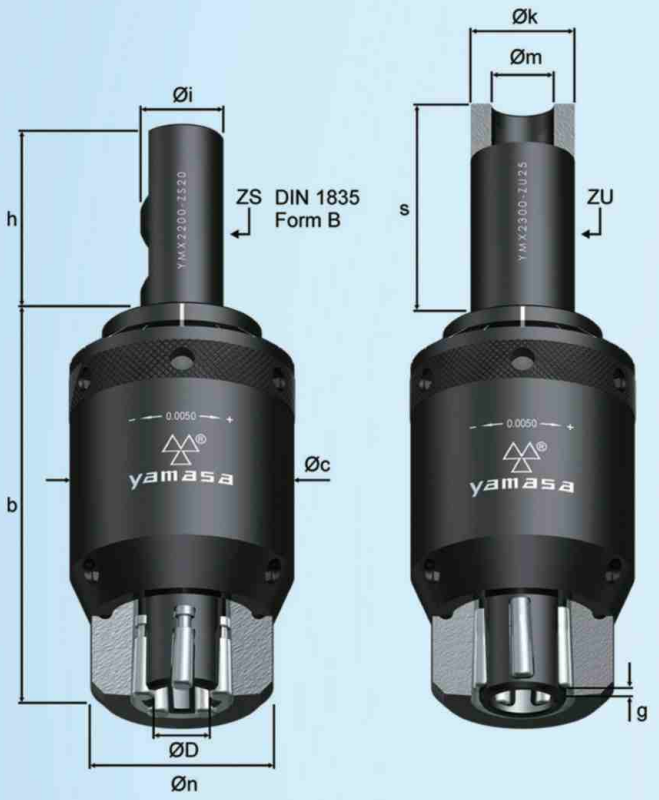
External Roller Burnishing Tools

Type MX For Cylindrical Shafts

Plain shaft between Ø3 - Ø110 mm
Stepped shaft between Ø3 - Ø110 mm

Application

YAMASA MX type tools are used for the aim of the burnishing the cylindrical stepped and plain shafts. The tools provide as well as surface hardness and at low rate calibration (measurement accuracy) beside of the burnishing. The tools provide time saving through a high processing power and speed and this is preference cause for the serial production.



Stepped Shaft **Plain Shaft**

There are three types according to the process type of YAMASA MX burnishing tools.

1) Plain Shaft Automatic (Self) Feeding

These burnishing tools process plain shafts. The tool provides own feeding speed which is needed while it is proccessing the workpiece. Feeding is occured free from the machine.

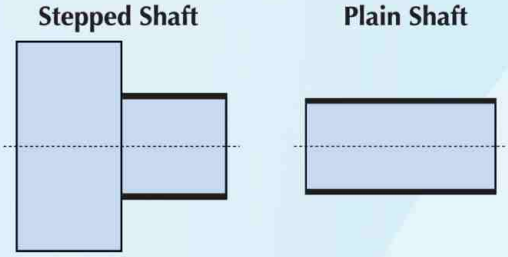
2) Plain Shaft Machine Feeding

These burnishing tools process plain shafts. While the tool processes the workpiece, machine provides feeding speed which is needed.

3) Stepped Shaft Machine Feeding

These burnishing tools process stepped shafts and plain shafts up to the end. While the tool processes the workpiece, machine provides feeding speed which is needed.

The tool or the workpiece can be turned with a speed of 250 m/min. Machine feeding speed is possible from 0,1 mm/rev to 0,3 mm/rev for per roller.



Technical Features

The tools are adjusted. The adjustment capacity for every diameter is 0,5 mm. The tools have an adjustment mechanism which gives the possibbilty to adjust very high precision measurements. This mechanism provides adjustment precision up to 0,005 mm. YAMASA MX type roller burnishing tools for cylindrical shafts can work in H8 tolerances with a single adjustment. These tools are capable to process all kinds of metallic materials with 1400 N/mm² tensile strength and hardness up to max. 42-45 HRC. Tools work by turning to right. Either tool or workpiece may turn. These tools can be used on universal or CNC lathes, machining centers, drilling machines or other machines which process by turning. The tools can be tied to all machines easily and practically. Tools have rather a long life. It is possible to use the tools for a long time without size change due to abrasion.

Tool Body	Diameter Range Ø	**Tool Shank** Morse Taper or Cylindrical Shank			b	c	g	n	a
		For Limited Rolling Length		For Unlimited Rolling Length					
		MK	ZS (Øi x h)	ZU (Øk x s x Øm)					
MX1	03-14	MK2	Ø 20 h6 x 50	Ø 25 h6 x 60 x Ø 15	min 95 - max 105	54	2,0	44	78,5
MX2	15-24	MK3	Ø 25 h6 x 56	Ø 40 h6 x 70 x Ø 26	min 100 - max 110	74	2,5	62	98
MX3	25-49	MK4	Ø 40 h6 x 70	Ø 80 h6 x 90 x Ø 50	min 119 - max 129	106	3,0	94	123
MX4	50-85			Ø 110 h6 x 110 x Ø 87	min 128 - max 138	149	3,5	138	123
MX5	86-110	MK5	Ø 50 h6 x 80	Ø150 h6 x 120 x Ø112	min 141 - max 151	193	3,5	177	155,5

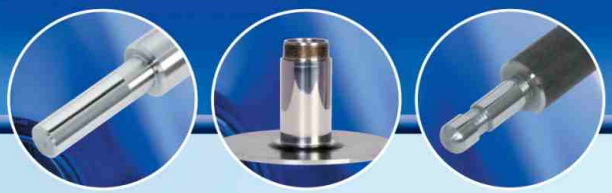
All Dimensions in mm.

Tool Structure

YAMASA MX burnishing tools consist of a body and a roller head. The tool body has a precision adjustment mechanism. Cage, cone and rollers are the parts of the roller head. The roller heads fitting in to the same body can be changed. The tool shank may be morse taper or cylindrical. Rolling lengths are related to shank selection. ZU shanks have unlimited rolling length, but ZS and MK shanks are limited (see table side).

Samples of application

- Torque converters
- Air hammer parts
- Clutch pants
- Spline hubs
- Pulleys
- Rods
- Pins
- Shafts etc.



YAMASA MX Type burnishing tools can process the various diameters in order to the adjustment specification. As an example, MX3-030,00-1-100-MK3 model burnishing tool having a nominal size of Ø30,00 mm is capable to process all sizes between Ø29,60 mm and Ø30,10 mm.

YAMASA MX type tools are produced in special diameters and sizes upon request. In addition, the tools with the special rolling length can also be produced.

You can use the information above to select the proper tool. If you want to take help for the tool selection, you can fill out the tool option form and send to us or to one of the related zone representation. So we can do the proper tool selection for you.

Tool Selection

1-Tool Body Selection

At sight to the table, select the body number proper to the tool diameter.

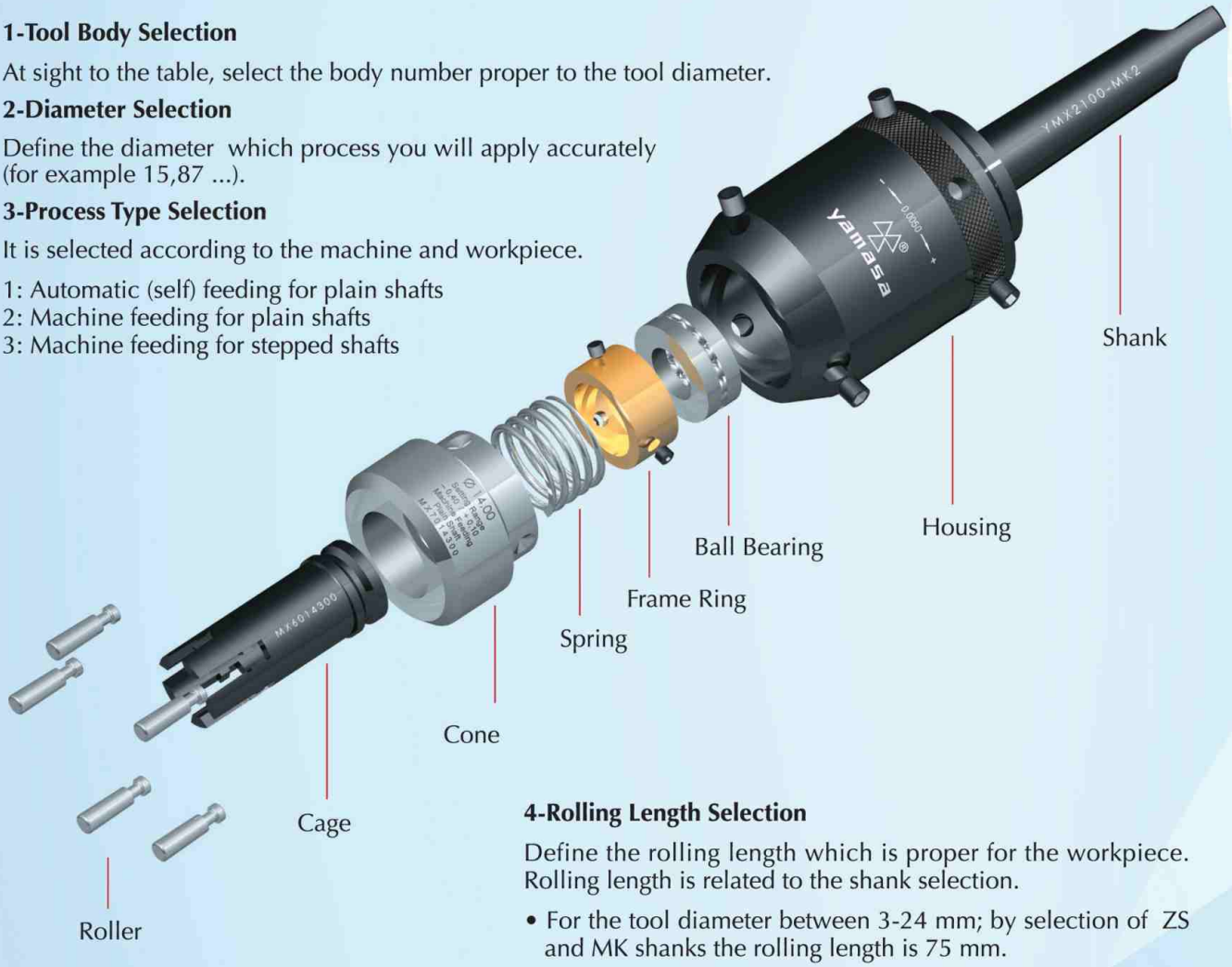
2-Diameter Selection

Define the diameter which process you will apply accurately (for example 15,87 ...).

3-Process Type Selection

It is selected according to the machine and workpiece.

1: Automatic (self) feeding for plain shafts
2: Machine feeding for plain shafts
3: Machine feeding for stepped shafts



4-Rolling Length Selection

Define the rolling length which is proper for the workpiece. Rolling length is related to the shank selection.

- For the tool diameter between 3-24 mm; by selection of ZS and MK shanks the rolling length is 75 mm.
- For the tool diameter between 25-85 mm; by selection of ZS and MK shanks the rolling length is 100 mm.
- For the tool diameter between 86-110 mm; by selection of ZS and MK shanks the rolling length is 115 mm.
- For the tool diameter between 3-110 mm; by selection of ZU shank rolling length is an unlimited (U).

5-Tool Shank Selection

Prefer the proper shank to your machine.

ZU : Cylinder Shank (for unlimited rolling length)
ZS : Cylinder Shank (for limited rolling length)
MK : Mors Taper Shank (for limited rolling length)

Order Sample

MX2-014,00-3-75-MK2
MX2 : Tool body
014,00 : Diameter (Ø)
3 : Process type
75 : Rolling length
MK2 : Shank

External Roller Burnishing Tools

Type MX For Cylindrical Shafts

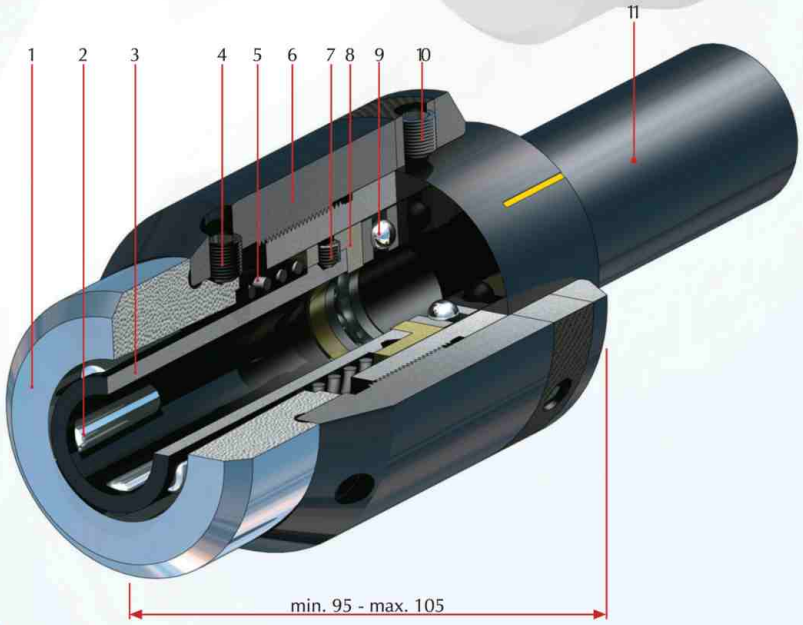
Plain shaft between Ø3 - Ø14 mm
Stepped shaft between Ø3 - Ø14 mm

Recommended Machining Parameters

Burnishing allowance : ~ +0,005 to +0,02 mm
Pre-machining : Precision lathening or grinding
Pre-machining roughness : R_z = 5-15 µm
Coolant : Oil emulsion or cutting oil

Diameter Range (mm)	Revolution (rev/min)	Feeding (mm/rev)
3,00-8,00	1000	0.45
9,00-11,00	1000	0.60
12,00-14,00	1000	0.75

MX1-014,00-3-75-MK2



1 Cone
2 Roller
3 Cage
4 Screw
5 Spring
6 Housing
7 Screw
8 Frame ring
9 Ball bearing
10 Screw
11 Shank

STANDARD TYPE

Order Sample															
Tool Body	Diameter	Process Type			Rolling Length			Tool Shank			Setting Range		Roller		
		Plain		Stepped				Morse Taper	Cylindrical				Roller Number		Quanlity
		AF	MF	MF	MK	ZS	ZU	MK	ZS	ZU	Plain	Stepped	Plain	Stepped	Piece
MX1	003,00	1	2	3	75	75	UNLIMITED	MK2	ZS 20 Ø20 h6 x 50	ZU 25 Ø25 h6 x 60 x Ø15	-0,40 +0,10	-0,40 +0,05	500112	500311	3
	004,00														
	005,00														
	006,00														
	007,00														
	008,00														
	009,00														4
	010,00														
	011,00														
	012,00														5
	013,00														
	014,00														

All Dimensions in mm. AF: Automatic Feeding (Self Feeding) MF: Machine Feeding

External Roller Burnishing Tools

Type MX For Cylindrical Shafts

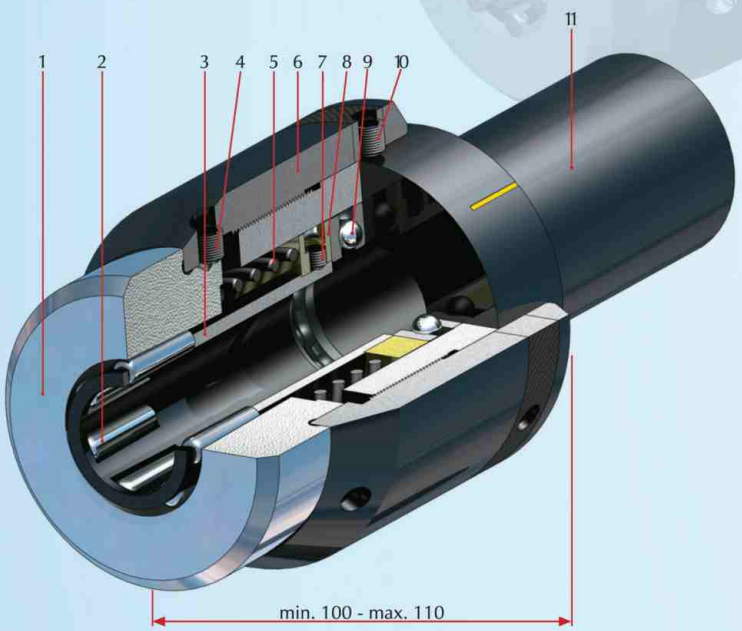
Plain shaft between Ø15 - Ø24 mm
Stepped shaft between Ø15 - Ø24 mm

Recommended Machining Parameters

Burnishing allowance : ~ +0,01 to +0,02 mm
Pre-machining : Precision lathening or grinding
Pre-machining roughness : R_z = 5-15 µm
Coolant : Oil emulsion or cutting oil

Diameter Range (mm)	Revolution (rev/min)	Feeding (mm/rev)
15,00-17,00	1000	0.75
18,00-21,00	1000	0.90
22,00-24,00	1000	1.05

MX2-020,00-3-75-MK3



1 Cone
2 Roller
3 Cage
4 Screw
5 Spring
6 Housing
7 Screw
8 Frame ring
9 Ball bearing
10 Screw
11 Shank

STANDARD TYPE

Order Sample															
Tool Body	Diameter	Process Type			Rolling Length			Tool Shank			Setting Range		Roller		
		Plain		Stepped				Morse Taper	Cylindrical				Roller Number		Quanlity
		AF	MF	MF	MK	ZS	ZU	MK	ZS	ZU	Plain	Stepped	Plain	Stepped	Piece
MX2	015,00	1	2	3	75	75	UNLIMITED	MK3	ZS 25 Ø25 h6 x 56	ZU 40 Ø40 h6 x 70 x Ø26	-0,40 +0,10	-0,40 +0,05	500112	500311	5
	016,00														
	017,00														
	018,00														6
	019,00														
	020,00														
	021,00														
	022,00														7
	023,00														
	024,00														

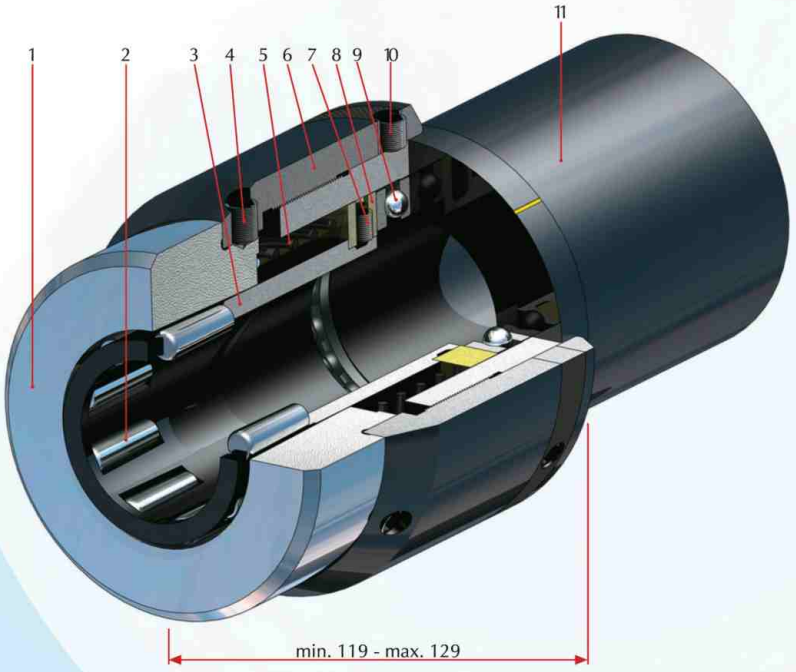
All Dimensions in mm. AF: Automatic Feeding (Self Feeding) MF: Machine Feeding

Recommended Machining Parameters

Burnishing allowance : ~ +0,01 to +0,02 mm
Pre-machining : Precision lathening or grinding
Pre-machining roughness : R_z = 5-15 µm
Coolant : Oil emulsion or cutting oil

Diameter Range (mm)	Revolution (rev/min)	Feeding (mm/rev)
25,00-31,00	1000	1.05
32,00-38,00	840	1.05
39,00-49,00	650	1.35

MX3-040,00-3-100-MK4



1 Cone
2 Roller
3 Cage
4 Screw
5 Spring
6 Housing
7 Screw
8 Frame ring
9 Ball bearing
10 Screw
11 Shank

STANDARD TYPE

Order Sample																
Tool Body	Diameter	Process Type			Rolling Length			Tool Shank			Setting Range		Roller			
		Plain		Stepped				Morse Taper	Cylindrical				Roller Number		Quanlity	
		AF	MF	MF	MK	ZS	ZU	MK	ZS	ZU	Plain	Stepped	Plain	Stepped	Piece	
MX3	025,00	1	2	3	100	100	UNLIMITED	MK4	ZS 40 Ø40 h6 x 70	ZU 80 Ø80 h6 x 90 x Ø50	-0,40 +0,10	-0,40 +0,05	500109	500307	7	
	038,00															
	039,00														9	
	049,00															

All Dimensions in mm. AF: Automatic Feeding (Self Feeding) MF: Machine Feeding (Not-self Feeding)

External Roller Burnishing Tools

Type MX For Cylindrical Shafts

Plain shaft between Ø50 - Ø110 mm
Stepped shaft between Ø50 - Ø110 mm

Recommended Machining Parameters

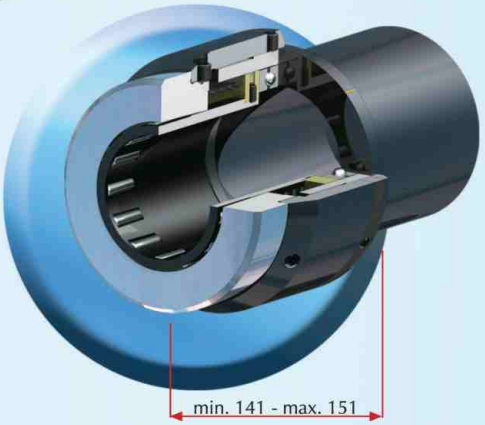
Burnishing allowance : ~ +0,01 to +0,02 mm
Pre-machining : Precision lathening or grinding
Pre-machining roughness : R_z = 5-15 µm
Coolant : Oil emulsion or cutting oil

Diameter Range (mm)	Revolution (rev/min)	Feeding (mm/rev)
50,00-51,00	620	1.35
52,00-69,00	460	1.65
70,00-85,00	370	1.95
86,00-95,00	330	1.35
96,00-110,00	290	1.65

MX4-070,00-3-100-MK4

between Ø50 - Ø85 mm

between Ø86 - Ø110 mm



1 Cone
2 Roller
3 Cage
4 Screw
5 Spring
6 Housing
7 Screw
8 Frame ring
9 Ball bearing
10 Screw
11 Shank

STANDARD TYPE

Order Sample															
Tool Body	Diameter	Process Type			Rolling Length			Tool Shank			Setting Range		Roller		
		Plain		Stepped				Morse Taper	Cylindrical				Roller Number		Quanlity
		AF	MF	MF	MK	ZS	ZU	MK	ZS	ZU	Plain	Stepped	Plain	Stepped	Piece
MX4	050,00	1	2	3	100	100	UNLIMITED	MK4	ZS 40 Ø40 h6 x 70	ZU 110 Ø110 h6 x 110 x Ø87	-0,40 +0,10	-0,40 +0,05	500109	500307	9
	051,00														
	052,00														11
	069,00														
	070,00														13
	085,00														
MX5	086,00				115	115		MK5	ZS 50 Ø50 h6 x 80	ZU 150 Ø150 h6 x 120 x Ø112			500107	500306	9
	095,00														
	096,00														11
	110,00														

All Dimensions in mm. AF: Automatic Feeding (Self Feeding) MF: Machine Feeding (Not-self Feeding)