



***Translation of the original operating instructions***

**RÜHLE Injector**

***Type: IR 17***



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Version: 24/10/2018

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



Work on electrical equipment of the machine may only be carried out by qualified technicians!



Always disconnect machine from the mains during this process!

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. 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 the 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



Risk of injury when touching or handling curing needles or softer blades!



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 box) 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 loaded with max. 30 kg!

## **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!



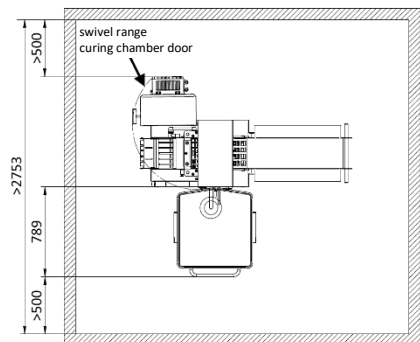
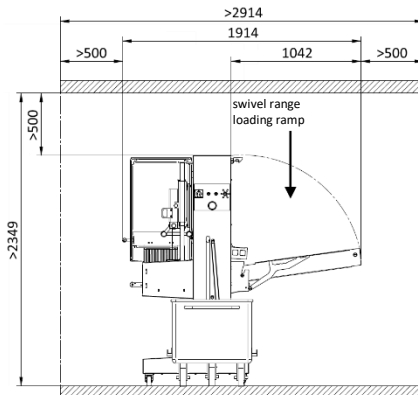
There is an increased risk of tipping over during transport and movement!

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 on the two steering castors on the operator side must always be locked except during transport!

Ensure that the machine is stable!

## 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 follow the safety instructions in chapter 1.1!



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 perforated basket on the curing solution 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

## **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 follow the safety instructions in chapter 1.1!
- 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 use with foodstuffs and suitable against the contamination (e.g. protein, limescale, ...) 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*

The following cleaning agents and disinfectants must be used:

Cleaning agents:	Alkaline cleaning:	P3 - topax 19, P3 - topax 66
	Acidic cleaning:	P3 - topax 56
Disinfectants:		P3 - topax 99, P3 - topax 66
Supplier:		Henkel Hygiene GmbH Bonner Str. 117 40589 Düsseldorf Germany Tel.: +49 211 9893-0

Or:

Cleaning agents:	Alkaline cleaning:	Simplex F fat solvent
	Acidic cleaning:	Simplex foam, acidic
Disinfectants:		Tego 2000, Tego lMC
Supplier:		Th. Goldschmidt AG Goldschmidtstr. 100 45116 Essen Germany Tel. +49 201 1730-1

## 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 external 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 follow the safety instructions in chapter 1.1!



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 / PLASTILUBE, 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 steering castors and locking devices for damage and correct function.
- f) 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

1. The following components contain oil or lubricant:
  - Beam drive
  - Centrifugal pump (food oil)

All gear units/motors are equipped with oil drain plugs. Subsequently, dispose of the oil correctly.
2. In addition, remove the lubricating oil and grease from all lubricated parts properly and disposed of the oil and grease afterwards.
3. All other materials must be sorted and disposed of at a recycling facility.

## 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
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
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
Emission sound pressure level:	$L_{pA} = 77,4 \pm 2,5 \text{ dB(A)}$
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  
+ A1: 2009-10
- DIN EN 13534: 2011-02 Food processing machinery - Curing injection machines - Safety and hygiene requirements
- EC 1935/2004 Regulation on materials and articles intended to come into contact with food.

### Nominated body:

Name, legal form: DGUV Test Prüf- u. Zertifizierungsstelle  
Fachbereich  
Nahrungsmittel

Address: Dynamostraße 7-11  
68165 Mannheim  
Germany

Identification number: 0556

### Reason for the involvement of the nominated body:

Type testing

### Signed by:

Place of issue: 79865 Grafenhausen  
Germany

Date of issue: 08/12/2016

Position of the signing person in the company: Management

Name of the signing person: Mr. Claus Rühle

### Person authorised for the documentation:

Name: Jürgen Stegerer

Address: Rühle GmbH  
Beim Signauer Schachen 10  
79865 Grafenhausen  
Germany

Signature:

