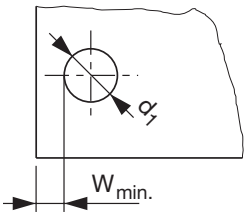
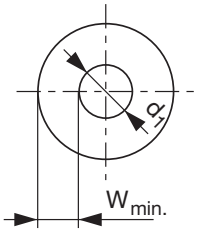
DESIGN GUIDELINES

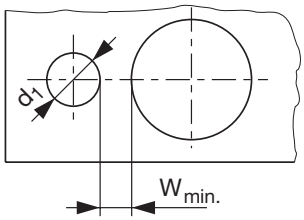
Distance to External Wall



Distance to Exterior Wall



Wall Thickness Between Bores



WALL THICKNESS / DISTANCE FROM EDGE

As the radial expansion of the KOENIG EXPANDER® sleeve occurs, the base material in which it will be anchored plastically deforms. The resultant strength, as well as the hydraulic pressure and temperature service conditions depending on the expander type and characteristics of the base material, require minimum wall thickness, or distance from edge.

The guideline values for minimum wall thickness and distance from edge ($W_{min.}$) express these influencing factors. At these minimum values, only slight deformation on the exterior profile of the base material of less than 20 µm is likely. This does not affect the function of the KOENIG EXPANDER®. Below the guideline values ($W_{min.}$) the possibility of overloading the base material exists, which can adversely influence the function of the KOENIG EXPANDER®. In such cases tests must be conducted.

Guideline values $W_{min.}$ for wall thickness and distance from edge

KOENIG EXPANDER® diameters Series MB / CV / SK /SKC

$d_1 \geq 4$ mm: $W_{min.} = f_{min.} \times d_1$

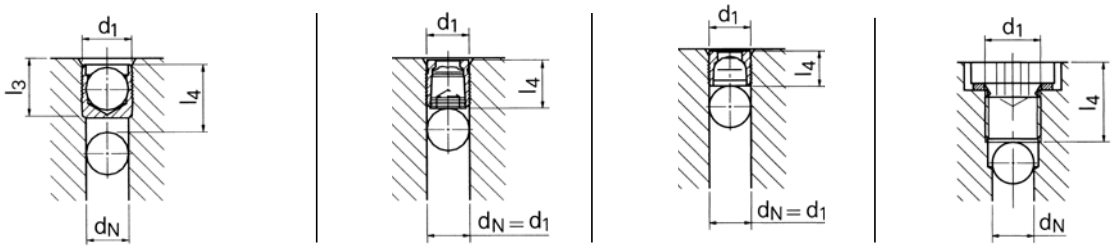
$d_1 < 4$ mm: $W_{min.} = f_{min.} \times d_1 + 0.5$ mm

KOENIG EXPANDER® diameters Series LK / RE

$d_1 \geq 5$ mm: $W_{min.} = f_{min.} \times d_1$

$d_1 = 4$ mm: $W_{min.} = f_{min.} \times d_1 + 0.5$ mm

		❶	❷	❸	❺	❻	❼	❽
Base Material	Description	ETG100	C15Pb	EN-GJS-600-3	EN-GJL-250	AlCu4Mg1	AlMgSiPb	G-AlSi7Mg
	Avg. Tensile Strength RM [N/mm²]	1000	560	650	300	480	340	260
	Minimum Elongation A5 [%]	6	10	3	0.3	8	8	2
	Avg. Ultimate Strength Rp 0.2 [N/mm²]	900	300	425	200	380	290	220
KOENIG EXPANDER® Series		Factor $f_{min.}$						
MB 600		0.6	0.8	0.8	1.0	0.8	1.0	1.0
MB 600, Inch-Version		0.6	0.8	0.8	1.0	0.8	1.0	1.0
MB 700		0.6	0.8	0.8	1.0	0.8	1.0	1.0
MB 850		0.5	0.6	0.6	1.0	0.6	1.0	1.0
CV 173		0.5	0.6	0.7	0.8	0.7	0.8	0.8
CV 588		0.6	0.8	0.8	1.0	0.8	1.0	1.0
SK		0.5	0.6	0.6	1.0	0.8	1.0	1.0
SKC	Ø4 mm	0.4	0.5	0.5	1.0	0.8	0.9	0.9
SKC	Ø5 mm	0.4	0.5	0.5	1.0	0.8	0.8	0.8
SKC	Ø6 mm	0.5	0.6	0.7	1.0	0.9	1.0	1.0
SKC	Ø7 mm	0.5	0.7	0.7	1.2	1.2	1.2	1.2
LK 600		0.4	0.5	0.5	0.8	0.7	0.7	0.7
LK 950		0.3	0.3	0.4	0.6	0.5	0.5	0.5
RE		0.3	0.3	0.5	0.6	0.5	0.5	0.5



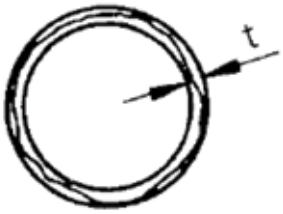
d_N	Series MB / CV			Series SK / SKC		Series LK		Threaded Plugs DIN 908	
	d_1	l_3 min.	l_4 min.	d_1	l_4 max.	d_1	l_4 max.	d_1	l_4 max.
2.0	3.0	3.4	5.0						
3.0	4.0	3.8	5.5						
4.0	5.0	5.3	7.0	4.0	6.5	4.0	4.0		
5.0	6.0	6.3	8.5	5.0	7.5	5.0	4.8	M8x1.5	11.5
6.0	7.0	7.3	9.5	6.0	8.5	6.0	5.3	M8x1.5	11.5
7.0	8.0	8.3	11.0	7.0	9.5	7.0	5.8	M10x1.5	12.0
8.0	9.0	9.8	12.5	8.0	10.5	8.0	6.8	M10x1.5	12.0
9.0	10.0	10.8	13.5	9.0	11.0	9.0	6.8	M12x1.5	16.0
10.0	12.0	12.8	16.0	10.0	12.5	10.0	6.8	M12x1.5	16.0
12.0	14.0	14.5	18.0	12.0	16.5	12.0	7.8	M14x1.5	16.0
14.0	16.0	16.5	20.0			14.0	8.7	M16x1.5	16.5
16.0	18.0	18.5	22.5			16.0	11.5	M18x1.5	17.5
18.0	20.0	21.5	25.5			18.0	13.0	M20x1.5	19.5
20.0	22.0	24.5	28.5			20.0	13.0	M22x1.5	19.5

d_N = Given nominal bore / system bore size

***Installation Lengths Series MB / CV**

The required installation length (l_4) min. for MB / CV plugs is for base materials with hardness greater than HB = 90.
For softer materials, deeper installation is required.

DESIGN GUIDELINES



ROUNDNESS TOLERANCE

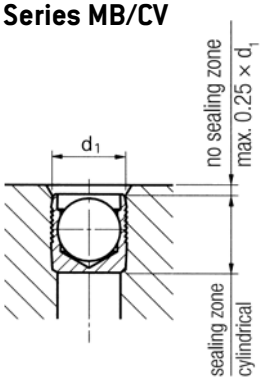
To ensure reliable functioning of the KOENIG EXPANDER® with regard to pressure performance and to ensure leak tight sealing, a **roundness tolerance of t = 0.05 mm** must be held.

By using a double lipped twist drill, the called out hole and roundness tolerances are reached. Better tolerances, particularly for larger diameter holes, can be held by using a **triple lipped** twist drill.

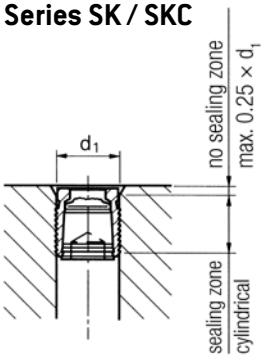
CONICITY OF THE BORE

Within the effective sealing area of the KOENIG EXPANDER, the bore must be according to the dimensional sheets. The bore lead in can be chamfered up to a depth of **0.25 x d_1 (LK: 0.15 x d_1)** because this area has no significant effect on the sealing function.

Series MB/CV



Series SK / SKC



Series LK