

ORDER CONFIRMATION

Doc. no./Date
305011 / 24.03.1998

Page
3 / 28

1. DELIVERY VOLUME AND PRICES

CNC-TURNING-BORING-MILLING CENTRE M120 x 5000 MILLTURN
WITH CONTROL SINUMERIK 840C

WORKING RANGE

swing over bed	mm	1160
swing over cross slide	mm	1100
longitudinal travel (Z)	mm	5370
cross travel (X)	mm	900 turning
length (depending upon clamping equipment)	mm	5000
turning diameter between centers	mm	1100 k

TURNING SPINDLE

spindle head DIN 55026 form A	size	15
spindle diameter in front bearing	mm	240
spindle bore	mm	165

MAIN DRIVE

AC-drive with 2 gear steps		
drive power 100% duty cycle	kW	60
max. speed	min-1	1600
max. torque at the spindle 100% duty cycle	Nm	4472

FEED DRIVE

AC-servodrive		
feed force longitudinal (Z)	kN	30,0
feed force transversal (X)	kN	31,5
feed force Y-axis	kN	20,0
rapid traverse motion: longitudinal (Z)	m/min	15,0
transversal (X)	m/min	15,0
Y-axis	m/min	12,5

TAILSTOCK

quill diameter	mm	180
quill travel	mm	200
quill force (adjustable)	N	5400-40000
quill with installed live center	MK	6

TOOL HOLDER

(single tool holder, TURNING-BORING-MILLING UNIT)
AC-drive

drive power 100% duty cycle	kW	<u>25</u>
speed range	min-1	<u>0-4000</u>

ORDER CONFIRMATION

Page

Doc. no./Date

4 /

28

305011 / 24.03.1998

max. torque at the spindle 100% duty cycle	Nm	300
travel vertical to the X/Z-plane (Y-axis)	mm	500 [-250/+250]
pivot capability of the milling spindle (B-axis) °		-110/+90
spindle head Sandvik CAPTO		C8
spindle diameter in front bearing	mm	100

ADDITIONAL COOLING of milling motor and spindle bearings by a closed loop cooling system with a separate heat exchanger

TOOL MAGAZINE

tool places (coded)		72
max. tool diameter:		
- neighboring tool place free	mm	160 (250)
- neighboring places occupied, at tool	mm	110
max. length of tool	mm	500 (800)
max. weight of tool	kg	20

C-AXIS

smallest programm able increment	°	0,001
max. speed	min-1	20
max. torque at the spindle 100% duty cycle	Nm	3000

DIMENSIONS

length (max. tool magazine)	m	13,0
width/height	m	4,5/3,8

ELECTRIC CONNECTION DATA

- connection power	kVA/kW	162/145
operating voltage	V/cps	<u>3x400/50</u>
- operating voltage - light cable	V/cps	230/50
connection power	kW	1

The short circuit power at machine power connection is min:

MVA	12
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ORDER CONFIRMATIONDoc. no./Date
305011 / 24.03.1998Page
5 / 28**1.1 BASIC MACHINE**

M101/22-04 Bed M-120 Millturn
 center distance 5000mm

K100/01-103 3rd bottom guideway on the machinebed,
 incl. reinforcements on steady rest- and
 tailstock slide

M101/03-01 Parking position for tailstock on bed
 extension.(500 mm)

M102/21-03 Headstock 1600 min-1, 60 kW, AC, 2-step
 gear, spindle bore 165mm, sp.nose A15

M102/01-04 Additional package for servocontrolled
 main spindle (C-axis),headstock 1600 RPM

M103/22-04 Compound slide top M 120
 center distance 5000mm

M104/21-01 Tailstock, automatic clamping/coupling
 Ø180, live center MT 6.

M105/22-02 Turning-Boring-Milling unit
 Capto C8, M120

M105/03-02 External tool magazine with automatic
 tool changer, 2x36 tool stations

M105/04-01 Prism tool holder accommodation
 on Turning-Boring-Milling unit.

M105/05-01 Pick up station for 3 tools with prism
 tool holders mounted over the headstock.

ORDER CONFIRMATIONDoc. no./Date
305011 / 24.03.1998Page
6 / 28

M106/40-03	Control Siemens SINUMERIK 840C for max. 30 axes and spindels
M106/41-10	Control component for 10 axes and spindles
M106/43-08	Manual encoder
M106/43-31	Control component for turning-boring-milling unit M-100
M106/43-43	Control component for external tool magazine, 2 magazine-drums.
M000/1-02	Documentation in ENGLISH language.
M006/42-12	Display text in English language
M006/44-01	Rigid tapping and / or gear hobbing
M006/44-11	Telediagnosis -software installation for Siemens 840C control and one off machine
M006/45-02	Tool management-tool change in external magazine simultaneous to machining
M107/01-02	Autom. workpiece measurement by means of a probe in TBM - unit (2x180°)
M007/2-07	Extended package of measuring cycles for circumferential orientation of workpieces
M007/3-10	Recording of results of measurements on hard disk of control.

ORDER CONFIRMATION

Doc. no./Date

305011 / 24.03.1998

Page

7 / 28

M007/3-11 Printout of measuring protocols in auto. production. Necessary Modul M007/3-10

M007/6-02 Process monitoring - 1. slide (cutting force component monitoring)

M108/01-01 Full center chucking cylinder Ø200 max.piston force 12000 daN

~~M108/05-03 Power operated 3-jaw chuck KNCS-N 800 make SMW~~

K108/06-103 Face plate ø 1000mm for spindle size 15" in steel casting incl. 1 set of chuck jaws.

M109/02-08 Chip conveyor, discharging to the right, with coolant pump 15bar 50l/min 5000mm

M109/10-01 High-pressure coolant equip. f. turning-boring-milling unit, 35bar-24l/min

~~M109/20-03 Coolant filtration by rotation separator coolant tank 700 l.~~

K109/00-116 Separate coolant pump for manual connection to the tool accommodation, for ejector drills dia. 80/120 mm. (Dia.120 in two steps)

M113/01-01 Fixed rest slide with automatic positioning and clamping

K113/04-110 Self centering hydraulik Steady rest clamping range 120 -530 mm, incl. holder

ORDER CONFIRMATION

Doc. no./Date
305011 / 24.03.1998

Page
9 / 28

1.2 GENERAL DATA OF THE BASIC MACHINE

Hydrauliksystem of the machine:

- Central unit for clamping device, tailstockquill and other accessories.
- Infinitely variable adjustment of the clamping pressure as well as indication of the pressure of the above subassemblies.

Machine covering:

Completely closed working area with sliding protection door(s) and integrated electric safety device.
Double-walled in especially endangered ranges with window made of multilayer safety glass.

Main dimensions of the MILLTURN M120:

Height of the main spindle above floor	mm	1343
Weight of the machine approx.		
Center distance:	2000 mm 3000 mm 5000 mm 6500 mm	
	28000 kg -----> <u>36000 kg</u> 40000 kg	

Electric system:

Corresponds to the VDE and UVV standards valid at the time of submitting the quotation (resp. placing the order).

Ambient temperature:

under normal working conditions	°C	min.	0
	°C	max.	35
under full load and long continuous working conditions	°C	max.	30

Change of temperature:

within one hour	K	max.	10
within 3 minutes	K	max.	1

Relative humidity of air at 20°C	max.	90%
at 35°C	max.	50%
		not condensing

Connection voltage:

voltage fluctuations		+ -	10%
frequency fluctuations		+ -	2%
short-time voltage drops:			
voltage interruption with rated voltage	ms	<=	10
recovery time	s	>=	10

ORDER CONFIRMATION

Doc. no./Date

305011 / 24.03.1998

Page

10 / 28

events per hour

<= 10

Standard accessories:

- Extension for "external in- output unit" on the operator panel
- Cold light in the working area
- Set of wrenches

Noise Level:

80 dB(A) without chuck and with closed sliding door

Necessary media to be provided by the customer:

- pneumatic: pressed air 150 l/min at min. 6 bar

Initial filling:

Delivery of the machine filled with hydraulic- and central lubricating oil.

Painting: WFL - standard

RAL 5010 blue, textured and
RAL 7035 gray, textured.

Documentation consisting of:

- operating manual
- set of wiring diagrams
- programming instuction
- foundation drawing

ORDER CONFIRMATION

Doc. no./Date
305011 / 24.03.1998

Page
11 / 28

2. TECHNICAL DESCRIPTION OF THE COMPONENTS

M101/22-04 Bed M-120 Millturn
 center distance 5000mm

- High rigidity and damping due to a 60 degrees slant bed made of Meehanite quality casting and core sand enclosed in the bottom part
- Tailstock and rest to be by-passed by 4 guideways
- Guideways made of ground steel strips hardened through
- High safety of operation due to a complete covering of the top slide guideways

max. swing over bed	mm	1160
max. swing over slide	mm	1100

K100/01-103 3rd bottom guideway on the machinebed,
 incl. reinforcements on steady rest- and
 tailstock slide

M101/03-01 Parking position for tailstock on bed
 extension. (500 mm)

M102/21-03 Headstock 1600 min-1, 60 kW, AC, 2-step
 gear, spindle bore 165mm, sp.nose A15

- Spindle head acc. to DIN 55026, ground
- Highest accuracy and stiffness of the turning spindle inclined precision ball bearings in 0-arrangement at front- and rear end of the spindle.
- Insignificant heating of the spindle bearing requiring no maintenance due to a permanent grease lubrication
- Thermal separation of main drive and headstock

spindle head DIN 55026/A15		
spindle diameter in the front		
bearing/spindle bore	mm	240/165

ORDER CONFIRMATION

Doc. no./Date
305011 / 24.03.1998

Page
12 / 28

three phase current drive, 2 gear steps (100 % duty cycle)	kW	60
max. torque at the spindle	Nm	4472
max. speed	min-1	1600

M102/01-04 Additional package for servocontrolled
main spindle (C-axis), headstock 1600 RPM

Drive without backlash equipped with harmonic-drive-gear
(hydraulically retractable) and additional
rotatory measuring system

-Additional disc brake for extra dampening and maximum
clamping torque.

smallest programmable increment	degrees	0,001
max. speed	min-1	20
max. torque at the spindle when rotating	Nm	3000
max. torque at the spindle when held by disc brake	Nm	6000

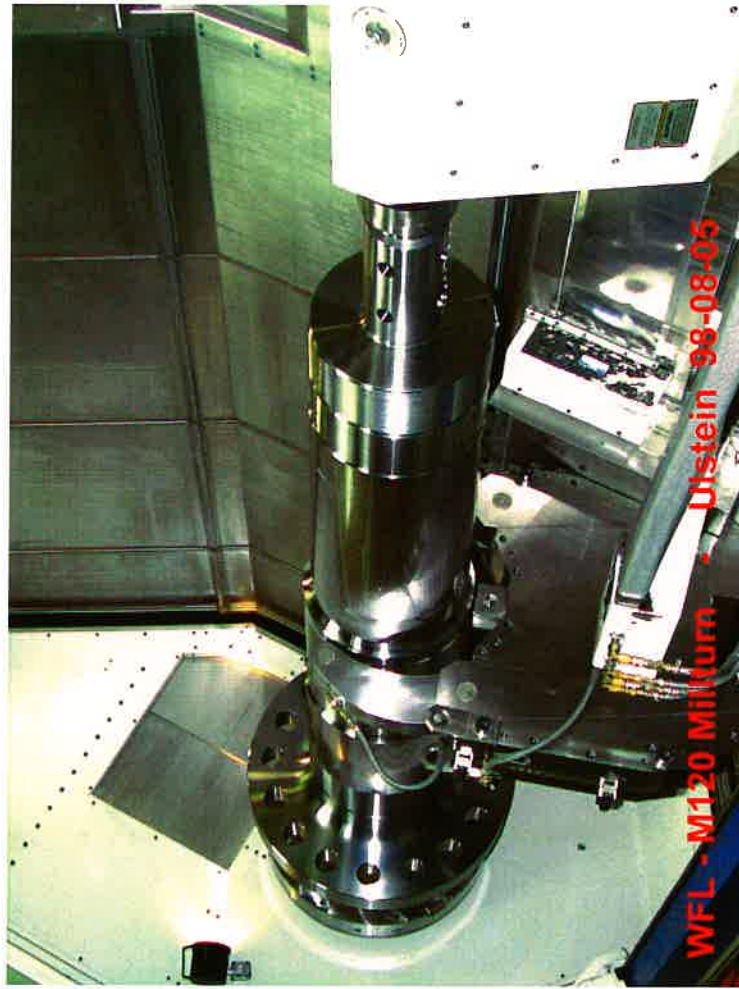
M103/22-04 Compound slide top M 120
center distance 5000mm

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Ø180, live center MT 6.

M105/22-02 Turning-Boring-Milling unit
Capto C8, M120

M105/03-02 External tool magazine with automatic
tool changer, 2x36 tool stations





WFL - M120 Millturn - Distein 98-08-05







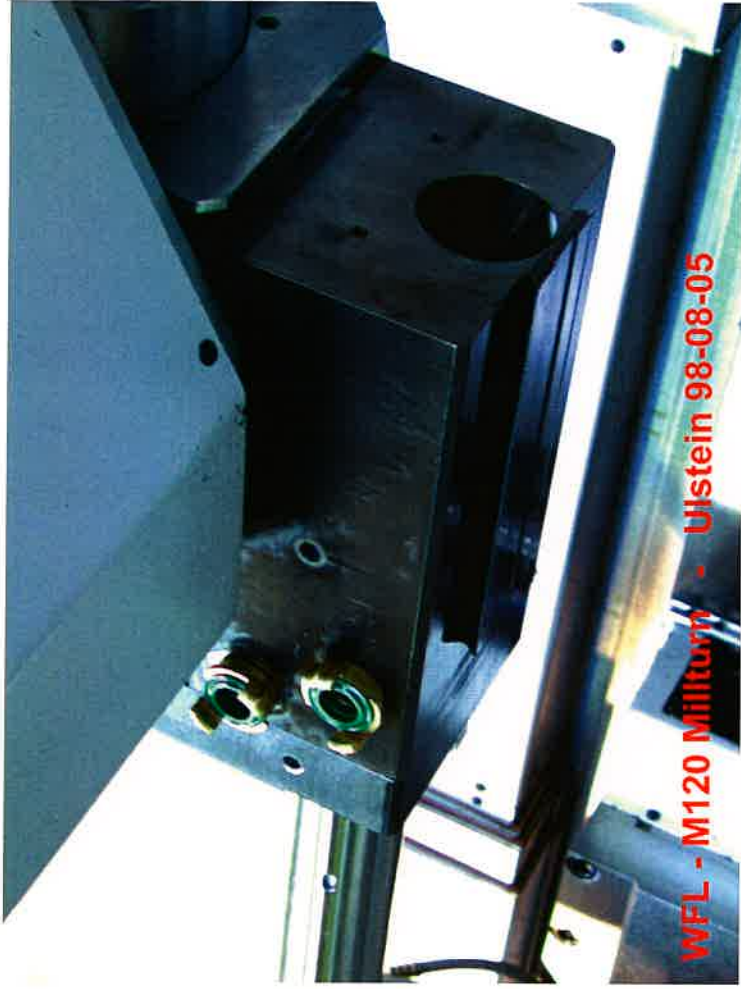


WFL - M120 Millturn - Urstein 98-08-05





WFL - M120 Millturn - Ulstein 98-08-05



WFL - M120 Military - Ulstein 98-08-05

