



# Computer Numeric Control

CNC milling machines  
CNC lathes  
CNC software  
Accessories

**OPTIMUM®**  
MASCHINEN - GERMANY

## CNC metal working machines

The OPTIMUM in quality, price-performance and service



**OPTI mill®**  
**OPTI turn®**



**CNC main catalogue 2013/14**



Assembly F80



Assembly CNC changer



Final inspection L 33



Manufacturing on CNC machines

## Quality at a cost-efficient price OPTIMUM metal working machines

### Your requirements are our target

Since more than 20 years we are dealing with the development, design and production of **OPTIMUM** machines. All our products distinguish themselves by quality, accuracy, sustainability and consistent value. In addition to our production plants we have our articles solely produced by manufacturers who are able to fulfil our high quality requirements. The knowledge of our experience of decades serves to constantly advance and improve our products.

### The products

You're looking for a functional CNC machine offering comprehensive features at an economical price? Then you make the right choice by purchasing an **OPTIMUM** metal working machine. Our products are convincing by outstanding quality, accurate manufacturing and offer an "OPTIMUM" in price and performance.

### Production

Since 2003, **OPTIMUM** produces a large part of its metal working machines in its own factory in Yangzhou in China. The quality is monitored by German quality management representatives. Another important part of the **OPTIMUM** metal working machines is exclusively produced or produced for **OPTIMUM** according to special specifications.

### Quality

The **OPTIMUM** products are produced with high quality requirements. There are the same or similar products on the market which by far do not attain the quality standard of **OPTIMUM**: **OPTIMUM** products are **often copied**.



Optimum factory, Yangzhou China

**The OPTIMUM guarantee of quality**  
**All OPTIMUM products are produced with high quality requirements.**

### Distribution

**OPTIMUM** CNC machines can be purchased from your competent specialized dealers on site. An area-wide network of specialized dealers and sales partners - who are supported by the employees of **OPTIMUM** are at your disposal to help you with words and deeds.

### Exhibition

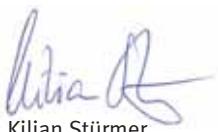
At our site in Hallstadt/Bamberg you will find a largely dimensioned exhibition room where we will be glad to present our products to you.

### After-Sales-Service

If your machine requires an after-sales service, we as well as your locally specialized dealer will be at your disposal with an experienced service team. A comprehensive stock of spare parts is available at our head office in order to ensure the supply of spare parts at short notice, if necessary. Our service guarantees you the value of your machines for years. Please use our **free of charge** phone hotline for any further questions: +49/ (0) 951 - 96 555 74

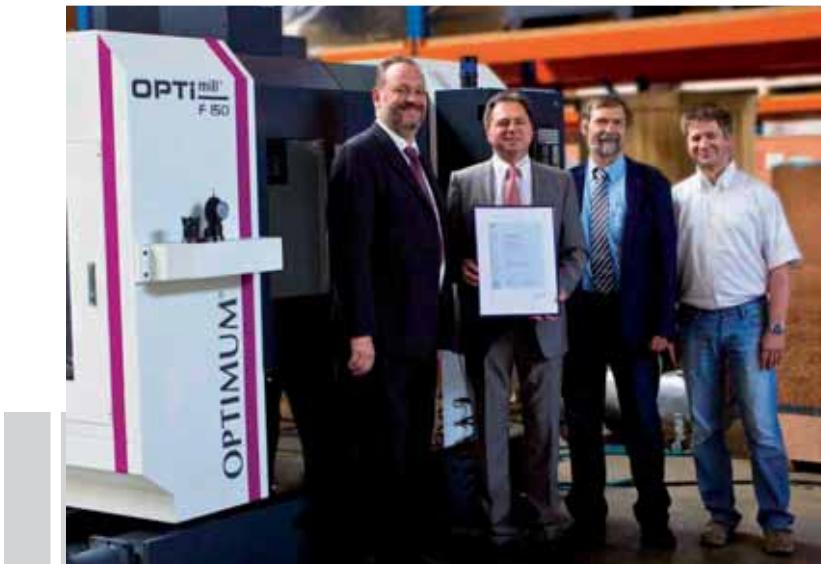
### Worldwide representations

As a German company, **OPTIMUM** is globally working together with specialist partners from its company's headquarters at Hallstadt/Bamberg. The international distribution network of **OPTIMUM** extends worldwide over the most important countries.

  
Kilian Stürmer  
Manager



## Optimum Maschinen Germany New cooperation partner for CNC training in Bavaria



### A strong team

Since many years Siemens is the system supplier of the control and drive engineering for the CNC controlled lathes and milling machines of the Optimum Maschinen Germany GmbH. Due to the long term and successful cooperation, a cooperation partnership for the CNC training was agreed in June 2012.

In target group specific courses the participants of the training program are made familiar with the functions of the different Sinumerik controls.

To do so, Optimum uses CNC machines with the Sinumerik controls 828D, 802S and 808D. Also the software "Sinumerik Operate" with the working step programming "ShopMill" and "ShopTurn" are part of the training courses. The machine operators become familiar with the rapid NC programming, the work preparation and the intuitive use of the software. Trainers of OPTIMUM certified by Siemens train the skilled workers either directly at their working places or at the company headquarters of Optimum at Hallstadt nearby Bamberg



### With knowledge to success!

You may learn which inumerous application options are offered by programming with different software programs and machine controls in the field of CNC engineering.

**Operation and programming using**  
Siemens SINUMERIK 828D  
Siemens SINUMERIK 802S  
Siemens SINUMERIK 828D Operate ShopMill, ShopTurn  
Siemens SINUMERIK 808D

### Training services

Perfectly qualified specialized staff is the prerequisite for productivity and quality. The SINUMERIK training of OPTIMUM establishes this basis. In target group specific courses the participants are made familiar with the functions of the SINUMERIK CNC controls.

Trainers certified by Siemens will train you on site in your premises worldwide or at our company headquarters in Hallstadt/Bamberg. Please do not hesitate to contact us: [info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)





## ■ Sales training and training of staff / customer training

The success in handling our products is mainly determined by passing the technical knowledge on to the sales and service employees by consequent internal training measures. This qualification forms the basis so that we are able to guarantee a skilled, qualified consultation and troubleshooting at any time when a customer contacts us. This qualification also includes our customers; we are providing workshops at our facility or training courses at the customer's premises.



## ■ Service support

...since good service is essential!

Our OPTIMUM technicians are at your disposal at any time in case of service in order to support the shop in performing a rapid and targeted repair.

Weak points are analysed and customer wishes noted in close cooperation with the service centre and its internal and external employees. These points are evaluated under technical points of view and noted down in specific requirements or measure catalogues.



## ■ Testing in practice

Our engineers combine theory and practice. In order to leave nothing to chance with regard to the product satisfaction; application-specific tests are performed on all machines and selected customers are consequently involved in this testing. In this way, any new product first has to prove itself during everyday work before it is included as a inherent part in our range of products. The technical analysis helps us to recognize and resolve any remaining weak points.



## ■ Technical customer support

Our customers may rightly expect that our specialists are using their knowledge and experience to their utmost satisfaction. Our product consultants support the user with technical information. A phone hotline as well as an info mail account are available which our customers may use in order to receive qualified information or troubleshooting at short notice.



## ■ Planning

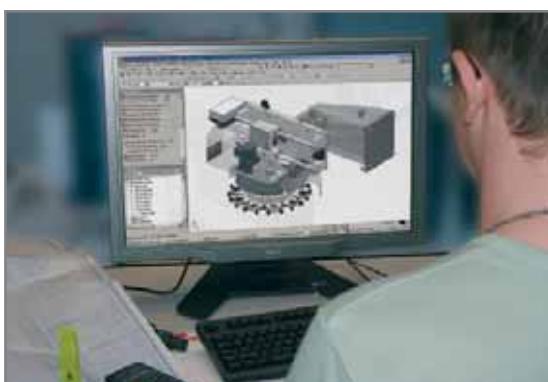
Already during the planning phase our technical department intervenes in the development of new products which are manufactured at our facility as well as at the facilities of our partners. In this way, all marketing influences and customer requirements are immediately added where the future direction for a successful product design is set.

**Our technical department has a well-established team of technically highly qualified specialists. Their well-founded expertise allows flexible and creative implementation of all requirements which are demanded for our product and services.**



## ■ Technical documentation and risk analyses

Our technical authors are able to achieve a high standardized level which complies with all legal requirements or even exceeds them. These enormous efforts only serve to easily introduce the machine to our customers as well as to guarantee the continuous and safe operation. In order to compensate the identified safety gaps, measures are taken to minimize the risk in the frame of the analysis. Then an evaluation of the remaining residual risk is performed after having implemented these measures.



## ■ Development

The development work is performed by creating a virtual machine model using most modern 3D CAD software. In doing so, beside the optimum functionality of the machine we also pay attention to the re-usability of the data which are created during the development phase. Such data do not only serve to elaborate manufacturing documents and documentations, but also to establish calculations as well as for computer-aided manufacturing and to visualize and simulate the product.



### ■ Quality management incoming goods inspection

Our quality manager from Germany is the first contact for adhering to quality on site.

He is responsible for the dimensional accuracy of the components as well as their control and the quality of the manufacturing process. He is closely working together with our technical department in the headquarters in Germany and thus forming an optimum symbiosis.



### ■ Quality management production and outgoing goods inspection

Beside delivery reliability and service the quality of our products is of highest importance for us. Our quality is ensured by continuous internal and external monitoring on site by our quality manager.

Our comprehensive outgoing goods inspection is performed according to the general technical guidelines.



### ■ Supply of replacement parts

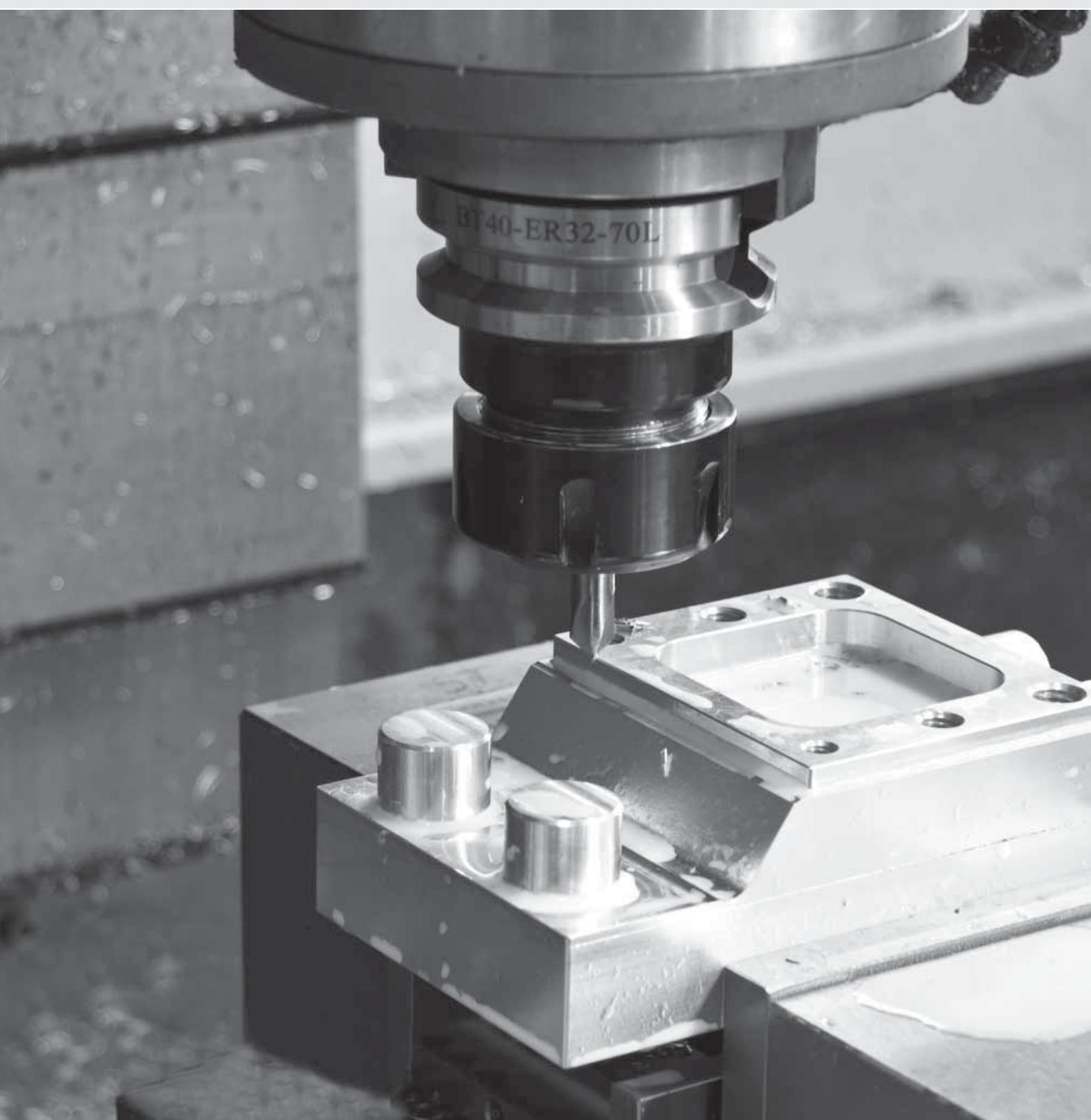
We know that the rapid availability of spare parts is one of the basic requirements for a satisfying, customer-focused service concept. At Optimum Machines Germany GmbH the planning, coordination and availability of replacement parts are harmonized in a way to ensure maximum benefit regarding economic efficiency and speed.



### ■ Two-stage price-performance ratio

We subdivide our metal working machines into two categories with an "OPTIMUM" in quality and price-performance.

- |               |   |
|---------------|---|
| Standard line | - Metal working machines for the professional craftsmen and industrial enterprises. |
| Premium line  | - Machines for small and medium-sized companies and for the industry                |



#### **CNC milling machines**

M 2LS .....	10	F 80 .....	16
M 4HS .....	12	F 105 .....	18
F 4 .....	14	F 150 .....	20
		F 310 .....	24
		F 410 .....	28

# CNC milling machines

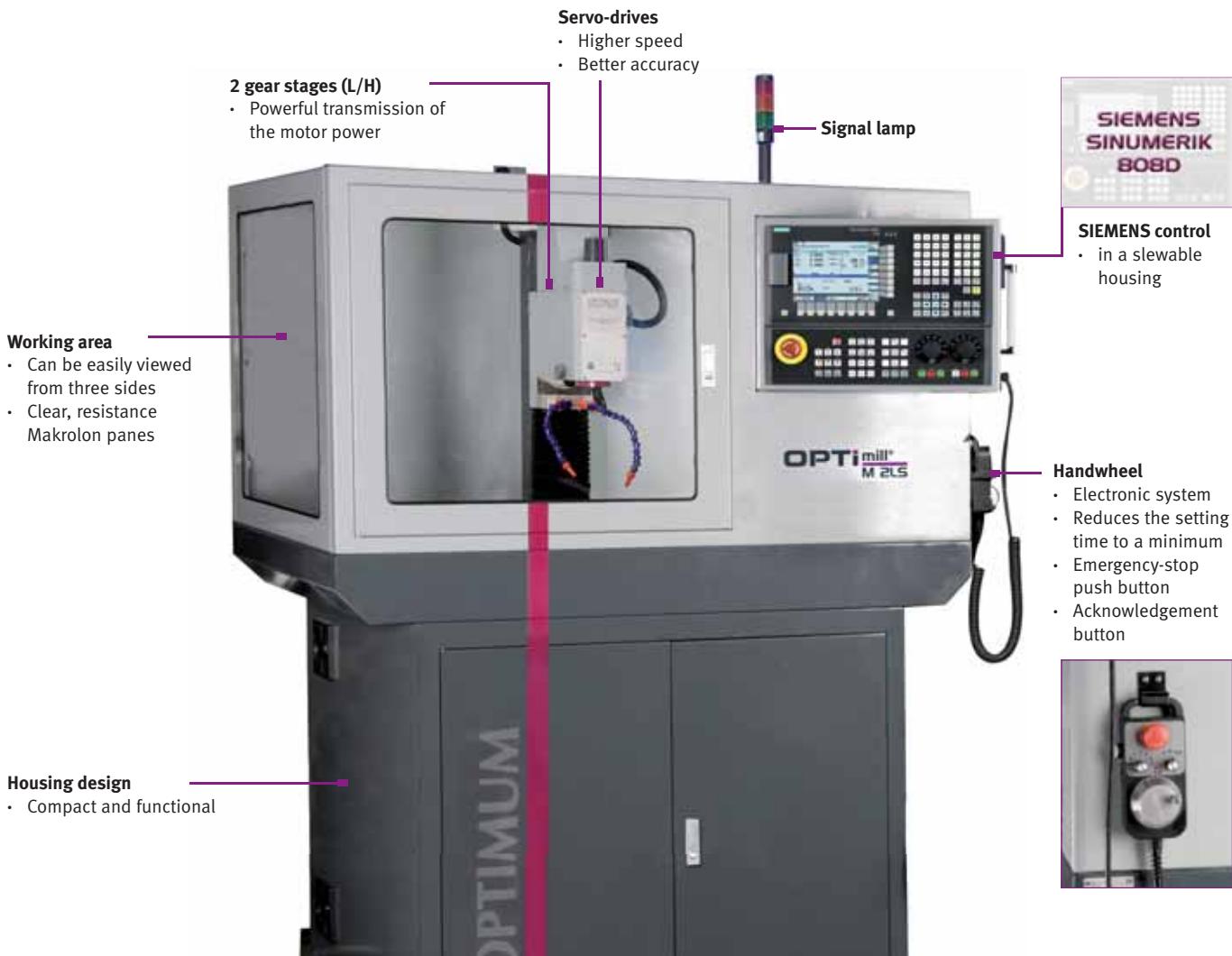


## CNC milling machine with servo-drives and SIEMENS control SINUMERIK 808 D, perfect for training purposes

### Convincing arguments: quality, efficiency and price

- Ball screw made by **HIWIN** in all three axes
- Robust and precise dovetail guide with adjustable V-ledges free of play
- Bellow as guide protection
- Electronic controllable drive
- Front door with safety switch

- Base designed on two sides. Front side with access to the coolant tank; rear side with access to the electronic system
- Central lubrication
- Gear stage is represented with the gear change to the SIEMENS control



„CNC-instruction - Information“ on page 80

### Coolant

- Tank integrated in the base
- Tank capacity 10 litres



Type	M2LS
Item No	350 0123
<b>Electrical connection</b>	
Connection ~50 Hz	230 V / 1 Ph
Total connected value	1.0 kW
Driving motor	850 W
Motor coolant pump	40 W
Tank capacity coolant pump	10 litres
<b>Spindle seat</b>	
Spindle seat	MT 2/M 10
Milling head dimension max.	Ø 52 mm
End mill dimension max.	Ø 16 mm
<b>Travels</b>	
X axis	480 mm
Y axis	155 mm
Z axis	280 mm
<b>Feed speeds</b>	
X axis	2'000 mm/min.
Y axis	2'000 mm/min.
Z axis	2'000 mm/min.
<b>Throat</b>	
Throat	185 mm
<b>Speeds</b>	
Gear stages slow	90 - 1'480 min <sup>-1</sup>
Gear stages rapid	150 - 3'000 min <sup>-1</sup>
Gear stages	2 steps, infinitely variable
<b>Cross table</b>	
Table length x width	700 x 180 mm
T-slot size / number / distance	12 mm / 3 / 63 mm
Load (max.)	55 kg
<b>Dimensions</b>	
Length	1'620 mm
Width x Height	895 x 2'085 mm
Total weight	380 kg

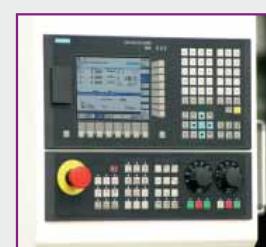
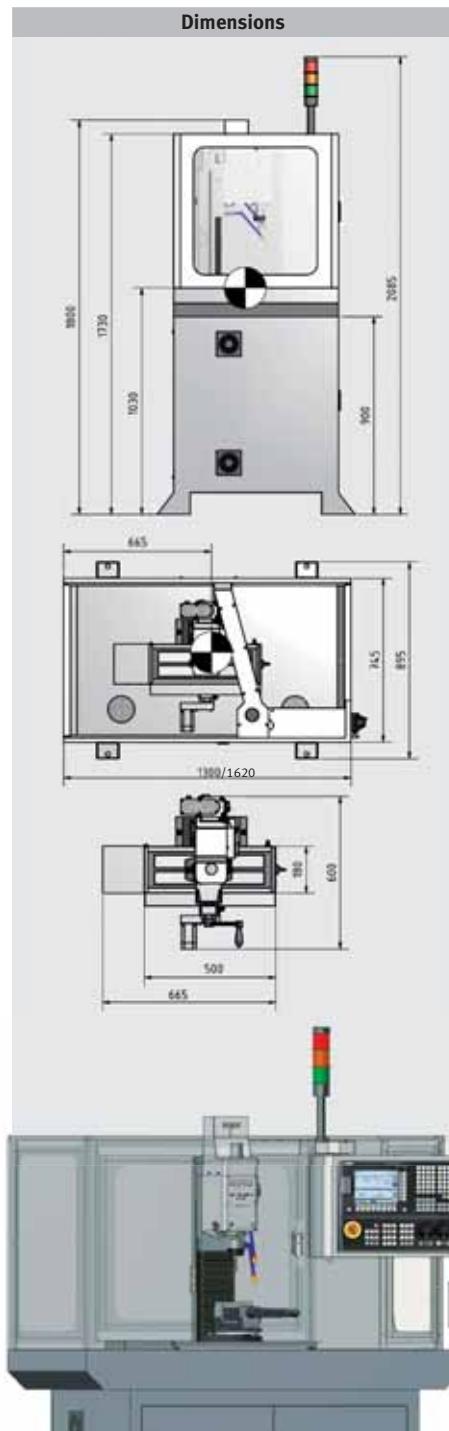
#### Standard equipment

- Operating tool
- Data cable RS 232
- Siemens Tool Box CD
- Working lamp
- Taper mandrel MT 2, B16 M10

#### Siemens SINUMERIK 808 D

##### Outstanding performance. Simply intelligent.

- User interface Sinumerik Operate Basic with Sinumerik startGuide for a new dialogue-oriented user support which conducts through the setting of the machine step-by-step and reduces the time for commissioning to a minimum.
- 7.5" LCD colour display
- Sinumerik MDynamics (Look ahead, Advanced Surface ...)
- High-speed settings Cycle (Cycle 832)
- Look Ahead kits 50
- 80 bit Nano accuracy
- DIN / ISO programming
- Contour calculator
- Online help
- Max. 3 interpolating axes
- Memory size 1.25 MB (extendable via USB)
- Metric/Inch change-over
- ProgramGUIDE BASIC



Technique

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Accessories

## Stable CNC milling machine with SIEMENS - control SINUMERIK 802S base line, perfect for the users who need high speeds and high accuracy

### Convincing arguments: quality, efficiency and price

- Ball screw made by **HIWIN** in all three axes
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Heavy, solid cast iron construction
- Re-adjustable V-ledges of the X and Y axis
- Base designed on two sides. Front side with access to the coolant tank; rear side with access to the electronic system and to the Optimum CNC Controller IV
- Infinitely variable drive
- SIEMENS Micromaster as frequency converter
- Front doors with safety switch
- Central lubrication
- Linear guideway in the Z-axis
- Very wide speed range
- Powerful micro processor control
- Control of the axis drives
- Micro step setting is possible
- Spindle seat ER32 for high speed and normal chipping

### Housing design

- Compact and functional
- Lateral parts of housing are collapsible thus easy access to the machine

### Working area

- Easily viewed from three sides
- Clear, resistance Makrolon panes



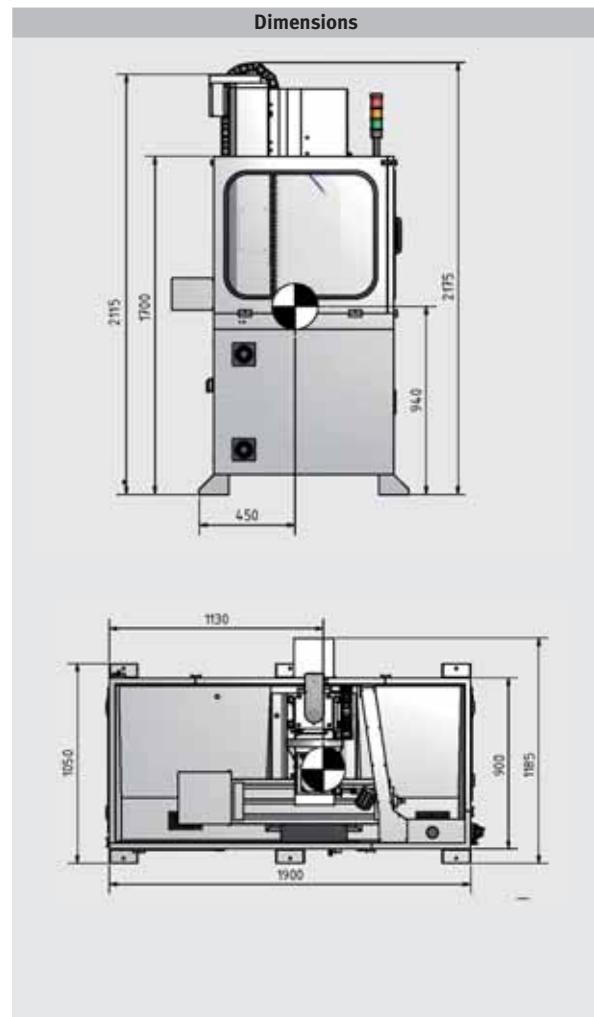
Fig.: M 4 HS



### Rear of base

- Powerful micro processor control
- Control of the axis drives
- Micro step setting is possible

Type	M 4HS
Item No	350 0140
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Total connected value	3.1 kW
Driving motor	3 kW
Torque driving motor	4.7 Nm
Gear stages driving motor	Direct transmissions
Motor coolant pump	40 W
Tank capacity coolant	15 litres
<b>Spindle seat</b>	
Spindle seat	ER 32
Drilling capacity in steel (S235JR)	Ø 13 mm
Continuous drilling capacity in steel (S235JR)	Ø 11 mm
End mill dimension max.	Ø 20 mm
<b>Travels</b>	
X axis	500 mm
Y axis	240 mm
Z axis	530 mm
<b>Feed speeds</b> (were determined in the 1/16 step procedure)	
X axis	2'000 mm/min.
Y axis	2'000 mm/min.
Z axis	2'000 mm/min.
<b>Throat</b>	
Throat	260 mm
<b>Speeds</b>	
Speeds	150 - 8'600 min <sup>-1</sup>
<b>Cross table</b>	
Table length x width	750 x 210 mm
T-slot size / number / distance	18 mm / 3 / 80 mm
<b>Dimensions</b>	
Length x Width x Height	1'900 x 1'185 x 2'175 mm
Total weight	800 kg



#### Standard equipment

- Operating tool
- Data cable RS 232
- Siemens Tool Box CD
- Working lamp
- Coolant equipment

- We imperatively recommend the briefing performed by our specialists.



„CNC-instruction - Information“ on page 80

#### Siemens 802S base line



SINUMERIK 802S base line, the CNC control made by SIEMENS for application in the low power range is particularly well suited for milling machines with up to 3 axis and a spindle and distinguishes itself by the following properties:

- Extremely easy operation
- Maintenance-free
- Compact design.

#### Milling cycles:

- Deep-hole drilling
- Row of holes - circle
- Row of holes - line
- Drilling, countersinking
- Milling of pockets, grooves and circular pockets

## Stable CNC milling machine with SIEMENS control SINUMERIK 808 D

### Convincing arguments: quality, efficiency and price

- Linear guideways in all axis
- All axis equipped with ball screws
- 8-position magazine tool changer
- Cross table with 3 T-slots
- Electronic handwheel
- Coolant equipment
- Central lubrication
- Servo drive in all axis
- Slewable control panel
- Siemens Sinumerik 808 D on PC free of charge (Computer workstation)
- Including 2-year Siemens warranty



**Cable duct**

- in an energy chain



**SIEMENS control**

- in a slewable housing

### Working area

- Can be easily viewed from three sides
- Clear, resistance Makrolon panes



**„Starter kit BT 30“  
on page 76**



**„CNC-instruction  
- Information“ on  
page 80**

**Convincing arguments ...**



**Tool change system**

- Automatic by means of magazine disc for 8 tools
- Tool replacement speed 8 sec.**
- Max. tool diameter 50 mm



**Control cabinet**

- Clearly arranged structure
- Largely dimensioned



**Central lubrication**

- reduced wear and increases the service life of the machine

**Power connection**

- Quick action coupling



**Chip tray**

- Simple chip disposal due to extractable chip tray (backside)

<b>Type</b>	<b>F 4</b>
Item No	350 0430
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Total connected value	8.5 kW
Driving motor	2.2 kW
Torque driving motor	14 Nm
Motor coolant pump	95 W
Tank capacity coolant	
<b>Spindle seat</b>	
Spindle seat	ISO 30/BT 30
Milling head dimension max.	Ø 65 mm
End mill dimension max.	Ø 30 mm
<b>Milling accuracy</b>	
Repeatability	± 0.015 mm
Positioning accuracy	± 0.015 mm
<b>Tool changer</b>	
Disc type	8 tools
Tool diameter max.	70 mm
Tool weight max.	6 kg
Time - tool changing	8 seconds
<b>Travels</b>	
X axis	310 mm
Y axis	200 mm
Z axis	300 mm
<b>Feed speeds</b>	
Rapid feed X-, Y-, Z axis	10'000 mm/min.
<b>Torque motor</b>	
X axis	3.3 Nm
Y axis	5 Nm
Z axis	5 Nm
<b>Speeds</b>	
Speeds	50 - 9'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	90 - 390 mm
Table length x width	690 x 210 mm
T-slot size / number / distance	16 mm / 3 / 63 mm
Load (max.)	100 kg
<b>Air connection</b>	
Connection	min. 7 bars
<b>Dimensions</b>	
Length x Width x Height	1'800 x 1'641 x 2'000 mm
Tank capacity coolant	50 litres
Total weight	1'800 kg

**Siemens SINUMERIK 808 D**

**Outstanding performance. Simply intelligent.**

- User interface Sinumerik Operate Basic with Sinumerik startGuide for a new dialogue-oriented user support which conducts through the setting of the machine step-by-step and reduces the time for commissioning to a minimum.
- 7.5“ LCD colour display
- Sinumerik MDynamics (Look ahead, Advanced Surface ... )
- High-speed settings Cycle (Cycle 832)
- Look Ahead kits 50
- 80 bit Nano accuracy
- DIN / ISO programming
- Contour calculator
- Online help
- Max. 3 interpolating axes
- Memory size 1.25 MB (extendable via USB)
- Metric/Inch change-over
- ProgramGUIDE BASIC



Technique

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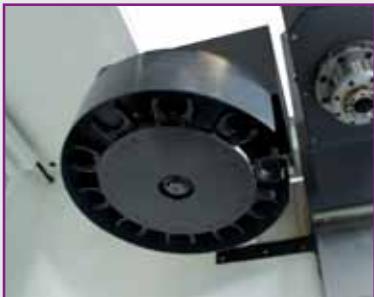
## The compact solution in the field of training with SIEMENS control 808D

### Convincing arguments: quality, efficiency and price

- Main spindle drive with servo motor
- Spindle motor with  $8'000 \text{ min}^{-1}$  as standard
- All linear guiding are equipped with special steel covers
- Automatic central lubrication of the machine
- Integrated machine lamp / integrated coolant equipment
- Tool change is performed automatically or by pushing a button (electro-pneumatic tool clamping device)
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Largely designed access doors in order to reduce cleaning and maintenance times to a minimum
- Electronic handwheel reduces the set-up time to a minimum with EMERGENCY-STOP push button and acknowledgement button
- Servo drive in all axis
- Including 2-year Siemens warranty
- Siemens Sinumerik 808 D on PC free of charge (Computer workstation)



Convincing arguments ...



**Tool change system**

- Automatic by means of magazine disc for 10 tools
- Tool replacement speed 7 sec.
- Tool diameter max. 104 mm



**Control cabinet**

- Clearly arranged structure
- Largely dimensioned



**LED-Machine lamp**

- High light output
- Little energy consumption
- Long service life



**Cable duct**

- in an energy chain

<b>Type</b>	<b>F 80</b>
Item No	350 1080
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Total connected value	9.5 kW
Driving motor	2.2 kW
Torque driving motor	14 Nm
Motor coolant pump	650 W
Tank capacity coolant	
<b>Spindle seat</b>	
Spindle seat	ISO 30 BT30
Milling head dimension max.	Ø 65 mm
End mill dimension max.	Ø 30 mm
<b>Milling accuracy</b>	
Repeatability	± 0.015 mm
Positioning accuracy	± 0.015 mm
<b>Tool changer</b>	
Disc type	10 tools
Tool diameter max.	104 mm
Tool weight max.	6 kg
Time - tool changing	7 seconds
<b>Travels</b>	
X axis	400 mm
Y axis	225 mm
Z axis	375 mm
<b>Feed speeds</b>	
Rapid feed (X, Y, Z axis)	10'000 mm/min.
<b>Torque motor</b>	
X axis	5 Nm
Y axis	5 Nm
Z axis	6 Nm
<b>Speeds</b>	
Speeds	50 - 8'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	75 - 475 mm
Table length x width	800 x 260 mm
T-slot size / number / distance	16 mm / 5 / 50 mm
Load (max.)	150 kg
<b>Dimensions</b>	
Length x Width x Height	1'925 x 1'600 x 2'070 mm
Tank capacity coolant	160 litres
Total weight	1'900 kg

**Siemens SINUMERIK 808 D**

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- Look Ahead kits 50
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- Contour calculator
- Online help
- Max. 3 interpolating axes
- Memory size 1.25 MB (extendable via USB)
- Metric/Inch change-over
- ProgramGUIDE BASIC



Technique

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The compact solution to produce small series in small and medium-sized companies and in the field of training with SIEMENS control 808D

**Convincing arguments: quality, efficiency and price**

- Robust type
- Main spindle drive with servo motor
- Spindle motor with  $8'000 \text{ min}^{-1}$  as standard
- All linear guiding are equipped with special steel covers
- Automatic central lubrication of the machine
- Integrated machine lamp / integrated coolant equipment
- Tool change is performed automatically or by pushing a button (electro-pneumatic tool clamping device)
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Largely designed access doors in order to reduce cleaning and maintenance times to a minimum
- Electronic handwheel reduces the set-up time to a minimum with EMERGENCY-STOP push button and acknowledgement button
- Servo drive in all axis
- Feed motors made by SIEMENS (V60)
- Including 2-year Siemens warranty
- Siemens Sinumerik 808 D on PC free of charge (Computer workstation)



**Convincing arguments ...**



**Tool change system**

- Automatic by means of magazine disc for 12 tools
- Tool replacement speed 7 sec.
- Tool diameter max. 104 mm



**Control cabinet**

- Clearly arranged structure
- Largely dimensioned



**LED-Machine lamp**

- High light output
- Little energy consumption
- Long service life



**Connection**

- Compressed air
- Central lubrication

<b>Type</b>	<b>F 105</b>
Item No	350 1105
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Total connected value	10 kW
Driving motor	5.5 kW
Torque driving motor	35 Nm
Motor coolant pump	650 W
Tank capacity coolant	
<b>Spindle seat</b>	
Spindle seat	ISO 40 BT40
Milling head dimension max.	Ø 75 mm
End mill dimension max.	Ø 35 mm
<b>Milling accuracy</b>	
Repeatability	± 0.01 mm
Positioning accuracy	± 0.01 mm
<b>Tool changer</b>	
Disc type	12 tools
Tool diameter max.	104 mm
Tool weight max.	6 kg
Time - tool changing	7 seconds
<b>Travels</b>	
X axis	550 mm
Y axis	305 mm
Z axis	460 mm
<b>Feed speeds</b>	
Rapid feed (X, Y, Z axis)	10'000 mm/min.
<b>Torque motor</b>	
X axis	5 Nm
Y axis	5 Nm
Z axis	10 Nm
<b>Speeds</b>	
Speeds	10 - 8'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	100 - 600 mm
Table length x width	800 x 320 mm
T-slot size / number / distance	14 mm / 3 / 100 mm
Load (max.)	300 kg
<b>Dimensions</b>	
Length x Width x Height	2'164 x 1'860 x 2'200 mm
Tank capacity coolant	200 litres
Total weight	2'800 kg

**Siemens SINUMERIK 808 D**

**Outstanding performance. Simply intelligent.**

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- ProgramGUIDE BASIC



Technique

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The OPTIMUM Premium CNC milling machine with SIEMENS control SINUMERIK 828 D distinguishes itself by performance, speed, accuracy and high durability

**Convincing arguments: quality, efficiency and price**

- Heavy type
- High productivity
- Linear guiding for high rapid feed speeds in all axis
- 16-position magazine tool changer (carousel type)
- High reliability
- Cast iron body made of quality Meehanite cast iron
- Cross table precision ground with 4 T-slots
- Heavily rippled, torsion-free machine basis
- Precision ground pre-tensioned high-performance ball screws in all axes Ø 32 x P8 x C3
- Powerful servo drives directly on the ball screws in all 3 axis
- Electronic handwheel
- Chip conveyor
- Cleaning gun
- RJ45 plug connection, USB connection and power connection (230V)
- Coolant equipment with coolant tank with a capacity of 210 litres
- Heat exchanger
- Including 2-year Siemens warranty

**Including**

**Our options:**

- Safety Integrated
- Residual material detection and operation
- ShopMill Working step programming
- Managing network drive
- 3-D simulation finished part
- Simultaneous recording



Set up with  
opened door  
safety integrated  
power by siemens



**PREMIUM**

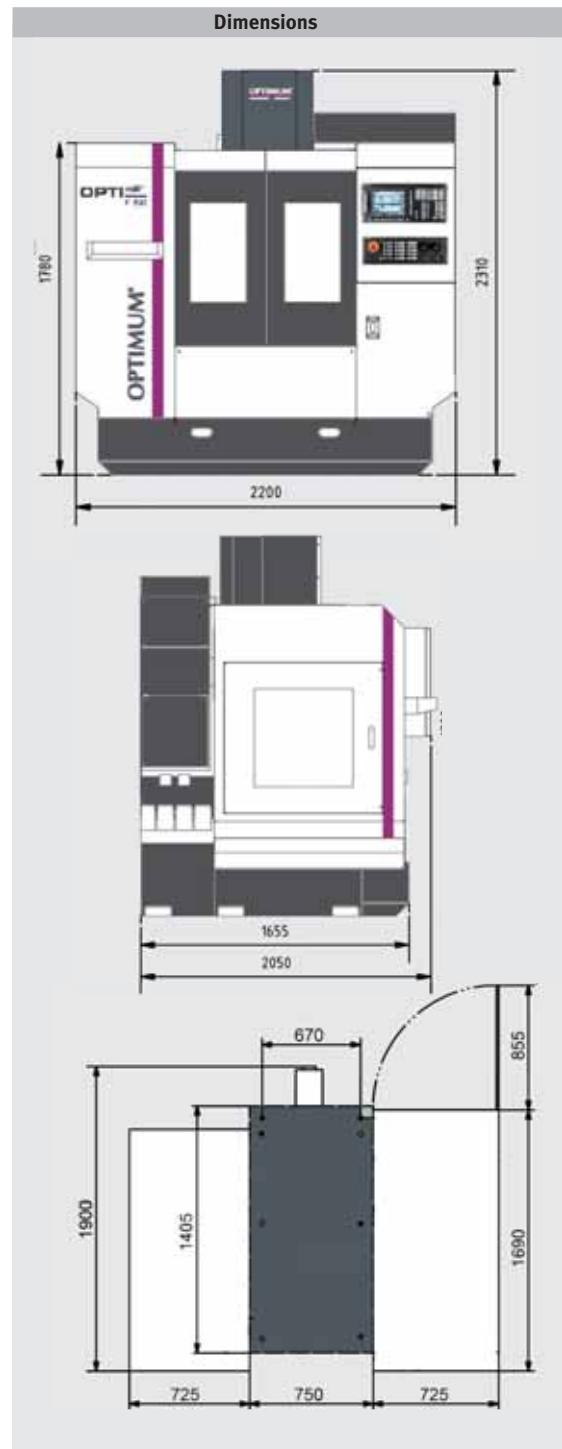
**Special equipment:**

- Tool changer 24-position double arm gripper
- Time - tool changing Tool to tool 1,8 Sek.



Fig. with optional double arm gripper and chip carriage

Type	F 150
Item No	351 1210
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Total connected value	25 kW
Driving motor	12 kW (S1-mode; 9 kW)
Torque driving motor	57 Nm
Motor coolant pumps 3 pcs.	1.27 kW each
<b>Spindle seat</b>	
Spindle seat	ISO 40 DIN 69871
Milling head dimension max.	Ø 63 mm
End mill dimension max.	Ø 32 mm
<b>Milling accuracy</b>	
Repeatability	0.005 mm
Positioning accuracy	± 0.005 mm
<b>Tool changer</b>	
Disc type	16 tools
Tool diameter max.	89 mm
Tool weight max.	8 kg
Time - tool changing	
Tool to tool	7 seconds
<b>Travels</b>	
X axis	760 mm
Y axis	430 mm
Z axis	460 mm
<b>Feed speeds</b>	
Milling feed (X, Y, Z axis)	10'000 mm/min.
Rapid feed (X-, Y-, Z axis)	24'000 mm/min.
<b>Torque motor</b>	
X axis	6 Nm
Y axis	6 Nm
Z axis	11 Nm
<b>Speeds</b>	
Speeds	10 - 10'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	102 - 562 mm
Throat	480 mm
Table length x width	900 x 410 mm
T-slot size / number / distance	16 mm / 4 / 102 mm
Load (max.)	350 kg
<b>Dimensions</b>	
Length x Width x Height	3'000 x 2'050 x 2'310 mm
Tank capacity coolant	210 litres
Total weight	3'520 kg



#### Standard equipment

Residual material detection and machining for contour pockets and stock removal	Coolant pistol
Shop Mill	Chip flushing system
Network drive management	Working lamp
3-D simulation finished part	Tool changer 16-position carousel type
Simultaneous recording	Chip conveyor screw-conveyor type
Safety integrated	Heat exchanger
Sinumerik Operate	6 pcs. Machine feet
EMC	

„Starter kit SK40/DIN 69871“ on page 79



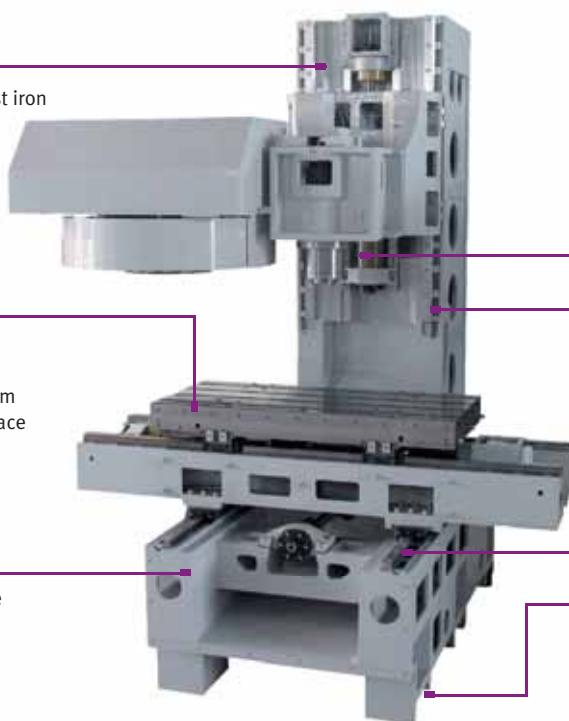
„CNC-instruction  
- Information“ on  
page 80

## Standard equipment

Convincing arguments: quality, efficiency and price

### Cast iron body

- made of quality Meehanite cast iron



### Spindle

- ISO 40
- Spindle speed  
 $10'000 \text{ min}^{-1}$  as standard

### Cross table

- Massive, accurate and largely dimensioned
- Clamping surface 900 x 410 mm
- Precisely machined at the surface

### Linear guideways

- for high rapid feed speeds  
 $24'000 \text{ min}^{-1}$  in all three axes

### Base body

- Quality cast iron of rippled type

### Machine feet

- 6 pieces
- Optimum alignment of the machine

### Heat exchanger



- Efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

### Tool change system



- Automatic by means of magazine disc for 16 tools
- Max. tool length 300 mm

### Handwheel



- Electronic system
- Reduces the set up time
- Emergency-stop push button
- Acknowledgement button

### Cleaning gun



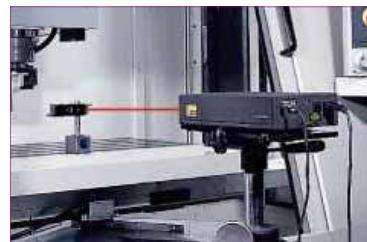
- Easy cleaning of the working area

### Chip flushing system



- Powerful chip flush system to clean the working chamber and the workpiece

### Laser measurement



- Guaranteed repeatability and positioning accuracy

## Special equipment

Item No	Options F 150
	<b>Tool changer 24-position double arm gripper</b> Time - tool changing Tool to tool 1,8 Sek. (In exchange - Scope of delivery standard tool changer 16-position carousel type)
351 1210 13	<b>Power transformer</b> for special tension
351 1210 10	<b>Belt type of chip conveyor</b> (Retrofitting of scope of delivery chip conveyor screw-conveyor type)
	<b>Chip carriage</b>
	<b>Fourth axis Ø 120 mm</b> including assembly • incl. SIEMENS motor
	<b>3-jaw chuck Ø 120 mm</b> for fourth axis
351 1210 07	<b>Counterholder</b> for 3-jaw chuck Ø 120 mm for fourth axis
	<b>Fifth axis Ø 100 mm</b> • incl. SIEMENS motors
	<b>Coolant channels</b> for spindles 20 bars integrated  <b>Coolant channels</b> for spindles 20 bars external version with external cooling tank  <b>Coolant channels</b> for spindles 70 bars external version with external cooling tank • Filtering accuracy 25 µm
351 1210 05	<b>Air conditioning</b> (In exchange - Scope of delivery standard heat exchanger)
	<b>Spindle 12'000 min⁻¹</b> (In exchange - Scope of delivery standard spindle 10'000 min⁻¹)
	<b>Tool Renishaw TS 27R</b>
351 1230 17	<b>Machine reparation for Renishaw NC 4</b>
	<b>Tool control system Renishaw NC4</b> • Contactless tool measurement and detection of tool break
351 1230 18	<b>Machine reparation for Renishaw OMP60</b>
	<b>Tool one measuring sensor Renishaw OMP60</b> • Optical signal transfer

Can only be ordered ex works.

For prices and further options please contact your dealer or send us an e-mail: [info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

Technique

Mit

Turn

Software

Assessories

## The Optimum Premium CNC milling machine with SIEMENS control SINUMERIK 828 D distinguishes itself by performance, speed, accuracy and high durability

### Convincing arguments: quality, efficiency and price

- Precision linear guideways in all axis
- 24-position magazine tool changer
- Cast iron body made of quality Meehanite cast iron
- Cross table precision ground with 5 T-slots
- Heavily rippled, torsion-free machine basis
- Precision ground pre-tensioned high-performance ball screws in all axes Ø 40 x P12 X c3
- Main spindle SK40 up to 10'000 rev/min, with belt drive to minimise the vibrations as well as heat and noise development
- Spindle oil cooler
- Cross table and machine base made of high quality Meehanite cast iron, low-vibration
- Powerful servo drives directly on the ball screws in all 3 axes
- Chip conveyor incl. chip flushing system
- Cleaning gun
- Coolant pump with 4 bars
- Electronic handwheel
- Cleaning gun
- RJ45 plug connection, USB connection and power connection (230V)
- Telescopic guiding covers of all 3 axis
- Including 2-year Siemens warranty



Set up with  
opened door

safety integrated  
power by siemens

### Including

#### Our options:

- Safety Integrated
- Residual material detection and operation
- ShopMill Working step programming
- Managing network drive
- 3-D simulation finished part
- Simultaneous recording



PREMIUM

Type	F 310
Item No	351 1230
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Power of the total connected value	25 kW
Driving motor	13 kW (S1)
Torque driving motor	70 Nm
Motor coolant pumps 4 pcs.	1.27 kW each
<b>Spindle seat</b>	
Spindle seat	ISO 40 DIN 69871
Milling head dimension max.	Ø 63 mm
End mill dimension max.	Ø 32 mm
Throat	615 mm
<b>Milling accuracy</b>	
Repeatability	0.005 mm
Positioning accuracy	± 0.005 mm
<b>Tool changer</b>	
Disc type	24 tools
Tool diameter max.	80 mm
Tool diameter max. (secondary places free)	125 mm
Tool length max.	300 mm
Tool weight max.	8 kg
Time - tool changing	
Tool to tool	1,8 seconds
<b>Travels</b>	
X axis	1'000 mm
Y axis	560 mm
Z axis	550 mm
<b>Feed drive of axis</b>	
Milling feed (X, Y, Z axis)	10'000 mm/min.
<b>Torque motor</b>	
X axis	16 Nm
Y axis	16 Nm
Z axis	11 Nm
<b>Rapid feed</b>	
X axis	30'000 mm/min
Y axis	30'000 mm/min
Z axis	24'000 mm/min
<b>Speeds</b>	
Speeds	10 - 10'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	100 - 650 mm
Spindle Z axis housing	615 mm
Table length x width	1'200 x 520 mm
T-slot size / number / distance	16 mm / 5 / 80 mm
Load (max.)	800 kg
<b>Dimensions</b>	
Length x Width x Height	4'080 x 2'600 x 3'130 mm
Tank capacity	210 litres
Total weight	6'020 kg

### Standard equipment

Residual material detection and machining for contour pockets and stock removal
Shop Mill
Network connection
3-D simulation finished part
Simultaneous recording
Safety integrated
Sinumerik Operate
EMC
Chip conveyor conveyor type
Chip carriage
Oil separator
Heat exchanger
Coolant pistol
Chip flushing system
Working lamp
Tool changer 24-position double arm gripper
Coolant pump 4 bars
6 pcs. Machine feet
• Spindle oil cooler

„Starter kit SK40/DIN 69871“ on page 79



„CNC-instruction - Information“ on page 80

## Standard equipment

### Cast iron body

- Quality Meehanite cast iron



- Spindle**
- ISO 40
  - Spindle speed  $10'000 \text{ min}^{-1}$  as standard

### Cross table

- Massive, accurate and largely dimensioned
- Clamping surface  $1'200 \times 528 \text{ mm}$
- Precisely machined at the surface
- Quality Meehanite cast iron

### Base body

- Quality cast iron of rippled type

- Linear guideways**
- for high rapid feed speeds  $30'000 \text{ min}^{-1}$  in X- and Y- axis and  $24'000 \text{ mm/min}$  in the Z - axis

- Machine feet**
- 6 pieces
  - Optimum alignment of the machine

### Heat exchanger & Air Conditioner



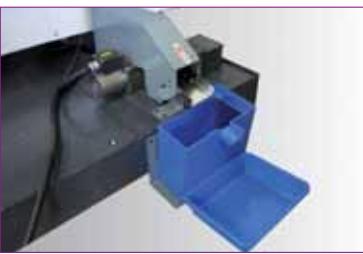
- Efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

### Tool change system



- Automatic
- Magazine disc for 24 tools
- Max. tool length 300 mm

### Oil separator



- Eliminating contaminants from the coolant

### Handwheel



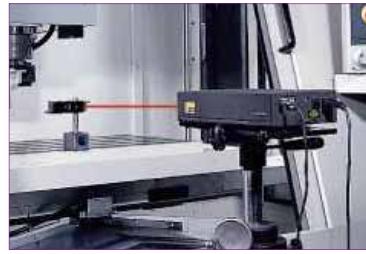
- Electronic system
- Reduces the set up time
- Emergency stop push button
- Acknowledgement button

### Chip flushing system



- Powerful chip flush system to clean the working chamber and the workpiece

### Laser measurement



- Guaranteed repeatability and positioning accuracy

## Special equipment

Item No	Options F 310
	351 1230 01      Fourth axis Ø 120 mm • incl. SIEMENS motor
	351 1230 06 <b>3-jaw chuck Ø 120 mm</b> for fourth axis
	351 1230 07 <b>Counterholder</b> for 3-jaw chuck Ø 120 mm for fourth axis
	351 1230 02      Fifth axis Ø 200 mm • incl. SIEMENS motor
	351 1230 08 <b>Coolant channels</b> for spindles 20 bars integrated
	351 1230 09 <b>Coolant channels</b> for spindles 20 bars external version with external cooling tank
	351 1230 03 <b>Coolant channels</b> for spindles 70 bars external version with external cooling tank • Filtering accuracy 25 µm
	351 1230 05 <b>Air conditioning</b> (Upgrade of the heat exchanger)
	351 1230 04 <b>Spindle 12'000 min⁻¹</b> (In exchange - Scope of delivery standard spindle 10'000 min⁻¹)
	351 1230 10 <b>Tool changer 30-position double arm gripper</b> (In exchange - Scope of delivery standard tool changer 24-position double arm gripper)
	351 1230 11 <b>Chip conveyor screw-conveyor type</b> (In exchange - Scope of delivery standard chip conveyor belt type)
	351 1230 12 <b>Tool Renishaw TS 27R</b>
	351 1230 18 <b>Machine reparation for Renishaw NC 4</b>
	351 1230 13 <b>Tool control system Renishaw NC4</b> • Contactless tool measurement and detection of tool break
	351 1230 18 <b>Machine reparation for Renishaw OMP60</b>
	351 1230 14 <b>Tool one measuring sensor Renishaw OMP60</b> • Optical signal transfer

Can only be ordered ex works.

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send us an e-mail: [info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

Technique

Mit

Turn

Software

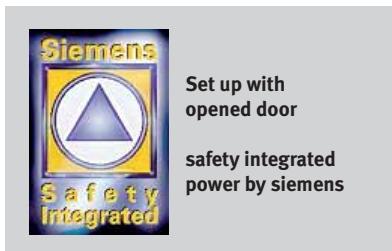
Assessories

## The Optimum Premium CNC milling machine with SIEMENS control SINUMERIK 828 D distinguishes itself by performance, speed, accuracy and high durability

### Convincing arguments: quality, efficiency and price

- Precision linear guideways in all axis
- 24-position magazine tool changer
- Cast iron body made of quality MEEHANITE cast iron
- Cross table precision ground with 5 T-slots
- Heavily rippled, torsion-free machine basis
- Precision ground pre-tensioned high-performance ball screws in all axes Ø 40 x P12 X c3
- Main spindle SK40 up to 10000 rev/min, with belt drive to minimise the vibrations as well as heat and noise development
- Spindle oil cooler
- Table and machine basis made of high quality Meehanite cast iron, low-vibration
- Powerful servo drives directly on the ball screws in all 3 axes
- Chip conveyor incl. chip flushing system
- Cleaning gun
- Coolant pump with 4 bars
- Electronic handwheel
- Cleaning gun
- RJ45 plug connection, USB connection and power connection (230V)
- Including 2-year Siemens warranty

# PREMIUM



Set up with  
opened door  
safety integrated  
power by siemens

### Including

#### Our options:

- Safety Integrated
- Residual material detection and operation
- ShopMill Working step programming
- Managing network drive
- 3-D simulation finished part
- Simultaneous recording



Fig.: F 410

Type	F 410
Item No	351 1240
<b>Electrical connection</b>	
Connection ~50 Hz	400 V / 3 Ph
Power of the total connected value	35 kW
Driving motor	13 kW (S1)
Torque driving motor	70 Nm
Motor coolant pumps 2 pcs.	1.27 kW each
Motor coolant pump 1 pc.	750 W
<b>Spindle seat</b>	
Spindle seat	ISO 40 DIN 69871
Milling head dimension max.	Ø 63 mm
End mill dimension max.	Ø 32 mm
<b>Milling accuracy</b>	
Repeatability	0.005 mm
Positioning accuracy	± 0.005 mm
<b>Tool changer</b>	
Disc type	24 tools
Tool size max.	130 mm
Tool diameter max.	80 mm
Tool diameter max. (secondary places free)	125 mm
Tool length max.	300 mm
Tool weight max.	8 kg
Time - tool changing; Tool to tool	1,8 seconds
<b>Travels</b>	
X axis	1'300 mm
Y axis	680 mm
Z axis	730 mm
<b>Feed drive of axis</b>	
Milling feed (X, Y, Z axis)	10'000 mm/min.
<b>Torque motor</b>	
X axis	18 Nm
Y axis	18 Nm
Z axis	16 Nm
<b>Rapid feed</b>	
X axis	30'000 mm/min
Y axis	30'000 mm/min
Z axis	24'000 mm/min
<b>Speeds</b>	
Speeds	10 - 10'000 min <sup>-1</sup>
<b>Cross table</b>	
Distance spindle - table	100 - 830 mm
Table length x width	1'700 x 600 mm
T-slot size / number / distance	18 mm / 5 / 100 mm
Load (max.)	1'000 kg
<b>Dimensions</b>	
Length x Width x Height	4'200 x 2'720 x 3'130 mm
Tank capacity	210 litres
Total weight	8'480 kg

### Standard equipment

Residual material detection and machining for contour pockets and stock removal  
 Shop Mill  
 Network connection  
 3-D simulation finished part  
 Simultaneous recording  
 Safety integrated  
 EMC  
 Sinumerik Operate  
 Chip conveyor belt type  
 Chip carriage  
 Oil separator  
 Heat exchanger  
 Coolant pistol  
 Chip flushing system  
 Working lamp  
 Tool changer 24-position double arm gripper  
 Coolant pump 4 bars  
 6 pcs. Machine feet  
 Spindle oil cooler

### Spindle oil cooler



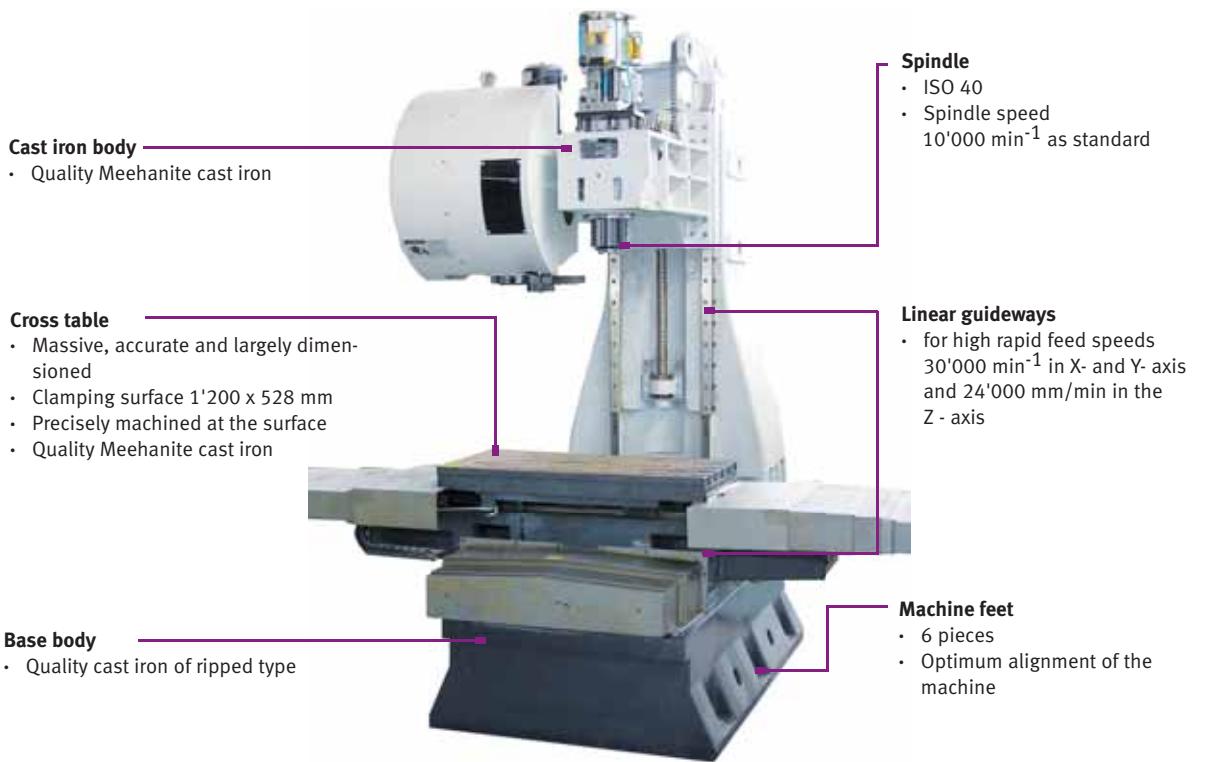
The machine is already equipped as standard with max. spindle speed 10'000 min<sup>-1</sup> and spindle oil cooler



„Starter kit SK40/DIN 69871“ on page 79

„CNC-instruction - Information“ on page 80

**Standard equipment**



**Heat exchanger & Air Conditioner**



- Efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

**Tool change system**



- Automatic by means of magazine disc for 24 tools
- Max. tool length 300 mm

**Chip carriage**



- tiltable
- rollable

**Handwheel**



- Electronic system
- Reduces the set up time
- Emergency-stop push button
- Acknowledgement button

**Chip flushing system**



- Efficient disposal of chips
- keeps the work area free from chips

**Laser measurement**

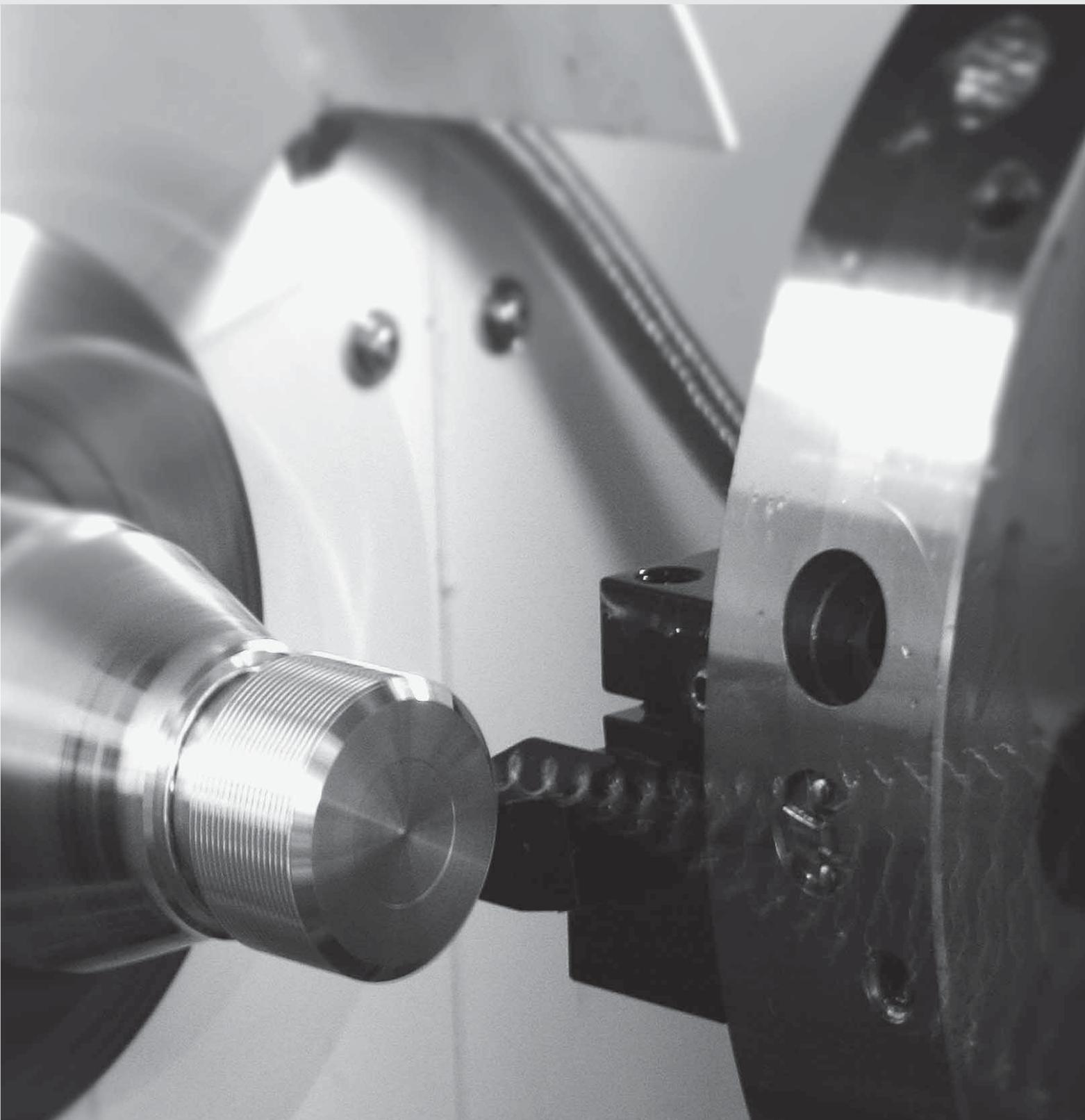


- Guaranteed repeatability and positioning accuracy

## Special equipment

Item No	Options F 410
	351 1240 01 <b>Fourth axis Ø 120 mm</b> • incl. SIEMENS motor
	351 1240 06 <b>3-jaw chuck Ø 120 mm</b> for fourth axis
	351 1240 07 <b>Counterholder</b> for 3-jaw chuck Ø 120 mm for fourth axis
	351 1240 02 <b>Fifth axis Ø 200 mm</b> including • incl. SIEMENS motor
	351 1240 08 <b>Coolant channels</b> for spindles 20 bars integrated
	351 1240 09 <b>Coolant channels</b> for spindles 20 bars external version with external cooling tank
	351 1240 03 <b>Coolant channels</b> for spindles 70 bars external version with external cooling tank • Filtering accuracy 25 µm
	351 1240 05 <b>Air conditioning</b> (Upgrade of the heat exchanger)
	351 1240 04 <b>Spindle 12'000 min⁻¹</b> (In exchange - Scope of delivery standard spindle 10'000 min⁻¹)
	351 1240 10 <b>Tool changer 30-position double arm gripper</b> (In exchange - Scope of delivery standard tool changer 24-position double arm gripper)
	351 1240 11 <b>Chip conveyor screw-conveyor type</b> (In exchange - Scope of delivery standard chip conveyor belt type)
	351 1240 12 <b>Tool Renishaw TS 27R</b>
	351 1240 18 <b>Machine reparation for Renishaw NC 4</b>
	351 1240 13 <b>Tool control system Renishaw NC4</b> • Contactless tool measurement and detection of tool break
	351 1240 17 <b>Machine reparation for Renishaw OMP40</b>
	351 1240 14 <b>Tool one measuring sensor Renishaw OMP60</b> • Optical signal transfer

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**CNC lathes**

L 28 .....	34	L 44 .....	38	S 600 .....	50
L 33 .....	36	L 440/L 460.....	42	S 500 .....	54
		L 500/L 520.....	46	S 750 .....	54

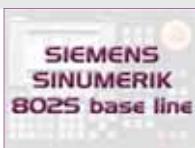
# CNC lathes



## CNC controlled flat bed lathe equipped with SIEMENS control, perfect for training purposes

### Convincing arguments: quality, efficiency and price

- Braced machine bed made of grey cast iron
- Bed guideways inductively hardened (HRC 42-52) and precision ground
- Elaborate spindle bearing
- Guaranteed concentricity of the spindle nose less than 0.009 mm
- Concentricity on the lathe chuck less than 0.04 mm
- Maintenance-free motor
- Brushless DC drive, infinitely variable
- Emergency-stop push button
- Central lubrication
- Incremental position encoder for spindle positioning (thread cutting)
- Right-/left handed rotation
- Ball screw made by **HIWIN**
- Reference switch
- Easy to maintain protective housing
- Rear access flap for maintenance purposes
- Safety switch at the front sliding door



#### SIEMENS control

- in a slewing housing
- Two electronic handwheels allow manual working

- Automatic quadruple tool changer for small series
- Servo motor equipped with worm gear
- Tool change controlled by CNC program



### Standard equipment



- Controller IV
- Control of the axis drives



- Base with coolant system
- Tank capacity 12 litres
- Extendable chip drawer
- Telescopic guide rail
- Coolant drain

Type	L 28
Item No	350 4110
<b>Electrical connection</b>	
Total connection	2.7 kW 230 V ~50 Hz
Driving motor	1.5 kW
Power of the coolant pump	40 W
Tank capacity	12 litres
<b>Machine data</b>	
Centre height	140 mm
Centre width	700 mm
Turning Ø over machine bed	266 mm
Bed width	180 mm
<b>Speeds</b>	
Spindle speed	30 - 4'000 min <sup>-1</sup>
Speed stages	4 steps, infinitely variable
<b>Spindle</b>	
Spindle taper	MT 4
Spindle bore	Ø 26 mm
Quadruple tool holder seat height	(max.) 12 mm
<b>Tool changer</b>	
Number of tool positions	4
Seat height max.	12 mm
<b>Travels</b>	
X axis	180 mm
Z axis	465 mm
<b>Feed speed</b>	
X axis	3'000 mm/min.
Z axis	2'500 mm/min.
<b>Tailstock</b>	
Tailstock seat	MT 2
Tailstock - sleeve travel	80 mm
<b>Dimensions</b>	
Length x Width x Height (open)	1'885 x 805 x 1'685 mm
Total weight	420 kg

Stage	1	2	4	3
Speed [min <sup>-1</sup> ]	30 - 300	140 - 1400	300 - 3000	400 - 4000
Torque [Nm]	98	21	9.8	7

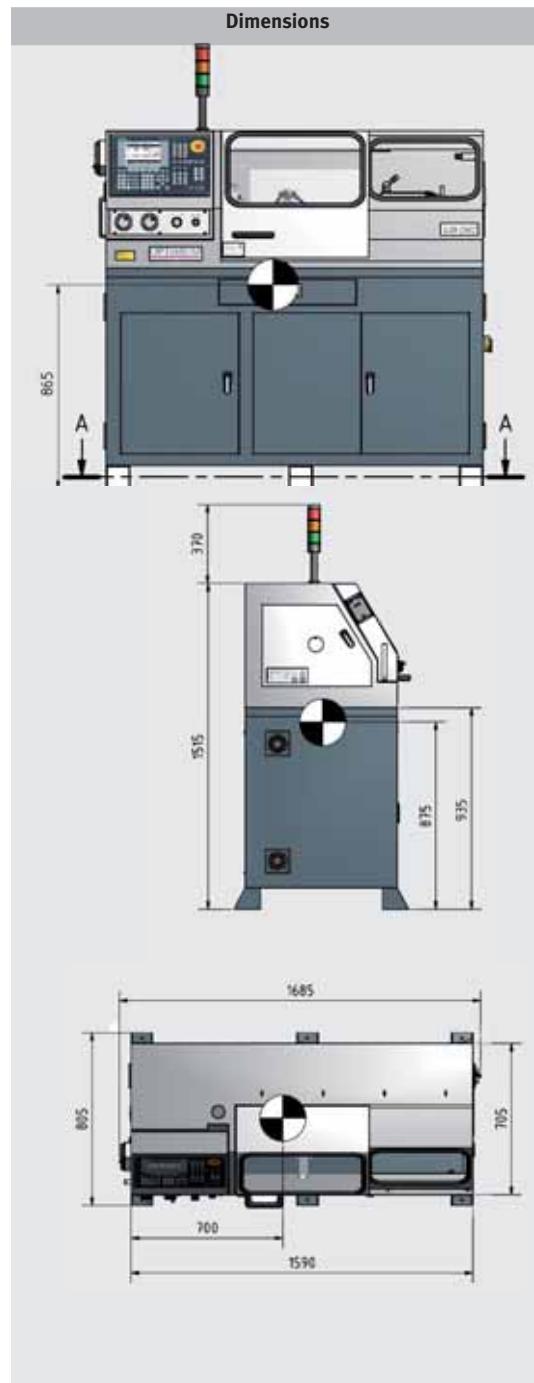
#### Standard equipment

- 3-jaw chuck Ø 125 mm
- Steady centre point MT2/MT4
- Coolant equipment
- Machine lamp
- Operating tool



- We imperatively recommend the briefing performed by our specialists.

„CNC-instruction - Information“ on page 80



## CNC controlled flat bed lathe equipped with SIEMENS control, perfect for small series and training purposes

### Convincing arguments: quality, efficiency and price

- Precise machining
- Braced machine bed made of grey cast iron
- Bed guideways inductively hardened (HRC 42-52) and precision ground
- Elaborate spindle bearing
- Emergency-stop push button
- Central lubrication
- Incremental position encoder for spindle positioning (thread cutting)
- Right-/left handed rotation
- Grinded ball screw spindles
- Reference switch
- Two-stage gear ratio for a powerful transmission of the motor power
- Easy to maintain protective housing
- Rear access flap for maintenance purposes
- Safety switch at the front sliding door
- SIEMENS Micromaster as frequency converter
- Control via Controller IV



- Automatic 6-fold tool changer for serial production
- High repeat accuracy



### SIEMENS control

- in a slewable housing
- Two electronic handwheels allow manual working



### Standard equipment



#### Motor spindle with encoder

- Readings recorder for rotary movements
- for highest pitch accuracy



#### Cable duct

- centrally via energy chain

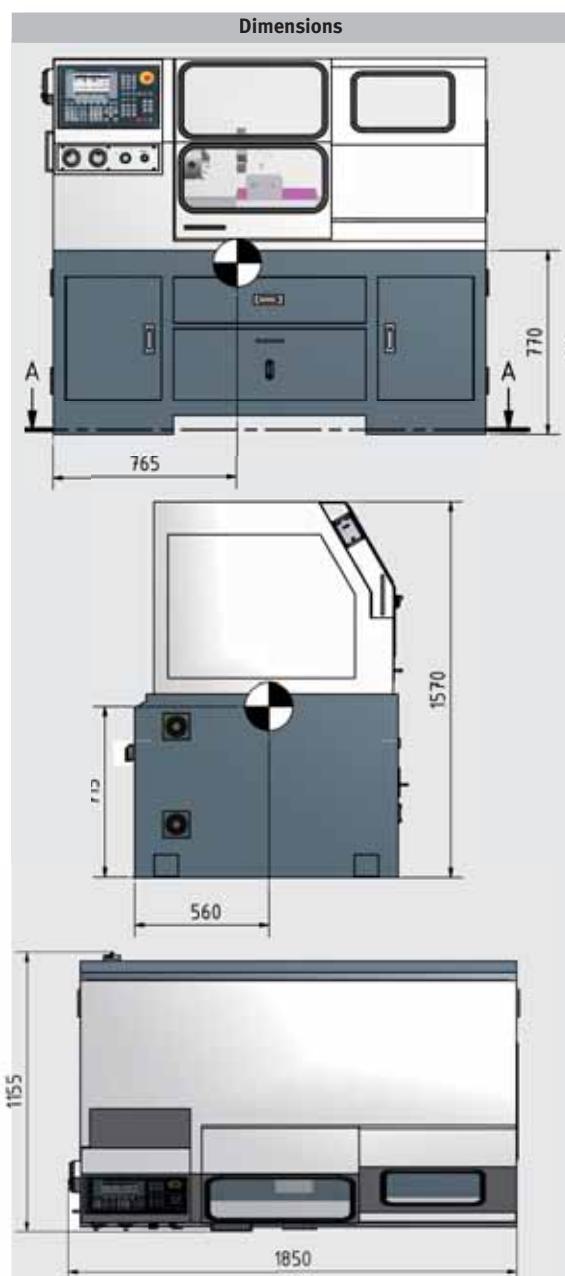
#### Reference switch

- of mechanic type

Type	L 33
Item No	350 4115
<b>Electrical connection</b>	
Total connection	3.5 kW 400 V ~50 Hz
Drive motor	3 kW
Power of the coolant pump	40 W
Tank capacity	50 litres
<b>Machine data</b>	
Centre height	165 mm
Centre width	750 mm
Turning Ø over cross slide	140 mm
Turning Ø over machine bed	330 mm
Bed width	187 mm
<b>Speeds</b>	
Spindle speed "L"	80 - 1'200 min <sup>-1</sup>
Spindle speed "H"	500 - 3'000 min <sup>-1</sup>
Torque spindle motor "L"	36 Nm
Torque spindle motor "H"	16 Nm
<b>Spindle</b>	
Spindle seat	Camlock D 1-4"
Spindle bore	Ø 38 mm
Quadruple tool holder seat height	(max.) 16 mm
<b>Tool changer</b>	
Number of tool positions	6
Seat height max.	16 mm
<b>Travel</b>	
X axis	165 mm
Z axis	600 mm
<b>Feed speed</b>	
The indicated speeds were determined in the 1/16 step process	
X axis	2'000 mm/min.
Z axis	2'000 mm/min.
<b>Pitch of ball screw</b>	
X axis	4 mm
Z axis	6 mm
<b>Torque motor</b>	
X axis	8.4 Nm
Z axis	10 Nm
<b>Tailstock</b>	
Tailstock seat	MT 3
Tailstock - sleeve travel	120 mm
<b>Dimensions</b>	
Length x Width x Height (open)	1'860 x 1'160 x 1'580 mm
Total weight	1'000 kg

#### Standard equipment

- 3-jaw chuck Ø 160 mm centric clamping
- Coolant equipment
- Machine lamp
- Operating tool



„CNC-instruction - Information“ on page 80

## Optimum CNC lathe with SIEMENS control 828 Basic T and the advantages: Speed, power, accuracy and durability

### Convincing arguments: quality, efficiency and price

- Spindle and servo motor made by SIEMENS
- Complete cladding with safety equipment
- Coolant equipment
- Automatic central lubrication
- High spindle speed
- Slewable operating unit
- Electronic handwheels for X and Z axis
- RJ45 plug connection, USB connection and power connection (230V)
- Two-year SIEMENS guaranty included



Fig. including optional hydraulic tailstock spindle sleeve

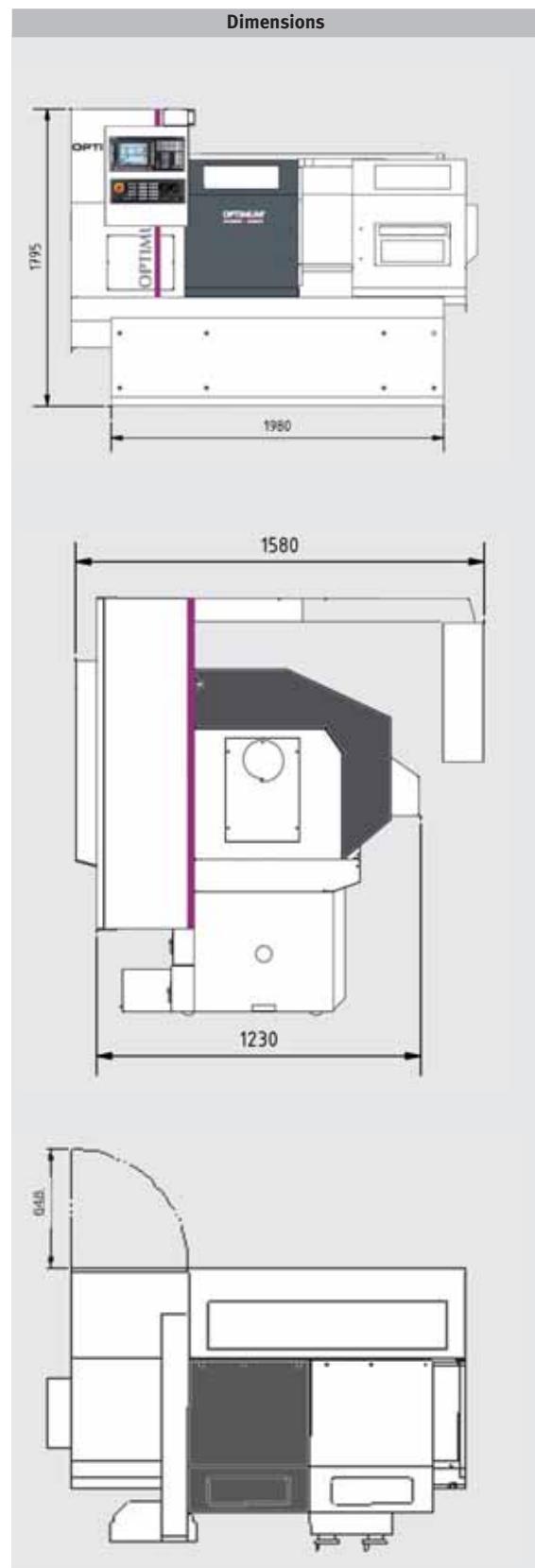
### Standard equipment

- Residual material detection and machining for contour pockets and stock removal
- Shop Turn
- Network drive management
- 3-D simulation finished part
- Simultaneous recording
- Safety integrated
- EMC
- Joystick
- Electronic handwheel
- Hydraulic turret Type VDI 30 (8 tools)
- 3-jaw chuck hydraulic Ø 150 mm
- Hard and non-rigid block jaws
- Heat exchanger
- Tailstock end cover
- 6 pcs. Machine feet
- Operating tool

Type	L 44
Item No	351 4330
<b>Electrical connection</b>	
Total connection	18.5 kW 400 V ~50 Hz
Driving motor	8 kW (S1 mode 7kW)
Torque drive motor	31 Nm
Power of the coolant pump	270 W
Tank capacity	90 litres
<b>Hydraulic system</b>	
Motor power	750 W
Tank capacity	50 litres
<b>Machine data</b>	
Centre height	223 mm
Centre width	850 mm
Turning Ø over cross slide	240 mm
Turning Ø over machine bed	446 mm
Turning Ø in the bed bridge	520 mm
<b>Speeds</b>	
Spindle speed, 2 steps	80 - 3'200 min <sup>-1</sup>
<b>Spindle</b>	
Spindle seat	DIN ISO 702-1 Nr. 5
Spindle bore	Ø 52 mm
Hydraulic lathe chuck	Ø 150 mm
Chuck through hole	Ø 40 mm
Bed width	300 mm
<b>Turret</b>	
Hydraulic type	VDI 30
Number of tool positions	8
Seat height, seat width max.	20 x 20 mm
Seat diameter max.	Ø 25 mm
<b>Accuracy</b>	
Repeatability	± 0.005 mm
Positioning accuracy	± 0.005 mm
<b>Travels</b>	
X axis	250 mm
Z axis	760 mm
<b>Feed speed</b>	
X axis	15'000 mm/min
Z axis	15'000 mm/min
<b>Torque motor</b>	
X axis	6 Nm
Z axis	8.5 Nm
<b>Ball screw</b>	
X axis	25 mm × P5 mm × C3
Z axis	40 mm × P5 mm × C3
<b>Tailstock</b>	
Tailstock seat	MT 4
Tailstock - sleeve diameter	52 mm
Tailstock - sleeve travel	165 mm
<b>Dimensions</b>	
Length x Width x Height (open)	2'230 x 1'580 x 1'795 mm
Total weight	2'100 kg



„CNC-instruction - Information“ on page 80



„Starter kit VDI 30“ on page 74

### Standard equipment

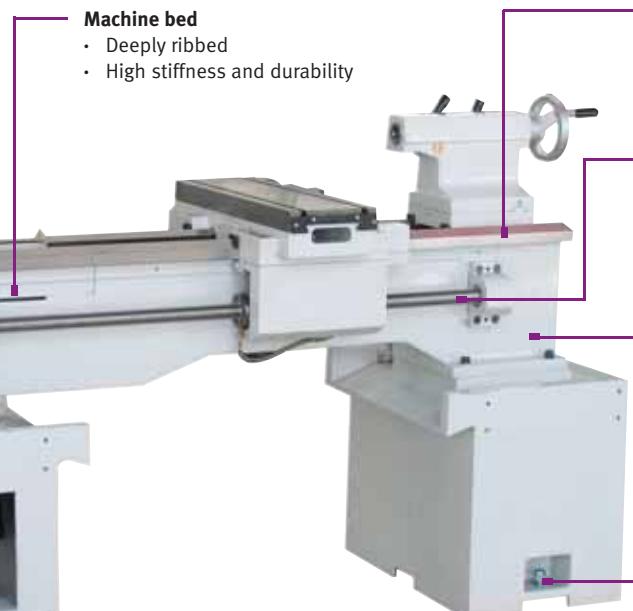
#### Main spindle

- Massive type



#### Machine bed

- Deeply ribbed
- High stiffness and durability



#### Guiding

- Stable flat bed guiding

#### Ball screw

- ground

#### Cast iron body

- Hardened (HRC48-52) and heat treated

#### Machine feet

- 6 pcs
- for optimum alignment of the machine

### Heat exchanger



- for efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

### Tool change system



- 8 tool positions
- Hydraulic VDI30 turret
- Seat height max. 20 mm

### Tailstock



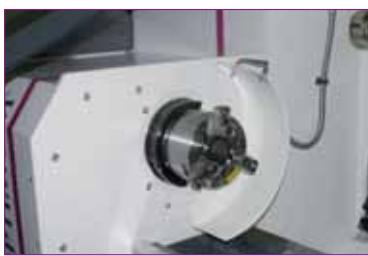
- generously dimensioned
- Carriage with ball screw with prestressed nut

### Hydraulic unit



- Tank capacity 50 litres

### Three-jaw chuck



- Hydraulic three-jaw chuck Ø 150 mm
- Simple clamping of work-pieces

### Central lubrication system



- Automatically
- Fold-out for easy filling
- The floating switch identifies the volume of the oil and releases an automatic alarm as soon as it falls below the set value

## Special equipment

Item No	Options L 44
351 4330 06	<b>Non-rigid block jaws</b> for scope of delivery hydraulic 3-jaw lathe chuck Ø 150 mm
351 4330 05	<b>Hard block jaws</b> for scope of delivery hydraulic 3-jaw lathe chuck Ø 150 mm
351 4330 15	<b>3-jaw lathe chuck Ø 200 mm</b> (In exchange - Scope of delivery 3-jaw chuck hydraulic Ø 150 mm)
351 4330 17	<b>Non-rigid block jaws</b> for 3-jaw lathe chuck Ø 200 mm
351 4330 16	<b>4-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 150 mm)
351 4330 18	<b>Hydraulic 3-jaw lathe chuck Ø 200 mm</b> (Surcharge in exchange - Scope of delivery hydraulic 3-jaw chuck Ø 150 mm)
351 4330 20	<b>Hydraulic 4-jaw lathe chuck Ø 200 mm</b> (In exchange - Scope of delivery 3-jaw chuck hydraulic Ø 150 mm)
	<b>Steady rest</b> 10 mm - 130 mm
351 4330 03	<b>Follow rest</b> 10 mm - 100 mm
351 4330 10	<b>Working lamp</b>
351 4330 07	<b>LS-120 Hydraulic turret</b> Standard type - incl. 8 tools
351 4330 08	<b>Tool holder kit</b> for LS-120 hydraulic turret
	<b>Quick action tool holder Multifix4</b> (In exchange - Scope of delivery hydraulic turret LS-120)
351 4330 09	<b>Portable handwheel</b> (In exchange - Standard joystick)
	<b>Hydraulic tailstock spindle sleeve</b>
	<b>Bar feeder PRO 1.25 mtr.</b>
	<b>Bar feeder PRO 3.20 mtr.</b> for diameter 5 mm - 51 mm
351 4330 13	<b>Power transformer</b> for special tension

Can only be ordered ex works.  
For prices and further options  
please contact your dealer or  
send us an e-mail:  
[info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

## OPTIMUM Premium high-capacity CNC cycle lathes incl. SIEMENS control Sinumerik 828D Basic T

### Convincing arguments: quality, efficiency and price

- High precision machine with latest SIEMENS control and SIEMENS servo drives
- New compact structure of the headstock
- High-speed spindle (4500 rev/min) with high-precise, largely dimensioned taper roller bearings
- Change-over between the two gears is performed pneumatically via the air cylinder
- Headstock structure guarantees minimum noise development
- Wide machine bed with double rectangle slideways also for roughing work
- Hardened and ground slide ways
- Largely dimensioned tailstock, travelling on two guideways, easy-to-position via carriage and is equipped with a quick clamping
- 2 front separately travelling sliding doors incl. integrated windows
- Micro switches prevent starting up the machine if the protecting device is not completely closed and thus avoids the opening of the door
- RJ45 plug connection, USB connection and power connection (230V)
- Travelling operating panel
- Two electronic handwheels for manual operation of the X and Z axis
- Automatic lubrication of the headstock
- Automatic lubrication of the saddle slide and the cross slide rest
- Halogen working lamp
- Heat exchanger for switch cabinet
- Two-year SIEMENS guaranty included



### Standard equipment

Residual material detection and machining for contour pockets and stock removal	Hydraulic turret LS160 VDI40
Shop Turn	3-jaw chuck hydraulic Ø 200 mm
Network drive management	Hard and non-rigid block jaws
3-D simulation finished part	Heat exchanger
Simultaneous recording	Tailstock end cover
Safety integrated	6 pcs. Machine feet
EMC	Coolant equipment
Electronic handwheel	

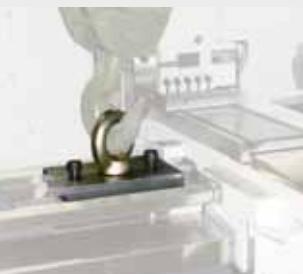
Type	L 440	L 460
Item No	351 4410	351 4420
<b>Electrical connection</b>		
Total connection	20 kW 400 V ~50 Hz	20 kW 400 V ~50 Hz
Driving motor	12 kW	12 kW
Torque drive motor	70 Nm	70 Nm
Power of the coolant pump	560 W	560 W
Tank capacity (without chip conveyor)	170 litres	240 litres
<b>Hydraulic system</b>		
Motor power	750 W	750 W
Tank capacity	50 litres	50 litres
<b>Machine data</b>		
Centre height	235 mm	235 mm
Cutting length max.	1'000 mm	1'500 mm
Turning Ø over cross slide	240 mm	240 mm
Turning Ø over machine bed	475 mm	475 mm
Turning Ø in the bed bridge	710 mm	710 mm
<b>Speeds</b>		
Spindle speed (chuck-Ø 160 mm)	100 – 4'500 min <sup>-1</sup>	100 – 4'500 min <sup>-1</sup>
<b>Spindle</b>		
Spindle seat	DIN ISO 702-1 Nr. 6	DIN ISO 702-1 Nr. 6
Spindle bore	Ø 65 mm	Ø 65 mm
Hydraulic lathe chuck	Ø 200 mm	Ø 200 mm
Chuck through hole	Ø 52 mm	Ø 52 mm
<b>Turret</b>		
Hydraulic type	VDI 40	VDI 40
Number of tool positions	8	8
Seat height, seat width max.	25 x 25 mm	25 x 25 mm
Seat diameter max.	Ø 32 mm	Ø 32 mm
<b>Accuracy</b>		
Repeatability	± 0.005 mm	± 0.005 mm
Positioning accuracy	± 0.005 mm	± 0.005 mm
<b>Travels</b>		
X axis	260 mm	260 mm
Z axis	1'150 mm	1'680 mm
<b>Feed speed</b>		
X axis	15'000 mm/min	15'000 mm/min
Z axis	15'000 mm/min	15'000 mm/min
<b>Torque motor</b>		
X axis	6 Nm	6 Nm
Z axis	16 Nm	16 Nm
<b>Tailstock</b>		
Tailstock seat	MT 4	MT 4
Tailstock - sleeve diameter/travel	65 mm / 150 mm	65 mm / 150 mm
<b>Dimensions</b>		
Length x Width x Height	3'030 x 1'952 x 2'025 mm	3'530 x 1'952 x 2'025 mm
Total weight	3'000 kg	3'450 kg

„Starter kit VDI 40“ on page 75

### Information

#### Lifting device

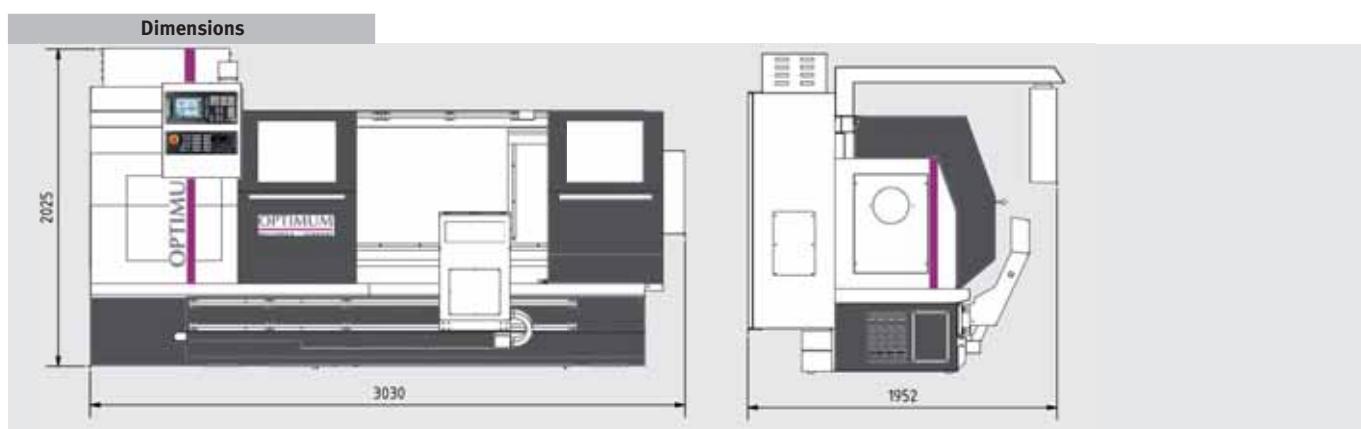
Item No. 351 4301



- A lifting device is required to unload the machine. The company Optimum may make it available by way of loan on bail in Germany and Austria. It may optionally be purchased.



„CNC-instruction - Information“ on page 80



## Standard equipment

### Machine bed



- Machine bed is designed particularly wide
- Ball screw drive for higher repeatability

### Headstock



- Precision bearings
- Stable structure
- Smooth running also at high spindle speeds

### Heat exchanger



- Efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

### Rear side of the machine



- Large opening at the rear side allows easy access for maintenance purposes

### Laser measurement



- Guaranteed repeatability and positioning accuracy

### Turret



- 8 tool positions
- Hydraulic - VDI40
- Seat height max. 25 mm

### Tailstock



- Generously dimensioned
- Carriage with ball screw with prestressed nut

### Hydraulic unit



- Tank capacity 50 litres

### Three-jaw chuck



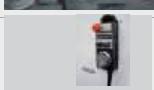
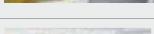
- Hydraulic three-jaw chuck Ø 200 mm
- Simple clamping of work-pieces

### Coolant equipment



- High power coolant pump 375 W
- Tank capacity 100 litres

## Special equipment

Item No L 460	Item No L 440	Options
351 4420 08	351 4410 08	<b>3-jaw lathe chuck Ø 200 mm manual</b>
351 4420 10	351 4410 10	<b>Base jaws and non-rigid block jaws</b> for 3-jaw lathe chuck Ø 200 mm
351 4420 28	351 4410 28	<b>Hydraulic 3-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw lathe chuck Ø 200 mm)
351 4420 11	351 4410 11	<b>4-jaw lathe chuck Ø 250 mm</b>
351 4420 31	351 4410 31	<b>Hydraulic 4-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw lathe chuck Ø 200 mm)
	351 4420 02	351 4410 02 <b>Joystick</b> to travel the X- and Z axis (not combinable with electronic handwheel)
	351 4420 20	351 4410 20 Detachable <b>electronic handwheel</b> (not combinable with joystick)
	351 4420 07	351 4410 07 <b>Oil separator</b>
	351 4420 05	351 4410 05 <b>Chip conveyor</b> 1.0 meter (L 440) 1.50 meter (L 460)
	351 4410 06	351 4410 06 Chip carriage
	351 4420 12	351 4410 12 <b>Turret Baruffaldi TB 160 VDI40</b> 8 tools - driven tools (In exchange - Scope of delivery standard turret LS-160)
	351 4420 17	351 4410 17 <b>C axis brake system</b> (only with turret Baruffaldi TB 160)
	351 4420 16	351 4410 16 <b>Tool holder kit</b> for LS-160 turret
	351 4420 13	351 4410 13 <b>Coolant pump</b> 5 bars
	351 4420 01	351 4410 01 <b>Coolant channels</b> for tools 20 bars
	351 4420 14	351 4410 14 <b>Air conditioning</b> for switch cabinet (In exchange - Scope of delivery standard heat exchanger)
	351 4420 03	351 4410 03 <b>Steady rest</b> 20 mm - 200 mm
	351 4420 04	351 4410 04 <b>Follow rest</b> 20 mm - 100 mm
	351 4420 19	351 4410 19 <b>Preparation for hydraulic tailstock spindle</b>
	351 4420 21	351 4410 21 <b>Hydraulic tailstock spindle sleeve</b>
	351 4420 22	351 4410 22 <b>Device to travel the tailstock simultaneously</b>
	351 4420 23	351 4410 23 <b>Pneumatic lifting device for tailstock</b>
	351 4420 33	351 4410 33 <b>Bar feeder 1,25 mtr.</b> V65-E-Pro
	351 4420 34	351 4410 34 <b>Bar feeder 1,5 mtr.</b> V65-LE-Pro
	351 4320 35	351 4310 35 <b>Bar feeder 1,25 mtr.</b> DH 65 Fedek
	351 4320 36	351 4310 36 <b>Bar feeder 1,5 mtr.</b> DH 65L Fedek

Can only be ordered ex works. For prices and other options please contact your dealer or send us an e-mail to: info@optimum-maschinen.de

Technique

Mil

Turn

Software

Accessories

## Optimum Premium high-capacity CNC cycle lathes incl. SIEMENS control Sinumerik 828 Basic T

### Convincing arguments: quality, efficiency and price

- High precision machine with latest SIEMENS control and SIEMENS servo drives
- New compact structure of the headstock
- High-speed spindle (3'500 rev/min) with high-precise, largely dimensioned taper roller bearings
- Change-over between the two gears is performed pneumatically via the air cylinder
- Headstock structure guarantees minimum noise development
- At high speeds a thermal expansion is almost avoided contrary to the pure gear drive.
- Stable ball screw with a diameter of 45 mm provides for longitudinal movements
- The hardened and precision-ground ball bearings of the X and Z axis mounted in high precision bearings allow most accurate traverse movements
- Machine bed with double rectangular guiding designed for high rapid traverse
- Hardened and ground slide ways
- Largely dimensioned tailstock, travelling on two guideways, easy-to-position via carriage equipped with quick clamping
- 2 front separately travelling sliding doors incl. integrated window
- Micro switches prevent starting up the machine if the protecting device is not completely closed and thus avoids opening
- RJ45 plug connection, USB connection and power connection (230V)
- Travelling operating panel
- 2 electronic handwheels for manual operation of the X and Z axis
- Automatic lubrication of the headstock
- Automatic lubrication of the saddle slide and the cross slide rest
- Halogen working lamp
- Two-year SIEMENS guaranty included



Set up with  
opened door  
  
safety integrated  
power by siemens



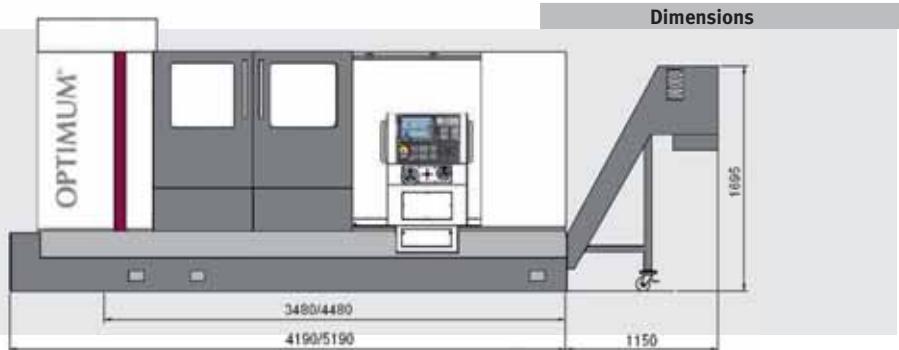
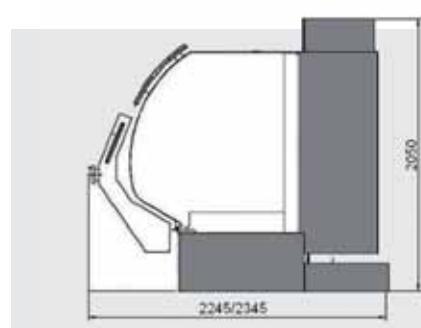
**PREMIUM**

### Standard equipment

Residual material detection and machining for contour pockets and stock removal	Hydraulic turret LS160 VDI40
Shop Turn	3-jaw chuck hydraulic Ø 250 mm
Network drive management	Hard and non-rigid block jaws
3-D simulation finished part	Heat exchanger
Simultaneous recording	Tailstock end cover
Safety integrated	6 pcs. Machine feet
EMC	Siemens Tool Box CD
Electronic handwheel	Chip carriage
Tailstock locking	Chip conveyor

Type	L 500	L 520
Item No	351 4430	351 4440
<b>Electrical connection</b>		
Total connection	20 kW 400 V ~50 Hz	30 kW 400 V ~50 Hz
Driving motor	12 kW (S1)	17.5 kW (S1)
Torque drive motor	115 Nm	115 Nm
Power of the coolant pump	450 W	450 W
Tank capacity	208 litres	260 litres
<b>Hydraulic system</b>		
Motor power	750 W	750 W
Tank capacity	50 litres	50 litres
<b>Machine data</b>		
Centre height	235 mm	235 mm
Distance between centres max.	2'000 mm	3'000 mm
Turning Ø over cross slide	310 mm	310 mm
Turning Ø over machine bed	550 mm	550 mm
Turning Ø in the bed bridge	790 mm	790 mm
Max. workpiece weight (incl. tailstock)	2'000 kg	2'000 kg
Bed width	405 mm	405 mm
<b>Speeds</b>		
Spindle speeds	80 – 3'500 min <sup>-1</sup>	80 – 3'500 min <sup>-1</sup>
<b>Spindle</b>		
Spindle seat	DIN ISO 702-1 Nr. 8	DIN ISO 702-1 Nr. 8
Spindle bore	Ø 82 mm	Ø 82 mm
Hydraulic lathe chuck	Ø 250 mm	Ø 250 mm
Chuck through hole	Ø 69 mm	Ø 69 mm
<b>Turret</b>		
Hydraulic type	VDI 40 (5480)	VDI 40 (5480)
Number of tool positions	12	12
Seat height, seat width max.	25 x 25 mm	25 x 25 mm
Seat diameter max.	Ø 32 mm	Ø 32 mm
<b>Accuracy</b>		
Repeatability	± 0.005 mm	± 0.005 mm
Positioning accuracy	± 0.005 mm	± 0.005 mm
<b>Travels</b>		
X axis	345 mm	345 mm
Z axis	2'150 mm	3'150 mm
<b>Feed speed</b>		
X axis	15'000 mm/min	15'000 mm/min
Z axis	15'000 mm/min	15'000 mm/min
<b>Torque motor</b>		
X axis	11 Nm	11 Nm
Z axis	20 Nm	20 Nm
<b>Tailstock</b>		
Tailstock seat	MT 5	MT 5
Tailstock - sleeve diameter	80 mm	80 mm
Tailstock - sleeve travel	150 mm	150 mm
<b>Dimensions</b>		
Length x Width x Height	4'190 x 2'245 x 2'050 mm	5'190 x 2'245 x 2'050 mm
Total weight	5'170 kg	6'200 kg

„Starter kit VDI 40“ on page 75



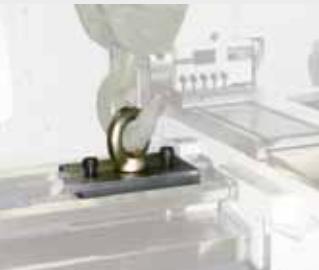
### Scope of delivery

- Chip carriage
- Chip conveyor
- Non-rigid and hard block jaws

### Information

#### Lifting device

Item No. 351 4302



- A lifting device is required to unload the machine. The company Optimum may make it available by way of loan on bail in Germany and Austria. It may optionally be purchased.



„CNC-instruction - Information“ on page 80

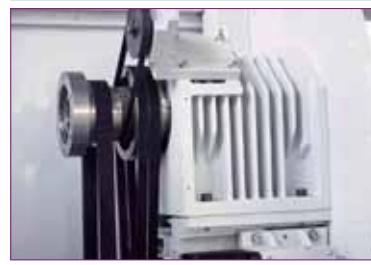
## Standard equipment

### Machine bed



- Machine bed is designed particularly wide
- More rapid movement
- Ball screw drive for higher repeatability

### Headstock



- incl. pneumatic automatic speed changer
- Fully automatic mode
- Shaft of the manual gearbox made of sintered bronze for high accuracy

### Heat exchanger



- Efficient integrated heat transfer from the switch cabinet
- Avoids that faults are generated from the overheated electrical and CNC components

### Machine bed



- Machine bed designed for complete Z travel
- The actual turning capacity of the Z axis of other competitive machines on the market is 10-20% less efficient

### Laser measurement



- Guaranteed repeatability and positioning accuracy

### Turret



- 8 tool positions
- Hydraulic - VDI40
- Seat height max. 25 mm

### Chip conveyor with chip carriage



- The chip conveyor eases the work and is time-saving

### Chip carriage

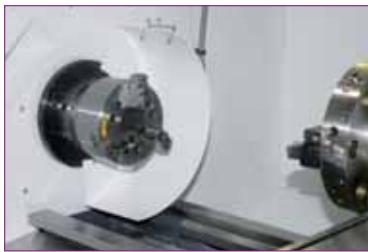
- Can be rolled and collapsed

### Chip cleaning



- Easy cleaning of chips
- Inclined shape along the bed is available so that the chips directly fall on the chip tray
- The inclined design of the door avoids that the chips are getting caught in the door

### Three-jaw chuck



- Hydraulic chuck
- Size Ø 250 mm

### Guide bearing



- Coated
- Manually scraped for highest accuracy

## Special equipment

Item No L 500	Item No L 520	Options
351 4430 09	351 4440 09	<b>Non-rigid block jaws</b> for scope of delivery hydraulic 3-jaw chuck Ø 250 mm
351 4430 06	351 4440 06	<b>3-jaw lathe chuck Ø 315 mm</b>
351 4430 08	351 4440 08	<b>Non-rigid block jaws</b> for 3-jaw lathe chuck Ø 315 mm
351 4430 20	351 4440 20	<b>3-jaw lathe chuck Ø 300 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 250 mm)
351 4430 28	351 4440 26	<b>4-jaw lathe chuck hydraulic Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 250 mm)
351 4430 29	351 4440 27	<b>4-jaw lathe chuck hydraulic Ø 300 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 250 mm)
	351 4430 02	351 4440 02 <b>Joystick</b> to travel the X- and Z axis (not combinable with electronic handwheel)
	351 4430 17	351 4440 17 Detachable <b>electronic handwheel</b> (not combinable with joystick)
	351 4430 22	351 4440 22 <b>Oil separator</b>
	351 4430 11	351 4440 11 <b>Turret Baruffaldi TB 160 VDI40</b> 8 tools-driven tools (In exchange - Scope of delivery standard turret LS-160)
	351 4430 12	351 4440 12 <b>C axis brake system</b> (only with turret Baruffaldi TB 160)
	351 4430 10	351 4440 10 <b>Drive motor 15 kw (s1)</b> (In exchange - Scope of delivery drive motor 12 kW)
	351 4430 21	351 4440 21 <b>Coolant pump 5 bars</b>
	351 4430 01	351 4440 01 <b>Coolant channels for tools 20 bars</b> (external)
	351 4430 27	351 4440 27 <b>Air cooling system</b> for switch cabinet (In exchange - Scope of delivery standard heat exchanger)
	351 4430 03	351 4440 03 <b>Steady rest</b> 20 mm - 200 mm
	351 4430 14	351 4440 14 <b>Steady rest</b> 150 mm - 330 mm
	351 4430 15	351 4440 15 <b>Steady rest</b> 180 mm - 410 mm
	351 4430 04	351 4440 04 <b>Follow rest</b> 20 mm - 200 mm
	351 4430 16	351 4440 16 <b>Preparation for hydraulic tailstock spindle</b>
	351 4430 18	351 4440 18 <b>Hydraulic tailstock spindle sleeve</b>
	351 4430 19	351 4440 19 <b>Extension of the tailstock sleeve</b> to 100 mm
	351 4430 31	351 4440 31 <b>Bar feeder 1,25 mtr. V65-E-Pro</b>
	351 4430 32	351 4440 32 <b>Bar feeder 1,5 mtr. V65-LE-Pro</b>
	351 4330 33	351 4410 33 <b>Bar feeder 1,25 mtr. DH 65 Fedek</b>
	351 4330 34	351 4410 34 <b>Bar feeder 1,5 mtr. DH 65L Fedek</b>

„CNC-instruction - Information“ on page 80

Can only be ordered ex works.  
For prices and other options please contact your dealer or  
send us an e-mail: info@optimum-maschinen.de

Technique

Mil

Turn

Software

Accessories

## OPTIMUM CNC slant bed lathe: Speed, power, accuracy and durability

### Convincing arguments: quality, efficiency and price

- Heavy type
- Compact type
- Slant bed type 30° for particularly large machining diameter
- Simple chip flow into the chip tray
- Dimensionally stable linear guiding - provides for long service life for maximum static and dynamic stiffness
- Hardened and ground ball screws
- SIEMENS servo motors for spindle, X- and Z axis
- All servo motors incl. integrated encoder for highest accuracy
- Equipment for manual tool measurement
- Tailstock with hydraulic spindle sleeve
- Electronic handwheel
- Two-year SIEMENS guaranty included

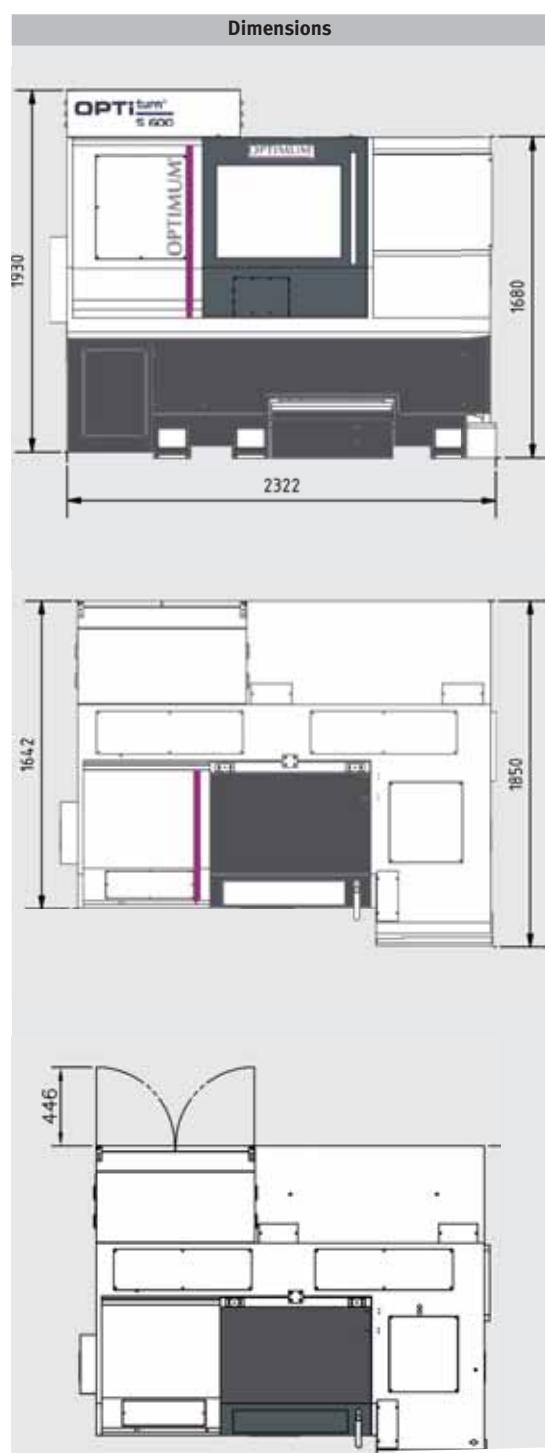
**PREMIUM**



Set up with  
opened door

safety integrated  
power by siemens

Type	S 600
Item No	351 5060
<b>Electrical connection</b>	
Total connection	25 kW 400 V ~50 Hz
Driving motor	12 kW
Torque drive motor	115 Nm
Power of the coolant pump	700 W
Power of the cleaning pump	700 W
Tank capacity	140 litres
<b>Hydraulic system</b>	
Motor power	1.5 kW
Tank capacity	60 litres
<b>Machine data</b>	
Centre height	460 mm
Centre-Ø max.	210 mm
Turning Ø over cross slide	220 mm
Turning Ø over machine bed	500 mm
Inclined bed	30°
<b>Speeds</b>	
Spindle speeds	10 - 4'000 min <sup>-1</sup>
<b>Spindle</b>	
Spindle seat	DIN ISO 702-1 Nr. 6
Spindle bore	Ø 75 mm
Hydraulic lathe chuck	Ø 215 mm
<b>Turret</b>	
Type	hydraulic
Number of tool positions	12
Seat height, seat width max.	25 x 25 mm
Seat diameter max.	Ø 32 mm
<b>Accuracy</b>	
Repeatability	± 0.005 mm
Positioning accuracy	± 0.005 mm
<b>Travels</b>	
X axis	215 mm
Z axis	520 mm
<b>Feed speed</b>	
X-/Z-axis	30'000 mm/min
<b>Torque motor</b>	
X-/Z axis	11 Nm
<b>Tailstock</b>	
Tailstock seat	MT 4
Travel	370 mm
Tailstock - sleeve diameter	65 mm
Tailstock - sleeve travel hydraulically	50 mm
<b>Dimensions</b>	
Length x Width x Height	2'322 x 1'948 x 1'930 mm
Total weight	3'200 kg



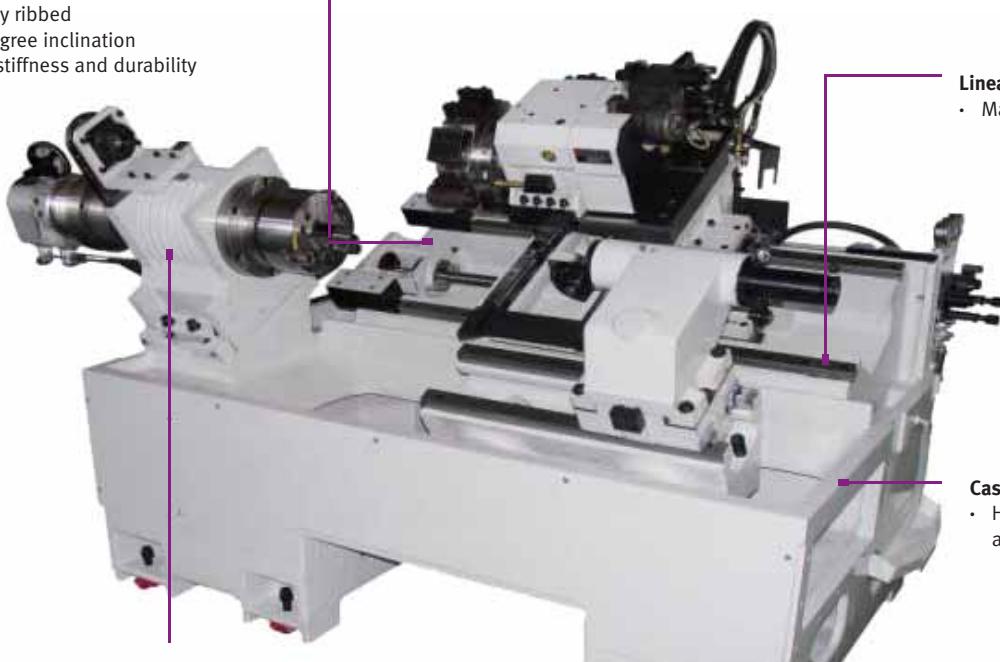
#### Standard equipment

Residual material detection and machining for contour pockets and stock removal	Hydraulic changer LS200 standard (12 tools)
Shop Turn	3-jaw chuck hydraulic Ø 215 mm
Network drive management	Heat exchanger
3-D simulation finished part	Chip conveyor
Simultaneous recording	Chip carriage
Safety integrated	Tool holder kit for LS 160
EMC	Coolant pistol
Manual handwheel	Tool holder for MT3
Automatic tool measuring probe Renishaw	Operating tool
Non-rigid and hard block jaws	
Toolholder kit (3 holders for reducing bushes, 1 holder for external lathe tool, 5 reducing bushes M12, M16, M20, M25, MT 3)	

## Standard equipment

### Machine bed

- Deeply ribbed
- 30 degree inclination
- High stiffness and durability



### Components and castings

- ensure stiffness and structural output by means of the FEA (Finite-Element-Method)
- absorbs oil

### Linear guiding

- Maximum feed speed

### Cast iron body

- Hardened (HRC48-52) and heat treated

### Machine feet

- 6 pieces
- Optimum alignment of the machine

### Hydraulic tailstock spindle sleeve



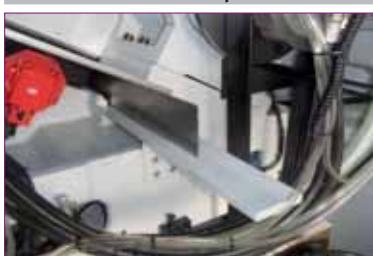
- for a rapid processing it can be hydraulically run in and extended

### Tool change system



- 12 tool positions
- Type of hydraulic turret
- Seat height max. 25 mm

### Coolant and lubricant separator



- Separates the lubricant from the coolant

### Hydraulic unit



- High capacity of the hydraulic oil tank
- Safety check valve
- Tank capacity 50 litres

### Tool measuring probe



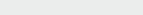
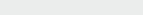
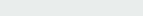
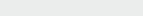
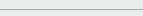
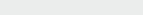
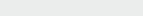
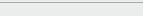
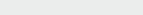
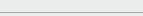
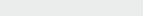
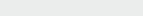
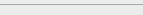
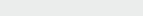
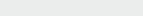
- Renishaw tool measuring probe allows measuring the tools within the machine

### Central lubrication system



- Automatically
- Fold-out for easy filling
- The floating switch identifies the volume of the oil and releases an automatic alarm as soon as it falls below the set value

**Special equipment**

Item No	Options
351 5060 09	<b>Non-rigid block jaws</b> for scope of delivery standard 3-jaw chuck Ø 215 mm
351 5060 10	<b>Hard block jaws</b> for scope of delivery standard 3-jaw chuck Ø 215 mm
351 5060 08	<b>3-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 215 mm)
351 5060 24	<b>Hydraulic 4-jaw lathe chuck Ø 200 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 215 mm)
351 5060 25	<b>Hydraulic 4-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery hydraulic 3-jaw chuck Ø 215 mm)
	351 5060 20 <b>Oil separator</b>
	351 5060 01 <b>Turret type Sauter VDI 30</b> 12 tools - driven tools) and C axis brake system
	351 5060 22 <b>Coolant pump</b> 5 bars
	351 5060 19 <b>Coolant channels for tools</b> 20 bars external with external cooling tank
	351 5060 21 <b>Air cooling system</b> for switch cabinet (In exchange - Scope of delivery standard heat exchanger)
	351 5060 05 <b>Preparation for hydraulic tailstock spindle travel</b>
	351 5060 04 <b>Automatic tailstock travel per M code</b> (only in connection with a hydraulic tailstock spindle sleeve)
	351 5060 03 <b>Tool changer VDI 30-40</b> In exchange - Scope of delivery standard turret LS-160
	351 5060 06 <b>Automatic tool measuring</b>
	351 5060 07 <b>Automatic part catcher</b>
	351 5060 11 <b>Bar feeder interface</b> for 351 5060 12 - 15
	351 5060 12 <b>Bar feeder 1.25 mtr. V-65 E, PRO</b>
	351 5060 13 <b>Bar feeder 1.50 mtr. V-65 LE PRO</b>
	351 5060 14 <b>Bar feeder 1.25 mtr. DH65 FEDEK</b>
	351 5060 15 <b>Bar feeder 1.50 mtr. DH65 FEDEK</b>
	351 5060 23 <b>Bar feeder 3.20 mtr. for diameter 5-51 mm PRO</b>
	351 5060 16 <b>Automatic door opening</b>
	351 5060 02 <b>Collet chuck for collets</b> from 15 - 60 mm
	351 5060 17 <b>Collet single</b> from 10 mm -14.9 mm
	351 5060 18 <b>Collet single</b> from 15 mm - 60 mm

Can only be ordered ex works.  
For prices and further options  
please contact your dealer or  
send us an e-mail:  
[info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

## Optimum CNC lathes - Higher speed, accuracy and efficiency with chip conveyor and C-axis

### Convincing arguments: quality, efficiency and price

- Robust and heavy "Cartridge" spindle system incl. 1 two-row cylindrical roller bearing at the front and rear as well as double-sided taper bearing in the centre
- Long durability of all bearing due to permanent permanent lubrication
- All axes with SIEMENS servo motors
- Direct drive of all axis to eliminate the torsion play or for higher accuracy for thread cutting and contour machining
- Double pretensioned ball bearing spindles with small pitch to increase the feed force
- Rapid turret indexing mechanism - releasing and turning process are practically taking place at the same time
- Turret indexing mechanism is performed non-stop bi-directionally
- Tailstock sleeve is activated by pressing the treadle or with the program
- Tailstock body is positioned by means of a control bar engaged by the slide
- Clamping and releasing of the drive bar can be programmed
- Electronic handwheel
- Bar feeder prepared
- Hydraulic turret
- Two-year SIEMENS guaranty included



Set up with opened door

safety integrated power by siemens

### Standard equipment

Residual material detection and machining for contour pockets and stock removal	Heat exchanger
Shop turn	Chip conveyor
Network drive management	Chip carriage
3-D simulation finished part	Automatic tool measuring Renishaw
Simultaneous recording	Automatic door opener
Safety integrated	Bar feeder interface
EMC	Coolant channels for tools 20 bars external
Working lamp	Driven tool changer VDI 40 (12 tools Sauter)
Manual handwheel	C axis brake system
Programmable tailstock	3-jaw chuck hydraulic Ø 200 mm
Parts catcher	

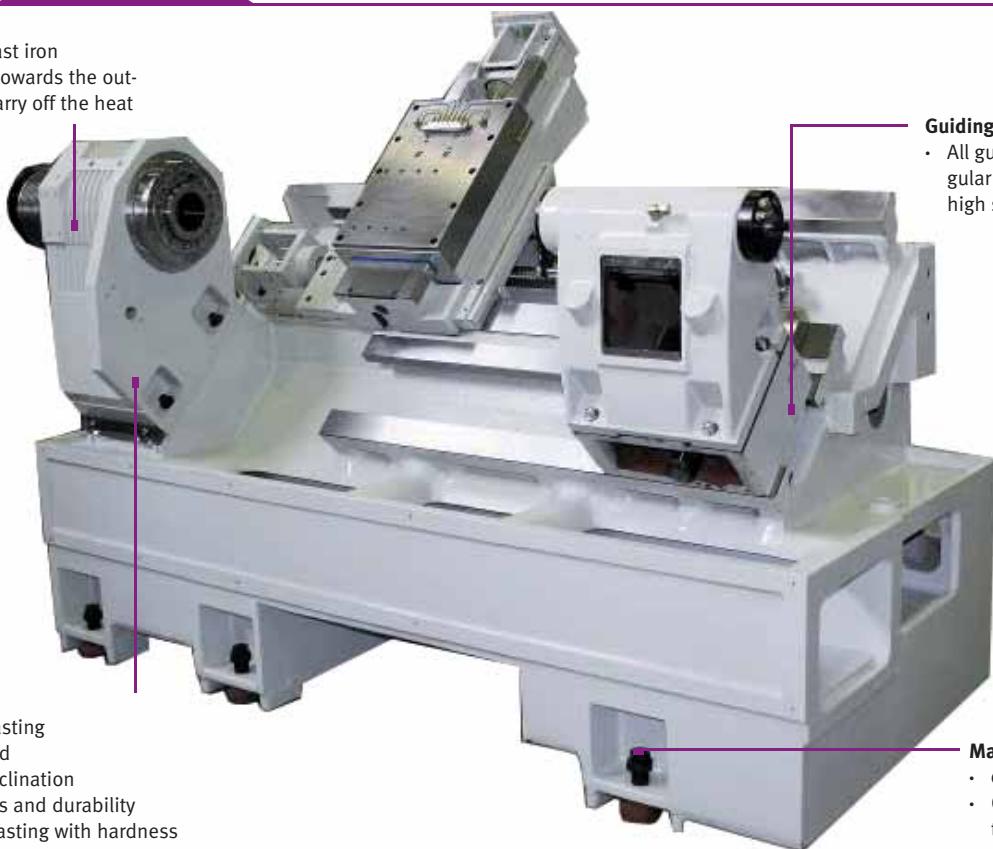
Type	S 500	S 750
Item No	351 5150	351 5170
<b>Electrical connection</b>		
Total connection	40 kW 400 V ~50 Hz	50 kW 400 V ~50 Hz
Driving motor	17 kW	30 kW
Torque drive motor	162 Nm	186 Nm
Power of the coolant pump	750 W	750 W
Tank capacity	185 litres	185 litres
<b>Hydraulic system</b>		
Motor power	1.5 kW	1.5 kW
Tank capacity	70 litres	70 litres
<b>Machine data</b>		
Centre height	600 mm	600 mm
Distance between centres max.	750 mm	1'250 mm
Turning Ø over cross slide	450 mm	450 mm
Turning Ø over machine bed	600 mm	600 mm
Turning diameter max.	485 mm	485 mm
Inclined bed	45°	45°
<b>Speeds</b>		
Spindle speeds	10 - 4'500 min <sup>-1</sup>	10 - 3'000 min <sup>-1</sup>
<b>Spindle</b>		
Spindle seat	DIN ISO 702-1 Nr. 6	DIN ISO 702-1 Nr. 8
Spindle bore	Ø 66 mm	Ø 88 mm
Hydraulic lathe chuck	Ø 200 mm	Ø 250 mm
Chuck through hole	Ø 52 mm	Ø 77 mm
<b>Turret</b>		
Seat	VDI 40	VDI 40
Number of tool positions	12	12
Max. speed of the tools	4'000 min <sup>-1</sup>	4'000 min <sup>-1</sup>
Power of the tools	4.82 KW	4.82 KW
Max. torque	20 Nm	20 Nm
Type	Sauter	Sauter
Seat height, seat width max.	25 x 25 mm	25 x 25 mm
Seat diameter max.	Ø 32 mm	Ø 32 mm
<b>Accuracy</b>		
Repeatability	± 0.005 mm	± 0.005 mm
Positioning accuracy	± 0.005 mm	± 0.005 mm
<b>Travels</b>		
X axis	305 mm	305 mm
Z axis	750 mm	1'250 mm
<b>Feed speed</b>		
X axis	24'000 mm/min	24'000 mm/min
Z axis	24'000 mm/min	24'000 mm/min
<b>Torque motor</b>		
X axis	11 Nm	11 Nm
Z axis	27 Nm	27 Nm
<b>Tailstock</b>		
Tailstock seat	MT 5	MT 5
Travel	600 mm	600 mm
Tailstock - sleeve diameter	90 mm	90 mm
Tailstock - sleeve travel hydraulically	120 mm	120 mm
<b>Dimensions</b>		
Length without / with chip conveyor	3'015 / 4'114 mm	3'515 / 4'614 mm
Width x Height	1'856 x 2'016 mm	1'856 x 2'016 mm
Total weight	5'700 kg	7'200 kg

„Starter kit VDI 40“ on page 75

### Standard equipment

#### Headstock

- Meehanite cast iron
- Cooling ribs towards the outside better carry off the heat



#### Machine bed

- One-piece casting
- Deeply ribbed
- 45 degree inclination
- High stiffness and durability
- Meehanite casting with hardness HB 170 ~ 180

#### Laser measurement



- Guaranteed repeatability and positioning accuracy

#### Tool change system



- High dividing precision and rapid tool change
- Slewing range, high torque and minimum stability
- Duration - tool to tool: 0.35 sec
- 180 degree: 1.2 sec

#### Programmable tailstock



- Heavy type
- High stiffness
- Tailstock can be activated via the program or directly controlled by the operator by means of a standard treadle

#### Internal tool cooling CTS



- Pressure: 20 bars
- Filtering accuracy 25µm

#### C axis brake system



- Hydraulic brake disc to check the effect of the C axis
- Spindle-servo-motor provides for higher resolution accuracy at 0.001°

#### Central lubrication system



- Automatically
- Fold-out for easy filling
- The floating switch identifies the volume of the oil and releases an automatic alarm as soon as it falls below the set value

## Special equipment

Item No S 500	Item No S 750	Options
351 5150 04	351 5170 04	<b>Non-rigid block jaws</b> for 3-jaw lathe chuck Ø 200 mm
351 5150 05	351 5170 05	Non-rigid block jaws for 3-jaw lathe chuck Ø 250 mm
351 5150 13	351 5170 13	<b>Hydraulic 4-jaw lathe chuck Ø 200 mm</b> (In exchange - Scope of delivery standard hydraulic 3-jaw lathe chuck Ø 200 mm)
351 5150 16	-	<b>Hydraulic 3-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery standard hydraulic 3-jaw lathe chuck Ø 200 mm)
351 5150 17	-	<b>Hydraulic 4-jaw lathe chuck Ø 250 mm</b> (In exchange - Scope of delivery standard hydraulic 3-jaw lathe chuck Ø 200 mm)
-	351 5170 15	<b>Hydraulic 4-jaw lathe chuck Ø 300 mm</b> (In exchange - Scope of delivery standard hydraulic 3-jaw lathe chuck Ø 250 mm)
	351 5150 01	<b>Oil separator</b>
	351 5150 03	<b>Bar feeder 1.55 mtr. V-65 LE, PRO</b>
	-	<b>Bar feeder 1.55 mtr. DH-65 LE, FEDEK</b>
351 5150 12	351 5170 12	<b>Bar feeder 3.20 mtr.</b> for diameter 5 mm - 51 mm PRO
351 5150 06	351 5170 06	<b>Axially driven tool holder</b>
351 5150 07	351 5170 07	<b>Radially driven tool holder</b>
351 5150 08	351 5170 08	<b>Rear radial driven tool holder</b>
351 5150 09	351 5170 09	<b>Air cooling system</b> for switch cabinet
351 5150 10	351 5170 10	<b>Steady rest</b> 20 mm - 200 mm
351 5150 11	351 5170 11	<b>Tool changer VDI 40</b> (12 tools)

„CNC-instruction - Information“ on page 80

Can only be ordered ex works.  
For prices and further options  
please contact your dealer or  
send us an e-mail:  
[info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

### Part's catcher



- Automatic part catching device

### Bar feeder prepared



- Connexion for bar feeder

Technique

Mil

Turn

Software

Accessories

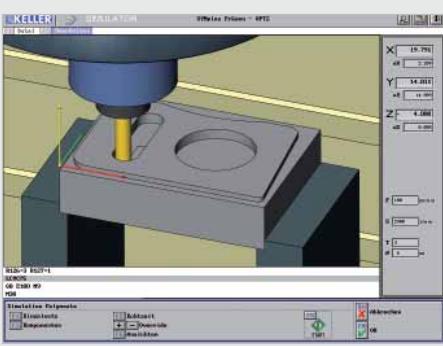
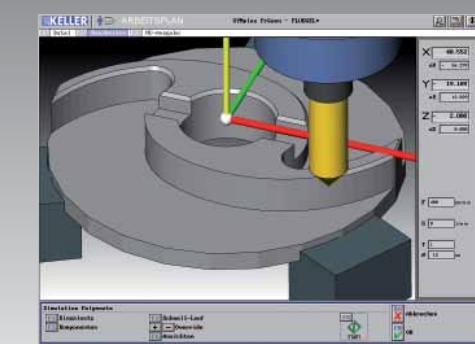
**CNC software**

- SYMplus milling ..... 60
- SYMplus turning ..... 62
- Shopmill/ Shopturn ..... 64
- Sinutrain ..... 65

**CNC controls**

- Sinumerik 802 S base line ..... 66
- Sinumerik 808D ..... 68
- Sinumerik 828D ..... 70
- Sinumerik 828D BASIC T ..... 72

# CNC software, controls and accessories



# SYMplus milling

**for cost-efficient, time-saving and economic working.**

**SYMplus milling is the perfect software add-on for all milling machines made by Optimum equipped with Siemens control.**

## CNC software SYMplus milling 358 3850

- Version 5.2

## Upgrade SYMplus milling

### For Siemens control 828 D 358 3856

- Simulator and post processor

### For Siemens control 808 D 353 3859

- Processor

## USB adapter 357 1968

- RS 232

As training software it helps to rapidly introduce the operator how to use the control Sinumerik 802S. Employees having little CNC experience can learn the basics of the DIN programming by using SYMplus and are finally able to write and test programs using 802S cycles. In particular SYMplus is an easy-to-learn 2½D-CAD/CAM system which helps you to save programming times, to avoid crashes and to reduce the production time.

The software is subdivided into four modules:

## SYMplus milling : CAD/CAM functionality at a glance

### Geometry

- Interactive contour setting via pictograms. Any contour, rectangle, circle, polygon, drilling pattern, text
- Constructions of variants to simply change contours, bidirectional CAD interfaces (DXF, IGES)
- Measuring functions, 3D display at any point in time of the construction incl. calculation volumes and masses

### Working plan

- Strategies reducing the production time by detection of residues over the whole processing, working with any raw parts
- Face milling, surface milling (pockets,islands), contour parallel or shaded with different plunging strategies (helical, ramp, vertical), contour milling, chamfering, grooving, engraving text, handwheel (teaching), clamping, drilling, sinking, grinding, threading
- Comprehensive collision check, taking the clamping devices into account
- 2D and 3D simulation with common types of machines, real time, preview of single records, magnifying glass
- Time calculation for the calculation and to optimize the working plan, automatically created tooling sheet
- Post processor(s) to generate NC programs for your control

### Tool management, data transfer

- Tool management (geometric and technological, depending on the material)
- NC editor for easy editing (copying, cutting, searching, replacing)
- Bi-directional data transfer via the serial interface (RS232)

## SYMplus milling : Versions, licenses, delivery volume

- SYMplus Milling is available in the following languages: German, English, French, Spanish, Italian, Dutch, Polish, Hungarian and Slovakian. Other languages are available upon request.
- SYMplus will be delivered on CD-ROM. The license is protected by a USB dongle. The software package includes a manual and a 4-coloured exercise book of more than 130 pages.
- The software also always includes a SIEMENS post processor (matching the control of the F100 CNC resp. F 100 TC CNC) to automatically generate the NC programs for your machine. A simulator for the control SINUMERIK 802S and an RS232 interface to transfer the data is also integrated by default. Additional post processors and/or simulators are optionally available.

## SYMplus milling : System requirements

- Commercial PC from e.g. Intel Pentium® IV on with min. 2 GHz
- Operating system Microsoft Windows® XP/Vista/7
- Screen resolution 1024x768
- OpenGL - compatible 3D graphic card, e.g. GeForce 7xxx/8xxx/9xxx (128 MB)
- Main storage: Microsoft Windows® 2000/XP 512 MB, Microsoft Windows® Vista/7 1 GB
- about 400 MB free hard disc storage for system data
- Sound card and loudspeakers

### SYMplus milling : Module SHOP

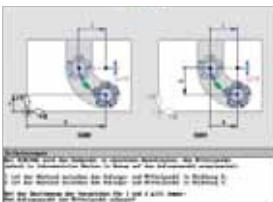


- ◀ Practice here typical repetitive sequences of action to set up the Sinumerik 802S.
- ◀ The realistically designed machine (with noises) will give you the feeling to practice very near to reality – without any stress of real risk of crash.

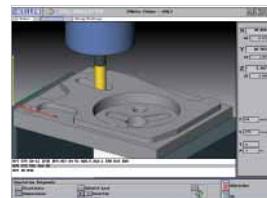
Also interactively practice the key sequence to program the Sinumerik control.



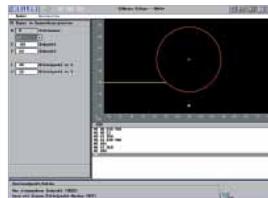
### SYMplus milling : Module DIN/PAL



Using this module you can learn or freshen up the geometric basis of DIN-programming.



Complete DIN programs can be edited using a guided editor, checked for errors and simulated.

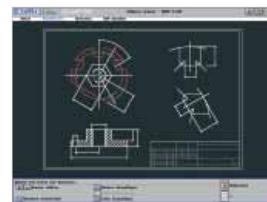


There is a context help and graphic support for error analysis. A test module is included for your trainees. The evaluation is performed automatically.

### SYMplus milling : Module CAD/CAM - Geometry



Unprecedented in speed and ease you can graphically program workpieces using SYMplus even if the drawing is not dimensioned according to the NC dimensioning.



Alternatively you can load and output CAD contours. Value entries are immediately dynamically converted.



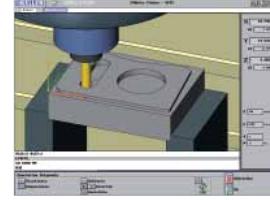
It is also possible to subsequently change any construction data within short time. It is possible to create symmetric contours by mirroring/turning, etc. Also measurement geometries can be created with a few mouse clicks.

### SYMplus milling : Module CONTROL

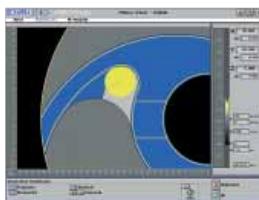


- ◀ Help graphics are available for all commands and cycles. The clear editor allows you to work efficiently.

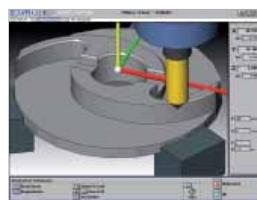
Here you can write and simulate programs using 802S cycles and commands.



### YMplus milling : Module CAD/CAM - Working plan

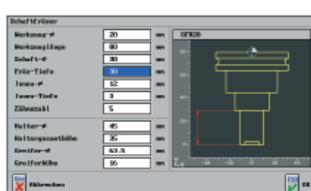


- ◀ The 2D simulation shows lots of details in the view from the top such as e.g. measurements and the cutting trace of each single milling path.



- ◀ The 3D simulation will give you the best overview of the operations. Also chamfers and depressions are easy to recognize.

### SYMplus milling : Setting up tools, etc.



- ◀ Tools can be entered geometrically including shank and holder – this is important for the crash control.

The tools can be individually configured in magazines..



# SYMplus turning

## CAD/CAM system including 802S training appropriate for shops.

SYMplus turning is the ideal software supplement for CNC lathes made by OPTIMUM.

### CNC software SYMplus turning 358 3852

- For Siemens control 802S base line
- Version 5.2

As training software it helps for rapid introduction in the operation of the control Sinumerik 802S. Employees having little CNC experience can learn the basics of the DIN programming by using SYMplus and are finally able to write and test programs using 802S cycles.

### Upgrade SYMplus turning 358 3854

#### For Siemens control **828 D** 358 3854

- Simulator and post processor

#### For Siemens control **808 D** 353 3858

- Post processor

#### USB adapter for Siemens 357 1968

- RS 232

In particular SYMplus is an easy-to-learn CAD/CAM system which helps you to save programming times, to avoid crashes and to reduce the production time.

The software is subdivided into four modules:

## SYMplus turning : CAD/CAM functionality at a glance

### Geometry

- Interactive contour setting via pictograms, any contour routings, cylinder, stage pins, tubes, grooves,
- Constructions of variants to simply change contours, bidirectional CAD interfaces (DXF, IGES)
- Measuring functions, 3D display at any point in time of the construction incl. calculation volumes and masses

### Working plan

- Strategies reducing the production time by detection of residues over the whole processing, working with any raw parts
- Roughing plane and transversal finishing, engraving, punch roughing, cutting-off, drilling, threading, thread turning, handwheel (teaching), re-chucking
- Comprehensive collision control
- 2D and 3D simulation, real-time, single block preview, magnifying glass
- Time calculation for the calculation and to optimize the working plan, automatically created tooling sheet
- Post processor(s) to generate NC programs for your control

### Tool management, data transfer

- Tool management (geometric and technological, depending on the material)
- NC editor for easy editing (copying, cutting, searching, replacing)
- Bi-directional data transfer via the serial interface (RS232)

### Versions, licenses, delivery volume

- SYMplus turning is available in the languages German and English. Other languages are available upon request.
- SYMplus will be delivered on CD-ROM. The license is protected by a USB dongle. The software package includes a manual and a 4-coloured exercise book of more than 130 pages.
- The software also always includes a SIEMENS post processor (matching the control of the Optimum machines) to automatically generate the NC programs of your machine. A simulator for the control SINUMERIK 802S and an RS232 interface to transfer the data is also integrated by default. Additional post processors and/or simulators are optionally available.

### System requirements

- Commercial PC from e.g. Intel Pentium® IV on with min. 2 GHz
- Operating system Microsoft Windows® XP/Vista/7
- Screen resolution 1024x768
- OpenGL - compatible 3D graphic card, e.g. GeForce 7xxx/8xxx/9xxx (128 MB)
- Main storage: Microsoft Windows® 2000/XP 512 MB, Microsoft Windows® Vista/7 1 GB
- about 400 MB free hard disc storage for system data

#### SYMplus turning : Module SHOP

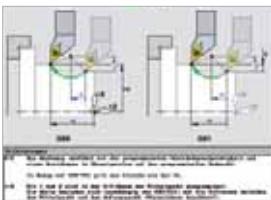


- Practice here typical repetitive sequences of action to set up the Sinumerik 802S.
- The realistically designed machine (with noises) will give you the feeling to practice very near to reality – without any stress of real risk of crash.

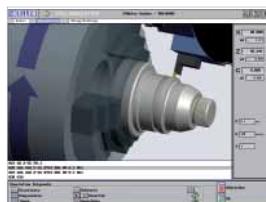
Also interactively practice the key sequence topogramm the Sinumerik control.



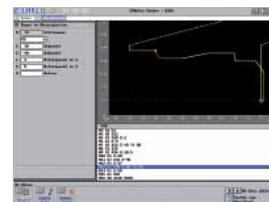
#### SYMplus turning : Module DIN/PAL



In this module it is possible to learn or freshen up geometric basis of the DIN/PAL programming.

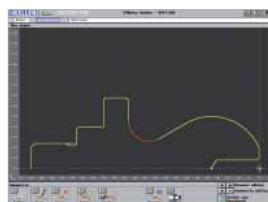


Complete DIN/PAL programs can be edited using a guided editor, checked on errors and simulated.

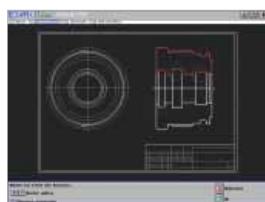


There is a context help and graphic support for error analysis.

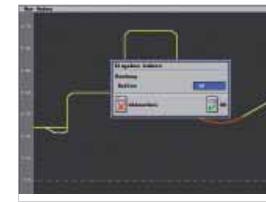
#### SYMplus turning : Module CAD/CAM - Geometry



Unprecedented in speed and ease you can graphically program workpieces using SYMplus even if the drawing is not dimensioned according to the NC dimensioning.

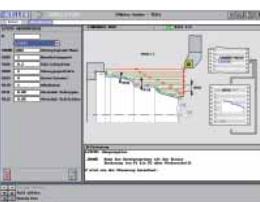


Alternatively you can load and output CAD contours. Value entries are immediately dynamically converted.



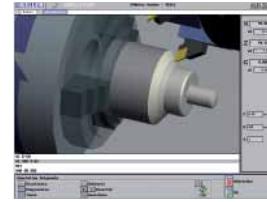
It is also possible to subsequently change any construction data within short time. Fit sizes (about 48h) can be directly entered, average tolerance is automatically proposed as nominal dimension

#### SYMplus turning : Module CONTROL

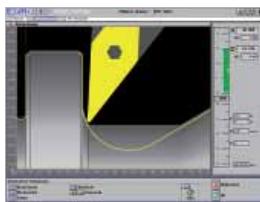


- Help graphics are available for all commands and cycles. The clearly arranged editor allows you working efficiently.

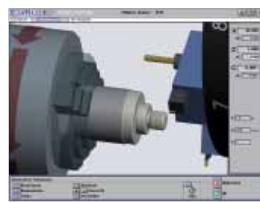
Here you can write and simulate programs using 802S cycles and commands.



#### SYMplus turning : Module CAD/CAM - Working plan



- The 2D simulation shows lots of details such as e.g. allowances. Here it is also possible to measure the workpiece



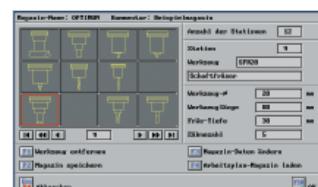
- The 3D simulation will give you the best overview of the operations.

#### SYMplus turning : Setting up tools, etc.



- Tools can be geometrically entered incl. setting angle, shank and seat – this is important for the crash control.

Finally the turret is equipped. Each equipment can be individually saved..



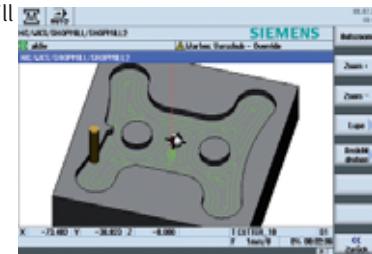
# Shop Mill / Shop Turn

## ShopMill is a tailored technology package for all standard CNC milling machines

The main focus of these machines is on the production of individual parts and small series. ShopMill offers a simple operation of the machine tool appropriate for skilled workers.

All operating actions are supported by help graphics.

The functions in the manual mode allow rapid, practice-oriented setting-up of the machine for the operation. Those are in particular determining the workpiece position in the machine as well as the maintenance and measurement of the used tools.



### For the programming, ShopMill is offering two different programming tools.

- The DIN/ISO editor serves to create DIN/ISO programs on the machine as well as to correct externally created DIN/ ISO programs.
- The working plan editor serves for graphic programming on the machine.

Thus, ShopMill offers a uniform control configuration which covers all worldwide required fields of application without subsequent commissioning efforts:

- Simple user interface for all machine functions
- DIN/ISO programming on the machine or offline via CAD/CAM system
- Graphic programming
- Mould making applications
- Measurement functions

### ShopMill - Highlights

- Flexible programming by graphic interactive programming inputs (without DIN/ISO knowledge) or textual programming inputs with practical cycles also for the use in the tool and mould making
- User-friendly operation by practice-oriented setting-up and measuring functions, clearly arranged tool management and 3D simulation
- Increase in productivity by supporting PC software for production planning without machine scheduling

## ShopTurn - An operation and programming software - distinguishes itself by a graphically supported programming and working plan creation

In ShopTurn machines are rapidly set up and workpieces and tools are rapidly measured. The operating and programming software ShopTurn distinguishes itself by a graphically supported programming and working schedule preparation, by means of which it is possible to manufacture a workpiece even without knowledge of DIN/ISO programming commands.

It is possible to call a graphic overall representation of the workpiece from the working plan by a push of a button. With the help of this dynamic line graphic it is possible to rapidly identify and correct programming errors.

Special advantages: By means of simulation it is possible to test the created working plan. During the simulation run, the productive time of the turned part is determined simultaneously. In this way, it is possible to program and simulate the workpiece in short time after the inquiry from the drawing using ShopTurn and in addition to create a price statement starting from the determined productive time: time saving for the customers.



## ShopTurn - Highlights

### The following basic elements are available:

- Straight line X/Z also with C axis
- Incline in X/Z or under angle, also with C axis
- Circle parametrizable by radius / endpoint or centre

### Automatic functions

Block scan (also on individual holes of a drilling template)

Sequence (automatic operation)

Working plan test (Dry-Run)

Restarting at the contour

Block search

Other functions

The step-by-step creation of a working plan allows you to characterize each step by easy-to-understand icons, working plan creation without DIN/ISO knowledge simple modifying, inserting and removing of special commands (e.g. M functions) & inserting of transition elements, step-by-step processing (single step)

### Manual functions/Set up functions

Measuring workpiece > Scratching workpiece in Z axis

Measuring workpiece > Measuring tool using Tooley

Measuring tool by scratching

### Other options

Easy-to-understand help graphics for each cycle

Scale drawing graphic for input support

Graphic working plan test / test run

Creating / reading and processing of complete DIN/ISO programs

Technology input workpiece definition for each working plan step is possible

Tool and wearing data for up to 128 tools



## SIEMENS SINUTRAIN - SINUMERIK training software

Software	Item No	Software	Item No
Siemens Shopturn	900 1030	Siemens Shopturn & Shopmill	900 1032
Siemens Shopmill	900 1031	Sinumerik 808D on PC free download at cnc4you	

### Learning technique, controlling technique: Formation and training with SINUTRAIN

SinuTrain is the control identical software of SINUMERIK for your PC. From training courses via the offline programming up to the professional sales presentations – SinuTrain is designed for the different requirements.

With SinuTrain we are offering you a practice-oriented and integrated solution for CNC training courses. From the basics to the professional qualification you can

easily mediate your function knowledge of the innovative CNC control SINUMERIK using this training software. Our holistically oriented training solution perfectly includes a training software and systems which are perfectly adapted to your requirements.

### The advantages at a glance

- Comfortable SINUMERIK operation and CNC programming on your PC. Suitable for all common CNC programming types.
- Optimum machine control via the machine operating panel which is integrated in the software.
- Optimum adaptation to different machines
- in the sense of maximum compatibility of the
- CNC programs. Available in lots of languages.

### SinuTrain – more than a training tool.

The operation of SinuTrain is identical with the operation of the real SINUMERIK system. Accordingly you may test all operating modes of the user interface SINUMERIK Operate step by step. Beside milling and turning applications SinuTrain can also be used for other technologies on the basis of SINUMERIK Operate.

### As real as reality

SinuTrain allows a comfortable SINUMERIK operation and CNC programming on your PC – on the basis of the real SINUMERIK CNC kernel.

The software can perfectly be adapted to the axis configuration of different machines. In this way, maximum compatibility of offline created CNC programs is ensured with the machines in the production area.

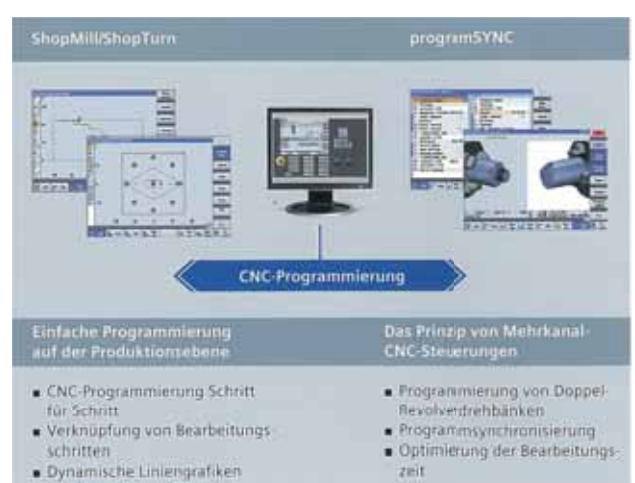


### SinuTrain – numerous useful additional functions

SinuTrain offers numerous useful additional functions and proves your performance during operation.

SinuTrain allows a comfortable SINUMERIK operation and CNC programming on your PC – on the basis of the real SINUMERIK CNC kernel. The software can perfectly be adapted to the axis configuration of different machines. In this way maximum compatibility of offline created CNC programs is ensured with the machines in the production area.

- The integrated online help for CNC operation and programming is making the correct information available.
- An integrated manual facilitates the approach to CNC programming.
- Printout of DIN/ISO programs and working step programs provide an overview.
- Parallel installation of different versions of the SinuTrain software can be easily performed.
- Windows application facilitates the installation
- Communicative by program transfer via Ethernet or USB to your machine



Please find further information under:  
[info@optimum-maschinen.de](mailto:info@optimum-maschinen.de)

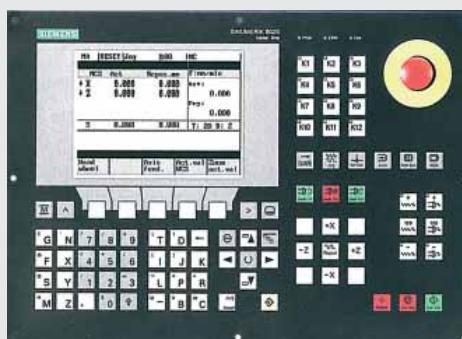
# Sinumerik 802 S base line

## The ideal CNC for standard applications

SINUMERIK 802S base line, the CNC made by Siemens for applications in the low power range is excellently appropriate for lathes and milling machines with up to 3 axis and one spindle and distinguishes itself by the following features of:

- Extremely easy-to-operate and simple programming
- Maintenance-free
- Compact design

For Optimum machines  
M4HS  
L 28  
L 33



### The perfect control for starting:

- Easy-to-operate and to program
- Rapid, easy setting-up of tools and workpieces
- Cycle and contour-supported programming

### The CNC control for different applications:

- Controls up to 3 axes and 1 spindle
- Complete unit of compact dimensions
- Maintenance-free, since it is working without batteries and fans
- Easy connection by pulse/direction interfaces (feed axes) resp. ± 10 V analogue interface (spindle)
- Standard solution with worldwide service for different applications

### The SINUMERIK 802S base line offers you lots of advantages:

- Easy CNC programming in DIN 66025
- Easy measuring of tools by scratching
- Contour elements as programming aid
- Cycle support for complex applications
- Spindle pitch error, batch and measuring system error compensation for precise processing results.

### Turning cycles:

- Grooving
- Undercut
- Machining
- Thread cutting\*
- Drilling, spot facing\*
- Deep hole drilling\*
- Tapping with/without compensation chuck\*
- Drilling

### Milling cycles:

- Deep-hole drilling
- Thread cutting with/without compensation chuck
- Row of holes – circle
- Row of holes – line
- Drilling, countersinking
- Milling of pockets, grooves and circular pockets

### Other features:

- Processing from external – also processes larger CNC programs via the RS 232 C (V.24) interface
- Extremely robust – due to compact design
- Powerful PLC – for perfect adaptation to the machine tool (SIMATIC S7-200 compatible)
- 256kb program memory

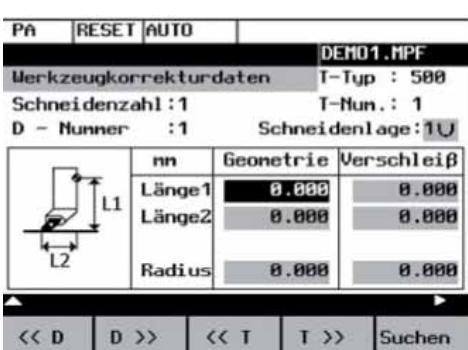
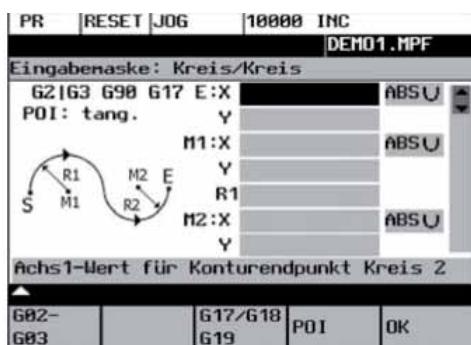
\*depending on the machine type

## Programming

- Program entry according to DIN 66025
- High level language elements and R parameters for modular and efficient programming
- Graphic programming by means of contour routing support
- Integrated turning and milling cycles with graphic input masks
- Teach in (Optional) for program entry by means of handwheels or direction keys

## Tool management

- 15 tools and 30 cutting edges
- Tool length compensation
- 2D tool radius compensation
- Measuring cycles for easy workpiece and tool measurement



Tool corrections

## Dimensions

- 3 servo axis (pulse/direction interface, 5V difference signals) and 1 spindle ( $\pm 10$  V)
- 8" LCD flat screen (monochrome)
- 256 kbyte part program memory
- Handwheel function (max. 2 handwheels)
- Serial interface RS 232 C
- Operating panel front of IP65 type
- 12 customer keys with LED can be freely allocated and determined
- 48 digital inputs and 16 digital outputs are integrated
- Extension module with 16 digital inputs and outputs each (max. 2 pieces)
- Emergency-stop button can be integrated
- PLC with contact plan programming
- Look Ahead function
- Up to 15 tools, 30 cutting edges
- Calculator function
- Servo trace for axis diagnosis
- 2 languages can be switched over online
- Operating software with 11 languages (English, German, French, Italian, Spanish, Chinese simplified, Polish, Russian, Czech, Turkish and Hungarian)



# SINUMERIK 808D

**relating a high degree of user friendliness with high performance CNC functions.**

The CNC SINUMERIK 808D Milling is perfectly pre-configured for the requirements of easy standard milling machines. The SINUMERIK 808D Milling is equipped with the intelligent move guiding advanced surface of the technology package SINUMERIK MDynamics. It also includes the LookAhead function which allows an optimum speed control.

- **SINUMERIK Operate BASIC**  
easy, intuitive user guiding by dialogue-oriented user support
- **SINUMERIK programGUIDE BASIC**  
Includes a bandwidth of technology cycles for milling and drilling with graphic input masks  
High performance and accuracy thanks to modern CNC functions
- **SINUMERIK MDynamics**  
Intelligent move guiding advanced surface for applications in the simple tool making and mould making
- **Machine Control Panel**  
The machine control panel can be connected as "Plug&Play" via USB and is equipped with ergonomic override rotary switches in the same way as the High-End-CNCs.

The compact and user friendly entry-level solution is used for simple milling applications. As panel-based control the 808D is equipped with all interfaces including PLC in- and outputs on board so that no complex cabling to the switch cabinet is required any longer. The machine control panel can be connected as "Plug&Play" via USB and is equipped with ergonomic override rotary switches in the same way as the High-End-CNCs. The interface on the operating panel front allows the use of a USB memory stick and thus the easy transmission of part programs and tool data during the daily operation.

A significant feature of the new CNC is the easy, intuitive user guidance. The user interface Sinumerik Operate Basic offers a new dialogue-oriented user support with the Sinumerik startGuide which is guiding through the setting of the machine step-by-step and reduces the time for commission-

For Optimum machines

M2LS  
F 4  
F 80  
F 105



ing to a minimum. Thus it is possible to easily commission prototypes as well as serial machines by means of the so called "startupAssistants". The "operationAssistant" helps the operators to set-up and program the machine step by step. All in all the completely renewed Sinumerik Operate Basic is modelled strongly on the operating philosophy of the larger Sinumerik Operate system. This applies for the menu structure as well as for the programming. In this way the "programGuide Basic" allows easy programming by means of graphically supported cycle masks and a comfortable contour calculator. The reuse of part programs of other controls which support the ISO code can be easily realized. In this way it is possible to use DIN- and ISO programming languages alternately within a program. As usual, the user interface offers an online language changeover. On the hardware key labels for the CNC are available with English and Chinese characters. Thanks to the used micro keys the membrane keyboard is also offering a very good tactility.

**User friendly:**  
Technology specific keyboard layout  
Hardkeys with protective film

**Display:**  
7.5" colour LCD display with a resolution of 640 x 480

**Communicative:**  
USB interface at the front panel supports USB memory stick and USB PC keyboard



**Robust:**  
Panel-based CNC design  
Protection class IP65 - at the front

**Easy to assemble and to maintain:**  
Durable buffer battery  
Clamping assembly of the PPU and MCP

**Easy-to-operate:**  
MCP with rotary switch for feed and spindle override  
LED display of the tool number

The new model shows a high degree of precision and productivity. Thus the CNC is counting with an accuracy of 80-Bit-NanoFP in order to avoid internal rounding errors. Being the smallest member of the Sinumerik family the 808D is equipped with the intelligent move guiding MDynamics including an intelligent "Look-Ahead" to attain an optimum speed guiding. Thus it is possible to attain productivity increases and improved service quality at the same time. The high computing power as well as optimized technology cycles in the operating system contribute to the high performance of the CNC. The transfer from conventional machines to CNC programming is enabled by using the option Manual Machine plus (MM+). A machine which is equipped with this feature can be operated by means of handwheels in the same way as a conventional machine but with the advantages of CNC supported technology cycles.

At the driving end the control is equipped with a semi-servo solution consisting of the drive system Sinamics V60 combined with Simotics servo motors of the type 1FL5. The CNC provides the drive with target values via the plus-/direction interface which the CNC perfectly translates in the enclosed speed control circuit by means of the Simotics motor. The continuous CNC system can also be used in rough environmental conditions among others since the drive system is equipped with a large cooling body which can be operated without ventilator. Furthermore the Sinumerik 808D attains the protection class IP65 on the operating panel front.

The new CNC is completed with the software package Sinumerik 808D on PC which further facilitates the use of the machine. When used as practical training software it is possible to program and simulate workpieces offline. The free of charge software can also be used for presentation purposes.

Language Note:  
Version 1 of the following languages: D / GB / RUS / P / CN  
Version 2: languages on request

# Sinumerik 828D

## High performance CNC control for maximum accuracy and processing speed

SINUMERIK 828D is a panel-based CNC control for demanding applications on lathes and milling machines as they are typically used in the shop. They combine CNC, PLC, operating and axis control functions on a compact and robust unit which fits in each operation panel housing. There are two variants for the horizontal and vertical installation.

With its powerful CNC functions the SINUMERIK 828D sets new benchmarks in the class of compact CNCs. Thanks to a comprehensive CNC program-

ming package the Sinumerik 828D is perfectly prepared for all worldwide CNC consumption markets.

### For Optimum machines

- F 150
- F 310
- F 410
- S 500
- S 750



### Compact

Maximum power with most compact dimensions:

- 10.4" colour display
- QWERTY CNC standard keyboard
- USB, CF card, Ethernet at the panel front side

### Powerful

High performance CNC functions

- 80bit NANOPF accuracy
- Technology package SINUMERIK MDynamics with the new function Advanced Surface
- Clearly arranged tool management
- Powerful kinematic transformations

### Simple

Simple programming

- ShopMill / ShopTurn - shortest programming times for individual parts and small series
- programGUIDE- shortest program runtimes and maximum flexibility for large batch sizes
- ISO dialect – optimum CNC program compatibility

### Simple

- Easy commissioning
- Easy Archive – optimum application updates
- Easy Extend - user-friendly extension of machine components

### Simply brilliant

- Animated elements - unique graphic visualisation
- Integrated online help - rapid relevant help
- Easy Message – Transfer of the machine status by SMS

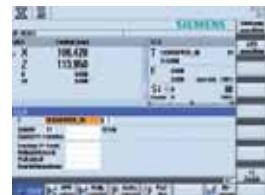
Scope of service	
Minimum block cycle time	~6 ms
CNC main storage	3 MB
Maximum number of tools/cutters	128/256
Maximum number of axes/spindles	6

## CNC operation in the manual mode (JOG)

### TSM universal cycle

A universal cycle is available in the setting mode for the most frequently used machine functions:

- Tool change with direct access via the tool table (T)
- Spindle speed and –direction (S)
- M functions (M)
- Activating of zero offsets

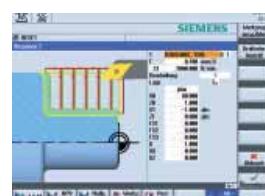


### Turning cycle

In the setting mode a comfortable turning cycle is available. Using this cycle it is for instance possible to turn smooth clamping jaws.

It is possible to preset the following parameters:

- Roughing resp. finishing
- Undercut for smooth clamping jaws



### Measuring workpiece

You can measure the workpiece as follows:

- Reference tool



### Zero point offsets

The following adjustable zero point offset are at your disposal:

- A basic offset
- Maximum 99 zero point offsets (G54, G55 ...)
- Each zero point offset with axis rotation and fine offset

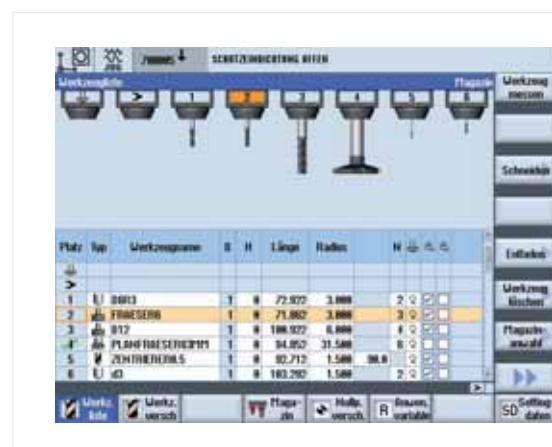
## Tool management

### Tool table

You can manage tools including their complete use data in the tool list.

The maximum number of tools/cutters amounts to 128/256

- The function loading allows to assign the tools to the required magazine positions.
- You can store the following data for each tool:
  - Tool type: e.g. roughing, finishing, engraving, drilling and milling tools
  - Clear tool name in clear text, example: ROUGHING\_80GRAD
  - Max. 9 cutters for each tool
  - Tool lengths and cutting insert geometry
  - Point angle for drilling and number of teeth for milling tools
  - Spindle turning direction and coolant (Step 1 and 2)
  - Direct taking over of the tool from the list to the program resp. to measurements



### Monitoring service life and number of pieces

Using the SINUMERIK 828D you can monitor the service life of your tools and the number of substitutions. You can assign clear names to your tools instead of less significant numbers. At the least when reading the CNC program you will appreciate this comfort.

- Monitoring contact time (T) in minutes or number of exchanges (C)
- Early warning threshold for making available new tools in time
- If the required tool is not in the magazine the SINUMERIK 828D prompts you to change it manually.

### Spare tools

If required you can also manage spare tools (replacement tools) with the SINUMERIK 828D. Tools of the same name are created as spare tools. In the column ST the spare tools are marked with an ascending number.

# Sinumerik 828D BASIC T

## The all-round talent for standard lathes

The SINUMERIK 828D BASIC T is the perfect entry into the class 828D and together with SINAMICS drives and motors precisely tailored for the demands of modern standard lathes.

besides numerous drilling operations. Of course, also on the fore-part and surface area of the workpiece. This, the one-time performance of the SINUMERIK 828D BASIC T guarantees highest accuracy of the workpiece with minimum processing time.

The SINUMERIK 828D BASIC T controls all drilling and milling operations

For Optimum machines

L 44  
L 440  
L 460  
L 500  
L 520  
S 600



### Robust and maintenance-friendly Sinamics drive

In addition to new CNC Siemens is offering a multiple axis drive with the new Sinamics S120 Combi which is tailored to the demands of compact standard machines in the same way as the CNC controls. Robustness is an important feature for the Combi drive. In order to guarantee this among others the supply unit as well as the three to four motor modules are integrated in one housing. In this way, on the one hand the number of cabling interfaces is decreased, on the other hand a mutual cooling element provides for optimum heat dissipation – even if one of the performance parts is under full load. If the machines are used in tropical environmental conditions, the drives have to withstand tension and frequency variations in the power network without malfunctions beside heat resistance and condensation tightness. The Sinamics S120 Combi was also designed for these conditions.

The Sinumerik 828D Basic T is already integrated in the training package SinuTrain for Sinumerik Operate. In this way, it is possible to learn and deepen the operation of a lathe with the latest control. Furthermore, SinuTrain is also appropriate for performing the programming offline. At this, it is possible to use the established programming methods Sinumerik-CNC programming language, ISO-Code programming as well as the step sequence programming ShopTurn in the same way as on the real CNC in the machine.

With this type Siemens Drive Technologies complements its portfolio of controls in the compact class Sinumerik 828D. With the Sinumerik 828D for demanding lathes and milling machines in the workshop, the Sinumerik 840D sl for premium applications and the Sinumerik 802 family for standard machine applications make available a complete spectrum of machine tool controls for all CNC requirements.

### High-tech for the compact class

Modern processor technique and software architecture are the basis

of the 80-bit NANOPF accuracy (80 Bit floating point precision). From the software point of view it is possible to attain accuracy values in the range of microns ( $\mu\text{m}$ ). Thus the accuracy which can be attained in practice is not limited control technically, but it is determined by the options of the mechanical components. Beside the high accuracy the Sinumerik 828D Basic T furthermore allows very flexible use since it can also perform drilling and milling processes beside numerous turning operations. With intelligent kinematic transformations between the spindle and the X-axis it is even possible to perform different milling and drilling operations on the face and lateral surfaces of the workpiece. The Sinumerik 828D Basic T is equipped with Sinumerik Operate, a comfortable CNC user interface which allows performing safe and intuitive programming and setting up processes.

The function "Easy Message" is a special feature. In this way, the responsible employee is informed via SMS about all important process data regarding production. If a machine requires new raw parts or a lathe tool attained the limits of its lifetime the Sinumerik 828D Basic T can send a corresponding information via SMS. In this way, the productivity of the machine is further increased.

Scope of service	
Input voltage	DC 24 V, + 20 %/- 15%
Power consumption, max.	60 W
Network failure bridging operation	3 ms
Protection class according to DIN EN 60529 (IEC 60529)	Operating panel front IP65 (with closed front cover) PPU IP20 (rear)

## Overview

Compact, strong, simple - just brilliant  
 The compact, operating panel based CNC control SINUMERIK 828D BASIC T is offering a maximum of robustness and maintenance-friendliness.  
 Powerful CNC functions coupled with a unique 80-bit NANOFP accuracy providing highest workpiece accuracy with minimum operating time. Thanks to a flexible CNC programming language as well as a unique working step programming ShopTurn/ShopMill, it is possible to program and edit parts for mass production as well as individual components with the highest possible efficiency.

Preconfigured technology-specific system software and unique service functions reduce the commissioning costs and the service to an absolute minimum.

## Advantage

- Compact, robust and maintenance-free operating panel CNC with firm system software for the technology turning
- Highest operating precision with 80-bit NANOFP accuracy
- New user interface SINUMERIK Operate, continuous for SINUMERIK 840D sl
- Intelligent kinematic transformations for the milling and drilling operations on the front and lateral surfaces of the workpieces
- ShopTurn: shortest programming time when producing individual parts and small series
- programGUIDE: shortest operating time and maximum flexibility when producing parts for mass production
- Unique spectrum of technology cycles – from the operation of any turning and milling contours with detection of residual material up to process measurement
- Animated elements: unique operating and programming support with moving image sequences
- Most modern data transfer via CompactFlash Card, USB stick and factory network (Ethernet)
- Easy Message: maximum machine availability by process monitoring via text messages (SMS)

## Function

- 2 operating panel types for horizontal and vertical operating panel housings
- Integrated QWERTY-CNC standard keypad with short-stroke keys
- CompactFlash Card, USB and Ethernet interface on the operating panel front
- Additional Ethernet interface on the CNC rear side for firm factory networking
- Integrated PLC on the basis of the instruction set of the SIMATIC S7-200 with ladder diagram programming (Ladder Steps)
- E/A interface is based on PROFINET for the connection of the PLC peripherals and machine control panel
- Licensing CNC options
- Up to 5 axis/spindles
- 1 processing channel/group of operating modes
- Integrated tool management with tool lifetime control
- Management of spare tools (optional)
- User images can be projected Easy Screen
- Integrated data archiving procedure for simple data update
- Provision of repair of deficiencies for 24 months from the 2nd commissioning on for all equipment components according to the RSV work description

## Integration

It is possible to connect the following components to the SINUMERIK 828D BASIC T:

- Up to 2 electronic handwheels
- Mini handheld unit with handwheel
- Up to 3 peripheral modules PP 72/48D PN or PP 72/48D 2/2A PN
- Machine control panel MCP 310C PN or MCP 483C PN
- GSM/GPRS modem
- Drive system SINAMICS S120 Combi via DRIVE-CLiQ

# Safety engineering - Safety integrated



### SINUMERIK Safety Integrated®

is the comprehensive safety pack for person and machine protection, is working extremely reliable, efficient and profitable. It guarantees safe and practicable operation of the machine for all required operating conditions. All safety functions fulfil the requirements according to SL 2 /PL d and are certified accordingly and listed under NRTL.

Comprehensive, highly active safety functions result in rapid, situation-related reactions in case of a fault due to the integration of the safety functions in the

drive and control. Among others, the safe monitoring of speed, standstill and position are integrated. The safe brake management allows anti-fall guard for vertical axis. The security-relevant signals can be linked due to the safe, programmable logics without any additional hardware.



# Starter kit VDI 30

**NEW**

<b>Starter kit</b>	<b>VDI 30</b>
Item No	353 6115

## Consisting of:

- 3 pcs Square transversal seat
- 1 pcs Square transversal seat overhead
- 1 pcs Longitudinal seat
- 5 pcs Bohrstangenaufnahme Ø 10 / 12 / 16 / 20 / 25 mm
- 3 pcs Cover plate
- 1 pcs Collet chuck ER 25
- 1 pcs Key for collet chuck ER 25
- 1 pcs Collet chuck kit ER 25
- 1 pcs Tool holder
- 1 pcs Bohrfutter

<b>Square transversal seat</b>	<b>353 6231</b>
--------------------------------	-----------------

- Right, short
- DIN 69880
- large adjustable ball-type nozzles



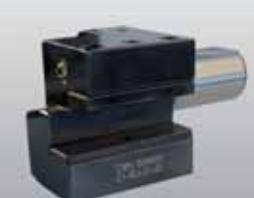
<b>Square transversal seat</b>	<b>353 6232</b>
--------------------------------	-----------------

- Overhead
- Right, short
- DIN 69880
- large adjustable ball-type nozzles



<b>Longitudinal seat</b>	<b>353 6233</b>
--------------------------	-----------------

- Right
- large adjustable ball-type nozzles



<b>Cover plate</b>	<b>353 6236</b>
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- Protection against contamination of the tool changer



<b>Collet chuck ER 25</b>	<b>353 6237</b>
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<b>Key for collet chuck ER 25</b>	<b>353 6240</b>
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<b>Collet chuck kit</b>	<b>344 1109</b>
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<b>Tool holder</b>	<b>353 6238</b>
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<b>Drill chuck</b>	<b>353 6239</b>
--------------------	-----------------



<b>Bohrstangenaufnahme Ø 10 mm</b>	<b>353 6241</b>
<b>Bohrstangenaufnahme Ø 12 mm</b>	<b>353 6242</b>
<b>Bohrstangenaufnahme Ø 16 mm</b>	<b>353 6243</b>
<b>Bohrstangenaufnahme Ø 20 mm</b>	<b>353 6244</b>
<b>Bohrstangenaufnahme Ø 25 mm</b>	<b>353 6245</b>



# Starter kit VDI 40

**NEW**

**OPTIMUM®**  
MASCHINEN - GERMANY

<b>Starter kit</b>	<b>VDI 40</b>
Item No	353 6116

## Consisting of:

- 3 pcs Square transversal seat
- 1 pcs Square transversal seat overhead
- 1 pcs Longitudinal seat
- 5 pcs Bohrstangenaufnahme Ø 10 / 12 / 16 / 20 / 25 mm
- 3 pcs Cover plate
- 1 pcs Collet chuck ER 25
- 1 pcs Key for collet chuck ER 25
- 1 pcs Collet chuck kit ER 25
- 1 pcs Tool holder
- 1 pcs Bohrfutter

<b>Square transversal seat</b>	353 6251
--------------------------------	----------

- Right, short
- DIN 69880
- large adjustable ball-type nozzles



<b>Square transversal seat</b>	353 6252
--------------------------------	----------

- Overhead
- Right, short
- DIN 69880
- large adjustable ball-type nozzles



<b>Longitudinal seat</b>	353 6253
--------------------------	----------

- Right
- large adjustable ball-type nozzles



<b>Cover plate</b>	353 6256
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- Protection against contamination of the tool changer



<b>Collet chuck ER 25</b>	353 6257
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<b>Key for collet chuck ER 25</b>	353 6260
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<b>Collet chuck kit</b>	344 1109
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<b>ER 25</b>	344 1109
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- 15 pcs- size Ø 1 - 16 mm



<b>Tool holder</b>	353 6258
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- pre-worked
- Blank round



<b>Drill chuck</b>	353 6259
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- Spannbereich 1 - 13 mm



<b>Bohrstangenaufnahme Ø 10 mm</b>	353 6261
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<b>Bohrstangenaufnahme Ø 12 mm</b>	353 6262
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<b>Bohrstangenaufnahme Ø 16 mm</b>	353 6263
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<b>Bohrstangenaufnahme Ø 20 mm</b>	353 6264
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<b>Bohrstangenaufnahme Ø 25 mm</b>	353 6265
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Technique

Mil

Turn

Software

Accessories

# Starter kit BT 30

**NEW**

<b>Starter kit</b>	<b>BT 30</b>
Item No	353 6107

## Consisting of:

- 1 pcs Cone wiper
- 14 pcs Pull studs
- 3 pcs Collet chuck ER 32
- 1 pcs Key for collet chuck ER 32
- 2 pcs Collet chuck kit ER 32
- 1 pcs Drill chuck
- 2 pcs Weldon 6 mm
- 1 pcs Weldon 8 mm
- 1 pcs Weldon 10 mm
- 1 pcs Weldon 12 mm
- 1 pcs Weldon 16 mm
- 2 pcs Weldon 20 mm
- 1 pcs Adapter BT 30
- 1 pcs holder milling head
- 1 pcs Device for height adjustment
- 1 pcs Assembly and tool setting aid

<b>Holder milling head</b>	<b>353 6306</b>
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- Seat 27 mm



<b>Drill chuck</b>	<b>353 6303</b>
--------------------	-----------------

- Clamping range 1 - 13 mm



<b>Weldon holder 6 mm</b>	<b>353 6310</b>
<b>Weldon holder 8 mm</b>	<b>353 6311</b>
<b>Weldon holder 10 mm</b>	<b>353 6312</b>
<b>Weldon holder 12 mm</b>	<b>353 6313</b>
<b>Weldon holder 16 mm</b>	<b>353 6314</b>
<b>Weldon holder 20 mm</b>	<b>353 6315</b>



<b>Adapter</b>	<b>353 6305</b>
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- BT 30 to MT 2



<b>Collet chuck ER 32</b>	<b>353 6304</b>
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<b>Key for collet chuck ER 32</b>	<b>353 6307</b>
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<b>Collet chuck kit ER 32</b>	<b>344 1122</b>
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- 18 Collets Size Ø 1 - 16 mm



<b>Device for height adjustment</b>	<b>353 6290</b>
-------------------------------------	-----------------

- Analogue type
- For rapid and easy determining of the reference point in the Z axis and/or to set the tools "zeroing" (e.g. for milling or drilling) without damaging the workpiece
- Housing height 50 mm



<b>Assembly and tool setting aid</b>	<b>353 6193</b>
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- For easy and exact setting of the tools
- Vertical and horizontal seat for tools with taper shank



<b>Cone wiper</b>	<b>353 6301</b>
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<b>Pull studs</b>	<b>353 6302</b>
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# Starter kit BT 40/Set 1

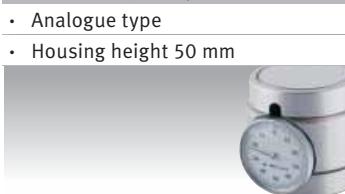
**OPTIMUM®**  
MASCHINEN - GERMANY

<b>Starter kit</b>	<b>BT 40 / Set 1</b>
Item No	353 6105

## Consisting of:

- 6 pcs Pull studs
- 2 pcs Collet chuck BT 40/ER32
- 1 pcs Collet chuck kit ER 32, 3 - 20 mm
- 1 pcs quick-action drill chuck 0 - 13 mm
- 1 pcs Collet chuck BT 40 SLA 20-90
- 1 pcs adapter morse taper BT 40 - MT 3
- 1 pcs Surface milling cutter seat BT 40
- 1 pcs surface milling cutter
- 1 pcs tool deposit
- 1 pcs holder milling head
- 1 pcs Device for height adjustment
- 1 pcs Assembly and tool setting aid
- 1 pcs Kit of parallel packing plates

<b>Device for height adjustment</b>	353 6180
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<b>Kit of parallel packing plates</b>	353 6191
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- Superfinished, accuracy of 0.01 mm
- Length 150 mm x Width 8.5 mm
- 18 pcs sizes 2 x 14 mm/2 x 16 mm/2 x 20 mm/2 x 24 mm/  
2 x 30 mm/2 x 32 mm/2 x 36 mm/2 x 40 mm/2 x 44 mm



<b>Assembly and tool setting aid BT 40</b>	353 6187
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- For easy and exact setting of the tools
- Vertical seat for tools with taper shank
- Weight 13 kg



<b>Milling chuck - BT 40 SLA 20 - 90</b>	353 6186
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- To seat the 3-D push button



<b>Quick-action drill chuck 0 - 13 mm - BT 40</b>	353 6183
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- Including hook spanner for closing



<b>Collet chuck BT 40/ER 32</b>	353 6182
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- Accuracy 0,005 mm



<b>Collet chuck kit ER 32</b>	344 1122
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- 18 collets 3 - 20 mm



<b>Adapter Morse taper BT 40 - MT 3</b>	353 6184
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<b>Surface milling cutter seat - BT 40 (27 mm)</b>	353 6190
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<b>Surface milling cutter</b>	353 6189
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- 63 mm · Hole 27 mm · Including cutting inserts

<b>Spare cutting inserts</b>	353 0196
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- 10 pcs



<b>Pull studs BT 40 - 40 x 45°</b>	353 6185
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<b>Pull studs Sk 40 M16</b>	353 6179
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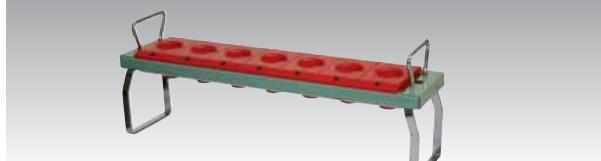
<b>Pull studs BT 40 HC 40</b>	353 6178
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- for F210 TC assembly tools



<b>Tool deposit for BT 40 tools</b>	353 6188
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- Dimensions L x W x H: 595 x 143 x 225 mm



Technique

Mil

Turn

Software

Accessories

# Starter kit BT 40/Set 2



<b>Starter kit</b>	<b>BT 40 / Set 2</b>
Item No	353 6108

**Consisting of:**

- 1 pcs Cone wiper
- 15 pcs Pull studs
- 3 pcs Collet chuck ER 32
- 1 pcs Key for collet chuck ER 32
- 2 pcs Collet chuck kit ER 32, 1 - 16 mm
- 1 pcs Drill chuck 1 - 13 mm
- 2 pcs Weldon 6 mm
- 1 pcs Weldon 8 mm
- 1 pcs Weldon 10 mm
- 1 pcs Weldon 12 mm
- 1 pcs Weldon 16 mm
- 2 pcs Weldon 20 mm
- 1 pcs Adapter BT 40 to MT 3
- 1 pcs holder milling head mit Seat 27 mm
- 1 pcs Device for height adjustment
- 1 pcs Assembly and tool setting aid

<b>Holder milling head</b>	353 6336
<ul style="list-style-type: none"> <li>• Seat 27 mm</li> </ul>	



<b>Drill chuck</b>	353 6333
<ul style="list-style-type: none"> <li>• Clamping range von 1 - 13 mm</li> </ul>	



<b>Weldon holder 6 mm</b>	353 6340
<b>Weldon holder 8 mm</b>	353 6341
<b>Weldon holder 10 mm</b>	353 6342
<b>Weldon holder 12 mm</b>	353 6343
<b>Weldon holder 16 mm</b>	353 6344
<b>Weldon holder 20 mm</b>	353 6345



<b>Adapter</b>	353 6335
<ul style="list-style-type: none"> <li>• BT 40 to MT 3</li> </ul>	



<b>Cone wiper</b>	353 6331

<b>Collet chuck ER 32</b>	353 6334

<b>Key for collet chuck ER 32</b>	353 6307

<b>Collet chuck kit ER 32</b>	344 1122
<ul style="list-style-type: none"> <li>• 18 Collets Size Ø 1-16 mm</li> </ul>	



<b>Device for height adjustment</b>	353 6290
<ul style="list-style-type: none"> <li>• Analogue type</li> <li>• For rapid and easy determining of the reference point in the Z axis</li> <li>• and/or to set the tools "zeroing" (e.g. for milling or drilling) without damaging the workpiece</li> <li>• Housing height 50 mm</li> </ul>	



<b>Assembly and tool setting aid</b>	353 6194
<ul style="list-style-type: none"> <li>• For easy and exact setting of the tools</li> <li>• Vertical and horizontal seat for tools with taper shank</li> </ul>	



<b>Pull studs</b>	353 6332



# Starter kit SK40/DIN 69871

**OPTIMUM®**  
MASCHINEN - GERMANY

**NEW**

<b>Starter kit</b>	<b>SK 40 / DIN 69871</b>
Item No	353 6109

## Consisting of:

- 1 pcs cone wiper
- 6 pcs Pull studs
- 3 pcs Collet chuck ER 32
- 1 pcs Key for collet chuck ER 32
- 2 pcs Collet chuck kit ER 32, 1 - 16 mm
- 1 pcs Drill chuck 1 - 13 mm
- 2 pcs Weldon 6 mm
- 1 pcs Weldon 8 mm
- 1 pcs Weldon 10 mm
- 1 pcs Weldon 12 mm
- 1 pcs Weldon 16 mm
- 2 pcs Weldon 20 mm
- 1 pcs Adapter SK 40 to MT 3
- 1 pcs holder milling head mit Seat 27 mm
- 1 pcs Device for height adjustment
- 1 pcs Assembly and tool setting aid

<b>Holder milling head</b>	353 6366
<ul style="list-style-type: none"> <li>• Seat 27 mm</li> </ul>	

<b>Drill chuck</b>	353 6363
<ul style="list-style-type: none"> <li>• Clamping range von 1 - 13 mm</li> </ul>	

<b>Weldon holder 6 mm</b>	353 6370
<b>Weldon holder 8 mm</b>	353 6371
<b>Weldon holder 10 mm</b>	353 6372
<b>Weldon holder 12 mm</b>	353 6373
<b>Weldon holder 16 mm</b>	353 6374
<b>Weldon holder 20 mm</b>	353 6375

<b>Adapter</b>	353 6365
<ul style="list-style-type: none"> <li>• SK 40 to MT 3</li> </ul>	

<b>Cone wiper</b>	353 6331
	

<b>Collet chuck ER 32</b>	353 6364
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<b>Key for collet chuck ER 32</b>	353 6307
	

<b>Collet chuck kit ER 32</b>	344 1122
<ul style="list-style-type: none"> <li>• 18 collets size Ø 1-16 mm</li> </ul>	

<b>Device for height adjustment</b>	353 6290
-------------------------------------	----------

<b>Device for height adjustment</b>	353 6290
<ul style="list-style-type: none"> <li>• Analogue type</li> <li>• For rapid and easy determining of the reference point in the Z axis</li> <li>• and/or to set the tools "zeroing" (e.g. for milling or drilling) without damaging the workpiece</li> <li>• Housing height 50 mm</li> </ul>	



<b>Assembly and tool setting aid</b>	353 6193
--------------------------------------	----------

<b>Assembly and tool setting aid</b>	353 6193
<ul style="list-style-type: none"> <li>• For easy and exact setting of the tools</li> <li>• Vertical and horizontal seat for tools with taper shank</li> </ul>	



<b>Pull studs</b>	353 6362
-------------------	----------



Technique

Mil

Turn

Software

Accessories

**NEW****Surface milling cutter**

- 63 mm
- Hole 27 mm

**NEW****cutting inserts**

- APKT 1604 PDTR-ME14 C15M
- 10 pcs

**Clamping tool kit SPW 58 pcs**

- Metric threads
- 24 pcs draw-in bolts
- 6 pcs T-slots
- 6 pcs nuts
- 4 pcs elongation nuts
- 6 pcs step blocks
- 12 pcs clamping blocks
- Practical wall bracket

**SPW 8** 335 2015

- T-slots 10 mm; draw bar thread M 8

**SPW 10** 335 2016

- T-slots 12 mm; draw bar thread M 10

**SPW 12** 335 2017

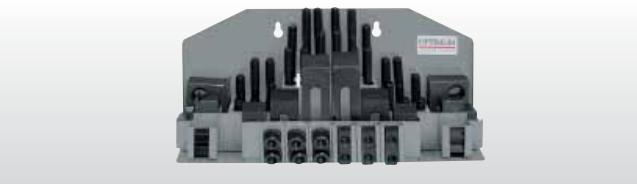
- T-slots 14 mm; draw bar thread M 12

**SPW 14** 335 2018

- T-slots 16 mm; draw bar thread M 14

**SPW 16** 335 2019

- T-slots 18 mm; draw bar thread M 16

**Vibration damping machine foot**

Item No

- Machines and devices can be installed without anchoring and exactly levelled per height adjustment
- Machine capability is improved by efficient impact and vibration damping

**SE 1**

338 1012

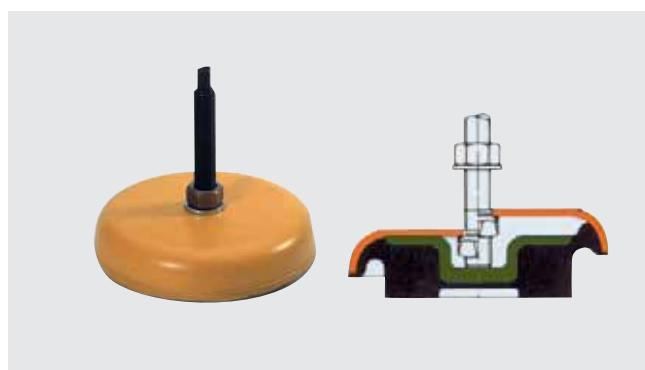
**SE 2**

338 1016

**SE 3**

338 1018

Charge	<b>SE 1</b>	<b>SE 2</b>	<b>SE 3</b>
Milling machines	340 Kg	460 kg	1'600 kg
Sawing/ general machines	570 kg	1'460 kg	3'500 kg
Thread	M12	M 16	M 20
Base Ø/Base height	120/32	160/35	185/39

**CNC-instruction - Information****CNC-instruction indoor**

Item No. 900 0509

on-site operation

excl. travel expenses / overnight stay

**Accounting unit: 1 day**

The commissioning includes the alignment, the acceptance and the functional test of the machine. This applies under the condition that the machine is unpacked, that exterior corrosion protection is removed, that the machine is cleaned, moved to the installation place and connected to the electrical or pneumatic energy supply by the customer. Subsequently your employees are briefly instructed in the function, operation, preparation, diagnostic and maintenance of the machine.

Duration of the commissioning and instruction: 8 hours/day, including the time for arrival and departure plus travelling cost, plus accommodation at cost, if applicable.

The same applies for deviating and additional services which are separately ordered on site; such services will be invoiced on a time and material basis.

If it is necessary and desired to install and connect the machine, the customer engages himself to support our assemblers using his best efforts and to make available the necessary assistants, tools and appliances at his own cost.

## Machine vices for standard and individual manufacturing on CNC milling machines and machining centres

### Hydraulic vice HCV

Modular - machine vice of high accuracy and repeatability for standard and individual manufacturing on CNC milling machines and machining centres

Solid structure for milling

Hardened and ground guide surfaces

Booster system, little effort, high pressure output when clamping

Large clamping range due to locking bolts with different hole spacings

Manufactured of high-quality stainless steel

Long service life due to high quality type

High clamping power

**HCV 105**

353 6210

**HCV 125**

353 6214

**Non-rigid jaws 2 pcs for HCV125**

353 6221

**L-jaws 2 pcs for HCV125**

353 6222



Fig.: HCV 105



Fig.: HCV 125

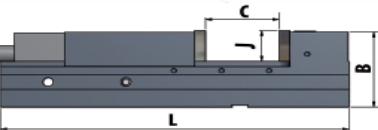


Fig.: Non-rigid jaws

Fig.: L-jaws

Technical data		L	B	C	j	a	T-slots	Clamping pressure	Clamping force	kg
HCV 105	mm	442	107	170	42	107	16	24.5 kN	2500 kg	22
HCV 125	mm	478.5	140	205	45	126	18	40 kN	4000 kg	35.4

### OPTIMUM precision modular vices PNM

Modular vice for standard and individual manufacturing on CNC milling machines and machining centres

Rotary table

Particularly suitable for tool manufacturing, mould making and construction of jigs and fixtures

Material made of alloyed tool steel

Hardened and ground guideways

Rapid alignment over longitudinal and transversal grooves

High precision

High clamping force

Horizontally and vertically applicable

Little installation height

Easy handling

**PNM 100**

335 5551

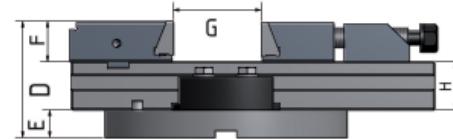
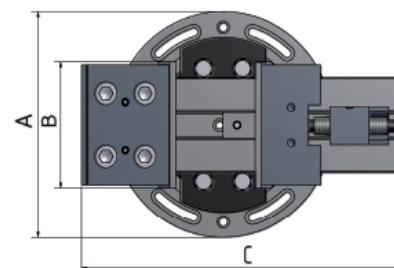
**PNM 125**

335 5553



Fig.: PNM 100

Technical data		A	B	C	D	E	F	G	H	kg
PNM 100	mm	180	100	270	85	20	30	95	35	10.3
PNM 125	mm	226	125	345	103	23	40	150	40	18.2



### Please note

#### General notes regarding the operation of our machines:

- Generally, our machines have to be operated only under supervision. However, if you leave the machine during operation you are acting grossly negligent.
- Please find the indications regarding the accuracy of the machines

in the technical data on the catalogue pages. If you cannot find the corresponding values there, please do not hesitate to contact info@optimum-maschinen.de in order to obtain more detailed information.

The indicated accuracies are achieved under standard conditions (proper installation of the machine and environmental temperatures

The OPTIMUM in quality, value and service

Metal working machines for craftsmen and industry

Table drilling machines for  
craftsmen and training workshops



Upright drilling  
also of Vario type



Geared upright drill with or without  
automatic sleeve



Metal band saw from  
compact to semi-automatic



Drilling-milling machines  
Multi milling machines



CNC milling machines incl. complete  
control package made by Siemens



Metal belt grinders  
Double grinders  
Polishing machines



Lathes also for conversion  
to CNC machinery



CNC-lathes. We offer comprehensive  
service! Instruction by our experts



## Compressed air technology for trade and industry

### The entry-level models



**Portable compressors for the professional craftsman with maximum equipment**

### The installation professionals



**The Stationary - maximum power in the smallest area**

### The solid compressors for craftsmen



**Silent compressors - for installation in the direct working environment**



**Screw-type compressors and stationaries**



**Compressed air distribution Pipe plug systems**



**Compressed air use - Pneumatic tools for various applications**



## Are you interested in further products?



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[www.schweisskraft.de](http://www.schweisskraft.de)



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**OPTIMUM®**  
MASCHINEN - GERMANY

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- The prices are without engagement, in Euros, plus the statutory VAT, plus delivery and transportation costs as well as unloading charges, if applicable.
- We do not take any liability for misprints, errors or incorrect presentation.
- Technical and optical modifications are reserved.
- Illustrations partially including optional accessories
- The delivery is performed exclusively according to our terms of delivery and payment.
- The machines are delivered partially disassembled for transport-technical reasons.
- The products are sold by specialized trade.
- The products remain our property until they are completely paid.
- Our ownership reservation shall remain valid upon third-party resale.
- In the commercial sector, the legal terms of warranty shall apply.
- No part of this catalogue may be reproduced and reprinted, in any form whatsoever, without our written authorisation.
- Please observe that the prices of some machines in this brochure are plus transport packaging flat rate for transportation units resp. packaging and packaging cost.

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Main catalogue



CNC catalogue



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