



GSI 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 one or two needle heads for both bone-in or 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.

GSI 420, 620, 820

CONTROL PANEL

12-inch touch screen allowing for intuitive regulation of all injector functions, such as recipes control and others.

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.

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.

LOW-MAINTENANCE

pneumatic or mechanical valves.

FLOW SYSTEM

adapted for even the most complex and viscous brines

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.

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.





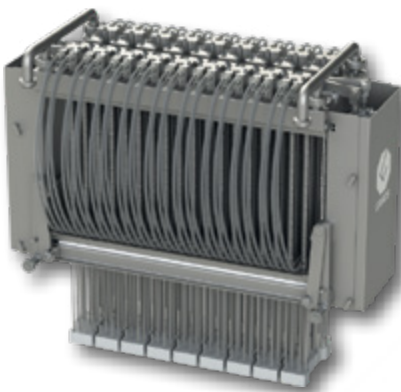
FISH BONE - IN

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



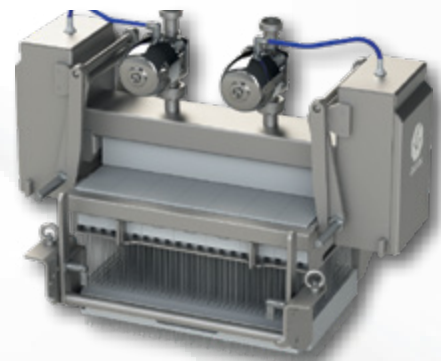
TENDERIZER BONELESS

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. Bone-in model is also available.



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 quick and easy cleaning and inspection, with our cassette system all needles can easily be removed together.



GSI 350

LOW-MAINTENANCE
pneumatic or mechanical valves.

INTRALOX CONVEYOR
for all types of meat.

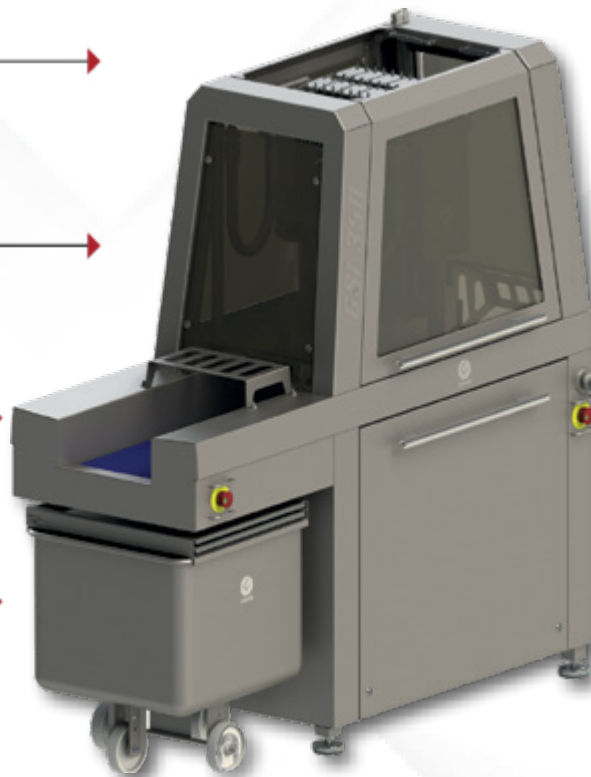
INLINE PROTEIN FILTER
optional feature -
automatically cleaning,
reducing the potential of
blocked needles.

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.

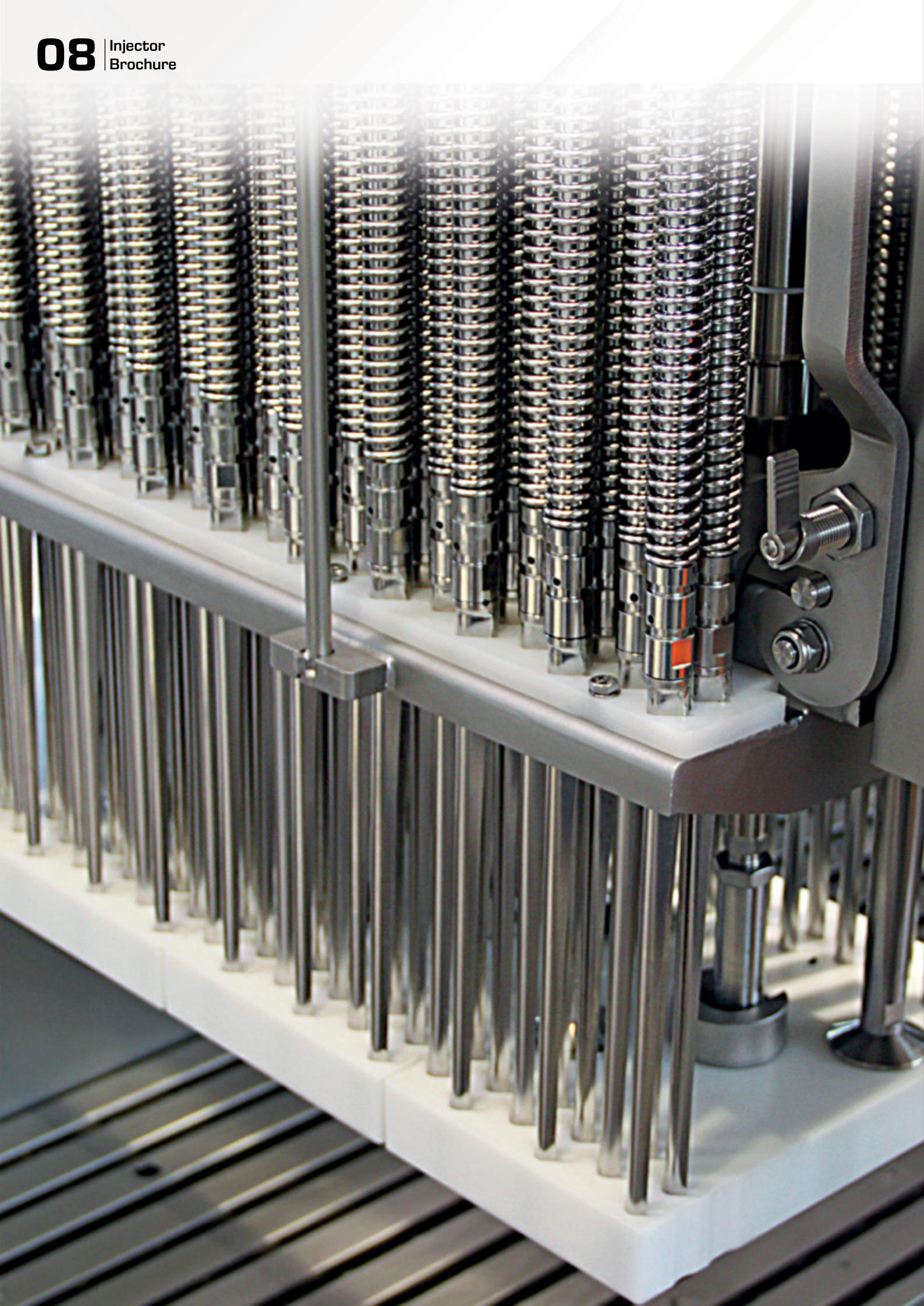
The head was developed for injection of fish and fish fillets,
boneless poultry parts. Pneumatically controlled valves.



TENDERIZER BONELESS, BONE - IN

Up to 160 needles.

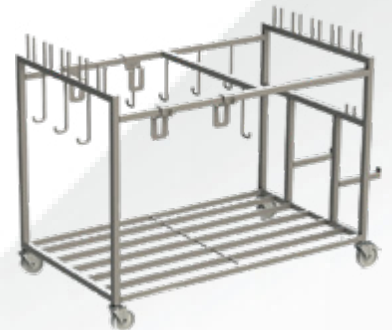
Suitable for products such as red meat and poultry cuts, with
and without bone. Mechanically controlled valves.



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 filter uses a belt with a large surface area and a filter by the bottom of the tank. The GBF is cleaned automatically due to specialized scrapers and water jets that remove any debris from the brine. 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

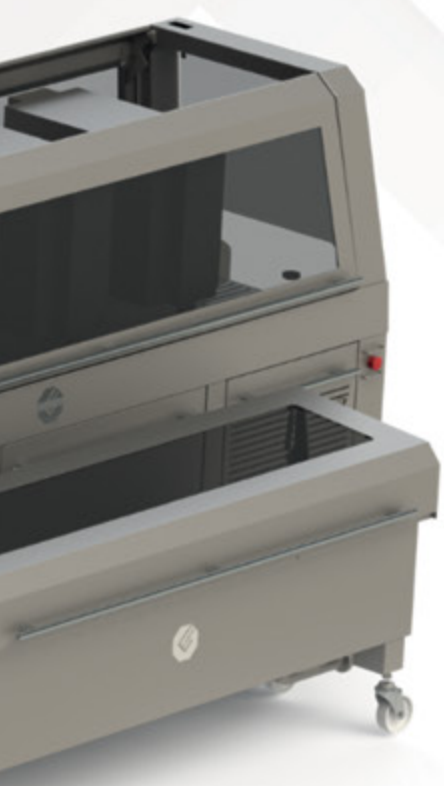
GRT (Garos Roller Tenderizer) is an extension for our Injectors. The capacity of the GRT 620 matches the throughput of all our injector models. The leg frame is available in different executions to fit standard 200l trolleys, 800l bins and various vacuum filling hoppers.

For more information, please check our GRT brochure.



At Garos we are able to meet the challenges of the food processing industry thanks to our years of experience with both single machines and production lines.

Whether today's challenges are to increase quality, yield, or productivity through automation, Garos is able to offer proven and successful solutions.

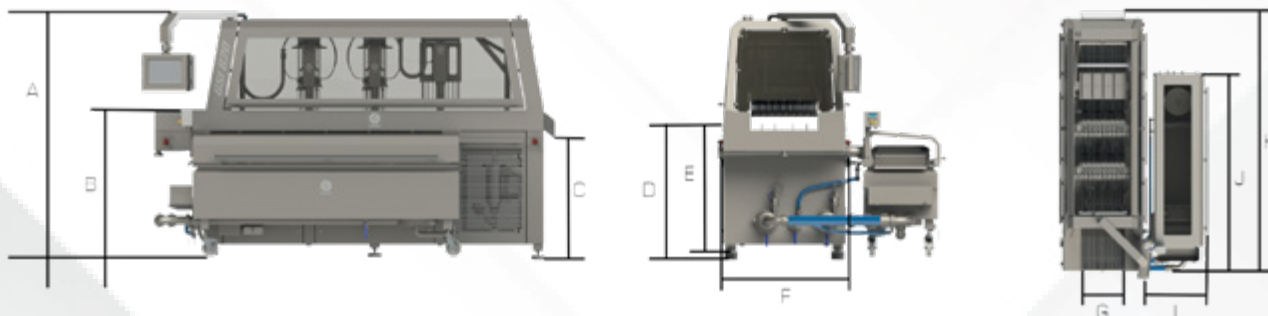
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- ← Improvement of microbiological quality and shelf life of products
 - ← Increased productivity of machines – higher capacity per hour, or the same capacity with a higher yield.
 - ← Quality, Consistency, and Customization: consistent food product quality, thanks to continuous monitoring and controlled production processes, human errors and quality fluctuations can be avoided. Our automated production lines allow for customizing products to individual customer preferences.

AUTOMATIC FEEDER



GAF (Garos Automatic Feeder) dispenses products an even layer, with capacity adjusted to suit the injector. The GAF has a volume of 800l which allows for a full 800l 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 such as the brine filter tank or tumbler.

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 kg
GSI 420 Combi	2240	1345	1125	1198	1155	1050	424	3100	-	890	1927	1750 kg
GSI 420 Double	2240	1345	1125	1198	1155	1050	424	3100	3950	890	1927	2000 kg
GSI 620 Single	2240	1345	1125	1198	1155	1250	624	2490	3340	890	1927	1405 kg
GSI 620 Combi	2240	1345	1125	1198	1155	1250	624	3100	-	890	1927	1860 kg
GSI 620 Double	2240	1345	1125	1198	1155	1250	624	3100	3950	890	2627	2075 kg
GSI 620 Triple	2240	1345	1125	1198	1155	1250	624	3710	-	890	2627	2500 kg
GSI 820 Single	2240	1345	1125	1198	1155	1450	824	2490	3340	890	1927	1530 kg
GSI 820 Combi	2240	1345	1125	1198	1155	1450	824	3100	-	890	1927	1980 kg
GSI 820 Double	2240	1345	1125	1198	1155	1450	824	3100	3950	890	2627	2175 kg
GSI 820 Triple	2240	1345	1125	1198	1155	1450	824	3710	-	890	2627	2675 kg

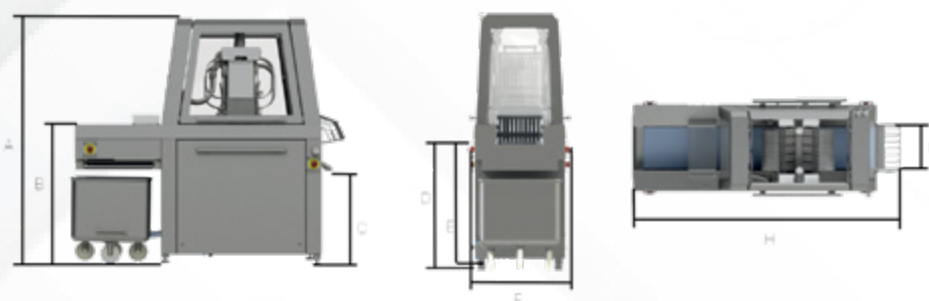
DESCRIPTION

Single - one injection head

Double - two injection heads

Combi - one injection head, one tenderizer head

Triple - two injection heads, one tenderizer

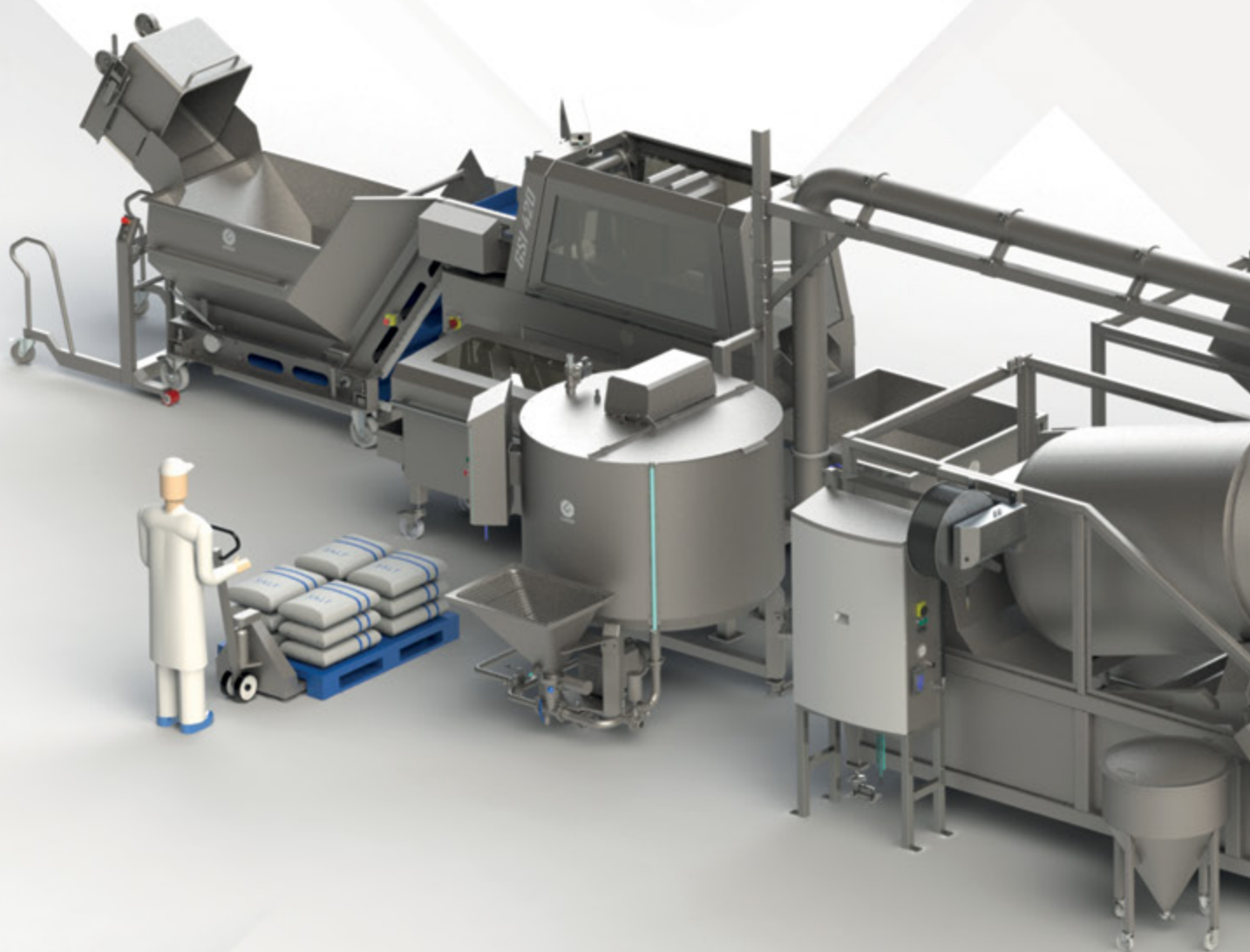


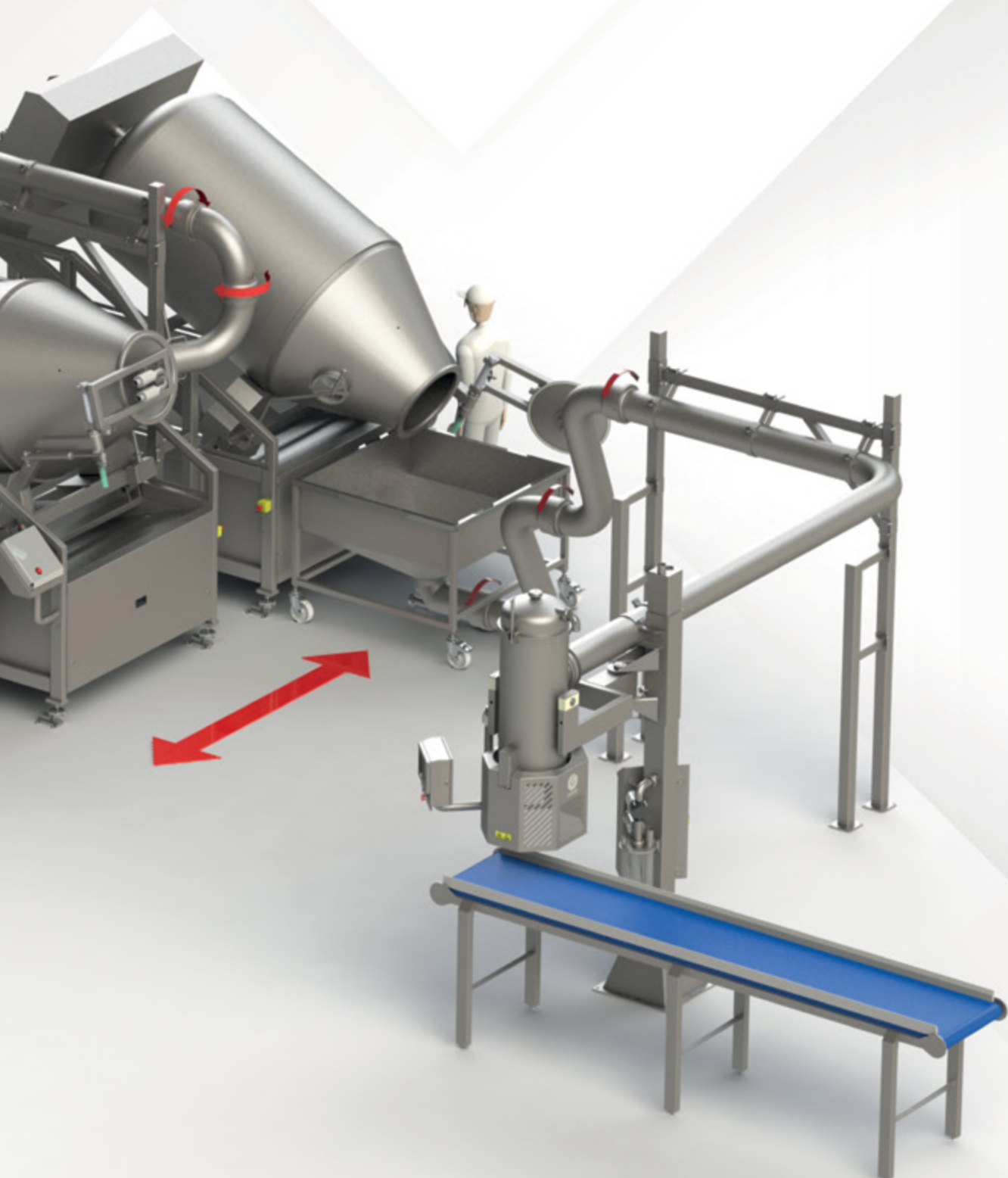
Dimensions in mm	A	B	C	D	E	F	G	H	Weight in kg
GSI 350	2015	1145	830	1006	986	826	364	2240	720 kg

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			
Single Head/ Double Head / Tenderizer Head				Single Head/ Double Head / Tenderizer Head				Single Head/ Double Head / Tenderizer Head				Single Head/ Double Head / Tenderizer Head			
	Red Meat Poultry	Fish		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 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			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	120 or 240 mm	
Number of needles	40 / 80 / 160			48 / 96 / 192 2x48/2x96/2x192	192 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			Single, double or quadro	quadro	quadro		Single, double or quadro	quadro	quadro		Single, double or quadro	quadro	quadro	
Number of knives	-			432	-	-		672	-	-		864	-	-	
Stroke/min needle head	20 - 70			20 - 70	20 - 70	20 - 90		20 - 70	20 - 70	20 - 90		20 - 70	20 - 70	20 - 90	
Stroke/min knife head	-			20 - 60	-	-		20 - 60	-	-		20 - 60	-	-	
Stroke height	240 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		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 mm	-	-	
Pump capacity	200 l / min			500 l/min - 1000 l/min	500 l/min - 1000 l/min	500 l/min - 1000 l/min		500 l/min - 1000 l/min	500 l/min - 1000 l/min	500 l/min - 1000 l/min		500 l/min - 1000 l/min	500 l/min - 1000 l/min	500 l/min - 1000 l/min	
Brine pressure	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		0,5 - 5 bar	0,5 - 4 bar	0,5 - 4 bar	
Volume filter unit	200 l			430 l / 700 l	430 l / 700 l	430 l / 700 l		430 l / 700 l	430 l / 700 l	430 l / 700 l		430 l / 700 l	430 l / 700 l	430 l / 700 l	
Rated voltage	400 V			400 V	400 V	400 V		400 V	400 V	400 V		400 V	400 V	400 V	
Power supply drive unit	1,1 kW			1,5 / 1,5 + 1,5 kW	1,5 / 1,5 + 1,5 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	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	4 kW / 4 + 4 kW / 4 + 4 + 4 kW	
Power supply pump	2,2 kW			5,5 kW / 5,5 kW + 5,5 kW	5,5 kW / 5,5 kW + 5,5 kW	5,5 kW		5,5 kW / 5,5 kW + 5,5 kW	5,5 kW / 5,5 kW + 5,5 kW	5,5 kW		5,5 kW / 5,5 kW + 5,5 kW	5,5 kW / 5,5 kW + 5,5 kW	5,5 kW / 5,5 kW + 5,5 kW	

AUTOMATED LINES







RED MEAT



POULTRY



FISH

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