

# The MADO EXTRUSION GRINDER

For ambitious food processing companies.



**50** Years  
Innovation  
1960 - 2010

**MA  
DO**<sup>®</sup>  
Meat processing  
machines

# The MADO EXTRUSION GRINDER increases your profits.

The new EXTRUSION GRINDER from MADO - specialist manufacturers of the most hygienic and cost-effective meat processing machines in the world save time and reduce investment capital by combining several processing stages into one. This revolutionary machine, designed for ambitious food processing companies, is the result of continuous dialogue with our customers. Eight variations in five different sizes are available.

Patented, state-of-the-art technology, combined with first class materials and exceptional finishing, guarantees the best possible results in all production phases. Integrating **mixing**, **cutting** and **homogenizing** into a single machine improves production efficiency immensely.



**A new era has dawned for the food processing industry.**

MADO'S EXTRUSION GRINDER is a revolutionary invention, reducing three machine processes into one machine. Cutting, mixing and homogenization are all accomplished within this single unit, saving capital costs, reducing processing time and eliminating the transfer of product from one machine to another. Imagine the elimination of transfer conveyors, the space and maintenance they require and the efficiency improvement that this machine offers.

Another benefit of MADO'S EXTRUSION GRINDER is this machine's significant improvement in hygiene levels as well as the commensurate reduction and simplification of cleaning the machine: rather than three machines to supply electricity to, manage (man power), maintain, clean and provide floor space for, MADO'S EXTRUSION GRINDER truly does it all in one machine for a fraction of the cost.

The MADO'S EXTRUSION GRINDER meets EU guidelines 98/37/EWG for safety and hygiene for food processing machinery. MADO maintains its own Quality Management system and is ISO DIN 9001 certified.



**EXTRUSION GRINDER MMG 229**

Hopper volume 130 litres

Capacity 3.600 kg/h

**EXTRUSION GRINDER MMG 233**

Hopper volume 500 litres

Capacity 12.000 kg/h

**EXTRUSION GRINDER MMG 235**

Hopper volume 1.000 litres

Capacity 6.000 kg/h

**EXTRUSION GRINDER MMG 239**

Hopper volume 1.500 litres

Capacity 12.000 kg/h

**EXTRUSION GRINDER MMG 243**

Hopper volume 2.200 litres

Capacity 12.000 kg/h



# EXTRUSION GRINDER – mixing, cutting and homogenizing in just one Machine.

**The MADO EXTRUSION GRINDER is the optimal solution for the modern food processing industry.**

Whether one processes cured, cooked, fresh sausage or other comminuted food, patented MADO technology provides the most efficient production with the high quality: grinding machines in the world. Products such as Hot Dogs, Wieners, cold cut emulsions, cooked sausages such as liverwurst or coarser items such as fresh bratwurst, or diverse as Krakauer and cooked and cured salami are all processed in a single step operation with the utmost efficiency, highest quality and the ultimate in hygiene. With a processing capacity of up to 12 metric tonnes per hour, the high-volume screw pump gives the new EXTRUSION GRINDER double the output compared to standard mincers with the same sized cutting tools.

The MADO EXTRUSION GRINDER is perfectly suited for the production of emulsions. In comparison to the standard bowl cutter or emulsifier line, this revolutionary technology consumes only one third the electrical power at less than half the capital equipment cost. Furthermore, traditional use of ice for emulsifying is eliminated: MADO'S EXTRUSION GRINDER needs only water for the process. Start counting the savings.

For even better production results and more specialised applications, the new MADO EXTRUSION GRINDER can also be supplied with an optional vacuum device. Mixing under vacuum improves protein extraction and shortens the reddening time of the products. Also, oxidation is reduced even with low levels of nitrite present. The product has a firmer texture and a longer shelf-life. An injection system is also available to improve flavor, optimise color and temperature.







- Higher quality
- Higher efficiency
- Increased hygiene
- Lower costs

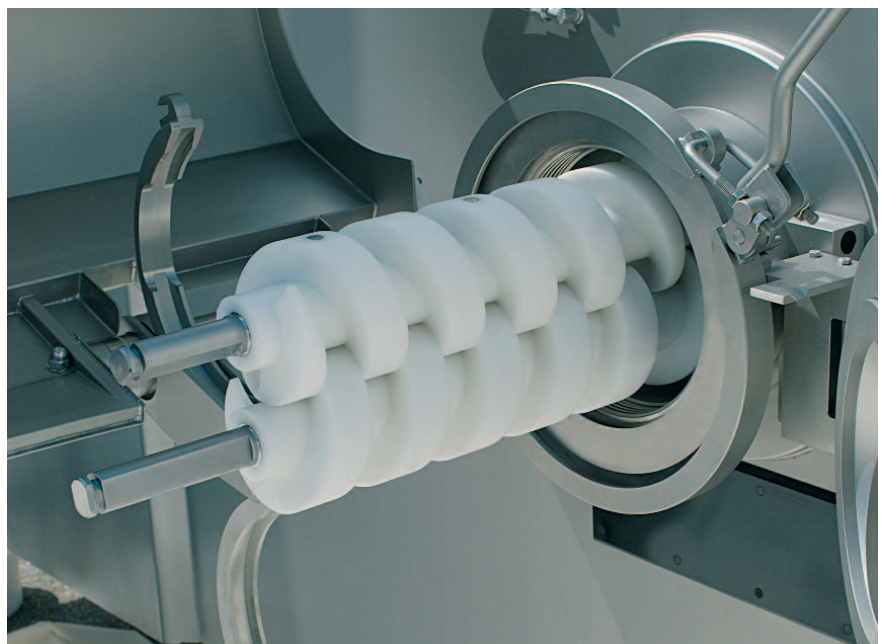
EXTRUSION GRINDER MMG 239  
with Vacuum unit and "Duo-Separat" separator system

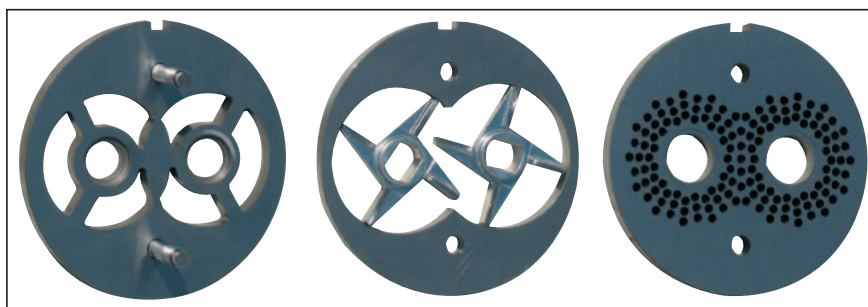
# Everyone's talking about the new EXTRUSION GRINDER from MADO.

The speed of the mixing unit is variable and operates both forward and reverse. During the mixing process, the two feed augers run in reverse and push the material up the back wall of the hopper. This significantly enhances product mixing while reducing the blending time.



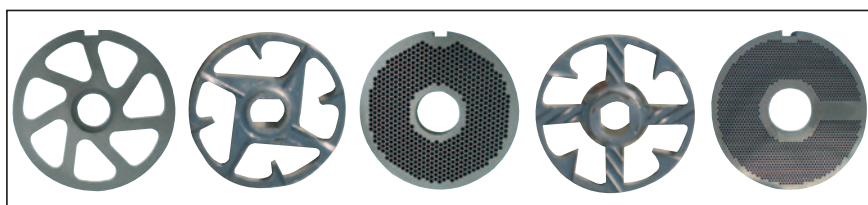
The screws of the EXTRUSION GRINDER'S cutting assembly transport the processing material in an exemplary gentle fashion. This ensures an excellent particle definition with the lowest possible temperature increase. E.g. when processing pork,  $\Delta t$  is only  $0.5^{\circ}\text{C}$  when using a 3 mm end hole plate.





- First-class sectional view
- Minimal temperature increase
- Minimal energy consumption
- Maximum output

The patented twin-cutting system is used to pre-cut the material in the most gentle way possible. Afterwards, the material is homogenized using 3 to 7 piece cutting sets, individually configured for each product.



#### Excellent product quality

- Integrating several processes within a single machine reduces microbial contamination of the raw material by up to 80%.
- Optimized homogenous mixing of all ingredients through patented cutting technology.
- The clear particle definition allows the processor to present an exceptional product.
- The double feed auger system prevents air pockets in the emulsion.

#### Cost savings

- Mixing, grinding and emulsifying in one machine shorten processing times and reduces capital costs. This saves time and money!
- Integrating the processing steps makes conveyors and other transporting means obsolete and results in huge space savings and significantly reduced cleaning procedures.
- In emulsions, water is used instead of ice. This improves hygiene, while significantly cutting operating costs.
- Optimized production efficiency means significantly lower energy consumption compared with standard machines.

#### Increase profitability

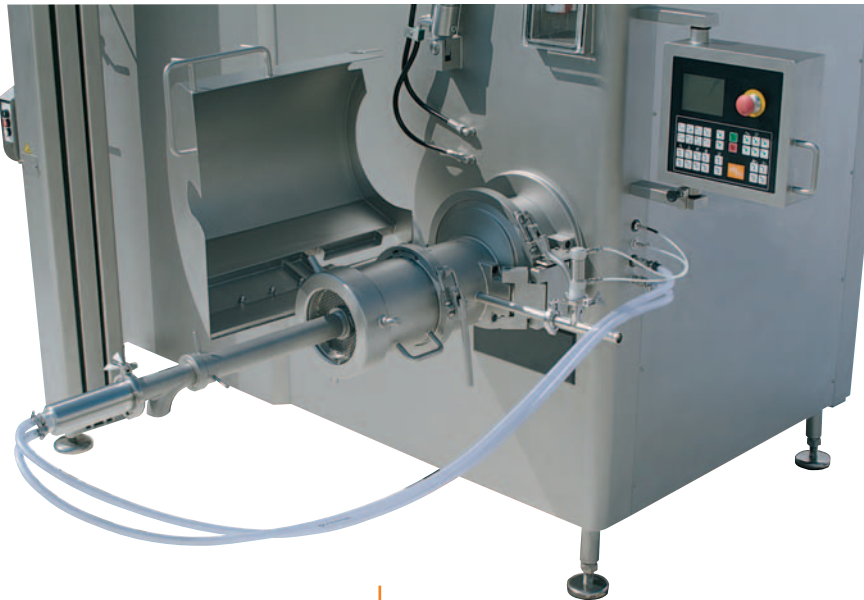
- High levels of output of up to 12 metric tonnes per hour means significantly lower capital requirements compared with standard processing methods.

# Variants and equipment.

## **"DuoSepar" bone elimination system**

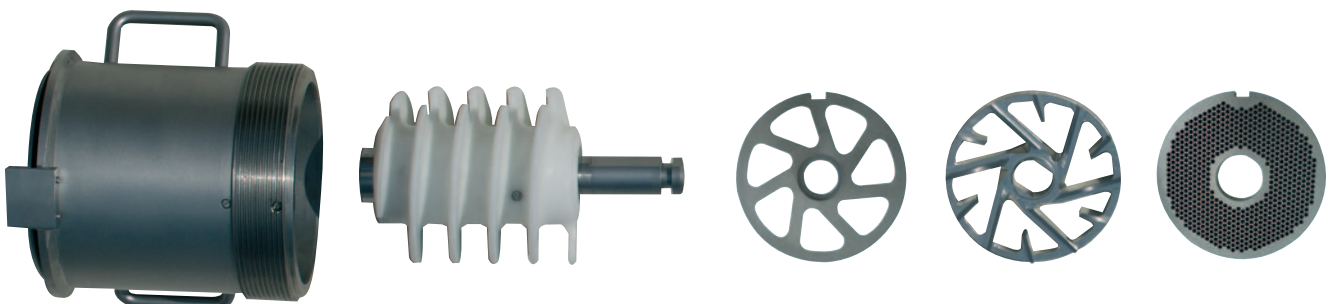
The EXTRUSION GRINDER can be fitted with the patented "DuoSepar" elimination system upon request. This system allows you to separate bone, gristle and sinews effectively and efficiently. Processes which cause stress to raw materials, such as conventional separation systems, can also be eliminated, thus increasing your savings. The "DuoSepar" system consists of

two separator units which work independently of each other. In the first stage, separation is carried out on the side. In the second stage it takes place centrally on the hole plate. The pneumatically operated control valves for the two separators are infinitely adjustable.



## **MADO Double Pre Grinder Attachment**

The patented mixing auger comes with integrated back flow openings. This enables the raw material to be mixed optimally with spices and other ingredients. This supplemental mixing and cutting unit is especially suited for the production of emulsions or products such as liver sausage.





### Tool trolley

All functional parts are removed from the EXTRUSION GRINDER and hung or placed on the tool trolley which comes as a standard accessory. This allows for easy, hygienic and spotless cleaning and disinfection of both the machine and the parts. With the tool trolley, space to be removed disassembly and storage of components is child's play. This simplifies handling and keeps everything in good order.

- Programmable control unit
- Feed screws with variable speed adjustment
- Mixing arm with variable speed adjustment
- Pump screws with variable speed adjustment
- Cleaning platform
- Tool trolley
- All come as standard



# Cleaning and maintenance made easy.



## Cleaning platform as standard

To enable you to get the most out of your MADO EXTRUSION GRINDER, the machine comes complete with a robust cleaning platform. The platform is equipped with a safety interlock to provide the utmost in safety.

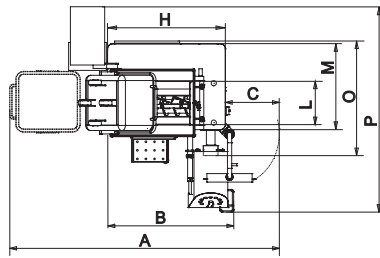
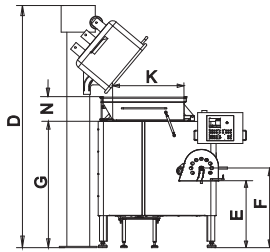
All MADO EXTRUSION GRINDER drives are controlled by frequency converters and are thus completely variable in speed. Operators can also adjust the individual times and cycles of the mixing unit. All electrical elements are compactly sealed in the machine housing and are thus protected against moisture. A separate electric control cabinet is not necessary.



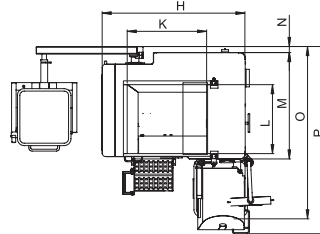
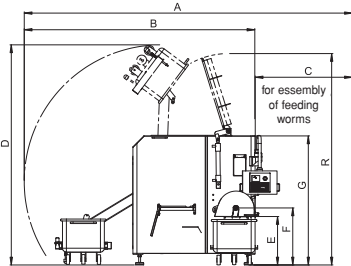
## State-of-the-art drive concept

The MADO EXTRUSION GRINDER has a compact control panel, with an easy-to-operate keyboard that is splash resistant. Up to 99 separate operating programmes can be stored.

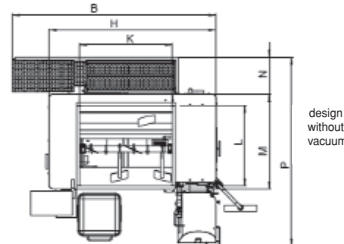
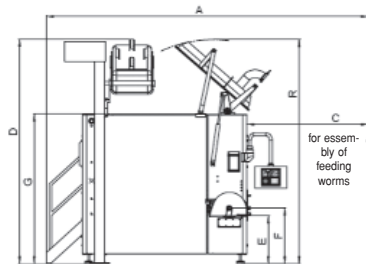
## MMG 229



## MMG 233



## MMG 235 MMG 239 MMG 243



Type	MMG 229	MMG 233	MMG 235	MMG 239	MMG 243
A	3150 mm	5060 mm	5000 mm	5400 mm	5400 mm
B	1470 mm	3560 mm	3050 mm	3450 mm	3450 mm
C	630 mm	1500 mm	1600 mm	2000 mm	2000 mm
D	2825 mm	3400 mm	3700 mm	3700 mm	3700 mm
E	780 mm	745 mm	740 mm	740 mm	740 mm
F	930 mm	880 mm	1010 mm	1010 mm	1010 mm
G	1475 mm	1990 mm	2400 mm	2400 mm	2500 mm
H	1380 mm	1880 mm	2310 mm	2710 mm	2710 mm
K	830 mm	895 mm	1100 mm	1500 mm	1500 mm
L	500 mm	900 mm	1000 mm	1000 mm	1200 mm
M	1006 mm	1400 mm	1500 mm	1500 mm	1500 mm
N	290 mm	80 mm	620 mm	620 mm	620 mm
O	1340 mm	2270 mm	-	-	-
P	2400 mm	2500 mm	3050 mm	3050 mm	3050 mm
R		3260 mm	3600 mm	4020 mm	3700 mm
Extruder screw ø	80 mm	125 mm	125 mm	125 mm	125 mm
Current type	400 V, 50 Hz AC current	400 V, 50 Hz AC current	400 V, 50 Hz AC current	400 V, 50 Hz AC current	400 V, 50 Hz AC current
Nominal current	50 A	64 A	110 A	199 A	199 A
Motor capacity	AS 18,5 kW ZS 5,5 kW MW 1,1 kW	AS 64,0 kW ZS 19,0 kW MW 4,0 kW	AS 64,0 kW ZS 19,0 kW MW 11,0 kW	AS 64,0 kW ZS 19,0 kW MW 15,0 kW	AS 64,0 kW ZS 19,0 kW MW 18,0 kW
Fuse protection	63 A inert	100 A inert	200 A inert	250 A inert	250 A inert
Revolution per minute (rpm)	AS 50-350 ZS 5-35 MW 5-30	AS 10-350 ZS 5-35 MW 5-33	AS 10-150 ZS 12-24 MW 5-33	AS 10-300 ZS 5-34 MW 5-33	AS 10-300 ZS 1-36 MW 5-33
Cutting assembly	E 130	U 200	G 160	U 200	U 200
Out put per hour	approx. 3600 kg/h	approx. 12000 kg/h	approx. 6000 kg/h	approx. 12000 kg/h	approx. 12000 kg/h
Hopper volume	approx. 130 litres	approx. 500 litres	approx. 1000 litres	approx. 1500 litres	approx. 2200 litres
Weight	approx. 1000 kg	approx. 2700 kg	approx. 3000 kg	approx. 3300 kg	approx. 3450 kg

Supplied with 130 litres – 2.200 litres  
hopper output volumes ranging from  
3.600 to 12.000 kg/h

Machine and equipment configurable  
to individual needs

Comes with vacuum or gas injection  
device upon request

Several different mixing paddle designs  
available

Variable mixing time and mixing speed,  
as well as variable feed and cutting  
speeds

PLC controller and touch panel as  
standard

Can be used in all kinds of meat and  
food processing

# Special machines for modern meat processing.



- Meat grinders
- Bowl choppers
- Band saws
- Knife sharpeners
- Mixers
- Portioning systems
- Industrial machines

MADO machines comply with the EC Machine Norms. They are marked with the CE sign. MADO is certified according to DIN ISO 9001.

Special voltages on enquiry.

Technical changes made during the course of further development are reserved.

MADO special machines for modern meat processing at qualified specialists.

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