



Operating Instructions

ELECTRIC STEP



www.amf-bruns.de

Foreword

Dear reader,

These Operating Instructions serve to provide all information required for the safe use of the Electric Step.

The Electric Step is designed and constructed in accordance with state-of-the-art technology and recognised safety standards. Persons and material assets can however still be at risk, as not all danger areas can be eliminated if the functional capability is to be maintained. Accidents caused by these risks can however be prevented by strictly observing these Operating Instructions.

These Operating Instructions only apply to the Electric Step specified on the cover page and in the footnotes. Please compare these details with the details given on the rating plate.

After reading these Operating Instructions for the first time, keep them in a safe place for future reference over the entire lifetime of the Electric Step. If you sell the Electric Step, hand these Operating Instructions over to the new owner.

All details, figures and dimensions given in these Operating Instructions are non-binding. They cannot be used as the basis for any claims whatsoever.

This document must not be reproduced or duplicated, in full or in part, without the prior, written permission of the manufacturer.

The electric step must never be converted or modified in any way, without seeking the prior, written permission of the manufacturer. The manufacturer will not be held responsible in any way whatsoever if conversions or modifications are carried out without authorisation.

Use only original spare parts or spare parts which have been approved of by the manufacturer. If spare parts other than these are used, this can have a negative effect on the specified characteristics, the functionality and safety of the Electric Step. Using non-original or unauthorised spare parts will render the guarantee null and void.

Contact our customer services department to order spare parts or accessories (see Chapter 10, page 27).

Explanation of symbols and signs

To improve understanding, the following conventions should be met for these Operating Instructions:

1.

The following conventions are used to highlight important information:



DANGER!

- warns of a situation of immediate danger, which will lead to severe or fatal injuries if not avoided.



WARNING!

- warns of a potentially dangerous situation, which will lead to severe or fatal injuries if not avoided.



CAUTION!

- warns of a potentially dangerous situation, which will lead to slight or minor injuries or material damage if not avoided.



ATTENTION!

...warns of a potentially dangerous situation, which can cause material damage, if not avoided.



...contains general notes and useful information.



...gives a reference to important information in other sections and documents.

2.

Some text passages serve a special purpose. These are identified as follows:

- Lists.

⇒ Instructional text, e.g. a sequence of activities.

3.

Meaning of directions:

If directions are given in the text (in front of, front, behind, rear, right, left), these directions relate to the normal direction of travel of the vehicle.

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1 Safety



CAUTION!

There are a number of risks of suffering personal injury and material damage involved in the operation and maintenance of the Electric Step.

Therefore:

- It is imperative, that these Operating Instructions are read thoroughly before operating your Electric Step. Always follow the instructions and information herein, particularly the safety instructions.
- If these Operating Instructions or parts thereof are lost or become illegible, please request a new copy from the manufacturer.

Prerequisite to the safe handling and trouble-free operation of the Electric Step is a thorough knowledge of the applicable safety information and the safety regulations.

It is therefore imperative that this chapter is read thoroughly before operating the Electric Step and that the instructions and warnings given herein are strictly observed. Safety instructions and warnings that are given at the corresponding places in the text in the following chapter must also be strictly observed. The manufacturer will not be held responsible if safety information and warnings are not strictly adhered to.

In addition to the information given in these Operating Instructions, local legislative regulations must be taken into consideration, in particular those regarding safety and accident prevention.

1.1 Proper Use

The Electric Step is used to assist persons when embarking or disembarking a vehicle.

Proper use also includes strictly adhering to the information given in these Operating Instructions.



WARNING!

If the Electric Step is used for any other purpose than that described above, this may result in dangerous situations for persons or material damage being caused.

Therefore:

- Only use the Electric Step for the purpose for which it was intended.
- Always adhere to information given in these Operating Instructions.
- Do not use the Electric Step for any other purpose, particularly those given in Section 1.2. These are deemed to be improper use.

1.2 Improper Use

Any use other than that described in Section 1.1 is deemed to be improper use.

The Electric Step is deemed to be improperly used if for example:

- it is used to support goods when loading or unloading the vehicle,
- it is subject to a load in excess of 150 kg,
- it is operated by persons who do not fulfil the necessary requirements (see Section 1.3).
- Operation when safety-relevant faults exist or if in a faulty condition.

1.3 User Requirements

The Electric Step must only be used and operated by the following persons:

- the driver of the vehicle who has read these Operating Instructions.
- Other persons who have read these Operating Instructions.
- Other persons who have been made aware of the Electric Step and its function by the driver of the vehicle.

Transportation, installation, commissioning, maintenance, repair, fault finding and disposal of the Electric Step must only be carried out by persons with the corresponding technical training and experience.

1.4 Product Monitoring

Please contact AMF-Bruns GmbH & Co. KG immediately if faults or problems are encountered when operating your Electric Step or if accidents or "near-misses" occur.

AMF-Bruns will effect a solution to the problem with your help and the knowledge gained will flow into future projects.



NOTE

Guarantee work on the Electric Step must only be carried out with the prior agreement of AMF-Bruns GmbH & Co. KG.

The costs of such work will not be accepted by AMF-Bruns without prior agreement.

1.5 Danger Zone

Persons standing within the danger zone are at risk of suffering an injury or harm their health.

The danger zone is the area in the immediate vicinity of the vehicle into which the Electric Step retracts. When the Electric Step is being extended or retracted, the area on Electric Step itself also belongs to the danger zone.



CAUTION!

Risk of injury through movements of the Electric Step.

There are risks of personal injury if standing within the danger zone.

Therefore:

- Keep a safe distance from the vehicle when the Electric Step is being extended.
 - If necessary, make other persons aware that the Electric Step is being extended.
 - Make certain that no person is standing on the Electric Step when it is being extended or retracted.
-

1.6 Safety Devices

1.6.1 Electric motor current limiter

A current limiter is provided in the control unit of automatic Electric Steps. This limits the current to the electric motor. The force with which the Electric Step can push against an obstacle is thus limited.

The current limiter protects persons, who are standing too close to the vehicle when the Electric Step is being extended, from injury.

1.6.2 Signalling system

An acoustic warning signal sounds when the Electric Step is being extended. The warning signal sounds until the Electric Step has been fully retracted again.

1.7 Safety and Accident Prevention Regulations

Adhere to the following notes in order to prevent personal injuries and material damage. For commercial use, also adhere also to the relevant safety and accident prevention regulations laid down by the trade associations.

- The Electric Step must only be operated if all safety devices are installed correctly and are fully functional. Safety and protective devices (see Section 1.6, page 10) must only be deactivated or removed in order to carry out maintenance and repair work. All safety and protective devices must be replaced immediately after such work has been completed. If they are not replaced correctly, there is a high risk of injury.
- The Electric Step must only be used for the purpose for which it is intended, otherwise dangerous situations, with resultant injuries, may occur (Proper Use: see Section 1.1, page 8).
- The owner is responsible for ensuring that proper use is adhered to, in particular that the Electric Step is only operated by authorised persons.
- If the Electric Step is used commercially or as a public utility, the owner must ensure that operating personnel are familiar with the operation of the Electric Step under all operating conditions by giving training and familiarisation courses.
- Proper use of the Electric Step also includes adherence to the specified maintenance and repair work, in particular the strict adherence to the maintenance intervals (see Chapter 6, page 19). If such work is not carried out, trouble-free operation cannot be guaranteed. There is a risk of personal injury and material damage being caused.
- The Electric Step must be inspected by a technical expert after it has been installed. During inspection, faults affecting the safety should be systematically identified and remedial action taken.
- An inspection must also be carried out by a technical expert if modifications are made to the construction or major repairs are carried out on load-bearing parts of the Electric Step.
- The Electric Step must not be operated in a faulty condition, as severe injuries can be caused by this. If faults occur, initiate repair.
- Do not place any foreign objects on the Electric Step. Persons can suffer injuries if such objects fall off the step.
- Switch the vehicle's engine and the Electric Step OFF before carrying out maintenance and repair work, this also includes cleaning work. Secure the vehicle, to prevent it from rolling away. Make certain that no other person can inadvertently start the vehicle or

switch the Electric Step ON (e.g. by removing the ignition key or disconnecting the starter battery). If this is not done, there is a risk of injury.

- Use only original spare parts or such that have been approved of by the manufacturer. If other parts are used, the manufacturer will not accept liability for the consequences.

1.8 Disposal

When the Electric Step's useful life has expired, it must only be disposed of by qualified specialists. The manufacturer will accept no liability for damage caused by incorrect disposal.

2 Description

Person embark and disembark a vehicle with the aid of the Electric Step.

The main components of the Electric Step are:

- the step itself,
- the frame and
- the motor.

The aim of this Chapter is to illustrate the construction and function of the Electric Step. To this end, the individual assemblies and components are described in the following sections.

2.1 Step

The step is automatically extended when the side door is opened or when a rocker switch is operated. When the vehicle is in motion, it is retracted under the vehicle. The step has a non-slip surface. In order to increase safety, it is provided with rounded plastic corners in high-visibility yellow (see Figure 1).



Step

Figure 1: Step

2.2 Frame

The frame is a steel construction that is bolted to the underside of the vehicle (see Figure 2). It comprises a fixed part and two extendible square guide tubes that connect the frame to the step.

2.3 Motor

The Electric Step motor is a 12 V DC motor which extends and retracts the step via a linear drive (see Figure 2).

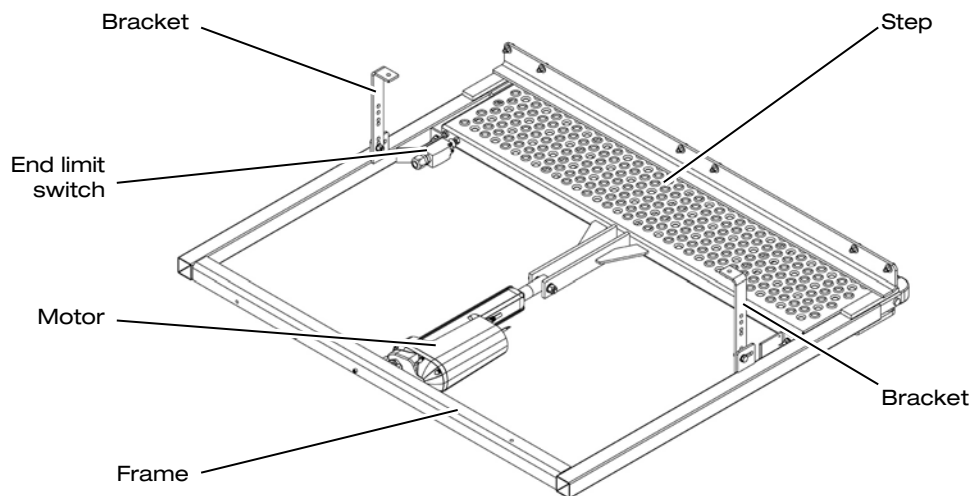


Figure 2: Frame with Step and Motor

2.4 Rating Plate

A rating plate, which contains the fundamental data, is attached to the Electric Step (see Figure 3). The rating plate is located on the front side of the step.

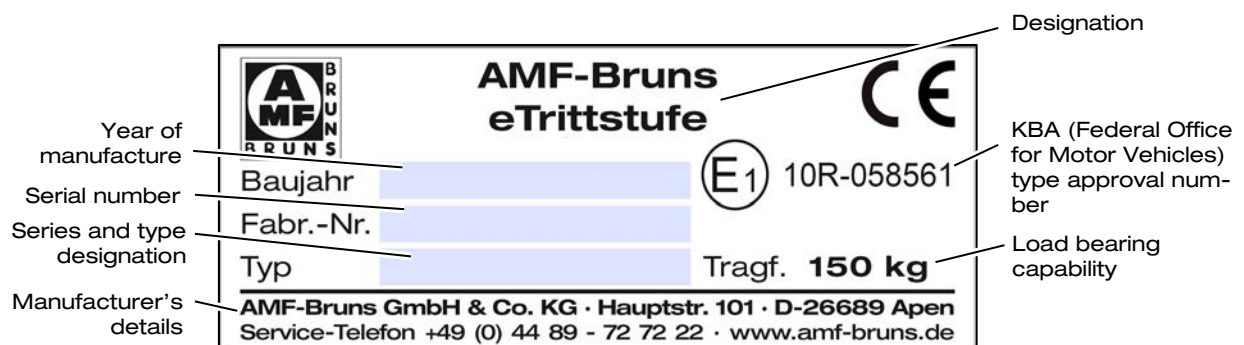


Figure 3: Rating Plate

2.5 Operating Controls

Rocker Switch

The Electric Step is extended and retracted by operating the rocker switch. It is only available with a manually operated Electric Step.

The rocker switch is installed in the B-pillar. It is covered by the closed side door when the vehicle is in motion. This prevents inadvertent operation.

2.6 Technical Data

Designation	Electric Step		
Total width	530 mm	900 mm	1150 mm
Step width	440 mm	810 mm	1060 mm
Weight	approx. 13 kg	approx. 22 kg	approx. 26 kg
Step depth	290 mm		
Permissible number of persons on the step	max. 1 person		
Maximum load capacity	150 kg		
Time to extend	approx. 4 seconds		
Time to retract	approx. 4 seconds		
Extend and retract drive unit	Linear drive, 12 V DC		
Sound pressure emission	< 70 dB(A)		
Equipment suitable for use	outdoors		
Rated current	14 A		
Electrical rating	0.17 kW		

3 Transportation

CAUTION!



Risk of injury when transporting the Electric Step.

The Electric step can fall over or drop when being transported. There is a risk of personal injury and material damage.

Therefore:

- Exercise caution when transporting the Electric Step.



NOTE

The AMF-Bruns GmbH will accept no liability whatsoever for damage or injury caused by incorrect transportation.

4 Installation / Commissioning



The Electric Step must be installed in accordance with the AMF-Bruns Installation Instructions applicable to the vehicle in question.

DANGER!

Danger through incorrect installation work.

A number of risks of personal injury and material damage can be caused if the Electric Step is incorrectly installed in the vehicle.

Such risks of danger cannot only occur during installation but also as a result of installation not being carried out correctly.

Therefore:



- The Electric Step must only be installed by trained, specialist personnel. This also applies to the electrical connections.
- The vehicle manufacturer's body fitting guidelines must be adhered to.
- A technical expert must be called in to inspect that installation has been carried out correctly and that the protective devices are effective.
- The Electric Step must not be used until this has been done.

5 Operation

5.1 Safety Regulations for Operation



The safety information given in the Safety chapter must have been read prior to operation (see Chapter 1, page 8).



DANGER!

Risk of injury and of material damage when the vehicle is in motion.

If the Electric Step is extended when the vehicle is in motion there is a risk of other road users or pedestrians being seriously injured. Material damage can be caused.

Therefore:

- Always make certain that the Electric Step is retracted before starting a journey.



WARNING!

Risk of injury through a defective Electric Step.

Accidents can be caused if the Electric Step shows signs of damage or if the fastenings become loose.

Therefore:

- Inspect the Electric Step for signs of damage and looseness at regular intervals.
- Never place a load in excess of 150 kg on the Electric Step.



CAUTION!

Risk of injury through falling or crushing.

If persons are standing on the step when the Electric Step is being extended or retracted there is a risk of injury through falling or being crushed between the vehicle and the step.

Therefore:

- No person must stand on the Electric Step when it is being extended or retracted.



CAUTION!

Risk of injury through impact.

If persons are too close to the vehicle when the Electric Step is being extended, there is a risk of injury through impact.

Therefore:

- Keep a safe distance from the vehicle.
- If necessary, make other persons aware that the Electric Step is being extended.



WARNING!

Risk of personal injury and material damage if the Electric Step is operated by unauthorised persons.

Dangerous operating conditions may be caused if the Electric Step is operated by unauthorised persons.

Therefore:

- The Electric Step must only be operated by persons who are familiar with operating the Electric Step.
- The Electric Step must never be operated by the passenger.
- Lock the vehicle's doors when the Electric Step is not in use.



WARNING!

Risk of injury if safety devices are removed or are defective.

If safety devices are modified, bypassed or removed, they will no longer fulfil their function.

Therefore:

- Never modify, bypass or remove safety devices.
- Always make certain that safety devices are refitted if they have been removed (e.g. for maintenance or repair purposes).

5.2 Manual Operation

- ⇒ Open the vehicle's side door.
- ⇒ Press and hold the bottom half of the rocker switch until the Electric Step has fully extended.

After embarking or disembarking:

- ⇒ Press and hold the top half of the rocker switch until the Electric Step has fully retracted.

5.3 Automatic mode

An automatic Electric Step is directly connected to a door contact switch on the side door. When the side door is opened, the Electric Step automatically extends. When the side door is closed, the Electric Step automatically retracts.

There is no rocker switch or other operating controls.

6 Maintenance and Repair

6.1 Safety Regulations for Maintenance and Repair



Read the safety information before carrying out maintenance and repair work (see Chapter 1, page 8).

WARNING!

Risk of injury if safety devices are removed or are defective.

If safety devices are modified, bypassed or removed, they will no longer fulfil their function.

Therefore:

- Never modify, bypass or remove safety devices.
- Always make certain that safety devices are refitted if they have been removed (e.g. for maintenance or repair purposes).



WARNING!

Risk of injury and material damage if maintenance and repair work is not carried out correctly.

Therefore:

- Only allow specialist personnel to carry out maintenance and repair work.
- If repair work has been carried out on load bearing parts, this must be inspected by a technical expert.



WARNING!

Personal injury and material damage can be caused by using inferior quality spare parts.

The manufacturer will accept no liability whatsoever for damage or injury caused by the use of non-original spare parts or spare parts that have not been approved of by the manufacturer.

Therefore:

- Use only original spare parts or spare parts that have been approved of by the manufacturer.



6.2 Routine Maintenance Work

The maintenance schedule below lists the maintenance work that must be carried out at regular intervals.

Contact the customer service department for maintenance work that must only be carried out by a specialist (see Chapter 10, page 27).

6.2.1 Maintenance schedule

Interval	Work to be Carried Out	Refer to
Before use	Inspect for damage and listen for any unusual noises. Initiate repairs if necessary.	
3-monthly	Clean the Electric Step and lubricate the extended piston rod with silicone oil.	Section 6.3
Yearly	Functionally test the safety devices.	Section 1.6
	Check that all fastenings are secure.	

6.2.2 Maintenance records

Enter maintenance and repair work that has been carried out into the maintenance record provided for this purpose (see Section 6.4, page 21). This provides a traceable record of maintenance work.

For records of maintenance work over and above this, it is recommended that you keep your own lists.

6.3 Cleaning

Depending upon the degree of dirtiness, clean the Electric Step at 3-monthly intervals.

- ⇒ Remove the bolt on the piston rod side of the motor using an SW 17 spanner.
- ⇒ Pull the step out by hand.
- ⇒ Clean the inner guide tubes. Do not apply grease to the components.
- ⇒ Fit the Electric Step in the reverse order.
- ⇒ Extend the Electric Step.
- ⇒ Clean the piston rod using a lint-free cloth.
- ⇒ Spray the piston rod with using silicone oil spray.

6.4 Maintenance and Repair Record

[illegible]

7 De-Commissioning and Conservation

For queries regarding de-commissioning and conservation, contact our customer services department (see Chapter 10, page 27).

8 Faults and Troubleshooting

8.1 Troubleshooting Table



WARNING!

Risk of severe injury and material damage if repair work is carried out incorrectly.

Therefore:

- Only allow specialist personnel to carry out repair work.



WARNING!

Risk of injury if safety devices are removed or are defective.

If safety devices are modified, bypassed or removed, they will no longer fulfil their function.

Therefore:

- Never modify, bypass or remove safety devices.
- Always make certain that safety devices are refitted if they have been removed (e.g. for maintenance or repair purposes).

If faults occur when operating the Electric Step, proceed as described in the following troubleshooting table. Contact the customer service department if faults are encountered which cannot be remedied using the information and measures given in the table (see Chapter 10, page 27).

Fault	Possible Cause	Remedial measures
The Electric Step does not move.	The vehicle's starter battery is discharged.	Charge the starter battery.
	The fuse has blown.	Replace the blown fuse (located in the vicinity of the starter battery).
	The rocker switch (manually-operated) or door contact switch (automatically-operated) is defective.	Check the rocker switch or door contact switch respectively and replace if necessary.
	The electric motor current limiter requires adjustment or is defective.	Have the current limiter in the control unit adjusted in a specialist workshop.
	The electric motor is defective.	Check the electric motor and replace if necessary.
	The cable harness is defective.	Check the cable harness and initiate repairs if necessary.
The Electric Step chatters when it reaches the fully retracted position.	The end limit switches are not adjusted correctly.	See Section 8.2.

8.2 Work and Troubleshooting

Adjusting the end limit switches

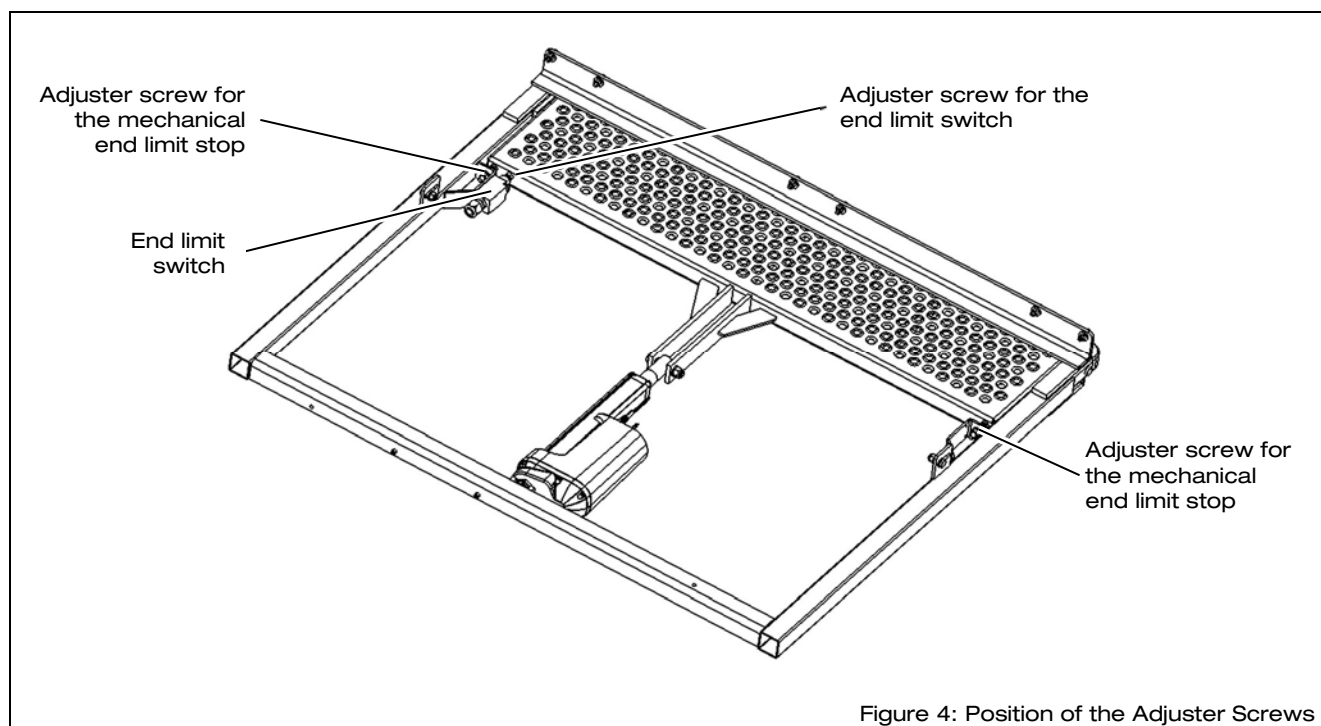


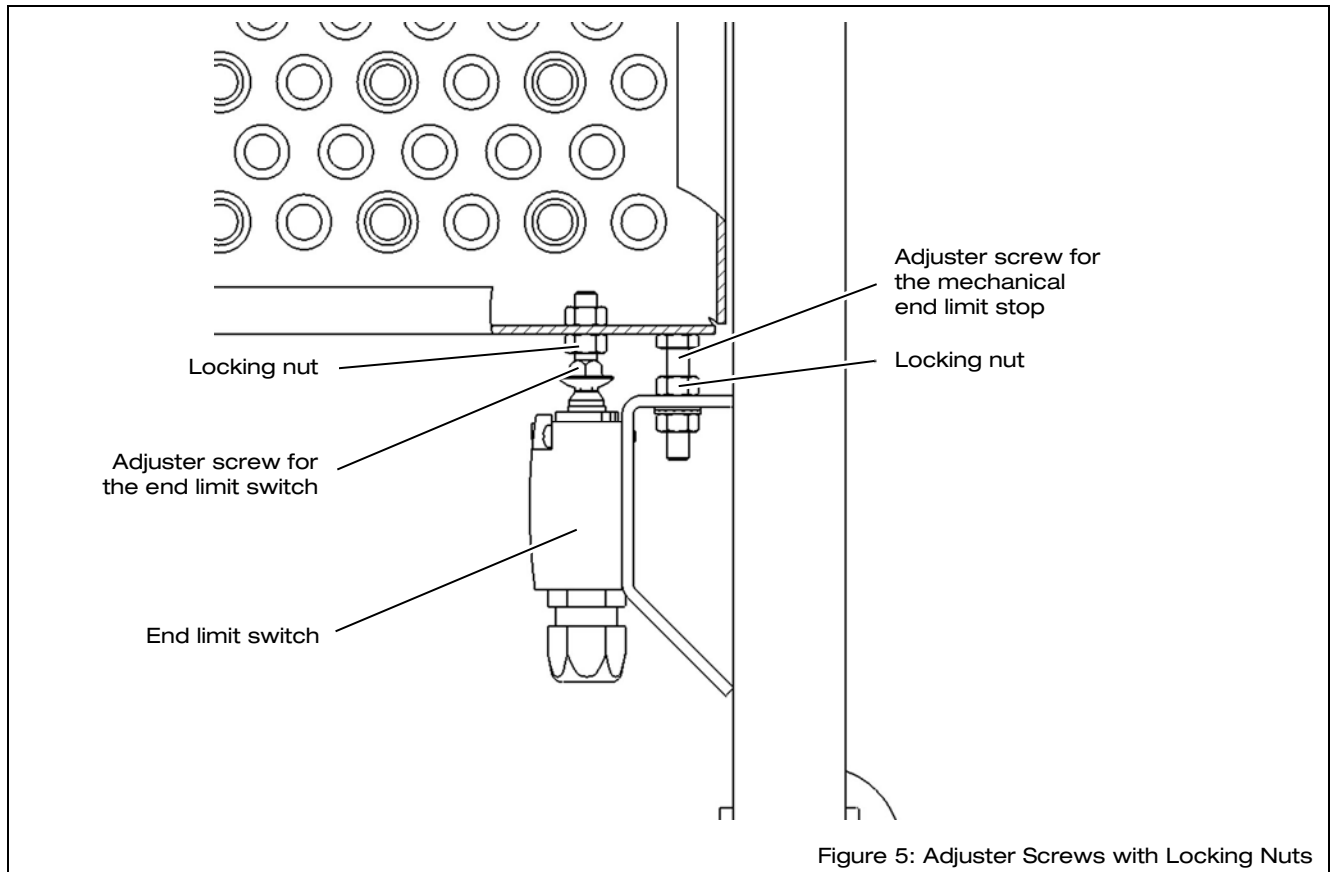
NOTE

Position of the adjuster screws: See Figure 4, page 24. The mechanical stops on older versions with clamped brackets can deviate from those shown in the Figure. The work procedure is the same for welded or clamped end limit stops.

- ⇒ Extend the Electric Step.
- ⇒ Loosen the locking nuts (see Figure 4, page 24 and Figure 5, page 25) on the three adjuster screws.
- ⇒ Screw all three adjuster screws so far in that they do not make contact when the step is retracted.
- ⇒ Fully retract the Electric Step using the electrical drive.
- ⇒ Screw the two adjuster screws for the mechanical end limit stop so far out that they make contact with the step.
- ⇒ Extend the Electric Step.
- ⇒ Screw the two adjuster screws for the mechanical end limit stop out by a further 1 to 2 mm to achieve pre-tension.
- ⇒ Tighten the two corresponding locking nuts.

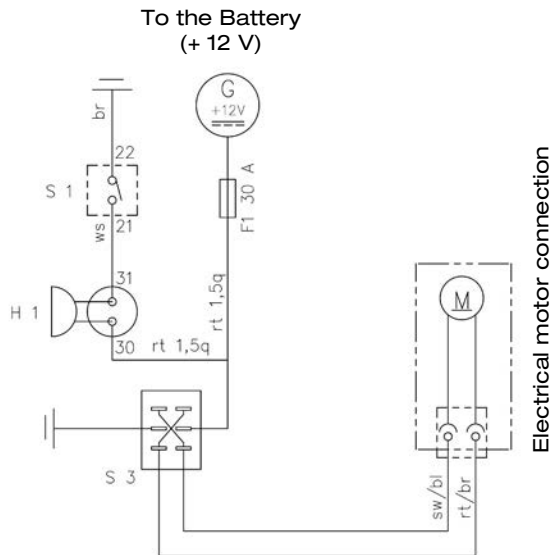
- ⇒ Retract the Electric Step.
- ⇒ Adjust the adjuster screw for the end limit switch such that the end limit switch makes operates reliably but without too much pressure.
- ⇒ Tighten the corresponding locking nut.
- ⇒ Check the adjustment by extending and retracting the Electric Step several times.
- ⇒ If the Electric Step still chatters when it reaches the fully retracted position: Repeat the adjustment procedure and vary the pre-tension of the mechanical end limit stops when doing so.



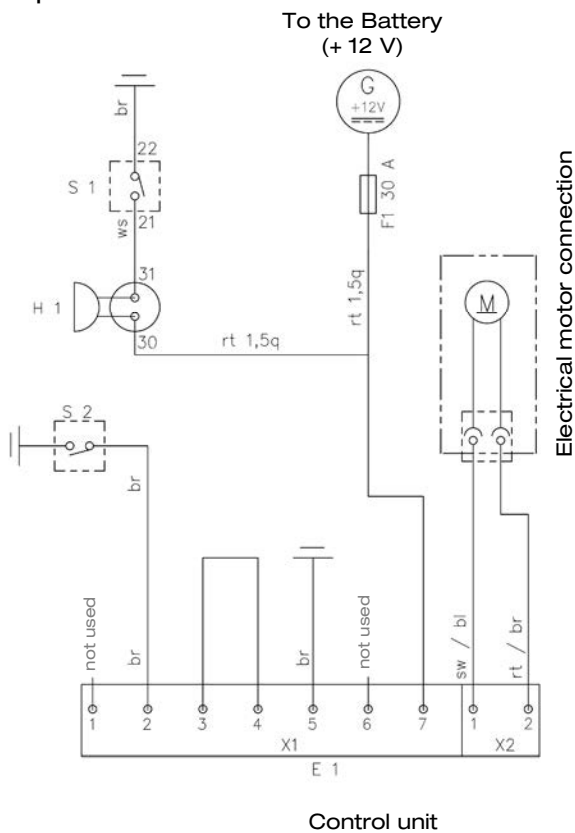


9 Electrical Circuit Diagram

Manual Operation



Automatic Operation



rd	red
bk	black
br	brown
wh	white
bl	blue

F1	30 A Fuse
M	Motor
H1	Buzzer
S1	Limit switch
S2	Door contact switch
S3	Rocker Switch
E1	Control unit
G	To the Battery (+ 12 V)

Figure 6: Electrical Circuit Diagram

10 Customer Service

The AMF-Bruns customer service department will be more than pleased to assist in ordering spare parts, maintenance and repair work and help with general problems or queries.

The address is:

AMF-Bruns GmbH & Co. KG

Hauptstraße 101

D – 26689 Apen

Tel.: +49 (0) 44 89 / 72 72-22

Fax: +49 (0) 44 89 / 62 45

service.hubmatik@amf-bruns.de

www.amf-bruns.de



NOTE

Guarantee work on the electric step must only be carried out with the prior agreement of AMF-Bruns GmbH & Co. KG.

The costs of such work will not be accepted by AMF-Bruns without prior agreement.

11 Declaration of Conformity



EC Declaration of Conformity

according to EC Machine Directive 2006/42/EC, Annex II A

We, the manufacturer, hereby declare, that the design and construction of the machine designated below complies with the fundamental health and safety requirements of the EC Machinery Directive 2006/42/EC. This declaration is rendered null and void if unauthorised modifications are made to the machine.

Designation **Electric Step**
Type: see rating plate
Serial number: see rating plate

Manufacturer:
Company: **AMF-Bruns GmbH & Co. KG**
Address: **Hauptstraße 101**
 26689 Apen

Harmonised standards applied:

DIN EN ISO 12100

Other technical standards and specifications applied:

DIN 75078-1

Authorised representative for the technical documentation:

Thomas Lakewand (address: see manufacturer's address)

Apen, 01.02.2013

Place, date

Signature

Gerit Bruns, managing director

Details of the signatory



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