

# 3D-Coordinate Measuring Machine (CMM) LHF 3020

STANDARD / PREMIUM / PREMIUM-SELECT

## Technical Data



# Technical Data LHF 3020 STANDARD / PREMIUM / PREMIUM-SELECT

## Short description

- CNC coordinate measuring machine in travelling bridge design on guide beams, with touch-trigger or scanning probe system
- All granite guideways are accurately hand-lapped, the Y-axis features a dual drive system
- Compact design operator workstation, with integrated controller and computer
- CMM available in multiple sizes for the optimal selection of the required measurement volume

## Application areas

- In production, incoming inspection and quality assurance for large-volume components
- Measurement of prismatic and free-form components
- Both series and individual measurements
- Palletized operation possible

## Features

- Efficient design for part loading-unloading, rigid machine frame for laboratory and production usage
- Pre-stressed, encompassing air bearings in all axes
- Compact control panel with central, logarithmic joystick, "mouse function" and context-sensitive function buttons. The joystick's axis assignment can be selected
- X- and Y- guides with bellows protection against contamination
- High-speed-dynamic servo drives with position monitoring combined friction transmission. Dual drive in the Y-axis
- 3-/4-axis contouring controller with intelligent "lookahead" function for application-optimised trajectory
- Manual temperature compensation in Standard version
- Premium- and Premium-Select version with automatic temperature compensation on all axes and work piece
- Two-stage speed selection and variable speed adjustment (override 0-100%) in all operation modes, resulting in sensitive movement via joystick or in CNC mode

## Probe systems

- PH10M / PH10T motorized indexing head
- TP200 touch-trigger probe, highly precise and suitable for styli up to 100 mm in length. Styli can be changed via optional tool changer
- Touch-trigger probe TP20, Stylus module changeable via optional tool changer
- PH10M motorized indexing head
- SP25M scanning and single-point probe, precise and flexible for stylus lengths of up to 400 mm. Probe module and stylus can be changed via optional tool changer.
- Shapetracer: 3D Line Scanner to report and handle point clouds
- SP80 scanning probe head, highly precise for larger probe lengths. For scanning and single-point probing. Stylus combinations can be changed via optional tool changer
- REVO: 5-axis head and probe system for scanning of complex contours and high throughput

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Machine Type			LHF 3020 Standard			LHF 3020 Premium			LHF 3020 Premium-Select		
Measuring Ranges, Weights											
Measuring ranges	X	[mm]	3000			3000			3000		
with PH10M probe-system	Y*	[mm]	4000	5000	6000	4000	5000	6000	4000	5000	6000
	Z	[mm]	2000			2000			2000		
Machine weight		[kg]	15000	17000	19000	15000	17000	19000	15000	17000	19000
General Requirements											
Electric		Single-phase AC 1P+N+PE, 115/230V ± 10 %, 50/60 Hz, max. 1500 VA, acc. to EN 60204/1									
Compressed air		Supply pressure 6-10 bar, pre-filtered, quality according to ISO 8573-1: Class 4 or better									
Air consumption		[ <sup>Nl</sup> /min]	135 (average), 200 (max)								
Measuring Accuracy**, ***											
Measurement system		Photoelectric set-up system, optical division 20 µm									
Resolution		[µm]	0,1								
Single-Stylus probing uncertainty <sup>1</sup>	P <sub>FTU, MPE</sub> [µm]		TP20 7,0	TP200 6,6	SP25/80 6,0	REVO 6,0	TP200 6,0	SP25/80 5,0	REVO 5,0	SP25/80 4,8	
Repeatability range uncertainty <sup>2</sup>	R <sub>0, MPL</sub> [µm]		TP20 7,0	TP200 6,6	SP25/80 6,0	REVO 6,0	TP200 6,0	SP25/80 5,0	REVO 5,0	SP25/80 4,8	
Volumetric length measuring uncertainty <sup>2</sup>	E <sub>0, MPE</sub> / E <sub>150, MPE</sub> [µm]		TP20 7,0+L/300	TP200 6,6+L/300	SP25/80 6,0+L/300	REVO 6,0+L/300	TP200 6,0+L/350	SP25/80 5,0+L/350	REVO 5,0+L/350	SP25/80 4,8+L/450	
Scanning probe uncertainty <sup>3</sup>	MPE <sub>THP</sub> [µm]		SP25/80 6,6		REVO 6,6		SP25/80 5,6		REVO 5,6		SP25/80 5,4
Total measuring time for THP	MPT <sub>THP</sub> [sec]		72			72			72		
Operating Environment											
Operating temperature		[°C]	15-30								
Temperature range for E <sub>L, MPE</sub> (Standard/Premium)		20 °C ± 2 K, ΔT: 1 <sup>K</sup> / <sub>h</sub> , 1 <sup>K</sup> / <sub>m</sub> , 2 <sup>K</sup> / <sub>d</sub>									
Temperature range for E <sub>L, MPE</sub> (Premium-Select)		20 °C ± 1 K, ΔT: 0,5 <sup>K</sup> / <sub>h</sub> , 0,5 <sup>K</sup> / <sub>m</sub> , 1 <sup>K</sup> / <sub>d</sub>									
Relative humidity		[%]	40-70								
Dynamics***											
Joystick operation		v <sub>max</sub> [ <sup>mm</sup> /s]	0-20 (creep mode), 0-100 (normal)								
CNC mode		v <sub>max</sub> [ <sup>mm</sup> /s]	300 axial, 520 volumetric								
CNC mode		a <sub>max</sub> [ <sup>mm</sup> /s <sup>2</sup> ]	350 axial, 600 volumetric								

1: According to DIN EN ISO 10360-5 / Maximum Permissible Error  $P_{FTU, MPE}$

- SP25M with Module SM25-1 and Styli Ø 4 x < 30 mm
- SP80 and Styli Ø 5 x 50 mm
- TP200 with Standard Force Module and Styli Ø 4 x < 30 mm
- TP20 with Standard Force Module and Styli Ø 4 x 10 mm
- REVO with RSP3-3 and Styli Ø 4 x < 30 mm

2: According to DIN EN ISO 10360-2 / Maximum Permissible Error  $E_{L, MPE}$

- SP25M with Module SM25-1 and Styli Ø 4 x < 30 mm
- SP80 and Styli Ø 5 x 50 mm
- TP200 with Standard Force Module and Styli Ø 4 x < 30 mm
- TP20 with Standard Force Module and Styli Ø 4 x < 30 mm
- REVO with RSP3-3 and Styli Ø 4 x < 30 mm

3: According to DIN EN ISO 10360-4 / Maximum Permissible Error  $MPE_{THP}$

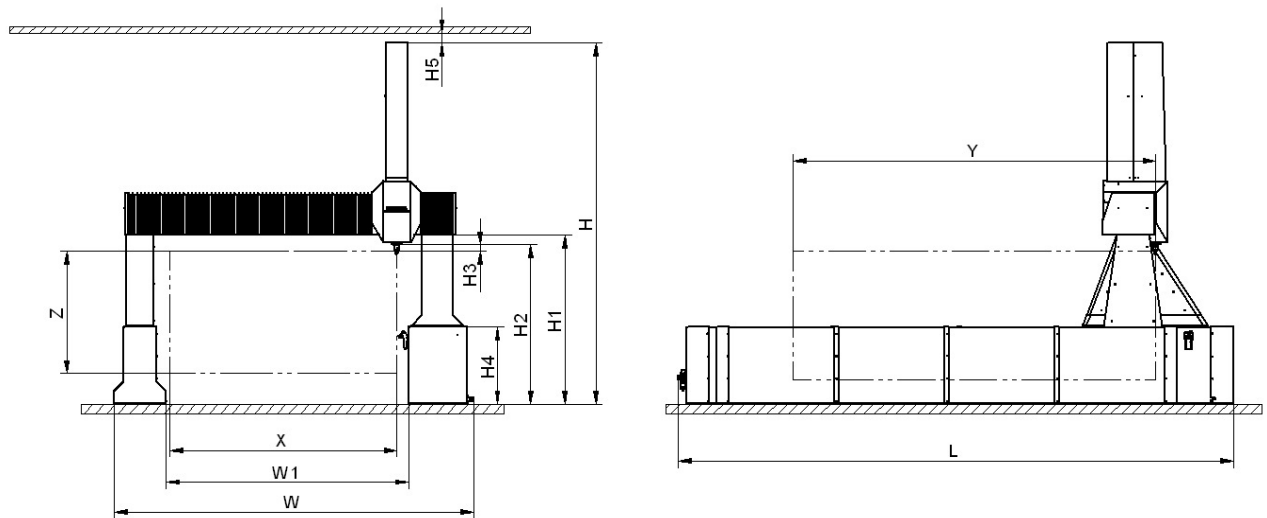
- SP25M with Module SM25-1 and Styli Ø 4 x < 30 mm
- SP80 and Styli Ø 5 x 50 mm
- REVO with RSP3-3 and Styli Ø 4 x < 30 mm

\* Y-measuring ranges on request up to 12000 mm possible

\*\* Specification of accuracies valid under inclusion of temperature compensation

\*\*\* Dependent on used controller

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Dimensions [mm]			
Measuring ranges with PH10M probe system	X	3000	
	Y*	4000	5000
	Z	2000	
Overall dimensions	W	4900	
	L	6650	7650
	H	5500	
Workspace dimensions	W1	3300	
	H1	2590	
	H2	2450	
	H3** (PH10M)	90	
	H3** (SP80)	145	
	H4	1035	
Inspection room dimension	H5	50 (min.)	

\* Y-measuring ranges on request up to 12000 mm possible

\*\* Measuring ranges dependent on probe system

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