



Productinformation



Euro-Type Milling Machine

# VOLZ FUS Serie

FUS 32-SERVO

# FUS 32-SERVO

**MADE  
IN  
GERMANY**



## VOLZ Euro-Type Milling Machine

**The more than 800 sold (among others at BMW, Continental and ABUS) and successful FUS 32 are the basis for the new VOLZ FUS 32-SERVO.**

The new universal „Euro-Type“ milling machine VOLZ FUS 32-SERVO was completed made by VOLZ in germany and also developed and improved in detail and meets the increased market customer requirements for a universal milling machine of the latest generation.

The revised machine concept and high-quality machine components „Made in Germany“ ensuring increased stability, increased machine accuracy (according to DIN 8615) and make this milling machine is essential for all tasks in education, workshop and production from the tool to the mold.



Generous **chip collecting tray** through the entire workspace with integrated coolant tank and high-performance coolant pump by GRUNDFOS® or BRINKMANN®.





All FUS 32-SERVO is standard with **3-way adjustable spindle protection** with security microswitches for vertical and horizontal work delivered.



The **standard interval central lubrication** with **one SKF VOGEL® precision lubrication pump** with easy service access.

#### +/- 90° Swivel Mounted Milling Head

Vertical milling with spindle taper ISO 40 / DIN 2080, manual tool clamping, 95 mm quill stroke and swivel 90° in both.

#### Powerful Direct Drive

36-speed gear transmission for up to 3,600 rpm with precision ground quality gears in oil bath with powerful **3 kW direct drive from SEW-EURODRIVE®** without belt and therefore no loss of torque.

#### Rotary-Swivel Table

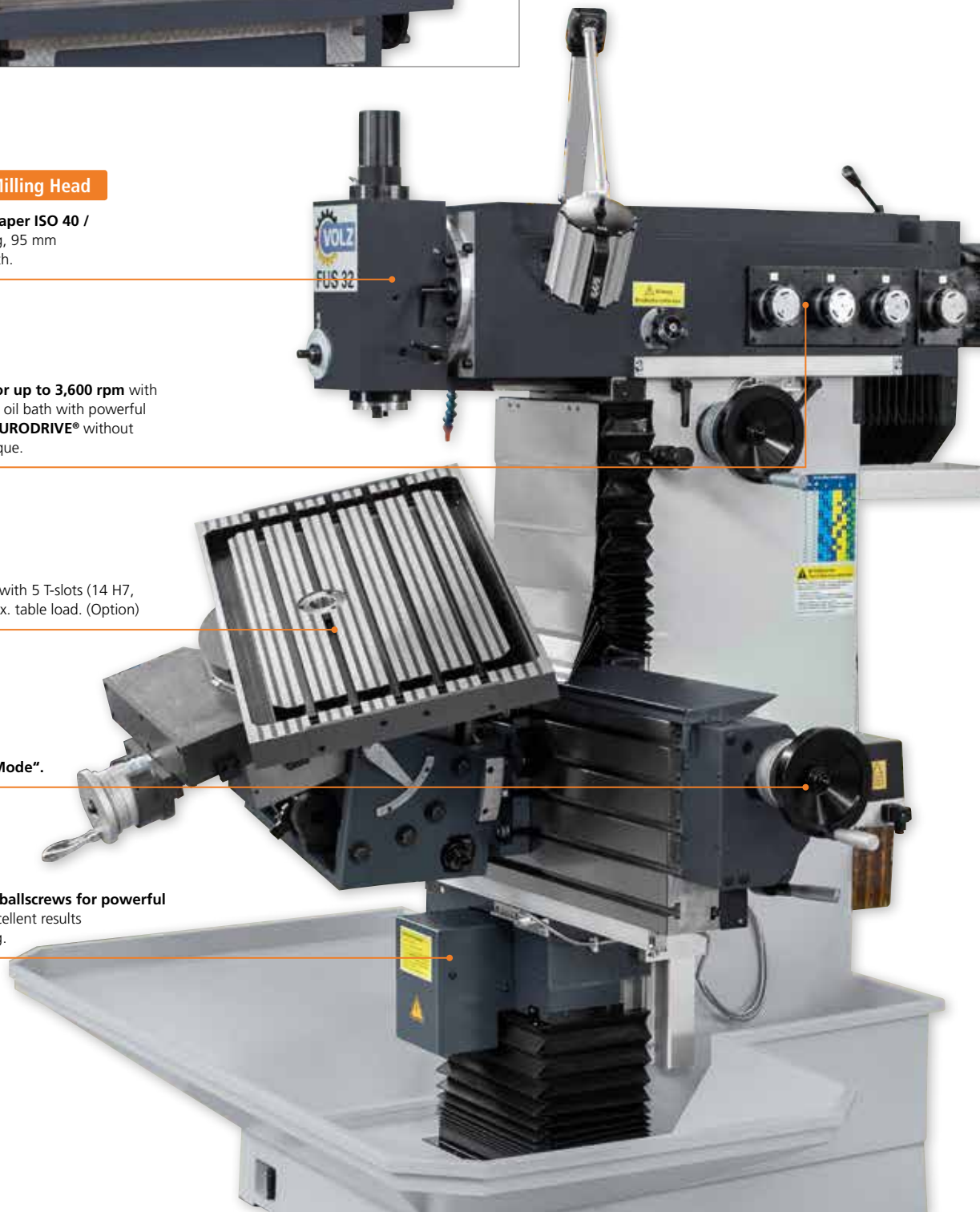
Universal rotaty-swivel table with 5 T-slots (14 H7, distance 63 mm) and 140 kg max. table load. (Option)

#### Rotary-Swivel Table

Inputs in X-, Y- and Z-axis with 1,200 mm / min incl. „Trainer Mode“.

#### Powerful Movements

Powerful Movements **precision ballscrews for powerful movements in all axes** and excellent results in climb and conventional milling.



# FUS 32-SERVO



Rear view.



**Tidy panel** with standard 3-axis digital display and serial feed ads for X / Y- and Z-axis.

## VOLZ Euro-Type Milling Machine

### Machine Highlights / Features

- milling machine according to DIN 8615 and in the agreement SCHLESINGER standard
- high-quality machine components „Made in Germany“ - RITTAL®, SKF®, GRUNDFOS®, SEW EURODRIVE® and more
- all major components such as machine base, stand, boom, worktable and vertical milling head from stress-relieved MEEHANITE® quality cast, partly multiple ribbed for best stability and precision production from the beginning
- worktable and vertical clamping surfaces are hardened and precision honed for increased load capacity, long service life and an exact plane bearing surface for clamping devices and workpiece
- powerful direct drive without belt and without loss of torque, by quality motor SEW-EURODRIVE® 3 KW output
- the high-quality vertical and horizontal milling spindle runs only in SKF® quality ball bearings for high accuracy
- vertical milling head with spindle taper ISO 40 / DIN 2080, manual tool clamping, 95 mm quill stroke and swivel 90° in both
- horizontal spindle ISO 40 / DIN 2080 with standard backstop for horizontal milling
- 36-stage speed transmission up to 3,600 rev / min with precision ground quality gears in an oil bath
- automatic interval central lubrication system (SKF VOGEL®) for a perfect lubrication of all important wings and a guaranteed long life
- infinitely variable feed rates via direct servo drives from YASKAWA® with 0.75 kW per axes (a total of 2.25 kW) and a feed-rate 10 – 600 mm/min
- rapid traverse in X, Y and Z axis 1.200 mm / min incl. „Trainer mode“
- backlash-free precision ball screws for forceful movements in all axes and excellent results in climb and conventional milling
- all guideways are hardened, honed and additionally TURCITE®-B coated for optimal and constant movement
- engine brake with overload protection - for quick and safe spindle stop
- guideways with lamellae protective (partially stainless steel) for the X and Z axis
- mechanical safety handwheels with scale ring in all axes for a proven operation
- tank for integrated coolant system to save space in the machine
- adjustable interval central lubrication of all important wings, perfect for lubrication and long life
- 3-way adjustable spindle guard with safety microswitches and gas springs for vertical and horizontal work
- LED work lights, multiple adjustable



**Universal rotaty-swivel table** with 5 T-slots (14 H7, distance 63 mm) and 140 kg max. table load. (Option)

**XL table enclosure** with two interlocked sliding front doors and additional side doors for perfect, IP54 certified, all around protection by remaining full accessibility. (Option)



**Pneumatic power clamping** for easy tool clamping with FESTO® control unit. (Option)

### Horizontal Spindle

**Horizontal spindle** ISO 40 / DIN 2080 with as standard horizontal abutment for horizontal milling.

### Guideways with Lamella Cover

**Equipped with lamella cover** (partially stainless steel) for X- and Z-axis protection.

### High Precision Clamping Surface

**Worktable and vertical clamping surfaces are hardened and precision honed** for a increased load capacity, long service life and a precise, flat surface for clamping devices and workpiece.



# VOLZ M



## VOLZ 3-axis DRO

### Display

- membrane keypad resistant to dirt and chemicals
- robust aluminum housing with scratch-resistant paint
- complete housing sealing for harsh workshop conditions
- overvoltage protection for high reliability
- connection for probe

### Displacement encoder

- quality glass scales with a resolution of 5µ / 1µ
- high accuracy through laser surveying
- 5-way ball bearing for the read head-carriage, a suspension compensates misalignments between the scale and machine guideways
- insensitive to vibration
- data cable with protective enclosure



VOLZ		M
Axes	3 + 1 axis	•
Resolution		1µ (5µ)
V constant		
Power-saving mode after inactivity (adjustable from 1-60 min)		•
Basic functions	zero point for all axes	•
	center determination (1/2 value)	•
	mm / inch display	•
	coordinate input	•
	absolute / incremental	•
	power-off data storage (20 years)	•
Integrated calculation functions	200 tool offset memory	•
	reference point memory for each axis	•
Bolt circle calculation, linear row of holes		•
Machining slopes		•
Shrink calculation		•
Thermal compensation		•
Axes	simple radius	•
	tool radius compensation	•
Linear and non-linear error compensation		•
Achsensummierung in Z1 and Z		
Interfaces		RS 232 / RS485
Linear or rotary measuring sensors can be connected for all axes		•
Measuring the paths after switching off (!)		•
4 freely programmable relays for automatic - Off mode		•
Automatic adaptation to voltage, AC 110 - 230 V		•

**VOLZ FUS 32-SERVO**

Work Table		
horizontal clamping area (L x W)	mm	950 x 450
T-slots (no. / width / distance)	mm	7 / 14 / 63
vertical clamping size (L x W)	mm	1050 x 320
T-slots (no. / width / distance)	mm	5 / 14 / 63
max. table load	kg	300
distance spindle / table	mm	50 – 450
distance h-spindel / table	mm	min. 163

Universal Rotary-Swivel Table (Option)		
clamping size (L x W)	mm	800 x 450
T-slots (no. / width / distance)	mm	5 / 14 H7 / 63
max. table load	kg	140

Axes Travel				
Axes Travel	X-axis	auto / manual	mm	560
	Y-axis	auto / manual	mm	320
	Z-axis	auto / manual	mm	400

Vertical Milling Head		
spindle tape DIN 2080 / M16		SK 40
spindle speed (36 steps)	U/min	25 – 3600
pivotability of vertical milling head	Grad	+/- 90
quill movement, manual	mm	95
precision of the spindle run	mm	0.005

Horizontal Spindle		
spindle tape DIN 2080 / M16		SK 40
spindle speed (36 steps)	U/min	25 – 3600

Feed Rates		
feed (X/Y/Z)	mm / min	10 – 600
rapid feed (X/Y/Z)	mm / min	1200

Drive Powers		
main motor	kW	3
feed motor	kW	0.75 pro Achse / 2.25
cooling pump	kW	0,09
lubrication pump	kW	0,05

Overall Dimensions		
length	mm	1800
width / depth	mm	1500
height	mm	1780

Machine Weight		
weight	kg	1650

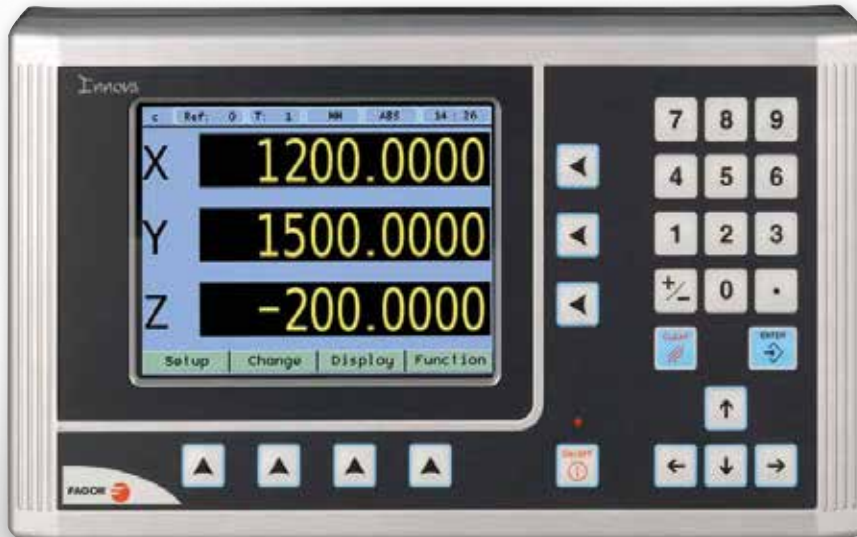
## Standard equipment

- milling machine according to DIN 8615
- 3-axis DRO made by VOLZ
- direct drives, without belt, with powerful 3 kW drive motor from SEW-EURODRIVE®
- all of machine components MEEHANITE® quality cast
- in all axes:
  - rapid traverses up to 1,200 mm / min
  - backlash, precision ballscrews
  - Infinitely variable feed with direct servodrive per axis 0.75 kW (2.25 kW)
  - mechanical safety handwheels
  - engine brake with overload protection
- precision ground quality gears in an oil bath
- SKF® quality ball bearings in gear, vertical and horizontal spindle and in other main machine components
- lamellae protective (partially stainless steel) in the X / Y axis
- 3-way adjustable spindle protection with safety microswitches and gas shock absorbers for vertical and horizontal work
- all guideways hardened, ground and TURCITE®-B coated
- automatic interval central lubrication with lubrication pump from SKF-VOGEL®
- vertical milling head, adjustable in both directions up to +/- 90 °
- RITTAL® support arm, pivotally seided
- RITTAL® panel with handle, pivotable on both sides
- horizontal spindle with standard end support / backstop
- coolant system with powerful GRUNDFOS® or BRINKMANN® coolant pump
- machine according to newest CE rules
- machine documentation

## Special equipment (options)

- 3-axis DRO made by ACU-RITE or FAGOR
- rotary table incl. 3-jaw chuck Ø 130 mm
- electric tool clamping
- pneumatic power tool clamping
- DIN 69871 / SK40 tool-interface with hydraulic-pneumatic tool clamping
- universal rotary-swivel table
- dividing head with chucks Ø 165 mm horizontal vertical
- tailstock for rotary tables and dividing heads Ø 115 – 145 mm
- round tables Ø 300 / 350 mm horizontal / vertical usable
- collet chuck ER 25 incl. collet eet, Ø 2 – 16 mm
- parallel blocks set in wooden stand - 24 pairs
- machine vice with mechanical turntable, jaw width 130 mm
- horizontal arbors Ø 22 / 27 / 32 mm short version
- clamping device for T-slot tables
- hydraulic clamps
- spindle shield of steel pipe incl. safety disc Ø 600 mm
- machine enclosure for table, also enlarged workspace
- XL Full enclosure table guard – with two side doors
- special painting
- additional equipment documentation

# INNOVA 40i P



## FAGOR® DRO for Milling Machines

The progress in technologies for measuring devices and control systems at FAGOR® guarantees excellent results for machines and increases their accuracy, productivity and quality of every machining operation. Further it greatly prevents human errors.

The use of a TFT-screen enables the user to select different work planes. Thus making it possible to machine in the X-Y, X-Z, or Z-Y plane. The results can be displayed by a 3D simulation. The package is completed by a highly intuitive and operator-friendly environment that only FAGOR® offers.

### ▶ Basic Functions

- axes reset („Zeroing“)
- axes preset
- direct conversion (imperial/metric)
- absolute and incremental reference signals
- resolution up to 0,1 µm
- alarms for speed and travel
- tool radius compensation
- linear error compensation of machining axes
- linear and angular calculation

### ▶ Special Functions

- hole pattern calculation
- tool centering
- calculus function
- software limit switches
- multi point compensation
- angular machining
- workpiece setting
- rotation of machining axis
- axis readout setup
- hysteresis factor
- scale factor

### ▶ FAGOR Exclusive Functions

- up to 20 zero positions
- counter signal monitoring
- easy operating and diagnosis
- energy saver mode
- PC connection via USB



# 200S



## ACU-RITE® DRO

The ACU-RITE 200S digital readout is especially suited for use on milling, drilling and boring machines and lathes with up to three axes. A separate I/O unit provides switching input/outputs for simple tasks in automation.

### Description

The 200S display unit is designed as a sturdy upright unit with splash-proof full-travel keypad for use in a workshop. It is equipped with a monochrome flat screen for position values, dialog and input displays, graphic functions and graphic positioning support.

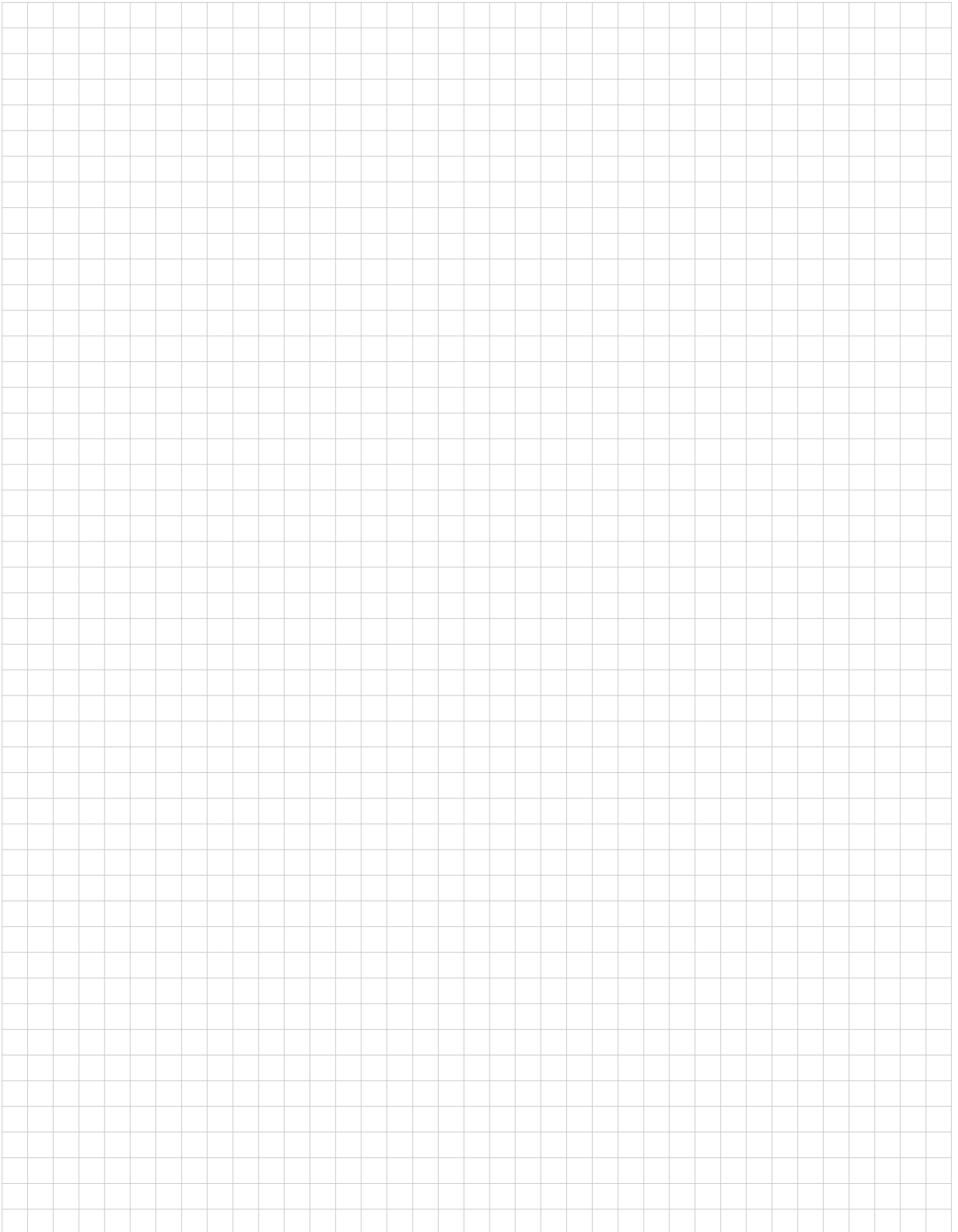
### Functions

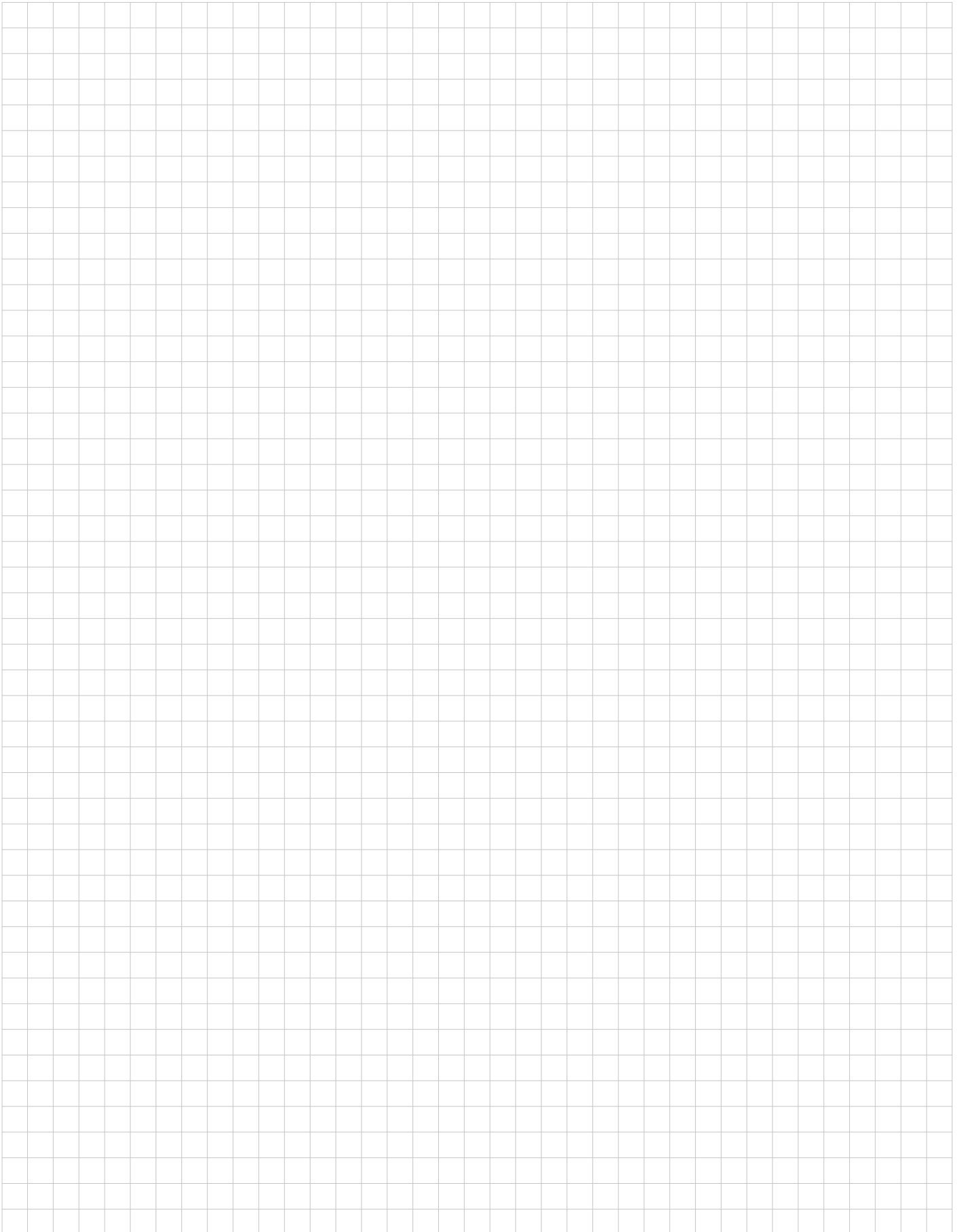
The 200S display unit is characterized by its plain language dialog guidance. The distance-to-go display facilitates positioning. You approach the next position quickly and reliably by simply traversing until the display reads "zero". The functions for each application are easily activated by parameter input. Special functions are available for producing hole patterns (linear patterns and circular patterns). Datums can be determined quickly and accurately with an edge finder. The 200S readout supports you with special probing functions.

You can easily switch between radius and diameter display when the position display is configured for turning. The readout also offers support for lathes with separate top slide: The sum display feature allows you to display the saddle and top slides together or separately. To set a datum, touch the workpiece and freeze the tool position. Then retract and measure the workpiece.

ACU-RITE	200S
Axes	2 or 3 from A to Z and ZO
Display step	Adjustable, max. 7 digits, Linear axis: 1 mm to 0.0001 mm Angular axis: 1° to 0.001° (00° 00' 01")
Functions	<ul style="list-style-type: none"> <li>- 10 datums</li> <li>- 16 tools</li> <li>- REF reference-mark evaluation for distance-coded or single reference marks • Distance-to-go mode</li> <li>- Scaling factor</li> <li>- mm/inch switching</li> <li>- Absolute-incremental display</li> <li>- On-screen help and operating instructions</li> <li>- Graphic positioning support (Near Zero warning)</li> <li>- Calculator</li> </ul>
For milling / drilling / boring	<ul style="list-style-type: none"> <li>- Calculation of positions for hole patterns (circular patterns as well as linear patterns)</li> <li>- Tool radius and tool length compensation</li> <li>- Probing functions for reference-point acquisition with KT edge finder: „Edge,“ „Centerline“ and „Circle center“</li> <li>- Linear hole patterns, bolt hole circles</li> </ul>
For turning	<ul style="list-style-type: none"> <li>- Taper calculator</li> <li>- Radius/diameter switching</li> <li>- Freezing the tool position for back-off</li> <li>- Vectoring: X/Y display of the traverse path with inclined top slide</li> <li>- Sum displays for Z and ZO (axis coupling)</li> </ul>
Error compensation	<ul style="list-style-type: none"> <li>- Axis error: Linear and multipoint over up to 200 points</li> <li>- Backlash compensation: for compensation of reversal error</li> </ul>
Data interface	RS-232-C/V.24 300 to 115200 baud
Accessories	Mounting arms, mounting frame, KT 130 edge finder (for milling)
Main power input	100 V AC to 240 V AC (-15 % to +10 %), 47 Hz to 63 Hz; 30 W
Operating temperature	0 °C to 45 °C (storage temperature -20 °C to 70 °C)
Protection EN 60529	IP 40, front panel IP 54

## Notes

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.





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