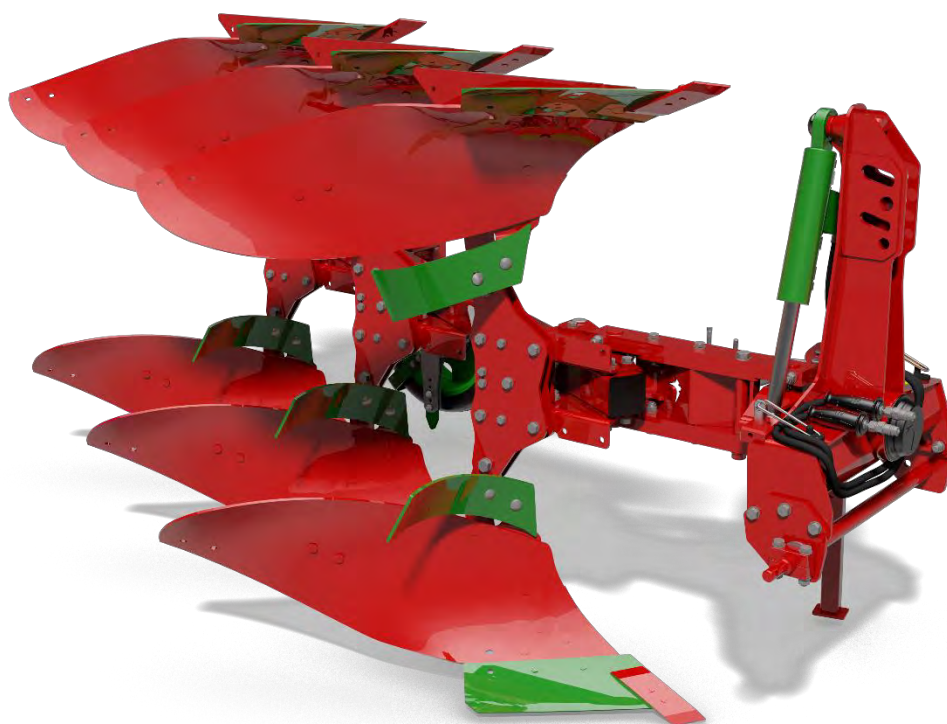


AGRO[®] MASZ

Instruction manual

Warranty certificate

Parts catalogue



SMALL ROTARY PLOUGH
POM2 POM3



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Address: **agro-masz.eu**

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Dear Customers!

Taking the opportunity to thank you for your interest in our offer and for the purchase made, we would like to ensure that the trust placed in us becomes the motivation for the whole team for further and more intensive work to improve the machines belonging to the ever increasing range of products offered by AGRO-MASZ.

In order to ensure the fullest presentation of the capabilities of our product, we created an instruction manual, which will clearly guide you step-by-step through the essential aspects of the technical construction of the machine and protect against adverse effects caused by incorrect operation.

Detailed knowledge of the provisions set forth in this instruction manual, which remains the basic piece of equipment of every machine, is necessary for its safe use for many years.

The instruction manual should be kept in a safe place and used properly throughout the entire period of the operation of the machine.

If it is lost or damaged, please order a new copy.

The new instruction manual can be ordered from the dealer of AGRO-MASZ-brand the machines or directly from the manufacturer.

It is also important to note that the instruction manual should be made available to the other user in case of sale or lending of the machine.

Every machine manufactured by AGRO-MASZ is also provided with a warranty certificate and parts catalogue, in which all elements of equipment of the machine are presented.

It should be kept in mind that the use of original spare parts only will ensure the proper functionality and long service lifetime of our product. The use of non-original and duplicated parts adversely affects its parameters.

We have put every effort to present you an easy-to-operate, solid and reliable product, with the belief that our cooperation with you will also be lasting and, as a result, it will allow us to develop together new solutions in order to facilitate and increase the level of productivity in agriculture.

Thank you for choosing our product and wish all joy in your work.

I. EC DECLARATION OF CONFORMITY FOR THE MACHINE

Manufacturer

AGRO-MASZ Paweł Nowak
Strzelce Małe 78
97-515 Masłowice

Machine

Name: Rotary plough.

Type/ Model:

Factory number:

Year of manufacture:

Application: bed free ploughing of medium and large depth.

The manufacturer hereby declares that the machine, to which the declaration relates, meets:

- all relevant provisions and regulations of Directive **2006/42/EC of the EUROPEAN PARLIAMENT and of the COUNCIL of 17 May 2006 on the machinery, and amending Directive 95/16/EC (Official Journal of the European Union L157 of 09.06.2006, page 24)** and **Ordinance of the Minister of Economy of 21 October 2008 on essential requirements for the machinery (Journal of Laws, No 199, item 1228)**;

- requirements of harmonized standards:

- EN ISO 4254-1:2016;
- EN ISO 12100: 2012;
- EN ISO 13857: 2010;

- other standards:

- ISO 3600: 1998;
- ISO 11684: 1998;


- Regulation of the Minister of Economy of 31 December 2002 on technical conditions applicable to vehicles and scope of the necessary equipment.

This Declaration shall become invalid if the machine is changed or redesigned without the written consent of the manufacturer.

Name, address of person authorized to prepare the technical documentation:

Mirosław Nowak, Strzelce Małe 78, 97-515 Masłowice

Strzelce Małe, 05.01.2015



Paweł Nowak – owner
(full name, signature of person
authorised to prepare the
declaration)

II. THE MACHINE IDENTIFICATION

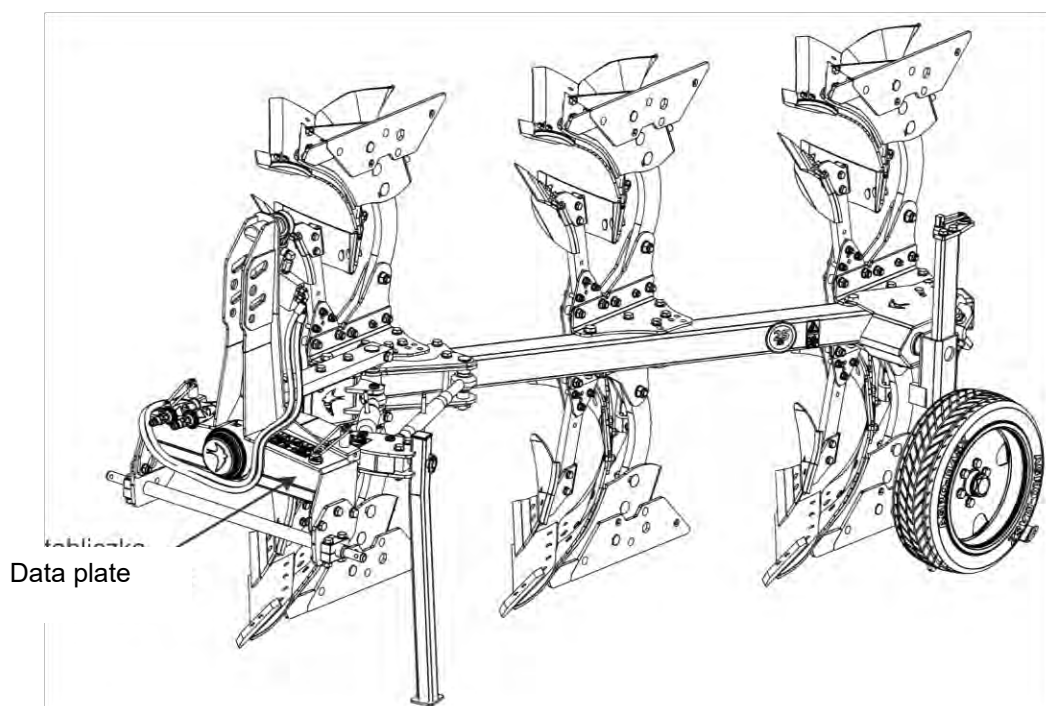
2.1. Name

Mounted rotary plough

2.2. Model symbol

POM2 – Small rotary plough, 2-furrow

POM3 – Small rotary plough, 3-furrow



Identification data can be found on data plate attached to the machine's frame by the three-point linkage.

2.3. Data plate

| | | | |
|-------------------------|---------------------------------|-------------------------|--------------------------------|
| AGRO-MASZ | | | |
| 97-515 Masłowice | | Strzelce Małe 78 | |
| Symbol | <input type="text"/> | Znak K.J. | <input type="text"/> |
| Symbol | | Certification mark | |
| Nr fabr. | <input type="text"/> | Masa | <input type="text"/> kg |
| Factory number | | Mass | |
| Rok prod. | 201 <input type="text"/> | CE | |
| Year of manufacture | | | |

THE MACHINE

The purchaser (the user) of the machine should confirm to have acquainted with warranty terms and information included in the Instruction Manual with his/her signature.

When the machine is being sold, the seller (dealer) should enter below the machine's symbol, factory number and year of manufacture in accordance with the data plate and include own data.

Machine symbol

Factory number

Year of manufacture

Date of sale

Seller Address.....

Tel. / Fax.....

Purchaser (User) Address

Tel. / Fax.....



NOTE! Remember the name and symbol of your machine. Always use this name and symbol in contact with the seller or the manufacturer.

2.4. Manufacturer data


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III. TABLE OF CONTENTS

| | |
|---|-----------|
| DEAR CUSTOMERS!..... | 3 |
| I. EC DECLARATION OF CONFORMITY FOR THE MACHINE..... | 5 |
| MANUFACTURER | 5 |
| MACHINE | 5 |
| II. THE MACHINE IDENTIFICATION | 6 |
| 2.1. NAME | 6 |
| 2.2. MODEL SYMBOL | 6 |
| 2.3. DATA PLATE..... | 6 |
| 2.4. MANUFACTURER DATA..... | 8 |
| III. TABLE OF CONTENTS..... | 9 |
| IV. INITIAL EXPLANATIONS..... | 11 |
| 4.1. DIRECTIONS IN THE INSTRUCTION MANUAL | 11 |
| 4.2. USER FEEDBACK | 11 |
| 4.3. RECOMMENDATIONS AND DESCRIPTIONS | 13 |
| 4.4. INTENDED USE | 13 |
| V. SAFETY NOTES..... | 14 |
| THE MENTIONED SAFETY REGULATIONS REFER TO THE PLOUGH. NOTWITHSTANDING, OBSERVE THE GENERAL SAFETY AND ACCIDENT PREVENTION RULES AS WELL AS ROAD TRAFFIC REGULATIONS. | 14 |
| 5.1. GENERAL SAFETY RULES | 14 |
| 5.2. WARNING PICTOGRAMS PLACED ON THE PLOUGH..... | 16 |
| 5.3. LOCATION OF WARNING LABELS ON THE MACHINE | 19 |
| 5.4. OTHER RISKS..... | 20 |
| 5.4.1. WIRING SYSTEM..... | 20 |
| 5.4.2. HYDRAULIC SYSTEM | 20 |
| 5.4.3. RESIDUAL ENERGY | 21 |
| 5.4.4. FOREIGN BODIES | 21 |
| 5.4.5. OTHER OBSTACLES..... | 21 |
| 5.5. OPERATOR'S OBLIGATIONS AND TRAINING..... | 22 |
| 5.5.1. OPERATOR'S OBLIGATIONS | 22 |
| 5.5.2. PERSONNEL TRAINING | 22 |
| 5.5.3. PERSONAL PROTECTIVE EQUIPMENT..... | 23 |
| 5.6. RISK ZONES..... | 23 |
| 5.7. RESIDUAL RISK..... | 24 |
| 5.7.1. DESCRIPTION OF RESIDUAL RISK | 24 |
| 5.7.2. RESIDUAL RISK ASSESSMENT | 24 |
| 5.8. STABILITY OF TRACTOR - PLOUGH ASSEMBLY | 25 |

| | |
|---|-----------|
| VI. GENERAL INFORMATION | 27 |
| 6.1. TECHNICAL DATA FOR POM PLOUGHS | 27 |
| 6.2. CONSTRUCTION OF PLOUGH | 28 |
| 6.3. CONSTRUCTIONAL CHANGES | 28 |
| VII. MAINTENANCE AND SERVICE | 29 |
| 7.1. PREPARATION OF THE TRACTOR TO WORK WITH THE PLOUGH | 29 |
| 7.1.1. TYRES | 29 |
| 7.1.2. WHEEL TRACK | 29 |
| 7.1.3. THREE-POINT LINKAGE | 30 |
| 7.1.4. HYDRAULIC SYSTEM | 30 |
| 7.1.5. FRONT AXLE LOAD | 31 |
| 7.2. PREPARATION OF THE PLOUGH | 31 |
| 7.2.1. MOUNTING THE PLOUGH ON THE TRACTOR | 32 |
| 7.3. START OF PLOUGHING | 33 |
| 7.3.1. UPPER ATTACHMENT POINT | 33 |
| 7.3.2. SPINDLES (BOTTLE SCREWS) | 33 |
| 7.3.3. BODIES | 34 |
| 7.3.4. MOULDBOARDS | 35 |
| 7.3.5. SUPPORT WHEEL | 35 |
| 7.3.6. ADJUSTMENT OF VERTICAL TILT | 37 |
| 7.3.7. ADJUSTMENT OF HORIZONTAL TILT | 37 |
| 7.4. PLOUGH ROTATION | 38 |
| 7.5. SAFETY DEVICES | 39 |
| VIII. TRANSPORT | 41 |
| 8.1. DELIVERY AND UNLOADING | 41 |
| 8.2. TRANSPORT – DRIVING ON PUBLIC ROADS | 42 |
| 8.2.1. SPEED | 42 |
| IX. MAINTENANCE | 43 |
| 9.1. LUBRICATION | 43 |
| 9.2. BOLT TIGHTENING | 45 |
| 9.3. INSTRUCTIONS FOR PROPER OPERATION | 46 |
| 9.4. DETACHMENT OF PLOUGH | 51 |
| 9.5. STORAGE | 52 |
| 9.6. REPLACEMENT OF PARTS | 52 |
| 9.7. DEFECTS AND THEIR ELIMINATION | 53 |
| 9.8. ENVIRONMENTAL PROTECTION | 55 |
| 9.9. NOISE AND VIBRATIONS | 55 |
| X. WARRANTY CERTIFICATE | 58 |
| 10.1. WARRANTY TERMS | 58 |
| 10.2. WARRANTY TABLE | 59 |
| 10.3. LIST OF SERVICE WORKS | 59 |

IV. INITIAL EXPLANATIONS

When you receive the machine, please make sure that there are no transport damages, and the machine is complete!

To avoid any misunderstanding, a complaint should be filed immediately. This instruction manual is delivered to the user of the machine at the point of sale. Getting familiar with its provisions and guidelines gives the operator an opportunity to conduct the safe and trouble-free operation of the machine. Failure to observe the provisions of the instruction manual can lead to an accident or the machine breakdown. This may result in the loss of the guarantee and warranty rights.

The instruction manual is provided with the parts catalogue, which is to enable the user to identify the parts and to purchase them in case of possible damage to the machine.

Before any use, check the machine and tractor, with which it is coupled, for work and transport safety.

The operator is responsible for his/her safety and the safety of persons that come into contact with the plough throughout the period of use, operation and storage.

Before using the plough, get acquainted with the instruction manual. Special attention should be paid to the danger warning signs and safety marks placed on the plough. They indicate important information relating to the risk specified in the instruction manual.

4.1. Directions in the instruction manual

The terms: "the left side" or "the right side" used in the instruction manual mean the sides on the left and right hand of the observer facing the direction of the machine travel, respectively.

REMEMBER! The AGRO-MASZ company assumes no responsibility for damage caused by any failure to observe the instruction manual.

In case of any concern or doubt about maintenance and operation, consult the authorised seller or manufacturer's sales department.

The seller is obliged to fill in the address of the contractor of the warranty service in the warranty certificate.

The company is developing its products and therefore reserves the right to introduce constructional and technological changes and modifications in the equipment.

4.2. User feedback

AGRO-MASZ will be grateful for sending any comments on the use and operation of the machine and on this instruction manual. Instruction manuals are regularly updated, but it is your feedback that enables us to jointly create a user-friendly instruction manual.

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INITIAL EXPLANATIONS

4.3. Recommendations and descriptions

The recommendations, referred to as: WARNING, ATTENTION, REMEMBER, are used in order to underline the importance of information.

WARNING! This indicates a possibility of danger, which if not avoided, can lead to cutting or heavier injuries to personnel operating the machine.

ATTENTION! This is used when there is a risk of damage to the machine.

REMEMBER! This is used with complementary information.



This symbol warns about the risk. Information included in the instruction manual and marked by this symbol is particularly important for user of the machine.

Descriptions to figures and diagrams are given next to or near them.

Procedures to be carried out by the machine's operator are given as enumeration:

- Operation 1
- Operation 2 ...



Service operations included herein, marked with this symbol should be carried out by a specialized service.

4.4. Intended use

Mounted rotary ploughs with POM are designed for bed free ploughing of medium and large depth on flat fields and fields with maximum inclination of 8,5°, using left and right bodies alternatively. Ploughs POM2, POM3 are suitable for cooperation with tractors of 40 to 80 HP power. The plough is fitted with safety devices of bodies by means of shear bolts and is intended only for works in agriculture for cultivation of non-stony fields. Plough should be used, operated and repaired only by personnel familiar with its construction, operation and safety procedures.

The scope of the use compliant with its purpose also includes:

- Observance of provisions of the instruction manual (widely understood regulations related to operation, maintenance, service, settings, repairs and performance),
- Observance of safety regulations, in particular, warning pictograms located on the machine and legal provisions of the country where the machine is operated,
- Use of original spare parts only,
- Observance of maximum permissible loads of the machine (also the recommendations of the manufacturer of the tractor, with which the machine is aggregated).

Any use of the machine other than the above, as recommended by the manufacturer, shall be considered as a misuse.

REMEMBER! Any arbitrary modifications introduced to the machine without consent of the manufacturer shall exempt the manufacturer from the responsibility for machine damages, personal injuries and other material losses.

V. SAFETY NOTES



REMEMBER! Before operation and use of the (tractor + plough) assembly, get acquainted with this instruction manual, the construction of the plough and its sub-assemblies, their functions, ranges and adjustment method, paying special attention to information on the work safety. During work it is too late for that!

The mentioned safety regulations refer to the plough. Notwithstanding, observe the general safety and accident prevention rules as well as road traffic regulations.



WARNING! Observance of the safety rules related to the use included in this instruction manual will allow avoiding personal accidents, damage or premature wear of the machine.

5.1. General safety rules

The below-mentioned safety regulations refer to the plough aggregated with the tractor. Notwithstanding, always observe general occupational health and safety rules and road traffic regulations.

- In addition to the recommendations included in this instruction manual, follow general occupational health and safety rules as well!
- Observe warning symbols placed on the machine. Their observance is for your own safety!
- The machine can be used only by adults who hold adequate qualifications to drive tractors, and are familiar with instruction manuals of both the plough, and the tractor.
- Use of the machine by minors, and children in particular, is forbidden.
- Before any start, check if the condition of the plough and tractor ensures traffic and work safety.
- The tractor cooperating with the plough must be equipped with ballast weights of the front axle. Balance of the tractor with the machine mounted, its manoeuvrability and braking capacity must be maintained. Observe the maximum permissible load per axle and transport dimensions.
- Stay of any personnel on the machine during work and transport is forbidden. Before operation, make sure that nearby the machine there are no bystanders. Pay special attention to children.
- Lever for the tractor hydraulic sections should be operated only from the driver's seat.
- Exercise particular caution when the machine is being connected to and disconnected from the tractor. Turn the tractor's engine off, remove the ignition key, and engage the hand brake.
- When the plough is aggregated with the tractor, raised or lowered on the tractor's hydraulic lift and turned on the headlands, check if there are no bystanders, children in particular, nearby the tractor + plough assembly.
- It is forbidden to approach the plough while it is being lifted and lowered, and turned.

SAFETY

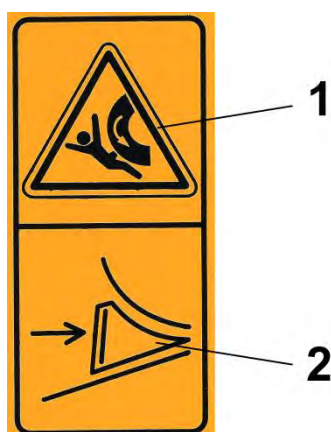
- Do not stand between the tractor and the plough while the engine is working.
- When connecting hoses to tractor's hydraulic system make sure the hydraulic system is depressurized. Check position of control levers for the tractor's hydraulic system.
- Appliances controlled by the hydraulic sections can be activated only when there are no personnel within the operation area of the machine. There are crushing and cutting places on the parts activated with the use of the other force than their own (e.g. hydraulic system).
- Rotate the plough once the plough is lifted on the tractor's three-point linkage.
- Raise, lower, tune and start the assembly slowly, without sharp jerks.
- It is forbidden to reverse the tractor and make turns with the lowered plough in the working position.
- While making turns, take the far protruding elements into account, do not use the brakes independent of the tractor.
- Check air pressure in the tractor's tyres.
- Connect the machine to the tractor as described herein.
- The machine can be connected only to tractors of adequate power and equipped with category 3 rear three-point linkage (in accordance with ISO 730-1:1996). Also remember to choose the tractor's class correctly to ensure its manoeuvrability.
- In order to maintain proper tractor's manoeuvrability, the machine should be connected to the tractor equipped with a set of front axle ballast weights. Pressure of the tractor's front axle with the mounted plough must be at least 20% of the tractor's weight.
- Balance of the tractor with the machine mounted, its manoeuvrability and braking capacity must be maintained. Observe the maximum permissible load per axle and transport dimensions.
- Do not operate the plough on slopes greater than 8.5°.
- Use special, dedicated pins and cotter pins to secure connections between the machine and the tractor. It is forbidden to use any substitute means, such as bolts, rods, wires etc., as these can be sheared or fall out during work or transport, and thus cause an accident or damage to the machine. Diameter of the pins must be compliant with the machine's three-point linkage category.
- All maintenance, repair and adjustment works should be carried out only when the machine is lowered and the tractor's engine is turned off. Remove the ignition key! It is forbidden to remain under the raised plough due to risk of being crushed by machine elements.
- It is forbidden to replace working elements of the machine without proper protection against shifting of the tractor-machine assembly and falling of the machine.
- During repairs requiring the machine to be lifted use stable and strong supports protecting the machine against falling. Do not use supports made of materials that can be easily damaged (e.g. hollow tiles, bricks).
- If working units are clogged during operation, clean the machine by lifting / lowering it few times on the tractor linkage.
- It is forbidden to leave the tractor with the machine mounted on slopes or other sloping areas without protecting it against uncontrolled rolling. Take care while working on the slopes.
- For operation wear working clothes and protective gloves.
- Never leave the tractor with the engine operating. Before leaving the driver's seat, lower the machine, turn the tractor's engine off, remove the ignition key, and engage the hand brake.
- Do not work with the machine which is defective or incomplete. Also inspect the hydraulic system. The cylinder, hydraulic hoses and connections must be tight. Replace worn or defective parts immediately.
- Due to material wear and tear, flexible hydraulic hoses should be replaced periodically, every 4 years from the date of their manufacture. The date of manufacture, i.e. year and week number, is indicated on hydraulic hoses.

- Exercise particular caution when driving on public roads, observe the relevant road traffic rules and regulations. For the time of transport on the public roads, install the following on the plough: warning signs painted in white and red stripes, with lamps: front – white position, rear – red position and red round reflective (warning signs can be ordered at the machine's manufacturer on additional charge or purchased at a point of sale of agricultural machinery) and a warning triangle for slow moving vehicles.
- For transport on public roads protect the plough against rotation by means of a mechanical lock.
- Speed during machine transport should be adjusted to the condition of the road surface.
- During transport, drive the tractor as close to the right side of the road as possible.
- During manoeuvres on roads pay attention to the space around the machine. Exercise particular caution when passing and overtaking, and on curves (the machine is firmly connected to the tractor).
- During transport and work, it is forbidden to stand on the plough or load it with additional ballast weights.
- Detach the plough from the tractor when the plough is supported on right bodies on a firm and level ground, and protected with a lock, with the engine turned off.
- During breaks in operation, the plough should be stored in a place that is inaccessible to unauthorised personnel and animals.
- Pay particular attention when dismantling and use drawings provided in the spare parts catalogue.
- When loading, lifting devices (e.g. forklift truck, overhead crane) can be operated only by personnel with proper qualifications. Elements of the frame (marked on the machine) should be used as fixing points.

5.2. Warning pictograms placed on the plough

The warning labels informing of permanent or periodical hazards are placed by the manufacturer on the machine in easily visible locations. Do not remove them from the machine. These labels should be replaced if worn, damaged or illegible for other reasons.

Warning pictograms can be ordered at the manufacturer of the machine.



Each warning sign consists of two vertically arranged fields (black figures on a yellow background).

1 – figure on a warning triangle background presents a risk (e.g. 1 – risk of rolling of the machine and crushing of the body),

2 – figure presents a way of behaviour to avoid the risk (e.g. 2 – to avoid the risk, secure the wheels of the machine with wedges).

SAFETY

The below section presents graphically warning signs, shows their location on the machine, explains what type of risk they indicate and the way to keep safety and avoid hazard.

Additionally, each sign bears a number, which refers to the number of a warning pictogram included in the parts catalogue, which facilitates identification of a label if damaged.



A. Risk due to non-observance of the provisions of the instruction manual!

This risk can result in serious injuries of the operator and bystanders.

Before using the machine, get acquainted with the instruction manual and safety regulations included there.



B. Risk due to uncontrolled rolling of the machine and tractor!

This risk can result in serious injuries, even fatal, to operator of the machine.

Before maintenance or repair works, turn off the tractor's engine and remove the ignition key!



C. Risk of crushing of the limbs by working elements of the machine or cutting by sharp edges!

This risk can result in serious injuries leading to loss of a limb, in extreme cases.

Keep a safe distance from the machine! Exercise particular caution when replacing the working elements!



D. Risk of crushing of the body within the three-point linkage operating area!

This risk can result in crushing of chest or other part of the body, or even death of the operator.

It is forbidden to stay between the machine and tractor when fixing the machine and starting the lifting device!



E. Risk of crushing of the hand or fingers by the moving parts of the machine!

This risk can result in serious injuries leading to the loss of fingers, a hand, or even the whole arm.

Never reach into the area of moving elements of machine (e.g. cylinders, plough rotation points, release area of plough bodies), especially during work of the machine or when the tractor's engine is turned on, or the hydraulic installation is being started!



F. Risk of crushing of the whole body due to the machine swing while turning!

This risk can result in serious bodily injuries, including fatal injuries.

Do not stay within the swing area of the machine during work and transport! Keep a safe distance from the plough when it is being swung!



G. Risk of crushing of the whole body due to movement of an unprotected subassembly of the machine!

This risk may cause serious injuries.

When detaching the plough from the tractor, remember to unfold the support foot and secure it with cotter!

SAFETY

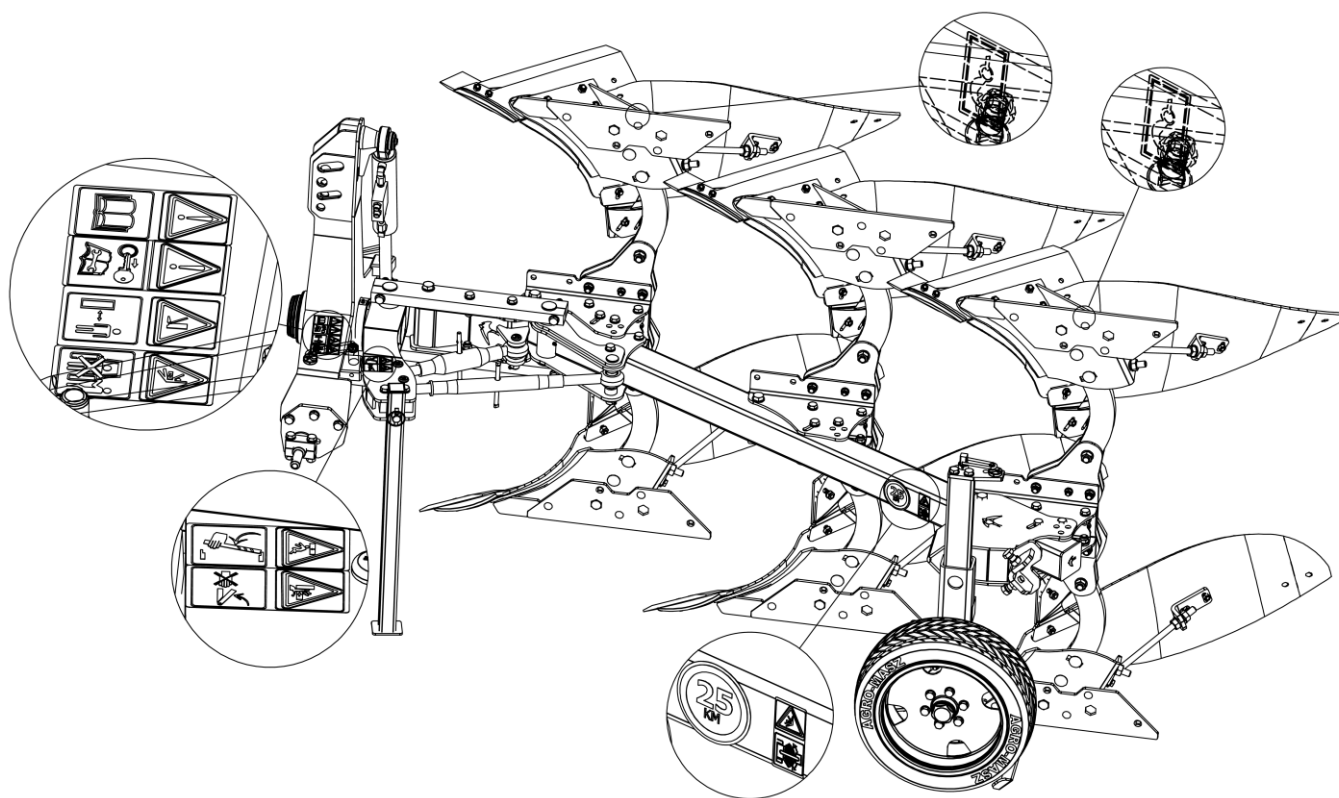


H. Marking of a place to fasten loading slings!

These are suggested places to maintain the safe loading / unloading of the machine and its balance while it is hanging on ropes, belts or chains.

Always take the weight of the lifted machine into account!

5.3. Location of warning labels on the machine



5.4. Other risks

In addition to the risks defined in the section 5.2. and presented in the form of warning pictograms placed on the machine, the other risks described by manufacturer in this section can also appear during operation.

5.4.1. Wiring system

- Electrical devices, such as lighting system, are powered by 12V current.
- Too high or too low voltage can cause malfunction of an electronic device or cause its damage!
- Use of non-original elements of electrical and electronic devices and improper fuses can result in a breakdown!
- Take special care when installing electrically operated devices. Improper connection to the tractor's battery, in extreme cases, can result in a fire or explosion of the battery!
- When removing the electrical and electronic devices from the machine, protect their elements (plugs, cables, etc.) properly against moisture and atmospheric agents.

5.4.2. Hydraulic system

- Hydraulic system works under high pressure!
- Hydraulic hoses of the machine can be connected to the tractor only when hydraulic systems, of both the machine mounted and the tractor, are under pressure-free conditions.
- Hydraulic hoses of the machine should be connected to hydraulic connectors of the tractor, paying attention to their correct arrangement! Improper connection can result in a breakdown of the mounted machine or the tractor!
- Hoses of the hydraulic system should be controlled regularly for tightness and damages.
- Damaged hoses should be replaced immediately only with original hoses, as recommended by the machine's manufacturer!
- Period of use (as intended) of hydraulic hoses should not be longer than 4 years.
- Do not work with the machine, in which hydraulic system is not tight! There is a risk of a serious breakdown!
- There is a risk of being cut by the machine elements, which are moved by means of the hydraulic system.
- During work and operation of the machine, there is a risk of cutting a skin of face, hand, and in particular eyes caused by oil splashing!
- It is forbidden to seal hydraulic hoses manually!
- In case of skin burns or oil penetration into the body, seek medical attention immediately!
- When checking the condition of the hydraulic hoses, use appropriate equipment and protective clothing. It is recommended to check the condition of hydraulic hoses by a specialized service point on a yearly basis.

- It is forbidden to lock hydraulic system controls in the tractor.
- Before any works on the hydraulic system:
 - Lower the mounted machine,
 - Remove pressure from the hydraulic system,
 - Turn the tractor's engine off and engage the parking brake,
 - Remove the ignition key.

5.4.3. Residual energy



WARNING! During operation of the machine keep in mind that there is residual electric, pneumatic and mechanical energy on the machine!

Electric current for powering road lights, high-pressure oil in the hydraulic system intended to power such sub-assemblies as rotation cylinder, ruling cylinder and mechanical energy accumulated in the elastic parts constitute a hazard to an inattentive operator and unauthorised personnel!

The machine's operator must be careful during work and all service and maintenance actions carried out on the machine!

5.4.4. Foreign bodies

During operation of the machine there is a risk that the personnel remaining nearby will be injured by stones, lumps of the soil or other foreign bodies unexpectedly thrown by the machine and its sub-assemblies.



WARNING! During work no person is allowed to remain within the danger zone or move near the machine, until the tractor's engine is turned on!

5.4.5. Other obstacles

During field works there is a risk of burning or electric shock after contact with overhead power lines or as a result of getting too near to high voltage lines.



WARNING! Observe national regulations regarding a safe distance, within which the live overhead power lines can be approached to!

5.5. Operator's obligations and training

5.5.1. Operator's obligations

The operator must:

- get acquainted with the instruction manual attached to the machine, in particular become familiar with the safety regulations related to work, repair and maintenance,
- take care that the instruction manual is always stored in a place ensuring its maintenance in good condition and to make sure it is always available during work,
- be equipped with proper protective clothes, in accordance with the description included in 5.5.3.,
- get acquainted with the legal regulations, applicable in a specific country, relating to the occupational safety, accident prevention and environmental protection,
- operate the machine according to the manufacturer's recommendations,
- use only original spare parts and do not make any modifications of the machine without a written consent of the manufacturer.

The machine should be always stored and transported protected in order to avoid accidents caused by contact of the children or bystanders with the machine, untrained in their use!

5.5.2. Personnel training

The machine can be operated, to the same extent as the operator (owner), only by personnel who are authorized and trained by the owner.

The authorized personnel (e.g. an employee) must:

- hold a driving licence compliant with requirements of regulations applicable in a specific country,
- get acquainted with the instruction manual attached to the machine,
- observe general occupational health and safety rules,
- undergo training provided by the owner in regulations relating to work safety (machine installation, operation and maintenance),
- get acquainted with construction and function of the machine.

The above-mentioned provisions are also applicable to any further owner of the machine, when it is sold on the secondary market.

5.5.3. Personal Protective Equipment

Before any service works operator of the machine must be equipped with:

- protective gloves protecting against sharp edges of the machine elements and against a direct contact with oils and lubricants,
- clothing which do not constrain movements but, at the same time, are tight to such extent not to be caught by any of the machine sub-assembly,
- protective goggles, hearing protectors and breathing protection mask, if necessary (when strong wind is encountered during operation or the tractor is not provided with a cab).

5.6. Risk zones

According to a general definition, a danger zone includes surroundings of the machine, within which people can be caught. Places of risk are as follows:

- an area between the tractor and mounted machine,
- immediate vicinity of the machine's moving elements (rotation cylinders, ruling cylinders, springs),
- flat surfaces, such as frame,
- places within plough raising / lowering and rotating areas.

In such surroundings a person can come in contact with:

- foreign bodies ejected by the machine,
- mounted machine due to its unexpected lowering,
- the tractor-plough assembly due to its rolling or shifting when operating and changes in its while turning or reversing, rotating,
- mounted machine due to its working elements, changing their position, driven by mechanical, electric or hydraulic power.

When operating the machine there is a risk that parts of the body of people present nearby will be injured! This risk can be permanent or periodically variable. Pay attention to lumps of soil, stones and other foreign bodies ejected by working elements of the machine in motion, and keep a safe distance!

During operation no person is allowed to remain within reach of the tractor-machine assembly, i.e. no person can be present neither directly in front of, behind nor by the machine! It is also forbidden to move nearby and stand on the machine during work.

People cannot stay within the risk area until:

- the tractor's engine and control units for the plough's working elements are off (hydraulic system for rotation control, etc.),
- both the tractor and machine mounted, and its sub-assemblies are protected against rolling and unintended motion.



WARNING! Keep a safe distance!

The risk area varies during work when the machine is running!

5.7. Residual risk

Residual risk mainly results from incorrect behaviour of the operator of the plough mounted on the tractor. Reasons for such behaviour of a person operating the machine are ignorance and inattention.

5.7.1. Description of residual risk

Despite the fact, that the **AGRO-MASZ** company – the manufacturer of the plough POM, takes the responsibility for the design and manufacture, in order to eliminate hazard, certain risk when operating the machine is unavoidable.

Major source of risk follows these forbidden operations:

- stay of personnel on the plough during work and transport,
- stay of personnel between the tractor and the plough when the tractor's engine is working,
- stay of personnel nearby the plough when it is being lifted, lowered or rotated,
- operation of the machine when tractor engine is working,
- operation of the machine lifted on the linkage and unprotected against falling down,
- stay of unauthorised personnel nearby the plough while operating,
- operation of the plough and the tractor in poor technical condition.

When describing residual risk, the plough shall be considered a machine, which until the production start has been designed and manufactured in accordance with the state of the art current as for the date of manufacture.

5.7.2. Residual risk assessment

Apply the following recommendations:

- carefully read and follow rules herein,
- do not put hands into restricted areas,
- stay of personnel on the machine during work and transport is prohibited,
- stay of personnel between the tractor and the machine with the tractor's engine working is prohibited,
- stay of personnel nearby the machine when it is being lifted, lowered and rotated is prohibited,
- stay of unauthorised personnel nearby the plough while operating is prohibited,
- operation of the plough is allowed only by the personnel who are trained and acquainted with this instruction manual,
- performance of repair and maintenance works only by personnel who are properly trained,
- protection of the plough against access by children, unauthorised personnel and animals,
 - elimination of all accident hazards to ensure safe use of the rotary plough POM.

The AGRO-MASZ company, the manufacturer of the plough POM declares that in the current state of the art it is not possible to eliminate the existing residual risk. This risk can be reduced by using the plough POM in accordance with the recommendations specified in this instruction manual.



ATTENTION! Accident hazards resulting from the existing residual risk appear in case of failure to observe the specified recommendations and guidelines.

5.8. Stability of tractor - plough assembly

The tractor-plough assembly can lose its stability due to weight of the mounted machine.

To calculate the required minimum front ballast, and also determine by how many kilograms the load of the tractor's rear axle should be increased, in order to ensure stability of the whole assembly, the user should know parameters of the tractor and the plough applicable to the below calculations.

Mounting of machines to the tractor cannot result in exceeding the maximum permissible values, i.e. total mass of the whole tractor-plough assembly, load of the front and rear axles, and tyre carrying capacity.

Below there are the most useful formulas to calculate maximum permissible loads.

To calculate increase in load of the tractor's rear axle:

$$I_R + \frac{I_R \times (a+b)}{b}$$

In order to verify the total stability, to calculate minimum mass of front ballast weights $I_{F,min}$ in kg, allowing to achieve load of the front axle equal to 20% of the tractor overall weight, the below formula can be used:

$$I_{F,min} = \frac{[I_R \times (c+d)] - (T_F \times b) + (0,2 \times T_E \times b)}{a+b}$$

Formula to calculate the actual load of the front axle:

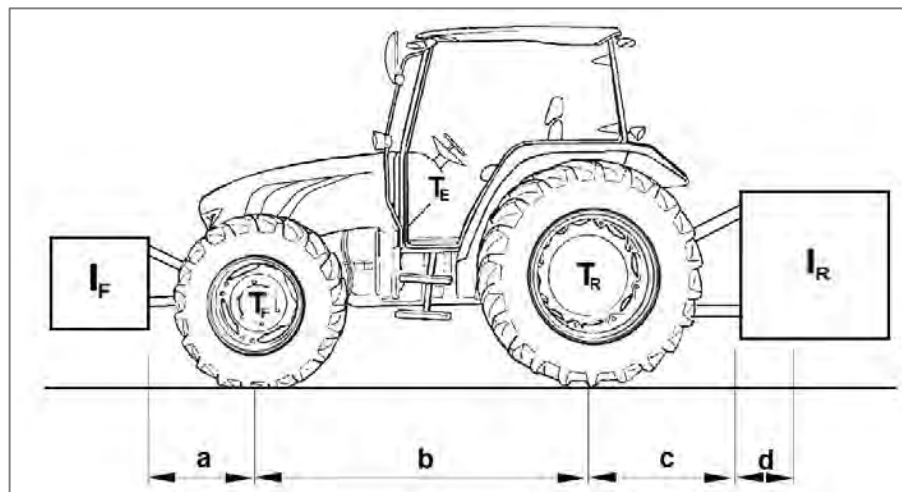
$$T_{Fs} = \frac{I_F \times (a+b) + T_F \times b - T_R \times (c+d)}{b}$$

Formula to calculate the actual total weight:

$$C_{RC} = I_F + T_E + I_R$$

Formula to calculate the actual load of the rear axle:

$$T_{Rs} = C_{RC} - T_{Fs}$$



T_E – tractor's overall weight (kg)

T_F – front axle load of unloaded tractor (kg)

T_R – rear axle load of unloaded tractor (kg)

I_F – weight of front ballast weights (kg)

I_R – weight of machine mounted at rear (kg)

a – distance between centre of gravity of front ballast weights and centre of front axle (m)

b – tractor wheelbase (m)

c – distance between centre of rear axle and centre of ball joints of rear linkage (m)

d – distance between centre of ball joints of rear linkage and centre of gravity of mounted machine (m)

Enter calculations from formulas in the below table to compare them with values specified by the tractor's manufacturer.

Calculated values cannot exceed the maximum permissible limits.

| | CALCULATED REAL VALUE | VALUE ACCEPTABLE BY TRACTOR MANUFACTURER | UNIT OF MEASURE |
|---|----------------------------------|---|----------------------------|
| Minimum load of tractor front | | | kg |
| Total weight of tractor-plough assembly | | | kg |
| Tractor's front axle load | | | kg |
| Tractor's rear axle load | | | kg |

VI. GENERAL INFORMATION

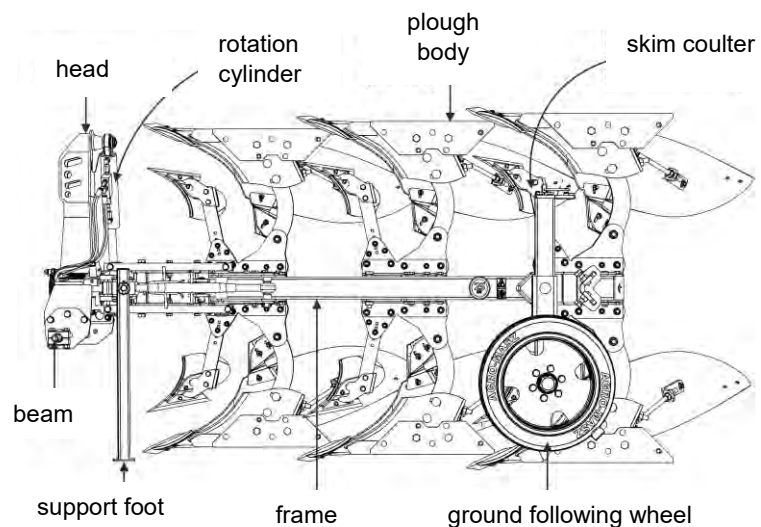
The plough, intended for sale, is delivered assembled by the manufacturer. Plough bodies are equipped with sectional mouldboards, ploughshares with bolted chisel, strips and landsides and skimmers to be mounted above mouldboards for better coverage of plant residues. Mounting of plough body core (frog) to plough beam enables plough body tilt angle adjustment. Before the last body, a disk cutter is mounted for better slicing of furrow from undisturbed soil.

6.1. Technical data for POM ploughs

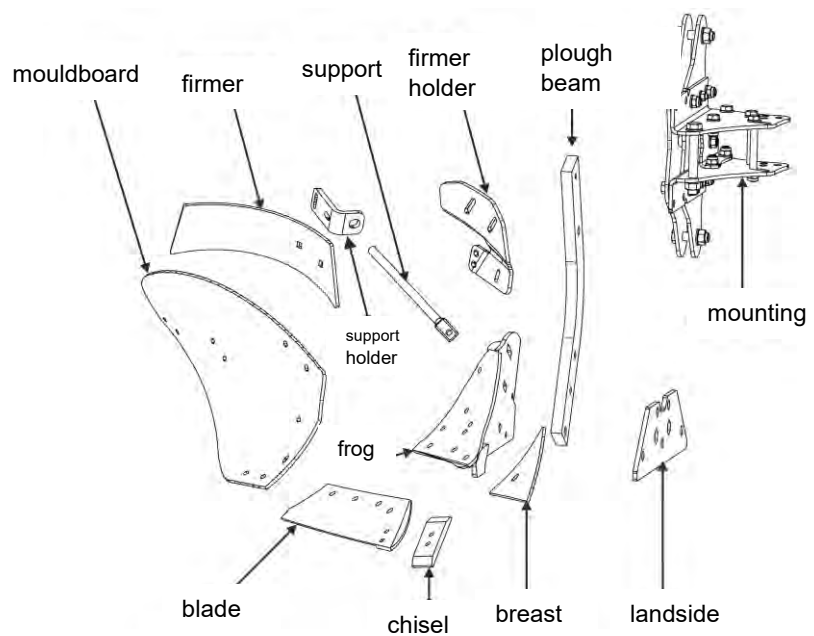
Information given in the table below is for reference only. Machine's ultimate parameters depend on both the additional equipment and configuration.

| PARAMETER | UNIT OF MEASURE | PLOUGH POM2 | PLOUGH POM3 |
|--|-----------------------|--|--|
| Type | | mounted | mounted |
| Number of bodies | pcs | 3 | 4 |
| - distance between bodies on frame, - height under frame, - mouldboard type, - ploughshare type, - support wheel | mm mm | 850 700 semihelicoidal zone tempered 200/60-14.5 | 850 700 semihelicoidal zone tempered 200/60-14.5 |
| Width of cut | m | 0.50-0.80 | 0.75-1.20 |
| Depth of cut (max) | cm | 30 | 30 |
| Dimensions: - length - width - height - frame profile | mm mm mm mm | 2400 1500 1550 100x100 | 3250 1700 1550 100x100 |
| Weight | kg | 510 | 720 |
| Working speed | km/h | 5-10 | 5-10 |
| Performance | ha/h | 0.25-0.40 | 0.40-0.60 |
| Power demand | HP | 40-60 | 60-80 |
| Nominal pressure in hydraulic system | MPa | 18 | 18 |
| Acoustic pressure level | dB L _{pA} | below 70 | below 70 |
| Skim coulter set | | - | - |
| Disk cutter for last body | | - | - |
| Openwork mouldboards | | - | - |
| Wheel shock absorber | | - | - |
| Rotation cylinder with memory module | | - | - |
| Ruling cylinder | | - | - |

6.2. Construction of plough



Overview of plough POM in version with skim coulters.



Construction of a single body.

6.3. Constructional changes

Equipment of your machine can slightly differ from equipment provided in figures or in descriptions included in this instruction manual.

The manufacturer reserves the right to make further technical modifications of the machine, relating to both its basic construction and additional equipment, due to the adaptation to the ever developing technical level.

REMEMBER! All modifications and alterations of the plough made without a written consent of the manufacturer are forbidden, or they can result in a decrease of the machine's parameters.

VII. MAINTENANCE AND SERVICE



Before working, it is necessary to carefully get acquainted with the function and construction of the tractor's and plough's parts.

7.1. Preparation of the tractor to work with the plough

REMEMBER! In order to make proper adjustments of the below-described sub-assemblies of the tractor, observe the provisions specified in the instruction manual provided by the tractor manufacturer.

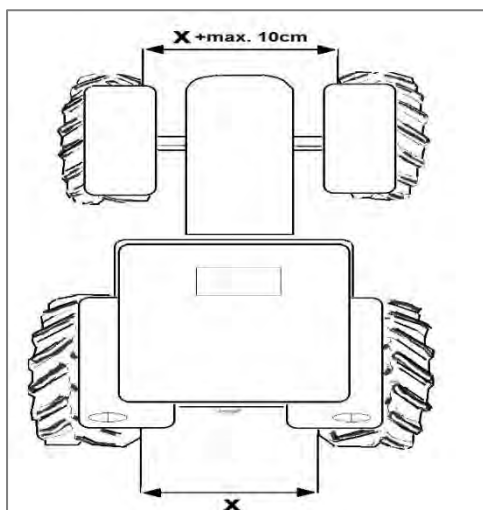
7.1.1. Tyres

In order to maintain proper service lifetime of the tyres and achieve optimum driving properties, check and correct tyre pressure, if necessary. In particular, it is essential to maintain the same pressure level in the tractor's rear tyres. In difficult conditions, while observing the provisions of the instruction manual of the tractor, it is recommended to add further ballast weights to wheels or to fill up the tyres with a liquid. Air pressure in the tyres must be accordingly not too high to ensure the optimum tractive force and not too low so that the rims do not damage the tyres at the same time.



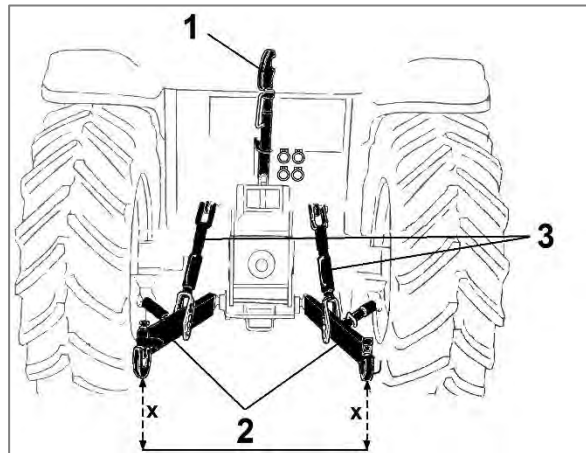
REMEMBER! In order to ensure equal working depth for the plough, take care that pressure in the tractor's tyres is the same in right and left tyres.

7.1.2. Wheel track



For ploughing, the wheel track is measured as a space between the internal surfaces of the tractor's tyres. The distance between the external edges of front wheels should be equal to, or slightly greater than, the distance between rear wheels.

7.1.3. Three-point linkage



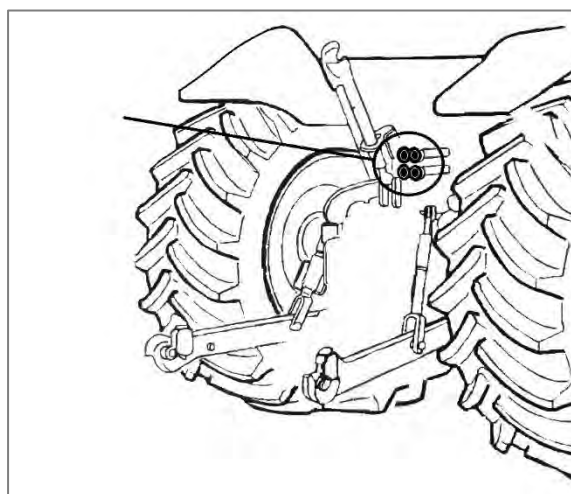
The construction of the three-point linkage is based on the principle that the tractor and the mounted machine are intended to operate as an integral assembly. The functionality of such assembly depends on a setting of **the upper link (1)** and **lower links (2)** adjusted on **hangers (3)**.

In order to facilitate the optimum arrangement of the plough, if the tractor has several points for the attachment of the upper link, the said link should be fixed at the top-most point.

Lower links should be set on the same height (**x**) by means of adjustment on hangers. Hangers should be set so as to enable lowering of lower link to approx. 30 cm below the plough's linkage axis and lifting of the plough onto an adequate height for the plough's rotation and safe transport.

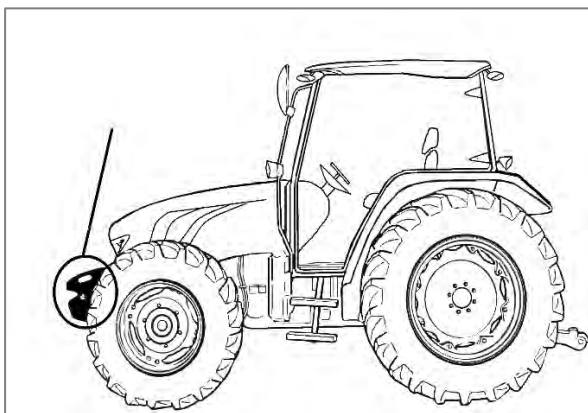
Regardless of whether the lower links are equipped with chains, telescopic struts, or other side movement stabilisation system, the system should be adjusted so that the mounted plough can move slightly sideways during work and it does not tilt too much during transport.

7.1.4. Hydraulic system



The tractor should have 2 independent external hydraulic sections – **2 pairs of push-in fittings (1)**, i.e. two hydraulic outputs of two-side action to ensure plough's rotation and two hydraulic outputs of two-side action for ruling cylinder (option).

7.1.5. Front axle load



The tractor must be equipped with **front weights (1)** to ensure the optimum driving properties, proper mass distribution and equal working depth of ploughing.

The calculation procedure of the counterweight mass for the plough as the ballast weights mounted in front

of the tractor is discussed in the “Stability of the tractor-plough assembly” sub-section, page 16.

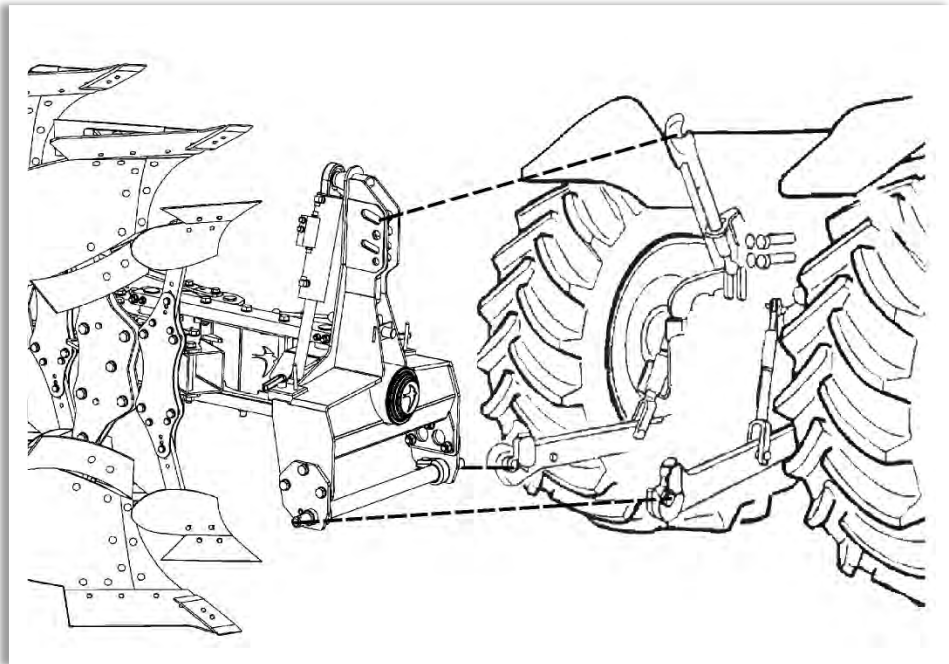


ATTENTION! Attachment of the cultivating machine on the tractor three-point linkage must not cause the maximum load parameters specified by the tractor manufacturer to be exceeded.

7.2. Preparation of the plough

- Before work, check technical condition of the plough, and working parts and hydraulic system in particular. Replace any damaged or worn parts causing the plough's work quality to decrease.
- Check bolting connections, and tighten nuts, if any plays are found. After about 3 hours of ploughing, tighten all bolts and nuts.
- Lubricate the plough in accordance with recommendations specified in the lubrication table.
- Check the arrangement of plough bodies, and if there are no significant differences between each particular body.
- Check whether adjustment screws turn without jamming.
- Check whether push-in fittings on the plough's hydraulic hoses match the sockets on the tractor.
- Check the condition of hydraulic hoses (cannot be damaged) and cleanliness of push-in fittings.
- Check the pressure in tyres of the transport wheel, which should be 350-425 kPa.

7.2.1. Mounting the plough on the tractor



In order to attach the plough correctly and safely, the tractor should stand on a firm and level ground.

While mounting the plough on the tractor proceed as follows:

- switch the tractor's hydraulic system into position adjustment,
- set the plough's latch bar in one of four positions and attach it on tractor's lower links (possibly on ends of latch bar, attached on the plough, mount ball-and-socket joints – depending what type of ends of three-point linkage links the tractor is equipped with) and secure,
- reverse the tractor at a distance allowing connection of the latch bar to forepart plates and the tractor's upper link to the plough's upper hanger,
- secure the suspension axle in forepart plates using **pins (2)** with cotters,
- attach the tractor's upper link and secure its pin. When ploughing the attachment point for the plough's upper link should be higher than the attachment point for the tractor's link,
- adjust the anti-roll bars of the tractor's lower links,
- connect the plough's hydraulic hoses to the tractor's external hydraulic sections,
- unlock transport support,
- check the plough for lifting and lowering,
- perform a trial rotation of the plough to check whether during this operation neither the support wheel nor the machine touches the ground.



WARNING! When mounting the plough on the tractor, in the three-point linkage area, there is a risk of crushing!

Do not stand between the tractor and the machine!

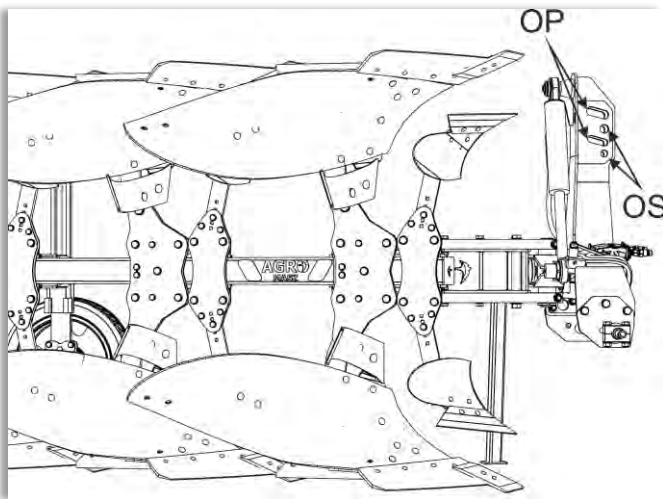
Protect the tractor against rolling!

OPERATION

7.3. Start of ploughing

The arrangements indicated below are essential, particularly if the plough is operated for the very first time.

7.3.1. Upper attachment point

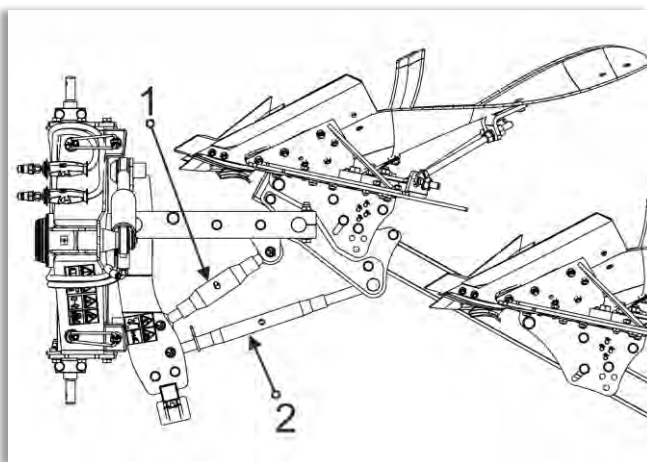


The plough can be connected to the end of the tractor's upper link **by means of permanent holes (OS) or floating holes (OP)**, which additionally enable the plough to lift slightly whenever a significant resistance is encountered. Apart from that, it is recommended to use floating

holes for mounting, if the plough has 4 furrows or more.

If the upper link is to be connected to a floating hole (length-wise) on the hanger, loosen the link so that when the plough is lowered, pin for the link is relieved adjoining the hole's front end.

7.3.2. Spindles (bottle screws)

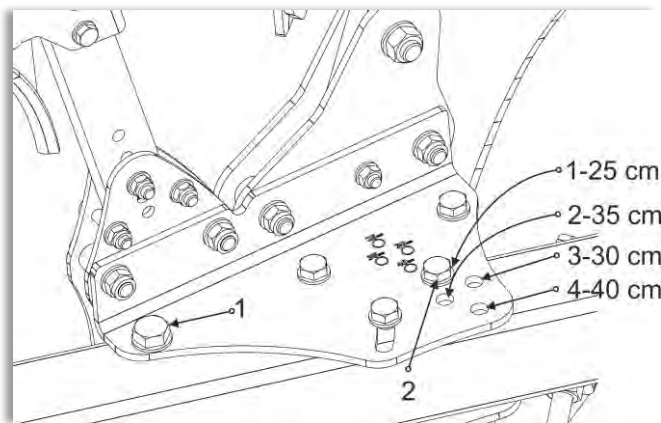


The **internal spindle (1)** is used for setting the tractor-plough hauling rope. If set correctly, prevents the plough's sliding, and in turn provides reduction in sliding of the whole tractor-plough assembly, and fuel consumption.

When starting ploughing, in order to properly set the plough, note which direction the tractor tends to veer to. If it turns towards the ploughed soil, loosen the internal spindle, and if it turns towards unploughed field tighten the internal spindle.

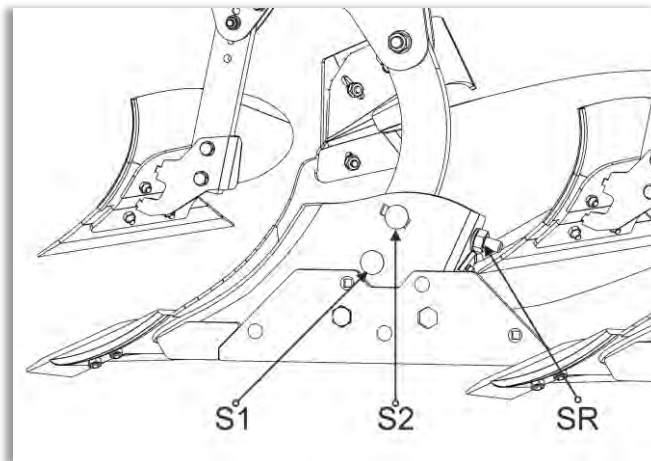
While **external spindle (2)** is used for changing of the furrow width. For transport to the customer, it is often tightened to save space.

7.3.3. Bodies



An element mounting each pair of bodies (right and left) to the frame has holes for working width adjustment (**from 1 to 4**), for a body, within approx. **32 cm** and **44 cm**. In order to adjust the setting, loosen **central screw (1)**, with same working

principle as a hinge, then unscrew and put through the **adjustment screw (2)**, while moving the mounting with body accordingly and tighten the screws. This needs to be done on mounting for each body in order to maintain the same working width for all plough bodies.



Each body has the approach angle adjustment. To align all bodies and set the same angle, use **adjustment screw (SR)** at the back of each body. To start the adjustment, loosen **fastening bolts (S1 and S2)**. It is important that the distance (**x**) from the ploughshare chisel

end to the frame for all bodies should be the same. Once the adjustment is completed, re-tighten fastening bolts (**S1 and S2**).

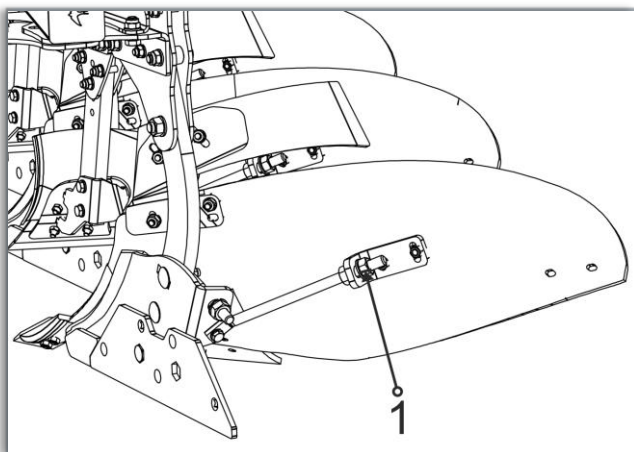
OPERATION

However, if value of the angle of approach is too high, this can result in undesired resistance and problems maintaining the same ploughing depth, and finally, significant increase in fuel consumption.



When adjusting the body, do not loosen fastening bolts completely to prevent detachment of elements of the body!

7.3.4. Mouldboards

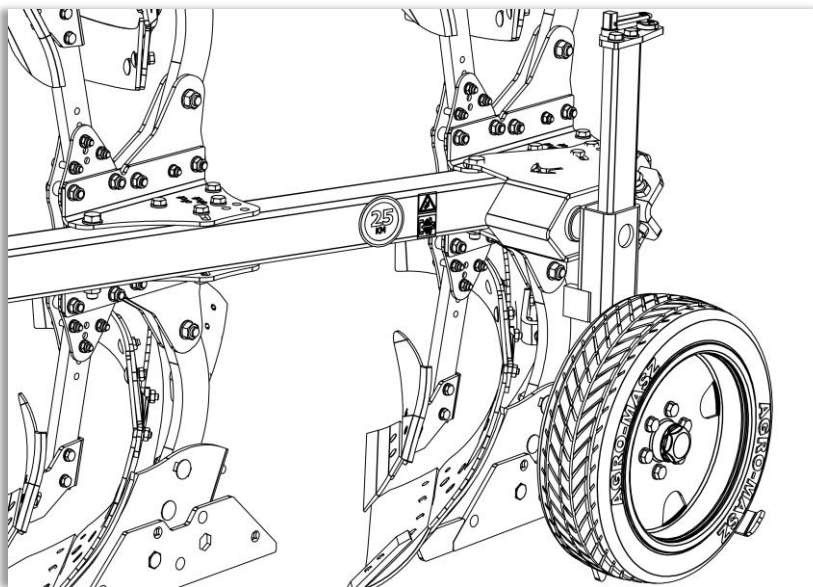


Mouldboards are made of tempered steel, as they are exposed to fast wearing due to contact with soil.

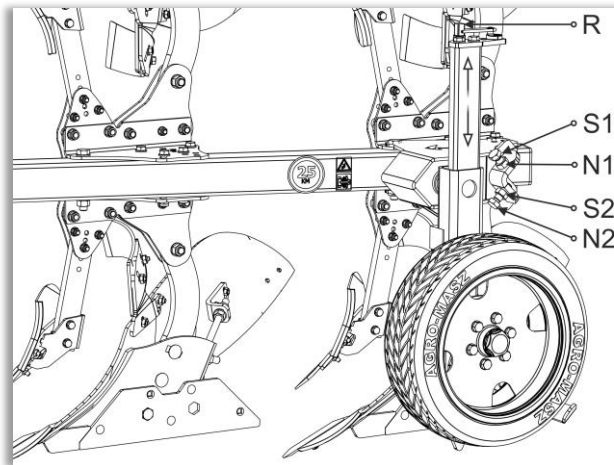
In order to produce even furrows at each passage, set the approach angle for all mouldboards by means of **mouldboard support screw (1)**.

In order to achieve optimum quality of the ploughing on the first use of the plough, paint on the mouldboard, at the side which remains in contact with soil when tilling, can be removed.

7.3.5. Support wheel

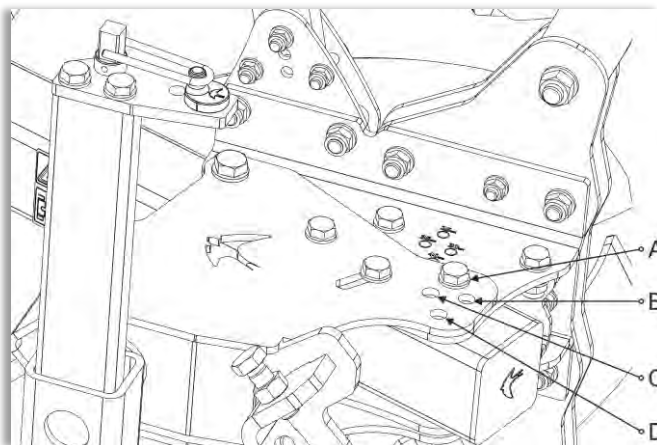


The plough is equipped with a standard universal support wheel.



Wheel support has a few-step vertical adjustment, separately for the plough's right and left side (**screws S1 and S2**). In connection with the tractor's hydraulic system, used for lifting and lowering of the plough, the adjustable support wheel can be used for ploughing

depth adjustment. The wheel, if properly adjusted, bears partial weight of the plough, and thus prevents excess and uneven penetration of the plough into soil. However, it should be noted that the plough's general weight should, as far as possible, be borne on the tractor, so as not to cause too much of sliding. Despite proper setting of the support wheel, the operator should monitor the machine's working depth by means of the tractor's hydraulic system, and take notice of variable conditions (operation on light or difficult grounds).



The support wheel mounting on the frame, has additional adjustment (in four positions **A, B, C, D**) to align the track of the plough. When setting the tractor-plough hauling rope, correct the wheel arrangement to prevent side

sliding of the plough and damage to the whole support wheel assembly.

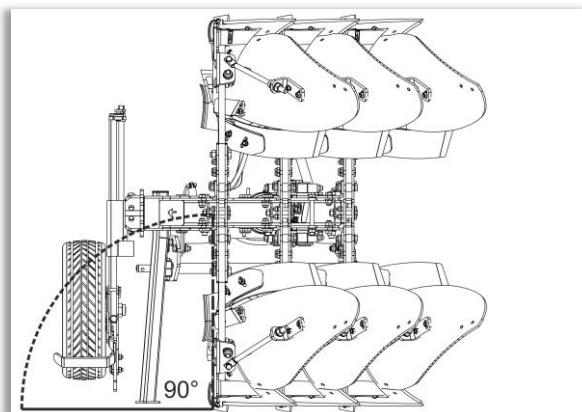


ATTENTION! Around the support wheel, areas of cutting and crushing risk are present! Exercise particular caution when removing the wheel in "transport / work" positions, and when setting the wheel working position!

Check pressure in the plough's wheels regularly. Too high or too low pressure during work or transport, can result in damage of the tyre, and even the whole machine or cause an accident!

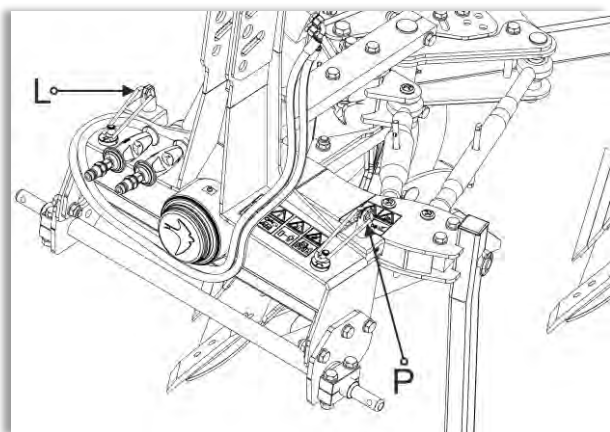
OPERATION

7.3.6. Adjustment of vertical tilt



After setting of a desired ploughing depth and setting of the tractor so that right or left wheels are level on a furrow, adjust proper working angle for the whole machine (vertical adjustment). It is desirable that in ploughing position, between the ground and plough beams on the bodies an angle of 90°

(the setting can be checked by looking at the plough from its behind).

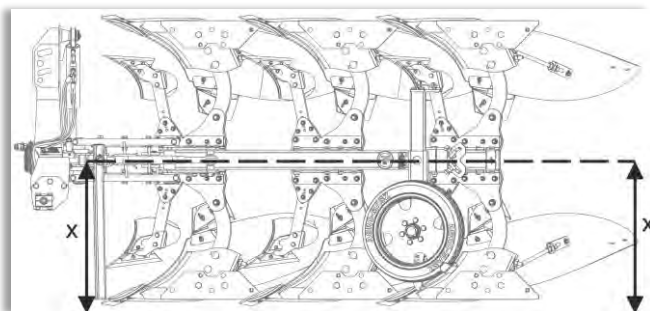


For vertical adjustment use two **adjustment screws (L, P)**, located on the plough's hanger arms. They are used for separate adjustment of right and left bodies.

In order to change the setting of the screw for one side of the plough, lift the plough and rotate it, and then adjustment the screw,

rotate the plough again to starting point to continue the operation.

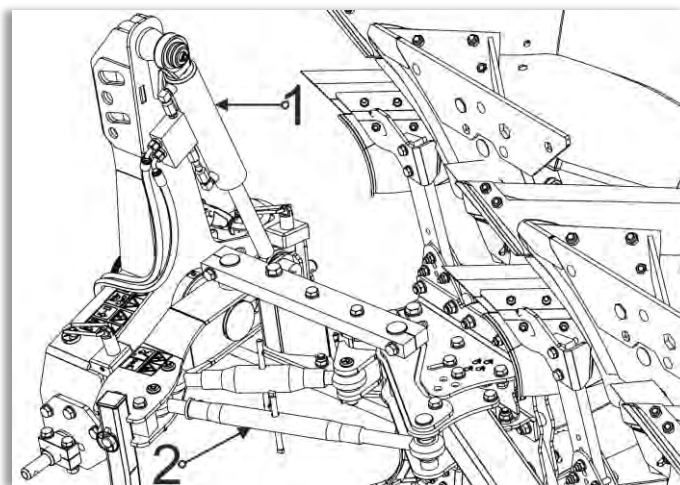
7.3.7. Adjustment of horizontal tilt



Once the first furrow is completed, correct the upper link length, tilt, furrow width, the plough's working depth and pressure of the support wheel. During work, the plough's frame always should be

parallel to the ground.

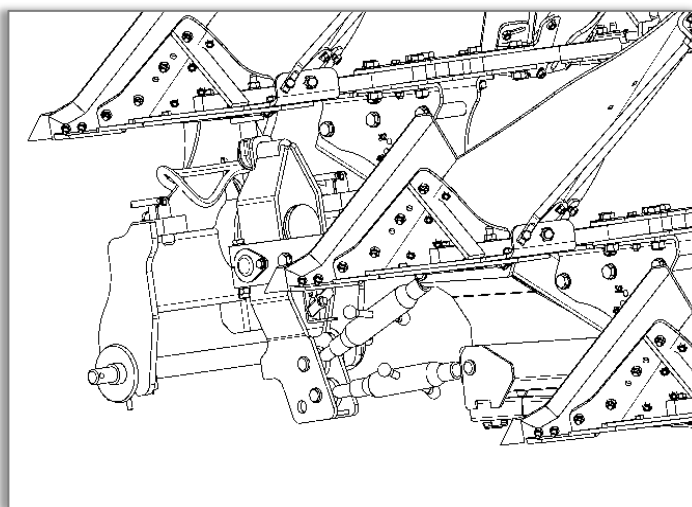
7.4. Plough rotation



The plough's rotary mechanism is based on two-side action **rotation cylinder (1)**. The cylinder is mounted at the back of hanger's turret which enables smooth and safe rotation.

External spindle (2)

should be adjusted so that when the plough is lifted, the machine has a sufficient clearance from the ground to ensure a collision-free full rotation, taking into account also a change in the support wheel's position during this procedure. If necessary, when adjustment of the spindle cannot provide a sufficient amount of space for the plough's rotation, additionally change the upper link's position on the hanger for higher.



Once the plough's rotation is started from the position on right bodies, the two-side action cylinder will push the plough to its intermediate position, and then oil flow in the cylinder is automatically changed,

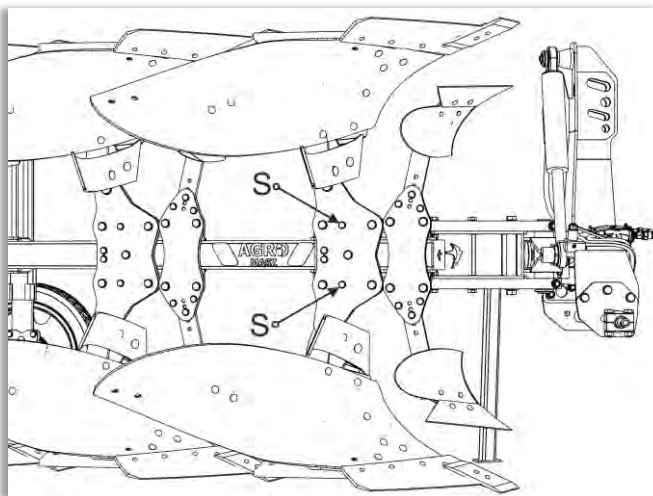
while the plough is pushed to ploughing position on left bodies or the other way round.

Plough in half-rotation position.



Before the plough's rotation is started, make sure within the machine's range there are no personnel!

7.5. Safety devices



The simplest in use and the most effective stone protection device. Each plough body is protected with **shear bolts (s)** of adequate hardness. These bolts are mounted in upper holes on the plough beam and holder mounting the whole body on the frame. In lower holes bolts of

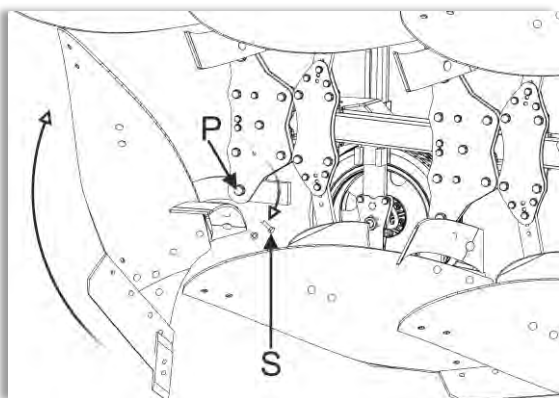
greater hardness are provided, therefore once a stone is hit, an adequate bolt is sheared, and the whole body is lifted up as on hinges.



Remember to use special bolts of adequate hardness. The manufacturer uses shear bolts with hardness of 5.8.

Application of bolts of lower hardness, can lead to the need of replacing them frequently, or deformation of the bolts which may damage of the plough.

Also, use of bolts of too much hardness, can damage the machine. When the body hits a stone, it is also possible that the bolt is not sheared, and e.g. a ploughshare or other plough element can be subject to a damage.



Once the shear bolt is sheared, at an adequate point, the plough body passes the obstacle by, being lifted up, and then the body gets back to the working position.

To replace a sheared bolt:

- Carefully set the body in its working position,
- bearing in mind that it hangs on **joint bolt (P)**, and protect it against shifting,
- Remove remainders of the damaged bolt,
- Loosen bolt **(P)**,
- Place and tighten new **shear bolt (S)**,
- Tighten bolt **(P)**.



During ploughing keep away from the area of plough body release!
Keep a safe distance!

WARNING! Exercise particular caution when replacing shear bolt. Within the area of protection of the plough body with shear bolt, there are cutting and crushing risk points!

ATTENTION! Do not rotate the plough with released body! This may cause damage to the machine!

VIII. TRANSPORT

8.1. Delivery and unloading

If the machine is purchased directly from the manufacturer, the transport conditions are determined by AGRO-MASZ, if no other arrangements are made with the customer. The delivery time-limit is settled by the manufacturer in consultation with the customer. The seller (manufacturer) is responsible for the proper packaging and protection of the machine for the time of transport. The manufacturer is also responsible for loading of the machine for the needs of transport to the customer. However, the carrier is responsible for the machine for the time of transport.

The plough POM is delivered assembled to the customer. Some sub-assemblies can be set in a transport position or disassembled. In this case the sub-assemblies are installed by the authorised AGRO-MASZ or trading partner's employee at the customer's site.

Conditions for unloading machine safely:

1. Depending on structure of a transport trailer, the plough POM can be driven down once it's aggregated with a tractor or can be lifted by means of a hoisting device (crane, fork-lift truck, etc.)
2. Loading and unloading of the machine and its assemblies should be performed with a crane by personnel holding adequate qualifications.
3. The machine can be hoisted only by marked points (fixation points are marked with decals) considering proper distribution of load and stability of the lifted machine.
4. Check whether the hoisting device has adequate capacity and there is no risk of the machine's falling.
5. Use only certified ropes, chains or belts of relevant strength.
6. Do not mount the machine directly onto the crane's hook and rather use ropes, chains or belts.
7. When lifting the machine, keep ropes, chains or belts tensioned, so as to prevent it from swinging which may cause an accident.
8. When lifting the machine with a crane, always pay attention to hoist trajectory and remove any obstacles.
9. The whole area, where any machine's manoeuvring is to take place and vehicle's setting location should be previously checked for any possible "danger areas" and particularly for conductors, gas pipelines or liquid hoses. If such "danger areas" are present, choose other areas for manoeuvring.
10. All employees should keep proper safety distance, so in case of an accidental falling of the machine, no person is injured.

8.2. Transport – driving on public roads



Take care as the machine can swing beyond the outline of the tractor at the corners!

Before transport, fix supports of the tractor's lower links to limit the sideways movements of the machine!

For transport on public roads the machine is driven being lifted on the tractor's three-point linkage.

For driving on public roads, according to valid regulations, the machine should be equipped with lighting and warning plates.

After leaving the field, and before driving onto roads, clean the machine of the soil.



Always keep in mind that the tractor's rear axle is significantly loaded and its front section must be additionally loaded to keep proper manoeuvrability of the assembly.

REMEMBER! Before work in the field, remember to remove lighting and warning plates to prevent their damage.

8.2.1. Speed

Always adjust the speed to the road conditions and observe road traffic regulations. The maximum permissible speed during transport of the plough equipped with a universal support wheel on the roads in all conditions is 25 km/h.

IX. MAINTENANCE



The machine can be repaired and serviced only by personnel with proper knowledge and being familiar with the possible risk and instruction manual!

To keep the plough in the best technical condition and its optimum service lifetime, maintain its elements in accordance with the below-mentioned schedule.

Apart from elements subject to regular lubrication, to keep the machine's functionality, it is necessary to inspect:

- tightening of bolts and nuts connecting elements of the plough,
- technical condition of hydraulic hoses which, if apparent mechanical damages or rubber porosity is found, should be replaced,



ATTENTION! It is forbidden to work under the raised plough without its additional protection!

9.1. Lubrication

Proper care of the lubricated elements of the plough will prevent the penetration of dirt or water into places between movable parts of the machine, and as a consequence, will protect against its premature wear.

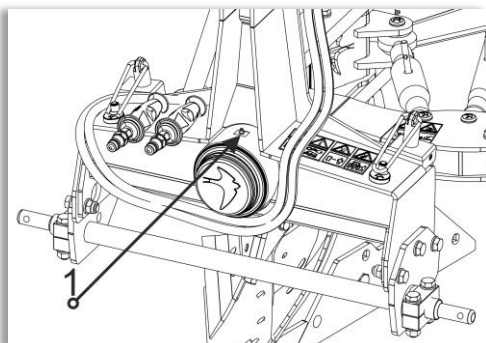
Lubricate until grease gets out from the lubrication point. Remove the excess with a cloth to prevent accumulation of dirt on the grease.

REMEMBER! Make sure that before the first use the rotation bearing is greased abundantly (approx. 3L).

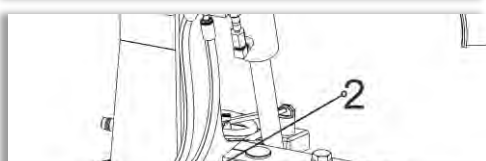
LUBRICATION PLAN

| | COMPONENT NAME | NUMBER OF LUBRICATION POINTS | TYPE OF GREASE | LUBRICATION FREQUENCY |
|------|--|------------------------------|----------------|-----------------------|
| 1, 2 | Rotation bearing | 1 | ŁT-41 | 20h of operation |
| 3 | Mounting of ground following wheel bracket | 1 | ŁT-41 | 20h of operation |
| 4, 5 | Pins of frame-hanger joint | 2 | ŁT-41 | 20h of operation |
| 6 | Bottle screws | 2 | ŁT-41 | Once a year |
| 7 | Tilt cylinder joints | 2 | ŁT-41 | 50h of operation |

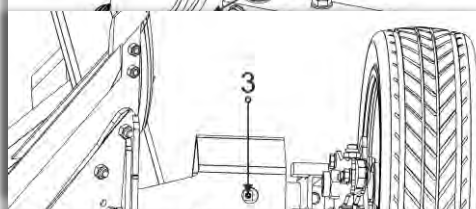
MAINTENANCE



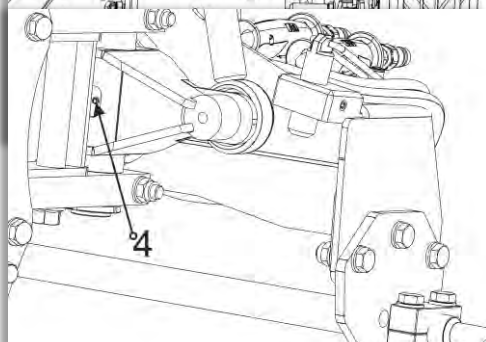
Rotation bearing



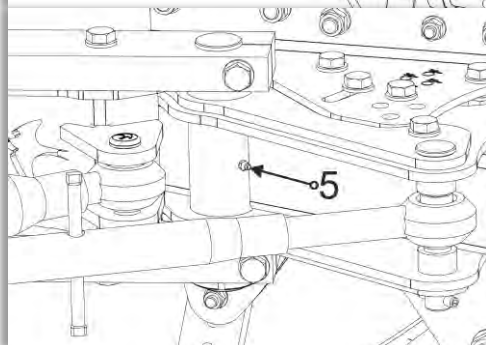
Mounting of ground following wheel bracket

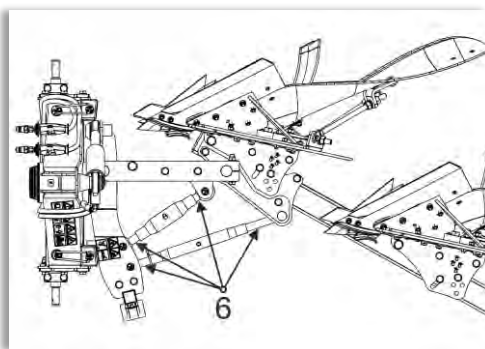


Pins of frame-hanger joint

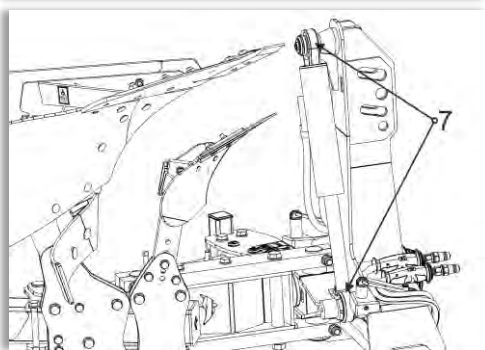


Pins of frame-hanger joint





Bottle screws



Tilt cylinder joints



REMEMBER! For maintenance, use adequate enriched grease! Use of a grease of inadequate parameters can result in the faster wear of the plough parts or their breakdown!

9.2. Bolt tightening

The machine is provided with bolts with hardness grade of 8.8, 10.9 and 12.9. The below table is intended to indicate the torque measured in Nm that should be applied to bolts of particular sizes and hardness grades for different sub-assemblies of the machine in order to ensure its proper operation and protect against part loosening and breakdown. The table includes most types of the bolts used in the machine.

REMEMBER! Suggested values provided in the table are given for reference only.

Bolts and nuts can be oiled so as to provide their easier tightening (applying less torque).

REMEMBER! Damaged bolts should be replaced with new ones of the same quality.

Control the tightening torque of bolts during operation!
 Tighten all bolts and nuts after the first day of operation!
 Tighten all bolts and nuts after the end of the working season!

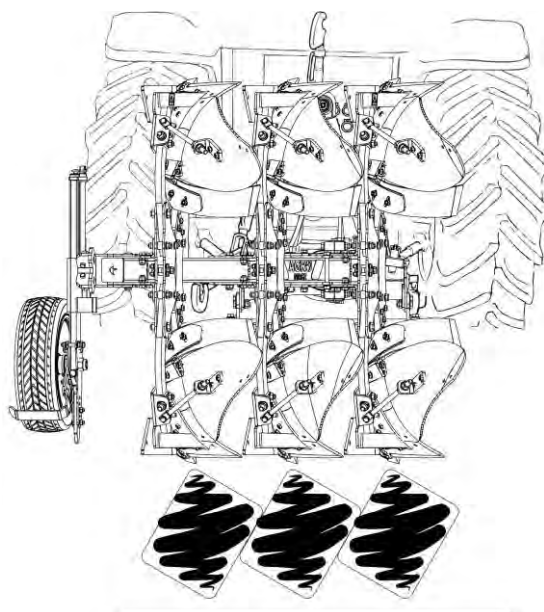


ATTENTION! It is forbidden to use bolts with the parameters other than applied by the manufacturer!

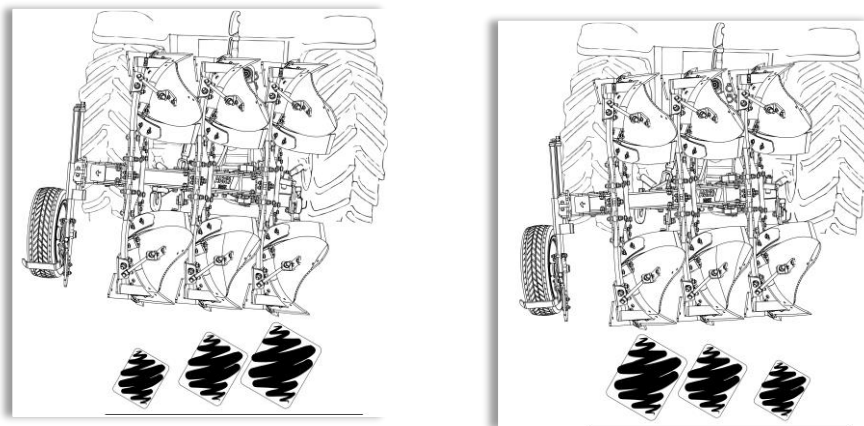
| SIZE | HARDNESS | TIGHTENING TORQUE (Nm) |
|------------|----------|------------------------|
| M12 | 8.8 | 80-85 |
| M14 | 8.8 | 137-145 |
| M16 | 8.8 | 195-207 |
| M20 | 8.8 | 380-410 |
| M24 | 8.8 | 658-672 |
| M30 | 8.8 | 1290-1332 |
| M12 | 10.9 | 102-120 |
| M14 | 10.9 | 178-198 |
| M16 | 10.9 | 276-300 |
| M20 | 10.9 | 542-590 |
| M24 | 10.9 | 933-1005 |
| M30 | 10.9 | 1820-1910 |
| M12 | 12.9 | 135-145 |
| M16 | 12.9 | 332-360 |
| M20 | 12.9 | 648-712 |
| M24 | 12.9 | 1105-1240 |

9.3. Instructions for proper operation

Even if settings of each particular element of the plough are correct, this will not ensure a high quality of ploughing unless the whole machine is checked for vertical and horizontal setting.

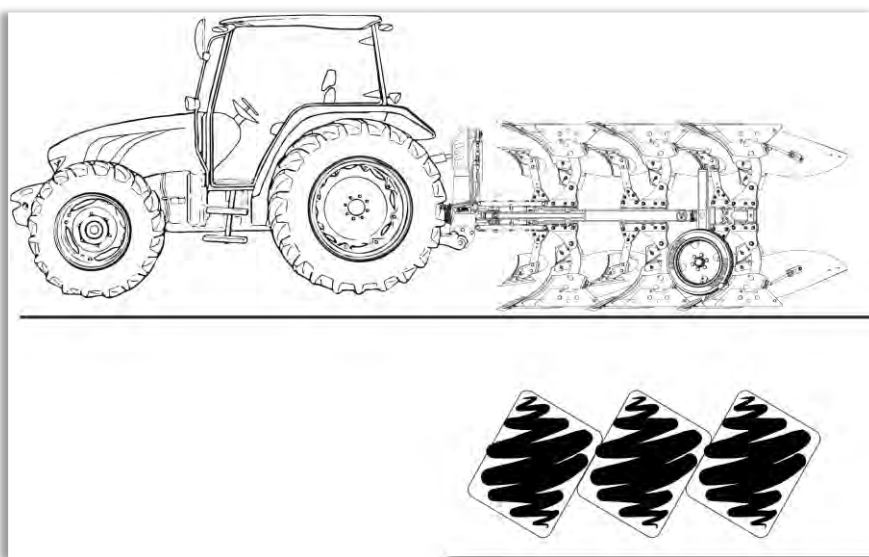


Correct vertical setting of the plough.

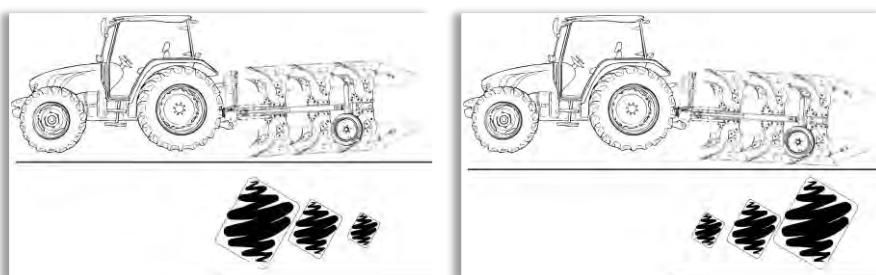
OPERATION

Incorrect vertical settings of the plough.

As far as the quality of work is concerned, it is important to have the depth correctly set. Maximum working depth should not be greater than $\frac{2}{3}$ of the furrow width, which in normal soil conditions will allow to produce furrows which are properly turned over and balanced.



Correct horizontal setting of the plough.



Incorrect horizontal setting of the machine.

Ploughing quality is significantly influenced by an apparently obvious matter of turning on headlands. It is recommended to take turns using either of two methods:

- Turn by 360° – when approaching the edge of the field, start the plough lifting function at the same time turning maximally to the ploughed part of the field, and shortly after that smoothly turn the steering wheel maximally to the opposite direction, and then approach the unploughed part again, turn and lower the plough.
- Three-point turn – lift the plough on headland, turning accordingly towards the ploughed field, drive the tractor back to the unploughed part and turn smoothly to get near and lower the plough.

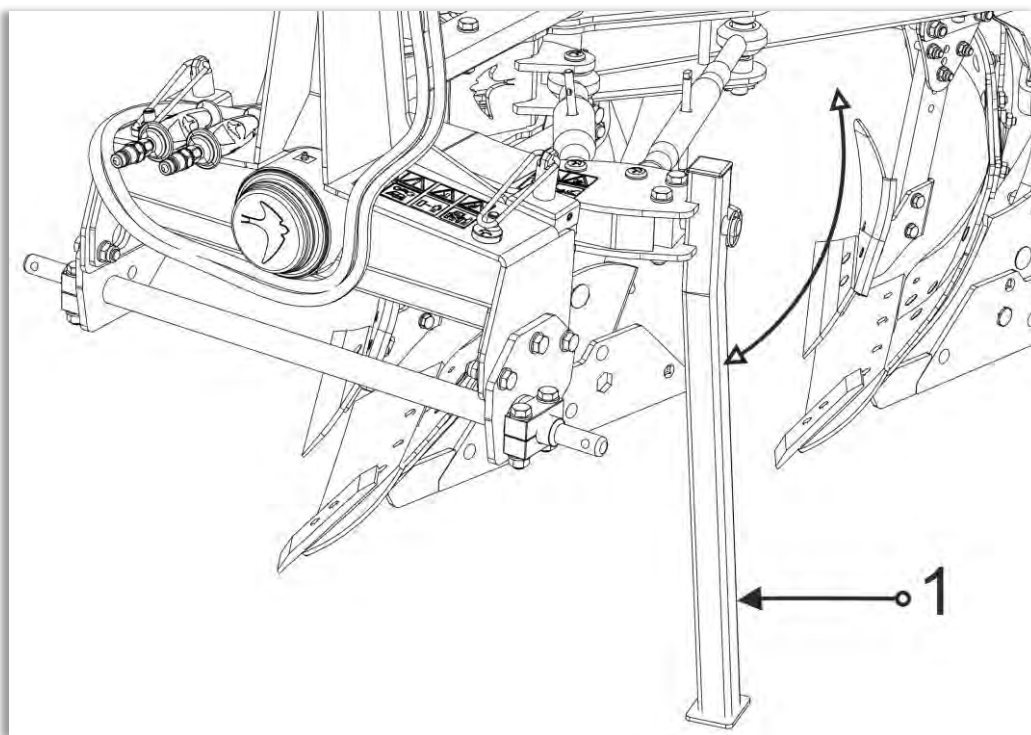
Adjust working speed according to soil conditions, stony fields in particular, cultivation of which, with too high working speed, may result in a major damage to the machine.

Always try to drive as straight as possible. Careless driving (uneven furrows), apart from deterioration in quality of ploughing, as consequence will result in sudden load of the tractor and progressive increase in fuel consumption.

It is not possible to carry out ploughing using only right or left bodies. Always use left and right bodies alternatively. Bodies at both sides should wear evenly, which in turn will produce a uniform furrow at both sides.

Always mark headlands (across the field, in particular), while using the last plough body which will facilitate loosening of the tractor's upper link. A headland should be of an adequate width, including length of the tractor-plough assembly.

9.4. Detachment of plough



The plough always should be parked on a firm and level ground.

To safely detach the plough from the tractor:

- turn the plough to working position and lower it so it is supported with right bodies on the ground,
- turn the tractor's engine off and remove the ignition key,
- set lever for hydraulic connector control valve in neutral position (to remove pressure from the hoses) and disconnect the plough's hydraulic hoses,
- detach the upper link of the three-point linkage from the plough's hanger,
- unlock and lower **support foot (1)** of the plough,
- remove lower links from the plough's latch bar.

9.5. Storage

The machine should be cleaned on regular basis, taking particular care after the end of the working season for a storing period between the working seasons, which will affect its service lifetime. The plough can be cleaned by means of compressed air or a pressure washer. However, the water jet should not be directly pointed to the lubrication places and bearings.

The elements of the machine indicated in the lubrication table also should be lubricated before every working season, after its end, as well as after every washing of the machine (in particular after the use of pressure washer).

The preserved machine should be parked and stored on a firm and level ground, with unfolded and secured support foot (the plough should not be supported on the wheel), shielded from direct impact of weather conditions (sun, rain, snow) which will protect metal elements without paint against rust, and rubber elements against damage.



ATTENTION! Make sure children and animals have no access to the machine.

Additionally, surfaces which lose paint coating due to work in contact with soil, should be preserved with oil.

9.6. Replacement of parts

Parts, technical condition of which shows wear, should be replaced immediately, so as to prevent other sub-assemblies against wear, which in turn could cause deterioration in quality of work performed by the machine. To maintain functions of the plough, it is essential to use original spare parts only.

Before replacement of any parts, the plough should be set in transport position and protected against falling down by means of an adequately strong and stable support (e.g. a thick metal support or a wooden beam). It is also necessary to turn off the tractor engine, engage the parking brake and protect the tractor wheels with additional supports. It is recommended to clean the area of the machine, maintenance of which is to be performed.

Only after it is certain that the plough is stable, replacement of worn or damaged parts can be performed.

Elements of the plough, working in a direct contact with the soil, i.e. ploughshares, ploughshare chisels, mouldboards, and other parts of plough bodies and shear bolts, are exposed to the fastest wear.

Chisels (ploughshare blades) are elements the construction of which enables reversing them, if one end is worn significantly.

MAINTENANCE

Ploughshares should be replaced in good time before section where the chisel is bolted is affected by wear. However a ploughshare can be recovered, if its wear allows for this.

Mouldboards should be replaced together with supports, if there is a deterioration in dumping of a produced furrow, or eventually, if the element starts to get deformed.



It is forbidden to perform maintenance works of the plough without providing an additional protection against falling down, shifting or releasing of its parts!

Use protective clothing (gloves, goggles, etc.) in order to protect against sharp parts of the machine. Working elements in contact with the soil can be particularly sharp. Their improper operation can result in personal injury!

Protect skin against direct contact with greases and oils!

Prevent penetration of lubricants and oils into the soil!

Use only tools in proper technical condition!

9.7. Defects and their elimination

The below table presents the possible defects during operation and most often incorrect arrangements of the machine, causing unintended faster wear of the plough and the tractor.

| MALFUNCTION | POSSIBLE CAUSE | REPAIR ACTION |
|---------------------------------------|---|--|
| Oil leaks from hydraulic hose fitting | Soiling of seal area | Thoroughly clean internal and external side of the plough's and the tractor's fittings |
| | Damaged seals on quick couplings | Replace quick coupling end |
| | Loose nut connecting push-in fitting to hydraulic hose | Tighten quick coupling nut |
| Tractor tends to turn to one side | Uneven setting of protective means to stabilise tractor lower links | Adjust setting of link stabilisers |
| | Incorrectly adjusted plough | Correct settings of particular elements of plough (refer to "Maintenance and service") |

| MALFUNCTION | POSSIBLE CAUSE | REPAIR ACTION |
|--|---|---|
| Tractor front section is lifted | Improper additional loading of tractor front section in relation to plough's weight | Mount more front axis weights on tractor |
| | | Fill front tyres with liquid (if provided by the tractor manufacturer) |
| Plough does not penetrate into soil | Upper link on tractor's three-point linkage is too loose | Tighten upper link to shorten |
| | Link is mounted to high on plough's turret | Re-attach upper link on plough's lower attachment hole |
| Plough "jumps" causing uneven passage | Plough's weight is distributed in excess on support wheel | Adjust support wheel setting to distribute part of plough's weight onto tractor |
| Plough body protecting bolt (peg) is sheared too often | Use of bolt with inadequate diameter or hardness | Mount original bolts with adequate hardness |
| Uneven ploughing on the right and on the left | Improper vertical setting of the plough | Adjust setting screws (see "Adjustment of vertical tilt") |
| | Different settings of approach angle for right and left mouldboards | Adjust mouldboards position |
| | Uneven pressure in tractor's rear tyres | Adjust pressure according to the tractor manufacturer's instructions |
| Furrows are not turned over completely | Set furrow width is too narrow related to ploughing depth | Increase furrow width (refer to "Plough bodies – Fig. Change of furrow width") |
| Furrows are uneven on the same passage | Mouldboards are not set parallel | Adjust mouldboards to be parallel |
| | Skim coulters are set for various depths (plough optional version) | Adjust skim coulters higher / lower, all at equal height |
| | Improperly adjusted disk cutters (plough optional version) | Adjust furrow width and cutter setting |

9.8. Environmental protection

When the machine is significantly worn, as a result of the expiry of its service lifetime, it should be utilised by a specialist company, in accordance with the applicable environmental protection regulations.

Worn and damaged parts of the machine, replaced with the new ones, should be dealt in a special way, as well. Such parts should be stored on the farm in a specially isolated place, protected against access of people and animals, and periodically delivered to the collection points (metal scrap points).

Plastic parts (hydraulic hoses, tyres) should be delivered to separate collection points for recycling purposes.

9.9. Noise and vibrations

The machine does not pose a health risk to the operator, because the noise level / level of emitted acoustic pressure at the workplace, corrected by the characteristics A, does not exceed 70dB (A).

There is no vibration hazard while using the plough, either.

The operator's workplace is the tractor's cabin, appropriately and ergonomically shaped and cushioned.

NOTES

INDEX

INDEX

X. WARRANTY CERTIFICATE

Any defects under warranty should be notified directly to the manufacturer at +48 661 076 457.

For proper warranty service, in addition to the afore-mentioned notification, the machine's user should submit photographs of the machine showing the defect at: serwis@agro-masz.eu.

10.1. Warranty terms

- 1) The "user", as referred herein, means any natural or legal person purchasing agricultural equipment; the "seller" – a trade unit delivering equipment to the user, the manufacturer – a maker of agricultural equipment.
- 2) Before work, the user should carefully get acquainted with this instruction manual in order to avoid unnecessary breakdowns, as failure to observe rules for proper operation results in reduction of the machine's efficiency and loss of warranty rights.
- 3) The manufacturer guarantees its products against faults in materials or production.
- 4) Faults or damages to the plough found within 12 months from the date of purchase shall be removed free of charge at the Purchaser.
- 5) Faults or damages should be submitted personally, in writing or by telephone. Warranty repairs are performed by the manufacturer.
- 6) If it is necessary to perform 4 warranty repairs within the warranty period, and the product still fails to function properly, the purchaser is entitled to have the product replaced with a new defect-free one or have the money returned.
- 7) Upon completion of the repair, the manufacturer must submit a warranty claim within 14 days.
- 8) The purchaser bears costs of technical evaluation – when the manufacturer finds that the claimed product is defect-free and it is confirmed by an expert opinion.
- 9) The manufacturer has the right to cancel the warranty, if within the warranty period the machine was used not as intended, and any unauthorised technical modifications or repairs were carried out.
- 10) The warranty does not cover the removal of damages caused by the user,
 - removal of damages due to modifications or alterations of the product not agreed with the manufacturer (design modifications),
 - removal of damages caused by random or other events, for which the manufacturer shall not be held responsible,
 - removal of damages caused due to the use of the machine not as intended or against provisions of the instruction manual,
 - replacement of ploughshares, ploughshare chisels, breasts and mouldboards, shear bolts, landsides, and other parts, wear and tear of which can occur before the end of warranty period.

The above warranty terms are valid in Poland and apply to the purchase of the machine by the user residing in Poland.

10.2. Warranty table

| MACHINE INFORMATION | |
|------------------------------------|--|
| Plough symbol | |
| Factory number | |
| Date of sale | |
| Manufacturer's signature and stamp | |
| Seller's signature and stamp | |

ATTENTION! When the product is purchased, request the seller to fill in exactly the warranty certificate, specifying the date and place of sale and have the data confirmed with the seller's stamp and signature. Otherwise the purchaser may lose his / her warranty rights. The warranty certificate, if not filled in, filled in illegibly or corrected, is invalid.

10.3. List of service works

| | SCOPE OF REPAIRS | DATE, REPAIR CONTRACTOR'S SIGNATURE STAMP |
|--|------------------|---|
| | | |
| | | |

WARRANTY

| | SCOPE OF REPAIRS | DATE, REPAIR CONTRACTOR'S SIGNATURE STAMP |
|--|------------------|---|
| | | |
| | | |
| | | |
| | | |

XI. PARTS CATALOGUE

Spare parts can be purchased at the point where the machine was sold, or at the machine's manufacturer.

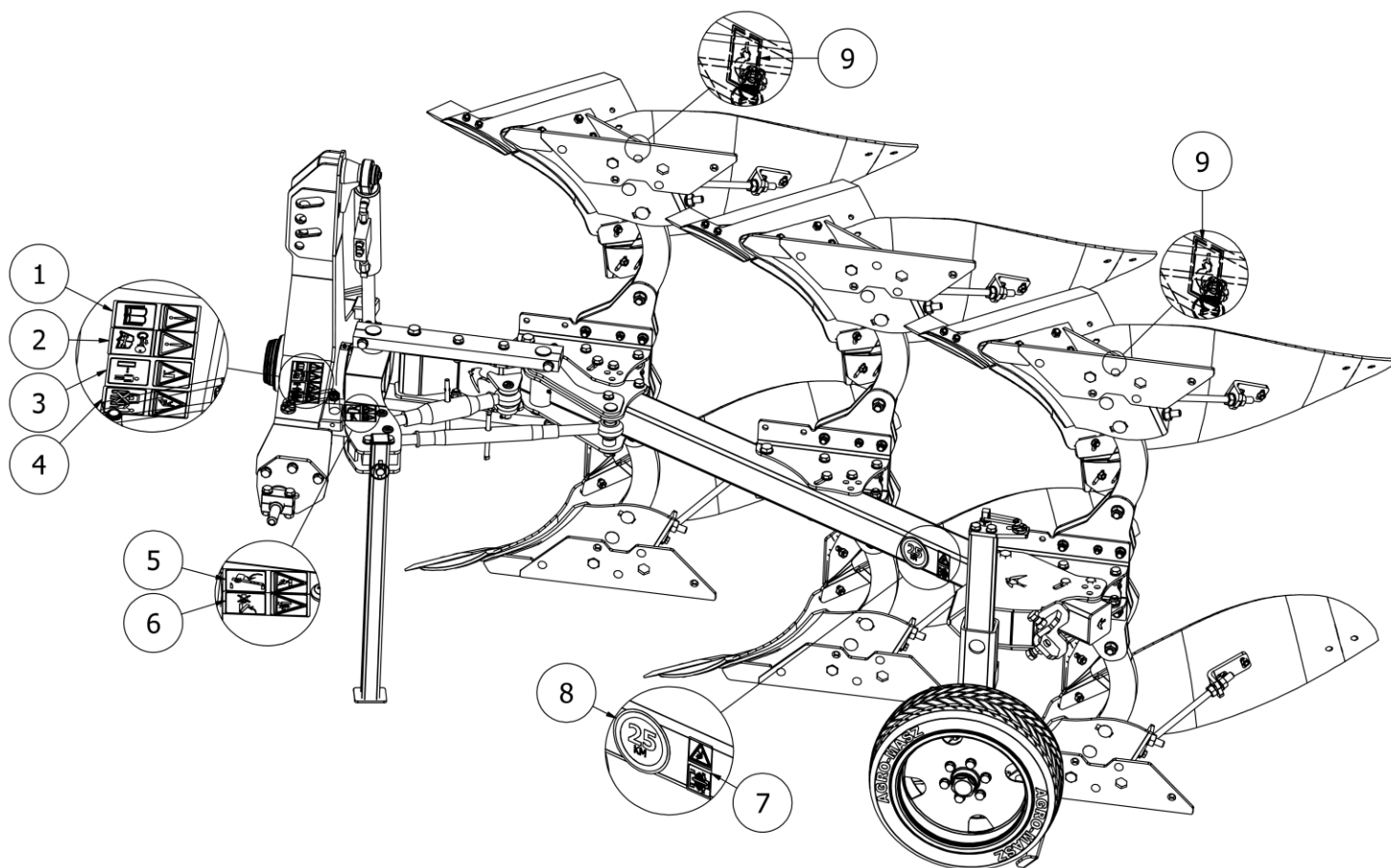
When ordering spare parts include the following data:

- machine symbol, year of manufacture, factory number (see data plate),
- catalogue part designation,
- reference number,
- quantity,
- exact address and phone number of orderer.

Using the catalogue, find the machine's part to be ordered in the figure and determine its designation and catalogue number specified in the table of contents and corresponding reference number.

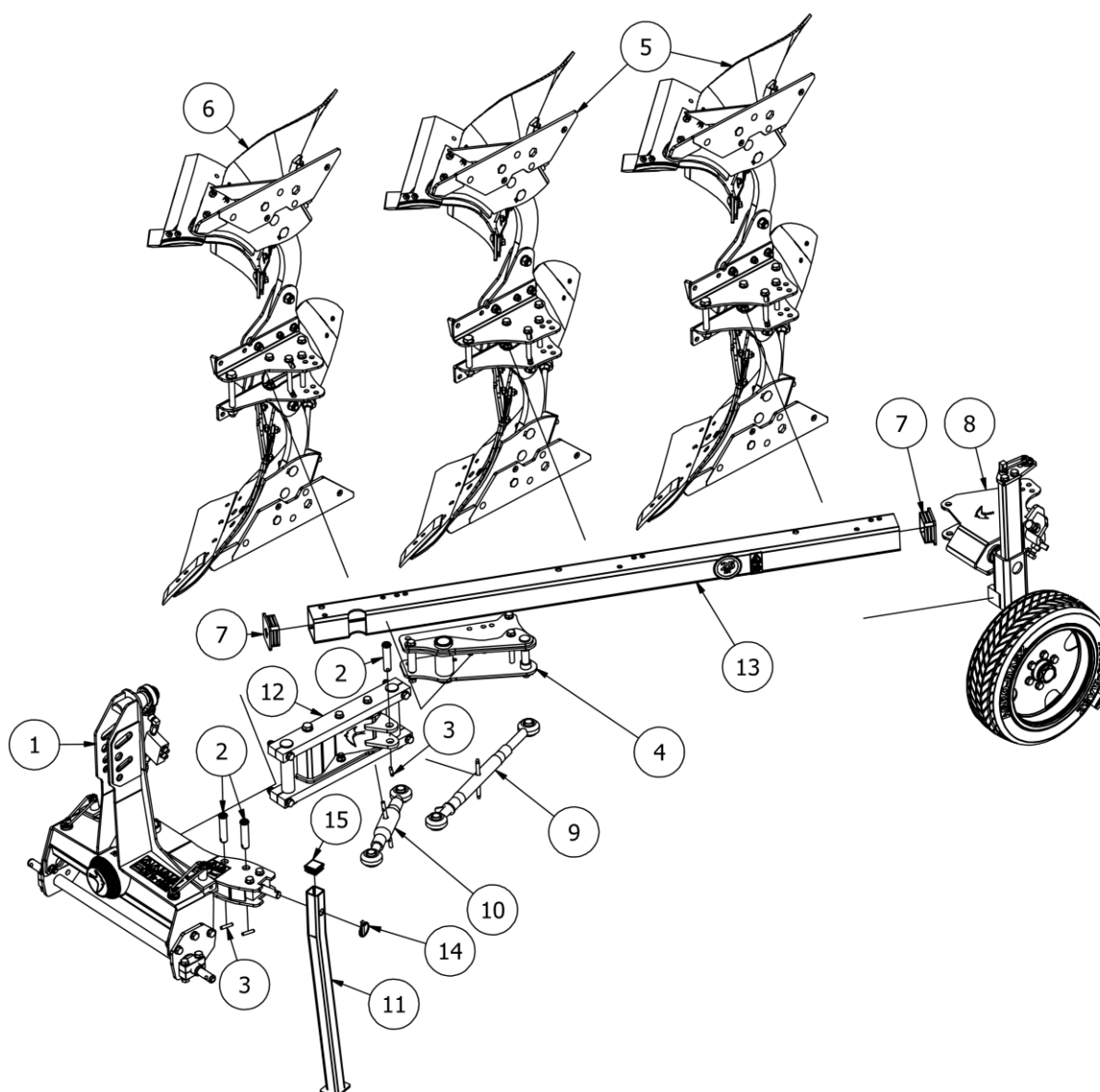
PARTS

Fig. R1 PLM0015 Plough POM 3+1 (pictograms)



| LIST OF PARTS | | | |
|---------------|----------|------------------|--|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | EW00060 | Warning pictogram - Read the Manual |
| 2 | 1 | EW00061 | Warning pictogram - Stop the engine before any servicing |
| 3 | 1 | EW00063 | Warning pictogram - Risk of crushing of the limbs by working elements of the machine or cutting by sharp edges |
| 4 | 1 | EW00068 | Warning pictogram - Stay of personnel between the tractor and the machine mounted is prohibited |
| 5 | 1 | EW00260 | Warning pictogram - Risk of crushing of the body by structural elements. Mount the support. |
| 6 | 1 | EW00062 | Warning pictogram - Do not reach into crushing area |
| 7 | 1 | EW00067 | Warning pictogram - Stay of personnel in a close proximity to the machine mounted is prohibited |
| 8 | 1 | PL01857 | Sticker Speed limit |
| 9 | 2 | EW00066 | Information pictogram - Sling fixation point |

Fig. R2 PLM0015 Plough POM 3+1

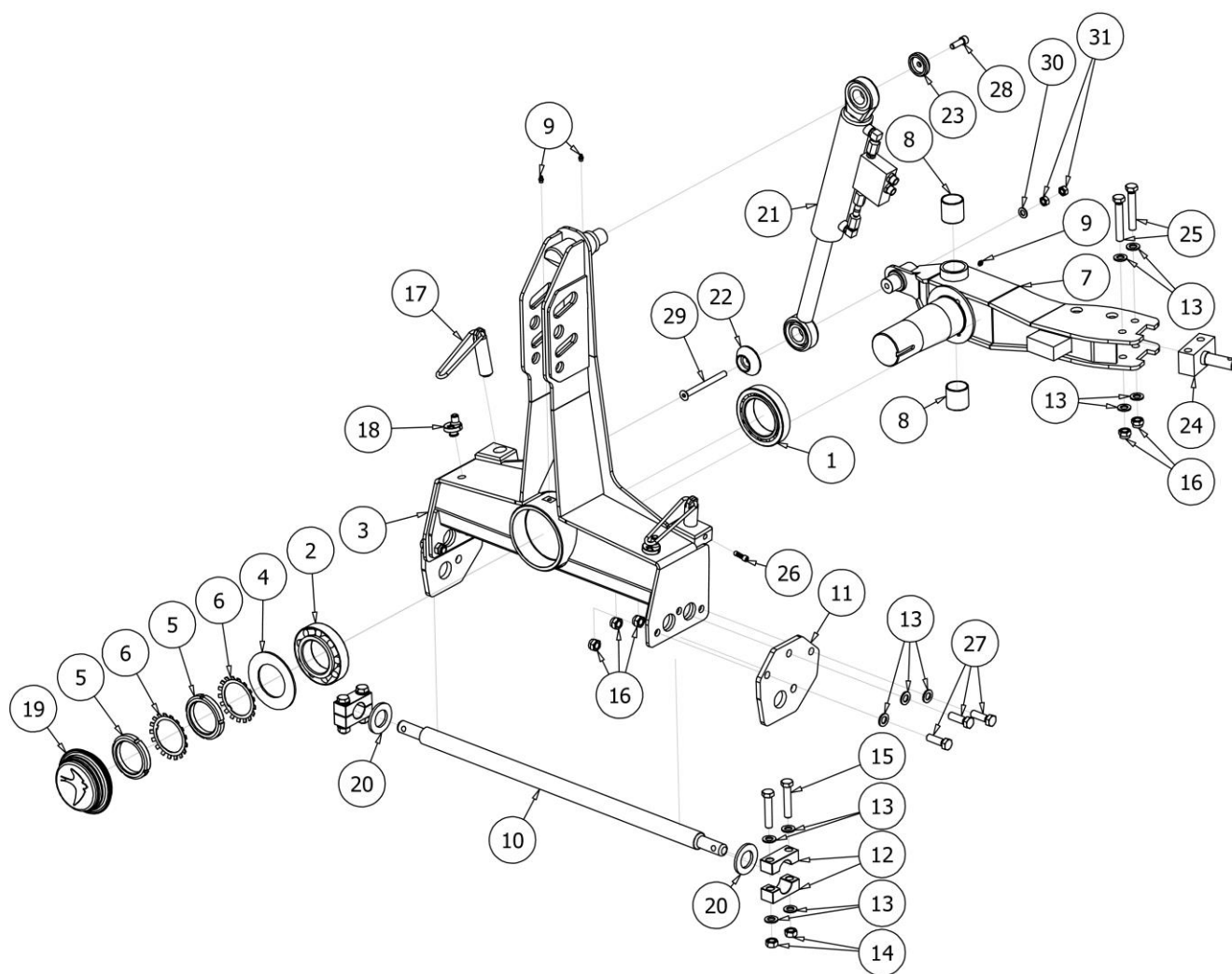


LIST OF PARTS

| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
|-----|----------|------------------|---|
| 1 | 1 | PL01321 | Hitch with turntable POM |
| 2 | 3 | PL00794 | Link pin dia25.5xL105 |
| 3 | 3 | EL00044 | Spring peg dia10xL45 |
| 4 | 1 | PL01485 | Connector |
| 5 | 2 | PL01487 | Rotary plough POM body with mounting |
| 6 | 1 | PL01488 | Rotary plough POM body with mounting |
| 7 | 2 | EW00194 | Rubber plug 100x100 |
| 8 | 1 | PL01525 | Ground-following wheel mechanism side frame 100x100 |
| 9 | 1 | PL01540 | Bottle screw - ruling POM2 |
| 10 | 1 | PL00789 | Link 470mm |
| 11 | 1 | PL01544 | Foot |
| 12 | 1 | PL01739 | Hinge POM complete |
| 13 | 1 | PL01774-02 | Frame POM3 |
| 14 | 1 | EW00004 | Cotter with clip dia10 |
| 15 | 1 | EW00391 | Plastic plug 50x50 |

Fig. R3

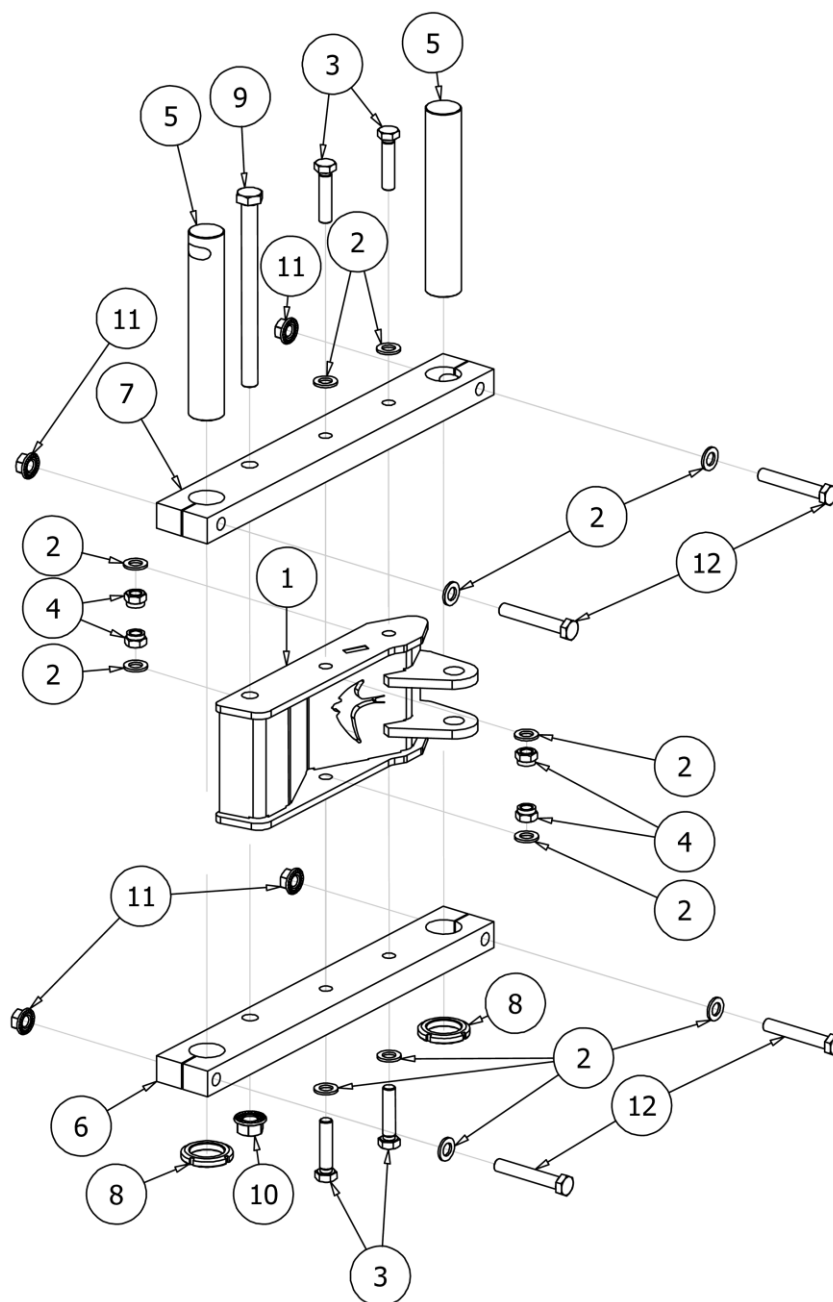
PL01321 Hitch with turntable POM



| LIST OF PARTS | | | |
|---------------|----------|------------------|--|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | EL00060 | Tapered roller bearing 32018 |
| 2 | 1 | EL00061 | Tapered roller bearing 32216 |
| 3 | 1 | PL01324 | Hitch POM |
| 4 | 1 | PL01325 | Dust protection |
| 5 | 2 | EL00058 | Bearing nut KM16 |
| 6 | 2 | EL00059 | Bearing washer MB16 |
| 7 | 1 | PL01327 | Turntable POM |
| 8 | 2 | PL01351 | Sliding sleeve 45x50 |
| 9 | 3 | EL00020 | Grease nipple Type A DIN 71412 - AM8 x 1 conical short |
| 10 | 1 | PL01345 | Spindle 40 dia36 POM |
| 11 | 2 | PL01342 | Adapter hitch |
| 12 | 4 | PL01498 | Spindle lock POM |
| 13 | 18 | P16/O | Flat washer M16 zinc plated |
| 14 | 4 | N16/10/O | Flat washer M16 10 zinc plated |
| 15 | 4 | S16x80/8.8/O | Bolt M16x80 8.8 zinc-plated |
| 16 | 8 | NS16/O | Locknut M16 8 zinc plated |
| 17 | 2 | PL02416 | Rotation adjustment with knob |
| 18 | 2 | PL01267 | Spring lock |
| 19 | 1 | PL01746 | Turntable plug POM |
| 20 | 2 | BT02026 | Washer M41 zinc plated |
| 21 | 1 | PL01406 | Hydraulic cylinder SMT2AM.63x36x240 + valve |
| 22 | 1 | PL00839 | Lock - socket dia35 |
| 23 | 1 | PL00226 | Cylinder protection upper |
| 24 | 1 | PL00040 | Foot holder |
| 25 | 2 | S16x100/8.8/O | Bolt M16x100 8.8 zinc-plated |
| 26 | 2 | PL01760 | Rotation angle adjustment lock |
| 27 | 6 | S16x50/8.8/O | Bolt M16x50 8.8 zinc-plated |
| 28 | 1 | SI12x35/8.8/O | Hexagon socket bolt M12x35 8.8 zinc plated |
| 29 | 1 | SW12x140/8.8/O | Countersunk bolt with hexagonal socket M12x140 10.9 |
| 30 | 1 | P12/O | Flat washer M12 zinc plated |
| 31 | 2 | N12/8.8/O | Flat washer M12 8.8 zinc plated |

Fig. R4

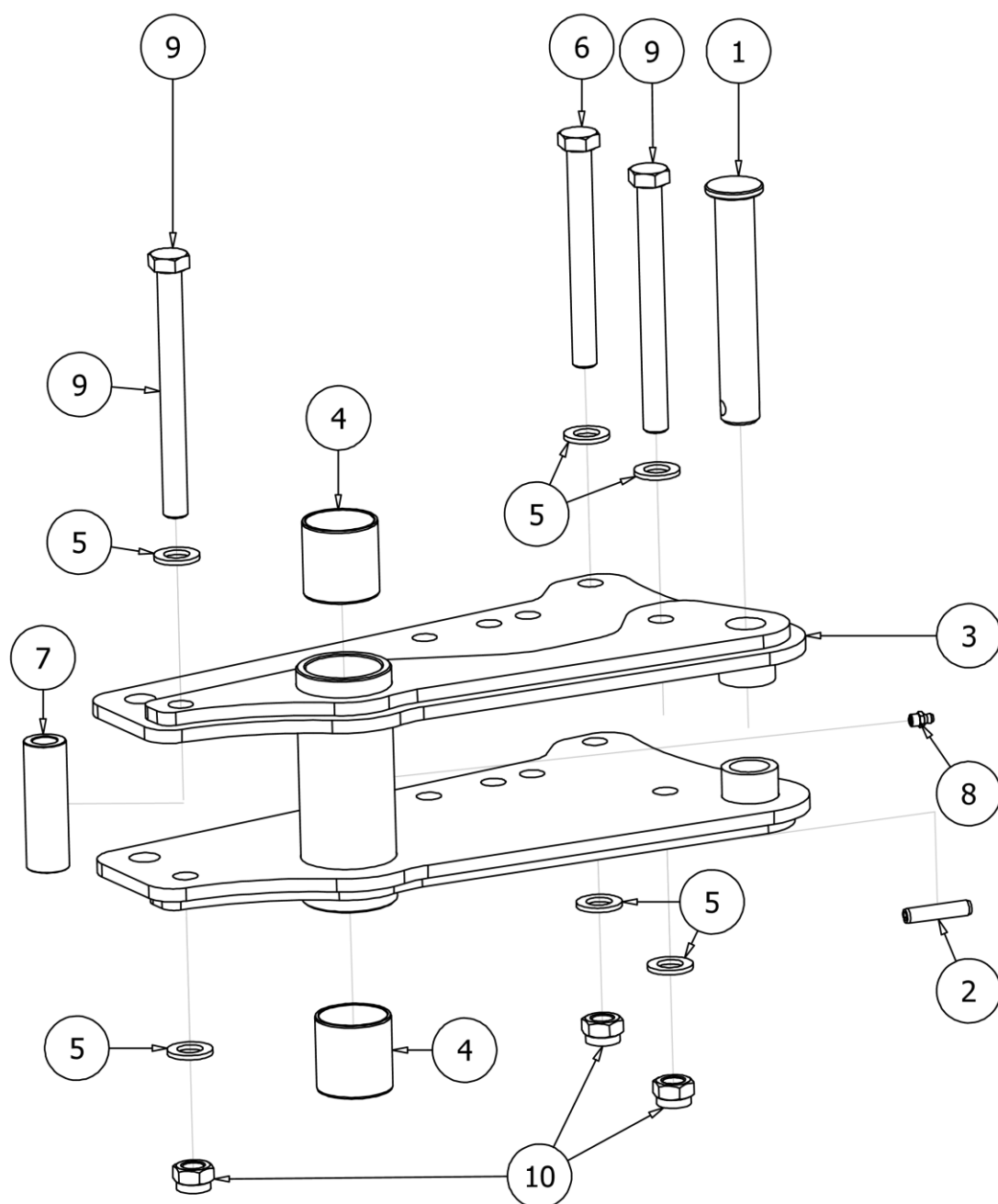
PL01739 Hinge POM complete



| LIST OF PARTS | | | |
|---------------|----------|--------------------|-----------------------------------|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | PL01734 | POM hinge reinforcement |
| 2 | 12 | P16/O | Flat washer M16 zinc plated |
| 3 | 4 | S16x70/8.8/O | Bolt M16x70 8.8 zinc-plated |
| 4 | 4 | NS16/O | Locknut M16 8 zinc plated |
| 5 | 2 | PL01745 | Pin dia45 |
| 6 | 1 | PL01743 | Hinge flat POM |
| 7 | 1 | PL01732 | Hinge flat POM |
| 8 | 2 | EL00043 | Bearing nut KM09 |
| 9 | 1 | S20x1.5x250/10.9/O | Bolt M20x1.5x250 10.9 zinc plated |
| 10 | 1 | NK20x1.5/10/O | Flange nut M20x1.5 10 zinc plated |
| 11 | 4 | NK16x1.5/10/O | Flange nut M16x1.5 10 zinc plated |
| 12 | 4 | S16x1.5x100/10.9/O | Bolt M16x1.5x100 10.9 zinc plated |

Fig. R5

PL01485 Coupling

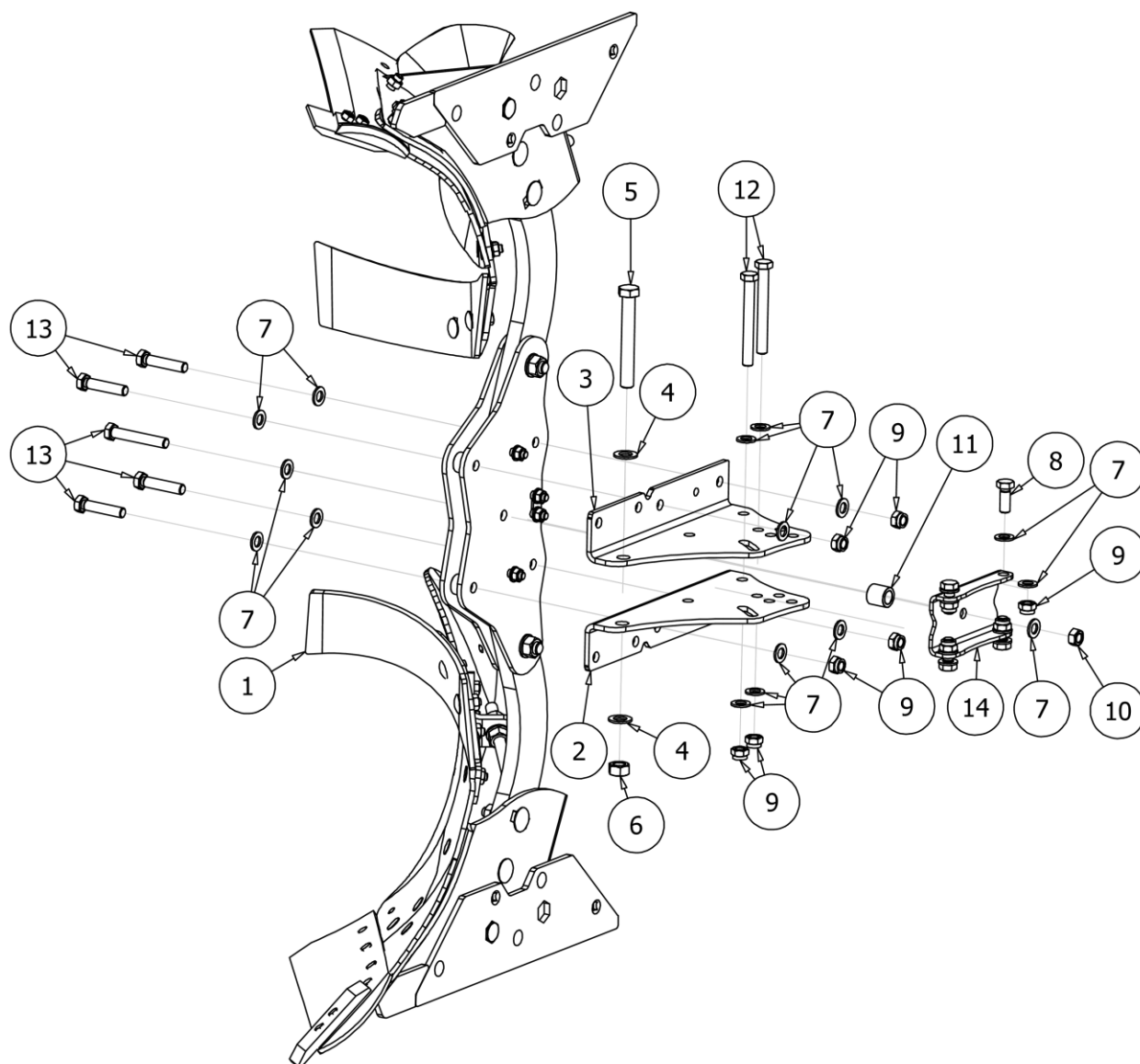


LIST OF PARTS

| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
|-----|----------|------------------|--|
| 1 | 1 | PL01483 | Pin dia25xL157 |
| 2 | 1 | EL00044 | Spring peg dia10xL45 |
| 3 | 1 | PL01486 | Connector |
| 4 | 2 | PL01351 | Sliding sleeve 45x50 |
| 5 | 6 | P16/O | Flat washer M16 zinc plated |
| 6 | 1 | S16x150/8.8/O | Bolt M16x150 8.8 zinc-plated |
| 7 | 1 | PL01495 | Sleeve 16x28x89 |
| 8 | 1 | EL00020 | Grease nipple Type A DIN 71412 - AM8 x 1 conical short |
| 9 | 2 | S16x170/8.8/O | Bolt M16x170 8.8 zinc-plated |
| 10 | 3 | NS16/O | Locknut M16 8 zinc plated |

Fig. R6

PL01487 Rotary plough POM body with mounting

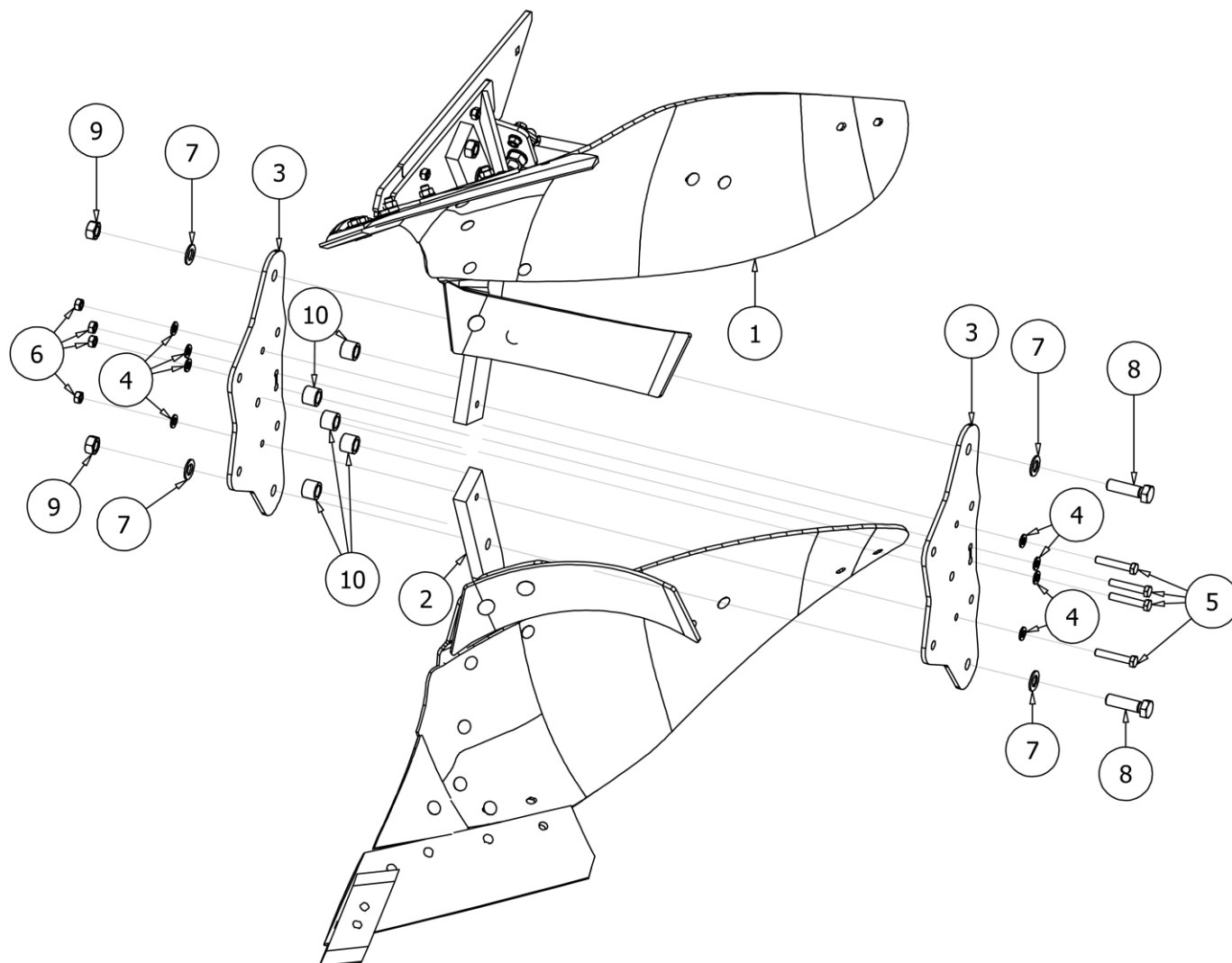


LIST OF PARTS

| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
|-----|----------|------------------|--------------------------------|
| 1 | 1 | PL01476 | Second pair of bodies |
| 2 | 1 | PL01477 | Pocket holder lower |
| 3 | 1 | PL01478 | Pocket holder upper |
| 4 | 2 | P20/O | Flat washer M20 zinc plated |
| 5 | 1 | S20x150/8.8/O | Bolt M20x150 8.8 zinc-plated |
| 6 | 1 | NS20/O | Locknut M20 zinc plated |
| 7 | 22 | P16/O | Flat washer M16 zinc plated |
| 8 | 4 | S16x40/8.8/O | Bolt M16x40 8.8 zinc-plated |
| 9 | 10 | NS16/O | Locknut M16 8 zinc plated |
| 10 | 1 | N16/10/0 | Flat washer M16 10 zinc plated |
| 11 | 1 | PL01518 | Spacer dia20xL31.5 |
| 12 | 2 | S16x140/8.8/O | Bolt M16x140 8.8 zinc plated |
| 13 | 4 | S16x75/8.8/O | Bolt M16x75 8.8 zinc-plated |
| 14 | 1 | PL01558-01 | Reinforcement |

Fig. R7

PL01476 Rotary plough POM body

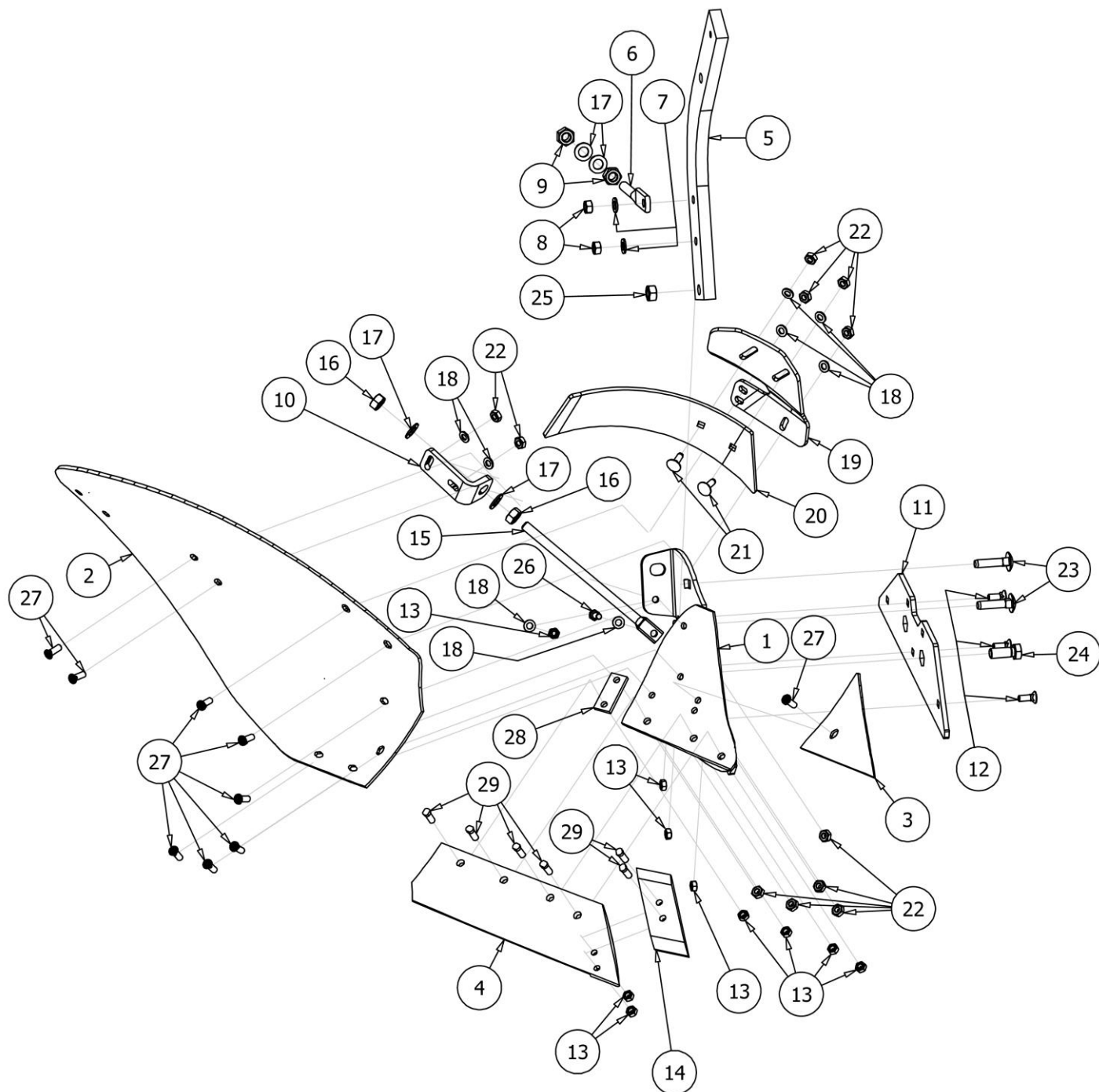


LIST OF PARTS

| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
|-----|----------|------------------|---------------------------------|
| 1 | 1 | PL01443 | Right frog complete POM |
| 2 | 1 | PL01449 | Left frog complete POM |
| 3 | 2 | PL01457 | Pocket vertical plate |
| 4 | 8 | P12/O | Flat washer M12 zinc plated |
| 5 | 4 | S12x70/8.8/O | Bolt M12x70 8.8 zinc-plated |
| 6 | 4 | N12/5.8/O | Flat washer M12 5.8 zinc plated |
| 7 | 4 | P20/O | Flat washer M20 zinc plated |
| 8 | 2 | S20x70/8.8/O | Bolt M20x70 8.8 zinc-plated |
| 9 | 2 | NS20/O | Locknut M20 zinc plated |
| 10 | 5 | PL01472 | Spacer |

Fig. R8

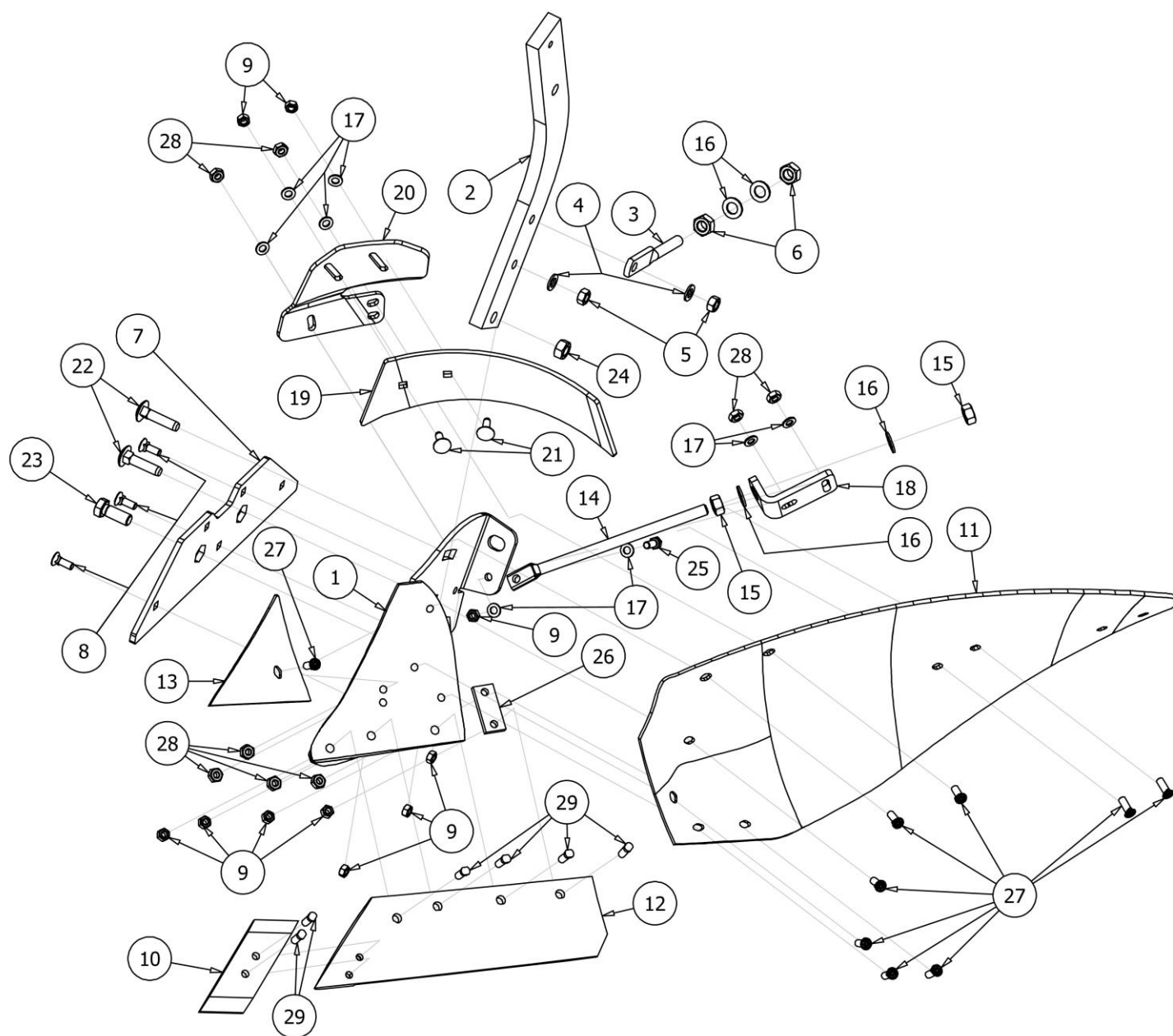
PL01443 Right frog complete POM



| LIST OF PARTS | | | |
|---------------|----------|------------------|--------------------------------------|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | PL01436 | Frog right PJL |
| 2 | 1 | PL01391 | Mouldboard right 14" |
| 3 | 1 | PL01431 | Breast right 14" |
| 4 | 1 | PL01429 | Ploughshare right 14" |
| 5 | 1 | PL01444 | Plough beam POM |
| 6 | 1 | PO.ET.00021 | Angle adjustment screw |
| 7 | 2 | P16/O | Flat washer M16 zinc plated |
| 8 | 2 | N16/10/O | Flat washer M16 10 zinc plated |
| 9 | 2 | N20/8.0/C | Flat washer M20 8.0 black |
| 10 | 1 | PO.WG.00029 | Support mounting |
| 11 | 1 | PL00871 | Landside POL 2015 |
| 12 | 3 | SP12x35/8.8/O | Plough bolt M12x35 8.8 zinc plated |
| 13 | 10 | N12/5.8/O | Flat washer M12 5.8 zinc plated |
| 14 | 1 | PL00342 | Chisel right |
| 15 | 1 | PO.WG.00030 | Board support |
| 16 | 2 | NS20/O | Locknut M20 zinc plated |
| 17 | 4 | P20/O | Flat washer M20 zinc plated |
| 18 | 8 | P12/O | Flat washer M12 zinc plated |
| 19 | 1 | PL01563 | Trash board holder POM |
| 20 | 1 | PL01223 | Trash board right 2016 |
| 21 | 2 | SZ12x35/8.8/O | Coach bolt M12x35 8.8 zinc plated |
| 22 | 11 | N12/8.8/C | Flat washer M12 8,8 black |
| 23 | 2 | SZ16x70/8.8/O | Coach bolt M16x70 8.8 zinc plated |
| 24 | 1 | S20x50/8.8/O | Bolt M20x50 8.8 zinc-plated |
| 25 | 1 | N20/8.8/O | Nut M20 8.8 zinc plated |
| 26 | 1 | S12x35/8.8/O | Bolt M12x35 8.8 zinc-plated |
| 27 | 9 | PL02848 | Plough bolt M12x35 12.9 |
| 28 | 1 | PL00728 | Ploughshare coupling with mouldboard |
| 29 | 6 | PL00785 | Chisel bolt M12x40 |

Fig. R9

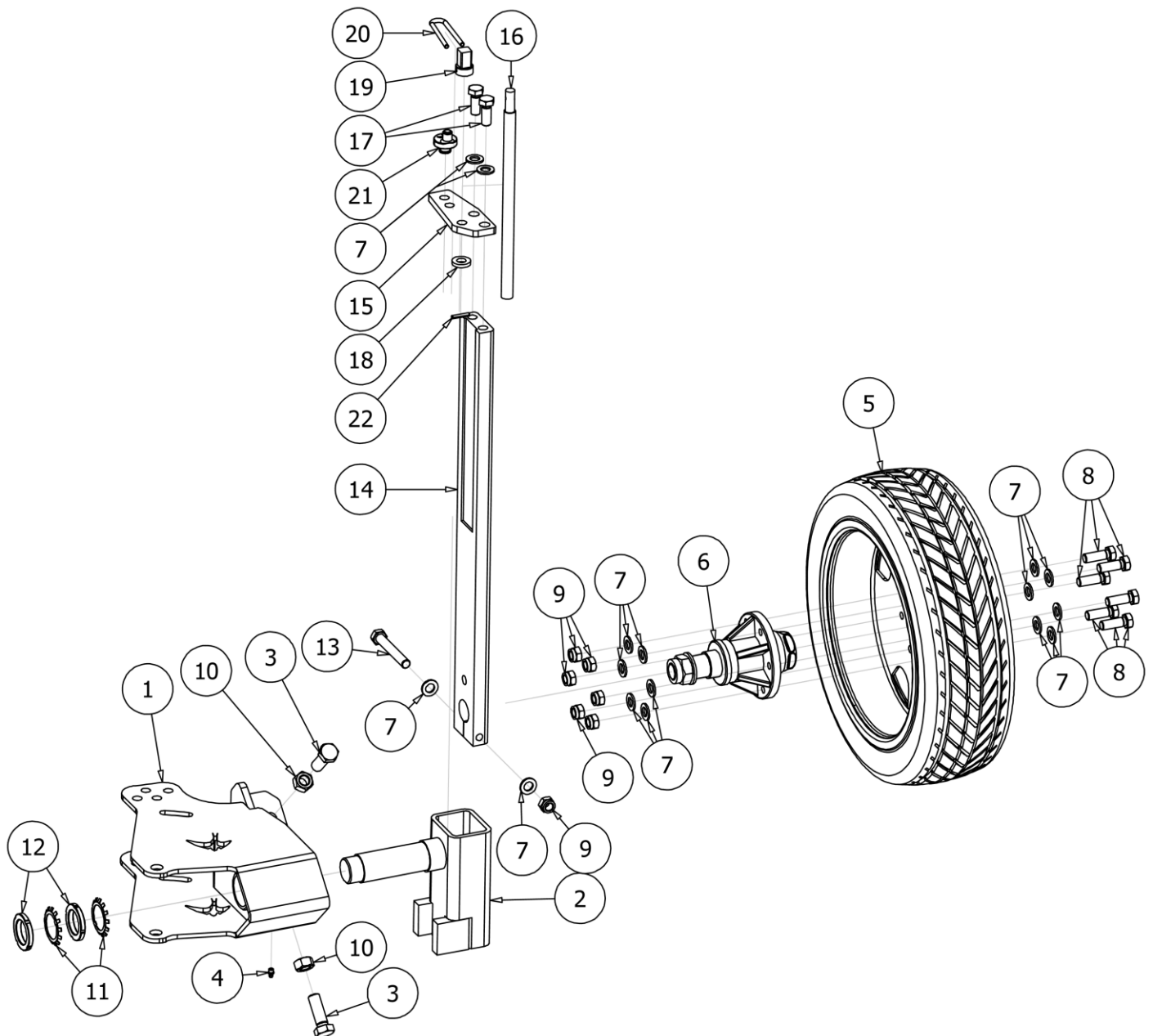
PL01449 Left frog complete POM



| LIST OF PARTS | | | |
|---------------|----------|------------------|--------------------------------------|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | PL01448 | Left frog |
| 2 | 1 | PL01444 | Plough beam POM |
| 3 | 1 | PO.ET.00021 | Angle adjustment screw |
| 4 | 2 | P16/O | Flat washer M16 zinc plated |
| 5 | 2 | N16/10/O | Flat washer M16 10 zinc plated |
| 6 | 2 | N20/8.0/C | Flat washer M20 8.0 black |
| 7 | 1 | PL00871 | Landslide POL 2015 |
| 8 | 3 | SP12x35/8.8/O | Plough bolt M12x35 8.8 zinc plated |
| 9 | 12 | N12/5.8/O | Flat washer M12 5.8 zinc plated |
| 10 | 1 | PL00343 | Chisel left |
| 11 | 1 | PL01404 | Mouldboard left 14" |
| 12 | 1 | PL01430 | Ploughshare left 14" |
| 13 | 1 | PL01433 | Breast left 14" |
| 14 | 1 | PO.WG.00030 | Board support |
| 15 | 2 | NS20/O | Locknut M20 zinc plated |
| 16 | 4 | P20/O | Flat washer M20 zinc plated |
| 17 | 8 | P12/O | Flat washer M12 zinc plated |
| 18 | 1 | PO.WG.00029 | Support mounting |
| 19 | 1 | PL01579 | Trash board left 2016 |
| 20 | 1 | PL01578 | Trash board holder POM |
| 21 | 2 | SZ12x35/8.8/O | Coach bolt M12x35 8.8 zinc plated |
| 22 | 2 | SZ16x70/8.8/O | Coach bolt M16x70 8.8 zinc plated |
| 23 | 1 | S20x50/8.8/O | Bolt M20x50 8.8 zinc-plated |
| 24 | 1 | N20/8.8/O | Nut M20 8.8 zinc plated |
| 25 | 1 | S12x35/8.8/O | Bolt M12x35 8.8 zinc-plated |
| 26 | 1 | PL00728 | Ploughshare coupling with mouldboard |
| 27 | 9 | PL02848 | Plough bolt M12x35 12.9 |
| 28 | 9 | N12/8.8/C | Flat washer M12 8.8 black |
| 29 | 6 | PL00785 | Chisel bolt M12x40 |

Fig. R13

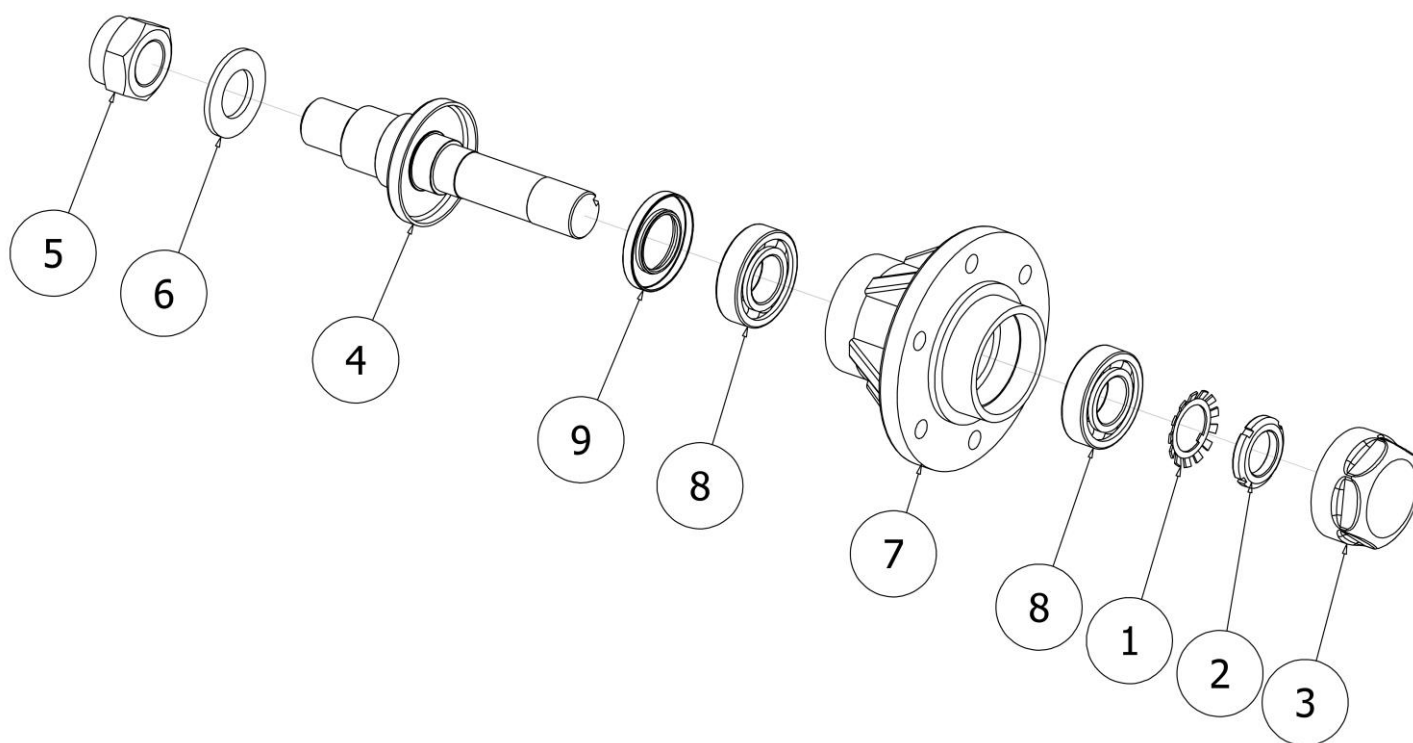
PL01525 Ground-following wheel mechanism side frame 100x100



| LIST OF PARTS | | | |
|---------------|----------|------------------|--|
| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
| 1 | 1 | PL01523 | Wheel mounting |
| 2 | 1 | PL01297 | Mechanism for flat |
| 3 | 2 | S20x60/8.8/O | Bolt M20x60 8.8 zinc-plated |
| 4 | 1 | EL00020 | Grease nipple Type A DIN 71412 - AM8 x 1 conical short |
| 5 | 1 | PZ.EM.00003 | Rim with tyre PZ40 PJ |
| 6 | 1 | PL01528 | Wheel hub POM complete |
| 7 | 16 | P16/O | Flat washer M16 zinc plated |
| 8 | 6 | S16x45/8.8/O | Bolt zinc plated M16x45 grade 8.8 |
| 9 | 7 | NS16/O | Locknut M16 8 zinc plated |
| 10 | 2 | NS20/O | Locknut M20 zinc plated |
| 11 | 2 | PL01243 | Bearing washer MB09 |
| 12 | 2 | EL00043 | Bearing nut KM09 |
| 13 | 1 | S16x110/8.8/O | Bolt M16x110 8.8 zinc plated |
| 14 | 1 | PL01298 | Wheel arm |
| 15 | 1 | PL01301 | Threaded rod mounting |
| 16 | 1 | PL01304 | Threaded rod Tr 20x4 |
| 17 | 2 | S16x40/8.8/O | Bolt M16x40 8.8 zinc-plated |
| 18 | 1 | PL01310 | Washer 16x32.2x6 |
| 19 | 1 | PL01311 | Thread head |
| 20 | 1 | PL01312 | Rotation lock |
| 21 | 1 | PL01267 | Spring lock |
| 22 | 1 | EL00070 | Dowel pin d6xL32 |

Fig. R14

PL01528 Wheel hub POM



LIST OF PARTS

| NO. | QUANTITY | REFERENCE NUMBER | DESCRIPTION |
|-----|----------|------------------|---|
| 1 | 1 | EL00018 | Bearing washer MB6 |
| 2 | 1 | EL00019 | Bearing nut KM6 |
| 3 | 1 | PL00454 | Hub dust nut |
| 4 | 1 | PL01527 | Wheel axle POM |
| 5 | 1 | NS30/O | Locknut M30 zinc plated |
| 6 | 1 | P30/O | Flat washer M30 zinc plated |
| 7 | 1 | SI00916 | Housing of maintenance-free hub (SR, PJ, PZ, POM) |
| 8 | 2 | EL00016 | Tapered roller bearing 30206 |
| 9 | 1 | EL00017 | O-ring DIN 3760 - A - 35 x 62 x 7 - NBR |