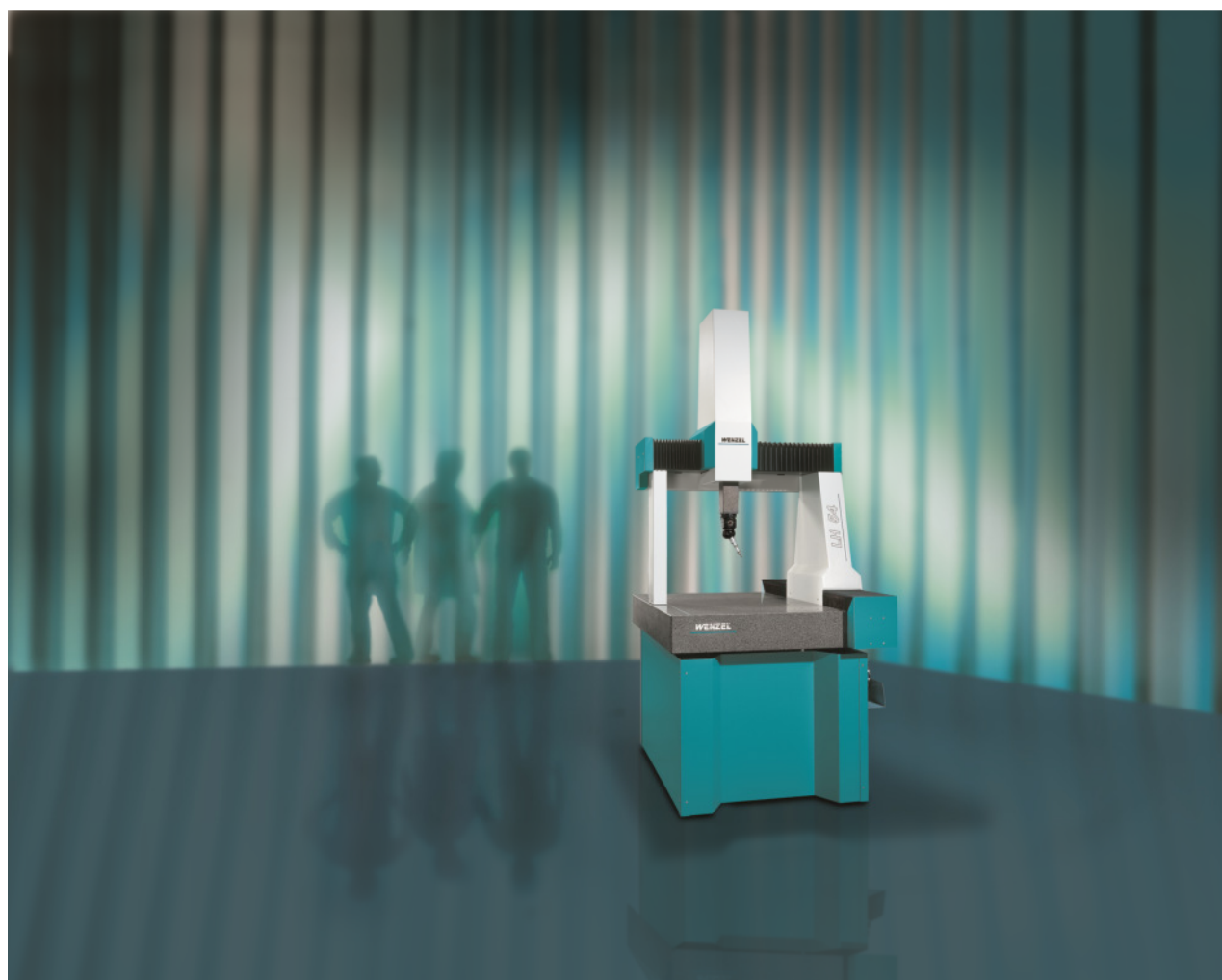


3D-Coordinate Measuring Machine (CMM) LH 54 STANDARD / PREMIUM / PREMIUM-SELECT

Technical Data



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Short description

- CNC-bridge design measuring machine capable for touch-trigger and scanning probes; for optical or continuous and indexing probe systems
- Dynamic and high precision series with air bearings in all axis
- All granite guideways accurately hand-lapped
- 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, quality control, process and production control; in reverse engineering and model making
- Geometric and free-form components
- Both series and individual measurements
- Palletized operation possible

Features

- The Y-axis guideway is machined directly in the base plate, providing optimal long-term stability
- Pre-stressed, encompassing air bearings in all axes
- Passive vibration dampers
- Active pneumatic vibration damping optionally available and field retrofittable
- Compact control panel with central, logarithmic joystick, "mouse function" and context-sensitive function buttons. Selectable joystick's axis assignment. Wireless version optionally available.
- The X- and Y-guideways feature bellows protections against contamination
- High-speed-dynamic servo drives with position monitoring, combined friction power transmission
- Three-axis contouring controller with intelligent "lookahead" function for application-optimized 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
- PH20™: Continuous 5-axis touch-trigger system with „head touch“

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Machine Type		LH 54 Standard	LH 54 Premium	LH 54 Premium-Select					
Measuring Ranges, Weights									
Measuring ranges	X	[mm]	500	500					
with PH10M probe system	Y*	[mm]	600	600					
	Z	[mm]	400	400					
Machine weight		[kg]	770	770					
Permissible part weight		[kg]	200	200					
General Requirements									
Electric		Single-phase AC 1P+N+PE, 115/230 V ± 10 %, 50/60 Hz, max. 1000 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 passive		[Nl/min]	Ø 35	42 (max.)					
active		[Nl/min]	Ø 40	50 (max.)					
Measuring Accuracy**									
Measurement system		Photoelectric scale system, optical division 20 µm							
Resolution		[µm]	0,1						
Single-stylus probing uncertainty ¹	$P_{FTU, MPE}$	[µm]	TP20 2,5	TP200 2,1	SP25 1,8	PH20 2,2	TP200 1,7	SP25 1,5	SP25 1,3
Repeatability range uncertainty ²	$R_{0, MPE}$	[µm]	TP20 2,5	TP200 2,1	SP25 1,8	PH20 2,2	TP200 1,7	SP25 1,5	SP25 1,3
Volumetric length measuring uncertainty ²	$E_{0, MPE}$ $E_{150, MPE}$	[µm]	TP20 2,5+L/300	TP200 2,1+L/300	SP25 1,8+L/300	PH20 2,2+L/300	TP200 1,7+L/350	SP25 1,5+L/350	SP25 1,3+L/450
Scanning probe uncertainty ³	MPE_{THP}	[µm]	SP25 2,4			SP25 2,1		SP25 1,9	
Total measuring time for THP	MPT_{T+P}	[sec]	72			72		72	
Operating Environment									
Operating temperature		[°C]	15-30						
Temperature range for $E_{L, MPE}$ (Standard/Premium)	20 °C ± 2 K, ΔT: 1 K/h , 1 K/m , 2 K/d								
Temperature range for $E_{L, MPE}$ (Premium-Select)	20 °C ± 1 K, ΔT: 0,5 K/h , 0,5 K/m , 1 K/d								
Relative humidity		[%]	40-70						
Dynamics***									
Joystick operation	v_{max}	[mm/s]	0-20 (creep mode), 0-100 (normal)						
CNC mode	v_{max}	[mm/s]	400 axial, 690 volumetric						
CNC mode	a_{max}	[mm/s^2]	1200 axial, 2000 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
 • TP200 with Standard Force Module and Styli Ø 4 x < 30 mm
 • TP20 with Standard Force Module and Styli Ø 4 x 10 mm
 • PH20 with Standard Force Module and Styli Ø 4 x < 10 mm

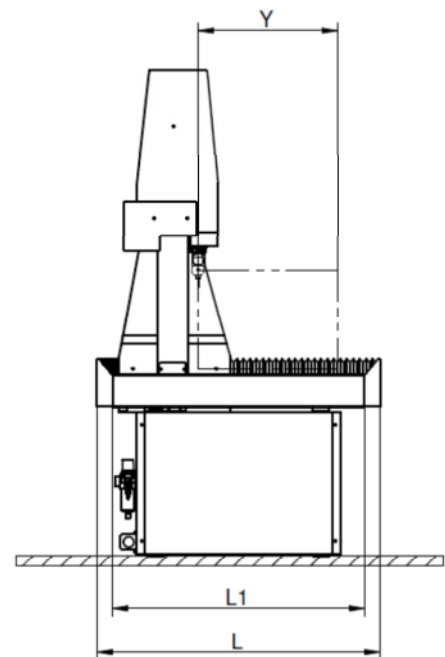
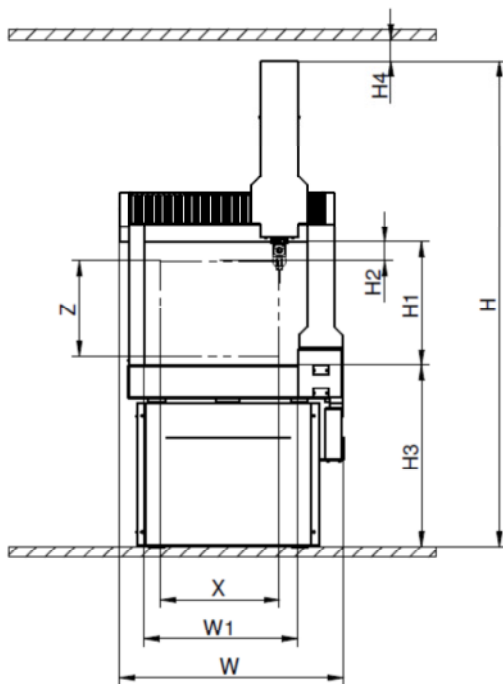
2: According to DIN EN ISO 10360-2 / Maximum Permissible Error $E_{L, MPE}$
 • SP25M with Module SM25-1 and Styli Ø 4 x < 30 mm
 • TP200 with Standard Force Module and Styli Ø 4 x < 30 mm
 • TP20 with Standard Force Module and Styli Ø 4 x < 30 mm
 • PH20 with Standard Force Module and Styli Ø 4 x < 30 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

* Y-measuring ranges on request up to 1500 mm possible

** Specification of accuracies valid under inclusion of temperature compensation

*** Dependent on used controller



Overall Dimensions [mm]		
Measuring ranges	X	500
with PH10M probe system	Y*	600
	Z	400
Overall dimensions	W	1050
	L	1320
	H	2280
Workspace dimensions	H1	570
	H2** (PH10M)	75
	H3	850
	L1	1180
	W1	720
Inspection room dimension	H4	50 (min.)

* Y-measuring ranges on request up to 1500 mm possible
 ** Measuring ranges dependent on probe system

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