



UNISIGN

## Unipent 4000

**Vertical 5-Axes High Speed  
CNC Portal Machining Centre**



# Unipent 4000

## UNISIGN

The economical solution to flexible manufacturing!

Representing the latest generation of UNISIGN vertical machining centres, the UNIPENT 4000 combines powerful machining capabilities in 5 axes with highly dynamical machine features and highest product accuracy. The UNIPENT 4000 is the result of a continuing development process, incorporating experiences obtained during the development and manufacturing of vertical machining centres over a period of more than 30 years.

The concept of the UNIPENT 4000 is based on a portal machine configuration with a two-sided synchronised drive system in Y-axis, for the movable bridge, and a moving spindle carrier with ram in X-axis. The portal bridge is a light weight and very rigid construction.

The front face of the UNIPENT 4000 base incorporates a clamping face at a 45° angle to the horizontal plane. Integrated in this frame is the rotating and tilting table for 5-axes machining and positioning of complex components. The inclined front face facilitates easy chip and coolant flow.

The machine is fully enclosed with electronic safety locks on the operator doors. A slide way system (option) can open the roof top to enable loading from the top side of the machine.

The stationary tool storage offers space to 69 tools and is located centrally in the X-axis directly behind the work area.

The UNIPENT 4000 can be equipped with a high dynamics package and high accuracy package. The high dynamics package gives the machine accelerations of 10 m/s<sup>2</sup> and rapid speeds of 60 m/min in all linear axes. The C-axis speed of the rotating and tilting table is increased to 52 rpm. The high accuracy package with linear scales in all axes, two in Y-direction for the two-sided drive system, makes the machine predestined to be successfully utilised in manufacturing systems with highest accuracy requirements.

Two direct drive water cooled spindle configurations are available, offering 36 kW and 12.000 or 16.000 rpm for general machining tasks. For high speed cutting the powerful UNISIGN motor spindle, with 25.000 rpm and power output of up to 100 kW, is available.

The UNIPENT 4000 can be completed with a pallet system.



NC rotating and tilting table for 5-axes machining

# Vertical CNC Port

## STANDARD CONFIGURATION



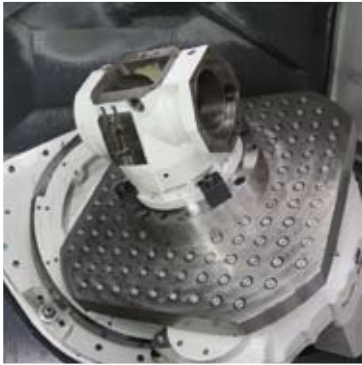
*UNIPENT 4000 in 5-axes configuration*

- High speed 5-axes CNC portal machining centre
- Work area X-axis 1.000 mm; Y-axis 900 mm; Z-axis 500 mm
- Direct driven water cooled main spindle AC 36 kW, 12.000 rpm
- NC rotating and tilting table for 5-axes machining
- Digital AC servo drives in all axes
- Two-sided synchronised Y-axis drive
- High accuracy linear guides on all axes
- Fully enclosed guarding with electronic safety locks on the doors
- Automatic tool change from tool storage with 69 pockets, allowing loading while machining
- Taper size HSK 63 (DIN 69893 form A)
- Tool taper cleaning with compressed air
- Tool change time 5 sec.
- Large chip bin and coolant collecting tank for 200 litres
- External coolant supply 40 l/min at 4 bar
- Automatic central lubrication with function control
- Closed loop cooling system for main drive and electrical cabinet
- Two-tone machine painting RAL 7035/7024
- SIEMENS Sinumerik 840D CNC-control
- TFT 15" colour monitor
- SIEMENS tool management system
- Tool life monitoring with automatic sister tool selection
- Rigid tapping
- User interface under MS-Windows
- Remote access via integrated modem
- Ethernet connection

# 5-Axes High Speed Metal Machining Centre

## APPLICATIONS

Components typically suited for UNIPENT 4000



*Multisided machining of prismatic components*



*Aerospace structural components*

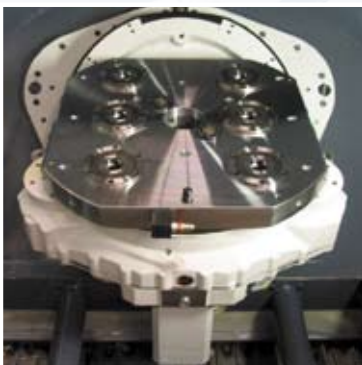


*Mould and die components*

## AVAILABLE OPTIONS

Selection of available options

- Direct driven water cooled main spindle AC 36 kW, 16.000 rpm
- UNISIGN motor spindle with 25.000 rpm and 90 Nm in 70 kW or 100 kW configurations
- High dynamics package
- High accuracy package
- Pallet system
- Integrated chip conveyor
- Sliding roof for loading from top side of the machine
- Tool storage with pre-selection system
- Direct position feedback with linear scales in X-, Y- (2x) and Z-axis
- Two-fold rotary coupling for rotating and tilting table
- High pressure coolant supply central through the spindle, including filter unit
- Coolant spray gun for cleaning parts and fixtures
- Tool probe for tool length and diameter verification
- Tool monitoring system
- Tool identification system with data chips
- Radiographic part probe
- Manual pulse generator
- HEIDENHAIN iTNC 530 CNC-control



*Zero point clamping systems integrated in table top*



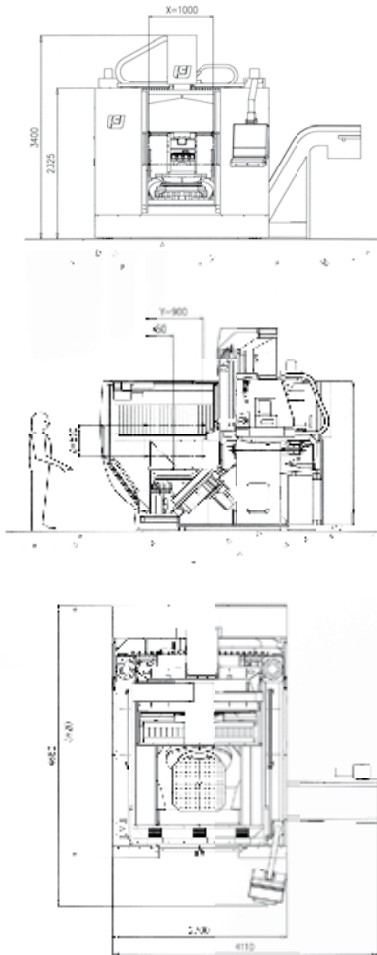
*Wireless measuring probe for gauging / calibrating of reference points. The receiver is connected to the CNC control via an interface*



*Coolant supply through the spindle and tool, including coolant filter unit with self-cleaning rotating filter*



## TECHNICAL SPECIFICATIONS



### Work area

X-axis, longitudinal travel	mm	1.000
Y-axis, cross travel	mm	900
Z-axis, height travel	mm	500
Distance spindle nose to table top	mm	160 - 660

### Rotating and Tilting Table

Clamping table	mm	800 x 800
Central bore	mm Ø	80H7
Location hole pattern	mm	40 - 80 (M12)
Swing circle	mm Ø	1.000
Speed of rotation	rpm	32
- optional* C-axis	rpm	52
Maximum drive torque	Nm	3.000
Admissible table load	kg	1.000

### Milling and Drilling Spindle

Main drive motor (S6-40%)	kW	36
(S1-100%)	kW	26
Spindle speed		
- standard direct drive	rpm	12.000
- optional direct drive	rpm	16.000
Maximum available torque	Nm	180
Main spindle bearing diameter	mm Ø	70

### Option Motor Spindle

Spindle A: 25.000 rpm, 70 kW (S6-40%), 90 Nm (S6-40%)  
 Spindle B: 25.000 rpm, 100 kW (S6-25%), 90 Nm (S6-40%)

### Tool System

Stationary chain type tool magazine, allowing loading while machining

Taper size DIN 69893, form A	#	HSK 63
Number of pockets	-	69
Maximum tool size		
- with loaded adjacent pockets	mm Ø	90
- with empty adjacent pockets	mm Ø	125
- depending on shape	mm	200 x 125
Maximum tool length	mm	350
Maximum tool weight	kg	10
Tool change time	sec.	5

### Axis Drive and Feed System

Digital AC servo drives

Rapid traverse	X-, Y- and Z-axis	mm/min	48.000
- optional*	X-, Y- and Z-axis	mm/min	60.000
Feed rate	X-, Y- and Z-axis	mm/min	5 - 48.000
- optional*	X-, Y- and Z-axis	mm/min	5 - 60.000
Feed thrust	X- and Y-axis	N	10.000
Drilling thrust	Z-axis	N	16.000

### Capacity in C45

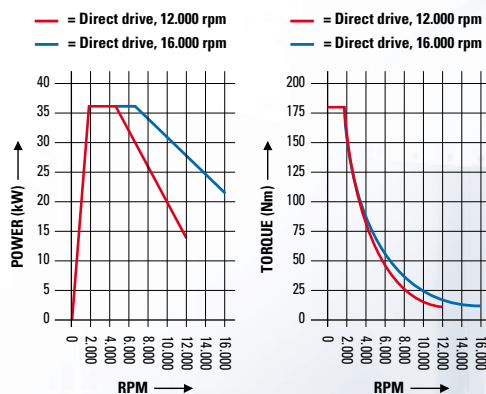
Drilling	mm Ø	50
Milling	-	M 30
Tapping	cm <sup>3</sup> /min	400

### Various

Power supply	kVA	70
Electrical equipment for		400 V / 3 ph / 50 Hz

\* with high dynamics package

## POWER/TORQUE CHARTS



We reserve the right to change technical specifications without prior notice



PANNINGEN  
THE NETHERLANDS

## UNISIGN

The Unisign range of standard products, UNIVERS, UNIPENT, UNIPRO, UNIPORT and UNICOM, are ideally suited for almost any machining task due to their flexibility. All configurations guarantee high productivity combined with competitive prices. The machining centres are developed and built by Unisign and supported by our well trained service technicians for fast and reliable service, direct from Unisign.

### More information? Please contact us:

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