



## New sealing system DBPa NICROFLEX®-HIPERFORM with high resilience

Specifically intended for shut-off dampers and diverters for combined cycle gas turbine plants, more generally for any large dimensioned flue gas isolation damper, RAUMAG-JANICH developed the new NICROFLEX®-HIPERFORM sealing system.

This new sealing technique is a development based on the NICROFLEX-MLO type of seal (see sketch 6 on the reverse side) which has been in successful service since 1971.

Geometrically shaped as a fully circular metal loop this sealing element affords a permanently high resilience of more than 30 mm, with enlarged loops even more. Heat distortion or certain misalignments of very large damper components can therefore be easily compensated.

In relaxed condition (damper open) the Vee-shaped backup-bar positioned inside the circular loop provides additional lateral support (picture 1).

It protects the seal against damage or destruction due to vibrations emanating from high gas velocities and turbulence.

In stressed condition (damper closed) a wide area of contact is created between seal and mating surface providing an excellent sealing effect (picture 2). The parts of the loops protruding sideways retain their curved shape and are thus able to withstand high pressure levels.

The internal Vee-shaped bar also acts as an end stop which limits the seal compression and prevents an unintentional overdeformation.

By placing one or more additional metal loops inside the circular seal, its resilience can be adapted to suit specific service conditions. Even when deformed by point loads (tramp materials) the seal regains contact with the mating surface within a short distance. Dust deposits and incrustations of the metal loop simply break off due to seal flexing during closing of damper.

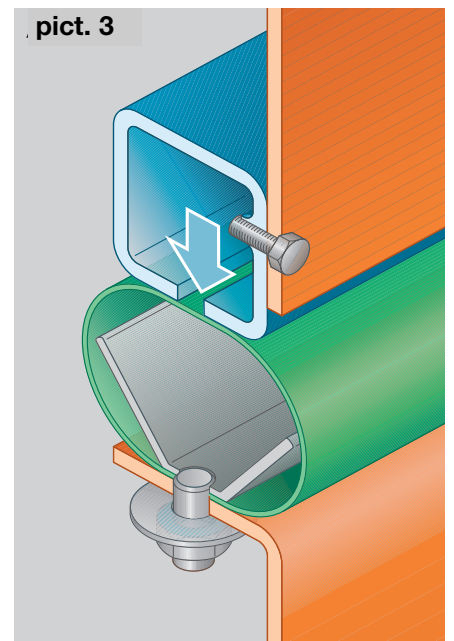
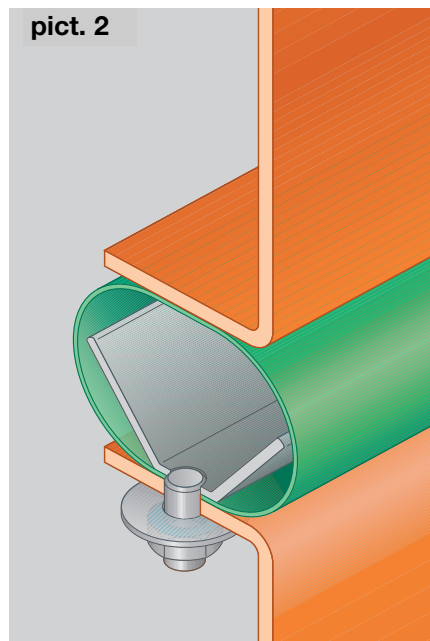
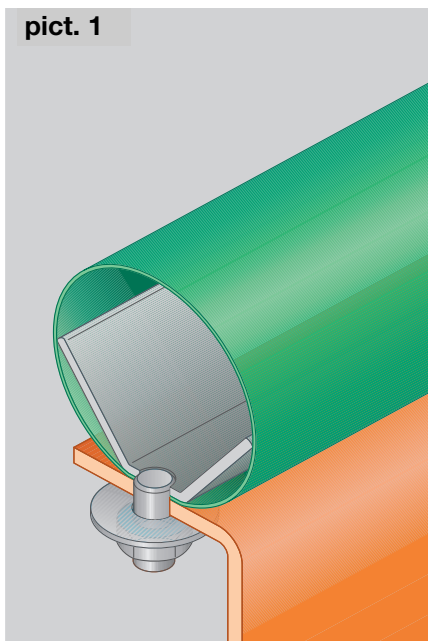
### Double sealing with seal air and one sealing element only

Due to the wide area of contact created between seal and mating surface a double sealing effect can be achieved with one sealing element only (picture 3).

The second plane of blades common in conventional Double louver dampers or Tandem dampers, is unnecessary. This simplifies the whole damper design and reduces maintenance.

#### The result is:

**A double shut off damper, 100% gastight at an extremely competitive price.**



## Standard sealing systems

RAUMAG-JANICH has developed proven sealing systems for various applications.

Sketches 1–6 depict the available sealing methods which can be applied to suit the respective requirements for sealing and operating conditions.

● Sketch 1

**Without seal. Blade swings through freely.**

For modulation dampers with no or very low sealing requirements.

● Sketch 2

**Blade seals against fixed metal seal.**

For abrasive conditions and low sealing requirements.

● Sketch 3

**Blade seals against a sloped, fixed metal seal.**

For gas with a high a dust burden. For low sealing requirements.

● Sketch 4

**Blade seals against an adjustable metal seal.**

For very abrasive and sticky mediums. For average sealing requirements.

● Sketch 5

**NICROFLEX-MLS type seal (metal leaf seal)**

Blade mounted lamellar stainless steel leaf seal for high sealing requirements. Not suitable for high gas velocities, nor for modulating service. Due to vibrations emanating

from such conditions the lamellar seals may be destroyed.

● Sketch 6

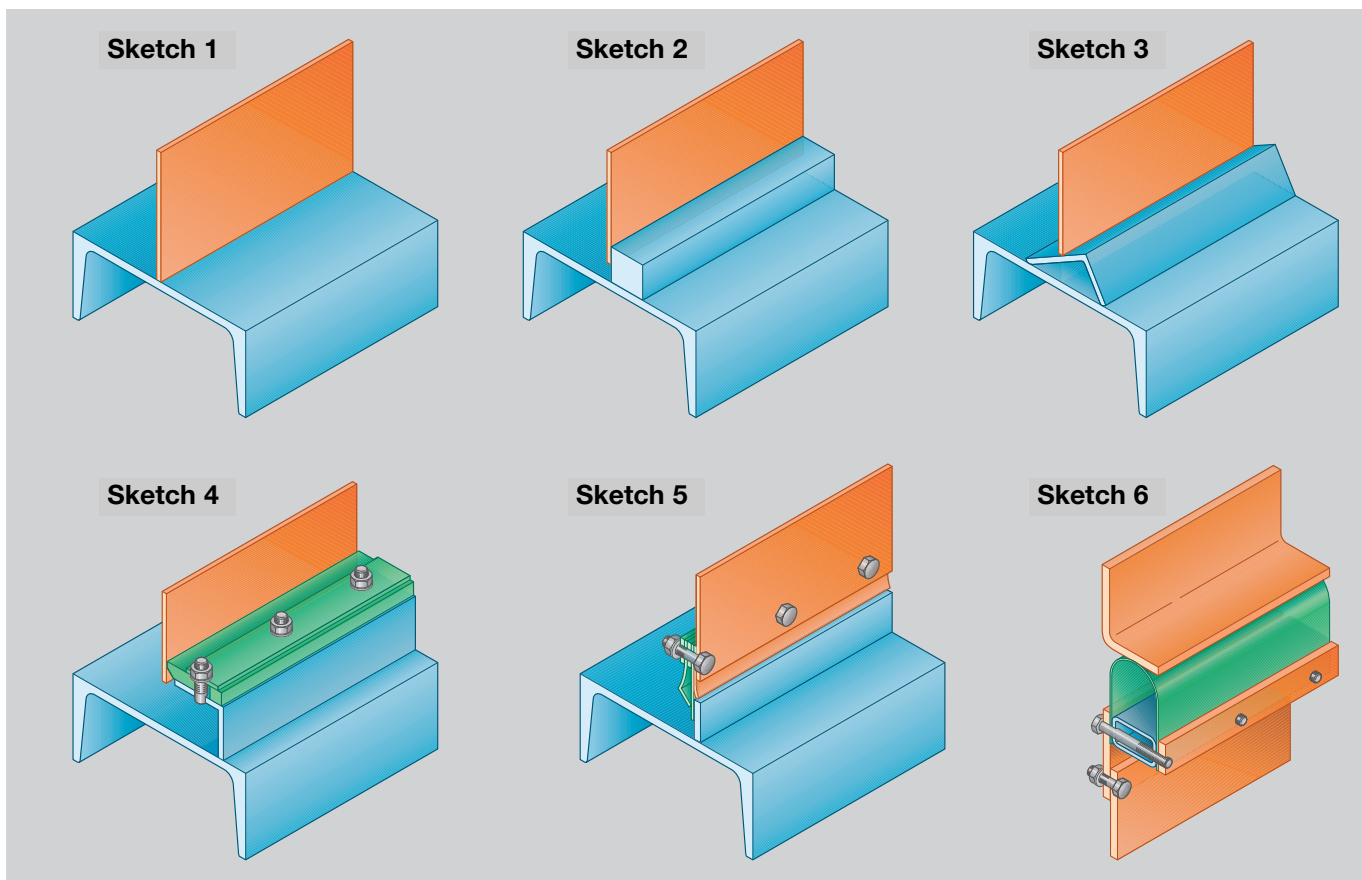
**NICROFLEX-MLO type seal (metal loop seal)**

This proven sealing method has been introduced in 1971 for the handling of dust laden flue gases in Powerstations and Cement plants.

The sealing elements consist of oblong, resilient, stainless steel loops.

Even after long periods of deformation whilst a damper is closed the loops do to regain their original shape. Dust deposits and incrustations simply break away due to seal flexing upon closing.

For very high sealing requirements.



**RAUMAG-JANICH – perfect Technique, Quality and Security**