Pos	Mng	Description
1000	1	**Vertical CNC manufacturing centre** **Mill MT 800 high speed type**
1040	1	**Travelling column machine** according to the scope described below
1060	1	**Machine base** with integrated chip disposal to the left, Linear guides with long-term grease lubrication **Splash guard cover** with fully encapsulated workspace Workspace partition made of stainless steel slats with electrically secured loading door, suitable for crane loading at a height of 2,500 mm above ground, incl. machine light **Fixed table** with chip tray with split design allowing for the free falling of chips prepared for **bar processing** technology package **Minimal distance** spindle mount - rotation axis 330 mm **Travel paths:** X-axis 800 mm Y-axis 480 mm Z-axis 630 mm
1080	1	**Tray flushing**
1100	1	**NC swivel head with spindle head** prepared to accommodate 1 motor spindle NC swivel axis swivel range ± 100° Rapid traverse speed 30 min-1 with direct measuring system, resolution 0.001° repeatability ± 10" Drive torque 280 Nm Holding torque through hydraulic clamping 1400 Nm
1120	1	**Main spindle drive** 12.5 kW at 100% ED 34 kW at 10% ED Speed range up to 12,000 rpm Torque max. 140 Nm Drilling capacity Ø 42 mm (with turning plate drill) cutting capability up to M 30 Milling capacity 600 cm³/min in steel E335

1140 1 **Automatic tool changer**
60 tool slots
Tool shank HSK A 63 DIN 69893 Tool
Ø max. 75 mm
Tool-Ø with free adjacent slots max. 160 mm Tool length max. 320 mm
Tool weight 8 kg (max. Storage capacity 250 kg) Tool change time approx. 1.5 s (control-dependent) The acceleration of the X-axis is reduced by 0.1 g. Chip to chip time approx. 2.9 s (control-dependent)

1160 1 **Feed drive for X-, Y- and Z-axis**
digital direct drives with indirect absolute path measurement system (no reference point needed)
Rapid traverse speed 60 - 60 - 60 m/min
Axial acceleration 0.5 - 0.5 - 0.5 g

1180 1 **Direct path measurement system X-axis**
pressurised

1200 1 **Direct path measurement system Y-axis**
pressurised

1220 1 **Direct path measurement system Z-axis**
pressurised

1240 1 **SIEMENS CNC control 840D solution line**
(PCU 50 / NCU 720.3, 6 measurement circuits, 1 channel)
incl. 10.4" TFT colour screen / full keyboard / control panel
OP010S control panel logic Windows XP
NC memory 3 MB (freely available max. 1 MB)
(freely available max. 200 programs)
for the processing of part programs according to DIN
66025 hard disk with approx. 20 GB for free use Power
display, operating hours
and piece counter in the
screen, screen dimming,
Look-ahead with dynamic pilot control,
software limit switch,
access authorisation via key switches for tool
corrections, NC program changes and machine
parameters,

oriented spindle hold, restart in
the program,
Subprogramming in high-level language and
parameters, concurrent programming,
cycle support,

drilling cycles G81-
G89, drilling and
milling patterns, M
and T functions,
tool corrections for geometry, wear,
4 storable zero point shifts G54-G57,
30 zero point shifts programmable via G-functions, tool radius
correction with intersection calculation, insertion of chamfers and
radii,
transition radii, contour course
programming, measurements in
metric or inch format, scale
factor,
mirroring, polar
coordinate
system,
Circle interpolation (full circle programming), 3D
interpolation/helical interpolation,

processing of large CNC programs via V24 interface, universal
interface RS 232C (1x V24) on the side of the control panel, USB
interface on the control panel,
Ethernet port RJ45 in the control panel,

NC diagnostics with help
function, machine diagnostics

1260 1 **Remote diagnostics and teleservice**
Optimisation of maintenance process and shortening of troubleshooting through faster diagnostics:
Detailed information about the machine status is available to internal and any external experts allowing for qualified support, regardless of time and location.
Option of remote control of CNC control for the analysis of operations and support in case of problems.
Option of access to the PLC for diagnostics, troubleshooting and programming.
Notification service via SMS / e-mail, e.g. at the end of the order or in the event of a malfunction.
Easy data backup by using the existing infrastructure on the Internet.
Secure access through defined user rights, access protection and data encryption.
Connection via Ethernet port RJ45.

The router is provided free of charge.
If this part or service is not being used, the router will be removed by our service staff.

During the warranty period, this **service is free of charge**.
After expiry of the warranty period, an extension may be agreed on an annual basis.

Requirement:
The machine connection for accessing the Internet via the in-house network must be provided on site.

1280 1 **CHIRON maintenance instructions on the display interface** Display of upcoming maintenance: Pre-warning limit = "Prepare maintenance" Warning limit = "Perform maintenance" Processing stop = "Maintenance overdue"

Short instructions for maintenance work to be carried out through graphical representations on CD-ROM
Password-protected confirmation of maintenance work carried out by the maintenance personnel.

1300 1 **5-axis milling package**
for the machining of spatially curved or pivoted surfaces with 3 linear axes and 2 additional axes (TRAORI & CYCLE 800), incl. the CompCAD compressor.
5-axis transformation with tool tracking.
The machining task is completely programmed in Cartesian space coordinates with Cartesian position and orientation.
The resulting movements of all 5 axes are calculated internally within the control system through the 5-axis transformation.
5-axis tool length correction
The length of the tool is automatically calculated and corrected in the axial movement.

1320 1 **Operating hours and unit counters**
on the display interface

1340 1 **Socket on the control panel**
(For the design see "Mains connection of the machine")

1360 1 **Socket for portable mini handwheel**
without EMERGENCY STOP button, on the control panel

1380 1 **Control cabinet cooler as door-mounted device**

1400 1 **Signal light for 3 signals**
"red" signal = fault
"white" signal = machine loaded "green"
signal = machine running

1420 1 **Base price of the machine**

1440 1 **Additional equipment for the machine**

1460 1 **Coolant package**

1480 1 **Chip conveyor (scraper chain)**
Tank capacity 150 l
Lift pump max. 300 l/min at 1.3 bar Chip
conveyor ejection height 1050 mm Chip
conveyor ejection direction rear

1500 1 **Coolant system TPF 350 S / 900**
(for sludge-forming materials e.g. grey cast iron, GGG,
Al with Si >/= 12%)
Tank capacity 900 l

LP pump 100 l/min at 2.1 bar to 250 l/min at 1.8 bar
External tool cooling 30 l/min at 4 bar
HD pump 22 l/min at **30 bar**

Full-flow cleaning via drum paper belt filter TPF 350 S with
coolant cleaning 50 µm nominal
Double switch filter in the HD circuit to protect the machine

1520 1 **Machine preparation**
for internal cooling tools (through the spindle) according to DIN 69871 form A40 or DIN 69893 HSK A63*. With rotary feed-through on the motor's hollow shaft, moisture sensor for leakage monitoring, high-pressure feed with built-in debris catcher and flow monitor,
Solenoid valve programmable via NC program.

* At HSK we recommend the use of our patented coolant tube with plug-in sieve for the tool holders.
Advantage: Reduction in blockages of the coolant channels in the tools.

1540 1 **Device flushing** incl. coolant connection

1560 1 **Coolant / Chip Option**

1580 1 **Internal rinse gun**

1640 1 **Rod machining**

1660 1 Milling machining for Ø 100 bar
consisting of:

1680 1 **Technology package**
Milling machining for Ø 100 bar
consisting of:

NC rotary table Peiseler AWU 200
plug-in ready
smallest increment 0.001° pneumatic
connection unregulated for sealing air
hydraulic connection controlled for clamping

Technical description:
faceplates Ø 225 mm max.
Speed 41 min-¹
Repeatability ± 15"
prepared for maximum chuck mounting at the front
and rear Thru Ø 100 mm

NC carriage for rod feed
plug in ready Speed 60
m/min
Stroke max. 1,100 mm, depending on the clamping
device incl. torque monitoring

NC turner Peiseler ATU 200
incl. clamping vice for machining the 6th side, mounted on an NC slide
with stroke per jaw 16 mm
plug-in ready
Pneumatic connection unregulated for sealing air Hydraulic
connection controlled for clamping Hydraulic connection
controlled for clamping / releasing vice

Technical description max
speed 33 min-¹
repeatability ±15"

Query bar end

Cabin opening left for bar
feeder

Remark:
it is the responsibility of the customer to anchor the machine to the ground
after alignment

Recommended options:
Raw material support
Removal of finished
parts

1700 2 **Collet Hainbuch Spanntop** hydraulic connection
controlled for clamping / releasing Clamping range
up to max. Ø 100 mm
Control via OPEN/CLOSE button in the control panel and M function via
NC program

1720 1 **Rotary table / device option**

1730 1 **Tailstock with MK3 mount**
without tip
mounted on the NC turner

1740 1 **Pneumatics / hydraulics option**

1760 1 **Hydraulic unit** for
continuous operation
Pressure: 200 bar

1780 1 **Measuring / tool breakage option**

1800 1 **CHIRON Laser Control F840**
for tool breakage control
min. Tool diameter > 0.6 mm
min. Tool diameter Tool measurement > 3.5 mm Transmitter-
receiver distance <= 1,800 mm,
incl. test mandrel with tool holder
transmitter and receiver Debris
cover with lock

1820 1 **Measuring probe for automatic measuring in the machine Blum measuring probe - Package TC 52**
for workpiece measurement and automatic
machine compensation Measuring probe
with optical touch module
and tool taper fitting the machine spindle. Probe
insert 50 mm with ruby ball Ø 4 infrared receiver
and interface
Process-related measurements
Software for measurement cycles and strategy program

Note:
The execution of machine compensation by means of a measuring probe requires a suitable measuring surface on the machine or clamping device, or an optional calibration block.

1840 1 **NC control option**

1860 1 **Rotation feed**
for thread cutting without compensating chuck

1880 1 **CHIRON Kinematics Fit with measuring ball**
In order to ensure optimum milling results,
5-axis machines must be calibrated at regular intervals. This option offers automatic measurement of the machine kinematics by probing a measuring ball within the working space and subsequently correcting the machine transformation parameters for the rotation and pivoting of axes.
For machines with 2-axis swivel rotary table or swivel head with rotary table.
Incl. control upgrade level and calibrated measuring ball with holder.

Requirement: Spindle measuring probe and 5-axis milling package for machines with Siemens or Fanuc control

1960 1 **Execution of project**

1980 1 **Machine acceptance in our factory**
Checking the scope of delivery

2000 1 **Execution documentation**

2020 1 **Operating instructions according to Machinery Directive 2006/42/EC**
in 1 copy in DIN A4 file
and 1 x on CD-ROM/DVD in file PDF format
Operation / Security in Czech language

2040 1 **Documentation Spare/ wear parts/parts list**
in 1 copy in DIN A4 file
and 1 x on CD-ROM/DVD in file format PDF
Parts list / drawings in English

2060 1 **Documentation of electrical and fluidic schematics**
in 1 copy in DIN A4 file
and 1 x on CD-ROM/DVD in file format PDF
Schematics in Czech

2080 1 **Execution Miscellaneous**

2100 1 **Material warranty for NC control and machine**
is 24 months from commissioning at the end customer
however, for a maximum of 27 months from delivery (with the exception of wearing parts), provided that the planned maintenance is carried out.
however, for a maximum of 8000 operating hours on main spindle

2120 1 **Machine set-up/set-up elements**
The machine is anchored and
is not prepared for installation in an oil tray.

When installed in a sheet metal tray, the installation directly on the sheet metal of the tray is not permitted. No warranty can be given for problems resulting from this.

2140 1 **Packaging and loading** Disposable packaging for truck transport (note: no container transport possible)

2160 1 **Commissioning and instruction by our representative**
Commissioning includes:
Fine adjustment and acceptance according to CHIRON geometry protocol Complete functional test of the machine
Briefing of operating personnel

Before commissioning, the customer must provide the following services:
Unloading and transport of the machine to the installation site
Setting up the machine
Connecting the machine electrically and pneumatically

During commissioning by the **representative** personnel, upon request, auxiliary personnel and aid must be provided free of charge.

The following additional services are billed at cost: integration, production and testing of customer workpieces and equipment.
Training beyond the briefing. Additional expenses due to services not provided by the customer.

2180 1 **Network connection**
Compressed air 6 bar +1 bar / -0.5 bar at all operating cycles Ambient temperature: 10 to max. 40 degrees Celsius Load-bearing neutral conductor
Protective conductor with a frequency of 50 Hz
VDE-SCHUKO type socket Connection voltage machine 3x400 volts ± 10% voltage socket 230 volts ± 10%

2200 1 **Machine colour**
Two-component structural lacquer - 3-colour light grey according to NCS S1502-B
blue according to NCS S2050-R80B basalt grey according to RAL 7012