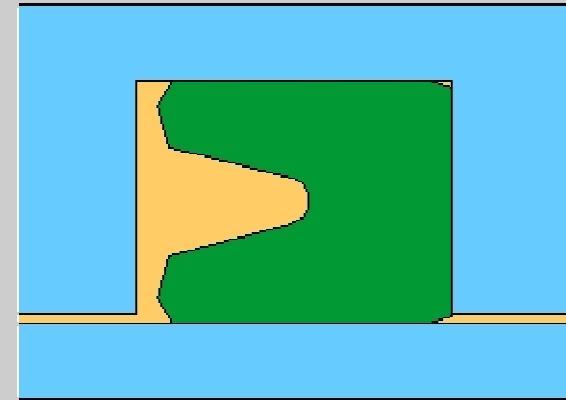
Functioning & characteristics



seal before
installation



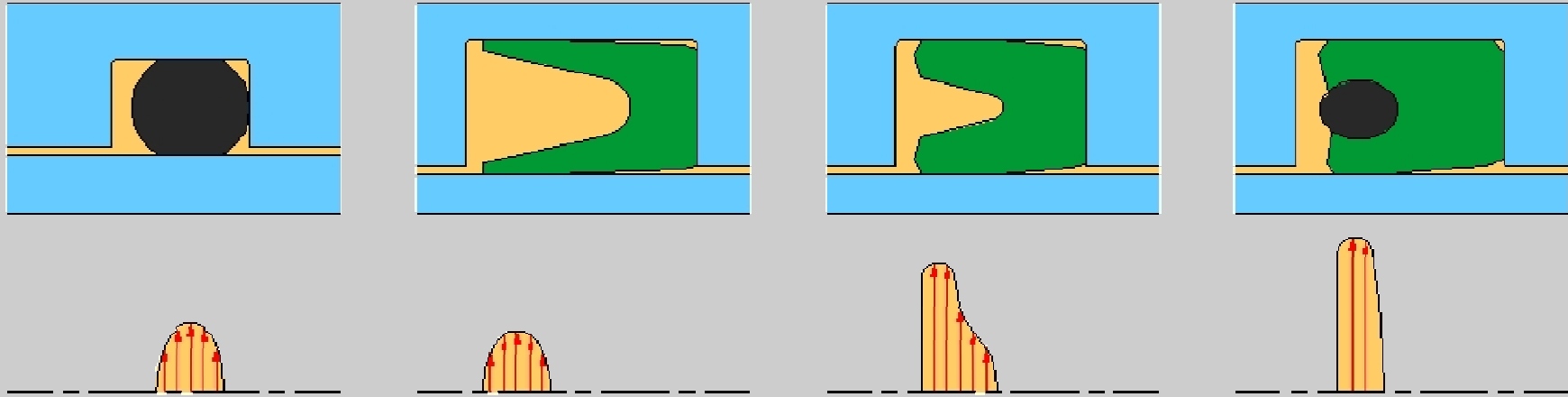
initial sealing
capacity after
installation due to
preloaded lips



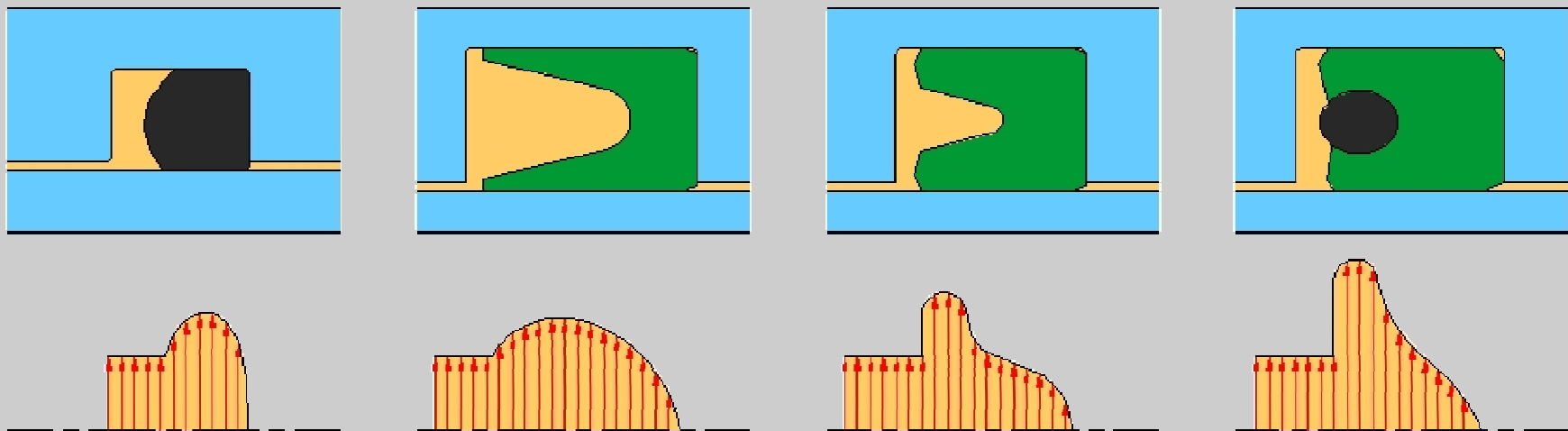
automatic sealing
effect:
the increasing
medium pressure
results in a increase
of the contact
pressure between
the seal and the
metal parts

Basic seal design

Functioning & characteristics



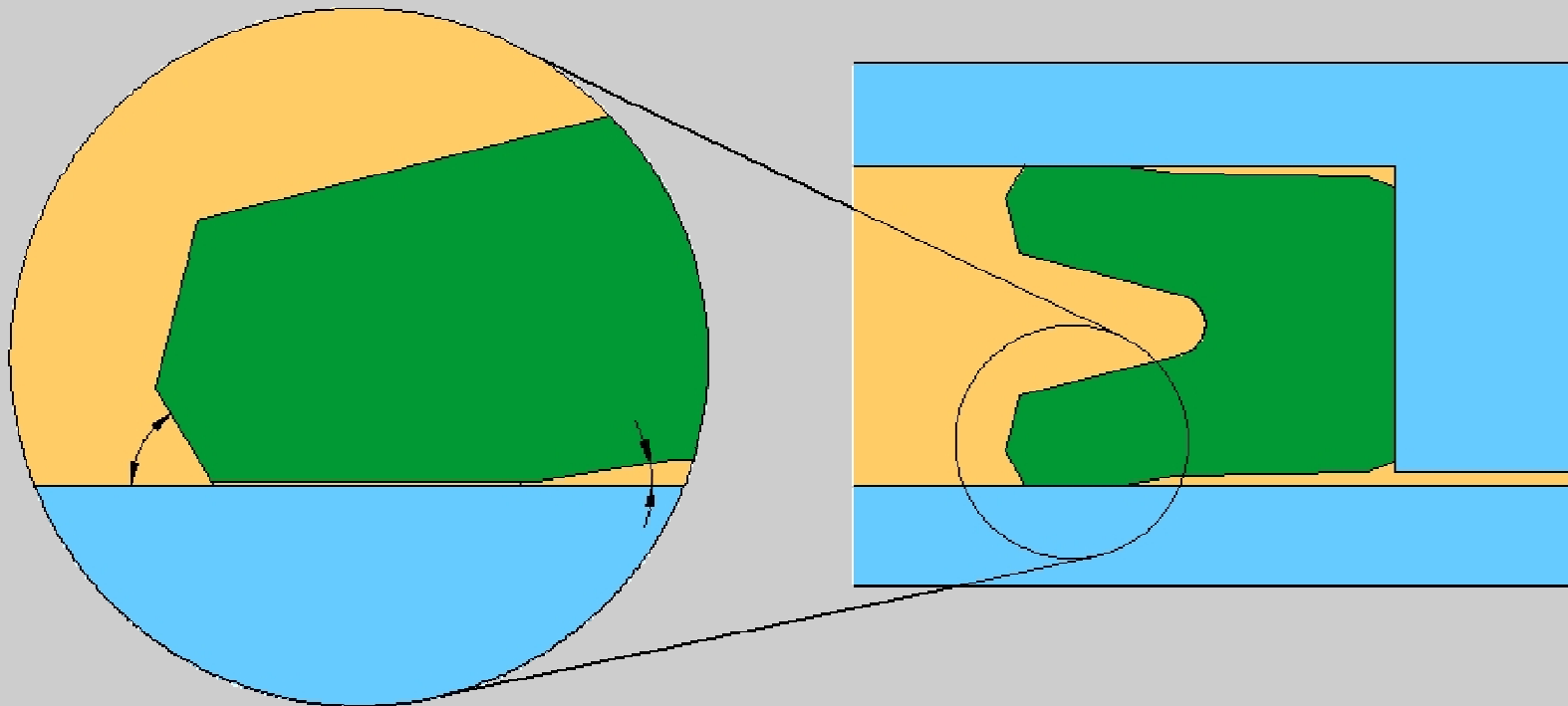
compression in pressureless condition



compression when pressurised

Basic seal design

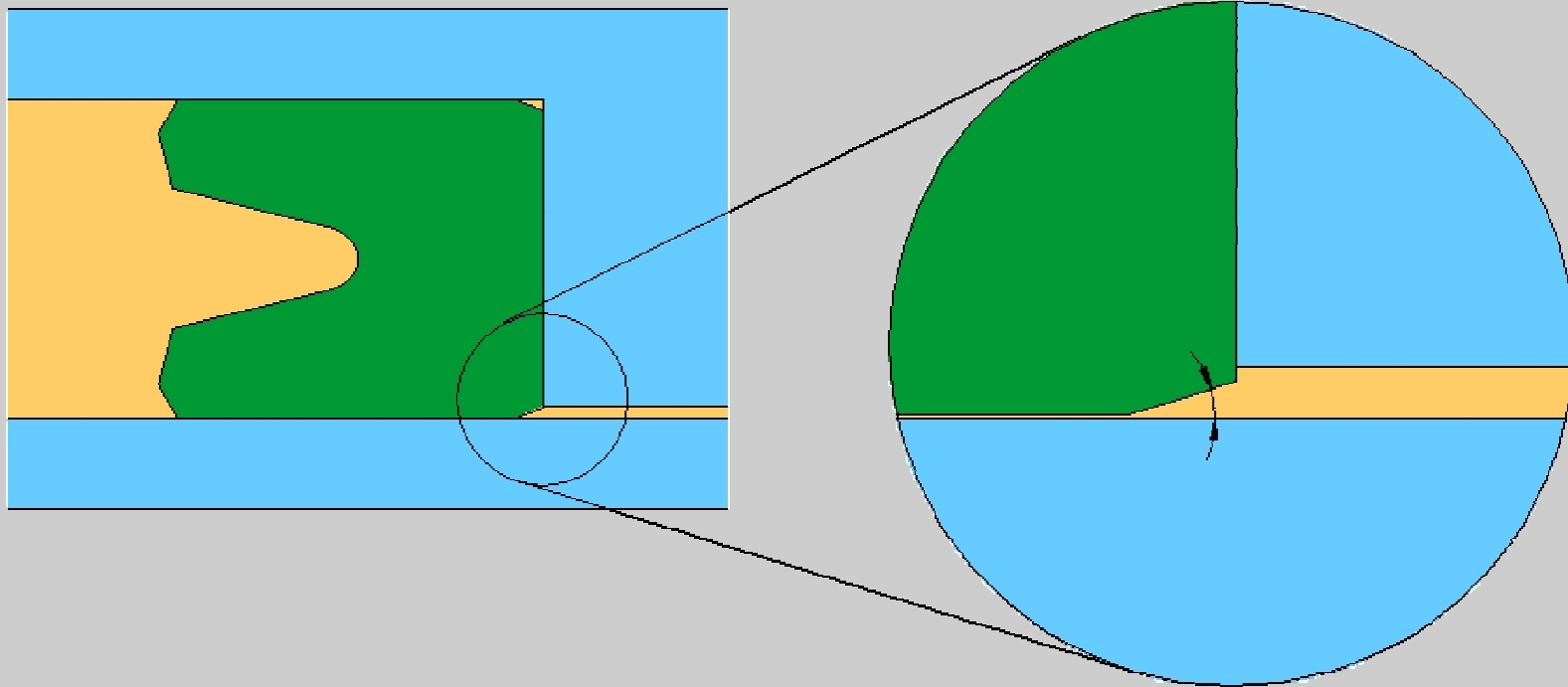
Functioning & characteristics



Pressureless or low pressure condition

Basic seal design

Functioning & characteristics



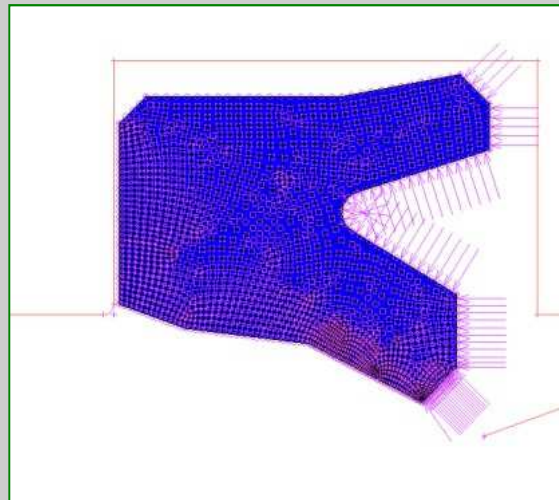
in high pressure condition

Finite elements analysis

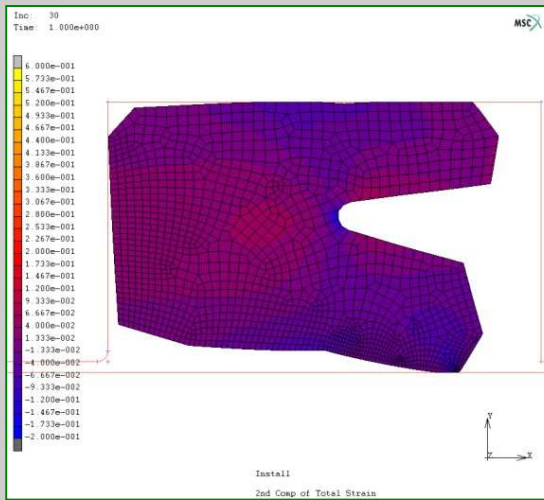
Deformation behaviour

- Deformation

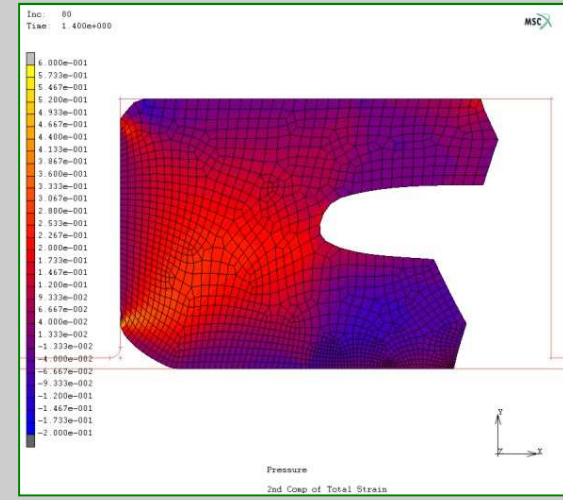
Profile: S01-P
Material: H-ECOPUR
Pressure: 0-250bar
Temp.: 20°C
Speed: 0,1m/s



not installed



installed, 0 bar



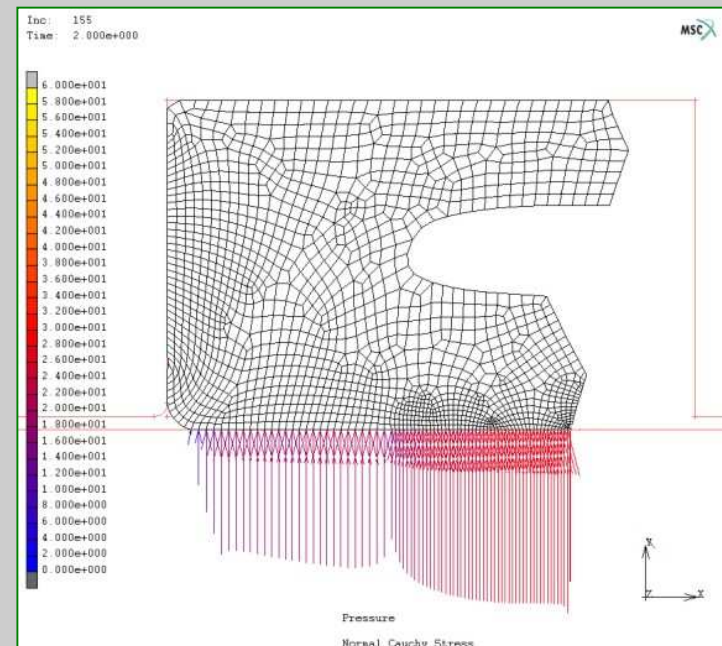
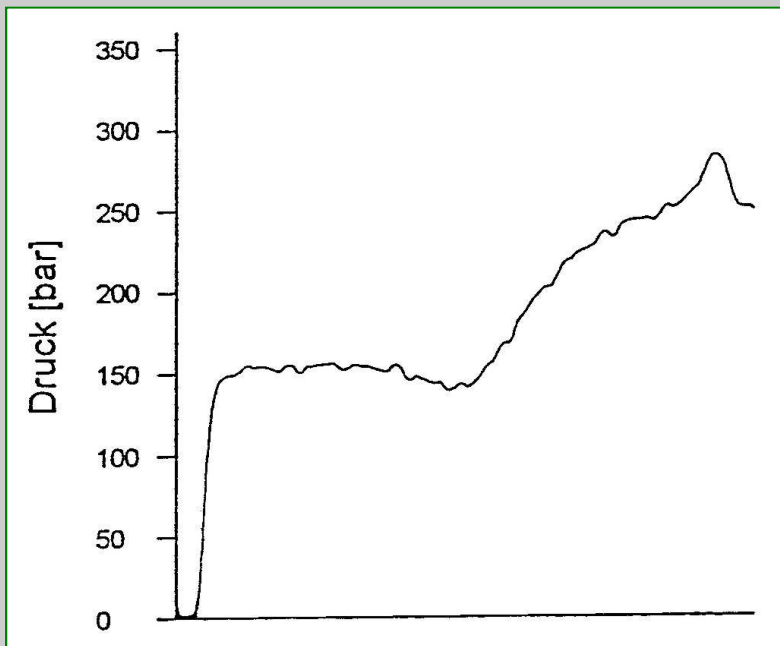
Installed, 250 bar

Finite elements analysis

Contact pressure

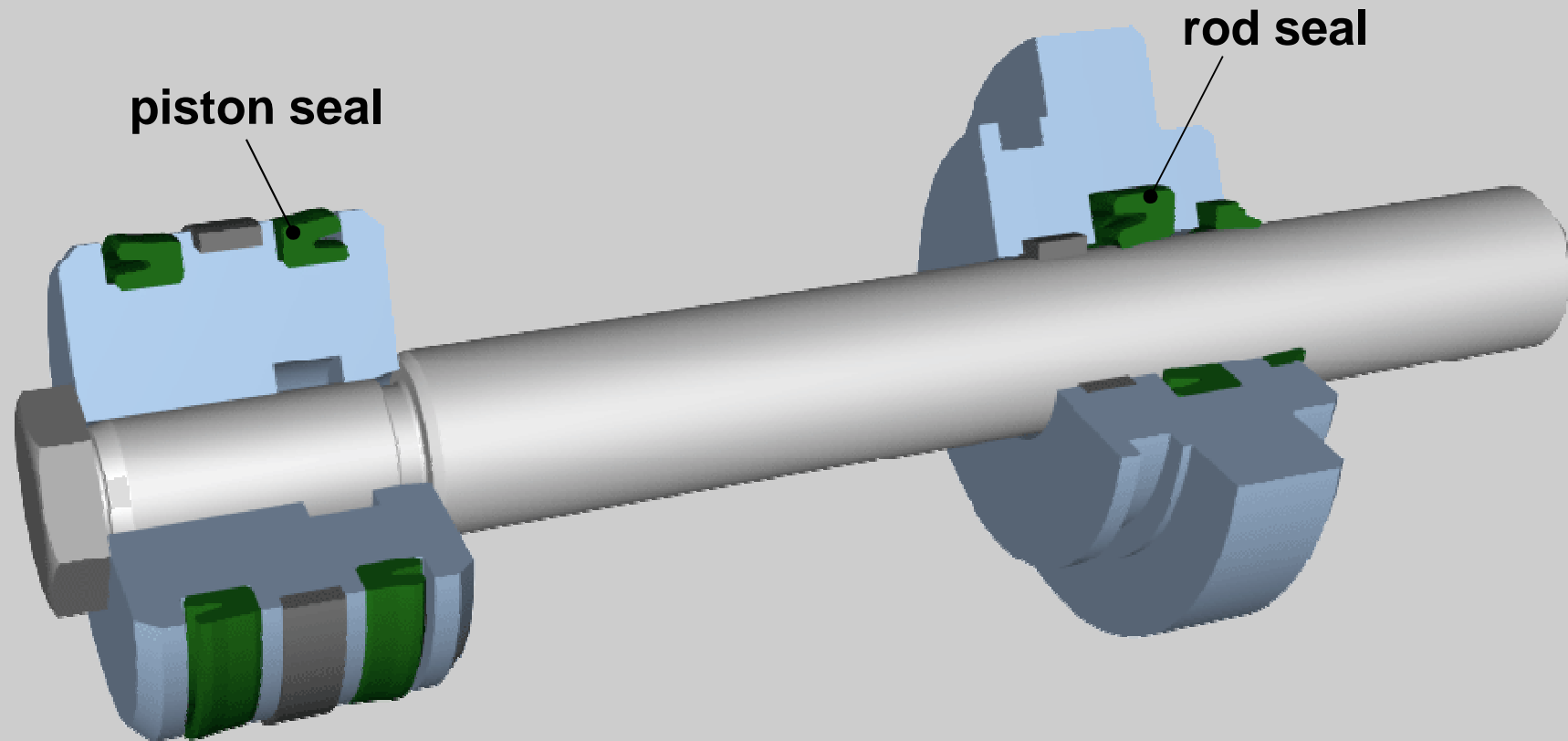
- Contact pressure

Profile: S01-P
Material: H-ECOPUR
Pressure: 0-250bar
Temp.: 20°C
Speed: 0,1m/s



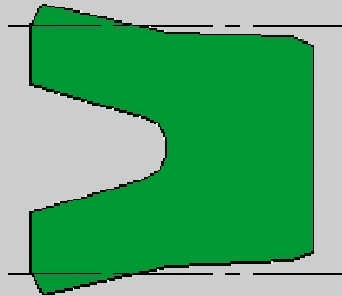
Basic seal design

Functioning & characteristics



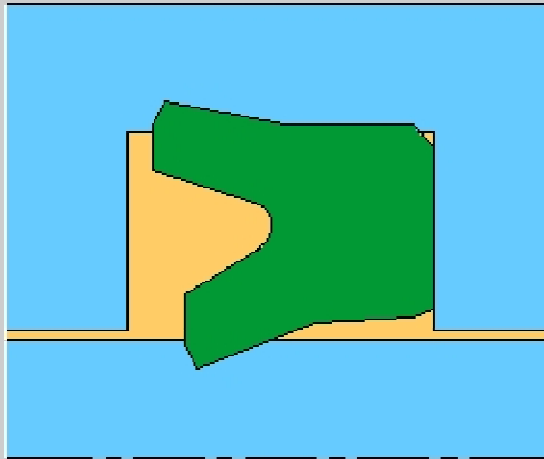
Basic seal design

Functioning & characteristics



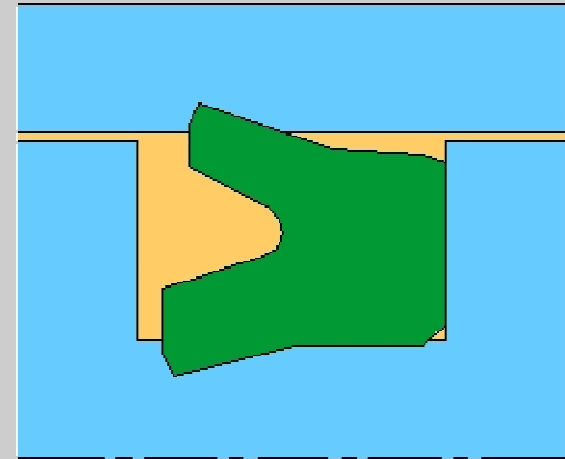
Symmetrical U-cup:

This design has no interference fit and can be used for dynamic sealing on the outside as well as on the inside.



Non-symmetrical lip seal as a rod seal:

This design has an interference fit on the outside diameter and a shorter inside lip.

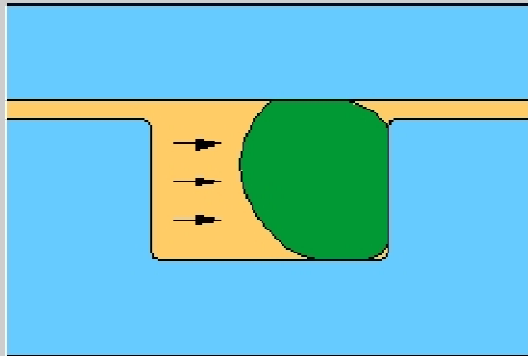


Non-symmetrical lip seal as a piston seal:

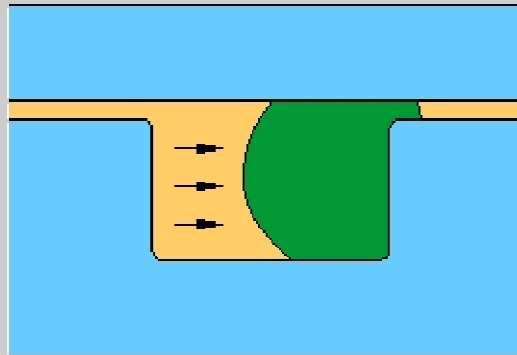
This design has an interference fit on the inside diameter and a shorter outside lip.

Basic seal design

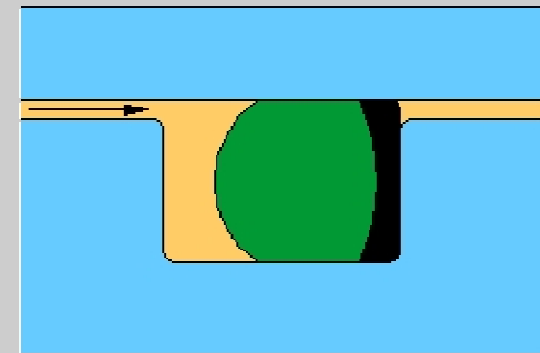
Functioning & characteristics



When pressurised, the O-ring acts like an incompressible fluid



The contact force is increased proportional to the pressure

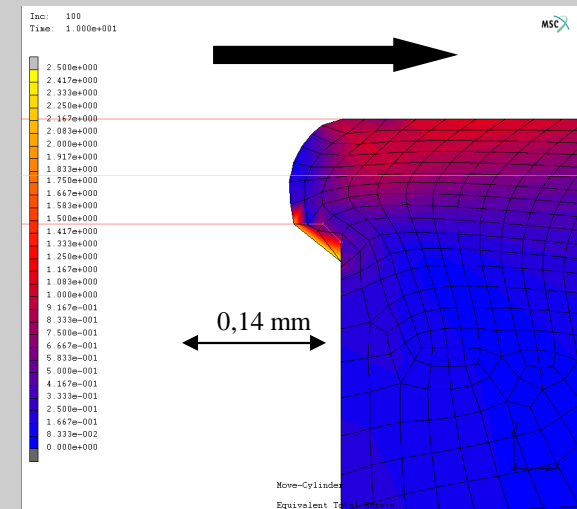
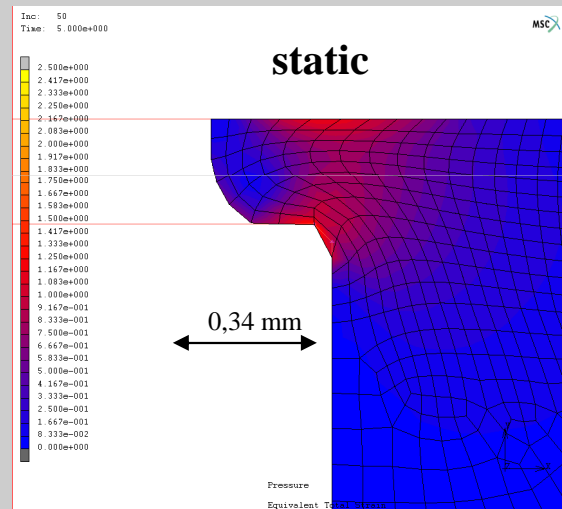
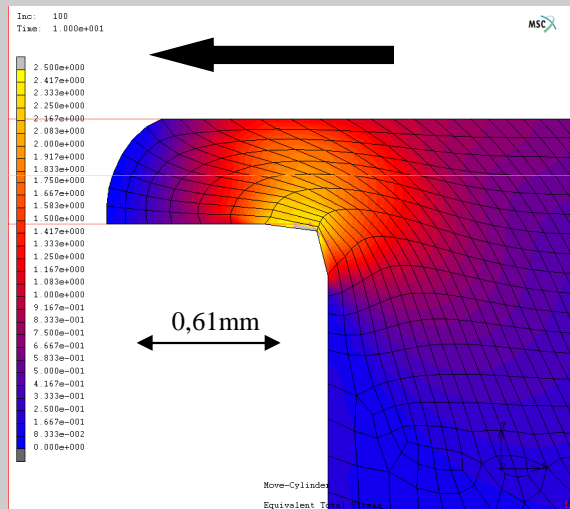


Back up ring to avoid gap extrusion

Finite elements analysis

Extrusion resistance

Differences in static and dynamic extrusion performance:
Important influence of friction to the extrusion process



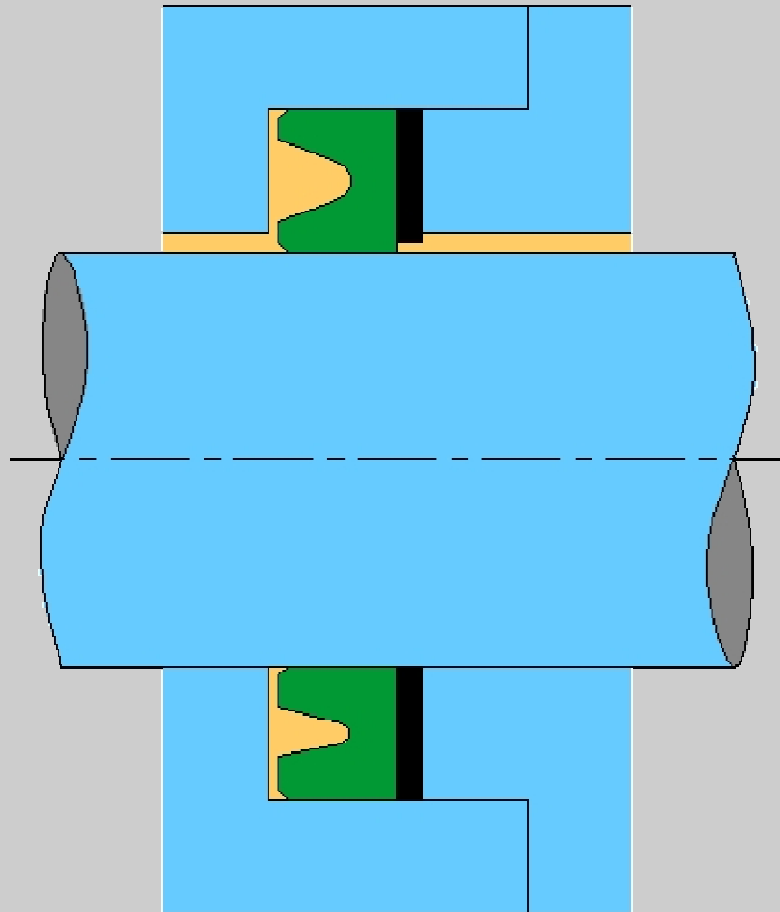
FEM-calculations:

pressure: 500 bar / gap size: 0,3mm / coefficient of friction: 0,5

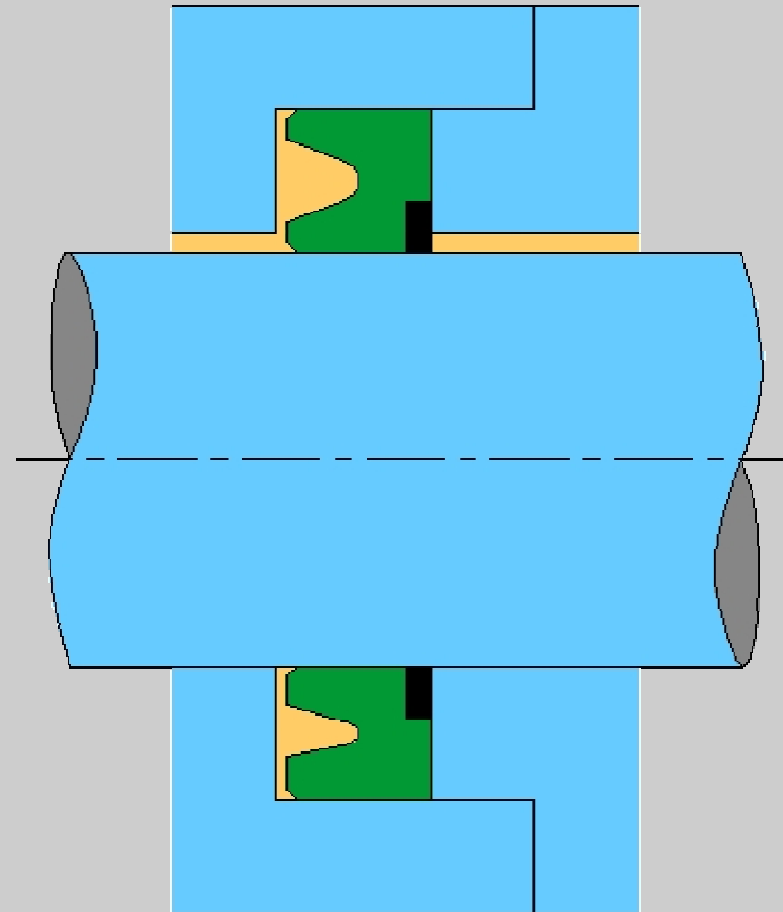
profile: S09-E made of X-Ecopur

Basic seal design

Functioning & characteristics



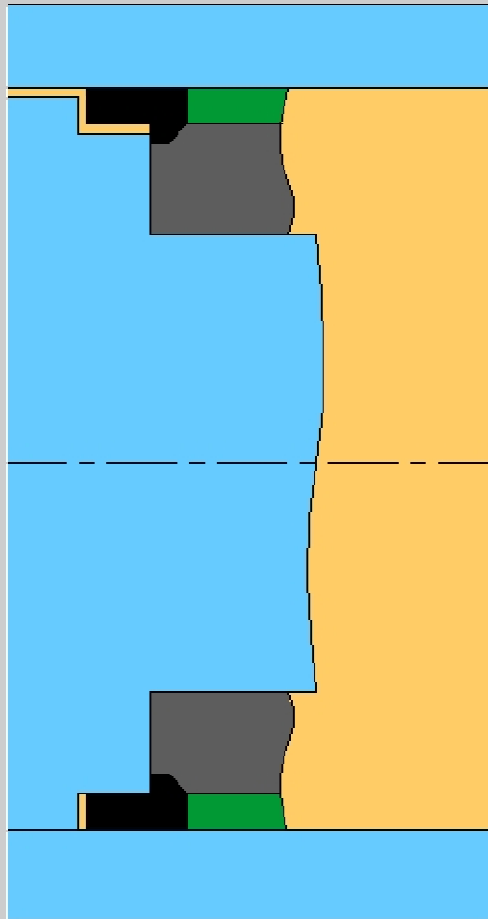
**inactive backring
(not integrated)**



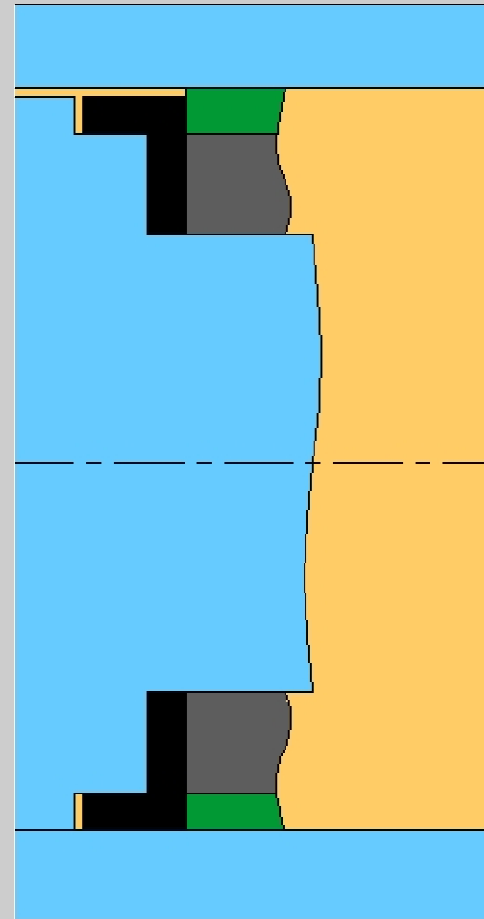
**active backring
(integrated)**

Basic seal design

Functioning & characteristics



**inactive backring
(not integrated)**

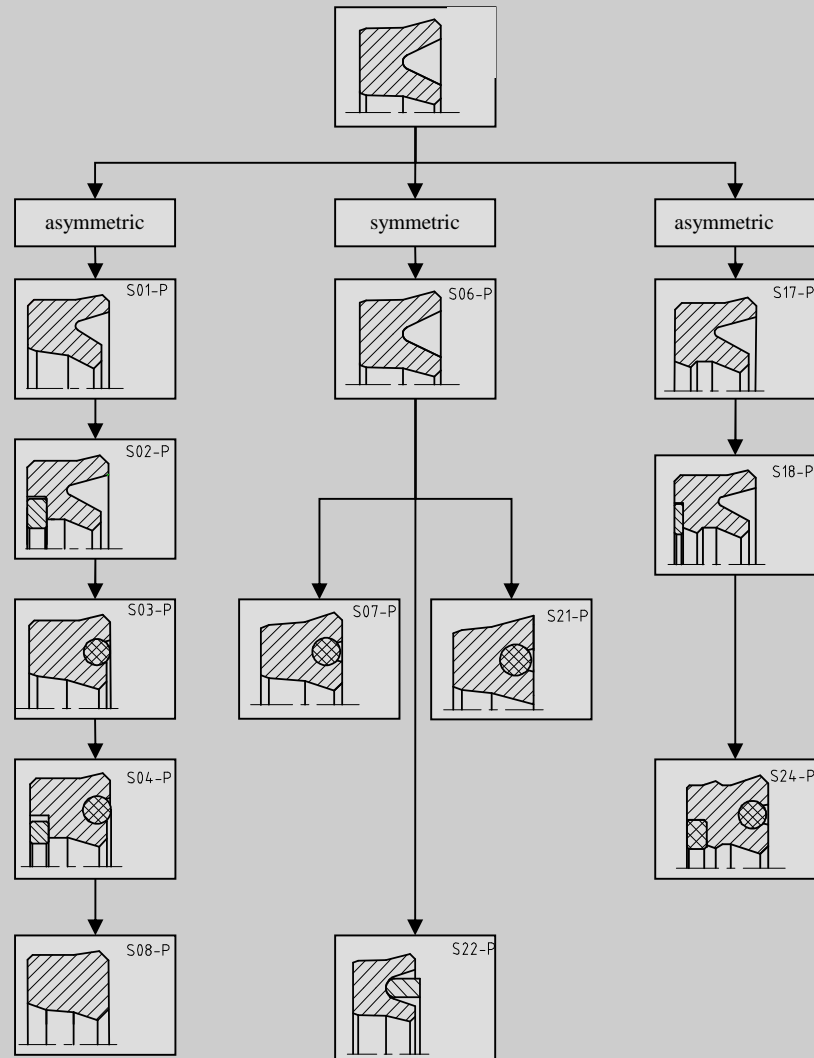


**active backring
(integrated)**

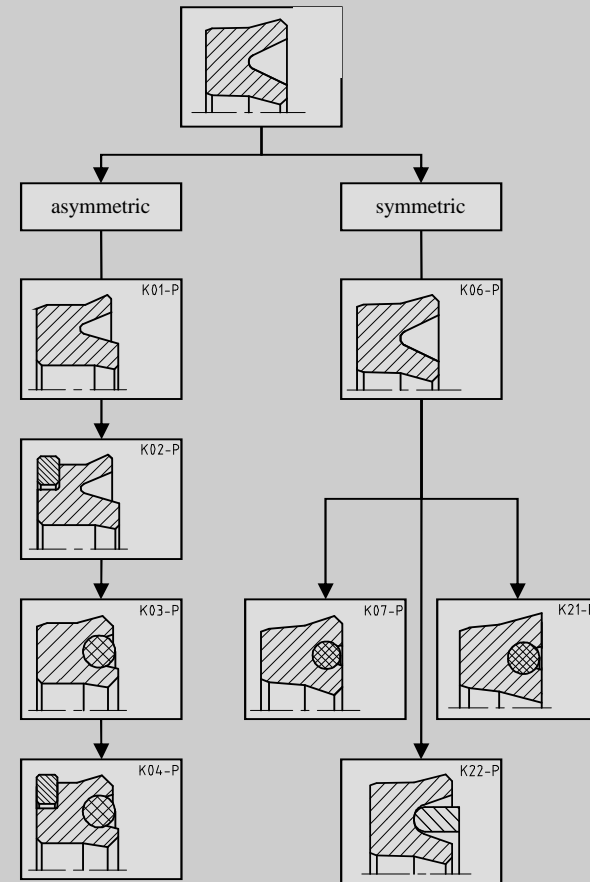
Basic seal design

Functioning & characteristics

rod seals based on lip seals (U-CUP)



piston seals based on lip seals (U-CUP)



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