Hammer®

User Manual

Belt Sanders
HS 2200

Keep this manual handy and in good condition for continual reference!

Attention! The machine must be inspected immediately on arrival. If the machine was damaged during transport or if any parts are missing, a written record of the problems must be submitted to the forwarding agent and a damage report compiled. Be sure also to notify your supplier immediately.

For the safety of all personnel, it is necessary to conscientiously study this manual before assembly and commissioning. This manual must be kept in good condition, as it belongs to the machine! Furthermore, keep the manual to hand and in the vicinity of the machine so that it is accessible to personnel when they are using, maintaining or repairing the machine.

HAMMER | **A product of the FELDER GROUP**

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1 General

1.1 Explanation of symbols

Important technical safety instructions in this manual are marked with symbols.
These instructions for work safety must be followed. In all these particular cases, special attention must be paid in order to avoid accidents, injury to persons or material damage.

Warning: Risk of injury or death!
This symbol marks instructions that must be followed in order to avoid harm to one's health, injuries, permanent impairment or death.

Warning: Danger – electric current!
This symbol warns of potentially dangerous situations related to electric current. Not observing the safety instructions increases the risk of serious injury or death. Required electrical repairs may only be carried out by a trained electrical technician.

Attention: Risk of material damage!
This symbol marks instructions which, if not observed, may lead to material damage, functional failures and/or machine breakdown.

Attention:
This symbol marks tips and information which should be observed to ensure efficient and failure-free operation of the machine.

1.2 Information about the manual

This manual describes how to operate the machine properly and safely. Be sure to follow the safety tips and instructions stated here as well as any local accident prevention directives and general safety regulations. Before beginning any work on the machine, ensure that the manual, in particular the chapter entitled „Safety" and the respective safety guidelines, has been read in its entirety and fully understood. This manual is an integral part of the machine and must therefore be kept in the direct vicinity of the machine and accessible at all times. If the machine is sold, rented, lent or otherwise transferred to another party, the manual must accompany the machine.

1.3 Liability and warranty

The contents and instructions in this manual were compiled in consideration of current regulations and state of the art technology as well as based on our know-how and experience acquired over many years. This manual must be read carefully before commencing any work on or with this machine. The manufacturer shall not be liable for damage and or faults resulting from the disregard of instructions in the manual. The texts and images do not necessarily represent the delivery contents. The images and graphics are not depicted on a 1:1 scale. The actual delivery contents are dependent on custom-build specifications, add-on options or recent technical modifications and may therefore deviate from the descriptions, instructions and images contained in the manual. Should any questions arise, please contact the manufacturer. We reserve the right to make technical modifications to the product in order to further improve user-friendliness and develop its functionality.

1.4 Copyright

This manual should be handled confidentially. It is designated solely for those persons who work on or with the machine. All descriptions, texts, drawings, photos and other depictions are protected by copyright and other commercial laws. Illegal use of the materials is punishable by law.
This manual – in its entirety or parts thereof – may not be transferred to third parties or copied in any way or form, and its contents may not be used or otherwise communicated without the express written consent of the manufacturer.
Infringement of these rights may lead to a demand for compensation or other applicable claims. We reserve all rights in exercising commercial protection laws.

1.5 Warranty notice

The guarantee period is in accordance with national guidelines. Details may be found on our website, www.felder-group.com

1.6 Spare parts

Attention: Non gnuine, counterfeit or faulty spare parts may result in damage, cause malfunction or complete breakdown of the machine.

If unauthorized spare parts are installed in the machine, all warranty, service, compensation and liability claims against the manufacturer and their contractors, dealers and representatives shall be rejected.

Use only genuine spare parts supplied by the manufacturer.

Attention: A list of authorised genuine spare parts and part numbers can be found at the end of this operating manual.

1.7 Disposal

If the machine is to be disposed of, separate the components into the various materials groups in order to allow them to be reused or selectively disposed of. The whole structure is made of steel and can therefore be dismantled without problem. This material is also easy to dispose of and does not pollute the environment or jeopardise public health. International environmental regulations and local disposal laws must always be complied with.

Attention: Used electrical materials, electronic components, lubricants and other auxiliary substances must be treated as hazardous waste and may only be disposed of by specialized, licensed firms.

2 Safety

At the time of its development and production, the machine was built in accordance with prevailing technological regulations and therefore conforms to industry safety standards.
However, hazards may arise should the machine be operated by untrained personnel, be used improperly or employed for purposes other than those it was designed for. The chapter entitled „Safety" offers an overview of all the important safety considerations necessary to optimise safety and ensure the safe and trouble-free operation of the machine.
Additionally, in order to further minimize risks, the other chapters of this manual contain specific safety instructions, all marked with symbols. Besides the various instructions, there are a number of pictograms, signs and labels affixed to the machine that must also be heeded. These must be kept visible and legible and may not be removed.

2.1 Intended use

The belt sander HS 2200 is designed to provide superior sanding results on large surfaces and frames. Working materials other than wood is only permitted with the express written consent of the manufacturer. Operational safety is guaranteed only when the machine is used for its intended purposes.

Attention: Any use se outside the machines intended purposes shall be considered improper and is therefore not permitted. All claims regarding damage resulting from improper use that are made against the manufacturer and its authorized representatives shall be rejected. The operator shall be solely liable for any damage that results from improper use of the machine.

The term „proper use" also refers to correctly observing the operating conditions as well as the specifications and instructions in this manual.

The machine may only be operated with parts and original and or genuine accessories from the manufacturer.

2.2 Manual contents

All those appointed to work on or with the machine must have fully read and understood the manual before commencing any work. This requirement must be met even if the appointed person is familiar with the operation of such a machine or a similar one, or has been trained by the manufacturer. Knowledge about the contents of this manual is a prerequisite for protecting personnel from hazards and avoiding mistakes so that the machine may be operated in a safe and trouble-free manner. It is recommended that the operator request proof from the personnel that the contents of the manual have in fact been read and understood.

2.3 Making changes and modifications to the machine

In order to minimize risks and to ensure optimal performance, it is strictly prohibited to alter, retrofit or modify the machine in any way without the express consent of the manufacturer. All the pictograms, signs and labels affixed to the machine must be kept visible, readable and may not be removed. Pictograms, signs and labels that have become damaged or unreadable must be replaced promptly.

2.4 Responsibilities of the owner operator

This manual must be kept in the immediate vicinity of the machine and be accessible at all times to all persons working on or with the machine. The machine may only be operated if it is in proper working order and in safe condition. Every time before the machine is switched on, it must be inspected for visible defects and general condition. All instructions in this manual must be strictly followed without reservation.
Besides the safety advice and instructions stated in this manual, it is necessary to consider and observe local accident prevention regulations, general safety regulations as well as current environmental stipulations that apply to the operational range of the machine.
The operator and designated personnel are responsible for the trouble-free operation of the machine as well as for clearly establishing who is in charge of installing, servicing, maintaining and cleaning the machine. Machines, tools and accessories must be kept out of the reach of children.

2.5 What is required of personnel

Only authorized and trained personnel may work on and with the machine. Personnel must be briefed about all functions and potential dangers of the machine. „Specialist staff" is a term that refers to those who – due to their professional training, know-how, experience, and knowledge of relevant regulations – are in a position to assess delegated tasks and recognise potential risks. If the personnel lack the necessary knowledge for working on or with the machine, they must first be trained. Responsibility for working with the machine (installation, service, maintenance, overhaul) must be clearly defined and strictly observed. Only those persons who can be expected to carry out their work reliably may be given permission to work on or with the machine. Personnel must refrain from working in ways that could harm others, the environment or the machine itself. It is absolutely forbidden for anyone who is under the influence of drugs, alcohol or reaction-impairing medication to work on or with the machine. When appointing personnel to work on the machine, it is necessary to observe all local regulations regarding age and professional status. The user is also responsible for ensuring that unauthorised persons remain at a safe distance from the machine. Personnel are obliged to immediately report to the operator any irregularities with the machine that might compromise safety.

2.6 Work safety

Following the safety advice and instructions given in this manual can prevent bodily injury and material damage while working on and with the machine. Failure to observe these instructions can lead to bodily injury and damage to or destruction of the machine. Disregard of the safety advice and instructions given in this manual as well as the accident prevention regulations and general safety regulations applicable to the operative range of the machine shall release the manufacturer and their authorised representatives from any and all liability and compensation claims.

2.7 Personal safety

When working on or with the machine, the following must be strictly observed:

Persons with long hair who are not wearing a hairnet are not permitted to work on or with the machine.

It is prohibited to wear gloves while working on or with the machine.
All jewellery (rings, bracelets, necklaces, etc.) must be removed before starting work on or with the machine.

When working on or with the machine, the following must always be worn by personnel:

Protective gear (overalls, safety goggles, dust mask, hairnet to contain long hair, etc.)
Sturdy, tight-fitting clothing (tear-resistant, no wide sleeves).

Protective footwear
That protects the feet from heavy falling objects and prevents sliding on slippery floors.

Ear protection
To protect against loss of hearing.

2.8 Hazards arising from the machine

The machine has undergone a hazards analysis. The design and construction of the machine are based on the results of this analysis and correspond to state-of-the-art technology.
The machine is considered operationally safe when used properly.
Nevertheless, there are some residual risks that must be considered.
The machine runs with high electrical voltage.

Warning! Danger – electric current: Electrical energy can cause serious bodily injury. Damaged insulation materials or defective individual components can cause a life-threatening electrical shock.

- Before carrying out any maintenance, cleaning and repair work, switch off the machine and secure it against being accidentally switched on again.
- When carrying out any work on the electrical equipment, ensure that the voltage supply is completely isolated.
- Do not remove any safety devices or alter them to put them out of commission.

2.9 Other risks

Warning! Risk of injury: Even if the safety measures are followed, there are still certain residual risks that must be considered when working on the machine:

- Danger of injury due to ejected workpieces.
- Danger of injury from crushing.
- Risk of injury from workpiece kickback.
- Hearing damage as a result of high noise levels.
- Health impairments due to the inhalation of airborne particles, especially when working with beech and oak wood.
- Unforeseen contact of the hands with the running sanding belt.
- Unforeseen contact of the hands with the running sanding belt edge.
- Workpiece tipping due to insufficient workpiece support.
- Danger of accidents from the unprotected portion of the running sanding belt.
- The workpiece being dragged in the direction of the sander when sanding if the sanding foot applies too much pressure.

3 Declaration of Conformity

CE

EG-Declaration of Conformity
according to Machine Guidelines 98/37/EG, Appendix II A

Manufacturer:	**FELDER** **KR-Felder-Str. 1** **A-6060 Hall in Tirol**

We hereby declare that the machine indicated below, which corresponds to the design and construction of the model we put on the market, conforms with the safety and health requirements as stated by the EC.

Product designation:	**Belt Sanders**	
Make:	**HAMMER**	
Model designation:	**HS 2200**	
The following EC guidelines were applied:	**98/37/EG** **73/23/EWG** **89/336/EWG**	**- Machine Guidelines** **- Low-Voltage Guidelines** **- Electromagnetic Tolerance Guidelines**
The following harmonised norms were applied:	**EN 292-1** **EN 292-2** **EN 60204**	**EN 50081-2 (01.92)** **EN 50082-2 (03.95)**
Issuing authority:	**Prüf- und Zertifizierungsstelle im BG-Prüfzert** **Fachausschuss Holz** **Vollmoellerstraße 11** **D-70563 Stuttgart** **No. 0392**	

This EC Declaration of Conformity is valid only if the CE label has been affixed to the machine.

Modifying or altering the machine without the express written agreement of the manufacturer shall render the warranty null and void.

Johann Felder

Hall in Tirol, 14.06.2006

Johann Felder, Managing Director

4 Technical data

4.1 Dimensions and weight

Fig. 1: Machine

Machine	
Height	1380 mm
Length	2510 mm
Width	1000 mm
Weight	330 kg
Belt rollers dia	190 mm
Belt speed	28 m/s
Table size	700 x 2200 mm
Max. frame height	500 mm
Height adjustment	540 mm
Sanding belt length	6000 mm
Sanding belt width	150 mm

Machine including packaging
1500 x 2830 mm

4.2 Operation and storage conditions

Operation/room temperature	+10 to +40 °C
Storage temperature	–10 to +50 °C

4.3 Electrical connection

Motor speed	2840 rpm
Motor power	3 HP
Power supply	3x 400 V

The following electrical requirements must be fulfilled:

- Earth the machine using an electrical conductor.
- The voltage regulation in the electricity network must not exceed ± 10% of the rated voltage.
- The quality of the connection cable has to be of the 4(5)x2.5 H07RN-F type or at least of equivalent quality.
- The current supply has to be protected against damages e.g. armoured conduit.
- Connected vacuum hoses have to be earthed to avoid electrostatic charges.

Attention! All operations may only be executed by an authorised electrical technician!

Please note the connection loads on the rating plate and ensure that your mains voltage corresponds to that specified on the rating plate.

The machine is equipped with a CEE plug with phase inverter.
Plug the appliance into the electricity supply, turn on and check as it runs that the motor rotates in the same direction as the arrow symbol on the motor.

In order the change the rotation direction, adjust by 180 degrees with a screwdriver.
The dust collector must be connected to the machine in such a manner that it must run along with the machine.

4.4 Particle emissions

The machine was tested for particle emissions according to DIN 33893. The Wood Authority ascertained, according to the „Principles for Testing Particle Emissions" (workplace-related particle concentrations) of woodworking machines, that the particle emission values for this machine are notably below the currently valid atmospheric limit of 2.0 mg/m³. This is certified by the blue label „BG Wood Particle Tested".

4.5 Chip extraction

Vacuum connection bei V min=20 m/s	
Diameter	120 mm
Vacuum, min.	550 Pa
Volume flow, min.	815 Cubic meters per hour

4.6 Noise emission

The specified values are emission values and therefore do not represent safe workplace values. Even though a relationship exists between particle emission and noise emission levels, an inference cannot be made about whether additional safety measures need to be implemented. Factors which can significantly affect the emission level that presently exists at the workplace include duration of the effect, characteristics of the workspace, and other ambient influences.

The permissible workplace values may also differ from country to country. Nevertheless, this information is provided to help the operator better assess hazards and risks.

Emission values at the workplace according to	
EN ISO 11202	
Idle	83,8 Decibel.
Working	78,1 Decibel.

An allowance must be made to compensate for tolerances with the specified emission values. K = 4 dB (A)

Depending on the location of the machine and other specific conditions, the actual noise emission values may deviate significantly from the specified values.

It is recommended to use protective ear equipment, this is however not a substitute for properly sharpened tools or the correct operating speed.

5 Setting up the machine

5.1 Overview

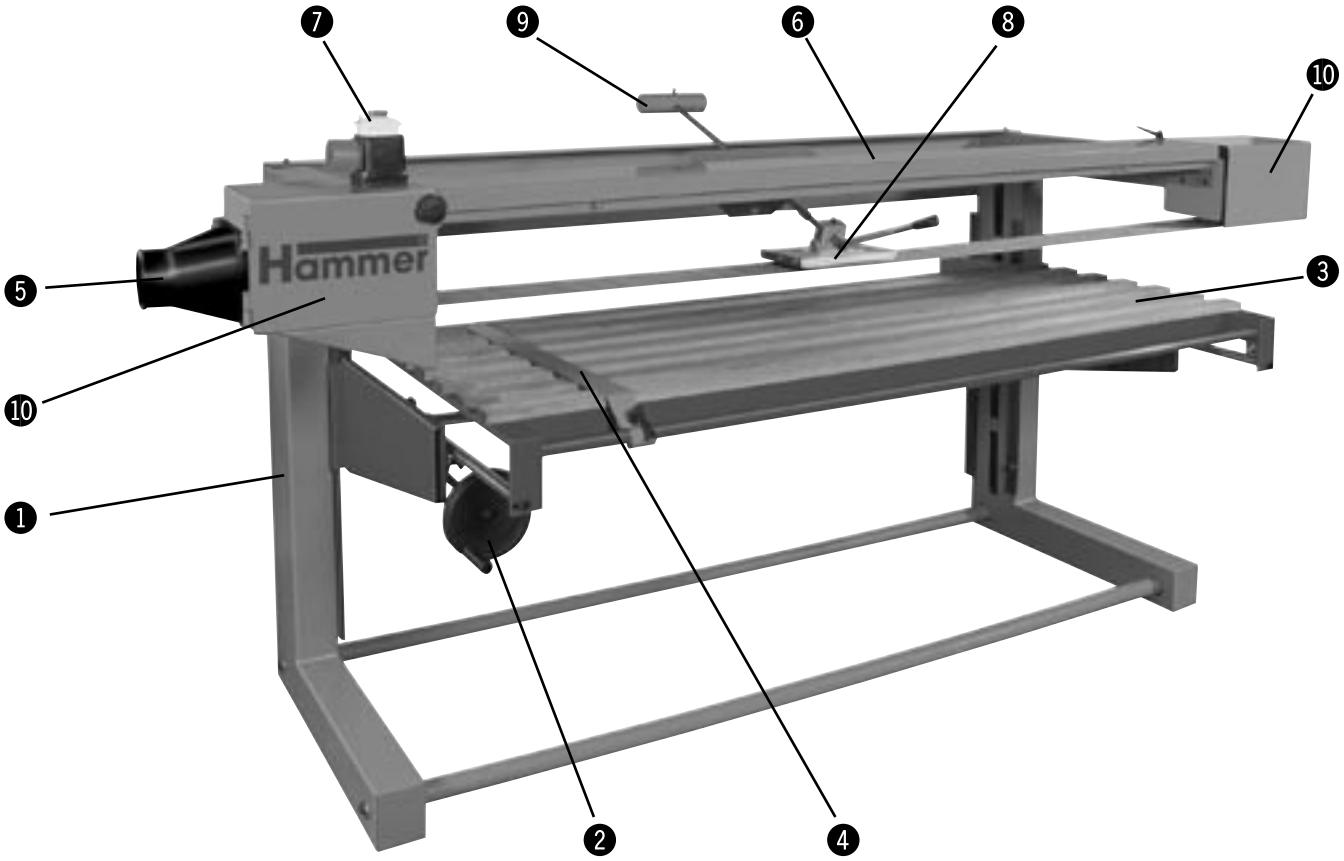

Fig. 2: Overview

1. Machine base-frame
2. Height adjustment handwheel
3. Worktable
4. Infeed fence
5. Connection for dust extractor Ø 120 mm
6. Upper protective cover
7. On/Off/Emergency-off
8. Sanding carriage
9. Counterweight
10. Belt roller guarding door

5.2 Data plate

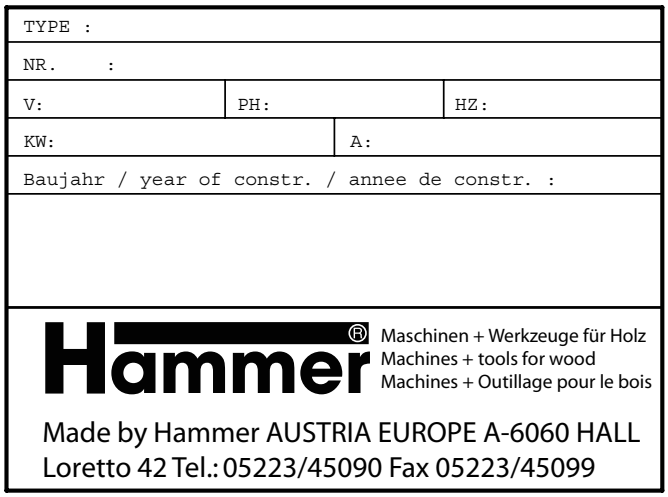

Fig. 3: Data plate

The data plate displays the following specifications:

- Manufacturer info
- Model designation
- Machine number
- Voltage
- Phases
- Frequency
- Capacity
- Electricity
- Year of construction
- Particulars for the motor

6 Transport, packaging and storage

6.1 Safety instructions

Warning! Risk of injury: There is a risk of injury due to falling parts while transporting, loading or unloading the machine.

Attention! Risk of material damage: The machine can be damaged or destroyed if it is subjected to improper handling during transport.

For this reason the following safety instructions must be observed:

- Never lift loads over a person.
- Always move the machine with utmost care and precaution.
- Only use suitable lifting accessories and hoisting devices that have a sufficient load-carrying capacity.
- The machine should never be lifted using protruding parts (e.g. fences, sliding table etc.).
- Consider the machine's centre of gravity when transporting it (minimise the risk of it tipping over).
- Take measures to prevent the machine from slipping sideways.
- Ropes, strops or other hoisting devices must be equipped with safety hooks.
- Do not use torn or worn ropes.
- Do not use knotted ropes or strops.
- Ensure that ropes and belts do not lie against sharp edges.
- Transport the machine as carefully as possible in order to prevent damage.
- Avoid subjecting the machine to shocks.
- When transporting the machine overseas, ensure that the packaging is air-tight and that a desiccant is added to protect the metal parts against corrosion.

6.2 Transport

Attention! Transport the machine only according to the enclosed transport and assembly instructions.

The machine will be delivered partly dismantled on a palett.
The machine may be transported using a crane, pallet truck or fork lift truck.

6.3 Transport inspection

Upon arrival, inspect the shipment to ensure that it is complete and has not suffered any damage.
If any transport damage is visible, do not accept the delivery or accept it only with reservation. Record the scope of the damage on the transport documents/delivery note. Initiate the complaint process.

For all defects that are not discovered upon delivery, be sure to report them as soon as they are recognized because claims for damage must be filed within a certain period, as granted by law.

6.4 Packaging

If no agreement has been made with the supplier to take back the packaging materials, help to protect the environment by reusing the materials or separating them according to type and size for recycling.

Attention! Dispose of the packaging materials in an environmentally friendly way and always in accordance with local waste disposal regulations. If applicable, contract a recycling firm to dispose of the packaging materials.

Attention: Help preserve the environment! Packaging materials are valuable raw materials and in many cases they can be used again or expediently reprocessed or recycled.

6.5 Storage

Keep items sealed in their packaging until they are assembled/installed and be sure to observe the stacking and storage symbols on the outside of the packaging.

Store packed items only under the following conditions:
- Do not store outdoors.
- Store in a dry and dust-free environment.
- Do not expose to aggressive substances.
- Protect from direct sunlight.
- Avoid subjecting the machine to shocks.
- Storage temperature: -10° to +50° C.
- Maximum humidity: 60%.
- Avoid extreme temperature fluctuations (condensation build-up).
- Apply a coat of oil to all bare machine parts (corrosion protection).
- When storing for longer than 3 months, apply a coat of oil to all bare machine parts (corrosion protection). Regularly check the general condition of all parts and the packaging. If necessary, refresh or reapply the coat of anti-corrosive agent.
- If the machine is to be stored in a damp environment, it must be sealed in air-tight packaging and protected against corrosion (desiccant).

7 Setup and installation

7.1 Safety instructions

Warning! Risk of injury: Improper assembly and installation can lead to serious bodily injury or equipment damage. For this reason this work may only be carried out by authorised, trained personnel who are familiar with the operation of the machine and in strict observance of all safety instructions.

- Ensure that there is sufficient space for working around the machine. Ensure there is ample distance between the machine and other solid constructions such as a walls or other machines.
- Keep the work area orderly and clean. Components and tools that are not put in their correct place or put away may be the cause of accidents!
- Install the safety equipment according to the instructions and check that it functions properly.

Warning! Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

Before assembling and installing the machine, check to make sure it is complete and in good condition.

Warning! Risk of injury: An incomplete, faulty or damaged machine can lead to serious bodily injury or equipment damage. Assemble and install the machine and other units only if they are complete.

Attention! Risk of material damage: Only operate the machine in ambient temperatures from +10° to +40° C. If the instructions are not followed, damage may occur during storage.

7.2 Electrical connection

Warning! Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

Characteristics of electrical connections:

- The machine must be earthed with electrical conductors.
- The voltage fluctuations in the mains supply may not exceed ±10%.
- Security and connection cable. Table on page 14.
- Triggering characteristic C (D with heavy running, caused by large swinging masses).
- The power supply cable must be protected against damage (e.g. armoured conduit).
- The power supply cable must be laid in such a way that it does not overbend or chafe and there is no risk of tripping over it.

Warning! Danger – electric current: Before hooking up the machine to the power supply, compare the specifications on the data plate with those of the electrical network. Only hook up the machine if the two sets of data correspond to each other. The electrical outlet must have the appropriate socket (for a three phase alternating current motor, CEE).

7.3 Installation

Characteristics of the installation site:

- Operation/room temperature: +10° to +40° C.
- Ensure that the work surface is sufficiently stable and has the proper load-bearing capacity.
- Provide sufficient light at the workstation.
- Ensure there is sufficient clearance for or from neighbouring workstations.
- Due to a high risk of tilting, the assembled machine must be firmly anchored to the floor.

7.4 Unloading

The machine can be unloaded/transported via forklift or pallet jack resp. with a crane and belts.

7.4.1 Assembling the machine

You will require a helper when assembling the machine, because sometimes several actions must be performed at once and the parts are too large for one person.

The machine is shipped mounted on a pallet.

1. First unpack all the parts and clean off the protective coating.
2. Unscrew both base halves from the wooden beams and place them side by side on the floor.
3. Place a level on the base and check that it is level along and across its axis.
4. If necessary, accurately adjust the base.

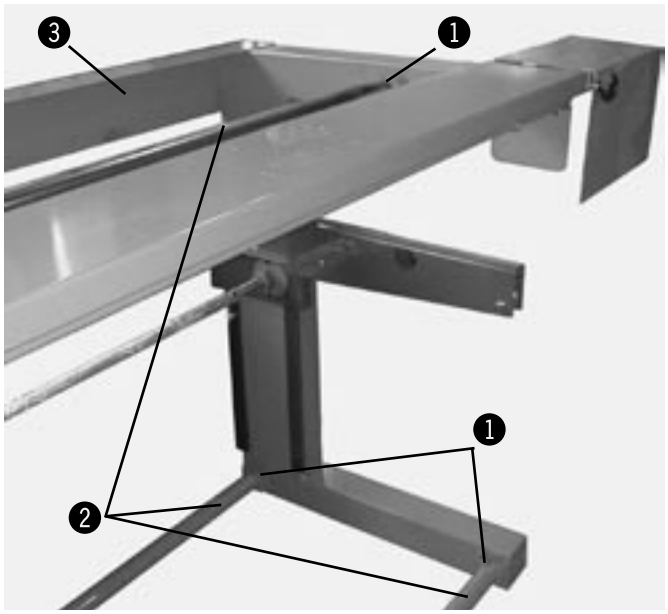

Fig. 4: Installation

5. Connect both base halves with the bars and fix them with screws.
6. Attach the rear shore to the base halves.

1 Screws
3 Cross beam

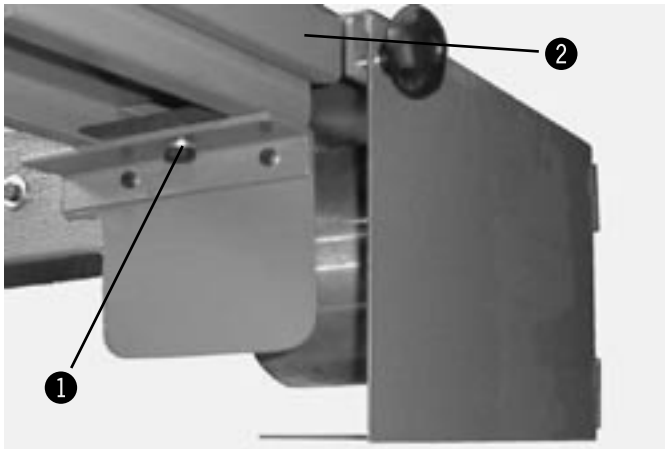

Fig. 5: Installation

7. Mount the upper crossmember to the base using screws.

1 Screws
2 Cross bar

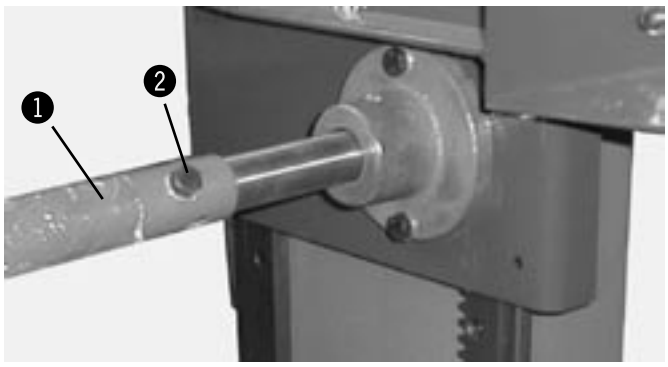

Fig. 6: Installation

8. Mount the height adjustment shaft with screws.

1 Table hub peg
2 Screw

Setup and installation

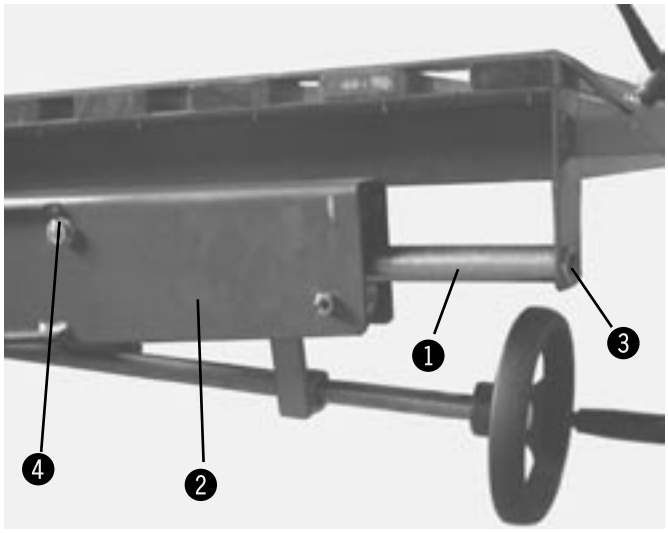

Fig. 7: Installation

9. Slide the bars into the hight adjustment supports and fix the worktable with srews. Adjust play-free with eccentric screw if necessary.

1. Bar
2. Height support
3. Screw
4. Eccentric

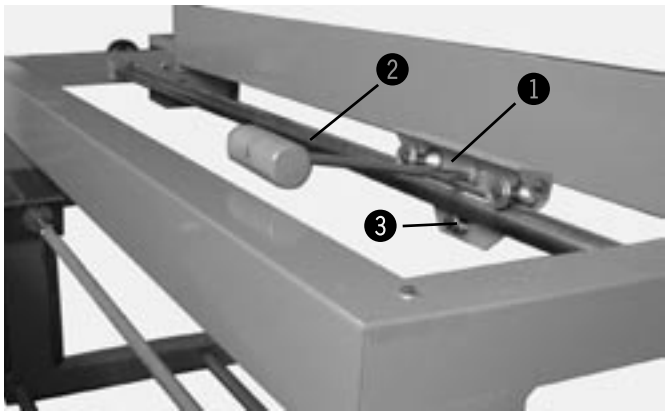

Fig. 8: Installation

10. Set the sanding carriage to the bar and adjust play-free with eccentric screw.

1. Sanding carriage
2. Sanding fence
3. Eccentric

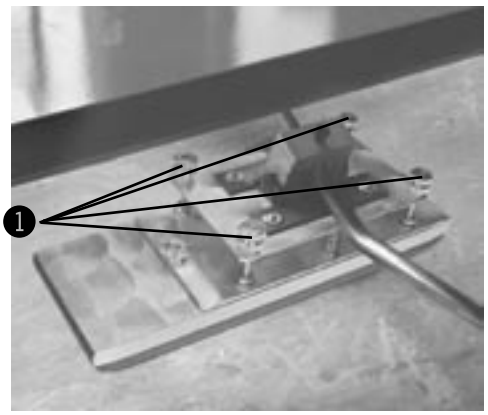

Fig. 9: Installation

11. Adjust sanding shoe with srews parallel to the sanding table.
12. Attach the belt tension device to the machine base.

1. Screws

7.5 Dust extraction

The machine has an 120 mm dia. connection for a dust extractor.
Please refer to the HAMMER catalog for suitable quick-connecting elements.

The dust extractor must be connected to the machine so it is always switched on with the belt sanding machine. This can be done via a potentialfree contact.

Only vacuum hoses may be used that fulfill the currently applicable safety regulations.

Vacuum connection V min=20 m/s)	
Diameter	160 mm
Vacuum, min.	950 Pa
Volume flow, min.	2300 Cubic meters per hour

8 Making adjustments and preparations

8.1 Safety instructions

Warning! Risk of injury: Improper adjustment and working setup can lead to serious bodily injury or material damage. For this reason this work may only be carried out by authorised, trained personnel who are familiar with the operation of the machine and in strict observance of all safety instructions.

- Before beginning any maintenance work on the machine, switch it off and secure it against accidentally being turned on again.
- Before commencing any work with the machine, inspect it to ensure that it is complete and in technically good condition.
- Ensure that there is sufficient space for working around the machine.
- Keep the work area orderly and clean. Components and tools that are not put in their correct place or put away may be the cause of accidents!
- Install the safety equipment according to the instructions and check that it functions properly.

Warning! Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

8.2 Sanding belt

Warning: Avoid all contact with rotating sanding belts. Never clean sanding belts in the machine! Remove it beforehand and clean it outside the machine!

Attention: Always relax the sanding belts when the machine is not in use!

8.2.1 Allowed sanding belts

Only the following HAMMER sanding belts may be attached:

500-14-5900	6000 x 150	K80
500-14-5910	6000 x 150	K100
500-14-5912	6000 x 150	K120

8.3 Table height adjustment and maneuvering

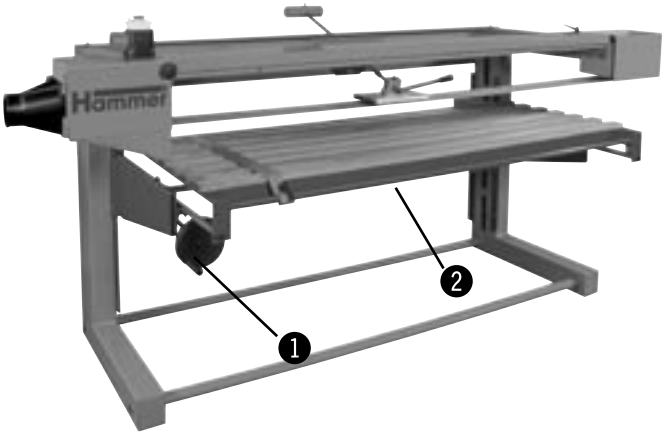

Fig. 10: Table height adjustment and maneuvering

The height of worktable can be continuously adjusted via the handwheel. Also the position can be changed via the holding bar.

1. Hand wheel
2. Holding bar

8.4 Sanding carriage

The sanding carriage can be moved along the sanding carriage bar via the grip.

Grip also simultaneously presses the sanding belt onto the workpiece.
After opening screw, the depth of grip can be continuously adjusted.
After opening clamping screw, counterweight can be continuously adjusted along the shaft according to your specific preferences.

8.5 Infeed fence

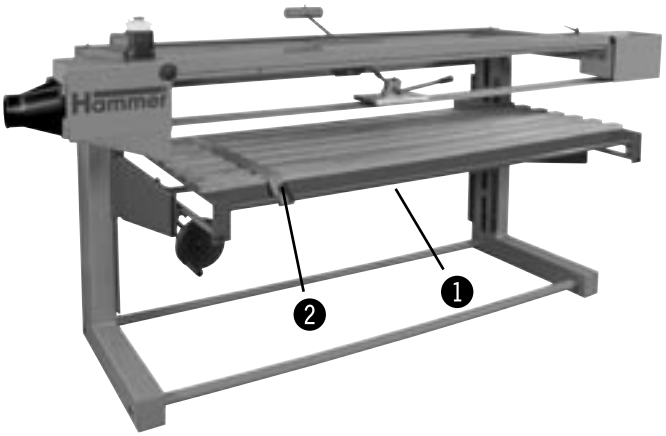

Fig. 11: Infeed fence

The workpiece stop can be continuously adjusted along the holding bar and clamped in any position via the clamping lever.

It especially prevents small workpieces from being carried by the sanding belt due to friction.

1. Holding bar
2. Clamping lever

8.6 Mounting/adjusting the sanding belt

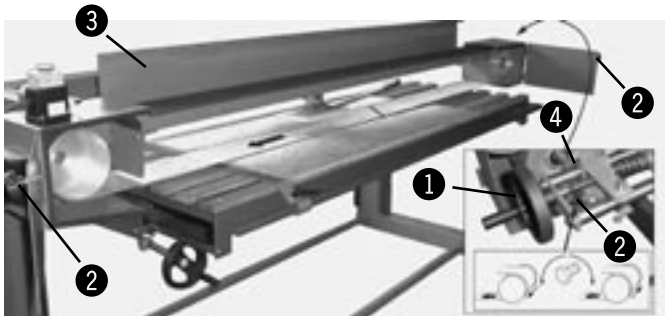

Fig. 12: Sanding belt

1. First release the sanding belt tension by turning the handwheel to the left.
2. Open the right and left protective cover after loosening screws.
3. Open upper protective cover.
4. Now place the new sanding belt over the left and right belt roller. Observe the correct running direction of the belt. The arrow on the bottom belt half must point to the left.
5. Tension the sanding belt by turning the handwheel to the right.
6. Now you can adjust the belt position via screw.
7. First loosen the lock screw.
8. By turning the thumbscrew left, the belt wanders forward and by turning right it wanders to the rear.
9. Constantly turn the belt roller by hand when adjusting.
10. When the belt runs along the center of the belt roller, fix the setting with lock screw.
11. Close the the right and left protective cover.

1 Hand wheel
2 Screws
3 Lock screw
4 Lock screw

9 Operation

9.1 Safety instructions

Warning: Risk of injury: Improper operation may lead to severe bodily injury or material damage. For this reason this work may only be carried out by authorised, trained personnel who are familiar with the operation of the machine and in strict observance of all safety instructions.

Before starting work:
- Before assembling and installing the machine, check to make sure it is complete and in good condition.
- Ensure that there is sufficient space for working around the machine.
- Keep the work area orderly and clean. Components and tools that are not put in their correct place or put away may be the cause of accidents!
- Ensure that all safety devices have been properly installed.
- Adjustments to the machine or tool replacement may only be conducted once the machine has stopped.
- Only clamp authorised tools to the machine.
- Install the vacuum system according to the instructions and test its function.
- Only process workpieces that can be safely placed on the machine and guided.
- Carefully inspect workpieces for foreign matter (nails, screws) which might impair processing.
- Support long work-pieces with additional surface equipment (e.g.: Table extensions, Roll supports).
- Ensure that each unit is rotating in the proper direction.
- Keep tools for handling short and narrow workpieces close at hand.
- Before switching on the machine, always check to make sure that there are no other persons in the immediate vicinity of the machine.

During operation:
- When changing to another workpiece or when there is a malfunction, first switch off the machine and then secure it against being switched on again accidentally.
- Do not switch off, circumvent or decommission protective and safety devices during operation.
- Do not overload the machine! It is safer and performs better if operated within its power range.

When working on or with the machine, the following must be strictly observed:
- Persons with long hair who are not wearing a hairnet are not permitted to work on or with the machine.
- It is prohibited to wear gloves while working on or with the machine.
  All jewellery (rings, bracelets, necklaces, etc.) must be removed before starting work on or with the machine.

When working on or with the machine, the following must always be worn by personnel:
- Sturdy, tight-fitting clothing (tear-resistant, no wide sleeves).
- Protective footwear that protects the feet from heavy falling objects and prevents sliding on slippery floors.
- Ear protection to protect against loss of hearing.

Attention: Risk of material damage: Only operate the machine in ambient temperatures from +10° to +40° C. If the instructions are not followed, damage may occur during storage.

Warning: Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

9.2 Switching on the machine

Warning: Risk of injury due to insufficient preparation!
It is only permitted to switch on the machine if, for the work at hand, the required preconditions are fulfilled and any preliminary work is completed. For this reason the instructions for adjusting, fitting and operating (see the corresponding chapters) must be read before switching on the machine.

9.3 Control points during the test sanding

Warning! Risk of injury: Whilst the machine is running, all doors and protective covers must be and remain closed!

Now you can do some test sands with some workpieces.
Verify the following points:

- Wait until the sanding belt has come to a complete stop.
- That the workpiece is the same strength left and right.
- No round corners have been formed on the entry or exit side of the workpiece..

9.4 Switching off the machine

To turn the machine off, proceed as follows:

1. Switch off the motor using the switch on the operating field.
2. Wait until the sanding belt has come to a complete stop.
3. Shut the main tap and the air tap.
4. Set the main switch to 0.

Attention! The main tap and the air tap may never be closed whilst the machine is in operation. The sanding belt steering function will then not function! This means that the sanding belts will move down and away from the work piece!

Attention! Never actuate the EMERGENCY STOP switch to switch off the machine as this will wear out the brake shoes very quickly. The EMERGENCY STOP switch is only to be actuated in case of an emergency!

9.5 Emergency stop

Only use the emergency stop switch in case of an emergency!

If you want to switch the machine on again, you need to disengage the EMERGENCY STOP switch: Pull the EMERGENCY STOP switch out and repeat the starting process.

9.6 Working techniques

9.6.1 Permitted working techniques

All other working techniques that deviate from these uses are improper on this machine and therefore not permitted:

- Sanding of surfaces up to the maximum table size.
- Sanding frames using the frame apparatus.
- Sanding frame sides with the removeable table inlay.
- Sanding of smaller workpieces with the workpiece stop.
- Sanding of front sides or corners on the upper sander.

9.6.2 Prohibited working techniques

Prohibited working techniques are those which must never be carried out on this machine!

- Sanding of any types of metals.

9.6.3 Sanding surfaces

Fig. 13: Sanding surfaces

1. Place the workpiece on the table against the workpiece stop.
2. Crank the table upwards until the workpiece is within approx. 20 mm of the sanding belt.
3. Switch on the machine. Move the sanding shoe to the beginning of the workpiece.
4. Lightly press the sanding shoe down until the sanding belt touches the workpiece.
5. Now move the worktable in and out and the sanding shoe back and forth until the entire workpiece surface is cleanly sanded.

9.6.4 Sanding on the upper sanding surface

Fig. 14: Sanding on the upper sanding surface

1. Open the lid on the upper sanding surface.
2. You can sand end-grain, small workpieces or edges at the left end of the running sanding belt.
3. The lid must always be closed when the upper sanding surface is not being used.

10 Maintenance

10.1 Safety instructions

Warning! Risk of injury: Improper maintenance can cause serious injury or damage. For this reason this work may only be carried out by authorised, trained personnel who are familiar with the operation of the machine and in strict observance of all safety instructions.

- Before beginning any maintenance work on the machine, switch it off and secure it against accidentally being turned on again.
- Ensure that there is sufficient space for working around the machine.
- Keep the work area orderly and clean. Components and tools that are not put in their correct place or put away may be the cause of accidents!
- Following the maintenance work, re-install the guards and check that they are functioning properly.

Warning! Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

10.2 Periodic service

To extend the service life and precision of the machine, we strongly recommend cleaning chips and dust from the machine each day, especially the table surface and the guides, and to apply the appropriate care products.
The following service must be performed at the prescribed intervals.

10.2.1 Height adjustment spindle

Crank the worktable completely up and down, cleaning the spindle and guides with compressed air or a blower. Clean off old grease and collected dust with a rag and regrease. Standard machine grease can be used here.

Cleaning interval: monthly

10.2.2 Table guides and Sanding carriage bar

Dust and chips must be cleaned from the guides. Pull the worktable into the end position and clean the guides and the guide rollers with a rag.
The guides of the worktable must not be oiled or greased.

Cleaning interval: weekly

10.2.3 Belt rollers

Dust buildup must be removed from the inside of the belt rollers.

Cleaning interval: weekly

11 Faults

11.1 Safety instructions

Warning! Risk of injury: Repairing faults incorrectly can result in personal injury or damage the machine. For this reason this work may only be carried out by authorised, trained personnel who are familiar with the operation of the machine and in strict observance of all safety instructions.

Warning! Danger – electric current: Work on electrical fittings may only be carried out by qualified personnel and in strict observance of the safety instructions.

11.2 What to do if a fault develops

Stricktly speaking:

- In the event of a breakdown which creates danger for either personnel or equipment the machine should be stopped immediately, by activating the emergency stop.
- Also disconnect machine from the mains and secure it from being switched on again.
- Inform those responsible for machine faults immediately.
- Type and extent of fault should be determined by an authorised professional, as well as the cause and repair.

11.3 What to do after rectifying the fault

Warning! Risk of injury!

Before switching the machine back on:

- the fault and its cause are professionally repaired.
- all safety equipment has been replaced and is working correctly,
- people are not located in the danger area of the machine.

11.4 Faults, causes and repairs

Problem	Cause	Repair
Table guides dragging.	Guides dirty.	Clean guides. Do not oil or grease!
Height adjustment catches and drags.	Height guides or height adjustment spindle dirty.	Clean height adjustment and spindle gradient adjustment and grease/lubricate.
Belt does not run on the middle of the drive roller.	Machine was not setup exactly.	Realign the base halves to each other. They must be absolutely parallel to one another and at right angles to the connecting parts.
Motor does not start.	Main switch off Fuses blown.	Check fuses and power supply. If these are OK, contact an electrical technician.
	Fault in the electrical system or in the machine connection.	

If you cannot solve the problem yourself, or if your problem is not contained in this list, please contact your HAMMER dealer or the HAMMER service department.

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