

TECHNICAL SPECIFICATION

Concept MILL 55

PC-controlled 3-axis Milling Machine
for universal CNC Training
With/without 8-station tool turret



Control Systems

Sinumerik Operate 840D sl / 828D
SIEMENS 810D/840D
SIEMENS 810/820
FANUC Series 31i
FANUC Series 21
FANUC Series 0
HEIDENHAIN TNC 426/430
HEIDENHAIN TNC 640
EMCOTRONIC TM02
FAGOR 8055 MC
CAMCONCEPT

Inhaltsverzeichnis

Inhaltsverzeichnis	2
Technical Data of the Machine	3
PC-Control	5
<i>Technical data</i>	<i>5</i>
<i>PC-minimum configuration</i>	<i>5</i>
<i>Recommended PC Configuration</i>	<i>5</i>
<i>Machine license:</i>	<i>5</i>
<i>Available WinNC-Control Languages</i>	<i>6</i>
<i>Input- and Operating possibilities</i>	<i>6</i>
<i>Description EMCO Easy2control</i>	<i>7</i>
Basic Machine	8
Accessories	11
Engraving Spindle Facility.....	12
Accessories for Automation.....	13
Clamping Devices	14
Tool Holders	15
Cutting Tools	16
Setting Tools.....	18
Manuals.....	19
Courseware.....	21
<i>E[MCO] Campus</i>	<i>21</i>
Brochures	22
Packing	23

Technical Data of the Machine

Working area		
Longitudinal travel (X-axis)	[mm]	190 (7,5 inch)
Cross travel (Y-axis)	[mm]	140 (5,5 inch)
Vertical travel (Z-axis)	[mm]	260 (10,2 inch)
Effective Z-stroke, with / without turret	[mm]	120/190 (4,7/7,5 inch)
Distance spindle nose – table surface	[mm]	77 – 337 (3,0-13,3 inch)
Milling table		
Clamping surface (L x W)	[mm]	420 x 125 (16,5 x 4,9 inch)
Maximum table load	[kg]	10
2 T-slots acc. to DIN 650	[mm]	11 (0,4 inch)
T-slots distance	[mm]	90 (3,5 inch)
Milling spindle		
Bearing type		Roller bearing
Tool system (F1F P02)		
Tool magazine		Pick-up system with swivel arm on the left of the milling head placed; blow out facility
System drive / expiry		electr., mech.
Proceeding speed tool turret trick plate	[m/min]	10 (393,7 inch/min)
Tool mounting similar DIN 2079		SK30
Draw bolts		Works standard
Tool clamping		automatic
Number of tool stations		8
Maximum tool weight	[kg]	1
Maximum tool diameter with / without turret	[mm]	40 / 60 (1,6 / 2,4 inch)
Main drive		
Asynchronous AC motor, power	[kW]	0,75
Speed range (stepless)	[rpm]	150 - 3500
Maximum torque	[Nm]	3,7
Speed per minute with option high speed spindle	[rpm]	14.000
Feed drives		
3 phase step motor in X/Y/Z axis with resolution of	[mm]	0,0005 (0,00002 inch)
Feed rate and rapid traverse in X/Y/Z axis	[m/min]	2 (78,7 inch/min)
Middle positioning variation acc. to VDI 3441 in X, Y, Z	[mm]	0.008 (0,0003 inch)
Maximum feed force X/Y/Z	[N]	800 / 1000
Lubrication system		
Guideways		oil lubrication
Main spindle bearing		lifetime grease lubrication

Subject to technical modifications!

Basic pneumatic (standard included in basic machine)		
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)	
Painting		
light gray	RAL Nr. 7035	
traffic red	RAL Nr. 3020	
graphite gray	RAL Nr. 7024	
Electrical connection		
Voltage supply (adjustable) 1/N/PE	[V]	115/230
Admissible voltage fluctuation	[%]	+5/-10
Frequency	[Hz]	50/60
Connection value	[kVA]	0,85
Maximum pre-fusing of machine	[A]	12
Safety devices		
Fully enclosed working area, axis limit switch door limit switch, emergency-off switch		Safety category 3
Step motor drive with brake		At tool turret
Procedures with the tool turret only with closed door, without setting function		
Dimensions/weight (approx. values !)		
Overall height	[mm]	980 (38,6 inch)
Floor requirement WxD	[mm]	960 x 1000 (37,8x39,4 inch)
Overall weight incl. tool turret	[kg]	ca. 220
Sound pressure level		
Mean sound pressure level	[dB(A)]	70
Machine acceptance		
Works standard similar DIN 8615		
Safety rules/norms		
Acc. to EEC-rules / acc. to CE EN292 part 1 / 2, EN60204 part 1 EEC machine guiding rules appendix 1		

PC-Control

Technical data

Control system with PC and control keyboard (option)

Interchangeable control-specific keyboard (not contained in delivery)

Separate PC with 14" VGA-colour display (not contained in delivery)

Alternative input possibility through EMCO Easy2Control, displaying the operator panel on the screen also possible in combination with a touch screen monitor and a mini operating keyboard for the necessary hardware keys.

PC-minimum configuration

Processor	PC 1000 MHz
Operating system 32 bit / 64 bit	Windows XP-SP3 / Vista / 7 / 8 / 10
Random memory	256 MB RAM
Graphic card	Resolution min. 800x600
Free Hard drive memory, ROM	400 MB
Necessary interfaces	2 available USB ports / Network card (TCP/IP able)

Recommended PC Configuration

Processor	PC 2GHz
Operating system 32 bit / 64 bit	Windows 7 / 8 / 10
Random memory	32Bit 1GB
	64Bit 2GB

Machine license:

Does the direct control of the CONCEPT Machines and includes machine specific datas.

For every CONCEPT Machine a new machine license is to be produced.

Available WinNC-Control Languages

WinNC-Control	Available Languages (Language Abbreviations according to ISO 639-1)
Sinumerik Operate 840D sl / 828D	DE, EN, FR, ES, IT, NL, HU, CS, RU, ZH, PL
Sinumerik 810D/840D	DE, EN, FR, ES, IT, NL, SV, HU, CS, RU, ZH
Sinumerik 810/820	DE, EN, FR, ES, NL
FANUC Series 0	DE, EN, FR, ES
FANUC Series 21	DE, EN, FR, ES
FANUC Series 31i	DE, EN, FR, ES, IT, CS, RU, PL
EMCOTRONIC TM02	DE, EN, FR, ES, IT
HEIDENHAIN TNC 426	DE, EN, FR, ES, SV, IT
HEIDENHAIN TNC 640	DE, EN
FAGOR 8055	DE, EN, FR, ES

Legend:

DE	German
EN	English
FR	French
ES	Spanish
IT	Italian
NL	Dutch
SV	Swedish
HU	Hungarian
CS	Czech
RU	Russian
ZH	Chinese
PL	Polish

Input- and Operating possibilities

- **Standard PC-keyboard**
- **Control identical keyboard with interchangeable keypads**
A contemporaneous use of the PC keyboard/mouse and the Onscreen-control keyboard is possible; there is no need of a switch.
- **Onscreen-control keyboard (EMCO Easy2control)**
A contemporaneous use of the PC keyboard/mouse and the Onscreen-control keyboard is possible; there is no need of a switch.
The Software can also be operated by a 16:9 Full-HD-Touchscreen..

Description EMCO Easy2control



EMCO Easy2control is a Software visualizing the control- and machine-specific keyboards of the WinNC-controls on a 16:9 Full-HD screen.

The diverse operation fields for machine, control and short-cuts can be switched by tabs. → see graphic: EMCO Easy2control tabs

The buttons and regulation keys can be operated by the mouse.

When using a Full-HD-Touchscreen, you can operate these buttons and keys with this screen.

For operating the Software on the programming station (without machine), you need a license dongle.
For operating the Software on a Concept Machine, you need the license dongle and the „Mini Machine Operating Panel“.

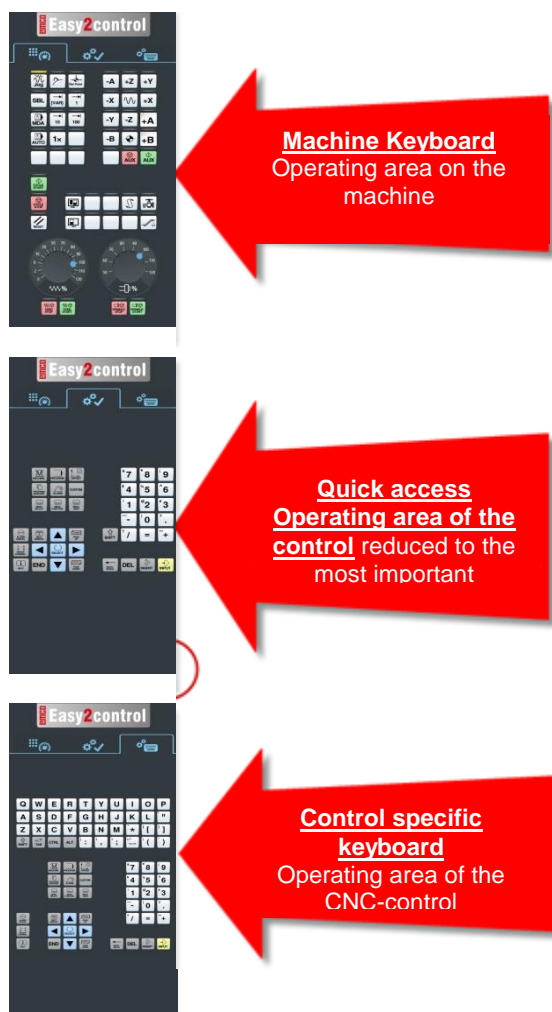
PC-Configuration

→ See EMCO WinNC PC minimum configuration, or recommended PC configuration.



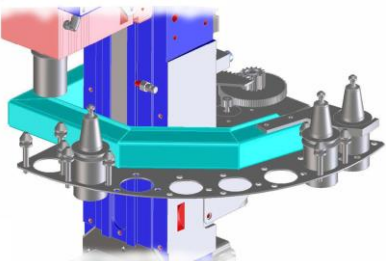
Hardware-Configuration

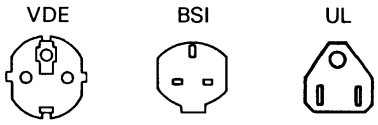
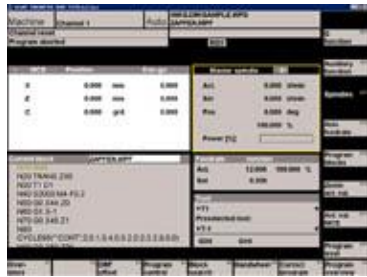
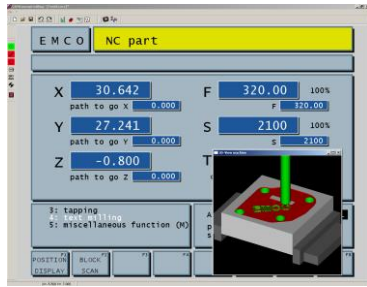
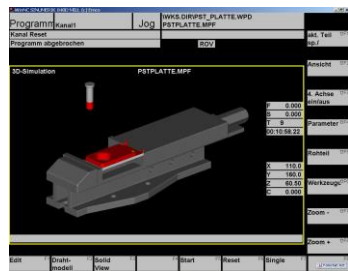
Full-HD-Screen with min. 1920 x 1080 pixels

Graphic: EMCO Easy2control tabs using here the control WinNC for Sinumerik Operate 840D sl / 828D



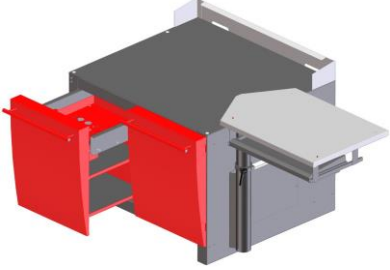

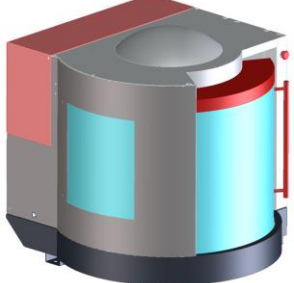


Basic Machine

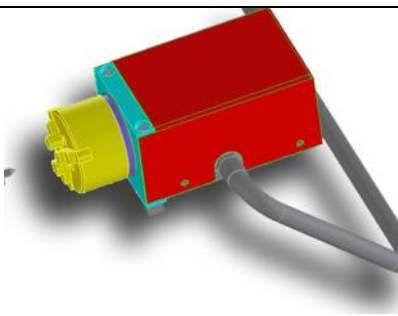
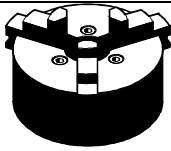

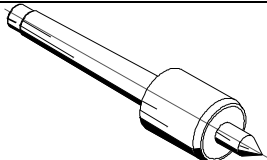
	Description	Ref.-No.
 <p>ATTENTION: PC, software and control keyboard are not included in scope of supply of basic machine</p>	<p><u>1. EMCO Concept MILL 55</u></p> <p>PC-controlled 3-axis milling machine for basic CNC training with various industrial control systems.</p> <p>Machine complete with fully enclosed working area, safety units acc. to CE, stepless adjustable main drive, automatic movement to the reference position, electrical and mechanical preparation for automation, connection cable for PC-machine, machine lamp.</p> <p>Disk with machine data, tool set for operating, operating instruction manual with spare parts list. Possibility for remote monitoring,</p> <p>Tool turret Factory installed only !!</p>	<p>F1F P01</p>
  <p>ATTENTION: PC, software and control keyboard are not included in scope of supply of basic machine</p>	<p><u>EMCO Concept MILL 55 with tool turret</u></p> <p>PC-controlled 3-axis milling machine for basic CNC training with various industrial control systems</p> <p>Machine complete with fully enclosed working area, safety units acc. to CE, stepless adjustable main drive, automatic movement to the reference position, electrical and mechanical preparation for automation, connection cable for PC-machine, machine lamp.</p> <p><u>8-station tool turret with</u> electric/mechanical pick-up system with blow out facility milling spindle incl. pneumatic unit (for blow out facility)</p> <p>Disk with machine data, tool set for operating, operating instruction manual with spare parts list. Possibility for remote monitoring,</p>	<p>F1F P02</p>

	Description	Ref.-No.
	<p>2. Power supply cable</p> <p>Indicate type of cable when ordering</p> <p>Power supply cable VDE Power supply cable BSI Power supply cable UL</p>	<p>A4Z 010 A4Z 030 A4Z 050</p>
	<p>3. Software</p> <p>WinNC - Control software, machine licence</p> <p>Indicate type of control needed when ordering:</p> <p>Sinumerik Operate 840D sl / 828D SIEMENS 810/820 SIEMENS 810D/840D FANUC Series 0 FANUC Series 21 FANUC Series 31i EMCOTRONIC M02 HEIDENHAIN TNC 426/430 HEIDENHAIN TNC 640 FAGOR 8055 MC</p>	<p>X3Y 400 On request On request On request On request X3Y 360 On request X3A 200 X3Y 460 X3A 300</p>
	<p>EMCO CamConcept</p> <p>Machine license</p> <p>CamConcept includes NC format DIN/ISO.</p> <p>Optional NC program formats: WinNC Sinumerik Operate 840D sl / 828D Postprocessor für WinNC Sinumerik 840D Postprocessor für WinNC Fanuc21 Postprocessor für WinNC Sinumerik 810/820 Postprocessor für WinNC Fanuc0 Postprocessor für WinNC Heidenhain TNC426 Postprocessor für WinNC Emcotronic TM02 Postprocessor für WinNC FANUC 31i</p>	<p>X3A 400</p> <p>X5A 467 X5A 460 X5A 461 X5A 462 X5A 463 X5A 464 X5A 465 X5A 968</p>
	<p>EMCO Win 3D-View, Milling (32bit and 64bit)</p> <p>3D-graphic simulation Option for WinNC</p> <p>EMCO Win 3D-View, milling, single license</p> <p>not required for CAMCONCEPT !</p>	<p>X5A 260</p>


	Description	Ref.-No.
	<p><u>Control keyboard - basic case</u></p> <p>Incl. connection cable USB</p>	<p>X9B 000</p>
	<p><u>TFT- Display</u></p> <p>incl. display cable, power supply and attaching parts</p> <p>Main cable VDE Main cable BSI Main cable UL</p>	<p>X9Z 600</p> <p>A4Z 010 A4Z 030 A4Z 050</p>
	<p><u>Control keyboard – key module</u></p> <p>Sinumerik Operate 840D sl / 828D SIEMENS 810 SIEMENS 820 SIEMENS 810D/840D FANUC Series 0 FANUC Series 21 FANUC Series 31i EMCOTRONIC TM02 HEIDENHAIN TNC 426/430 HEIDENHAIN TNC 640 FAGOR 8055 MC</p>	<p>X9Z 060 X9Z 010N X9Z 020N X9Z 040N X9Z 110N X9Z 130N X9Z 030 X9Z 210N X9Z 426N X9Z 640 X9Z 055N</p>
	<p><u>Easy2Operate</u></p> <p>Portable Machine Operating panel to operate the machine via hardware, includes axis buttons, feed override switch, mode switch etc. together with EMCO Easy2Control</p> <p>includes Easy2control single license with license dongle</p>	<p>X9C E2C</p>
	<p><u>EMCO Easy2control Programming station</u></p> <p>Onscreen-control keyboard for programming stations of following control: WinNC für Sinumerik Operate 840D sl / 828D WinNC für Heidenhain TNC 426/430 WinNC for Fanuc 31i WinNC für Fagor 8055 WinNC für Sinumerik 810D/840D And for all future WinNC-controls.</p> <p>Single license incl. license dongle</p>	<p>X9C 111</p>

Accessories

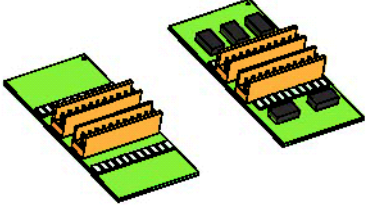
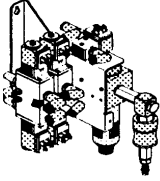
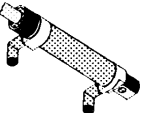



	Description	Ref.-No.
	<p><u>Machine base</u></p> <p>Base including: drawer for tools and other devices, deposit for PC-tower. WxDxH 1035x1100x800 mm Add machine type to your order! A cover sheet is delivered then.</p> <p><u>Cover sheet for machine base</u> <u>Absolutely necessary in Concept Mill 55</u></p> <p><u>Swivel table</u></p> <p>Deposit for monitor and control keyboard. With drawer for PC-keyboard. Height adjustment with gas-pressure-spring from 720 to 970 mm. Swivelling range +/- 30°. Installation on both sides possible. Installation left: Extension lead for monitor, keyboard and mouse necessary! WxD 845x550 mm. Table area 700x550 mm</p>	<p>A7Z 210</p> <p>A6Z 670</p> <p>A7Z 430</p>
	<p><u>Levelling element</u></p> <p>4 pieces required, when using with machine base</p>	<p>F3Z 150</p>
	<p>View Window left</p>	<p>F1Z420</p>
	<p><u>Minimum- lubrication unit</u></p> <p>Container volume 500ml 2 oil volume regulators 2 nozzles with flexible hose Pressured air connection 4bar with regulator and pressure gauge Level display Coaxial supply hoses</p> <p>Pneumatic unit A6Z540 and extension board A6Z640 necessary!! Factory installed only !!</p>	<p>F1Z 400</p>
	<p><u>Electronical handwheel</u></p> <p>For moving the machine's axes manually to proceed zero point- and tool offsets</p> <p>Retrofit able by EMCO technician !! Possible with ACC-Hardware V2 and higher!!</p>	<p>Q1Z 340</p>

	Description	Ref.-No.
	<p><u>Dividing head (without chuck)</u></p> <p>Dividing head Ries RSC-20 with casing and mounting pieces for Montage on the Milling table</p> <ul style="list-style-type: none"> - continuously adjustable - Nominal moment: 42 Nm - Fast traverse: 8 min-1 - Accuracy of indexing: +/- 100" - Repeating accuracy: +/- 15" - Spindle height: 48 mm - Total height: 95 mm - No hole through spindle ! - No control possible with the PAL and the EMCOTRONIC Retrofit able by EMCO technician !! 	F1Z 240
	<p><u>3-jaw lathe chuck dividing head</u></p> <p>Chuck diameter 74mm, throat 15 mm with chuck wrench, incl. 1 set inside/outside graduated jaws</p>	A6Z 630
	<p><u>Tailstock for dividing head (without live center)</u></p> <ul style="list-style-type: none"> - Center height: 48 mm - Connection cone MK 1 - Displace range: 20 mm - Max. workpiece length: 100 mm 	F1Z 450
	<p><u>Live center MT1 for dividing head</u></p> <p>Triple-bearing live center for supporting long work-pieces.</p>	A5Z 260

Engraving Spindle Facility

	Description	Ref.-No.
	<p><u>Engraving spindle facility</u></p> <p>Including 6 collets (1/1,5/2/2,4/3/3,2 mm), union nut and holder.</p> <p>Transmission case with EMCO spindle acceptance similar SK 30 and mechanically belt-driven step-up gear. The spindle facility is directly mounted at the main spindle. Transmission 4:1</p>	F1Z 190
	<p><u>Set of engraving tools</u></p> <p>5 pcs. Engraving tools</p>	223 180

Accessories for Automation

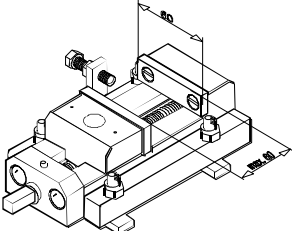
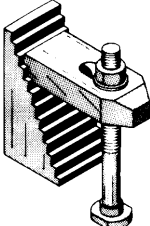
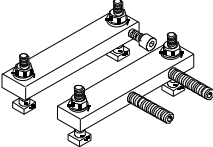
	Description	Ref.-No.
	<p><u>I/O – Extension board</u></p> <p>I/O - extension board is required for <u>ALL</u> automation accessories and the minimum lubrication unit necessary.</p> <p>Retrofit able by EMCO technician !!</p>	<p>A6Z 640</p>
	<p><u>Pneumatic unit</u></p> <p>For connection of automatic door, pneumatical machine vice with blow out facility and the Minimum- lubrication unit.</p> <p>Factory installed only !!</p>	<p>A6Z 540</p>
	<p><u>Automatic door</u></p> <p>Incl. stroke control</p> <p>Pneumatic unit A6Z640 necessary !!</p> <p>Factory installed only !!</p>	<p>F1Z 210</p>
	<p><u>Pneumatic machine vice</u></p> <p>Type Gressel</p> <p>Stroke and blow-out unit</p> <p>Jaw width: 72 mm Jaw opening: max. 70 mm Total length: 344 mm Total height: 63 mm Clamping force: 700 to 3000 N Pneum. pressure: 2 to 6 Bar</p> <p>Pneumatic unit A6Z540 necessary !!</p> <p>Factory installed only !!</p>	<p>F1Z 740</p>
	<p><u>Robotic-Interface</u></p> <p>Necessary for the FMS/CIM - operation</p> <p>A6Z 640 necessary</p>	<p>X1A 000</p>
	<p><u>DNC-Interface</u></p> <p>Enables the remote control of WinNC via a software- protocol. The communication is done via the RS 232 interface</p> <p>Not available for Heidenhain TNC426/430/640 and Fagor 8055 MC</p>	<p>X5A 050</p>

The accessories are containing all electrical and mechanical parts for mounting on the machine and a mounting manual.

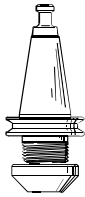


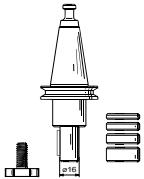
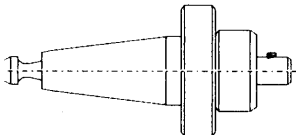
For all automation accessories the I/O extension board is required.

Subject to technical modifications!




Clamping Devices




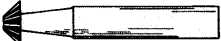
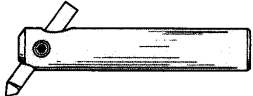

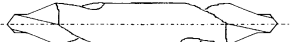
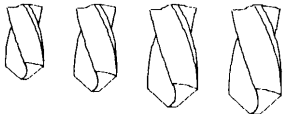
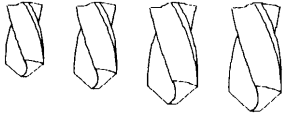
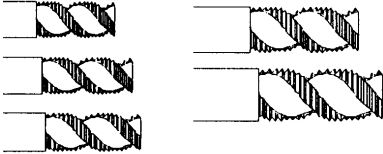
	Description	Ref.-No.
	<p><u>Machine vice</u></p> <p>Machine vice complete with adjustable longitudinal limit stop. Width of jaws 60 mm, clamping width 60 mm</p>	<p>F1Z 310</p>
	<p><u>Stepped clamping shoe</u></p> <p>Stepped clamping shoe complete with clamping screw. Clamping range up to 60 mm</p>	<p>C3Z 300</p>
	<p><u>Clamping rails</u></p> <p>1 set of clamping rails</p>	<p>F1Z 060</p>

Tool Holders

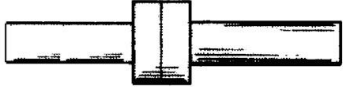


	Description	Ref.-No.																																																						
	<u>Tool holder package CM55</u> consisting of: Collet holder ESX25 - 5x Set of collets ESX25 - 1x Collet ESX25 dmr. 10 - 1x Collet ESX25 dmr. 6 - 1x Shell end mill arbor dmr. 16 - 1x Tap holder M5-M8 - 1x	F1Z 970																																																						
	<u>Collet holder</u> For double coned ESX-25 collets, complete with operating key	F1Z 100																																																						
	Set of 14 collets type ESX 25 with wooden box nominal- \varnothing 2 - 14 mm	225 000																																																						
	<u>Collets</u> <table border="0"> <thead> <tr> <th>Type ESX 25</th> <th>DIN 6499B</th> <th></th> </tr> <tr> <th>Nominal-\varnothing</th> <th>Capacity [mm]</th> <th></th> </tr> </thead> <tbody> <tr><td>2,0</td><td>1,5 bis 2,0</td><td>225 020</td></tr> <tr><td>2,5</td><td>2,0 bis 2,5</td><td>225 025</td></tr> <tr><td>3,0</td><td>2,5 bis 3,0</td><td>225 030</td></tr> <tr><td>4,0</td><td>3,0 bis 4,0</td><td>225 040</td></tr> <tr><td>5,0</td><td>4,0 bis 5,0</td><td>225 050</td></tr> <tr><td>6,0</td><td>5,0 bis 6,0</td><td>225 060</td></tr> <tr><td>7,0</td><td>6,0 bis 7,0</td><td>225 070</td></tr> <tr><td>8,0</td><td>7,0 bis 8,0</td><td>225 080</td></tr> <tr><td>9,0</td><td>8,0 bis 9,0</td><td>225 090</td></tr> <tr><td>10,0</td><td>9,0 bis 10,0</td><td>225 100</td></tr> <tr><td>11,0</td><td>10,0 bis 11,0</td><td>225 110</td></tr> <tr><td>12,0</td><td>11,0 bis 12,0</td><td>225 120</td></tr> <tr><td>13,0</td><td>12,0 bis 13,0</td><td>225 130</td></tr> <tr><td>14,0</td><td>13,0 bis 14,0</td><td>225 140</td></tr> <tr><td>15,0</td><td>14,0 bis 15,0</td><td>225 150</td></tr> <tr><td>16,0</td><td>15,0 bis 16,0</td><td>225 160</td></tr> </tbody> </table>	Type ESX 25	DIN 6499B		Nominal- \varnothing	Capacity [mm]		2,0	1,5 bis 2,0	225 020	2,5	2,0 bis 2,5	225 025	3,0	2,5 bis 3,0	225 030	4,0	3,0 bis 4,0	225 040	5,0	4,0 bis 5,0	225 050	6,0	5,0 bis 6,0	225 060	7,0	6,0 bis 7,0	225 070	8,0	7,0 bis 8,0	225 080	9,0	8,0 bis 9,0	225 090	10,0	9,0 bis 10,0	225 100	11,0	10,0 bis 11,0	225 110	12,0	11,0 bis 12,0	225 120	13,0	12,0 bis 13,0	225 130	14,0	13,0 bis 14,0	225 140	15,0	14,0 bis 15,0	225 150	16,0	15,0 bis 16,0	225 160	
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	<u>Milling Arbor</u> For milling cutter with 16 mm bores, with key and milling machine arbor collars.	F1Z 110																																																						
	<u>Screw tap holder</u> M3 M4 M5, M6, M8	F1Z 360 F1Z 370 F1Z 380																																																						

Cutting Tools

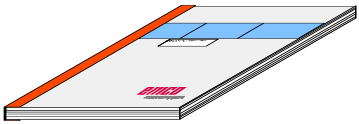
	Description	Ref.-No.
	<p><u>Tool Package "Basic"</u> with</p> <p>2 # 225 060 Collet 6mm 1 # 225 100 Collet 10mm 1 # 764 301 Slot End Mill 3mm 1 # 764 303 Slot End Mill 5mm 1 # 764 308 Slot End Mill 10mm 1 # 764 410 Heavy Duty Shell End Mill 3 # F1Z 100 Collet Holder 1 # F1Z 110 Milling Arbor</p>	F1Z 980
	<p><u>Tool Package "Extended"</u> with</p> <p>1 # 225 100 Collet 10mm 2 # 764 301 Slot End Mill 3mm 2 # 764 303 Slot End Mill 5mm 2 # 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 # 771 120 Drills For Core Holes 5 pcs. 2 # 781 152 Heavy Duty Shank End Mill 10mm 1 # 781 280 Twist Drills 25 pcs. 1 # 781 303 Screw Tap M5 1 # 781 304 Screw Tap M6 1 # F1Z 970 Tool Holder Package CM55</p>	F1Z 990
	<p><u>Heavy duty shell end mill, HSS</u></p> <p>With roughing finishing teeth ø 40 x 20 mm, bore hole ø 16 mm</p>	764 410
	<p><u>Staggered tooth side mill, HSS</u></p> <p>Bore hole ø 16 mm ø 35 x 5 mm</p>	764 900
	<p><u>Slot end mill, HSS</u> Acc. to DIN 327, shape B</p> <p>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</p>	764 301 764 302 764 303 764 304 764 306 764 308 773 100

	Description	Ref.-No.
	<p>Heavy duty shank end mill, HSS</p> <p>Acc. to DIN 844, shape A</p> <p>cutting- $\varnothing 8$ mm / shank- $\varnothing 8$ mm cutting- $\varnothing 10$ mm / shank- $\varnothing 10$ mm cutting- $\varnothing 12$ mm / shank- $\varnothing 12$ mm cutting- $\varnothing 16$ mm / shank- $\varnothing 16$ mm</p>	<p>764 200 781 152 781 151 771 020</p>
	<p>Radius milling cutter, HSS Two edged, with parallel shank</p> <p>shank- $\varnothing 6$ mm shank- $\varnothing 12$ mm</p>	<p>771 030 771 040</p>
	<p>Angle milling cutter, HSS</p> <p>Acc. to DIN 1833, shape A 60°, $\varnothing 16$ mm, shank- $\varnothing 12$ mm</p>	<p>764 400</p>
	<p>Angle milling cutter, HSS</p> <p>Acc. to DIN 1833, shape B 45°, $\varnothing 16 \times 4$ mm, shank- $\varnothing 12$ mm</p>	<p>771 050</p>
	<p>Boring bar</p> <p>For bore hole $\varnothing 16$-40 mm shank- $\varnothing 15$ mm</p>	<p>F1Z 050</p>
	<p>NC-start drill, HSS</p> <p>Shank $\varnothing 10$ mm, acute angle 120°</p>	<p>771 010</p>
	<p>Centre drill, HSS</p> <p>$\varnothing 6,8$ mm A8, HSS, DIN 333</p>	<p>573 770 271 220</p>
	<p>Twist drills, HSS</p> <p>25 twist drills $\varnothing 1$-13 mm, (0.5 mm graded) 9 twist drills $\varnothing 2$-10 mm, (1 mm graded)</p>	<p>781 280 260 628</p>
	<p>Twist drills for core holes, HSS</p> <p>5 twist drills for core holes $\varnothing 2,5$, $3,3$, $4,2$, $5,0$, $6,8$ mm 6 twist drills for core holes $\varnothing 2,5$ - $\varnothing 8,5$ mm</p>	<p>771 120 271 230</p>
	<p>Screw taps, HSS</p> <p>Set of 5 screw taps M3 - M8, DIN 352 + 371 Screw tap M3, (shank $\varnothing 3,5$ mm) Screw tap M4, (shank $\varnothing 4,5$ mm) Screw tap M5, (shank $\varnothing 6$ mm) Screw tap M6, (shank $\varnothing 6$ mm)</p>	<p>781 300 781 301 781 302 781 303 781 304</p>

Setting Tools

	Description	Ref.-No.
	<p><u>Dial gauge with magnetic stand</u></p> <p>Outside ring $\varnothing 58$ mm, division 0,01 mm measuring range 10 mm, with shock protection</p>	565 065
	<p><u>Edge indicator</u></p> <p>Probe $\varnothing 6$ Shank $\varnothing 6$ mm</p>	F1Z 390
	<p><u>3D sensor</u></p> <p>incl. short probe tip $\varnothing 4$ mm clamping shank $\varnothing 10$ mm</p> <p>necessary tool holder: F1Z100+225100</p>	764841
	<p><u>Spare Probe Ball Tip for 3D-Sensor</u></p> <p>25mm lang Tastkugel-D.4mm</p>	764 842

Manuals

	Description	Ref.-No.
	<p><u>Machine description Concept Mill 55</u></p>	<p>DE 2055 EN 2055 FR 2055 SP 2055 TA 2055 HL 2055 SK 2055 CZ 2055</p>
	<p><u>Software description</u></p> <p>WinNC Sinumerik Operate 840D sl / 828D</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 Fanuc 31i</p>	<p>DE 1848 EN 1848 FR 1848 SP 1846 CZ 1848 HL 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 HL 1901 TA 1901</p> <p>DE1846 EN1846 FR 1846 SP 1846 CZ 1846</p>

	Description	Ref.-No.
	<u>Software description</u>	
	WinNC EMCOTRONIC M02	DE 1800 EN 1800 FR 1800 HL 1800 SP 1800 TA 1800
	WinNC HEIDENHAIN TNC 426	DE 1816 EN 1816 FR 1816 HL 1816 SP 1816 TA 1816
	WinNC HEIDENHAIN TNC 640	DE 1844 EN 1844
	FAGOR 8055 MC	DE 1818 EN 1818 FR 1818 SP 1818 HL 1818 TA 1818
	EMCO CAMCONCEPT - milling	DE 1828 EN 1828 FR 1828 HL 1828 SP 1828 TA 1828
	EMCO Win 3D-View Milling	DE 1826 EN 1826 FR 1826 SP 1826 HL 1826 TA 1826

Brochures

	Description	Ref.-No.
	<u>EMCONOMY moves</u>	DE 2801 EN 2801 FR 2801 SP 2801 RU 2801 CZ 2801
	<u>CONCEPT MILL 55</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>Europe packing</u> Standard packing	incl.
	Options to european packing for Machine Mill55:	
	<u>Climate packing</u> Pallet, Alu-bandage, various accessories	ZVP 547 120
	<u>Seaworthy packing</u> (as option to European- and Climate packing) Requires seaworthy packing ZVP 547120!	ZVP 301 124
	Options to european packing for machine base:	
	<u>Climate packing</u> Pallet, Alu-bandage, various accessories	ZVP 547 120
	<u>Seaworthy packing</u> (as option to European- and Climate packing) Requires seaworthy packing ZVP 547120!	ZVP 301 124