



FORES
SOLUTIONS



FORES 648

Mobile compact drilling and milling centre



648

place, plug & work

FORES 648 – place, plug & work

Small, detailed and finishing operations are often a costly affair on large and thus expensive machining centres and can also unduly tie up this production equipment. A small, highly flexible machining centre provided as needed helps to significantly rationalise the production process. The mobile FORES 648 compact machining centre also provides valuable service as a quickly set-up stand-alone machine, allowing the efficient and precise machining of smaller workpieces, including drilling, milling and grinding processes.



Mobile compact machining centre

Weighing barely 900 kg, the FORES 648 can be brought quickly and easily to any desired location by manual lift truck. Requiring less than 2 m² of floorspace, it can be flexibly set up anywhere.

Stable, precise and flexible

The high-precision machine column, extremely solidly built and welded, operates with 3 axes with preloaded linear rail guides and ISO-5 ball-screw drive (optionally ISO-3). The turret head for 6 tool holders allows fast tool changes for efficient machining processes, and 2 tool magazines for 12 tools each provide the necessary flexibility.



Plug in – and go!

The compact machine design integrates all components necessary for operation, especially the cooling system and compressor. This allows the centre to be optimally positioned for any production process, regardless of the existing infrastructure. Only a 400 V power connection is required: Plug in – and go!

Drilling, thread cutting, milling and grinding – fast and precise

The FORES 648 is designed for fast and precise machining operations with a max. torque of 8 Nm:

- Drilling (aluminium \varnothing 1–10 mm, steel \varnothing 1–8 mm)
- Thread cutting (aluminium M2...M10, steel M3...M8)
- Milling (milling depth axial/radial per pass: steel 0.5 mm, aluminium 1 mm)
- Grinding (with optional air turbines with up to 40 000 min⁻¹ resp. 150 000 min⁻¹)

Features

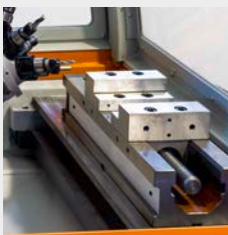
- CNC control Mitsubishi M80, 90° swing-out
- 3 linear axes with Mitsubishi spindle motors:
 - X: stroke 250 mm, travel speed 20 m/min
 - Y: stroke 150 mm, travel speed 15 m/min
 - Z: stroke 150 mm, travel speed 10 m/min
- Positioning accuracy $\pm 5 \mu\text{m}$, repeat accuracy $\pm 10 \mu\text{m}$
- Manual or pneumatic precision holder with variable workpiece holding
- Turret head for 6 tool holders, spindle speed 10 000 min⁻¹ (optional 18 000 min⁻¹)
- Manual tool change from 2 integrated tool magazines for 12 tools each
- Integrated closed-loop cooling system with 85-litre tank and filter
- Integrated chip removal (screw conveyor)
- Front access via lift-up window
- Side access or workpiece feed-through via swing-out doors
- Various options are available to meet specific requirements for enhanced performance and automation.



Standard version



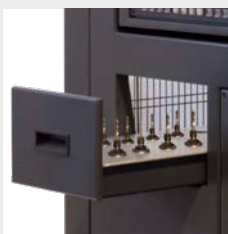
3-axis CNC control
Mitsubishi M80
+ Mitsubishi spindle motors and axes



Manual precision holder with variable workpiece holding



Turret head for 6 WF-35-series tool holders, horizontally mounted, spindle speed 10 000 min⁻¹, rotation from tool to tool (60°) with torque servo motor in approx. 1 sec.



Manual tool change from integrated tool magazines (side drawers left and right for 12 tools each)



Integrated closed-loop cooling system with internal 85-litre tank and filter



Integrated chip removal (screw conveyor) with side chute for external chip collection



Options



Manual PIRANHA precision holder with variable workpiece holding



Manual or pneumatic EVARD PRÉCISION precision holder with variable workpiece holding



LEHMANN 500 series precision-drive rotary table



Turret head for 6 WF-35-series tool holders, horizontally mounted, spindle speed 18 000 min⁻¹



Turret head for 6 WF-35-series tool holders, **vertically** mounted, spindle speed 10 000 min⁻¹ or optionally 18 000 min⁻¹



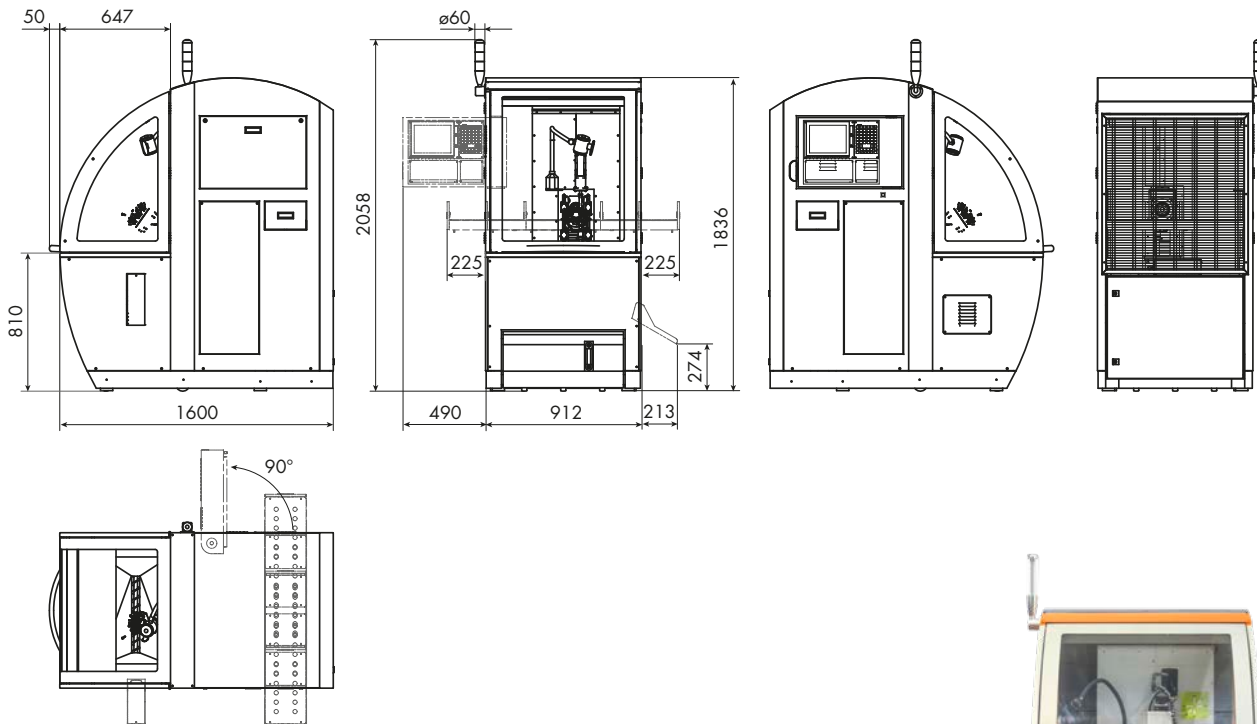
Equipping individual tool positions of the turret head with
– air turbine(s) for spindle speeds up to 40 000 min⁻¹
– air turbine(s) for spindle speeds up to 150 000 min⁻¹

Further available options (bespoke)

- Automatic tool changer
- Automatic workpiece feed
- Workpiece/bar feeder
- Minimum lubrication system etc.



Layout FORES 648



Technical data FORES 648

Control	3-axis CNC Mitsubishi M80, 90° swing out
Axes	X: stroke 250 mm, travel speed 20 m/min Y: stroke 150 mm, travel speed 15 m/min Z: stroke 150 mm, travel speed 10 m/min
Positioning accuracy of all axes	± 5 µm
Repeat accuracy of all axes	± 10 µm
Tool head	turret head for 6 WF-35-series tool holders, turret rotation by torque servo motor, 60° in ~1 sec., pneumatic stop
Tool speed	≤ 10000 min ⁻¹ , optional ≤ 18000 min ⁻¹
Machining diameter max.	drilling: steel 1...8 mm, aluminium 1...10 mm thread cutting: steel M3...M8, aluminium M2...M10
Milling depth axial/radial max.	steel 0.5 mm, aluminium 1 mm per pass
Maximum allowable torque	8 Nm
Tool change	manual
Tool magazine	integrated side drawers for 2 × 12 tools
Cooling system	integrated closed-loop system with internal 85-litre tank and filter
Chip removal	integrated (screw conveyor) with side chute for external chip collection
Electrical connection	400 V / 50 Hz; without plug
Power consumption	~ 10 A
Compressed air	Integrated compressor with 24-litre tank, 8 bars, ≤ 68 dB
Total noise emissions	< 72 dB
Weight	~ 900...950 kg, depending on version

