Skiving Machine ES 50

Operating Manual

English, Version 03

Copyright

Operating Manual part number:	ES 50-BA-UK-V3
Version:	03
Date of issue:	24.01.2012

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Customer information

The **Operating Manual** has specially been compiled for the FORTUNA *Skiving Machine ES 50*.

It consists of:

Machine description

User manual

The instructions must be read carefully and the reader must thoroughly familiarise themselves with all details. Failure to comply with the instructions in the documentation may result in a loss of warranty in case of damage.

In addition to the Operating Manual, the generally applicable regulations as well as the domestic and local regulations on accident prevention and environmental protection must be made available and observed.

To help you understand your FORTUNA *Skiving Machine ES 50*, design details are given, some of which are confidential. This information is intended only for the operator of the machine and may be neither reproduced nor made accessible to third parties.

We are certain that your new FORTUNA *Skiving Machine ES 50* will completely meet your expectations.

If you have any further questions, the FORTUNA advisory service engineers are always available to provide additional information.

Summary of customer documentation

Machine description
Among other things the machine description comprises:
Machine data
Safety information
Important safety devices
Personnel (demands and duties)
Machine installation

User manual
The machine's user manual contain all the information necessary to operate your FORTUNA *Skiving Machine ES 50*. They must be given to the operator of the machine. These user manual must always be available at the machine.
All safety information, regulations and demands stipulated in the “ Machine description “ section also apply to operations with the machine.

Repair Manual
The Repair Manual contains all information necessary to replace wearing and spare parts on your *Skiving Machine ES 50*.
This document must be handed to the member of staff who repairs the machine. Staff entrusted with this task must be trained by FORTUNA Spezialmaschinen GmbH.
All safety information, regulations and demands stipulated in the “ Machine description “ section also apply to the repair and replacement of parts.

Spare parts list
The spare parts list contains all the information on the machine's individual components and assemblies.

Circuit diagram

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1 Machine description

1.1 Machine data

This description of the machine helps you to operate the machine safely and prevents damage. Please familiarize yourself with the safety instructions before you transport, connect or start up the machine, see chapter 1.7 *Safety information* (page 16).

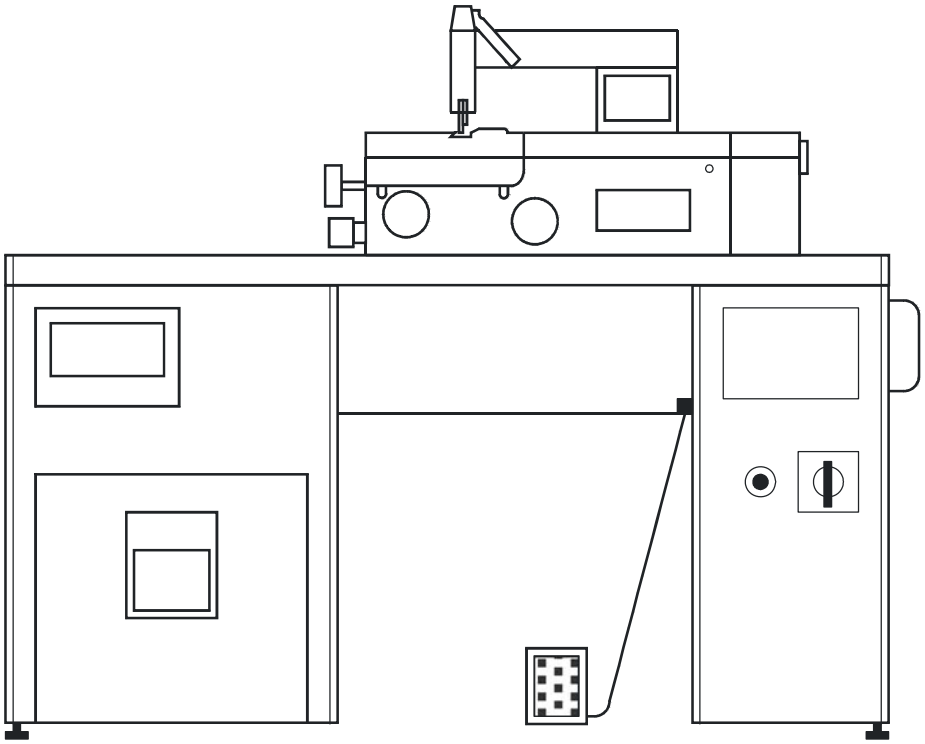


Figure 1: View of the machine

The guarantee for function and safe operation can only be given in the case of appropriate operation and the utilization of the original FORTUNA spare parts.

⇒ Check the functioning of all safety devices at regular intervals.

⇒ Contact the FORTUNA after sales service immediately if you find out deficiencies in the safety area.

⇒ The operation of the machine must be carried out by skilled personnel only.

⇒ The operation of the machine by persons who are younger than 14 years is not allowed.

⇒ The machine is designed to be operated by one person only and must be used accordingly.

⇒ Make sure that the safety devices and control elements are accessible without restriction during the operation.

1.1.1 Range of application of the machine

This machine is not permitted to be operated in an explosion-proof area.

Only use this machine for cutting and skiving of leather or material that is similar to leather (also artificial leather). If you intend to use any other materials you must contact one of the FORTUNA-representations or the FORTUNA Company and ask for written approval.

Any other use of the machine may not correspond with the application range of the machine. The FORTUNA Company is not responsible for any damages resulting from the non-observance of these rules.

Other considerations for the correct application of the machine are:

⇒ the observance of all recommendations in the Operating Manual and

⇒ the execution of all prescribed inspection and maintenance tasks.

The use of the following materials is not allowed:

⇒ Metals

⇒ Wood

⇒ Rubber with metallic insert

⇒ Hard PVC

⇒ Textiles

⇒ Glass

⇒ Ceramics

Please do not exceed or fall short of the values listed in Chapter 1.1.3 *Electrical data* (page 9).

1.1.2 Technical data

Overall Dimensions of the Machine	
Width	1270 mm
Required space width	1690 mm
Depth	565 mm
Required space depth	1115 mm
Height	1200 mm
Weight of the machine	approx. 170 kg

Noise Emissions	
Utilized measuring device	Type ELT 3-215.8510.02
Value measured at the operating place	73 dB(A)

A higher sound pressure level that causes defective hearing can be generated depending on the local conditions. In this case, the operating personnel must take protective measures with the appropriate safety equipment.

1.1.3 Electrical data

Operating voltages and frequencies	380 – 420 V ± 5% 220 – 240 V ± 5% 380 – 420 V ± 5% 220 – 240 V ± 5%	50 cycles 50 cycles 60 cycles 60 cycles
Control voltage	12/220 VAC	
Power input	1.0 KVA	
Safety fuses	max.: 16 A	

1.1.4 Ambient conditions

Conditions during operation and storage	
Humidity	< 80 % (non-condensing)
Temperature, stored	0 ... 50 C°
Temperature, operating	10 ... 40 C°

1.1.5 Tools and accessories

Various accessory parts are delivered in the scrap material bin at the front of the machine.

The following tools are packed in a box

⇒ Fork wrench
13 mm x 17 mm

⇒ Hexagonal socket-head wrench
2.5 mm / 3 mm / 5 mm

⇒ 1 Oil stone with sleeve

⇒ 1 Hex driver with T-handle

⇒ 1 Set collar A8

Skiving accessories

⇒ Presser foot 361 V

⇒ Presser foot 361 HP

⇒ 2 Work plates

Further accessory parts

⇒ Key for the switch cabinet

⇒ Operating Manual

1.2 Applicable rules and regulations

⇒ DIN EN ISO 12100–1 and 12100–2
⇒ DIN EN ISO 13857
⇒ EC Machinery Directive 2006/42/EG
⇒ DIN 60204
⇒ DIN EN ISO 13849-1

1.3 Guarantees and liabilities

Our "General sales and delivery conditions" are principally valid for the guarantee and liability of our products. Personal and material liabilities are excluded in the following cases:

⇒ The machine has been used for purposes other than originally intended.

⇒ Improper assembly, start-up, operation and maintenance of the machine.

⇒ Operation of the machine with defective safety devices and safety guards that are not functional or have not been installed in accordance with the instructions.

⇒ Non-observance of the rules that are listed in the Operating Manual with regard to transport, storage, assembly, start-up, operation, maintenance and setting-up of the machine.

⇒ Unauthorized constructional modifications to the machine.

⇒ Unauthorized alterations of the given parameter limits of the machine (i.e. power, speed and fuses).

⇒ Insufficient maintenance of machine parts that are subject to wear.

⇒ Non-observance of the prescribed maintenance schedules.

⇒ Repair work carried out incorrectly.

⇒ Catastrophes caused by external influences or acts of God.

1.4 Copyrights

The copyrights of this Operating Manual remain in the property of FORTUNA. They are only intended to be used by the operator of the machine and his personnel.

Requirements and rules included in these instructions may not be entirely or partially

⇒ copied

⇒ distributed or

⇒ given to third persons.

Infringements may be prosecuted.

1.5 Training offers

Training possibilities for the *Skiving Machine ES 50* are offered at our Company in Weil der Stadt as well as at our subsidiary companies. Please inquire about times, subjects and duration of training.

1.6 CE declaration of conformity

EC Declaration of Conformity
As defined by machinery directive 2006/42/EC Annex II, No. 1 A

Herewith we declare that the design of the machine described thereafter,

Designation:	**Skiving machine**
Machine type:	**ES 50**
Machine number:	
Year of manufacture:	

complies - as supplied - with the following provisions:

EC machinery directive (2006/42/EC)
EC low tension directive (2006/95/EC)
Directive EMC (2004/108/CE)

Applied harmonized standards in particular:

DIN EN ISO 12100-1	Safety of machinery - Basic concept, general principles for design - Part 1: Basic terminology, methodology (ISO 12100-1:2003)	April 2004
DIN EN ISO 12100-2	Safety of machinery - Basic concept, general principles for design - Part 2: Technical principles (ISO 12100-2:2003)	April 2004
DIN EN ISO 13857	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857: 2008)	August 2008
DIN EN 60204-1	Safety of machinery - Electrical equipment of machinery - Part 1: General requirements (IEC 60204-1: 2005 (modified)	June 2007

In case of any modification of the machine which has not been approved by us, this declaration is not valid any longer.

Weil der Stadt,

ppa. Günter Weslowsky

The engineering director is authorised to compile the relevant technical documents.

Figure 2: CE declaration of conformity

1.7 Safety information

All safety instructions and warnings on the machine must be legible at all times.

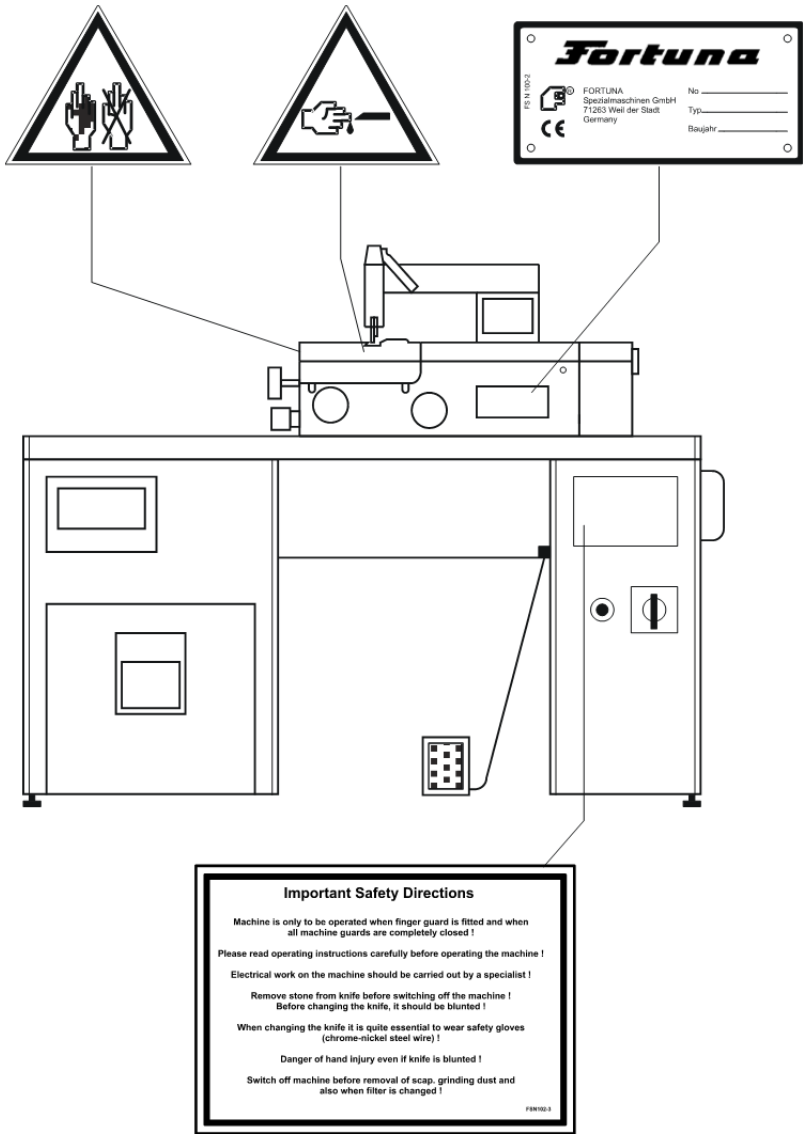


Figure 3: Safety informations and nameplate on the machine

1.7.1 Personal safety

⇒ Read and observe the safety rules indicated on the reference plates, please refer to Figure 3: Safety informations and nameplate on the machine (page 16).

⇒ Use protecting equipment, e. g. steel mesh chain gloves for all work for which these protections are obligatory.

⇒ Do not wear loose clothes. Wear a hair net or bind your hair if your hair is down to your shoulders. These measures are necessary in order to avoid any contact with moving machine parts.

⇒ Make sure that the main switch as well as the pedal can be reached easily with your foot during operation.

⇒ Inform your company safety representative about all injuries and accidents.

⇒ Make sure that the machine is only be operated and maintained by skilled personnel.

⇒ It is not allowed to eat or drink at the place of operation of the machine.

1.7.2 Safety in the operation area

⇒ Keep the operation area clean and make sure that the lighting is satisfactory. Do not keep tools and loose machine parts close to the machine.

⇒ Return tools and equipment to their place after use.

⇒ Safety devices must not be bypassed, dismounted or made ineffective by blocking them.

⇒ The machine must only be operated with completely closed cover, filters in position, scrap material bin closed and knife cover fitted.

1.7.3 Safety rules for the use of tools

⇒ Wear gloves and protective clothing when you are working with sharp-edged cutting tools.

⇒ Store the tools (grinding wheels etc.) in the bins that are provided for this purpose.

⇒ Remove hand tools (wrenches, measuring devices etc.) immediately after use.

1.7.4 Safety rules for the transport

⇒ The convenient lifting devices must be used for the installation and transport of the machine.

⇒ Stand clear of the machine when lifting or transporting the machine.

⇒ Install safety devices to avoid the machine being dropped.

1.7.5 Safety rules for the installation and operation of the machine

⇒ Read, take care and observe all the safety reference marks on the machine, please refer Figure 3: Safety informations and nameplate on the machine (page 16).

⇒ Make yourself thoroughly familiar with the different ways of switching off the machine, Chapter 1.8.1 Main switch (page 22).

⇒ Make sure that all safety devices of the machine have been activated prior to the start-up of the machine.

⇒ Do not remove any covers or machine parts during the operation.

⇒ Check the tool for wear and damage prior to the start-up of the production process.

⇒ Take care that there are no excessive vibrations and unusual noise during the operation and maintenance of the machine. They might inform you about possible problems which require immediate attention.

1.7.6 Safety rules for repair and maintenance work

⇒ Work that has to be carried out in the switch cabinet and at the electrical control system must be carried out by skilled personnel only.

⇒ Changes and reconstructions of the machine should be carried out with the approval of FORTUNA only.

⇒ It is not allowed to inactivate safety devices or safety guards or to impair their effectiveness.

⇒ Take utmost care when certain installation work of the machine requires to switch off safety devices.

⇒ You endanger your life if you open the door of the switch cabinet when the main switch is on.

⇒ The power supply to the machine must be interrupted (main switch off) during the maintenance and cleaning work.

⇒ The danger reference marks in the switch cabinet must be strictly observed (e. g. ‘Attention: machine is voltage-carrying even when the main switch is off’).

⇒ It is obligatory to blunt the knife prior to opening the covering or changing the knife. Even when the knife is dull there is a risk of injury. Therefore, the use of steel mesh safety gloves is mandatory.

⇒ The machine must be secured (e. g. by locally closing it with a warning tape) against unauthorized start-up by switching off the main switch when the machine is left unattended during maintenance work.

⇒ Spare parts and replacement parts subject to wear must be examined prior to their installation and must comply with the manufacturer’s specifications (this applies specially to knives and grinding wheels).

⇒ Appropriate measures must be taken when cleaning and degreasing the machine with aggressive and inflammable agents.

We recommend that you use only original FORTUNA spare parts.

1.7.7 Inspection requirements

⇒ The machine operator is bound to regularly inspect the basic units of the machine that are important for the operational safety and to replace them in case of a fault or wear.

⇒ The machine is subject to the inspection obligation for electric systems. The machine must be checked regularly according to the regulations of the industrial sector and the local regulations.

⇒ Obvious damages and the function of the tensioning equipment of the knife, all drive elements and the guide elements which are in contact with the knife must always be inspected when the knife is replaced.

⇒ The function of the safety switches must be inspected when maintenance work is carried out.

1.7.8 Further safety rules

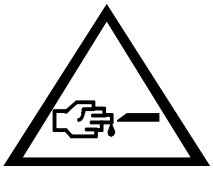
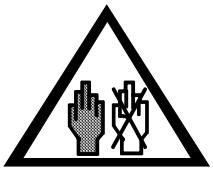
During the working process there remains a small risk of injury because complete protection in the working zone of the knife during the skiving process of leather parts is not possible.

This zone is marked with a danger label (pictograph). The machine has been designed for optimum safety in accordance with the latest technical safety standards.

For further information about safety rules, please refer to this Operating Manual as well as to the national and international safety recommendations and laws.

1.7.9 Symbols and reference marks

The following symbols and reference marks will be used in this Operating Manual and/or are attached at the *Skiving Machine ES 50*.

Symbol	Description
	This symbol signifies a direct hazard to life and health. Non-observance of these directions may be highly dangerous to your health or result in injuries that could endanger your life.
	This symbol signifies a possible hazard to life and health. Non-observance of these directions may be highly dangerous to your health or result in injuries that could endanger your life.
	This symbol refers to the appropriate operation of the *Skiving Machine ES 50*. Non-observance of these directions could result in a failure of the machine and damage to the environment.
	This symbol refers to a specific operation of the machine and other relevant information for the machine.
	This symbol signifies that there is an increased danger of injury from the unshielded knife. It signifies a direct hazard to life and health. Non-observance of these directions may be highly dangerous to your health or result in injuries that are life threatening.
	This symbol signifies that steel mesh chain gloves must be worn during operation of the machine. It signifies a direct hazard to life and health. Non-observance of these directions may be highly dangerous to your health or result in injuries that are life threatening.

1.8 Important safety devices

The proper functioning of the safety devices described below must be checked at regular intervals:

⇒ after any repair work,

⇒ after any maintenance work and

⇒ prior to the start-up of the machine.

1.8.1 Main switch

The main switch stops the drives of the machine; the emergency stop function separates the machine from the power supply.

1.8.2 Motor protection switch

The motor protection switches in the switch cabinet stop the machine drives.

1.8.3 Protection switch against non-intended restart of the machine

The S*kiving machine ES 50* is protected against non-intended restart by means of a self-acting main switch with undervoltage release.

1.9 Personnel (requirements and tasks)

⇒ Only skilled and trained personnel is allowed to operate the *Skiving Machine ES 50.*

⇒ The responsability of the personnel in charge of the operation, conversion and maintenance of the machine must be clearly laid out.

⇒ Unskilled personnel is only allowed to operate the machine when supervised by a qualified staff member.

Activity	**Persons**		
	Skilled persons	Persons with technical education	Persons with electro-technical education
Transport		X	
Start-up		X	X
Operation	X		
Troubleshooting		X	X
Mechanical troubleshooting		X	
Electrical troubleshooting			X
Machine setting and tooling		X	X
Maintenance		X	X
Repair work		X	X

1.9.1 Operators

A training for the operation of the *Skiving Machine ES 50* is mandatory.

The operator must be in a position to stop the machine and to inform the responsible persons in case of machine breakdowns or problems.

The cleaning and the maintenance work that the operator must carry out are restricted to the daily emptying of the scrap material bin and the cleaning of the filters and the operation area.

1.9.2 Repair and maintenance personnel

Adjustment and maintenance work must only be carried out by specially trained personnel. This special training is also required for operating the *Skiving Machine ES 50*.

All cleaning and maintenance work which requires opening the cover with tools must be done by maintenance personnel. This applies for instance to the changing of the bell knife, the changing of the grinding wheels, the changing of the feed roll etc.

The machine must be protected against non-intended starting during all maintenance work (with a padlock at the main switch).

Electrical work must only be carried out by a qualified electrician.

The maintenance work intervals can be found in Chapter 2.6.2 *Cleaning and maintenance schedule* (page 43).

1.10 Installation of the machine

1.10.1 Transport

The machine is transported on a pallet.

For the installation of the machine at its place of destination the metallic straps with which the machine is fixed on the pallet must be removed.

When lifting the machine please consider

⇒ the appropriate angle of the rope (at least 45°) and

⇒ the load-carrying capacity of the rope.

1.10.2 Unpacking the machine

Carefully unpack the machine and inspect the packing material before its disposal.

The tools and the accessory parts which are required for the machine have been wrapped and placed in the scrap material bin which is located on the lower left side on the front of the machine. Therefore, open the scrap material bin door and pull the recessed grip to draw out the scrap material bin.

Inspect the machine for damage and missing parts. Please refer to Chapter 1.1.5 *Tools and* accessories (page 10).

1.10.3 Installation of the machine

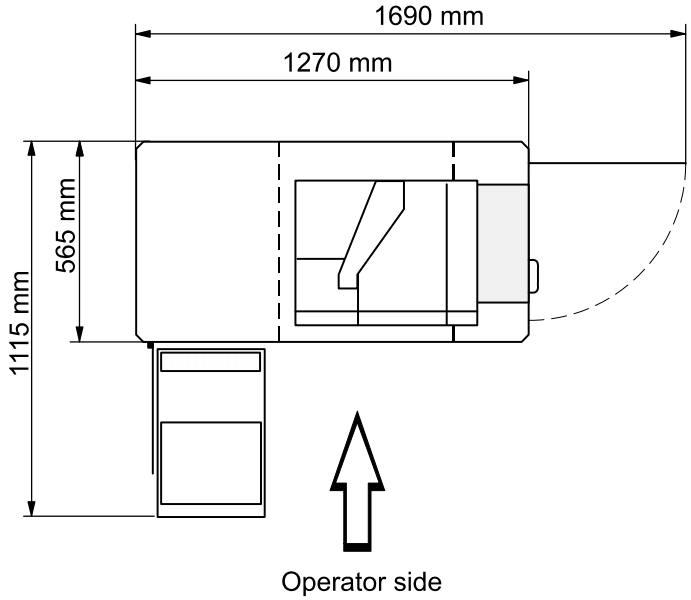


Figure 4: Installation plan of the machine

The floor space requirements for the operational machine can be calculated from the above figure. The floor area of the machine should be clean and flat. The adjustable basescrews will mount the machine to the floor.

1.10.4 Preliminary work for start-up

Cleaning the machine

The machine is provided by the supplier with a corrosion-protective coat which must be removed prior to start-up. The following work must be carried out:

⇒ Cleaning of all belt pulleys.

⇒ Cleaning of the guide element (presser roll/foot).

⇒ Cleaning of the bell knife.

Accessory equipment for the installation

The work lamp is fitted to the bushing socket and fastened with the cap screw mounted on the lamp.

1.10.5 Electrical connection

Electrical work must only be carried out by a qualified electrician.

A complete circuit diagram is part of the technical documentation of this machine and can be found in the switch cabinet of the machine.

Observe the safety rules of the local power station.

Before connecting the machine to the mains ensure that the voltage and frequency correspond to the values provided on the switch cabinet.

For more information please refer to Chapter 1.1.3 *Electrical data* (page 9).

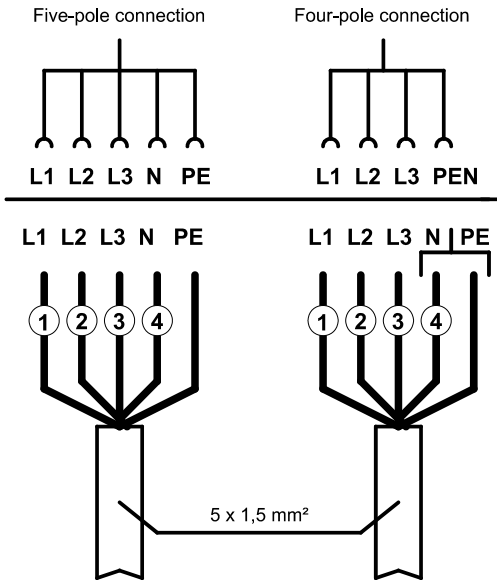


Figure 5: Mains connection cables of the machine

When connecting the cables, ensure that there is a right three-phase field between the phases L1, L2 and L3.

We recommend the following procedure for checking the three-phase field:

⇒ Turn on the machine for a **brief period**, then **immediately** turn off the machine again.

⇒ A right three-phase field exists when the bell knife turns to the rear – seen from the operator side.

⇒ Two of the three phase connections (L1, L2, L3) must be interchanged when the sense of rotation is not correct.

Even operating the machine with a left three-phase field for only a few seconds may endamage various machine parts.

1.11 Start-up

1.11.1 Installation of the regulator pedal

Place the foot pedal in the floor space of the machine and screw it down on an mounting angle. The bottom side of the pedal consists of nonskid rubber knubs. The connector of the pedal is plugged into the socket on the backside of the switch cabinet. The plugs with reverse battery protection is keyed and can only be connected in one position. Please refer to Figure 9: *Details of the machine – front view* (page 44).

2 User manual

The S*kiving machine ES 50* must be operated from the front side by one person. The operator must be trained and made familiar with the control elements prior to the start-up of the machine. For this purpose, Figure 9: *Details of the machine – front view* (page 44) should be folded out.

The machine must only be operated with completely closed covering. Cover plates and machine parts must **not** be removed during operation.

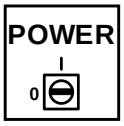
Conditions for skiving

⇒ Sharp knife edge
⇒ Smooth, undamaged guiding edge of the presser foot
⇒ Correct distance between knife edge and presser foot

Determination of the correct distance between knife and presser foot

Normal upper leather	0,3 – 0,4 mm
Fine leather	0,2 mm
Thick and hard leather	0,5 mm

2.1 Main switch



This switch (15) turns the main power supply on or off. The machine is now ready for operation.

Note: Switching on this interrupter activates the knife, the aspiration, the grinding device and possibly the drive as well according to the position of the feed potentiometer.

The main switch is provided with an emergency stop function that disconnects the machine completely from the main supply.

2.2 Explanation of the control elements

2.2.1 Adjusting screw for adjusting the skiving thickness

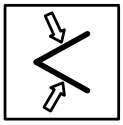
The desired skiving thickness of the treated material is adjusted by means of this adjusting screw (7). The operating result depends on the material and should be checked by means of the thickness gauge (optional).

An eccentric lever (8) that can be adjusted in two positions is placed below the adjusting screw (7). Please refer to , Figure 9: *Details of the machine – front view* (page 44).

⇒ Lever in upper position: the presser foot can be replaced.

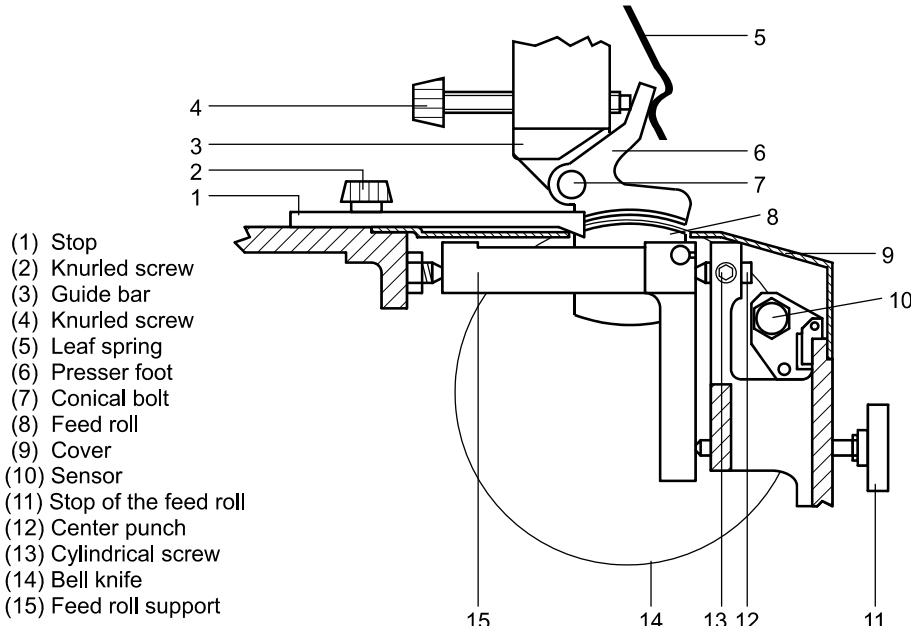
⇒ Lever in lower position: working position = skiving of the material.

2.2.2 Knurled screw for adjusting the skiving angle



Use this knurled screw (4) to carry out the adjustment of the skiving angle from a parallel position to its maximum width. The pressure generated by the leaf spring (5) fixed on the front side enables the skiving angle to be adjusted correctly and free from play.

For information on the position of the knurled screw and the leaf spring, please refer to Figure 6: *Knife guidance* (page 30).



(1) Stop
(2) Knurled screw
(3) Guide bar
(4) Knurled screw
(5) Leaf spring
(6) Presser foot
(7) Conical bolt
(8) Feed roll
(9) Cover
(10) Sensor
(11) Stop of the feed roll
(12) Center punch
(13) Cylindrical screw
(14) Bell knife
(15) Feed roll support

Figure 6: Knife guidance

2.2.3 Stop for adjusting the skiving width

The skiving width is adjusted by opening the knurled screw (2) and by shifting the stop (1) in the slotted hole. Please refer to Figure 6: *Knife guidance* (page 30).

2.2.4 Adjusting spindle for adjusting the grinding intensity

The grinding intensity for the sharpening of the knife is adjusted by means of this adjusting spindle (13). Please refer to , Figure 9: *Details of the machine – front view* (page 44).

We recommend to sharpen the knife lightly in regular intervals.

Adjustment process

⇒ Slowly turn the adjustment screw in counterclockwise direction. The grinding intensity is increased.

⇒ Slowly turn the adjustment screw in clockwise direction. The grinding intensity is reduced.

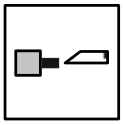
2.2.5 Adjusting screw for dressing the grinding wheel

Use this adjusting screw (3), see Figure 9: *Details of the machine – front view* (page 44) to dress the grinding wheel. The grinding wheel should be dressed about twice a day depending on the material to be treated in order to prevent a clogging of the grinding wheel and to sharpen it.

Dressing process

For this purpose, the adjusting screw is lightly pressed to the inside and turned to the limit stop. Thus, the grinding wheel is dressed on its complete width.

2.2.6 Opening for blunting and deburring the bell knife

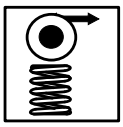


Deburring the knife is absolutely mandatory to obtain a satisfactory separation cut. This opening is required for blunting the knife and/or for deburring its inside by means of the supplied oil stone. Please refer to Chapter 1.1.5 *Tools and* accessories (page 10).

The blunting of the knife **must** principally be carried out for all work that is described in this Operating Manual prior to opening the cover.

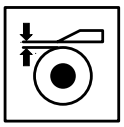
Exceptions can only be made when it is specially pointed out in this Operating Manual.

2.2.7 Adjusting screw for adjusting the contact pressure of the feed roll



The contact pressure of the feed roll is adjusted by means of this adjusting screw (1). The contact pressure is increased by turning the adjusting screw in a clockwise direction, whereas it is reduced by turning the adjusting screw in a counterclockwise direction.

2.2.8 Adjusting screw for adjusting the feed roll distance

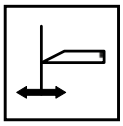


The distance between the feed roll and the knife edge is reduced or increased with this adjusting screw (2).

The following reference values must be observed

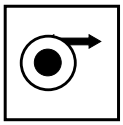
Emery feed roll	The emery feed roll should be adjusted in parallel alignment with the knife. The distance between the emery feed roll and the knife is 0.1 mm.
Steel feed roll	The distance between knife edge and feed roll should be at least 0.2 mm.

2.2.9 Adjusting spindle for the knife infeed



By turning the adjusting spindle (12) of the knife infeed in a counterclockwise direction the bell knife is moved closer to the presser foot.

2.2.10 Setpoint potentiometer



Use this potentiometer (16) to adjust the area in which the feed speed can be controlled by means of the regulator pedal. Please refer to Figure 9: *Details of the machine – front view* (page 44).

The scale shows values from 1 to 10 and in the center position (set value: 5) it is possible to adjust the rate of feed from 0 to 100 %.
In the minimum setting (value: 0) the rate of feed can be adjusted with the regulator pedal from 0 to 50 %.
In the maximum setting (value: 10) the rate of feed can be adjusted from 50 to 100 % by means of the regulator pedal, i. e. the feed roll turns even if the pedal is not being actuated.

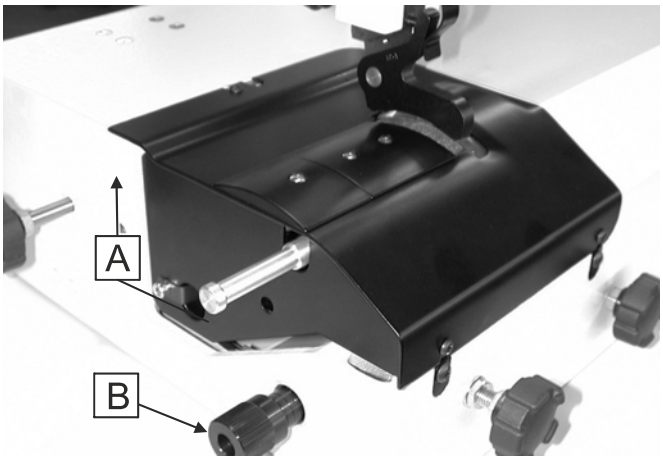
2.2.11 Regulator pedal

The regulator pedal (18) is located on the bottom below the machine. Please refer to Figure 9: *Details of the machine – front view* (page 44). The rate of feed can be regulated by means of this regulator pedal.

It is useful to preset the rate of feed at the setpoint potentiometer, please refer to Chapter 2.2.10 *Setpoint potentiometer* (page 33).

2.2.12 Handle

The handle is included in the tools.
With the handle the scraps can be removed easily and you can check with it the feeding power.
Thus, the complete cover plate has not to be opened.



⇒ A: Lift-up to remove scraps / to check feeding power

⇒ B: See Chapter 2.2.7 *Adjusting screw for adjusting the contact pressure of the feed roll* (Seite 32).

2.3 Adjustment of the knife position indicator

General information

There are two ways of indicating the knife position:

⇒ Analog bar graph display

⇒ Digital 4 ½-place seven-segment display

Bar graph

The analog bar graph display is performed by LED

Yellow LED in the middle	Knife position OK
Red LED on the left	Limit left knife position
Red LED on the right	Limit right knife position
Green LEDs	Possible intermediate postitions

Seven-segment display

The seven-segment display should only be switched on to adjust the analog sensor. It shows the inital tension of the analog sensor in 1/100 V. To deactivate the seven-segment display, press simultaneously the keys ◄ and ►.

Programming

⇒ Adjust the distance between knife and pressure foot mechanically to 0.4 mm.

⇒ Position the analog sensor mechanically and fix it until the seven-segment display shows 05.00.

⇒ Press the SET key (4) to store the zero point.

⇒ Move the knife mechanically towards the left position (the distance between knife and pressure foot is 0.2 mm).

⇒ Press the left key ◄ (5) to store this position.

⇒ Move the knife mechanically towards the right position (the distance between knife and pressure foot is 0.6 mm).

⇒ Press the right key ► (3) to store this position.

(1) Bar graph
(2) Seven-segment display
(3) Right limit position key
(4) Store zero point
(5) Left limit position key

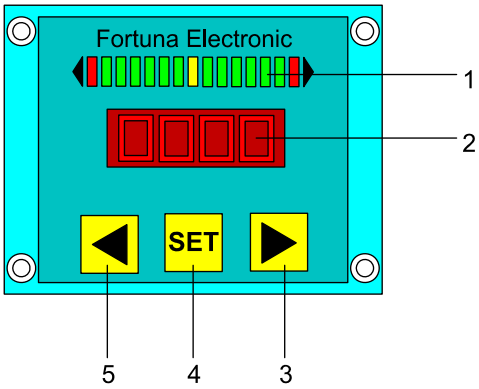


Figure 7: Knife position indicator

2.4 Adjustment of the feed regulator

The regulator is adjusted by means of four potentiometers which are mounted on the regulator board.

Inscription	Function
N_{max}	Adjustment of the maximum speed
V	Torque adjustment
Strom (Current)	Rated motor current adjustment
0-Punkt (Zero point)	Dwell speed adjustment

Adjustment of the potentiometers

Inscription	Setting
N_{max}	⇒ Set the external potentiometer at the center position (value: 5). ⇒ Press the regulator pedal until ist stop. ⇒ Use a speed counter to adjust the maximum speed by means of the potentiometer. ⇒ Turning to the right increases the speed. ⇒ Turning to the right reduces the speed.
V	⇒ Adjust a low speed by means of the regulator pedal or an external potentiometer. ⇒ Reduce the feed motor speed applying a low braking force. ⇒ The optimum adjustment has been reached when the motor neither increases nor decreases under load. ⇒ Turning to the right increases the amplification. ⇒ Turning to the left decreases the amplification.
Current	Adjust the rated current of the motor used. With a low speed it must only be possible to stop the motor applying an increased force and at its maximum speed the motor must not pulse. Turning to the right increases the motor current. Turning to the left decreases the motor current.

Zero point	⇒ Do not push the regulator pedal. ⇒ Set the external potentiometer at the center position (value 5). ⇒ Turn the zero point potentiometer until the feed motor just starts turning. ⇒ Now turn back until the feed motor stops. ⇒ Turning to the right increases the speed. ⇒ Turning to the left decreases the speed.

Jumper

The jumper on the regulator board serves to bridge the external regulator pedal.

Jumper plugged in - regulator pedal is bridged.

Jumper removed - regulator pedal connected.

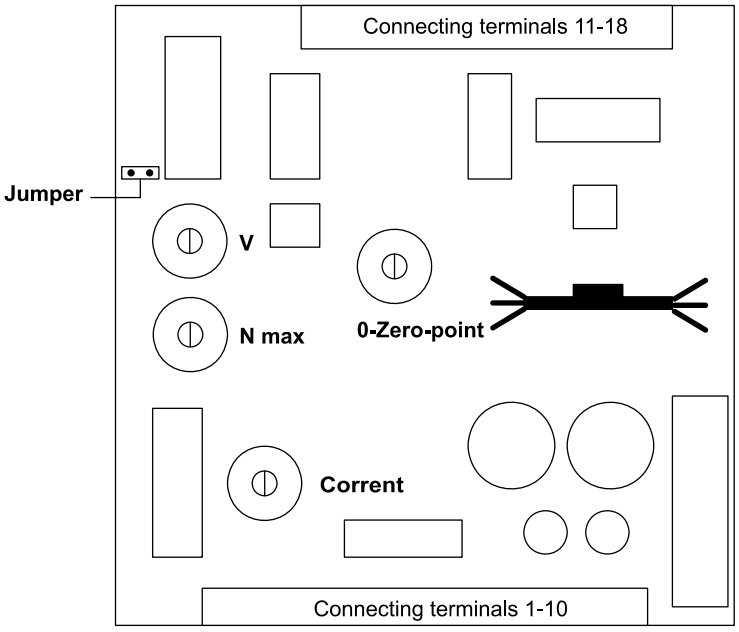


Figure 8: Regulator

2.5 Cleaning

2.5.1 Daily cleaning

The following cleaning must be carried out **daily**, please refer to Chapter 2.6.2 *Cleaning and maintenance schedule* (page 43).

Switching off the machine

Emptying the scrap material bin

⇒ Open the door of the scrap material bin.
⇒ The scrap material bin which is located on the left side of the work table must be removed.
⇒ Extract the filter cartridge, clean it and make sure that it fits correctly.
⇒ The scrap material bin must be emptied.
⇒ Clean the rubber gasket of the filter cartridge and control if it is damaged. If the rubber gasket is damaged it must be replaced in order to guarantee optimal scrap suction.
⇒ Insert the filter cartridge.
⇒ Replace the scrap material bin.
⇒ Close the door of the scrap material bin.

2.5.2 Weekly cleaning

The following cleaning must be carried out **weekly**, please refer to Chapter 2.6.2 *Cleaning and maintenance schedule* (page 43).

Stopping the machine

Cleaning the inside space of the machine

⇒ Open the upper part of the machine by removing the countersunk screw in the upper part of the machine with a hexagonal socket-head wrench. Then the upper part of the machine can be tilted to the rear. The safety loop snaps in automatically.

⇒ Thoroughly clean the inside space of the machine with a vacuum cleaner.

⇒ Clean the grid at the suction pipe "Scrap suction".

Do not use compressed air in order to avoid the blowing of dust into the inside space of the machine.

Lubricating the rotary segment
Lubricate the rotary segment through the upper borehole with some drops of sewing-machine oil.

2.6 Maintenance work

In order to guarantee optimum functioning of the machine, the following maintenance work must be carried out within the indicated intervals. For more information, please refer to Chapter 2.6.2 *Cleaning and maintenance schedule* (page 43). The mechanical maintenance work must only be carried out by skilled personnel.

All ball bearings of the machine are covered and therefore maintenancefree.

Weekly work

The following maintenance work must be carried out weekly:

⇒ Clean and lubricate the knife infeed.
⇒ Clean and lubricate the grinding infeed.
⇒ Lubricate the flat bearing of the guide head.
⇒ Clean the grinding area.
⇒ Check the suction pipe and if it is dirty, clean it.

Monthly work

⇒ Clean and lubricate the point suspension of the feed shaft bearing arm.
⇒ Check the belts and the belt tensions and, if neccessary, replace them by new ones.

2.6.1 Troubleshooting

2.6.1.1 Bad skiving results

Cause	Elimination
Bell knife is blunt.	Regrind bell knife.
Knife has a burr inside.	Remove burr with emery feed roll or oil stone.
Increased inside knife chamfer.	Regrind bell knife.
Grinding wheel is blunt and/or clogged.	Dress grinding wheel.
Adjustment of the bell knife is incorrect.	Readjust distance to presser foot.
Presser foot is worn.	Replace presser foot by a new one.
Stop is worn.	Replace stop by a new one.
Play in flat bearing of guide head.	Readjust flat bearing.

2.6.1.2 Insufficient feeding

Cause	Elimination
Feeding power too low.	Increase feeding power.
Feed roll is worn.	Replace feed roll with a new one.
Feed roll is smudged.	Remove the abraded leather particles from the feed roll with a steel brush.
Bell knife is blunt.	Regrind bell knife.

2.6.1.3 Bevels are too thick

Cause	Elimination
Position of presser foot too high.	Change adjustment of the presser foot.
Position of stop is not correct.	Readjust position of stop.
One side of presser foot is worn.	Replace presser foot by a new one.
Feed roll is damaged.	Replace feed roll by a new one.

2.6.1.4 Insufficient scrap removal

Cause	Elimination
Scrap ejector is not adjusted correctly.	Correctly adjust scrap ejector.
Scrap material bin is not inserted correctly.	Check scrap material bin.
Scrap material bin is full.	Empty scrap material bin.
Filter is clogged.	Clean filter.
Suction pipe is clogged.	Clean suction pipe.

2.6.1.5 Noisy operation

Cause	Elimination
Nylon sliding sleeve of knife drive is worn (chattering noise).	Remove sliding sleeve and replace it with a new one.

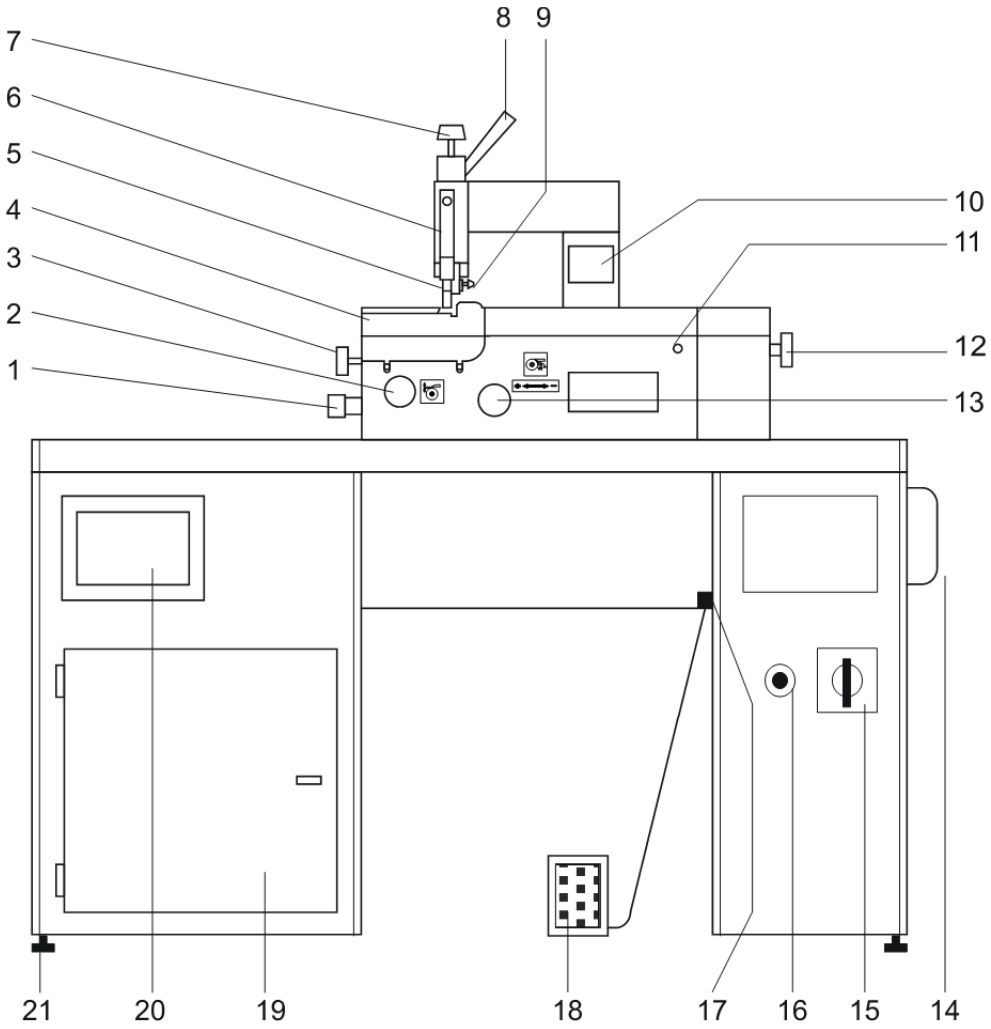
2.6.1.6 Electrical troubles

Description of the Trouble	Elimination
Work lamp does not light.	⇒ Check fuse and if necessary, replace it by a new one. ⇒ Halogen bulb lamp defective, replace it by a new one.

2.6.2 Cleaning and maintenance schedule

Cleaning and maintenance work to be carried out	Daily	Weekly	Monthly
Clean machine.	X		
Readjust scrap ejector.	X		
Clean filter cloth.	X		
Empty scrap material bin.	X		
Clean and lubricate knife infeed.		X	
Lubricate flat bearing of guide head.		X	
Clean grinding zone.		X	
Check suction pipe and clean it, if it is contaminated.		X	
Clean the grid at the suction pipe "Scrap suction".		X	
Clean and lubricate point suspension of the feed shaft bearing arm.			X
Check belts and belt tensions and if they are worn, replace them with new ones.			X

2.7 Views and detailed drawings



(1) Adjusting screw spring tension
(2) Adjusting screw feed roll
(3) Dressing device grinding wheel
(4) Knife cover
(5) Presser foot
(6) Leaf spring
(7) Adjusting screw
(8) Excentric lever
(9) Knurled screw with bolt
(10) Knife position indicator
(11) Locking pin
(12) Knife infeed
(13) Grinding infeed
(14) Drive motor
(15) Main switch
(16) Setpoint potentiometer
(17) Connection regulator pedal
(18) Regulator pedal
(19) Scrap material bin
(20) Pigeon hole
(21) Foot (adjustable)

Figure 9: Details of the machine – front view

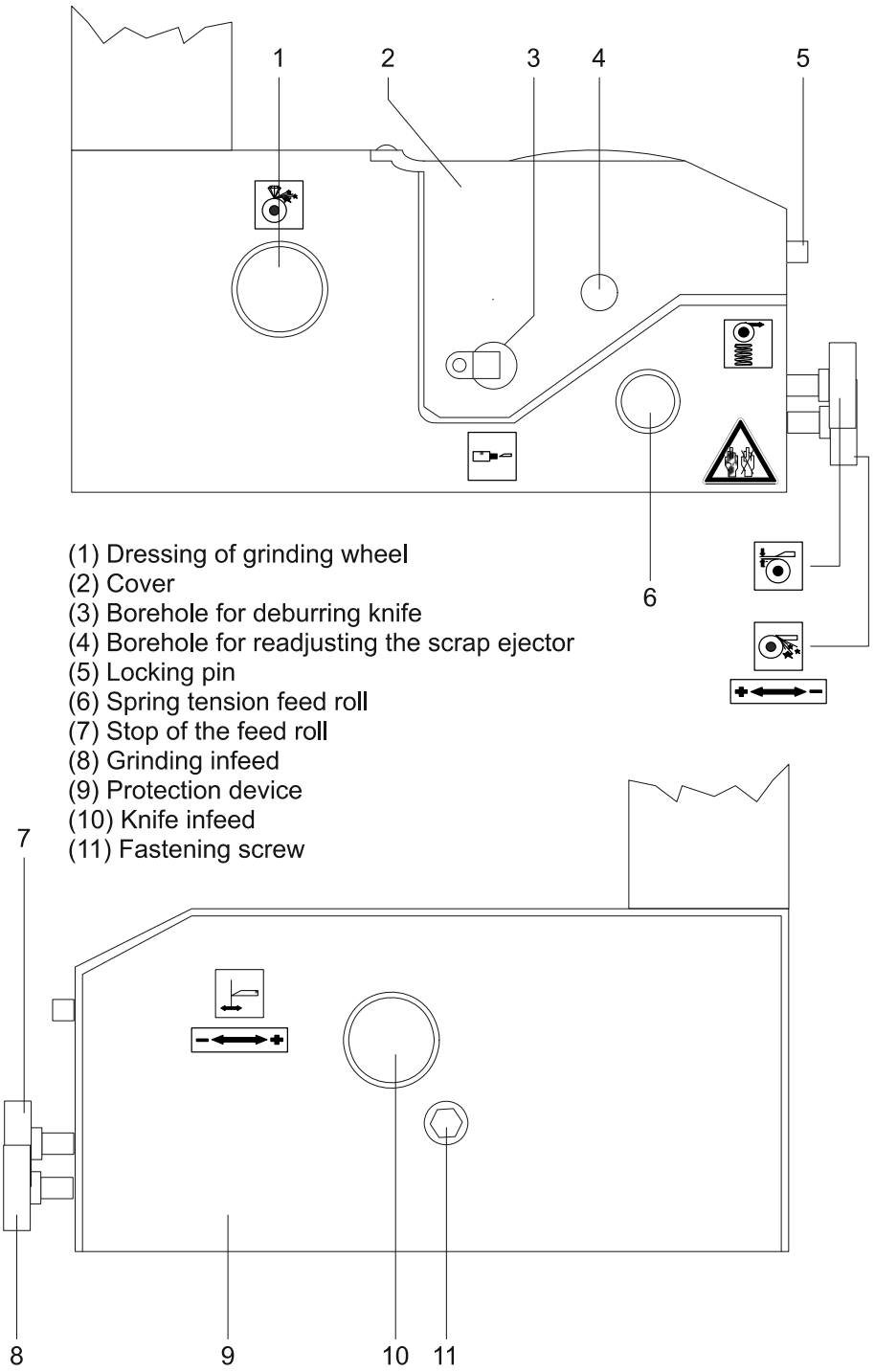


Figure 10: Details of the machine – lateral view