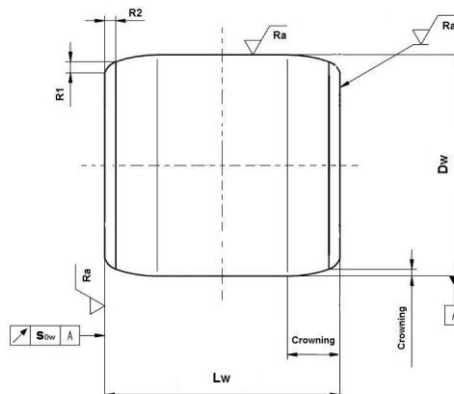


# CYLINDRICAL ROLLERS LOGARITHMIC PROFILE

## TYPE ZB



The profile of the lateral surface of this kind of rollers - Type ZB – is composed of the cylindrical middle section and the slightly laterally chamfered end zones. This type of end profiling prevents harmful stresses to the edges.

Cylindrical rollers are suitable in different applications, mainly:

- Bearings
- Planetary drives
- Pinions for starter motors
- Freewheels
- Hydraulic Motors
- Crossed-roller fifth wheels
- Crossed-roller linear guides
- Roller sliding blocks
- Rotating elements

### MATERIALS NORMALLY USED

Production of cylindrical rollers is mainly made with steel for bearings **UNI 100 Cr 6 / 100CrMnSi6-4**,

steel used in over 90% of roller bearings, thanks to its properties:

- high adhesive wear resistance, also thanks to lubrication.
- Abrasive wear resistance due to low non-metallic inclusions and uniformity in the distribution of hard carbides which grind any inclusions ;
- fatigue resistance due to homogeneity of the structure: the steel can be core hardened due to the presence of chromium.

Cylindrical rollers are core hardened and tempered with value **HRC 58 – 65** (670 / 840 HV) in order to achieve the maximum mechanical strength.

### Chemical composition :

Material	C %	Mn %	Si %	P %	S %	Cr %
100Cr6	0,93 ÷ 1,05	0,25 ÷ 0,45	0,15 ÷ 0,35	≤ 0,015	≤ 0,025	1,35 ÷ 1,60
100CrMnSi6-4	0,93 ÷ 1,05	0,95 ÷ 1,25	0,45 ÷ 0,75	≤ 0,015	≤ 0,025	1,40 ÷ 1,65

### International equivalents:

ITALY	SPAIN	GERMANY	CHINA	USA
UNI 100Cr6	UNE F 1310	W. nr. 1.3505	GCr15	AISI/SAE 52100
UNI 100CrMnSi6-4		W. nr. 1.3520	GCr15SiMn	

Cylindrical rollers can be manufactured with special steel like:

AISI 302	AISI 304	AISI 316	AISI 420-C
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## PRODUCT RANGE

Cylindrical rollers type TR are made in standard and special dimensions:

- Diameter from 2,0 mm. to 70,0 mm.
- Length from 4,0 mm. to 100,0 mm.

## TECNHNICAL CHARACTERISTIC

GRADE	DIAMETER (mm)		DIAMETER TOLERANCE (µm)	SORTING GROUPS V <sub>DwL</sub> (µm)	MAX ROUNDNESS DEVIATION Δ R <sub>w</sub> (µm)	MAX SURFACE ROUGHNESS Ra (µm)	LENGTH TOLERANCE h13 (mm)
	DA	A					
G1	-	26	+ 5 - 10	1	0,5	0,10	Length ≤ 20,0 mm. = + 0,000 - 0,030 mm.
	26	40			0,8		
	40	-			1,2		
G2	-	26	+ 5 - 10	2	1,0	0,10	Length > 20,0 mm. = + 0,000 - 0,050 mm.
	26	40			1,2		
	40	-			2,0		

**Note :** On request Length Tolerance can be made according to standard DIN 5402-1: 2014-05

D <sub>w</sub> (mm)		S <sub>Dw</sub> (µm)	Roughness faces Ra (µm)
DA	A		
-	26	6	0,3
26	48	6	0,5
48	120	10	0,5

D <sub>w</sub>		r <sub>1s</sub> min	r <sub>1s</sub> max	r <sub>2s</sub> min	r <sub>2s</sub> max
DA	A				
-	4	0,2	0,4	0,2	0,7
4	8	0,2	0,6	0,2	0,7
8	12	0,3	0,7	0,3	1,0
12	16	0,4	0,8	0,4	1,2
16	20	0,4	1,0	0,4	1,2
20	26	0,5	1,1	0,5	1,3
26	34	0,6	1,4	0,6	1,4
34	42	0,7	1,7	0,7	1,7
42	56	0,9	2,1	0,9	2,1
56	64	1,2	2,4	1,2	2,4
64	75	1,4	2,6	1,4	2,6
75	95	1,8	3,2	1,8	3,2
95	115	2,2	3,8	2,2	3,8
115	120	2,7	4,3	2,7	4,3

Cylindrical rollers can be have improve variants like:

- diameter sorted in groups of 1 µm
- length sorted in groups of 6 µm or 10 µm
- super finish of the diameter in order to reduce the surface roughness close to Ra ≤ 0,04 µm and roundness values to 0,5 µm
- non-destructive testing using technology Eddy Current.

Cylindrical rollers can be manufactured with different types of materials and tolerances, if the quantity required is sufficient for a production.



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