

KUNZMANN®

FRÄSMASCHINEN

WF 410 M
WF 610 M

UNIVERSAL MILLING MACHINE



UNIVERSALITY

The main spheres of application for the WF 410 M and the WF 610 M are workshops and training as well as the manufacturing of precise individual parts and small series. These modern and conventional universal milling machines are outstanding in their high productivity, maximum precision, and simple handling. Even in the basic version, the machines have an easy to operate Heidenhain TNC 128 positioning control.

The vertical milling head has an extending quill and can quickly be swiveled through $\pm 90^\circ$. For horizontal processing, the vertical milling head can be swiveled to one side on a swivel arm in a few simple steps, freeing the horizontal milling spindle and permitting machining with or without an arbor holder and long milling spindle.

In place of the rigid angular table, the WF 410 M and WF 610 M can also be equipped with a universal tilting and swiveling table including a digital readout.

HIGH PERFORMANCE

Modern, high torque drives as well as a solid machine column with hardened flat guideways also make it possible to process materials that are difficult to machine. Spindle speeds and feed rates can be steplessly adjusted via potentiometer.

MAXIMUM PRECISION

Due to the steplessly adjustable single feed drives and backlash-free ball screws, the WF 410 M and WF 610 M enable exact positioning and effortless up- and down-milling.

In addition, the machines have linear path measuring systems in all axes.

Automatic axis clamping via the feed motor brakes ensures operational safety and guarantees a consistently high long-term accuracy of the machine geometry.

SIMPLE HANDLING

Due to optimal accessibility and practice orientated arrangement of the operating elements the WF 410 M and WF 610 M are flexible, compact, and easy-to-handle machines.

Consequently, the TNC 128 positioning control is mounted centrally on a rotary control desk attached to a swivel arm. As a result, the working area and controls can be reached easily by the machine operator.

For a delicate approach the electronic handwheel HR 510 can also be fitted next to the mechanical safety handwheels.

Hydraulic tool clamping, automatic central lubrication and separate coolant system are standard equipment.

AUTOMATIC MODE WITH CABIN

If required, both machines can be equipped with a splash guard cabin. The cabin offers excellent accessibility to the working area through the two large front sliding doors as well as through the right-side door.

In combination with the cabin, the programs in the TNC 128 control system also run in automatic mode. In this way, the range of application is extended further, and the machines can be used even more productively. Additional advantages are greater safety protection as well as tidiness in the workplace.



↑ Right side door open, operation with mechanical handwheels and 3 axis digital readout



← WF 610 m with splash guard cabin

► HEIDENHAIN TNC 128 POSITIONING CONTROL

The machine is manually operated and has a positioning control.

You can call the basic functions via **key switch**. You can remove the key in any position. The operator's key management guarantees that only qualified operators can call the respective operating modes.

1. Manual Mode (3 axis digital readout)

- Axis direction buttons
- Incremental jog function
- Manual handwheels
- KUNZMANN positioning function (3 axis digital readout):
You can set and travel a positioning block with incremental or absolute dimensions with radius compensation
- Electronic handwheel (option)
- You can use the quill for manual drilling operations.

2. Single Run

- Combines all functions of the "Manual mode" plus
- Manual positioning – setting and travelling of various positioning blocks
 - Programming
 - Simulation
 - Single run

3. Full sequence run/automatic (*)

- Combines all functions of the "Manual mode" and the "Single run" with "Full sequence run" (automatic run of operating cycles and NC programs)



* in combination with optional splash guard cabin

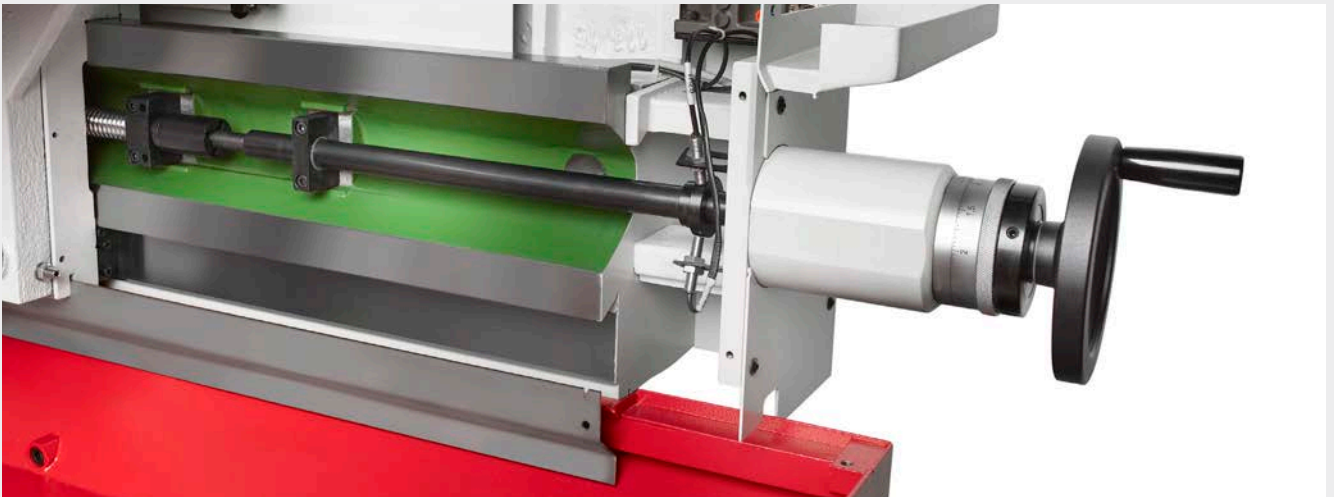
SAFETY AND TIDINESS

MECHANICAL SAFETY HANDWHEELS

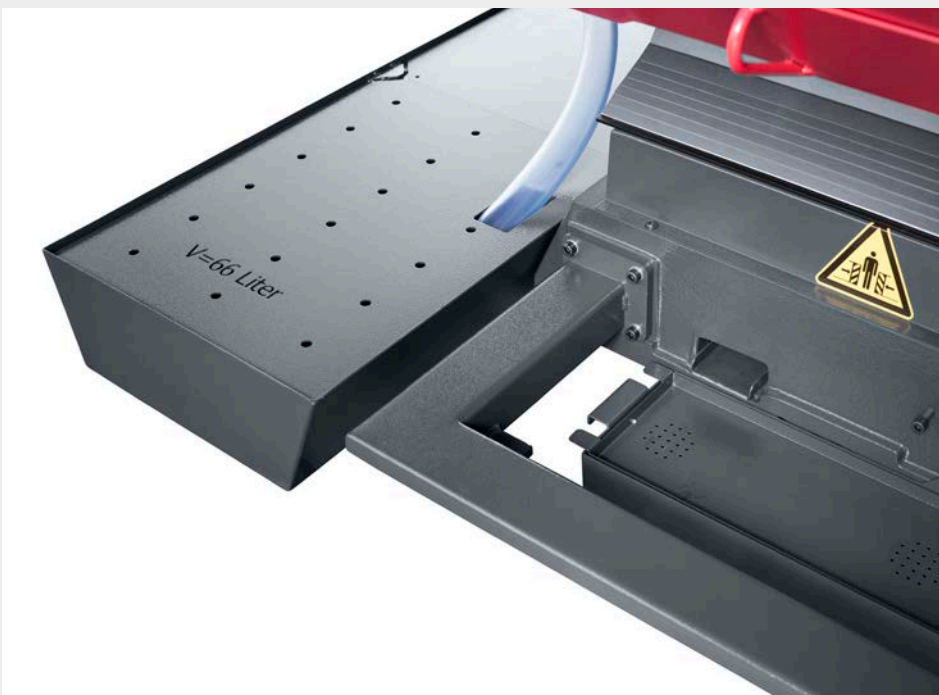
The machine is equipped with mechanical handwheels for manual operations. The ergonomic position of the handwheels guarantees ideal access to and view on workpieces. As soon as a handwheel is activated, "Handwheel X/Y/Z axis active" is displayed and, for safety reasons, you cannot move the machine via the axis selection buttons anymore. The axes are automatically in a safe position, e.g. STO (Safe Torque Off).

OIL DRIPPING PAN

Track oil is directly drained due to the special KUNZMANN design. The machine base thus remains clean and oil-free. This reduces the risk of contamination and accidents around the machine. At the same time, the coolant durability is prolonged, as oil and coolant are drained separately. The collected oil can easily be taken and disposed of from the oil dripping pan.



↑ Mechanical handwheel X axis



← Oil dripping pan and coolant tank

ARBOR HOLDER

The arbor holder is an additional equipment for horizontal milling. In just a few steps, it is mounted to the upper slide of the machine and allows the efficient use of long cutter spindles with one or more disk milling cutters up to a diameter of 150 mm.

PC KEYBOARD

Useful for input of commentary and texts in the control. The keyboard is protected against splash water.

UNIVERSAL TILTING AND SWIVELING TABLE

The universal tilting and swiveling table allows the operator to position the workpiece in different angular positions. The adjustment is done manually using a handwheel while the rotation angle of the clamping plate is digitally indicated on the display of the TNC 128 control system.

WF 410 M with Plexiglas splash protection, arbor holder, horizontal spindle (1), universal tilting and swiveling table (2), TNC 128 with PC keyboard (3)



ELECTRONIC HANDWHEEL

This is a handheld device enabling the operator to get closer to the working area of the machine during set-up or similar procedures. The handwheel housing incorporates axis buttons, buttons for feed rates and control buttons for the machine.

DIGITAL READOUT FOR QUILL STROKE

The quill stroke is comfortably and digitally displayed in the control system.

TOUCH PROBE SYSTEMS

Together with the probing cycles of the control system, triggering 3D touch probe systems simplifies the setup, measuring and checking functions when manufacturing workpieces.

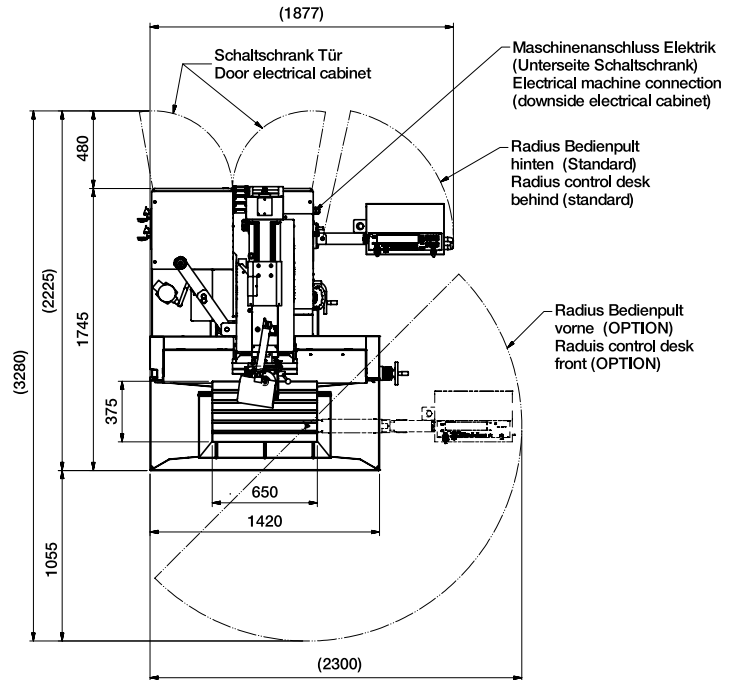
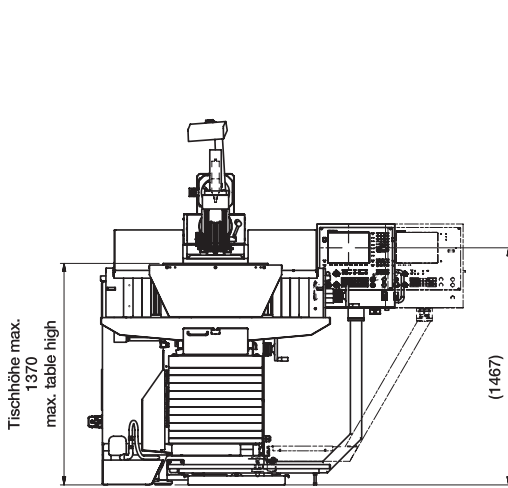
AUTOMATIC TOOL MEASUREMENT

The tool is a vital element in ensuring consistent manufacturing quality. Various control system cycles are used to automatically register tool parameters such as the exact tool length, tool radius, and even tool wear.

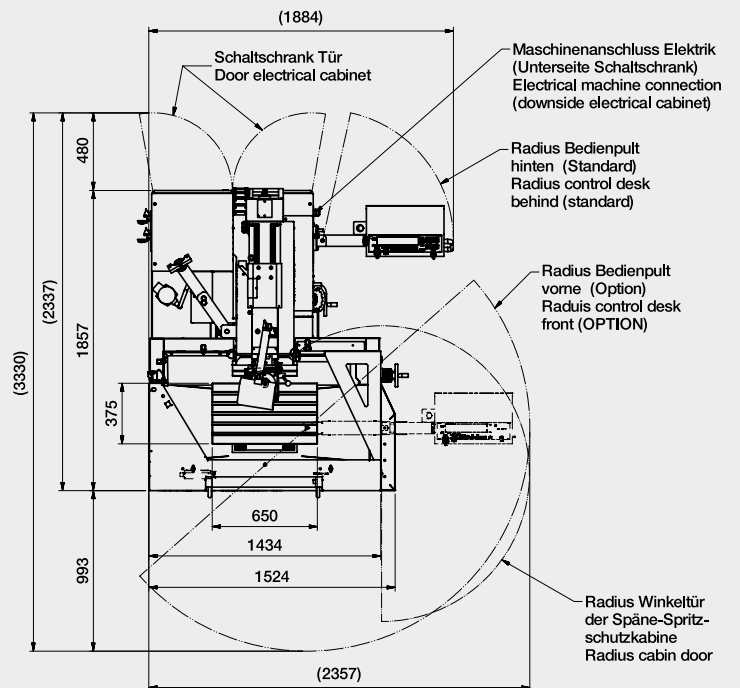
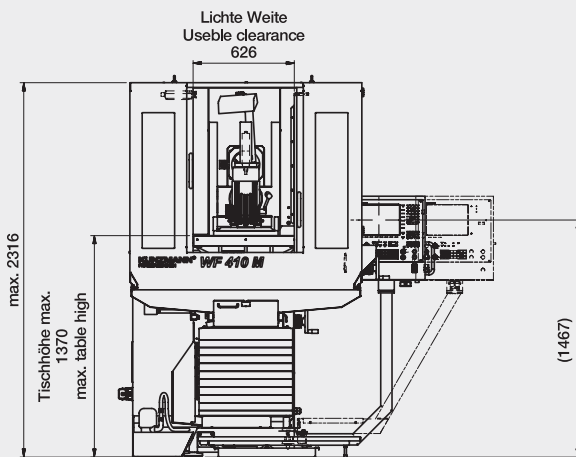


LAYOUTS

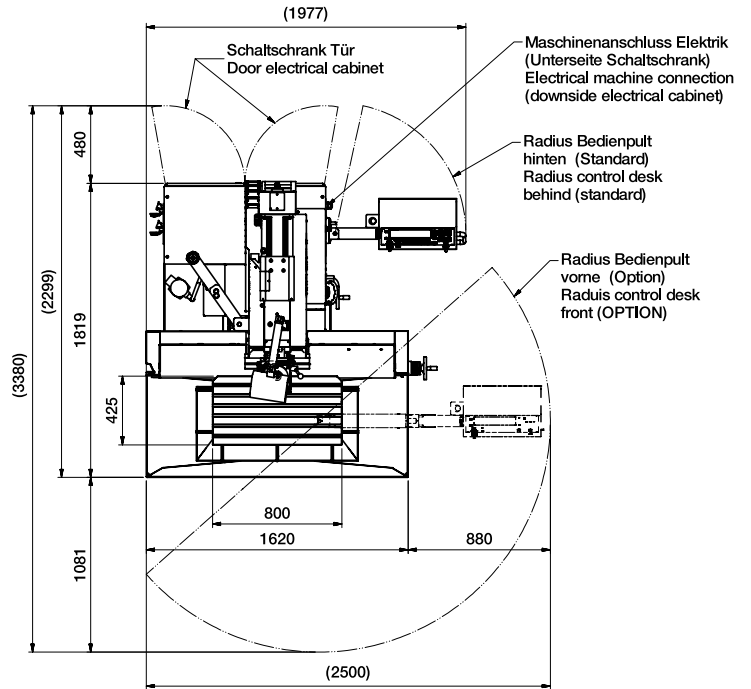
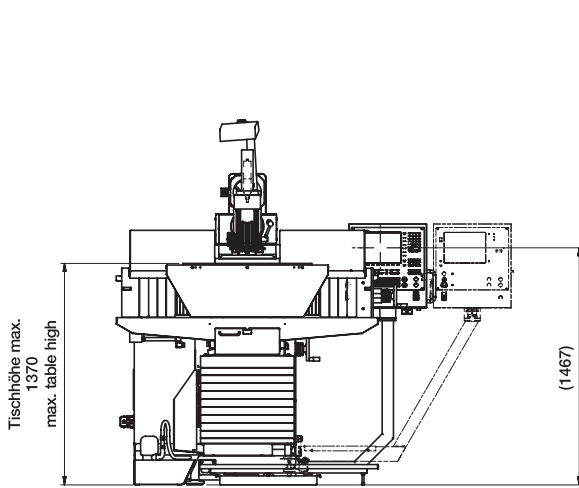
WF 410 M



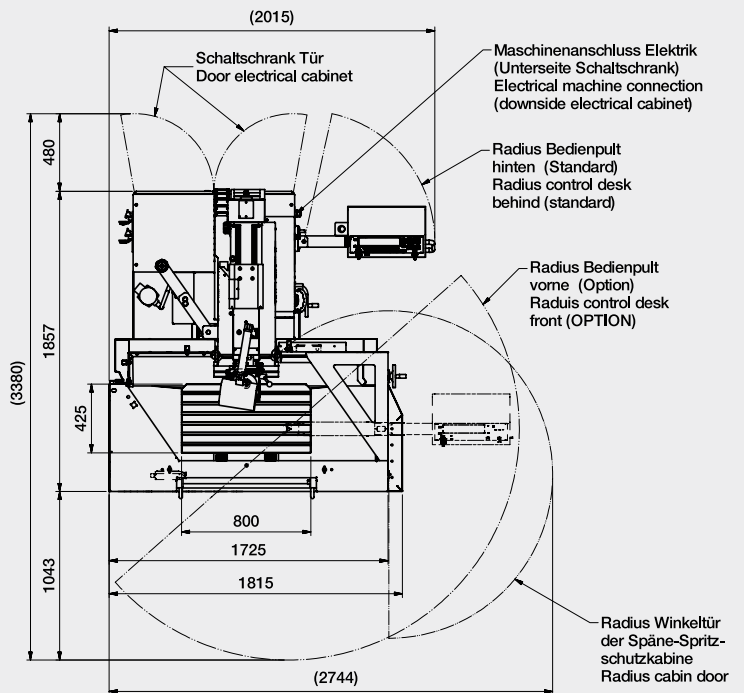
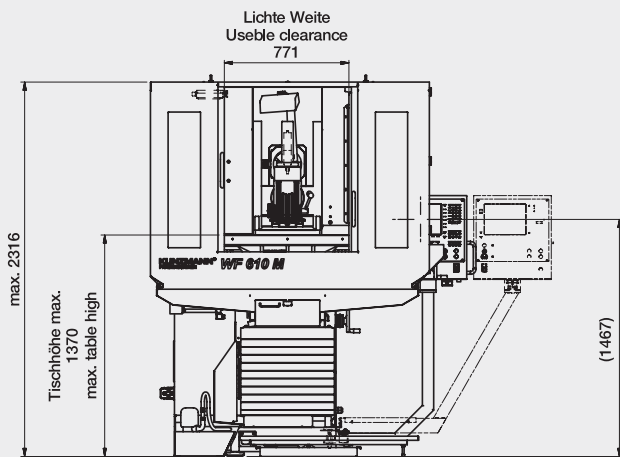
WF 410 M with splash guard cabin



WF 610 M



WF 610 M with splash guard cabin



PERFORMANCE CHART

HORIZONTAL/VERTICAL SPINDLE 4,500 RPM

The universal milling machines KUNZMANN WF 410 M and WF 610 M are equipped with a two-stage gear box which is shifted automatically. Additionally, the spindle speed in each gear stage is infinitely adjustable through a potentiometer.

► **Performance**

8.5 kW (100% of duty cycle)*

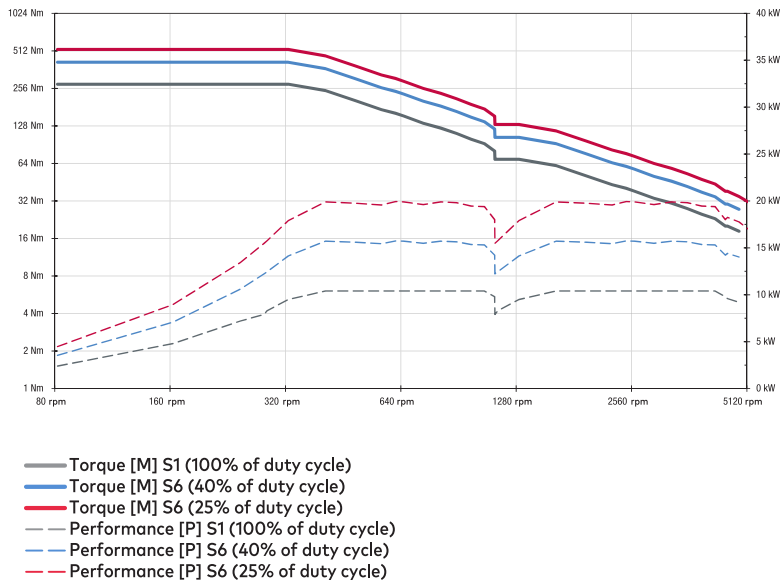
16.2 kW (25% of duty cycle)*

► **Torque**

81 Nm (100% of duty cycle)*

154 Nm (25% of duty cycle)*

*(at 1,000 rpm)



STANDARD EQUIPMENT

- ▶ Vertical milling head with extending quill
- ▶ Horizontal spindle
- ▶ Stable cast iron column with flat guideways in all axes (hardened)
- ▶ Ball screws
- ▶ Automatic axis clamping
- ▶ Automatically shifted gear stage
- ▶ Distance-coded linear path measuring systems
- ▶ Mechanical handwheels
- ▶ Automatic central lubrication system
- ▶ Chip tray
- ▶ Coolant fluid tank, free-standing, 66 liters
- ▶ LED machine light
- ▶ Leveling elements

OPTIONS

- ▶ Rigid angular table:
WF 410 M: 650 x 375 mm
WF 610 M: 800 x 425 mm
- ▶ Universal tilting/swiveling table
650 x 395 mm (rotating angle digitally indicated)
- ▶ Digital readout for quill stroke
- ▶ Electronic handwheel HR 510
- ▶ Plexiglas splash protection
- ▶ Splash guard cabin
- ▶ Minimum-quantity lubrication system
- ▶ Arbor holder
- ▶ Dividing unit
- ▶ Touch probe systems



Visit our website

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Working range	Longitudinal, X axis	410 / 610 mm
	Cross, Y axis	350 / 400 mm
	Vertical, Z axis	450 mm
Main spindle drive	Horizontal/vertical spindle	
* at 1,000 rpm	Performance at 100% of duty cycle*	8,5 kW
	Performance at 25% of duty cycle*	16,2 kW
Spindle speed	Horizontal and vertical spindle steplessly adjustable, 2 mechanical gear stages	1 - 4,500 rpm
Feed drives	AC single drives	
Feed	X and Y axis	5 m/min
	Z axis	4 m/min
Swiveling range of vertical milling head		+/- 90°
Vertical quill	Stroke	70 mm
Tool taper		SK 40 DIN 69871 / 2080 / 7388
Operating voltage		400 V / 50 Hz
Control	HEIDENHAIN	TNC 128
Power consumption		approx. 12 kVA
Machine weight	WF 410 M	approx. 1,800 kg
	WF 610 M	approx. 2,000 kg

- ▶ Manufacturer of universal milling machines and vertical machining centers
- ▶ Competent technological support
- ▶ Customer-specific application technology
- ▶ Individual programming trainings
- ▶ Prompt and convenient support service

Our strong partner

 **WEILER**