

MIDA SOFWARE TECHNICAL SPECIFICATIONS FOR PROBING AND LASER CYCLES



This page is intentionally left blank



Document structure and index

PROBING SOFTWARE				
Machine type	Application	Levels	Cycles	Pag.
			Protected probe positioning	3
			Probe calibration	3
			Hole and shaft measurements (90°)	4
		Inspection Basic	Measurement of bores and shafts at 3 points	4
			Rib measurements	5
		(See page 5)	Pocket measurements	5
			Single surface measurement	6
			Angular measurement on XY plane	6
	Deut in en estien		Corner positioning	7
Machining centres	(See page 4)		Angular measurement on XZ and YZ planes	8
Milling machines	(000 page 1)	Inspection	Angled bore and shaft measurements	8
and milling		Premium	Angled rib and pocket measurements	9
macnines		(See page 9)	Angled single surface measurement	9
			Corner positioning with co-ordinates rotation angle	10
			Two bores/shafts centre distance measurement	11
		Inspection Ultimate (page 12)	Three/four bores/shafts measurement	11
			Stock measurement	12
			Aligning the probe for multiple axes	12
			Sample program	14
	Tool check (page 16)		Probe calibration	17
			Tool length and radius measurement/check	17
			Axial tool integrity check	18
			Protected probe positioning	21
			X axis calibration	21
			Z axis calibration	22
			X axis single touch measurement	22
			Z axis single touch measurement	23
	Part inspection		X axis groove and rib measurements	23
Lathes and Turning	(page 20)		Z axis groove and rib measurements	24
centres			Diameter measurement	24
			C axis measurement with centre search	25
			Z axis groove and keyslot measurements with centre search	25
			X bore and cylinder measurements with centre search	26
			Sample program	28
	Tool check		Probe calibration	31
	(page 30)		Tool measurement	31

	LASER SOFTWARE				
Machine type	Application	Levels	Cycles	Pag.	
			Mida Laser calibration	33	
			Axial and non-axial tool length and radius measurement	33	
			Checking the integrity of single tool cutting edges at a point or on a straight profile	34	
			Checking the integrity of single tool cutting edges on a complex profile	34	
Common cycles for			Checking the tool circular sector	35	
working centres, milling machines	lool checking (page 32)		Checking the tool for axial breakage	35	
and turning centres			Pre-setting disk mills	36	
			Axis thermal drift compensation	36	
			Boring bar measurement	37	
			Axial tool breakage check with drop filtering	37	
			Additional features	38	
Dedicated turning	Tool checking		Pre-setting standard turning tools	41	
centre cycles	(nage 40)		Pre-setting threading tools	41	
	(page 40)		Pre-setting tools for grooves	42	



— 🔎 mida —



PAR1







סר

MARPOSS

MIDA SOFTWARE data sheet 5







סך

MARPOSS

of tolerance









MARPOS

POSITIONING A CORNER (Inspection Basic)		
x Internal corner	External corner	PART
Description	Output	
 The cycle determines the position of an internal or external corner. Working offsets can be set up along the X or Y axes with reference to the position of the corner Data printout possible (see Appendix) Can display alarm messages if the corner position is out of tolerance 	 Position of corner along the X and Y axes (absolute or machine co-ordinates) X and Y position error with respect to nominal value Selected process offset update Corner position out of tolerance alarm Results printout 	

















MARPOSS



PECTION









Results printout

tolerance



MARPOSS



MIDA SOFTWARE data sheet 13



PART INSPECTION





MARPOSS

This page is intentionally left blank





MARPOSS

1000	0.1	21	Can
			CA.
		-	- N.

1

SAM	SAMPLE PROGRAM - SEQUENCE OF OPERATIONS				
#	Program instructions	Explanation			
1	% G80 G40 G49 G91 G28 Z0 T03 M6 G56 G1 X0 Y0 F1000 G43 H03 Z10 F1000	Initial operations and positioning above the corner			
1	G65 P9315 A5 B5 I0 J0 W56 K-5 V1	Determine the position of the corner at co-ordinates X5 and Y5 and set up the origin G56 to the depth Z-5, select the corner alignment (V1)			
2	G65 P9311 Z10 G65 P9311 X50 Y30	Release in Z10 and position above the pocket at co-ordinates X50 Y30	PART		
2	G65 P9313 A2 D10 S1 K-5 Q1	Measure the pocket along the Y axis, nominal dimension 10 at the depth Z-5 and print the results (see Appendix)			
3	G65 P9311 Z50 G65 P9311 Y57,5	Release in Z50 and position above the rib at co-ordinates Y57,5 Z50 with first safety movement along Z axis			
3	G65 P9314 Z30 W57 Q1	Single touch in Z and set up origin G57, print the results (see Appendix)			
3	G65 P9313 A2 D15 S2 K25	Measure the rib along the Y axis, nominal dimension 15 at the depth Z-5			
4	G65 P9311 Y12,5 G65 P9311 Z10	Position above the bore at co-ordinate Z10 with first safety movement along ZY axis			
4	G65 P9312 D10 S1 K-5 W58 Q1	Measure Ø10 bore at the depth Z-5, set up origin G58 origin and print the results (see Appendix)			
5	G65 P9337 A0 B120 E240 J3 D5 F18 H90 S1 K-5 Q1 C2	Measure three Ø5 bores arranged on a Ø20 circumference at the depth Z-5 executing three touches for each bore (calibration data set = C2) and print the results (see Appendix)			
6	G65 P9336 A0 B120 E240 I95 J20 D5 S1 T5 X95 Y5 K-5 Q1 C2	Measure two 05 bores at the co-ordinates X95 / Y20 and X95 / Y5 respectively at the depth Z-5 and print the results (see Appendix)			
	G91 G28 Z0 M30	Return to home position and end cycle			



- 🔎 mida —







— 🗩 mida —





סר

MARPOSS

- 🗩 mida -





This page is intentionally left blank





- 🗩 mida —



X AXIS CALIBRATION Description Output • Calibration value for X+ and X-• The cycle calibrates the probe along the X axis Calibration may be either on a single touch (radius) or two diametrically opposed touched • (diameter) Can be used with either internal (ID) or external (OD) masters ٠



PART



- 🔎 mida -

Z AXIS SINGLE TOUCH MEASUREMENT		
Description	Output	
 The cycle measures the position in X+ or X- by executing a single touch Can be used to offset the Z dimension in the tool table Allows displacement of the origin along the Z axis Data printout possible (see Appendix) A tolerance check may be included 	 Measurement in Z Error with respect to nominal dimension Z dimension out of tolerance alarm Results printout (if programmed) 	
X AXIS RIRS AND GROOVES MEASUREMENT		1

Description	Output
 The cycle measures the width of a groove or rib along the X axis. A tolerance check may be included 	 Measured position with respect to the origin Difference between measured position and theoretical position Real groove/rib width value Difference between real width and theoretical width Measurement out of tolerance alarm





- 🌔 mida —





_				
~				
	1530	102	21	Con .
-			903	Οŧ.







PART

X BORE AND CYLINDER MEASUREMENTS WITH CENTRE SEARCH





Description	Output
 The cycle measures an internal or external diameter by executing a double touch on the X axis, calculating its centre point along the rotating C axis first Can be used to offset the X dimension in the tool table C and X axis working offsets can be set to the centre of measured element Data printout possible (see Appendix) 	 Diameter in X Error with respect to nominal dimension Centre of part in C Centre of part in X X diameter out of tolerance alarm Results printout



This page is intentionally left blank



SAM	SAMPLE PROGRAM - SEQUENCE OF OPERATIONS			
#	Program instructions	Explanation		
1	% T0701 G55 G90	Call up probe and activate working origin		
2	G65 P9011 X0 Z15 G65 P9104 Z0 W55 Q1 U0,1	Protected positioning at co-ordinates X0 Z15 Touch as Z0 with 0.01 mm measurement tolerance, update origin G55 and print results (see Appendix)		
3	G65 P9011 Z30 G65 P9011 X130	Protected positioning at co-ordinate X130		
4	G65 P9102 X100 K-10 T3 Q1 U0,1	Touch at X100 and depth Z-10 with 0.01 mm measurement tolerance, tool offset n° 3 and print results (see Appendix)		
5	G65 P9011 X50 G65 P9011 Z30	Protected positioning at X50		
6	G65 P9107 D20 S2 V3 Q1 U0,005	Measurement with centre search along the rotating C axis of nominal external diameter 20 in X, with 0.005 mm measurement tolerance and print results (see Appendix)		
	G28 U0 W0 M30	Return to home position and end cycle		











PROBE CALIBRATION	

— 🗩 mida —

ĺ	Description	Output
	 The cycle calibrates the four sides of the stylus cube with reference to a know tool or sample Can be used to offset the X and Z dimensions in the tool table 	Cube face positionsErrors with respect to the programmed movements



MARPOSS

TOOL СНЕСК







🗕 🗩 mida 🗕





AXIAL AND NON-AXIAL TOOL LENGTH AND RADIUS MEASUREMENT (TOOL PRESETTING)



CHECKING THE INTEGRITY OF SINGLE TOOL CUTTING EDGES ON A COMPLEX PROFILE



MARPOSS





— 🔎 mida —

קן

- 🗩 mida —

סכ

MARPOSS

TOOL

CHFC

ADDITIONAL FEATURES

9

TOOL CHECK

Configures the number of lasers or heads present and associates them with the working zone	Head 1 Head 2 Head 3 Zone 1 Zone 2 Laser 1 Laser 2			
Configurable machine axes	Axis associated with the positions of 1st CNC axis (1 = X axis - 2 = Y axis - 3 = Z axis) Axis associated with the positions of 2nd CNC axis (1 = X axis - 2 = Y axis - 3 = Z axis) Axis associated with the positions of 3rd CNC axis (1 = X axis - 2 = Y axis - 3 = Z axis)			
Working plane selection parameter	XY plane - Laser parallel to X axis and measurement along Z axisXY plane - Laser parallel to Y axis and measurement along Z axisXZ plane - Laser parallel to X axis and measurement along Y axisXZ plane - Laser parallel to Z axis and measurement along Y axisYZ plane - Laser parallel to Y axis and measurement along X axisYZ plane - Laser parallel to Y axis and measurement along X axisYZ plane - Laser parallel to Z axis and measurement along X axis			
Angle in degrees between the machine axis direction defined as parallel to the laser beam and the direction of the laser beam itself	$Z \rightarrow Y$ - $X \rightarrow Z^{25^{\circ}}$			
Possible not used axis (axis to be inhibited because it doesn't attend in measure movement)				

This page is intentionally left blank

סכ

MARPOSS

TOOL

CHFC

- 🔎 mida ——

<u>Appendix</u>

-				-	
	115	X)	ñх	πL	G)
_				-06	ч.

A. SAMPLE PRINTOUT OF THE RESULTS OF A PART CHECK CYCLE EXECUTED ON A WORKING CENTRE

* _{NOMINAL} **** _{ACTUAL} **** _{ERROR}
*0010.0000**0010.0093**0000.0093
* _{NOMINAL} *** _{ACTUAL} **** _{ERROR}
*0040.0000**0039.9905**0000.0095
* _{NOMINAL} *** _{ACTUAL} **** _{ERROR}
*0015.0000**0015.0712**0000.0712
* _{NOMINAL} *** _{ACTUAL} **** _{ERROR}
*0010.0000**0010.1030**0000.1030
** _{ANGLE} *** _{XCENTRE} ** _{YCENTRE}
*0090.7503**0050.1205**0012.5134
** _{ANGLE} *** _{XCENTRE} ** _{YCENTRE}
*0089.9912**0095.0132**0012.5634

•	-	1	м.	ъſ	~
		75.1			22
				-30	- SL

1

B. SAMPLE PRINTOUT OF THE RESULTS OF A PART CHECK EXECUTED ON A LATHE

* _{NOMINAL} ** _{ACTUAL} **** _{TOL} **** _{ERROR}
*000.0000**000.0151**000.0100**000.0151
* _{NOMINAL} ** _{ACTUAL} **** _{TOL} **** _{ERROR}
*050.0000**049.9911**000.0100** -0.0089
* _{NOMINAL} ** _{ACTUAL} **** _{TOL} **** _{ERROR}
*020.0000**020.0047**000.0050**000.0047

MARPOSS S.p.A. the manufacturer is not obliged to notify customers about any subsequent modifications to the product. The descriptions provided in this document do not grant permission to unauthorised personnel to modify the machine in any way. The warranty covering the equipment shall be considered null and void in the event that any such modifications become apparent.

For a full list of address locations, please consult the Marposs official website

D31011LG00 - Edition 03/2018 - Specifications are subject to modifications © Copyright 2010-2018 MARPOSS S.p.A. (Italy) - All rights reserved.

MARPOSS, @ and Marposs product names/signs mentioned or shown herein are registered trademarks or trademarks of Marposs in the United States and other countries. The rights, if any, of third parties on trademarks or registered trademarks mentioned in this publication are acknowledged to the respective owners.

www.marposs.com

Marposs implements an ISO 9001, ISO 14001 and OHSAS 18001 certified, integrated Company quality, environmental and safety management system. Marposs has also been awarded the EAQF 94 qualification and the Q1-Award.

Download the latest version of this document