

INTRODUCTION

Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

This Operator's Manual is an integral part of the machine's documentation. Before using the machine, the user must carefully read this Operator's Manual and observe all recommendations. This guarantees safe operation and ensures malfunction free work of the machine. The machine is designed to meet obligatory standards, documents and legal regulations currently in force.

The manual describes the basic safety rules and operation of Pronar EPT315 ant EPT21 spreader.

If the information contained in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

MANUFACTURER'S ADDRESS:

*PRONAR Sp. z o.o.
ul. Mickiewicza 101A
17-210 Narew*

CONTACT TELEPHONES

*+48 085 681 63 29 +48 085 681 64 29
+48 085 681 63 81 +48 085 681 63 82*

SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:



and also preceded by the word "**DANGER**". Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:



and also preceded by the word "**ATTENTION**". Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

In order to focus the user's attention on the need to perform maintenance, the relevant section of the Operator's Manual is marked with the pictogram:



Additional tips and advice for machine operation are marked:



and also preceded by the word „**TIP**”.

DIRECTIONS USED IN THIS OPERATOR'S MANUAL

Left side – side to the left hand of the operator facing in the direction of machine's forward travel.

Right side – side to the right hand of the operator facing in the direction of machine's forward travel.

REQUIRED SERVICE ACTIONS

Service actions described in the manual are marked: ➡

Result of service/adjustment actions or comments concerning the performance of actions are marked: ⇨



PRONAR Sp. z o.o.

ul. Mickiewicza 101 A
17-210 Narew, Polska
tel./fax (+48 85) 681 63 29, 681 63 81, 681 63 82,
681 63 84, 681 64 29
fax (+48 85) 681 63 83
http://www.pronar.pl
e-mail: pronar@pronar.pl

**EC DECLARATION OF CONFORMITY OF THE
MACHINERY**

PRONAR Sp. z o.o. declares with full responsibility, that the machine:

Description and identification of the machinery		
Generic denomination and function:	Spreader	
Type:	EPT15	EPT21
Model:	—	—
Serial number:		
Commercial name:	Spreader PRONAR EPT15 Spreader PRONAR EPT21	

to which this declaration relates, fulfills all the relevant provisions of the Directive **2006/42/EC** of The European Parliament and of The Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Official Journal of the EU, L 157/24 of 09.06.2006).

The person authorized to compile the technical file is the Head of Research and Development Department at PRONAR Sp. z o.o., 17-210 Narew, ul. Mickiewicza 101A, Poland.

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

Narew, the 2017-01-20

Place and date

Z-CIA DYREKTORA
d/s technicznych
członek zarządu

Roman Olsztyński

Full name of the empowered person
position, signature

TABLE OF CONTENTS

1 BASIC INFORMATION	1.1
1.1 IDENTIFICATION	1.2
1.1.1 SAND SPREADER IDENTIFICATION	1.2
1.2 PROPER USE	1.3
1.3 EQUIPMENT	1.4
1.4 TERMS & CONDITIONS OF WARRANTY	1.4
1.5 TRANSPORT	1.6
1.5.1 TRANSPORT ON VEHICLE	1.6
1.6 WITHDRAWAL FROM USE	1.8
2 SAFETY ADVICE	2.1
2.1 SAFETY INFORMATION	2.2
2.1.1 BASIC SAFETY RULES	2.2
2.1.2 CLEANING, MAINTENANCE AND ADJUSTMENT	2.3
2.1.3 ATTACHING THE SAND SPREADER	2.5
2.1.4 LOADING THE SAND SPREADER AND SPREADING	2.5
2.1.5 DRIVING ON PUBLIC ROADS	2.6
2.2 DESCRIPTION OF MINIMAL RISK	2.6
2.3 INFORMATION AND WARNING DECALS	2.7
3 DESIGN AND OPERATION	3.1
3.1 TECHNICAL SPECIFICATION	3.2
3.2 DESIGN OF THE SAND SPREADER	3.2
3.2.1 BASIC INFORMATION	3.2
3.2.2 ELECTRICAL SYSTEM	3.5

4	CORRECT USE	4.1
4.1	PREPARATION OF THE SAND SPREADER FOR WORK	4.2
4.1.1	PRELIMINARY INFORMATION	4.2
4.1.2	HAND-OVER AND INSPECTION OF THE MACHINE AFTER DELIVERY	4.2
4.1.3	PREPARING THE SAND SPREADER FOR THE FIRST USE, TEST RUN OF THE SPREADER	4.3
4.1.4	PREPARING THE SAND SPREADER FOR NORMAL USE	4.4
4.2	MOUNTING THE SAND SPREADER ON THE PLATFORM	4.5
4.3	DISMOUNTING THE SAND SPREADER FROM THE PLATFORM	4.10
4.4	LOADING	4.11
4.5	SPREADING AND ADJUSTMENT OF SPREADING MATERIAL DENSITY	4.11
4.5.1	PRELIMINARY INFORMATION	4.11
4.5.2	SPREADING	4.13
4.6	TRANSPORTING THE MACHINE	4.15
5	MAINTENANCE	5.1
5.1	PRELIMINARY INFORMATION	5.2
5.2	LUBRICATING THE SAND SPREADER	5.2
5.2.1	CONSUMABLES	5.4
5.3	CLEANING THE SAND SPREADER	5.4
5.4	STORAGE	5.5
5.5	TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS	5.6
5.6	ADJUSTMENT OF CONVEYOR BELT	5.7

SECTION

1

**BASIC
INFORMATION**

1.1 IDENTIFICATION

1.1.1 SAND SPREADER IDENTIFICATION

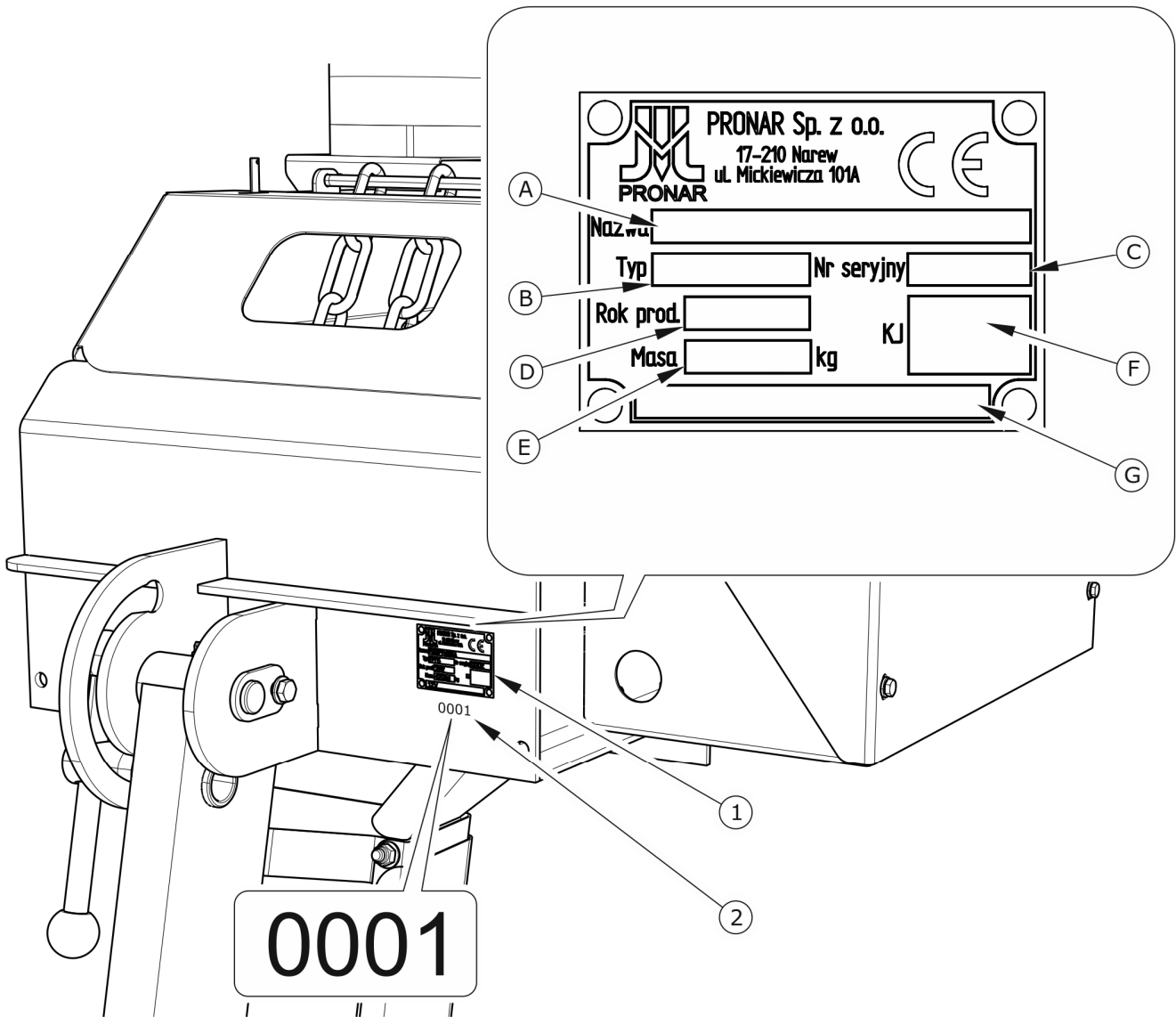


FIG. 1.1 Location of the data plate and serial number

(1) data plate, (2) example of serial number

The Pronar EPT15 and EPT21 sand spreader is marked with the data plate (1), and the serial number (2) located on a gold painted rectangle. The serial number and data plate are located on the machine frame cover – figure (1.1). When buying the machine check that the serial numbers on the machine agree with the number written in the *WARRANTY BOOK* and

in the sales documents. The meanings of the individual fields found on the data plate are presented in the table below:

TAB. 1.1 *Markings on data plate*

ITEM	MARKING
A	Machine name
B	Symbol /Machine type
C	Serial number
D	Year of manufacture
E	Machine tare weight
F	Quality Control marking
G	Unfilled box or extension of machine name (box A)

1.2 PROPER USE

The sand spreader is designed for linking up with platform vehicles and is used for surface spreading of the following materials on public roads and pavements:

- non-chemical agents:
 - ✓ sand and natural or artificial crushed stone of grain size from 1 to 4 mm,
- solid chemical agents:
 - ✓ sodium chloride (NaCl),
 - ✓ calcium chloride (CaCl₂),
 - ✓ magnesium chloride (MgCl₂),
- mixture of solid chemical agents and non-chemical agents.

The sand spreader must not be used in any way other than that described above. Using it as intended also involves all actions connected with the safe and proper operation and maintenance of the machine. Due to the above, the user is obliged to:

- carefully read the *OPERATOR'S MANUAL* and comply with its recommendations,

- understand the machine's operating principle and how to operate it safely and correctly,
- comply with general safety regulations while working,
- prevent accidents,
- comply with road traffic regulations.

IMPORTANT!



The sand spreader must not be used for purposes other than those for which it is intended, in particular:

- *for transporting whatever materials,*
- *spreading other materials than those specified in the Operator's Manual.*

1.3EQUIPMENT

TAB. 1.2 *Equipment*

EQUIPMENT	STANDARD	ADDITIONAL	OPTION
<i>OPERATOR'S MANUALS,</i>	•		
<i>WARRANTY BOOK</i>	•		
Parking supports	•		

1.4TERMS & CONDITIONS OF WARRANTY

PRONAR Sp. z o.o., Narew guarantees the reliable operation of the machine when it is used according to its intended purpose as described in the *OPERATOR'S MANUAL*. The repair period is specified in the *WARRANTY BOOK*.

The warranty does not apply to those parts and sub-assemblies of the machine, which are subject to wear in normal usage conditions, regardless of the warranty period. Consumables include the following parts/sub-assemblies:

- conveyor belt,
- bearings,
- paint coating inside the tank,
- side seals of the belt,
- bulbs.

The warranty service only applies to factory defects and mechanical damage that is not due to the user's fault.

In the event of damage arising from:

- mechanical damage which is the user's fault, caused by road accidents,
- by inappropriate use, adjustment or maintenance, use of the sand spreader for purposes other than those for which it is intended,
- use of damaged machine,
- repairs carried out by unauthorised persons, improperly carried out repairs,
- making unauthorised alterations to machine design,

the user will lose the right to warranty service.



TIP

Demand that the seller carefully and precisely fills out the WARRANTY BOOK and warranty repair coupons. A missing date of purchase or sale point stamp, may make the user ineligible for any warranty repair or refund.

The user is obliged to report immediately on noticing any wear in the paint coating or traces of corrosion, and to have the faults rectified whether they are covered by the warranty or not. For detailed Terms & Conditions of Warranty, please refer to the *WARRANTY BOOK* attached to each machine.

Modification of the machine without the written consent of the Manufacturer is forbidden. In particular, do NOT weld, drill holes in, cut or heat the main structural elements of the machine, which have a direct impact on the machine operation safety.

1.5 TRANSPORT

The machine is prepared for sale completely assembled and does not require packing. Packing is only required for the machine's technical documentation. Supply to user takes place by transport vehicle.

1.5.1 TRANSPORT ON VEHICLE

Loading and unloading of the sand spreader should be conducted using loading ramp with the aid of a forklift truck, overhead travelling crane or crane. During work adhere to the general principles of Health and Safety at Work applicable to reloading work. Persons operating reloading equipment must have the qualifications required to operate these machines.

Lifting equipment used for transporting the machine must be attached only to the attachment points marked with the decal (2) – figure (1.2). The sand spreader can be loaded with the aid of a forklift truck because the sand spreader's frame is equipped with properly reinforced pockets for inserting the fork of a forklift truck.



IMPORTANT!

Lifting equipment used for transporting the machine must be attached only to the proper attachment points on the machine.

The sand spreader should be attached firmly to the platform of the transport vehicle using straps, chains, stays or other securing measures fitted with a tightening mechanism. Use the attachment points (1), figure (1.2), to attach the machine in a proper manner.

Parking supports must be dismantled and transported separately. Spreading unit (4) should be unlocked and set in transport position – compare *CHAPTER 4*.

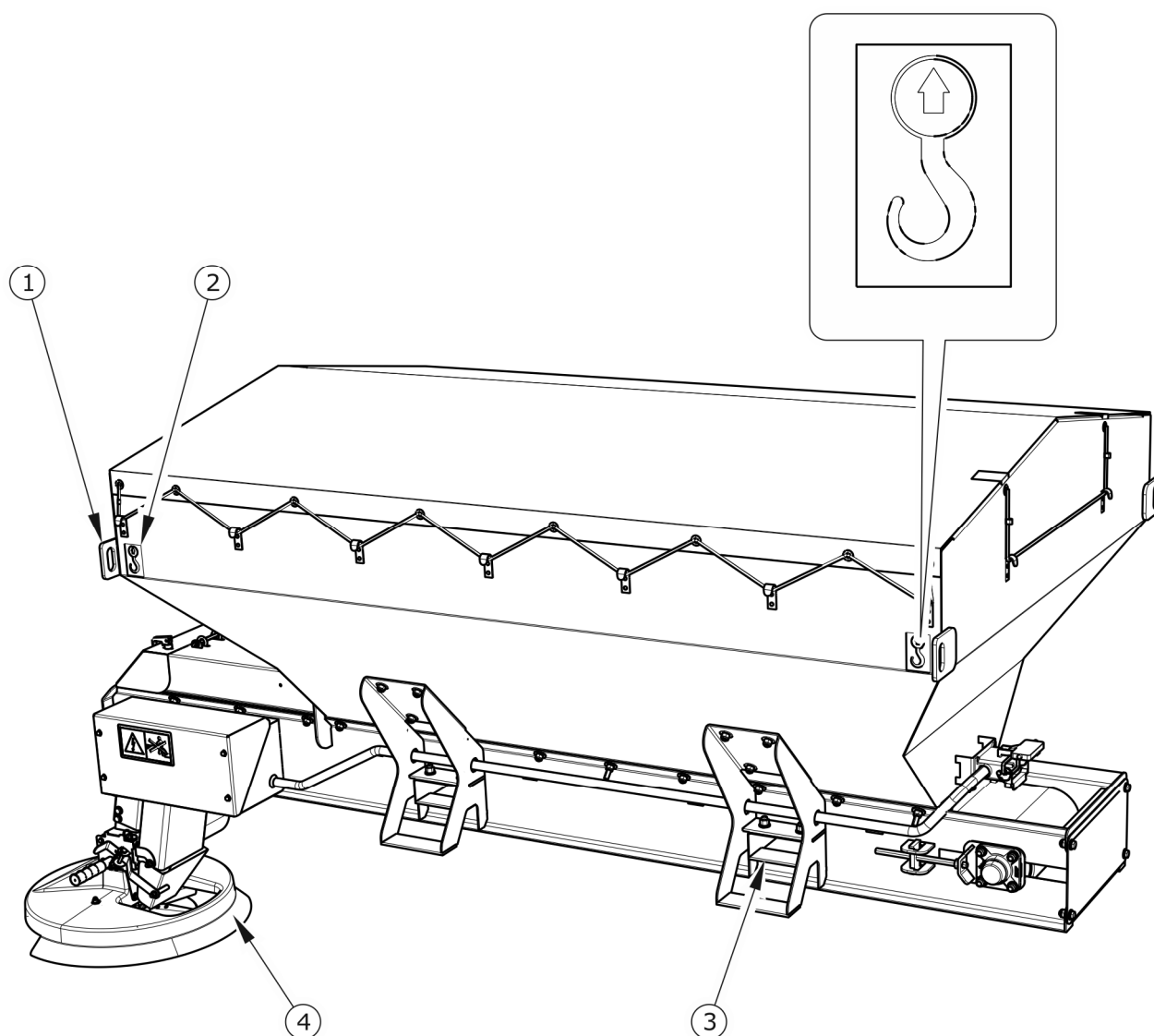


FIG. 1.2 Attachment points on the sand spreader

(1) attachment point, (2) information decal, (3) pocket for inserting the fork of a forklift truck, (4) spreading unit

Use certified and technically reliable securing measures. Worn straps, cracked securing catches, bent or corroded hooks as well as other damage may disqualify use of the given element from use. Carefully read the information stated in the Operator's Manual for the given securing measure. The number of securing elements (cables, straps, chains and stays etc.) and the force necessary for their tensioning depends on a number of things, including weight of the machine, the construction of vehicle carrying it, speed of travel and other conditions. For this reason it is impossible to define the securing plan precisely.

A correctly secured wrapper does not change its position with regard to the transport in vehicle. The securing elements must be selected according to the guidelines of the Manufacturer of these elements. In case of doubt apply a greater number of securing elements. If necessary, sharp edges of the sand spreader should be protected at the same time protecting the securing elements from breaking during transport.



DANGER

Incorrect application of securing measures may cause an accident.

During reloading work, particular care should be taken not to damage parts of the machine's fittings or the lacquer coating. The tare weight of the sand spreader is given in table (3.1).

IMPORTANT!



When being road transported on a motor vehicle the sand spreader must be mounted on the vehicle's platform in accordance with the transport safety requirements and the regulations.

Driver of the vehicle should be particularly careful during travel. This is due to the vehicle's centre of gravity shifting upwards when loaded with the machine.

Use only certified and technically reliable securing measures. Carefully read the manufacturer's instructions for the securing measures.

1.6 WITHDRAWAL FROM USE

In the event of decision by the user to withdraw the sand spreader from use, comply with the regulations in force in the given country concerning withdrawal from use and recycling of machines withdrawn from use. Worn out or damaged parts that cannot be reclaimed should be taken to a collection point for recyclable raw materials.

DANGER



During dismantling use the appropriate tools, equipment (overhead travelling crane, crane or hoist etc.), using personal protection equipment, i.e. protective clothing, footwear, gloves and eye protection etc.

SECTION

2

SAFETY ADVICE

2.1 SAFETY INFORMATION

2.1.1 BASIC SAFETY RULES

- Before using the sand spreader, the user must carefully read this operator's manual. When operating the machine, the operator must comply with all the recommendations included in the operator's manual. Do NOT start the sand spreader without knowledge of its function.
- The user is obliged to acquaint himself with the construction, action and the principles of safe usage of the machine.
- Before using the sand spreader always check the machine, whether it is properly prepared for work, especially in terms of safety.
- If the information stated in the Operator's Manual is difficult to understand, contact a seller, who runs an authorised technical service on behalf of the Manufacturer, or contact the Manufacturer directly.
- Careless and improper use and operation of the sand spreader and also non-observance of the recommendations contained in this Operator's Manual, endanger health and life third persons and/or machine operator.
- Be aware of the existence of a minimal risk, and for this reason the fundamental basis for using this sand spreader should be the application of safety rules and sensible behaviour.
- The machine must never be used by persons who are not authorised to drive the sand spreader's carrying vehicles and not trained in the safety principles and use of the machine, including children and people under the influence of alcohol.
- The sand spreader must not be used for purposes other than those for which it is intended. Anyone who uses the machine other than the way intended takes full responsibility for himself for any consequences of this use. Use of the machine for purposes other than those for which it is intended by the Manufacturer may invalidate the warranty. Use other than intended means also spreading agents other than those recommended by the machine Manufacturer.

- Any modification to the sand spreader frees the manufacturer from any responsibility for damage or detriment to health which may arise as a result.
- Before using the sand spreader always check its technical condition.
- The user is obliged to acquaint himself with the principles of safe operation, adjustment methods and inspection points of the sand spreader and with the risks resulting from operation and maintenance of the machine.
- The sand spreader may be operated only by one person at a time.
- The sand spreader may only be used when all the safety guards and other protective elements are technically sound and correctly positioned. In the event of loss or destruction of the safety guards, they must be replaced with new ones.

2.1.2 CLEANING, MAINTENANCE AND ADJUSTMENT

- Maintenance and repair works may be performed only on the sand spreader which is attached to the load platform in a correct and stable manner. Working place should be dry, clean and well-lighted. The works must not be performed when the sand spreader is located on the parking supports.
- Regularly check the condition of the bolt and nut connections.
- During the warranty period, any repairs may only be carried out by Warranty Service authorised by the manufacturer. After the expiry of the warranty period it is recommended that possible repairs to the machine be performed by specialised workshops.
- During work use the proper, close-fitting protective clothing, gloves, protective goggles and appropriate tools.
- In the event of any fault or damage whatsoever, do not use the machine until the fault has been corrected.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.

- Service inspections of the sand spreader should be carried out according to the frequency specified in this Operator's Manual.
- Welding works may be performed only by persons having appropriate authorisations for this type of works.
- Before welding or electrical work, the sand spreader should be disconnected from the power supply, if the machine is connected to the vehicle (disconnect the negative battery cable (-) or disconnect connection lead). The paint coating should be cleaned. Burning paint fumes are poisonous for people and animals. Welding work should be carried out in a well lit and well ventilated space.
- Be especially careful when welding and pay attention to flammable or fusible elements. If there is a risk that they will catch fire or be damaged, they should be removed or covered with non-flammable material before commencing welding work. Before beginning work prepare a CO₂ or foam extinguisher.
- After completing work associated with lubrication, remove excess oil or grease. The machine should be kept clean and tidy.
- Do NOT install additional appliances or fittings not according to the specifications defined by the Manufacturer.
- Should it be necessary to change individual parts, use only original parts or those indicated by the Manufacturer. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine.
- After completion of works, make sure that no tools are left inside the tank, on the belt conveyor or on the adapter disc.
- Access onto the sand spreader is only possible when the machine is absolutely motionless, the vehicle's engine is switched off and the supply conduit is disconnected. Vehicle must be immobilised by parking brake.
- Remove the remains of load from the sand spreader each time after finished work.

2.1.3 ATTACHING THE SAND SPREADER

- The sand spreader may be attached exclusively to the vehicle equipped with a load platform. The vehicle must be capable of carrying loads exceeding the maximum gross weight of the sand spreader.
- The sand spreader should be attached with the aid of a crane, overhead travelling crane or forklift truck. Persons operating reloading equipment must have the qualifications required to operate these machines.
- Lifting equipment used for transporting the machine may be attached only to the attachment points or reinforced pockets on the machine (for inserting the fork of a forklift truck)
- The sand spreader must be attached firmly to the platform of the transport vehicle using straps, chains, stays or other securing measures fitted with a tightening mechanism.
- Use certified and technically reliable securing measures.
- When transporting the sand spreader by means of loading equipment, keep a safe distance from the machine and never stay under the spreader.

2.1.4 LOADING THE SAND SPREADER AND SPREADING

- Do NOT exceed the sand spreader's maximum carrying capacity. Use only the vehicle capable of carrying loads exceeding the maximum gross weight of the sand spreader.
- Exceeding the carrying capacity may lead to damage to the machine, loss of stability while driving, scattering of the load and danger while working or driving.
- Before loading make certain that there are no stones, tools or other objects in the load box.
- Do NOT leave the vehicle cab, when the spreading adapter drive and the feeding mechanism drive are engaged.
- When spreading is completed, disengage the drive of the feeding and spreading mechanism.
- The load in the sand spreader's load box must be distributed uniformly.

- The sand spreader drive may be started only when there are no bystanders or animals within the radius of approximately 3 metres from the machine.
- Spreading agents must be prepared in accordance with the regulations concerning winter road maintenance in force in the country in which the sand spreader is used. Spreading agents other than those recommended by the Manufacturer must not be used.
- Unused load should be unloaded in the storage area to prevent the load from freezing in the sand spreader's load box.

2.1.5 DRIVING ON PUBLIC ROADS

- Before driving off make certain that the sand spreader is correctly attached to the platform.
- When driving on public roads, comply with the road traffic regulations.
- Exceeding the maximum load capacity of the sand spreader and vehicle may damage it, and also threaten the safety of traffic.
- While driving on public roads the sand spreader must be fitted with a certified or authorised reflective warning triangle.
- The yellow beacon light should be turned on during sand spreader operation.
- Do not exceed the maximum speed limit. Adjust your speed to the road conditions.
- Avoid travelling on uneven terrain and unexpected corners.
- Do NOT attempt to climb the sand spreader while travelling.
- Reckless driving and excessive speed may cause accidents.

2.2 DESCRIPTION OF MINIMAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of accidents. There is, however, a certain minimal risk, which could lead to an accident, and this is connected mainly with the actions described below:

- using the sand spreader for purposes other than those for which it is intended,

- being on the vehicle's platform when loading the sand spreader,
- being on the machine while the vehicle's engine is working and the sand spreader's drive is operating,
- operating the machine with removed or faulty safety guards,
- not maintaining a safe distance from the machine during its operation and loading,
- operation of the machine by persons under the influence of alcohol
- cleaning, maintenance and technical checks of the machine,
- work of machine on unstable and sloping surface.

The minimal risk may be kept to a minimum by following the recommendations below:

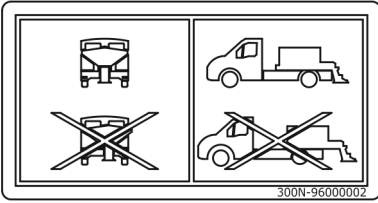
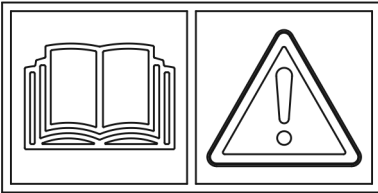
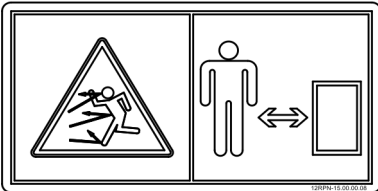
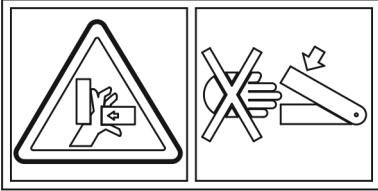
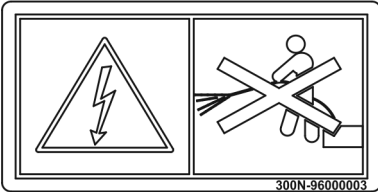
- prudent and unhurried operation of the machine,
- adherence to the remarks and recommendations stated in the Operator's Manual,
- maintaining safe distance from forbidden or dangerous zones,
- a ban on being on the machine when it is operating,
- carrying out repair and maintenance work in line with operating safety rules and carrying out such work by trained persons,
- using close fitting protective clothing,
- ensuring unauthorised persons have no access to the machine, especially children.

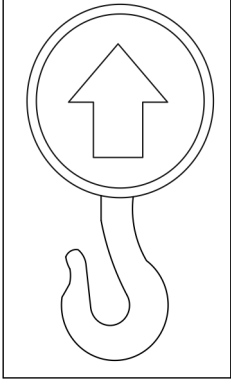


2.3 INFORMATION AND WARNING DECALS

The sand spreader is labelled with the information and warning decals mentioned in table (2.1). Locations of pictograms on the machine are shown in figure (2.1). Throughout the time it is in use, the user of the machine is obliged to take care that notices and warning and information symbols located on the sand spreader are clear and legible. In the event of their destruction, they must be replaced with new ones. Information and warning decals may be purchased directly from the Manufacturer or your PRONAR dealer. Part numbers of information decals are given under pictogram description in table (2.1) and in *SPARE PARTS*

LIST. New assemblies, changed during repair, must be labelled once again with the appropriate safety signs. During sand spreader cleaning do not use solvents which may damage the coating of information label stickers and do not subject them to strong water jets.

TAB. 2.1 Information and warning decals

ITEM	DECAL	DESCRIPTION
1		<p>Mounting the sand spreader on the load platform.</p> <p>300N-96000002</p>
2		<p>Caution!</p> <p>Before starting work, carefully read the <i>OPERATOR'S MANUAL</i></p> <p>35RPN-27000007</p>
3		<p>Beware of thrown out objects.</p> <p>Thrown out objects, endanger the whole body. Keep a safe distance.</p> <p>12RPN-15000008</p>
4		<p>Danger of crushing or cutting of limbs.</p> <p>35RPN-27000008</p>
5		<p>Danger of damage to electrical equipment. Do not clean the equipment with water.</p> <p>300N-96000003</p>

ITEM	DECAL	DESCRIPTION
6		<p>Marking of attachment point for transporting or loading the machine onto load platform.</p> <p>35RPN-27000009</p>
7		<p>Machine name.</p> <p>300N-96000001</p>
8		<p>Information decal.</p> <p>187N-00000033</p>

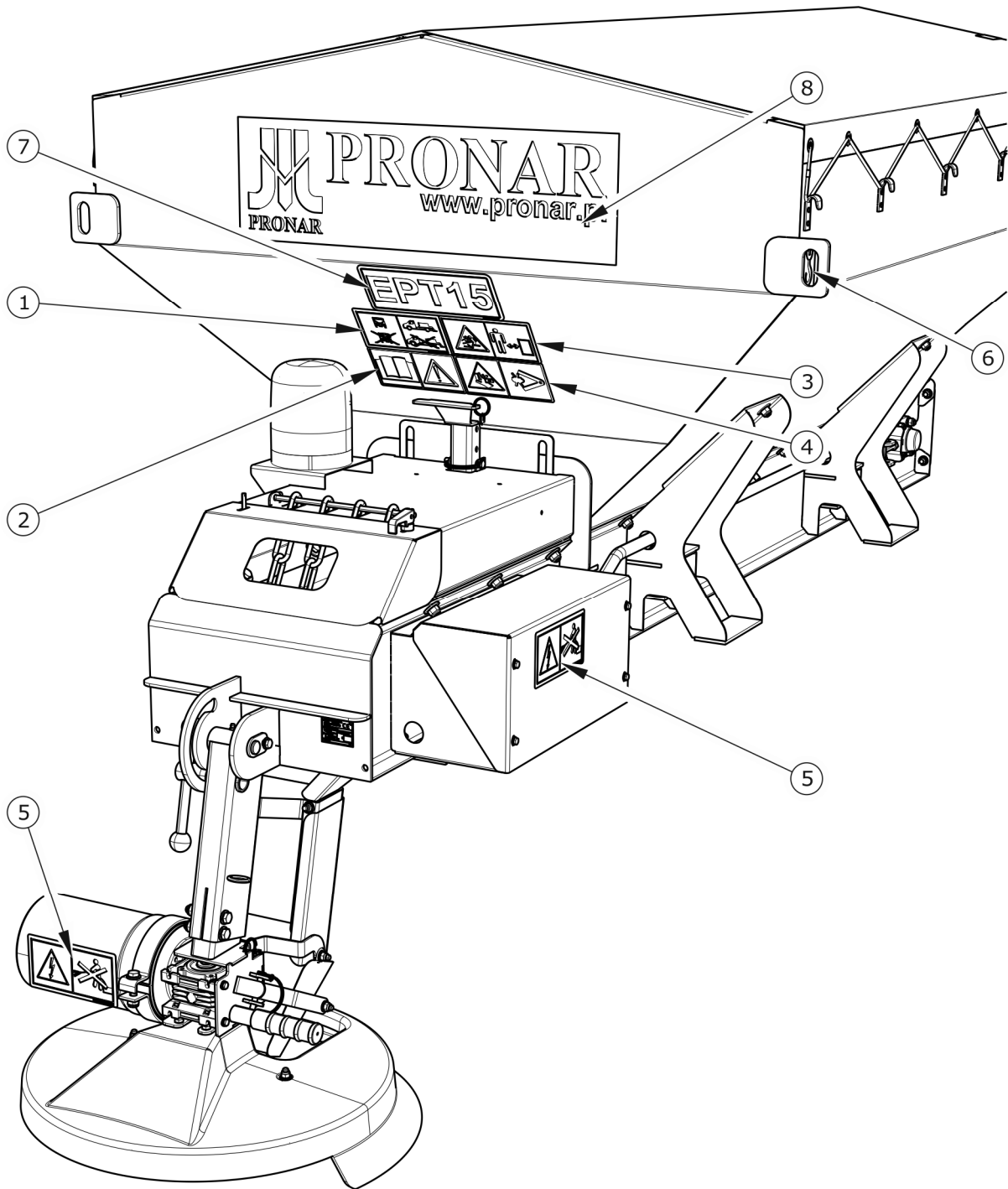


FIG. 2.1 Locations of information and warning decals.

SECTION

3

**DESIGN AND
OPERATION**

3.1 TECHNICAL SPECIFICATION

TAB. 3.1 Basic technical data of standard fittings

CONTENTS	UNIT	EPT15	EPT21
Dimensions			
Length (spreading disc in working position)	mm	3,060	
Width	mm	1,400	
Height ⁽¹⁾	mm	1,835	930-1,100
Height – (UNIMOG) ⁽¹⁾	mm		1,200-1,370
Height from platform	mm	1,070	1,320
Other information			
Nominal voltage of electrical system ⁽²⁾	V	12 / 24	24
Spreading density ⁽³⁾	g/m ²	5 – 150	5 – 150
Maximum working speed	km/h	40	40
Spreading width	m	2 – 5	2 – 4
Tank capacity	m ³	1.5	2.1
Tare weight	kg	340	385

⁽¹⁾ – height for the sand spreader located on the parking supports

⁽²⁾ - depending on equipment version

⁽³⁾ – depending on travelling speed and spreading width

3.2 DESIGN OF THE SAND SPREADER

3.2.1 BASIC INFORMATION

Design of EPT15 sand spreader is presented in figures (3.1) and (3.2).

Load box (1), figure (3.1), is made of steel sheet and mounted on bearing frame (3). Belt conveyor is installed between the frame's longitudinal members.

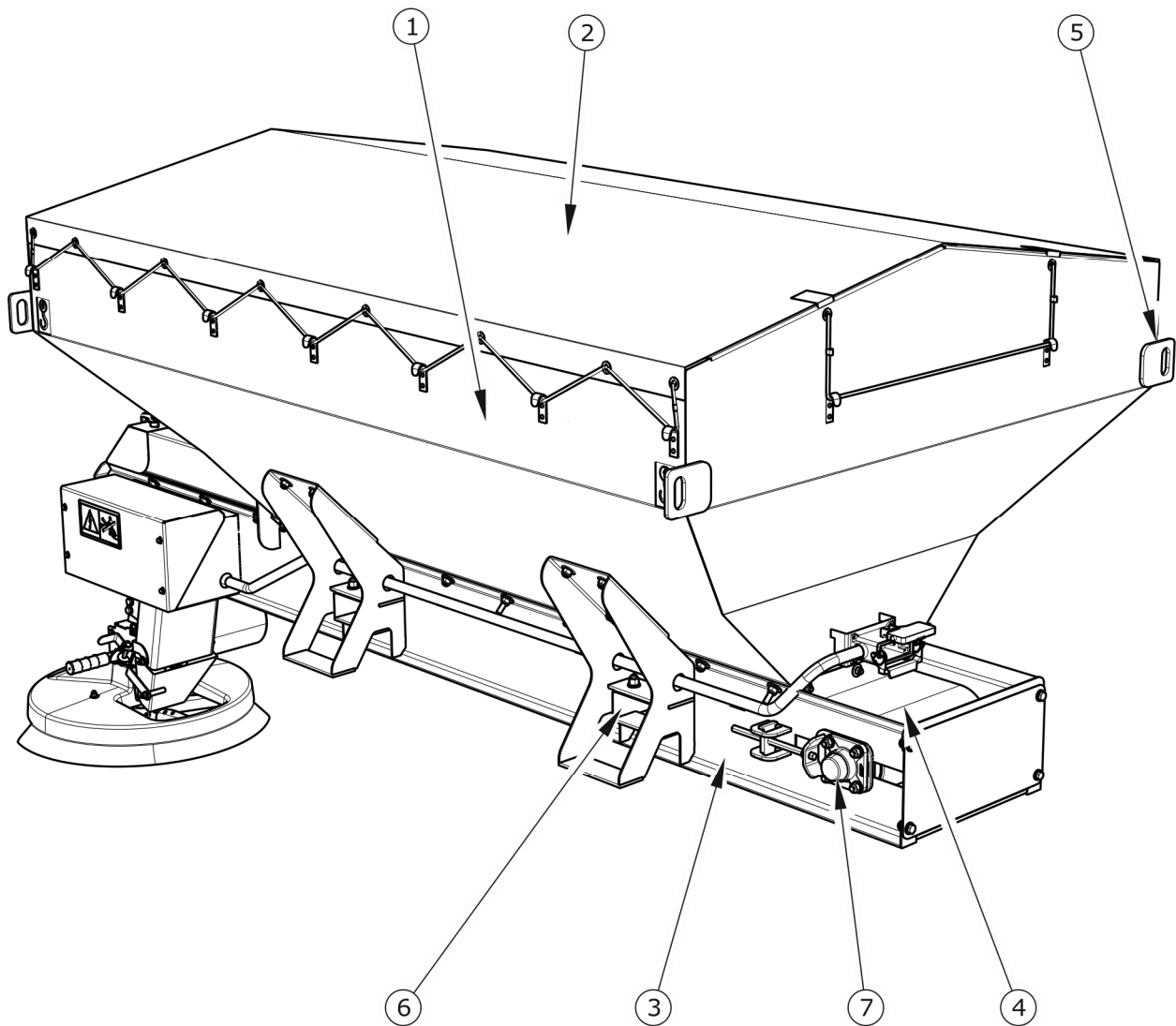


FIG. 3.1 *Design of sand spreader – front view*

(1) load box, (2) tarpaulin cover, (3) bearing frame, (4) belt conveyor, (5) attachment point, (6) pocket for inserting the fork of a forklift truck, (7) belt conveyor tensioner

Chute (6) is located in the rear part of the sand spreader – figure (3.2). The material goes from the belt conveyor through the chute to the spreading disc. Belt conveyor is driven by electric motor (3) installed on the right longitudinal member in the rear of the sand spreader.

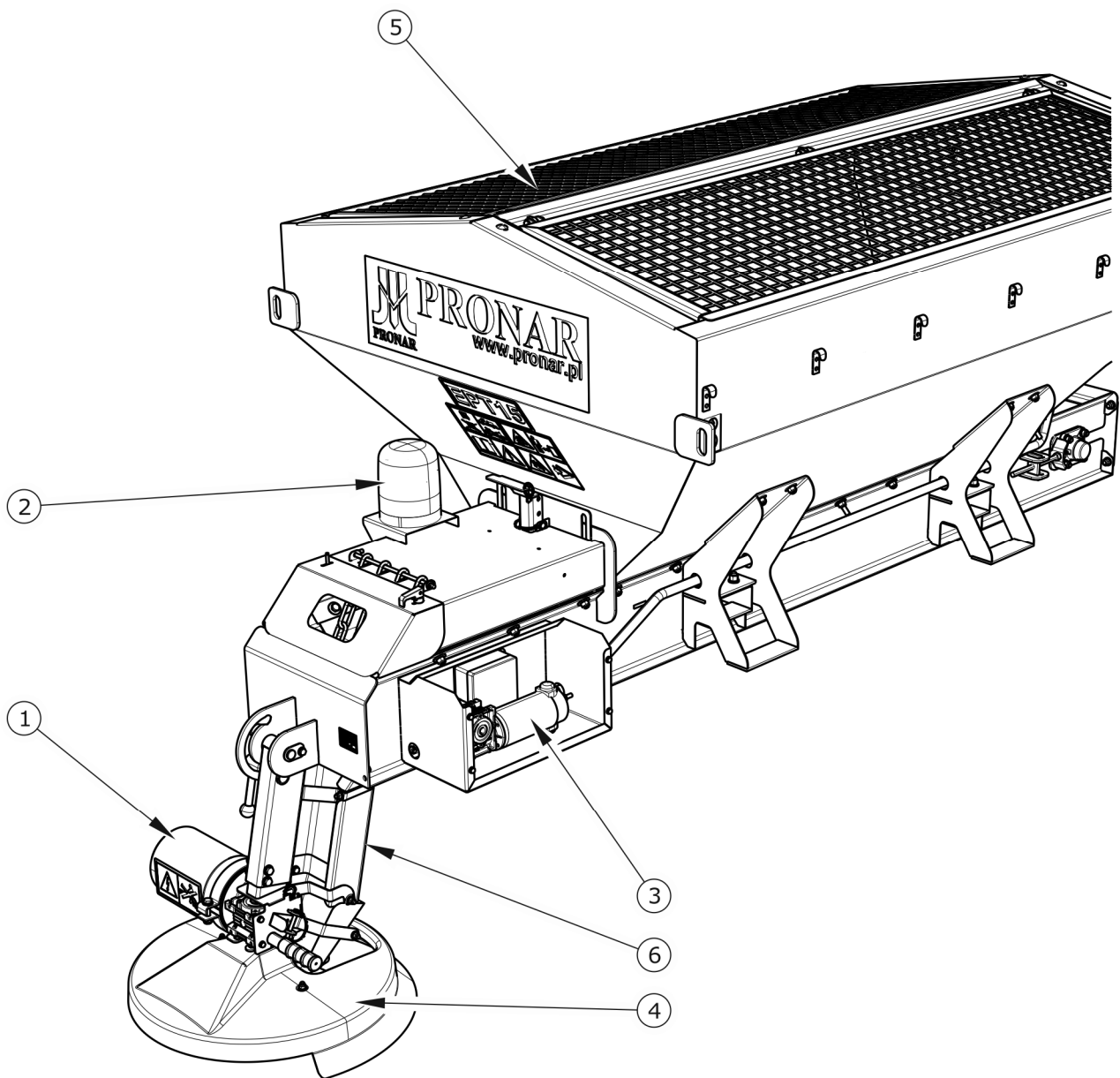


FIG. 3.2 *Design of sand spreader – rear view*

(1) spreading disc drive motor, (2) yellow beacon light, (3) belt conveyor drive motor, (4) spreading disc guard, (5) load box sieve, (6) chute

Spreading disc (1), figure (3.3), is driven by electric motor (1) via motoreducer. Rotation direction of spreading disc is indicated by arrow. Spreader unit can be raised (to transport position) after releasing knob (3). Figure (3.2) shows spreader unit in working position.

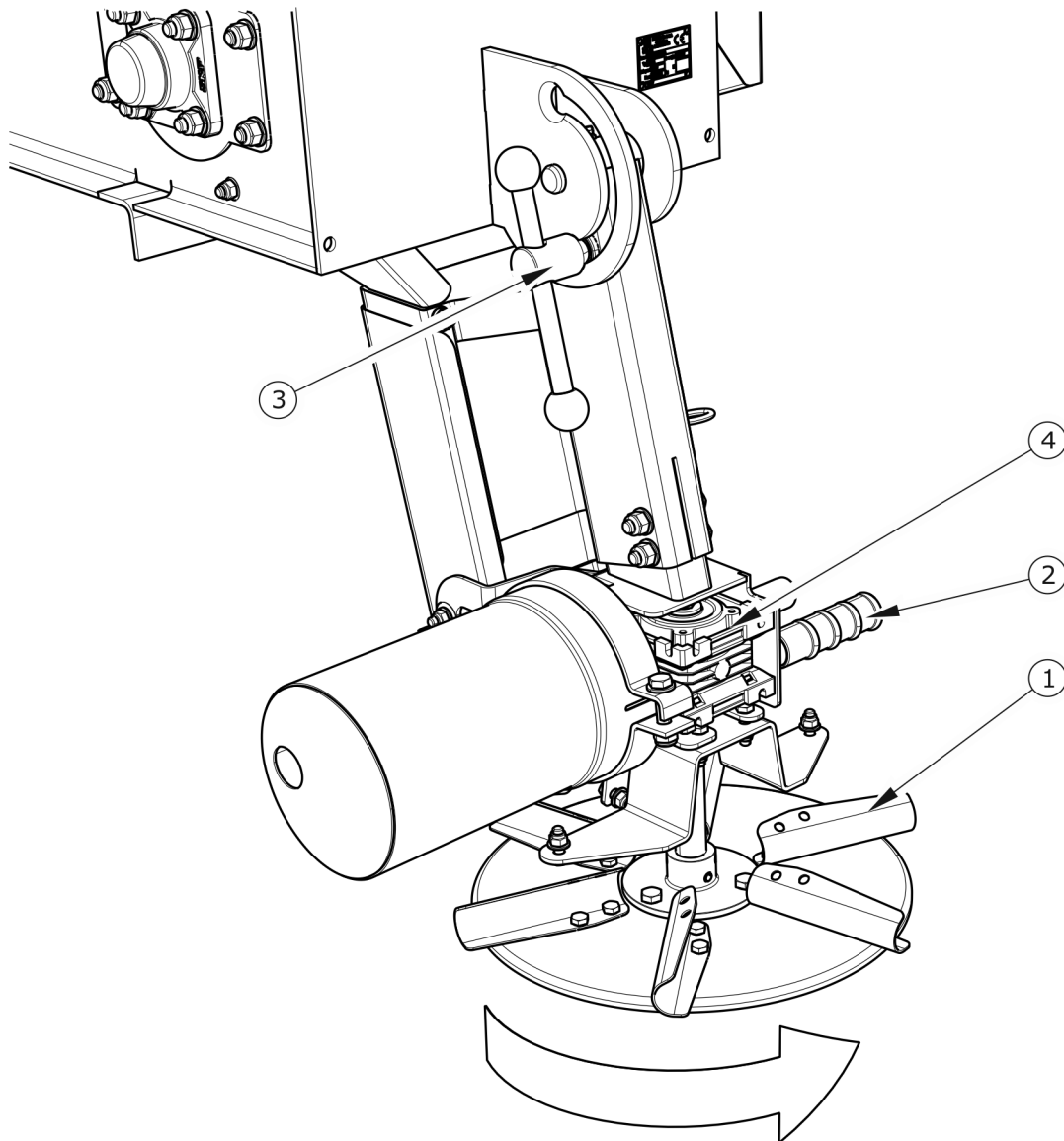


FIG. 3.3 *Spreader unit*

(1) spreading disc, (2) grip, (3) knob, (4) motoreducer

3.2.2 ELECTRICAL SYSTEM

The sand spreader's electrical system can be made in one of the three versions described below:

- electrical system designed for 12 V supply voltage,
- electrical system designed for 24V supply voltage,
- electrical system designed for UNIMOG multifunctional vehicles.

The sand spreader is driven by DC electric motors with nominal supply voltage of 12V or 24V. Electrical system diagram is shown in figure (3.4).

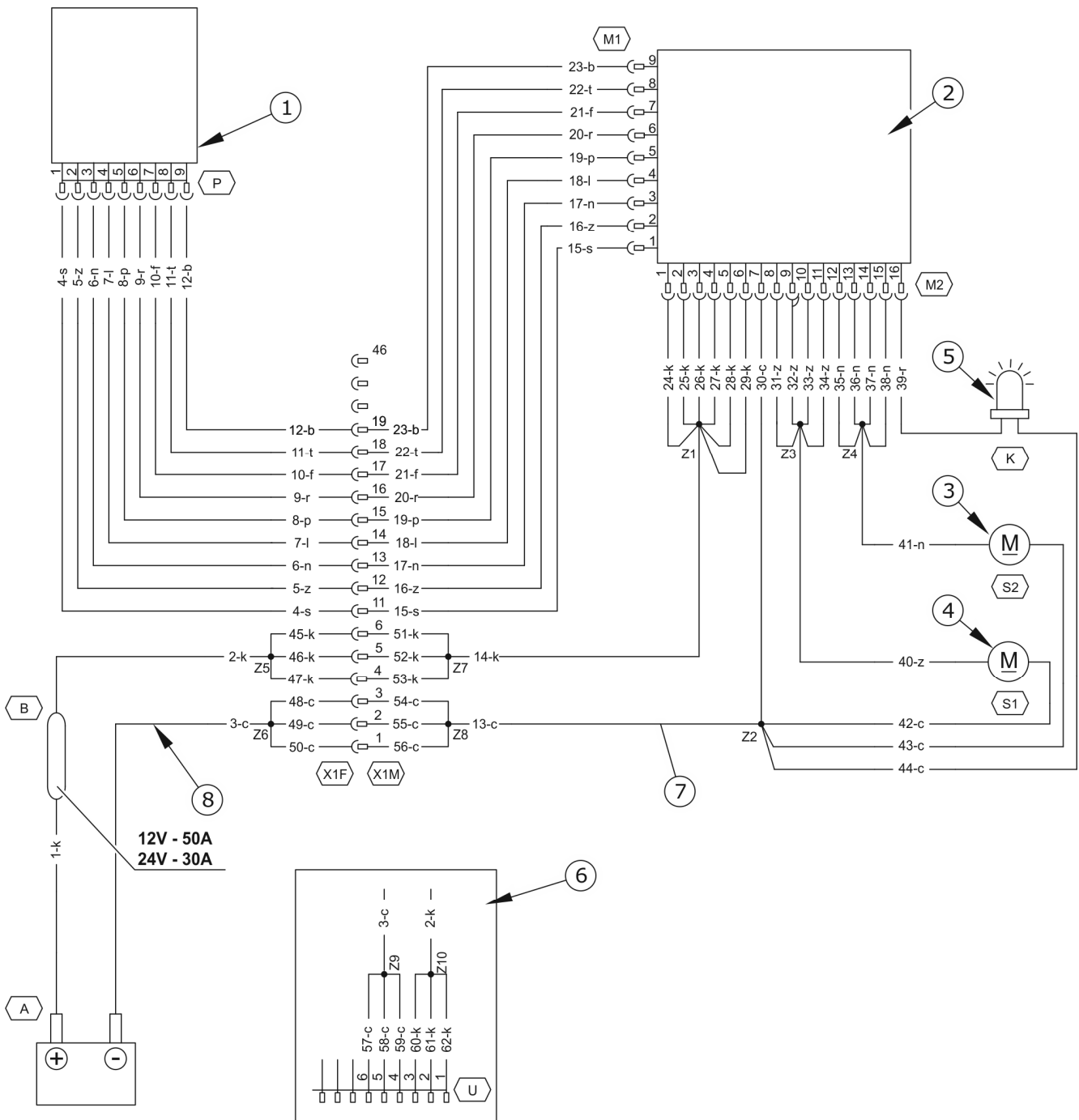


FIG. 3.4 Electrical system diagram

(1) control panel, (2) actuator module, (3) belt conveyor drive motor, (4) spreading disc drive motor, (5) orange beacon light, (6) UNIMOG power supply wiring harness, (7) sand spreader's wiring harness, (8) power supply wiring harness

TAB. 3.2 *Line colour marking*

MARKING	COLOUR
b	white
b	black
f	violet
o	brown
p	orange
t	green

MARKING	COLOUR
k	red
l	lazurite
n	blue
r	pink
s	grey
z	yellow

**TIP**

Depending on the variant of electrical system, fuse (B), figure (3.4), should be replaced with a 30A fuse in case of 24V system and 50A in 12V variant of the system.

Functions of the sand spreader are controlled by means of control panel (1), figure (3.5), which is located in the vehicle operator cab for the period of operation.

Control panel functions

- Switching on and off the belt conveyor drive and the spreading disc drive.
- Controlling rotation speed of the spreading disc (controlling spreading width).
- Controlling the travelling speed of the conveyor belt (controlling the spreading density).
- Displaying the spreading density setting within the range of 1...8.
- Displaying the spreading width setting within the range of 1...8.
- Switching on and off the yellow beacon light.

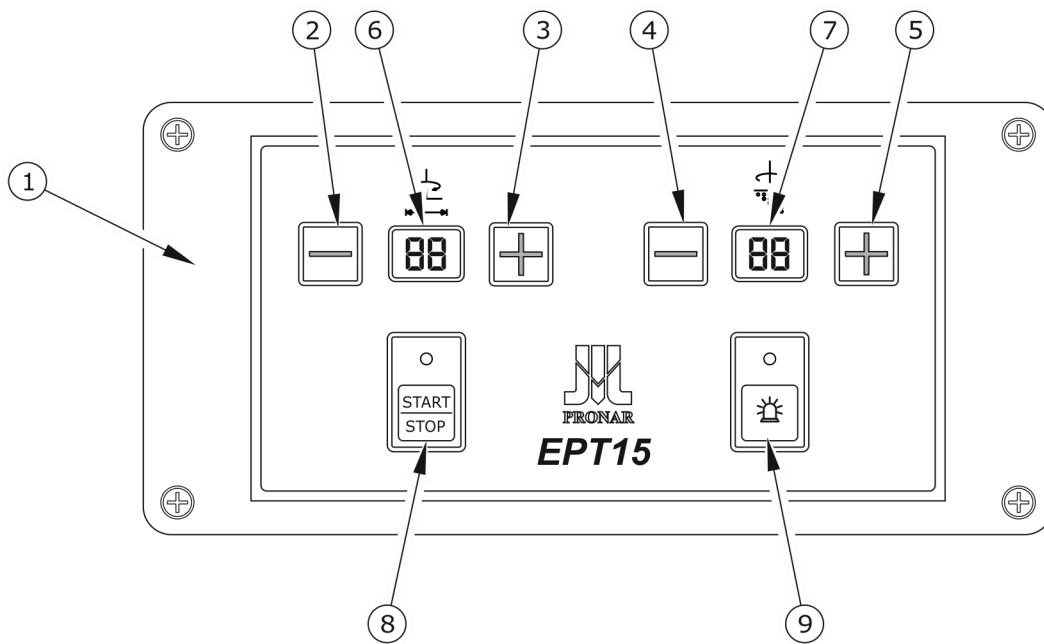


FIG. 3.5 View of the control panel

(1) control panel, (2) push-button for decreasing the spreading width, (3) push-button for increasing the spreading width, (4) push-button for decreasing the spreading density, (5) push-button for increasing the spreading density, (6) spreading width setting indicator, (7) spreading density setting indicator, (8) switching on / off the belt conveyor and spreading disc, (9) switching on / off the yellow beacon light

SECTION

4

CORRECT USE

4.1 PREPARATION OF THE SAND SPREADER FOR WORK

4.1.1 PRELIMINARY INFORMATION

The sand spreader is supplied to the user completely assembled and does not require additional mounting operations of machine sub-assemblies. The manufacturer guarantees that the machine is fully operational and has been checked according to quality control procedures and is ready for use. This does not release the user from an obligation to check the machine's condition prior to purchasing and before first use.

4.1.2 HAND-OVER AND INSPECTION OF THE MACHINE AFTER DELIVERY

After delivery of the machine to the buyer, the user is obliged to check technical condition of the sand spreader (one-time inspection). While buying the machine, the user must be informed by the seller about the method of use of the machine, risks resulting from the use for purposes other than intended, the method of mounting the machine on the vehicle's platform and the principles of the machine construction and design. Detailed information concerning the machine hand-over are included in the *WARRANTY BOOK*.

Checking the sand spreader after delivery

- Check completeness of the machine according to order.
- Check technical condition of safety guards.
- Check condition of paint coating; check the machine for traces of corrosion.
- Check the machine for damage resulting from wrong transport of the machine to its destination (crushing, piercing, bending or breaking of minor elements etc.).
- Check technical condition of the rubber belt of the feeding mechanism.
- Check the condition of bolt and nut connections of the sand spreader unit shields and fixing of spreader unit discs.

If non-conformities are found, do not attach and start the sand spreader. Discovered defects should be notified directly to the seller in order to remove them.

IMPORTANT!

The seller is obliged to conduct the first start up of the sand spreader in the presence of the user.

The user trained by the seller is not released from the obligation to read this operator's manual carefully.

4.1.3 PREPARING THE SAND SPREADER FOR THE FIRST USE, TEST RUN OF THE SPREADER

Preparing for the test run

**TIP**

All service activities are described in detail in further parts of the Operator's Manual.

- The user must read this *OPERATOR'S MANUAL* and observe all the recommendations contained in it.
- Visually inspect the sand spreader according to guidelines presented in section *PREPARING THE SAND SPREADER FOR NORMAL USE*.
- Check lubrication points of the sand spreader, if necessary grease the machine.
- Mount the sand spreader on the vehicle's platform. Connect the electrical system leads to the control panel and the sand spreader's supply system.
- Confirm that there are no objects in the load box.

Test start

- Start the drive of the feeding mechanism and spreading disc.
- Check operation of the belt conveyor by changing the belt speed.
- Check operation of the spreading unit by changing the rotation speed of the spreading disc.
- Check position of the conveyor belt (confirm that it does not rub against the bearing frame).

- Stop the drive of the conveyor belt and disc.
- Check operation of beacon light.

If during test run worrying symptoms occur such as:

- excessive noise and abnormal sounds originating from the rubbing of moving elements,
- conveyor belt speed and / or spreading disc speed do not change during speed tests,
- other suspected faults,

stop operating the sand spreader and do not operate it until the malfunction is corrected. If a fault cannot be rectified or the repair could void the warranty, please contact retailer for additional clarifications or to perform the repair.

4.1.4 PREPARING THE SAND SPREADER FOR NORMAL USE

DANGER



Careless and improper use and operation of the sand spreader, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.

The sand spreader must never be used by persons, who are not authorised to drive motor trucks, including children and people under the influence of alcohol or other drugs.

Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.

Scope of inspection activities

- Visually inspect if the vehicle's tyres are properly inflated. In case of doubt, carefully check tyre pressure.
- Check cleanliness of the spreading disc and the internal side of the disc's guards.
- Check correctness of electrical system operation.
- Check technical condition and completeness of safety guards.

- Check if the sand spreader is correctly attached to the vehicle's platform. Check technical condition of tightening elements.
- Confirm that there is no frozen material in the load box.

4.2 MOUNTING THE SAND SPREADER ON THE PLATFORM

Connection

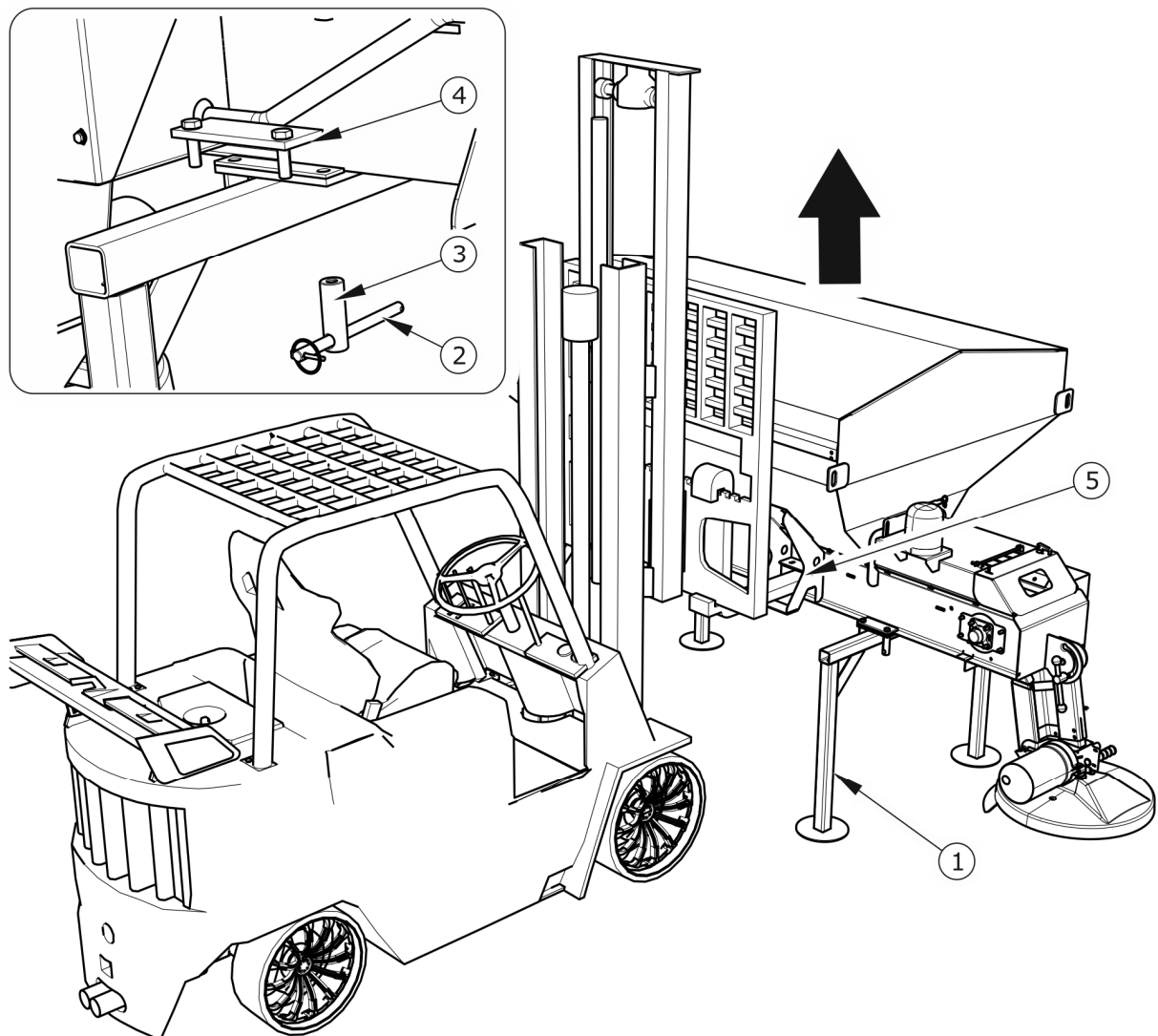


FIG. 4.1 *Preparing the sand spreader*

(1) parking support, (2) knob, (3) nut, (4) pressure plate, (5) pocket

- ➔ Open or dismount the rear wall of the vehicle's load box.
- ➔ Open left or right wall of the vehicle's load box.

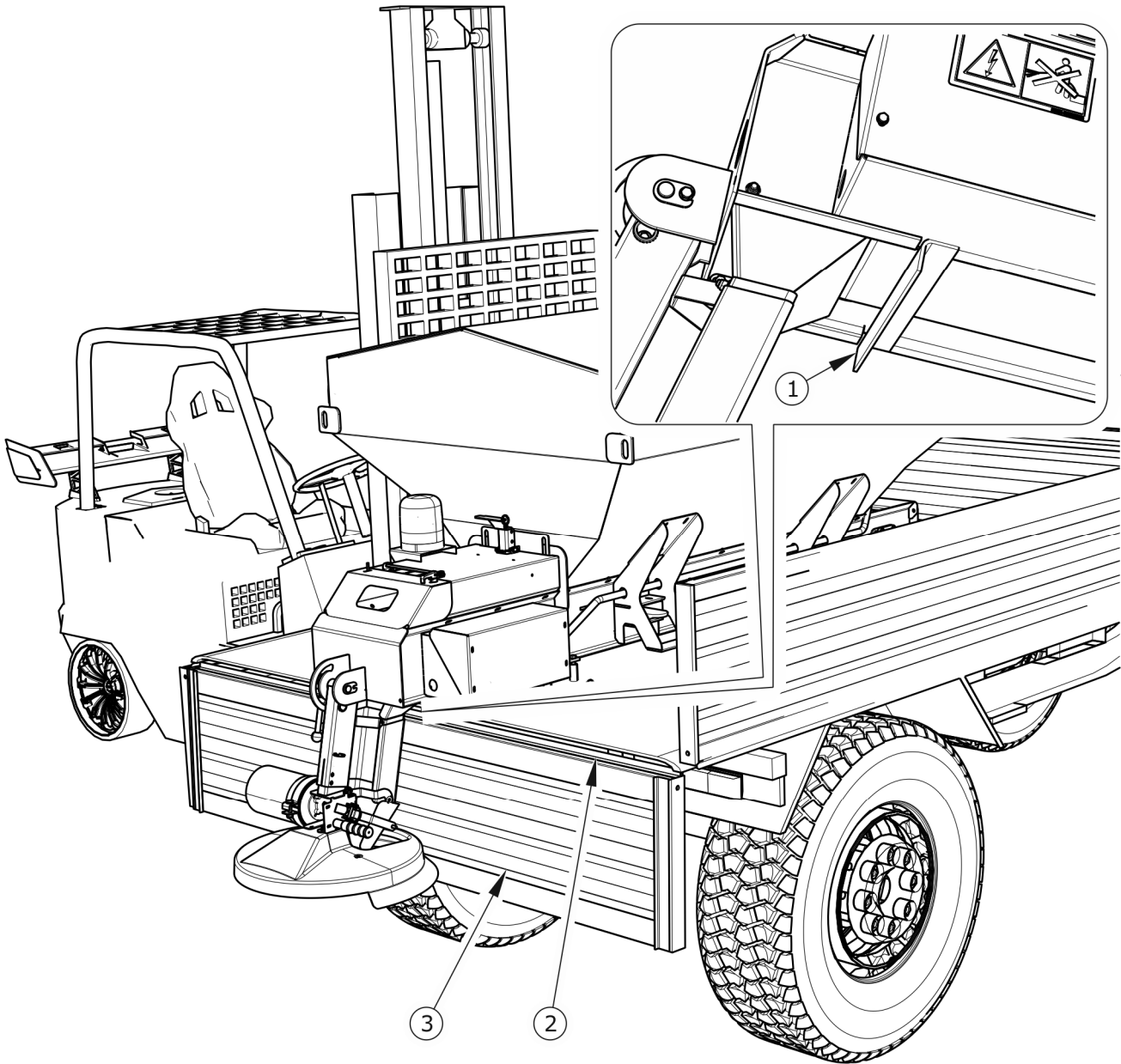


FIG. 4.2 *Positioning the sand spreader*

(1) limiting angle, (2) platform edge, (3) rear load box wall

- ➔ Adjust spacing of the forklift truck's fork to the spacing of the pockets in the sand spreader's frame.
- ➔ Drive the forklift truck to the sand spreader, slide the fork into the pockets and slightly raise the sand spreader.

- ➔ Using knob (2), figure (4.1), undo 8 nuts (3), dismount plate (4) and 2 parking stands.
- ➔ Raise the sand spreader to such a height that one may safely position the sand spreader on the vehicle's platform.
- ➔ Position the sand spreader in such a manner as to ensure that limiting angle (1) -, figure (4.2), is supported on the rear edge of the load platform. The sand spreader must be positioned on a symmetry plane of the vehicle.
 - ⇒ The sand spreader which is positioned non-symmetrically with regard to the left or right edge of the load platform will tilt the vehicle and may cause the loss of stability of the working vehicle.
- ➔ Secure the sand spreader to the vehicle's load platform using fixing brackets.
- ➔ Tighten belts / chains, make sure that the sand spreader will not move during transport.

IMPORTANT!



Precise method of fixing the sand spreader can not be determined because there are various designs of the vehicles as well as various arrangements and allowable loads of fixing brackets.

Figure (4.3) shows various variants of fixing recommended by the Manufacturer. However, the sand spreader can be also attached to the vehicle in different manners.

- ➔ Connect the electric connection lead to the sand spreader's socket and control panel and finally, to the vehicle's power supply
 - ⇒ In case of 12V / 24V electrical systems, the electric connection lead should be connected directly to the battery. The lead with a fuse should be connected to the positive battery end; the lead without a fuse should be connected to the negative battery end – figure (4.4).
 - ⇒ In case of UNIMOG system, the connection lead (male connector) should be connected to the socket in the vehicle's cab.

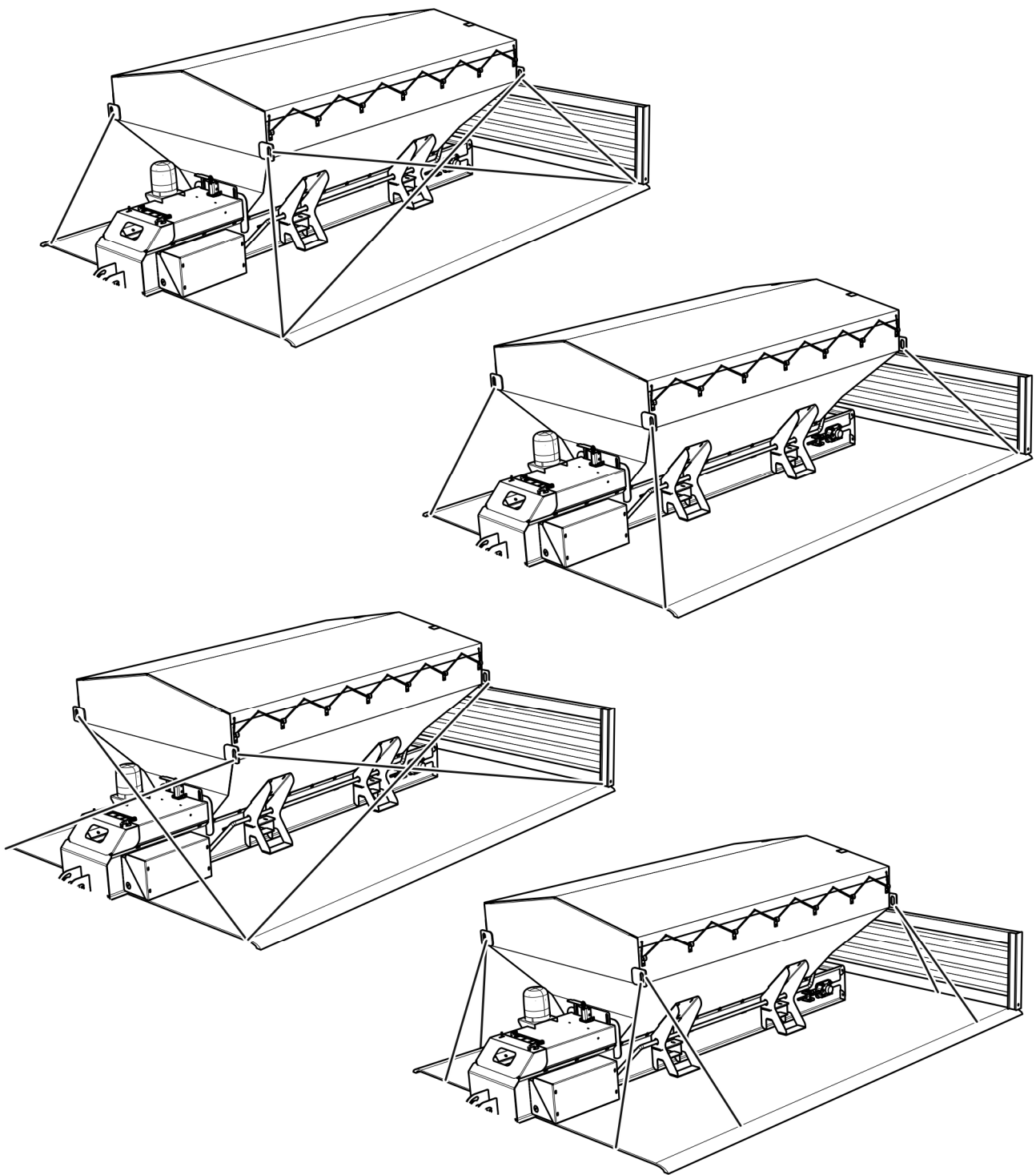


FIG. 4.3 Sand spreader fixing variants



DANGER

If necessary, use more securing measures to attach the sand spreader to the vehicle's platform

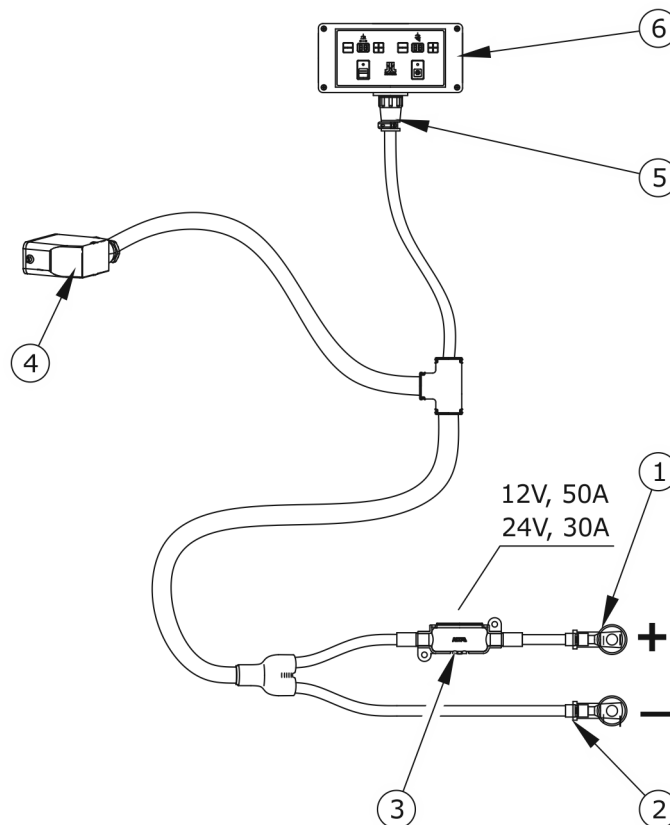


FIG. 4.4 Connection lead

(1) lug (+), (2) lug (-), (3) fuse, (4) sand spreader's connection, (5) control panel's connection, (6) control panel



DANGER

The sand spreader can be moved only when it is not loaded.

Exercise particular caution when installing the sand spreader on the vehicle's load platform. Take care that the driver has sufficient visibility.

Before the first use of the sand spreader, make sure that the proper fuse is installed. 50A fuse should be used for 12V electrical system; 30A fuse should be used for 24V electrical system.



IMPORTANT!

It is recommended that the rear wall of the vehicle's load box should be dismantled. If it is impossible, secure the rear wall in such a manner as to prevent it from hampering the vehicle operation.

4.3 DISMOUNTING THE SAND SPREADER FROM THE PLATFORM

To disconnect the sand spreader from the vehicle, perform the following activities:

- ➔ Raise the spreading unit.
- ➔ Unload the material in the storage area.
- ➔ Disconnect the power lead from the spreader (if the sand spreader will not be used for a long time, disconnect the power lead completely, disconnect the lugs from the battery and disconnect the connection from the control panel).
- ➔ Loosen belts or chains, dismantle securing measures.
- ➔ Open side wall.
- ➔ Prepare parking supports and attached fixing plates with nuts.
- ➔ Drive the forklift truck to the vehicle and unload the sand spreader from the platform. Position the machine on the supports, install fixing plates and tighten nuts.

DANGER



Exercise particular caution when dismantling the sand spreader. Ensure good visibility.

Do NOT dismantle the sand spreader if its load box is filled with material.

4.4 LOADING

Load box can be filled with material only when the sand spreader is mounted on the vehicle's platform. Always aim at distributing the load uniformly in the load box. This will ensure proper stability of the sand spreader when travelling and uniform loading of the vehicle's axles. A proper loader or belt conveyor is recommended to be used for filling the load box with material.

IMPORTANT!



Do NOT exceed the sand spreader's maximum carrying capacity.

Before loading make certain that there are no stones, tools or other objects in the load box and on the spreading disc.

The load in the sand spreader's load box must be distributed uniformly.

Before loading check that there are no objects (tools, stones) in the load box. Avoid throwing material into the load box from a great height during loading because the feeding mechanism may be damaged. Loading of materials other than those recommended by the Manufacturer is forbidden. During loading, the sieves should be closed and properly attached to the load box rim and the protective tarpaulin cover should be removed.

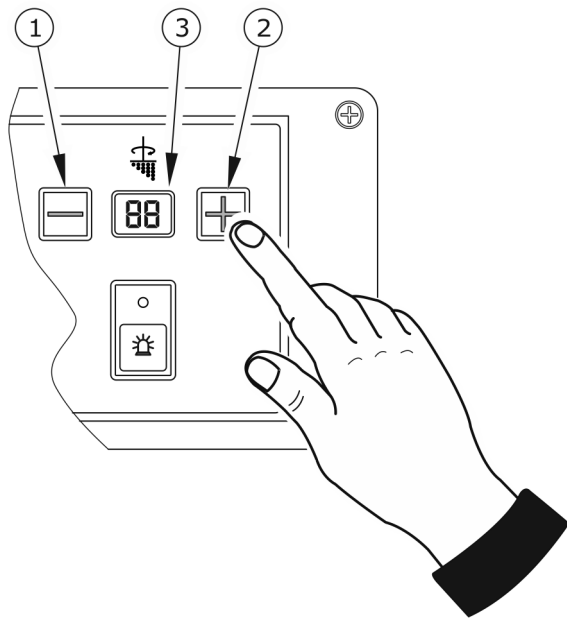
IMPORTANT!



Spreading agents must be prepared in accordance with the regulations concerning winter road maintenance in force in the country in which the sand spreader is used. Spreading agents other than those recommended by the Manufacturer must not be used.

4.5 SPREADING AND ADJUSTMENT OF SPREADING MATERIAL DENSITY

4.5.1 PRELIMINARY INFORMATION

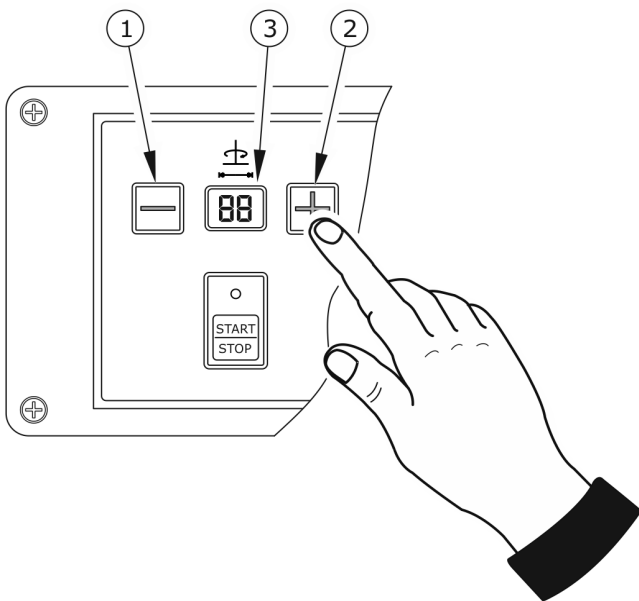


Proper belt speed is selected by means of push-buttons (1) or (2) – figure (4.5). Press push-buttons in order to chose proper working position.

One of the eight speeds of the conveyor belt can be selected.

FIG. 4.5 *Spreading density adjustment*

(1) reducing the spreading rate, (2) increasing the spreading rate, (3) current setting of the spreading rate 1..8



Proper spreading width is selected by means of push-buttons (1) or (2) – figure (4.6). Press push-buttons in order to chose proper working position.

One of the eight speeds of the spreading disc can be selected.

FIG. 4.6 *Spreading width adjustment*

(1) reducing the spreading rate, (2) increasing the spreading rate, (3) current setting of the spreading rate 1..8

Amount of spread material depends on the belt conveyor speed setting as well as humidity and grain size of the material. If humidity of sand or sand-chemicals mixture is higher, the spread material may slip on the conveyor surface and a reduced amount of material may be fed to the spreading disc.

Density of the material spread in a specific spreading area depends on numerous factors: conveyor belt speed, spreading disk speed, vehicle speed, composition of material mixture and physical properties of the material, such as weight, moisture and other properties. This is caused mainly by difficulty in maintaining constant humidity of spread material as well as various grain size and degree of mixing of sand-chemicals mixtures. The settings should be based on practical experience

IMPORTANT!



Do NOT leave the vehicle's cab when the drive of the belt conveyor and the spreading disc are engaged.

Use of the sand spreader with damaged shields is forbidden.

4.5.2 SPREADING

Switch on the orange beacon light in the vehicle before you start spreading – push-button (1) – figure (4.7).

Spreading is recommended to be started during travel of the sand spreader. Push-button (2) activates the belt conveyor and spreading disc. When the sand spreader is stopped (e.g. at the traffic lights) or after emptying the load box, the sand spreader's drive should be disengaged.

DANGER



Use of the sand spreader with damaged shields is forbidden.

When driving on public roads, comply with the road traffic regulations.

DANGER



Do not exceed the maximum speed limit. Adjust driving speed to the road conditions. If spreading with the sand spreader is done on pavements, special attention should be paid to the bystanders and animals near the machine.

During sand spreader operation, operator is obliged to switch on the orange beacon light.

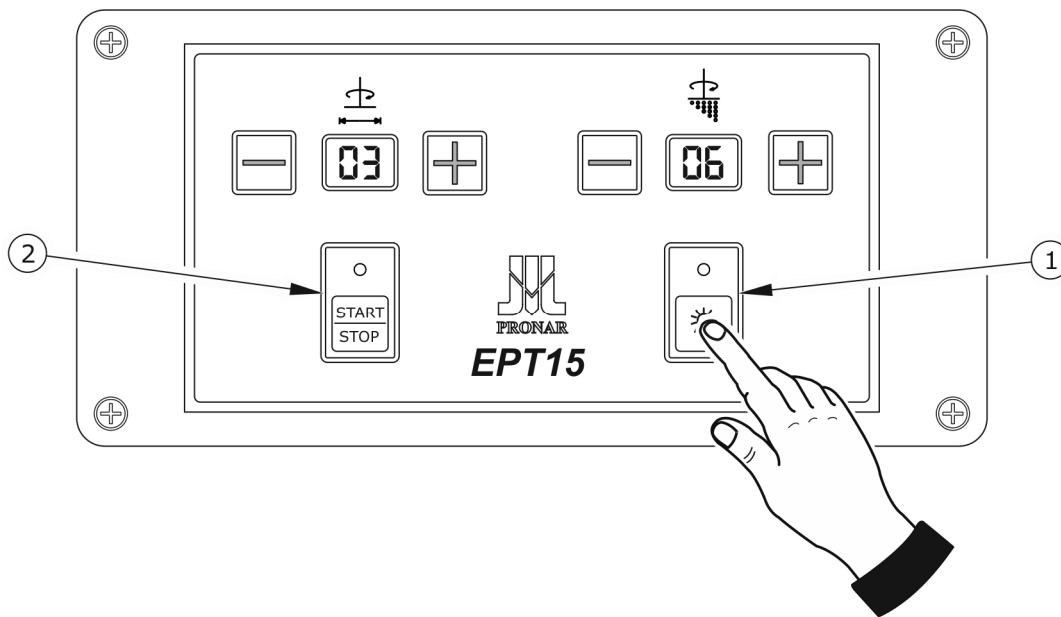


FIG. 4.7 Panel operation

(1) beacon light switch, (2) switch of the drive of the belt conveyor and spreading disc

IMPORTANT!



After completed operation of the sand spreader, the remaining material must be unloaded in the storage area. Before operating the sand spreader, the user is obliged to check the load box, especially if the machine is operated by several operators. Remaining and frozen material may cause serious damage to the belt conveyor's mechanisms.

4.6 TRANSPORTING THE MACHINE

When driving the vehicle with the sand spreader mounted, respect the road traffic regulations, exercise caution and prudence.

- Before moving off make sure that there are no bystanders, especially children, near the vehicle. Take care that the driver has sufficient visibility.
- Make sure that the sand spreader is correctly attached to the vehicle's platform.
- Avoid sudden acceleration, turning and braking.
- The sand spreader must not be overloaded. The machine's maximum carrying capacity must not be exceeded as this can damage the sand spreader and pose a risk to the operator or other road users.
- Permissible design speed and maximum speed allowed by road traffic law must not be exceeded. Speed of travel should be adjusted to prevailing road conditions, load carried and other conditions. Allowable travelling speed during operation is 40 km/h.
- In the event of vehicle or sand spreader malfunction, pull over on the hard shoulder avoiding any risk to other road users and position reflective warning triangle according to traffic regulations.
- When driving, comply with all road traffic regulations, indicate an intention to turn using indicator lamps, keep all road lights and indicator lights clean at all times and ensure they are in good condition. Any damaged or lost lamps or indicator lights must be immediately repaired or replaced.
- Avoid ruts, depressions, ditches or driving on roadside slopes. Driving across such obstacles could cause the vehicle or the sand spreader to suddenly tilt. This is of special importance because loaded machine's centre of gravity is higher, which reduces safety. Driving near ditches or canals is dangerous as there is a risk of the slope collapsing.
- Speed must be sufficiently reduced before making a turn or driving on an uneven road or a slope.
- When driving, avoid sharp turns especially on slopes.

- Please note that the braking distance of the vehicle and sand spreader combination is substantially increased at higher speeds and loads.
- Monitor vehicle's behaviour when travelling on an uneven terrain, and adjust driving speed to road conditions, slow down early enough when turning.
- Keep the vehicle and sand spreader clean. Prevent soiling of lights, reflective lights and information and warning decals.

SECTION

5

MAINTENANCE

5.1 PRELIMINARY INFORMATION

When using the sand spreader, regular inspections of its technical condition and the performance of maintenance procedures are essential, which keep the machine in good technical condition. In connection with this the user of the sand spreader is obliged to perform all the maintenance and adjustment procedures defined by the Manufacturer.

Repairs during the warranty period may only be performed by authorised service points.

Detailed procedures and extents of functions are described in this section, which the user may perform with his own resources. In the event of unauthorised repairs, changes to factory settings and other actions, which are not regarded as possible for the sand spreader operator to perform, the user shall invalidate the warranty.

5.2 LUBRICATING THE SAND SPREADER

The sand spreader should be greased using a hand or foot-operated grease gun filled with recommended permanent grease (e.g. general-purpose machine lithium or calcium permanent grease). Before commencing work insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease. Empty grease containers should be disposed of according to the recommendations of the lubricant Manufacturer.

TAB. 5.1 *Lubrication schedule*

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	FREQUENCY
1	Housing of the belt conveyor's bearing	3	14D
2	Pin	1	1M

Lubrication periods – M months, D – days

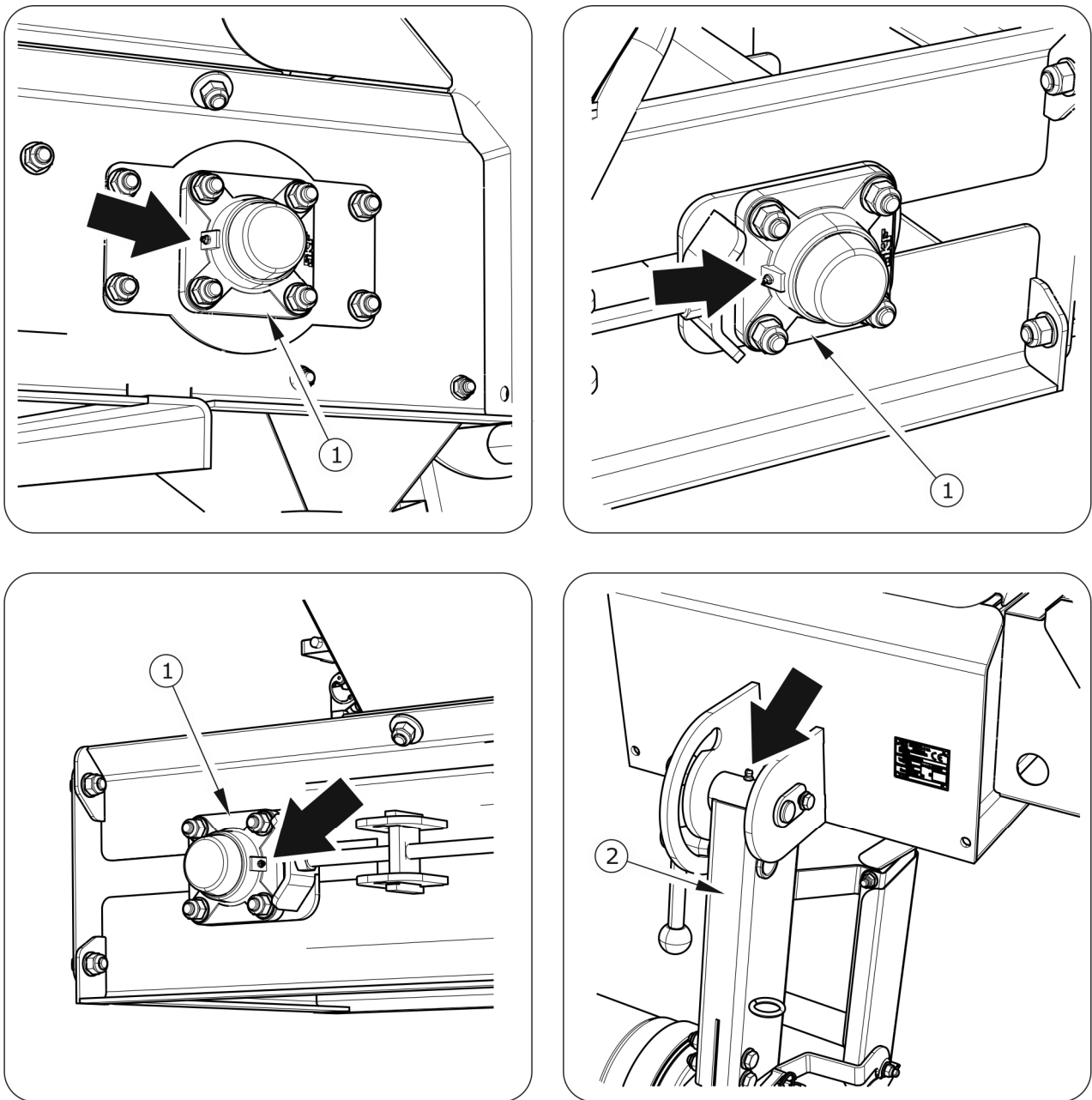


FIG. 5.1 *Lubrication points on the sand spreader*



During sand spreader use the user is obliged to observe lubrication instructions according to attached lubrication schedule.

5.2.1 CONSUMABLES

Lubricants

In the case of less loaded sub-assemblies the application of general purpose machine greases is recommended, which contain anticorrosion additive and have significant resistance to being washed away by water.

Before starting to use greases acquaint oneself with the content of the information leaflet for the chosen product. Particularly relevant are safety rules and handling procedures for given lubricant product and waste utilisation (used containers, contaminated rags etc.). Information leaflet (material safety data sheet) should be kept together with grease.

5.3 CLEANING THE SAND SPREADER

Sand spreader should be cleaned depending on requirements and before longer idle periods. Wash the sand spreader thoroughly each time after operation. Before using pressure washer the user is obliged to acquaint himself with the operating principles and recommendations concerning safe use of this equipment.

Cleaning guidelines

- Remaining material should be removed from the load box before cleaning the sand spreader.
- To clean the sand spreader only use clean running water or water with a cleaning detergent additive with neutral pH.
- Using pressure washer increases washing effectiveness, but particular care must be taken during work. During washing washer nozzle may not be closer than 50 cm from the surface being cleaned.
- Water temperature shall not exceed 55°C.
- Do not direct water jet at system and equipment elements of the sand spreader i.e. electric plugs and sockets, information and warning decals, name plate, lubrication points, electric motors etc. High pressure of water stream may cause mechanical damage to these elements.

- For cleaning and maintenance of rubber surfaces it is recommended to use clean water or special preparations designed for this purpose.
- Do not apply organic solvents, preparations of unknown origin or other substances, which may cause damage to lacquered, rubber or plastic surfaces. In the event of doubt it is recommended to make a test on an unseen surface area.
- Surfaces smeared with oil or grease should be cleaned by application of benzene or other degreasing agents and then washed with clean water with added detergent. Comply with recommendations of the Manufacturer.

DANGER



Carefully read the instructions for application of washing detergents and maintenance preparations.

While washing with detergents wear appropriate protective clothing and goggles protecting against splashing.

- Washing detergent should be kept in original containers, optionally in replacement containers, but very clearly marked. Preparations may not be stored in food and drink containers.
- Rubber elements should be maintained with the aid of special preparations after previous thorough washing.
- After finishing washing wait until the sand spreader is dry and then grease all inspection points according to recommendations. Remove excess grease with a dry cloth.
- Observe environmental protection principles and wash the sand spreader in a place designed for this purpose.
- Washing and drying the sand spreader must take place at temperatures above 0°C.

5.4 STORAGE

After finishing work, the sand spreader should be thoroughly cleaned and washed with water jet. In the event of damage to the paint coat, clean rust and dust from damaged area,

degrease and then paint with undercoat and after it is dry paint with surface coat paint retaining colour uniformity and even thickness of protective coating. Until the time of touch-up painting, the damaged place may be covered with a thin layer of grease or anticorrosion preparation. The sand spreader should be kept in closed or roofed building at temperature above 0°C.

If the sand spreader shall not be used for a long period of time, protect it against adverse weather conditions, especially those which may cause rusting of steel. During this time the machine must be unloaded.

Lubricate the sand spreader according to the instructions provided. In the event of prolonged work stoppage, it is essential to lubricate all elements regardless of the period of the last lubrication process.

5.5 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

Unless other tightening parameters are given, during maintenance repair work apply appropriate torque to tightening nut and bolt connections. Recommended tightening torque of most frequently applied nut and bolt connections are given in table (5.2). Given values apply to non-lubricated steel bolts.

TAB. 5.2 *Tightening torque for nut and bolt connections*

THREAD METRIC	5.8 ⁽¹⁾	8.8 ⁽¹⁾	10.9 ⁽¹⁾
	Md [Nm]		
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310
M20	300	425	610
M24	530	730	1,050

THREAD METRIC	5.8 ⁽¹⁾	8.8 ⁽¹⁾	10.9 ⁽¹⁾
	Md [Nm]		
M27	820	1,150	1,650
M30	1,050	1,450	2,100

⁽¹⁾ – resistance class according to DIN ISO 898 standard

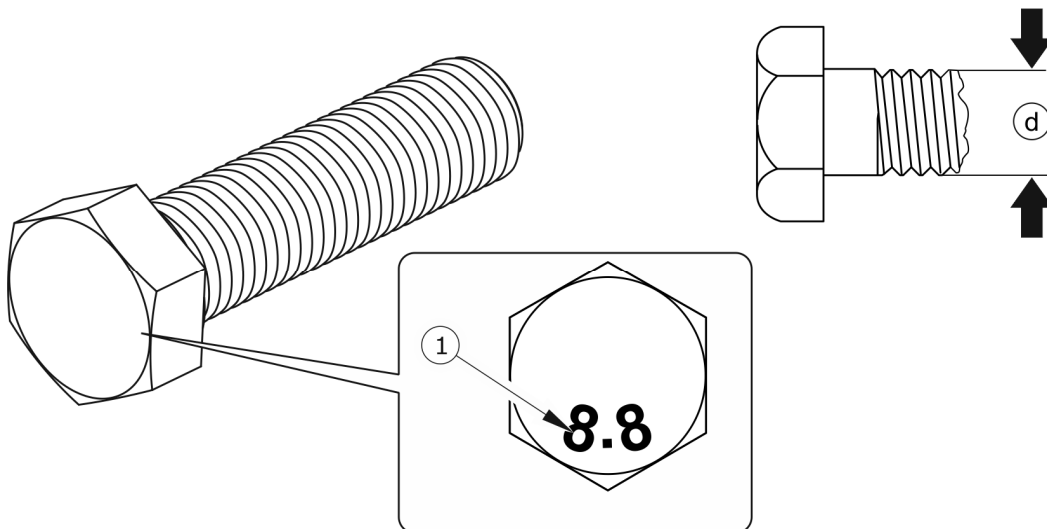


FIG. 5.2 Bolt with metric thread

(1) resistance class, (d) thread diameter

5.6 ADJUSTMENT OF CONVEYOR BELT

Make necessary adjustments if the conveyor belt tends to shift sideways or if the belt slips excessively on the conveyor rollers.

Adjustment

- ➔ Disengage the sand spreader's drive and make sure that it can not be engaged by unauthorised persons.
- ➔ Rotate bolt (1) in the direction indicated by arrow and shift the bearing mounting.
- ➔ Rotate adjusting bolt, switch the drive on and check arrangement of the belt during belt conveyor operation. If the belt still tends to shift sideways, repeat the adjustment.

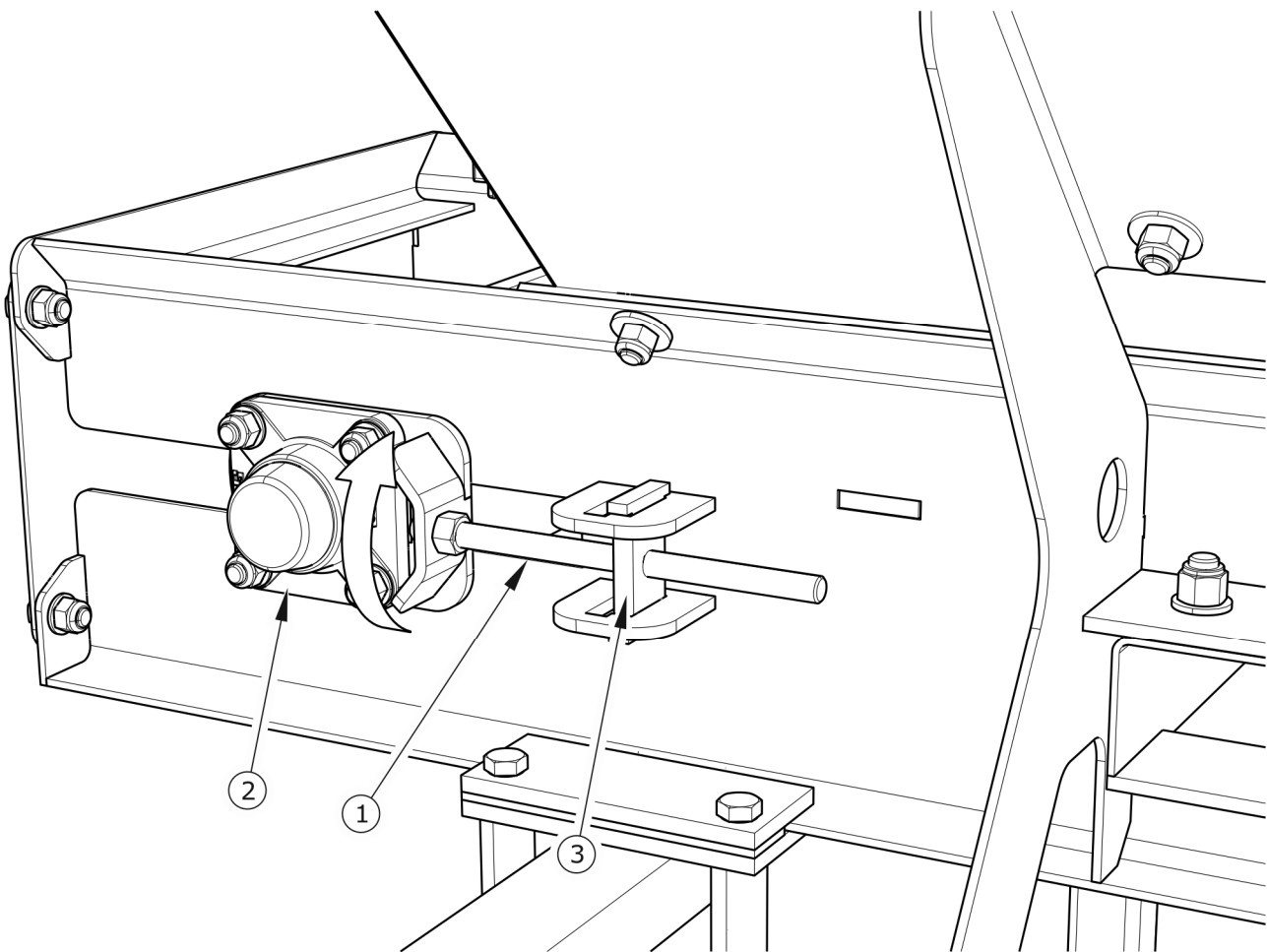


FIG. 5.3 *Principle of adjustment*

(1) tensioning bolt, (2) bearing mounting, (3) bracket

NOTES

A series of horizontal dotted lines for writing notes.

