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Technical documentation

RotaFlex 150 Insulation Folding Machine

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Content

1 Introduction

1.1 Product name and type designation

Product:	Insulation folding machine RotaFlex 150
Type designation:	RF150

1.2 Information about the manufacturer

Name:	ELECTRICAL Manufacturing Systems
Address:	Roggentalstrasse 2, DE-73312 Geislingen
Email:	office@karl-wetzel.com
Telephone:	+49 7331 / 305522 0

1.3 Target group

This instruction manual is intended for the following personnel:

- Installationspersonal
- Operator
- Maintenance personnel

1.4 Life cycles of the machine

The machine goes through the following life cycles:

- Transport
- Assembly
- Operation
- Maintenance
- Dismantling
- Disposal

2 Safety

2.1 Intended use

The machine is designed to fold insulation strips up to 150 mm wide.

2.2 Foreseeable misuse

The machine must not be used for any other purpose. The following foreseeable misuses are not permitted:

- Machining of parts not intended for the machine
- Independent conversion or repair measures
- Operate the machine without operator supervision
- Use of inappropriate materials

2.3 Symbols and hints

The instructions use symbols, signal words and instructions to warn of hazards and ensure safe operation. The symbols are shown and explained below.

DANGER
This signal word indicates an imminent danger.
Failure to pay attention can lead to the most serious or even fatal injuries.

WARNING
This signal word indicates an imminent danger.
Failure to do so can lead to serious injuries.

CAUTION
This signal word indicates an imminent danger.
Failure to pay attention can lead to minor injuries.

HINT
This symbol indicates an imminent danger.
Failure to observe this can lead to property damage.

2.4 Safety

Read and follow the instructions in this owner's manual to operate the machine safely. Do not carry out any modifications or repairs to the appliance on your own.

2.5 Signs on the machine

The following signs are attached to the machine:

Wear safety goggles
Wear safety goggles during operation.

Avoid hand injuries
Beware of hand injuries and bruises

2.6 Personal protective equipment

Protective work shoes
Wear protective work shoes.

Goggles
Wear safety glasses.

2.7 Protective devices, emergency stop

The machine is equipped with intervention protection and emergency stop button.

2.8 Special safety instructions

2.8.1 Transport, assembly, commissioning

The folding machine is equipped with 2 eyebolts with which the machine can be safely lifted and transported with a load carrier. The machine must be set up and fastened on a stable and vibration-free surface (table).

2.8.2 Operation

Operating personnel are considered to be those who have read and understood the operating instructions. Furthermore, the person must be commissioned by the supervisor.

Work on the electrical equipment of the machine may only be carried out by a qualified electrician or by instructed persons under the direction and supervision of a qualified electrician in accordance with the electrotechnical rules.

A skilled worker is a person who, on the basis of his or her professional training, knowledge and experience as well as knowledge of the relevant provisions, is able to assess the work assigned to him or her and to identify possible hazards.

The operating instructions must be read, understood and observed by the operating personnel during all work that arises. The machine may only be operated by instructed operators. All protective devices must be functional and active. The working area of the machine must be easily accessible and comply with legal requirements.

2.8.3 Cleaning, maintenance, servicing

In the event of cleaning, maintenance or servicing, the machine must be de-energized. Maintenance or modifications may only be carried out by qualified personnel (manufacturer).

2.8.4 Decommissioning, dismantling, disposal

When the machine is taken out of service, it can be handed over to the manufacturer for disposal free of charge. Disposal must be carried out in accordance with the relevant provisions and must be reported to the manufacturer.

2.9 What to do in an emergency

If a supposed or real dangerous situation arises, the emergency stop must be activated and the danger point removed by qualified personnel. In any case, the manufacturer can be consulted.

2.10 Operator's duty of care

For safe operation, the operator of the machine must meet the following obligations:

- Regular maintenance
- Prevent contamination of the workplace
- Conduct safety briefings
- Conduct training
- Provide suitable premises

2.11 User's duty of care

For safe operation, the user of the machine must comply with the following obligations:

- Read and follow the operating instructions
- Keep your workplace clean
- Wear necessary protective equipment
- Suitable installation site

2.12 Deadlines for periodic inspections

Test part	**Interval**	**To be verified by**
Emergency stop check	weekly	Operator
Cleaning the tabletop	weekly	Operator
Check moving parts	monthly	Operator
Inspect Mold Rollers	monthly	Operator
Inspect plastic roller	monthly	Operator
Electrical System	monthly	Operator
Mechanical Systems	annual	Maintenance Personnel Manufacturer

3 Product

3.1 General function of the machine

The folding machine is designed for the production of folded insulation paper.

3.2 Components

The machine has the following main components:

- Forming rollers
- Kunststoffwalze
  - Transverse adjustment
  - Pressure adjustment

3.3 Controls and their function

The machine has the following actuators:

- Transverse adjustment of the rebate width
- Pressure adjustment of the fold thickness

3.4 Specifications

3.4.1 Nameplate

The nameplate is located at the back of the machine. A manufacturer's marking is located on the bottom of the machine.

3.4.2 Dimensions and weight

Parameter	**Unit**	**Value**
Length	[mm]	500
Width	[mm]	280
Height	[mm]	290

3.4.3 Electricity

Parameter	**Unit**	**Value**
Voltage	[Volt]	230
Frequency	[Hertz]	50-60
Power consumption	[Watt]	170

3.4.4 Mechanics

Parameter	**Unit**	**Value**
Maximum insulation width	[mm]	150
Minimum insulation width	[mm]	3
Insulation thickness	[mm]	0,15-0,50

Insulation length	[mm]	Unlimited
Rebate width	[mm]	4-140
Feed speed	[m/min]	0-34
Acoustic pressure	[dB(A)	40
Weight	[kg]	50

3.4.5 Tires

Parameter	**Unit**	**Value**
None	None	none

3.4.6 Hydraulics

Parameter	**Unit**	**Value**
None	None	none

3.4.7 Energy consumption

Parameter	**Unit**	**Value**
Power consumption max.	[Watt]	170

3.4.8 Emissions

Parameter	**Unit**	**Value**
Acoustic pressure	[dB(A)	40

3.5 Limits for operation and storage

The limits of the machine according to the Machinery Directive are defined in the safety chapter.

4 Transport, packaging and storage

4.1 Requirements for the personnel to be executed

Transport and storage may only be carried out by trained personnel of the manufacturer or by commissioned specialist personnel of the operator.

4.2 Lifting and transporting

The machine may only be lifted at the marked lifting points (2 eyebolts). Lifting and transport may only be carried out with a suitable approved lifting device such as a forklift or a lifting crane.

4.3 Packaging

The machine is delivered in environmentally friendly packaging. The packaging consists of a wooden box lined with cardboard on the inside. The machine is also wrapped in foil against moisture.

4.3.1 Remove

Open the packaging in the places provided. The opening points are marked with a symbol.

4.3.2 Dispose

Dispose of the packaging in an environmentally friendly manner and properly in accordance with legal requirements.

4.4 Storage

The machine may only be stored in closed rooms with a flat and solid surface. Furthermore, the following specifications must be met.

Parameter	**Unit**	**Value**
Max. humidity	[%]	40-60
Max. Temperatur	[°C]	35
Min. Temperatur	[°C]	12

5 Installation and assembly

5.1 Requirements for the personnel to be executed

The installation and installation may only be carried out by trained competent personnel of the manufacturer or the operator.

5.2 Requirements for the installation site

The machine may only be set up in enclosed spaces with a flat and solid surface. Furthermore, the following specifications must be met.

Parameter	**Unit**	**Value**
Max. humidity	[%]	40-60
Max. Temperatur	[°C]	35
Min. Temperatur	[°C]	12

5.3 Assembly of the machine

Follow these steps:

1. Unpacking the machine
2. Check for completeness
3. Remove applied corrosion inhibitor
4. Safe installation and screwing of the machine on flat dry ground
5. Connecting the electrical power supply 230V/50-60 Hz
6. Turn on the machine and perform a test run

6 Commissioning

6.1 Requirements for the personnel to be carried out

Commissioning may only be carried out by trained personnel from the manufacturer or operator.

6.2 Machine on/off and speed

The machine is switched on with the green push button on the left front. This means that the machine is ready for operation and the forming rollers are turning. With the control under the push buttons, the folding speed can be infinitely adjusted. Switching off with the red push button.

6.3 Settings on the machine

Reference point: To approach the reference point of the machine, please press the red push button > 2 seconds. The machine then searches for the reference point automatically.

Rebate width: First, approach the reference point as described. Then press the green button for >2 seconds. The button will then light up green to confirm. Now the first forming roll can be easily adjusted with the socket wrench on the right side of the machine. You can see the movement of the forming roller when adjusted at the slot above the dimension scale. After the forming roller 1 is set, press the green button again > 2 seconds, the button will light up briefly. Afterwards, the forming roller 2 can also be easily adjusted with the socket wrench.

Insulation strip width: The width of the insulation strip can be adjusted by means of the star handle attached to the right side wall at table height. Make sure that the insulation strip is not jammed.

Rebate thickness: The thickness of the rebate on the insulation strips can be adjusted by means of the star handle attached to the right side wall in the lower area. You can see the setting on the right side of the page within the half-trip.

! Make sure that after using the machine, the plastic roller is always relieved without pressure on the forming rollers, this significantly increases the service life of the plastic roller. !

Reverse: The machine can run backwards. To do this, press both buttons (green and red) at the same time > 2 seconds. It lights up between the buttons and as long as you press, the machine runs backwards.

6.4 Working with the machine

The machine is switched on with the green push button on the left front. This means that the machine is ready for operation and the forming rollers are turning.

The machine can now be used.

The machine is switched off with the red push button. After that, all functions of the machine are switched off.

7 Operation

7.1 Requirements for the personnel to be executed

Operation may only be carried out by suitable, trained personnel. Operating personnel are those who have read, understood and internalized the operating instructions. In order to work with the machine, an order from the supervisor is always necessary. A suitable operator is also considered to be a person who, on the basis of his or her professional training, knowledge and experience as well as knowledge of the relevant provisions, is able to assess the work assigned to him or her and to identify possible hazards.

7.2 Instructions for safe operation

For the safe operation of the machine, it is necessary to actively use the appropriate personal protective equipment. As an example, we give protective goggles, safety shoes, noise protection (depending on the environment) and suitable clothing.

7.3 Warning signals on the machine

A warning light indicates the current operating status of the machine.

7.4 Controls

The machine is equipped with the following controls:- On/Off Button- Speed Controller- Star Handle Rebate Width- Star Handle Rebate Thickness

7.4.1 Control panel

The operation of the machine is controlled via the control panel.

7.4.2 Remote control

The machine has no devices for remote control.

7.4.3 Lifting device

The machine does not have a lifting device.

7.5 Workflows

7.5.1 Login

Turn on the machine by pressing the green button on the left front. This means that the machine is ready for operation and the forming rollers are turning.

7.5.2 Workflow 1

The machine can now be used. Insert the insulation strips on the front inside the boundaries and run them through the machine to the output slot.

7.5.3 Workflow 2

After the current insulation strip arrives at the output slot, you can insert the next insulation strip.

7.5.4 Logout

The machine is switched off with the red push button. After that, all functions of the machine are switched off.

7.6 Secondary functions

Reference point: To approach the reference point of the machine, please press the red push button > 2 seconds. The machine then searches for the reference point automatically.

Rebate width: First, approach the reference point as described. Then press the green button for >2 seconds. The button will then light up green to confirm. Now the first forming roll can be easily adjusted with the socket wrench on the right side of the machine. You can see the movement of the forming roller when adjusted at the slot above the dimension scale. After the forming roller 1 is set, press the green button again > 2 seconds, the button will light up briefly. Afterwards, the forming roller 2 can also be easily adjusted with the socket wrench.

Insulation strip width: The width of the insulation strip can be adjusted by means of the star handle attached to the right side wall at table height. Make sure that the insulation strip is not jammed.

Rebate thickness: The thickness of the rebate on the insulation strips can be adjusted by means of the star handle attached to the right side wall in the lower area. You can see the setting on the right side of the page within the half-trip.

! Make sure that after using the machine, the plastic roller is always relieved without pressure on the forming rollers, this significantly increases the service life of the plastic roller. !

Reverse: The machine can run backwards. To do this, press both buttons (green and red) at the same time > 2 seconds. It lights up between the buttons and as long as you press, the machine runs backwards.

7.7 Additional modules

The folding machine can optionally be equipped with a side table for cross-folding the insulation strips.

8 Maintenance and repair

8.1 Requirements for the personnel to be carried out

Maintenance and repair may only be carried out by trained and commissioned personnel of the manufacturer or the operator.

8.2 Maintenance schedule

For a safe and reliable machine, regular inspection and maintenance is mandatory:

Test part	**Interval**	**To be verified by**
Emergency stop check	weekly	Operator
Cleaning the tabletop	weekly	Operator
Check moving parts	monthly	Operator
Inspect Mold Rollers	monthly	Operator
Inspect plastic roller	monthly	Operator
Electrical System	monthly	Operator
Checking and oiling spindles	1/2 annually	Operator
Checking and oiling the Gatling roller	1/2 annually	Operator
Mechanical Systems	annual	Maintenance Personnel Manufacturer

We recommend Divinol T 8 EP ISO 100 from Zeller+Gmelin

8.3 Electricity

Work on the electrical system of the machine may only be carried out by the manufacturer or by specially trained personnel. In the event of malfunctions, the manufacturer must be informed.

8.4 Mechanics

The machine has 2 mechanically demanding assemblies that must be handled with care and require maintenance according to the procedure. - Gattling roller with the upper forming roller - feeding unit with the plastic roller

8.5 Tires

The machine is delivered without pneumatics

8.6 Hydraulics

The machine is delivered without hydraulics.

9 Emergency maintenance

Malfunction/error message	Possible cause(s)	Remedy
Embossing is off-center along the entire length.	The individual forming rollers must be adjusted with the hexagonal socket wrench.	• Hex socket wrenches • Place each forming roll separately on the desired fold track.
	Plastic roller has run in.	Replacing the plastic roller
	Insulation material is narrower than the set table stops.	Set table stops on insulation material.
Embossing is partially off-center.	Isolation moves under the table stops.	• Fix stops using locking knobs • Readjust table stops.
	Table stops are not parallel along the entire length.	Readjust table stops.
	Insulation material is too thin	Use stronger insulation material.
	Dust/dirt is between table stops and table.	Clean
	Plastic rolling has run in	Replacing the plastic roller
	Insulation material different widths (cut crooked).	Cut insulation material to an even width.
Embossing is not evenly shaped.	Forming rollers have deformations	Replacing Mold Rollers
	Plastic roller has run in	Replacing the plastic roller
	Gattlingwalze defekt	Replacing the Gattling Roller
Embossing width not dimensionally accurate.	Embossing width not set correctly	Readjust embossing width
	Plastic roller has run in	Replacing the plastic roller
Embossing is not/too weakly imprinted.	Roller pressure too low	Adjust roller pressure
	Plastic roller has run in	Replacing the plastic roller

Malfunction/error message	Possible cause(s)	Remedy
Insulation is cut in	Insulation material is too thin	Use stronger insulation material.
	Roller pressure is too strong	Reduce roller pressure
Insulation material is not or only difficult to introduce.	Table stops are set too tightly	Set table stops on insulation material.
	Hold-down device set too tightly	Reduce spring pressure
Shape rollers cannot be adjusted	Spindle for forming rollers is blocked	Release blockage, cleanse, grease.
Table stops cannot be adjusted	Table stops are blocked	Opening the two front locking knobs
No feed of the insulation material	No infeed between forming rollers and plastic rollers	Increase roller pressure
Embossing on the side table is not parallel to the outer edge	Insulation was not/poorly guided by hand	Correctly guide insulation by hand
Embossing made at the side table is not true to size	Incorrect adjustment of the side table stop	Readjust the stop on the side table
Embossing is not/too weakly imprinted	Roller pressure too low	Adjust roller pressure
Insulation is cut in	Side table pressure is too strong	Reduce side table pressure

10 Interfaces

The RotaFlex 150 folding machine has a Siemens logic unit without an external interface. If an interface is needed, the manufacturer must implement it. Please contact the manufacturer.

Space for your comments:

11 Spare parts list

Designation	Item No.
Forming Roller No. 1	120.00.10.001
Forming Roller No. 4	120.00.10.004
Stop rail	120.10.20.006
Kunststoffwalze	067.00.1.020
Ring sensor	BI15R

Space for your comments:

12 Supplier documentation

Please contact the manufacturer for detailed information.

Space for your comments:

13 Decommissioning/Dismantling/Disposal

If you want to disassemble and dispose of the machine, please let the manufacturer know. The manufacturer takes back the machine delivered free of charge and takes care of professional, environmentally friendly disposal.

The machine is to be dismantled and disposed of exclusively by the manufacturer. This guarantees the lowest environmental impact and, if necessary, partial reuse in line with our environmental responsibility.

14 Plans and technical drawings

14.1 Electricity

Please contact the manufacturer.

14.2 Mechanics

Please contact the manufacturer.

14.3 Tires

The machine is delivered without pneumatics.

14.4 Hydraulics

The machine is delivered without hydraulics.

15 Protocols/Certificates:

EC Declaration of Conformity

The machine was built according to the following guidelines and recommendations:

- Product Safety Directive 2001/95/EC Directive EMC 2014/30/EU
- Machinery Directive
2006/42/EC Low Voltage Directive 2014/35/EU Directive RoHS
2011/65/EU Ecodesign Directive 2009/125/EC Directive CE Marking
93/68/EEC

The manufacturer / distributor declares that this product (folding machine RotaFlex 150 | Article 3.120.10)) complies with the provisions of the said Directives in the version in force at the time of the declaration.

The following harmonized standards were used in the construction of the machine:

- DIN EN ISO 13857:2019- DIN EN ISO 12100:2013-08- EN 547-2:1996 +A1:2008- EN ISO 14738: 2008- EN 60204-1: 2018- EN 61800-5-2: 2007- EN ISO 13850: 2015- EN ISO 13854:2019- EN 60204-1: 2018- EN ISO 20607 :2019 Betriebsanleitung

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Documentation Representative

Uwe Bidlingmaier