

COORDINATE MEASURING MACHINE

# SF 87

Technical Data

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MEASURING IN THE  
**PRODUCTION ENVIRONMENT**

### Short description

- CNC coordinate measuring machine with cantilever design. Comes with touch probe and optical probe systems.
- Compact design with CNC controller, computer and work station built in.
- Large measuring volume with small footprint.
- Ergonomic loading from three sides.
- Tolerant for shopfloor conditions.

### Application fields

- Designed for production quality control and analysis. Also well suited for reverse engineering and model construction.
- Geometric components and free-form surfaces.
- Series and individual measurements.
- Machinist Inspection.
- Automation in the shopfloor area.

### Equipment

- High precision linear bearing guides in all axes.
- Elastomer vibration system.
- Protective bellow covers for the X and Y axis.
- High dynamic servo drives with following error monitoring and combined friction/form locking transmission.
- Photoelectric reflected light measuring system (optical division 20 µm).
- 3-axis path control with intelligent "lookahead function" for application-optimized travel paths.
- Compact control panel with a centrally located progressive joystick with mouse function and programmable function keys.
- Two stage speed selection with variable speed override (0-100%). Allows for variable sensitivity in joystick and CNC mode.
- Automatic temperature compensation with built in sensors in all axes and work piece sensor.
- Baseplate made of dark hard stone with integrated M10 threaded inserts (hole pattern size 200 x 200 mm) for clamping the workpieces (further hole pattern sizes available on request).
- Automation ready.

### Probe systems

- **PH10M PLUS / PH10T:** 2 axis motorized rotary swivel head that can be indexed in 7.5 degree steps up to 720 reproducible positions.
  - **TP200:** High precision touch trigger probe with interchangeable modules.
  - **SP25M:** High precision flexible scanning probe with interchangeable modules that can be used for scanning or touch probes.
  - **SHAPETRACER:** Optical 3D line scanner for contactless measurement and processing of data point clouds.
- **PH20:** Motorized stepless 5-axis touch trigger system employs "head touch" method to decrease measurement times in CNC mode.
- **PH6M:** Compact probe head with single fixed position.

Device type		SF 87			
<b>Measuring range</b>					
Measuring range with probe system PH10M PLUS	X	[mm]	800		
	Y	[mm]	700		
	Z	[mm]	700		
<b>Weight</b>					
Device weight		[kg]	1850		
Maximum workpiece weight		[kg]	300		
<b>Connection values</b>					
Electrical		Electricity quality according to EN 60204/1:2019-06			
		Single phase alternating current (1P+N+PE), 115/230 V ± 10 %, 50/60 Hz, max. 1000 VA			
<b>Accuracies*</b>					
			SP25M	TP200	PH20
Limit value single stylus probing error <sup>1</sup>	$P_{FTU, MPE}$	[µm]	2.6	2.9	3.1
Limit value repeatability range <sup>2</sup>	$R_{0, MPL}$	[µm]	1.6	1.9	2.1
Limit value length measurement error <sup>2</sup> (standard temperature range)	$E_{0, MPE} / E_{150, MPE}$	[µm]	3.5 + L/300	3.9 + L/300	4.2 + L/300
Limit value length measurement error <sup>2</sup> (extended temperature range)	$E_{0, MPE} / E_{150, MPE}$	[µm]	4.0 + L/200	4.4 + L/200	4.7 + L/200
Limit value scanning probing error <sup>3</sup>	$MPE_{THP}$	[µm]	3.9	-	-
Limit value scanning test duration	$MPT_{\tau}$	[s]	72	-	-
Resolution measuring system		[µm]	0.1		
<b>Permitted environmental conditions</b>					
Operating temperature		[°C]	15 ... 30		
Standard temperature range for $E_{L, MPE}$			18 to 22 °C, $\Delta T: 1^{\text{K}}/\text{h}, 1^{\text{K}}/\text{m}, 2^{\text{K}}/\text{d}$		
Extended temperature range for $E_{L, MPE}$			18 to 28 °C, $\Delta T: 1^{\text{K}}/\text{h}, 1^{\text{K}}/\text{m}, 2^{\text{K}}/\text{d}$		
Relative humidity		[%]	40 ... 70 (non-condensing)		
Max. height of the installation site		[m]	2000 over sea level		
<b>Dynamic**</b>					
Joystick mode	$v_{\text{max}}$	[mm/s]	0 ... 20 (creep mode), 0 ... 100 (normal)		
CNC mode	$v_{\text{max}}$	[mm/s]	300 axis-related, 520 vectorial		
CNC mode	$a_{\text{max}}$	[mm/s <sup>2</sup> ]	700 axis-related, 1200 vectorial		
<b>1: according to DIN EN ISO 10360-5 / Limit value single stylus probing error <math>P_{FTU, MPE}</math></b> <ul style="list-style-type: none"> <li>• SP25M with Module SM25-1 and stylus Ø 4 x &lt; 30 mm</li> <li>• TP200 with Standard Force Module and stylus Ø 4 x &lt; 30 mm</li> <li>• PH20 with TP20 Standard Force Module and stylus Ø 4 x 10 mm</li> </ul>		<b>3: according to DIN EN ISO 10360-4 / Limit value scanning probing error <math>MPE_{THP}</math></b> <ul style="list-style-type: none"> <li>• SP25M with Module SM25-1 and stylus Ø 4 x &lt; 30 mm</li> </ul>			
<b>2: according to DIN EN ISO 10360-2 / Limit value length measurement error <math>E_{L, MPE}</math></b> <ul style="list-style-type: none"> <li>• SP25M with Module SM25-1 and stylus Ø 4 x &lt; 30 mm</li> <li>• TP200 with Standard Force Module and stylus Ø 4 x &lt; 30 mm</li> <li>• PH20 with TP20 Standard Force Module and stylus Ø 4 x &lt; 30 mm</li> </ul>		* Accuracy values are achieved by incorporating of the temperature compensation. ** Depending on the used controller.			

Table 1: Technical Data SF 87

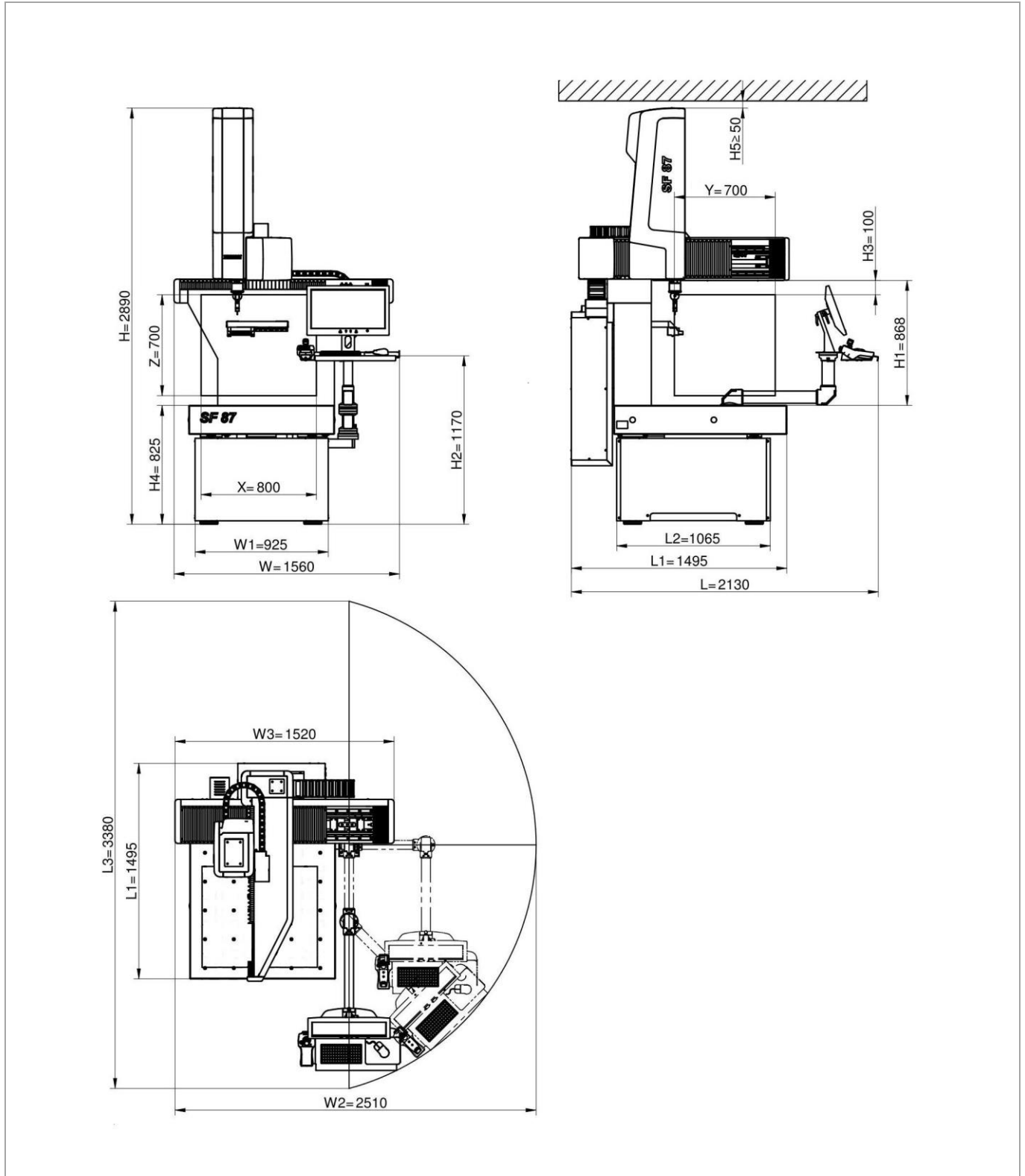


Figure 1: Layout SF 87

Dimensions [mm]		
Measuring range with probe system PH10M PLUS	X	800
	Y	700
	Z	700
Overall dimensions with device holder	L	2130
	W	1560
	H	2890
Working area	L1	1495
	L2	1065
	L3	3380
	W1	925
	W2	2510
	W3	1520
	H1	868
	H2	1170
	H3* (PH10M PLUS)	100
	H4	825
Measuring room requirement	H5	≥ 50
Hole pattern size baseplate (threaded insert M10)**		200 x 200
* Depending on the used probe system		
** Further hole pattern sizes available on request.		

Table 2: Dimensions SF 87

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power generation and medicine. WENZEL looks at today on an installed base of more than 10,000 machines worldwide. Subsidiaries and agencies in more than 50 countries support sales and provide after-sales service for our customers. The WENZEL Group today employs more than 600 people.



## YOUR LOCAL CONTACT PERSON

### WENZEL GROUP GMBH & CO. KG

Werner-Wenzel-Straße  
97859 Wiesthal  
Phone: +49 6020 201-0  
E-Mail: [info@wenzel-group.com](mailto:info@wenzel-group.com)

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