

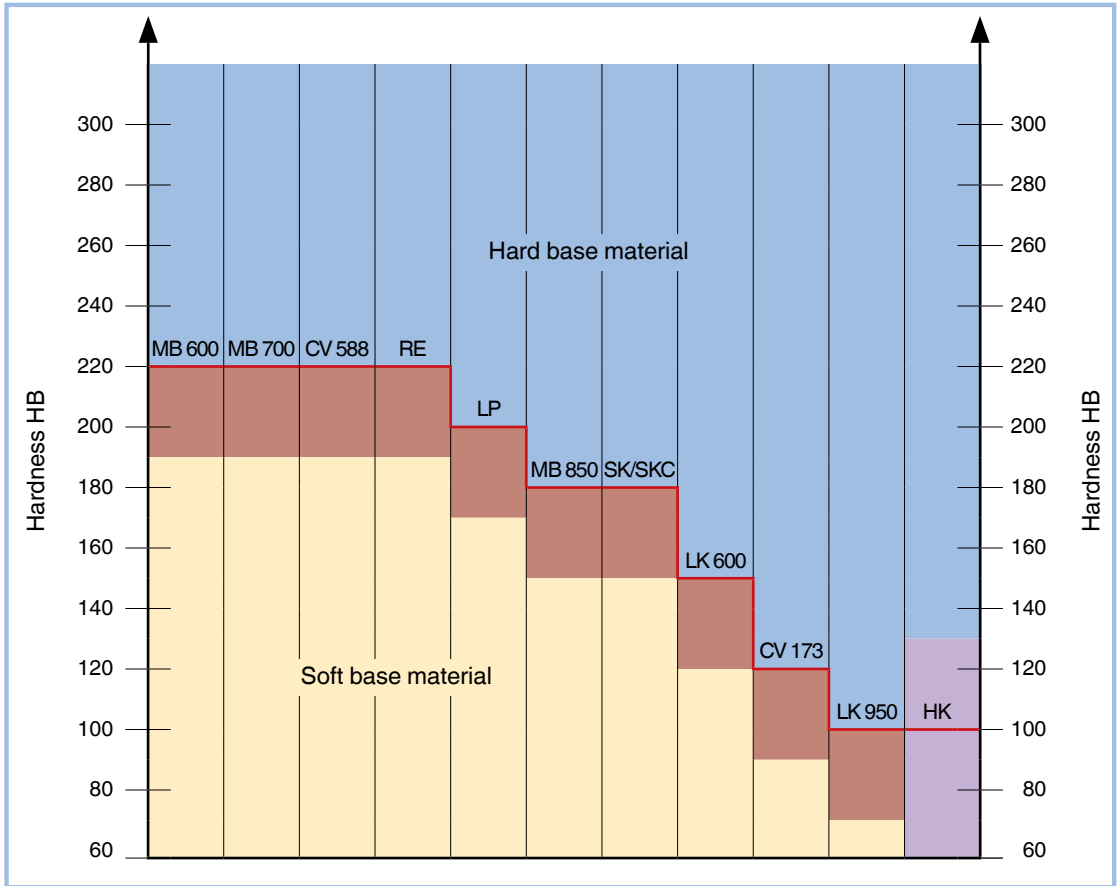
Anchorage principle related to the base material

Note:

The required bore roughness is directly related to the hardness and the mechanical characteristics of the base material. Depending on the combination of sealing plug and base material, anchorage takes place either by the groove profile of the expander sleeve biting into the base material or on anchorage to the surface roughness of the bore.

When selecting a KOENIG EXPANDER® the bore roughness must always be adjusted according to the hardness of the base material.

Anchorage between sleeve and base material is achieved when the sleeve is a minimum of HB = 30 greater than the base material. If the hardness difference is less, hole roughness of 10 to 30 µm is needed to achieve indicated working pressures.



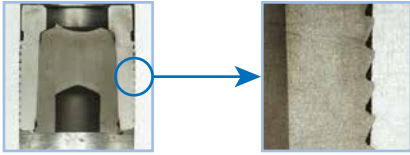
Base material harder than Expander: To achieve the allowable working pressure, anchorage to the bore roughness of the base material is required. **Roughness $R_z = 10 - 30 \mu\text{m}$.**

Transition zone: To achieve the allowable working pressure, anchorage to the bore roughness of the base material is required. **Roughness $R_z = 10 - 30 \mu\text{m}$.**

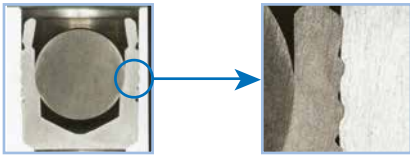
Base material softer than Expander: Anchorage to the bore of the base material occurs automatically due to the serrations on the sleeve of the KOENIG EXPANDER®.

Soft base material: Anchorage is not possible with the HK Series. Such combinations are not allowed for high pressure applications.

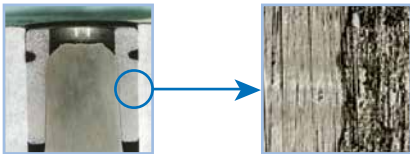
Anchorage



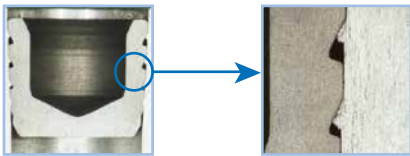
Anchorage due to plug sleeve serrations
 KOENIG EXPANDER® Series SK/SKC
 In aluminum-alloy HB = 90



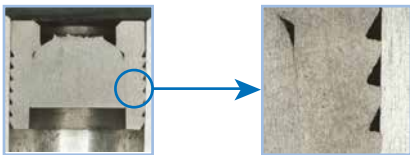
Anchorage due to plug sleeve serrations
 KOENIG EXPANDER® Series MB 850
 In aluminum-alloy HB = 90



Anchorage due to bore roughness
 KOENIG EXPANDER® Series HK
 In gray cast iron HB = 160

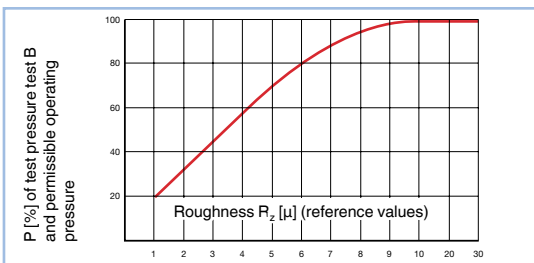


Anchorage due to plug sleeve serrations
 KOENIG EXPANDER® Series LP
 In aluminum-alloy HB = 90



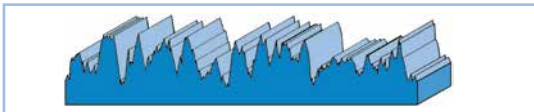
Sufficient anchorage due to plug sleeve serrations
 KOENIG EXPANDER® Series LK 950
 In aluminum-alloy HB = 90

Pressure depending on the bore roughness



Bore roughness requirements:

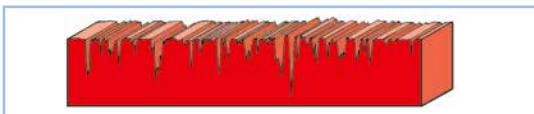
When installing KOENIG EXPANDER® plugs in hard base material positive anchoring is not possible. To attain suitable working pressures and anchorage, it is necessary to have a bore roughness of $R_z = 10 - 30 \mu\text{m}$. At a roughness greater than $R_z = 30 \mu\text{m}$ leakage might occur.



Roughness profil

Required roughness profile

The ideal bore roughness for anchorage is attained by drilling with a twist drill or a core drill.



Undesirable roughness profile

By reaming, a one-sided, smooth roughness profile is created. This is not desirable.