



GSI   
RED MEAT POULTRY FISH

INJECTORS



INJECTOR MODELS

GSI (Garos Salt Injector) is one of the most advanced injectors on the market and is at the forefront of technological solutions. As the fourth generation of Garos injectors, its design has been refined over the years to meet the extensive hygiene and performance requirements of the modern meat industry.

With several models in three sizes, there are various needle configurations and injector head options. The GSI is incredibly versatile - different models can be used for either red meat, poultry, and fish products, including bone-in products.

Depending on requirements, the GSI can be tailored to suit and manufactured with either one or two injection heads with the potential third head for tenderising (for models 620 and up). With the varying head options combined with proper needle configurations, the GSI's injection rate can be as low as 5% to above 100%.



ADVANCED
GSI 420, 620, 820

- ▶ Developed to meet the requirements for uniform injection percentages and hygiene.
- ▶ PLC controlled via touchscreen or push-button manual control.
- ▶ Models suited for any type of meat - red meat, poultry, or fish.
- ▶ Equipped with one or two needle heads for both bone-in or boneless products.
- ▶ Additional tenderising head available also for either bone-in or boneless products.
- ▶ The needle configuration in the injector ranges from 48 up to 768 needles.
- ▶ Unique brine flow system - from the pump to the product.

**BASIC**
GSI 350

- ▶ Used for small and medium-sized production requirements as well as testing facilities.
- ▶ PLC controlled via touch panel.
- ▶ Suitable for any type of meat - red meat, poultry, or fish.
- ▶ Equipped with a single needle head for bone-in and boneless products.
- ▶ Injector needle configuration from 40 up to 160 needles.
- ▶ The capacity from 0,8 to 2,5 tons per hour Uniform brine distribution.
- ▶ All standard components are manufactured and utilised from well-known brands.
- ▶ Heavy duty design.

GSI 420, 620, 820

CONTROL PANEL

whether touchscreen or manual, regulating containing equipment functions, is placed on an adjustable arm to simplify control for the operator.

WALKING BEAM/ INTRALOX CONVEYOR

Conveyor either Walking beam or Intralox, depending on product and customer's requirements.

INLINE PROTEIN FILTER

automatic self-cleaning, eliminating blocked needles.

MAINTENANCE-FREE

pneumatic or mechanical valves.

FLOW SYSTEM

adapted for even the most complex types of brine and marinade.

PANEL HMI

controlled via an 12-inch touch panel allows for intuitive communication with the device.

LARGE WINDOWS

to give full visual control of the process.

INCLUDED WITH TOUCHSCREEN MODEL

fully automatic lubrication system, ensuring all grease points are lubricated, in the entire machine. When the grease tank is empty and alert is given which in turn stops the machine.

HYGIENIC PERFORMANCE

the entire injection area is easily accessible due to the design of the machine. The hood gables are welded to the machine body surfaces without any hidden gaps.

SEPARATE CIRCULATION PUMP

included with touchscreen model, separate circulation pump connected to the filter tank, keeps the brine in suspension to prevent additives sedimentation on the base of the tank. For all brines, including those with a high content of additives. It is also possible to use the pump for circulation through a heat exchanger, to keep the brine cold.

ROTARY FILTER

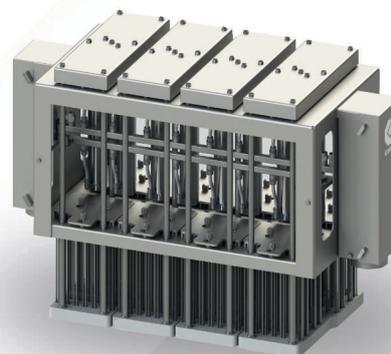
plus a 4-stage filtering process that ensures an excellent result.





FISH **BONE - IN**

Up to 384 needles. A head designed for injecting fish and fish fillets in a unique solution for diversified production of fish products. Regardless of the product type, guaranteeing continuous and homogenous injection.



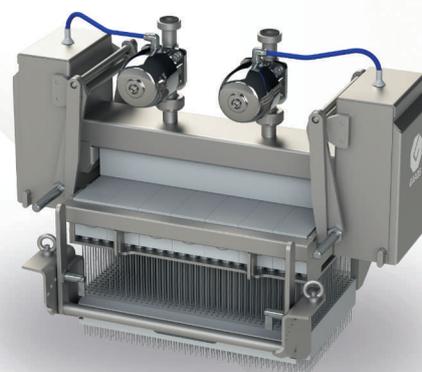
TENDERIZER **BONELESS, BONE - IN**

Up to 864 knives allows for tenderising muscle fibers by severing the connective tissue. Whilst this improves the pliability of the meat and it increases the surface area, allowing for increased protein extraction during vacuum massaging, with higher moisture retention during the cooking process. Applicable to large and small pieces of meat.



RED MEAT, POULTRY **BONELESS, BONE - IN**

Up to 384 needles. Suitable for products such as bone-in, boneless poultry, and red meat. The optimal solution for differentiated production, regardless of the product type. The brine flow valves are activated as soon as the needle foot touches the product, therefore only the needles in the meat are injected giving consistent set percentage levels, with no pressure drops across the head.



FISH, POULTRY **BONELESS**

Up to 1968 needles - Specially developed for delicate products such as fish fillets and boneless poultry cuts. A unique needle system, it is distinguished by a very large number of needles, which allows for high efficiency while at the same time gently and evenly distributing the brine in the product at low pressure allowing better absorption. The design allows for easy and quick cleaning and inspection due to the quick disassembly system of the replaceable needle cassettes.



GSI 350

MAINTENANCE-FREE
pneumatic or mechanical valves.

INTRALOX CONVEYOR
for all types of meat.

INLINE PROTEIN FILTER
automatically cleaning,
reducing the potential of
blocked needles.

SCREEN FILTER UNIT
in conjunction with a
standard 200 l trolley.



LARGE WINDOWS
giving the operator full view of
the process.

PLC
controlled via a 4-inch touch
panel which allows for
intuitive communication with
the injector.

SEMI-AUTOMATIC LUBRICATION SYSTEM
all moving parts of the
injector having a central
lubrication point, for quick
and easy maintenance.

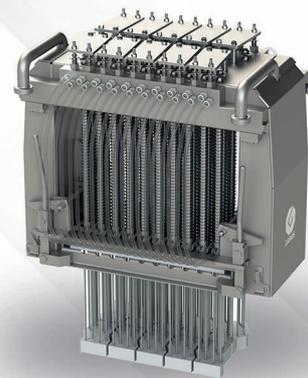


FISH AND POULTRY BONELESS, BONE - IN

Up to 160 needles.

The head was developed for injection of fish
and fish fillets, boneless poultry parts.

Pneumatically controlled valves.

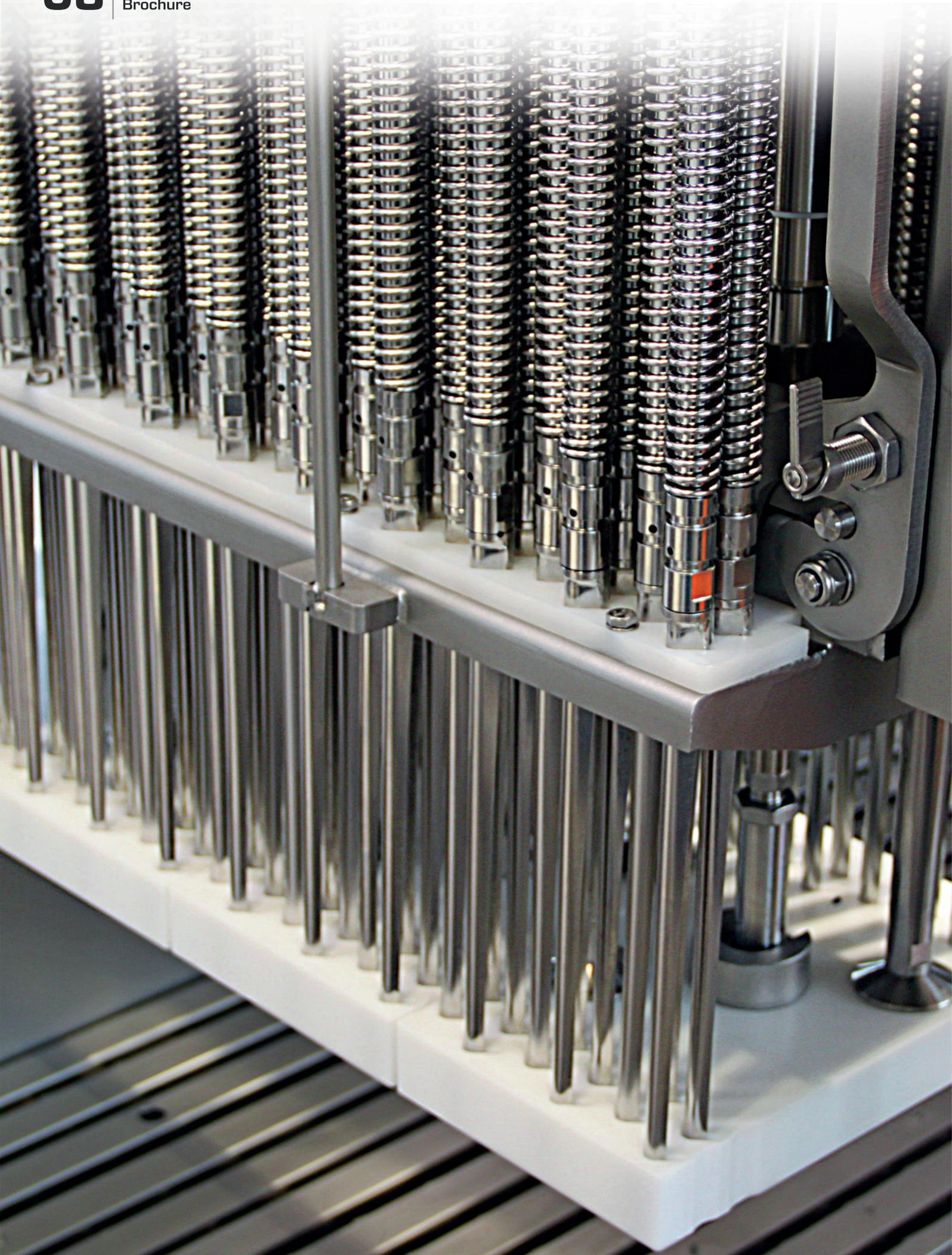


TENDERIZER BONELESS, BONE - IN

Up to 160 needles.

Suitable for products such as red meat and
poultry cuts, with and without bone.

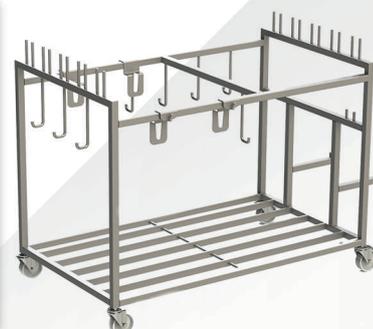
Mechanically controlled valves.



FEATURES

GSI CLEANING TROLLEY

A trolley simplifies the cleaning of the injector. Allowing storage of all removable parts, during wash down of the injector safely, making it possible to clean the machine without any obstacles.



INLINE FILTER

Standard on most GSI's optional on others, Inline filter - an additional filter removing particles larger than the needle holes from the brine in order to avoid blocking the needles. This filter self-cleaning cycle takes place at intervals set by the user, ejecting the debris.

CIRCULATION PUMP

An additional pump for brine circulation manual or automatic control keeps the brine in suspension. This pump can be used to remove any left-over brine from the filter tank at the end of production or between recipes into small holding tanks to reduce waste.



GRF FILTER UNIT

The Standard GRF filter tanks are available in two standard sizes 430 and 700 liters which feature an internally mounted motor gearbox ensuring no electrical elements outside of the machine cabinet driving a rotary filter screen, from there the brine flows through three vertical filter screens then to a round floor mounted screen before entering the injector and in-line filter. Optional extra: cooling jacket added to the filter tank.

GBF FILTER

Self-cleaning belt filter, is used in production where an especially high level of brine filtration is required. The GBF is equipped with a belt filter with a large surface area, and a filter mounted on the bottom of the tank before the injector pump and protein filter. The belt filter is cleaned automatically thanks to specialized scrapers and water jets that remove any debris with a steady stream of water. Automatic cleaning of the filter allows for smooth and uninterrupted operation. The belt filter is driven directly from a gearbox installed in the body of the injector. Optionally, the GBF filter unit can be equipped with a cooling jacket.



INJECTION LINE



ROLLER TENDERIZER

GRT (Garos Roller Tenderizer) is the extension for our Injectors. The capacity of the GRT 620 matches the throughput of all our injector models. The leg frame is available in different executions to fit standard 200l trolleys, 800l bins and various vacuum filling hoppers. For more information, please check our GRT brochure.



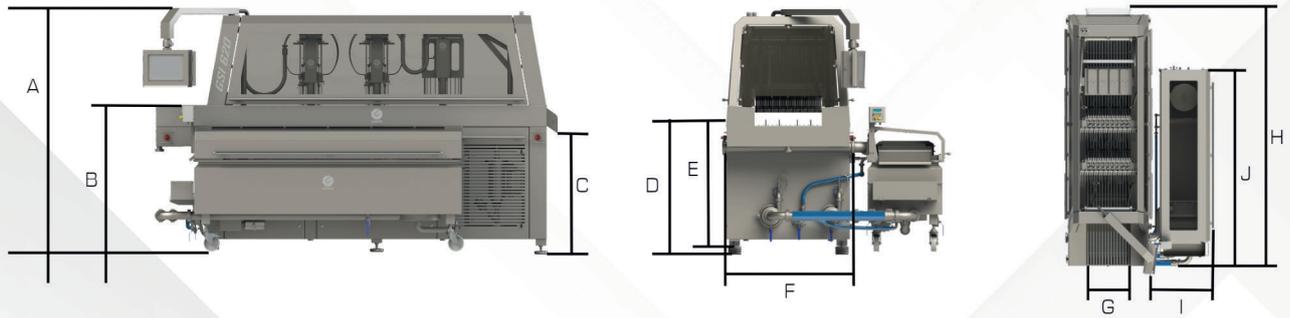
At GAROS, whether the requirement is for a single machine or completely integrated lines, due to the Management, Staff's experience and knowledge of The Food Processing Industry, gained through many years, we are able to meet today's challenges, whether it for improved microbiological quality, therefore shelf life, increased yields and productivity through automation, GAROS is able to offer proven successful solutions to achieve those ends.

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- ← Improvement of microbiological quality and shelf life of products
 - ← Increased productivity of machines - elimination of labor and time-consuming and costly manual operation.
 - ← Automation of the production line will allow for a significant reduction in staff

AUTOMATIC FEEDER



GAF (Garos Automatic Feeder) dispenses products an even layer, with capacity adjusted to suit the injector. The GAF has a volume of 800 l which allows for a full 800 l bin to be emptied into the trough. The feeder is equipped with a collection tray for product drip-off, which can optionally be transported by pump to any other location. For more information, please check our GAF brochure.



Dimensions in mm	A	B	C	D	E	F	G	H		I	J	Weight in kg
								Red meat, Poultry	Fish			
GSI 420 Single	2240	1345	1125	1198	1155	1050	424	2490	3340	890	1927	1280
GSI 420 Combi	2240	1345	1125	1198	1155	1050	424	3100	-	890	1927	1750
GSI 420 Double	2240	1345	1125	1198	1155	1050	424	3100	3950	890	1927	2000
GSI 620 Single	2240	1345	1125	1198	1155	1250	624	2490	3340	890	1927	1405
GSI 620 Combi	2240	1345	1125	1198	1155	1250	624	3100	-	890	1927	1860
GSI 620 Double	2240	1345	1125	1198	1155	1250	624	3100	3950	890	2627	2075
GSI 620 Triple	2240	1345	1125	1198	1155	1250	624	3710	-	890	2627	2500
GSI 820 Single	2240	1345	1125	1198	1155	1450	824	2490	3340	890	1927	1530
GSI 820 Combi	2240	1345	1125	1198	1155	1450	824	3100	-	890	1927	1980
GSI 820 Double	2240	1345	1125	1198	1155	1450	824	3100	3950	890	2627	2175
GSI 820 Triple	2240	1345	1125	1198	1155	1450	824	3710	-	890	2627	2675

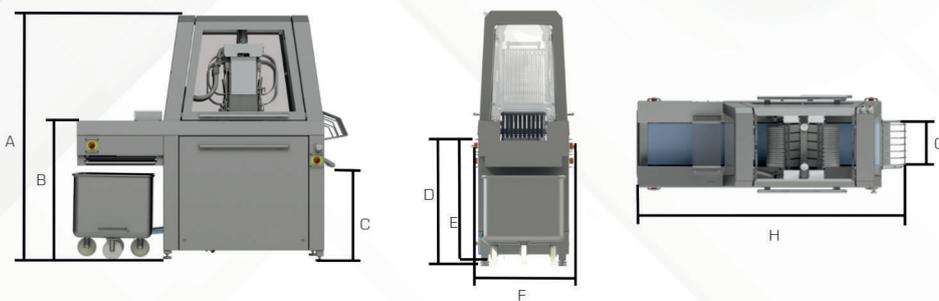
DESCRIPTION

Single - one injection head

Double - two injection heads

Combi - one injection head, one tenderizer head

Triple - two injection heads, one tenderizer

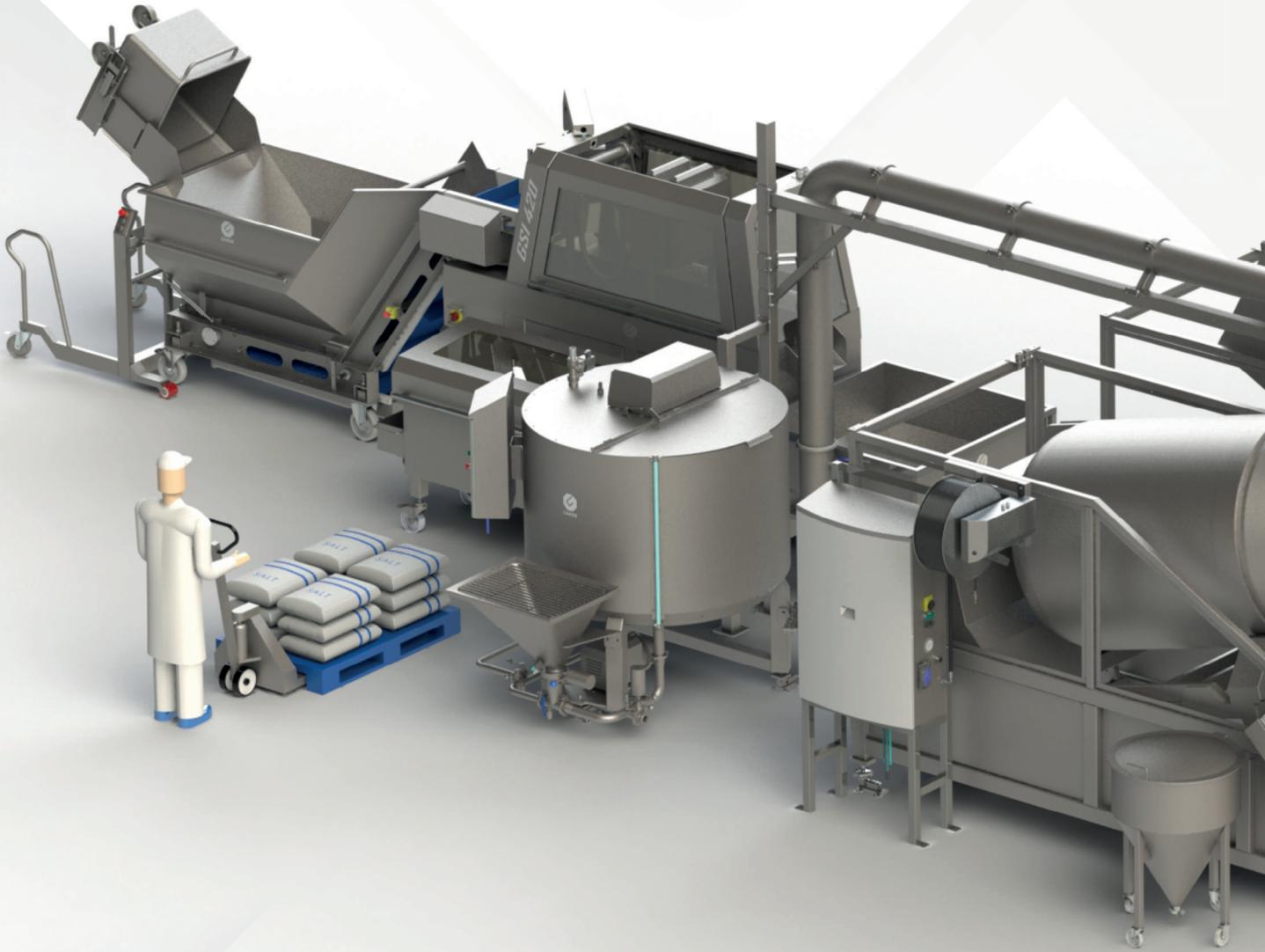


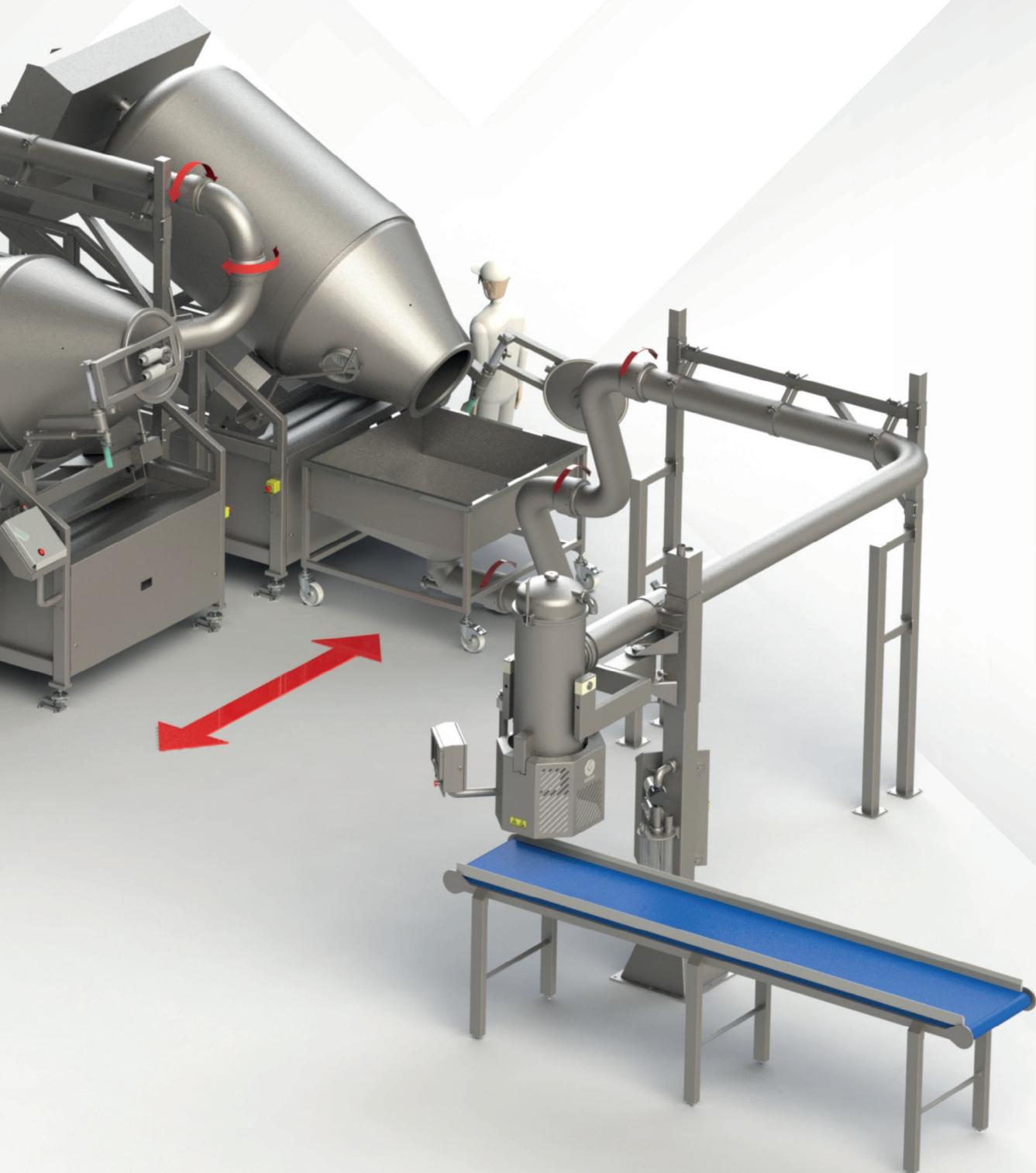
Dimensions in mm	A	B	C	D	E	F	G	H	Weight in kg
GSI 350	2015	1145	830	1006	986	826	364	2240	720

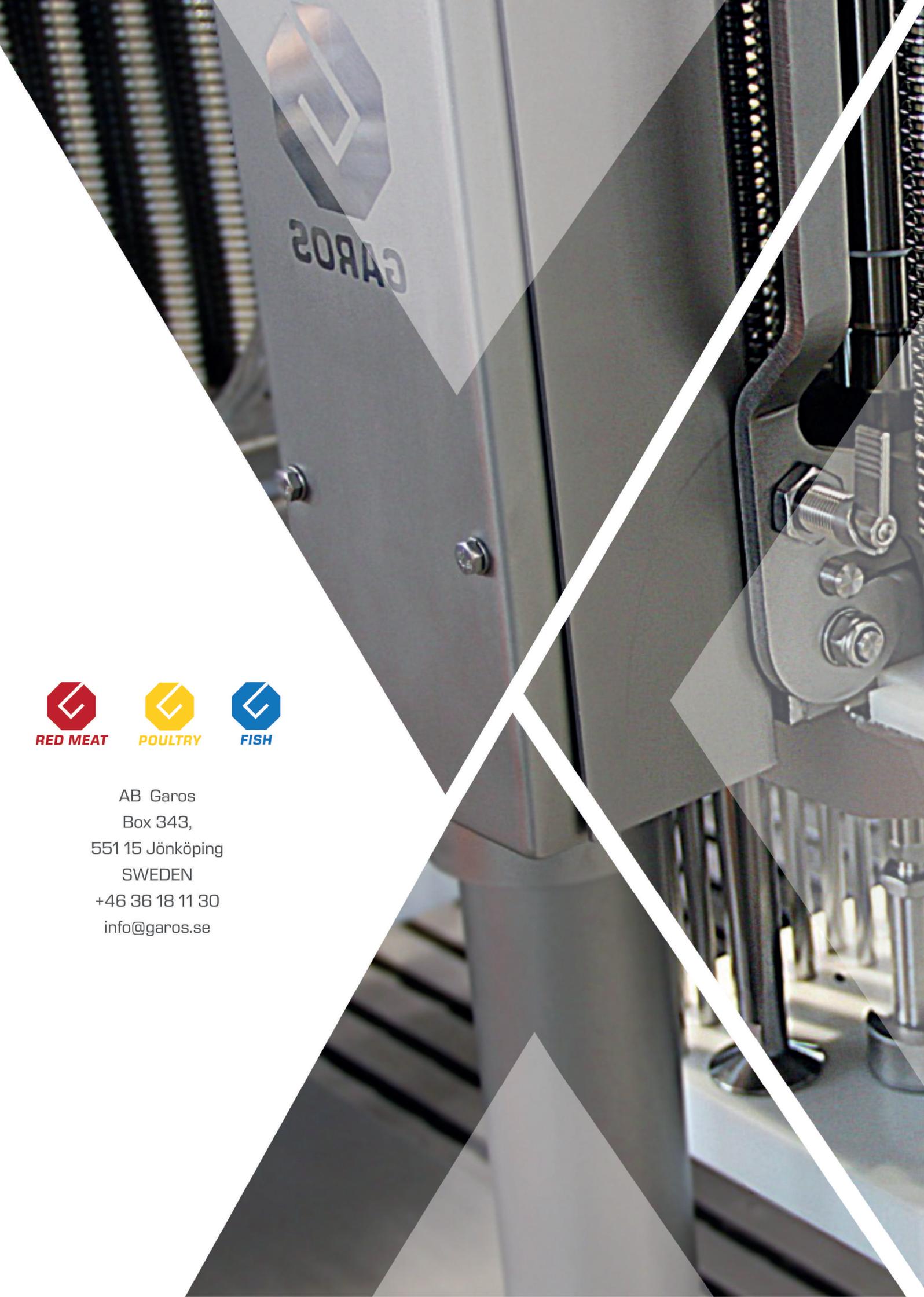
Due to continuous product improvement, the specifications and design of the device are subject to change without notice.

	GSI 350			GSI 420			GSI 620			GSI 820		
	Red Meat Poultry	Fish	Capacity	Red Meat Bone-In/less	Poultry Bone-In/less	Poultry/Fish Boneless	Red Meat Bone-In/less	Poultry Bone-In/less	Poultry/Fish Boneless	Red Meat Bone-In/less	Poultry Bone-In/less	Poultry/Fish Boneless
Capacity	Up to 2,5 t/h	Up to 0,8 t/h	Up to 2,5 t/h	Up to 7 t/h	Up to 3 t/h	Up to 1,4 t/h	Up to 11 t/h	Up to 6 t/h	Up to 2,3 t/h	Up to 13 t/h	Up to 10 t/h	Up to 3 t/h
Forward feeder width	350 mm		420 mm				620 mm			820 mm		
Forward feed system	Intralox conveyor		Intralox Conveyor	Walking Beam or Intralox Conveyor	Intralox Conveyor	Intralox Conveyor	Walking Beam or Intralox Conveyor	Intralox Conveyor	Intralox Conveyor	Walking Beam or Intralox Conveyor	Intralox Conveyor	Intralox Conveyor
Forward feed	30 or 60 mm		30 or 60 mm	30 or 60 mm	120 or 240 mm	30 or 60 mm	30 or 60 mm	120 or 240 mm	30 or 60 mm	30 or 60 mm	30 or 60 mm	120 or 240 mm
Number of needles	40 / 80 / 160		192 2x192	48 / 96 / 192 2x48 / 2x96 / 2x192	252 2x252	72 / 144 / 288 2x72 / 2x144 / 2x288	288 2x288	372 2x372	96 / 192 / 384 2x96 / 2x192 / 2x384	384 2x384	492 2x492	
Needle type	Single, double or quadro		quadro	Single, double or quadro	quadro	quadro	Single, double or quadro	quadro	quadro	Single, double or quadro	quadro	quadro
Number of knives	-		432	20 - 70	20 - 60	20 - 70	20 - 70	20 - 70	20 - 70	20 - 70	20 - 70	20 - 90
Stroke/min needle head	20 - 70		20 - 70	20 - 60	20 - 70	20 - 60	20 - 70	20 - 70	20 - 60	20 - 60	20 - 60	20 - 90
Stroke/min knife head	-		-	-	-	-	-	-	-	-	-	-
Stroke height	240 mm / 160 mm	160 mm	160 mm	240 mm	160 mm	100 mm	240 mm	160 mm	100 mm	240 mm	160 mm	100 mm
Max product height	210 mm / 130 mm	75 mm	130 mm	210 mm	130 mm	75 mm	210 mm	130 mm	75 mm	210 mm	130 mm	75 mm
Max product height tenderizer head	-		-	150 mm	-	-	150 mm	-	-	150	-	-
Pump capacity	200 l / min		500 l/min - 1000 l/min	0,5 - 5 bar	0,5 - 4 bar	0,5 - 4 bar	0,5 - 5 bar	0,5 - 4 bar	0,5 - 4 bar	0,5 - 5 bar	0,5 - 4 bar	0,5 - 4 bar
Brine pressure	0,5-4 bar		430 l / 700 l	400 V	400 V	400 V	400 V	400 V	400 V	400 V	400 V	400 V
Volume filter unit	200 l		1,5 / 1,5 + 1,5 kW	5,5 kW / 5,5 kW + 5,5 kW	5,5 kW / 5,5 kW + 5,5 kW	3 kW / 3 + 3 kW / 3 + 3 + 3 kW	3 kW / 3 + 3 kW / 3 + 3 + 3 kW	3 kW / 3 + 3 kW / 3 + 3 + 3 kW	3 kW / 3 + 3 kW / 3 + 3 + 3 kW	4 kW / 4 + 4 kW / 4 + 4 + 4 kW	4 kW / 4 + 4 kW / 4 + 4 + 4 kW	4 kW / 4 + 4 kW / 4 + 4 + 4 kW
Rated voltage	400 V		7 kW / 8,5 kW	7 kW / 8,5 kW	7 kW / 8,5 kW	9 kW / 12 kW / 18 kW / 21 kW	9 kW / 12 kW / 18 kW / 21 kW	9 kW / 18 kW	9 kW / 18 kW	10 kW / 14 kW / 20 kW / 24 kW	10 kW / 20 kW	10 kW / 20 kW
Power supply drive unit	1,1 kW		307 / 528 / 614 NI / min	307 / 614 NI / min	307 / 614 NI / min	461 / 852 / 922 / 1248 NI / min	461 / 922 NI / min	461 / 922 NI / min	461 / 922 NI / min	615 / 1212 / 1230 / 1740 NI / min	615 / 1230 NI / min	615 / 1230 NI / min
Power supply pump	2,2 kW		307 / 614 NI / min	307 / 614 NI / min	307 / 614 NI / min	461 / 852 / 922 / 1248 NI / min	461 / 922 NI / min	461 / 922 NI / min	461 / 922 NI / min	615 / 1212 / 1230 / 1740 NI / min	615 / 1230 NI / min	615 / 1230 NI / min
Connected load	3,5 kW		307 / 614 NI / min	307 / 614 NI / min	307 / 614 NI / min	461 / 852 / 922 / 1248 NI / min	461 / 922 NI / min	461 / 922 NI / min	461 / 922 NI / min	615 / 1212 / 1230 / 1740 NI / min	615 / 1230 NI / min	615 / 1230 NI / min
Compressed air consumption	30 NI / min	50 NI / min	307 / 614 NI / min	307 / 614 NI / min	307 / 614 NI / min	461 / 852 / 922 / 1248 NI / min	461 / 922 NI / min	461 / 922 NI / min	461 / 922 NI / min	615 / 1212 / 1230 / 1740 NI / min	615 / 1230 NI / min	615 / 1230 NI / min

AUTOMATED LINES







GAROS



RED MEAT



POULTRY



FISH

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