



INSTRUCTION MANUAL
WARRANTY CARD
SPARE PARTS CATALOGUE

CONVEYOR DIGGER

Upus

Z656 - SINGLE-ROW CONVEYOR DIGGER



**PLEASE READ THE INSTRUCTION MANUAL BEFORE
WORKING WITH THE MACHINE**



BOMET[®]

Spółka z ograniczoną odpowiedzialnością
Spółka Komandytowa
07-100 Węgrów, ul. B. Joselewicza 2
phone: (0 prefix 25) 691 78 06





BOMET®

Spółka z ograniczoną odpowiedzialnością
Spółka Komandytowa
07-100 Węgrów, ul. B. Joselewicza 2
phone: (0 prefix 25) 691 78 06
http:www.bomet.pl; e-mail: bomet@bomet.pl



**DECLARATION OF CONFORMITY
for the machine**



*According to the Ordinance of the Ministry of Economy of 21 October 2008 (Journal of Laws No. 199, item 1228)
And European Union Directive 2006/42/EC of 17 May 2006 (OJ L157, p. 24-86)*

we declare with full responsibility that the machine:

Machine: **SINGLE-ROW CONVEYOR DIGGER**
Type/model: **Z656**
Production year: **201**
Function: Mechanical digging of potato tubers from the ridge

to which this declaration refers, meets the requirements of:

**Ordinance of the Ministry of Economy of 21 October 2008 on essential requirements
for machinery (Journal of Laws No. 199, item 1228)
and European Union Directive 2006/42/EC of 17 May 2006**

Person responsible for the technical documentation of the machine: Andrzej Sińczuk, ul. B. Joselewicza 2, 07-100 Węgrów

The following standards have also been used for conformity

assessment:

PN-EN ISO 12100:2012P
PN-EN ISO 4254-1:2016E

This EC Declaration of Conformity will cease to be valid if the machine is altered or rebuilt
without our consent.

THE INSTRUCTION MANUAL CONSTITUTES THE BASIC EQUIPMENT OF THE MACHINE!

Węgrów,
Place and date of issue

BOMET
Spółka z ograniczoną odpowiedzialnością
Spółka Komandytowa
07-100 Węgrów, ul. Berka Joselewicza 2
tel. +48 25 792 38 88
NIP 8241801763
.....
Last name, first name, and position of the
person authorized to sign



BOMET®

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Last name, first name, and position of the
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WARRANTY CARD

Single-row conveyor digger type **Z656**

Factory no

Production year **201**

Controller's signature

Sale date

Seller signature

BOMET
Spółka z ograniczoną odpowiedzialnością
Spółka Komandytowa
07-100 Węgrów, ul. Berka Joselewicza 2
tel. +48 25 792 38 88
NIP 8241801763

.....
Seller's stamp

NOTE: The warranty card and complaint coupons must be clearly (legibly) filled in by the seller. Lack of e.g. sales date or stamp of the seller will cause that the user's possible complaint may not be accepted. A warranty card with corrected or incorrectly filled data is invalid.

Warranty proceedings

1. The user is to be understood as a natural or legal person acquiring agricultural equipment, the seller - as a trading unit supplying the equipment to the user, and the manufacturer - as an entity producing the agricultural equipment.
2. The manufacturer ensures the quality and correct performance of the digger for which this warranty is issued.
3. Defects or damage to the digger will be removed free of charge at the buyer's place within **12 months** from the date of sale.
4. Disclosed defects or damage should be reported in person, by letter or by phone.
5. If during the warranty period three warranty repairs are required and the product continues to show defects that prevent its use according to its intended purpose, the purchaser has the right to exchange the product for a new one, free of defects, or a cash refund.
6. If the manufacturer, the seller and the user do not agree on a different term for the execution of a complaint, replacement of a product or a refund of cash, the complaint should be executed within 14 days of the date of filing it by the user.
7. Warranty repairs do not include the repairs caused by:
 - using the digger incompatible with the instruction manual and intended use,
 - random events or other which the manufacturer is not responsible for.These repairs can only be carried out at the expense of the user or buyer.
8. The manufacturer is entitled to cancel the product warranty when stating:
 - introduction of structural changes,
 - occurrences of damage caused by random events,
 - lack of required records or their arbitrary execution in the warranty card,
 - using the digger incompatible with the instruction manual and intended use.

Complaint coupon no 1

Single-row conveyor digger **Z656**

Factory no Purchase date

seller's signature and stamp

Complaint protocol no

Complaint coupon no 2

Single-row conveyor digger **Z656**

Factory no Purchase date

seller's signature and stamp

Complaint protocol no

Complaint coupon no 3

Single-row conveyor digger **Z656**

Factory no Purchase date

seller's signature and stamp

Complaint protocol no

I have accepted the technical equipment effective after repair
on

.....
user's signature

Remarks:

.....
.....
.....

I have accepted the technical equipment effective after repair
on

.....
user's signature

Remarks:

.....
.....
.....

I have accepted the technical equipment effective after repair
on

.....
user's signature

Remarks:

.....
.....
.....

IDENTIFICATION

SINGLE-ROW CONVEYOR DIGGER

The Z656 single-row conveyor digger has a rated plate located in the front part of the digger's frame. It contains basic information used to identify the machine: manufacturer's name, machine symbol, factory number, and production year.

The data on the rated plate is used to identify the digger and should correspond to the following data entered during the sale.

Symbol **Z656**

Production year **201**

Factory no

**IT IS RECOMMENDED THAT THE SUPPLIER OF BOTH NEW AND USED MACHINES
KEEPS THE CONFIRMATION OF RECEIVING THE INSTRUCTION MANUAL
TOGETHER WITH THE MACHINE SIGNED BY THE PURCHASER.**



**THE INSTRUCTION MANUAL CONSTITUTES THE BASIC EQUIPMENT
OF THE MACHINE!**

SAVE THIS INSTRUCTION MANUAL FOR FUTURE USE



NOTE

When lending the machine, make sure to provide the instruction manual with the lent machine.



REMEMBER!

Before work, should check the compatibility of the articulated telescopic shaft with the tractor. The length of the articulated telescopic shaft should be adjusted to the tractor by changing the length of the telescopic tubes. See: articulated telescopic shaft instruction manual.



CAUTION !

During operation, it is necessary to pay particular attention to loosening of screw connections. Therefore, it is necessary to check and tighten screw connections after stopping the tractor and turning off the tractor engine.

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1. INTRODUCTION

This instruction manual is attached to each machine on order to familiarize the user with the construction, operation and adjustment of a single-row conveyor digger. It also has a purpose of warning about any existing or potential dangers. This manual also contains information on the preparation of the digger to work and transport on public roads.

Accurately observing the instructions contained in this manual will ensure long-lasting and trouble-free operation and will reduce the machine's operating costs. The individual chapters of the manual (according to the table of contents) discuss the relevant issues in detail. If the manual contains information incomprehensible for the user, they may obtain comprehensive explanations by writing to the manufacturer's address (the address can be found on the cover) - in such situation the buyer's exact address, machine symbol, factory number, production year as well as the year and issue number of the instruction manual must be specified.

The following words used in this manual - *left*, *right*, *rear* and *front* - refer to the position of the observer facing the direction of travel.

The provisions of the warranty procedure and the resulting rights are provided in the warranty card attached to each digger.

2. PURPOSE OF THE DIGGER

The Z656-series single-row conveyor digger is intended exclusively for agricultural use. Using it for other purposes will be construed as misuse. Compliance with the requirements for using the machine, i.e. servicing and repairs according to the manufacturer's recommendations and strict adherence to them, is a condition of intended use.

The machine should be used and operated only by persons familiar with its specific characteristics and familiar with safety rules and provisions. Accident prevention regulations and all basic health and safety provisions as well as traffic regulations should always be observed.

The Z656 conveyor digger is a machine suspended on a three-point linkage of the tractor. The digger should cooperate with tractors with 25 HP or above, equipped with a standardized PTO, standard three-point linkage category I or II as well as standard front axis weights to maintain the required steering coefficient ($s \geq 0.2$). The machine is equipped with double-sided studs of the bottom suspension axis, allowing to assemble the digger with tractors with suspension category 1 (\varnothing 22mm stud) or category 2 (\varnothing 28 mm stud). The machine is mainly intended for digging potatoes from a single row, but other root crops and vegetables can also be harvested with it. The machine can be used on light and moderately compact soils with a small amount of stones and with comminuted plant residuals on flat lands and sloping terrains up to 8.5°.

The digger penetrates the ridge picking up the soil along with the potatoes, then the soil is sifted through the sifting conveyor while the potatoes are moved backwards. Potato tubers from the sifting strip fall from the back of the strip to the chute grid and are arranged into a narrow strip behind the digger. This arrangement of potatoes allows another working travel without damaging the dug potatoes.

The digger can be used for harvesting root crops such as onions, carrots, etc.

3. SAFETY AND WARNING REMARKS

3.1. Symbols: meaning and use

This instruction manual uses symbols to draw the attention of the reader and highlight some of the most important aspects that need to be addressed.



DANGER

Indicates danger with possible serious risk of accident. Failure to follow the instructions marked with this symbol may cause the risk of serious injury to the operator and/or persons nearby! ***Strictly follow these recommendations!***



NOTE

This symbol indicates the possibility of damage to the machine or object and orders the user to be careful.

This is an important tip to pay close attention to!



REMEMBER!

This symbol signifies a tip or note concerning key functions or useful information regarding the correct operation of the machine.

3.2. Intended use

The Z656-series single-row conveyor digger is designed, constructed and adapted to dig potatoes from one row on flat and way fields, on all types of soils maintained in good culture, without stones, with a humidity that allows for proper operation. Operating the digger can be carried out on slopes up to 8.5°. The single-row digger should cooperate with tractors with power of 25 HP or above, equipped with a standardized PTO and standard three-point linkage category I or II; the machine has studs with the diameters of Ø 22 mm and Ø 28 mm. The tractor should be equipped with standard front axis weights to maintain the required steering coefficient.



REMEMBER!

The provisions concerning the intended use and configuration provided for this machine are the only ones that are strictly acceptable. Do not use the machine for any purposes other than those intended for the machine. The provisions in this instruction manual do not replace obligations related to the applicable statutory regulations relating to safety standards and accident prevention, but only summarize them.

3.3. Residual risk description

Residual risk results from wrong or improper behaviour of the digger's operator. The greatest danger can occur when carrying out the following:

- handling the digger by minor as well as persons not familiar with the instruction manual or not authorized to drive an agricultural tractor,
- handling the digger by persons in a state of illness, in the state indicating alcohol consumption or after taking drugs,
- transport and work without proper precautions,
- assembling the digger with the tractor while the operator stays between the machine and the tractor when the tractor engine is switched on,
- operating if there are people or animals within reach of tractor + machine assembly,
- servicing and adjustment work on the digger if the tractor engine is switched on and the machine is not secured against falling.

When describing the risk of residual digger, the digger is considered as a machine that has been designed and manufactured since the start of production according to the state of the art.

3.4. Residual risk assessment

When using the digger, the danger and residual risk may be minimized if the following recommendations are observed:

- careful reading of the instruction manual,
- it is forbidden to stay on the digger during work and transport,
- it is forbidden to stay between the tractor and the digger if the tractor engine is running,
- all adjustment, maintenance and lubrication operations must be carried out on the digger only with the tractor engine switched off,
- repairing the digger carried out by trained personnel only,
- operating the machine by persons authorized to drive agricultural tractors and familiar with the instruction manual of the machine,
- when repairing the machine, if the machine is lifted as necessary, it must be protected from falling, e.g. by means of a wooden block.
- securing the digger against the access of children.

Although **BOMET**[®] takes responsibility for the design and construction to eliminate the danger, some of the risk factors during the operation of the conveyor are unavoidable.

⚠1) Danger of hooking or injury caused by the edges of the frame or a sharp end of the blades and digger chute grid during the assembly or changing the position from transport to working and vice versa.

⚠2) Danger of injury or abrasion caused by machine components during handling or adjustment due to the operator's incorrect position during these operations.

⚠3) Danger of overturning the machine during storage or transport. During storage, the digger should stand on a flat surface on the support wheels and blades for stability. The digger should only be assembled with tractor classes recommended by the manufacturer.

⚠4) Danger of pulling by rotating drive components. Keep a safe distance when the rotating components are moving. The operator and bystanders should not approach the machine during work.

⚠5) Danger of throwing out stones by the sifting conveyor during work. Take special care and safe distance when operating the machine. The operator and bystanders should not approach the machine during work.

3.5. Occupational health and safety provisions

	NOTE To avoid danger, read this instruction manual carefully before operating the digger and observe the following provisions and precautions concerning dangers and risks:
---	---

3.5.1. General provisions

- In addition to this instruction manual, traffic regulations as well as health and safety provisions must be observed.
- Warning signs (pictograms) on the digger provide safety tips for the user and third parties as well as help prevent accidents.
- When travelling on public roads, the provisions of the Road Traffic Code must be observed.

- It is recommended to work with a tractor equipped with a cab or a protective frame.
- Before each travel, make sure all digger components are in good condition. Any defects should be repaired immediately and possible shortcomings removed.
- Avoid staying in the digger's work area.
- Before leaving the tractor cab and before any work carried out on the digger, turn off the tractor engine and pull out the ignition key.
- Keep the digger in a dry room on a hard and flat surface. Take special care when lowering the digger to the ground. Danger of injury!!!

3.5.2. Machine assembly

- Take special care when assembling the digger to the tractor and when disassembling it.
- It is forbidden to stay between the digger and the tractor while performing any operation with a lever operating the hydraulic system.
- When assembling the digger with the tractor, it is forbidden to stay between the machine and the tractor when the tractor engine is running.
- When carrying out any servicing operations on the digger, the engine must be immobilized, the ignition key removed and the handbrake engaged.
- The digger's suspension system bolt securing should be carried out only with the use of typical securing aids in the form of cotter pins.
- The digger should only be assembled with tractors from the recommended classes, equipped with front axis weights.
- The digger can be operated by a person authorized to drive agricultural tractors.
- When assembling, observe the minimum tractor front load.



NOTE

Operating with a tractor of a different class than the one recommended by the manufacturer can result in a risk of stability loss in operation or standstill. The front axis load must not be less than 20% of its own weight.

3.5.3. Machine operation

- The digger can be operated by a person authorized to drive agricultural tractors and familiar with the instruction manual.
- Do not allow bystanders or persons not familiar with the instruction manual to operate the digger.
- Do not allow children or persons after consuming alcohol to operate the digger.
- The digger should be raised on the tractor's three-point linkage gently, without jerking or vibration.
- **Working with the digger without the drive shaft guard is strictly forbidden.**
- Operating the digger on slopes exceeding 8.5° is forbidden.
- After leaving the tractor, the operator should leave the digger in the lowered position.
- Use only articulated telescopic shafts with complete guards and CE marking for the digger's drive.
- Removal of the clogs can be carried out when the machine is lowered to the ground, the articulated telescopic shaft and the tractor engine are switched off and the ignition key is removed.
- When removing the clogs, if necessary, use special tools and secure the raised digger against falling with a support e.g. wooden block.
- Do not use tractor reverse gear during operation while the machine is in working position.
- All maintenance operations (lubrication, repair, cleaning, etc.) must be carried out with the digger lowered to the ground, the articulated telescopic shaft and the tractor engine switched off, the ignition key removed and the parking brake applied.
- Persons operating agricultural equipment should have work wear, footwear and personal protective equipment according to the occurring dangers.

3.5.4. Machine transport

- The transport of the digger on the means of transport from the manufacturer to the seller or customer is described in detail in the “Transport on public roads” section. Remember about safety rules during loading and proper immobilization of the digger on the car trailer. Hooking points for ropes or chains are marked with pictograms.
- The digger transported on the tractor’s three-point linkage on public roads must be equipped with portable light and warning devices and a triangular sign for low-speed vehicles, mounted in special holders in the back of the digger's frame, see “Transport on public roads” section for details.
- It is forbidden to carry persons or objects on a frame or in the sifting baskets of the digger.
- Pay attention to the overlap of the machine and to the rigid connection to the tractor, especially while reversing during operation and turning during transport.
- Take special care when turning a tractor with a suspended digger both during transport as well as during reversions in the field, especially if there people or objects nearby.
- The speed of the tractor with the digger during transport must not exceed:
 - when travelling on paved roads with flat surface - 15 km/h,
 - when travelling on country roads - 10 km/h.

3.5.5. Storage of the machine

- Disconnecting the digger from the tractor can only take place after the articulated telescopic shaft is switched off and the tractor motor is stopped, the ignition key is removed and the parking brake is engaged.
- Keep the digger in a dry room on a hard and flat surface. Take special care when lowering the digger to the ground; there is a danger of injury or crushing!!!
- During storage, the digger should stand on a flat surface on the support wheels and blades for stability.
- Storage of the digger should be carried out where there is no chance of accidental injury to people or animals, on a flat surface, preferably under roofing.
- The conveyor digger must be stored in a clean condition.



DANGER!

Watch out for the sharp edges – there is a possibility of injury; be careful when carrying out activities around the digger.

3.5.6. Other recommendations

- Do not use the digger for any other purposes than those specified in the instruction manual.



NOTE

Failure to comply with the above provisions may pose a risk to the operator and bystanders as well as damage to the digger. The user of the machine is solely responsible for any damage resulting from non-compliance to the above provisions.

3.6. Compliance with standards

The machine is designed and manufactured in accordance with the safety standards in the machinery industry valid on the date of introducing the suspended digger on the market. In particular, the following legal acts and standards were taken into consideration:

- 2006/42/EC - Machinery Safety Directive Implemented by the Ordinance of the Minister of Economy of 21.10.2008 (Journal of Laws No. 199, item 1228).
- PN-EN ISO 12100:2012P – Safety Of Machinery - Basic Concepts, General Principles For Design Assessment and Reduction of Risks
- PN-EN ISO 4254-1:2016E – Agricultural Machinery - Safety - Part 1: General Requirements . (org)

- PN-ISO 730-1:1996P – Agricultural Wheeled Tractors - Rear-mounted Three-point Linkage - Part 1: Categories 1, 2, 3 And 4
- PN-R-02001-01:1993 – Tractors And Machinery For Agriculture And Forestry - Technical Means For Ensuring Safety - General
- PN-ISO 2332:1998P – Agricultural Tractors And Machinery - Connection Of Implements Via Three-point Linkage - Clearance Zone Around Implement
- PN-ISO 3600:1998P – Tractors, Machinery For Agriculture And Forestry, Powered Lawn And Garden Equipment - Operator's Manuals - Content And Presentation
- PN-ISO 11684:1998P – Tractors, Machinery For Agriculture And Forestry, Powered Lawn And Garden Equipment - Safety Signs And Hazard Pictorials - General Principles

3.7. Manufacturer responsibility and warranty

As regards the machine described in this manual, **BOMET**[®] does not recognize any civil liability in the event of:

- using the machine in an improper way or incompatible with the manufacturer's instructions,
- using the machine in a manner violating national laws relating to safety and prevention of accidents,
- failure to observe or comply with the provisions of this instruction manual,
- making unauthorized changes to the machine,
- using the machine by untrained personnel,
- using spare parts that are not original parts.

As long as the buyer wants to use the warranty, they should strictly follow the instructions and recommendations provided in this manual, especially:

- they should only work within the stated operating ranges of the machine,
- they should always carry out unchanged and careful maintenance,
- only operators with the appropriate skills and qualifications are allowed to use the machine,
- only original spare parts recommended by the manufacturer should be used.

3.8. Noise and vibrations

When working with a conveyor digger, there is no risk to the operator due to noise contributing to hearing loss as the driver's workplace is located in the tractor's cab. The sound pressure level was measured at the standstill of the machine, according to Annex B of PN-EN ISO 4254-1:2013-08E standard; the noise level amounted to 80 dB (A) at a nominal speed of the tractor's engine.

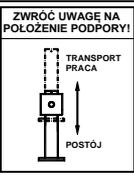
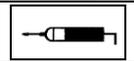
When digging, there are no vibration hazards as the operator's workplace is located in the tractor's cab, where the seat is cushioned and ergonomically shaped in a proper way.

3.9. Safety signs and inscriptions

The Z656-series single-row conveyor digger from **BOMET**[®] is equipped with all devices that ensure safe operation. In case of dangerous locations impossible to be fully protected due to the correct operation of the digger, there are warning signs - pictograms present in order to indicate the possibility of danger and provide a way of avoiding it.

Table 1 lists all pictograms located on the machine and their meanings. Safety pictograms should be protected from being lost or losing legibility. Lost or illegible signs and inscriptions should be replaced with new ones. It is required that new assemblies used during repairs are marked with all safety marks provided by the manufacturer. The pictograms can be purchased by writing to the manufacturer's address or by sending an e-mail, specifying the number of the sign (acc. to Table 1) and the instruction manual's version and year of issue.

Table 1. Safety signs and inscriptions

No	Pictogram	Meaning	Place of location
1	2	3	4
1.	(Rated plate)	Rated plate	In front of the frame, on the left side
2.		Note! Please read the instruction manual before working with the machine.	In the front, on the three-point linkage stand
3.		Note! Turn off the engine and remove the ignition key before servicing.	In the front, on the three-point linkage stand
4.		Do not occupy space near the lifter's linkage while handling the lifter.	In the front, on the three-point linkage stand
5.		Danger of leg injury. Keep a safe distance from the sharp edges of the blades.	On digger frame
6.		Note! Do not touch the machine components before stopping of all assemblies.	On digger frame
7.		Danger of hand injury. Keep a safe distance from the sharp edges of the blades.	On digger frame
8.		Danger of hand crushing. Do not reach the crushing area if the components can move.	On the digger frame, at the rocker levers
9.		Watch out for thrown out objects e.g. stones. Keep a safe distance from the machine.	On digger frame
10.		Pay attention to the position of the support! Position of the support during stoppage and during transport and operation of the machine	On the frame, near the support
11.		Marking of the place of the hooks for loading.	On digger frame
12.		Marking of locations for lubrication	On digger frame
13.		Symbol of permissible transport speed	In the back, on the drive shaft guard
14.		Information on PTO rotational speed and direction of rotation.	On power input connection guard
15.		Company logo	On digger frame

4. USAGE INFORMATION

4.1. General information

The Z656 conveyor digger is produced as a single-row machine suspended on a three-point linkage of the tractor. The single-row conveyor digger is suitable for operation on terrain slopes of up to 8.5 and can cooperate with tractors with 25 HP or above, equipped with a standardized PTO (see Technical specification - Table 4) and equipped with standard wheel weights.

4.2. Construction and operation of the machine

The suspended single-row conveyor digger (figure 1) is an agricultural machine with a compact and simple construction, reliable and easy to use.

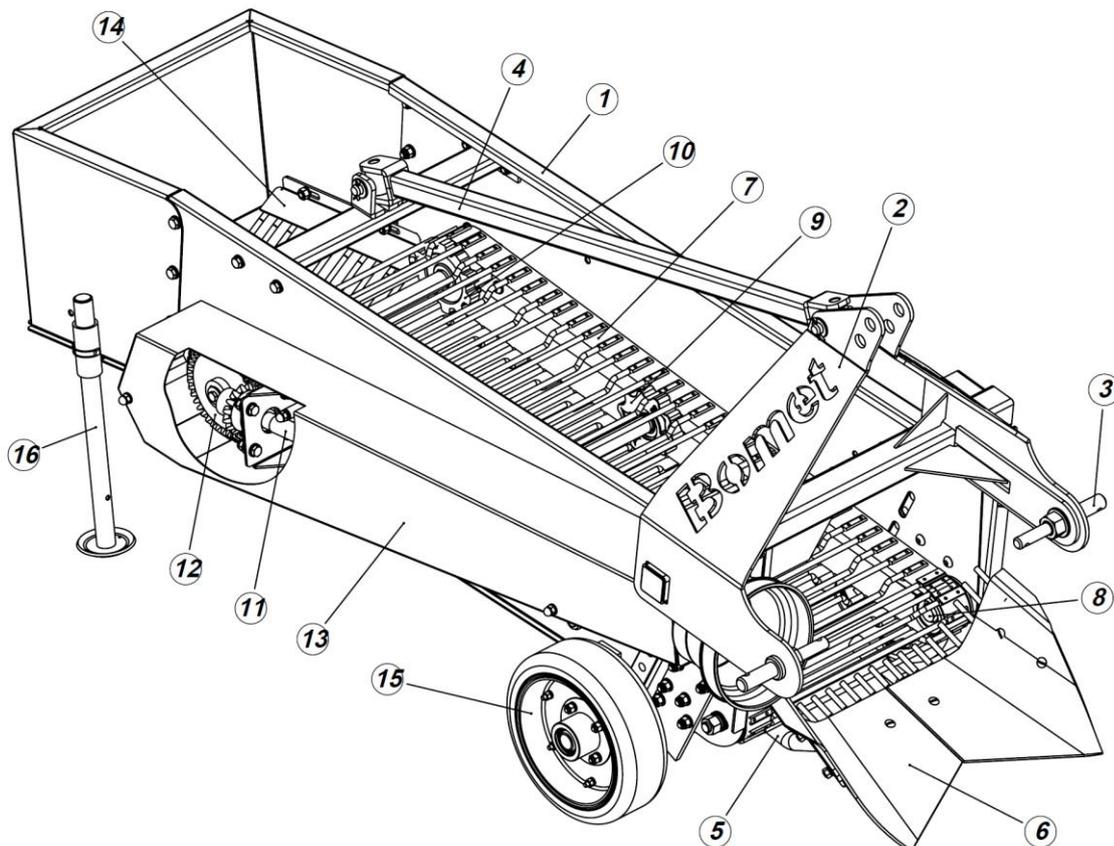


Figure 1. Single-row conveyor digger: 1 - frame, 2 - three-point linkage stand, 3 - suspension axis stud, 4 - extractor, 5 - blade holder, 6 - blade, 7 - sifting conveyor, 8 - tensioning roller, 9 - shaker, 10 - drive roller, 11 - drive shaft, 12 - angular gear drive, 13 - drive shaft guard, 14 - chute grid, 15 - support wheel, 16 - support

The basic component of the machine is the welded frame (1) to which the remaining parts of the machine are attached. In front of the frame there is a three-point linkage with a suspension stand (2), which has the suspension axis studs (3) mounted in the bottom part, compliant with suspension category I or II. Stiffening of the frame structure of the digger is provided with a screwed extractor (4). A two-piece blade (6) is mounted on the special holder in the front part (5). The profiled blade shape ensures the best picking up of the ridge along with the potatoes. A rod sifting conveyor (7) is located behind the blade. The sifting conveyor consists of rods assembled on fabric-rubber strips. The conveyor in the front part is supported by two tensioning rollers (8), the shaker is located in the central part (9), and drive gear rollers are in the rear part (10). The main drive shaft (11) of the digger carries the drive through the articulated telescopic shaft from the tractor's PTO to the angular gear (12) and onto the drive rollers. The drive shaft is protected against touching with the metal guard (13).

A chute grid (14) is installed in the rear of the frame, which arranges the dug tubers into the longitudinal shaft beyond the digger to allow for another free travel without damaging the dug potatoes.

In the front of the digger, the support wheels (15) mounted on the guides are used for leaping adjustment of the ploughing depth. In the rear of the digger there is a support (16) ensuring the stability of the machine during storage. The holders for mounting portable light and warning signs and a triangular sign for low-speed vehicles are also attached to the frame in the rear of the digger.

4.3. Equipment and accessories

The manufacturer delivers the digger for sale in the assembled state. Together with the machine, the manufacturer provides: an instruction manual with a spare parts catalogue and a warranty card. The standard equipment of the machine **does not include**: articulated telescopic shaft, portable light and warning devices and a triangular sign for low-speed vehicles; they can be purchased in agricultural equipment stores.



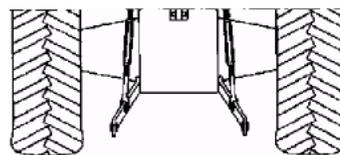
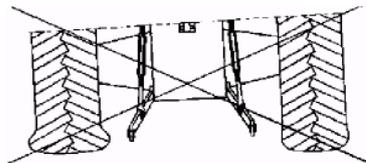
REMEMBER!

The instruction manual with the spare parts catalogue constitutes the basic equipment of the digger.

Each operator of the digger should have effective light and warning signs and a triangular sign for low-speed vehicles (see the description of the signs in the "Transport" chapter). Failure to install them for transport may cause an accident. The user of the machine is solely responsible for any damage resulting from the accident.

4.4. Preparing the tractor for work

Preparing the tractor to work with the digger consists in checking its general effectiveness in accordance with the instruction manual of the tractor (pay special attention to the performance of the suspension system). In addition, the components that prevent the suspension of the machine and its operation must be removed from the tractor. The digger should be assembled with the recommended tractor classes equipped with standard front axis and rear wheel weights according to the specifications given in the tractor's technical characteristics. The air pressure, especially in the rear tires of the tractor, should be the same in both wheels and in accordance with the instruction manual of the tractor!



The lower linkage of the tractor's suspension should be lowered to the same height prior to the suspension of the machine (distance of joints from the ground min. 200 mm). Linkage set at the same height from the ground makes it easy to suspend the digger on the tractor.

4.5. Preparing the digger for work



NOTE

It is forbidden for the operator to stay between the tractor and the digger when the tractor engine is running.

Preparing the digger to work in season and after the storage period (e.g. after winter) consists in checking the technical condition of the digger and, above all, the durability of the connections between the work components and the frame. In case of damage or wear of

components, replace them with new or reconditioned ones. Otherwise, this may result in reduced machine performance.

Before each start of the digger, the following actions must be carried out:

- check the screw connections; if any loosening is found, tighten the nuts (pay special attention to the screws of bearing brackets or setting gears).
- check the strength of bolt connections,
- check the condition of the blades,
- check the condition of the sifting conveyor,
- check the condition of the bearings on which the tensioners, shakers and conveyor belt drive are mounted,
- check the condition of welds on the frame and other welded parts of the machine,
- lubricate the digger as recommended (see "Lubrication instruction" section).



NOTE

All maintenance and inspection operations on the digger should be carried out prior to mounting it on the tractor.

4.6. Suspending the digger on the tractor

To suspend the digger on a tractor, carry out the following actions:

- dismantle the drawbar for tools from the bottom linkage of the tractor's three-point linkage,
- carefully drive the tractor close enough to the machine frame,
- **switch off the tractor engine, remove the ignition key and apply the handbrake,**
- put the tractor's lower linkage on the digger's studs and secure with standard cotter pins,
- connect the upper link of the tractor with the bolt to the digger frame stand and secure with a standard cotter pin,
- slightly tighten the chain of the tractor's lower linkage, keeping the symmetry of the digger's suspension in relation to the tractor,
- connect the digger to the PTO of the tractor with the articulated telescopic shaft, secure the shaft's guards against rotation by fastening the chains,
- mount portable light and warning signs and a sign for low-speed vehicles,
- raise the digger above the minimum transport clearance (250mm) and raise the support to the transport position.



NOTE

It is forbidden to assemble the machine with the tractor while the tractor engine is running. It is forbidden to use other components than recommended by the manufacturer to protect the suspension system.



NOTE

Take special care when assembling the digger, do not occupy space between the digger and the tractor.

Disassembly of the conveyor digger from the tractor takes place in the reverse order; remember to leave the machine on a flat and level ground.

4.7. Adjustments and settings of the digger

The correct and good quality of operation of the digger depends on the correct levelling of the digger and then on the setting of the blade penetration and its angle. When starting work, check the correctness of settings at a short section and correct them if necessary.

Transverse levelling is carried out by means of the right hanger of the tractor's suspension system. After adjusting, the digger frame visible from the rear should be set horizontally after reaching full working depth.

Adjustment of the ploughing depth is obtained by setting the support wheels at the same level on the right and left at the appropriate height. The level of penetration should be

sufficient so that all potatoes are dug without damage yet that the plough does not pick up excessive amounts of soil at the same time. The excessive amount of soil in the baskets makes it difficult to sift the potatoes.

Adjustment of the ploughing angle is obtained by elongation or shortening of the central connector. By shortening the connector, the angle of entry of the plough into the soil is increase, and by elongating the connector, this angle is decreased. Remember that changing the working angle of the blade also changes the depth of ploughing, so the optimum operation setting of the blade must be found. However, please note and determine the length of the central connector so that there is room for sifted soil below the sifting conveyor.

Tension adjustment of the conveyor is carried out by moving the tensioners in the treads after loosening the mounting screws.

Setting the chute grid, depending on which side the digging of the ridge takes place, the chute grid should be mounted on the left or right side of the digger so that the potatoes after digging are laid as far away from the ridges not dug yet as possible.



REMEMBER!

A single-row conveyor digger does not have soil sifting intensity adjustment. The conveyor in the central part is shaken with elliptical shakers.



WARNING

It is forbidden to make adjustments of the digger when the tractor engine is operating. It is forbidden for the operator to stay between the tractor and the digger when the tractor engine is running.

4.8. Operation of the digger



NOTE

It is absolutely forbidden to operate the digger without guards. It is recommended to use a CE marked articulated telescopic shaft.

The best results will be obtained if the field is pre-cleaned from plant residuals with small amount of stones and weed. Also remember that the best soil sifting is obtained at average soil humidity. Once the adjustment under 4.7 is carried out, the operator can start work.



IMPORTANT

The best effects are obtained on light moderately compact soils with a small amount of stones and weed as well as plant residuals cut.

The field should be divided into sections, optimally up to 30 ridges, and digging should be carried out with “whorl” driving. When entering the ridge, lower the digger into the working position, and at the end of the ridge, lift the machine to the transport position by means of a hydraulic lift. During operation, the machine should be guided in a straight line.



WARNING

Any clogs occurring during the operation of the digger requiring intervention should be removed when the tractor is stopped, the digger is lowered to the ground or the support, the tractor engine is switched off, and the parking brake is applied.

If the machine is clogged and the components have not cleaned automatically, stop the tractor, switch off the tractor engine, and then remove the accumulated contamination manually or by using special tools. If the digger must be lifted to remove the contamination, provide a support securing against a fall (e.g. wooden block). Particular attention should be paid to the loosening of the screw connections during operation, especially during the first period of use. Therefore, it is necessary to check and tighten the screw connections after the tractor has stopped and the engine is switched off.

**NOTE**

The reversions should be carried out gently with the raised digger without the use of the independent tractor's brake. Take special care when there are people or objects within reach of the digger.

**NOTE**

Do not use tractor reverse gear during operation while the machine is in working position. The digger should be raised gently, without jerking or vibration.

**NOTE**

It is unacceptable to leave the digger on a slope or other sloping terrain without securing it against automatic sliding.

5. TECHNICAL OPERATION

To ensure long-term and trouble-free operation of the digger, check the condition of the screw connections and tighten them if loosened. Thoroughly clean the digger after work. Worn or damaged digger working components should be replaced observing the following recommendations:

- All worn digger parts should be replaced at the appropriate time,
- For replacement, use only original parts ensuring high quality; this is one of the conditions for maintaining the validity of the warranty.

5.1. Tips for maintaining the digger

Each time after work, the digger should be cleaned of soil and other contamination, especially the sifting conveyor and the blade should be cleaned from the remains of the plant residuals and soil. Then carry out an inspection of the connections of parts and assemblies. Digger maintenance involves inspecting the condition of the ploughing blade, sifting conveyor, shaft with shakers and drive shaft, as well as checking the condition of screw and bolt connections and the condition of welds. All loose screw connections must be tightened. The bolts and studs of the digger's suspension system should not be lubricated and should be maintained clean and dry. Light and warning signs and a triangular sign for low-speed vehicles must be kept clean.

**NOTE**

All servicing should be carried out when the digger is lowered to the ground and the tractor engine is switched off, using appropriate personal protective equipment (e.g. gloves).

5.2. Post-seasonal maintenance of the digger

After the season of work has ended, the digger should be thoroughly cleaned of contamination and washed. Worn or damaged digger working components should be replaced and all loosened screw connections should be tightened. The defects of the coating should be cleaned and topped up with fresh protective paint, then the digger should be greased in accordance with the lubrication instruction (see section 5.6).

5.3. Storage of the digger

The digger should be stored under roofing on a flat hard surface. In the absence of a roofed space, the machine may be stored outdoors. After disconnecting the digger from the tractor, the machine should be supported on the support wheels in the front and on the support in the rear.

**NOTE**

The digger should be stored in a location that is not hazardous to people and the environment.

During long-term storage of the machine outdoors, maintenance of the working components should be repeated in case of rinsing the maintenance layer. **Light and warning signs and a triangular sign for low-speed vehicles must be dismantled from the digger and placed in a dry room protecting against damage.**

5.4. Replacement of working components

During the use of the conveyor digger, wear and tear of the working components (i.e. ploughing blades) occurs. Make sure that the blades are in good working order, without deformations and with proper sharpness. To replace the work components, lift the digger suspended on the tractor to the transport position. Secure the machine against falling by providing a sturdy support under the frame to prevent it from tipping over. After setting the support, lower the digger until it rests on the support, then switch off the tractor engine, remove the ignition key, apply the parking brake, and secure one the rear wheels with wedges against moving. Check the stability of the tractor - digger assembly before replacing the working components.



NOTE

Disassembly and assembly of the worn parts should be carried out on a hard level surface after lowering the digger to the ground or supports.

Replacement of plough blades

- the digger frame should rest on the support for the blade to be located above the surface,
- unscrew the screws mounting the blade to the frame,
- remove the worn blades,
- mount the new blades,
- tighten the screws mounting the blades.

Sifting conveyor replacement

- the digger frame should rest on the support to allow easy access to the conveyor,
- loosen the sifting conveyor tensioner's screws,
- dismantle one support wheel to allow removal of the rod connecting the conveyor,
- remove the rod connecting the conveyor through the support wheel's adjustment tread hole,
- dismantle the sifting conveyor.

Rod replacement in the sifting conveyor

- after removing the conveyor from the digger (see previous section),
- grind the rivet nib and knock out the rivet,
- remove the damaged rod,
- install a new rod of the same diameter by riveting,
- mount the belt in the digger, put the rod connecting the conveyor,
- tighten the sifting conveyor.



REMEMBER!

The working are not subject to warranty in the event of wear or damage not caused by the manufacturer.



NOTE

When replacing working parts, use appropriate tools and protective gloves. When replacing working parts, Use the spare parts catalogue where the diagram shows the assembly of the digging components.

5.5. Lubrication instructions

Basic maintenance includes observing lubrication periods and using appropriate lubricant grades. Before lubrication, all lubrication points must be cleaned from contamination. The digger should be lubricated according to Table 2, where the lubrication points are marked with the corresponding pictograms.

Table 2. Digger lubricating points

Lubricating point no	Place of lubrication	Lubrication frequency	Lubricant type
1	Drive axis bearings	every 40 hrs	LT-43 lubricant
2	Shaker axis bearings	every 40 hrs	LT-43 lubricant
5	Support wheel hubs	every 40 hrs	LT-43 lubricant
6	Articulated telescopic shaft	every 40 hrs	LT-43 lubricant

5.6. Detecting and removing malfunctions

During operation, the following malfunctions may occur, adversely affecting the digger performance, increasing the cost of the operation, and leading to damage of both the digger and the tractor.

Table 3. Table of malfunction causes and their removing methods

Symptoms	Cause	Removing method
The front of the tractor tends lift up	Too low front load. IMPORTANT: The front axis load must not be less than 0.2% of its own weight.	Check if the tractor's class complies with the recommendations in the instruction manual. If not - change the tractor. If yes - check and add the appropriate number of front axis weights if necessary.
Dug potatoes or vegetables are damaged	The digger works too shallowly	Increase the working depth of the digger by adjusting the support wheels.
The digger does not penetrate	Damaged or worn blades	Check and replace blades
	Blades set too high	Check and adjust the working depth
	Incorrect longitudinal levelling	Check and level the digger, adjusting with the central switch
Not all the soil is sifted	Damaged shaker of the conveyor	Check and replace with a new shaker if necessary
Lateral pivoting movements of the digger	Improperly adjusted side linkage buckles	Check and adjust



REMEMBER!

Operating the machine that is malfunctioning or improperly adjusted can lead to serious hazards for both the operator and bystanders. The detected malfunctions and damage should be removed immediately.

6. TRANSPORT ON PUBLIC ROADS

6.1. Transporting the digger on transport means

The diggers can be transported from the manufacturer to the dealer or the customer on the transport trailer. The transported diggers are assembled and ready for use. The diggers are loaded onto car trailers with lifting equipment when ropes or chains are installed at locations designated with pictograms by the manufacturer. The diggers should be immobilized on the means of transport; the person transporting is responsible for the correct attachment of the machine.



NOTE

When loading the digger on the means of transport, ropes or chains should be hooked at locations designated with pictograms by the manufacturer.

6.2. Transport of the digger to the three-point linkage of the tractor

The digger is suitable for transport on public roads at the three-point linkage of the tractor. When transporting, the machine should be lifted with the three-point linkage of the tractor so that the clearance is min. 25 cm. ***If during transport to the tractor's three-point linkage the digger obstructs the lights of the tractor***, the digger must be equipped with portable light and warning signs fitted with light units in the rear (red positioning, stop, indicator and red reflective). If the lights of the tractor are visible, it is enough to install a triangular sign for low-speed vehicles on the machine as well as portable light and warning signs with red positioning and red reflective lights. The portable light devices are connected to the tractor installation by means of a connecting cord with a 7-pole plug. In addition, the tractor on which the digger is suspended should meet the conditions for admission to public road traffic in accordance with the requirements of the Road Traffic Code.

NOTE !



It is forbidden to travel on public roads without proper marking (Ordinance of the Minister of Infrastructure of 31.12.2002, Journal of Laws No. 32/2003, item 262 as amended). The digger transported on public roads on the tractor's three-point linkage should be equipped portable light and warning signs (if necessary) and a triangular sign for low-speed vehicles attached to special holders mounted on the machine.

NOTE



When making a turn, attention should be paid to the "overlap" of the machine. It is strictly forbidden to carry people and loads on the digger.

7. DISASSEMBLY AND TOTALLING

NOTE



All dismantling and totalling operations should be carried out on a hard level surface after lowering the digger to the ground or support using appropriate personal protective equipment (e.g. gloves, goggles).

In case of permanent damage to the frame and other supporting components causing deterioration of functionality and safety of use, the disassembly and totalling of the digger must be carried out. The dismantling of the machine should be carried out by persons who are familiar with its construction, equipped with protective gloves and other personal protective equipment. These operations should be carried out when the machine is positioned on a level and hard surface.

NOTE



Disassemble the digger from the tractor before dismantling.

The disassembly should be carried out in the correct order according to the tables in the spare parts catalogue, avoiding the risk of crushing with the unscrewed parts. Take all precautions using protective gloves and effective working tools. All fastening components are made of standardized components adapted to metric keys. There are free spaces provided for the movement of the wrenches, ensuring free unscrewing and tightening of nuts and screws. In case of screws of the shackle mounting the working sections to the frame, use bent ring wrenches.

Due to the weight of digging components exceeding 20 kg (support frame, three-point linkage stand), the lifting equipment should be used during dismantling. During dismantling and totalling, the parts should be grouped by material type. The dismantled components should be grouped and transferred to scrap points.

NOTE



Lifting devices used during dismantling may be operated by a person with the appropriate authorizations and qualifications.

8. TECHNICAL CHARACTERISTICS

The technical specifications of the suspended single-row conveyor digger are shown in Table 4.

Table 4. Single-row conveyor digger technical characteristics

No	Specification	Units of measure	Manufacturer data
1.	Symbol	-	Z656
2.	Digger type	-	suspended
3.	Working width	-	single-row
4.	Ejection of potatoes	-	to the side
5.	Spacing of dug rows	mm	625 - 675
6.	Max. working depth	mm	200
7.	Machine weight	kg	245
8.	Dimensions in working position		
	- length	mm	2320
	- width	mm	1100
	- height	mm	1230
9.	Support wheels		
	- wheel spacing	mm	790
	- diameter of the wheels	mm	340
	- width of the wheels	mm	100
	- number of rods	pcs	64
	- connecting rod	pcs	1
10.	Sifting conveyor		
	- type	-	rod, smooth on fabric-rubber strips
	- width	mm	550
	- rod scale	mm	40
11.	Power demand (min.)	kW / HP	18 / 25
12.	Working speed	km/h	5
13.	Articulated telescopic shaft - min. torque *	Nm	300
14.	Articulated telescopic shaft - length min / max*	mm	L _{min} - 510, L _{max} - 790
15.	Articulated telescopic shaft speed	rpm	540
16.	Capacity	ha/h	up to 0.1

* - the articulated telescopic shaft is not included in the equipment of the digger. Use shafts with CE marking only.

The measurements of geometric values and weights given in the technical characteristics were carried out with an accuracy of 1%

SPARE PARTS CATALOGUE

How to use the catalogue.

The spare parts catalogue contains further assembly units for the single-row conveyor digger marked with appropriate numbers.

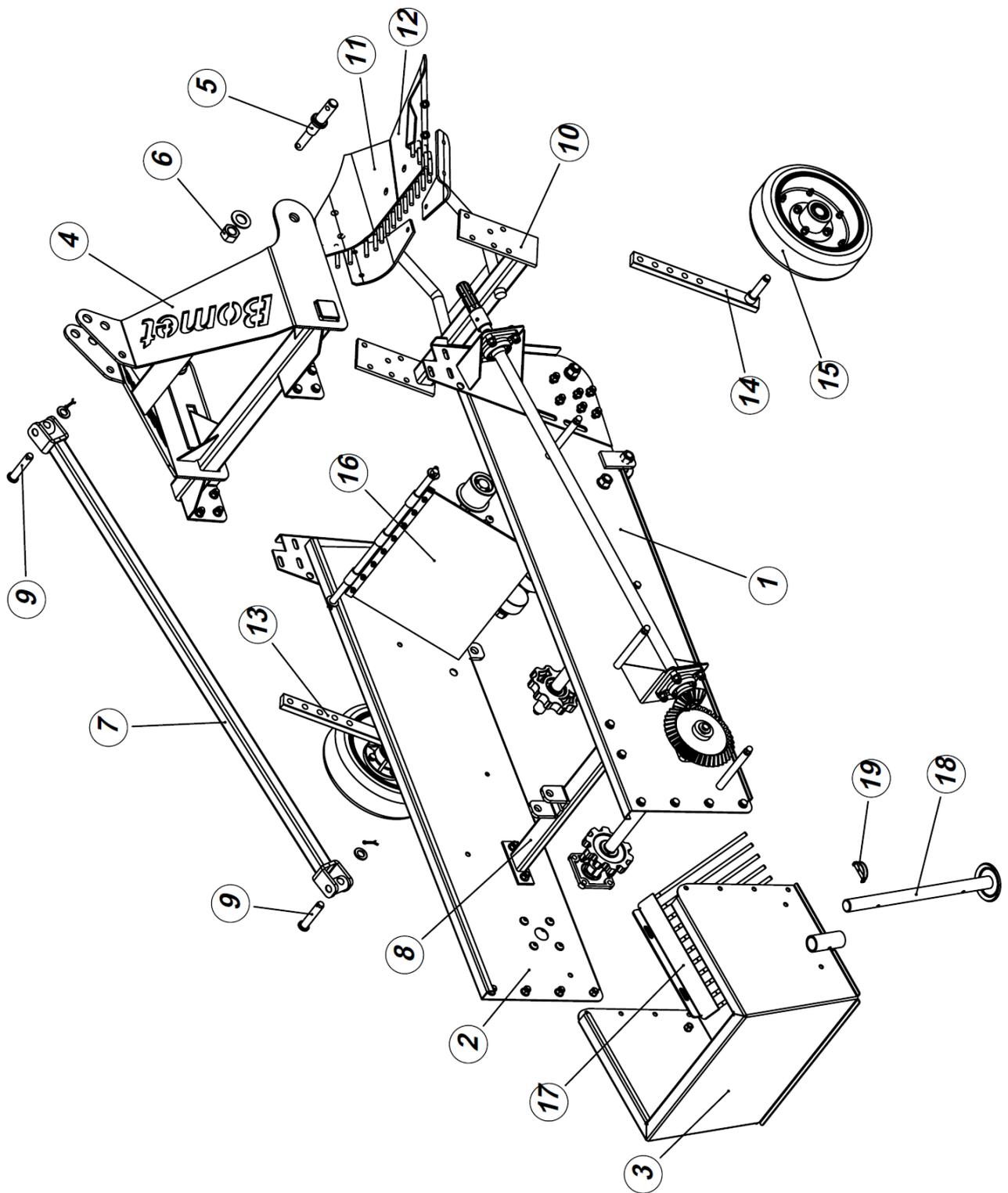
The catalogue should be used as follows:

- determine the affiliation of the replaced part to the appropriate mounting assembly according to the board,
- find the required part on the assembly board by referring to the link number from the assembly drawing.

Spare parts can be purchased from the manufacturer by writing to their address or contacting by phone; the following should be specified:

- detailed address of the ordering party,
- digger symbol,
- factory number of the digger,
- production year,
- instruction manual issue date,
- detailed name of the part or assembly,
- KTM symbol, spare part or standard number,
- number of pieces,
- payment terms.

All standardized components can be purchased in publicly available sale.



Board 1. Single-row conveyor digger - frame

Pos. in fig.	Part name	KTM symbol or standard number	Number of items Z656
1.	R welded side of the digger	6560-01-01	1
2.	L welded side of the digger	6560-01-02	1
3.	R welded rear	6560-01-03	1
4.	Welded three-point linkage tower	6560-01-04	1
5.	Double-sided stud cat. I and II	6560-01-05	2
6.	Nut M27	PN-EN ISO 4032:2013	2
7.	Welded extraction	6560-01-07	1
8.	Welded extraction bracket	6560-01-08	1
9.	Bolt D-20x100	6560-01-09	2
10.	Welded blade mounting holder	6560-01-10	1
11.	L blade	6560-01-11	1
12.	R blade	6560-01-12	1
13.	Support wheel set	6560-01-13	2
14.	Welded support wheel arm	6560-01-14	2
15.	Support wheel set	6560-01-15	2
16.	Cleaning rod set	6560-01-16	1
17.	Welded chute grid	6560-01-17	1
18.	Welded support	6560-01-18	1
19.	Agricultural pin with circle 8x50	6560-01-19	1

* L - left / R - right - the marking refers to the right and left blade and the rocker

Board 2. Single-row conveyor digger - drive

Pos. in fig.	Part name	KTM symbol or standard number	Number of items Z656
1.	Sifting conveyor b=550 set*	6560-02-01	1
2.	Tensioning metal roller set	6560-02-02	2
3.	Tensioning rubber roller set	6560-02-03	4
4.	Drive roller shaft	6560-02-04	1
5.	Drive roller set	6560-02-05	2
6.	Large gear wheel	6560-02-06	1
7.	Small gear wheel	6560-02-07	1
8.	Bearing bracket UCF206	SKF	4
9.	Shaker shaft	6560-02-09	1
10.	Shaker set	6560-02-10	2
11.	Main axis of the drive	6560-02-11	1
12.	Power input connection end set	6560-02-12	1
13.	Welded side guard	6560-02-13	1
14.	Guard spacer	6560-02-14	3
15.	Power input connection plastic guard	6560-02-15	1
16.	Side rubber cover of the conveyor	6560-02-16	2

* - the sifting conveyor's rods may be in rubber lagging; then, the rubber cover should be used

