MOTORSERVICE

SI 1424
For technical personnel only!
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KS PERMAGLIDE® plain bearings

Plain bearing mounting: Press-in force and joint pressure

Press-in force and joint pressure are interdependent. The joint pressure occurs between the housing bore and the surface of the bush jacket. It can be understood as a measure of how securely the bush fits in the housing. Together with other factors, the joint pressure influences the amount of press-in force.

Calculating the press-in force

The press-in force depends upon many factors, which are extremely difficult to measure accurately, for example:

• Actual press-fit
• Coefficient of friction
• Scoring
• Press-in speed

Motorservice offers the calculation of the press-in force as a service. In most cases, the estimate of press-in force as per Fig. 1 is sufficient.

Determining the bush press-in force

Figure 1 below shows the maximum required press-in force per mm of bush width. The curves represent the bush outside diameter D_O and the bush wall thickness s_3 to DIN ISO 3547.

This calculation assumes a steel housing with a diameter of D_G that has been adapted to the bush outside diameter D_O. The selected ratio is $D_G : D_O \approx 1.5...2$.
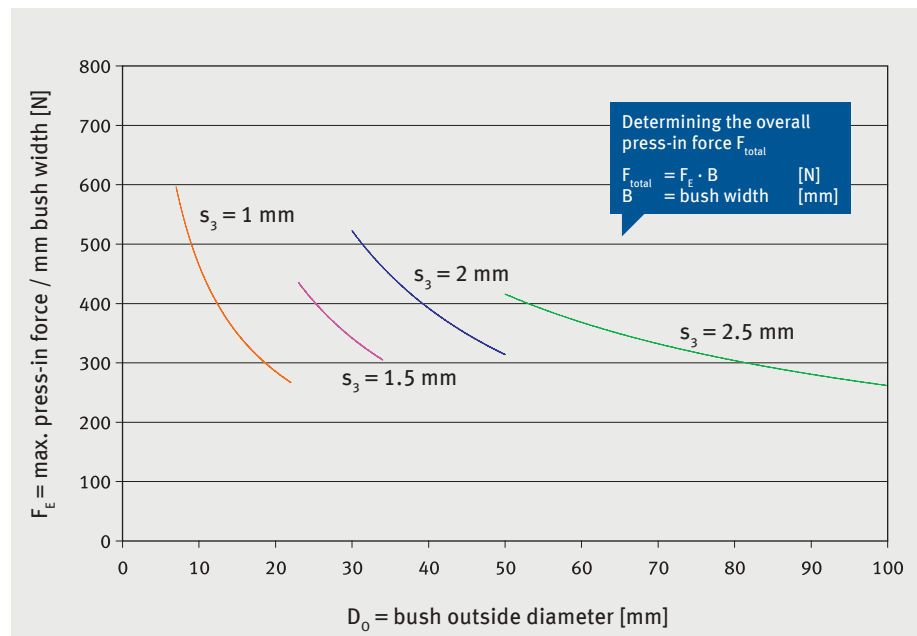

Determining the overall press-in force F_{total}
$F_{total} = F_E \cdot B$ [N]
B = bush width   [mm]

F_E = max. press-in force / mm bush width [N]

$s_3 = 1$ mm
$s_3 = 1.5$ mm
$s_3 = 2$ mm
$s_3 = 2.5$ mm

D_O = bush outside diameter [mm]

Fig. 1: Press-in force FE

Example of estimate of press-in force F_{total}

Given:	Bush		PAP 4030 P14	
	Bush outside diameter	D_O =	44 mm	
	Bush width	B =	30 mm	
	Bush wall thickness	s_3 =	2 mm	

[14]	$F_{total} = F_E - B$	= 340 N/mm − 30 mm	= 10200 N

F_E = 340 N/mm (from Fig. 55, D_O = 44 mm, s_3 = 2 mm)

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