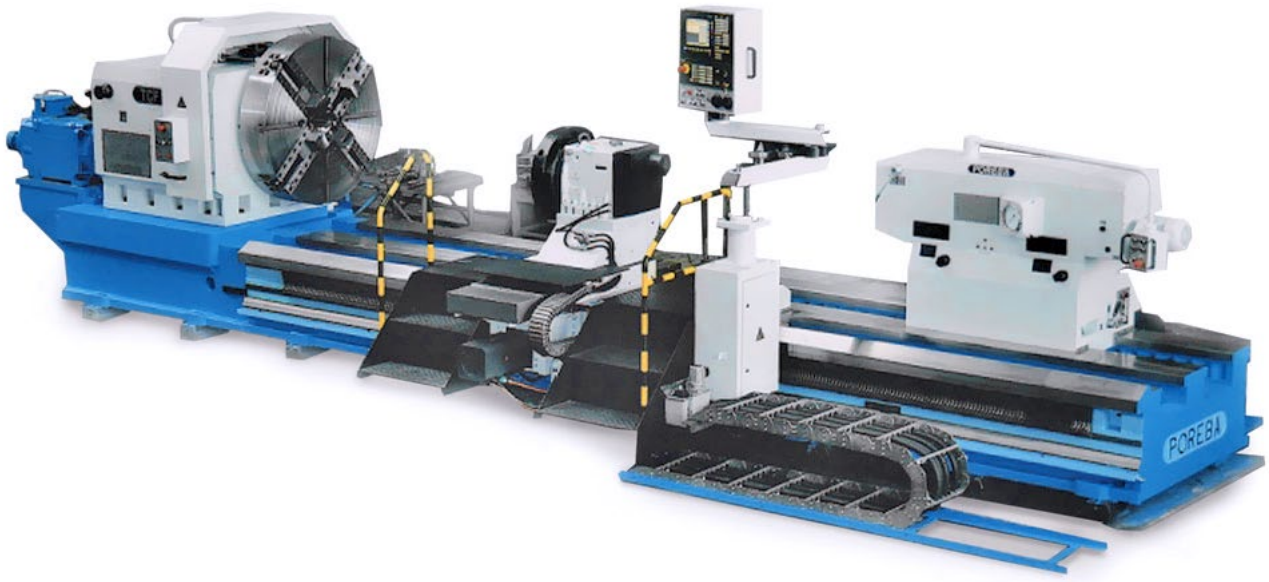
TCF 160 / TCF 200 / TCF 224 / TCF 250 TCF 275 / TCF 300

HEAVY CENTRE LATHES



BASIC PARAMETERS

3-guideways bed	
Max. torque on spindle	40,000 Nm
Max. weight of workpiece between centre	30 tonnes
Turning length	3,000 to 25,000 mm

In their basic version the **TCF** series **(TCF 160 / 200 / 224 / 250 / 275 / 300)** heavy centre lathes – thanks to the innovative mechanical solutions and the advanced control systems – are the multi-purpose lathes that guarantee productive rough and finish machining.

PURPOSE

The TCF series lathes are designed for workpiece machining in the range of turning in accordance with their specifications, especially for machining of large-size shafts. When delivered with special equipment they can operate as the horizontal machining centres with turning, drilling and milling capabilities. They can be equipped with an automatic turret, tool attachments, tool and workpiece measuring systems, controlled C axis, workpiece steady rests.

CONTROL SYSTEM

The application of the state-of-the-art CNC system allows for automatic, precise and productive workpiece machining according to a program.

MAIN FEATURES

- Machine tool construction based on a rigid bed with hardened guideways
- 3-guideway bed, headstock body made from high-grade cast iron of enhanced mechanical properties
- Carriage travels along two or three guideways that guarantee precise guidance
- Bed and carriage guideways hardened to 45 HRC and ground.
- A wide variety of optional equipment that expands the machine tool capabilities
- Slidable operator cabin with the control panel

STANDARD EXECUTION

- Swing over bed Ø 1,600 mm (TCF 160)
- Turning length 3,000 to 25,000 mm, every 1,000 mm
- 4-jaw chuck Ø 1,600 mm
- Carriage rested on two guideways
- Power of main drive motor of 71 kW (continuous operation)
- Range of continuously variable spindle rotation rates 0.5 to 250 rpm
- Power supply 3 × 400 V / 50 Hz
- SIEMENS SINUMERIK 840 D sl CNC system
- Backlash-free rack-and-pinion transmission for Z-axis travel
- Ball screw and nut transmission for X-axis travel
- Automatic change of range of headstock rotation rates
- Central lubrication system controlled by CNC
- Chip conveyor
- 1.0-Bar tool cooling system
- Tailstock with quill Ø 280 mm with spindle, clamping force indicator, workpiece extension compensation, with automatic quill stroke, travel along bed, automatic clamping against bed
- Operator cabin
- Control panel
- Dead centre - 2 pcs
- Adjusting wedges for leveling and foundation bolts
- CE mark
- Operations and maintenance manuals
- CNC operation and programming documentation

OPTIONAL EXECUTION

- Swing over bed Ø 2,000 mm (TCE 200)
- Swing over bed Ø 2,250 mm (TCE 224)
- Swing over bed Ø 2,500 mm (TCE 250)
- Swing over bed Ø 2,750 mm (TCE 275)
- Swing over bed Ø 3,000 mm (TCE 300)
- Spindle with nose A1-20
- 4-jaw chuck Ø 1,250 mm
- Range of chuck Ø 1,250-mm spindle rotation rates 0.6 to 315 rpm
- 4-jaw chuck Ø 2,000 mm, max. rotation rates 150 rpm
- Third guideway for carriage
- Additional carriage
- SIEMENS SINUMERIK 840 D sl Operate CNC system with basic turning functions and power of main drive motor of 100 kW (continuous operation)
  - Shop Turn – basic turning functions
  - PCU 50.3
  - Language options
  - Real-time simulations
  - 3D simulations
- FANUC 0i-TD Manual Guide CNC system with basic turning functions and power of main drive motor of 75 kW (continuous operation)
- FANUC 0i-TD Manual Guide CNC system with basic turning functions and power of main drive motor of 100 kW (continuous operation)
- Tailstock with quill Ø 280 mm with spindle, clamping force indicator, workpiece elongation compensation, with automatic quill travel, travel along bed, quill clamping and clamping against bed
- Tailstock with quill Ø 450 mm with spindle, clamping force indicator, workpiece elongation compensation, with automatic quill travel, travel along bed, quill clamping and clamping against bed
- Automatic 8-position turret with live tools, controlled C axis powered by main motor
- Automatic 8-position turret with live tools, controlled Y axis, controlled C axis powered by main motor
- Double lamellar cross-slide
- Linear measuring scales for X and Z axis
- Tool measuring system
- Workpiece measuring system
- Air conditioning for electrical cabinet and control panel
- Oil heating in hydraulic pack to maintain oil temperature >10ºC
- 56-HRC hardened steel and ground guideways

ADDITIONAL EQUIPMENT

- 4-jaw chucks Ø 1,250 mm, Ø 2,000 mm with spindle nose A1-20
- Steady rest Ø 100 to 400 mm
- Steady rest Ø 250 to 600 mm
- Steady rest Ø 400 to 800 mm
- Steady rest Ø 700 to 1,100 mm
- C-type steady rest Ø 150 to 700 mm
- C-type steady rest Ø 400 to 800 mm
- C-type steady rest Ø 700 to 1000 mm
- Open-type steady rest Ø 1,100 to 1,600 mm
- Hydrostatic steady rest Ø 600 to 1,000 mm
- 5.5 kW grinding attachment for automatic 4-position turret
- 20-kW grinding attachment for automatic 4-position turret
- 10-kW milling head and C axis powered by main drive motor
- 10-kW grinding attachment for automatic 4-position turret with Y axis and C axis powered by main drive motor
- Boring clamping ring Ø 200 mm

BASIC TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS (TCF SERIES)							
Model		**TCF 160**		**TCF 200**		**TCF 224**	
Machine tool code							
Swing over bed	Ø mm	1,600	1,600 *	2,000	2,000 *	2,250	2,250 *
Swing over carriage	Ø mm	1,300	1,150 *	1,600	1,550 *	1,800	1,800 *
Distance between centres (every 1,000 mm)	mm	3,000 to 25,000 *					
Max. weight of workpiece clamped in:							
• chuck	kg	4,000	4,000	4,000	4,000	4,000	4,000
• centres	kg	30,000	30,000	30,000	30,000	30,000	30,000
• centres + 1 steady rest	kg	35,000	35,000	35,000	35,000	35,000	35,000
• centres + 2 steady rests	kg	40,000	40,000	40,000	40,000	40,000	40,000
Headstock							
Range of continuously variable rotation rates	rpm	0.5 to 250 / 0.6 to 315 *					
Power of main drive motor	kW	71 / 100 *					
Max. torque on spindle	Nm	40,000 / 50,000 *					
Spindle nose	size	Taper 1:10 / A1:20 *					
Carriage							
Carriage	number	2	3 *	2	3 *	2	3 *
Longitudinal travel	mm	Turning length					
Crosswise travel	mm	650	1,200	650+250	1,200	650+400	1200
Rapid travel in X axis	mm/min	6,000					
Rapid travel in Z axis	mm/min	4,000					
Tailstock							
Quill diameter	Ø mm	280 / 450 *					
Quill stroke	mm	200					
Machine tool overall dimensions and weight, approx.							
Length	mm	3,550 + turning length					
Width	mm	2,600					
Height	mm	2,300		2,500		2,625	
Weight for 3,000 mm of turning length	kg	33,000	34,000	35,000	36,000	38,000	39,000
Increase in weight for 1,000 mm of turning length	kg	1,600					
* optional execution						© RAFAMET S.A. – All Rights Reserved	

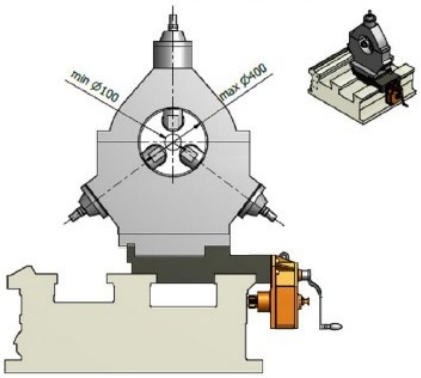
BASIC TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS (TCF SERIES)							
Model		**TCF 250**		**TCF 275**		**TCF 300**	
Machine tool code							
Swing over bed	Ø mm	2,500	2,500 *	2,750	2,750 *	3,000	3,000 *
Swing over carriage	Ø mm	2,200	2,050 *	2,450	2,300 *	2,700	2,550 *
Distance between centres (every 1,000 mm)	mm	3,000 to 25,000 *					
Max. weight of workpiece clamped in: • chuck • centres • centres + 1 steady rest • centres + 2 steady rests	 kg kg kg kg	 4,000 30,000 35,000 40,000	 4,000 30,000 35,000 40,000	 4,000 30,000 35,000 40,000	 4,000 30,000 35,000 40,000	 4,000 30,000 35,000 40,000	 4,000 30,000 35,000 40,000
Headstock							
Range of continuously variable rotation rates	rpm	0.5 to 250 / 0.6 to 315 *					
Power of main drive motor	kW	71 / 100 *					
Max. torque on spindle	Nm	40,000 / 50,000 *					
Spindle nose	size	Taper 1:10 / A1:20 *					
Carriage							
Carriage	number	2	3 *	2	3 *	2	3 *
Longitudinal travel	mm	Turning length					
Crosswise travel	mm	650+400	1,200	650+400	1,200+250	650+400	1,200+400
Rapid travel in X axis	mm/min	6,000					
Rapid travel in Z axis	mm/min	4,000					
Tailstock							
Quill diameter	Ø mm	280 / 450 *					
Quill stroke	mm	200					
Machine tool overall dimensions and weight, approx.							
Length	mm	3,550 + turning length					
Width	mm	2,600					
Height	mm	2,750		2,875		3,000	
Weight for 3,000 mm of turning length	kg	40,000	41,000	42,000	43,000	44,000	45,000
Increase in weight for 1,000 mm of turning length	kg	1,600					
* optional execution							

STEADY RESTS

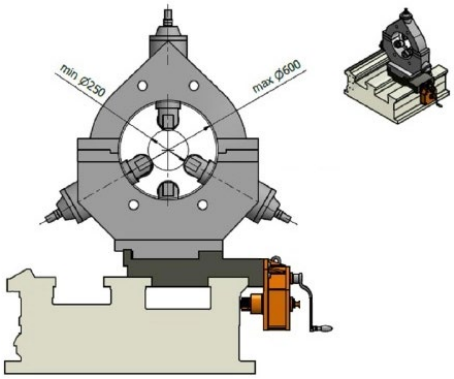
ROLLER STEADY REST:
Ø 100 to 400 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



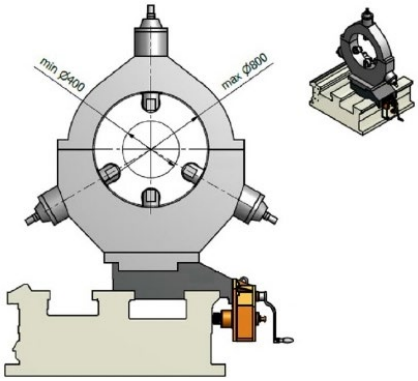
ROLLER STEADY REST:
Ø 250 to 600 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



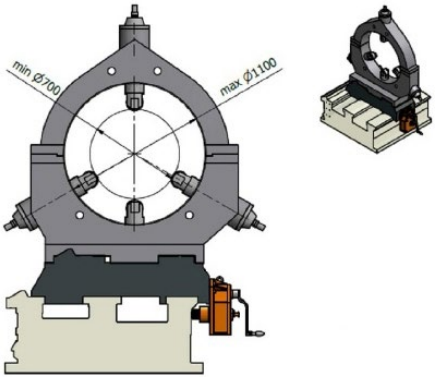
ROLLER STEADY REST:
Ø 400 to 800 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



ROLLER STEADY REST:
Ø 700 to 1100 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual

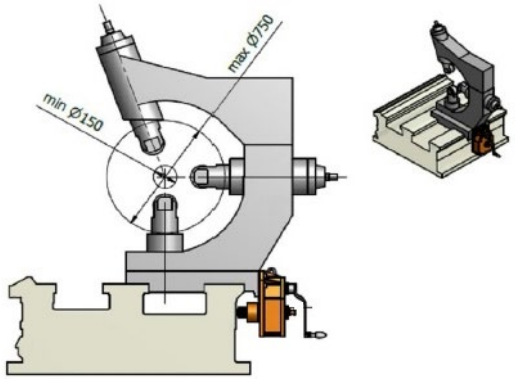


STEADY RESTS

C-TYPE ROLLER STEADY REST

Ø 150 to 700 mm

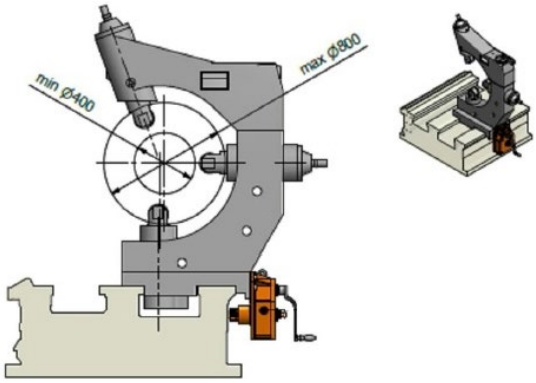
- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



C-TYPE ROLLER STEADY REST

Ø 400 to 800 mm

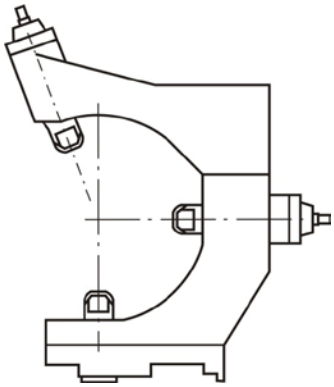
- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



C-TYPE ROLLER STEADY REST

Ø 700 to 1000 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual



OPEN-TYPE ROLLER STEADY REST:

Ø 1100 to 1600 mm

- Installed on the bed
- Fixing to the bed: Manual
- Setting of quills: Manual