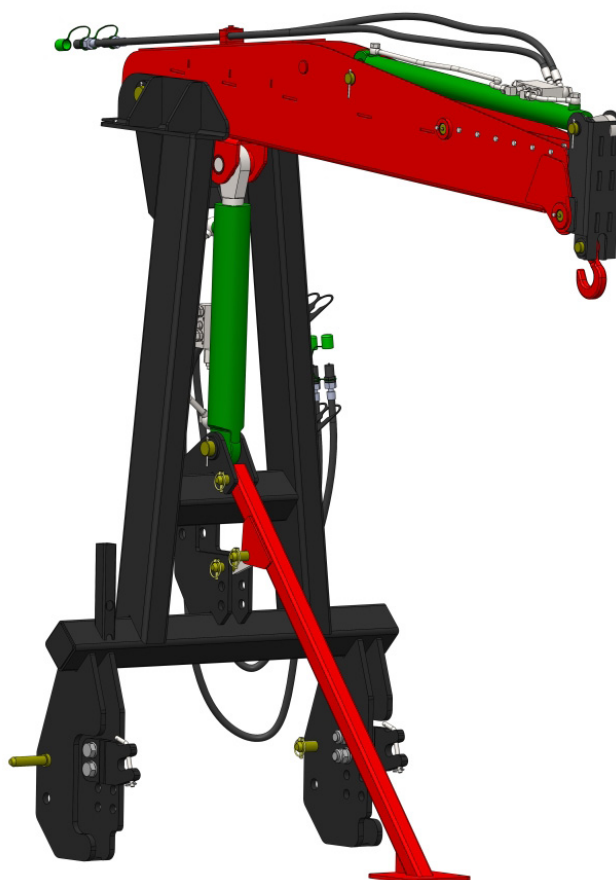

METAL-FACH Sp. z o.o.
16-100 Sokółka, ul. Kresowa 62
Tel. no. +48 85 711 98 40
Fax: +48 85 711 90 65

**BIG-BAG FERTILISER SUSPENDED LOADER
T466**




CE

Machine type: T466
Year of
manufacture:
Serial no.

EN

Edition no. 01
Year of issue: 2012
Original Instructions

 ***Read the instructions
carefully before
operating the machine***

WARNING:

The manufacturer delivers the machine completely assembled and complete with the operating instructions and the warranty card. When receiving the machine, the customer should verify that the product and enclosed documents are complete, verify the technical condition and check for any transport damage or missing parts.

Before starting operation of the machine, you absolutely must understand the safety guidelines in the operating instructions. Also please ensure that all operators of the machine read and understand these operating instructions before start.

Attention!

Complete understanding of the Operating Instructions and following the guidelines presented herein guarantees easier work, reliability and safe work.

Detailed information concerning operation of this and other machines from Metal-Fach Sp. z o.o., as well as service assistance and the spare parts catalogue are always available at our sales representatives.

Always at your service, Metal-Fach Sp. z o.o.

Head office:	tel. no. +48 85 711 98 40, fax: +48 85 711 90 65, biuro@metalfach.com.pl
Sales Department:	tel. no. +48 85 711 98 44, fax: +48 85 711 07 89, handel@metalfach.com.pl
Service:	tel. no. +48 85 711 07 80, fax: +48 85 711 07 93, serwis@metalfach.com.pl

Details of warranty and customer service are listed in the warranty card.

WE WISH YOU A SATISFACTORY EXPERIENCE WITH OUR PRODUCTS

**THE MANUAL CONSTITUTES
A PART OF THE MACHINE'S EQUIPMENT
KEEP IT FOR ANY FUTURE USERS**

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CE DECLARATION OF CONFORMITY



FOR THE MACHINE

„METAL-FACH” Sp. z o.o.
ul. Kresowa 62
16-100 SOKÓŁKA

which acts as the manufacturer

declares under sole responsibility that the following machine:

BIG-BAG FERTILISER SUSPENDED LOADER

type/model T466.....

year of manufacture:

serial number:

function/purpose – loading of fertilisers in big-bags

this declaration concerns, meets the following requirements:

- **Directive 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** dated 17 May 2006 on machines and the Resolution of the Minister of Economy of 21 October 2008 concerning general requirements for machinery (Journal of Laws, No. 199 item 1228);

The following harmonised standards were used for compliance evaluation:

PN-EN ISO 4254-1:2009	PN-EN 12525+A2:2010
PN-EN ISO 13857:2010	PN-EN ISO 12100:2012
PN-EN ISO 4413:2011	

- and the following standards: PN-ISO 3600:1998, PN-ISO 11684:1998; and the Resolution of the Ministry of Infrastructure of 31.12.2002 on the technical requirements for vehicles and the scope of their necessary equipment (Journal of Laws 2003, issue 32 item 262 as amended).

Safety Test Report no. MF/6/2012

Unit responsible for engineering documentation: METAL-FACH Engineering Department

This Declaration of Conformity becomes void and null if the machine design is changed or modified in any manner without prior consent from the manufacturer.

Sokolka, 06.12.2012

President of the Management Board
Jacek Marek Kucharewicz

Introduction

Dear Customers,

Thank you for your trust in us. You have chosen a product of highest quality that will help you improve your work performance. The long-lasting experience of METAL-FACH guarantees optimal efficiency, quality and comfort of work.

Safety

Read the operating instructions before use and follow the safety rules!

All sections concerning safety in this manual are designated with the warning triangle sign.

The warning and information symbols on the machine contain important guidelines to ensure safe work. Follow the for your safety.

Should you have any doubts concerning safe use or require clarification, contact the representative of METAL-FACH. Our employees are at your service.

This operating instructions manual contains important information about professional and correct use of the machine, as well as its safe operation.

The machine shall be controlled from the tractor cabin only. The loader shall only be used for the operations it has been designed for, i.e. handling and lifting of big-bags with fertilisers for charging of fertilizer spreaders. Never exceed the permitted lifting capacity of 1000 kg. Despite any experience in operation of this machine type, it is strongly recommended to read these instructions to understand the product. The manual contains information that is critical to safety and performance, as well as the validity of the manufacturer's warranty. Having received the purchased product, verify that it was not damaged in delivery or transport. If any damage is found or there are parts missing, immediately contact your dealer.

The user must read, understand and carefully follow the product's operating instructions. The user is also required to keep the hitches and connections on the tractor in good technical conditions, and to make sure that the driving vehicle has the required lifting capacity for the load weight value of the complete machine equipment plus the big-bag filled with a fertiliser. Metal-Fach reserves the right to introduce changes without notice to the operating and maintenance instructions, and to update the contents without notice.

The dealer must have introduced you to operation, setting and maintenance of this machine upon delivery.

This preliminary orientation usually covered only the basic information and it shall not replace the thorough understanding of various tasks, functions and proper use.

An equally important factor for safe operation is ensuring the use of original and correct spare parts for the bag lifting and unloading arm you operate.

1. Preliminary information

1.1. Machine identification

The machine is identified by the information on its nameplate. The nameplate contains the basic information about the product, e.g. the machine's name, symbol, year of manufacture, serial number, load capacity, weight and the CE mark to confirm compliance with the applicable Community guidelines and engineering specifications for the applicable product group.

The nameplate is on the loader support frame, i.e. on the left side of the main frame as indicated below.

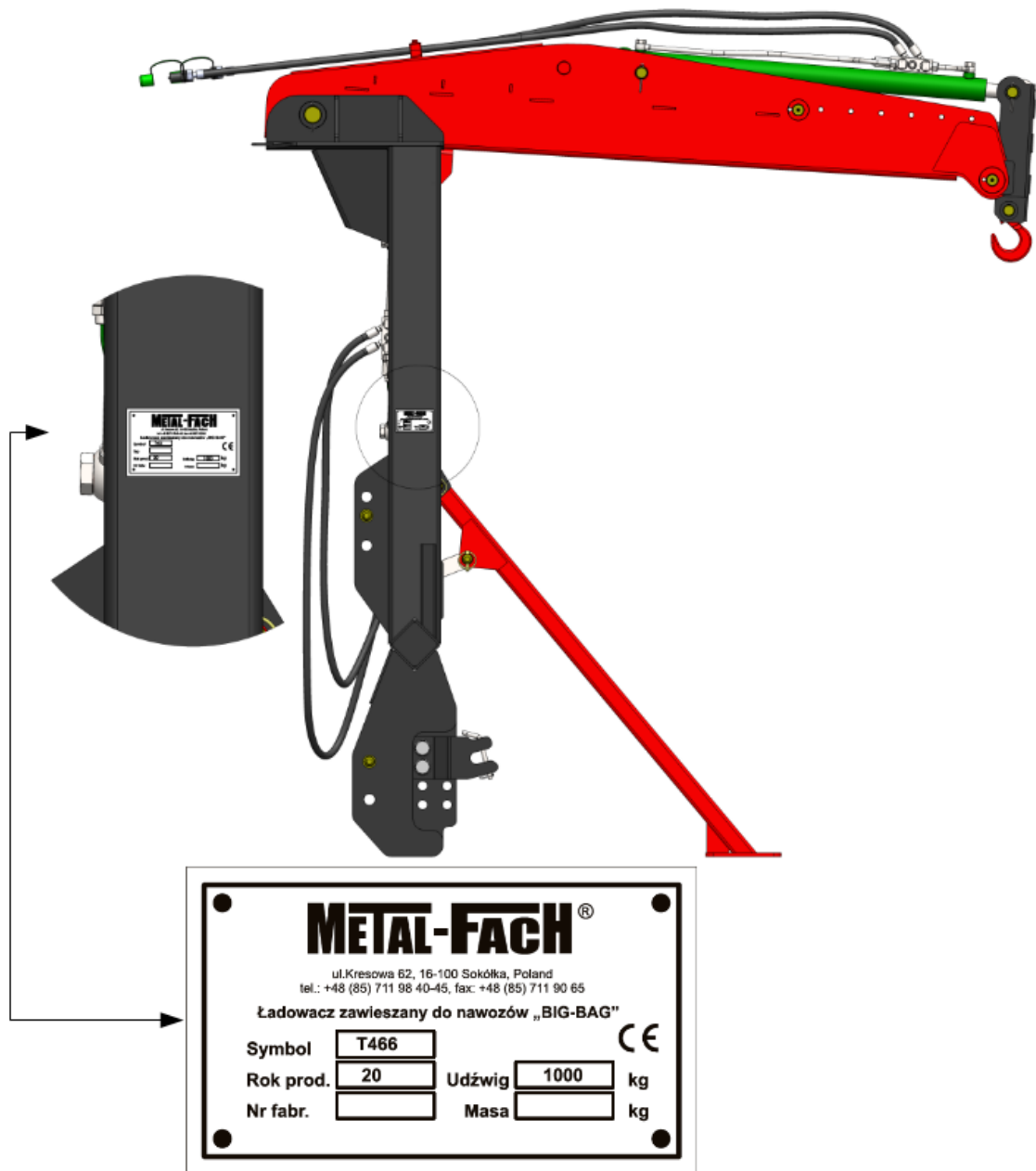


Fig. 1 Location of the nameplate

Identification data:

Machine type: big-bag fertiliser suspended loader

Type / Code: T466 /

Serial no.:

Manufacturer: METAL-FACH Sp. z o.o.
16-100 Sokółka
ul. Kresowa 62
Tel. no. +48 85 711 98 40
Fax: +48 85 711 90 65

Sold by:

Address:
.....

Tel./Fax:

Date of delivery:

Owner / User:

Name:

Address:
.....

Tel./Fax:

Environment, health, and safety

The big-bag fertiliser suspended loader can only be operated and serviced by persons who have read and understood these operating instructions and the following general rules for safe work.

1. Never commission and test run the machine in closed shelters due to the hazard of exhaust gas inhalation.
2. Before starting this machine, understand all systems, controls and their functions! It is too late to learn that during normal operation!
3. Operation and servicing of the arm can only be assigned to persons who is applicably qualified to become authorised for operation of farming machines.
4. Before use of the big-bag fertiliser suspended arm, inspect its technical condition, and the fastening of individual mechanisms, especially of the hydraulic system parts and working units.
5. Do not operate the machine when it is completely functioning.
6. Re-tighten all loose components and immediately replace all damaged components.
7. If repairs are necessary, use original spare parts only and have a properly qualified person do the repairs.
8. Do not replace the hook with any other part that has not been factory installed.
9. All safety guards shall be installed and undamaged.
10. Wear protective clothing at work.
11. The driving tractor of the big-bag fertiliser suspended loader shall be equipped with a driver's cabin.
12. Start the machine when it is in the operating position only and after verifying that no persons and animals are within 50 m of radius.
13. Prior to starting the machine, ensure that all adjustment elements work correctly.
14. Children must not approach the machine when it is in motion.
15. If any failure occurs, immediately stop the tractor's hydraulic system.
16. The big-bag fertiliser suspended loader shall only be coupled with tractors rated at the power output listed in the technical characteristics in these operating instructions. In order to maintain the required stability of the tractor, the vehicle must be equipped with front weight to keep the tractor front axle load at a minimum 20% of the tractor alone, including the loader, spreader and bag weight.
17. During transport driving, the machine must remain lifted on the hydraulic lift of the tractor at a height that leaves at least 300 mm of clearance under the loader frame. Secure the three-point hitch with chain to prevent the machine from dropping. The lower links of the tractor shall be rigid (the loader-spreader system must not swing sideways).
18. Transport the lifting arm on public roads only when coupled with a fertiliser spreader.
19. Before transport check:
 - that the feed lines are properly connected;
 - the hydraulic and braking systems for visible faults;
 - that the parking brake has been fully released;
 - operation of the braking system;
 - fastening of the support on the loader.
20. If the hydraulic system drive is engaged with the PTO drive, remove the drive shaft for transport driving of the loader-spreader system charged with a fertiliser.

21. Always mind the steerability and braking performance of the tractor! The machine installed on or coupled to the tractor, as well as the front and rear weights affect traction, steerability and braking performance of the tractor.
22. Check the braking performance before driving!
23. When cornering with the machine suspended or hitched, mind the reach of the machine and its inertia!
24. Always adapt your driving speed to the traffic!
25. Before driving downhill, always shift into a lower gear!
26. Exceeding the permitted load capacity may result in an accident.
27. During all adjustments and servicing, lower the machine into its rest position, stop the tractor engine, ensure that all rotating parts have stopped and decouple the drive shaft.
28. All components loosened for inspection, repairs or replacement must be permanently reaffixed.
29. In case of cut, wash the wound and sterilise with hydrogen peroxide. Contamination of the wound may result in hazards to health and life!
30. Do not carry persons, animals or objects that are irrelevant to operation on the machine.
31. The PTO drive shaft guard must be always installed and secured with chains from turning. Replace all damaged guards immediately.
32. Exercise extreme caution when travelling on public roads and follow the valid traffic code. Install a triangle warning sign when in transit.
33. Fill the tank of the spreader coupled with the loader only with the PTO shaft decoupled and the dosing openings closed.
34. Do not enter between the tractor and the loader when the tractor engine is running.
35. Do not leave the loaded loader lifted unattended.
36. Do not use the loader to haul, push or strike any objects.
37. Exercise extreme caution when unloading or loading near power lines. Keep a safe distance from live power cables.
38. Do not assign any person to operate the loader before making sure that they have understood the rules of operation and safety regulations.
39. Do not transport any persons or cargo with the loader.
40. When driving the tractor coupled with the loader and the fertiliser spreader, retract the loader arm and set it horizontally. Install red-and-white warning plates with lamp clusters on both sides of the spreader. Install the slow-moving vehicle sign in the bracket on the back of the spreader. Install a red-and-white warning side with a red parking light at the back of the loader arm.
41. Check the fastening of the support on the loader before driving.

1.2. General guidelines for hydraulic system servicing

1. When coupling the hydraulic hose with the tractor's hydraulic system, make sure that the hydraulic systems of the tractor and of the machine have been depressurised.
2. Periodically inspect all hydraulic lines and replace with new ones when damaged or expired. Replaced hydraulic lines must meet the applicable technical requirements.
3. Before servicing the hydraulic system, lower the machine, turn off the tractor engine and remove the ignition key.

Warning!
Travelling on public roads without the identification required by the traffic code is forbidden.

4. The operating life of hydraulic lines shall not exceed 5 years (including storage for up to two years). The hydraulic lines age and weather, which is natural. Hence the operating and storage life is limited.
5. Never attempt to seal leaking hydraulic lines with your hands or fingers. The liquid (hydraulic oil) which escapes under high pressure may puncture skin, penetrate the body and cause severe injury. If injured by hydraulic oil, immediately seek medical attention. Danger of infection.

1.3. Warning symbols



The big-bag fertiliser suspended loader features adhesive labels with warning and information symbols for the user and also indicating that the operating instructions must be read for operation, maintenance and transport.


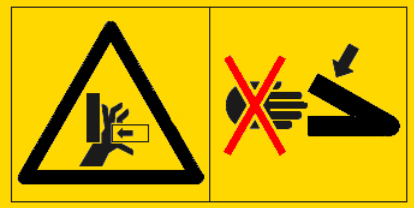
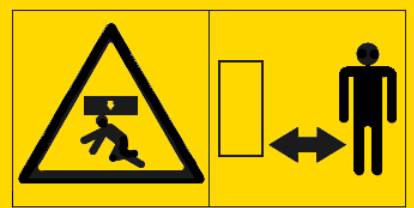

Keep the symbols clean. If damaged or lost, apply a new sticker of the same type.


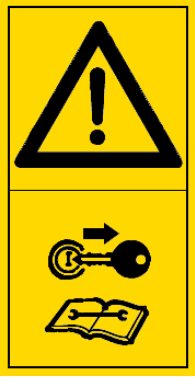


New labels are available for purchase from the manufacturer.







The warning signs must always be legible. If signs are illegible or destroyed, new ones are available for purchase from METAL-FACH dealers as spare parts.

1.3.1. List of warning signs

Warning sign	
 <p style="text-align: center;">PO17</p>	<p>Danger of cutting or severing of fingers or hands by moving operating parts!</p> <p>These hazards may be the cause of most frequent injuries, including amputation of fingers and hands.</p> <p>Never reach into the hazardous areas when the tractor engine is running and the power transmission shaft/hydraulic system is coupled/connected.</p> <p>Only touch the moving operating parts when they have completely stopped.</p>
 <p style="text-align: center;">PO13</p>	<p>Danger of crushing fingers or hands by exposed moving machine parts!</p> <p>This hazard may be the cause of most frequent injuries, including amputation of fingers and hands.</p> <p>Never reach into the hazardous areas when the tractor engine is running and the power transmission shaft/hydraulic system is coupled/ connected.</p>
 <p style="text-align: center;">PO28</p>	<p>Danger of crushing the whole body under suspended loads/machine parts!</p> <p>This hazard may result in extremely severe or fatal body injuries.</p> <p>Do not stay under suspended loads/machine parts.</p> <p>Maintain safe distance from the suspended load/machine part.</p> <p>Mind that all persons must be at a safe distance from the suspended load/machine part.</p> <p>Remove all persons from the hazardous area of the suspended load/machine part.</p>
 <p style="text-align: center;">PO1</p>	<p>Read and follow the safety guidelines in these operating instructions before starting the machine!</p>

 <p style="text-align: center;">PO18</p>	<p>Danger from escaping high-pressure hydraulic oil – may pierce the skin and penetrate the body (danger of infection)!</p> <p>This hazard may result in severe damage with long-term consequences.</p> <p>Read and follow the applicable guidelines in the operating instruction before repairing the hydraulic system.</p>
 <p style="text-align: center;">PO2</p>	<p>Hazards to service personnel from accidental start/movement of the machine during assembly, adjustment, troubleshooting, cleaning or repairs of the machine.</p> <p>The potential hazards may result in extremely severe or fatal injuries.</p> <ul style="list-style-type: none"> - Secure the tractor and the machine before any actions that may result in accidental start and movement of the machine. - Follow the chapters of these operating instructions that apply to the intended task.
 <p style="text-align: center;">PO38</p>	<p>Danger of touching power cables when lifting fertiliser bags!</p> <p>These hazards may result in extremely severe or fatal body injuries.</p> <p>Exercise extreme caution when working near power lines to avoid touching them with the arm.</p>
 <p style="text-align: center;">PO4</p>	<p>Danger of crushing and impact between the tractor tail and the machine during coupling and decoupling!</p> <p>These hazards may result in extremely severe or fatal body injuries.</p> <ul style="list-style-type: none"> - Do not start the tractor's TPH hydraulic system when any person remains between the tractor and the machine. - Actuate the TPH hydraulic system controls: <ul style="list-style-type: none"> • only from the suitable station at the tractor. • never start the TPH when there is someone in the hazardous area between the tractor and the machine.

 <p style="text-align: center;">PI3</p>	<p>Lifting points for machine loading.</p>
 <p style="text-align: center;">PO39</p>	<p>Danger of overloading (destruction) of the machine and/or turning over of the tractor when loading bags exceeding 1000 kg of weight! These hazards may result in extremely severe or fatal body injuries. Do not exceed 1000 kg of weight when lifting fertiliser bags.</p>
 <p style="text-align: center;">PI2</p>	<p>Grease lubrication points.</p>
 <p style="text-align: center;">PO22</p>	<p>Install a support before entering the hazardous area.</p>
<p style="text-align: center;">PIX</p>	<p>Information label – WARNING! Do not lift or transport any persons</p>
<p style="text-align: center;">PIXX</p>	<p>Information label – Lifting capacity: 1000 kg</p>

1.3.2. Locations of signs on the machine

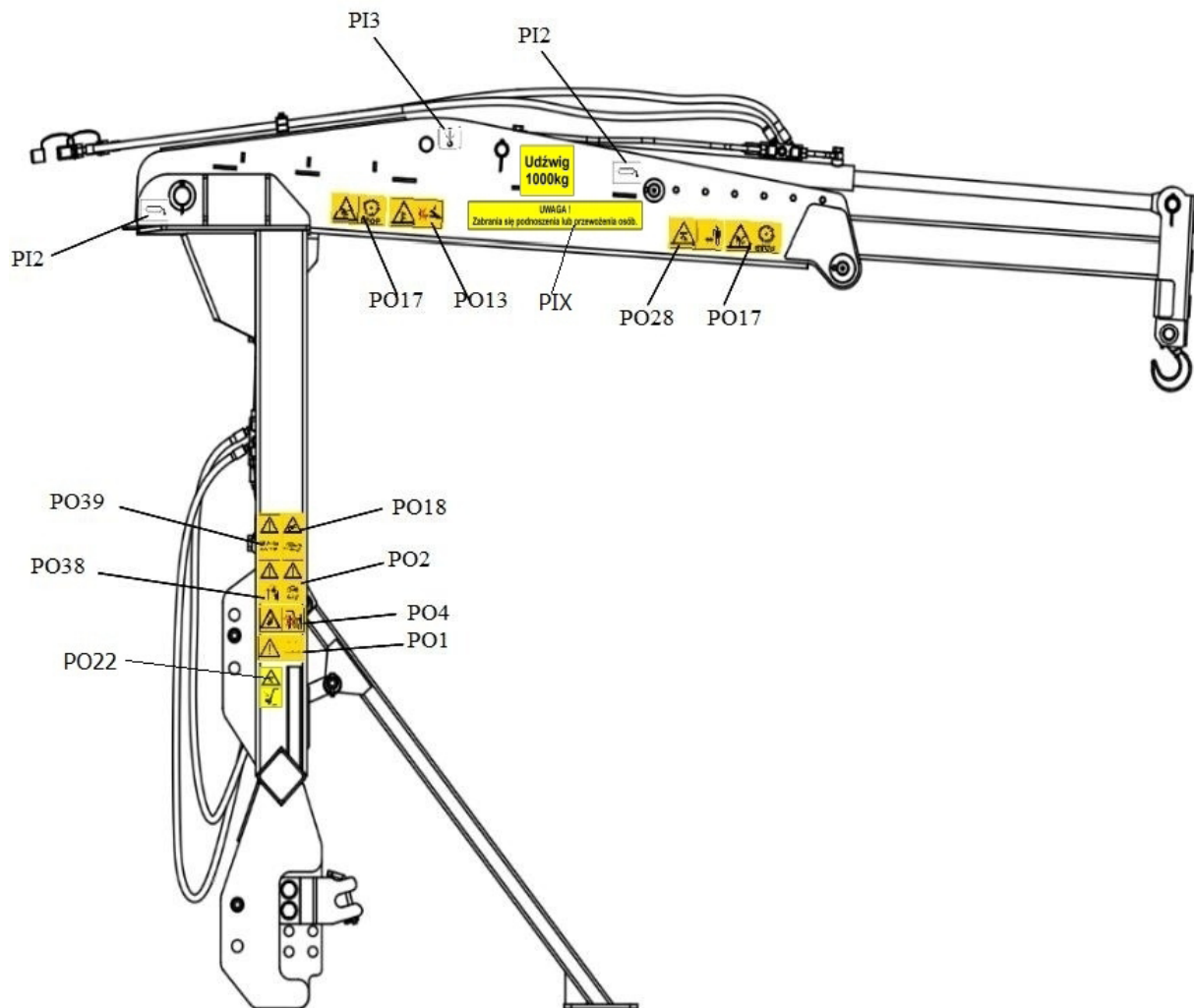


Fig. 2 Locations of warning and information signs on the machine

2. General information

2.1. Intended use

The fertiliser bag loader is intended for handling and lifting of big bags filled with fertilisers for charging of the load body of fertiliser spreaders.

The loader is designed for coupling with Class 2 one-man tractors equipped with the driver's cabin, a fully operational three point hitch and a power take-off shaft. Special adapters are available from the manufacturers for Class 3 tractors. Fertilisers for long-distance sowing shall be delivered to the field by other means of transport.



Any other use of this machine is forbidden and an unintended use. The user shall be solely liable for all damage resulting from unintended use and METAL-FACH shall not be held responsible.



Do not transport any persons or cargo with the loader

2.2. Technical and operating characteristics

Item no.	Parameters	Units	Value
1	Overall width	mm	1160
2	Overall length	mm	2126
3	Length w/extended arm	mm	2926
4	Overall height of the machine resting on the ground	mm	2220
5	Overall height of the machine resting on the ground and with the arm lifted and extended	mm	4639
6	Overall height of the machine resting on the ground and with the arm lifted and retracted	mm	3889
7	Max load capacity	kg	1000
8	Weight	kg	350
9	Minimum operating pressure	MPa	16
10	Minimum flow rate	l/min	25
11	Maximum operating pressure	MPa	20
12	Maximum flow rate	l/min	45
13	Driving tractor power output (minimum)	HP	90
14	TPH system category	-	2
15	Transport speed (maximum)	km/h	15
16	Noise – the equivalent sound pressure emission corrected by A characteristics (L_{pA}) does not exceed 70 dB.		

2.3. Design and operating principle of the big bag fertiliser suspended loader

The general design of the big-bag fertiliser suspended loader is shown in fig. 6.

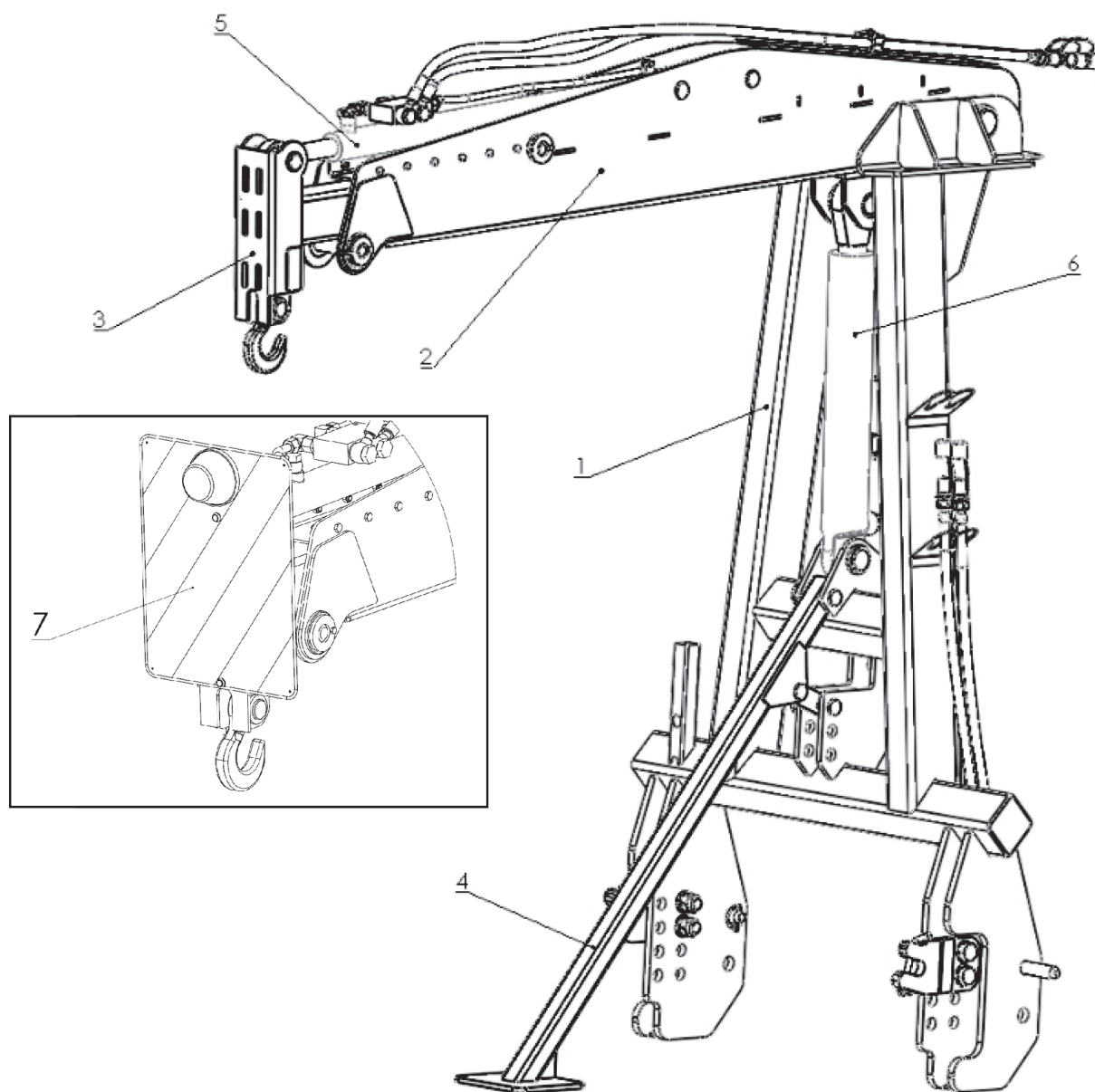


Fig. 3 Design of the arm.

1 - support frame; 2 - upper arm; 3 - extended arm; 4 - support assembly; 5 - extension actuator; 6 - lifting actuator; 7 - warning plate with lamp.

(1) is a support frame designed as an open welded structure made of sections and high-grade steel sheets. The upper part of the frame features the mounting opening for the upper arm. The middle part has eyes for the upper arm lifting actuator. The frame can be attached to a three point hitch on a tractor and on its other end, it allows coupling with a spreader. The compatible

spreaders are N061 standard versions from Metal-Fach; other spreaders can be coupled via adapters.

The upper arm (2) is made as an open welded structure and serves as the guide for extending and retracting of the extended arm. It has welded bushes at the other end for articulated coupling with the support frame. The lower part features the mounting opening for the lifting actuator. The upper part has eyes for the lifting actuator.

The extended arm (3) is a welded structure that increases the working range of the upper arm. At its end, the arm has a hook with the adequate strength class for hooking of big bags.

The support assembly (4) is a welded structure used for secure resting of the arm on a hardened ground after decoupling from the tractor. Children must not approach the machine, especially when it is in the position explained above. The actuators (5) and (6) are used, respectively, to extend the upper arm and to lift it in the horizontal plane.

2.4. Work range of the big bag fertiliser suspended loader

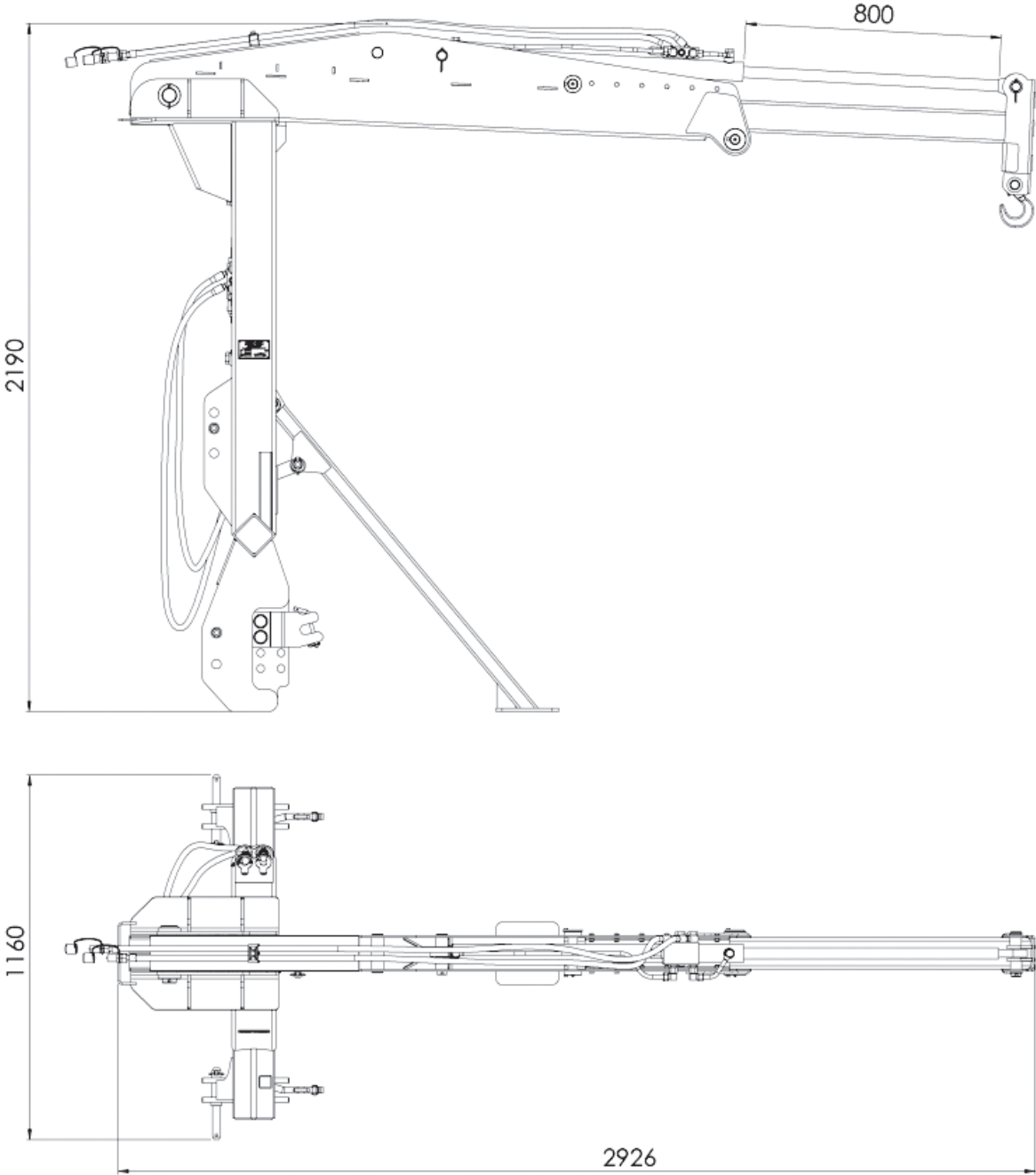


Fig. 4 Big-bag fertiliser suspended loader – overall dimensions

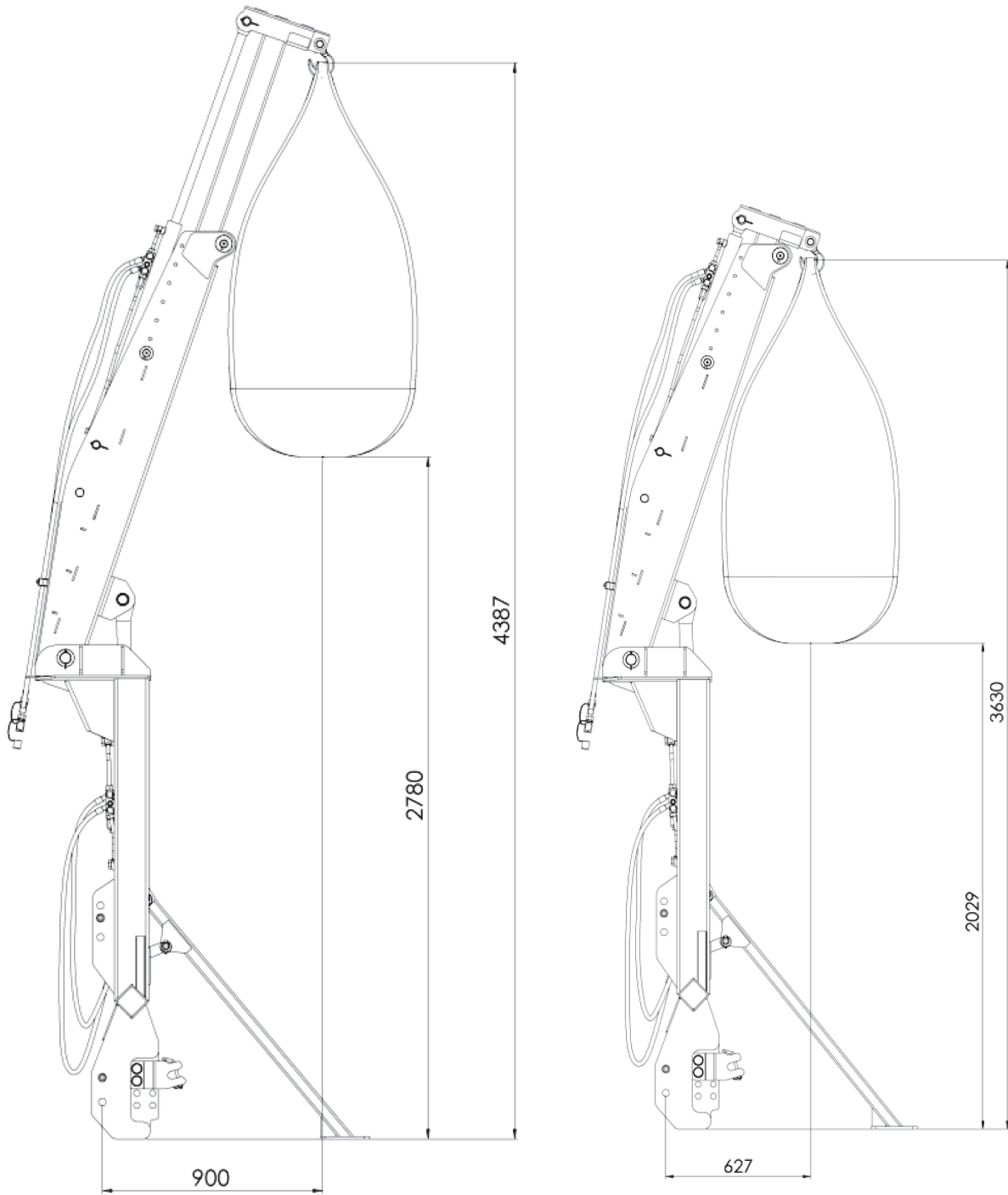


Fig. 5 Top position of the loader arm

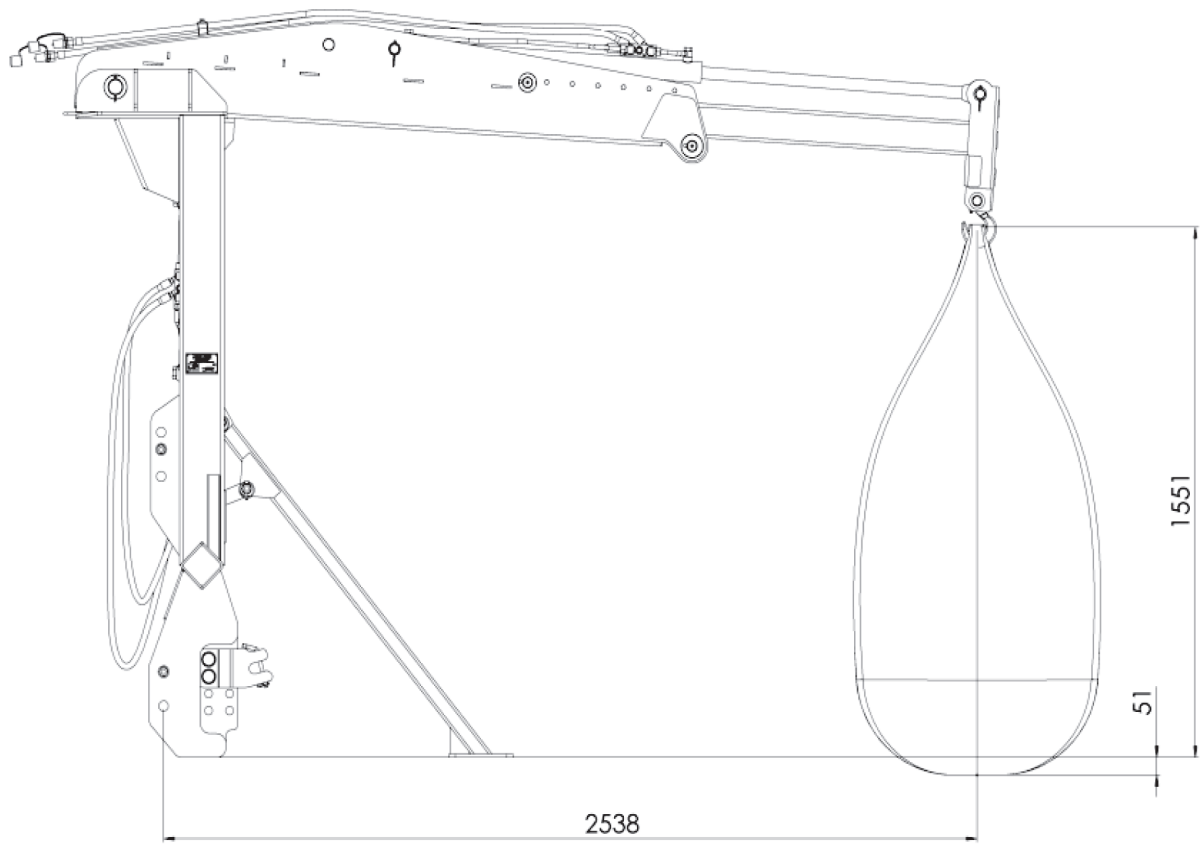
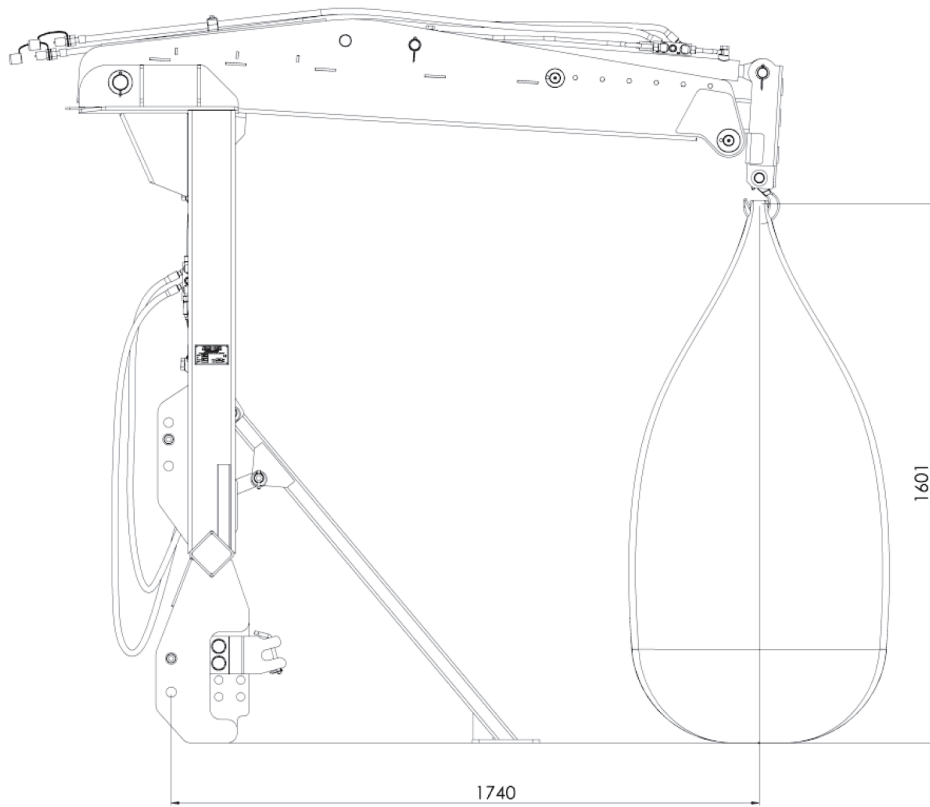


Fig. 6 Bottom position of the loader arm



Fig. 7 Transport position of the loader: the support is on the frame and secured with the pin

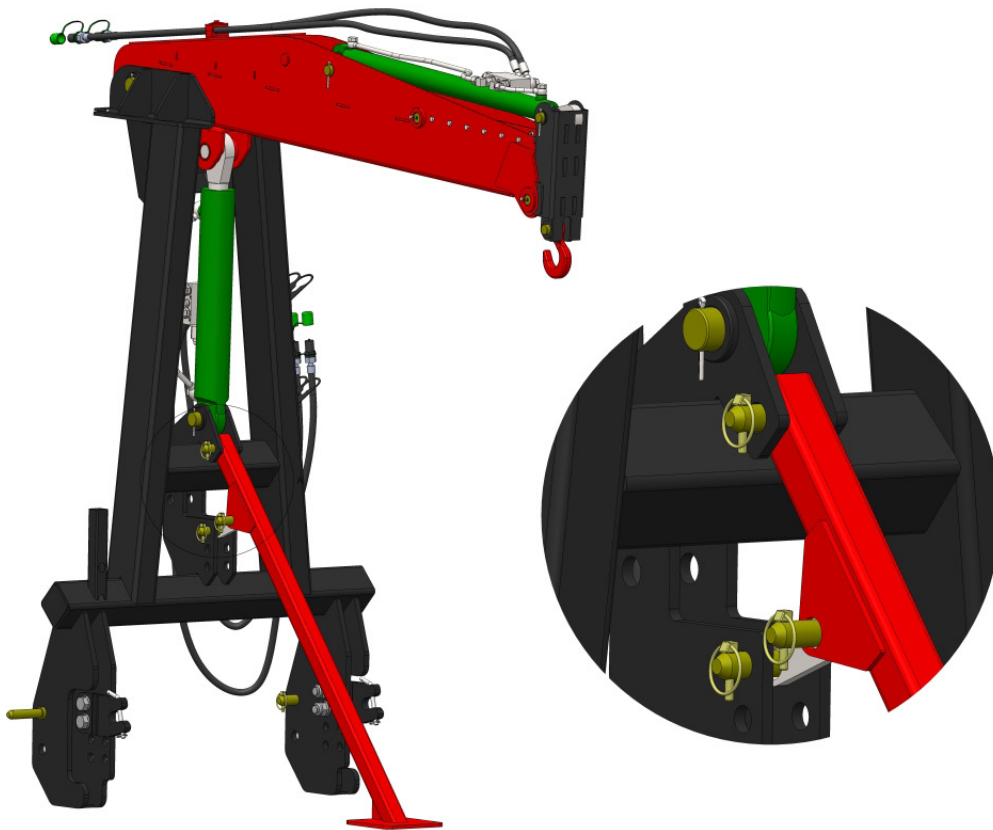


Fig. 8 Storage position of the loader: the lift rests on the support, secured with the pin

3. Operation

3.1. Coupling the arm with the tractor

The fertiliser big bag loader can be directly coupled with the three point hitch of a tractor. When coupling, the loader must rest firmly on a level and horizontal ground, supported by the support frame and the support assembly. Depending on the tractor's design, couple the bottom links with the top or bottom holes. Depending on the fertilising method (pre-sowing or top dressing), couple the spreader with the appropriate holes. Use the top coupling holes for standard fertilisation. The bottom holes are for late fertilisation and ensure that the machine runs higher. After installing and securing the lower link pins, set the top coupler height, install its pin and secure it.

Always mind that no one must remain between the tractor and the machine when approaching the latter with the tractor. Only one person, the operator, shall couple the two machines.

Warning!

Use of non-standard safety measures (bolts, wire, etc.) to couple the links and the coupler with the machine may result in accidental release of the coupled machines and an accident.

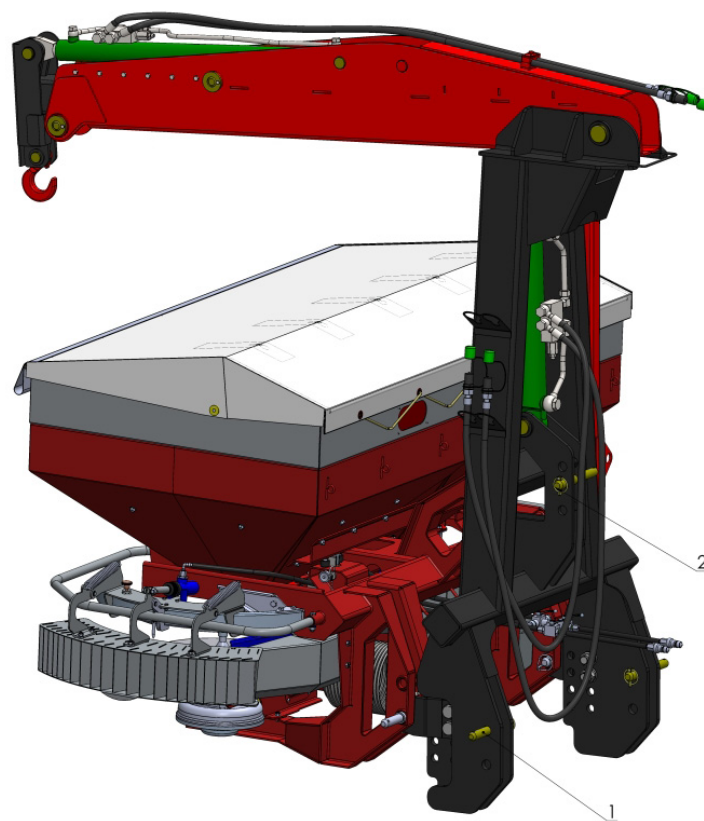


Fig. 9 Coupling the arm with the tractor and the spreader (1) – Cat. II pins of the lower coupler link; (2) – Cat. II pin of the top link

Use the original and operable cotter pins to secure the links and the coupler pins.
Limit the side movement of the bottom links to + 2.5 cm with bars or stabiliser chains.



Warning!

Before coupling the machine with the tractor, calculate the required load of the front axle. Additional weights may be necessary. Install them according to the tractor manufacturer's guidelines. The minimum front axle load is 20% of the tractor's kerb weight.

3.2. Installing the PTO drive-shaft

The spreader coupled with the loader frame shall be coupled with the tractor's PTO. Couple the machine's drive system with the tractor with the machine lowered, the engine turned off and with a shaft recommended by the manufacturer. The shaft shall be complete with guards, in a proper technical condition and with a working decoupling safety.

Check that the catches fully secure the PTO drive-shaft ends.

Fasten the shaft guard chains – one at the tractor end, the other at the machine tow bar.



Warning!

Do not couple and operate shafts with damaged guards.



Warning!

If the drive shaft needs to be shortened, follow the applicable instructions from its manufacturer.



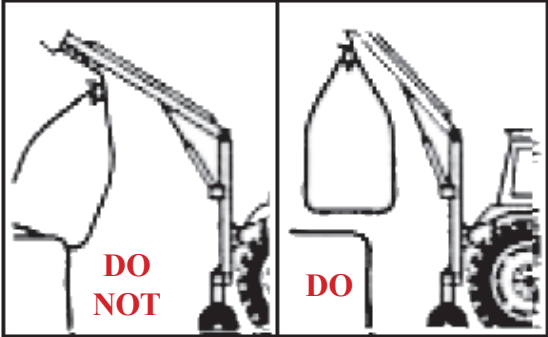
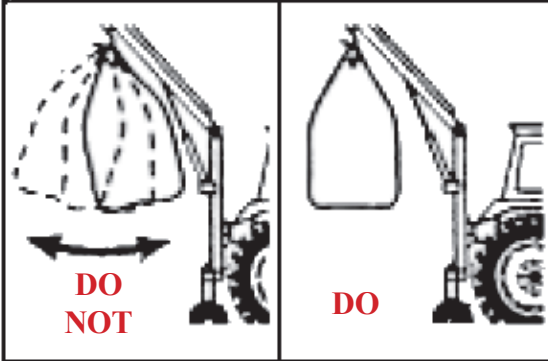
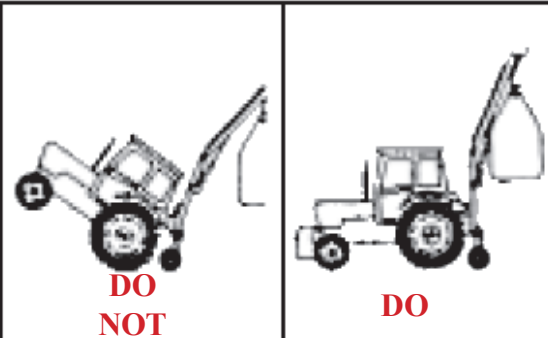
Warning!

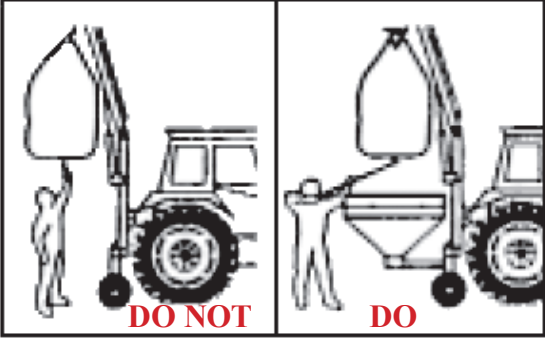
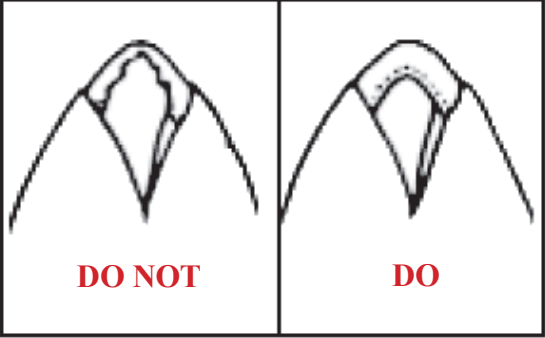
Danger of being caught by bare input shaft if the transmission shaft is not properly installed! When installing the machine end of the transmission shaft, the shaft guard bell must be properly installed on the transmission neck and the input shaft must be fully covered at all times.

3.3. Charging the spreader

Use extreme care when loading the fertiliser spreader with the big bag arm. Follow the guidelines in these operating instructions.

The following table lists the general requirements for proper work with big bags:

Item no.		
1		<p>All movements of the arm must be smooth.</p> <p>Before moving the bag, lift it at an appropriate height. Only then can you handle the bag further.</p> <p>Do not jerk the bag when lifting.</p>
2		<p>Do not swing the bag when in transit.</p> <p>ALWAYS check that no one remains near lifted and handled fertiliser bags.</p>
3		<p>Always before coupling the arm with the tractor and work, do check calculations to verify that the tractor's performance parameters meet the requirements of the machine.</p>

4		<p>The person who opens the bags to pour the fertiliser into the spreader hopper shall use special tools and shall not open the bags by hand.</p>
5		<p>Always check the technical condition of bags, and especially of their slings.</p>

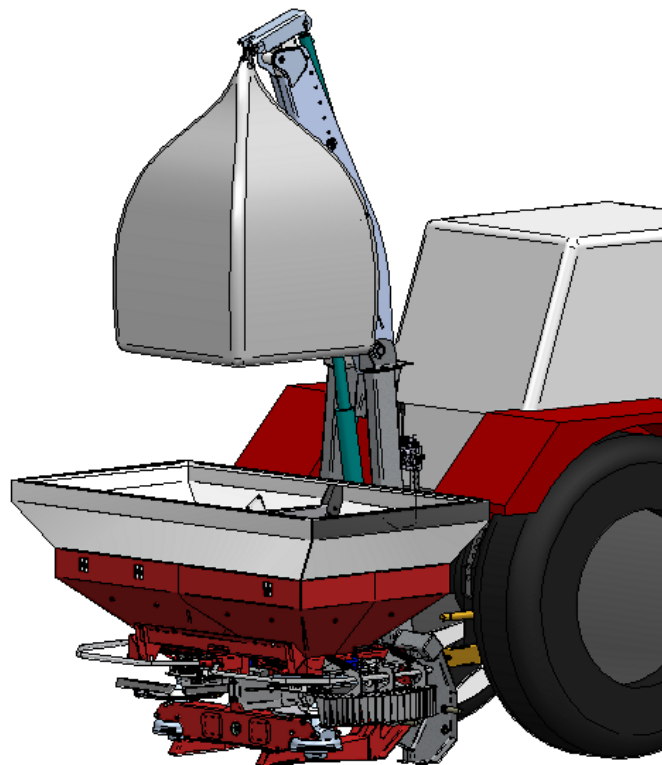


Fig. 10 Loading the big bags

Do the following to charge the spreader body with the fertiliser from the big bags handled by the loader arm:

- Prepare the big bag for loading;
- Position the tractor at a spot that facilitates hooking up the load;
- Having coupled the fertiliser spreader, approach as close to the big bag as possible with the tractor/loader/spreader unit;
- Operate the control levers to move the hook as close to the big bag sling as possible;
- Next, lower the arm until its support frame bottom part rests firmly on the ground;
- Make sure that the unit (tractor/loader/spreader) is stable;
- Turn off the tractor and remove the ignition key;
- Approach the big bag and hook it up to the arm;
- Check that the bag is properly hooked and close the hook safety catch;
- Start the tractor and operate the DCV levers to lift the big bag over the spreader hopper;
- Use the special tool to open the big bag and fill the hopper;
- Do not charge more fertiliser than the hopper capacity listed in the technical characteristics issued by the spreader's manufacturer. Check for the correct weight of the fertiliser (in the sowing tables) to avoid overloading the tank.



Warning!

No bystanders are allowed within the work zone of the machine when loading with the big bag fertiliser suspended loader.



Warning!

Do not use any unauthorised components to extend the sling when hooking up the big bags.



Warning!

Exceeding the permitted load capacity may damage the machine and cause work accidents.



Warning!

The loader has been designed and tested (for strength) for lifting loads with the maximum weight of 1000 kg. Do not exceed this limit!

Do not charge fertilisers that are clumped, contaminated with foreign bodies or wet and prone to leaching; this may reduce the performance of the spreader or incapacitate the spreader.

Identification and verification of the tractor's technical parameters for driving the loading arm/spreader unit

Check the following before coupling the arm and the spreader with the tractor:

- ✓ The permissible tractor kerb weight;
- ✓ The permissible tractor axle loads;
- ✓ The permissible tractor hitch load;
- ✓ The permissible tractor tyre load;
- ✓ That the permissible tractor hitch load is sufficient.



Warning!

The load on the front axle must be at least 20% of the tractor's kerb weight.

Location of the loader's centre of gravity

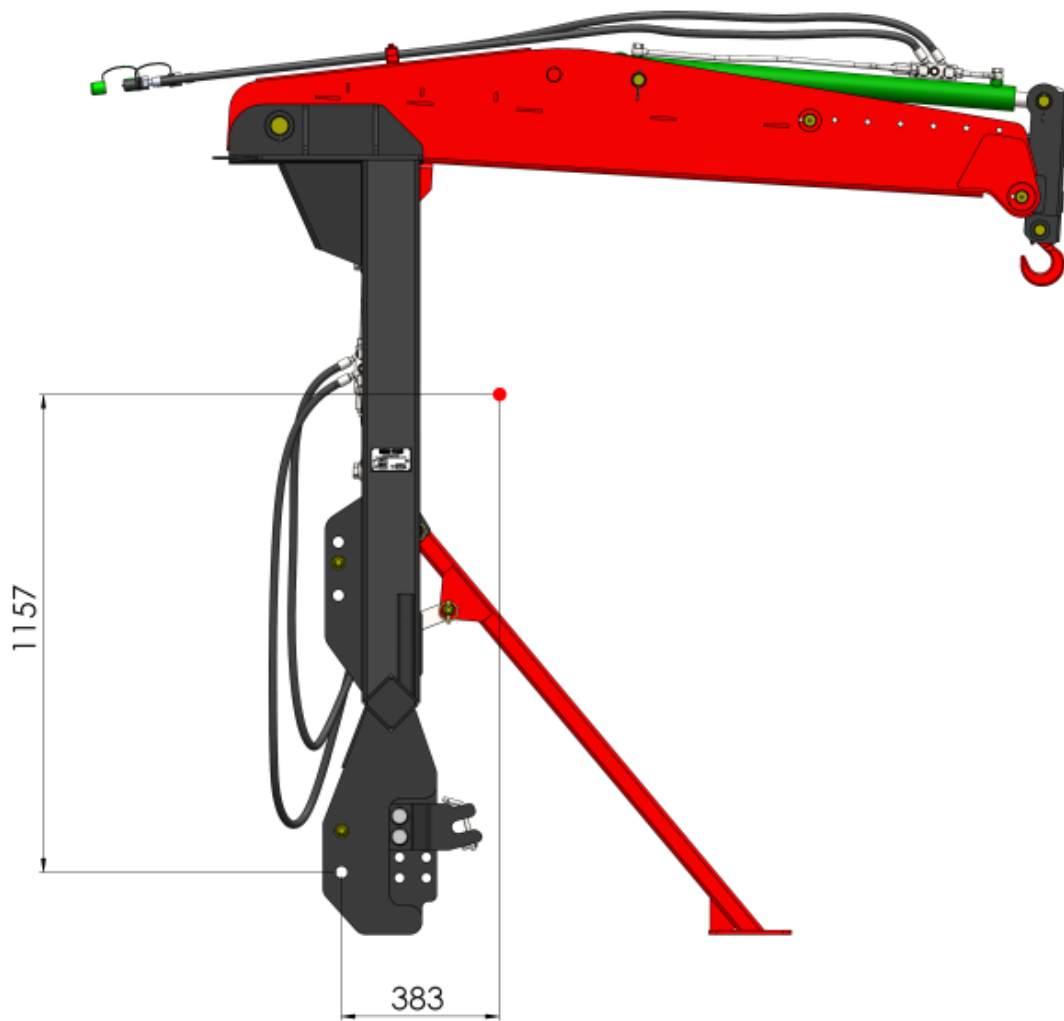


Fig. 11 Location of the loader's centre of gravity

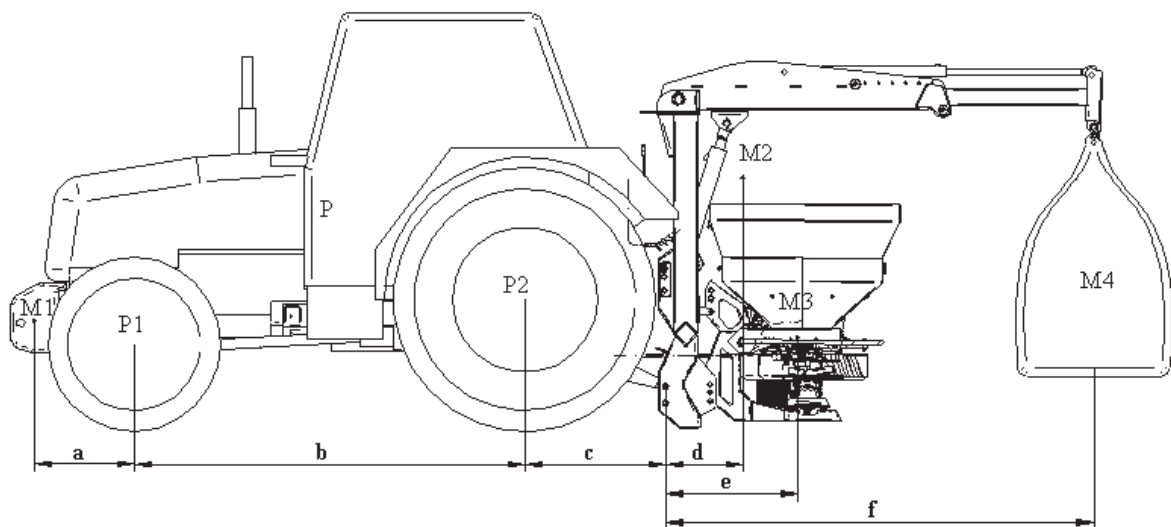


Fig. 12 Schematic drawing of the tractor/loader/spreader unit

$$M_1 \text{ min} = \frac{M2x(c+d)+M3x(c+e)+M4(c+f)-P1xb+(0,2xPxb)}{a+b} = \text{_____ kg}$$

$$P1_c = M1x(a + b) + P1xb - M2x(c + d) - M3x(c + e) - M4x(c + f) = \text{_____ kg}$$

$$P_c = M1 + P + M2 + M3 + M4 = \text{_____ kg}$$

$$P2_c = P_c - P1_c = \text{_____ kg}$$

P	kg	Tractor's kerb weight	The data is found in the tractor's operating instructions or its registration card
P1	kg	Tractor's front axle load	
P2	kg	Rear axle load of empty tractor	
M2	kg	Arm total weight	350 kg
M3	kg	Spreader total weight + fertiliser	The data is found in the operating instructions of the spreader
M4	kg	Big bag weight	1000 kg max
M1	kg	Total weight of the front tractor ballast	Check the tractor's technical data and of the front weight, or measure
and	m	Distance between the centre of gravity of the front ballast and the centre of the front axle	
b	m	Tractor wheel base	Check the tractor's operating instructions or its registration card, or measure
c	m	Distance between the hitch lower pins and the rear axle centre	Check the tractor's operating instructions or its registration card
d	m	Distance between the hitch lower pins and the arm centre of gravity	d is 0.46 for the arm
e	m	Distance between the hitch lower pins and the spreader centre of gravity	e is 0.79 for N061 spreaders
f	m	Distance between the hitch lower pins and the big bag centre of gravity	f is 2.6 for the arm

- ✓ M1 mini – Calculation of the minimum essential ballast for the tractor front.
- ✓ Pc – Calculation of the total unit weight (tractor+loader+spreader+big bag)
- ✓ P1c – Calculation of the front axle load
- ✓ P2c – Calculation of the rear axle load

	Calculated values	Values permissible for the tractor	Values permissible for the actual tractor tyres
P1c			
P2c			
Pc			

Fill out the table above and verify the following:

- ✓ The calculated values are equal to or less than the permissible values for the tractor and for the tyres.
- ✓ The tractor front axle load with the minimum load is greater than or equal to 20% of the tractor load.



Warning!

Do not suspend the loader-spreader-big bag unit of the tractor, when:

- ✓ **The total calculated load exceeds the permissible value.**
- ✓ **The front axle load is smaller than the required minimum.**

4. Working with the loader

In order to achieve proper performance of the arm, follow these guidelines:


- ✓ Always engage the tractor's parking brake when charging with the loader. Tractor wheels can also be chocked if necessary.
- ✓ Make sure before loading that the machine rests firmly on a stable ground.
- ✓ Avoid charging/loading on slopes; if this is unavoidable, exercise extreme caution.
- ✓ Do not lift the load higher than necessary for free loading and unloading.
- ✓ Always lubricate the loader according to the schedule.
- ✓ Always inspect all fastening bolts. Retighten as necessary. See the tightening torques listed in the instructions.
- ✓ Always check the loader for any cracks or damage on the support frame, the upper arm, the extended arm and the actuators.
- ✓ Before connecting the hydraulic system, make sure that all control levers are in neutral positions.
- ✓ Make sure that all pressure/return lines are properly connected.
- ✓ Bleed air from the hydraulic system by actuating each function several times. In order to remove any air from the system, set the actuating elements in extreme positions several times.

4.1. Maintenance and servicing

The machine is ready for operation when purchased. Prior to starting the operation, you absolutely must:

- Read and understand the contents of these operating instructions;
- Check the overall condition of the machine; pay particular attention to any faults and damage from transport.

Periodically service and maintain the machine to ensure reliable and cost-effective operation.

	Caution! Failure to comply with the operating instructions from Metal-Fach will void the entire warranty issued for the machine.
---	---

The warranty remains valid if proper maintenance is carried out.



Caution! Use only original spare parts for repairs and maintenance.

4.2. Safety of use during servicing/maintenance

Read the operating instructions before servicing the machine. Do not work on the machine or service it without having understood the entire instructions. Read the instructions before each servicing operation and follow its guidelines. Follow the recommended servicing and maintenance intervals.

- Use original spare parts only for repairs and maintenance.
- Always use the tools that are suitable for the task at hand.
- Always wear protective clothing and glasses.
- Always turn off the tractor engine first. After stopping the tractor engine, remove the ignition key.
- If it is required for the tractor's engine to run during certain servicing tasks, be careful not to come near the moving parts of the machine.
- Exercise extreme caution when handling pressurised oil. Pressurised oil can easily pierce the skin. Immediately seek medical attention if injured.
- Hot oil can cause burns. Inhalation of hot oil spray may result in breathing difficulties.
- Contact of skin with oil from a burst line is not hazardous, although protect your eyes and nose. Immediately seek medical attention if oil enters your eyes or airways.

4.3. Daily service

Always check the technical condition of the arm before work:

- Inspect all screw connections and retighten all loose bolts;
- Worn out bolts and screws may break under loads;
- Check the tightness of the hydraulic system;
- Immediately replace all damaged lines;
- Start the arm to move in the full range of motion to ensure that all its functions are working.
- Immediately stop work if structural cracks are found;
- Do not clean with pressure washers. First, wash the machine with warm water. Use an environmentally friendly detergent, if necessary. Lubricate the loader after washing.



Warning:
If cut, wash the wound and sterilise with hydrogen peroxide.
Contamination of the wound may result in bacterial infections
that are hazardous to health and life!

4.4. Lubrication schedule

Lubricate all articulated joint pins equipped with grease nipples every 50 hours (fig. 13). Use the LT-43 grease for lubrication. Feed the lubricant with a grease gun via ball nipples. Clean contaminated or dusted grease nipples first. Lubricate every 50 hours of operation and after each operating standstill longer than one month.

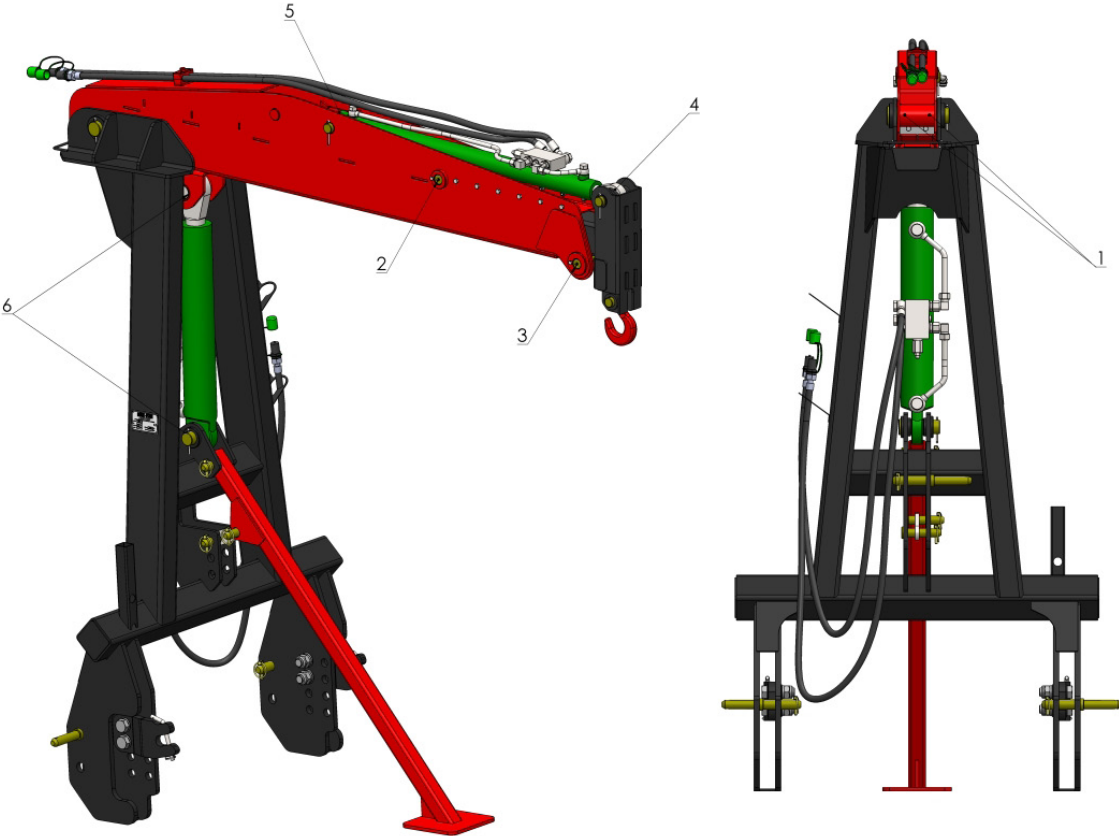


Fig. 13 Lubrication diagram

4.5. Tightening torques

The following table presents the tightening torques in Nm for screw (threaded) connections made of non-machined and oiled steel for torque wrench or adjustable torque screwdriver/wrench. Maximum torque wrench: $\pm 5\%$. Normal metric thread values. Retighten all bolts after 10 hours of work.

M thread	Property class acc. to SS-ISO 898/1		
	8.8	10.9	12.9
5	5.7	8.1	9.7
6	9.8	14	17
8	24	33	40
10	47	65	79
12	81	114	136
14	128	181	217
16	197	277	333
18	275	386	463
20	385	541	649
22	518	728	874
24	665	935	1,120

5. Maintenance, Care And Storage

In order to maintain proper and reliable operation of the machine, the user must periodically carry out the following maintenance tasks:

1. Clean the loader thoroughly of contaminants, grime and soiling, then wash the machine;
2. Carry out a thorough inspection of individual parts and assemblies;
3. Replace worn or damaged parts;
4. Touch up all locations of damaged topcoat enamel; coat all mating surfaces where the protective coats are worn out with anti-corrosive formulas (temporary protection), e.g. the Akorin N or Karpolast C lubricants;
5. Repair or replace illegible warning and information labels;
6. Protect the rubber elements against direct sunlight. Store the loader in a dry and ventilated room.



Park and store the loader on a level and paved/solid ground. The loader must rest on its original support secured with a pin to the loader. Keep the loader out of reach of children or unauthorised persons.

5.1. Safety



Before attempting any maintenance task, turn off the engine and wait until all running parts stop completely. Secure the tractor from starting by unauthorised persons.

5.2. Transport of the arm

5.2.1. Outdoor transport

Load the arm on the transport carrier with a forklift truck or a crane (fitted with appropriate slings). Transport the loader laying flat. The loader must be secured from shifting with woven belts or fixed to the vehicles' bed.

5.2.2. Indoor transport

Handle/transport the loader indoor on a pallet. Use indoor handling equipment to carry the loader at greater distances.

5.3. Disassembly and handling of worn out parts

Follow the general safety precautions for servicing agricultural machines during disassembly of the machine or its worn out parts.

Segregate the dismantled parts by size and material, and release for scrap.

6. Description and assessment of residual risks

6.1. Description of residual risks

Residual risk results from incorrect actions of the big-bag fertiliser suspended loader operator.

The greatest hazards arise when bystanders (especially children) and animals remain within the hazardous areas of the loader at work. The level of risk increases when warning labels are ignored!

Extreme hazards include:

- remaining under the raised loader arm and the big-bag at work;
- humans and animals staying in the loader's work area;
- servicing and repairing the loader with the tractor engine running and the loader raised;
- use of cracked or deformed hydraulic lines;
- failure to keep a safe distance from power lines during work;
- controlling the loader while remaining outside of the driver's cab;
- operating the loader without verifying the tractor's parameters (i.e. installation of counterweight).

The hazards do not occur when the operating instructions and safety instructions are followed.

6.2. Residual risks assessment for operation and daily servicing of the loader

Follow these rules:

1. Carefully read and fully understand the operating instructions.
2. Do not allow any bystanders to come near the arm at work.
3. Do not allow children to come near the machine at work.
4. Use the machine only as intended.
5. Wear fitted clothes only, i.e. without any loose parts.
6. Only the operator (after thoroughly understanding the operating instructions and the safety regulations) is allowed to operate the loader.
7. Inspections and repairs shall be carried out by trained personnel only.
8. Securing the machine for the duration of repairs and daily servicing will preclude risks to the user.

Warning! The residual risks arise if you fail to thoroughly understand the restrictions and guidelines!

Troubleshooting

<i>Problem</i>	<i>Possible cause</i>	<i>Remedy</i>
Hydraulic cylinders of the loader work incorrectly.	Not enough oil in the tractor's hydraulic system.	Check the oil condition in the tractor and refill if necessary.
	Oil pressure in the tractor's hydraulic system is too low.	Check pressure in the tractor's hydraulic system with a pressure gauge (min. 16 MPa).
	Lever of the external circuit set incorrectly.	Turn on the pump drive.
	Damaged actuator.	Check the actuator's condition, replace it with a new one or contact the loader's manufacturer.
The arm runs too slowly.	Not enough oil in the tractor's hydraulic system. Low pump capacity.	Check the oil condition and refill if necessary.
The loader arm does not lift loads.	Damaged actuator.	Check the actuator's condition, replace it with a new one or contact the loader's manufacturer.
	Not enough oil in the tractor's hydraulic system.	Check the oil condition and refill if necessary.
	Oil pressure in the tractor's hydraulic system is too low.	The pump is damaged or its capacity is too low.

7. Parts catalogue

USING THE PARTS CATALOGUE

Use the Catalogue as follows:

- a) Determine the location of the part to be replaced (which assembly of the machine contains the part).
- b) Find the appropriate assembly drawing with the part number you are looking for.
- c) Use this number to find the appropriate drawing or catalogue number in the table description and the number of items.

ORDERING INFORMATION

Spare parts may be ordered by phone or by mail stating:

- a) Address of the buyer,
- b) Name, symbol and serial number of the machine and its year of manufacture,
- c) Detailed name of the part,
- d) Drawing number or standard number from the Parts Catalogue,
- e) Number of items,
- f) Terms of payment.

The parts shall be sent using a courier service or picked up by the customer from the manufacturer or the nearest Metal-Fach representative.

8. Warranty conditions and warranty services

The detailed information on the warranty for agricultural equipment is listed in the Civil Code, Part III, Warranties, art. 577-581. The information should be available at every farming equipment dealership and service workshop.

The organisations responsible for the execution of warranty services (reseller/dealer) should be entered in the warranty card during the sale of the machine.

METAL-FACH

16-100 SOKÓŁKA, POLAND

UL. KRESOWA 62

WARRANTY CARD BIG-BAG FERTILISER SUSPENDED LOADER T466

The warranty service is provided on behalf of the manufacturer by:

.....

filled out by the seller

Date of manufacture..... Serial no.

Date of sale..... Dealer's signature

Customer's name and surname

Address (Postal code/post office).....

Street/Number..... Telephone.....

METAL-FACH Sp. z o. o. reserves the right to introduce changes to the machine's design without prior notice and without assuming any obligations resulting from those changes. Unauthorised modifications of the machine shall result in the warranty becoming null and void. Only original parts manufactured by METAL-FACH may be used during the service life of the machine.



COMPLAINT CALL

NO.

DATE

Data of Customer making the claim:

Customer's name and surname / Company name

City.....

Postal code

Street

Tel..... Fax

Machine name and code

Date of purchase

Serial number

Year of manufacture

Place of purchase:.....

/Dealer's name, city/

1. When and under what circumstances was the failure discovered?

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

2. Comprehensive fault description

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

3. Customer's proposed mode of the warranty claim processing

.....
.....

(legible signature of the customer who filed the complaint)

NOTE: If the complaint is found to be unjustified, all complaint processing costs will be charged to the complaint applicant.

Customer complaint placed by phone

date.....

Dealer's stamp

Legible signature of the outlet representative

SERVICE LOG

Item no.	Service call date	Date of failure removal	Description of completed service actions and replaced parts	Name and surname of the SERVICE TECHNICIAN (Service stamp)



External Spare Parts Order

1. Ordering party (full company name)

.....

(Tax ID No.)

2. Address (City, street, number)

.....

3. Zip Code:

4. Telephone no.

5. Payment method

(invoice / receipt / VAT invoice)

6. Specification of ordered parts:

Item no.	Machine/equipment name	Nomenclature	Catalogue number	Quantity

.....
 (Date and legible signature of the order recipient)

7. Order completion date:

.....
 (legible signature of the Service employee)

– value to be invoiced

– invoiced value

Invoice no.
