

## TECHNICAL SPECIFICATION

# *Concept MILL 250*

PC-controlled CNC – machining center  
with interchangeable control



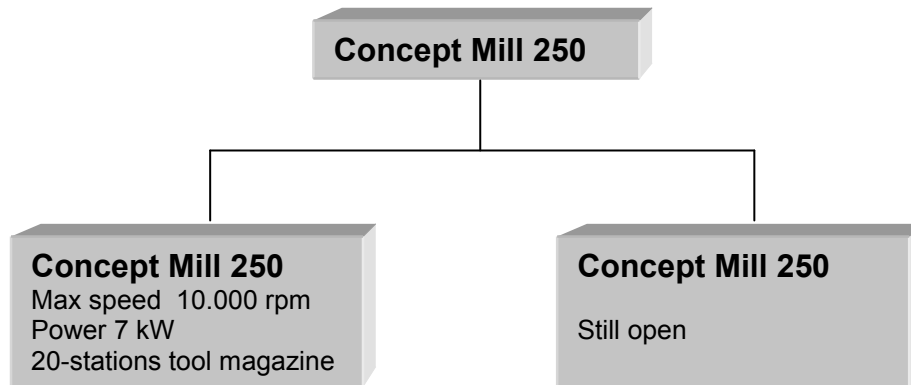
### **Control software**

Sinumerik Operate  
SIEMENS 810D/840D  
SIEMENS 810/820  
GE FANUC Series 21  
GE FANUC Series 0  
HEIDENHAIN TNC 426/430  
EMCOTRONIC TM02  
FAGOR 8055 MC

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## Overview of the modular machine concept




## Technical data of the machine:

<b>Working area</b>		
Travel X	[mm]	350
Travel Y	[mm]	250
Travel Z	[mm]	300
Effective Z-stroke	[mm]	300
Distance spindle nose – table surface	[mm]	120 - 420
<b>Milling table</b>		
Clamping surface (L x W)	[mm]	520 x 300
Max. table load	[kg]	100
5 T-slots according Din 650	[mm]	12
Distance of T-slots	[mm]	45
<b>Milling spindle</b>		
Bearing		Spindle bearing
Front bearing diameter	[mm]	ø 45
Tool holding fixture according to ISO DIN 69871-A		SK30
Draw bolts ISO DIN 69872 (similar to ISO 7388/2 type A)		M12
Tool clamping		Automatic
<b>Milling spindle drive</b>		
Asynchronous AC-motor, power (100% duty cycle)	[kW]	7
Speed range (step less)	[rpm]	150-10,000
Max. torque ( 60% duty cycle)	[Nm]	41
<b>Feed drives (Servo motors)</b>		
Feed	[m/min]	0 – 10
Rapid traverse in X/Y/Z axis	[m/min]	15
Max. feed force	[N]	2400
Positioning variation according to VDI 3441 in X / Y	[mm]	0.004
Positioning variation according to VDI 3441 in Z	[mm]	0.004
<b>Tool system (20 tool magazine)</b>		
Tool magazine		Drum turret
Number of tool stations		20
Entry force	[N]	1040
Max. admissible tool weight	[kg]	5
Max. tool diameter (* with free adjacent magazine place)	[mm]	63 (*80)
Max. tool length	[mm]	200
Turret indexing time	[s]	2.5

<b>Cutting performance</b>		
Drilling in steel	[mm]	ø 16
Tapping in steel		M10
<b>Lubrication system</b>		
Linear roller and ball screw spindle	Automatic oil-lubrication	
Main spindle bearing	Lifetime grease lubrication	
<b>Basic pneumatic (standard included in basic machine)</b>		
Pneumatic service unit for tool taper blow-out device (with filter)		
Supply pressure	[bar]	6
Air hose connection	[mm]	ø 10
Compressed air quality	cleanliness class 4 (ISO 8573-1)	
<b>Coolant equipment (option)</b>		
Tank volume	[l]	140
Max. coolant velocity at 3.5/ 1 bar	[l/min]	15/ 65
Max. pressure at 50Hz	[bar]	3.5
<b>Automatic clamping devices (option)</b>		
Pneumatic vice including blow-out device		
Clamping width	[mm]	125
Width of jaws	[mm]	125
<b>C-axis / NC-dividing head (option)</b>		
Resolution	[°]	0.01
Max. speed	[rpm]	44
Max. torque of feed	[Nm]	20
<b>Painting</b>		
light gray	RAL Nr. 7035	
traffic red	RAL Nr. 3020	
graphite gray	RAL Nr. 7024	
<b>Electrical connection</b>		
Voltage supply	[V]	400 ~3/N/PE
Max. admissible voltage fluctuation	[%]	+10/-10
Frequency	[Hz]	50/60
Connection value	[kVA]	9
Main fuse	[A]	20

<b>Dimensions/weight</b>		
Machine dimensions (L x W x H)	[mm]	1600 x 1700 x 2200
Machine weight	[kg]	1970
<b>Machine acceptance</b>		
According Din 8615, part 1		
<b>Sound pressure level</b>		
Main sound pressure level	[db(A)]	78
<b>At following conditions:</b>		
Measuring method:	Envelope surface measuring method acc.to DIN 45 635	
Measuring point:	1m distance and 1,6m over floor	
Operating status:	max.spindle speed at idle running	
<b>Safety rules / norms</b>		
According to EEC / CE rules EN60204 part 1, DIN12100 1/2 EEC machine guiding rules appendix 1		

## Basic machines Concept MILL 250

	DESCRIPTION	REF.NO.
	<p><b><u>EMCO Concept MILL 250</u></b></p> <p>PC-controlled CNC – machining center with interchangeable control:</p> <ul style="list-style-type: none"> <li>• Max. Speed 10,000 rpm</li> <li>• Power 7 kW</li> <li>• 20-station tool drum</li> <li>• Travel X: 350 mm</li> <li>• Travel Y: 250 mm</li> <li>• Travel Z: 300 mm</li> <li>• Clamping surface 500 x 300 mm</li> <li>• Machine lamp</li> <li>• Central lubrication</li> <li>• Fully enclosed including chip tray</li> <li>• Integrated PC</li> <li>• 12" flat display</li> <li>• Safety devices according to CE</li> <li>• 1 x USB-Plug on the front</li> <li>• Ethernet-connection included (electrical cabinet)</li> </ul>	<p>Q4A P02</p>

# Technical data of the PC control system

## Control system

Separate built-up of the machine operating keyboard and control-specific interchangeable keyboard  
Control-specific keyboard  
Integrated PC  
Integrated 12" colour flat display

## Description MOC III

Multi Operating Controller

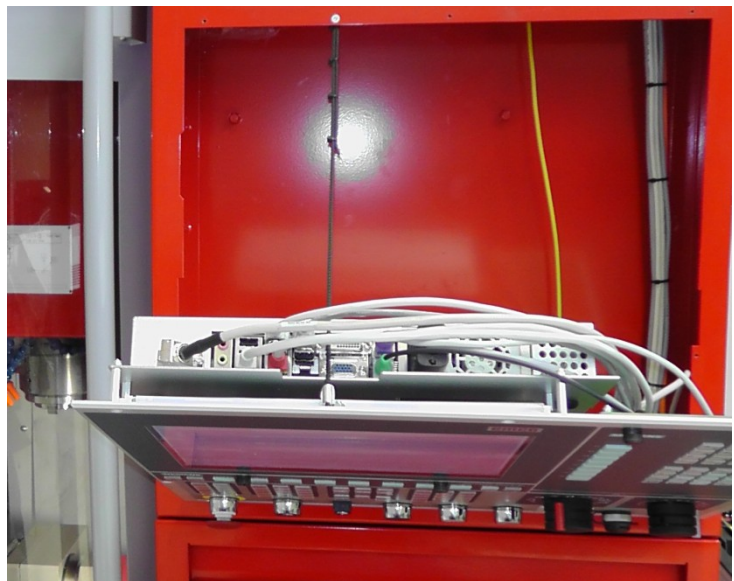
## Function

The MOC is an industrial PC with an integrated LCD monitor.  
Its special construction protects it from vibration and the harsh conditions in the workshop.  
By a free LAN port of the MOC can be easily integrated into an existing network.  
Easy data transfer via USB.


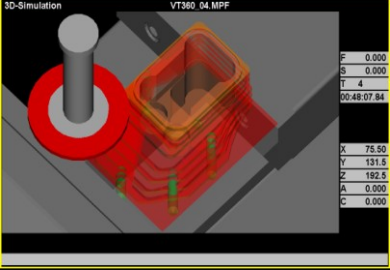

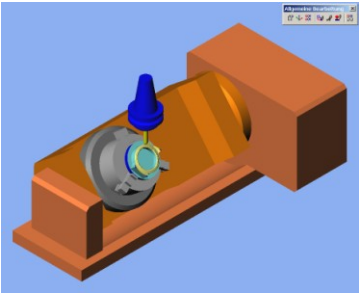
## PC- Configuration

### Technical Parameters:


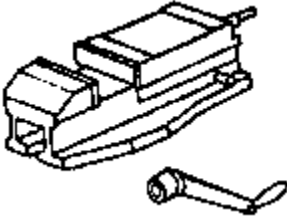
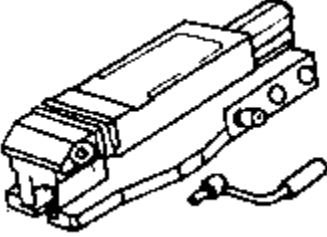




- Processor  
1.6 GHz AMD / dual core
- 1GB RAM
- 4GB Compact Flash
- 1xRS232
- 1 x USB
- 2x LAN
- PS2 Mouse + Keyboard (US)
- TFT 12,1" integrated
- Temperature range 5-50°C
- MS Windows 7 embedded

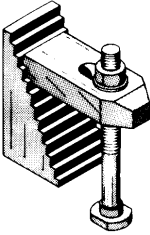
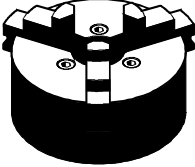
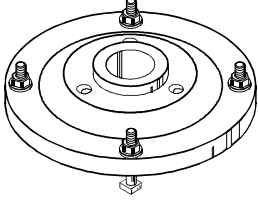


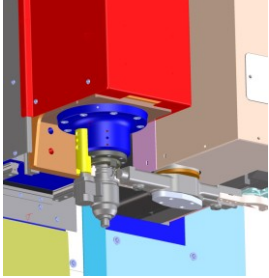



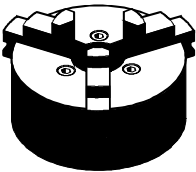

	<p><b><u>Software (32bit and 64bit)</u></b></p> <p>EMCO WinNC – control software, machine license</p> <p>In case of order please indicate required control:</p> <p>Sinumerik Operate                  SIEMENS 810/820                  SIEMENS 810D/840D                  GE FANUC Series 0                  GE FANUC Series 21                  EMCOTRONIC M02                  HEIDENHAIN TNC 426/430                  FAGOR 8055 MC</p>	<p>X3Y 400                  X5A C00                  X3Y 200                  X5A C50                  X3Y 300                  X5A E00                  X3A 200                  X3A 300</p>
	<p><b><u>EMCO Win 3D-View, milling (32bit and 64bit)</u></b></p> <p>3D-graphic simulation, option for WinNC</p> <p>EMCO 3D-View, milling, machine license</p>	<p>X5A 260</p>
	<p><b><u>Control keyboard – key module</u></b></p> <p>Sinumerik Operate                  SIEMENS 810                  SIEMENS 820                  SIEMENS 810D/840D                  GE FANUC Series 0                  GE FANUC Series 21                  EMCOTRONIC TM02                  HEIDENHAIN TNC 426/430                  FAGOR 8055 MC</p>	<p>X9Z 060                  X9Z 010N                  X9Z 020N                  X9Z 040N                  X9Z 110N                  X9Z 130N                  X9Z 210N                  X9Z 426N                  X9Z 055N</p>
	<p><b><u>CADCAM for 5 Axis milling for 5th axis</u></b></p> <p>ESPRIT™ Educational license</p> <p>Single license per station                  SMC single license per station / year                  USB Dongle for ESPRIT license</p> <p>Postprocessor for WinNC Sinumerik840D 5 Axis</p> <p>Please find further details about our CAD/CAM products in our specifications „spec_cadcam_en“</p>	<p>224200                  224210                  224220                  223 897</p>




## Clamping devices for workpieces

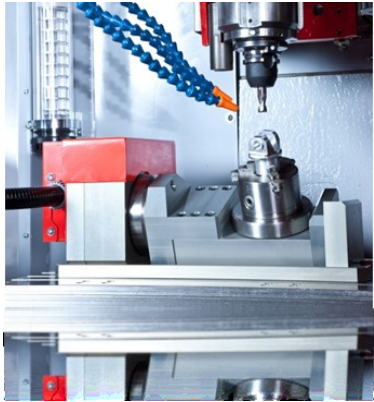
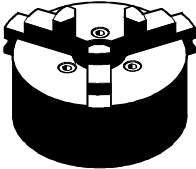
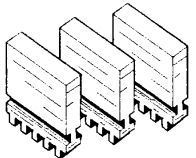
	DESCRIPTION	REF.NO.
	<p><b><u>Machine vice, mechanic</u></b></p> <p>Clamping width 90 mm Width of jaws 90 mm</p> <p>Can be mounted in X and Y direction.</p>	781 000
	<p><b><u>Machine vice, mechanic</u></b></p> <p>Clamping width: 125 mm Width of jaws: 110 mm</p> <p>Can be mounted only in X direction.</p>	781010
	<p><b><u>Machine vice, hydraulic</u></b></p> <p>Hydraulic high-pressure clamping device, manual.</p> <p>Clamping width: 170 mm Width of jaws: 110 mm</p> <p>Can be mounted only in X direction.</p>	781080
	<p><b><u>Machine vice MSR 125, mechanic</u></b></p> <p>Complete with clamps, stepped clamping shoes and necessary tools.</p> <p>Hight of Clamps 40 mm Clamping width 150 mm Width of jaws: 125 mm</p>	781040
	<p><b><u>Stepped clamp for fix clamp</u></b></p> <p>Stepped clamp for fix clamp</p> <p>Option for 781040</p>	781050
	<p><b><u>Stepped clamp for movable clamp</u></b></p> <p>Stepped clamp for movable clamp</p> <p>Option for 781040</p>	781060
	<p><b><u>Prism clamp with step for movable clamp</u></b></p> <p>Prism clamp with step for movable clamp</p> <p>Option for 781040</p>	781070

	<p><b><u>Stepped clamping shoe</u></b></p> <p>Complete with clamping screw.</p> <p>Clamping range: 15 - 58 mm Clamping range: 50 – 125 mm</p>	F3Z 210 F3Z 220
	<p><b><u>3-jaw lathe chuck</u></b></p> <p>Röhm-chuck ø 125 mm</p> <p>Including 1 set of hardened external and internal jaws.</p>	V1D 106R
	<p><b><u>Adapter plate</u></b></p> <p>Required for mounting the chuck # V1D 106R on the milling table.</p>	F3Z 230

	DESCRIPTION	REF.NO.
	<p><b>SPINDLE SPEEDER 20.000 U/min</b>                      High speed tool spindle mounted in the milling spindle, with locking bracket,                      Speed ratio: 1:5                      Length spindle nose - end of collet: 134 mm                      To be used with ER11 Collets</p> <p><b><u>Factory option</u></b></p>	Q4Z 010




	DESCRIPTION	REF.NO.
	<p><b><u>NC-dividing head (4th axis)</u></b>                      (without chuck)</p> <p>Including:                      Dividing head WALTER TANI 80 NEG,                      clamping screws and clamping shoes,                      necessary for the mounting on milling table</p> <p>Kind of clamping: pneumatically                      Necessary pressure: 6 bar                      Dividing precision: +/- 60"                      Repeating accuracy: +/- 10"                      Spindle height: 80 mm                      Bore ø 24 mm                      Total height: 136 mm                      No control possible with EMCOTRONIC</p> <p><b><u>Factory installed only !!</u></b></p>	Q4Z 690
	<p><b><u>Manual 3-jaw lathe chuck with flange for NC-dividing head</u></b> Q4Z 690</p> <p>Manual chuck including 1 set of outside and inside jaws.</p> <p>Chuck ø 82 mm                      Bore ø 18 mm</p>	Q1Z 600
	<p><b><u>Manual tailstock for NC-dividing head to use with NC-dividing head Q4Z 690</u></b></p> <p>Manual tailstock including live center MT 1.</p> <p>Center height 80 mm                      Mounting length: 110 mm                      Total length: 200 mm                      Total height: 93 mm                      Quill stroke: about 15 mm</p>	Q1Z 610

	DESCRIPTION	REF.NO.
	<p><b><u>NC-Dividing head (4th axis) without chuck and without flange</u></b> Including: Dividing head WALTER TANI 100 NEG, Clamping screws and clamping shoes, Necessary for the mounting on milling table Kind of clamping: pneumatically Necessary pressure: 6 bar Dividing precision: +/- 60" Repeating accuracy: +/- 10" Spindle height: 100 mm Bore ø 32 mm Total height: 171 mm</p> <p><b><u>Factory option!</u></b></p>	<p>Q4Z 590</p>
	<p><b><u>MANUAL THREE JAW CHUCK WITHOUT FLANGE FOR NC-DIVIDING HEAD Q4Z 590 and Q4Z 820 and Q4Z 825000</u></b></p> <p>Manual chuck including 1 set of outside and inside jaws. Chuck ø 82 mm Bore ø 18 mm</p> <p><b><u>Retrofitable</u></b></p>	<p>V4W 186R</p>
	<p><b><u>MANUAL THREE JAW CHUCK WITHOUT FLANGE FOR NC-DIVIDING HEAD Q4Z 590</u></b></p> <p>Manual chuck including 1 set of outside and inside jaws. Chuck ø 100 mm Bore ø 17 mm</p> <p><b><u>Retrofitable</u></b></p>	<p>A8Z 060</p>
	<p><b><u>FLANGE FOR NC-DIVIDING HEAD Q4Z 590</u></b></p> <p>With this adapter Flange the chucks V4W 186R and A8Z 060 can be mounted onto the NC-dividing head TANI 100.</p> <p><b><u>Retrofitable</u></b></p>	<p>Q4Z 600</p>
	<p><b><u>Manual tailstock for NC-dividing head to use with NC-dividing head Q4Z 590</u></b></p> <p>Manual tailstock including live center MT 1. Center height 100 mm Mounting length: 110 mm Total length: 200 mm Total height: 113 mm Quill stroke: about 15 mm</p>	<p>Q4Z 610</p>

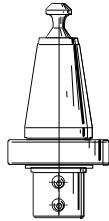
	DESCRIPTION	REF.NO.
	<p><b><u>5th axis turntable</u></b> <b>(without chuck but with flange)</b></p> <p>Spindle speed A axis 10 rpm Spindle speed B axis 15 rpm rated torque A/B axis: 50 Nm Weight: 17 kg Size: X / Y / Z = 520 / 260 / 150 mm Swivelling height: 80 mm Swivelling area of 4th axis: max.± 95°, depending on workpiece size Motors:: 3 Phase Stepper</p> <p><b>Factory installed only!!</b> <b>ONLY for WinNC Sinumerik 810/840 D and WinNC HH TNC 426/430!!</b></p>	Q4Z 820
<p>Enables simple and less expensive refitting of the 5th axis, when budget splitting is necessary!</p>	<p><b><u>Electrical preparation for 5th axis turntable</u></b></p> <p>Prepares the Mill250 for connection with the mechanical turntable.</p> <p><b>Retrofit able by EMCO technician!!</b></p>	Q4Z 710
<p>Installation on the CM250 by plug in!</p>	<p><b><u>Mechanic of 5th axis turntable</u></b> <b>(without chuck but with flange)</b></p> <p>Completes the preparation of the 5<sup>th</sup> axis Q4Z710 installation necessary!</p>	Q4Z825000
	<p><b><u>MANUAL THREE JAW CHUCK</u></b> <b><u>WITHOUT FLANGE FOR NC-DIVIDING HEAD Q4Z 590 and Q4Z 820 and Q4Z 825000</u></b></p> <p>Manual chuck including 1 set of outside and inside jaws. Chuck ø 82 mm Bore ø 18 mm <b><u>Retrofitable</u></b></p>	V4W 186R
	<p>Soft jaws for V4W 186R</p>	V0W 013R

## Tool holder

	DESCRIPTION	REF.NO.
	<p><b><u>PULL STUD for SK 30 DIN 69872A</u></b></p> <p>Single pull stud for SK30 tool holder. connecting thread M12</p> <p><b><u>REQUIRED FOR ALL TOOL HOLDERS!</u></b></p>	250 180
	<p><b><u>Tool holder package CM250</u></b> consisting of: Shell end mill arbor → 16 - 1x Shell end mill arbor → 22 - 1x Collet holder ESX25 - 4x Shaft mill arbor → 10 - 1x Shaft mill arbor → 16 - 1x Balanced.</p> <p>Use only holders, balanced G 2,5 at 10.000 rpm or G 6,3 at 20.000 rpm.!</p> <p><b><u>Pull studs not included, please order for each tool holder one pull stud!</u></b></p>	250 300
	<p><b><u>Collet chuck SK 30 DIN69871</u></b></p> <p>To be used with ESX 25 collets. Including clamping screw and drive key. Balanced.</p> <p>Use only holders, balanced G 2,5 at 10.000 rpm or G 6,3 at 20.000 rpm.!</p> <p><b><u>Pull studs not included, please order for each tool holder one pull stud!</u></b></p>	250 100
	<p><b><u>Collets (set)</u></b></p> <p>Set of 14 collets, type ESX 25. Diameter 2 - 14 mm</p>	225 000

	DESCRIPTION	REF.NO.
	<p><b><u>Collets (individual)</u></b> Type ESX 25</p> <p> <math>\varnothing</math> 1 mm  <math>\varnothing</math> 2 mm  <math>\varnothing</math> 2,5 mm    <math>\varnothing</math> 3 mm  <math>\varnothing</math> 4 mm  <math>\varnothing</math> 5 mm    <math>\varnothing</math> 6 mm  <math>\varnothing</math> 7 mm  <math>\varnothing</math> 8 mm    <math>\varnothing</math> 9 mm  <math>\varnothing</math> 10 mm  <math>\varnothing</math> 11 mm    <math>\varnothing</math> 12 mm  <math>\varnothing</math> 13 mm  <math>\varnothing</math> 14 mm    <math>\varnothing</math> 15 mm  <math>\varnothing</math> 16 mm </p>	<p>225 010 225 020 225 025  225 030 225 040 225 050  225 060 225 070 225 080  225 090 225 100 225 110  225 120 225 130 225 140  225 150 225 160</p>
	<p><b><u>Milling arbor SK30 DIN69871</u></b></p> <p>For milling cutters with 16 mm bore (Heavy duty shell end mill # 764 410), including key and milling arbor collars.</p> <p>For milling cutters with 22 mm bore (for Face mill cutter # 764 800, Edge mill cutter 764810), including key and milling arbor collars. Balanced.</p> <p>Use only holders, balanced G 2,5 at 10.000 rpm or G 6,3 at 20.000 rpm.!</p> <p><b><u>Pull studs not included, please order for each tool holder one pull stud!</u></b></p>	<p>250 110  250 120</p>
	<p><b><u>Mill arbor</u></b> For mill cutters with:</p> <p> Shank <math>\varnothing</math>10 mm  Shank <math>\varnothing</math>12 mm  Shank <math>\varnothing</math>16 mm  Shank <math>\varnothing</math>20 mm </p> <p>Balanced.</p> <p>Use only holders, balanced G 2,5 at 10.000 rpm or G 6,3 at 20.000 rpm.!</p> <p><b><u>Pull studs not included, please order for each tool holder one pull stud!</u></b></p>	<p>250 130 250 140 250 150 250 160</p>









	<p><b><u>Morse Taper Holder MT2 SK30 DIN69871</u></b></p> <p>Short insert bushing MT-2.                  Special use for twist drills with MT-2 fixture.                  Balanced.</p> <p>Use only holders, balanced G 2,5 at 10.000 rpm or                  G 6,3 at 20.000 rpm.!</p> <p><b><u>Pull studs not included, please order for each                  tool holder one pull stud!</u></b></p>	250 170
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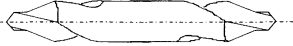

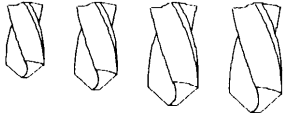
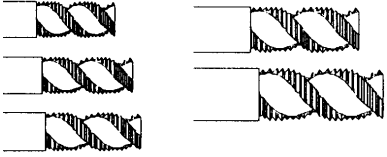
## Cutting tools

	DESCRIPTION	REF.NO.
	<p><b><u>Tool Package "Basic" CM250</u></b>                      with</p> <p>1 # 225 000 Set Of Collets 14 pcs.                      1 # 225 060 Collet 6mm                      1 # 225 100 Collet 10mm                      4 # 250 100 Collet Chuck SK 30 DIN69871                      1 # 250 110 Milling Arbor D 16mm                      2 # 250 130 Mill Arbor D 10mm                      1 # 250 150 Mill Arbor D 16mm                      8 # 250 180 Pull Stud SK30 DIN 69872A                      1 # 764 301 Slot End Mill 3mm                      1 # 764 303 Slot End Mill 5mm                      1 # 764 308 Slot End Mill 10mm                      1 # 764 410 Heavy Duty Shell End Mill                      1 # 771 010 NC-start Drill                      1 # 771 030 Radius Milling Cutter 6mm                      1 # 771 050 Angle Milling Cutter                      1 # 781 152 Heavy Duty Shank End Mill                      1 # 781 280 Twist Drills 25 pcs.</p>	Q4Z 910
	<p><b><u>Tool Package "Extended" CM250</u></b>                      with</p> <p>1 # 225 000 Set Of Collets 14 pcs.                      2 # 225 060 Collet 6mm                      2 # 225 100 Collet 10mm                      1 # 225 160 Collet 16mm                      2 # 250 100 Collet Chuck SK 30 DIN69871                      1 # 250 120 Milling Arbor D 22mm                      1 # 250 140 Mill Arbor D 12mm                      1 # 250 150 Mill Arbor D 16mm                      14 # 250 180 Pull Stud SK30 DIN 69872A                      1 # 250 300 Tool Holder Package SK30                      1 # 271 230 Drills For Core Holes 6 pcs.                      2 # 764 301 Slot End Mill 3mm                      2 # 764 303 Slot End Mill 5mm</p>	Q4Z 920

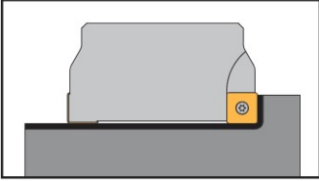
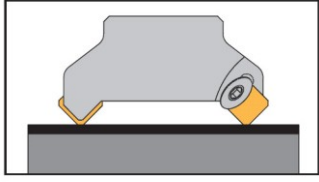
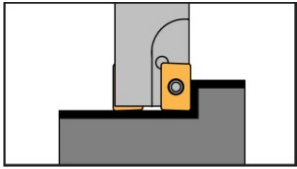
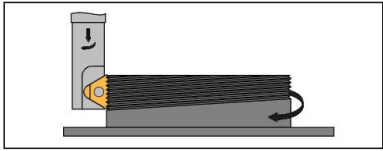
Subject to technical modifications.

	2 # 764 308 Slot End Mill 10mm 1 # 764 800 Face Mill Cutter 50mm 1 # 764 810 Edge Mill Cutter 50mm 1 # 764 820 Carbide Plates for 764 800 1 # 764 830 Carbide Plates for 764 810 1 # 764 850 Slot Mill Cutter 16mm 1 # 764 860 Carbide Plates for 764 850 1 # 771 010 NC-start Drill 1 # 771 040 Radius Milling Cutter 12mm 1 # 771 050 Angle Milling Cutter 2 # 781 152 Heavy Duty Shank End Mill 10mm 1 # 781 280 Twist Drills 25 pcs. 1 # 781 300 Set Of Screw Taps M3 - M8	
	<b><u>Heavy duty shell end mill, HSS</u></b>  With roughing/ finishing teeth. ø 40 x 20 mm, bore hole ø 16 mm	764 410
	<b><u>Slot end mill, HSS</u></b>  According to DIN 327, shape B  Cutting - ø3 mm / Shank - ø6 mm Cutting - ø4 mm / Shank - ø6 mm Cutting - ø5 mm / Shank - ø6 mm Cutting - ø6 mm / Shank - ø6 mm Cutting - ø8 mm / Shank - ø8 mm Cutting - ø10 mm / Shank - ø10 mm Cutting - ø12 mm / Shank - ø12 mm Cutting - ø16 mm / Shank - ø16 mm	764 301 764 302 764 303 764 304 764 306 764 308 773 100 773 105
	<b><u>Heavy duty shank end mill, HSS</u></b>  According to DIN 844, shape A  Cutting - ø8 mm / Shank - ø8 mm Cutting - ø10 mm / Shank - ø10 mm Cutting - ø12 mm / Shank - ø12 mm Cutting - ø16 mm / Shank - ø16 mm	764 200 781 152 781 151 771 020
	<b><u>Radius milling cutter, HSS</u></b>  Two edged, with parallel shank.  Shank – ø6 mm Shank - ø12 mm	771 030 771 040
	<b><u>Angle milling cutter, HSS</u></b>  According to DIN 1833, shape A 60°, ø16 mm, shank- ø12mm	764 400
	<b><u>Angle milling cutter, HSS</u></b>  According to DIN 1833, shape B 45°, ø16x4 mm, shank ø12mm	771 050

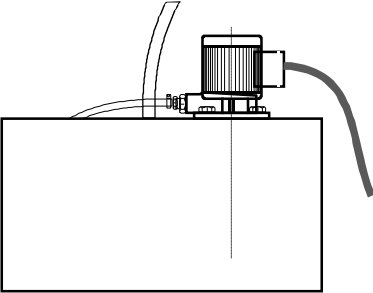

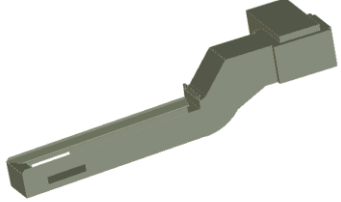

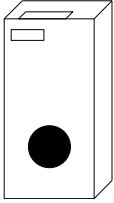
## Drilling Tools

	DESCRIPTION	REF.NO.
	<b><u>NC-start drill, HSS</u></b>  Shank $\varnothing$ 10 mm, acute angle 120°	771 010
	<b><u>Center drill, HSS</u></b>  $\varnothing$ 6,3 mm  A8, DIN 333	573 770  271 220
	<b><u>Twist drills, HSS</u></b>  25 twist drills $\varnothing$ 1-13 mm, (0.5 mm graded)  9 twist drills $\varnothing$ 2-10 mm, (1 mm graded)	781 280  260 628
	<b><u>Twist drills for core holes, HSS</u></b>  6 twist drills for core holes $\varnothing$ 2.5 - $\varnothing$ 8.5 mm	271 230
	<b><u>Screw taps, HSS</u></b>  According to DIN 352 / 371  Set of 5 screw taps M3 - M8  Screw taps M3 (shank $\varnothing$ 3,5 mm) Screw taps M4 (shank $\varnothing$ 4,5 mm) Screw taps M5 (shank $\varnothing$ 6 mm) Screw taps M6 (shank $\varnothing$ 6 mm) Screw taps M8 (shank $\varnothing$ 6 mm) Screw taps M10 (shank $\varnothing$ 7 mm)	781 300  781 301 781 302 781 303 781 304 781 305 781 306

## Milling cutters with Carbide Plates

	DESCRIPTION	REF.NO.
	<p><b>Edge mill cutter 50mm, for CPL</b> Cutting edge: 90° Ø50 x 15 mm, shaft ID ø22mm 90EA.050R.P16 required milling arbor: 250 120 + 250 180</p>	764 810
	<p><b>CPL, carbide plates for edge mill cutter 764810</b> APFT1604PDFR AK10F 1 package unit = 10 pcs.</p>	764 830
	<p><b>Face mill cutter 50mm, für CPL</b> Cutting edge: 45° Ø50 x 63 mm, shaft ID ø22mm 75PA.50R.E12 required milling arbor: 250 120 + 250 180</p>	764 800
	<p><b>CPL, carbide plates for face mill cutter 764800</b> SEKR1203AFFN AK10F 1 package unit = 10 pcs.</p>	764 820
	<p><b>Slot mill cutter, ø 16mm</b> 90ES.016R.P10 required mill arbor: 250 140 + 250 180</p>	764 850
	<p><b>CPL, carbide plates for slot mill cutter 7648</b> APKT1003PDER AM26C 1 package unit = 10 pcs.</p>	764 860
	<p><b>Thread mill cutter, ø 12mm</b> TCM12-2 for CPL required mill arbor 250 140 + 250 180</p>	764 910
	<p><b>Carbide plates for thread cutter 764910</b> P=1,5mm</p>	
	<p>for outside thread: 11E-ISO1,5TM AK20</p>	764 920
	<p>for inside thread: 11I-ISO1,5TM AK20 1 package unit = 5 pcs.</p>	764 930

## Accessories


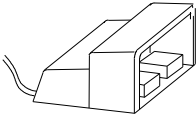
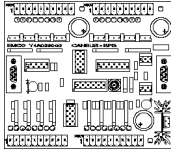

	DESCRIPTION	REF.NO.
	<p><b><u>Coolant equipment</u></b></p> <p>Coolant equipment including pump and tray for 140l tank volume and a pump capacity of 20 l/min.</p> <p><b>Factory installed only!!</b></p>	Q4Z 090
	<p><b><u>Electronical handwheel</u></b></p> <p>For moving the machine's axes manually to proceed zero point- and tool offsets</p> <p><b>Retrofit able by EMCO technician!!</b></p>	Q1Z 340
	<p><b><u>CHIP CONVEYOR CM250 - 500MM</u></b></p> <p>Hinge type chip conveyor, dump-height 500mm, suitable for:</p> <ul style="list-style-type: none"> <li>• Long steel shavings</li> <li>• Snarl chips</li> <li>• Wool chips</li> </ul> <p>Dry- and wet machining</p> <p><b>Factory installed only !!</b></p>	Q4Z 850
	<p><b><u>COOLANT PISTOL</u></b></p> <p>To clean the machining area from chips with coolant. (Note: never use air to clean the machine!)</p> <p><b>Retrofit able through EMCO technician !!</b></p>	R6Z 140
	<p><b><u>AIR CONDITIONER (ELECTRICAL CABINET)</u></b></p> <p>Seals the cabinet and keeps temperature constant; necessary for extreme environmental conditions (tropical climate) or graphite or cast work.</p> <p><b>Factory installed only !</b></p>	A8Z 130

	<p><b><u>MACHINE INSTALLATION KIT</u></b></p> <p>Consisting of:</p> <ul style="list-style-type: none"> <li>• 4x vibration absorbing, height adjustable levelling elements 881500</li> <li>• 4x angle plates to fasten the machine to the floor</li> <li>• 4x anchor bolts to lag the machine to the floor</li> </ul>	S6Z 460
	<p><b><u>Levelling element</u></b></p> <p>1 piece, 4 pieces required.</p>	881 500
	<p><b><u>FI-protection switch</u></b></p> <p>Leakage current circuit breaker 63/4 PO</p>	ZME280720
	<p><b><u>Machine Status Lamp</u></b></p> <p>Triple color machine lamp to indicate the status of the machine (red, green and white).</p>	R7Z 030

## Setting tools

	DESCRIPTION	REF.NO.
	<p><b><u>Dial gauge with magnetic stand</u></b></p> <p>Outside ring <math>\varnothing 58</math> mm, division 0,01 mm, measuring range 10 mm, with shock protection.</p>	565 065
	<p><b><u>Edge indicator</u></b></p> <p>Probe <math>\varnothing 4</math> / <math>\varnothing 10</math> mm Shank <math>\varnothing 10</math> mm</p>	F1Z 090
	<p><b><u>3D sensor</u></b></p> <p>incl. short probe tip <math>\varnothing 4</math> mm clamping shank <math>\varnothing 10</math> mm</p> <p>requires tool holder: 250 130 or collet chuck 250 100 together with collet <math>\varnothing 10</math> mm 225 100</p>	764 841

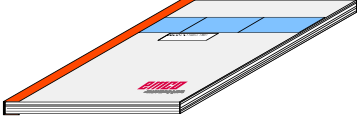
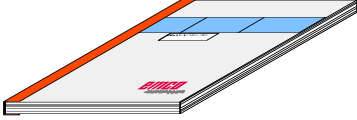
## Accessories for automation

	DESCRIPTION	REF.NO.
	<p><b><u>Automatic door</u></b></p> <p>Including stroke control and safety equipment. Motor and housing for transport removeable. Additional height: 135mm</p> <p><b>Factory installed only!!</b></p>	Q4Z 040
	<p><b><u>Pneumatic machine vice</u></b></p> <p>Type Gressel Including stroke control and blow-out device</p> <p>Width of jaws: 125 mm Opening of jaws: max. 130 mm Total length: 466 mm Total height: 84 mm Clamping force: 1200 – 5500 N Pneumatic pressure: 2-8 bar</p> <p><b>Factory installed only!!</b></p>	Q4Z 520
	<p><b><u>FOOT PEDAL SWITCH</u></b></p> <p>for Pneumatic machine vice</p> <p><b>Retrofit by EMCO specialist!</b></p>	R3Z 580
	<p><b><u>Robotics-Interface hardware</u></b></p> <p>Necessary for the FMS/CIM – operation. (required X1A 000)</p>	Q4Z 530
	<p><b><u>Robotics-Interface software</u></b></p> <p>Necessary for the FMS/CIM – operation. (required Q4Z 530)</p>	X1A 000
	<p><b><u>DNC-Interface</u></b></p> <p>Enables the remote control of WinNC via a software-protocol. The communication is done via the RS 232 interface. With Siemens 810/840D communication via TCP/IP is possible.</p> <p><b>Not available for Heidenhain TNC426/430 and Fagor 8055 MC</b></p>	X5A 050

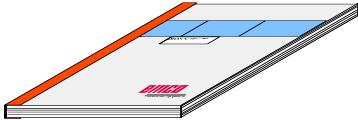
Assembling of automation accessories only ex factory – **no retrofitting possible.**

Subject to technical modifications.


## Manuals

	DESCRIPTION	REF.NO.
	<b><u>Operating manual Concept MILL 250</u></b> German English French Spanish Italian Dutch	DE 2250 EN 2250 FR 2250 SP 2250 TA 2250 HL 2250
	<b><u>Operating manual Win3D-View</u></b> <b><u>EMCO Win3D-View – milling</u></b>	DE 1826 EN 1826 FR 1826 SP 1826 HL 1826 TA 1826

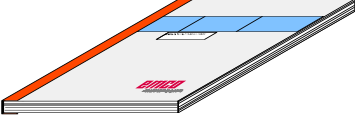


	<u>Programming instruction</u>	
	WinNC SINUMERIK OPERATE	DE 1848 EN 1848
	WinNC SIEMENS 810/820 M	DE 1803 EN 1803 FR 1803 SP 1803 TA 1803 HL 1803
	WinNC SIEMENS 810D/840D-M	DE 1814 EN 1814 FR 1814 SP 1814 TA 1814 HL 1814
	WinNC GE FANUC Series 0-M	DE 1801 EN 1801 FR 1801 SP 1801 TA 1801 HL 1801
	WinNC GE FANUC Series 21-M	DE 1901 EN 1901 FR 1901 SP 1901 TA 1901 HL 1901
	WinNC EMCOTRONIC M02	DE 1800 EN 1800 FR 1800 HL 1800 SP 1800 TA 1800
	WinNC HEIDENHAIN TNC 426/430	DE 1816 EN 1816 FR 1816 SP 1816 HL 1816 TA 1816
	FAGOR 8055 MC	DE 1818 EN 1818 FR 1818 SP 1818 HL 1818 TA 1818

## Courseware

	Description	Ref.-No.
	<p><b><u>E[MCO] Campus</u></b></p> <p><b>E-Learning 2.0 for machining. Multimedia teaching and learning materials for CNC training.</b></p> <p><i>E[MCO] Campus -</i></p> <p>is a multimedia training program that teaches all the basics of modern CNC technology. The cleverly-designed teaching format makes even complex concepts easy to grasp and learn. Interactive dialog features allow students to progress at their own pace. Views are displayed using attractive 2 and 3D graphics, animations, and videos, sustainably improving the success of the learning process.</p> <p>Languages:</p> <p>German English</p> <p><b>Single-user license</b> <b>Multi-user license 20</b> <b>Multi-user license 50</b> <b>Multi-user license 100</b></p> <p><b>Campus-license</b> A Campus-License consists of several Multiple licenses. The Software is working without any time restriction, a renewal of the version is not necessary. A Software Maintenance Contract (SMC) is not available right now.</p>	<p></p> <p><b>X2Y 400</b> <b>X2Y 410</b> <b>X2Y 420</b> <b>X2Y 430</b></p> <p><b>On request</b></p>

## Catalogues

	DESCRIPTION	REF.NO.
	<u>„EMCONOMY moves“</u> Format A4	DE 2801 EN 2801 FR 2801 SP 2801 RU 2801 CZ 2801
	<u>CONCEPT MILL 250</u>	DE 4536 EN 4536 TA 4536 SP 4536 FR 4536
	<u>EMCO Industrial Training</u>	DE 1837 EN 1837 TA 1837 SP 1837

## Packing

	DESCRIPTION	REF.NO.
	<u>Standard packing</u> Consisting of: skid and Rolamit cover	ZVZ341855
	<u>Climate packing</u> Pallet, Alu-bandage, various accessories	ZVP547190
	<u>Seaworthy packing</u> (as option to Standard- and Climate packing)	ZVP301855