



Quick installation guide

IR 17

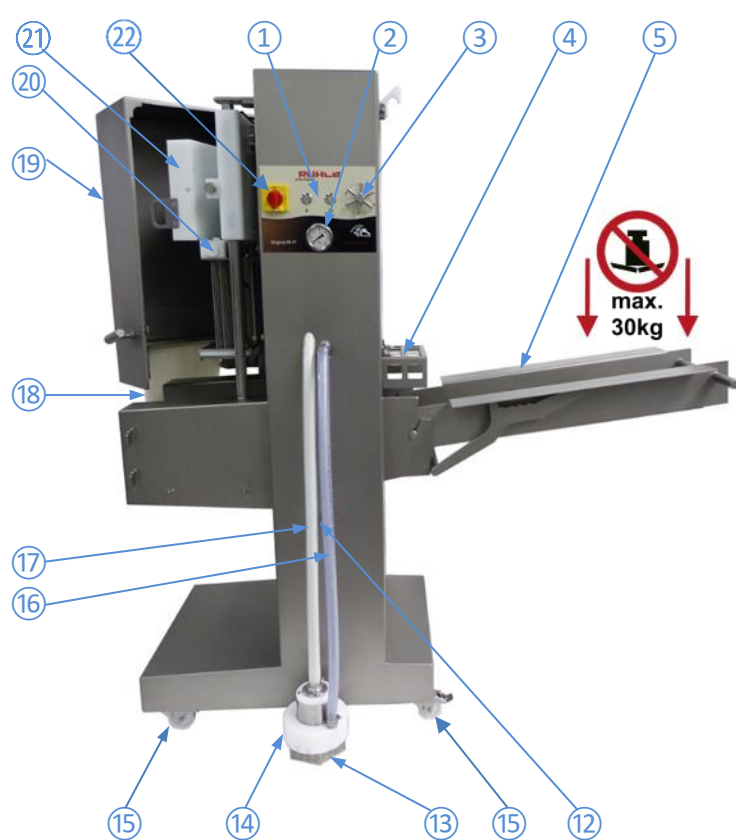
RÜHLE

Echte Originale.

I • Installing the machine



II • Operation

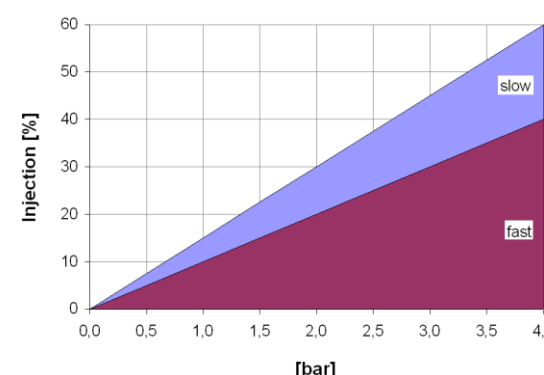
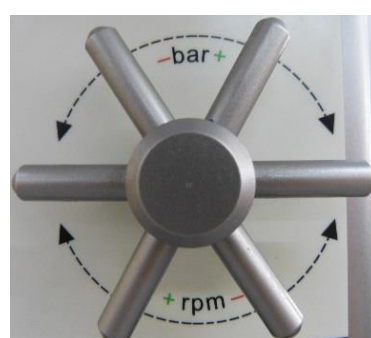


- 1) Mode of operation button
- 2) Pressure display
- 3) Pressure regulator
- 4) Access protection (inlet)
- 5) Feed ramp
- 6) Type plate
- 7) Conveyor belt
- 8) Cleaning plate
- 9) Filter
- 10) Steering castor without brake
- 11) Power supply
- 12) Brine return pipe
- 13) Centrifugal pump
- 14) Brine mixer
- 15) Steering castor with brake
- 16) Conveying hose
- 17) Pump drive shaft
- 18) Access protection (outlet)
- 19) Curing compartment door
- 20) Needle register
- 21) Spring magazine
- 22) Main switch

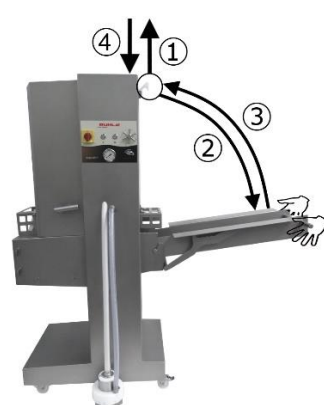
① • Mode of operation button



③ • Pressure regulator



⑤ • Feed ramp



⑬ • Curing compartment door



13

• Brine mixer

	Stop
	Soft Mix
	Hard Mix

11

• Power supply

18

• Access protection

4

• Access protection

20

• Needle change

7

• Conveyor belt / Belt removal

9

• Filter

III

• Cleaning

III

• Cleaning



Translation of the original operating instructions

RÜHLE Injector

Type: IR 17

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Germany**

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www.original-ruehle.de



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Version: 05 December 2022 (Version 2.2)

Subject to change

1 Safety instructions

!!! Observe the safety instructions during installation, operation, cleaning and maintenance of the Rühle Injector!



Hazard potentially causing irreversible injuries if disregarded.



Warning potentially causing serious injuries if disregarded.



Note



Warning of electrical power.



Pull the mains plug!



Warning of sharp object. (Risk of cutting)



Warning of tipping danger.



Warning of non-ionising radiation.

Non-ionising radiation is not specifically generated but is only emitted by the electrical equipment (e.g. electric motors, power lines or solenoid coils) for technical reasons. In addition, the machine has no strong permanent magnets. If a safety distance (distance field source to implant) of 30 cm is maintained, the influence on active implants (e.g. cardiac pacemakers, defibrillators) can be excluded with a high degree of probability.

1.1 Safety instructions

!!! A **supervisor** (responsible person) must be appointed for the machine!

This person must:

- a) Completely read and understand these operating instructions before transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance as well as dismantling/disposal!

- b) Prepare work instructions for intended and safe transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance as well as dismantling/disposal!
- c) Ensure that the qualified workers have completely read and understood the respective work instructions according to section 1.1b!
- d) Proper functioning of the protective devices must be checked at least once a year by a Rühle service engineer!
- e) Provide personal protective equipment!

All life cycle phases:



Use foot protection according to EN ISO 20345!
(e.g. recommended for butcher stores, dairies, meat and fish processing: safety boots S4 with steel cap)



Use hand protection according to EN ISO 388!
(e.g. gloves with high cutting/puncture resistance)



Wear protective clothing according to EN ISO 13688!
(e.g. appropriate aprons / coats / overalls)

Cleaning; care/maintenance; dismantling:



Use eye protection according to EN ISO 166!
(e.g. tightly closing safety goggles)



Use light breathing masks according to EN ISO 149!
(e.g. simple breathing mask protection class FFP1)



Use hand protection according to EN ISO 374!
(acid-resistant, butyl rubber, Viton)



Wear protective clothing according to EN ISO 13688, EN ISO 17491!
(e.g. appropriate coats / overalls)

[The information on the proposed personal protective equipment has only an advisory function. A full risk assessment should be carried out before using the product to assess whether the indicated personal protective equipment is suitable for local conditions. Personal protective equipment should conform to the relevant EU standards.]



!!! The **operator** must operate the machine according to the intended use and strictly observe all points listed in the "Operation" work instructions prepared by the supervisor.

!!! Before putting the machine into operation for the first time and on each working day, the **operator** must check the functionality of the following safety devices:

a) Visual check for changes or damage on all machine sides and accessible machine parts, e.g. the curing needles, hook (lock) of the loading ramp. The machine must be shut down in the event of any damage or changes!

b) Check the safety switches as follows:

Close curing compartment door with "discharge" safety guard as well as the "intake" safety guard.

- Start the machine. - Turn the main switch to "0 - Off". - If the machine has not switched off, it must be shut down immediately!
- Start the machine. - Lift the "Inlet" safety guard by 20 mm. - If the machine has not switched off, it must be shut down immediately!
- Start the machine. - Lift the "Outlet" safety guard by 20 mm. - If the machine does not switch off, it must be shut down immediately!

!!! To **shut down** the machine, turn the main switch to "0" - OFF" and disconnect the power plug from the outlet! Secure the machine against further use!

!!! The **supervisor** must arrange for the repair of the non-functional safety device by a Rühle service engineer. Until the corresponding parts have been repaired, the supervisor must ensure that the machine or parts of the machine are not put into operation under any circumstances!

!!! The **cleaning personnel** must observe the work procedures from the "Cleaning" work instructions prepared by the supervisor.

!!! The **maintenance personnel** may only carry out work specified as "regular care", unless any other authorisation has been issued in writing by the manufacturer of the machine. The maintenance personnel must observe the work procedures from the "Maintenance" work instructions prepared by the supervisor.

Disconnect the power plug for maintenance work!

!!! Do not modify the machine.

!!! Only use Rühle spare parts and accessories.

!!! The operating instructions as well as all other technical documents included must be supplied completely when reselling the machine.

1.2 Remaining risk of accidents

!!! All life cycles phases



Cut protection gloves must be worn when working on the curing needles.



Reaching into the machine or the curing chamber during operation is strictly prohibited!



Any manipulation and bypassing of the safety devices is strictly prohibited!



Do not hold the transport belt by the hinge during installation and dismantling as well as tensioning!

There is a risk of crushing in the area of the support of the loading ramp. Therefore, always hold the loading ramp on its handles when adjusting it!

!!! Cleaning



Observe the safety instructions from the manufacturers when handling curing, cleaning or disinfecting agents!

!!! Stability

The machine is top-heavy; this represents an increased risk of tipping over when moving it!



Clear all obstacles before moving the machine!

The castors must always be locked with the locking devices except when moving the machine!

!!! Maintenance

Disconnect the machine from the mains power when performing maintenance work!



Only remove the protective covers (control cabinet cover, ...) while carrying out maintenance work!



Do not operate the machine if the pump has no filter basket!

1.3 Intended use

The Injector may only be used for injecting curing solution into fish and meat products. The room temperature must not exceed 12 °C for reasons of food hygiene!

This machine must not be operated by persons under the age of 18!



This machine is intended:

- for use during work
- for use by persons from 18 years old
- for use by instructed persons



Claims of any type for damage caused by use other than the intended use are excluded!

Misuse

- Any use other than the use listed above is strictly prohibited and is considered misuse!
- Operating the machine in explosive atmospheres is prohibited!

- Handling/processing products and materials which are not foodstuffs is prohibited!
- The loading ramp may only be exposed to a max. load of 30 kg and not be abused as storage surface, step or seat!

2 Installation instructions

Installation and commissioning of the Injector may only be carried out in the presence of a Rühle service engineer or by persons authorised by Rühle.

Rühle GmbH Lebensmitteltechnik accepts no liability for any damage resulting from failure to comply with these operating instructions.

2.1 Machine transport and setup

Please refer to the short instructions supplied with the machine regarding transport and setup of the Injector.



The machine and machine parts must be transported by 2 persons (1 person to operate the floor truck/1 person to supervise transport).

The power supply line must not be damaged by driving over or crushing it!

The machine must be shut down until a damaged power supply line has been repaired!



There is an increased risk of tipping over during transport and movement!

To prevent this, do not drive over any objects such as hoses, cables, etc. and watch out for protruding edges or persons in the surrounding area!



The brakes at the two steering rollers on the inlet side must always be locked except during transport!

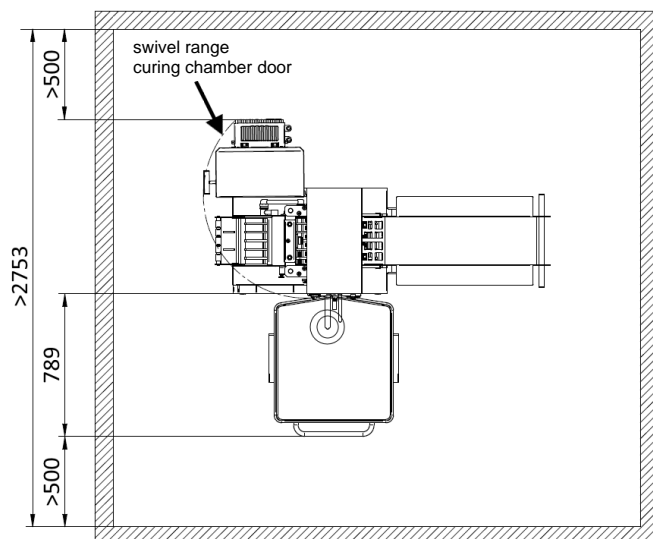
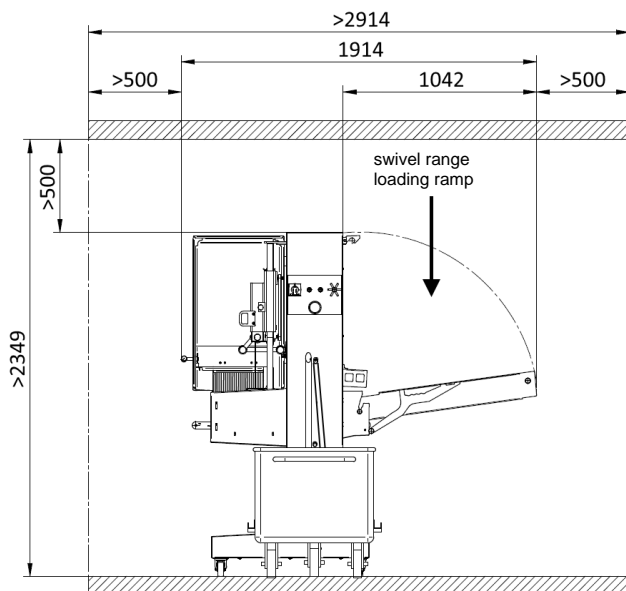
Ensure that the machine is stable!

Foundation load: 3,1 kN/m²!



Set up the machine on a solid level floor with sufficient load bearing capacity!

2.2 Workplace description



The work area around the machine, plus a container on the discharge and operator side, is at least 0.5 m on all sides; for maintenance work it is at least 1 m; if used as a passageway, it is at least 1.2 m.

2.3 Connecting the machine

The machine is connected to a three-phase outlet (clockwise rotating field), the specifications (voltage, amperage) must correspond to the specifications on the type plate of the machine.



The machine must be shut down until a damaged power supply line has been repaired!

Check the power supply line regularly!

Check the correct direction of the rotary field by starting the machine. The machine cannot be started if the rotational field is wrong.



- In this case, an electrician has to change the rotary field inside the mains plug.
- The power supply to the machine must be fuse-protected with 16 A and protected with an AC/DC sensitive RCD (type B).

3 Operating instructions

Please refer to the short instructions supplied with your machine for operation of your Injector.



Also observe Chapter 1 Safety instructions!



In its respective life cycle phases (transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance, dismantling/disposal) this machine is designed for single person operation!



When using this machine, no other persons may be present near the machine!

The following is strictly prohibited and failure to comply represents gross negligence:

- Lifting the lamella of the safety guard on the outlet side and reaching into the curing chamber during operation; the same applies the inlet side
- Operating the machine without protective enclosure
- Operating the machine without filter basket on the pickle mixer/centrifugal pump!
- Manipulating or deactivating the safety devices on the machine

Working on the machine without the protective enclosure installed is only permitted for Rühle service engineers during the service phase!



The operator must ensure that

- No persons who do not know the hazards of the machine or cannot anticipate them are present in the area of the machine



Fold the integrated transport belt - protruding on the discharge side of the machine - inward when the machine is not in use!

4 Cleaning instructions

The Injector IR 17 has been designed to allow for complete cleaning both of the curing solution system and all parts that come into contact with the food product.

4.1 Safety instructions

- Also observe Chapter 1 Safety instructions!
- The cleaning staff must notify the supervisor immediately of any defects on the machine.

- The cleaning staff must use the specified cleaning agents and disinfectants.
- Germ reduction can only be achieved through correct cleaning and subsequent disinfection.
- Appropriate materials (e.g. brushes, rags) are required and must be provided for the correct execution.
- Cleaning products and disinfectants approved for the food product area and suitable against contamination (e.g. protein, lime-scale, ...) must be used!
- The cleaning agents and disinfectants must be prepared as a solution as described in the product data sheet from the manufacturer.



Personal protective equipment must be worn as described in Chapter 1.1!

Cleaning with high-pressure cleaners

is permitted only for:



- all external surfaces (all external stainless steel surfaces + machine feet/castors)
- safety guard (intake)
- safety guard (discharge)
- curing chamber door
- needle bar (needle register, spring magazine)
- conveyor belt
- filter
- cleaning plate

The operator controls must be cleaned manually and must not be exposed to a water jet!

All other parts and surfaces may be cleaned only with normal water pressure!

4.2 Cleaning agents and disinfectants

Recommended cleaning agents and disinfectants:

Art. No.	Product name	Description	pH value	Concentration for application [%]	Exposure times [min]	Temperatures [°C]	
15207	FINK - Spül ASS	Alkaline foam cleaner, mild	alkaline	1.0 - 5.0	5 - 15	20 - 50	daily
19402	FINK - Superfettlöser	Alkaline foam cleaner		0.5 - 5.0	5 - 20	20 - 50	
10030	FINK - FC 30	Cleaning and disinfection, combined		1.0 - 3.0	5 - 15	20 - 50	
18556	FINK - FC Power-foam A2	Alkaline foam cleaner		1.5 - 3.0	5 - 20	20 - 50	
13308 *)	FINK - Antisept G	Disinfectant for spray application, QAC		0.5 - 3.0	5 - 15	20 - 40	
17107	FT 107 DES	Disinfection		2.0 - 5.0	15 - 30	20 - 40	
13302	FINK - Antisept A	Alcohol-based disinfectant	neutral	100	5	RT	daily
13304	FINK - Antisept E	Alcohol-based disinfectant		100	5	RT	
18803	FINK - Alu-Reiniger	Acid foam cleaner	acid	2.0 - 5.0	5 - 15	20 - 50	Once in 2 weeks
17043	FT 43 SR	Acid foam cleaner		1.0 - 5.0	5 - 15	20 - 50	
18550	FINK - FC Power-foam S1	Acid foam cleaner		1.0 - 2.0	5 - 20	20 - 50	
17310	Ökoron® 10	Disinfectant, acid		0.3 - 1.0	20 - 30	5 - 70	
17307	Ökoron® 7S	Disinfectant, acid		0.5 - 2.0	1 - 20	5 - 60	
17312	Ökoron® 12	Acid disinfection		0.5 - 3.0	5	Cold	
17313	Ökoron® 13	Acid disinfection, foamable		0.1 - 1.0	5	45	
17900	Ökoron® SR	Ecological cleaner	acid	1.0 - 5.0	15 - 20	20 - 55	daily

*) 13308, FINK - Antisept G Because of customer-specific application prohibitions, QAC-containing products are sometimes not used since the IFS standard must be met. Possible alternative products would be, for example, FT 107 DES.

Supplier:

FINK TEC GmbH, Oberster Kamp 23, 59069 Hamm, Germany
Tel. +49 2385-730 / info@finktec.com / www.finktec.com

4.3 Cleaning procedure

Please refer to the short instructions supplied with your machine for carrying out the cleaning procedure.

Before starting internal cleaning, remove any coarse soiling and product residue from the curing chamber.

Preparation for cleaning:

To ensure optimum cleaning, some components of the machine must be removed.

- Open the curing chamber door.
- Remove the cleaning plate.
 - Place the cleaning plate into the bracket provided.
- Remove the conveyor belt.
 - Place the conveyor belt into the bracket provided.
 - If necessary, the rod mesh belt can be separated from the belt frame and cleaned individually.
- Remove the filter.
 - Place the filter into the bracket provided.

5 Service: care, maintenance, repair

Any work related in any way to service may be carried out only by Rühle service engineers and by persons authorised by Rühle in writing. In this regard, a distinction is made between regular care and maintenance and repair. The respective qualification certificate must be issued explicitly for the corresponding task.



Also observe Chapter 1 Safety instructions!



Notify and obtain permission from Rühle customer service if welding or cutting work is required on the machine!



When working on the electrical equipment of the machine, ensure that

- this is only done by qualified personnel
- the machine is always disconnected from the power supply
- a waiting time of at least 10 minutes is observed after switching off the machine to allow the capacitors of the frequency converter to discharge to a harmless voltage level



Use of lubricants - Hygiene area

- Multipurpose grease OKS 476 white, for food technology NSF H1 Reg. No. 137619
 - Needle bar (switching mechanism)



Use of lubricants - Other

- Multipurpose grease OKS 476 white, for food technology NSF H1 Reg. No. 137619
 - Pump (pump motor pump shaft connection)
 - Transport system (free-wheeling belt feed)
- Synthetic high-performance lubricant TEROSON VR 500 / PLASTI-LUBE, on basis of super-refined mineral oils, free from metallic soaps or fatty acids

Protective equipment:

 - Protective gloves (EN 374), eye protection (EN 166), breathing mask (EN 14387), protective clothing (EN 14605)
 - Needle bar (drive sealing ring on motor)



[The information on the proposed personal protective equipment has only an advisory function. A full risk assessment should be carried out before using the product to assess whether the indicated personal protective equipment is suitable for local conditions. Personal protective equipment should conform to the relevant EU standards.]

5.1 Regular care

Regular care of the machine must be carried out at least once per week. This prevents malfunctions and signs of wear.

Any abnormalities detected during regular care must be reported to the supervisor! The supervisor must immediately initiate correction or maintenance or notify Rühle Service!

Care schedule

- a) Disassemble the machine according to the cleaning instructions. Check for any parts moving with difficulty, material abrasion or other signs of wear and tear.
- b) Check curing needles for wear, damage and clear passage.
- c) Check the needle system for leaks.
- d) Check all safety switches as described in chapter 1.1 "Safety instructions".
- e) Check the steering rollers and locking devices for damages and proper function!
- f) Check the hook of the loading ramp lock for damage and functioning!
- g) Visually check for changes or damage on all machine sides and accessible machine parts, e.g. the needle bar. The machine must be shut down in the event of any damage or changes!

5.2 Regular maintenance

Regular maintenance of the machine must be carried out at least once per year.

Maintenance schedule

- a) Inspect the safety devices as described in chapter 1.1 "Safety instructions"!
- b) Read out the error memory (frequency converter)!
- c) Replace the needle seals in the needle register!
- d) Check curing needles for wear, damage and clear passage!
- e) Check curing solution system (centrifugal pump, hoses, pipes, needle register) for leaks!
- f) Check the sliding guides of all joints of the curing solution system for wear!
- g) Check correct function of the pressure gauge!
- h) Lubricate machine parts according to the list "Lubricant use" at the beginning of this chapter!

- i) Carry out a test run with open machine (caution: moving parts)!
- j) Check the needle bar switching mechanism (needle register, spring magazine). All needles must close completely and without delay after each stroke!
- k) Check the conveyor belt frame for distortion!
- l) Check the conveyor belt tension!
- m) Check the centrifugal pump for smooth running!

5.3 Repairs and spare parts

As a damaged part on a machine is usually damaged due to causes unrelated to the part, always carry out a fault diagnosis.

Contact our Service Hotline at +49 7748 523-11 for spare parts or malfunctions. Please keep the machine type and number to hand.

6 Disposal



All materials and operating fuels must be separated and disposed of in accordance with nationally applicable regulations!

1. The following components contain oil or lubricant:
 - Beam drive
 - Centrifugal pump (food oil)All gear units/motors are equipped with oil drain plugs.
2. In addition, remove the lubricating oil and grease from all lubricated parts properly and disposed of the oil and grease afterwards.

7 Technical documentation

7.1 Technical data

Supply voltage:	400 V 50/60 Hz 3~ / N / PE
Power consumption:	5.3 kW
Full-load current:	9.7 A
Back-up fuse max.:	16 A
Protection class:	IP54
Protection class:	1
Ambient temperature:	+2 to 40 °C
Dimensions, W x H x D:	1027 x 1849 x 854 mm
Work space, W x H x D:	1914 x 1849 x 1753 mm
Machine weight:	255 kg
Transport weight:	max: 350 kg
Loading ramp, load capacity:	30 kg
Output:	1500 kg/h
Speed:	Off: 0 strokes/min Slow: 21 strokes/min Fast: 42 strokes/min
Feed:	28 mm/stroke
Needles:	17 needles, in 2 rows
Clear opening dimensions, W x H:	265 x 280 mm
Width of conveyor belt:	250 mm
Injection volume:	5 - 60 %
Operating pressure max.:	4.2 bar
Foundation load:	3,1 kN/m ²
Emission sound pressure level:	$L_{pA} = 77,4 \pm 2,5$ dB(A)
Measured according to:	DIN EN ISO 11204 accuracy class 2
Measured in:	idling without product, at maximum speed

However, the data on the type plate principally apply; this is located at the rear of the machine next to the power supply connection. In case of deviations, please contact the manufacturer for a written confirmation of the data.

If your country requires an RCD as protective measure, an RCD (type B), AC/DC sensitive, must be used.

7.2 *Circuit diagram*

The circuit diagram of your machine is located in the electrical control cabinet and must be supplied when reselling the machine.

8 EC Declaration of Conformity according to Directive 2006/42/EC

The manufacturer hereby declares		that the following product	
Name, legal form:	Rühle GmbH Lebensmitteltechnik	Type:	IR 17
Address:	Beim Signauer Schachen 10 79865 Grafenhausen Germany	Designation: from serial no.:	Injector 0500

complies with all relevant provisions of the directive indicated above, including any changes that are valid at the time of this declaration.

The product complies with all relevant provisions of the following additional EU Directives and standards, including any changes to these that are valid at the time of the declaration:

- DIN EN 1672-2: 2009-07 Food processing machinery – Basic concepts – Part 2: Hygiene requirements
- DIN EN 60204-1: 2007-06 Safety of machinery – Electrical equipment of machines – Part 1: General requirements
- DIN EN 13534: 2011-02 Food processing machinery – Curing injection machines – Safety and hygiene requirements
- EG 1935/2004 Regulation on materials and articles intended to come into contact with food.
- EU 10/2011 Regulation on good manufacturing practice for materials and articles intended to come into contact with food.
- EG 2023/2006

Signed by:		Person authorised for the documentation:	
Place of issue:	79865 Grafenhausen Germany	Name:	Jürgen Stegerer
Date of issue:	08 December 2016	Address:	Rühle GmbH Beim Signauer Schachen 10 79865 Grafenhausen Germany
Position of the signing person in the company:	Management		
Name of the signing person:	Mr. Claus Rühle		

Signature: 

A declaration of conformity for your machine (serial number), with updated content, if necessary, can be requested from RÜHLE GmbH.