

# TECHNICAL SPECIFICATION

## *Concept MILL 450*

VERTICAL CNC MILLING CENTRE  
with interchangeable control



### **WinNC Control software**

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

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## TECHNICAL MACHINE DESCRIPTION

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**8AE60CX12I4**

**3 Axes - CNC – milling machine with integrated tool magazine 20 receptacles and interchangeable EMCO WinNC control**

**Spindle:**

Spindle power: 11KW / S6 – 40%  
Speed: 50 - 12000 rpm  
Torque: 70 Nm / S6 – 40%  
Tool taper: ISO 40 DIN 69871  
( option BT40 )  
Tool pull studs: ISO7388/2 Type B

**Axes:**

Linear roller guides 35mm  
Feed screws class ISO 3  
ground DM 40 mm, pitch 20 mm  
**Strokes:** X=600mm, Y=500mm, Z=500mm  
Distance spindle nose – table = 100 – 600mm  
Rapid traverse X-Y-Z = 24 m/min

**Table:**

Cast iron table ground with T- grooves  
Number – width – distance = 5 – 18 – 100mm  
Usable clamping surface = 700 x 520mm  
Table load max. = 500 Kg  
Table height to floor = 786mm

**Tool changer:**

Tool drum with receptacles for 20 tools.  
Tool management: fix stations  
Max. tool diameter with (without)  
adjacent tools: 80 (125) mm  
Max. tool length: 250 mm  
Max. tool weight: 8 Kg  
Tool drum load max.: 100 Kg

**Coolant:**

Standard pump 2 bar. Supplied via 2  
adjustable nozzles at the spindle head.  
Capacity 40 Litres / min.

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**Illumination of working area:**

1 halogen spot light

**Required room space:**

LxWxH: 2.040 x 2.445 x 2.920mm

**Weight:**

4000 Kg (empty)

**Compressed air supply:**

Min. 6 bar , 150 normal litre/min

**Power consumption:**

20 KVA , (3x400V / 50A)

necessary short circuit power: 1.100KVA

**Machine enclosure:**Completely enclosed working room  
housing open at the top, amply  
dimensioned machine door**Painting:**

light gray	RAL Nr. 7035
traffic red	RAL Nr. 3020
graphite gray	RAL Nr. 7024

**Standard Equipment:**

- Central lubrication (Feed screws)
- Rigid tapping
- Automatic cleaning (air blast) of tool in motor spindle (during tool change)
- Coolant tank 160 litres
- 3# leveling elements included

WinNC control is not included in basic machine!

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## TECHNICAL DATA OF THE MACHINE

<b>Position Range</b>		
X-axis travel	[mm]	600
Y-axis travel	[mm]	500
Z-axis travel	[mm]	500
Minimum distance spindle nose – table	[mm]	100
Maximum distance spindle nose - table	[mm]	600
<b>Machine table</b>		
Length	[mm]	700
Breadth	[mm]	520
Height to floor	[mm]	786
Grooves width	[mm]	18
Grooves number		5
Grooves distance	[mm]	100
Work piece weight max.	[kg]	500
<b>Main spindle</b>		
Speed range	[rpm]	50-12.000
Drive		Direct drive
Torque (S6-40%)	[Nm]	70
Spindle power (S6-40%)	[kW]	11
Tool taper (DIN 69871)		ISO 40
Pull stud (ISO7388/2 Type B)		ISO 7388/2
<b>Tool Magazine</b>		
Number of tool receptacles		20
Tool change system		S - arm
Tool management		fixed stations
Tool change time (tool - tool)	[sec]	8,2
Tool diameter max.	[mm]	80
Tool diameter max. (without adjacent tools)	[mm]	125
Tool length max.	[mm]	250
Tool weight max.	[kg]	8
Drum load max.	[kg]	100

<b>Axis strokes</b>		
Rapid traverse	[m/min]	24
Work feed rate	[m/min]	10
Feed force in X-axis	[N]	5000
Feed force in Y-axis	[N]	5000
Feed force in Z-axis	[N]	5000
Acceleration	[m/s <sup>2</sup> ]	2
Positioning variation according to VDI 3441 in X / Y	[mm]	0.003
Positioning variation according to VDI 3441 in Z	[mm]	0.003
<b>Coolant</b>		
Tank capacity	[l]	160
Coolant pressure	[bar]	2
Flow rate 2 bar	[l/min]	40
Output on spindle		2 nozzles
<b>Pneumatic</b>		
Supply pressure	[bar]	6
power Dissipation	[l/min]	150
Compressed air quality		cleanliness class 4 (ISO 8573-1)
<b>Lubrication</b>		
Main spindle		grease lubrication
Guide ways		grease lubrication
Feed screws		oil central lubrication
<b>Painting</b>		
light gray		RAL Nr. 7035
traffic red		RAL Nr. 3020
graphite gray		RAL Nr. 7024
<b>Electrical connexion</b>		
Power supply	[V]	400 ~3/PE
Voltage fluctuation max.	[%]	+/-10
Frequency	[Hz]	50/60
Connected load of the machine	[kVA]	20
Max. pre-fuse for the machine (delay fuse)	[A]	50
Necessary short circuit power	[kVA]	1100
Necessary environmental temperature	[°C]	+10 to +35
<b>Dimensions/Weight</b>		
Total height	[mm]	2920
Floor space W × P (without chip conveyor)	[mm]	2040 × 2445
Total weight of machine	[kg]	4000
<b>Noise pressure level</b>		
Average noise pressure level		
<b>Under following conditions :</b>		
Measuring method: enveloping surface method DIN 45 635	[db(A)]	78
Measuring point: 1m distance and 1,6m above the floor		
Operating condition: maximum Speed no-load operating		

# TECHNICAL DATA OF THE PC CONTROL SYSTEM

## Control system

- Separate machine operating keyboard and control-specific interchangeable keyboard modules
- Integrated PC (MOC)
- Integrated 12.1" colour flat display

## PC Configuration

Multi Operating Controller (MOC)

## Description MOC III

Multi Operating Controller

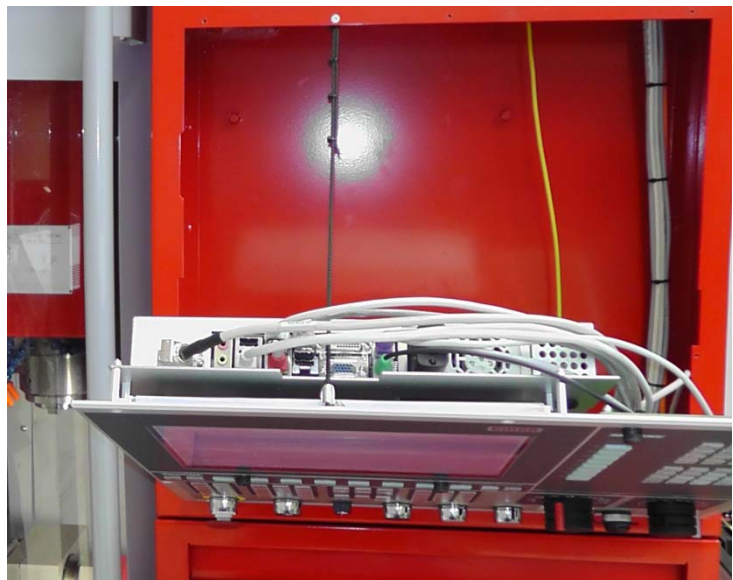
## Function

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

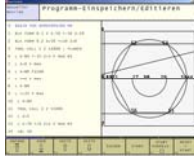


# CONTROL SOFTWARE

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## WINNC – SOFTWARE (32bit and 64bit)

### Software



**X3Y 400**  
**X5A C00**  
**X5A C00**  
**X3Y 200**  
**X5A C50**  
**X3Y 300**  
**X5A E00**  
**X3A 200**  
**X3A 300**

### Control keyboards



**X9Z 060**  
**X9Z 010N**  
**X9Z 020N**  
**X9Z 040N**  
**X9Z110N**  
**X9Z 130N**  
**X9Z 210N**  
**X9Z 426N**  
**X9Z 055N**

### Machine license

In case of order please indicate required controls

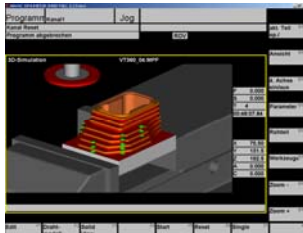
**Sinumerik Operate**  
**SIEMENS 810**  
**SIEMENS 820**  
**SIEMENS 810D/840D**  
**GE FANUC Series 0**  
**GE FANUC Series 21**  
**EMCOTRONIC TM02**  
**HEIDENHAIN TNC 426**  
**FAGOR 8055 MC**

All controls can be installed on one machine!

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## X5A 260

## 3D VIEW GRAFIC SIMULATION (32bit and 64bit)

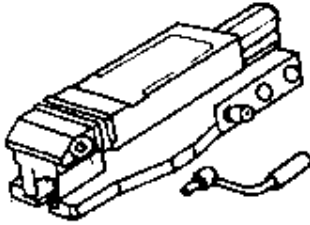


EMCO Win 3D-View, Milling, Machine license

Option for all WinNC controls for educational process simulation

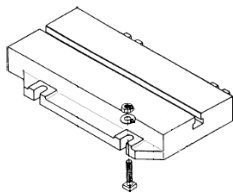


# CLAMPING DEVICES FOR WORK PIECES

**781 080****Machine vice**

Hydraulic high pressure clamping, manually

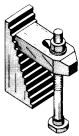
- \*Type RÖHM RB 744
- \* clamping range 0 - 170 mm,
- \* jaw width 110 mm
- \* jaw height 32 mm
- \* clamping force adj. up to max. 3.000 N

**F5Z 610****Riser base plate CM450**

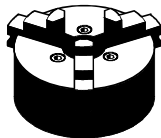
For adapter plate.

Option for machine vice 781080.

- \* for T18 slot's with 100mm distance
- \* height 50 mm
- \* not swivel able
- \* incl. T18 screws

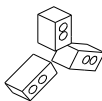
**F5Z 620****Stepped clamping shoe CM450**

- \* complete with T18 clamping screws
- \* clamping height 20 to 120 mm

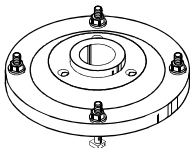
**V2E 106R****3 jaw chuck**

Chuck diameter → 160 mm

- \* incl. 1 set of internal and external stepped hard jaws

[requires adapter plate F3Z130](#)**V6Z 030****Jaws**

For V2E 106 R: 1 set of toothed soft jaws

**F3Z 130****Adapter plate**

for chuck V2E 106 R

for mounting the chuck on the riser base plate

[requires riser base plate F5Z610](#)

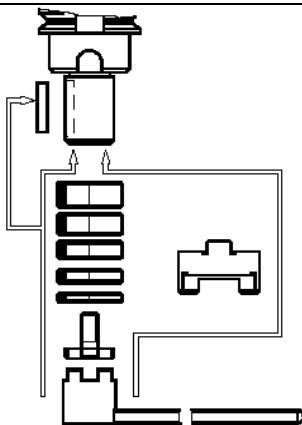
## TOOL HOLDERS ISO SK40

**8AO-CODSUPXX01E****PULL STUD ISO 7388/2 TypE B**

Single pull stud for ISO40 tool holder.  
connecting thread M16 with through hole

**REQUIRED FOR ALL TOOL HOLDERS !****F5Z 860****TOOL HOLDER PACKAGE CM450**

Tool holder package including:  
Shell end mill arbour  $\varnothing 16$  – 1x  
Shell end mill arbour  $\varnothing 22$  – 1x  
Shell end mill arbour  $\varnothing 27$  – 1x  
Collet holder ESX 32 – 4x  
Set of collets ESX 32 – 1x  
Mill arbour  $\varnothing 25$  –1x

**Pull studs not included, 8 pcs. Necessary !****F5Z 030****SHELL END MILL ARBOR  $\rightarrow \varnothing 16$  mm****F5Z 040****SHELL END MILL ARBOR  $\rightarrow \varnothing 22$  mm****F5Z 050****SHELL END MILL ARBOR  $\rightarrow \varnothing 27$  mm****For milling and cutting heads with radial and/or axial drive key, including:**

- clutch drive ring according to DIN 6366
- cutter clamping screw acc.to DIN 6367
- cutter arbor rings:  
with dia.  $\varnothing 16$  mm 4/6/8/12 mm  
with dia.  $\varnothing 22/27$  mm 4/5/6/8/10 mm
- drive key
- locking key

**Pull stud not included !**

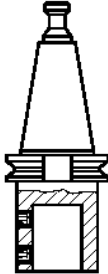
Q6Z 380

**SHAFT MILL ARBOR  $\rightarrow \varnothing 20$  mm**

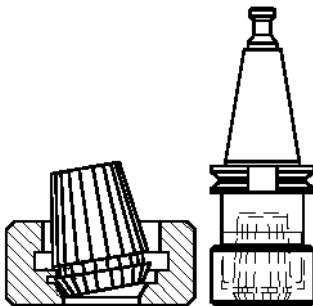
Q6Z 390

**SHAFT MILL ARBOR  $\rightarrow \varnothing 25$  mm**

773 400

**SHAFT MILL ARBOR  $\rightarrow \varnothing 32$  mm**Shaft DIN 69871 A,  
SK 40  
Balanced G 2,5 / 15000 r/pm  
Replacing Q6Z400**Pull stud not included !**

Q6Z 410

**COLLET HOLDER**For collets ESX-32, **110 mm** long  
clamping range:  $\rightarrow \varnothing 3 - \varnothing 20$  mm

Balanced G 6,3 / 12000 r/pm

**Pull stud not included !**

574 000

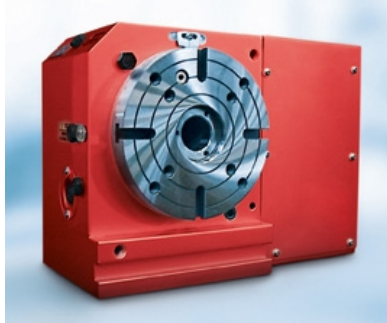
**SET OF COLLETS – ESX32**Set of 18 collets ESX-32  
Range:  $\rightarrow \varnothing 3 - \varnothing 20$  mm

764841

**3D SENSOR**incl. short probe tip  $\varnothing 4$  mmclamping shaft:  $\varnothing 10$  mm  
Length without shaft: 96mm  
Measuring area:  $\pm 2$ mm  
Display accuracy: 0,01mm**without tool holder!**

## OPTION 4th AXIS

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**8AO-TGCSC023****CNC ROTARY TABLE 200 MM  
WITH PNEUMATIC CLAMPING**

- Rotary table with infinitely variable positioning and interpolation
- Resolution 0.001°
- Integrated pneumatic clamping
- Diameter 200 mm  
Centre height = 180 mm  
CNC controlled via programme
- **Including Interface (8AO-PREEL017)**

**No control via EMCOTRONIC possible !**

**Factory installed only !**

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**8AO-PREEL017****ELECTRIC PREPARATION FOR CNC ROTARY  
TABLE**

Electrical preparation for CNC rotary table  
Contains:

Plug, hoses and cables to be able to retrofit the rotary table easier later on. This option does not contain drive electronics.

**Factory installed only !**

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**8AO-CONPN020****PNEUMATIC COUNTER TAILSTOCK 180MM  
MANUALLY OPERATED**

Counter tailstock with attached cylinder in line with axis; centre height H = 180 mm, pressing force F = 3000N, length: 288 mm, tailstock centre interchangeable via Morse taper MK3

**Retrofit by EMCO specialist!**

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**8AO-MILL450XX01****Pneumatic 3-jaw chuck for SCOTTI Eurotec 200  
rotary table**

incl. flange and hard jaws

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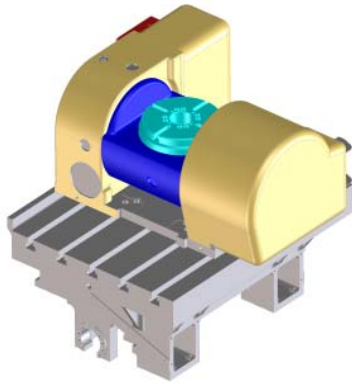
**8AO-MILL450XX02****Manual 3-jaw chuck for**

SCOTTI Eurotec200 rotary table

incl. flange and hard jaws

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## OPTION: 5th AXIS rotating,- swiveling unit DSE 200

**F5Z700****5th axis / rotating,- swiveling unit / (DSE 200)**

Diameter of flange:	200 mm
Centering hole:	Ø60 H7
4 T-slots:	12 H7
Drives:	Siemens Servodrives
Swivel range B-axis :	+/- 100°
A-axis (rotation axis) :	unrestricted
Resolution of axes:	0.001°
Rated speed:	
A-axis / rotation axis	2 min <sup>-1</sup>
B-axis / swiveling axis	16 min <sup>-1</sup>
Axis locks:	
Both axes pneumatic	250 Nm
Weight :	225 Kg

Controlled by WinNC controls:  
Sinumerik Operate  
Sinumerik 810/840D  
Heidenhain TNC426

**Includes centering piece for chuck F5Z 710**

**F5Z 710****Manual 3-jaw chuck 125 mm for DSE200**

Röhms ZG Ø125mm/3  
Mount D6350BVD  
Incl. outward stepped and inward stepped jaws  
Clamping capacity outside 3-125, inside 37-123mm  
Trough-hole 32 mm  
Mounting from front  
incl. Mounting bolts, operating key

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## Option: COOLANT THROUGH SPINDLE

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**8AO-ADDREF010****COOLANT THROUGH SPINDLE WITH  
CARTRIDGE FILTER**

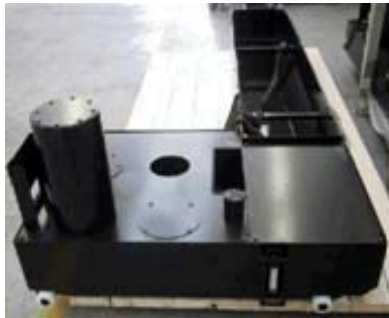
Coolant passage through spindle and tool via rotary coupling. High pressure pump 15 bar attached to 1 cartridge filter 60 micron. Stoppage while cleaning of filter!

**LARGE COOLANT TANK  
8AO-VASCA701  
must definitely be ordered as well**

**WORKSPACE TOP COVER  
8AO-COPSUPXX01  
should be ordered**

Factory installed only !

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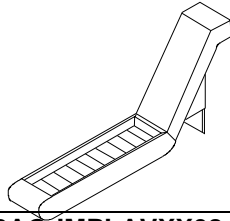
**8AO-VASCA701****LARGE COOLANT TANK**

If the option "8AO-ADDREF010" is ordered, this option „large coolant tank“ 330l must definitely be ordered as well:

Factory installed only !

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## MACHINE OPTIONS

**8AO-TRASP700****CHIP CONVEYOR CM450**

Chain feeding system, dump-height 1200 mm (chip discharge to the left),  
Suitable for:  
Dry- and wet machining  
Floor space: see Layout no.3

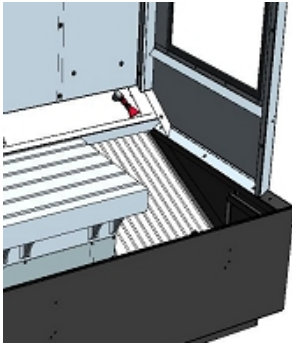
**Retrofit by EMCO specialist!**

**8AO-IMPLAVXX08****COOLANT PISTOL CM450**

Coolant pistol to clean work pieces and the machine area

It's forbidden to use compressed air!

**Retrofit by EMCO specialist!**

**8AO-IMPLAVXX01****CHIP FLUSH SYSTEM**

Chip evacuation from the frame of the machine by water jets into chip tray or chip conveyor. Controlled by additional 5 bar pump. This option is recommended especially when employing a chip conveyor

**Factory installed only !**

**8AO-LAMSUPXX01E****ALARM STATUS LIGHT**

Alarm status light to indicate the various operating conditions of the machine.

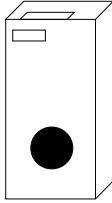
**Retrofit by EMCO specialist !**

**8AO-VOLREM011****ELEKTRONICAL HANDWHEEL WITH FELXIBLE CABLE**

For moving the machine's axes manually to proceed zero point- and tool offsets

**Retrofit by EMCO specialist!**

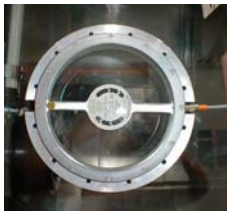
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**8AO-CONAR010****AIR CONDITIONER (ELECTRICAL CABINET)**

Seals the cabinet and keeps temperature constant; necessary for extreme environmental conditions (tropical climate) or graphite or cast work.

Factory installed only !

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**8AO-OBLV001E****ROTATING INSPECTION GLASS CM450**

Inspection window for clear sight into working area.

Factory installed only !

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**ZME280720****FI-protection switch**

Leakage current circuit breaker 63/4 PO

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**8AO-COPSUPXX01****WORKSPACE TOP COVER CM450**

Machine room top cover. Made of translucent, coolant resistant synthetic material.

Factory installed only !

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**8AO-SCHTRXX01****AUXILIARY MATERIAL FOR TRANSPORT BY CRANE**

Equipment, such as shackles and safety devices, necessary for hoisting by crane

Factory installed only !

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## AUTOMATISATION OPTIONS

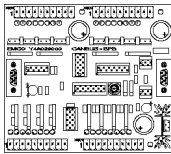
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**8AO-APAUTE60****FULLY AUTOMATIC MACHINE DOOR – CM450**

Automatic machine door, especially for efficient work-piece loading.  
One hand operation with door safety edge for optimum protection.  
Feed time: about. 2 sec

Factory installed only !

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**Q4Z530****Robotik-Interface Hardware**

Is required for the FMS/CIM – operation.  
(X1A 000 required)

Factory installed only !

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**X1A000****Robotik-Interface software**

Is required for the FMS/CIM – operation.  
(Robotik-Interface hardware required)

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**X5A050****DNC-Interface software**

Enables the tele-operation of the control (WinNC) via a software-protocol.  
The communication is done via a RS 232 interface.

**Not available for Heidenhain TNC426/430 and FAGOR8055MC**

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**8AO-BLOCPZXX01****Machine vice PNEUMATIC fully installed**

High pressure clamping, pneumatic  
Specially for FMS/ CIM loading

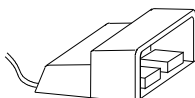
- Type Kesel Bull Pneumatik
- Clamping range 0 - 165 mm,
- Jaw width 125 mm

Foot Pedal included!

**\* clamping force max. 40.000 N (at 6.5 bar)**

**Factory installed only !**

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**8AO-BLOPED001****FOOT PEDAL SWITCH**

for power chuck of 4th axis

**Retrofit by EMCO specialist !**

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## CUTTING TOOLS

DESCRIPTION	REF.NO.
<b><u>TOOL PACKAGE "BASIC" CM450</u></b>	
includes	Q6Z 910
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 # 771 050	Angle Milling Cutter
1 # 781 152	Heavy Duty Shank End Mill
1 # 781 280	Twist Drills 25 pcs.
8 # 8AO-CODSUPXX01	Pull Stud ISO 7388/2
1 # F5Z 860	Tool Holder Package
<b><u>TOOL PACKAGE "EXTENDED" CM450</u></b>	
includes	Q6Z 920
1 # 271 230	Drills For Core Holes
1 # 574 000	Set Of Collets 18 pcs.
2 # 764 301	Slot End Mill 3mm
2 # 764 303	Slot End Mill 5mm
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
1 # 764 830	Carbide Plates
1 # 764 850	Slot Mill Cutter 16mm
1 # 764 860	Carbide Plates
1 # 771 010	NC-start Drill
1 # 771 040	Radius Milling Cutter
1 # 771 050	Angle Milling Cutter
2 # 781 152	Heavy Duty Shank End Mill
1 # 781 280	Twist Drills 25 pcs.
1 # 781 300	Set Of Screw Taps
13 # 8AO-CODSUPXX01	Pull Stud ISO 7388/2
1 # F5Z 040	Shell End Mill Arbor
1 # F5Z 860	Tool Holder Package
1 # 773 390	Shaft Mill Arbor 20mm
3 # Q6Z 410	Collet Holder SK40
<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

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**Slot end mill, HSS**

According to DIN 327, shape B



Cutting - $\varnothing$ 3 mm / Shank - $\varnothing$ 6 mm	
Cutting - $\varnothing$ 4 mm / Shank - $\varnothing$ 6 mm	
Cutting - $\varnothing$ 5 mm / Shank - $\varnothing$ 6 mm	764 301
Cutting - $\varnothing$ 6 mm / Shank - $\varnothing$ 6 mm	764 302
Cutting - $\varnothing$ 8 mm / Shank - $\varnothing$ 8 mm	764 303
Cutting - $\varnothing$ 10 mm / Shank - $\varnothing$ 10 mm	764 304
Cutting - $\varnothing$ 12 mm / Shank - $\varnothing$ 12 mm	764 306
Cutting - $\varnothing$ 16 mm / Shank - $\varnothing$ 16 mm	764 308
	773 100
	773 105

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**Heavy duty shank end mill, HSS**

According to DIN 844, shape A



Cutting - $\varnothing$ 8 mm / Shank - $\varnothing$ 8 mm	764 200
Cutting - $\varnothing$ 10 mm / Shank - $\varnothing$ 10 mm	781 152
Cutting - $\varnothing$ 12 mm / Shank - $\varnothing$ 12 mm	781 151
Cutting - $\varnothing$ 16 mm / Shank - $\varnothing$ 16 mm	771 020

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**Radius milling cutter, HSS**

Two edged, with parallel shank.



Shank - $\varnothing$ 6 mm	771 030
Shank - $\varnothing$ 12 mm	771 040

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**Angle milling cutter, HSS**


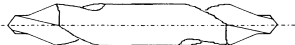
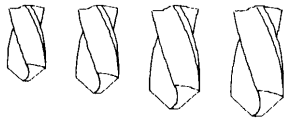

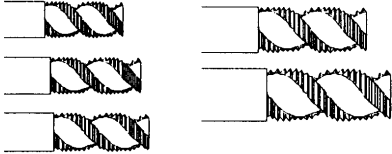
According to DIN 1833, shape A 60°, $\varnothing$ 16 mm, shank- $\varnothing$ 12mm	764 400
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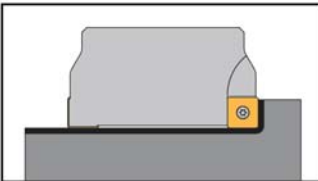
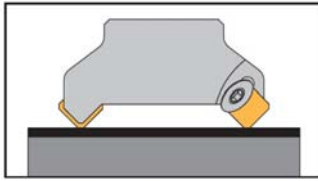
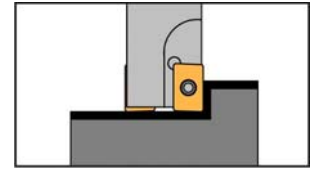
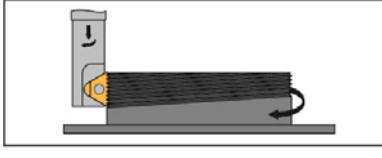
**Angle milling cutter, HSS**

According to DIN 1833, shape B 45°, $\varnothing$ 16x4 mm, shank $\varnothing$ 12mm	771 050
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	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.050RI.P16 required milling arbor: Q1Z 920</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: Q1Z 920</p>	764 800
	<p><b>CPL, carbide plates for face mill cutter 764820</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: Q6Z410 + 574016</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 Q1Z 840</p>	764 910
	<p><b>Carbide plates for thread cutter 764910</b> P=1,5mm for outside thread: 11E-ISO1,5TM AK20 for inside thread: 11I-ISO1,5TM AK20 1 package unit = 5 pcs.</p>	764 920 764 930

## 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>

## MACHINE DESCRIPTION – HARDCOPY

Contains information regarding the setting up, operating, maintenance, programming etc. of the machine.

**Attention: Please confirm with the machine the instruction in the required language!!**

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DE 2450	CM450 Machine operation manual - GERMAN
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EN 2450	CM450 Machine operation manual - ENGLISH
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FR 2450	CM450 Machine operation manual – FRENCH
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On Request	CM450 Machine operation manual - SPANISH
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TA 2450	CM450 Machine operation manual – ITALIAN
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HL 2450	CM450 Machine operation manual- DUTCH
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SP 2450	CM450 Machine operation manual –SPANISH
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## ELECTRICAL DOCUMENTATION

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included in basic machine !!

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### PROSPECTS:

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DE 6035	CM450 FOLDER – GERMAN
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EN 6035	CM450 FOLDER – ENGLISH
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SP 6035	CM450 FOLDER – SPANISH
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TA 6035	CM450 FOLDER – ITALY
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## PACKING

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**8AO-COE60XX01****STANDARD PACKING CM450 / E600**

Consisting of: skid and Rolamit cover

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**8AO-COE60XX02****KLIMATE PACKING CM450 / E600**Consisting of: skid, aluminium cover, drying agent,  
small parts

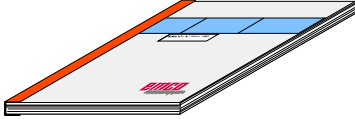
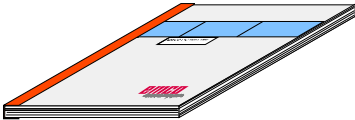
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**8AO-COE60XX03****WOODEN BOX CM450 / E600**As additional protection for awkward transports.  
Climate Packing included!



# CONTROL DESCRIPTION WINNC

**Attention: Please confirm with the machine the instruction in the required language!!**

	<p><u>Operating manual Win3D-View</u></p> <p><u>EMCO Win3D-View – milling</u></p>	<p>DE 1826 EN 1826 FR 1826 SP 1826 HL 1826 TA 1826</p>
	<p><u>Programming instruction</u></p> <p>WinNC für SINUMERIK OPERATE</p> <p>WinNC SIEMENS 810/820 M</p> <p>WinNC SIEMENS 810D/840D-M</p> <p>WinNC GE FANUC Series 0-M</p> <p>WinNC GE FANUC Series 21-M</p> <p>WinNC EMCOTRONIC M02</p> <p>WinNC HEIDENHAIN TNC 426/430</p> <p>FAGOR 8055 MC</p>	<p>DE 1848 EN 1848</p> <p>DE 1803 EN 1803 FR 1803 SP 1803 TA 1803 HL 1803</p> <p>DE 1814 EN 1814 FR 1814 SP 1814 TA 1814 HL 1814</p> <p>DE 1801 EN 1801 FR 1801 SP 1801 TA 1801 HL 1801</p> <p>DE 1901 EN 1901 FR 1901 SP 1901 TA 1901 HL 1901</p> <p>DE 1800 EN 1800 FR 1800 HL 1800 SP 1800 TA 1800</p> <p>DE 1816 EN 1816 FR 1816 SP 1816 HL 1816 TA 1816</p> <p>DE 1818 EN 1818 FR 1818 SP 1818 HL 1818 TA 1818</p>