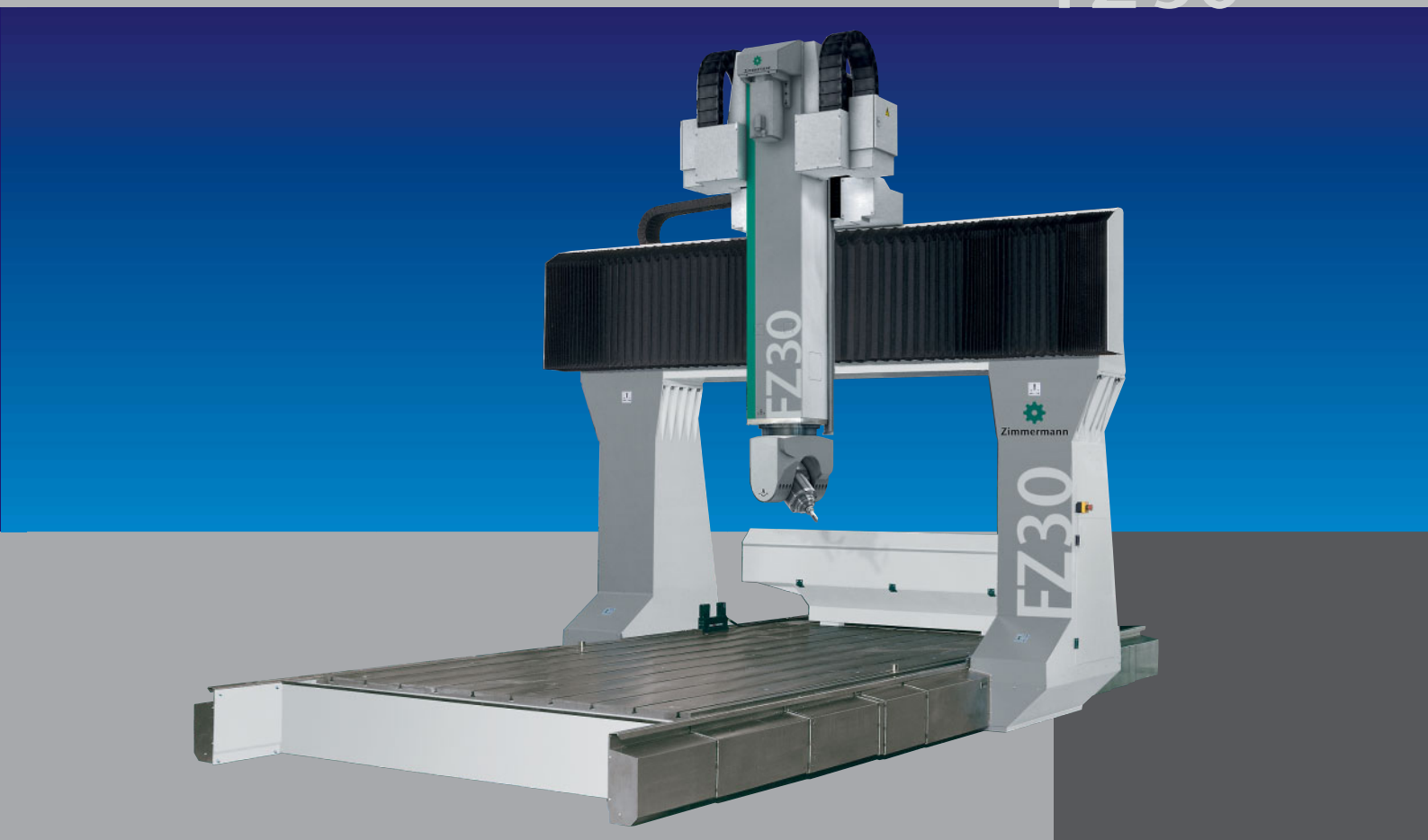
Zimmermann

CNC Portal Milling Machine

# FZ 30




High Performance
Milling Technology

# FZ 30
# The Classical Machine for the Model and Mould Making Industry

CLASSIC PORTAL

Very good accessibility
Highly versatile

With the FZ 30, Zimmermann made its name as an expert in the manufacture of technologically advanced, efficient and very cost-effective portal milling machines.

Due to its flexible design, the up to now mostly sold machine type is tailor-made for the needs of the modern model and mould making industry. A range of options cover all fields of application.

The market expects a high degree of flexibility from the modern model and mould maker as to the type of parts and materials which can be machined. The versatile FZ 30 machine is perfectly suited to meet these demands.

The Zimmermann CNC Portal Milling Machine FZ 30 is a modular machine design suitable for a variety of working ranges, milling heads and makes and types of control system.

The classical portal design with the fixed machine bed and the portal moving in the X-axis direction offers significant advantages to the model and mould maker. The cast machine bed is solidly anchored to the foundation and consequently the workpiece remains stationary. Thus machining is always performed independently of the weight of the workpiece.

The moving masses consist of an extremely sturdy portal with cross- and Z-slide as well as the milling head. The constant mass ratio provides a stable dynamic characteristic that is required to achieve ideal quality of any machined surface and accuracy of workpiece.

The combination of extreme stability and rigidity, constant moved masses and highly dynamic drives provides excellent conditions for machining materials such as plastics, aluminium, kirksite as well as for accurate finishing of steel and cast iron.

The design with the portal driven at floor level permits easy loading from all sides and offers optimal access to the worktable during set up.

# VH 2 – the compact

Wherever low interference contours and reduced moving masses are required, the extremely powerful VH 2 comes into its own.

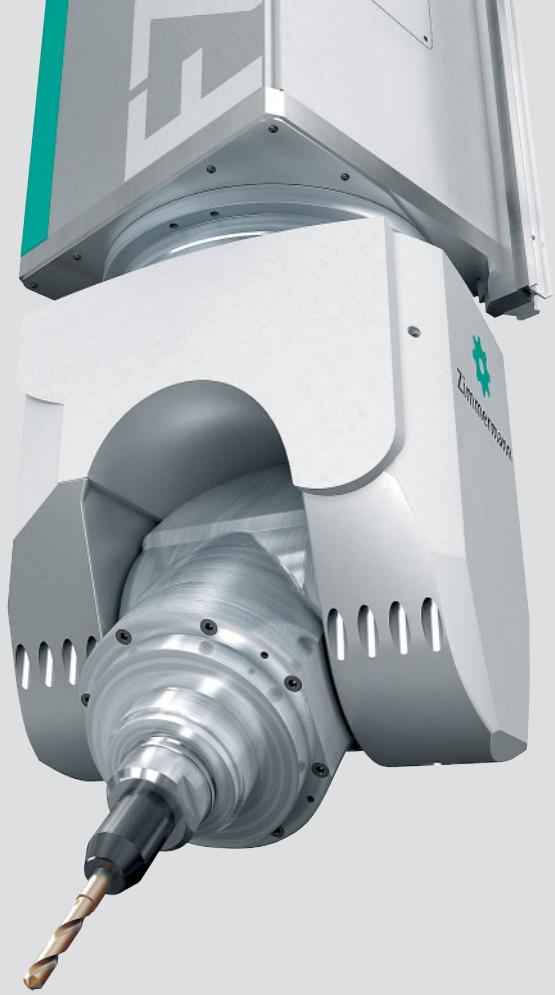
**Maximum working areas**
A particular specialty of the Zimmermann portal milling machine is the mastery of very large working areas due to its optimal structural rigidity.


Particularly with very long Z- and / or Y-axes, the mass of the milling head plays an important role in milling accuracy. Above all, deflection and torsion must be kept to a minimum in order to achieve the best possible surface finish and contour accuracy. Where large working areas are required but hardly any heavy materials are to be machined or high machining speeds are needed, the weight optimized VH 2 milling head is an ideal solution.

**Complicated contours**
Portal milling machines are being used to machine increasingly complex workpieces with tight contours. Often intricate clamping fixtures are needed which restrict access during the milling process. With its compact design the VH 2 is often ideal for working efficiently in this limited space.

**Lightweight machines**
The VH 2 is particularly suitable for medium-volume machining of lightweight materials up to aluminium and for finish machining of steel and cast iron.

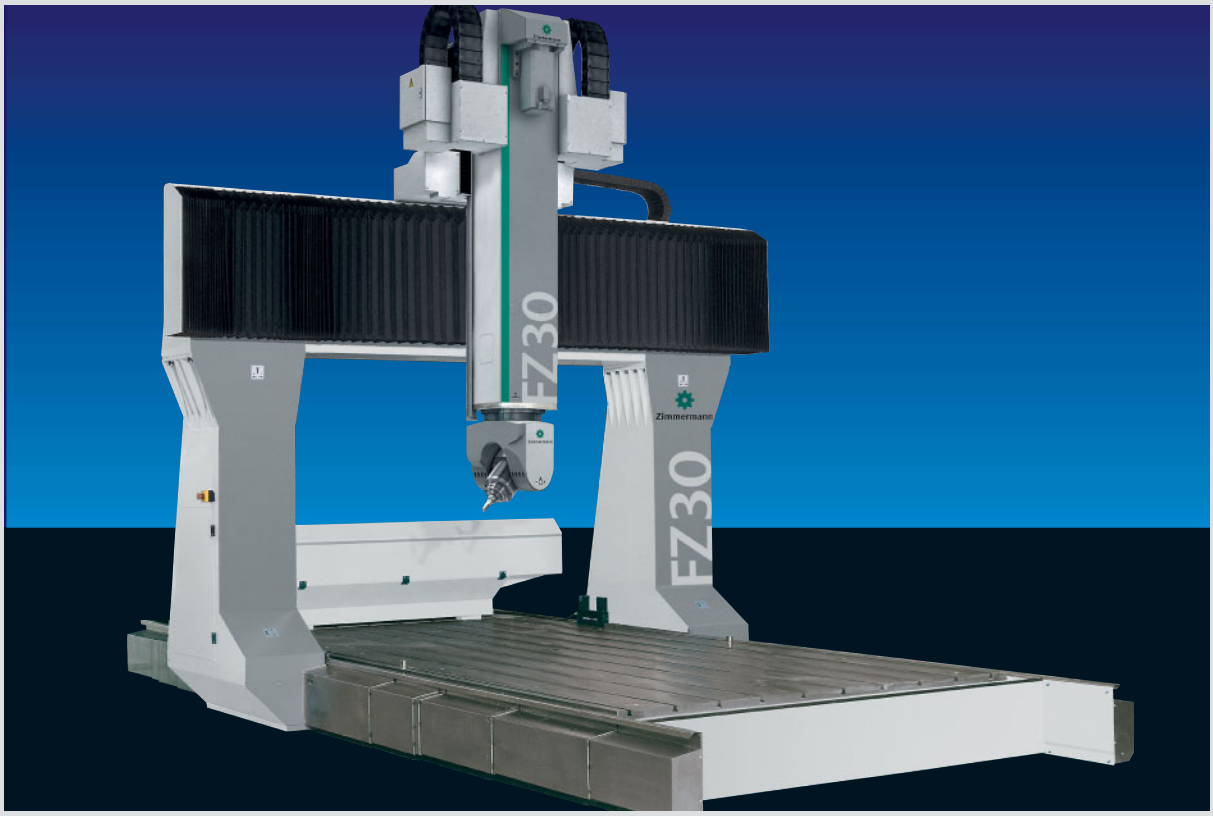
**A new design**
- Low interference contour for better access.
- Water-cooled worm drive and spindle flange for higher accuracy and to eliminate thermal influences.
- Higher swivel speeds to reduce overall machining times.

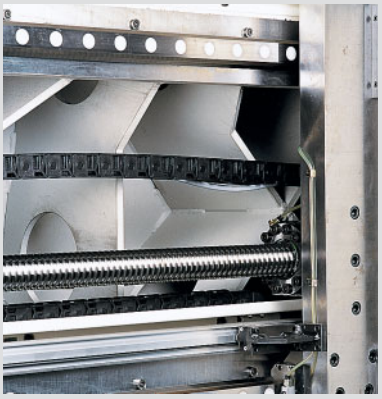


- Clamping of rotary axes for greater stiffness during roughing.
- Robust, reliable grease replenishment system to ensure long life and profitability.

**Applications**
The VH 2 is basically an all-rounder and thus offers great advantages as to order flexibility. However, it really comes into its own where high power combined with low weight and / or compact size is required. Very large working areas and complicated workpieces – such as in the design field and in aircraft manufacture – are the applications the VH 2 is often at its best.

# FZ 30
# Technical Specification



▲ Detail: Y-axis.

**Machine Features**

- Milling machine with high structural stiffness due to the cast machine bed which is solidly anchored to the foundation and the sturdy portal driven from both sides. Height of the portal / cross slide: 900 mm.
- The cross slide moves on the portal carrying the ribbed vertical slide. Cross-section of the vertical slide: 470 x 470 mm.
- Pre-loaded circulating roller guideways, size 55 in the X-axis and size 45 in the Y- and Z-axes. Up to 8 guide carriages per axis.
- Ball screws D = 63 mm (X-axis), 50 mm (Y- and Z-axis) with pre-loaded nuts in all axes.
- Digital drives for all axes.
- Minimum quantity lubrication can be changed to air blast.
- Various extraction connections and systems.
- Micro-dust collecting bellows, X-axis with telescopic steel coverings.
- Central grease lubrication.
- Direct NC linear measuring system with 0.001 mm resolution in the X-, Y- and Z-axes.
- The machine complies with the CE standard.

# FZ 30
# Milling units

**FZ 30 – 5 axes**
**2-axis milling head VH 2**
High frequency milling spindle
- 40 kW – HSK 63 A

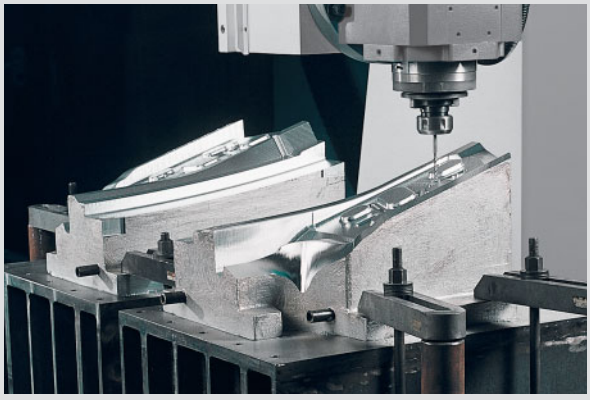
Fork head with hydraulic tool unclamping, constant power of 40 kW from 8 000 to 25 000 rpm with permanent grease lubrication; 30 000 rpm with oil-air lubrication.

**FZ 30 – 3+1 axes**
Milling spindle:
- 12 kW – SK 40,

Hydraulic tool clamping device. Vertical head can be manually swivelled continuously in Y-direction ± 90°. Automatic swivelling with tool length compensation on request.


**FZ 30 – 3 axes**
Milling spindle:
- 22 kW – SK 50,

Automatic clamping device, internal cooling system through the spindle, rigidly mounted in the in Z-slide.



▶ 3 + 1-axes milling in aluminium.

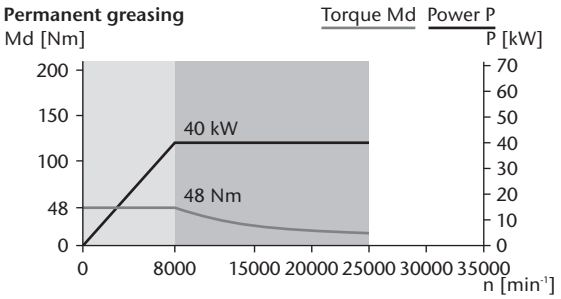
# FZ 30
# Technical Data

| Machine | FZ 30 | | |
|---|---|---|---|
| **Working areas** | | | |
| X- axis | 3 000 – 6 000 mm[1] | | |
| Y- axis | 2 360 – 3 360 mm[1] | | |
| Z- axis | 1 000 – 1 500 mm[1] | | |
| **Table size** | | | |
| Length | 5 000 – 8 000 mm | | |
| Width | 2 000 – 3 000 mm | | |
| Height | 420 mm | | |
| Table loading | max. 30 000 kg/m² | | |
| T-slots (longitudinal) | 18 H12 | | |
| Distance between T-slots | 250 mm | | |
| **Feed drives** | | | |
| Feed rates X-, Y- and Z-axes | bis 20 000 mm/min. | | |
| Acceleration linear axes | bis 1,5 m/s² | | |
| **Accuracy[2]** | | | |
| Positioning accuracy X-axis | 0,050 mm | | |
| Positioning accuracy Y-, Z-axes | 0,030 mm | | |
| Repeatability X-axis | 0,020 mm | | |
| Repeatability Y-, Z-axes | 0,015 mm | | |
| **Milling head** | **VH 2** | | |
| **Swivel ranges** | **5 axes** | **3+1 axes** | **3 axes** |
| A-axis | +95°/-125°/± 110° | ± 90° | – |
| C- axis | ± 275° – ± 360° | | – |
| **Performance** | | | |
| Torque A- axis | 800 Nm | 360 Nm | |
| Torque C- axis | 800 Nm | – | – |
| Acceleration A, C-axes | 300°/s² | – | – |
| Feed rate A-, C-axes | 60°/s perm. | – | – |
| | 90°/s max. | – | – |
| **Accuracy[2]** | | | |
| Positioning accuracy A, C-axes | 15" = 0,0041° | – | – |
| Repeatability A, C-axes | 10" = 0,0027° | – | – |
| **Axis clamping** | | | |
| A-axis clamping | hydraulic | hydraulic | – |
| C-axis clamping | spring loaded | – | – |
| Holding torque A, C-axes | 1600 Nm | 1 000 Nm | – |
| **Milling spindle** | | | |
| Power S1 max. (100 % ED) | 40 kW | 12 kW | 22 kW |
| Torque S1 max. (100 % ED) | 48 Nm | 76 Nm | 191 Nm |
| Speed max. | | | |
| Permanent greasing | 25 000 min⁻¹ | [3]9 000 min⁻¹ | 7 000 min⁻¹ |
| Oil-air lubrication | 30 000 min⁻¹ | – | – |
| Constant power range | from 8 000 min⁻¹ | from 50 min⁻¹ | 1 100 – 5 200 min⁻¹ |
| Tool holder | HSK 63 A | SK 40 | SK 50 |
| Swivel axis – spindle nose | 280 mm | 220 mm | hydraulisch |
| Tool clamping | spring clamp | spring clamp | spring clamp |
| Tool unclamping | hydraulic | hydraulic | hydraulic |
| Lubrication | Perm. grease lubrication + autom. grease replenishment system (opt. oil-air lubricat.) | Permanent grease lubrication | Permanent grease lubrication |

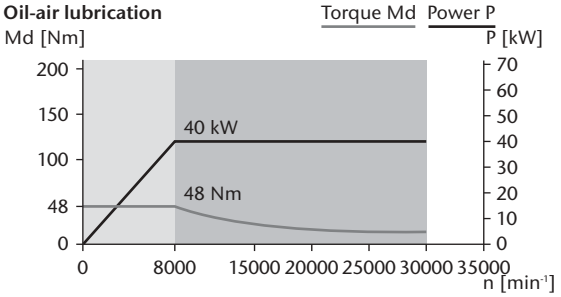
[1] Other dimension on request
[2] According to VDI / DGQ 3441
[3] Optional 14 000 min⁻¹
Subject to technical changes

## VH 2 Milling spindle performance diagrams

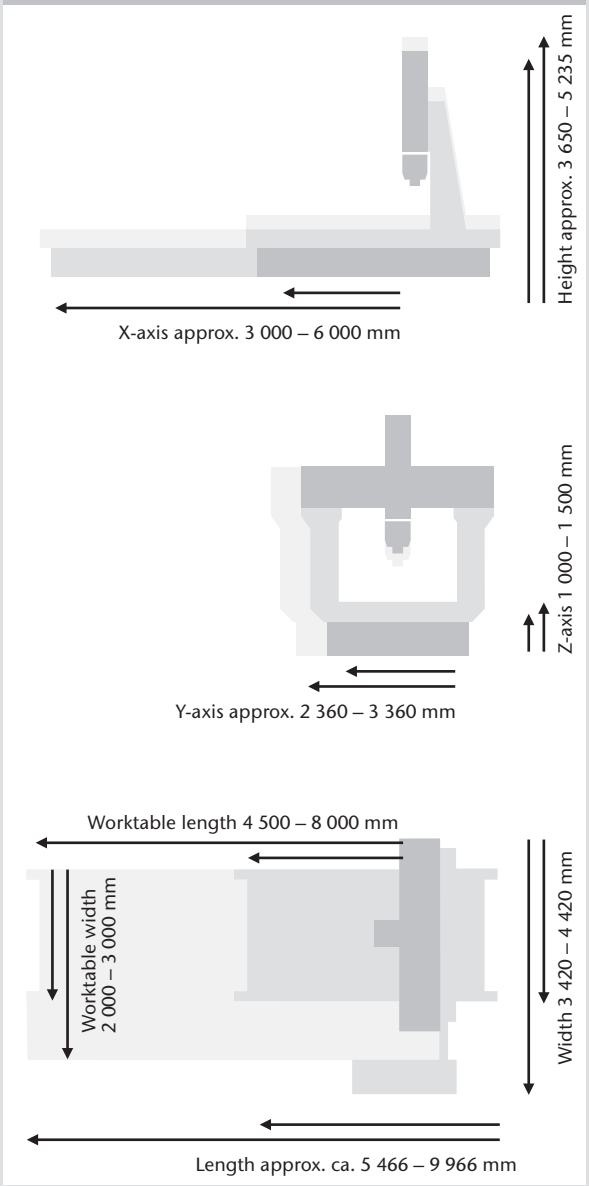
**Permanent greasing**




**Oil-air lubrication**




## Dimensions




All dimensions shown are examples of the FZ 32 in the minimum and maximum configurations. Special variations within this range are also possible.

| Options | 5 axes | 3+1 axes | 3 axes |
|---|---|---|---|
| Water cooling rotary axes | ■ | | |
| Safety guarding | ■ | ■ | ■ |
| Control cabinet air-conditioning | ■ | | ▪ |
| Permanent grease with automatic greasing system | ■ | | |
| A-axis: adjustable position axis | | ■ | |
| Coolant system | ▪ | ▪ | ■ |
| Minimum quantity lubrication | ▪ | ▪ | ▪ |
| 12-, 18- or 20-tool toolchanger | ▪ | ▪ | ▪ |
| Measuring touch probe | ▪ | ▪ | ▪ |
| Tool measurement | ▪ | ▪ | ▪ |
| Chip conveyor | ▪ | ▪ | ▪ |
| Special painting | ▪ | ▪ | ▪ |
| A- and C-axis clamping | ▪ | | |

■ Standard
▪ Option

Subject to technical changes.

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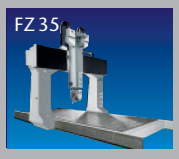






Zimmermann is synonymous with CNC portal milling machines on a big scale. Specialisation and our high rate of innovation has put our technology out in front worldwide.

A uniquely wide and finely tuned programme, including a large number of different machines and milling heads, enables you to choose the perfect machine for every application, thus offering you the ideal solution with regard to quality and cost-effectiveness.

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