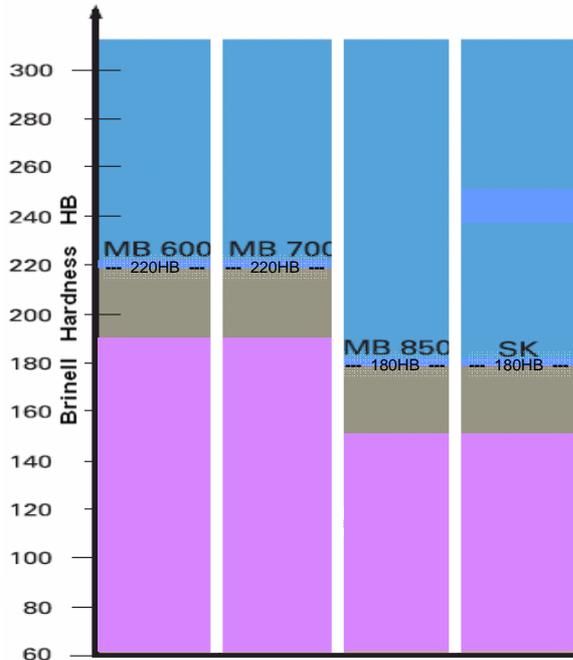


ANCHORAGE PRINCIPLES



Grip categories



Friction grip

Base Material harder than Expander sleeve: **The Expander grips by friction**

Transition zone

Base Material less than 30HB softer than Expander sleeve: **Grip is by a combination of friction and geometric lock**

Geometric lock

Base Material more than 30HB softer than Expander sleeve: **The Expander indents in the base material, creating a geometric lock**

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Sleeve serrations provide geometric lock anchorage
KOENIG-EXPANDER® Series SK
in aluminum-alloy HB = 90



Sleeve serrations provide geometric lock anchorage
KOENIG-EXPANDER® Series MB
in aluminum-alloy HB = 90

Bore roughness influence

Friction grip

Transition zone

Grip and pressure performance is influenced by the bore roughness.

Pressure performance:-

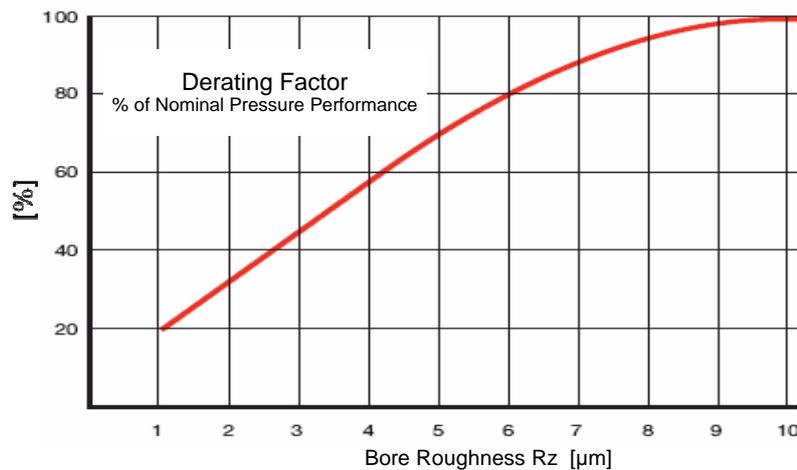
- R_z 10 ... 30 μm : **Full** (no derating required)
- R_z 1 ... 10 μm : **Derating required**, as shown in graph below
- $R_z > 30 \mu\text{m}$: Application inadmissible; leakage might occur

Geometric lock

Bore roughness has no effect on pressure performance

Pressure derating

Friction grip and transition zone applications only



Roughness profile



Required roughness profile

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

Undesirable roughness profile

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

Australian material comparison

SCHILTEC

	UTS kpsi	UTS MPa	HV	HB	MB700 MB600		MB850 SK550	
					Grip type ↙	Roughness influence ↙	Grip type ↙	Roughness influence ↙
	34	233	74	70	geometric lock	no influence	geometric lock	no influence
	39	267	84	80				
5083-H116 ⑦	44	300	95	90				
6061-T6 ⑥	48	333	105	100				
	53	367	116	110				
	58	400	126	120				
	63	433	137	130				
⑤	68	467	147	140				
mild steel AS3678-250	73	500	158	150				
③	77	533	168	160				
mild steel AS3678-350	82	567	179	170	transition	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	
④	87	600	189	180				
②	92	633	200	190	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm
stainless SS316	97	667	211	200				
stainless SS304	102	700	221	210				
AS3678-K1042-as-rolled	106	733	232	220				
	111	767	242	230				
	116	800	253	240				
	121	833	263	250				
	126	867	274	260				
	131	900	284	270				
	135	933	295	280				
①	140	967	305	290	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm
AS1444-4140-T	145	1000	316	300				
	150	1033	326	310				
	155	1067	337	320				
	160	1100	347	330				
	164	1133	358	340				
	169	1167	368	350				
	174	1200	379	360				
	179	1233	389	370				
	184	1267	400	380				
	189	1300	411	390	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm
	193	1333	421	400				
	198	1367	432	410				
	203	1400	442	420				
	208	1433	453	430	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm	friction	Full pressure performance only for Rz=10...30µm deretring required for Rz=1...10µm

Some base materials (approximate only)

SCHILTEC QUALITY

SCHILTEC builds on quality and only quality. Thus when you order an Expander from us, besides getting the prime KOENIG product, you receive the technical back up to ensure a successful application.

This is what we do as a service to our customers:

- We ensure the customer has the full set of up to date information regarding design and installation. We urge them to study.
- We probe the technical personnel's full understanding of procedures and assist them in case of uncertainty. If we cannot resolve or if specially requested, we get the proposed application approved by KOENIG Head Office.
- We encourage the customer to implement and QA the bore tolerance, installation and removal procedures. We keep stock of important tools.
- All unopened pack shipments are batch number recorded by SCHILTEC. Hence, without adding effort and paperwork, customers who allocate Expander deliveries to job numbers can, when needed, provide full trace of the Expanders installed in a particular product.

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