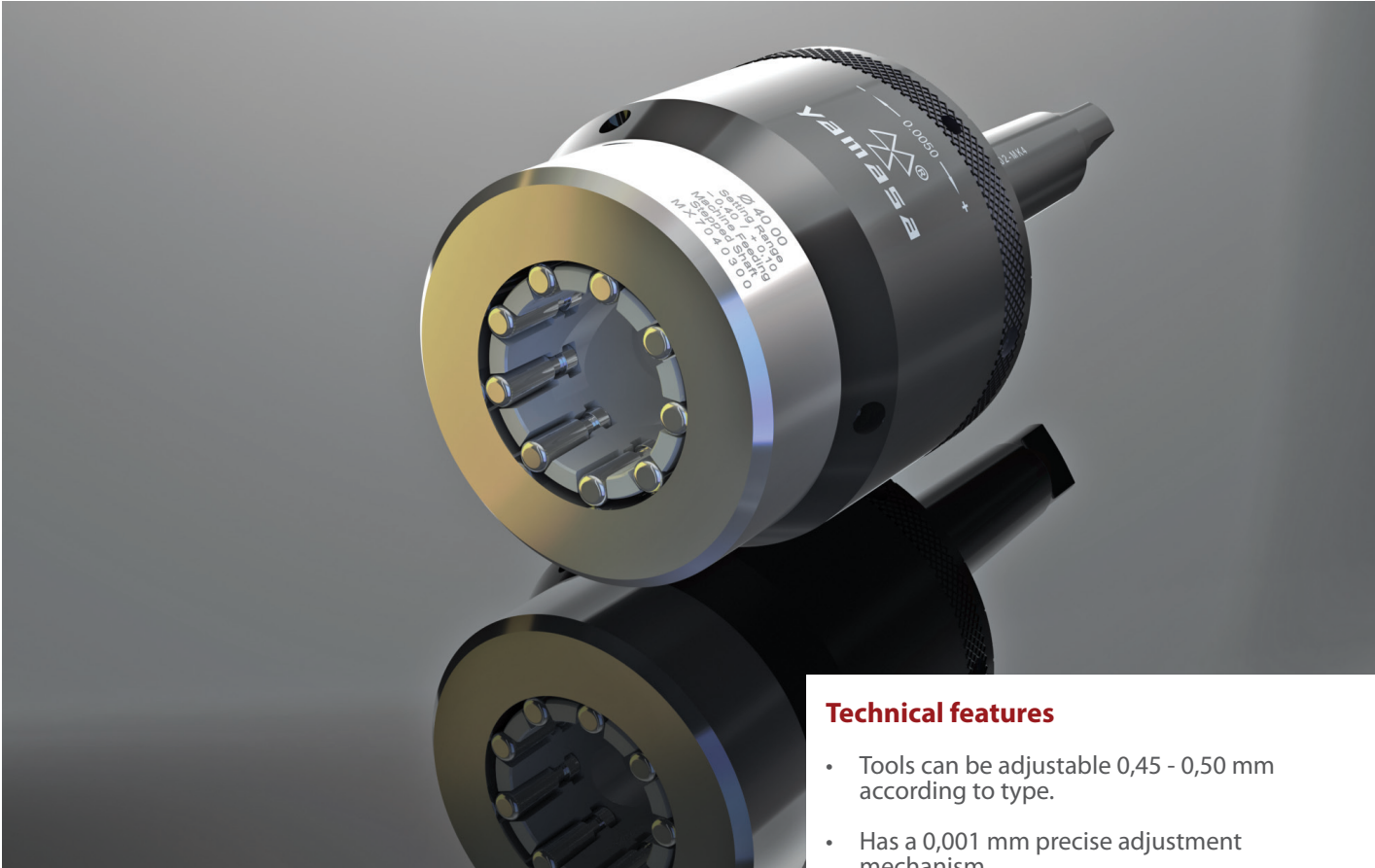


External Roller Burnishing Tools



Technical features

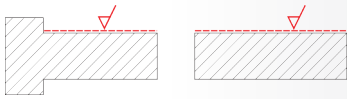
- Tools can be adjustable 0,45 - 0,50 mm according to type.
- Has a 0,001 mm precise adjustment mechanism.
- Can burnish the shafts up to H7 tolerance with one adjustment.
- Burnishing all kinds of metallic materials up to the tensile strength of 1400N/mm² and to the hardness 42-45 HRC.
- Easy setting, long using life, low spare parts consumption. Every kind of spare part can be provided by YAMASA.

Tool structure

- Tool consists of a burnishing head and a body which has a precision adjustment mechanism.
- Burnishing head consists of a cage, cone and rollers. In the same time, these are consumables.
- It is possible to mount on the same type body the roller heads in different diameter.
- There are cylindrical and morse taper shank choices are available. Roller length is limited on the cylindrical and morse taper shanks choices. Please prefer ZU Shanks for unlimited roller lengths (see table).

MX Series
Developed System





✓ Achievable surface roughness $Rz < 1\mu\text{m} / Ra < 0,16\mu\text{m}$

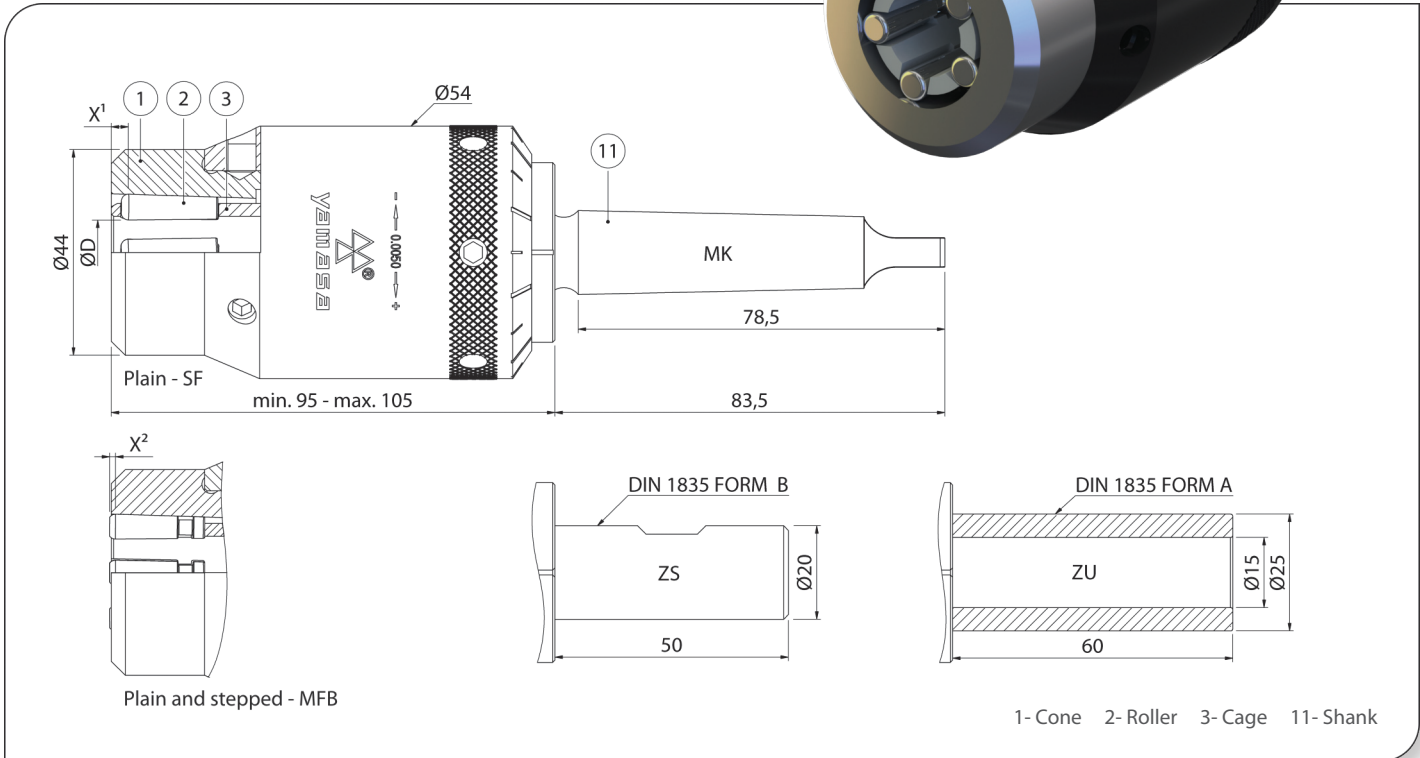
External Roller Burnishing Tools



Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 001,00 - 004,00 | 3,2 | 0,8 |
| 005,00 - 014,00 | 7,2 | 0,8 |

X²: It is possible to come to near the edge more. Please ask for special situations.



1- Cone 2- Roller 3- Cage 11- Shank

Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------|----------------|---------------------------|-------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 01,00 - 08,00 | 1000 | 0,45 | 450 | CCW (M3) | up to 0,015 mm | Rz = 5 - 15 μm | Lathe or grinding | Oil or emulsion |
| 09,00 - 11,00 | 1000 | 0,60 | 600 | | | | | |
| 12,00 - 14,00 | 1000 | 0,75 | 750 | Rapidly (G0) | up to 0,04 mm | | | |

Product selection

| MX Tool selection (complete) | | | | | | | | | Spare part selection | | | | | | | | |
|------------------------------|------------------------|---------|-----|----------------|-----|-------|------|------|------------------------|---------|------------------------|---------|--------|---|--------|--------|---|
| Tool body | Dia. \varnothing -mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. \varnothing -mm | Version | Dia. \varnothing -mm | Version | Code | | | | |
| | | | | | | | | | | | | | | | | | |
| MX1 | 1,00 | 1 | 3 | 75 | UNL | MK2 | ZS20 | ZU25 | 1,00 | 1 | 3 | 1,00 | 1 | 3 | 500102 | 500301 | 3 |
| | 2,00 | | | | | | | | 2,00 | | | | | | | | |
| | 3,00 | | | | | | | | 3,00 | | | | | | | | |
| | 4,00 | | | | | | | | 4,00 | | | | | | | | |
| | 5,00 | | | | | | | | 5,00 | | | | | | | | |
| | 6,00 | | | | | | | | 6,00 | | | | | | | | |
| | 7,00 | | | | | | | | 7,00 | | | | | | | | |
| | 8,00 | | | | | | | | 8,00 | | | | | | | | |
| | 9,00 | | | | | | | | 9,00 | | | | | | | | |
| | 10,00 | | | | | | | | 10,00 | | | | | | | | |
| | 11,00 | | | | | | | | 11,00 | | | | | | | | |
| | 12,00 | | | | | | | | 12,00 | | | | | | | | |
| | 14,00 | | | | | | | | 14,00 | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 5 | |

How to order | Order samples

| | | | |
|---|-----------------|-----------------|---------------|
| MX1-14,00-3-75-MK2 Roller burnishing tool | 14,00-3 MX Cage | 14,00-3 MX Cone | 500311 Roller |
|---|-----------------|-----------------|---------------|

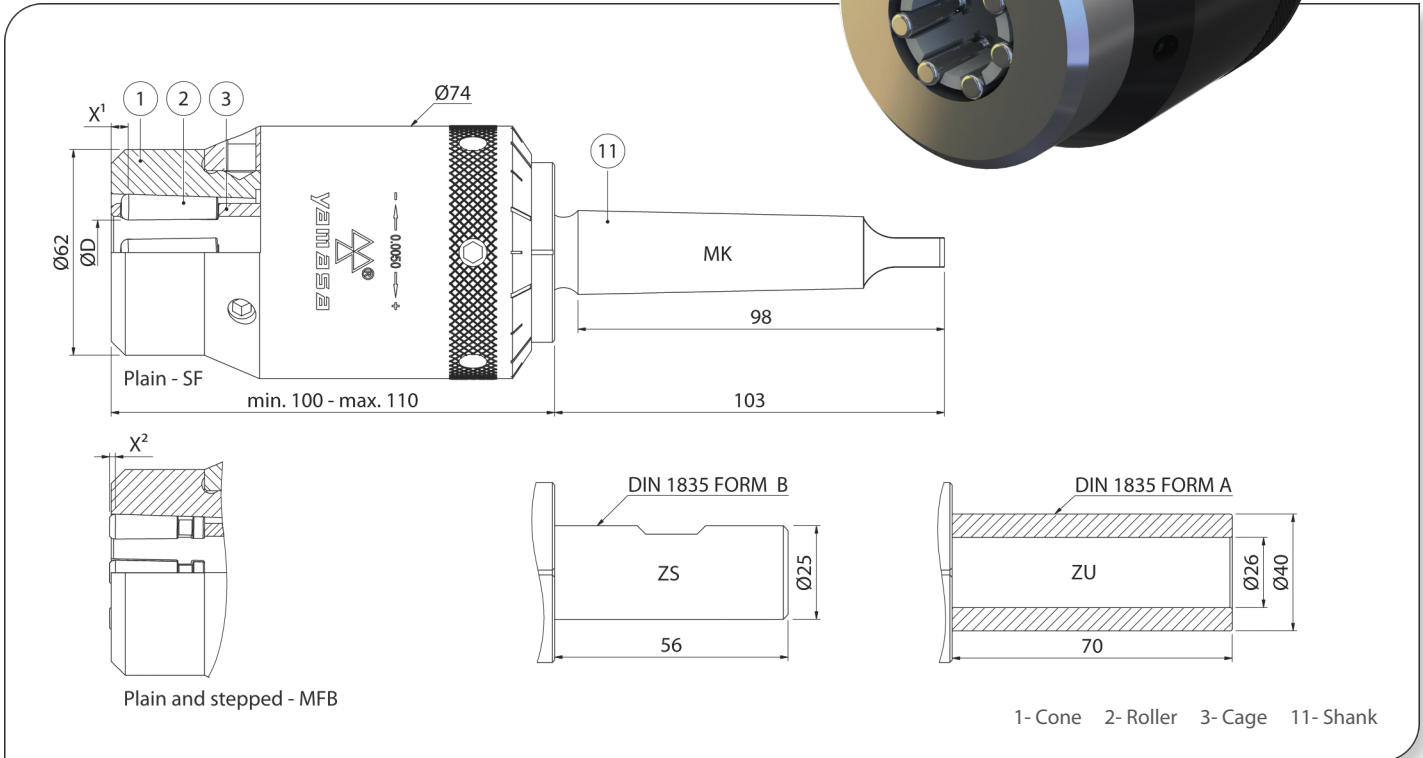
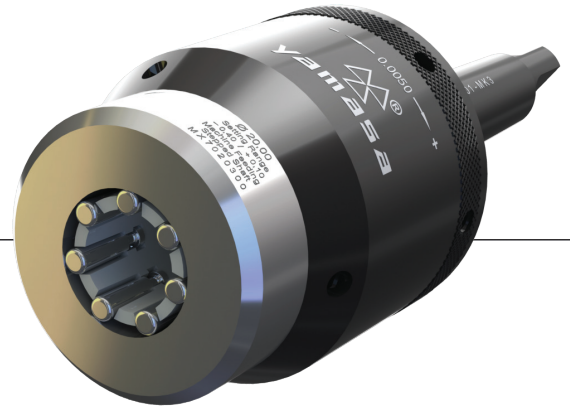
You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1):** Self feeding - plain shaft **MFB(3):** Machine feeding - plain and stepped shaft

External Roller Burnishing Tools

Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 015,00 - 024,00 | 7,7 | 0,8 |

X²: It is possible to come to near the edge more. Please ask for special situations.



1- Cone 2- Roller 3- Cage 11- Shank

Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------|---------------|-------------------------|-------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 15,00 - 17,00 | 1000 | 0,75 | 750 | CCW (M3) | up to 0,02 mm | Rz = 5 - 20 µm | Lathe or grinding | Oil or emulsion |
| 18,00 - 21,00 | 1000 | 0,90 | 900 | | | | | |
| 22,00 - 24,00 | 1000 | 1,05 | 1050 | Rapidly (G0) | up to 0,05 mm | | | |

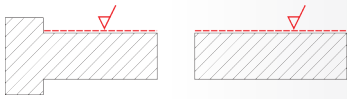
Product selection

| MX Tool selection (complete) | | | | | | | | | Spare part selection | | | | | | | | |
|------------------------------|-----------|---------|-----|----------------|-----|-------|------|------|----------------------|---------|-----------|---------|--------|---|--------|--------|---|
| Tool body | Dia. Ø-mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. Ø-mm | Version | Dia. Ø-mm | Version | Code | | | | |
| | | | | | | | | | | | | | | | | | |
| MX2 | 15,00 | 1 | 3 | 75 | UNL | MK3 | ZS25 | ZU40 | 15,00 | 1 | 3 | 15,00 | 1 | 3 | 500130 | 500311 | 5 |
| | 16,00 | | | | | | | | 16,00 | | | | | | | | |
| | 17,00 | | | | | | | | 17,00 | | | | | | | | |
| | 18,00 | | | | | | | | 18,00 | | | | | | | | |
| | 19,00 | | | | | | | | 19,00 | | | | | | | | |
| | 20,00 | | | | | | | | 20,00 | | | 6 | | | | | |
| | 21,00 | | | | | | | | 21,00 | | | | | | | | |
| | 22,00 | | | | | | | | 22,00 | | | | | | | | |
| | 23,00 | | | | | | | | 23,00 | | | | | | | | |
| | 24,00 | | | | | | | | 24,00 | | | | | | | | 7 |

How to order | Order samples

| | | | |
|---|-----------------|-----------------|---------------|
| MX2-15,00-1-UNL-ZU40 Roller burnishing tool | 15,00-1 MX Cage | 15,00-1 MX Cone | 500130 Roller |
|---|-----------------|-----------------|---------------|

You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1):** Self feeding - plain shaft **MFB(3):** Machine feeding - plain and stepped shaft



✓ Achievable surface roughness $Rz < 1\mu\text{m} / Ra < 0,16\mu\text{m}$

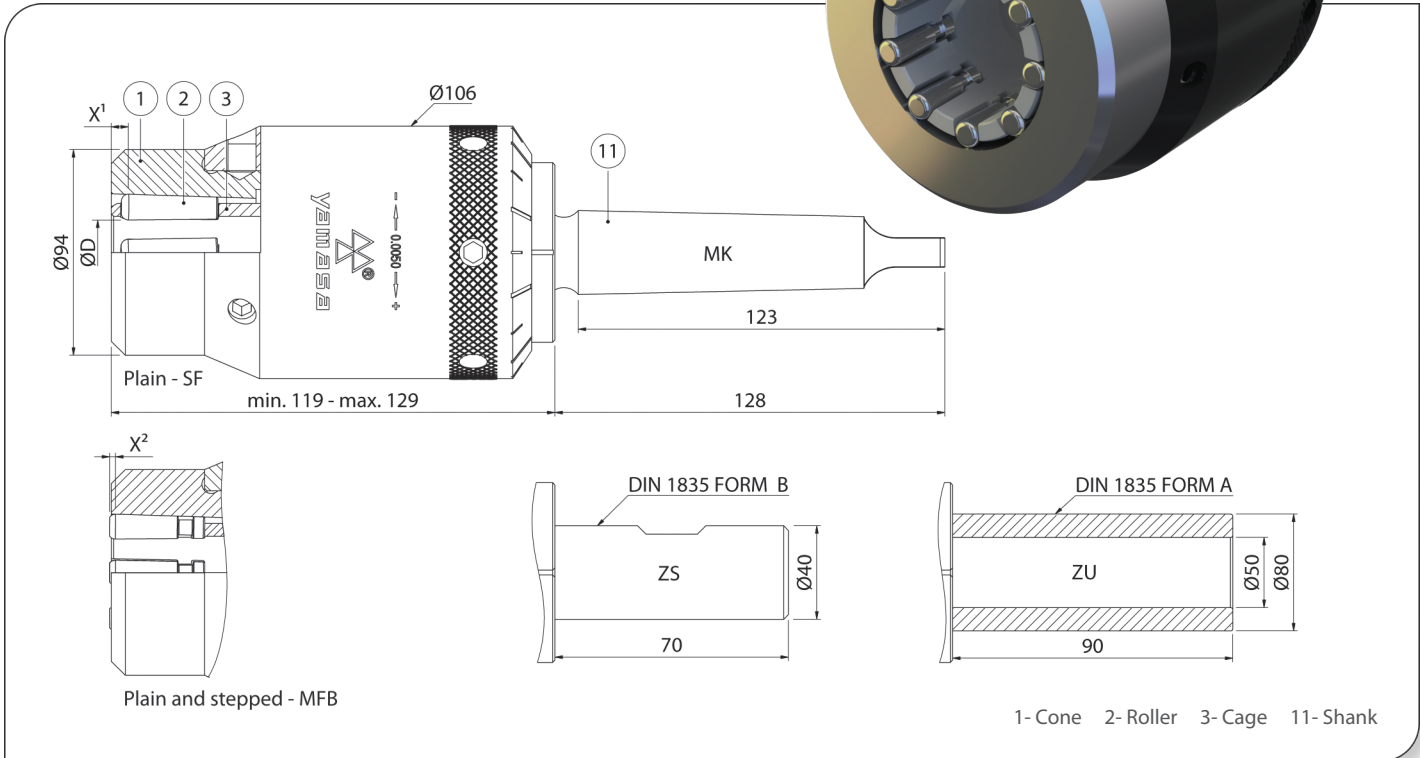
External Roller Burnishing Tools



Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 025,00 - 049,00 | 8,8 | 0,8 |

X²: It is possible to come to near the edge more. Please ask for special situations.



Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------------------------|---------------|--------------------------|-------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 25,00 - 31,00 | 1000 | 1,05 | 1050 | CCW (M3) ----- Rapidly (G0) | up to 0,02 mm | $Rz = 5 - 20\mu\text{m}$ | Lathe or grinding | Oil or emulsion |
| 32,00 - 38,00 | 840 | 1,05 | 880 | | | | | |
| 39,00 - 49,00 | 650 | 1,35 | 870 | | | | | |

Product selection

| MX Tool selection (complete) | | | | | | | | | | Spare part selection | | | | | | | |
|------------------------------|------------------------|---------|-----|----------------|-----|-------|------|------|------------------------|----------------------|------------------------|---------|--------|---|--------|--------|---|
| Tool body | Dia. \varnothing -mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. \varnothing -mm | Version | Dia. \varnothing -mm | Version | Code | | | | |
| MX3 | 25,00 | 1 | 3 | 100 | UNL | MK4 | ZS40 | ZU80 | 25,00 | 1 | 3 | 25,00 | 1 | 3 | 500128 | 500307 | 7 |
| | 26,00 | | | | | | | | | | | | | | | | |
| | 27,00 | | | | | | | | | | | | | | | | |
| | 28,00 | | | | | | | | | | | | | | | | |
| | 29,00 | | | | | | | | | | | | | | | | |
| | 30,00 | | | | | | | | | | | | | | | | |
| | 32,00 | | | | | | | | | | | | | | | | |
| | 34,00 | | | | | | | | | | | | | | | | |
| | 36,00 | | | | | | | | | | | | | | | | |
| | 38,00 | | | | | | | | | | | | | | | | |
| | 39,00 | | | | | | | | | | | | | | | | |
| | 45,00 | | | | | | | | | | | | | | | | |
| | 49,00 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

How to order | Order samples

| | | | |
|---|-----------------|-----------------|---------------|
| MX3-25,00-3-100-ZS40 Roller burnishing tool | 25,00-3 MX Cage | 25,00-3 MX Cone | 500307 Roller |
|---|-----------------|-----------------|---------------|

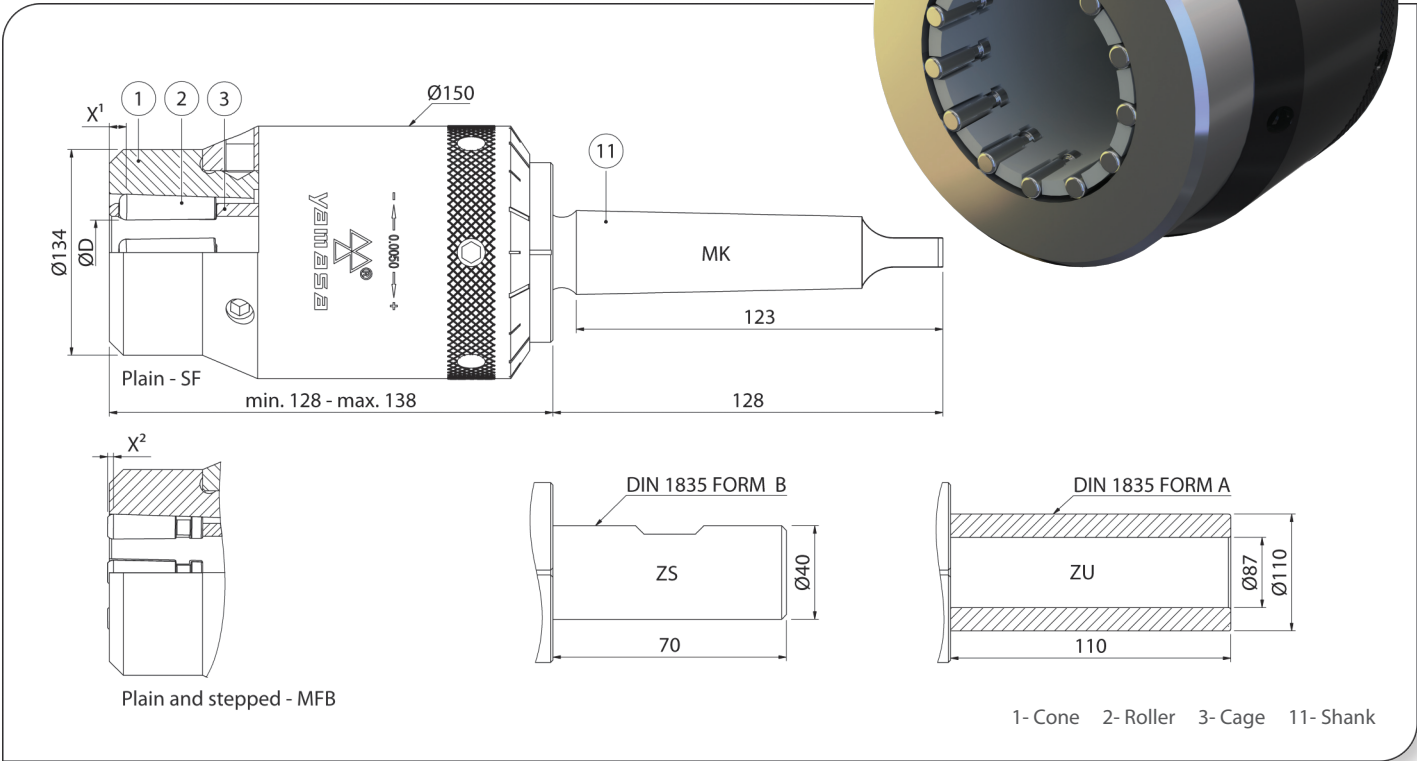
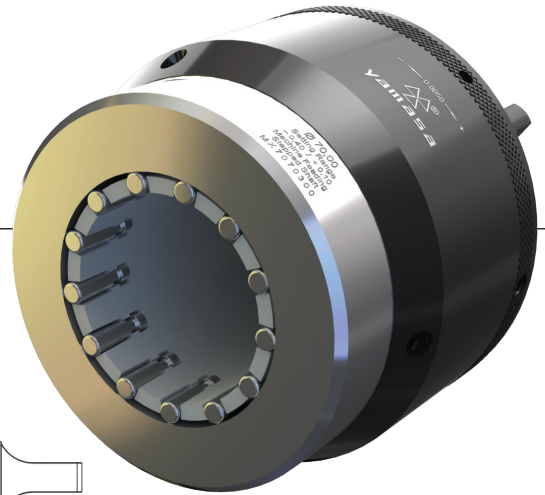
You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1):** Self feeding - plain shaft **MFB(3):** Machine feeding - plain and stepped shaft

External Roller Burnishing Tools

Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 050,00 - 085,00 | 9,3 | 0,8 |

X²: It is possible to come to near the edge more. Please ask for special situations.



Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------|---------------|-------------------------|-------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 50,00 - 51,00 | 620 | 1,35 | 830 | CCW (M3) | up to 0,02 mm | Rz = 5 - 20 µm | Lathe or grinding | Oil or emulsion |
| 52,00 - 69,00 | 460 | 1,65 | 760 | | | | | |
| 70,00 - 85,00 | 370 | 1,95 | 720 | Rapidly (G0) | up to 0,06 mm | | | |

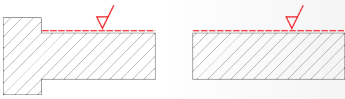
Product selection

| MX Tool selection (complete) | | | | | | | | | Spare part selection | | | | | | | | |
|------------------------------|-----------|---------|-----|----------------|-----|-------|------|-------|----------------------|----------------|-----------|----------------|-------------|---|--------|--------|---|
| Tool body | Dia. Ø-mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. Ø-mm | Version SF MFB | Dia. Ø-mm | Version SF MFB | Code SF MFB | | | | |
| MX4 | 50,00 | 1 | 3 | 100 | UNL | MK4 | ZS40 | ZU110 | 50,00 | 1 | 3 | 50,00 | 1 | 3 | 500128 | 500307 | 9 |
| | 51,00 | | | | | | | | 51,00 | | | | | | | | |
| | 52,00 | | | | | | | | 52,00 | | | | | | | | |
| | 54,00 | | | | | | | | 54,00 | | | | | | | | |
| | 56,00 | | | | | | | | 56,00 | | | | | | | | |
| | 58,00 | | | | | | | | 58,00 | | | | | | | | |
| | 60,00 | | | | | | | | 60,00 | | | | | | | | |
| | 65,00 | | | | | | | | 65,00 | | | | | | | | |
| | 69,00 | | | | | | | | 69,00 | | | | | | | | |
| | 70,00 | | | | | | | | 70,00 | | | | | | | | |
| | 75,00 | | | | | | | | 75,00 | | | | | | | | |
| | 80,00 | | | | | | | | 80,00 | | | | | | | | |
| | 85,00 | | | | | | | | 85,00 | | | | | | | | |

How to order | Order samples

| | | | |
|---|-----------------|-----------------|---------------|
| MX4-50,00-3-100-ZS40 Roller burnishing tool | 50,00-3 MX Cage | 50,00-3 MX Cone | 500307 Roller |
|---|-----------------|-----------------|---------------|

You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1):** Self feeding - plain shaft **MFB(3):** Machine feeding - plain and stepped shaft



✓ Achievable surface roughness $Rz < 1\mu\text{m} / Ra < 0,16\mu\text{m}$

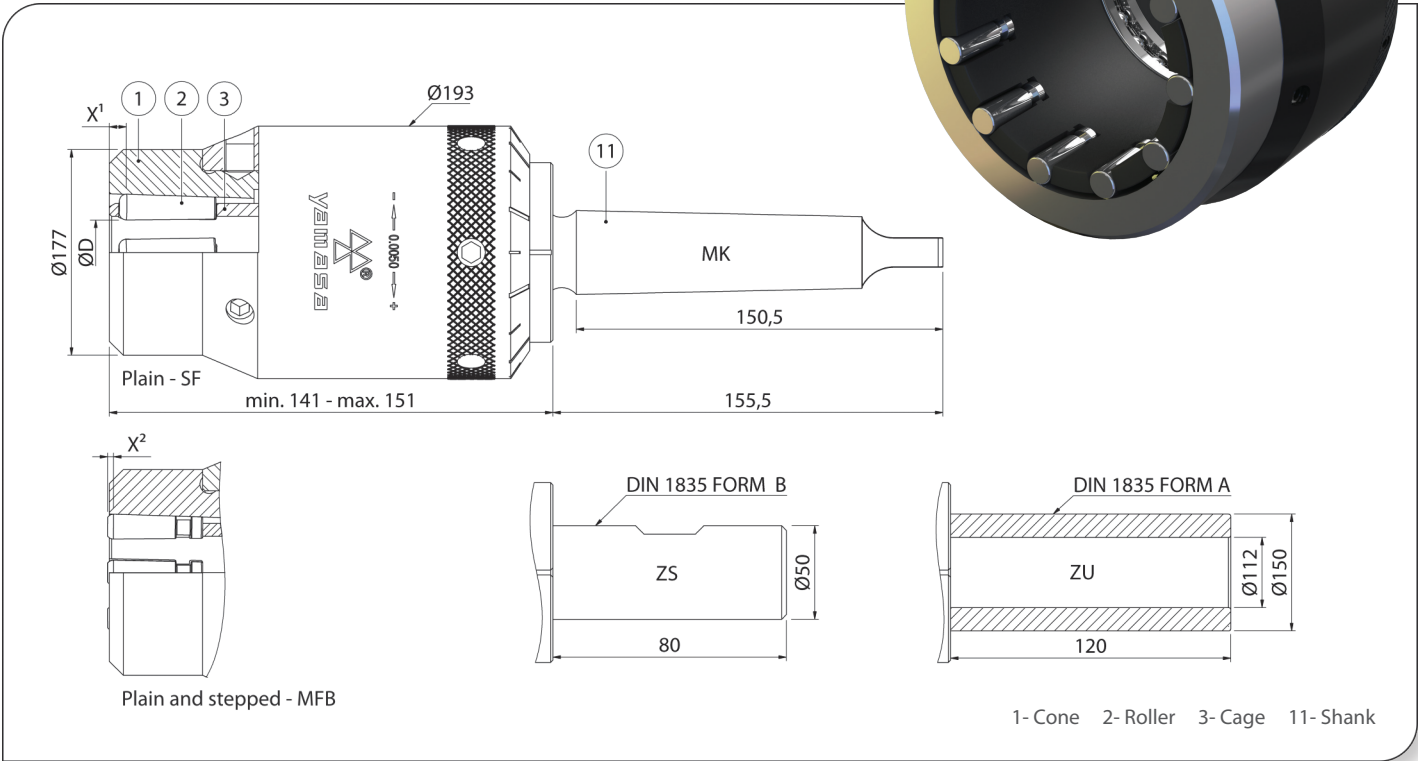
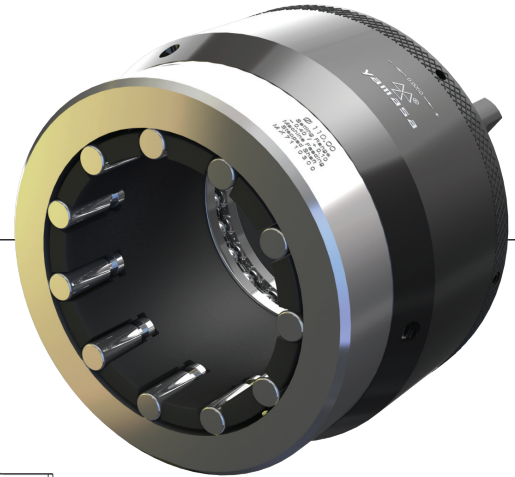
MX Type | Between $\varnothing 86 - 110\text{ mm}$

External Roller Burnishing Tools

Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 086,00 - 110,00 | 12,9 | 1,6 |

X²: It is possible to come to near the edge more. Please ask for special situations.



Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------|---------------|---------------------------|-------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 086,00 - 095,00 | 330 | 1,35 | 440 | CCW (M3) | up to 0,03 mm | Rz = 5 - 30 μm | Lathe or grinding | Oil or emulsion |
| 096,00 - 110,00 | 290 | 1,65 | 480 | Rapidly (G0) | up to 0,08 mm | | | |

Product selection

| MX Tool selection (complete) | | | | | | | | | | Spare part selection | | | | | | | |
|------------------------------|------------------------|---------|-----|----------------|-----|-------|------|-------|------------------------|----------------------|------------------------|---------|--------|---|--------|--------|---|
| Tool body | Dia. \varnothing -mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. \varnothing -mm | Version | Dia. \varnothing -mm | Version | Code | | | | |
| | | | | | | | | | | | | | | | | | |
| MX5 | 086,00 | 1 | 3 | 115 | UNL | MK5 | ZS50 | ZU150 | 086,00 | 1 | 3 | 086,00 | 1 | 3 | 500132 | 500306 | 9 |
| | 088,00 | | | | | | | | 088,00 | | | | | | | | |
| | 090,00 | | | | | | | | 090,00 | | | | | | | | |
| | 092,00 | | | | | | | | 092,00 | | | | | | | | |
| | 095,00 | | | | | | | | 095,00 | | | | | | | | |
| | 096,00 | | | | | | | | 096,00 | | | | | | | | |
| | 098,00 | | | | | | | | 098,00 | | | | | | | | |
| | 100,00 | | | | | | | | 100,00 | | | | | | | | |
| | 102,00 | | | | | | | | 102,00 | | | 11 | | | | | |
| | 104,00 | | | | | | | | 104,00 | | | | | | | | |
| | 106,00 | | | | | | | | 106,00 | | | | | | | | |
| | 108,00 | | | | | | | | 108,00 | | | | | | | | |
| | 110,00 | | | | | | | | 110,00 | | | | | | | | |

How to order | Order samples

| | | | |
|---|-----------------|-----------------|---------------|
| MX5-86,00-3-115-ZS50 Roller burnishing tool | 86,00-3 MX Cage | 86,00-3 MX Cone | 500306 Roller |
|---|-----------------|-----------------|---------------|

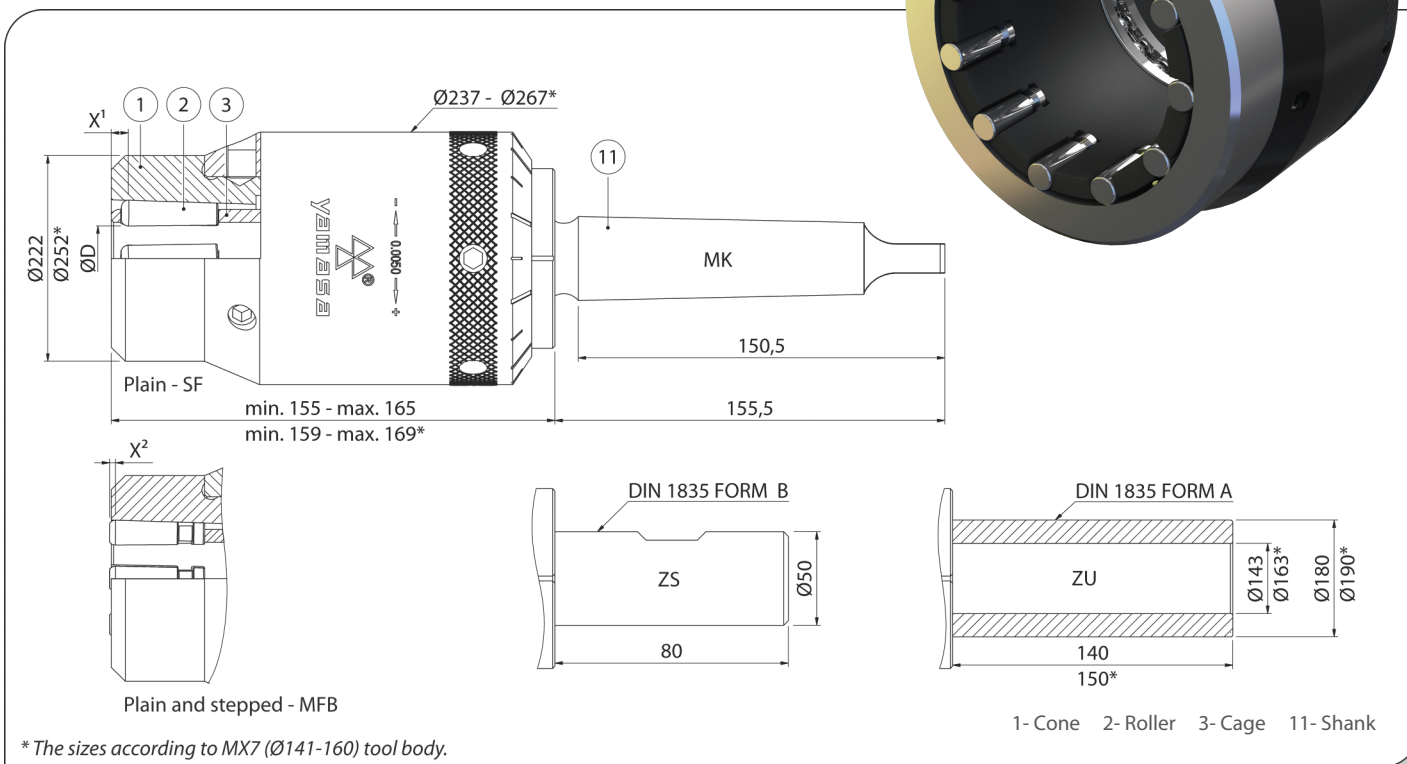
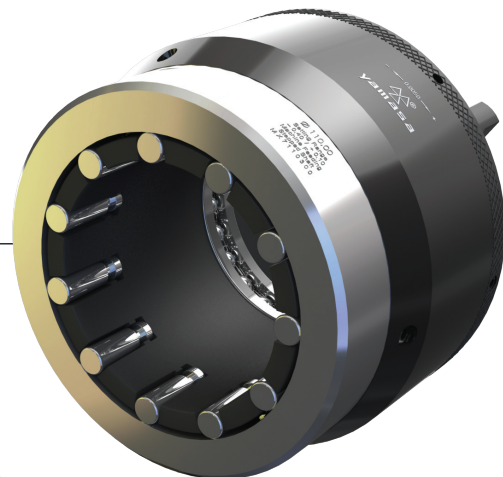
You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1)**: Self feeding - plain shaft **MFB(3)**: Machine feeding - plain and stepped shaft

External Roller Burnishing Tools

Minimum edge

| Diameter range | X ¹ / SF | X ² / MFB |
|-----------------|---------------------|----------------------|
| 111,00 - 160,00 | 12,9 | 1,6 |

X²: It is possible to come to near the edge more. Please ask for special situations.



* The sizes according to MX7 (Ø141-160) tool body.

Recommended machining parameters

| Diameter range (mm) | Revolution (rev/min) | Feed rate (mm/rev) | Feeding (mm/min) | Rotation direc. | Rolling share | Pre-machining roughness | Pre-machining | Coolant |
|---------------------|----------------------|--------------------|------------------|-----------------|---------------|-------------------------|------------------|-----------------|
| | | | | Retreat | Tool preload | | | |
| 111,00 - 120,00 | 270 | 1,65 | 445 | CCW (M3) | up to 0,03 mm | Rz = 5 - 30 µm | Reaming or lathe | Oil or emulsion |
| 121,00 - 140,00 | 230 | 1,95 | 448 | | | | | |
| 141,00 - 160,00 | 200 | 1,95 | 390 | Rapidly (G0) | up to 0,08 mm | | | |

Product selection

| MX Tool selection (complete) | | | | | | | | | Spare part selection | | | | | | | | |
|------------------------------|-----------|---------|-----|----------------|-----|-------|------|-------|----------------------|---------|-----------|---------|--------|---|--------|--------|----|
| Tool body | Dia. Ø-mm | Version | | Rolling length | | Shank | | | MX Cage | | MX Cone | | Roller | | Qua. | | |
| | | SF | MFB | MK/ZS | ZU | | | | Dia. Ø-mm | Version | Dia. Ø-mm | Version | Code | | | | |
| | | | | | | | | | | | | | | | | | |
| MX6 | 111,00 | 1 | 3 | 130 | UNL | MK5 | ZS50 | ZU180 | 111,00 | 1 | 3 | 111,00 | 1 | 3 | 500132 | 500306 | 11 |
| | 120,00 | | | | | | | | 120,00 | | | | | | | | |
| | 121,00 | | | | | | | | 121,00 | | | | | | | | |
| | 140,00 | | | 140,00 | 13 | | | | | | | | | | | | |
| | 141,00 | | | 141,00 | | | | | | | | | | | | | |
| | 160,00 | | | 160,00 | | | | | | | | | | | | | |
| MX7 | 141,00 | 1 | 3 | 135 | UNL | MK5 | ZS50 | ZU190 | 141,00 | 1 | 3 | 141,00 | 1 | 3 | 500132 | 500306 | 13 |
| | 160,00 | | | | | | | | 160,00 | | | | | | | | |

How to order | Order samples

| | | | |
|---|------------------|------------------|---------------|
| MX6-140,00-1-UNL-ZU180 Roller burnishing tool | 140,00-1 MX Cage | 140,00-1 MX Cone | 500132 Roller |
|---|------------------|------------------|---------------|

You can create order codes of the tool and spare parts by looking at the product selection table. For this, please rank the requested product features side by side. All dimensions in mm. **SF(1)**: Self feeding - plain shaft **MFB(3)**: Machine feeding - plain and stepped shaft