

Type RA Tool Application: Cylindrical outer surfaces

Diameters 3 – 160 mm

Features

- For bore tolerances up to class IT8
- Type RAP with compensating roller head for bore tolerances up to class IT11
- Suitable for metals with tensile strength up to 1400 N/mm² and maximum hardness HRC ≤ 45
- Achieves a surface quality of $R_z < 1 \mu\text{m}$ ($R_a \leq 0.2 \mu\text{m}$)
- For use on CNC-controlled lathes, drills, mills, and machining centers as well as manual machines
- Right hand rotation

Basic tool design

- Type RA roller burnishing tools consist of a tool body and roller head.
- Tool body includes shank and diameter adjustment assembly.
- Cylindrical shanks standard (Morse taper shanks also available).
- Roller head consists of the external cone, cage, and rollers.
- Roller heads interchangeable within the diameter range for the tool body size.

Parameters

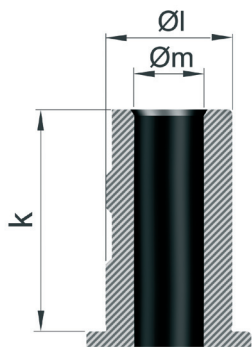
- Circumferential speed: up to 250 m/min.
- Feed rate: 0.05 - 0.3 mm/rev./roller
- Rolling length: when equipped with a standard shank, the tool's rolling length is limited (see the following table).

For longer workpieces ECOROLL® can supply roller burnishing tools for unlimited rolling length. These tools are equipped with a hollow, reinforced cylindrical shank.



Tool body	Diameter range D	Tool shank: Morse taper or cylindrical shank Ø e x f		a	b	c ¹⁾	d	i
		mm						
RA1	≥ 3 < 12	Ø 20 h6 x 50 (MK2)	Ø 25 h6 x 60 x 15	55	45	21	81	80
RA2	≥ 12 < 25	Ø 25 h6 x 56 (MK3)	Ø 40 h6 x 70 x 28	73	65			99
RA3	≥ 25 < 55	Ø 40 h6 x 70 (MK4)	Ø 80 h6 x 90 x 57	114	105	28	108	124
RA4	≥ 55 < 85		Ø 110 h6 x 110 x 88	152	140			156
RA5	≥ 85 < 110	Ø 50 h6 x 80 (MK5)	Ø 150 h6 x 120 x 113	190	180	35	130	
RA6	≥ 110 < 160		Ø 190 h6 x 150 x 150 ¹⁾	238	225			

NOTE: 1) Maximum diameter for unlimited rolling length is 145 mm.



Advantages

- Reliable, high precision performance
- Short cycle time
- Convenient diameter adjustment
- Minimal lubrication required (oil or emulsion)
- Tool automatically collapses when retracted to prevent surface damage
- Easy to change wear parts



How to order:

1. Specify the tool body type and machining diameter (see following table).

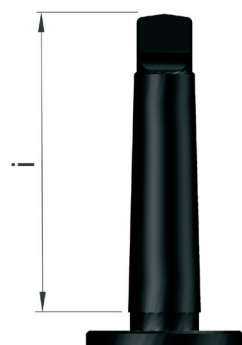
NOTE: Non-standard diameters are available by request.

2. Specify the design version:

- 3: with non-feeding cage
- 4: with self-feeding cage

3. Specify the shank type:

- MK: Morse taper
- ZS: Cylindrical shank (limited rolling length)
- ZU: Hollow cylindrical shank (unlimited rolling length)



Tool body	Diameter D	Setting range	Number of Rollers	Roller diameter	Roller radius	Rolling length
	mm			Ø g x h	r	
RA1 ≥ 3 < 12	3 and 5	- 0.2 / + 0.05	3	5 x 16 S	1.5	85
	6-7	- 0.4 / + 0.1	5			
RA2 ≥ 12 < 25	8-10		- 0.6 / + 0.1	7	8 x 25 S	2.5
	12,14-16	9				
RA3 ≥ 25 < 55	17,18,20,22,24	- 0.6 / + 0.1	11	14 x 35 S	4	135
	25,28,30,32,35		9			
RA4 ≥ 55 < 85	40,45,50	- 0.6 / + 0.1	11	14 x 35 S	4	135
RA5 ≥ 85 < 110	55,60,63,65,70,75,80		9			
RA6 ≥ 110 ≤ 160	85,90,95,100,105	- 0.6 / + 0.1	11	14 x 35 S	4	135
	110,115,120,125,130,140,150,160		9			

NOTE: 2) Please exchange only complete sets of rollers.