

Type RH Tool Application: Internal diameters, Plunge-in process

Features

- For internal diameters
- Deep rolling with the plunge-in process
- For use with CNC-controlled or conventional lathes
- Complete processing in one setting
- Symmetrical construction allows either right- or left-hand operation
- Rotates in either direction
- Suspended rollers for even force distribution independent of production tolerances
- Spring-mounted tool body provides constant rolling force (compensates for positioning errors and production tolerances)
- Process requires a maximum of 15 rotations



Advantages

Deep rolling is the only process that combines the following three physical effects:

- Induces deep residual compressive stresses which increase a component's fatigue strength (especially important during cyclic loading)
- Increases the surface layer's material strength through controlled cold working
- Improves surface finish, thus greatly reducing surface flaws where cracks can initiate

In addition, deep rolling is cost effective. It can take place in one setting on a standard machining tool right after the cutting process. Further advantages include:

- Short cycle time
- Low energy consumption
- No set up time, just tool change
- No transport costs
- Expedited workflow
- Lower capital commitment

Basic tool design

Type RH deep rolling tools consist of a tool body and roller head.

Tool body

- Four different sizes available (S1 through S4)
- Standard shank: Morse taper or cylindrical shank, but many other clamping systems are possible
- Equipped with a disc spring assembly
- Spring layers specifically designed and arranged for each machining task

Roller head

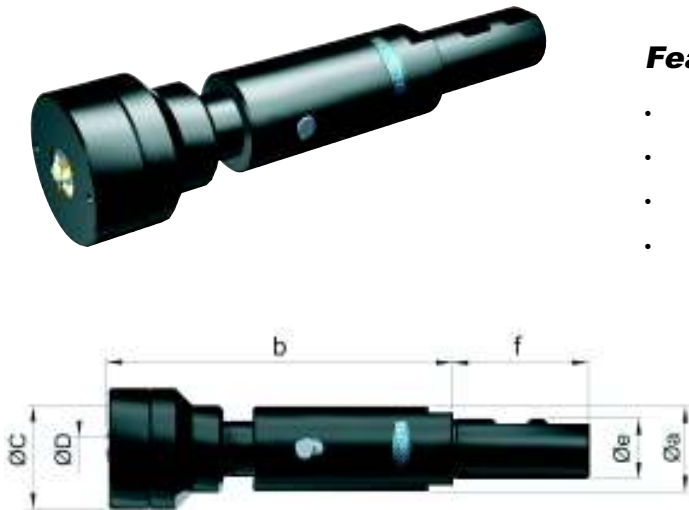
- Specially designed per workpiece dimensions
- Mounted onto the tool body

Parameters

- Maximum rolling force: 40 kN
- Maximum machining radius: 4.0 mm
- Maximum yield strength: 1400 N/mm²
- Machining diameter: > 17 mm

Main dimensions (mm)					Shank Ø d (mm)
a	b	c	b ₁	x	
26-65	depends upon workpiece				≥ 25

Type RHA Tool Applications: External diameters and fillets, Plunge-in process



Features

- For external diameters and fillets
- Deep rolling with the plunge-in process
- For use with CNC-controlled or conventional lathes
- Complete processing in one setting
 - Symmetrical construction allows either right- or left-hand operation
 - Rotates in either direction
 - Suspended rollers for even force distribution independent of production tolerances
 - Spring-mounted tool body provides constant rolling force (compensates for positioning errors and production tolerances)
 - Process requires a maximum of 15 rotations

Advantages

Deep rolling is the only process that combines the following three physical effects:

- Induces deep residual compressive stresses which increase a component's fatigue strength (especially important during cyclic loading)
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Tool body

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- Standard shank: Morse taper or cylindrical shank, but many other clamping systems are possible
- Equipped with a disc spring assembly
- Spring layers specifically designed and arranged for each machining task

Roller head

- Specially designed per workpiece dimensions
- Mounted onto the tool body

Parameters

- Maximum rolling force: 40 kN
- Maximum machining radius: 4.0 mm
- Maximum yield strength: 1400 N/mm²
- Machining diameter: > 4 mm

Main dimensions (mm)					Shank Ø d (mm)
a	b	c	b ₁	x	
26-65	depends upon workpiece				≥ 25

Type EF Tool Applications: Internal and external fillets

Features

- For use with CNC-controlled or conventional lathes
- Complete processing in one setting
- Symmetrical construction allows either right- or left-hand operation
- Rotates in either direction

EF45

- Deep rolling with the plunge-in process
- One suspended roller
- Rolling force monitored by a dial gauge or an inductive measuring system

EF90

- Deep rolls external thread root radii
- Deep rolls within the machine's thread cycle
- Axial floating roller compensates for marginal positioning errors
- Automatic roller angle alignment
- No conversion necessary to machine either right- or left-handed threads
- Roller made to fit component's thread root radius
- Integrated pre-loading mechanism, no further X-axis adjustment necessary

Basic tool design

Type EF deep rolling tools consist of a tool body equipped with a shank, a spring assembly that allows the roller head to move with no play and very low friction, and a dial gauge that indirectly indicates the spring force. An optional inductive measuring system externally displays the rolling force.

The roller head is attached to the flexible, spring-loaded section of the tool body. The flexible roller holder moves in response to the radial or axial rolling forces on either side of the tool.

EF45

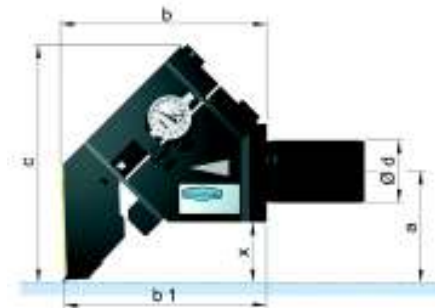
The roller is guided by a cage and supported by a support body with large-scale needle bearings.

EF90

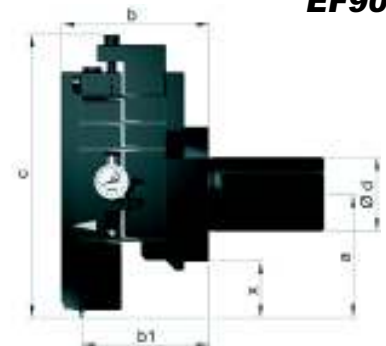
The roller is suspended within the roller holder with a slide bearing bolt. In addition, the roller mount swings such that the roller automatically adjusts to the thread pitch. A set screw limits the roller's pivoting angle.



EF45

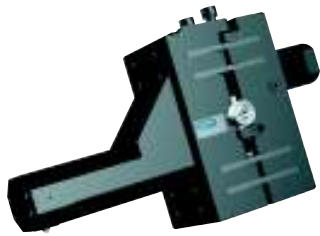


EF90

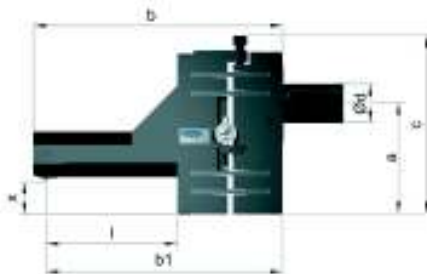


Tool type	Max. rolling force	Max. machining radius	Max. yield strength	Machining diameter	Main dimensions (mm)					Shank Ø d (mm)
					a	b	c	b ₁	x	
EF45-17	10	1.2	1400	10-250	71	133	152	130	38	≥ VDI 40
EF45-21	20	4.0		≥ 40						
EF90		1.6			100	120	228	103	45	

Type FAK Tool Applications: Internal and external fillets



FAK025



Features

- For use with CNC-controlled or conventional lathes
- Complete processing in one setting
- Symmetrical construction allows either right- or left-hand operation
- Rotates in either direction

FAK025

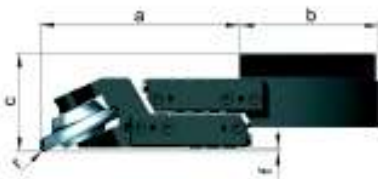
- Deep rolls internal thread root radii
- Deep rolls within the machine's thread cycle
- Axial floating roller compensates for marginal positioning errors
- Automatic roller angle alignment
- No conversion necessary to machine either right- or left-handed threads
- Roller made to fit component's thread root radius
- Integrated pre-loading mechanism, no further X-axis adjustment necessary

FAK120

- Deep rolls fillets with the plunge-in process
- Deep rolls contours or large fillets with the in-feed process
- Deep rolls thread root radii
- Axial floating roller for the plunge-in process
- Roller unit includes axial/radial bearings for the in-feed process
- Rolling force monitored by a dial gauge or an inductive measuring system



FAK120



Basic tool design

Type FAK deep rolling tools consist of a tool body equipped with a shank, a spring assembly that allows the roller head to move with no play and very low friction, and a dial gauge that indirectly indicates the spring force. An optional inductive measuring system externally displays the rolling force.

The roller head is attached to the flexible, spring-loaded section of the tool body. The flexible roller holder moves in response to the radial or axial rolling forces on either side of the tool.

FAK025

The roller is suspended within the roller holder with a slide bearing bolt. In addition, the roller mount swings such that the roller automatically adjusts to the thread pitch. A set screw limits the roller's pivoting angle.

FAK120

The roller holder contains a finely machined, hardened roller with two tapered roller bearings.

Tool type	Max. rolling force	Max. machining radius	Max. yield strength	Machining diameter	Main dimensions (mm)					Shank Ø d (mm)
					a	b	c	b ₁	x	
FAK025	20	1.6	1400	≥ 80	142	324	229	307	42	≥ VDI 40
FAK120	35	4.0			256	179	126			depends upon machine