

Service and Maintenance Report

X-ray Stress Analyser Pulstec μ -x360s



Identification Data

Identification Data	
Service and Maintenance Report	
Report Number	XXXXXXXX
Execution Date	01.07.2022
Device/Tool/Machine	
Unit name:	X-ray Stress Analyser
Model:	Pulstec μ -x360s
Serial Number of Sensor:	E-0101000XXX
Serial Number of Power Supply:	E-0102000XXX
Serial Number of X-ray tube:	E-0104000XXX
Customer	
Contact person Customer:	
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Country:	
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Identification Data

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Service and Maintenance Report	
Language:	English
Language Code:	EN
Edition:	1
Version:	1.0
Last updated:	2022-02-23

Note:

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Datteln, 01.07.2022

Signature and Stamp

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1 Service and Maintenance Scope

The following units and components were examined during maintenance and checked for functionality:

X-ray diffractometer

Model:	μ-X360s
Serial Number of Sensor:	E-0101000XXX
Serial Number of Power Supply:	E-0102000XXX
Software Version:	3.0.1.0
X-ray Tube:	rtw Röntgentechnik Dr. Warrikhoff MCBI 50C-0,3 Cr
Serial Number X-ray Tube:	E-0104000XXX
Operation hours of X-ray Tube after Service:	
Number of Measurements after Service:	

Safety Cabinet:

Model:	Costum Made
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PC:

Windows Version:	Windows 10
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2 Results

2.1 Review of the Unit

	Description	Evaluation
1.0	Main Unit	
1.1	Checking the cables and connections	ok
1.2	Check collimators	ok
1.3	Check filter foil	ok
1.4	Check detector area	ok
1.5	Check X-ray tube	ok
1.6	Calibrating the unit-internal beam angle measurement	ok
2.0	Electrical test of the unit (based on DIN VDE 0701-0702)	
2.1	Protective earth resistance	ok
2.2	Leakage current measurement (residual current method)	ok
2.3	Contact current measurement	ok
3.0	Safety equipment	
3.1	Emergency Stop	ok
3.2	Door Monitoring	ok
3.3	Software emergency stop	ok
4.0	Software	
4.1	Backup Software	ok
4.2	Update Software	ok
5.0	Program Settings	
5.1	Table of constants	ok
5.2	Information for starting measurement	ok
5.3	Measurement parameter files	ok
6.0	Calibration	
6.1	Adjustment with stress free sample and 2,0 mm Collimator	ok
6.2	Calibration with stress free sample	ok
6.3	Calibration with compressive stress samples	see Chapter 2.2

2.2 Calibration results

2.2.1 Stress free sample

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 224.000 N/mm²
Poisson's ratio: 0,280
Slip plane (h, k, l): (2, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	0 MPa	2 MPa	ok
τ_{xy}	0 MPa	0 MPa	ok
FWHM		2,81 °	ok
Signal Height above Background Noise			ok

2.2.2 Compressive stress sample MM E 001

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 69.310 N/mm²
Poisson's ratio: 0,348
Slip plane (h, k, l): (3, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	-76 MPa	-99 MPa	ok
σ_y	-81 MPa	-94 MPa	ok
τ_{xy}	1 MPa	3 MPa	ok
τ_{xz}	0 MPa	3 MPa	ok
τ_{yz}	6 MPa	3 MPa	ok

2.2.3 Compressive stress sample MM E 002

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 224.000 N/mm²
Poisson's ratio: 0,280
Slip plane (h, k, l): (2, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	-638 MPa	-634 MPa	ok
σ_y	-500 MPa	-497 MPa	ok
τ_{xy}	-5 MPa	2 MPa	ok
τ_{xz}	7 MPa	-2 MPa	ok
τ_{yz}	0 MPa	3 MPa	ok

2.2.4 Compressive stress sample MM E 003

Position 1.1

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 224.000 N/mm²
Poisson's ratio: 0,280
Slip plane (h, k, l): (2, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	-582 MPa	-593 MPa	ok
σ_y	-509 MPa	-517 MPa	ok
τ_{xy}	58 MPa	52 MPa	ok
τ_{xz}	8 MPa	5 MPa	ok
τ_{yz}	-8 MPa	-10 MPa	ok

Position 2.1

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 224.000 N/mm²
Poisson's ratio: 0,280
Slip plane (h, k, l): (2, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	-206 MPa	-197 MPa	ok
σ_y	-193 MPa	-191 MPa	ok
τ_{xy}	-30 MPa	39 MPa	ok
τ_{xz}	-2 MPa	-15 MPa	ok
τ_{yz}	0 MPa	-8 MPa	ok

Position 2.2

Parameter

Collimator diameter: 2,0 mm
Modulus of elasticity: 224.000 N/mm²
Poisson's ratio: 0,280
Slip plane (h, k, l): (2, 1, 1)

Stress component	Target value	Result	Evaluation
σ_x	-699 MPa	-704 MPa	ok
σ_y	-615 MPa	-614 MPa	ok
τ_{xy}	-6 MPa	-11 MPa	ok
τ_{xz}	-2 MPa	-2 MPa	ok
τ_{yz}	3,5 MPa	10 MPa	ok

3 Notes