

MeatMaster™ II AG



Introduction

MeatMaster™ II AG (= After Grinder) is designed to be placed after a grinder for dedicated in-line process analysis for continuous fat and weight determination in natural fresh or frozen ground meat.

MeatMaster II AG can determine the fat content in ground meat portions as well as entire batches of several tonnes.

Metal and bone detection is not available for MeatMaster II AG.

The Instrument can be configured with two different conveyor speeds of 150 or 250 mm/sec. (29.5 or 49 ft/min) which determine the instrument capacity.

MeatMaster II AG has a total length of 2500 mm (98.4 inches) including a belt section for product in- and out-feed on each side.

Dedicated Analytical Solutions

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Performance Data

Fat and Weight

	Ground Meat loose on conveyor	Notes and conditions.
Product fat range	2–85 % Fat	0-100 % fat is measured, but the accuracy cannot be guaranteed outside the fat range.
Product thickness range	1-20 cm	Solid meat thickness. Outside an average product thickness of 5-15 cm, the accuracy and repeatability may be reduced.
FAT Accuracy error: (RMSEP)¹⁾	≤1 % absolute Average solid meat height 5-15 cm/subsample	One standard deviation ²⁾ .
FAT Repeatability error³⁾	≤0.5 % absolute	One standard deviation ²⁾ . Sample size min. 20 kg and average solid meat height 5-15 cm
WEIGHT Accuracy error (RMSEP)¹⁾	≤2 % relative	One standard deviation ²⁾ Sample size min. 20 kg and average solid meat height 5-15 cm
WEIGHT Repeatability error³⁾	≤0.5 % relative	One standard deviation ²⁾ Sample size min. 20 kg and average solid
<p>¹⁾ Accuracy (RMSEP = Root Mean Square Error of Prediction). The accuracy should be evaluated on a large number of samples (minimum 24) and with a reference method with an accuracy error ≤ 0.5 % fat, including any sampling errors.</p> <p>²⁾ This means that 68 % of the samples will be within ± 1 standard deviation and 95 % within ± 2 standard deviations.</p> <p>³⁾ The repeatability is evaluated on consecutive measurements on the same sample.</p>		

Note: Actual performance must be stated and experimentally verified on a project-to-project basis.

Conveyer Speeds and Respective Capacity

The table below shows the two available belt speeds for the MeatMaster II AG and respective meat capacity.

	Ground Meat loose on conveyer⁴⁾
150 mm/s (29.5 feet/min)	9 tons/h (20.000 lbs/h)
250 mm/s (49 feet/min)	15 tons/h (33.000 lbs/h)
⁴⁾ Above stated capacity is calculated based on a chilled meat application. The capacity for frozen ground meat applications might be significant lower due to the lower density of frozen ground meat.	

Note:

The exact capacity will depend on the conditions of use and will be estimated for each customer's application. A downtime of approx. five min. each five hours for a reference measurement, which is needed to guaranty best performance, must be taken into consideration and is not included in above example.

Measurement Area

The figure illustrates a cross-section of the measurement area.

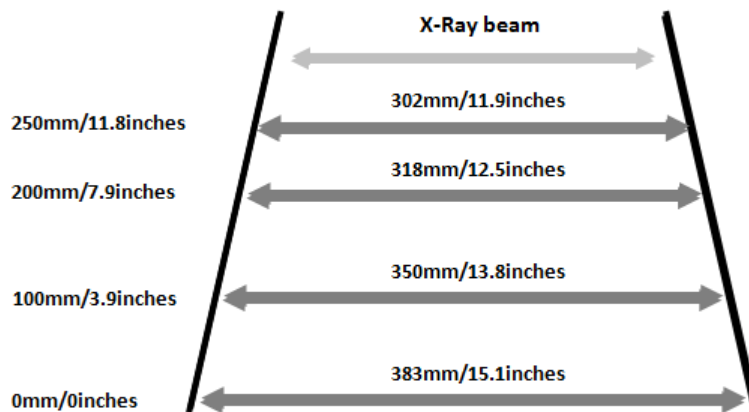


Fig. 1

Weight and Dimensions

Length (total):	2,505 mm (98.62 Inches)
Height (total):	Min. 2,456 mm (96.69 Inches) Max. 2,522 mm (99.29 Inches), feeds are adjustable
In-feed height:	Min: 784 mm (30.87 inches) Max: 850 mm (33.46 inches)
Width (total):	976 mm (38.43 Inches) (without additional back cabinet) 1,226 mm (48.27 Inches) (with additional back cabinet)

Space requirement [W*D]:	2,505 mm (9,62 Inches) * 2,700 mm (106 Inches) (calculated with additional back cabinet, 750 mm (29.5 Inches) free space both sides)
Tunnel aperture [H*W]:	260 mm (10.23 Inches) * 380 mm (14.96 Inches)
Weight (operational):	Approx. 1,000 kg (2,205 lbs)

Instrument Data

Power supply:	220-240 V / AC $\pm 10\%$, 1 phase, 50/60 Hz (US/CAN: 120 V /AC 2 phase $\pm 10\%$ two phase, 60 Hz) A line conditioner may be required depending on local conditions. FOSS offers a line conditioner for mounting inside the MeatMaster II AG instrument
Power consumption:	Max. 1200 VA
Water requirements:	Quality: Potable water, 8-15 °C (46-59 °F) and a maximum pressure of 10 bars (140 psi)
Water consumption:	60 l/h (16 U.S. gal/h)
Cooling need: 450 W:	Local water recirculation setup might be considered
Water connections:	In: Quick release fitting for hard plastic tubing (Pex) 12 mm outer diameter (e.g. fitting type: Norgren 102471228) Out: Quick release fitting for hard plastic tubing (Pex) 10 mm outer diameter (e.g. fitting type: Norgren 102251038)
Air requirements:	Clean dry air at min 2 bars (28 psi), a dew point lower than temperature at MeatMaster™ II location and a flow of approx. 15 l/min. (4 U.S. gal/min.)
Air connection:	In: $\varnothing 4/6$ mm hose (inner dia. 4mm / outer dia. 6mm) for pressurised air.
Ambient temperature:	2-15 °C (max dT/dt 3 °C/3h), 35-59 °F (max dT/dt 5.5 °F/3h) (Please contact Foss ANA in case ambient temperature is >15 °C)
Ambient humidity:	5–95 % RH
Degree of protection:	IP 69 K (Except X-ray warning lamp and Touch Screen Panel surface. (Stainless steel protection hood for Touch Screen Panel will be supplied with instrument)
Noise level:	< 70 dB

X-ray

X-ray source:	Operated at 140 kV / 3 mA
X-ray emission:	MeatMaster II AG is shielded to <1 μ Sv/hour or <2 μ Sv/hour at a distance of 5 cm (2 inches) depending on configuration
X-ray dose received by meat:	< 0.000005 Gy (Grey)

Data Connection

- Ethernet 10/100
- OPC data standards
- Internet access for remote support min. 1.4 Mbytes/s

Standards and Approvals

MeatMaster II AG is CE or UL labelled and complies with the following directives:

- EMC (Electromagnetic Compatibility) Directive 2004/108/EEC
- LVD (Low voltage directive) 2006/95/EEC
- MD (Machine Directive) 2006/42/EEC

Patents

Patent No.:

- US: 6600805
- CA: 2387756
- AU: 768044
- NZ: 518315
- EP: 1226431

Reference Methods

- Schmid-Bondzynski-Ratslaff (SBR) method No. 131, 1989 from the Nordic Committee for Food Analysis (NMKL)
- ISO 1443:1973 Fat in Meat Products

Installation

The analyser is of a robust design. We recommend nevertheless that the installed unit is protected by concrete mounted poles or rails that prevent the unit from being hit by passing vehicles. Such devices are not part of a FOSS delivery unless specified.