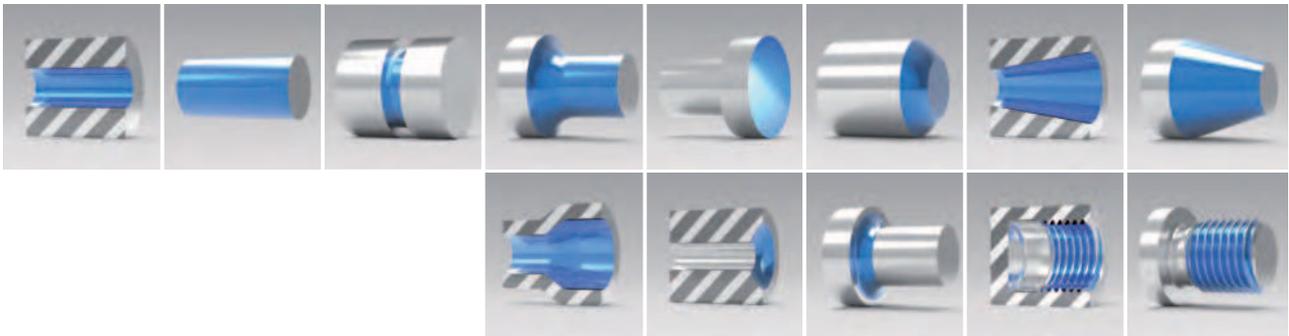


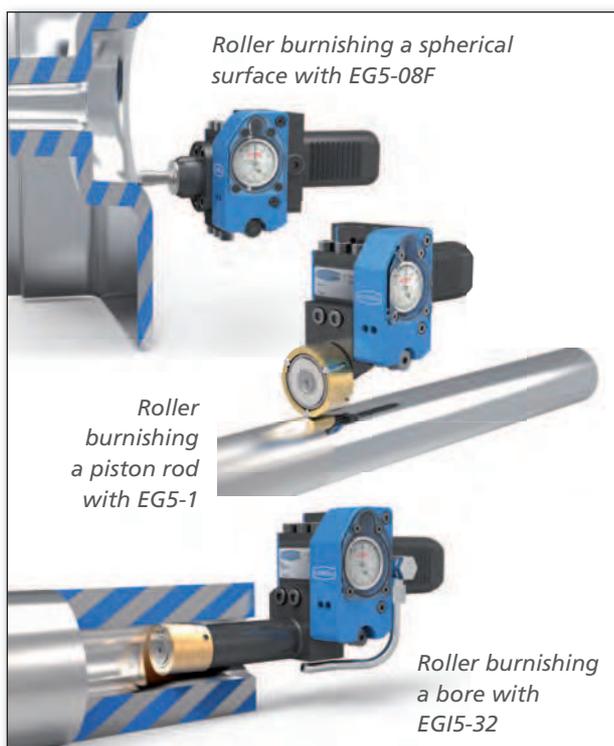
Single-roller Mechanical Tools



ECOROLL's mechanical tools with single rollers are generally used for roller burnishing. These tools can be used to machine a wide variety of complex contours, such as fillets and grooves, as well as cylindrical and tapered external surfaces or bores.

These tools are classified into three series: EG, EF and FAK. The EG series includes tool types EG5, EG14, EG45 and EG90, which are suitable for use in the machining of cylindrical outer surfaces and bores, tapered bores, end faces and fillets. The tools in the EF and FAK series are used to deep roll fillets and thread root radii.

Single-roller tools consist of a tool body, a burnishing head and a tool shank, which is equipped with a spring assembly with no play, low friction and progressive action. In the normal version, the tool body contains a dial gauge that indirectly indicates the spring force. A measurement system for transmitting the spring force values by cable or wireless communication to an external display is available in special versions. The burnishing head is affixed to the spring-loaded section of the tool body.



EG5



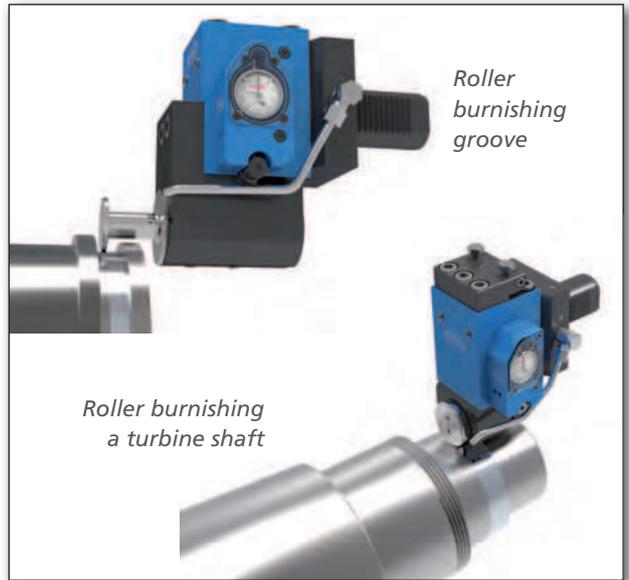
EG14



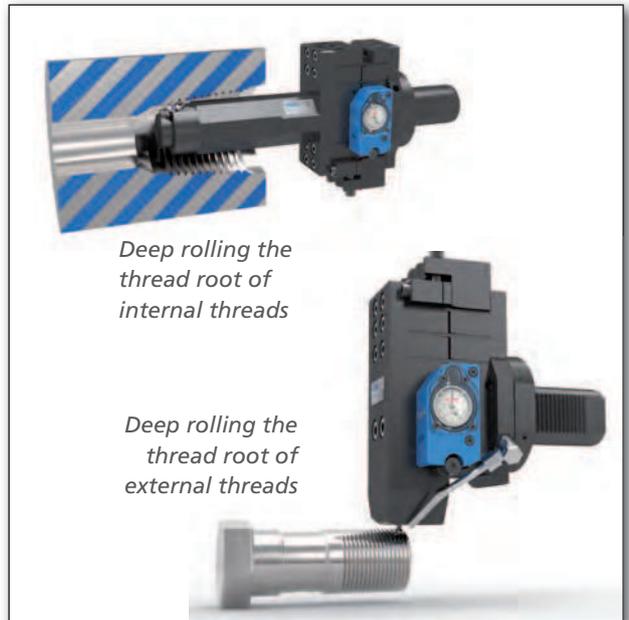
EG45



EF45



EG90

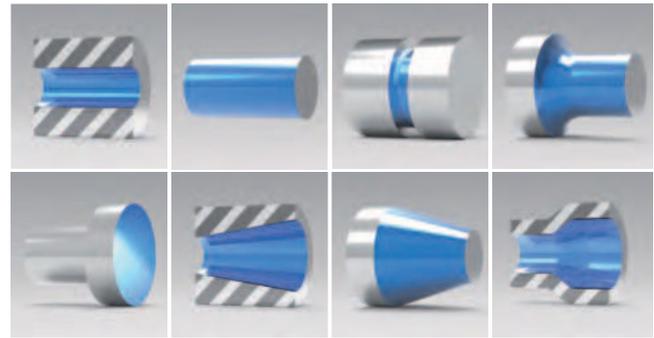


EF90

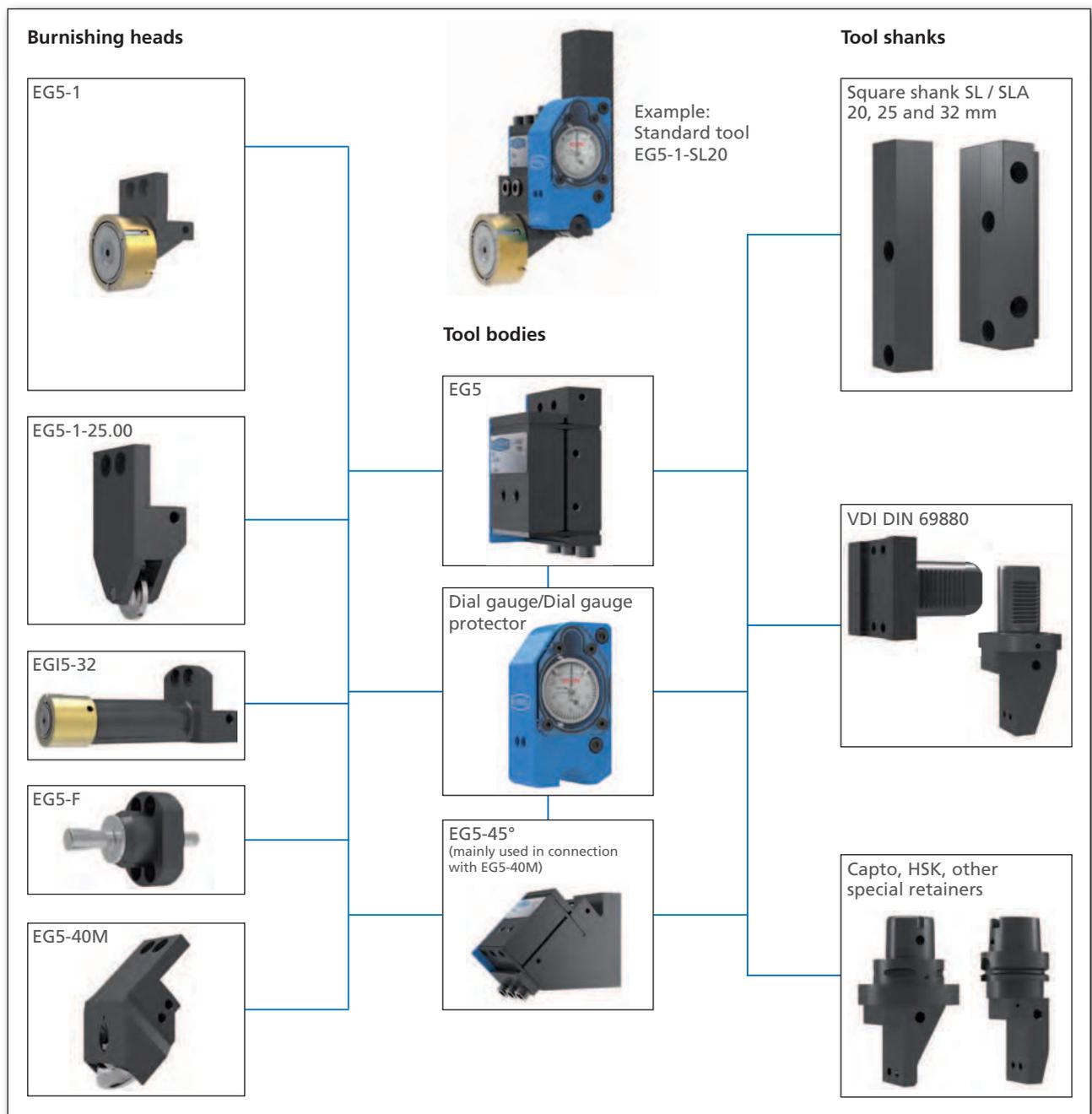


FAK

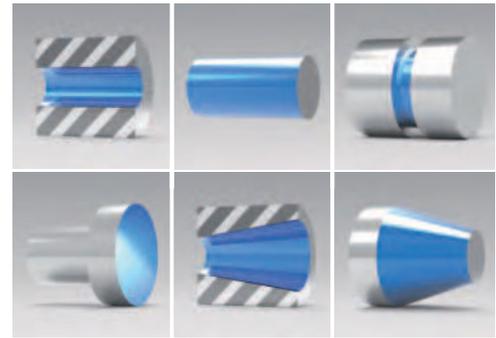
Type EG5: Modular system for universal application



- EG5: Cost-effective roller burnishing of any linear, rotationally symmetric surfaces of specified dimensions.
- For contours, transition radii and groove flanks: \varnothing of 8.5 mm and larger.
- For external surfaces (cylindrical or tapered), end faces (external or internal) and bores (cylindrical or tapered): \varnothing of 55 mm and larger.



Type EG5: For external surfaces, end faces and bores



Features

- For use on CNC-controlled or conventional lathes.
- Complete processing in one setting.
- Can achieve a surface quality of $R_z < 1 \mu\text{m}$ / $R_a \leq 0.2 \mu\text{m}$.
- Machines all metal materials up to a tensile strength of 1400 N/mm^2 and a maximum hardness of $\text{HRC} \leq 45$.
- Symmetrical tool design allows either right or left hand operation.
- Feed in the direction of the arrow label on the tool.
- Rotation in either direction.
- Included with delivery: two replacement rollers installed in the cage.

Advantages

- Short work cycle, changeover and auxiliary process time eliminated.
- No dust or residue.
- Requires minimal lubrication (oil or emulsion).
- Adjustable support positioning enables infinitely variable burnishing force.
- Measurement of burnishing force enables consistent, controlled work result.
- Unrestricted roller face for roller burnishing shoulders and other edges.
- Guided roller head moves with no play and very low friction.
- Wear parts are easy to exchange.

Design

- Tools consist of a tool body, a burnishing head and a tool shank, which is equipped with a spring assembly with no play, low friction and progressive action.
- In the normal version, the tool body contains a dial gauge that indirectly indicates the spring force. A measurement system for transmitting the spring

force values by cable or wireless communication to an external display is available in special versions.

- The burnishing head is affixed to the spring-loaded section of the tool body.
- Burnishing head components: Roller (in a cage) and support roller (with large-scale needle bearing).
- Fixed roller clearance angle α .

Parameters

- Maximum circumferential speed: 150 m/min.
- Maximum feed rate: 0.3 mm/rev.
- Maximum burnishing force: 3000 N.



Ordering

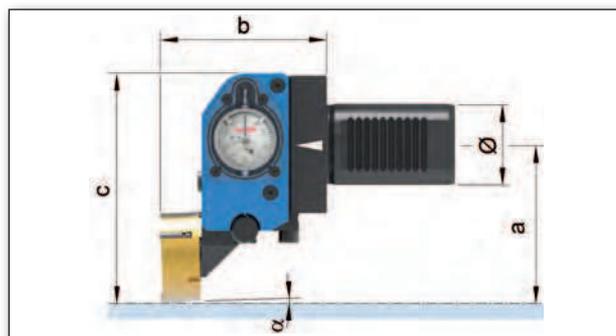
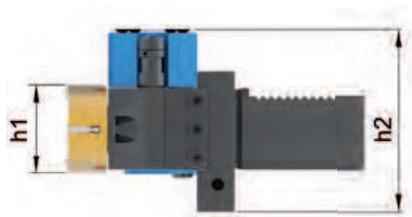
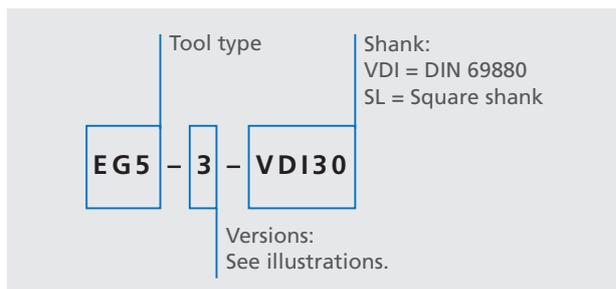
The following information is required:

1. Shank diameter.
2. Application:
Available in three versions (various burnishing heads).
Special version for machining tapers by request.
Version 1: Machining bores and cylindrical surfaces.

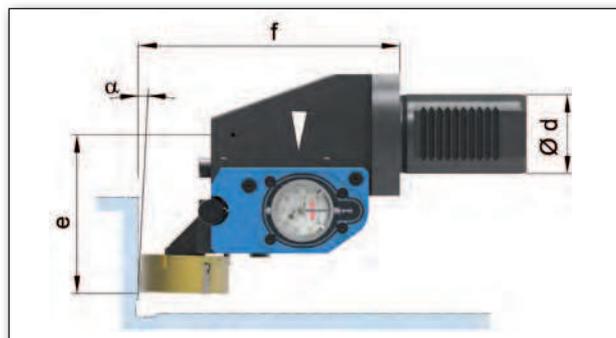
Bore depth (mm)	<- 16	> 66
Smallest bore diameter (mm)	55	140

- Version 2: Machining end faces.
Version 3: Machining cylindrical surfaces (feed toward tailstock).

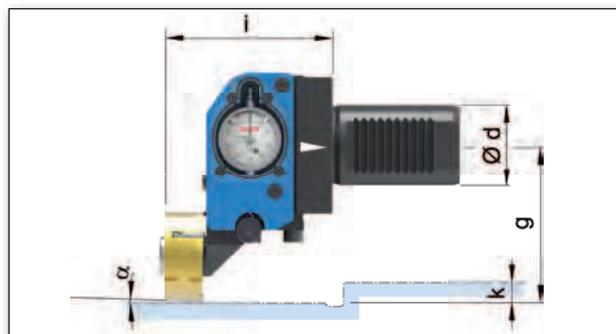
The tool designation is generated as follows:



EG5, Version 1, Cylindrical surfaces



EG5, Version 2, End faces

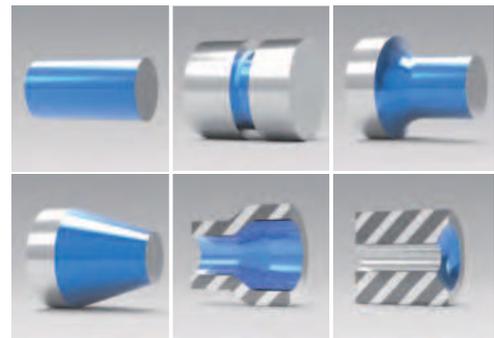


EG5, Version 3, Cylindrical surfaces, Feed toward tailstock

Tool body	VDI shank: Ø d ¹⁾ (mm)	Height (mm)		Square shank (mm)	Variable dimensions per version (mm)							
		h ₁	h ₂		1			2		3		
					a	b	c	e	f	g	i	k
EG5	20	45	67	16	78	82	120	64	111	78	84	10
	30		69									
	40		82					25	112			

Note: ¹⁾ Alternative sizes.

Type EG5: For contours, transition radii and groove flanks, Ø of 8.5 mm and larger



Features

- For use on CNC-controlled or conventional lathes.
- Complete processing in one setting.
- Can achieve a surface quality of $R_z < 1 \mu\text{m}$ / $R_a \leq 0.2 \mu\text{m}$.
- Machines all metal materials up to a tensile strength of 1400 N/mm² and a maximum hardness of HRC \leq 45.
- Symmetrical tool design allows either right or left hand operation.
- Feed in the direction of the arrow label on the tool.
- Rotation in either direction.

Advantages

- Short work cycle, changeover and auxiliary process time eliminated.
- No dust or residue.
- Minimum lubrication requirements (oil, emulsion)
- Adjustable support positioning enables infinitely variable burnishing force.
- Measurement of burnishing force enables consistent, controlled work result.
- Unrestricted roller face for roller burnishing shoulders and other edges.
- Wear parts are easy to exchange.

Design

- Tools consist of a tool body, a burnishing head and a tool shank, (equipped with a spring assembly with no play, low friction and progressive action).
- The tool body contains a dial gauge that indirectly indicates the spring force. Special version: with a measurement system for transmitting the spring force values by cable or wireless communication to an external display.
- The burnishing head is affixed to the spring-loaded section of the tool body. Burnishing head components: Roller (in a cage) and support roller (with large-scale needle bearing).
- Fixed roller clearance angle α .

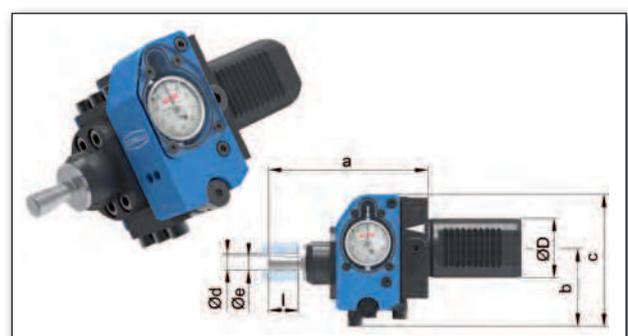
Parameters

Tool	Circumferential speed	Feed
EG5-08F	80-100 m/min.	0.1-0.3 mm/rev.
EG15-32	80-150 m/min.	0.1-0.3 mm/rev.
EG15		
EG5-40M	100-200 m/min.	0.1-0.5 mm/rev.
EG5-40M-45°		

Ordering

The following information is required:

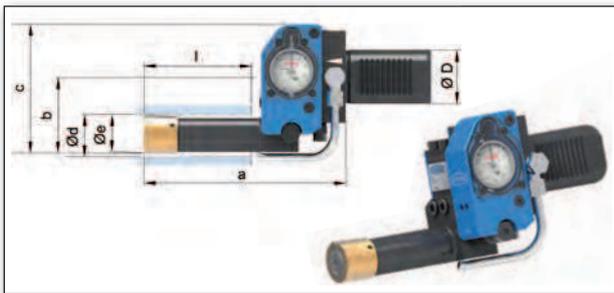
1. Shank diameter.
2. Application:
 - Available in four versions (various burnishing heads).
 - Version 1 (EG5-08F, EG5-11F): Groove flanks (face or circumference).
 - max. burnishing depth: 20 mm for bores of 8.5 mm and larger (EG5-08F).
 - max. burnishing depth: 30 mm for bores of 11 mm and larger (EG5-11F).
 - The tool body's spring assembly is positioned parallel to the workpiece surface.
 - Burnishing head with floating roller is affixed to the spring-loaded section of the tool body.
 - For machining bores and cylindrical surfaces.



EG5-08F and EG5-11F

Version 2 (EG15-32): For bores of $\varnothing 32$ mm and larger.

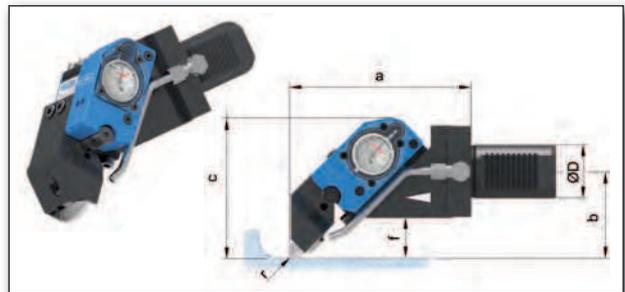
- max. burnishing length: 80 mm.
- The tool body's spring assembly is positioned parallel to the workpiece surface.
- Burnishing head is affixed to the spring-loaded section of the tool body.
- The burnishing head consists of both a cage that guides the roller and a support roller with a large-scale needle bearing.



EG15-32

Version 4 (EG5-40M-45°): Cylindrical surfaces with connecting radii up to the end face.

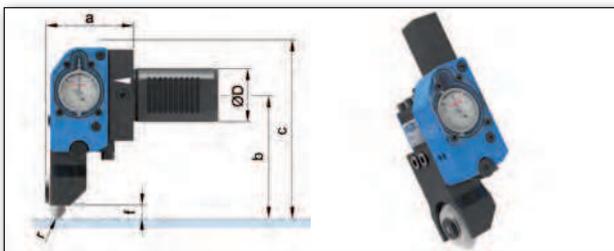
- Suitable for use with low and mid-level strength materials.
- The tool body's spring assembly is positioned at a 45° angle to the workpiece surface.
- Burnishing head with an extremely narrow roller is affixed to the spring-loaded section of the tool body.
- The roller is equipped with an integrated four-point bearing.



EG5-40M-45°

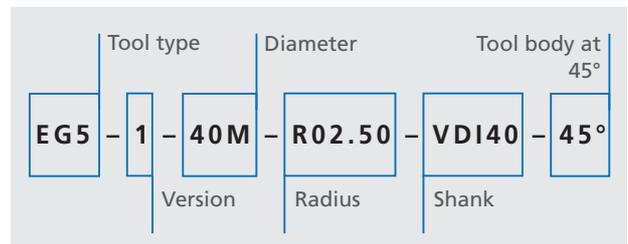
Version 3 (EG5-40M): External surfaces with contours.

- Suitable for use with low and mid-level strength materials.
- The tool body's spring assembly is positioned parallel to the workpiece surface.
- Burnishing head with an extremely narrow roller is affixed to the spring-loaded section of the tool body.
- The roller is equipped with an integrated four-point bearing.



EG5-40M

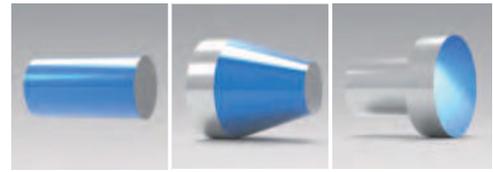
The tool designation is generated as follows:



Tool	VDI shank: $\varnothing d$ (mm)	Height (mm)		Square shank (mm) p ¹⁾	Main dimensions (mm)						
		h ₁	h ₂		a	b	c	d	e	f	l
EG5-08F	20, 30, 40	40	67-91	20	106	53	95	8,5 / 11,5	84		20 / 30
	117										
EG15-32	20, 30, 40	50		25	150	58	99	32	24		80
	161										
EG5-40M	20, 30, 40	50	67-91	32	66	92	134			10	10
	77										
EG5-40M-45°	20, 30, 40	50			136	65	115			30	30
	147										

Note: ¹⁾ Alternative sizes.

Type EG5T: Cost-effective roller burnishing of any linear, rotationally symmetric surfaces of specified dimensions



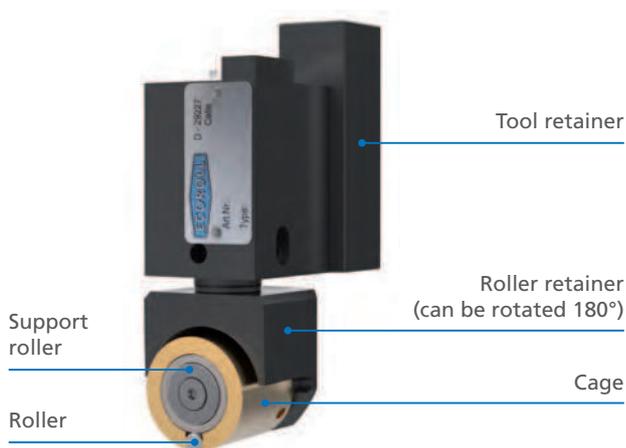
Features

- For use on CNC-controlled or conventional lathes.
- Also suitable for use on long bed lathes.
- Can achieve a surface quality of $R_z < 1 \mu\text{m}$ / $R_a \leq 0.2 \mu\text{m}$.
- Machines all metal materials up to a tensile strength of 1400 N/mm² and a maximum hardness of HRC \leq 45.

Advantages

- Versatile, compact, inexpensive.
- Short cycle time.
- Complete processing in one setting; changeover and auxiliary process time eliminated.

Design



Parameters

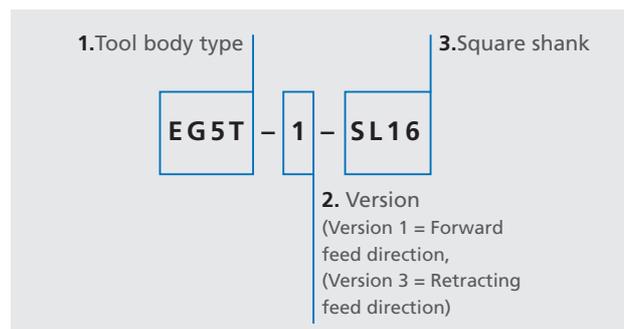
- max. circumferential speed: 150 m/min.
- max. feed rate: 0.3 mm/rev.
- max. burnishing force: 2100 N.

Ordering

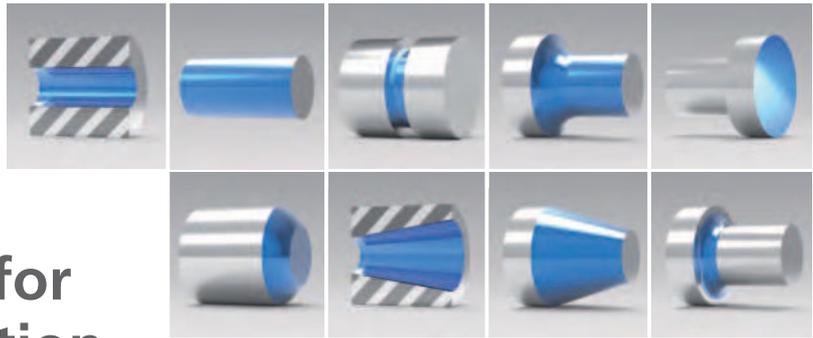
The following information is required:

1. Tool retainer.
2. Component drawing.
3. Square shank size
(available thicknesses: 12, 16, 20 mm).

The tool designation is generated as follows:



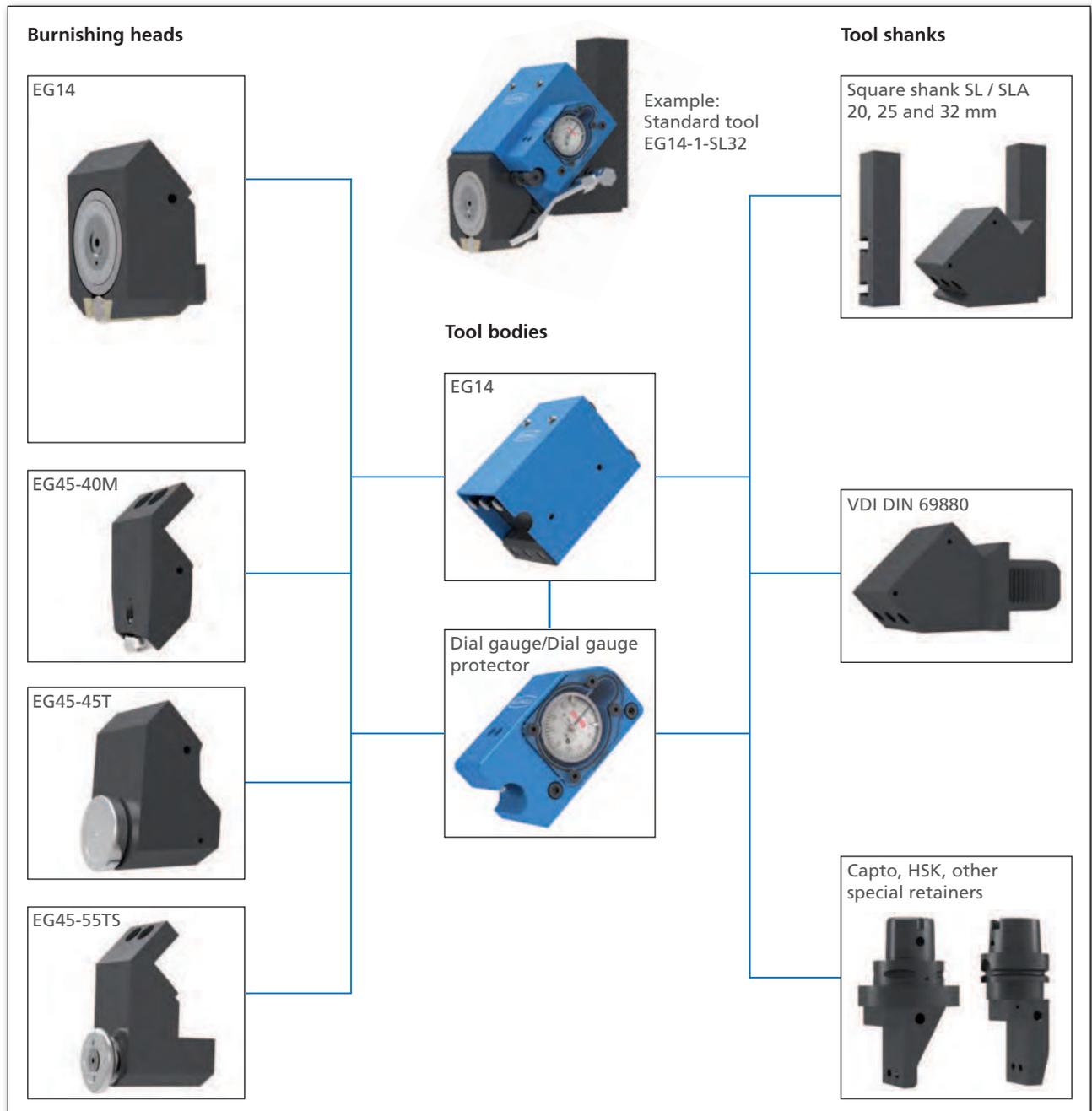
Types EG14 and EG45: Overview



Modular system for universal application

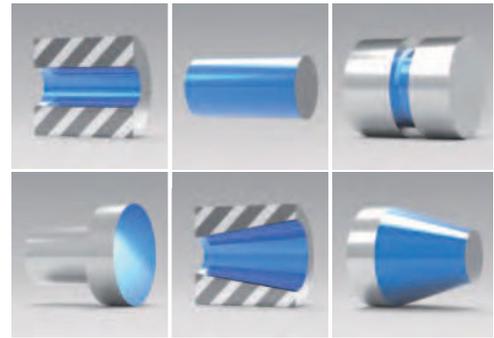
Tool types EG14 and EG45 have the same tool body.
Depending on the application, the tools are classified as

EG14 or EG45; the differences between these tools include
the burnishing head and the shank.



* Note: Depending on the burnishing head and the shank, tools are classified as EG45 or EG14. The tool body is always EG14.

Type EG14: Machining external surfaces and cylindrical and tapered bores



Features

- Machines cylindrical and tapered external surfaces, external or internal end faces and cylindrical and tapered bores (special version required for machining tapered surfaces).
- For use on CNC-controlled or conventional lathes.
- Complete processing in one setting.
- Can achieve a surface quality of $R_z < 1 \mu\text{m}$ / $R_a \leq 0.2 \mu\text{m}$.
- Machines all metal materials up to a tensile strength of 1400 N/mm^2 and a maximum hardness of $\text{HRC} \leq 45$.
- Symmetrical tool design allows either right or left hand operation.
- Rotation in either direction.

Advantages

- Short work cycle, changeover and auxiliary process time eliminated.
- No dust or residue.
- Requires minimal lubrication (oil or emulsion).
- Adjustable support positioning enables infinitely variable burnishing force.
- Measurement of burnishing force enables consistent, controlled work result.
- Unrestricted roller face for roller burnishing shoulders and other edges.
- Wear parts are easy to exchange.

Design

- Tools consist of a tool body, a burnishing head and a tool shank, which is equipped with a spring assembly with no play, low friction and progressive action.
- In the normal version, the tool body contains a dial gauge that indirectly indicates the spring force. A measurement system for transmitting the spring

force values by cable or wireless communication to an external display is available in special versions.

- The burnishing head is affixed to the spring-loaded section of the tool body.
- Fixed roller clearance angle α .



Parameters

- Maximum circumferential speed: 200 m/min.
- Maximum feed rate: 0.5 mm/rev. feed in the direction of the arrow label on the tool.
- Maximum burnishing force: 10,000 N.

Ordering

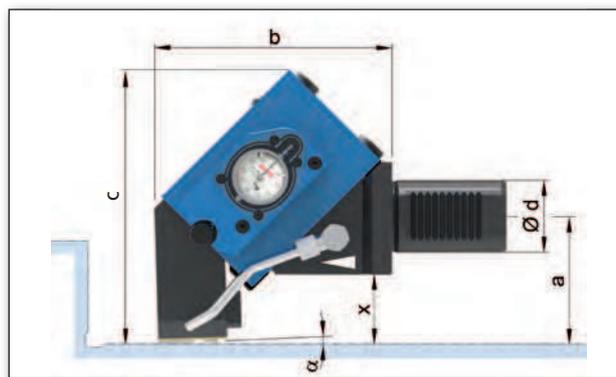
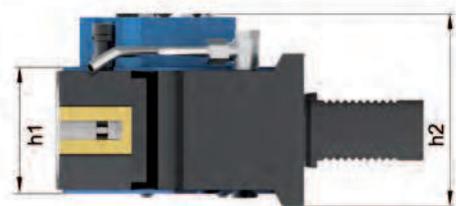
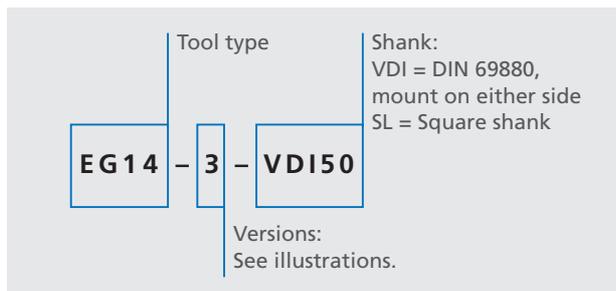
The following information is required:

1. Shank diameter.
2. Application:
 - Available in three versions (various burnishing heads).
 - Special version for machining tapers by request.
 - Version 1: Machining bores and cylindrical surfaces.

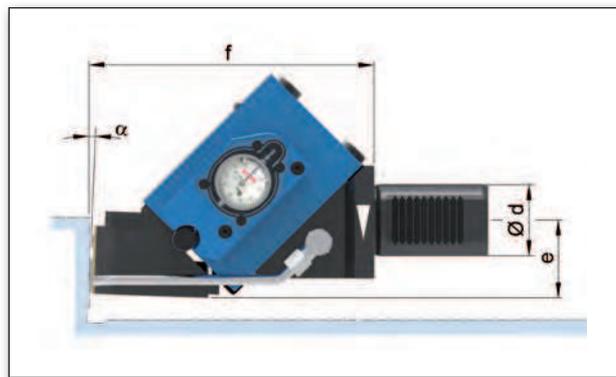
Bore depth (mm)	<- 25	<- 50	> 50
Smallest bore diameter (mm)	120	140	180

- Version 2: Machining end faces.
- Version 3: Machining cylindrical surfaces (feed toward tailstock).

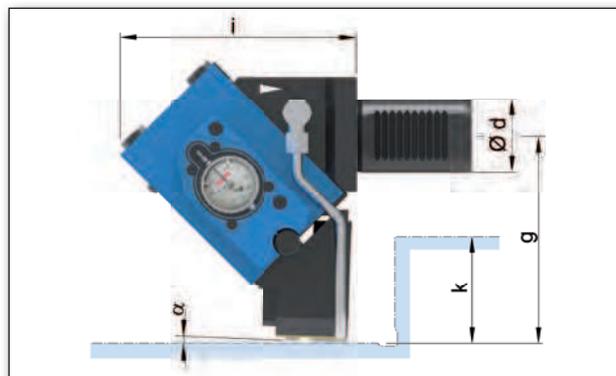
The tool designation is generated as follows:



EG14, Version 1, Cylindrical surfaces



EG14, Version 2, End faces

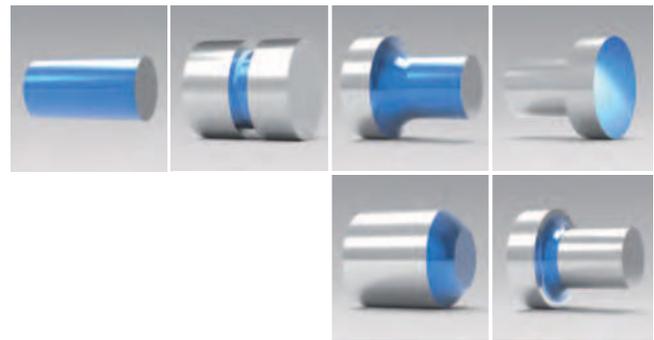


EG14, Version 3, Cylindrical surfaces, Feed toward tailstock

Tool body	VDI shank: $\varnothing d^{1)}$ (mm)	Height (mm)		Square shank (mm)	Variable dimensions per version (mm)								
		h_1	h_2		1				2		3		
				$p^{1)}$	a	b	c	x	e	f	g	i	k
EG14	40	63	81	25 or 32	71	131	152	43	40	159	113	127	50
	50		45										
	60		50						166				

Note: ¹⁾ Alternative sizes.

Type EG45: Machining transition radii, fillets and contours



Features

- For use on CNC-controlled or conventional lathes with hydraulic duplicators.
- Complete processing in one setting.
- Machines all metal materials up to a tensile strength of 1400 N/mm² and a maximum hardness of HRC ≤ 45.
- Can achieve a surface quality of R_z < 1 μm / R_a ≤ 0.2 μm).

Advantages

- Eliminates micro-notches.
- Induces compressive stresses and cold working.
- Short work cycle, changeover and auxiliary process time eliminated.
- No dust or residue.
- Requires minimal lubrication (oil or emulsion).
- Infinitely variable burnishing force.
- Measurement of burnishing force enables consistent, controlled work result.
- Wear parts are easy to exchange.

Design

- Tools consist of a tool body, a burnishing head and a tool shank, which is equipped with a spring assembly with no play, low friction and progressive action.
- In the normal version, the tool body contains a dial gauge that indirectly indicates the spring force.
- The burnishing head is affixed to the spring-loaded section of the tool body.



Parameters

- Maximum circumferential speed: 300 m/min.
- Maximum feed rate: 1 mm/rev.

Ordering

The following information is required:

1. Shank diameter.

2. Component geometry:

EG45-40M: Machines cylindrical surfaces with connecting radii up to the end face.

- Suitable for use with low and mid-level strength materials.
- Equipped with an extremely narrow roller; due to its compact design, however, this roller bearing cannot withstand high loads.
- Up to 4,000 N.

EG45-45T: Machines cylinders or end faces with connecting transition radii up to 75°.

- High burnishing force; suitable for high strength materials.
- Floating rollers.

EG45-45F: Machines convex and concave shapes in a plunge-in or feed process.

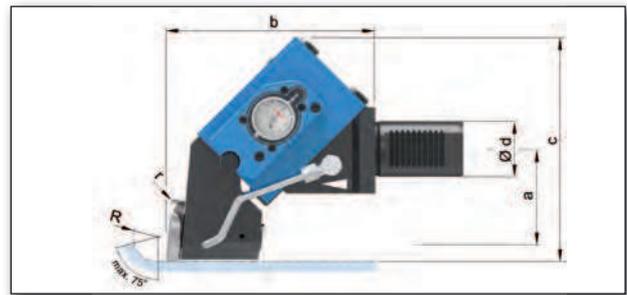
- Special version with specially shaped, floating roller.

3. Version 3: Available in three versions (various burnishing heads).

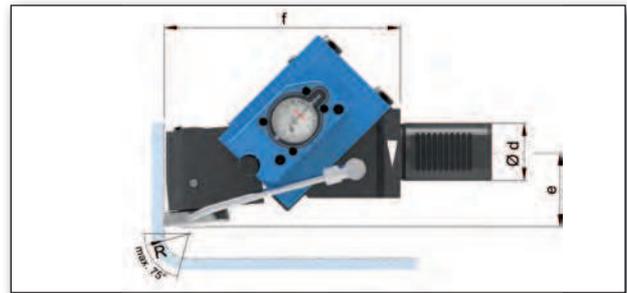
Version 1: Machines cylinder surfaces (including connecting fillets).

Version 2: Machines faces on the chuck side (including connecting fillets).

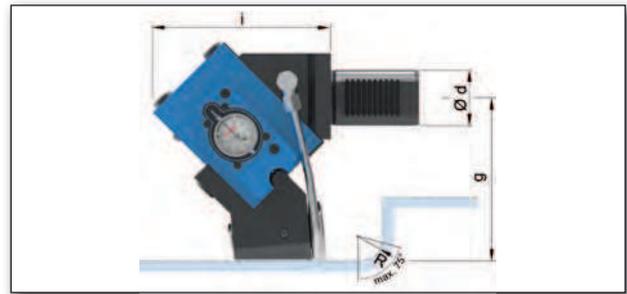
Version 3: Machines cylindrical surfaces (feed toward tailstock).



EG45, Version 1, Cylindrical surfaces



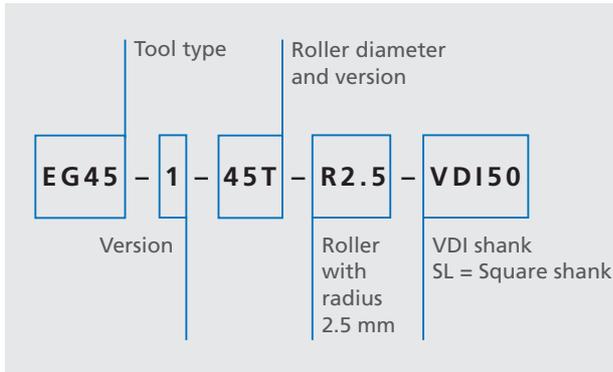
EG45, Version 2, End faces



EG45, Version 3, Cylindrical surfaces,
Feed toward tailstock

Tool	Workpiece radius R can be machined with roller radius r (mm)					
	0.8	1.2	1.6	2.5	4	6.3
EG45-40M	0,8 - 3	1,2 - 5	2,5 - 8	4 - 12	6 - 40	
EG45-45T	0,8 - 3	1,2 - 5	2 - 8	3 - 12	5 - 20	8 - 63
EG45-45F	Special rollers adapted for workpiece contour					

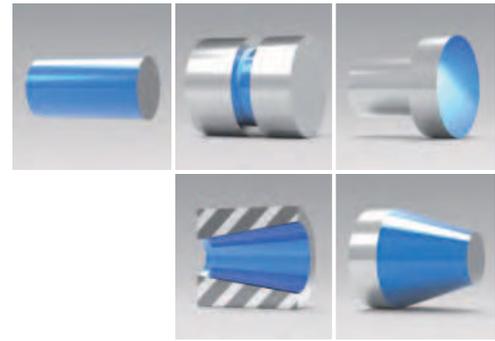
The tool designation is generated as follows:



Tool	VDI shank: Ø d ¹⁾ (mm)	Height (mm)		Square shank (mm)	Variable dimensions per version (mm)							
					1			2		3		
		h ₁	h ₂	p ¹⁾	a	b	c	e	f	g	i	k
EG45-45T	40, 50	63	81 -110	25 or 32	81	149	162	52	163	118	127	48
	60					156			170		134	
EG45-40M	40, 50	63	81 -110	25 or 32	69	129	150	52	163	108	126	48
	60					136					170	

Note: ¹⁾ Alternative sizes.

Type EG90: Cylinders, internal and external tapers and end faces



Features

- For machining any linear, rotationally symmetric surfaces of specified dimensions, together with connecting radii or arched radii, such as cylinders, external or internal tapers or end faces.
- Any metal material that can be plastically formed, with a hardness up to 45 HRC, can be roller burnished.
- Starting with a finished surface, a surface roughness of $R_z < 1 \mu\text{m}$ can be achieved in one pass.

Advantages

- Complete processing in one setting following the cutting process on a lathe or machining center.
- Short cycle time when compared with processes that remove material.
- Designed for use on CNC-controlled machine tools, but the same advantages can be achieved on conventional lathes.
- The floating burnishing roller positioned in the feed direction is particularly advantageous because it enables machining right up to shoulders and other difficult edges.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version of the tool is equipped with a measuring device.
- Special versions have a position sensor.
- Other components include a roller head and roller retainer.



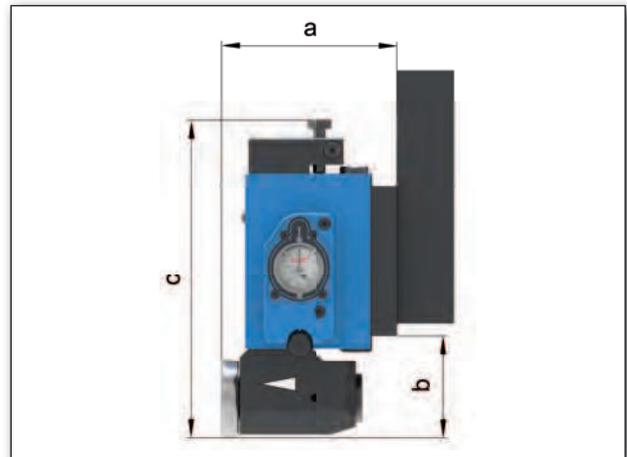
Parameters

- max. circumferential speed: 250 m/min.
- max. feed rate: 0.5 mm/rev.
- max. burnishing force: 10,000 N.

Ordering

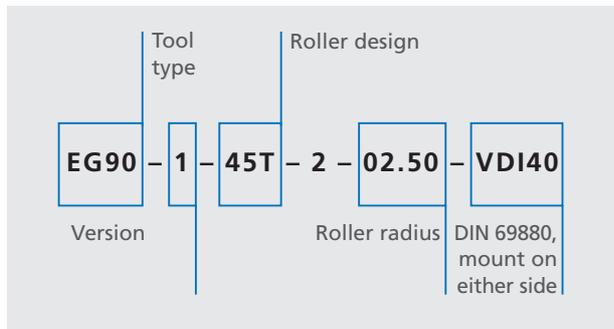
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Application:
 - Available in two versions (various burnishing heads).
 - Special version for internal surfaces by request.
 - Version 1: Machines external contours and bores with \varnothing 200 mm and larger (mounted on disc type turret).
 - Version 2: Machines external contours and bores (mounted on disc type turret or vertical turret).

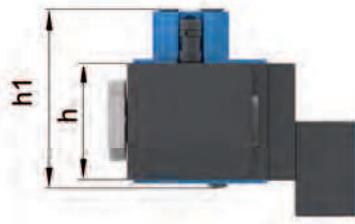


EG90-1-45T

The tool designation is generated as follows:

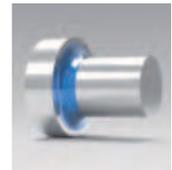


Note: SL= Square shank, special roller designs and other tool retainers available.



Tool	max. bur- nishing force	max. machining radius	max. tensile strength	Machining diameter (mm)	Main dimensions (mm)					Shank \varnothing d (mm)
	(kN)	(mm)	(N/mm ²)		a	b	c	h	h ₁	
EG90	20	1.6	1400	≥ 80	99	60	181	63	98	\geq VDI 40

Type EF45: Deep rolling fillets



Features

- For machining fillets on turned parts, such as shafts, screws, tension rods, torsion rods.
- Deep rolling in a plunge-in process.
- One floating roller.
- Burnishing force monitoring adjusted for the radius of the fillet using a dial gauge or sensor.

Advantages

- Can be used with conventional or CNC-controlled lathes.
- Complete processing in one setting.
- Allows either right or left hand operation.
- Rotation in either direction.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version is equipped with a dial gauge that indirectly indicates the spring force. Special versions can include an inductive measuring system for external display of the spring force.
- Burnishing head with roller is affixed to the spring-loaded section of the tool body. The springs allow the roller retainer to move elastically when affected by radial or axial burnishing forces acting upon the tool retainer.
- A cage holds the roller, which is supported by a support body with large-scale needle bearings.



Parameters

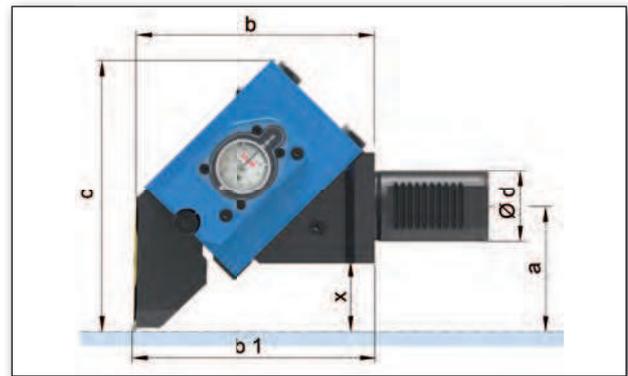
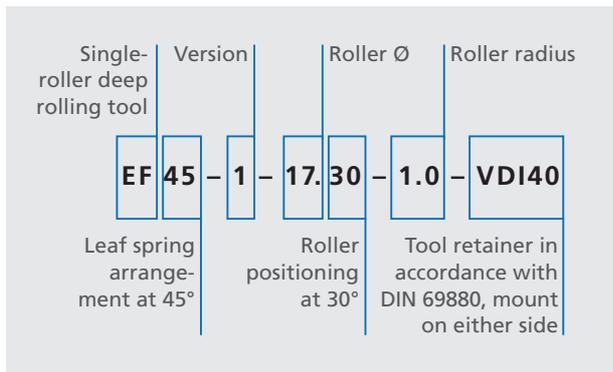
- max. circumferential speed: 20 m/min.
- max. burnishing force: 20 kN.

Ordering

The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Fillet radius.
4. Material properties.

The tool designation is generated as follows:



EF45

Note: SL = Square shank; special shanks by request.

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter	Main dimensions (mm)					Shank Ø d (mm)
	(kN)	(mm)	(N/mm ²)		a	b	c	b ₁	x	
EF45-17	10	1.2	1400	10 - 250	71	133	152	130	38	≥ VDI 40
EF45-21	20	2.5		≥ 40						

Type EF90: Deep rolling thread root radii on external threads



Features

- Deep rolling thread root radii (external).
- Deep rolling in the machine's thread cycle.
- Axially floating rollers compensate for minor positioning errors.
- Automatic roller angle setting for various pitches.
- Machines right-hand and left-hand threads without conversion.
- Roller adapted to the thread root radius of the workpiece.
- Integrated pre-loading mechanism, no further X-axis adjustment required.

Advantages

- Can be used with conventional or CNC-controlled lathes.
- Complete processing in one setting.
- Allows either right or left hand operation.
- Rotation in either direction.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version is equipped with a dial gauge that indirectly indicates the spring force. Special versions can include an inductive measuring system for external display of the spring force.
- Burnishing head with roller is affixed to the spring-loaded section of the tool body. The springs allow the roller retainer to move elastically when affected by radial or axial burnishing forces acting upon the tool retainer.
- The roller is suspended within the roller retainer with a slide bearing bolt.
- The roller mount swings such that the roller automatically adjusts to the thread pitch. A set screw limits the roller's pivoting angle.



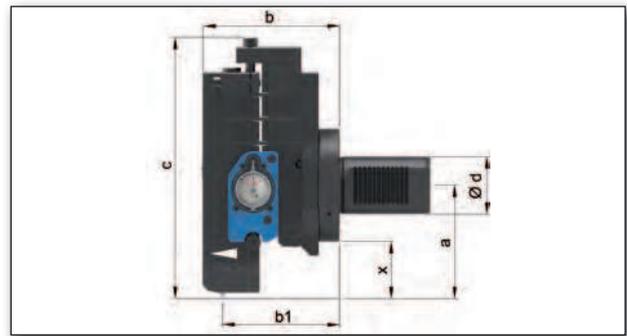
Parameters

- max. circumferential speed: 20 m/min.
- max. burnishing force: 15 kN.

Ordering

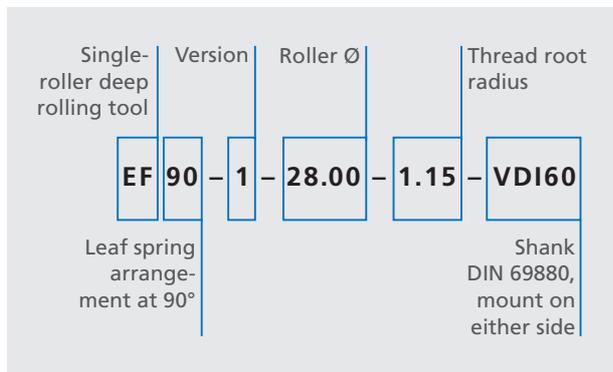
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.



EF90

The tool designation is generated as follows:



Note: SL = Square shank; special shanks by request.

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter (mm)	Main dimensions (mm)					Shank Ø d (mm)
	(kN)	(mm)	(N/mm ²)		a	b	c	b ₁	x	
EF90	20	1.6	1400	≥ 40	100	120	228	103	45	≥ VDI 40

Type HF90: Deep rolling thread root radii on external threads



Features

- Deep rolling of dynamically loaded external threads at the thread root (e.g. metric ISO threads or Whitworth threads).
- Hydraulic deep rolling tool (HGP series hydraulic unit available separately).
- Deep rolling in the machine's thread cycle.
- Automatic roller angle setting for various thread pitches.
- For use on CNC-controlled lathes.
- Any metal material that can be plastically formed, up to a tensile strength of 1400 N/mm² or a yield strength of 1200 N/mm² can be roller burnished.

Advantages

- Complete processing in one setting.
- Axially floating rollers compensate for minor positioning errors.

Design

- HG90 tools consist of a basic tool body with a hydraulic following system and a deep rolling head.
- Depending on the version, the tool can be delivered with any of a variety of shanks (e.g. HSK, Capto, VDI or square).



Parameters

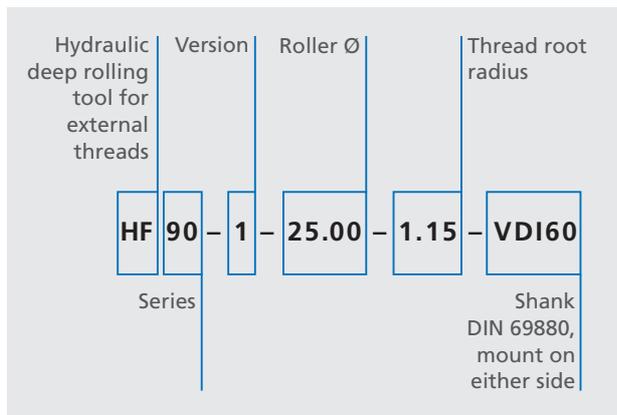
- max. circumferential speed: 20 m/min.
- max. burnishing force: 20 kN.

Ordering

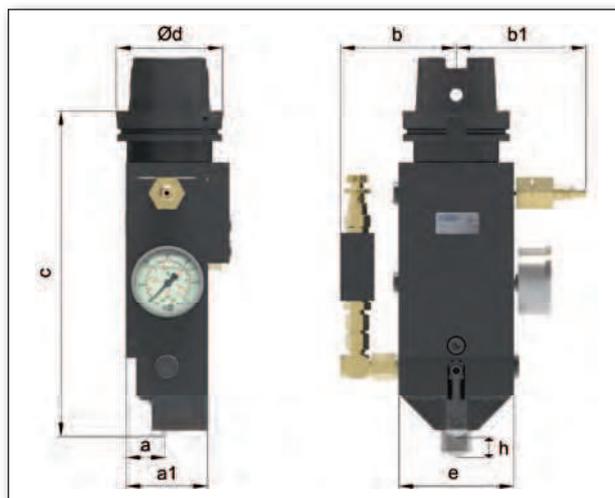
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.

The tool designation is generated as follows:



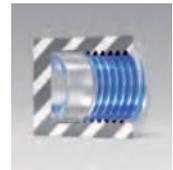
Note: SL = Square shank,
ZS = Straight shank; special shanks by request.



HF90

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter	Main dimensions (mm)						Shank Ø d (mm)	
	(kN)	(mm)	(N/mm ²)		a	a ₁	b	b ₁	c	e		h
HF90	20	2.5	1400	≥ 40	37	77	109	122	311	108	20	≥ VDI 40

Type EFI90: Deep rolling thread root radii on internal threads



Features

- Deep rolling thread root radii (internal).
- Deep rolling in the machine's thread cycle.
- Axially floating rollers compensate for minor positioning errors.
- Automatic roller angle setting for various pitches.
- Machines right-hand and left-hand threads without conversion.
- Roller adapted to the thread root radius of the workpiece.
- Integrated pre-loading mechanism, no further X-axis adjustment required.

Advantages

- Can be used with conventional or CNC-controlled lathes.
- Complete processing in one setting.
- Allows either right or left hand operation.
- Rotation in either direction.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version is equipped with a dial gauge that indirectly indicates the spring force. Special versions can include an inductive measuring system for external display of the spring force.
- Burnishing head with roller is affixed to the spring-loaded section of the tool body. The springs allow the roller retainer to move elastically when affected by radial or axial burnishing forces acting upon the tool retainer.
- The roller is suspended within the roller retainer with a slide bearing bolt. The roller mount swings such that the roller automatically adjusts to the thread pitch. A set screw limits the roller's pivoting angle.



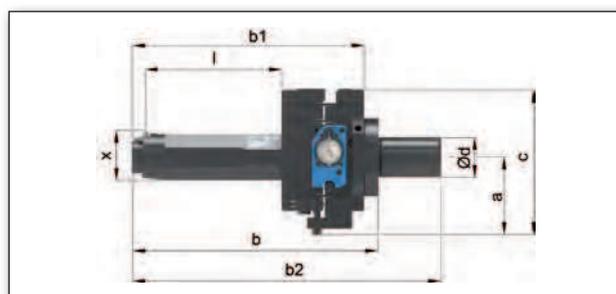
Parameters

- max. circumferential speed: 20 m/min.
- max. burnishing force: 15 kN.

Ordering

The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.



EFI90

The tool designation is generated as follows:

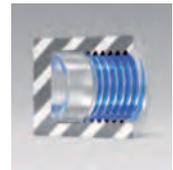
Single-roller deep rolling tool for internal threads	Roller Ø	Thread root radius	
EFI 90	28.00	0.97	VDI60
			Shank DIN 69880, mount on either side

Note: SL = Square shank,

ZS = Straight shank; special shanks by request.

Tool	max. bur-nishing force	max. machining radius	max. tensile strength	Machining diameter	Main dimensions (mm)					Shank Ø d (mm)	
	(kN)	(mm)	(N/mm ²)		a	b	c	b ₁	b ₂		x
EFI90	20	1.6	1400	≥ 80	142	324	229	307		42	≥ VDI 40

Type HFI90: Deep rolling thread root radii on internal threads



Features

- Deep rolling of dynamically loaded internal threads at the thread root (e.g. metric ISO threads, Whitworth threads or conical threads for the oil industry).
- Hydraulic deep rolling tool (HGP series hydraulic unit available separately).
- Deep rolling in the machine's thread cycle.
- The deep rolling force is determined by the hydraulic pressure. The required pressure depends on the size of the thread root radius and the material strength.
- Automatic roller angle setting for various pitches.
- For use on CNC-controlled lathes.
- Any metal material that can be plastically formed, up to a breaking strength of 1400 N/mm² or a yield strength of 1200 N/mm² can be roller burnished.

Advantages

- Complete processing in one setting.
- Axially floating rollers compensate for minor positioning errors.
- No radial force is transferred to the machine because the rollers are offset by 180°. This allows high deep rolling forces to be applied.

Design

- HFI90 tools consist of a basic tool body and a deep rolling head.
- While the tool body remains the same for all of the thread sizes to be machined, the deep rolling head is changed to adapt to the thread size and design.
- The tools are equipped with a modular interface for mounting the tool shanks required by the machine.



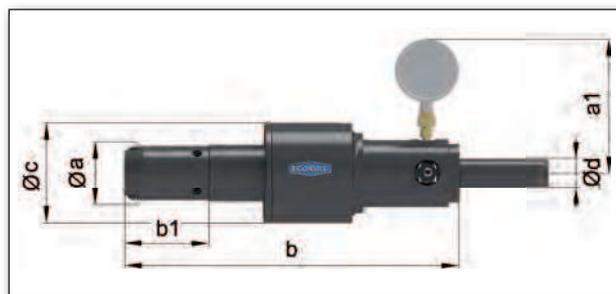
Parameters

- max. circumferential speed: 20 m/min.
- max. burnishing force: 40 kN.

Ordering

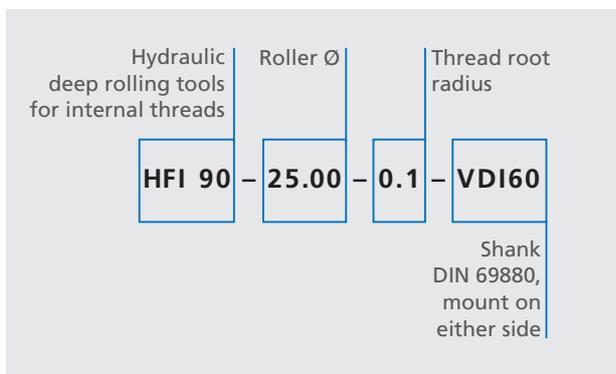
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.



HF190

The tool designation is generated as follows:



Note: ZS = Straight shank; special shanks by request.

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter (mm)	Main dimensions (mm)					Shank Ø d (mm)
	(kN)	(mm)	(N/mm ²)		a	a ₁	b	b ₁	c	
HF190	20	1.6	1400	≥ 80	122	191	404	141	170	≥ VDI 40

Type FA: Deep rolling large radii in thread roots



Features

- Deep rolling of dynamically loaded external threads, such as those used in the oil industry).
- Hydraulic deep rolling tool (HGP series hydraulic unit available separately).
- The set hydraulic pressure determines the deep rolling force. The constant, consistent hydraulic pressure compensates for workpiece tolerances and machine positioning errors, while the deep rolling force remains constant.
- Available deep rolling forces up to 60 kN.
- Any metal material that can be plastically formed, up to a breaking strength of 1400 N/mm² or a yield strength of 1200 N/mm² can be roller burnished.
- Automatic roller angle setting for various pitches.
- Automatic adjustment allows conical threads to be machined as well.

Advantages

- Force-locking version: no deep rolling forces are transferred into the machine tool; due to the C-shaped design, the forces are absorbed by the tool.
- Axially floating rollers compensate for minor positioning errors.

Design

- FA tools consist of a tool retainer, a hydraulic cylinder, the side parts and the lever as well as the upper and lower thread boxes.



Parameters

- max. circumferential speed: 20 m/min.
- max. burnishing force: 60 kN.

Type FAK90: Deep rolling thread root radii on external threads



Features

- Deep rolling thread root radii (external).
- Deep rolling in the machine's thread cycle.
- Axially floating rollers compensate for minor positioning errors.
- Automatic roller angle setting for various pitches.
- Machines right-hand and left-hand threads without conversion.
- Roller adapted to the thread root radius of the workpiece.
- Integrated pre-loading mechanism, no further X-axis adjustment required.

Advantages

- Can be used with conventional or CNC-controlled lathes.
- Complete processing in one setting.
- Allows either right or left hand operation.
- Rotation in either direction.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version is equipped with a dial gauge that indirectly indicates the spring force. Special versions can include an inductive measuring system for external display of the spring force.
- Burnishing head with roller is affixed to the spring-loaded section of the tool body. The springs allow the roller retainer to move elastically when affected by radial or axial burnishing forces acting upon the tool retainer.
- The roller is suspended within the roller retainer with a slide bearing bolt. The roller mount swings such that the roller automatically adjusts to the thread pitch. A set screw limits the roller's pivoting angle.



Parameters

- max. circumferential speed: 20 m/min.
- max. burnishing force: 25 kN.

Ordering

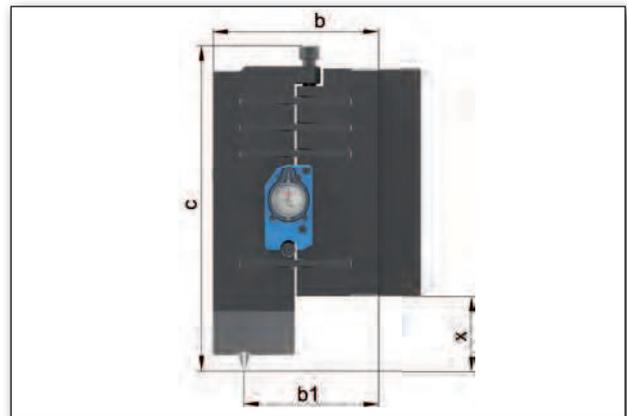
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.

The tool designation is generated as follows:

Hydraulic deep rolling tools for internal threads	Version	Roller Ø	Thread root radius
FAK 90	1	25.00	1.15
Leaf spring arrangement at 90°			Shank DIN 69880, mount on either side

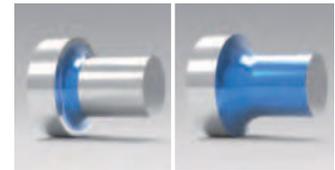
Note: SL = Square shank.
ZS = Straight shank; special shanks by request.



FAK90

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter	Main dimensions (mm)						Shank Ø d (mm)
	(kN)	(mm)	(N/mm ²)		(mm)	b	b ₁	c	x	h ₁	
FAK90	20	1.6	1400	≥ 80	149	121	298	69	100	139	≥ VDI 40

Type FAK120: Deep rolling fillets and cylindrical surfaces



Features

- Deep rolling of contours or large fillets in a feed process.
- Roller unit with tapered roller bearings for feed process.

Advantages

- Can be used with conventional or CNC-controlled lathes.
- Complete processing in one setting.
- Allows either right or left hand operation.
- Rotation in either direction.

Design

- The tool body has a tool shank and a spring assembly with no play, low friction and progressive action.
- The normal version is equipped with a dial gauge that indirectly indicates the spring force. Special versions can include an inductive measuring system for external display of the spring force.
- Burnishing head with roller is affixed to the spring-loaded section of the tool body. The springs allow the roller retainer to move elastically when affected by radial or axial burnishing forces acting upon the tool retainer.
- The roller retainer holds the robust roller in its sturdy bearing.



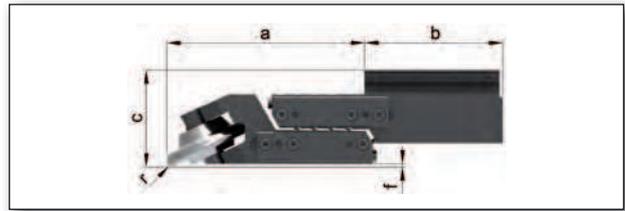
Parameters

- max. circumferential speed: 100 m/min.
- max. burnishing force: 35 kN.

Ordering

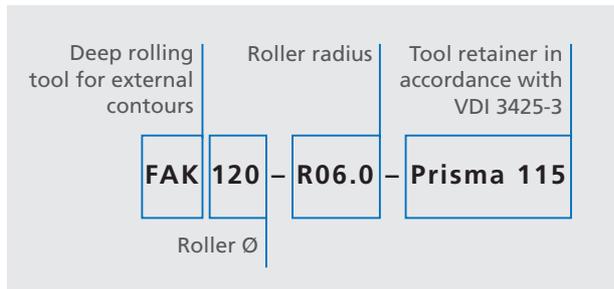
The following information is required:

1. Type of tool retainer and machine tool.
2. Component drawing.
3. Thread dimensions.
4. Thread root radius.
5. Material properties.



FAK

The tool designation is generated as follows:



Note: Special retainers by request.

Tool	max. burnishing force	max. machining radius	max. tensile strength	Machining diameter	Main dimensions (mm)				Tool retainer
	(kN)	(mm)	(N/mm ²)		(mm)	a	b	c	
FAK120	35	4.0	1400	≥ 80	256	179	126		Depending on the machine