



**METAL-FACH**



# **SUSPENDED BALE WRAPPER Z529**

**INSTRUCTION MANUAL  
TRANSLATION OF THE ORIGINAL INSTRUCTION MANUAL  
REV. I  
MAY 2018**





## EC DECLARATION OF CONFORMITY

The undersigned:	Jacek Kucharewicz, Chairman of the Board	
declares hereby with full responsibility, that the complete machine:		
<b>SUSPENDED BALE WRAPPER</b>		
0.1.	Brand(s) (manufacturer's registered trademark):	Metal-Fach
0.2.	Type:	Z529
	Variant:	Z529-00
	Version:	N/A
0.2.1	Vehicle trading name(s) (if any):	N/A
0.3.	Type identification, if marked on the vehicle:	N/A
0.3.1.	Manufacturer's plate (location and method of its attachment):	On the front part of the machine main frame, glued
0.3.2.	Chassis identification number (Location):	
0.4.	Vehicle category <sup>(3)</sup> :	N/A
0.5	Manufacturer's name and address:	Metal-Fach sp. z o.o. ul. Kresowa 62 16-100 Sokółka, Poland
<p>complies with all the relevant regulations of Directive 2006/42/EC and Regulation of the Minister of Economy dated 21 October 2008 on principal requirements for machines (Journal of Laws of 2008, No. 199, item 1228, as amended)</p> <p>The following harmonized standards were applied to assess the compliance: <u>PN-EN ISO 4254-1: 2016-02, PN-EN ISO 13857: 2010, PN-EN ISO 12100: 2012</u> and standards: PN-ISO 3600:1998, PN-ISO 11684:1998 and Regulation of the Minister of Infrastructure dated 31 December 2002 on technical conditions of vehicles and the range of their necessary equipment (Journal of Laws of 2003, No. 32, item 262, as amended).</p> <p><b>Safety testing report No.: LB/83/2016</b></p> <p><b>This declaration of conformity EC becomes null and void if the machine is changed or reconstructed with no consent of the manufacturer.</b></p>		

**Sokółka**  
(Location)

**20/04/2017**  
(Date)

**Jacek Kucharewicz**  
(Signature)

**Chairman of the Board**  
(Position)

## Machine data

**Machine kind:** Suspended bale wrapper

Type designation: Z529

Serial Number<sup>(1)</sup>: \_\_\_\_\_

Machine manufacturer: METAL-FACH Sp. z o.o.  
16-100 Sokółka  
ul. Kresowa 62  
Phone: (0-85) 711 98 40  
Telefax: (0-85) 711 90 65

Seller: \_\_\_\_\_

Address: \_\_\_\_\_

Phone/Fax: \_\_\_\_\_

Delivery date: \_\_\_\_\_

Owner Name: \_\_\_\_\_

or user: Address: \_\_\_\_\_

Phone/Fax: \_\_\_\_\_

---

<sup>(1)</sup> The data can be found on the machine rating plate located on the front part of the machine main frame

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## INTRODUCTION

The information included in the instruction manual is valid for the date of development. The manufacturer reserves himself the right to implement in machines construction changes and due to this fact some values or illustrations may not correspond to the actual state of the machine supplied to the user. The manufacturer reserves the right to implement construction changes without changing this instruction. The instruction manual constitutes the basic equipment of the machine. The user is obliged to acquaint himself with the contents of this instruction before commencing of operation and to meet the recommendations included in it. It will guarantee safe operation and assure trouble free machine operation. The machine was constructed according to the standards in force and current legal stipulations. The instruction describes the basic safety and operation principles of the suspended bale wrapper made by Metal-Fach, type Z529.

The substantial obligations of the manufacturer are presented in the guarantee card, which includes the complete and currently in force regulations on the guarantee coverage.

If the information included in the instruction manual prove to be incomprehensive, you should address the seller where the machine was purchased or the manufacturer directly for assistance.

The spare parts catalogue functions as a separate list and is attached in the form of a CD during the machine purchase and also is available at the Manufacturer's web site: [www.metalfach.com.pl](http://www.metalfach.com.pl).

This instruction manual, according to the Act of 4 February 1994 on copyrights and related Laws (Journal of Laws of 1994, No. 24, item 83) is protected by copyright. It is prohibited to copy and distribute the contents and figures without the consent of the proprietor of the copy rights.

The Guarantee Certificate and Guarantee Terms are enclosed to this Instruction Manual as separate documents.

**Manufacturer address:**

Metal-Fach sp. z.o.o.  
Ul. Kresowa 62  
16-100 Sokółka

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Phone: (0-85) 711 98 40  
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## Symbols used in the instruction:



WARNING

Hazard warning symbol. It points to the occurrence of a serious hazard condition, which, if not avoided, may result in death or serious injury. The symbol warns against the most dangerous situations.



ATTENTION

The symbol pointing to especially important information and recommendations. Non-compliance with the described recommendations may result in serious damage of the machine due to its incorrect operation.



DANGER

The symbol indicating the possibility of occurrence of a hazard, which, if not avoided, may result in death or serious injury. This symbol informs about lower level of risk of injury than the symbol with the word "DANGER".



The symbol indicating useful information.



The symbol indicating service operations that should be performed periodically.



# 1. Wrapping machine identification, general safety principles

## 1.1. Introduction

### THE INSTRUCTION MANUAL IS A BASIC EQUIPMENT OF THE SUSPENDED BALE WRAPPER

Read all instructions contained in this Instruction Manual to operate the Bale Wrapper in a safe manner. Following these Instructions will ensure safe operation by the operator and extend the machine life.

## 1.2. Wrapping machine identification

Identify the wrapping machine on the basis of the rating plate permanently fixed to the wrapper main frame.



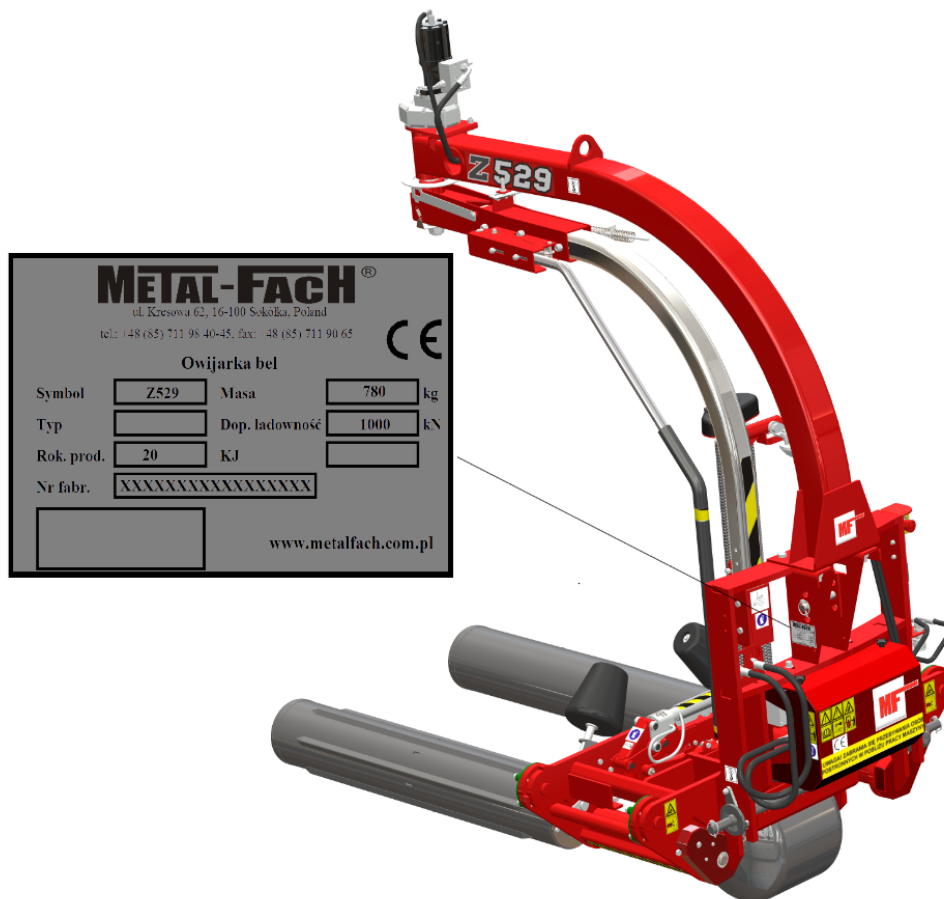
**Figure 1.** The data placed on the rating plate



ATTENTION

### ATTENTION!

Operating the wrapper on public roads without the rating plate or with an illegible rating plate is prohibited.



**Figure 2.** Location of the rating plate



Upon purchase check the compliance of the factory number located on the machine rating plate with the number written in the instruction manual and guarantee card - it is crucial for recognizing the guarantee. In the case of the user contact with the service, seller or manufacturer, the user is obliged to indicate information included on the machine rating plate.



The instruction manual constitutes the basic equipment of the bale wrapping machine Z529.

In the case of selling the machine to another user it is obligatory to submit the instruction manual. It is recommended for the wrapper supplier to archive the instruction manual receipt confirmation by the purchaser, submitted with the machine to the new user.

**Dear user, please read this instruction manual carefully.**

Application of its recommendations will allow to avoid hazards, efficiently and productively operate the machine and keep the guarantee for the duration period granted by the manufacturer.



ATTENTION

**ATTENTION!**

It is prohibited to use the wrapper by the persons who have not read this instruction manual.

### 1.3. Intended use

The Z529 bale wrapper is a machine attached from the back on a three-point hitch, intended to take up bales of compressed grass, hay or other not-lignified plants from the ground using bottom wrapping arms. Next is the process of wrapping of the loaded bale with foil intended for silage, which is charged on the foil feeder located on the upper wrapping arm, which turns round the bale. After finishing wrapping, the foil is caught and cut off by the foil cutting unit. The last stage is unloading of the wrapped up bale onto the ground.

All the work actions must be executed by one person - an operator who is in the tractor seat. The wrapper is a machine controlled electronically, the particular cycles of its work are executed automatically after confirming their start by the operator.

Any cargo, goods, people or animals cannot be transported by the wrapper. It is prohibited to transport bales on the wrapping machine on public roads.

The wrapping machine cannot be used for wrapping or catching/lifting other materials than the plant material bales.

Foils or other materials intended by the manufacturer for applications other than wrapping up bales from plant materials cannot be used for wrapping with the wrapper.



The machine is intended for use exclusively for agricultural purposes described in this instruction. Any other utilization of the wrapping machine is considered to be incompliant with its intended use and releases the manufacturer and distributor from their responsibility for damages arising in the result of incorrect utilization.



ATTENTION

**ATTENTION!**

Unauthorised construction changes and working with the wrapper incompliant with its intended use and avoiding the safety principles release the manufacturer from responsibility for any resulting hazards and damages.

#### 1.4. General safety rules



WARNING

##### WARNING!

The wrapper can be operated only by qualified persons who have read this instruction manual.

Prior to the first start up, all the chapters of the instruction manual should be read carefully, if it is done during operation it may be too late.

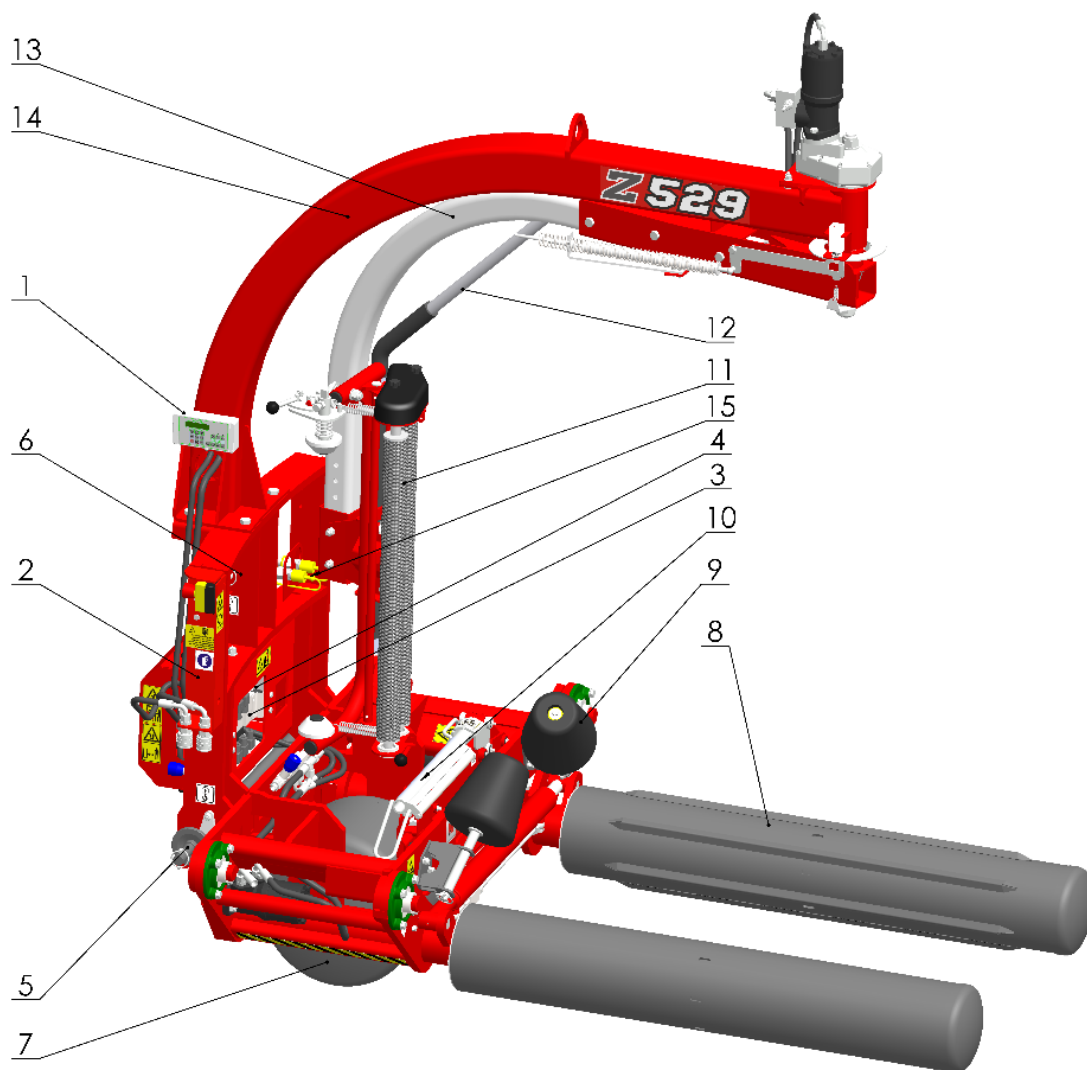
The wrapper was designed and constructed so as to provide maximum safety of use.

- 1) Apart from the information included in the instruction manual all the principles and local legal regulations related to safety of work and utilization of the machine should be met.
- 2) The wrapper operator can only be an adult person holding valid authorization to operate agricultural tractors, familiar with the occupational safety and health regulations in the respect of operating agricultural equipment and familiar with this instruction manual.
- 3) This instruction manual should be read carefully and adhered to its recommendations with the particular attention paid to the indications concerning safe wrapper work.
- 4) The instruction indicates the machine elements constituting potential hazards. Dangerous places are marked on the machine with yellow label with warning pictograms. Special attention should be paid to the dangerous places and recommendations should be strictly adhered to.
- 5) You should learn the meaning of the pictograms that appear.
- 6) Operation of the wrapper without protective guards installed on movable elements is strictly prohibited.
- 7) Prior to each starting of the wrapper check the machine condition, completeness and mounting of the guards.
- 8) Prior to each departure, starting up and ride on public roads check correctness of the machine connection with the tractor.
- 9) It is allowed to ride the wrapper on public roads only in the transport position.
- 10) All the adjustment, repair and service works should be executed with the tractor engine off, making sure before that it is protected in a right way against accidental starting up.
- 11) Prior to commencement and during loading of bales make sure that there are no bystanders and children especially.
- 12) During operation of the wrapper provide free space in the zone of the rotating parts. During wrapping of the bales there can be no people or animals in the zone of the rotating parts.
- 13) Never leave the machine unattended during operation.
- 14) Take special care during operation on inclined area. Pay special attention to the possibility of bale rolling down.
- 15) It is strictly forbidden to operate the wrapper under raised machine units.
- 16) It is strictly forbidden for any person to stay between the tractor and the wrapper during tractor engine operation.
- 17) Take particular care when connecting and disconnecting the wrapper from the tractor.
- 18) During work use appropriate working clothes and shoes with non-slippery soles.

- 19) Bale wrapping foil should be charged with the tractor engine switched off and protected against its accidental starting up (the key removed from the ignition and parking brake engaged).
- 20) It is forbidden to use damaged power hydraulics hoses. Immediately replace damaged hoses with new ones. During exchange of the damaged hoses use impermeable protective clothes.
- 21) Control the power hydraulics installation from the tractor operator cockpit only.
- 22) During transport on public roads follow the traffic law regulations and recommendations of the manufacturer.
- 23) Prior to entrance on the public roads provide visual control of the transported machine.
- 24) It is forbidden to climb the wrapper during parking, transport and operation.
- 25) During transport on the public roads it is forbidden to transport on the wrapper swathe or hay silage bales.
- 26) It is forbidden to work with the wrapper under the influence of alcohol.
- 27) It is forbidden to operate the wrapper by persons under the influence of drugs or medicines with narcotic reaction.
- 28) It is forbidden to operate the machine by persons under the influence of medicines having a negative influence on the ability to drive vehicles, and on general psychophysical efficiency, and medicines causing disturbances of concentration or delay of the reaction time.
- 29) It is forbidden to operate the wrapper in the state of exhaustion which can cause disturbances of concentration and delay of the reaction time.
- 30) It is forbidden to drive the wrapper near open fire.
- 31) The fire-fighting regulations must be strictly obeyed and the hazards arising during operation or stoppage of the wrapping machine must be eliminated immediately.
- 32) The sources of fire must be liquidated using a dry powder fire extinguisher.
- 33) During operation of the wrapper do not approach it with open fire and do not smoke near the machine.
- 34) Prior to each departure to work check if there is a dry powder fire extinguisher included in the tractor equipment. If there is not any provide the tractor with one.
- 35) When a breakdown occurs press STOP button on the control panel. Stop the tractor engine, take off the key from the ignition and engage the auxiliary brake. Locate the breakdown and remove it using an authorized service.

### **1.5. Wrapper construction**

The Z529 wrapper is constructed of the following units: electronic operating console, main frame, hydraulic manifold; control module; grapple shaft; upper lifting point; support wheel; bottom wrapping arms; bale guide cones; foil cutter; foil feeder; protection arm; bottom wrapping arm; main fixing arm; connective hydraulic hoses.



**Figure 3.** Wrapper construction

1 - Electronic operating console, 2 - Main frame, 3 - Hydraulic manifold; 4 - Control module; 5 - Grapple shaft; 6 - Upper lifting point; 7 - Support wheel; 8 - Bottom wrapping arms; 9 - Bale guide cones; 10 - Foil cutter; 11 - Foil feeder; 12 - Protection arm; 13 - Bottom wrapping arm; 14 - Main fixing arm; 15 - Connective hydraulic hoses

In the main frame (2), a grapple shaft (5) is mounted and the upper lifting point (6), through which the wrapper is to be connected with a tractor and levelled for both the transport and working positions.

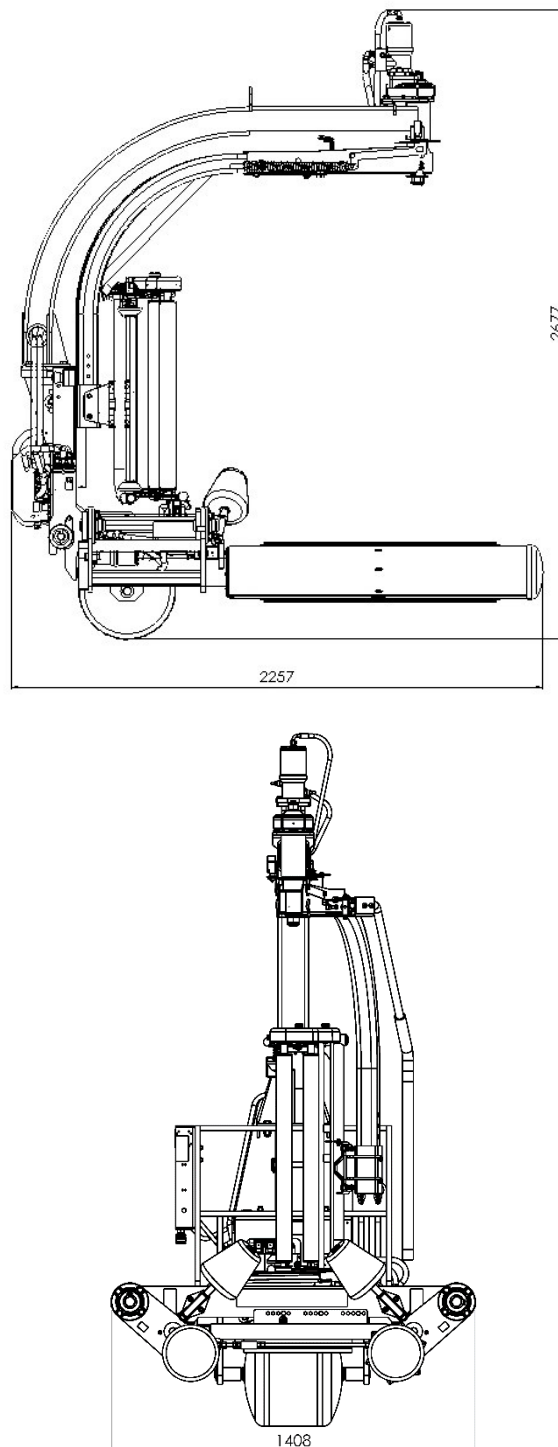
The main fixing arm (14) is mounted to the main frame (2) and the main wrapping arm (13) is mounted to it with the protection arm (12) and foil feeder (11). The movable bale turning and loading arms (8) are fixed to the main frame (2). The foil feeder (10) is fixed to the main frame (2).

## 1.6. Wrapper characteristics

**Table 1.** Technical specification of the wrapper

Item	Detailed list	UOM	
1	Type		Z529
2	The manner of connecting with the tractor		Suspended
3	Overall dimensions in operating position Length/width/height	mm	2257/1674/2677
4	Overall dimensions in transport position Length/width/height	mm	2257/1408/2677
5	Machine weight	kg	780
6	Maximum bale weight	kg	1000
7	Dimensions of a wrapped bale Length Diameter	mm	1200 1200-1500
8	Maximum operation speed	km/h	10
9	Maximum transport speed	km/h	15
10	Connected with the tractor by	-	Three-point hitch (TUZ)
11	Suspension category	-	2
12	Minimal tractor power	kW	60
13	Required pressure in tractor hydraulic actuator system	MPa	14
14	Recommended tractor pump output	l/min	Minimum 22 Maximum 50
15	Hydraulic oil purity class	-	Not less than 8 acc. to NAS 1638 (category 19/17/14 acc. to ISO 4406-1996)
16	Wrapper drive	-	Hydraulic from the tractor power hydraulics
17	Wrapper arm drive	-	Hydraulic motor
18	Maximum rotary speed of the wrapper arm	rpm	30
19	Bale loading way	-	Self-acting with bottom arms
20	Bale unloading way	-	Self-acting with bottom arms (a bale holder as an extra option)
21	Foil cutting	-	Automatic after completing the wrapping cycle
22	Foil width	mm	750
23	Wrapping arm revolution number at foil: 750 mm	rev.	16
24	Bale wrapping time (loading, wrapping, unloading)	min	~2
25	Number of operators	-	1 (tractor operator)
26	Control panel	-	Electronic, type Z529-00
27	Electrical installation voltage	V	12

## 1.7. Wrapper dimensions

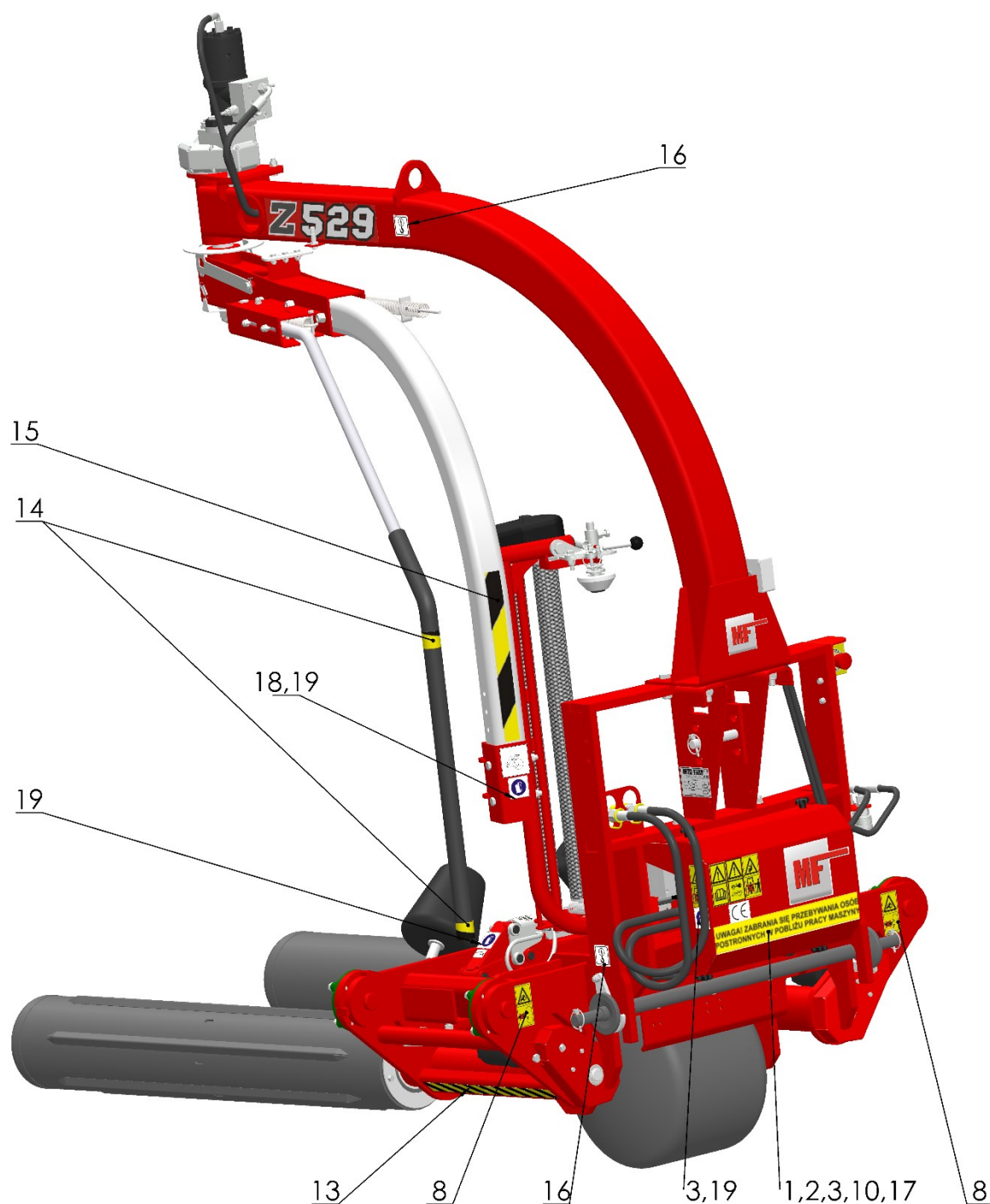


**Figure 4.** Overall wrapper dimensions in transport position.

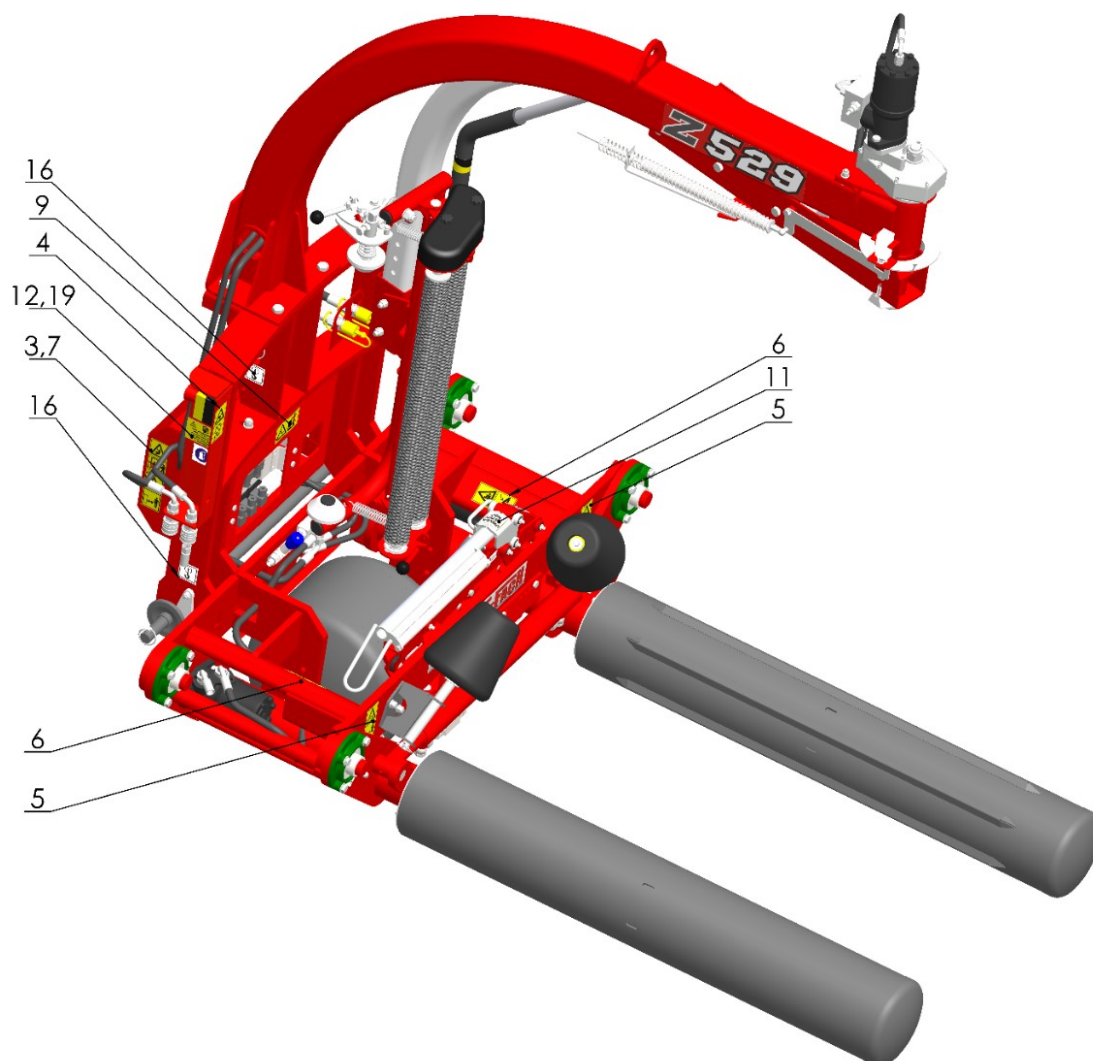
Overall wrapper dimensions in the operating position are presented in Table 1.



## 1.8. Location of pictograms



**Figure 5.** Location of pictograms view from the back.  
Meaning of the pictograms was indicated in Section 1.9 of the instruction manual.



**Figure 6.** Location of the pictograms view from the front.

Meaning of the pictograms was indicated in Section 1.9 of the instruction manual.









### 1.9. Hazard warning symbols








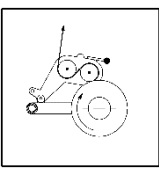

Warning pictograms located on the machine (Section 1.6) inform the operator on hazards and risks that can occur during operation of the machine. Keep the symbols clean and legible.



Illegible symbols should be replaced with new ones available for purchase at the manufacturer.

**Table 2.** List of safety signs and hazard tables

No.	Warning symbol	Symbol description
1.		Attention. Read the instruction manual.
2.		Attention. Stop the engine and remove the key from the ignition prior to commencing the service or repair activities.
3.		Attention. Do not stand near tractor tie-rods during control of the lifter.
4.		Attention. Do not touch the machine elements before all its units are stopped.
5.		Attention. Crushing - rolling bale. Keep a safe distance from the machine.
6.		Attention. Do not reach into the crushing area if the elements can move.
7.		Attention. Risk of crushing toes or a foot. Keep a safe distance from the machine.
8.		Attention. Do not open and remove protective guards if the engine is in operation.

9.		Attention. Do not ride on platforms and ladders.
10.		Warning inscription: Attention! Third persons are forbidden to stay near the machine working place.
11.		Warning inscription: Attention! Sharp blade.
12.		Warning inscription: Make sure to read the instruction manual before starting up the machine and strictly adhere to recommendations concerning safety of work during machine operation.
13.		Warning stripe 40x440.
14.		Warning stripe 40x260.
15.		Warning stripe 40x400.
16.		Information pictogram: Hooking or lifting point.
17.		Information pictogram: CE marking - manufacturer's conformity declaration on complying of the machine with the European Union Directives.
18.		Information pictogram; Foil mounting procedure.
19.		Information pictogram; Wear safety gloves.

## 2. Interaction with a connected tractor

Prior to commencement of connecting the bale wrapper to the tractor make sure that it fulfils all the requirements presented in the machine characteristics (Section 1.5) Connect the wrapper Z529 with a tractor featuring the power not less than 60 kW.

The tractor must be provided with at least two power hydraulics quick release sockets (acc. to ISO 7241-1, type A, size 12.5), enabling pressure supply and free return of oil from the wrapper distributor to the tractor oil tank. The tractor hydraulic installation must enable switching off the hydraulic supply of the working sections from the tractor operator's seat in the tractor cockpit.

The tractor must be provided with a 3 - pin electric socket 12V (DIN 9680).

Prior to connecting with the tractor the operator must make sure that the wrapper is complete.

Make sure that the point marked as lubrication one are really greased. If it is not the case, have them lubricated. (Section 5.1.)



ATTENTION

### ATTENTION!

Make sure the power hydraulic system is tight. To check if there are leaks from the hoses, use blotting paper or paper.



WARNING

### WARNING!

Wear well-fitting clothes that cannot be caught by movable elements and boots with non-slippery soles.

In the case of the hazard of item ejection wear a protective helmet with eye protection.

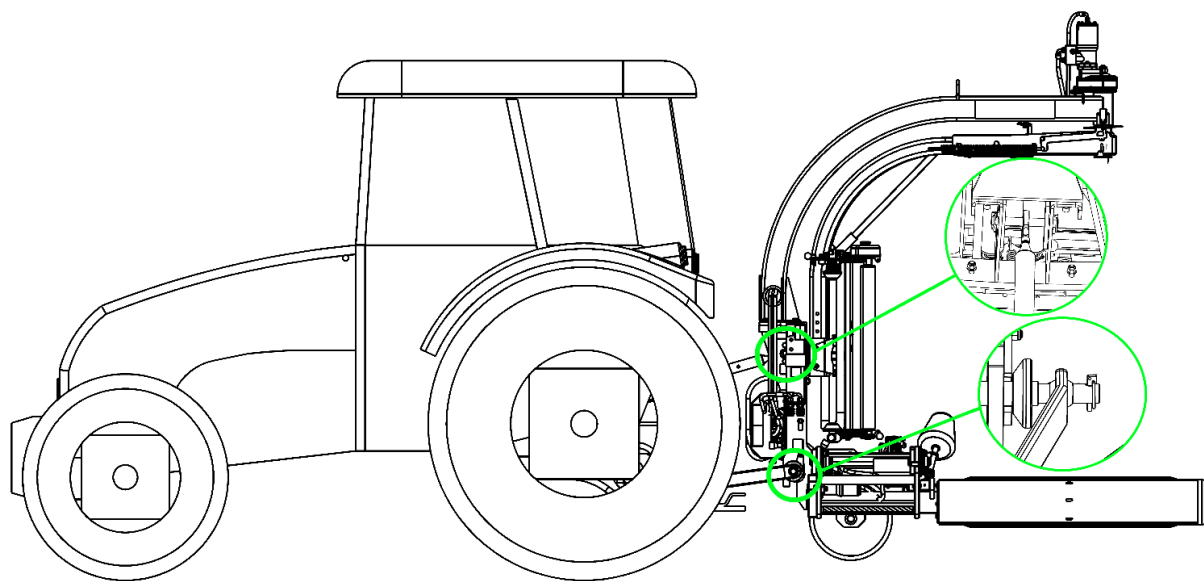


DANGER

### DANGER!

The machine working area is considered a danger zone. Prior to starting up the machine make sure that there are neither people nor animals around in the near proximity of the machine. In the case anyone appears near the machine the wrapper must be stopped immediately and you must make all undesired persons leave the zone. Never stop closely or just under: terraces, balconies, in front of open rooms or all kinds of platforms where there may be people or animals. The wrapper operator is responsible for any kinds of damages caused by the machine during operation.

## 2.1. Connection with the drive



**Figure 7.** Point of connecting the tractor with the wrapper

- The wrapper should be connected to the three-point hitch TUZ class 2.
- Make sure that in the area of connecting the wrapper with the tractor and in the near vicinity there are no third persons present, children especially.
- During connecting with the tractor position the machine along the tractor axis on paved, even and level ground (Fig. 10) Stop the tractor engine, take off the key from the ignition and engage the tractor auxiliary brake.
- Position the tractor in the way so as the bottom tie-rods of the lift were in front of the wrapper bottom fixing pins.
- Lower the bottom tie-rods of the hydraulic lift with the control lever of the tractor and connect the tie-rods to the relevant fixing points.
- Connect with the tie-rod the third, upper tractor fixing point with the wrapper.
- Adjust (by relevant tensioning) stiffness of the bottom rods of the lift of the tractor.
- Lift up the wrapper on the lift and using the upper tie-rod adjust setting of the wrapper to be in a relevant positions.
- Connect the electric power supply plug to the wrapper (Section 2.3). Protect against accidental disconnection. Possible excessive length of the power supply cable should be placed in the operator cockpit.
- Place the control panel in the tractor cockpit and then connect to it the communication cable. Possible excessive length of the control cable should be placed in the operator cockpit.
- Connect hydraulics supply system - the supply hose plug and the return hose to the supply sockets of the tractor.
- Start the tractor, switch on the control panel and check correct operation of the power hydraulic systems in the manual mode, without the bale and without foil on the feeder (Section 2.1.1).

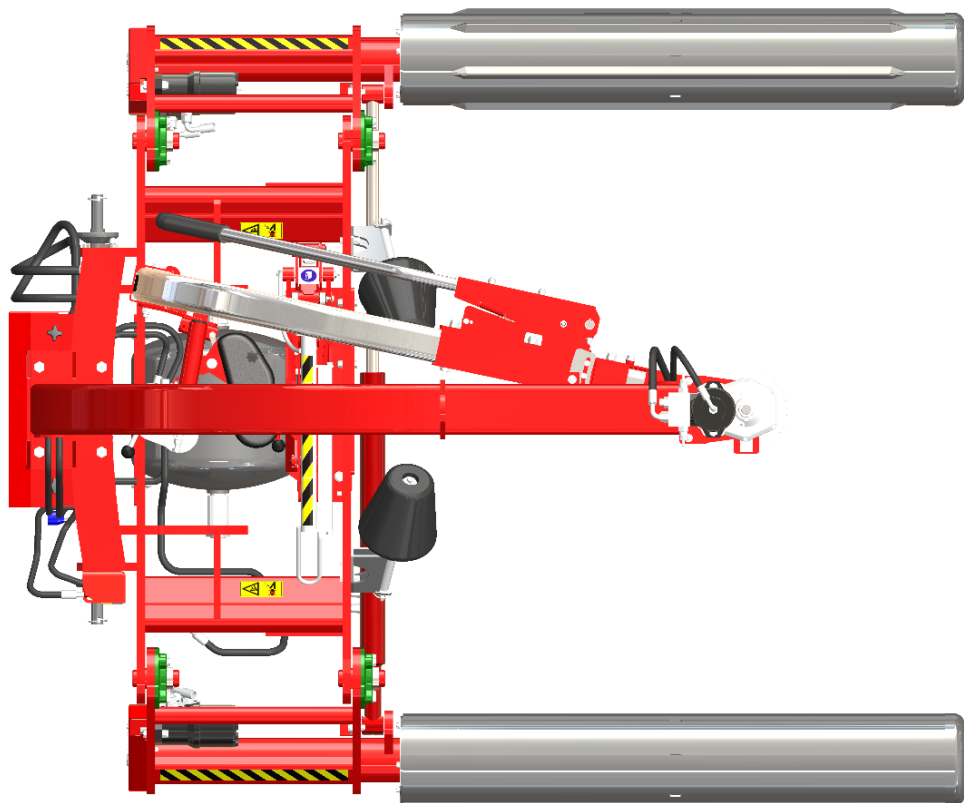
### 2.1.1. Checking the operation of the wrapper hydraulic system control



ATTENTION

#### ATTENTION!

Prior to commencement of the test of correct operation of the wrapper read point (3. Control elements and work with wrapper) of the particular instruction manual.



**Figure 8.** The wrapper in the initial position (view from the top)

To check the correct operation of the wrapper, follow the procedure below:

- Make movements with bottom arms in the manual mode, maximal extension and contraction of the arms.
- Make some revolutions with the top wrapping arm with slow and fast revolution speed. Stop the arm in the initial position (Fig. 8).
- Execute opening and closing of the foil cutter. Leave it in closed position.



### 2.1.2. Checking the correctness of power hydraulics control in the automatic mode

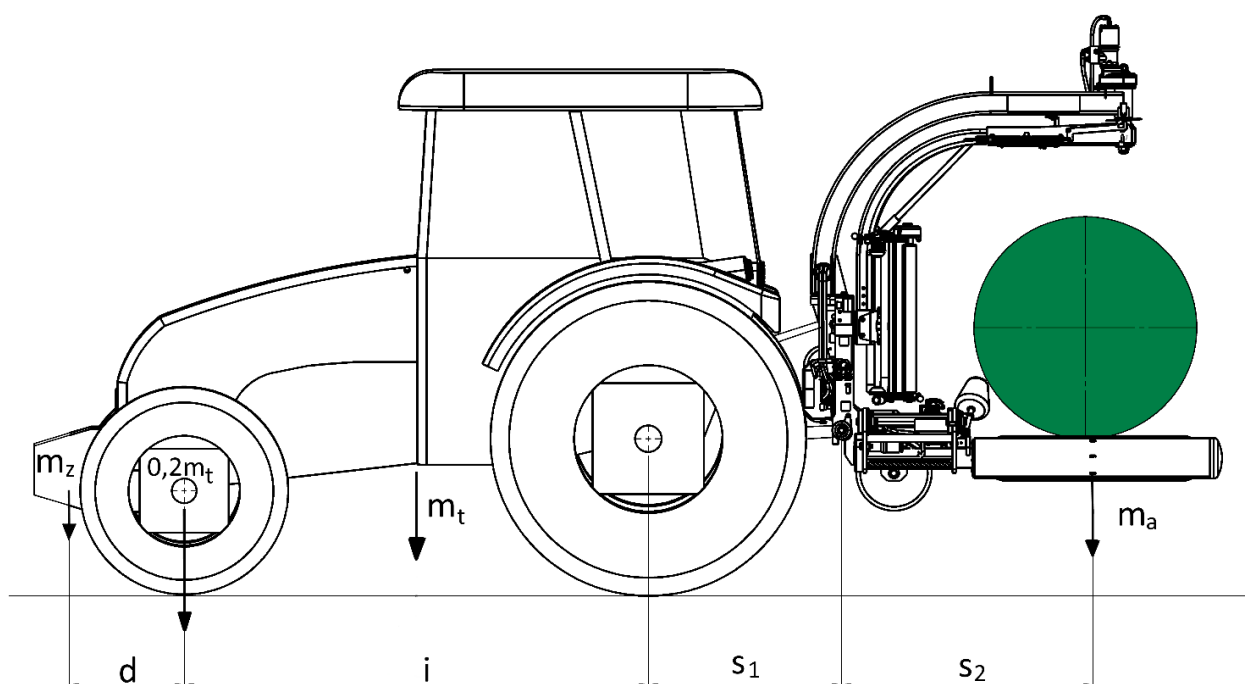
- Select automatic operation mode.
- Execute automatic loading.
- Execute automatic wrapping. Upper wrapping arm should turn clockwise looking from the top, move and slow smoothly. After performing the programmed number of revolutions, the arm should stop in the initial position (Fig. 8).
- Execute automatic unloading.

If the hydraulic and control systems operate correctly load the first bale and make sure that the stability of the tractor with the wrapper is correct. It is proved by maintaining by the tractor of the complete controllability. it can be calculated following the recommendations in Section 2.2 Tractor-wrapper unit stability.

### 2.2. Tractor-wrapper unit stability

The tractor-wrapper unit may become unstable if the weight is insufficient on the front axle of the tractor. A ballast is required ( $m_2$ ) of the front tractor axle, in order to obtain at least 20% of the tractor curb weight falling on the front axle, it can be calculated using the following formula:

$$m_z \times (d+i) \geq m_a \times (s_1 + s_2) - 0,2 \times m_t \times i$$



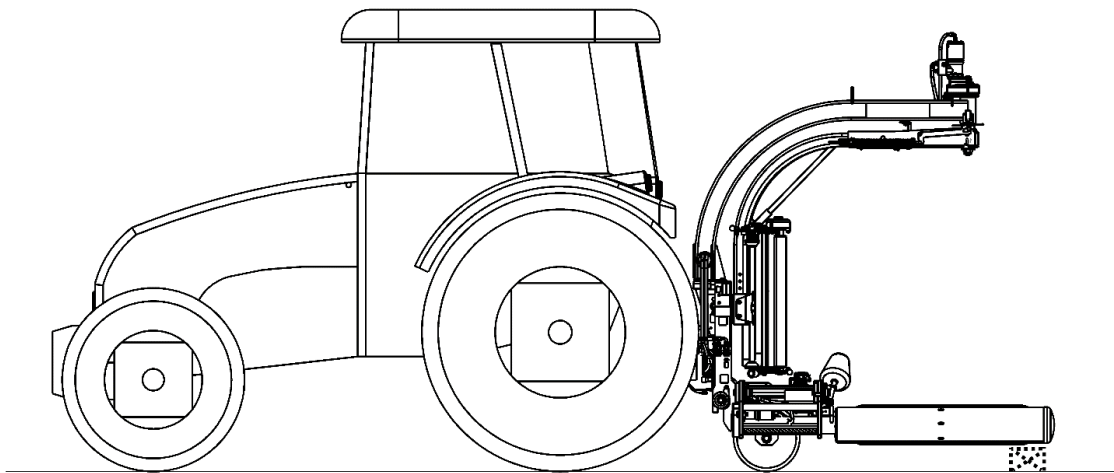
**Figure 9.** Calculation of the ballast required to maintain stability of the tractor-wrapper unit



## Explanations

- $m_t$  - tractor curb weight (kg);
- $m_a$  - weight of the suspended machine including the maximum weight of the bale defined in point 1.3 (kg);
- $m_z$  - ballast weight (kg);
- $d$  - distance from the ballast centre of gravity from the front axle centre (m);
- $i$  - tractor wheel base;
- $s_1$  - distance between the centre of the back axle and the centre of the bottom points of the three-point hitch (m);
- $s_2$  - distance between the centre of the bottom points of the three-point hitch and the suspended machine centre of gravity with the bale (m).

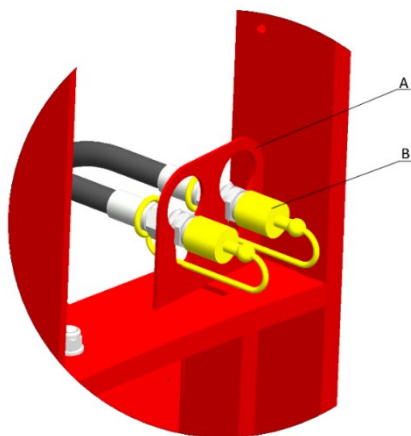
## 2.3. Drive disconnection



**Figure 10.** Wrapper position at connection and disconnection with the tractor drive

To disconnect the wrapper from the tractor drive, follow the procedure below:

- Make sure that in the area of connecting the wrapper with the tractor and in the near vicinity there are no third persons present, children especially.
- Position the wrapper on its storage place on even and level ground (Fig. 10). Stop the tractor engine, take off the key from the ignition and engage the tractor auxiliary brake.
- Disconnect the electric power supply system and control system of the wrapper. Wind the cables and store under the hydraulic distributor guard.
- Disconnect the power hydraulics system and protect the hydraulic hoses in their clamps on the wrapper main frame (Fig. 11- A).
- Make sure that there is no hazard of accidental machine displacement.
- Disconnect the three-point hitch TUV.
- Drive the tractor away from the wrapper.



**Figure 11.**Hydraulic conductor clamp  
A – hose retaining bracket, B – plastic cap



ATTENTION

**ATTENTION!**

Hydraulic connections must be always kept clean. After use reinstall plastic cover supplied at purchasing the machine (Fig. 11- B).



ATTENTION

**ATTENTION!**

After disconnecting the wrapper from the tractor its control panel should be stored in a dry, safe place, away from reach of unauthorized persons, children especially.

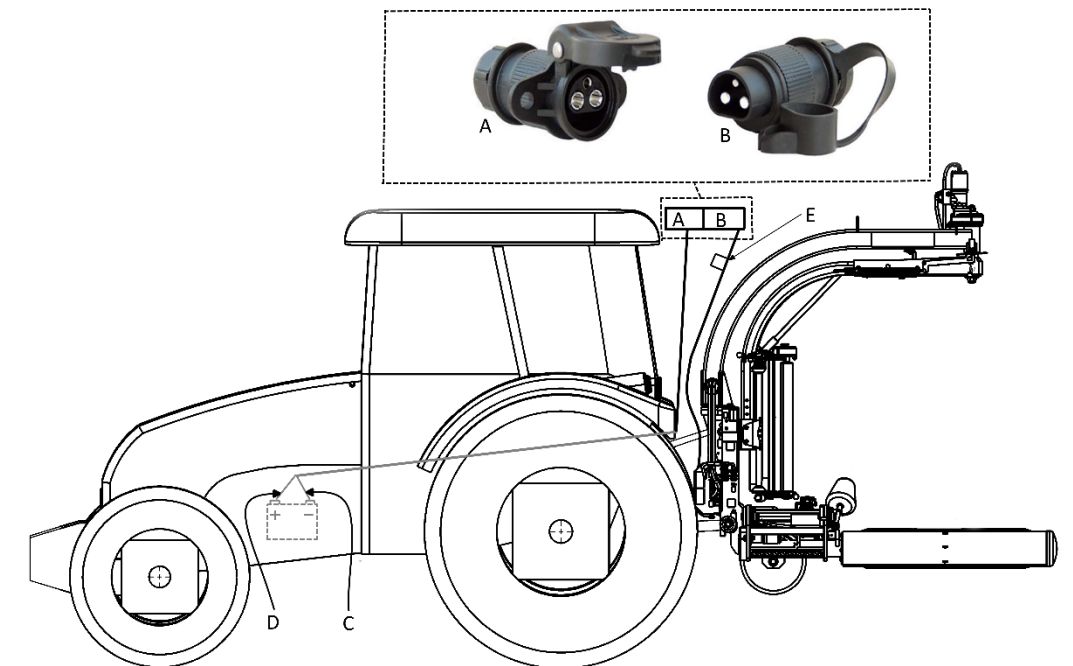


ATTENTION

**ATTENTION!**

After disconnecting the wrapper from the tractor its power supply wires and the communication cable of the control panel should be stored under the guard of the hydraulic distributor.

## 2.4. Power supply system



**Figure 12.** The connection diagram of 12V electric power supply of the tractor to the wrapper

Electric power supply 12V of the wrapper is taken from the electric system of the tractor after connecting the 3-pin power supply plug B (Fig. 12 - B) to the tractor electric socket A (Fig. 12 - A). The tractor must be provided with a 3 - pin electric socket 12V (DIN 9680 connected to the tractor battery).

The power supply wiring harness has an overload protection in the form of fuses, which are placed in their bases E immediately after the plug A.

In the case of burning of any of the fuses of the power supply wiring harness disconnect the power supply plug and replace the damaged fuse with a new one of the same load value. Before reconnecting find and eliminate the source of installation overload.



ATTENTION

### ATTENTION!

Do not connect power supply of the wrapper to the lighter plug if the tractor is not provided with the 3-pin 12V DIN 9680 socket. Report the distributor of the tractor a request to provide the tractor with this socket fitted with suitable wire connection to the battery.

**Table 3.** Connection of the socket wires to the battery (**Fig. 12** – B, C, D)

Lead (battery pole)	Pin marking on socket
C (-)	31
D (+)	15/30



ATTENTION

#### ATTENTION!

Provide relevant space for electric wires of power supply and control. Too much tensioned or loosely hanging wires may be damaged and result in uncontrolled movements of the machine, consequently, in damaging it or the tractor.

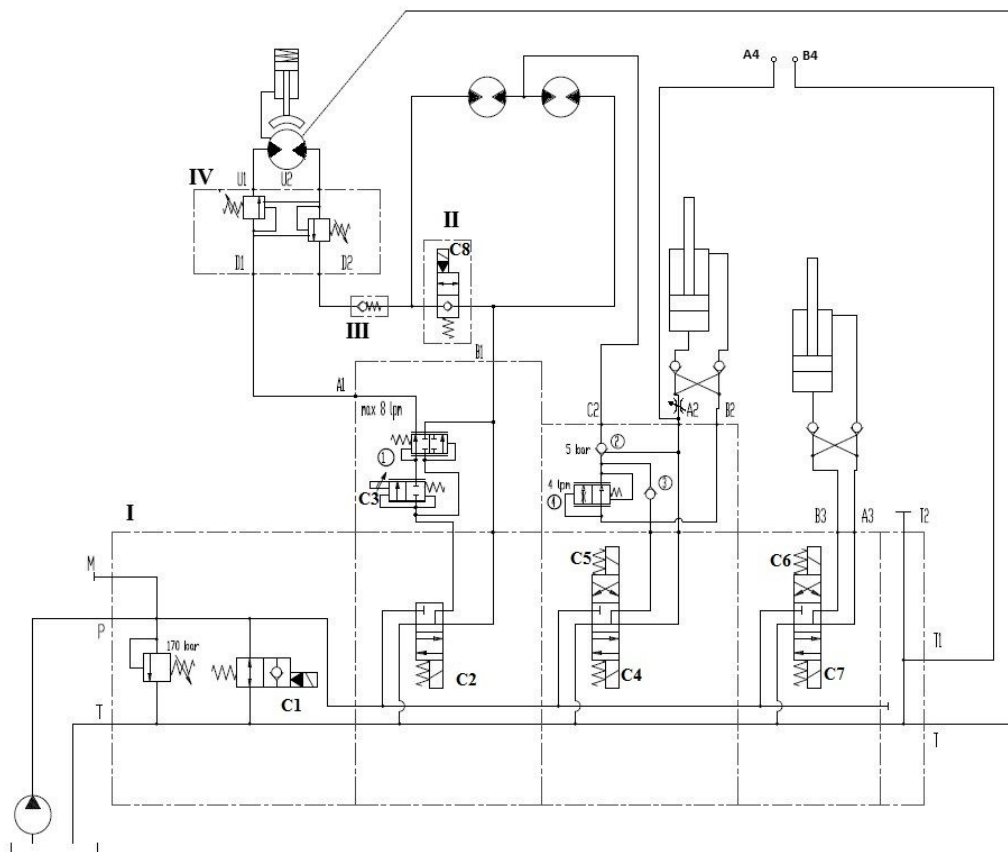
## 2.5. Wrapper hydraulic system

Wrapper hydraulic installation is supplied from the tractor power hydraulics system. Connecting to the power hydraulic system is realized with connecting hoses supplying the hydraulic distributor and further on the hydraulic motors and hydraulic servos (cylinders). A hydraulic motor actuates the wrapping arm via a toothed gear. The next two motors drive the bottom arms of the wrapper via a chain transmission. Double acting hydraulic cylinders execute:

- Extending and contracting of the bottom wrapper arms,
- Opening and closing of the foil cutter,

The Z529 wrapper features the power hydraulic system (Fig. 13), in which the following element can be distinguished:

- main hydraulic block;
- electrically operated directional valve;
- directional valve;
- engine braking valve;
- ports for supplying hydraulic motors during wrapping up;
- ports for opening and closing of the wrapper bottom arms;
- ports supplying the foil cutter;
- sockets supplying the bale holder (optional equipment activated in the automatic mode A2).



**Figure 13.** Wrapper hydraulic system

I - main hydraulic block; II - electrically operated directional valve; III - directional valve; IV - engine braking valve; A1, B1 - ports for supplying hydraulic motors during wrapping up; C2, A2, B2 - ports for opening and closing of the wrapper bottom arms; A3, B3 - ports supplying the foil cutter; A4, B4 - sockets supplying the bale holder (optional equipment activated in the automatic mode A2).

Controlling of the hydraulic motors and cylinders is executed via the electronic control panel located for the time of operation in the tractor operator's cockpit. The panel is communicated via the cable type **M12 a-coded cable assembly L=5m with a control module, which controls directly solenoid valves in the hydraulic distributor and receives the signal from the sensor.**

The hydraulic block is protected against the tractor power hydraulic high pressure system with a pressure valve. Maximum pressure of the hydraulic system amounts 160 Bar.



The hydraulic system of the wrapper was factory filled up with L-HL 46 oil type.

The hydraulic system of the tractor cooperating with the wrapper should have the oil of the same type. Filling up of the hydraulic system with oil of other type should be consulted with the manufacturer of the machine.



ATTENTION

**ATTENTION!**

The manifold flow rate in the tractor must be set to a value not higher than 50 l/min. The flow controller set value should be between 4 and 6 (Fig. 30). Failing to follow the above guidelines poses a risk of overheating the hydraulic oil, which results in irregular operation of the Bale Wrapper.



ATTENTION

**ATTENTION!**

Hydraulic oils of different types should not be mixed together. It may result in damaging the of the tractor and the wrapper itself.



ATTENTION

**ATTENTION!**

Always keep the oils and lubricants out of the reach of children. Always read carefully the warnings and precautions placed on packaging. Do not allow for contact of skin with all the hazardous substances. Wash yourself thoroughly after you have used the above-mentioned hazardous substances.



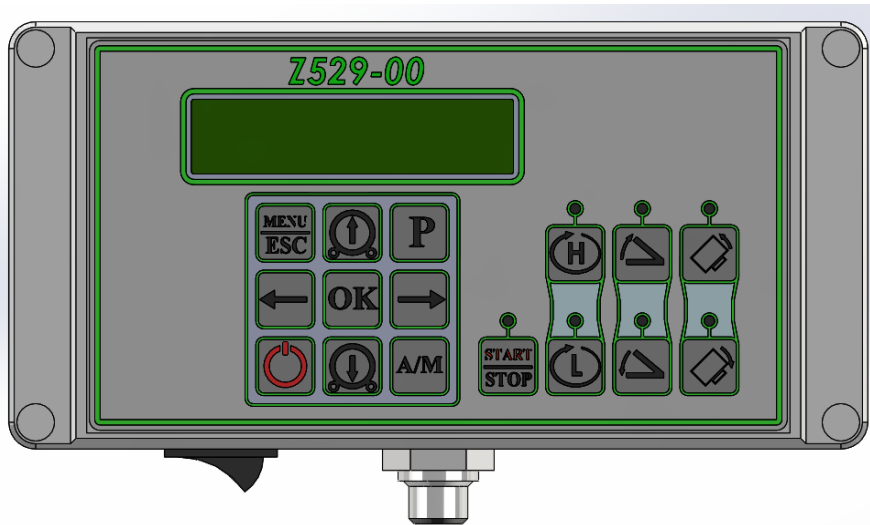
ATTENTION

**ATTENTION!**

Work on pressurised hoses is prohibited, may cause pollution or serious injuries.








### 3. Control elements and wrapper operation








#### 3.1. Description of control panel push buttons of Z529



**Figure 14.** Z529 Control panel

**Table 4.** Description of the control push buttons

Push button (symbol)	Name	Function
	START/STOP	Emergency stop - locking of operation of all the wrapper functions. Push it again to unlock them. Starting and stopping of the automatic operation mode.
	On switch / Off switch	Control panel switch.
	MENU/ESC	Entering the control panel menu (selection with the left and right cursor buttons): - Bale counter resetting; - All field counter resetting; - Setting of number of wrappings (8-99) - cursor arrows; - Field selection (16 fields can be selected) - cursor arrows; - Menu language selection; Validation: OK
	Left arrow	Change/diminishing of the defined value, moving between MENU options.
	Right arrow	Change/increasing of the defined value, moving between MENU options.
	Pause	
	OK	Validation of the input changes or entering the next selection level (menu).

	Bale loading	Holding results in retracting of the bottom arms (bale loading).
	Bale unloading	Holding results in expanding of the bottom arms (bale unloading).
	A/M	Wrapper operation mode selection: M - manual mode; A1 - automatic mode, without the bale holder; A2 - automatic mode, with the bale holder;
	Arm revolution - fast run	Holding results in quick turning of the wrapping arm and drums of the bottom arms.
	Arm revolution - slow run	Holding results in slow revolution of the wrapping arm and drums of the bottom arms.
	Foil cutter opening	Holding results in foil cutter opening.
	Foil cutter closing	Holding causes closing of the foil cutter.
	Moving out of the bale holder	Holding causes moving out of the bale holder.
	Retraction of the bale holder	Holding results in retraction of the bale holder.



### 3.2. Control panel operation

The panel is an electronic device intended to control wrapper operation, moreover it transfers information to the user concerning the current machine settings and work performed by it.

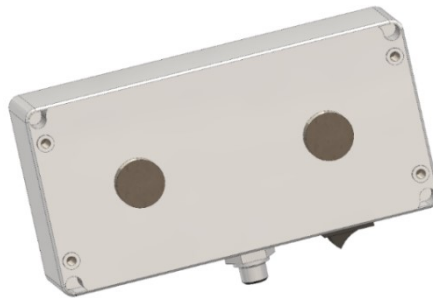


ATTENTION

#### ATTENTION!

In order to avoid the risk of causing an unintended wrapper movement, introduction of changes in the work parameters on the control panel should always be executed at the hydraulic system switched off. After inputting the parameter changes the hydraulic supply can be switched on again.

The control device features magnetic clamps, by which it should be attached to the metal parts of the body so as to prevent accidental movement of the panel or unintended starting up of the working sections of the wrapper. The panel should be located in the tractor so as the operator could operate the device with no difficulty and tiredness and have the review of the messages appearing on his display.




**Figure 15.**Control panel magnetic clamps




If the tractor body does not allow for mounting the panel using magnetic clamps due to its finishing with plastics, it may be mounted by bonding on the flat surface of the body of a rectangular piece of the steel plate with dimensions 110x60x2 mm, using a strong double sided mounting tape with a foam core.

#### 3.2.1. Panel switching on

1. Connect the plug of the wrapper to the tractor socket 12V.
2. Connect the panel to the control module with the **M12 a-coded cable assembly L=5m.**
3. Turn the panel main switch from the position 0 to I. The change-over switch is located at the bottom of the panel.
4. If the LED next to the Start/stop button flashes green it means that the panel has correct power supply
5. Switch the control panel with the push button . In this moment communication of the panel with the control module takes place. Wait approx. 5 sec. for the communication to be completed successfully. In the case of incorrect communication check correctness of connection of the cables to the control module.

### 3.2.2. Panel switching off.



- 1) make sure that the working modules are in the protected, transport position or in the initial position.
- 2) If the power hydraulics of the tractor is on it should be switched off.
- 3) Switch the panel off with the push button  and wait approx. 3 sec. for the panel display to go out.
- 4) Switch the panel power supply off with the change-over switch on the bottom of the panel from the position I to 0.



### 3.2.3. Protections against collisions



The wrapper features a programme protection against executing the actions that may cause a collision with the wrapping arm. Before the wrapping arm a safety arm is located, which after hitting an obstacle switches the control panel off and stops all the operation functions in the wrapper. In order to start the wrapper it is necessary to switch the control panel on.

### 3.2.4. Wrapper manual operation

Movements of the working elements of the wrapper are executed using the push buttons marked on the panel with the machine part symbols (**tab. 5**). The movement is executed as long as the push button is depressed or until the working element reaches its limit position.

When pushing the slow  or fast  rotation button to actuate the bale wrapping arm rotations, a green light comes on over the pushed button at the same time. Revolving movement is executed only when we have a button depressed.

We will also control manually opening of the foil cutter  as well as its closing . At the moment of depressing the push button a green LED lights up above it. The cutter opens and closes till the moment when it comes to its limit position or possibly to the moment, in which the press button is released. In the moment of opening and closing of the cutter these should be no third persons near the wrapper.

By pressing and holding the push button  the bale holder will be pushed out and by pressing the push button  and holding it, the bale holder will be pulled in. The bale holder opens and closes until it comes to its limit position or until the press button is released. These two functions are available only in the option with the bale holder.





### 3.2.5. Automatic mode operation

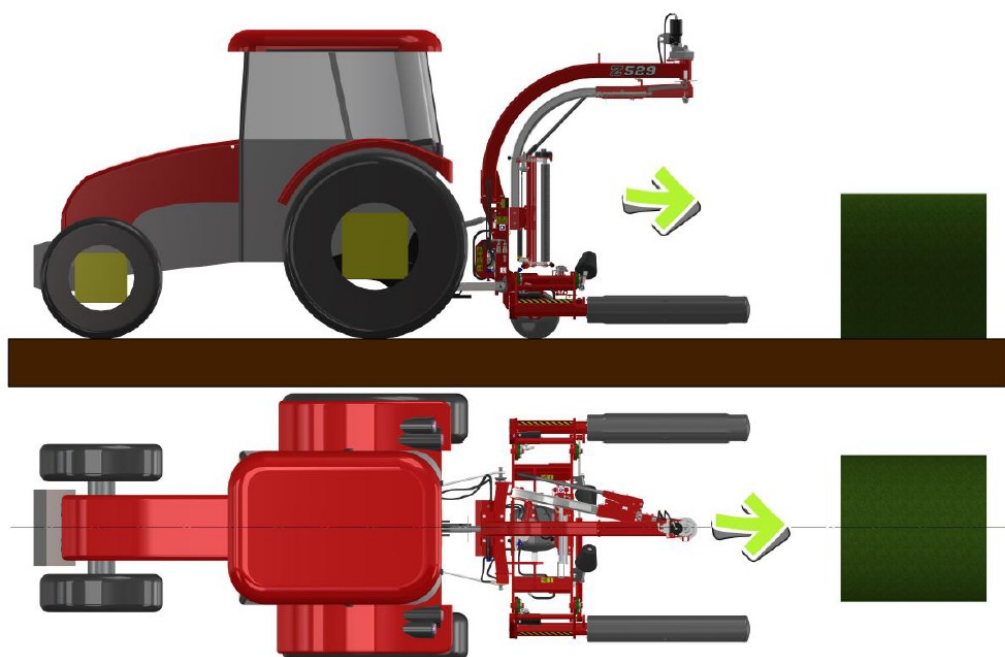
In the automatic mode of operation the whole wrapping process is executed automatically. Only loading of a bale requires acceptance and after it is completed wrapping function must be accepted.

Acceptance by the user of bale unloading is always required. It is connected with maintaining safety for unloading does not take place in the place not intended or incorrect for this purpose.

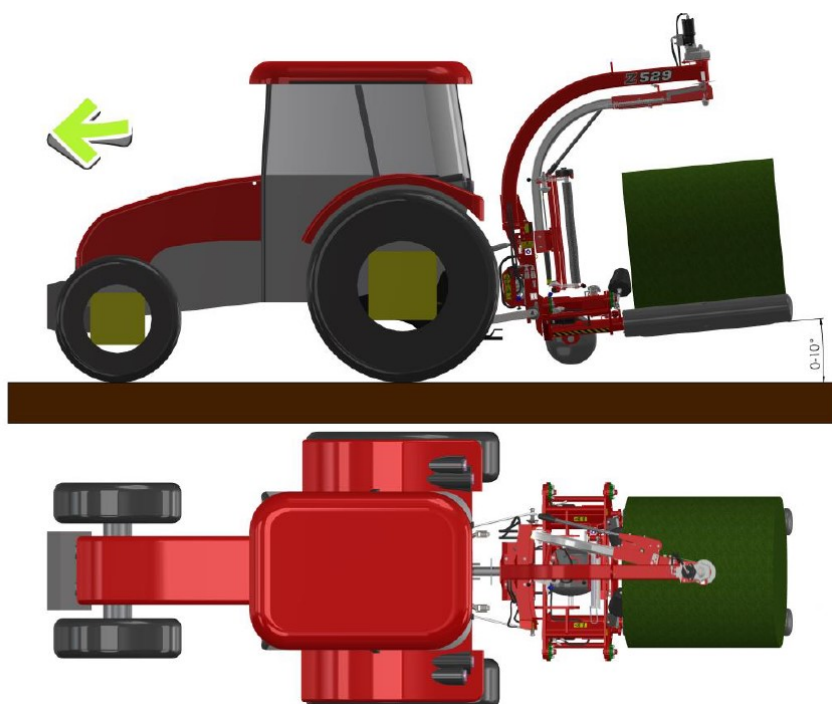
Automatic mode operation - the algorithm of proceeding:

1. Press the push button MENU/ESC and using the cursor arrows pass to setting of the number of wrappings option. When you see the number of wrappings on the display press the push button OK and set the number of wrapping using the cursor arrows. For a bale diameter of 1,200 mm the number of wrappings is 16. In order to accept the selected value press the **OK** push button. Upon accepting leave the menu with the **MENU/ESC** push button.
2. Press the button **A/M** to select the automatic mode of operation (A1). The current operation mode will be displayed in the upper right corner. The M symbol means the manual operation mode, A1- automatic mode, A2- automatic mode with the bale holder. The A2 operation mode is used only when the wrapping machine is equipped in a bale holder.

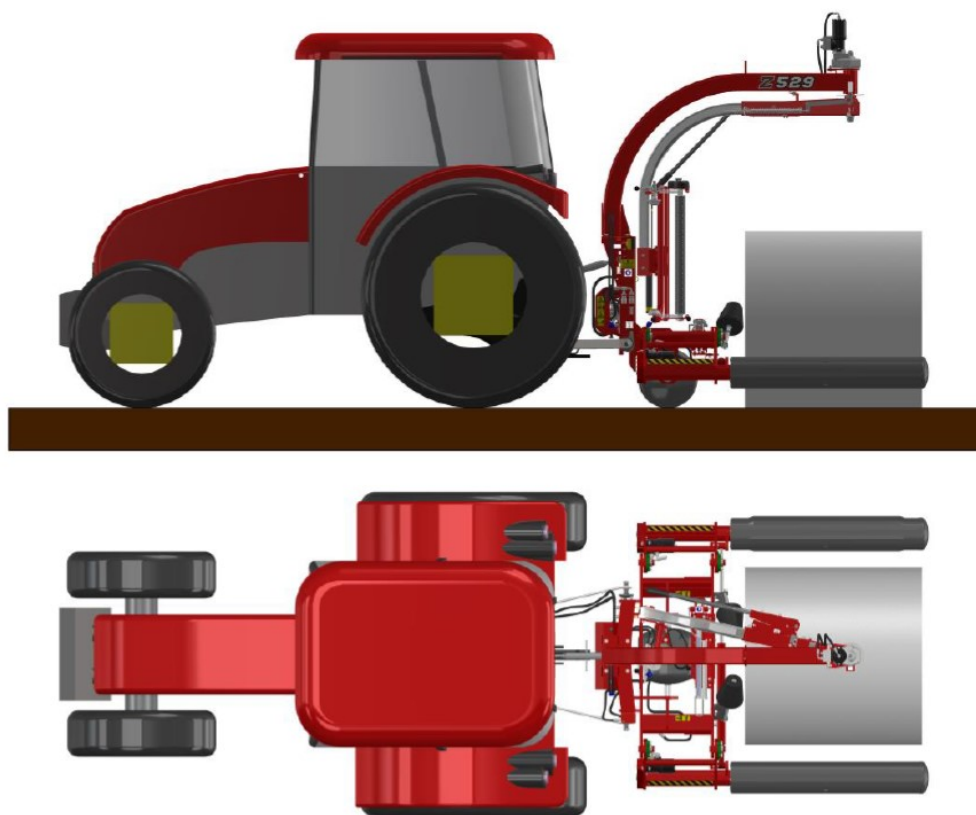
3. Press and hold the push button  to extend the bottom arms. Move the bale wrapper in the loading position (**Fig. 16**). Push button  to begin bale loading. When loading is over a green LED will start flashing over the START/STOP push button meaning readiness for wrapping start. If during the automatic loading the arms do not contract to the end they should be closed manually with button .
4. Lift the wrapper to the position of bale wrapping (**Fig. 17**). Press the push button **START/STOP** to commence the automatic wrapping process. After completing the wrapping process the foil will be cut automatically; unloading of a bale should be done manually by holding the button.
5. Set the bale wrapper in the unloading position (**Fig. 18**). Execute unloading pressing the push button . After finished unloading one bale will be counted as completed. After driving up to the next bale, press the **START/STOP** push button again to start loading.



**Figure 16.**Bale loading position



**Figure 17.**Position during wrapping up a bale



**Figure 18.**Bale unloading position



ATTENTION

**ATTENTION!**

During unloading the tractor must be on even surface. It is for the unloaded bale does not roll to another place causing a hazard.

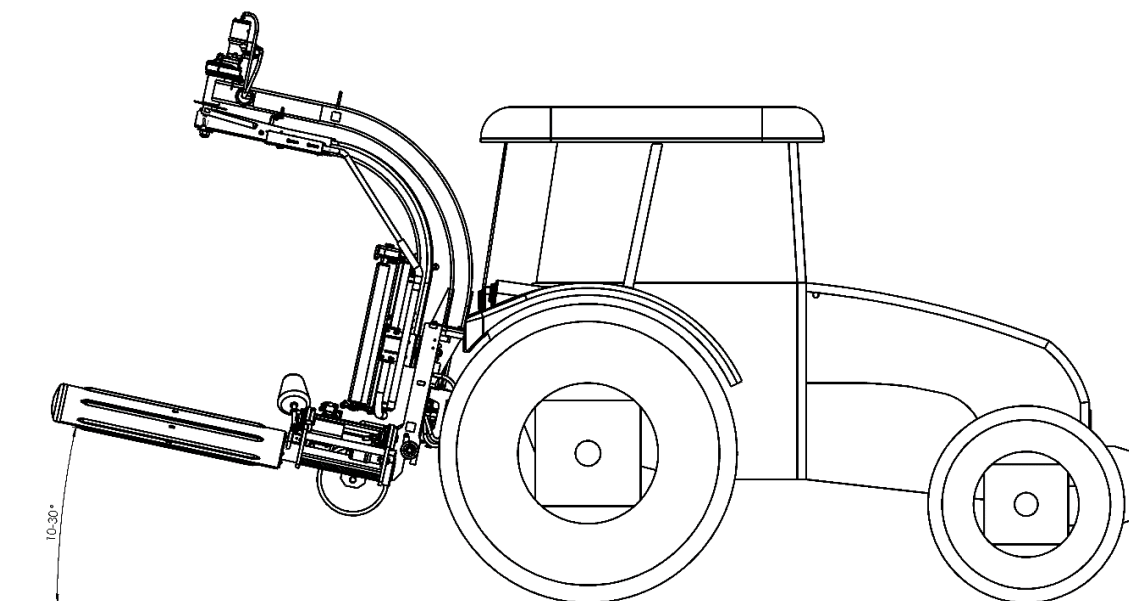


ATTENTION

**ATTENTION!**

Upon bale unloading drive away straight so as not to damage with the bottom arm the foil wrapped around the bale.

### 3.2.6. Transport position



**Figure 19.**Transport position

The transport position of the wrapper allows the user safe moving with the machine on the public roads. The wrapper in the transport position features the bottom wrapping arm contracted. Thanks to this the machine features smaller dimensions and it is easier to move along a road with it.

In order to reposition the wrapper into the transport position you should:

1. Contract the bottom wrapping arms.
2. Position the upper wrapping arm along the main fixing arm (Fig. 3)
3. Lift the wrapper to the transport position (Fig. 19).



ATTENTION

#### ATTENTION!

The servo motor of the bottom wrapping arms is equipped with a safety valve preventing falling of the arms under their own weight. However, staying near them during wrapper transport should be avoided.



ATTENTION

#### ATTENTION!

For the time of transport the upper wrapping arm should be secured with a safety strap.

### **3.2.7. Operation stoppage when wrapping**

If during wrapping in the automatic mode it is necessary to stop the wrapper operation press the push button **START/STOP**. It will cause stopping of the currently moving working sections (stopping of the bottom arms during loading, stopping the arms during wrapping, stopping the foil cutter during cutting).

In order to restart all the wrapper functions press the push **START/STOP** again.

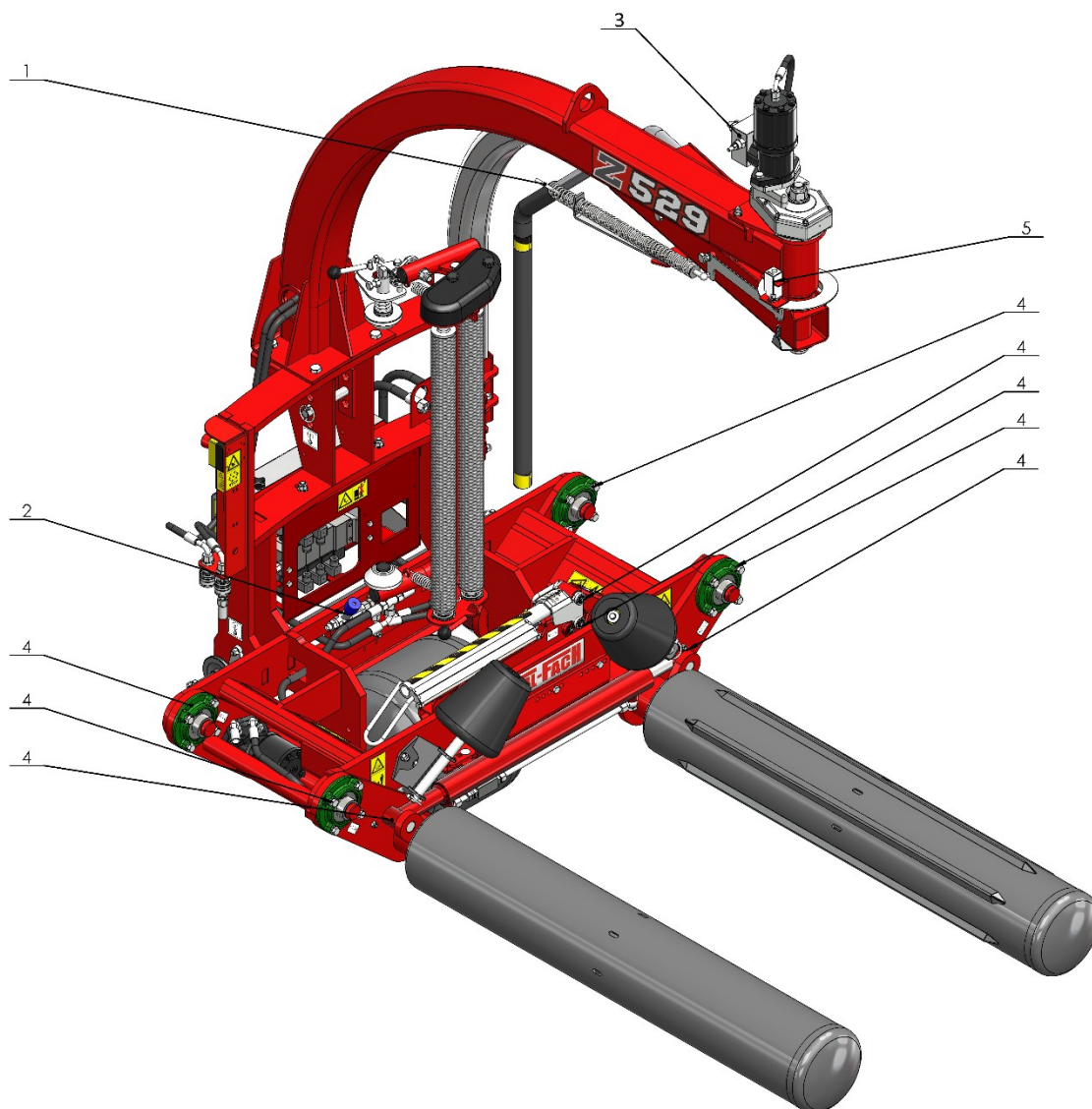
### **3.2.8. Emergency stopping**

If an emergency occurs during operation of the wrapper or the situation that may cause hazard occurs, operation of the wrapper must be stopped by switch off the control panel power supply by pressing from the bottom of the panel of the push button from the position I to the position 0.

After the breakdown or hazard has been eliminated, the work can be commenced by switching on the panel again.



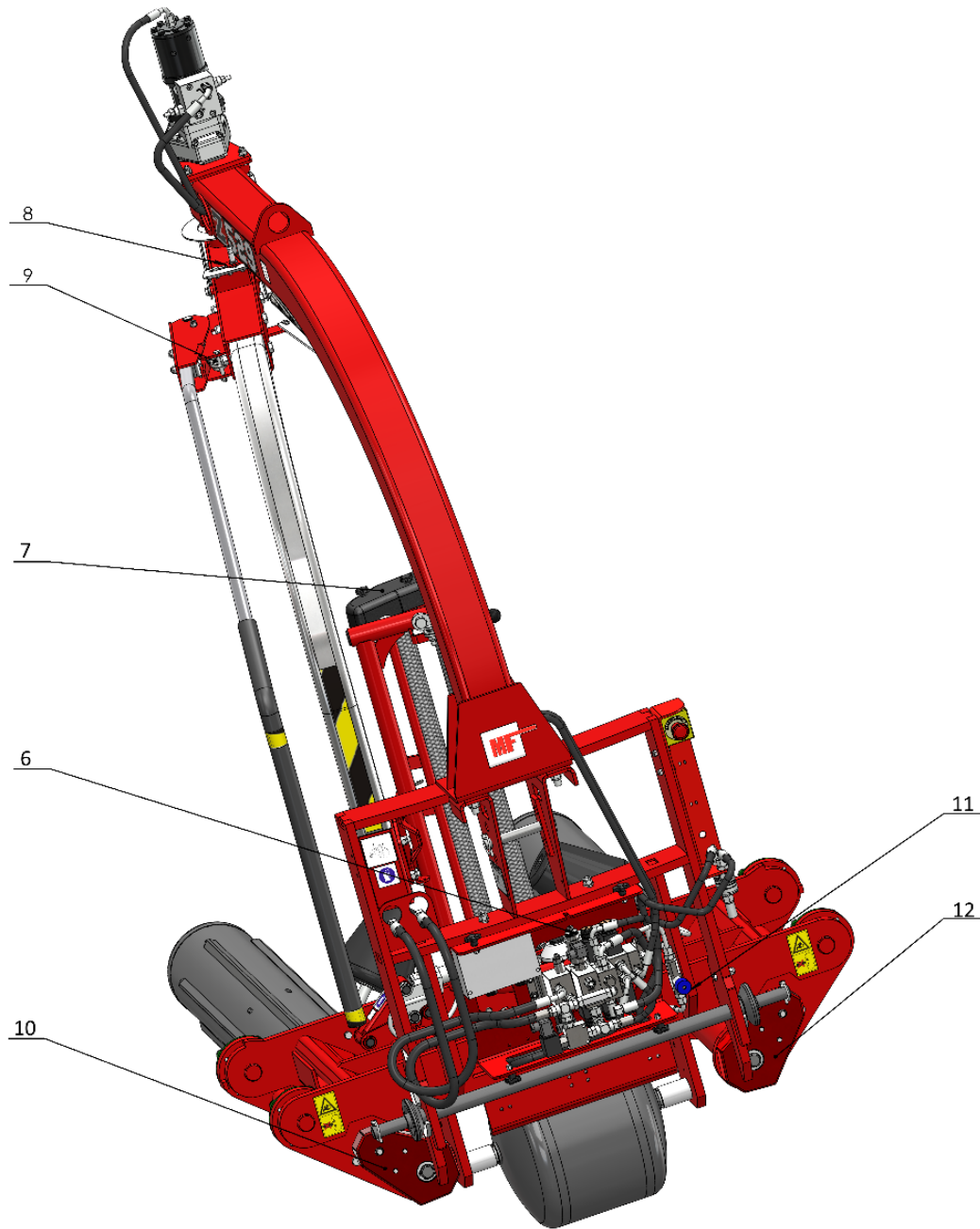
## 4. Current adjustment elements



**Figure 20.** Arrangement of adjustment controls – Front

1 - Spring tensioning in safety arm, 2 - Foil cutter check-throttle valve, 3 - Brake adjustment in the upper motor valve, 4 - Lubrication points, they are indicated by pictograms on the machine, 5 - Safety limit sensor





**Figure 21.** Arrangement of adjustment controls - Back

6 - Wrapping arm slow revolution adjustment, 7 - Chain tension in the foil feeder, 8 - Revolution sensor setting, 9 - Spring tensioning in the safety arm, 10 - Chain tension of the bottom arms, 11 - Check-throttle valve of the bottom arms and bale holder, 12 - Chain tension of the bottom arms

#### 4.1. Sensor setting adjustment

The wrapper revolution sensor (Fig. 21 item 8) is the most exposed to damage and the safety of work depends on it at the most. A damaged sensor should be replaced with a new one. The sensor operation range is 1-5 mm. In the case of setting correction of the sensor distance from its activator or other machine metal parts it is recommended to keep distances between them for ab. 3 mm. Direct contact of the sensor tip with the activator or other machine metal parts should be avoided.



**Figure 22.** Inductive revolution sensor setting

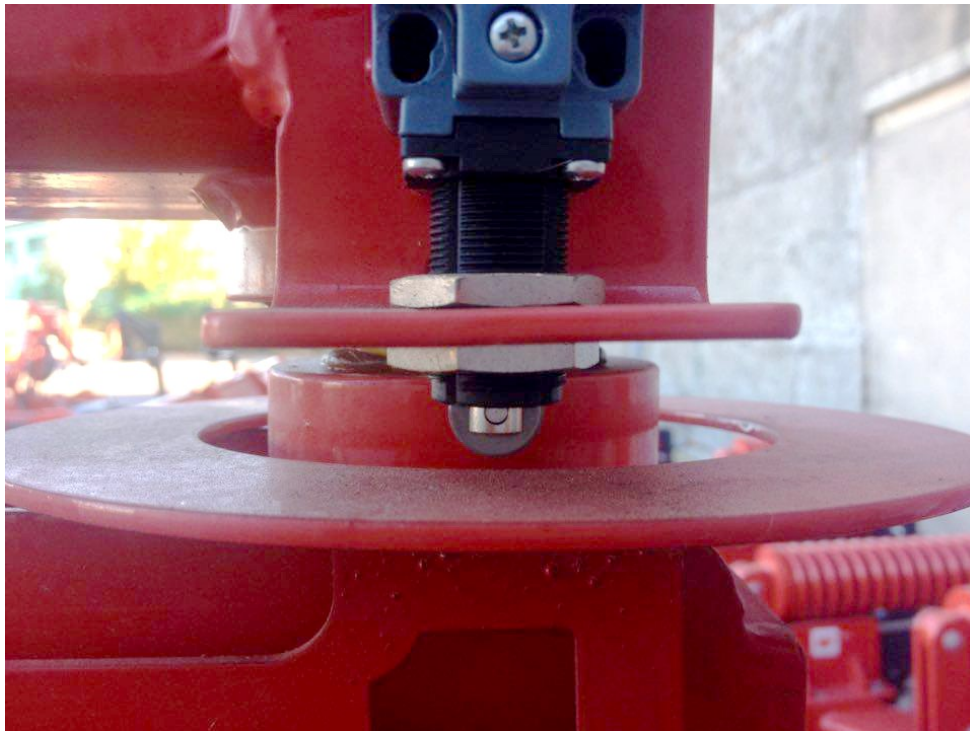


ATTENTION

#### ATTENTION!

Sensor setting corrections should be executed only at the tractor hydraulics switched off, switched off tractor engine and engaged tractor auxiliary brake.

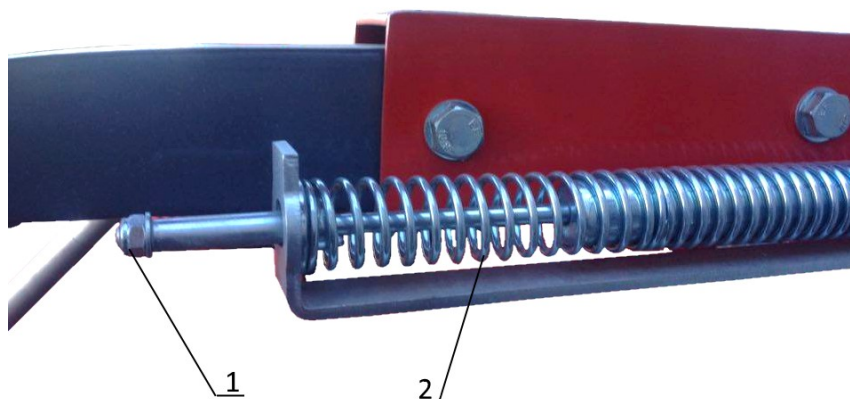
The sensor responsible for counting revolutions and stopping of the upper wrapping arm for the initial position (**Fig. 8**) should be set so as to lose the activator signal at ca. 5 to 10mm from reaching the initial position. It results from the inertia of the upper wrapping arm.



**Figure 23.** Safety limit sensor setting.

The safety limit sensor (**Fig. 20 item 5**) is responsible for disconnection of power supply and this causes stoppage of all the functions of the wrapping machine in the case when the safety arm collides with any item during operation. The sensor should be set in the way so as the activating element would switch it on at each strike at the arm. The distance of the limit switch from the activator should be ca. 5 mm.

#### **4.2. Spring pressure and tensioning adjustment**

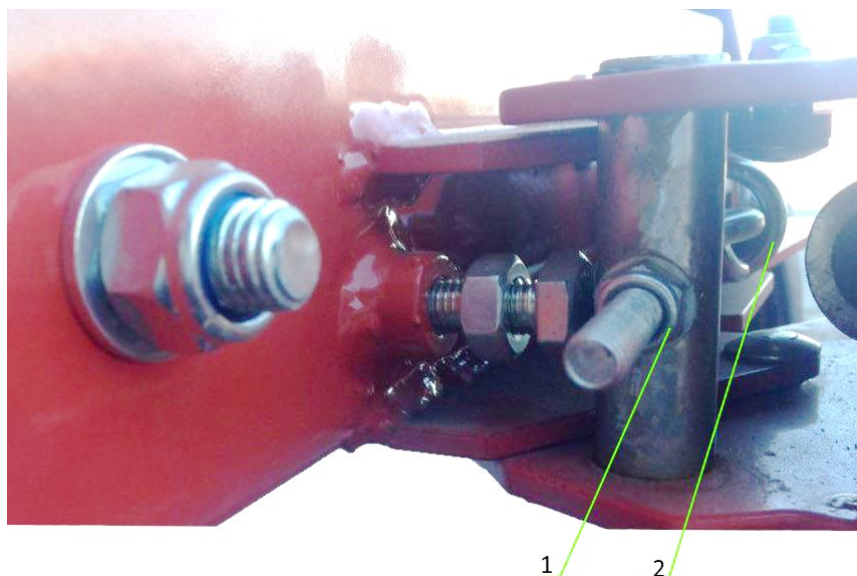


**Figure 24.** Spring tensioning adjustment in safety arm;

1 – nut, 2 - spring

When we see that the safety arm does not bounce back in the case of the collision from the wrapping arm it means that the springs are tensioned too weakly. In order to tension them unscrew the nut (Fig. 24-1) which will cause moving of the guide and spring tensioning (Fig. 24-2).

In the same case also tensioning of the spring should be controlled, which is located on the other side of the wrapping arm (Fig. 25- 2). Its tensioning is adjusted by tightening of the nut (Fig. 25- 1).

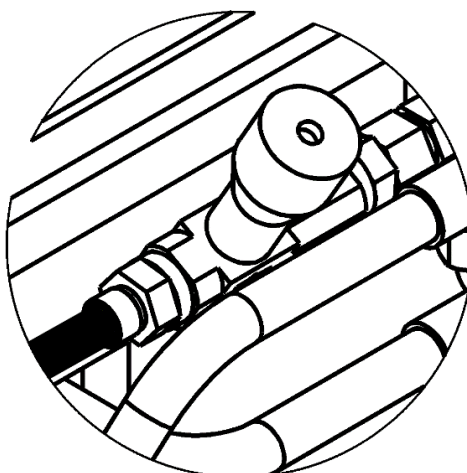


**Figure 25.** Spring tensioning adjustment in the safety arm;  
1 – nut, 2 - spring

#### 4.3. Adjustable hydraulic valves

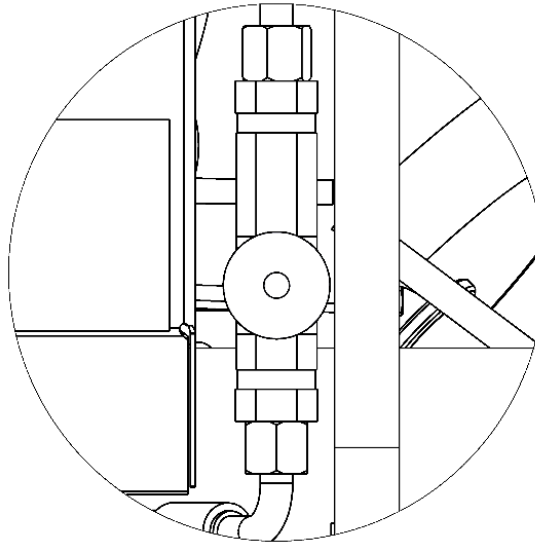
Check-throttle valves appear in the wrapper hydraulic system. Their factory settings should not be changed without consulting the service or the manufacturer.

The check-throttle valve of the foil cutter (**Fig. 26; Fig. 20 item 2**) is placed near the main frame of the wrapper. It allows for slowing down closing of the foil cutter, thanks to which during closing of the cutter we limit the risk of tearing the foil due to too violent and fast closing. By turning the valve clockwise we slow down closing of the foil cutter.



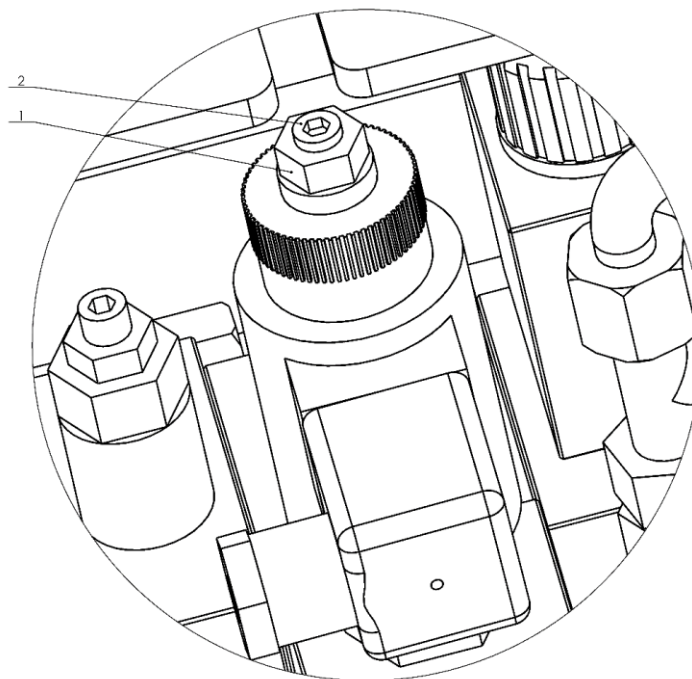
**Figure 26.** Foil cutter check-throttle valve

The check-throttle valve (Fig. 27; Fig. 21 item 11) located on the back of the main frame near the valve block guard is responsible for extending the bale holder in the course of bale unloading. Oil throttling is set only if there is a bale holder as a wrapper option.



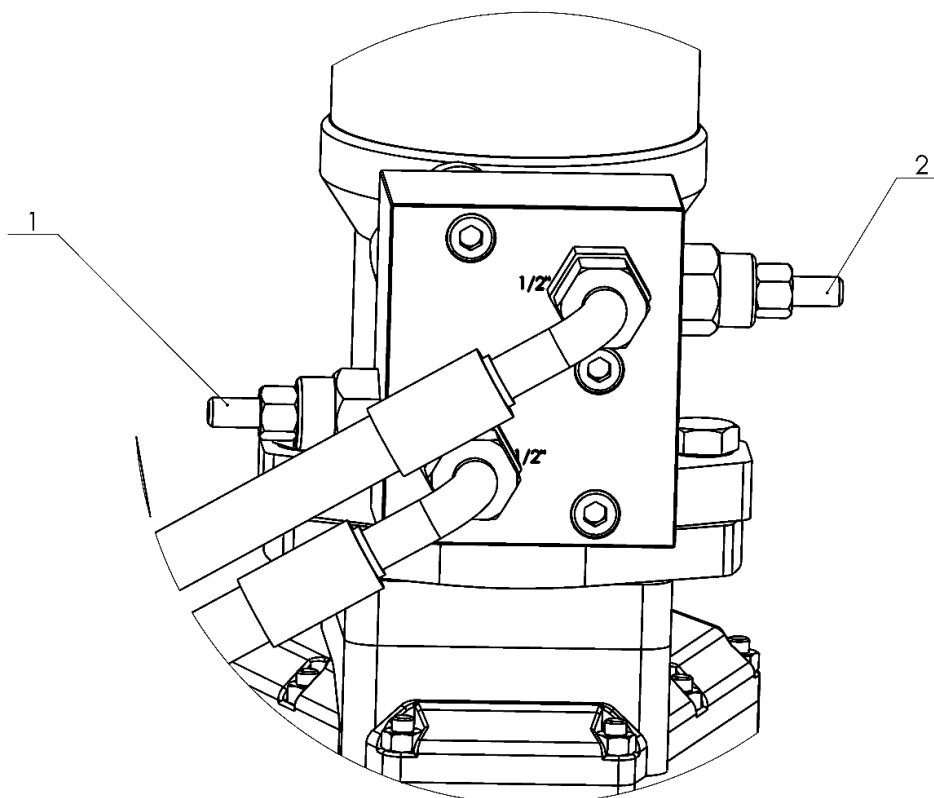
**Figure 27.** Check-throttle valve of the bottom arms and bale holder

The proportional valve (Fig. 28; Fig. 21 item 6) is responsible for adjustment of slow revolutions of the upper wrapping arm. In order to change it a counter nut should be released (Fig. 28 item 1). The control screw (Fig. 28 item 2) can be adjusted within one full turn. When it is completely tightened the valve is open and the arm works at full revolution speed. Meanwhile unscrewing the control screw we will reach lower revolutions of the wrapping arm. In order to change it a counter nut should be released (Fig. 28 item 2).



**Figure 28.** Proportional valve

The upper engine valve (Fig. 29; fig. 20 item 3) is intended to start the upper hydraulic brake. It has two regulation points. The first adjustment screw (Fig. 29 item 1) should be tightened clockwise completely and then unscrewed with 1 complete turning. The second adjustment screw (Fig. 29 item 2) should be tightened clockwise completely, then tightened with 8 complete turning, and then unscrewed with 8 complete turns. The particular setting is done during the machine assembly, therefore it should not be changed without the prior contact with the authorized manufacturer's service.

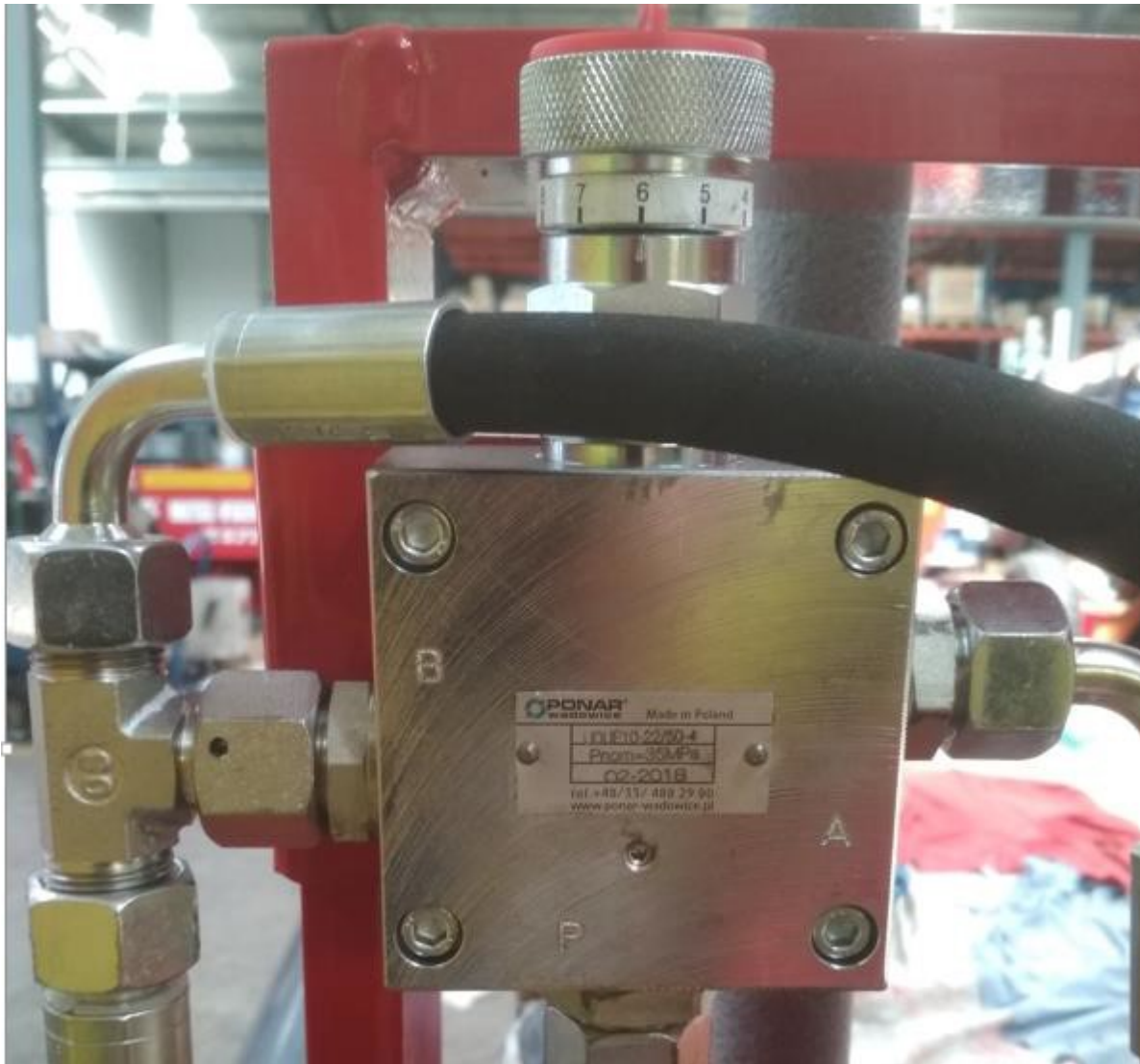


**Figure 29.** Motor upper valve

1 – First adjustment bolt, 2 – second adjustment bolt

The wrapper is fitted with a hydraulic oil flow controller. Its setting value must be between 4 and 6 (Fig. 30).



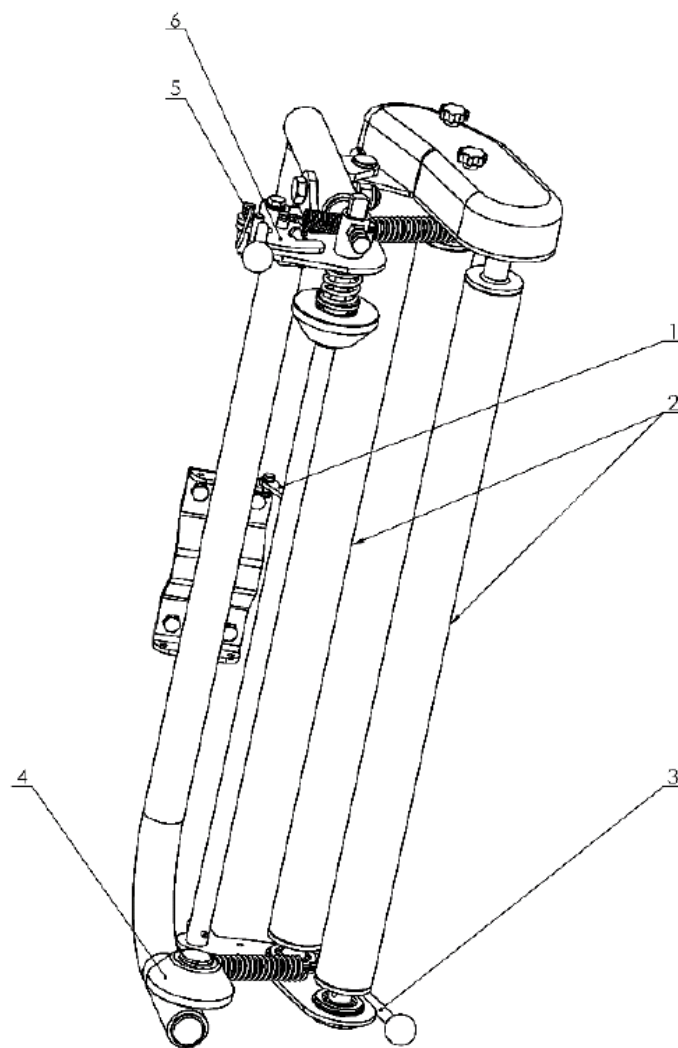


**Figure 30.** Flow controller

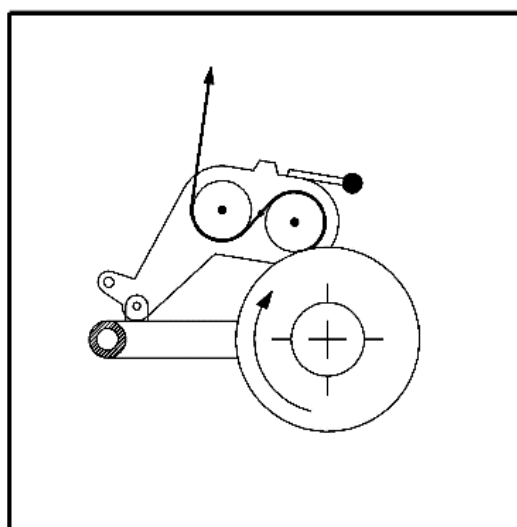
#### 4.4. Foil installation

Install the foil on a roll on the foil feeder pin in the following sequence:

- Tilt the foil support frame and secure it with a hook attached to the wrapping unit (1);
- Remove protection (5) from the upper foil clamp;
- Move the lever of the upper foil clamp (6) and lift the clamp;
- Install the foil roll on the bottom conical clamp (4);
- Clamp the roll by closing the upper clamp;
- Install protection so as the upper clamp would not open during wrapping;
- Install the foil with its external gluy side towards the bale axle;
- Pull the foil through the rollers (2) according to the diagram located on the feeder frame;
- Insert the end of the foil so as to enable free holding and operation of the foil;
- Tilt the foil support frame and remove the hook security.



**Figure 31.** Foil feeder



**Figure 32.** Foil flow diagram



At each rotation of the bottom wrapping arms, the bale with the foil turns by a certain angle around the horizontal axis causing overlapping of the foil layers wrapping the bale tightly.



**ATTENTION!**

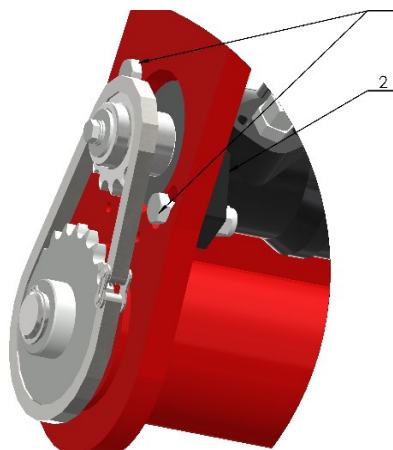
The wrapper is factory set to wrap with the foil of 750 mm width.



**Figure 33.** Correct installation of the foil in the feeder

#### **4.5. Drive chain adjustment**

In the bale wrapper two chain transmissions were installed as the drive in the bottom wrapping arms. After wrapping of the first 10 bales, tensioning of the drive chains should be adjusted. Perform the adjustment of the drive chain tension by repositioning the motor.



**Figure 34.** Adjustment of the bottom wrapping arms drive chain

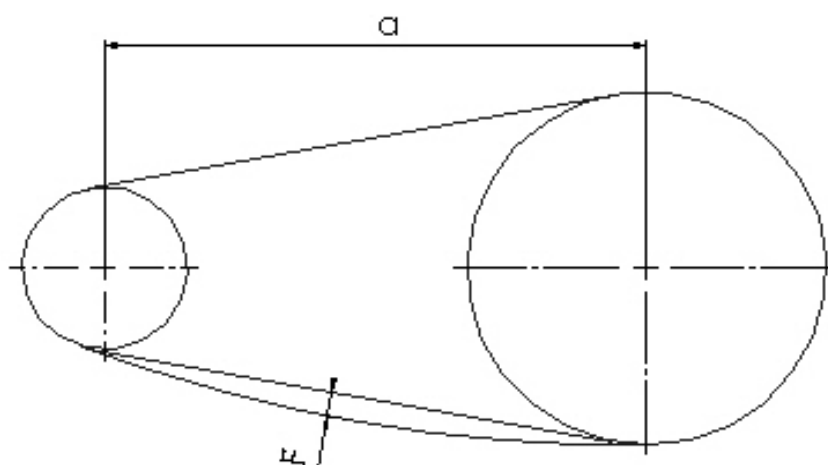
Adjustment of the bottom wrapping arms drive chain (Fig. 33):

- Remove the chain guard
- Loosen 2 screws M12 (1),
- Tension the chain by moving the motor (2),
- Tighten 2 screws M12 (1),
- Install the chain guard.

The periodical control of chain tension must be performed after making 120 bales.

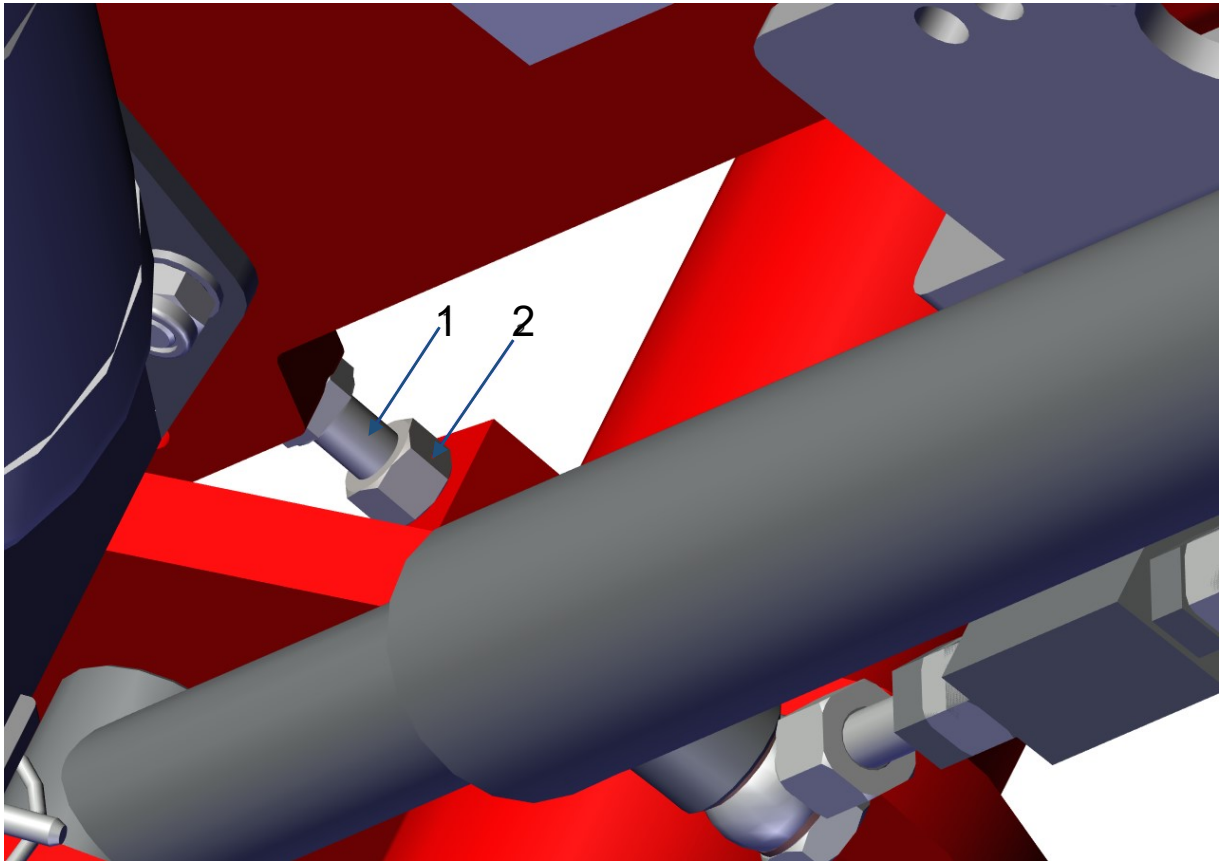
The tension value of the chain "F" must be within 3-5 mm. It can also be determined using the following formula:

$$F=0.1a$$



**Figure 35.** Chain tension

#### 4.6. Adjustment of the bottom wrapping arms



**Figure 36.** Limiting the arm folding movement

The default setting of the wrapping arms is for a bale diameter of 1,200 mm. To wrap bales with a diameter larger than 1,200 mm, adjust the lower wrapping bales (to enable correct revolution of the larger diameter bales). To make the adjustment, loosen the nut (item 2, Fig. 32) and fasten the bolt (item 1, Fig. 32) up to the height which will make the lower wrapping arms spread appropriately. Once the height of the bolt fastening is set (item 1, Fig. 32), secure it with a lock nut (item 2, Fig. 32). Proceed in the same way for both wrapping arms.

## 5. Operation-maintenance activities



WARNING

### WARNING!

The operation-maintenance activities can be performed exclusively by persons familiar with this instruction manual, having relevant qualifications and tools for performing such activities. Lack of knowledge concerning the principles of safe operation and maintenance works at the wrapper and use of improper tools may result in hazard for human life or machine damage.

During performing of the operation-maintenance works you should wear relevant protective clothes and boots, used for the activities to be performed and substances with which you will be in contact.

Do not repair leakages from the pressurised devices and hydraulic elements.

In the case of damaging of machine parts they should be replaced with new, original parts. Application of non-original or incorrect parts results in loss of the machine guarantee.

Unintended operation of the wrapper or operation by unauthorised persons who do not have the right qualifications must be strictly avoided.

Accidental starting up of the machine must be prevented.

In the case it is necessary to carry on works at the wrapper elements that cannot be reached standing on the ground, only equipment intended for ascending (safe ladders) can be used. Do not use the wrapper elements for climbing the machine.

Follow the check lists during connecting the machine with the tractor, starting it up and disconnecting the wrapper with the tractor.



It is recommended to run an operation-maintenance activities log book. It will allow for the continuous insight at the machine technical condition and to avoid repair activities in the field.

Hydraulic oil leakages to the environment must be prevented. Carry on repairs of the hydraulic installation on the place where there is no danger of oil penetration into the soil, ground water, food and animal fodder. Use tight and safe containers to store worn oil.

If it is necessary to conduct the operation-maintenance activities under the elevated machine parts, they must be protected against lowering by installing stable supports underneath.

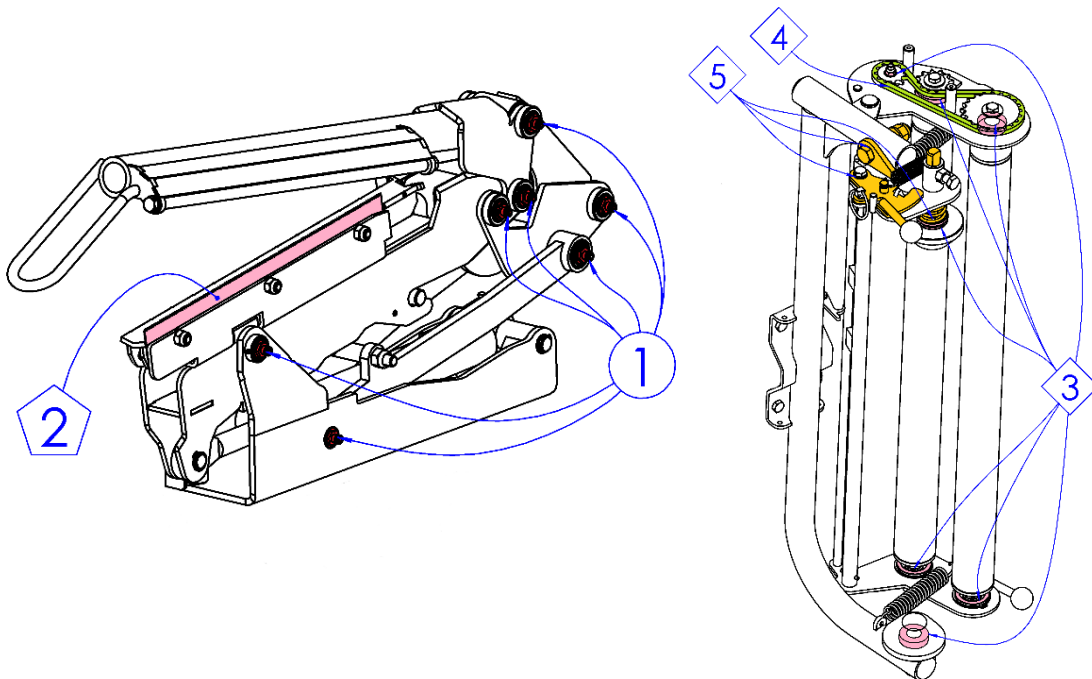
## 5.1. Lubrication points

The lubrication points were marked numerically, where each number has one of the three linings, which means the kind of the lubricant and tools used for its application.

Marking of the lubrication points:

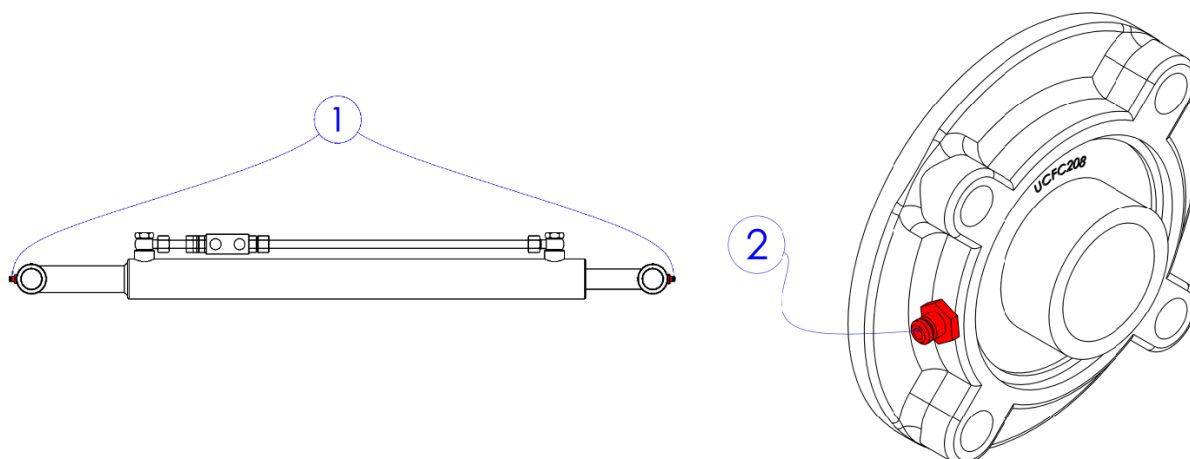
- ① - plastic grease applied with a grease gun,
- ◇1 - plastic grease applied on sliding surfaces with a brush,
- ⬡1 - plant oil (e.g. rapeseed) applied with a brush.

### 5.1.1. Foil cutter and foil feeder



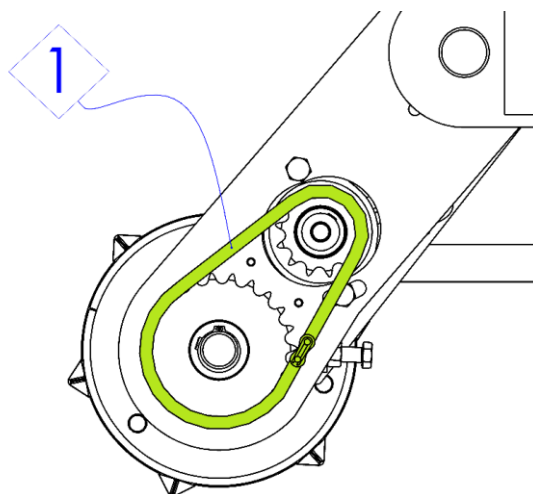
**Figure 37.** Lubricating points of foil cutter and foil feeder: 1 – swivel nipples; 2 – cutting blade; 3 – feeder bearings; 4 – feeder transmission drive chain; 5 – foil roll upper clamp

### 5.1.2. Lower arms servomotor and bearings



**Figure 38.** Lubrication point of Lower arms servomotor and bearings: 1 – pin nipples; 2 – bearing nipples

### 5.1.3. Lower arm drive



**Figure 39.** Bottom arms chain lubrication: 1 – bottom arm drive chain

## 5.2. Transmission oil exchange (once a year)



The oil in the transmission box should be exchanged after the first 50 hours of operation and then in the beginning of each season.



ATTENTION

#### ATTENTION!

Do not overfill the gearbox with oil. It may result in overheating or oil leakage. The oil should be exchanged while it is still warm (e.g. immediately after using the machine).

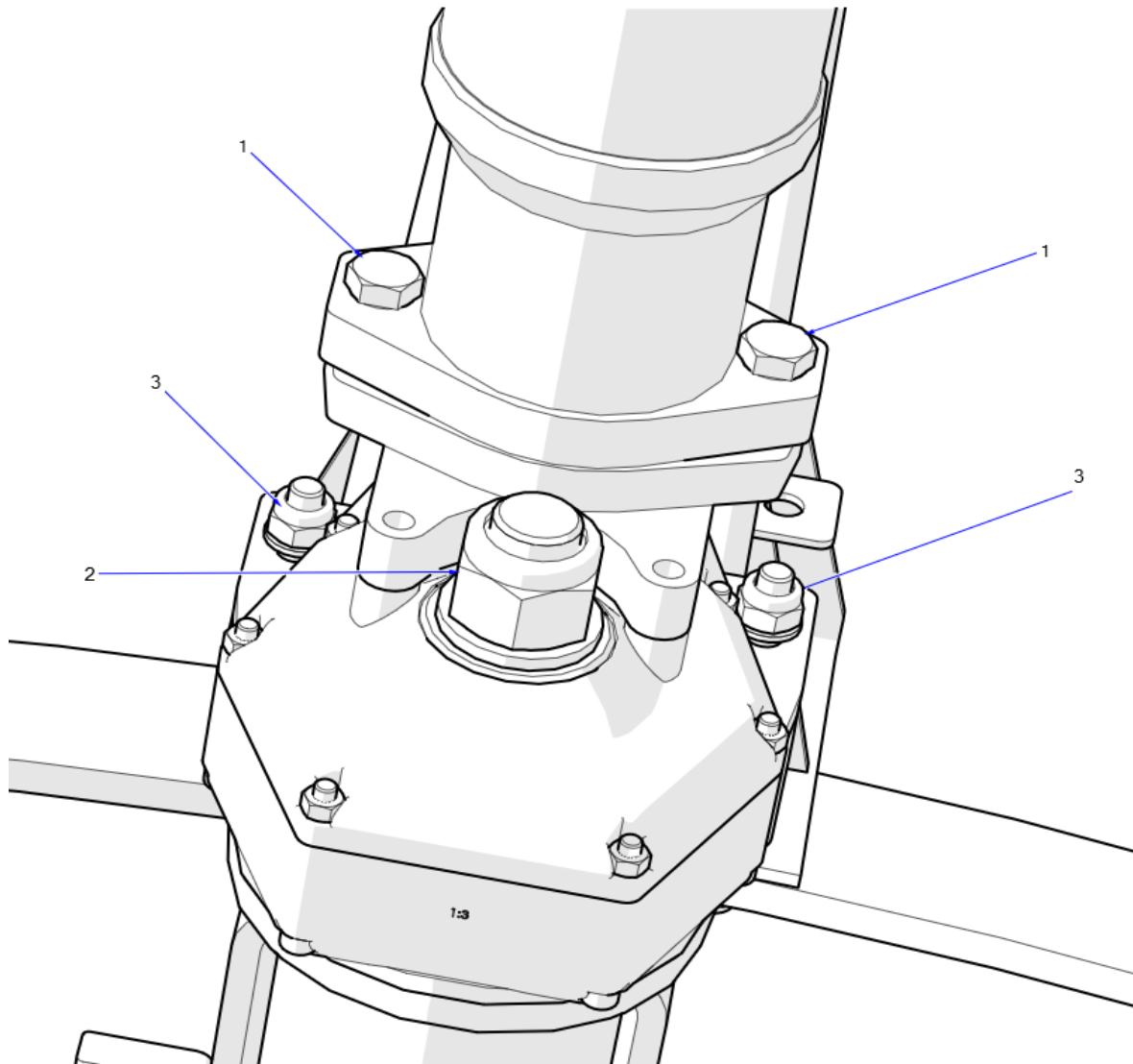
### 5.2.1. Transmission disassembly



ATTENTION

#### ATTENTION!

In order to disassemble and assemble the transmission a tool certified for work in heights should be used (a ladder).



**Figure 40.** Transmission disassembly

- Unscrew the motor screws item 1,
- Remove the motor from the transmission,
- Unscrew the axle pressing nut item 2,
- Unscrew the mounting screws of the transmission item 3,
- Remove the transmission.



### 5.2.2. Oil draining



**Figure 41.** View of the intersecting axis gear – draining plug

- Prepare a container for worn oil,
- Unscrew and remove the plug item 1,
- Drain oil to the previously prepared container,
- After emptying the box replace the plug.

### 5.2.3. Oil topping-up



**Figure 42.** View of the intersecting axis gear

- Unscrew and remove the plug item 1,
- Replenish the oil,
- Control the oil level through the sight glass item 2,
- Check the oil level immediately after replacing the plug item 1 and setting the gear in the horizontal position,
- The oil should be in the middle of the control sight glass,
- If the oil level is correct tighten the plug, item 1.



Important: Use the transmission oil type 80W90.



#### 5.2.4. Transmission assembly

- Install the transmission on the axis and screw to the arm Fig. 38 item 3,
- Screw the pressing nut Fig. 38 item 2,
- Mount the motor in the gear and connect it with screws Fig. 38, item 1.

#### 5.3. User inspections

Check the following after each use of the wrapper:

- Condition and legibility of the rating plate and pictograms,
- Hydraulic system tightness,
- Bottom wrapping arms drive chains,
- Chain in the foil feeder transmission,
- The rating plate to be replaced in the service only,
- Illegible pictograms should be replaced with new ones.

After the end of the season lubricate the lubrication point with bearing grease e.g. ŁT-43 (Section 5.1).

Submit to the authorised service the control panel in the case of its damage. Repairing of the control panel on one's own results in losing its guarantee.

Every two years exchange the oil in the toothed gear of the machine upper motor in the following way:

- Position the machine on level ground,
- Place a relevant, tight vessel under the drain plug,
- Unscrew the inlet and drain plugs,
- After complete draining of the oil replace and tighten the drain plug,
- Pour in the transmission oil 80W90 through the inlet hole to the middle of the level control sight glass,
- Replace the inlet plug.

Supply the worn oil to a petrol station that runs its purchase.



ATTENTION

#### ATTENTION!

During the operation of the oil exchange use the impermeable protective clothes adapted for contacts with crude oil derived products.

Every 5 years replace the power hydraulics hoses. Before each season check (without the silage bale) the efficiency of operating of all the wrapper functionalities.

Clean the dirtied control panel casing with a damp piece of cloth with some detergent. Do not use organic solvents for washing (acetone, benzine, nitro solvent, etc.), as it may result in damage of the panel casing.

#### 5.4. Service inspections

The periodical routine inspections are recommended to be performed after each two seasons of machine use.

For replacements it is recommended to use original spare parts that will assure maintaining the full efficiency of the wrapper for a long time of its operation.

## **6. Authorised service**

### **6.1. Guarantee service**

The manufacturer provides a guarantee for the machine on the terms and conditions as stipulated in the guarantee card. In the period covered with the guarantee the repairs are performed by the authorised services of the dealers or the manufacturer services.

### **6.2. Routine service**

After the period of the guarantee coverage it is recommended to carry on the periodical inspections at the authorised services of the dealers.

### **6.3. Ordering spare parts**

Purchase the spare parts at the dealer's, or order them at the manufacturer directly providing: last and first name or the company name and the address of the buyer, name, symbol, factory number and year of manufacture, catalogue part name, catalogue drawing or standard number, number of ordered parts, agreed terms of payment.

## 7. Wrapper transport

### 7.1. Load transport



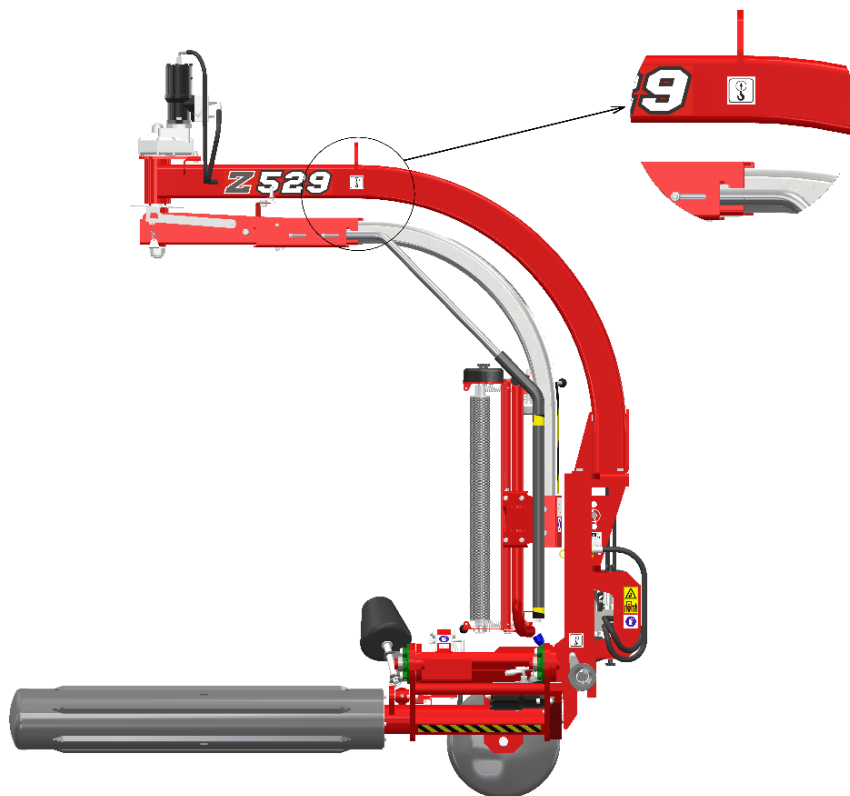
The wrapper is adapted for the railroad and road transport of relevant capacity.



ATTENTION

#### ATTENTION!

For loading on the railroad transport mean use the lifting equipment with the capacity relevant for the mass of the wrapper with a foil roll loaded on it. Use as the lifting point the elements of the frame marked on the machine with a pictogram presented below.



**Figure 43.** Lifting point on the wrapper

Lifting equipment can be operated by trained operators holding relevant qualifications. It is forbidden to transport the wrapper with a silage bale located on it.

For the time of transport the transported wrapper should be permanently and reliably attached to the floor.

## 7.2. Road traffic participant

The wrapper is adapted for the public road traffic as a machine attached to the three-point hitch system.

The dimensions of a correctly prepared for transport machine are indicated in Section 1.5.

You may use an agricultural tractor featuring the power not less than 60 kW for transport on the public roads.

Prior to entrance on the public roads you should:

- Contract the bottom wrapping arms
- Lift the wrapper to the transport position (**Fig. 19**),
- The upper wrapping arm should be secured with a safety strap,
- The hydraulic hoses should be disconnected and fixed in a relevant way,
- Leave the wrapper control panel in the tractor cockpit.

Prior to each departure of the wrapper to the public road check correctness of the wrapper connection with the tractor. Clean the machine of silage residues not to pollute the road surface.

It is forbidden to transport people or silage bales on the wrapper.

Prior to joining the traffic on the public road make sure that the tractor features relevant stability (Section 2.2). If this condition is not fulfilled the front axle of the tractor must be loaded.

During transport of the machine on the public roads adapt the speed to the traffic conditions and do not exceed the speed of 20 km/h.

During transport of the wrapper on public roads follow the traffic law regulations. In the case of an emergency stoppage of the tractor with an attached wrapper, the driver should (when stopping):

- Stop the vehicle avoiding causing any hazard for the safety on the road,
- Park the vehicle as close to the road edge as possible, parallel to the lane axis,
- Stop the tractor engine, take off the key from the ignition and engage the auxiliary brake.

Outside of the built-on area a warning, reflective triangle should be placed in the distance of 30 to 50 m behind the vehicle and the hazard light should be on,

In the built-on area switch on the hazard lights and place the warning, reflective triangle behind the vehicle. Make sure that it is well visible for the other traffic participants.

In the case of a breakdown undertake relevant steps in order to secure the place of the breakdown.

## 8. Wrapper storage

- Store the control panel in a dry room protecting the terminals against dirt and humidity.
- Wind the control panel cable and store in a dry room protecting the terminals against dirt and humidity.
- Store the wrapper on flat, level and paved surface.
- It is recommended to store the wrapper in a dry room protecting against the UV radiation and other adverse factors.
- Protect the wrapper stored outside with no roofing with a water proof canvas or foil.
- After the season is over clean the wrapper and check the condition of the protective layers. All the spots with protective coating missing should be completed at services.
- Check the condition and legibility of the rating plate. In the case it is destroyed report at the service.
- Check the condition and legibility of the pictograms. In the case they are destroyed replace them with new ones.



ATTENTION

### **ATTENTION!**

Store the wrapper in the atmosphere free from aggressive factors (e.g. ammonia, chemicals).

## 9. Risk

### 9.1. Residual risk description

The residual risk results from an erroneous behaviour of the wrapper operator. The largest hazard occurs during execution of the following activities:

- Assembly of the wrappers on tractors that do not fulfil the requirements described in the instruction,
- Staying under raised machine units,
- Staying of persons in the area of wrapper operation,
- Servicing or repairing the wrapper when the tractor engine is still on,
- Control of the wrapper by an operator who is outside the tractor cockpit,
- Control of the wrapper by an operator under the influence of alcohol,
- Operating of a damaged wrapper or operation with the guards removed.
- Operation of the wrapper on slopes exceeding 8°,
- Transport of the wrapper of silage bales on the public roads,
- Staying of people on the machine during its operation or transport,
- Using the wrapper not for its intended purpose,
- Leaving the unsecured wrapper on slopes,
- Staying in the area between the tractor and the machine during the tractor engine operation.

When presenting the residual risk the bale wrapper is treated as a machine that till the moment of starting its manufacturing was designed according to the current state of the art.

### 9.2. Residual risk assessment

When observing such recommendations as:

- Careful reading and meeting the recommendations of the instruction manual,
- Forbidding of staying under raised machine units,
- Forbidding of staying of persons in the area of wrapper operation,
- Maintenance and repair of the wrapper at authorised services,
- Operation of the machine by trained and authorised operators,
- Protection of the wrapper against the access of children and the third persons,
- The residual hazard can be minimized during the use of the wrapper and consequently operation of the machine with no hazard for people and the environment.



ATTENTION

#### ATTENTION!

There exists a residual risk in the case of disobeying the particular recommendations and indications of the manufacturer.

## **10. Wrapper disposal**

Disassembly and disposal should be performed by specialized services familiar with construction and operation of the wrapper. Only the specialized services possess the full and updated knowledge in the respect of the materials used and the risk related to the hazards in the case of their incorrect storage and transport. The authorized services offer both counselling as well as performance of the complete services concerning disposal of the machine.

Use proper tools and auxiliary equipment for disassembly.

Store the worn oil in tight containers. Without any delay supply it to a petrol station that runs purchase of the worn oil.

Disassemble the machine. Segregate the disassembled parts. Supply the dismantled parts to the relevant recycling points.

During disassembly of the wrapper use proper protective clothes and protective boots.

## 11. Typical faults and their removal

**Table 5.** Typical faults and their removing

Item	Fault description	Cause	Removal manner
I	II	III	IV
1.	Hydraulic servos of the wrapper work slowly or do not work. The wrapping arms do work smoothly, work too fast or too slowly.	Insufficient amount of oil in the tractor system.	Check the oil level in the tractor. Replenish the oil.
		Oil pressure in the tractor system too low.	Check the pressure in the tractor hydraulic system.
		Faulty setting of the proportional valve.	Check the setting of the proportional valve ( <b>Fig. 28</b> )
		Defective servomotor or hydraulic motor.	Replace the servomotor or the hydraulic motor.
		Incorrect setting of the external system lever.	Switch on the pump drive.
2.	The wrapper operates too slowly.	Insufficient amount of oil in the tractor system.	Check the oil level in the tractor. Replenish the oil.
3.	Oil leakages from the distributor.	Worn sealing rings.	Replace the sealing rings of the hydraulic distributor.
4.	In Automatic mode the upper wrapping arm does not stop or it stops at a wrong position.	Incorrect setting of the inductive sensor in respect to the activator.	Correct the setting of sensors in respect to their activators (Section 4.1).
		Sensor damage	Replace the damaged sensor with a new one.
5.	No reaction to a manual command of making a movement via the control panel.	No contact on the electrical connections in plugs at the control module.	Check correctness of the connection.
		No contact on the electrical connections in plugs on the solenoid valves of the hydraulic block.	
6.	The hydraulic system does not answer to the controlling signals from the control panel	Incorrect direction of oil flow	Put the distributor lever on a right position or switch the hydraulic plugs.
		Oil pressure too high	Diminish the setting of the oil pressure in the tractor to the max. value of 160 bar (16 MPA)



## **12.Accessories**

The user can purchase additionally at the dealer or at the manufacturer the following optional and additional equipment:

- Spare parts catalogue hard copy,
- A triangular plate indicating slowly moving vehicles,
- Chain link removing tool,
- Varnish coating repair set.

## NAME AND ABBREVIATION INDEXES

**OHS** - occupational health and safety;

**dB (A)** - decibel A, sound pressure unit;

**km/h** - kilometre per hour, linear speed unit;

**kW** - kilowatt, power unit;

**m** - metre, length unit;

**min** - minute, an auxiliary time unit equal to 60 seconds;

**mm** - millimetre, an auxiliary length unit equal to 0.001m;

**r** - revolution, determining the kind of movement;

**rpm** - revolution per minute, a rotation speed unit;

**pictogram** - an information plate;

**Rating plate** – a manufacturer's plate unambiguously identifying the machine;

**TUZ** – three point hitch (see the instruction manual of the tractor);

**UV** – ultraviolet radiation, invisible electromagnetic, invisible electromagnetic radiation with negative effect on human health, the UV radiation has a negative effect on rubber parts;

**V** - Volt, voltage unit;

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## This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.







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