WFL MILLTURN TECHNOLOGIES

M30 | M30-G | M35 | M35-G

[DE] [EN] [FR] [IT] [ES] [BR] [RU] [CN] [JP]

M30 M30-G M35 M35-G

CLAMP ONCE – MACHINE COMPLETE

GROUP 1906 AUTANIA

The integrated solution

The multifunctional turning-boring-milling centers M30/M35 and M30-G/M35-G allow complete machining of complex shafts and chuck parts with a swing of up to 520mm and machining lengths of up to 2000mm. It can thus function as a lathe, a 5-axes machining centre and if needed as a gear-cutting or deep-hole drilling machine.

MILLTURN as a trendsetting program

Its sturdy, gray cast-iron inclined bed and its innovative geometrical disposition of axes allow for exceptionally wide guideway distances and minimal distances from the machining area to the guideways. All linear axes of the upper and lower slide system come with large anti-friction guideways and maximum load rating of the slide. The smooth-faced sheet metal covers on the bottom slide are maintenance free.

The turning-boring-milling unit is driven by a powerful gear spindle with strong torque. This makes maximum power available even at low speed. Rough cutters and large boring tools can thus be used with exceptional efficiency. Additionally, motor and spindle housing do not overheat. By means of a direct measuring system the backlash-free B-axis can be positioned with utmost precision. This allows reliable machining within minimal tolerance limits.

M30 MILLTURN | M35 MILLTURN

Features

80 bar coolant pressure

Inprocess measuring

5 axis machining

M30-G MILLTURN | M35-G MILLTURN

Features

4-axis turning

Workpiece transfer

6 side machining

The tool magazine
- disc instead of chain magazine

The disc magazine - the better solution

The patented tool magazine fascinates through simple operation from the machine front as well as highest reliability and safety. Tools can easily be mounted, dismounted and serviced during the machining process. After automatic cleaning by means of the integrated collar flushing, the tool shanks are stored away in an entirely closed dirt-proof pocket on the magazine disc. The extremely short distance from the magazine to the tool change position results in a singularly short provisioning time of the tools. The tool change involves only linear movements. Centrifugal forces are thus avoided and tool life of e.g. gripper jaws is substantially increased.

In addition to highest safety levels in tool change operations, the disc magazine boasts very high stability and easy maintenance. The entire magazine front covering comes as a service flap ensuring perfect accessibility of the magazine and tool changer unit.

The location of the magazine bearings and drive on the outside makes the integration of a bar feeder easy.

Wear-free tool disc

Tool changer

Max. tool length

M30/M30-G: 450 mm; M35/M35-G: 450/600 mm

Tools up to 15 kg

- Capacity for 80 (120 optional for M35/ M35-G) tools in the disc magazine
- Set up time parallel to machining
- Max. tool length: M30/M30-G: 450 mm; M35/M35-G: 450/600 mm
- Max. tool weight: 15 kg

Intelligent tool management

- User-friendly software functions
- Simple and logical menu navigation
- Tool corrections automatically converted by the control system

Cleanliness as standard

- Dripping coolant returned
- Special bed design for perfect chip flow
- Chip conveyor extended to the magazine area for absolute cleanliness

Software solutions by WFL

The latest in control technology

Not only does the Sinumerik 840D sl, which is perfectly-suited to machining tasks, have the highest processing power, alongside its especially user-friendly programming it is also perfectly compatible with all current CAD/CAM systems. NC programs, technological data, measuring protocols, tool data and machine and process parameters can be transferred to a host computer, for example, using an Ethernet connection. This means that the MILLTURN is fully prepared for connection to networked production and to meet future requirements.

Safety is a central concern

The sophisticated MILLTURN safety concept works on an exclusively electronic basis. The advantages of this are that the system reacts extremely quickly in comparison to conventional concepts, the cabinet configuration is more simple and it provides the option of precise fault diagnosis on site and via a network connection.

Good parts from the very first workpiece

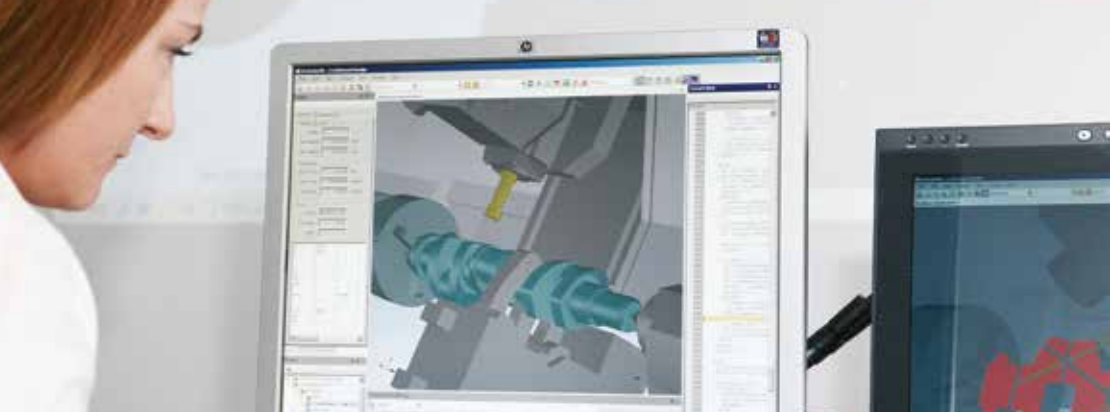
High-precision measuring probes, linear direct measuring systems and clearance-free anti-friction guideways transform the MILLTURN into a 3D measuring machine. WFL provides the user with comprehensive modular measuring software and proven expertise for intelligent measuring strategies, which serve to exclude as many error-causing variables as possible, right from the very start.

- Creation of complex user-specific measuring processes
- Determination of workpiece features or any forging allowances prior to machining
- Automatic recording and compensation for tool wear
- Software-controlled temperature compensation in order to eliminate machining errors caused by the thermal expansion of the workpiece
- Saving or printing of measuring protocols

Simulation

Reality

Technology cycles



CrashGuard Studio

CrashGuard

Professional CAM solutions from WFL

CrashGuard Studio: Offline 3D simulation with material removal to enable verification of NC programs

Millturn PRO: Universal and easy to understand programming editor with graphic support, directly on the machine.

CrashGuard: Real time collision prevention software within the CNC machine control system

Safe machining with up to 12 monitoring channels...

During machining, the sophisticated process monitoring visualises and monitors the flow of forces on all of the axes and spindles. This renders the cutting process fully transparent and makes it easy to identify potential for optimisation.

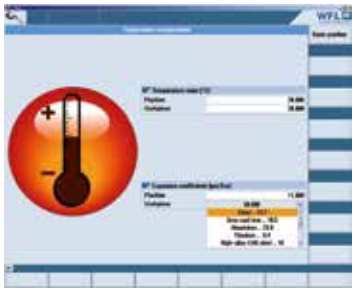
- Tool breakage and collision monitoring
- Teach-In procedure to enable cutting forces to be saved and used for calibration in the event that the same task is repeated
- Machining aborts in the event that the process parameters exceed the freely-definable tolerance limits

Process monitoring

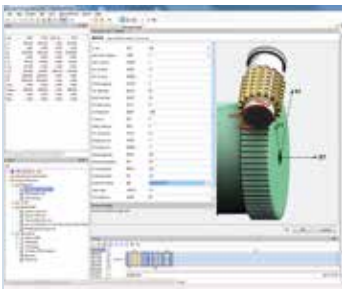
Tool management

Tool correction

Temperature compensation



Millturn PRO



Modular machine concept for customer-specific manufacturing solutions

1. Machine bed

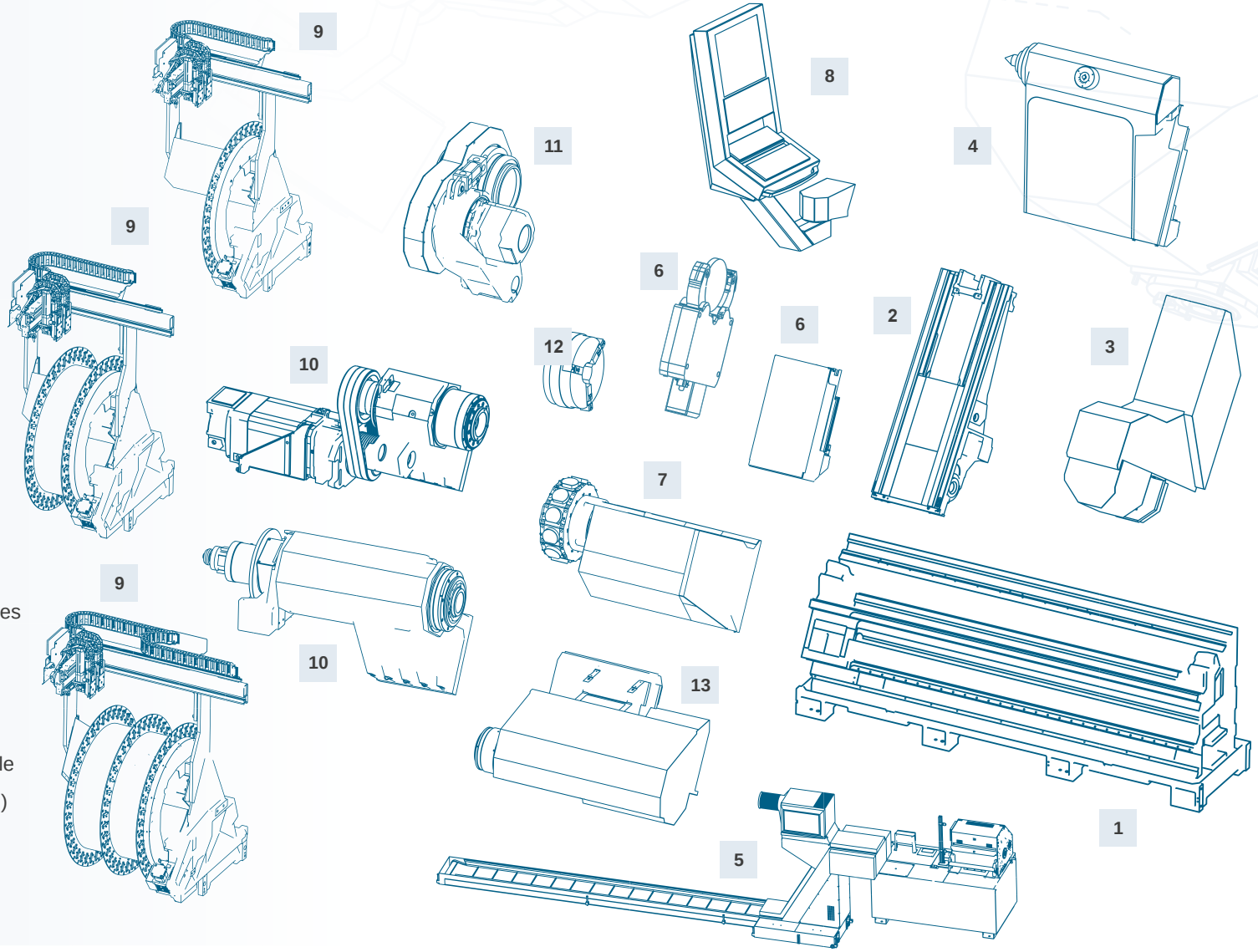
- 60° slant bed with large-scale guide ways
- Heavily ribbed cast body, designed to provide optimal torsional rigidity
- Optimal damping properties
- Minimal influx thanks to optimised chip flow
- Compact design of the bottom slides

2. Compound slide

- Cast body with optimal damping properties
- Best possible torsional and bending strength

3. Turning-boring-milling unit

- Linear direct measuring system in the X- and Y-axes
- Interpolable B-axis
- Indexable milling spindle
- Standard tool interface
- Coolant supplied directly through the milling spindle
- Optional integrated measuring probe (M35/M35-G)



4. Tailstock

- Positioning and feed force by easy software cycle
- Adjustable tip height
- Automatically positionable (dragged or with its own NC drive)

5. Chip conveyor and coolant cleaning system

- Travels to the right
- With coolant tank and filter system

6. Steady rest

- Self-centring steady rests
- Individual clamping device and support solutions
- Automatically positionable (dragged orwith its own NC drive)

7. Disc turret

- 12-station
- With or without driven tools (M30/M30-G only turret with driven tools)

8. Operator panel

- Siemens SINUMERIK 840D sl control system

9. Disc magazine

- M30/M30-G: 40/80 tool stations; M35/M35-G: 40/80/120 tool stations (HSK-A63 or Capto C6)
- Setting-up parallel to machining time
- Max. tool length: M30/M30-G: 450 mm; M35/M35-G: 450/600 mm
- Max. tool weight: 15 kg
- Automatic tool change

10. Main spindle

- AC drive (2-speed gearbox optional),(only the M35/M35-G, left spindle)
- Sturdy headstock with extra rigid spindle bearings

11. C-axis with retaining brake

- Dynamic and strong integrated spindle motor
- Optional separate unit with strong rotating brake
- For highest stiffness during heavy of center milling or drilling operations

12. Chuck

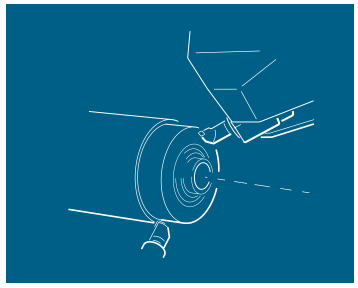
- Partially-hollow or hollow centre clamping
- Automatic power chuck
- Rapid changing of clamping jaws
- Tool-specific special clamping devices

13. Counter spindle

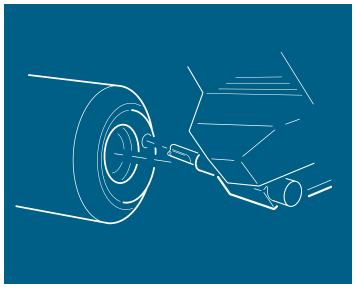
- With tailstock and synchronous spindle function
- Automatic work area transfer between the 2 spindles

Technologies by WFL

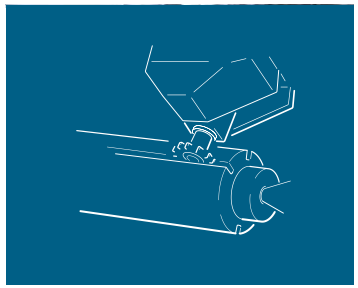
- Turning



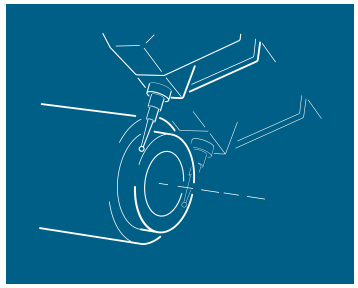
- Drilling



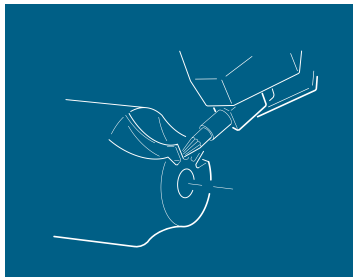
- Milling



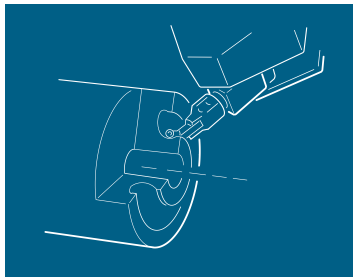
- In-process measuring



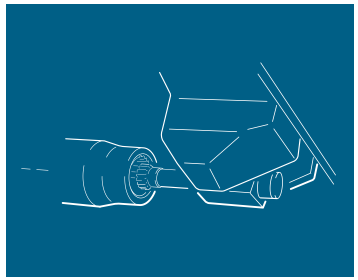
- 5-axis milling



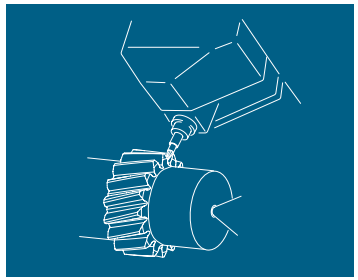
- B-axis turning



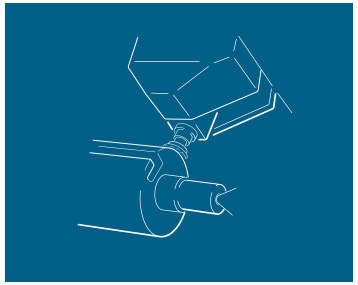
- Shaping of gear teeth (Flanx-Spline)



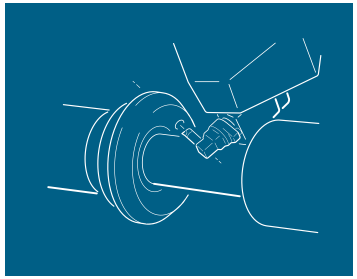
- Milling of gear teeth (Flanx-LM)



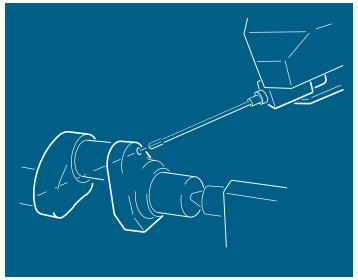
- Turn-milling



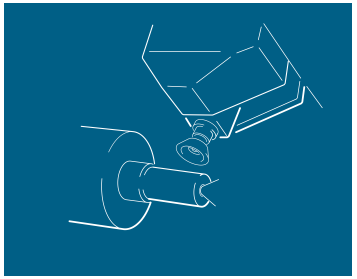
- Special tool heads



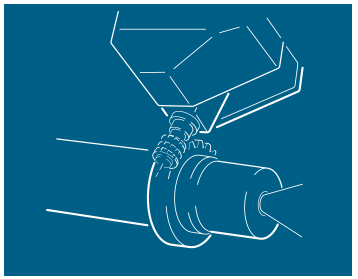
- Deep hole drilling



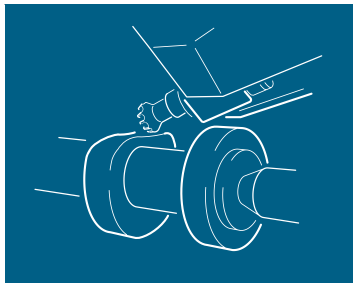
- Grinding and fine machining



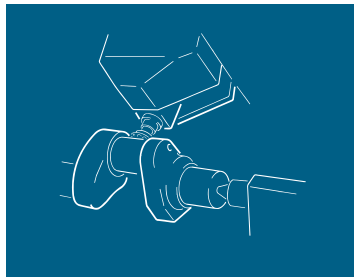
- Hobbing of gear teeth (Flanx-Hob)



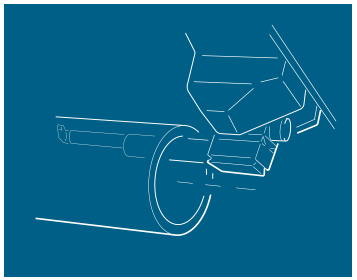
- Cam milling



- Milling of crankshaft pins



- Drilling and internal turning



Ergonomic Light Concept

Innovative LED lighting. Well-lit workspace. Highest level of productivity and safety

In addition to ergonomic machine construction, ergonomic machine lighting is an important component of integral ergonomic industry design. Machine lighting directly affects both productivity and safety when working with a machine tool. Ergonomic lighting is therefore a significant and comparable cost-effective factor in maximising the potential of your MILLTURN machine.

Advantages

- Efficient and high-quality light technology based on LED lamps
- Ideal illumination of workpiece, tool and workspace (shadows are minimised)
- Increase in light intensity by 700% in the workspace (compared to standard lighting)
- High degree of glare suppression
- Homogeneous light distribution
- Highest level of productivity and safety
- Extension of bulb life from 4,000 to 40,000 operating hours
- Easy and quick maintenance due to simple plug connections

LED basic light

LED basic light

✓ Standard M30/M35, M30-G/M35-G

The basic light in the workspace is provided by LED tube lights in the upper main girder.

- Robust high-tech LED tube lighting
- Flicker-free light with no IR or UV component
- Daylight white colour temperature
- Availability/retrofitting capacity: All machine types

LED door light

LED door light

+ Optional M35/M35-G

Internal LED area lights or LED tube lights are available for the sliding doors for ideal workspace lighting.

- Robust high-tech LED lighting
- Can be switched on and off independently of the basic light
- Can be combined with standard lamps as basic lighting
- Daylight white colour temperature

Head LEDs

Head LEDs

+ Optional M35/M35-G

Additional LED spotlights are available (mounting on the housing of the turning-boring-milling unit) for powerful and accurate lighting of the machining point or the workpiece.

- Maximum performance with minimum construction
- Ideal for high mechanical load
- Availability/retrofitting capacity: All standard design machine types

LED status light

LED status light

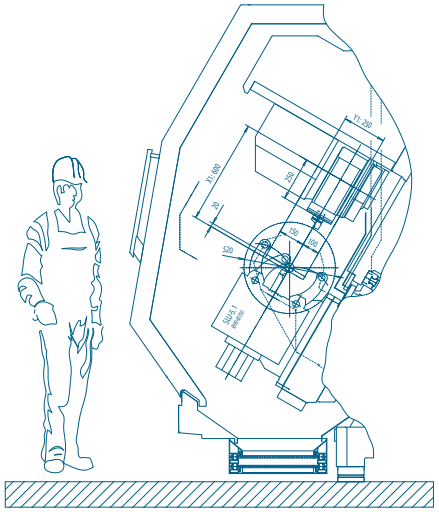
+ Optional M35/M35-G

In addition to standard light columns on the upper side of the machine, a machine status display near the base of the machine is available in the form of an LED strip light.

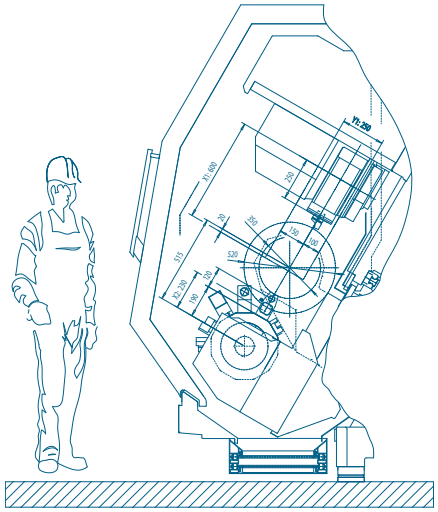
- High-quality, powerful LED strip light
- Current machine status visible from great distances
- Customer-specific light signal can be customised using the NC programme (special blink sequence with separate colours e.g. operator prompt for manual procedure)
- Availability/retrofitting capacity: All machine types

Machine cross section

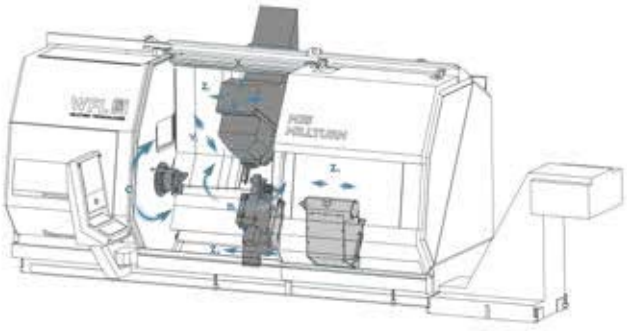
M30 | M35 MILLTURN



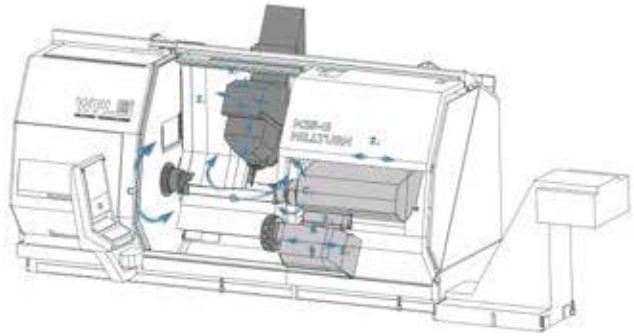
M30-G | M35-G MILLTURN



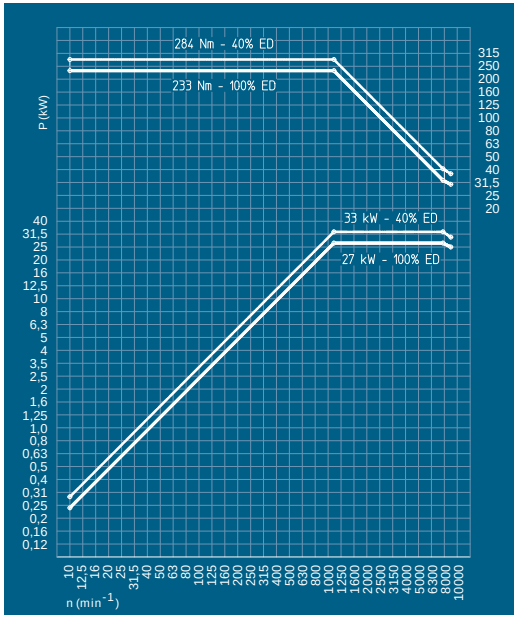
Axis scheme



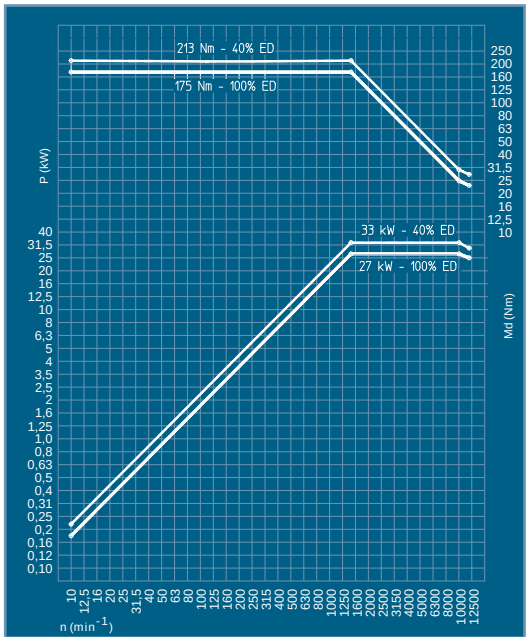
M30 MILLTURN | M35 MILLTURN



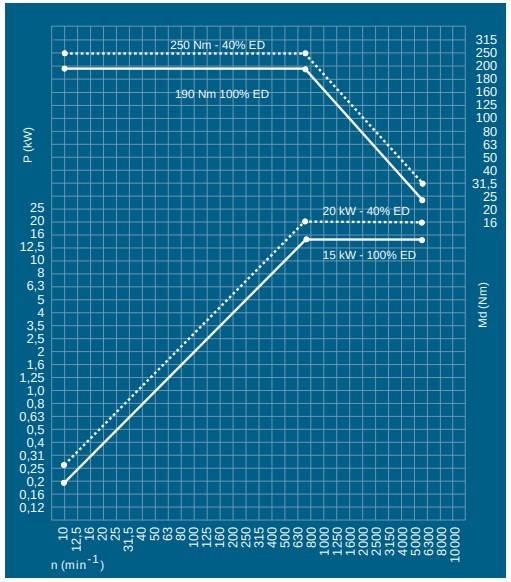
M30-G MILLTURN | M35-G MILLTURN



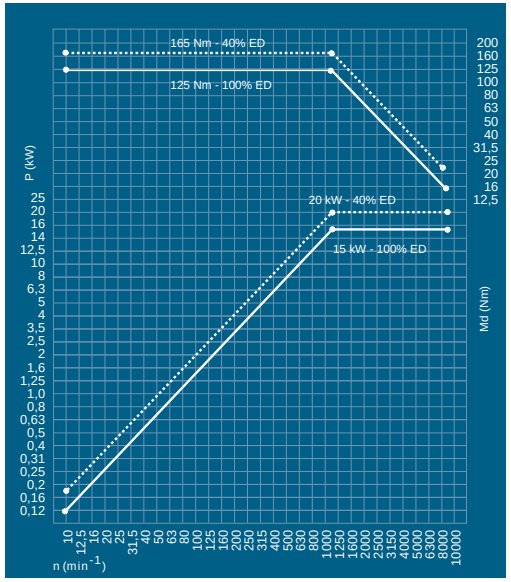
Milling spindle 33(27) kW - 9000 min^{-1}



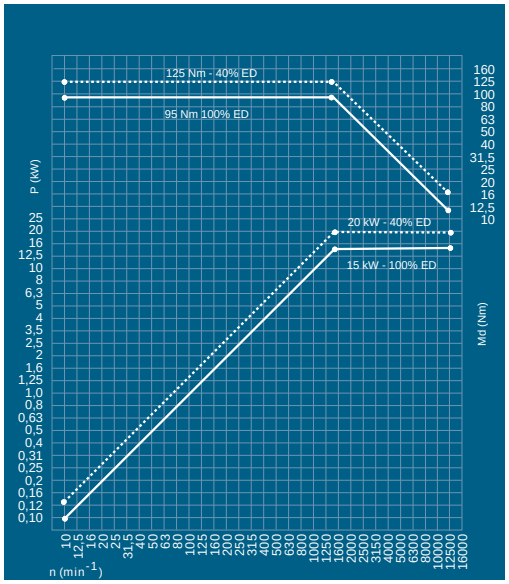
Milling spindle 33(27) kW - 12000 min^{-1}



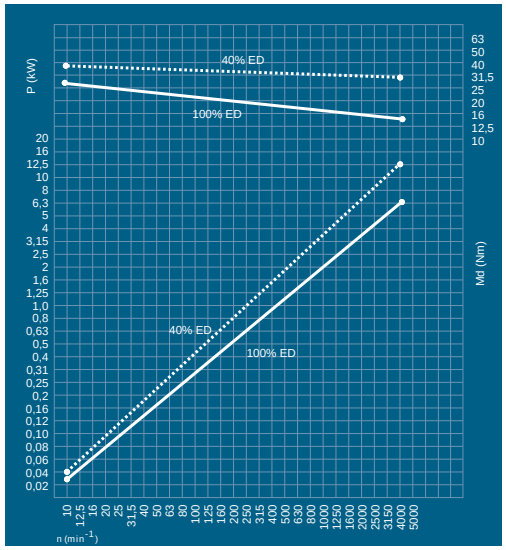
Milling spindle 20(15) kW - 6000 min^{-1}



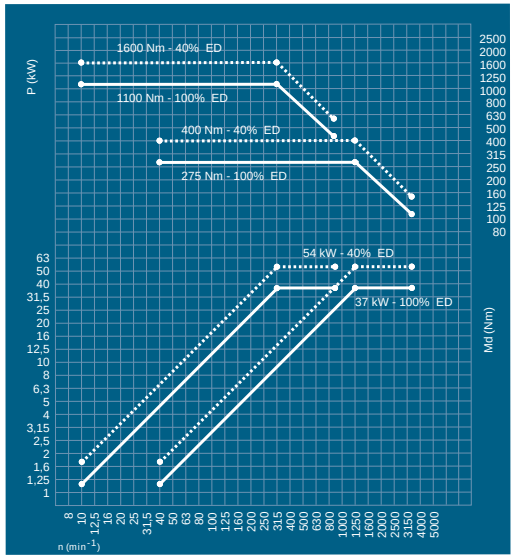
Milling spindle 20(15) kW - 9000 min^{-1}



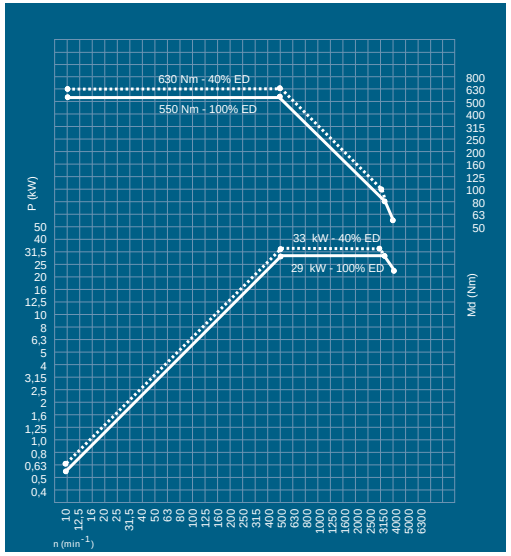
Milling spindle 20(15) kW - 12 000 min^{-1}



Driven tools on the lower turret



Main spindle - left 54(37) kW - 3300 min^{-1}



Main spindle - left / right 33(29) kW - 4000 min^{-1}

WFL MILLTURN TECHNOLOGIES

		M30 MILLTURN	M30-G MILLTURN	M35 MILLTURN	M35-G MILLTURN
WORKING RANGE					
Centre distance	mm	2000	1800	2000	1800 (1680)
Turning length max. (dependent on clamping device and spindle)**	mm	2100	1440	2100	1440
Swing diameter over top slid	mm	520	520	520	520
Turning diameter max.	mm	520	520	520	520
TURNING SPINDLE – LEFT // RIGHT		L	L // R	L	L // R
Spindle head DIN 55026	Size	A8	A8 // A8	A8 / A11	A8 / A11 // A8
Spindle bore	mm	77	77 // 77	77 / 115	77 / 115 // 77
Spindle diameter in front bearing	mm	160	160 // 160	160 / 160	160 / 160 // 160
Standard chuck diameter	mm	260 / 325	260 / 325 // 260 / 325	260 / 325 / 400	260 / 325 / 400 // 260 / 325
MAIN DRIVE – LEFT // RIGHT		L	L // R	L	L // R
Power max., 40% (100%) duty cycle	kW	33 (29)	33 (29) // 33 (29)	33 (29) / 54 (37)	33 (29) / 54 (37) // 33 (29)
Speed max.	min^{-1}	4000	4000 // 4000	4000 / 3300	4000 / 3300 // 4000
Torque max., 40% (100%) duty cycle	Nm	630 (550)	630 (550) // 630 (550)	630 (550) / 1600 (1100)	630 (550) / 1600 (1100) // 630 (550)
C-AXIS – LEFT // RIGHT		L	L // R	L	L // R
Speed max.	min^{-1}	100	100 // 100	100 / 32	100 / 32 // 100
Torque max., 40% (100%) duty cycle	Nm	630 (550)	630 (550) // 630 (550)	630 (550) / (1500)	630 (550) / (1500) // 630 (550)
Holding torque max. of the disc brake	Nm	2000	2000 // 2000	2000 / 3000	2000 / 3000 // 2000
Smallest programmable increment	Degrees	0,0001	0,0001 // 0,0001	0,0001	0,0001 // 0,0001
TURNING-BORING-MILLING UNIT – UPPER TOOL CARRIER*					
Power max., 40% (100%) duty cycle	kW	20 (15)		33 (27)	
Speed max.	min^{-1}	6000 / 9000 / 12000		9000 / 12000	
Torque at the spindle max., 40% (100%) duty cycle	Nm	250 (190) / 165 (125) / 125 (95)		284 (233) / 213 (175)	
Milling spindle diameter in front bearing	mm	80		80	
Z-axis travel	mm	2150	1500	2150	1500
X-axis travel	mm	600 (-20...+580)		600 (-20...+580)	
Y-axis travel	mm	250 (-100...+150)		250 (-100...+150)	
Z-axis feed force 100% duty cycle	kN	10		10	
X-axis feed force 100% duty cycle	kN	10		10	
Y-axis feed force 100% duty cycle	kN	12		12	
Rapid feed speed Z / X / Y	m/min	40 / 30 / 15		40 / 30 / 15	
B-axis swivelling range	Degrees	-110...+110		-110...+110	
B-axis additional indexing	Degrees	2,5		2,5	
B-axis swivelling torque max.	Nm	1250		1250	
B-axis holding torque max., indexed	Nm	10000		10000	
B-axis holding torque max., clamped	Nm	-		5000	
Smallest programmable increment B-axis (interpolable)	Degrees	0,0001		0,0001	
Tool system	Type	HSK-A63 / CaptoC6		HSK-A63 / CaptoC6	

		M30 MILLTURN	M30-G MILLTURN	M35 MILLTURN	M35-G MILLTURN
TAILSTOCK (MECHATRONIC, ADJUSTMENT VIA NC SERVO DRIVE)					
Feed force (adjustable)	kN	2,4 - 12	-	2,4 - 12	-
Live centre	MK	5	-	5	-
Weight of workpiece max.	kg	1000	-	1000	-
STEADY REST					
Clamping diameter max.	mm	350 / *	-	350 / *	-
Swing over steady rest slide	mm	520	-	520	-
DISC MAGAZINE					
Number of tool stations (place-encoded)	Number	40 / 80	40 / 80	40 / 80 / 120	40 / 80 / 120
Tool diameter, adjacent, max.	mm	90	90	90	90
Tool diameter, non-adjacent, max.	mm	160	160	160	160
Max. tool length	mm	450	450	450	450
Max. tool weight	kg	15	15	15	15
DISC TURRET – BOTTOM TOOL CARRIER					
Number of tool stations, HSK-A63, VDI 50-axial, driven	Number	-	12	-	12
Z-axis travel	mm	-	1355	-	1355
X-axis travel	mm	-	230	-	230
Rapid feed speed Z / X	m/min	-	40 / 10	-	40 / 10
Turning diameter max.	mm	-	400	-	400
CHIP CONVEYOR AND COOLANT UNIT					
Discharge height	mm	1250	1250	1250	1250
Standard coolant pump pressure	bar	10	10	10	10
PRINCIPAL DIMENSIONS OF THE BASE MACHINE					
Length x width x height	m	7,8 x 4,0 x 3,25	7,8 x 4,0 x 3,25	7,8 x 4,0 x 3,25	7,8 x 4,0 x 3,25
Working height of turning spindle	mm	1257	1257	1257	1257
Weight total, approximately	kg	15.000 – 18.000	20.000	15.000 – 18.000	20.000
CONTROL		Sinumerik 840D sl			
Display on the operator panel	Type	LCD colour display / 19“			
PAINTING		RAL 5023 distant blue, texture / 7035 light grey, texture / 7037 dusty grey, texture			

* other values available upon request

** indicated values refer to headstock A8 left without neck and chuck diameter 260mm

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04/18/EN_cp_04/18