

## Complete machine description

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| 1 | 1 | <b>Completely refurbished vertical CNC-machining centre model MC 326 Twin</b><br><b>Year of construction: 2002, weight: 5.600 kg</b> |  |
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**Machine-No. 2057**

Scope of delivery:

### Column moving machining centre

#### Traverse Ranges

Spindle distance A: 266 mm

X axis 520 mm

Y axis 300 mm

Z axis 360 mm

Feed Thrust:

X-Y axis 4000 N

Z axis 8000 N

#### Traverse Rates - Axes Dynamic

Rapid traverse in X- Y- and Z- axes 60 m/min

Feed rate X- Y- and Z- axes 1-10000 mm/min

Axis dynamics: a max. (m/sec<sup>2</sup>) X=5.0; Y=8.0; Z=12.0

#### Swivel Table

Swivel drive pneumatically controlled.

Pneumatically pull down in crown gear

Clamping area 2 x 700 x 350 mm

Distance table-spindle nose min./max. 200/560 mm

Number and size of T-slots per

clamping area: 2 x 14 H12

Number and diameter of location holes per

clamping area: 4 x ø16 F7

Acceptable table load 2 x 450 kg

Indexing time approx. 1,9 sec.



## Spindle Units

Tool holder HSK A 63  
Draw bar pulling force 8000 N  
Spindle diameter 65 mm  
Spindle speed:  
Standard 12.000 rpm  
Incl. automatic blowing facility for process safety  
taper cleaning during tool change.  
Special spindle bearing configuration.  
Electronically balanced spindle.  
Balancing after fitting to spindle head.

## Performance Data 60 Nm

Torque constant up to 3000 rpm:  
At 100% cont. duty 31 Nm; at 20% cont. duty 60 Nm  
Driving power over 3000 rpm:  
At 100% cont. duty 9,5 Kw; at 20% cont. duty 18,5 Kw  
Chipping in steel (600 N/mm<sup>2</sup>):  
Drilling capacity Ø 25 mm (with insert drill)  
Tapping capacity M 20  
Milling capacity in steel 200 cm<sup>3</sup>/min (face milling cutter Ø 63)

## Tool Magazine

Tool places standard 2 x 21  
Tool diameter maximum:  
all places used ø 88 mm  
with empty adjacent tool place ø 125 mm (at 100 mm length)  
Tool length max. 250 mm  
Tool register HSK A63 DIN 69893  
Tool weight max. 5 kg  
Chip-to-chip time approx. 2,4 sec.

## Tool data management

Menu guided tool data management.  
To each tool are assigned direct:  
8-digit tool ident. no.  
For length and radius offsets  
service life guideline  
Data input:  
At inserting station with input panel or  
menu guided direct at the display of the control or  
via interface of the tool presetting



## Measuring System

X-Y-Z axis, digital pulse coder (Siemens absolut)  
Absolute measuring value processing resolution 0.001 mm

## Installation Data

Space required for machine approx. 7 m<sup>2</sup>  
Weight approx. 5.300 kg  
Control voltage 24 V DC  
Valve voltage 24 V DC  
Customers side requirement:  
Working voltage 3x400 V ±10%; 50Hz; N/PE.  
Connected rating machine 40 KVA  
Fuse before master switch 3 x 80 A  
Connected cross section 5 x 25 mm<sup>2</sup>  
Required air pressure min. 6 bar  
ISO 8573-1 Klasse 4  
Necessary connection inner diameter Ø13mm

## Guarding Equipment

Enclosure of working area

## Axis movement with open safety door

If the safety door is open, axis movement and spindle rotation are just possible during setting mode.  
Speed of axis max. 2 m/min. Spindle RPM max. 800 1/min.  
Actuated by press-button and confirmation key.

## Lamp in Working Area

## Permanent Lubrication low-Maintenance

All linear guides and ball screws are equipped with long-time lubrication systems,  
3 years max. 5000 working hours maintenance-free.  
After 5000 working hours linear guides and ball screws must be lubricated.

## Air-Conditioning of the Electrical-Cabinet



Pos.	Qty.	Article Description	Price / €
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### **Coolant equipment with swarf Conveyor**

Scaper conveyor suitable for all kinds of material and swarf shapes.

Ejection height 850 mm on left side of MC.

Integrated wedge wire sieve box, changeable, gap width: 350 µm.

Tank for 300 l.

External coolant supply integrated in spindle head with adjustable nozzles.

If mainly cast iron or light metal has to be machined, additional coolant concentration units are necessary.

### **1 Wash gun**

For manual cleaning of the loading area

### **Machine Supports without Coolant Tray**

for levelling and fixing the machine on the ground.

Including all mounting elements.

### **Control Siemens 840D (POWER LINE)**

TFT Colour display 10,4"

NCK-RAM 768 KB (ca. 256 KB for free disposal)

Universal-interface RS-232C (V24)

Max. 24-digit alphanumeric programme names

Forming of sub-routines according to DIN or standard

Language and parameter max. nesting 7 times

3D-lin. interpolation G1 (max. 4 axes simultaneously)

Circular interpolation G2/G3, helical interpolation

Polar or Cartesian coordinates measuring system

49 zero point shifts direct by G-function

Inclusive of additive zero point shift

Turning of coordinates; Mirror; Scaling factor

Insertion of chamfer or radius

Siemens standard drilling and milling cycles

(additional G81 - G86 same as Siemens 840C)

Rigid tapping

32-digit alphanumeric tool identification

Tool data input by program or direct with input panel at inserting station

Tool life monitoring wear or number of parts

Cutter radius compensation G41/G42 by calculation of intersection points or transition radius

Restart of program

Prompt facility

Editing and programming during machining



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Conversational programming according to DIN 66025 including graphical generating of contour up to 3 axis.  
Diagnostic displ. and operating feed back in clear text  
Oriented spindle stop  
Measuring system: digital absolut incremental encoders  
Screen saver

### Coolant Filtration Paper 200 l/min

Paperband filter, installed on coolant tank 600 l, compact design.  
Filter width 710 mm.  
Middle filter mesh 50 microns.  
A good utilisation of the filter paper is guaranteed due to the high level of fluid.  
Filter performance 200 l/min - emulsion.  
With feed-back facility in the event of paper shortage. Including 1 roll of filter paper 710 mm width.  
Paper transport actuated by level switch.

### Flow Control Internal Coolant

The flow switch is in the coolant line of the interior coolant system installed.  
In case of the needed pressure can be not arrived, the machine will be stopped.

### Internal Coolant through Spindles 70 bar

Internal coolant supply through work spindles for tool adaptors to DIN 69871 (ISO) form AD or B, or for tool adaptors to DIN 69893 (hollow taper shank) form A  
> 70 bar high-pressure pump for coolant (22 l/min.)  
> Incl. Vario valve, pressure is programmable in 7 steps by M-functions.  
(Applicable only in combination with coolant filtration system filter mesh 50 microns).

## 2 NC Rotary Table Diameter 160 mm

Horizontal NC rotary axis, worm pinion drive by transistor-controlled AC motor. Position measurement by digital pulse coder. Ready for connection including CNC axis, intermediate plate to fit rotary table on machine table and hydraulic locking of table.  
Rotary table with T-slots and centre bore dia. 30 H7.  
Centre height 160 mm.



Permissible tilting torque 1500 Nm  
Permissible torque 700 Nm at hydraulic locking.  
Permissible torque during rotary milling 180 Nm.  
Speed of rotation 62 rpm  
Resolution 1/1000 degree. Indexing accuracy  $\pm 25$  sec.

### **Counter Support with Hydraulic Locking**

Support for rotary table dia. 160 mm or dia. 240 mm.  
Sturdy design for reception of high cutting forces.  
Hydraulic locking of flange.  
Cylindrical locating flange for positioning and mounting of manually or hydraulically actuated fixtures in bridge design.  
Mounted on console for leveling to rotary table.

### **Hydraulic Basic Equipment**

Necessary in case of hydraulically actuated clamping fixtures.

Consisting of:

- > High pressure aggregate system pressure 250 bar.
- > 1 hydr. block for 1 circuit double action (2 controlled lines).

The clamping line is equipped with a manual pressure adjustment 30-200 bar incl. pressure control (unclamping line 250 bar)  
Lines are installed up to machine table.

- > Electrical soft- and hardware.
- > Additional control panel added to main control panel with funct. clamping, control lamp clamping pressure reached and unclamp fixtures.

### **Additional Hydr. Circuit Double Action**

Extension of hydraulic basic equipment by 1 circuit (2 controlled lines). Workmanship is the same as in the basic equipment.

### **Distributor Swivel Table 6-fold**

Distributor for oil supply to clamping fixtures mounted on one or two sides of swivel table. Central space-saving installation in the middle of the swivel table. Supply through middle of swivel table.  
The oil-distributor is prepared for the additional supply to electrical units on the swivel table.



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### **Oil-Distributor 2-fold Counter Support**

Oil-Distributor 2-fold for oil supply to clamping fixtures mounted on tilting bridge.  
The oil-distributor is flanged on the counter support.  
Oil supply up to the mounting flange of the tilting bridge.

### **Center height 230 instead of 180 + aligning groove**

Counter bearing and NC-rotary table differently to the standard center height of 230 mm. Counter bearing axial adjustable from installation dimension 400 to 505. Counter Bearing lead to aligning groove.

### **Full Enclosure of Working Area**

As protection against swarf and fumes the working area of the machine is completely closed. The drive units are placed outside of the capsule. A suction unit is recommended.

### **Preparation for suction unit**

Preparation of machine for connection to customer's suction unit.  
1 connection nozzle Ø 200 for 1 working area  
Incl. deflector in the working area

### **Signal Lamp 3 Colours**

mounted on machine guard.  
red = machine stop  
yellow = advance warning  
green = Automatic cycle

### **Machine colour**

Standard painting: 3-coloured light grey/basalt grey  
RAL 7035/7012/4010 with telemagenta stripes

### **Main circuit**

total power supply 400 / 230V ± 10 %, 50 cycles N/PE,  
neutral conductor, load possible, pressure supply  
6 bar, ± 1 bar at all procedures,  
room temperature max 40°

### **Information Export**

We point out that the CNC-machining centres are subject to controls. For the export from the European Union an export license is necessary.



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### Information Machine safety

The machine is designed and built in accordance with the European machine guideline, according placing the product on the first time onto the market.

Other safety features due to special company rules and specifications can be considered. The actual cost will be invoiced.

### Information Coolant lubrication

The machine is designed for standard water soluble coolant and fully enclosed at the standard version.

The machine must be equipped with fume extraction.

The machine contents different plastics, varnish, resin and glue, which are selected carefully for using coolant and cutting oil.

The use of aggressive coolant and additive could cause major damages and machine stops.

Contact in any case your coolant supplier before machine set-up and installation.

