



Unipro 5-S

High speed machining centre



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UNISIGN

The economical solution to flexible manufacturing!

Representing the latest generation of UNISIGN vertical machining centres, UNIPRO 5-S combines powerful machining capabilities and highly dynamical machine features with the highest accuracy requirements. These high speed machining centres are 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 25 years.

Many of the heat generating sub-assemblies are either installed thermally isolated from the machine or are included in the closed loop cooling circuit with heat exchanger, resulting in an extremely high thermal stability. This consistently implemented machine concept, in conjunction with high resolution direct position measuring systems in all axes, make the UNIPRO 5-S machines predestined to be successfully utilized in manufacturing systems with highest accuracy requirements.

The UNIPRO 5-S concept is based on a light weight travelling column for the X-axis. It consists of two heavily ribbed, thin walled, fabricated cross rails between which the Y-axis sleigh and Z-axis spindle carrier are centrally assembled. When compared to traditional travelling column machining centres, this light weight travelling column combines a weight reduction of approximately 50% with an increase in stiffness of approximately 100%!

Further weight reduction is achieved by removing the tool storage from the travelling column and relocating it to a fixed position at the end of the X-axis travel. The overall weight reduction thus achieved, in conjunction with powerful digital drive systems, allow the machine to be accelerated with 8 m/sec^2 to a rapid traverse of 60 min/min in all axes!

In the standard execution the machine offers a work zone with 1.200 x 800 x 500 mm (X-, Y- and Z-axis) work envelope. The front face of the UNIPRO 5-S base incorporates a clamping face at a 45° angle to the horizontal plane. Standard clamping tables can be assembled onto this clamping face. Alternatively, an NC indexer designated as 4th axis (with or without tailstock centre) or an NC rotating & tilting table for 5-axes machining can be installed. The 45° angle of the front face furthermore facilitates easy chip and coolant flow into the chip conveyor located underneath the work area.

The tool magazine offers space to 63 tools and is integrated in the machine side guarding at the end of the X-axis travel. The magazine is equipped with a guarding section to protect the tool tapers from coolant and chips inside the work area. An automatic sliding door offers access to the tools inside the magazine for automatic tool change.

Two direct drive milling and drilling spindle configurations are available, offering 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.



UNIPRO 5-S with rotating & tilting table and automatic loading robot for cylinder head machining.



The tool loading bay allows the (un)loading of tools while the machine is in operation.

STANDARD CONFIGURATION



- Vertical travelling column CNC machining centre.
- Work envelope X-1.200 mm; Y- 800 mm; Z-500 mm
- Digital main drive AC 36 kW (S6-40%)
- Direct drive milling & drilling spindle 12.000 rpm
- Rapid traverse 60 m/min and acceleration 8 m/sec² in all axes
- Digital AC servo drives in all axes
- High accuracy linear roller bearings in all axes
- Direct position feedback with linear scales in X-, Y- and Z-axis
- Automatic tool change from 63 pocket tool magazine
- Tool change time 4,5 sec.
- Taper size ISO 40 per DIN 69871/72 type A
- Automatic pneumatic taper cleaning with compressed air
- Fully enclosed guarding section with electronic interlocks
- Flexible clamping concept with 45° clamping face for clamping tables in various configurations
- Chip conveyor with integrated coolant collecting tank of 320 litres
- Flood coolant supply 40 l/min at 4 bar
- Machine cooling system with heat exchanger
- Automatic central lubrication with function control
- Two-tone machine painting in light grey / dark grey RAL 7035 / 7024
- SIEMENS Sinumerik 840 D CNC-control
- Solid tapping
- User interface under MS-windows
- Remote access via integrated modem

UNIPRO 5-S in standard execution with X = 1.200 mm.

ALTERNATIV CONFIGURATIONS



UNIPRO 5-P with two work zones for machining in pendulum mode.



UNIPRO 5-L with X-axis of 2.000 to 6.000 mm for the machining of long components.

ed machining centre

AVAILABLE OPTIONS

Selection of available options

- Direct drive milling & drilling spindle 16.000 rpm
- Unisign motor spindle with 25.000 rpm, 90 Nm and 70 kW or 100 kW output
- Taper size HSK 63 per DIN 69893 type A
- NC indexers in various sizes and configurations, with or without tailstock centre
- NC rotating & tilting table for 5-axes machining
- High pressure coolant supply central through the spindle and the tool
- Tool probe for tool length and -diameter verification
- Tool identification system with data chips
- Tool life control with sister tool selection
- Spindle loaded radio wave measuring probe
- Mist extraction system with electrostatic filter unit
- Handheld pulse generator with electronic hand wheel
- Ethernet connection via integrated network card



Radio wave measuring probe for zero-point calibration. The probe is automatically loaded from the tool magazine into the spindle.



Tool probe on pneumatic lever arm for tool length and -diameter verification.



High pressure coolant supply centrally through the spindle and the tool.



NC rotating & tilting table for 5-axes machining.

APPLICATIONS

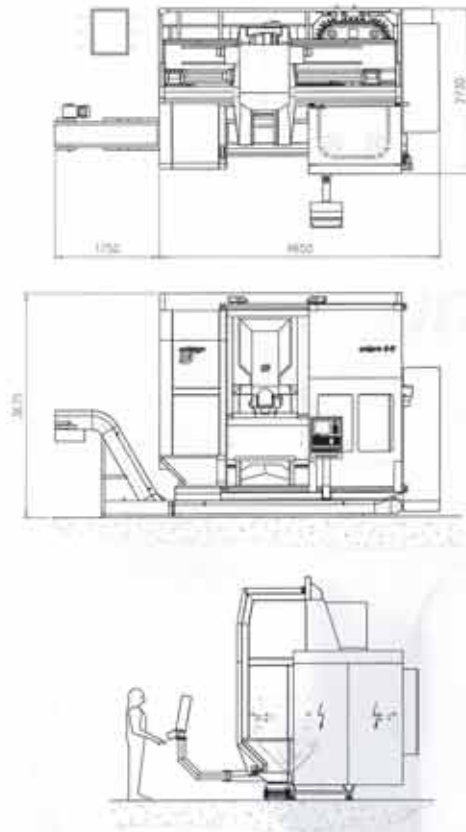
Components typically suited for UNIPRO 5-S

1. Complex integrated structural components such as monolithic airframe parts for the aerospace industry.
2. Complex engine parts that require multi-sided machining, such as cylinder heads.
3. Small integrated structural components for the aerospace industry that are machined from one large aluminium billet.
4. Complex, high precision engine parts that require multi-sided machining, such as crank cases.





TECHNICAL SPECIFICATIONS



Work area

X-axis, column travel	mm	1.200
Y-axis, cross travel	mm	800
Z-axis, height travel	mm	500
Distance spindle nose to table top	mm	200 - 700

Clamping tables

Table sizes	mm	850 x 1.000
T-slots	mm	18H8 (1x), 18H12
Distance T-slots	mm	125
Admissible table load	kg	2.000

Rotating & tilting table

Rotary table, size	mm	680 x 680
Location hole pattern (40-80 mm)	-	M12
Maximum speed of rotation	min ⁻¹	32
Maximum drive torque	Nm	3.000
Admissible table load	kg	750

Milling & drilling spindle

Direct drive, AC	(S6-40%)	kW	36
	(S1-100%)	kW	26
Spindle speed			
- standard, direct drive	rpm		12.000
- optional, direct drive	rpm		16.000
Max. available torque			
- direct drive (S6-40%)	Nm		180
- direct drive (S1-100%)	Nm		130
Main spindle bearing diameter	mm		70

Motor spindle

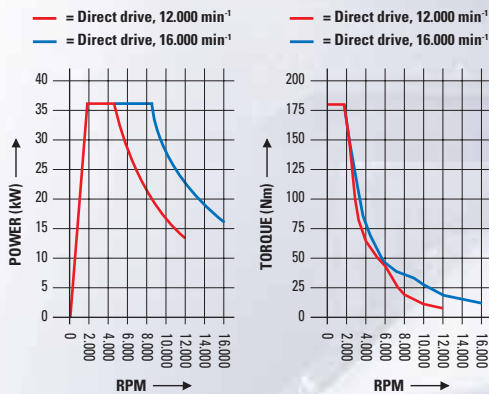
Spindle A: 25.000 rpm, 70 kW (S6 - 40%), 90 Nm (S6 - 40%)
 Spindle B: 25.000 rpm, 100 kW (S6 - 25%), 90 Nm (S6 - 40%)

Tool system

Stationary chain type tool magazine

Taper size			
- DIN 69871/72 form A or	#		ISO 40
- DIN 69893 form A	#		HSK 63
Number of pockets	-		63
Maximum tool size			
- with loaded adjacent pockets	mm ø		95
- with empty adjacent pockets	mm ø		120
- depending on shape	mm		120 x 200
Maximum tool length	mm		350
Maximum tool weight	kg		10
Tool change time	sec.		4,5

POWER / TORQUE CHARTS



Axis drive and feed system

Digital AC-Servo drives

Rapid traverse	X-, Y- and Z-axis	mm/min	60.000
Feed rate	X-, Y- and Z-axis	mm/min	5 - 60.000
Acceleration	X-, Y- and Z-axis	m/sec ²	8
Feed thrust	X- and Y-axis	N	10.000
Drilling thrust	Z-axis	N	16.000

Capacity in C45

Drilling	mm ø	50
Tapping	-	M 30
Milling	cm ³ /min	400

Power supply

Power consumption, approximately	KVA	70
Electrical equipment for		400 V / 3 ph / 50 Hz



UNISIGN

The Unisign range of standard products, UNIVERS, 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.

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