

Walter L. Robinson & Associates
Mark Liddington

Certificate No.: 127643-05282008

Date of Calibration:	5-28-08	Product:	Unfors Mult-O-Meter
Due Date:	May-09	Model:	320
Warranty Period:	1 year	Serial Number:	127643

Your instrument has passed several strict tests and has been approved for delivery.

kVp Mammo

Generator Settings		Measurements			Tolerance
kVp	mAs	Reference kVp	Unfors kVp	Error %	
23	20	23,0161082	23,1	0,4%	+/- 2 %
25	20	25,0168429	25,1	0,3%	"
28	20	27,97793026	28	0,1%	"
32	20	31,97900327	32,1	0,4%	"
35	20	34,97950432	35,5	1,5%	"

Total Filtration = 30µm Mo

Dose Mammo

Generator Settings		Measurements			Tolerance
kVp	mAs	Reference µGy	Unfors µGy	Error %	
25	20	1902	1770	-6,9%	-10 / -5 %
28	20	2686	2680	-0,2%	+/- 1 %
35	20	5012	5423	8,2%	+5 / +10 %

Total Filtration = 30µm Mo

Time

Generator Settings			Measurements			Tolerance
kVp	mAs	ms	Reference ms	Unfors ms	Error %	
71	10	320	320	319,2	-0,3%	+/- 1 %





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CALIBRATION EQUIPMENT

PRODUCT	MODEL	S/N	Date of calibration
Unfors Mult-O-Meter	320	127643	5-28-08

	CONVENTIONAL, R/F, DENTAL AND CT	MAMMOGRAPHY
GENERATOR	CPI INDICO 100	Siemens Mammomat 3000
WAVEFORM TYPE	HF	HF
ANODE/FILTER	W / 3 mm Al (RAD) W / 2.5 mm Al (DENT) W / 6 mm Al + 0.2 mm Cu (kVp CT) W / 4 mm Al + 0.1 mm Cu (dose CT)	Mo / 30 µm Mo
FIELD SIZE	10 x10 cm (RAD, DENT) 10 x 1 cm (CT)	18x23 cm
SDD Kv	50 cm	63 cm
SDD DOSE	50 cm (RAD, DENT) 75 cm (CT) 172 cm (FLU)	63 cm
CALIBRATION POINT FOR DOSE	70 kVp, 1st HVL of 2.45 mm Al (RAD, DENT) 120 kVp (CT)	28 kVp, 1st HVL of 0.314 mm Al

		Calibration Date		Calibration Date
Reference system DOSE	Unfors Xi S/N:144808	04-02-08	Radcal 10X5-6M SN 8360 9060 SN 99-0410 9015 SN 91-0304	02-04-08
Reference system mAs	Unfors mAs Box S/N: 2242	04-23-08		
Reference system kV		Parker Medical HV-1 S/N: 11074-1-2 Digi-X S/N: 223 Fluke 87-V S/N: 89940147		01-17-2008 01-17-2008 11-08-2007
Reference system TIME			Digi-X S/N: 223	01-10-2008

Calibration condition:

Ambient temperature: 72°F ± 5°F
 Relative humidity: 50% ± 10%

The expanded uncertainty of the measured instrument error in the calibration certificate is estimated to be:
 ± 2 % for kVp ± 0.5 % for exposure time ± 5 % for Dose (at calibration point) ± 2 % for mAs

The expanded uncertainty is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which have a normal distribution to a coverage probability of approximately 95 %.

All reference systems are calibrated once a year. kV systems are tested by the Swedish National Testing and Research Institute and are traceable to PTB. DOSE systems are tested by NIST/PTB. All DOSE reference system is traceable to NIST and PTB.

Unfors mammography meters are calibrated according to FDA MQSA requirements.

Unfors calibration procedure number: 76215

Tested by:

Certified by:

UNFORS INSTRUMENTS Inc.

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 Phone: (860) 355-2588 FAX: (860) 350-2664
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Summary of Enclosed Documents

Product:	Unfors Mult-O-Meter
Model:	320
Serial Number:	127643

Arrival check: Date: 05-28-08
Calibration Certificate: Date: 05-28-08
Calibration Equipment List

*Your instrument has passed several strict tests and has been approved for delivery.
 Enclosed you will find detailed documents for your instrument.*

Service Activity:

Calibrated and verified

The Unfors Concept



Accurate result



10 s to learn



Pocket sized