

### Using a mandrel

(Hardened carbon steel, polished finish, surface hardness 60RC)

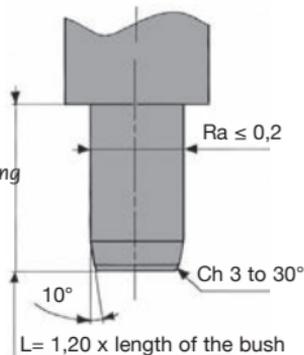
tolerance  $\emptyset$  **m6**

Fit the bush using a press ensuring that the correct diameter mandrel is used so that:

- the bushing is inserted correctly so as to ensure correct seating
- the tolerances of the bore are still correct after fitting

### Inserting force

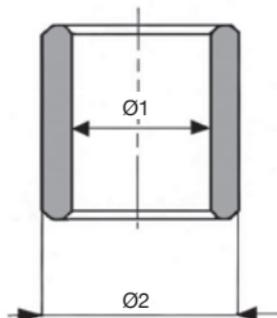
- Values are given assuming the tolerances are as follows ; mandrel **m6**, bore **H7** with  $Ra \leq 3,2$  and considered to be rigid\* : **100daN/cm** (equivalent surface area at  $\emptyset$ cm from exterior of bushing)



\*What do we mean by rigid? It is a bore or hole in steel (or possibly cast iron) where the wall thickness is at least 3 times the diameter of the bushing

### Bush before assembly

- $\emptyset$  interior - $\emptyset$ 1 cylindrical bush **F7**  
(F8 pour  $\emptyset$ 1 >50mm)
- $\emptyset$  interior - $\emptyset$ 1 flanged bush **F8**
- $\emptyset$  interior - $\emptyset$ 2 cylindrical bush **s7**  
(S8 pour  $\emptyset$ 2 >50mm)
- $\emptyset$  interior - $\emptyset$ 2 flanged bush **s8**

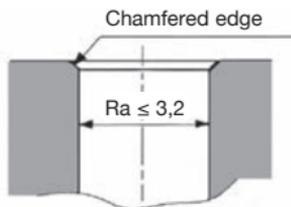


### Steel housing

(in rigid material)

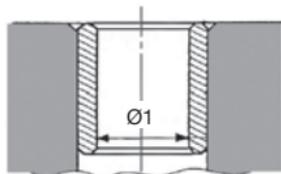
Tolerance  $\varnothing$  H7

- The tightness between the bush and the hole and the final tolerances of the bore of the bush have been calculated for a rigid steel housing.
- For all other types of support (non rigid or other materials), the tightness may vary and practical tests should be carried out to confirm the bore tolerances.



### Bush after press fitting

- $\varnothing$  interior –  $\varnothing$ 1 cylindrical bush H7 (H8 for  $\varnothing$  1 >50mm)
- $\varnothing$  interior –  $\varnothing$ 1 flanged bush H8



### Shaft to be used

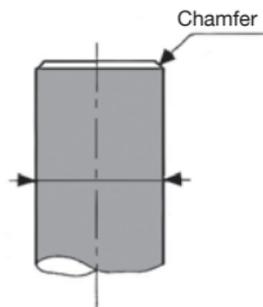
- Mechanical properties of steel depending on the type of bush
- For a BP25 bush
- Steel with a minimum hardness of 80 kg/mm<sup>2</sup>
- Ra ≤ 0.6

tolerance  $\varnothing$  f7

- Where bushes are fitted without additional support (Overmolding or gluing), use an h7 toleranced shaft rather than f7.

### Operating clearances

- Running fit H7/f7 ou H8/f7
- Assembly instructions should be followed to endure the correct operation of the self lubricating bush (lubricating, wear, rubbing).



### Metric tolerances

#### Plain bushes

For length  $L = 13$

Concentricity:

$D$  compared to  $d$

$D < = 50\text{mm}$ , IT9

$D > = 50\text{mm}$ , IT10

#### Flanged bushes

For length  $L = 13$

Flange thickness  $M = 13$

Flange diameter  $F = 13$

Concentricity:

$D$  concerning  $d$

$D < = 50\text{mm}$ , IT9

$D > = 50\text{mm}$ , IT10

#### Flanged bushes

External diameter	r max
$< 12$	0,30
$< 12 < 30$	0,60
$< 30$	0,80

**Chamfers:** There are  $45^\circ$  chamfers on the internal and external edges at each end of the bush.

**i Please note:** here are two different European standards that define the dimensions and tolerances of bearings.

**Bearings conforming to two different standards may be incompatible** and when used together may seize or may have their life expectancies reduced. It is therefore important to select bushes, housings, fitting pins and shafts with great care.

### Specifications

Material	Code Sint-	Density (g/cm <sup>3</sup> )	Porosity (%)	Chemical composition				Compression strength (N/mm)	Hardness (HB)
				C (%)	Cu (%)	Sn (%)	Other (%)		
Bronze	FU-E10-62	6,4 name	$> 22$	$< 0,3$	Balance	8,5/11,5	$> 2$	$> 140$	25

### Tolerances of cylindrical and flanged bushings

Sizes (mm)		Standard tolerances (13)			
DE	A	IT9	IT10	+	-
-	3	0,025	-	0,070	0,070
3	6	0,030	-	0,090	0,090
6	10	0,036	-	0,110	0,110
10	18	0,043	-	0,135	0,135
18	30	0,052	-	0,165	0,165
30	50	0,062	-	0,195	0,195
50	80	-	0,120	0,230	0,230

**Lubrication:** Standard OILITE bearings are impregnated with highly refined mineral oil conforming to ISO VG (SAE 30) having a high viscosity and containing anti-oxidant, anti-rust and defoaming additives.

The oil should be replenished after 1000 hours of use or annually. These intervals can be extended for bearings with relatively thick walls and shortened for low porosity bearings. Bearings running submerged in oil or subject to oil-splash will not require refilling.

The standard operating temperature range is -9°C to 70°C.

**Fitting:** before fitting make sure that all sharp edges are removed from the housing and shaft. The bearing must be free from grit and dust. Wash in oil if storage conditions suspect, if they have been held in stock for more than a year or stored in contact with an absorbent material.

Always use a steady pressure to insert the bearing. Never use a hammer.

Shafts should ideally be hardened to approximately HRC 60 and ground to a surface roughness of Ra=0.25µm.

The standard metric range of OILITE bearings conforming to ISO 2795 are made to G7/s7 limits of tolerance. These bearings when fitted into a rigid H7 housing using an m5 fitting pin, will give an H7 toleranced bore, which is suitable for use with an f7 shaft.

**Storage:** OILITE bearings can be stored for considerable periods at room temperature without deterioration or loss of oil if kept in a metal or other non-absorbent container. Proximity to heat could cause oil loss by evaporation, in which case re-oiling will be necessary before fitting.

**Re-oiling:** after machining of the bearing, or following oil loss during storage, immerse in high quality mineral oil conforming to ISO VG 60 or ISO VG 150 (SAE30 or SAE40) at 80°C to 100°C for 10 to 15 minutes and then cool in cold oil.

#### Material equivalents

Material	Grade	ISO 5755/1 1987	UK BS5600 Part 5 Section 5.1 1988	France NF 150 5755/1 A95-771-1	Germany DIN 30 910 Part 3	USA		
						M.P.I.F Stand.35	S.A.E	A.S.T.M
Bronze Oilite®	MB01-1	P4011Z	P4011Z	FU-E10-60	Stin A50	CT-1000-K19	1140	B438 Grd 1 Type 1
	MB01-2	P4012Z	P4012Z	FU-E10-64		CT-1000-K26	1141	B438 Grd1 Type 2