

# F 150/F 150HSC

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Excellent precision, solid design, effectiveness and efficiency

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## SIEMENS CONTROL 828D

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- Heavy duty version
- High productivity
- High reliability
- Profile rail with ball screw for fast rapid motion speeds on all axes
- High-torque servo drives on all three axes
- Torsion free machine base thanks to strong ribbing
- Solid, precision milling table with four T-grooves, generously dimensioned with precision surface finish
- Chip conveyor, screw auger type
- Machine lamp in the workspace
- RJ45 plug-in connection, USB connection and 230 V power connection
- Coolant unit with 210 litre coolant tank and chip flushing system
- Closed switch cabinet with integrated heat exchanger; ensures optimal temperature even in case of high ambient temperatures; prevents dirt particle penetration
- Portable, electronic handwheel
- Telescopic guide rail covers on all three axes
- Including two years SIEMENS warranty
- Information on „Warranty extension“ on page 61
- Information on „Maintenance contracts“ from page 175

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## 2 variants available:

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### F150

- Carousel tool changer with 16 tool slots
- Siemens control Sinumerik 828D with 10.4 inch colour display

### F150 HSC

- Double arm grab with 24 tool slots
- Siemens control Sinumerik 828D with 15.6 inch touch display
- Also available with KESSLER built-in high-frequency spindles (MADE IN GERMANY) at 24 000 rpm



YouTube

Follow this for the video presentation of our Optimum milling machine F 150

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[www.youtube.com/user/OptimumMaschinen](http://www.youtube.com/user/OptimumMaschinen)



Fig. F150HSC with optional accessories

# TECHNICAL DATA



Models	F150	F150 HSC	
	Belt drive	Inline spindle	Kessler built-in
<b>Article no.</b>	3511210	3511212	3511290013**
<b>Speed range</b>			
Speeds*	10 000 rpm		24 000 rpm
<b>Machine data</b>			
Electrical connection	400 V / 3 Ph ~ 50 Hz		
Total connected load	31 kVA	48 kVA	
<b>Milling spindle</b>			
Drive motor S1 operation	9 kW	25 kW	
Torque drive motor S1 operation	57 Nm	32 Nm	
Drive motor S6 30% operation	21.2 kW	35 kW	
Torque drive motor S6 30% operation	135 Nm	39 Nm	
Spindle seat	SK 40 DIN 69871	HSK A-63 DIN 69893	
<b>Cooling lubricant system</b>			
Motor - coolant pumps, 3 pcs.	1.27 kW each		
Flow rate	66 - 100 l/min		
Tank capacity	210 litres		
<b>End mill size</b>			
Max. sensor head size	Ø 63 mm		
Max. shaft milling cutter size	Ø 32 mm		
<b>Milling precision</b>			
Repetition accuracy	± 0.005 mm		
Positioning accuracy	± 0.005 mm		
<b>Tool changer</b>			
Type	Carousel	Double arm grab	
Number of tool slots	16 slots	24 slots	
Max. tool diameter	89 mm	80 mm	
Max. tool weight	8 kg	8 kg	
Tool change time tool to tool	9 seconds	2 seconds	
<b>Travel</b>			
X axis	760 mm		
Y axis	440 mm		
Z axis	460 mm		
<b>Axis feed drive</b>			
Rapid motion X, Y, Z axis	30 000 mm/min.		
<b>Motor torque</b>			
X axis	6 Nm		
Y axis	6 Nm		
Z axis	11 Nm		
<b>Pneumatics</b>			
Compressed air	5 - 7 bar		
<b>Milling table</b>			
Clearance spindle to table	102 - 562 mm		
Throat	480 mm		
Table length x width	900 x 410 mm		
T-Slot size/distance/no	16 mm / 102 mm / 4		
Max. load bearing capacity	350 kg		
<b>Dimensions</b>			
Length x width x height	3 000 x 1 950 x 2 310 mm		
Overall weight	4 350 kg		
Transport surcharge	TPZ 3000		

Sinumerik 828D system software	F 150 / SW 26x	F 150HSC / SW 28x
CNC memory	5 MB	8 MB
Set change time	2 ms	1 ms
Look Ahead	100	150
Number of tools	256	512

\* Please note that the maximum spindle speed must be reduced by approx. 20 % in continuous operation without an optional oil cooler

\*\* Must be ordered with the basic machine. Cannot be retrofitted

# SINUMERIK 828D

## The power house in the compact CNC control class

### 2 variants available:

#### F 150

- 10.4" TFT colour display
- 4:3 format
- Front interfaces: RJ45 Ethernet, USB 2.0, Compact Flash (CF) Card
- 16 soft keys The 8 horizontal and 8 vertical soft keys take the user to all control windows with just a few key presses

#### F 150HSC: Control panel with PPU 290

- System software SW 28x
- 15.6" colour display
- 16:9 format
- Capacitive display with Multi-Touch controller
- Intuitive single-touch gesture control
- Soft key selection via touch function
- Integrated full "QWERTY" keyboard
- Proximity sensor/clearance sensor for smart display control
- Front panel made of die-cast magnesium with scratchproof glass front
- No battery (permanent intermediate data storage thanks to NV-RAM technology)
- No fan
- No hard disk
- Can be operated while wearing gloves
- Front interfaces: USB 2.0, RJ45 Ethernet, IP65 also with protective flap open



### The device of choice for any processing technology.

- Even at the highest machining speeds, the smart Advanced Surface (Standard) motion guidance and Top Surface (optional 3584012) ensure optimal workpiece surfaces.
- Transfer CAD data to programming with ease at the CNC thanks to DXF Reader (optional 3584014)
- 3D simulation on the PC ensures better control over and optimisation of the production process

### INCLUDING

- Safety Integrated
- Residual material detection and machining
- ShopMill work step programming
- Managing network drives
- 3-D simulation
- Logging



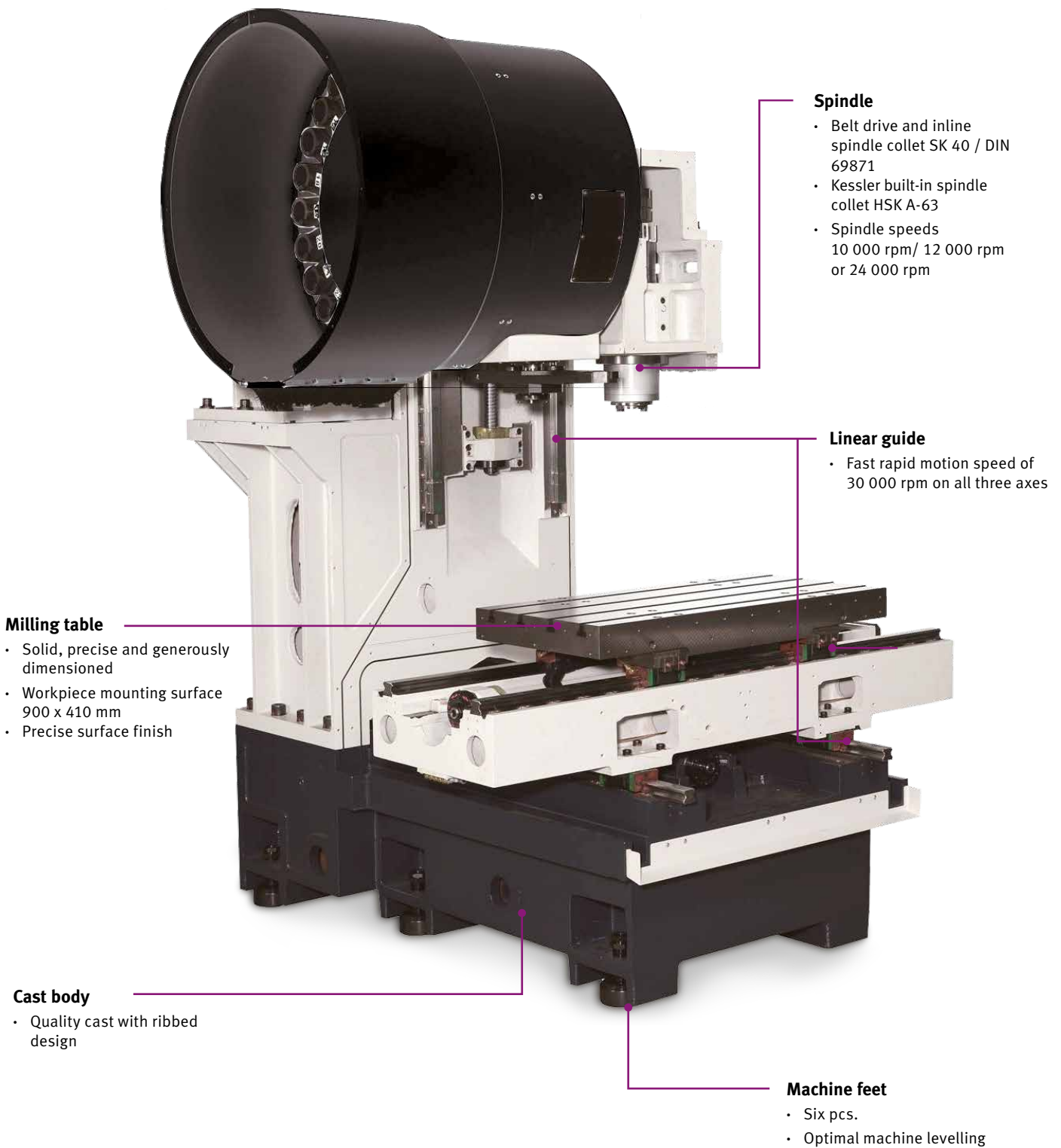
Siemens  
**SAFETY INTEGRATED**  
Set up work with open doors

### Warranty extension

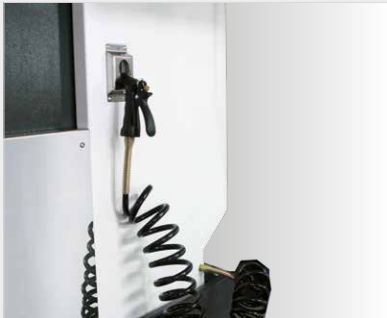
The warranty extension lets you protect your new machine against warranty damage for a further 12, 24 or 36 months after the two-year SIEMENS warranty expires. (can only be ordered within the two-year SIEMENS warranty)

- 12 months - Article no. 3589020
- 24 months - Article no. 3589021
- 36 months - Article no. 3589022

## OPTIMUM - OPTImill F 150 / F 150 HSC







### CLEANING GUN

- Easy cleaning of the workspace



### HANDWHEEL

- Portable, electronic
- Substantially facilitates running in of programs
- Emergency stop button
- Confirm button



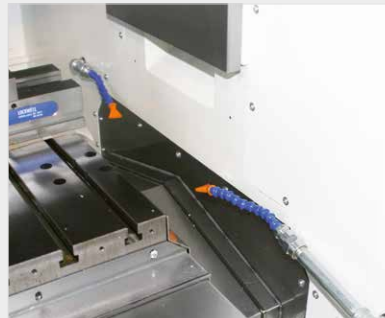
### HEAT EXCHANGER

- Closed switch cabinet with smart cooling management
- Optimal temperature even in case of high ambient temperatures
- Prevents particulate soiling



### TOOL CHANGER SYSTEM

- F 150: Carousel type with 16 tool slots
- F 150HSC: Double arm grab with 24 tool slots
- Max. tool length 300 mm



### CHIP FLUSHING SYSTEM

- Powerful chip flushing system for cleaning the workspace and workpiece



### LINEAR GUIDE

- Profile rails with ball screw guides



### CHIP CONVEYOR

- Chip conveyor



### COOLING LUBRICANT SYSTEM

- Three powerful coolant pumps with 1.27 kW each
- Tank capacity 210 litres
- Delivery rate 66 - 100 l/min.





### CENTRAL LUBRICATION SYSTEM

- Prevents wear, repair costs and unnecessary downtime to a major extent

# OPTIMUM - OPTImill F 150 / F 150 HSC

## Special equipment

Tool measuring / workpiece measuring		
	<b>Renishaw Tool/workpiece measuring</b>	<ul style="list-style-type: none"> <li>Information on „Renishaw“ on page 162</li> </ul>
	<b>Blum Tool/workpiece measuring</b>	<ul style="list-style-type: none"> <li>Information on „Blum“ on page 160</li> </ul>

F 150	F 150 HSC		
<b>Miscellaneous</b>			
3536109		<b>1 Starter set SK 40 / DIN 69871</b>	<ul style="list-style-type: none"> <li>Information on the starter set „SK 40 / DIN 69871“ on page 145</li> </ul>
3511290501*		<b>2 Power transformer</b>	<ul style="list-style-type: none"> <li>for special voltages</li> </ul>
-	3511290100*	<b>3 Coolant through spindle (CTS)</b>	<ul style="list-style-type: none"> <li>Integrated unit, 20 bar</li> </ul>
-	3511290102*		<ul style="list-style-type: none"> <li>External unit; tank capacity 165 litres, 20 bar</li> </ul>
-	3511290104*		<ul style="list-style-type: none"> <li>External unit; tank capacity 165 litres, 70 bar</li> </ul>
-	3511290002*	<b>Inline spindle 12 000 rpm</b>	<ul style="list-style-type: none"> <li>Instead of standard equipment &gt; 10 000 rpm</li> <li>Including spindle oil cooler (oil supply must be provided by customer)</li> </ul>
-	3511290401*	<b>Air conditioner</b>	<ul style="list-style-type: none"> <li>Instead of standard equipment &gt; heat exchanger</li> </ul>
-	3511290303*	<b>4 Chip conveyor, belt-type</b>	<ul style="list-style-type: none"> <li>Instead of standard equipment &gt; chip conveyor, screw auger type</li> </ul>
-	3511290301*	<b>5 Chip carriage</b>	<ul style="list-style-type: none"> <li>L x W x H: 994 x 510 x 838 mm, capacity: 65 litres</li> <li>For chip conveyors</li> </ul>

F 150	F 150HSC		
<b>Fourth and fifth axis</b>			
-	3511290201*	<b>Fourth axis</b>	<ul style="list-style-type: none"> <li>Preparation</li> </ul>
-	3511290210*	<b>6 Fourth axis complete kit</b>	<ul style="list-style-type: none"> <li>Three-jaw lathe chuck 100 mm</li> <li>Tailstock</li> <li>SIEMENS motor</li> <li>Installation</li> </ul>
-	3511290202*	<b>Fourth and fifth axis</b>	<ul style="list-style-type: none"> <li>Preparation</li> </ul>
-	3511290250*	<b>7 Fourth and fifth axis complete kit</b>	<ul style="list-style-type: none"> <li>Three-jaw lathe chuck 100 mm</li> <li>Tailstock</li> <li>SIEMENS motor</li> <li>Mounting</li> </ul>

F 150	F 150 HSC		
<b>Software</b>			
-	3584014	<b>DXF Reader for SIEMENS SINUMERIK controls</b>	<ul style="list-style-type: none"> <li>from version 4.7</li> <li>For importing DXF files</li> <li>Hiding graphics layers</li> <li>Automatic contour tracking</li> <li>Arbitrary workpiece zero point per contour/drilling point</li> </ul>
-	3584012	<b>Top surface for SIEMENS SINUMERIK control</b>	<ul style="list-style-type: none"> <li>The NC data from the CAM system are optimised online during processing</li> <li>The result is excellent surface quality while milling complex free-form surfaces. This is particularly beneficial for geometrically complex mould parts in automobile or aerospace applications or in power generation</li> </ul>



1

## STARTER SET SK 40 / DIN 69871

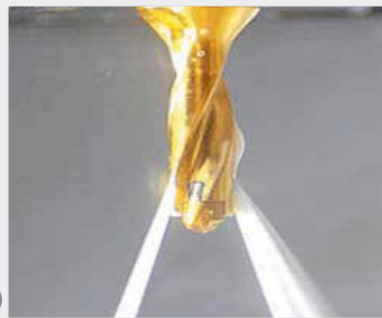
- Milling head holder with 27 mm collet
- Chuck 1 - 13 mm
- Pull stud
- 2 each Weldon 6 mm and 20 mm
- 2 each Weldon 8 mm, 10 mm, 12 mm and 16 mm
- Adapter SK 40 to MT 3
- Spring collet holder ER 32
- Spring collet key ER 32
- Spring collet set ER 32
- Assembly and tool adjustment gauge
- Height-adjuster
- Taper squeegee



2

## POWER TRANSFORMER

- For custom voltage
- Weight 147 kg



3

## COOLANT THROUGH SPINDLE

- Guarantees optimal service life
- Optionally with internal or external unit



4

## AIR CONDITIONER

- Instead of heat exchanger



5

## CHIP TROLLEY/CONVEYOR

- Conveyor version
- For efficient chip discharge



6

## FOURTH AXIS

- Servo motor by Siemens
- Table diameter 120 mm
- Peak height vertical 115 mm
- Table height horizontal 170 mm
- Vertical overall height 193 mm



7

## FIFTH AXIS

- Servo motor by Siemens
- Table diameter 120 mm
- Peak height vertical 150 mm
- Vertical overall height 235 mm
- Tilt angle -20° ~ 120°