Econo-Wrap

Self-loading Bale Wrapper

EW-1800T

Operator's Manual

Printed October 2023

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CAUTION!

Read this Instructions Manual prior to using the machine and observe the safety rules described herein.
The Instructions Manual is an integral part of the machine!

Keep the Instructions Manual in a safe place, where it should be accessible to the machine operator during the entire lifespan of the machine.

In the event of its loss or damage, the user must acquire a new copy from the machine dealer or manufacturer.

In the event the machine is sold or made available to another user, the Instructions Manual must be attached with the declaration of conformity for the machine.

Tar River Implements guarantees the efficient operation of the machine, providing it is being used in accordance with the technical and operating conditions specified in this INSTRUCTIONS MANUAL.
All faults revealed during the warranty period will be repaired by the In-Warranty Repairs Service.
The repair performance date is included in the WARRANTY CERTIFICATE.

Machine parts and components which are subject to wear in normal operating conditions are not covered by the warranty, regardless of the warranty period.
In-Warranty repairs cover only instances such as: mechanical damages not
caused by the user, manufacture defects of parts, etc.
The machine shall not be covered by the warranty conditions when damage is caused by:

- mechanical damage caused by the user or a traffic accident,
- improper use, adjustment, and maintenance, use of the machine for a purpose other than intended, operating a damaged machine,
- repairs by unauthorised persons,
- unauthorised changes to the machine structure,
- the use of the machine by persons unfamiliar with this Instructions Manual.

The user is obliged to immediately report any noticed damages of paint coat or spots of corrosion, and order repairs regardless whether or not the damages are covered by the warranty. Warranty conditions are specified in detail in the WARRANTY CERTIFICATE attached to the purchased machine.

CAUTION!

It is required to request the dealer to properly fill in the WARRANTY CERTIFICATE. For example, if the date of sale or the stamp of a dealer are missing, there is a risk that complaints will not be considered valid.

Table of contents

1. Introduction

Before the first use of the machine, you must thoroughly read and understand this Instructions Manual, and follow all the instructions contained herein.

CAUTION!

Read the Instruction Manual before use.

This Instructions Manual contains a description of hazards that can occur in case of non-compliance with safety rules during operation and maintenance of the machine. The Instruction Manual specifies precautionary measures to be taken to minimise or avoid risks.

This manual also contains principles of correct use of the machine and specifies the maintenance jobs to be carried out.

If you do not understand any information contained herein, please contact the manufacturer directly.

CAUTION!

This symbol indicates a hazard.

The warning symbol indicates a piece of important hazard information given in the Instructions Manual. Please read the information, follow the instructions, and exercise particular caution.

INFORMATION!

This symbol indicates additional information, descriptions of how to operate the machine or references to the sections in this manual.

2. Machine identification

Each bale wrapper has its rating plate, containing the most important identification data. The plate is affixed on the front beam of the machine bottom frame.

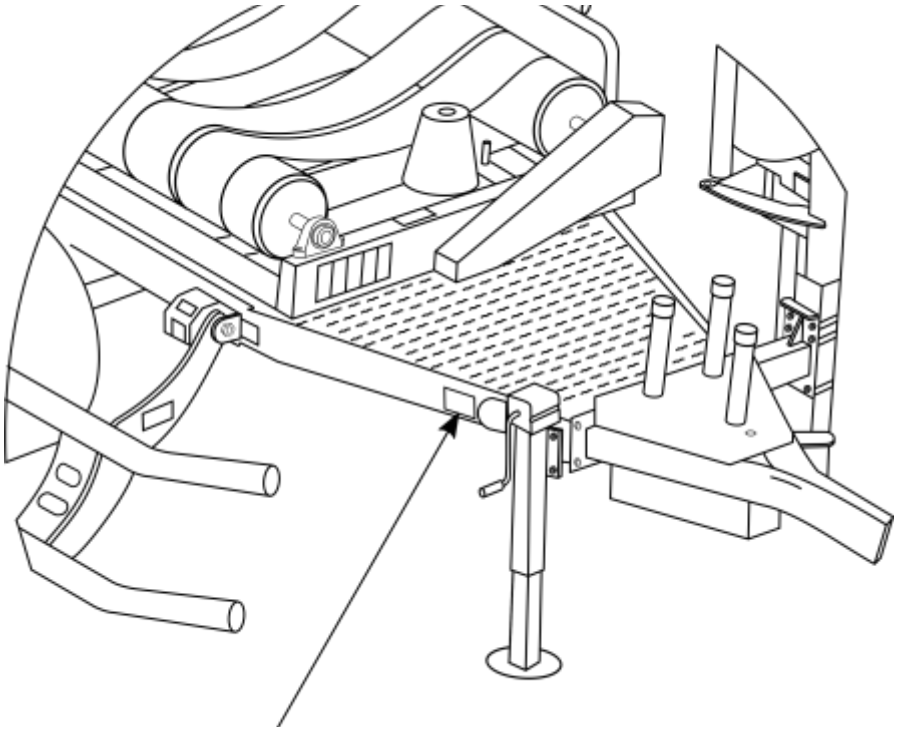


Figure 1 Rating plate

The rating plate includes:

- full name of the manufacturer,
- bale wrapper serial number,
- machine code,
- CE marking,
- weight,
- quality control sign,
- date of manufacture.

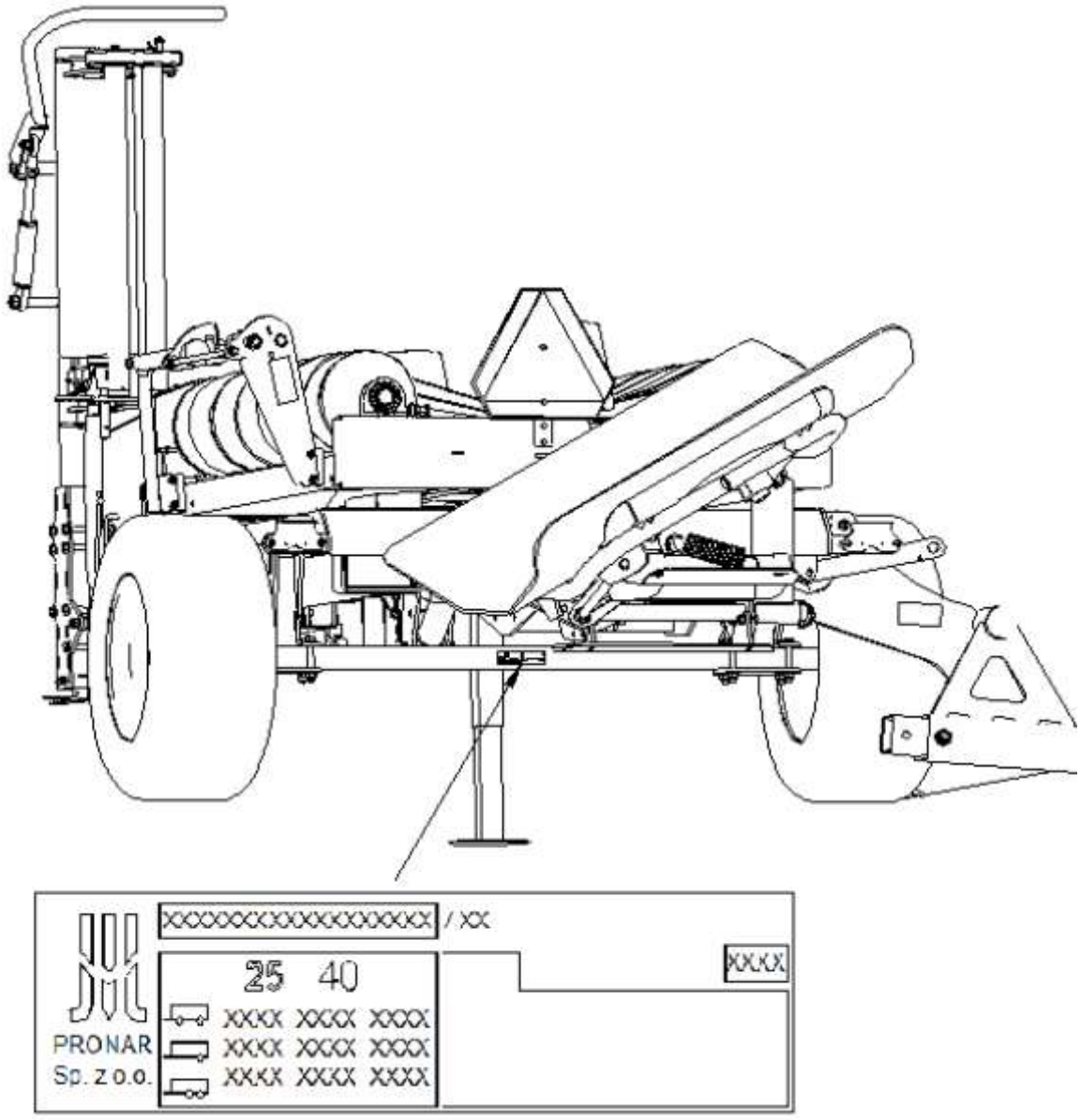


Figure 2 Rating plate of the running axle

The serial number and type of running axle are stamped on the rating plate attached to the running axle beam.

3. Rules of safe operation

3.1 User safety

The self-loading bale wrapper can only be operated by adults, who have learned how to operate it and have read this Instructions Manual, as well as have appropriate qualifications. The bale wrapper should be operated with all necessary precautions taken, in particular:

- Apart from the guidelines contained in this Instructions Manual, observe also general rules of occupational health and safety.

- Observe warning symbols placed on the machine.
- It is strictly forbidden, to operate the machine by persons under the influence of alcohol or other intoxicants.
- Never allow the vehicle towing the bale wrapper to be driven by a person other than the wrapper operator, and under no circumstances allow any other persons to be on the vehicle, or on the machine, during its operation.
- The bale wrapper may be operated by a person who holds a proper driving licence for the vehicle equipped with the bale wrapper, in accordance with the manufacturer's instructions.
- The operator’s workstation while working with the bale wrapper is the cab of the vehicle to which the machine is attached.
- Please note, that there are many elements of the machine that may cause an injury (sharp edges, protruding parts, etc.). During the use of the equipment, exercise particular caution when moving close to the above-mentioned critical spots, and obligatorily use the following personal protection equipment:
  - protective clothing,
  - protective gloves,
  - hearing protection,
  - safety footwear.
- It is forbidden to carry persons or objects on the machine.
- Persons who have not read the Instructions Manual are not allowed to operate the machine.
- The bale wrapper operator must be provided with the complete first aid kit with instructions of use.
- Before starting work, the bale wrapper must be set in the transport position.
- Take special care when driving on public roads and comply with the applicable road traffic regulations.
- The user is obliged to ensure the visibility of a machine during its transport: use road lightning, the reflective elements, warning signs and the optional equipment, the light warning signal.
- Adjust the transport speed to the condition of the road. The speed should not exceed 15 mph.
- Do not leave the vehicle with the machine on a hillside or other sloping surfaces, without securing the vehicle from automatic rolling down. Put wedges under the wheels of the vehicle.
- The bale wrapper must be adjusted to working height, during its attachment to the vehicle.
- Any preparations, fitting, dismantling or adjustment can be performed only after the drive has been switched off, the engine stopped, the vehicle immobilised and when all the moving parts of the machine have stopped.
- After the first hour of operation, check all disjoint connections like bolt and pin connections, etc.
- The bale wrapper should be stored on a flat, level, paved surface, out of the reach of bystanders and animals. Use the support foot for stabilising the bale wrapper.
- Exercise caution during the mounting and dismantling of the bale wrapper and pay particular attention to the structural components through which the machine is connected with the vehicle.

- Before the operation, check the condition of the machine and of the vehicle it is attached to. Ensure the vehicle and bale wrapper are in good technical condition. Any worn or damaged parts must be replaced immediately.
- The bale wrapper must be equipped with all the safety guards (provided by the manufacturer), preventing access to any moving parts. The guards must be complete and fully operational.
- It is not allowed to work with the bale wrapper without safety guards. It is not allowed to work with damaged safety guards.
- It is not allowed to lift the grab arm when the rotary frame drive is engaged.
- Before beginning to work with the machine, learn how to operate it by reading this Instruction Manual taking into account occupational safety rules and recommendations for maintenance and adjustment.
- The Instructions Manual must be kept with the machine. If you loan the machine for use, ensure that it is in good technical condition and that it is complete with the Instructions Manual.
- Do not attach additional transport means to the machine.
- During commissioning, check the machine functions and make the initial adjustments.
- Due to the natural wear and tear the state should be controlled, using the recommendations described in Section 9 "Maintenance".
- When taking over and transporting the machine, inspect its technical condition to check for damage.
- Standing under the raised grab arm is not allowed to prevent being crushed by the components of the machine.
- When adjusting, keep your fingers and limbs away from the structural parts of the machine.
- It is forbidden to leave a tractor's cabin when the machine is running, and before all the rotating parts have stopped.
- The operator of the vehicle working with the bale wrapper must ensure that no person is approaching the machine during its operation, and the distance of at least 160'. from the working bale wrapper is always maintained.
- Before you start wrapping, check that the rotary frame and other structural components will not collide.
- Ensure suitable visibility when u-turning, reversing, or manoeuvring the machine, or ensure assistance from a properly trained person.
- When connecting the hydraulic hoses, make sure that the hydraulic system is not pressurised.
- Do not stay between the vehicle and the machine when the vehicle engine is running.
- **Working on slopes exceeding 5% is not allowed.**
- Exercise particular caution when working on slopes.
- Never leave the vehicle unattended when the engine is running. Before leaving the driver's seat (the cabin) turn off the engine of the vehicle, remove the ignition key, and apply the parking brake.
- Avoid wearing unbuttoned, hanging parts of work clothes during the operation, assembly, disassembly or adjustment. Keep them away from any machine parts which are likely to catch them.

- After work, it is recommended to clean and wash the machine in the wash fitted with a sewage treatment plant or a settling tank to neutralise the resulting wastewater.
- The machine should be kept and stored in places protected from unauthorised access of persons and animals, thus eliminating the risk of accidental injuries, and on a flat, hardened surface, under a protective canopy.
- In case of failure, immediately turn off the hydraulic system of the vehicle.
- When working with the machine, use hearing protection headphones to minimise exposure to noise. In addition, it is recommended to close the doors and windows of the vehicle's cab.

Failure to observe the above guidelines may be hazardous to the operator and other persons, as well as damage the bale wrapper. The operator is responsible for any damage caused by failure to adhere to the above rules.

3.2. Residual risk assessment

Tar River Implements has made every effort to ensure that the design of the machine, and its intended use, do not pose any risk to persons or the environment.

Due to the nature of work being done by the bale wrapper and, for example, the inability to completely cover the machine's working unit, certain risk factors may occur.

No.	*Risk*	*Risk source (cause)*	*Protection measures against risks*
1	Overloading the locomotor system (physical load)	Working in a standing position, inclined-forced position, walking, moving objects	Read and understand the Instructions Manual; do workplace safety training in carrying weights standards for the manual handling, correct methods of lifting and carrying loads, getting other persons' help, and the use of handling devices such as jacks and winches.
2	Fall on the same level (tripping, slipping, etc.)	Uneven terrain, messy environment - objects lying and standing around, cables lying on communication roads, slippery surfaces	Suitable safety footwear, levelled terrain, paying attention, maintaining order, reading the Instructions Manual.
3	Bumping into stationary, protruding parts of the machine	Machine and its surroundings	Proper positioning of a machine, safe space to move around, proper organisation of work, paying attention, reading the Instructions Manual
4	Being hit by moving objects	Crop bales ejected by the machine, rolling bales on sloping ground	Maintaining caution, marking the danger zone, banning any traffic next to the working machine, banning people standing next to the working machine, reading the Instructions Manual.

5	Sharp, dangerous edges	Protruding parts of the machine structure, use of hand tools	Personal protective equipment – safety gloves, buttoned-up work clothes, exercising special attention.
6	Gears	Rotating components of the rotary frame and table rollers, guards for moving parts removed	No traffic nearby, approaching or making adjustments on the running machine, exercising caution, using guards for moving parts, reading the Instructions Manual.
7	Weight of the standing machine	Improper mounting, aggregating, wrong setting of the machine, improper operation	Exercising special attention, use of personal protective equipment - safety footwear, safety gloves, the secure position of the machine, the help of others, reading the Instructions Manual.
8	Microclimate - variable weather conditions	Work carried out in varied weather conditions	Suitable work clothes, beverages, creams with sunscreens, proper rest, reading the Instructions Manual.
9	Noise	Too high rotational speed of the machine, damaged, loose or vibrating parts	Operation of the machine in good technical condition, inspections on a regular basis, proper rotational speed, reading the Instructions Manual.
10	Impact to the head, trunk, lower limbs and hand cuts. Impact by moving parts of the machine.	Getting in the wrong position during grab movements. Being in close proximity to a working machine.	Paying special attention, use of personal protective equipment: safety footwear, protective gloves, secure setting of the machine, use of appropriate tools, cautious work without haste, reading the Instructions Manual. Keep away when the machine is running.
11	Risk of crushing and impact	Changing the actuator arm positions during work when working parts rotate, working with safety guards removed	Exercising special caution, never approach the machine when it is working, never approach the rotating machine, prevent actuators from spontaneous movements, wear close-fitting clothes. Read the Instructions Manual. Observe the warnings on the machine.

Table 1 Residual risk assessment

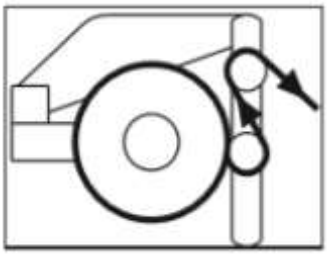
3.3. Safety decals

		
1.1 – Prior to using the machine, read the Instructions Manual.	1.2 – Switch off the engine and remove the ignition key before any maintenance or repair procedures.	1.3 – Danger of limb injuries. Do not reach for the cutting blade.
		
1.4 – Maintain a distance of at least 50 metres (164 feet) from the working machine.	1.5 – Danger of crushing. Do not stand in the area occupied by the folding bale grab arm.	1.6 – Do not touch the machine components until fully stopped

3.3. Safety decals, cont.

1.7 – Check the torque value of the running wheel nuts and other bolt connections regularly.

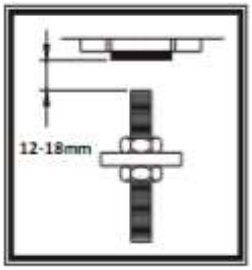
1.8 - Avoid exposure to liquids flowing under pressure. Read the Instructions Manual and learn about the maintenance works



1.9 – Wrapping film installation method.

1.10 – Direction of table rotation.

1.11 – Lifting hook location dur-



1.12 – Information on sensor adjustment.

1.13 – Maximum tire pressure symbol.

1.14 – Grease nipple symbol denoting the grease lubrication point.

3.3. Safety decals, cont.

 1.15 – Warning about pressure present in the hydraulic system.	1.16 – Use a protective coverall. 	1.17 – Use safety gloves 
1.18 – Use a protective helmet. 	1.19 – Use hearing protectors. 	1.20 – Use safety glasses. 

Table 2 Safety decals on the machine

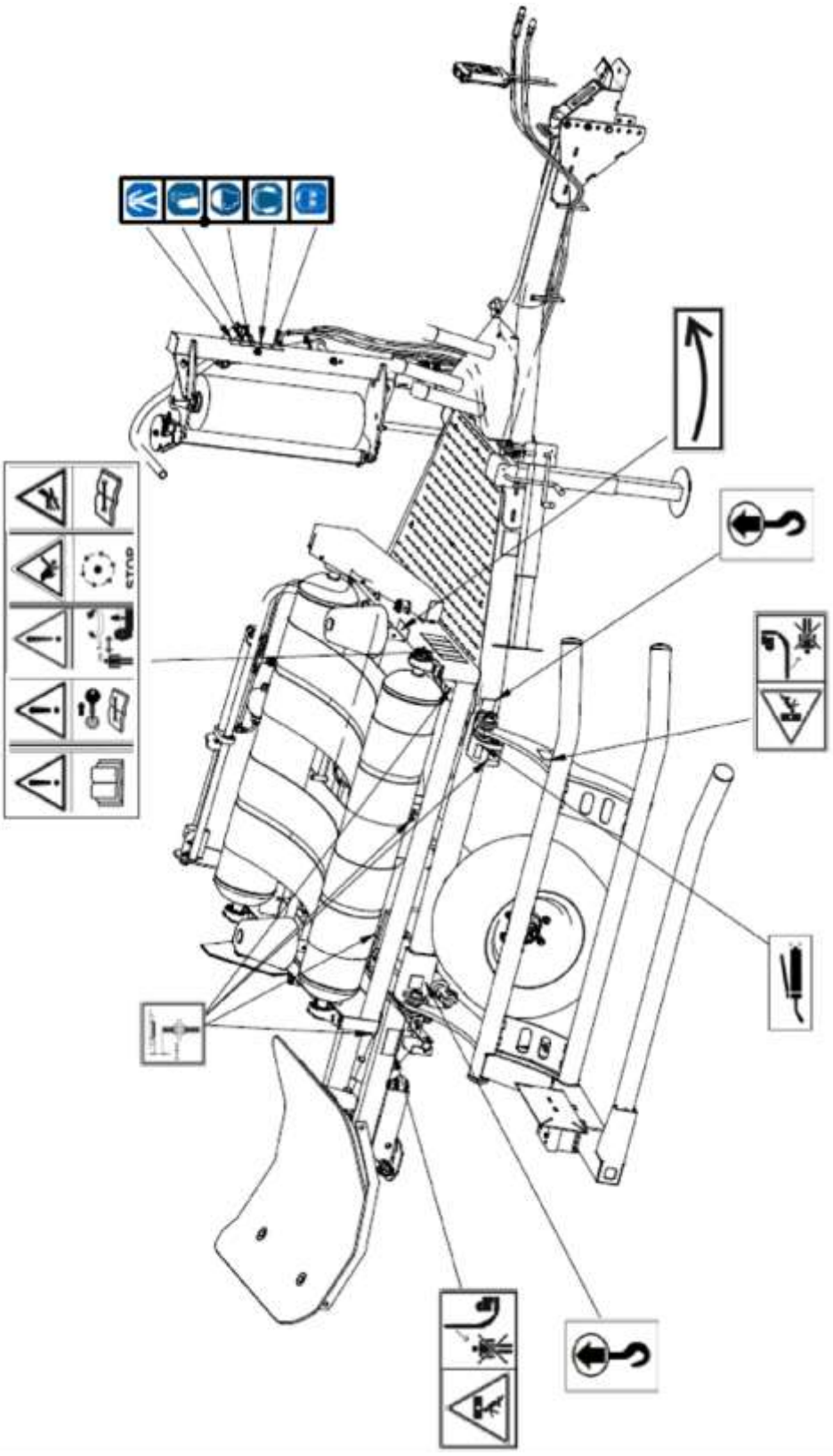


Table 2 (cont.) Safety decals on the machine

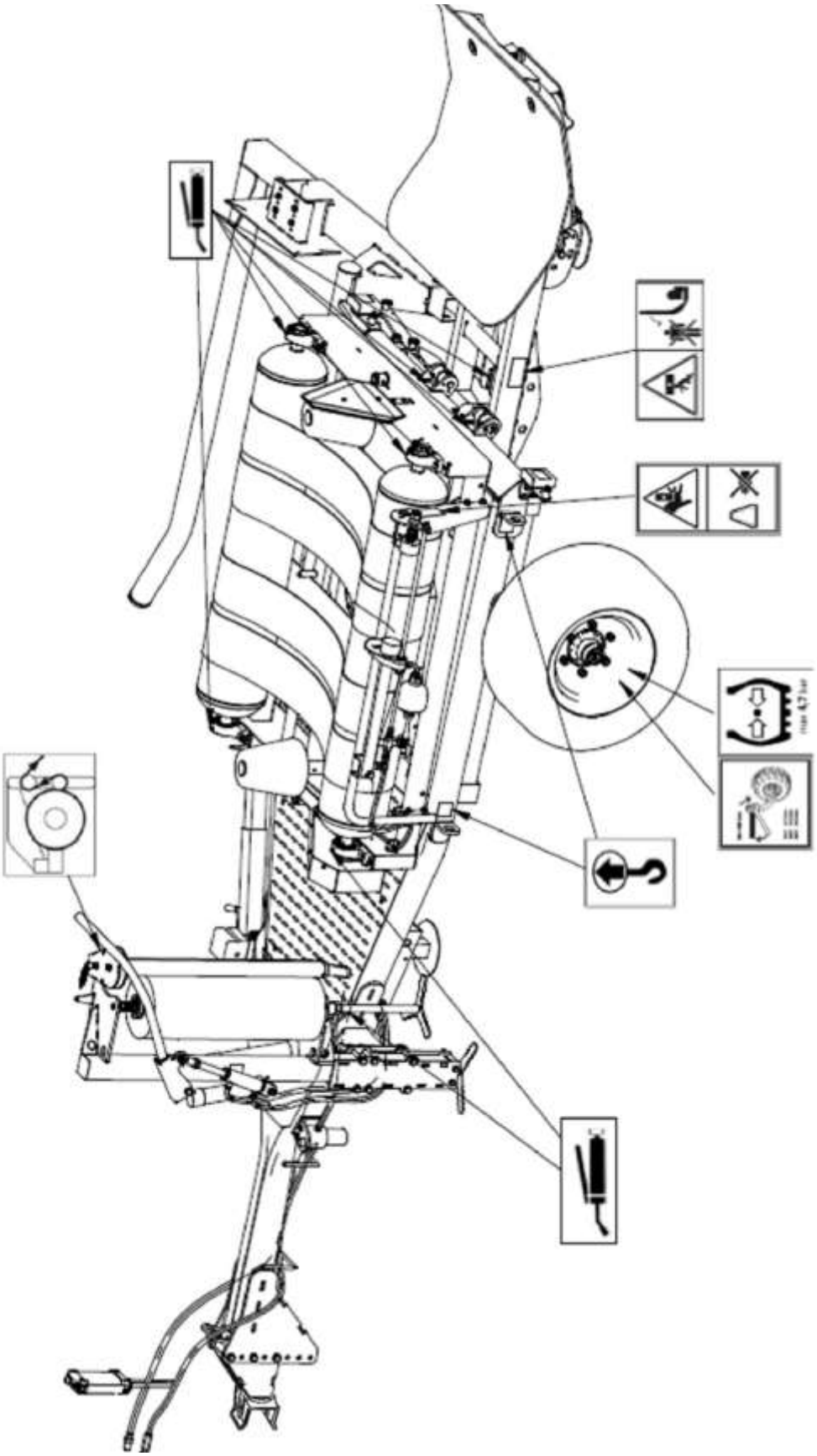


Table 2 (cont.) Safety decals on the machine

4. Intended use of the machine

The bale wrapper is designed for wrapping film around a crop prepared previously in the shape of a bale. The maximum weight of material to wrap must not exceed 2425 lbs. and 5 ft. in diameter. Rolled bales can be wrapped with a 20” or 30” wide stretch film. Using the machine in other circumstances will be construed as inconsistent with the intended use. Strict compliance with the requirements for the use of the machine and operation and maintenance as recommended by the manufacturer is a prerequisite for use as intended.

The machine should be operated, serviced, and repaired by people familiar with its specific characteristics and the rules of conduct in terms of occupational safety.

The bale wrapper has been designed in accordance with current safety requirements and machinery standards. The permissible speed of the bale wrapper on public roads is 15 mph. During operation (wrapping), the maximum speed of the combination must not exceed 3 mph, provided that the ride takes place on flat, level ground. Accident prevention regulations and all basic rules of safety and hygiene, as well as traffic regulations, must always be observed.

Intended use involves the observance of the correct and safe operation and maintenance of the machine. This is why the user is obliged to:

- Read and follow the contents of the **INSTRUCTIONS MANUAL**.
- Understand the operating principle of the machine and the safe and correct use of the bale wrapper.
- Observe the general safety regulations during work.
- Observe the scheduled maintenance and adjustment.
- Comply with road traffic regulations.
- Couple the machine with an agricultural tractor only if such a tractor meets all the requirements set by the Manufacturer of the bale wrapper.

Unauthorised changes in design of the machine without permission of the manufacturer waive the manufacturer's liability arising due to any resulting damage or injury.
It is forbidden to use the bale wrapper for any purpose other than that for which it was intended and to operate the machine by persons who are not familiar with the Instructions Manual, the safety regulations, and the instructions manual of the agricultural tractor.

5. Equipment, design, and operating principle

5.1. Basic equipment

The bale wrapper comes complete with the basic equipment listed below:

- Instructions Manual,
- Spare parts catalogue,
- Warranty Certificate.

The bale wrapper is a welded construction consisting of frames built from steel profiles and interconnected with pins or bolts. The bottom frame to which the unbraked running axle is bolted is the base which is coupled using the drawbar with the tractor. The loading arm hereinafter referred to as a bale lift is positioned along the right-hand edge of the machine and performs the loading movement of the crop. The rotary frame is the base for the table rollers which drive the rotation of the bale around its two axes of rotation. The turntable slide base underneath the rotary frame, pinned to the bottom frame, is to unload bales by a hinged tilt to the rear of the machine, where the bale tipper captures them and positions them with precision as required. In the front part of the bale wrapper, there is a film dispenser on a post, adapted to un-wind 20.00” or 30.00” wide film. A film cut and hold is mounted on the side of the rotary frame to cut off and hold the film for subsequent cycles automatically.

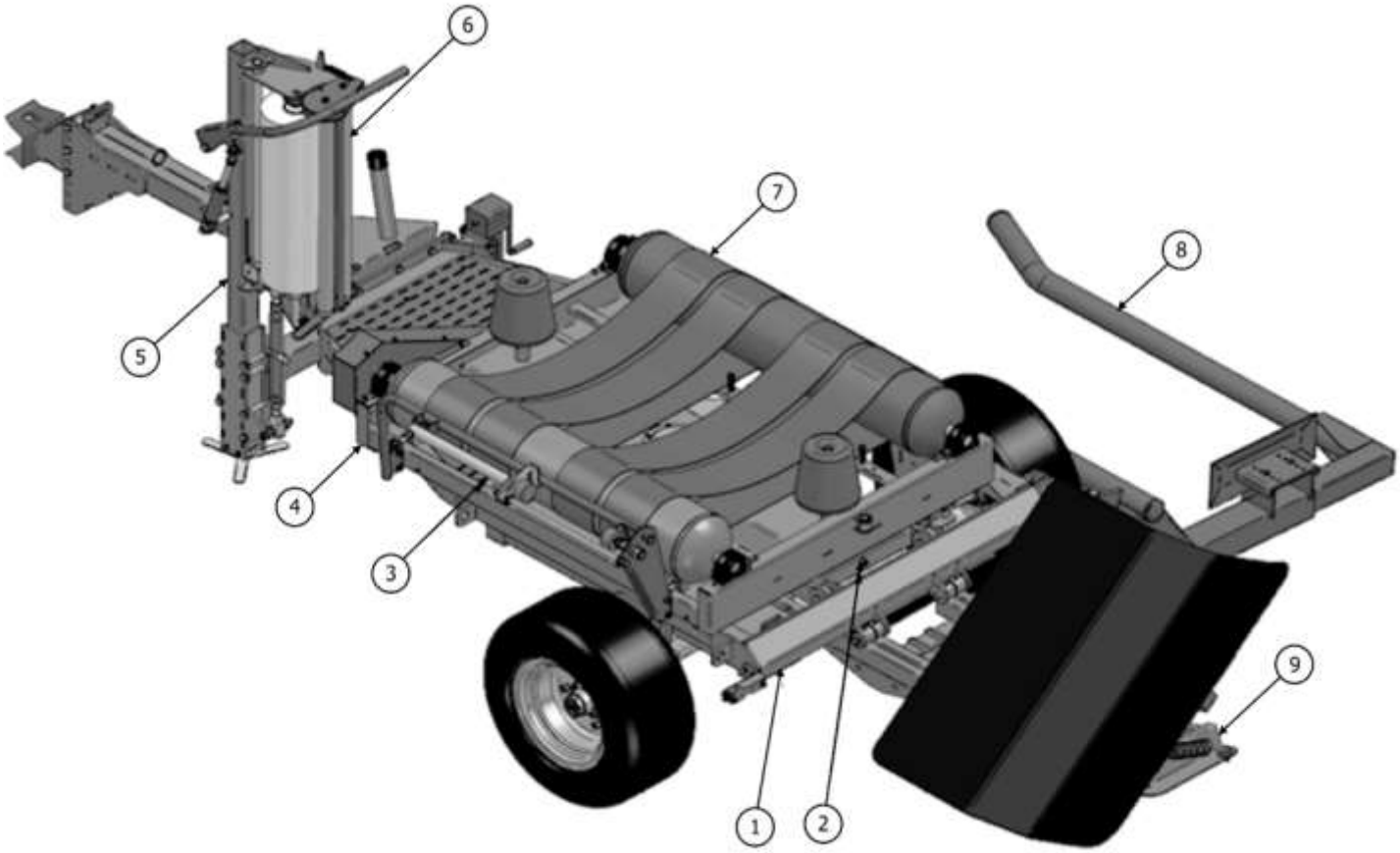
The basic version of the machine offers three operating modes:

- Auto mode,
- Semi-auto mode,
- Manual mode.

This is enabled with a control system connected to the hydraulic system driving machine movements. The hydraulic system is protected by an oil filter mounted on the left-hand side of the drawbar mounting frame. The electrical system is fitted with a 10 A fuse in the top section of the control unit to protect the controller.

5.2. Technical specification

The main components of the bale wrapper are shown in the figure below.



1 – Bottom frame
2 – Turntable slide base
3 – Film cut and hold
4 – Rotary frame
5 – Dispenser post
6 – Film dispenser
7 – Table rollers
8 – Bale lift
9 – Bale tipper

Technical-operational data are provided in Table.

No.	Specifications	UoM	Parameter
1	Total length in transport position	[in]	106
2	Total length in working position	[in]	233
3	Transport width	[in]	94
4	Working width	[in]	148
5	Height in the transport position	[in]	58
6	Height in the working position	[in]	103
7	Kerb weight	[lb]	4542
	Permissible payload capacity	[lb]	2425
8	Permissible speed of the turntable	[rpm]	30
9	Required tractor power	[HP]	≥ [48]
10	Hydraulic motor oil demand (min ÷ max)	l/min	14.5÷23
11	System max. pressure	[psi]	2320
12	Hydraulic sockets	-	As per ISO 7421-1
13	Oil type	-	SUPER UDT, API GL-4+
14	Required tractor hitch	-	Single-axle trailer hitch
15	Electrical system voltage	V	12
16	Connection sockets	-	7-pole (ISO 1724), cigarette lighter socket or 3-pin socket
17	Operation capacity	[pcs/h]	~45
18	Noise level	[dB]	70
19	Number of wheels	[pcs.]	2
20	Size of tire	-	350/50-16
21	Tire air pressure	[kPa]	470

Table3 Bale wrapper technical and operational data

5.3. Operating principle

The bale wrapper uses a lift arm (1) mounted along the main frame (2) to feed formed crop onto the table roller and belt assembly (4). Driven by a bevel gear and chain drive, the rollers turn the bale around their own centreline to offset layers of film, which one after the other are rolled out from the film dispenser (5). This unit is placed on a rotary frame (3) driven by a chain drive to rotate the bale. After the wrapping is complete, the rotary frame (3) is hinged out, the cut and hold (6) cuts off the film, the bale tipper (7) captures the bale and then puts it down in a vertical or horizontal position.

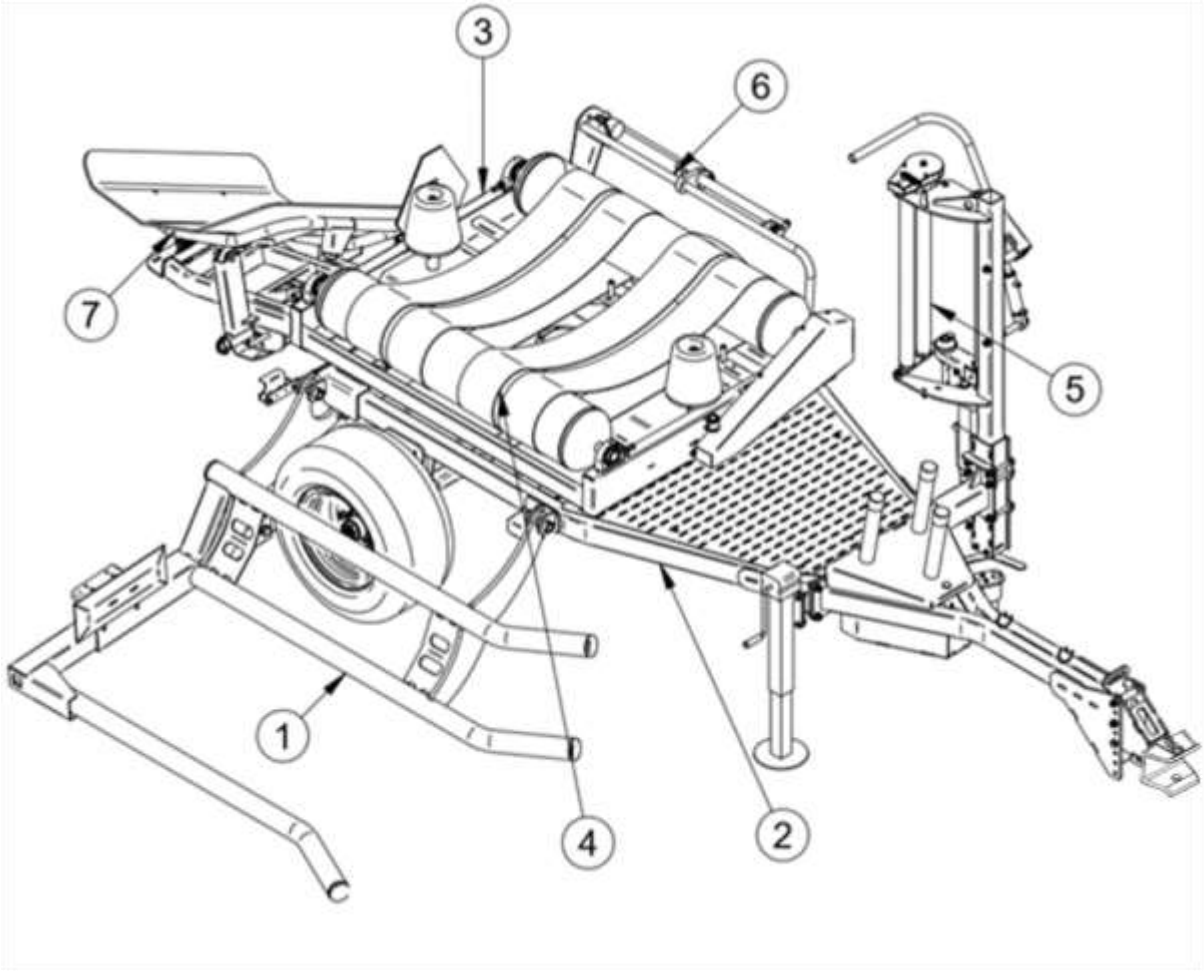


Figure 6 Bale wrapper operating principle

(1) lift arm, (2) main frame, (3) rotary frame, (4) table roller and belt assembly, (5) film dispenser, (6) film cut and hold

5.3.1 Film dispenser

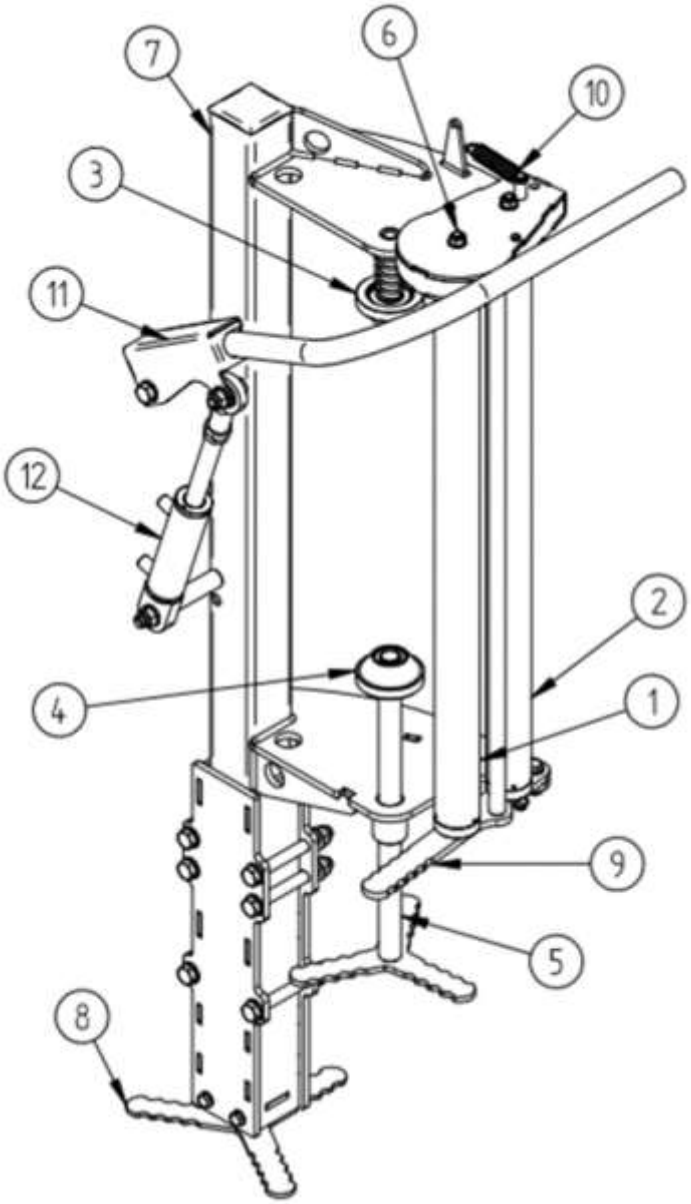


Figure 7 Film dispenser design

(1) roller I, (2) roller II, (3) top roll holder, (4) lower roll holder, (5) pressure screw, (6) gear, (7) dispenser post, (8) height adjustment screw handle, (9) roller frame, (10) spring, (11) film scraper frame, (12) scraper actuator

The dispenser is adapted for film with a width of 20” or 30”. It is installed on the dispenser post (7) and adjusted with screw with handle (8). The film roll is mounted between the conical holders (3) and (4). The film layer is threaded through the knurled rollers (1) and (2) (Figure 32), which are fixed to the frame (9) and fastened with tensioning gears (6). The tension is also adjusted by the position of the pressure screw (5). An actuator (12) is responsible for the movement of the scraper arm (11).

5.3.2 Rotary frame

The rotary frame is fixed on a slide base attached with pins to the rear beam of the lower frame and with a belt and table rollers assembly (3) mounted on its upper part in bearing units (5). The telescopic actuator is used to hinge the table to unload bales. The slide base accommodates a hydraulic motor which incorporates a chain drive for rotating bales around their vertical centrelines. The horizontal movement of bales is also achieved thanks to the rotation of the table through a bevel gear mounted in its central part, connected by a shaft with the chain drive (1), which transmits the drive to the driving table roller (2), which sets the belts (4) in motion. The bale is held in the correct position by the side bumpers (6) and the correct tension of the belts, see Section 7.4 (Figure 37). For bales with a width in excess of 4 feet the bumpers (6) must be placed on the external mounting brackets (7).

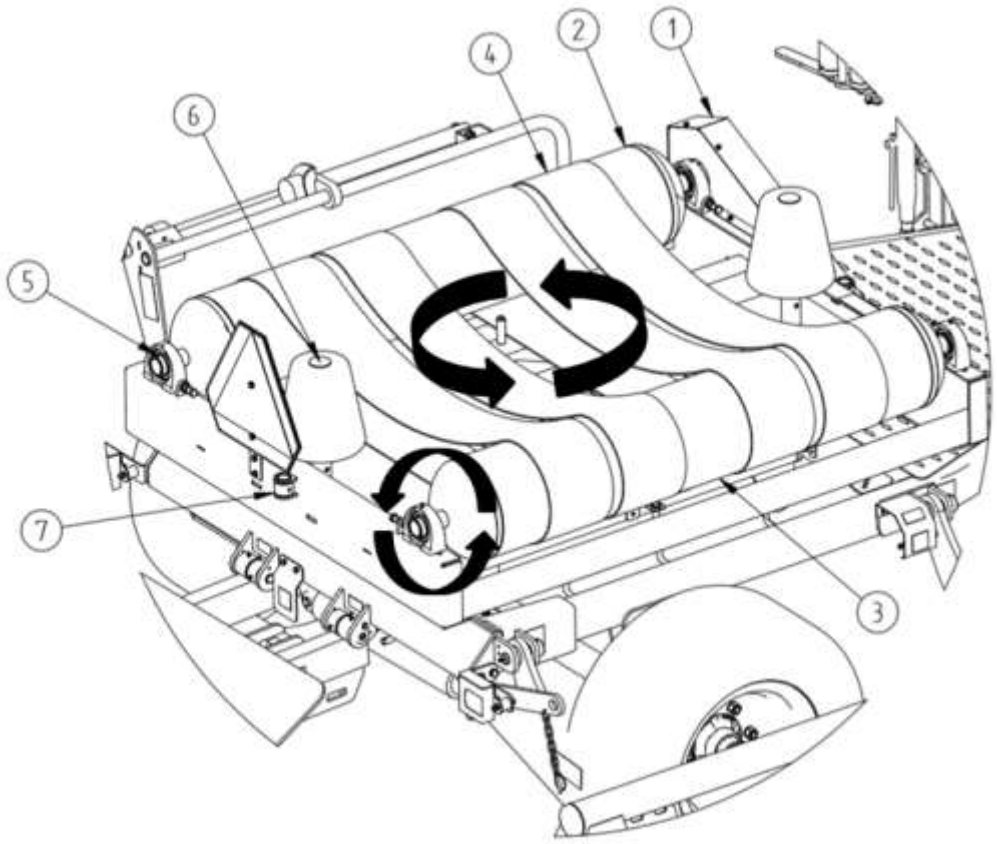


Figure 8 Movement of the rotary frame

(1) chain drive, (2) driving table roller, (3) table roller and belt assembly, (4) belts, (5) bearing unit, (6) side bumper, (7) outer holder

5.3.3 Bale tipper (unloading)

The bale tipper is designed for capturing and unloading bales safely in one of the two possible positions. The method of switching the unloading positions is described in Section 6.4.

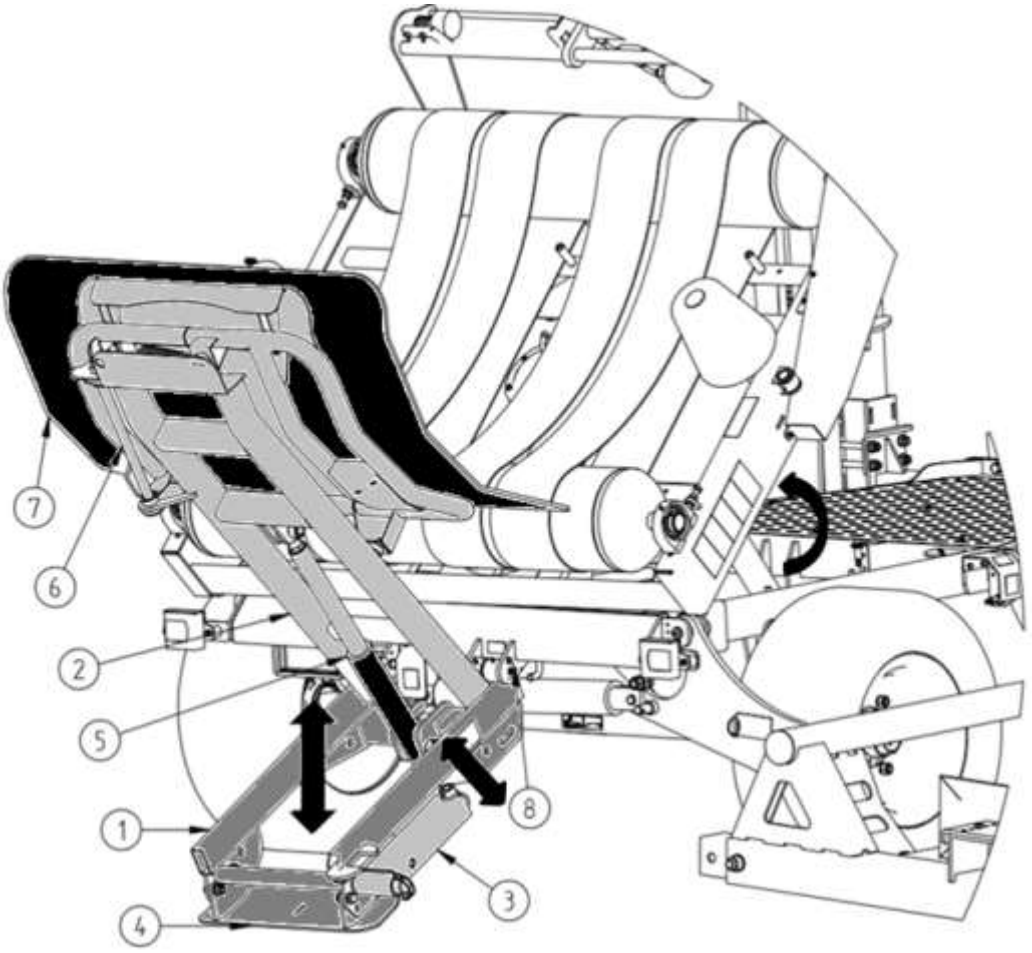


Figure 9 Components of the bale tipper

(1) outer frame, (2) cradle frame, (3) adjustable arm, (4) foot plate, (5) actuator, (6) cradle rotation pin, (7) moving cradle, (8) tipper hinge pins

The bale tipper consists of an outer frame (1) and an inner cradle (2) fixed with pins (8) to the rear beam in the bottom frame. The actuator (5), automatically activated when the bale is unloaded from the rotary frame, moves the cradle frame. The foot plate (4) is lowered which is caused by the unloading movement of the rotary frame and the movement of the bumper mounted on the outer frame (1) under the turntable slide base. The adjustable arm (3) on the right-hand side of the bale tipper can be set in two positions (Figure 10). If set to the position (A), the bale will roll over behind the bale wrapper after unloading. In variant (B), when the adjustable arm (3) is raised to the vertical position, the cradle frame will be lowered to rest against the roller of the adjustable arm and rotate around the centreline of the cradle rotation pin (6). The bale will be placed on the left side of the cradle in a vertical position (with its bottom on the ground).

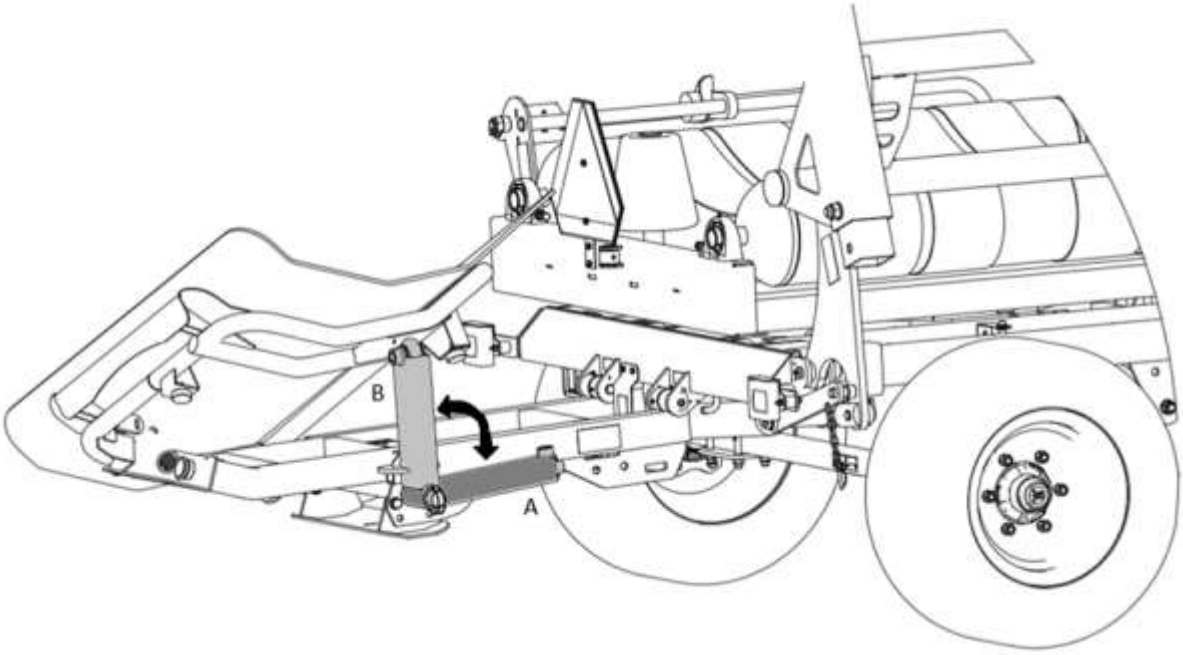


Figure 10 Unloading positions of the bale tipper

(A) set for horizontal tipping, (B) set for vertical tipping

For a description of how to change the bale tipper settings, see Section 6.5.

It is important that the unloading movement from the tipper is as smooth as possible regardless of the weight of the wrapped bale.

For a description of the drop speed control, see Section 7.3.

5.3.4 Cut and hold

The cut and hold is used to cut off the film after the wrapping cycle is complete, and to hold the other end of the film until the next bale is turned twice.

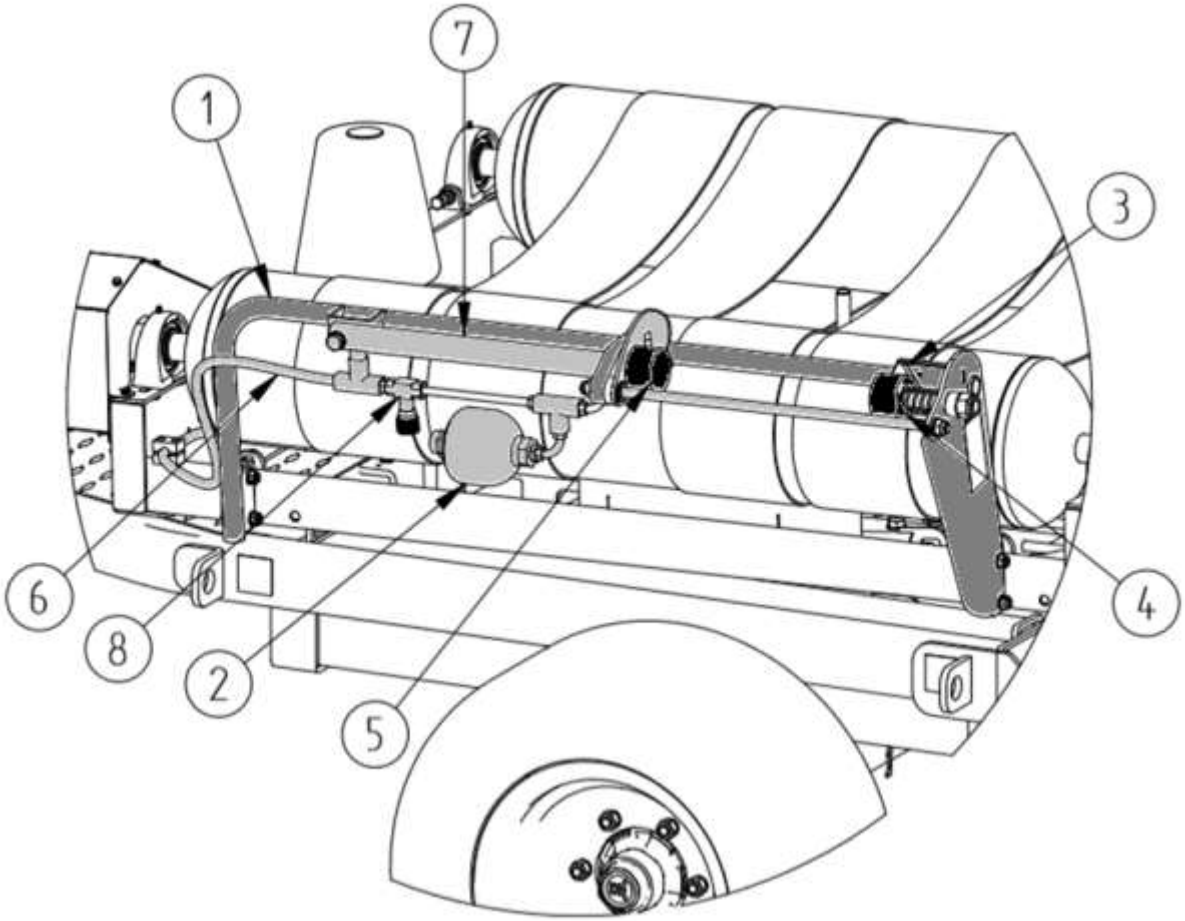


Figure 11 Cut and hold components

(1) cut and hold frame, (2) hydro accumulator, (3) blade, (4) passive buffer, (5) driven buffer, (6) supply line, (7) actuator, (8) throttling valve

The cut and hold is mounted along the driving table roller on the frame (1) screwed to the profile of the rotary frame. The film is cut and held in place by the automatically controlled hydraulic system. The piston in the actuator (7) is pushed out by means of the pressure in the hose (6), while the hydro accumulator (2) is used to push it in. The blade (3) is used for cutting when the film is pressed against it by means of rubber buffers (4) and (5). The hydraulic fluid in the hydraulic accumulator is throttled using a throttling valve (8). When the machine is started, the first cycle starts with the accumulation of pressure in the accumulator, which is automatically repeated every 10 cycles.

Remove the blade guard before starting work, see Figure 12.

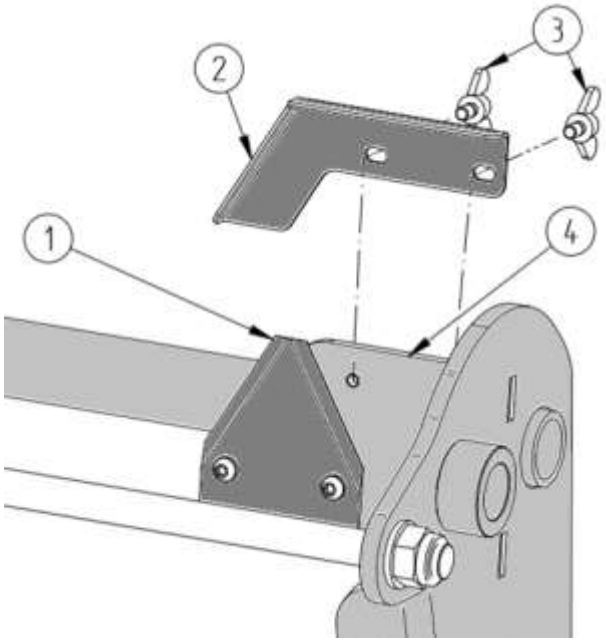


Figure 12 Dismantling blade guard

(1) blade, (2) guard, (3) fastening screws, (4) fastening plate

Protect yourself from accidents related to contact with sharp edges of the blade (1) by using the guard (2). The guard (2) is removed and replaced by fixing the guard (2) to the plate (4) using the screws (3).

Any preparations, fitting, dismantling or adjustment can be performed only after the drive has been switched off, the engine stopped, the vehicle immobilised and when all the moving parts of the machine have stopped.

Before you start wrapping, the blade guard in Figure 12 must be removed.

5.3.5 Electrical system

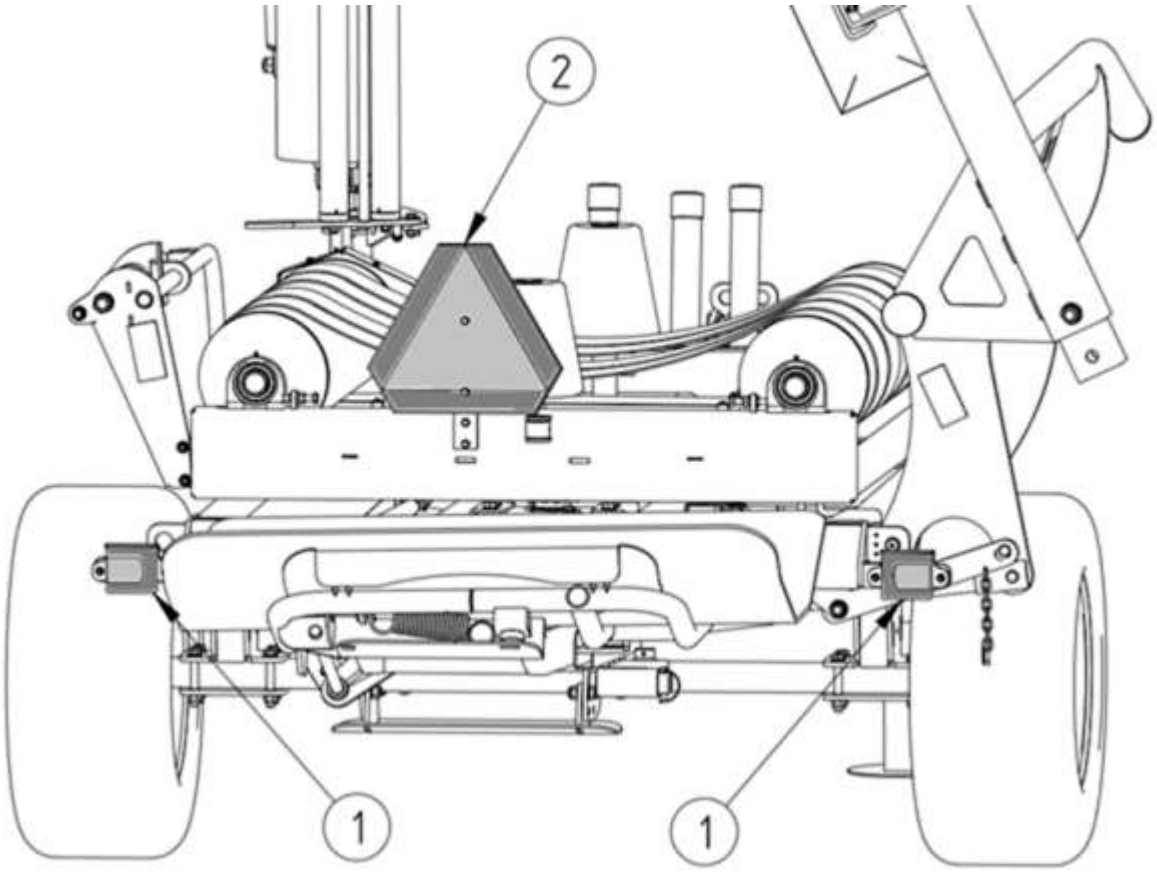


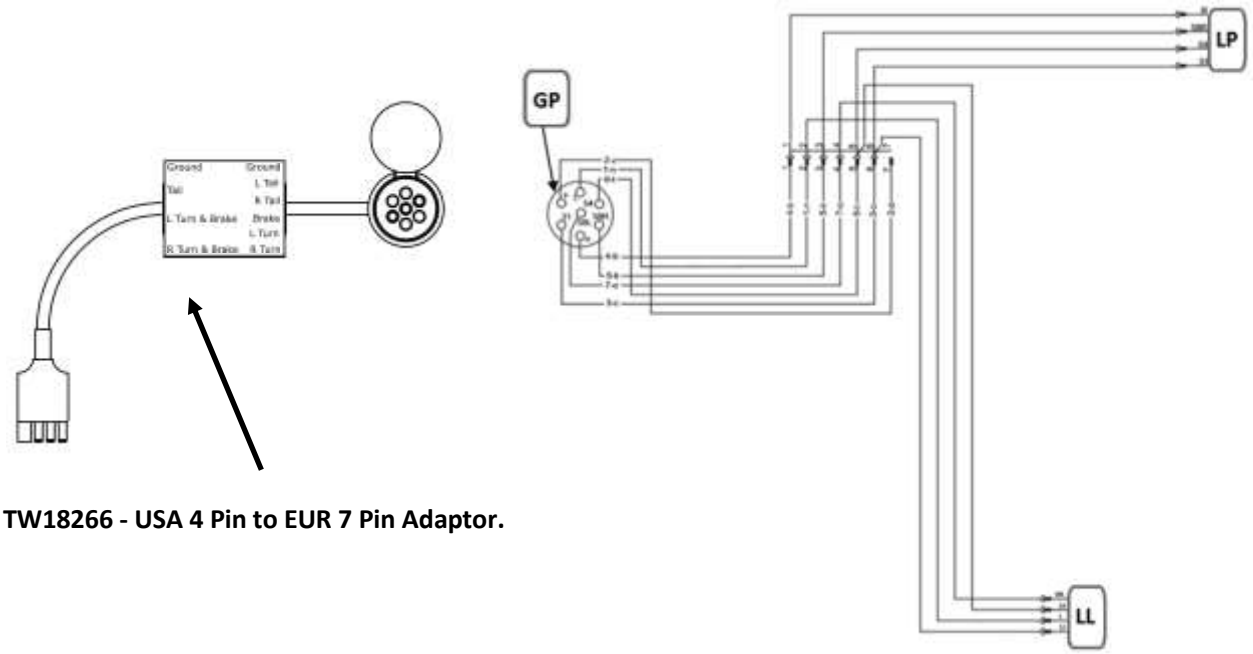
Figure 13 Arrangement of lighting and reflective elements

(1) multifunction tail lamp, (2) warning plate (reflective triangle)

The electrical system of the bale wrapper is designed to be powered from a 12 V DC source. The electrical system of the bale wrapper's lights should be connected to the tractor via a suitable 7-pin plug connection wire. An overview diagram of the electrical system of the bale wrapper is shown in Figure (14).

NOTE: An optional rear light kit is available. Contact the dealer for availability and pricing.

Part Number TW18265 WRAPPER REAR LED LIGHTS SET KIT



TW18266 - USA 4 Pin to EUR 7 Pin Adaptor.

Figure 14 Lighting system diagram

(GP) 7-pin plug connector, (LP) right multifunction tail lamp, (LL) left multifunction tail lamp

Designation	Function
31	Ground
+	Power supply +12 V
L	Left direction indicator
54	Brake light
58L	Tail light, left
58R	Tail light, right
R	Right direction indicator

Table 4 Symbols for socket connections

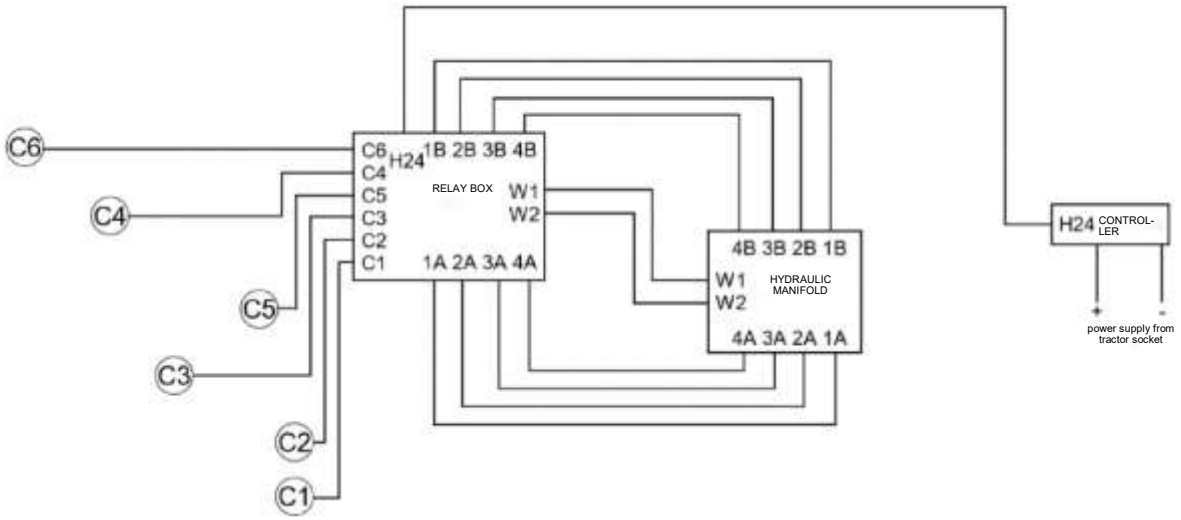


Figure 15 Control system diagram

Symbols	Function
+	+12 V power supply from tractor's battery
-	Ground
C1	Bale lift – bottom position
C2	Bale lift – top position
C3	Bale loading position
C4	Bale unloading position
C5	Table tilt
C6	Bale tipper – table bottom position
1A - 1B	Solenoid valves for bale lift actuator
2A - 2B	Solenoid valves for turntable's hydraulic motor
3A - 3B	Solenoid valves for table tilt, bale tipper, scraper
4A - 4B	Solenoid valves for film cut and hold
W1	Proportional solenoid valve
W2	Balanced solenoid valve

Table 5 Symbols for control system

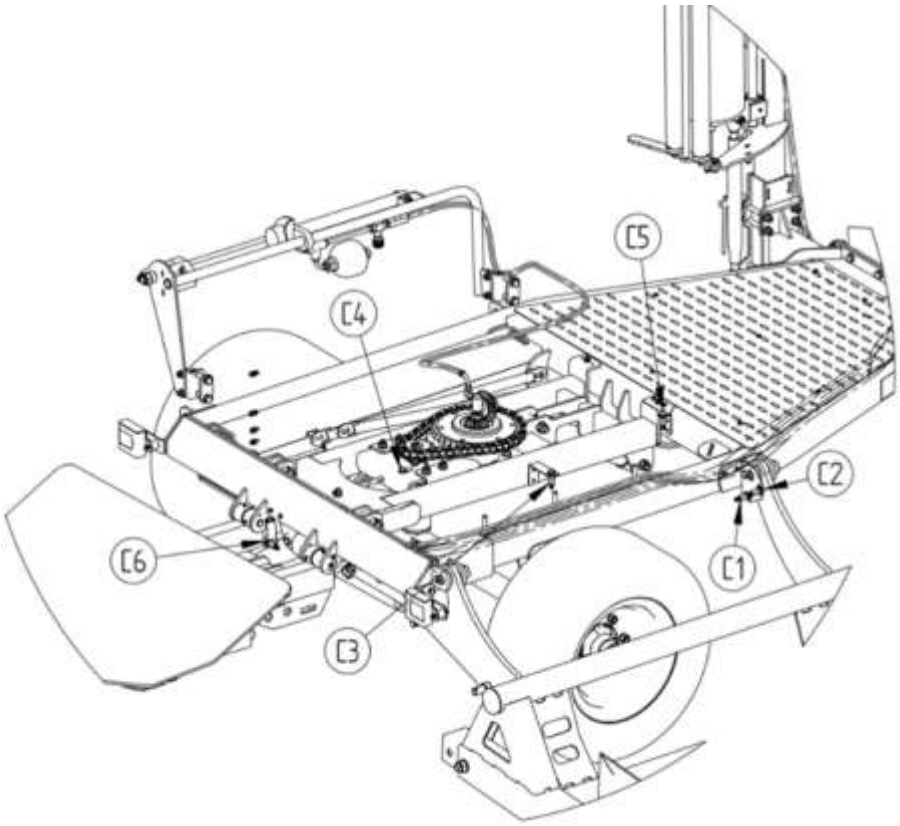


Figure 16 Positions of sensors in the frame

It is forbidden to work with sensors switched off or damaged, as their proper functioning protects the machine from damage.

5.3.6 Hydraulic system

Bale wrapper's hydraulic system is controlled by means of a manifold controlled from a control unit. The system is powered by a tractor hydraulic pump with the option of return by one extra line of a so-called “free drain”. The hydraulic system is under high pressure during the operation of the bale wrapper, so the condition of the connections and hoses must be checked regularly. Operation with a leaking or damaged system is not permitted. In case of a malfunction, the machine must be taken out of service until it is repaired. Before carrying out repair or maintenance, make sure that the system is depressurised. Hydraulic oils should be stored in original containers or in packaging adapted to their storage, paying particular attention to the effect of hydrocarbons.

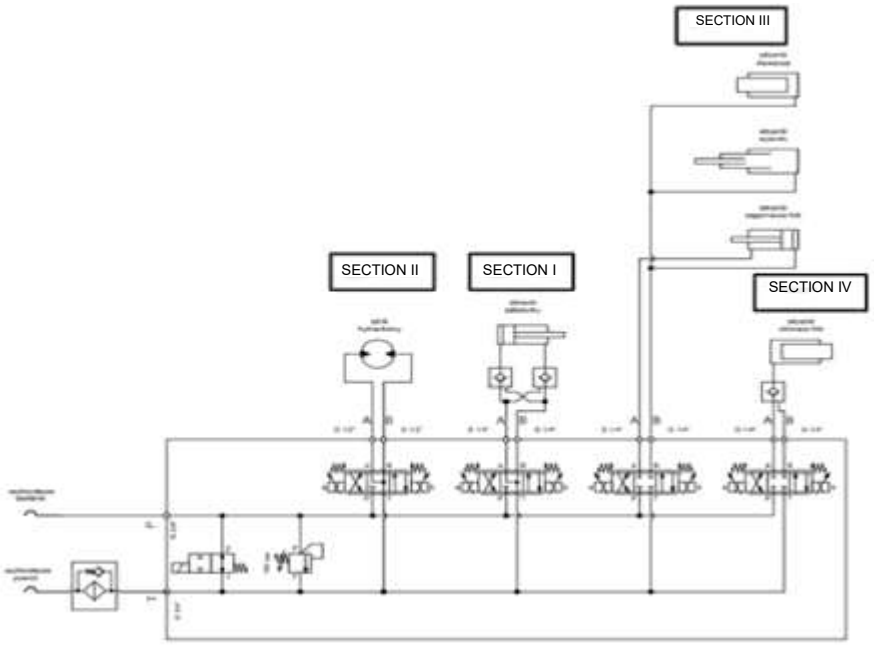


Figure 17 Bale wrapper hydraulic system diagram

SECTION I

By controlling the pressure on Section I, used for bale lift actuator movement, you can raise and lower the bale loading arm, which places crop between the table rollers on the rotary frame.

SECTION II

It uses a hydraulic motor to drive the gears activating the rotation of the rotary frame and the table rollers assembly.

SECTION III

It is used to move three actuators:

- film dispenser actuator, which pulls the film to be cut off,
- telescopic tilt actuator for the rotary frame,
- bale tipper actuator used for capturing and putting bales down.

SECTION IV

It drives the cut and hold actuator, which is designed to perform two functions:

- cut off the film from a bale to be put down,
- hold the film on the side of the dispenser before the next cycle.

6. Machine operation

The manufacturer shall ensure that the machine is fully operational and has been checked before being put into service. Nevertheless, the user is obliged to check the machine after delivery and before the first use. Before commencing any works related to coupling the bale wrapper with the tractor, the user should check the technical condition of the machine and prepare it for commissioning. In order to do so, the user should:

- read carefully all the information related to the safety, design, functioning, operation, transport, technical service, etc. included in the manual,
- familiarise themselves with the design and operating principle,
- check the completeness of the machine, whether all required protections, screws are in place,
- check the condition of screw connections, whether all screws are tightened – Table,
- check the condition and pressure of tires,
- check the appropriateness of wheel mounting,
- check the painting coating condition,
- check the overall condition of the machine with regard to any damage caused during transport, loading or due to other circumstances (breakage, indentations, cracks, punctures, etc.),
- check all lubrication points, whether there are lubrication signs (if needed, lubricate acc. to the guidelines in Section “Machine lubrication“),
- check that the drawbar, bale lift arm and bale tipper are attached correctly,
- check that the film dispenser post is fixed properly,
- check the hydraulic system for tightness,
- check the proper operation of the lighting system,
- check the proper operation of the protection sensors.

After performing all activities and stating that the machine condition raises no concerns, the user may couple the bale wrapper with the tractor.

Before each time the machine is used, its technical condition needs to be checked, and especially the condition of units like rotation transmission system, hydraulic and electrical systems.

6.1. Installing the bale wrapper

The bale wrapper can be coupled with the tractor of power not higher than 35 HP equipped with a single-axle trailer hitch. Coupling the bale wrapper with the tractor should be performed on hard and even ground.

Before coupling the bale wrapper, read the Instructions Manual carefully. Additionally, always pay particular attention to maintaining safety while attaching the bale wrapper to the tractor!

6.2. Connecting bale wrapper to a tractor

Procedure to be performed to connect the bale wrapper:

- drive your tractor up to the bale wrapper,
- in reverse gear, slowly backup to the bale wrapper's hitch (1) ensuring that nobody is standing between the machine and the tractor or in the immediate vicinity of the machine,
- when backing up, move the tractor's hitch (4) as close as possible to the bale wrapper's hitch,
- turn off the tractor and set the parking brake to prevent tractor from moving,
- connect the machine's hitch to the tractor's hitch with a pin (2), secure with a locking pin,
- lift the support foot (Figure 22),
- connect the bale wrappers hydraulic hoses (3) to tractor hydraulic sockets,
- connect the electrical wiring to the tractor's power supply socket.

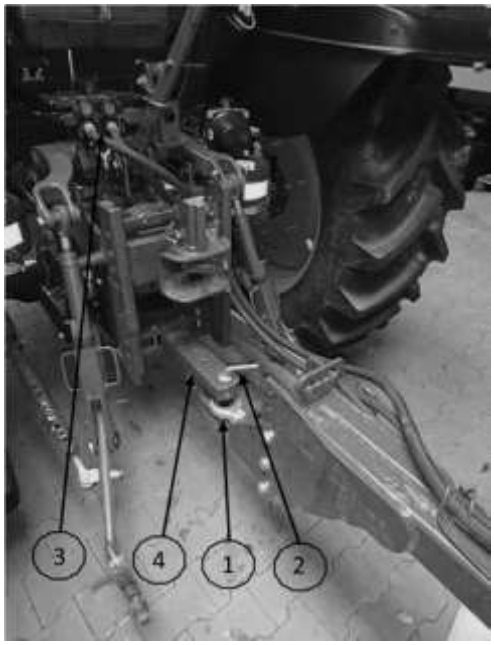


Figure 18 Coupling bale wrapper with a tractor

(1) drawbar eye, (2) pin, (3) hydraulic hoses, (4) tractor hitch

Coupling the bale wrapper with the tractor should be performed on hard and even ground.

6.3. Leveling the bale wrapper

Level the bale wrapper before use. To do this, position the machine on level ground, adjust the level with the crank in the support foot and then adjust the height of the drawbar relative to its mount in the tractor.

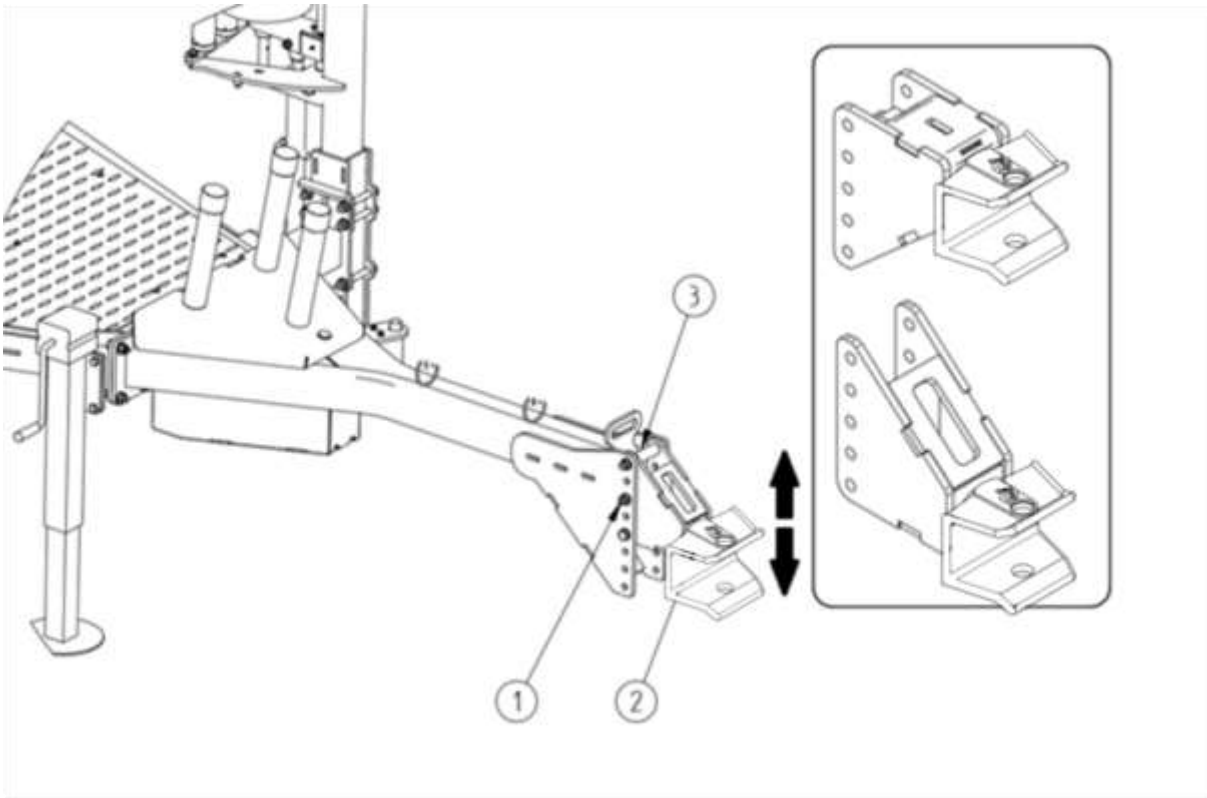


Figure 19 Drawbar position adjustment

(1) bolt connection, (2) drawbar, (3) sleeves

The machine must be levelled before it is coupled with the tractor. When setting the machine horizontally, pay particular attention to the position of the drawbar hitch and, if necessary, adjust it to the mounting height on the tractor. This job requires the drawbar hitch (2) to be removed by removing the hardware (1) together with the sleeves (3) using a 24mm wrench. Then set the drawbar eye at the height of the hitch on the tractor and attach it to the machine with the hardware removed (1) and sleeves (3) removed earlier.

6.4. Transport position

The lift arm is lifted and locked mechanically in the transport position, see Figure 20. Before starting work in the field, remove the locking flat bar (3) from the bale lift (Figure 20) by removing the locking pin (2) from the pin (1) to remove the flat bar and put it securely in the working position (Figure 21).

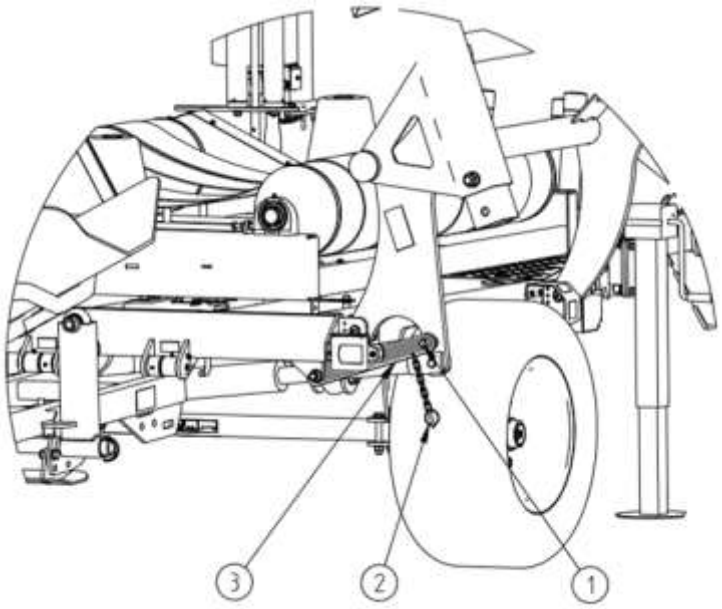


Figure 20 Mechanical lift lock

(1) pin, (2) locking pin, (3) locking flat bar

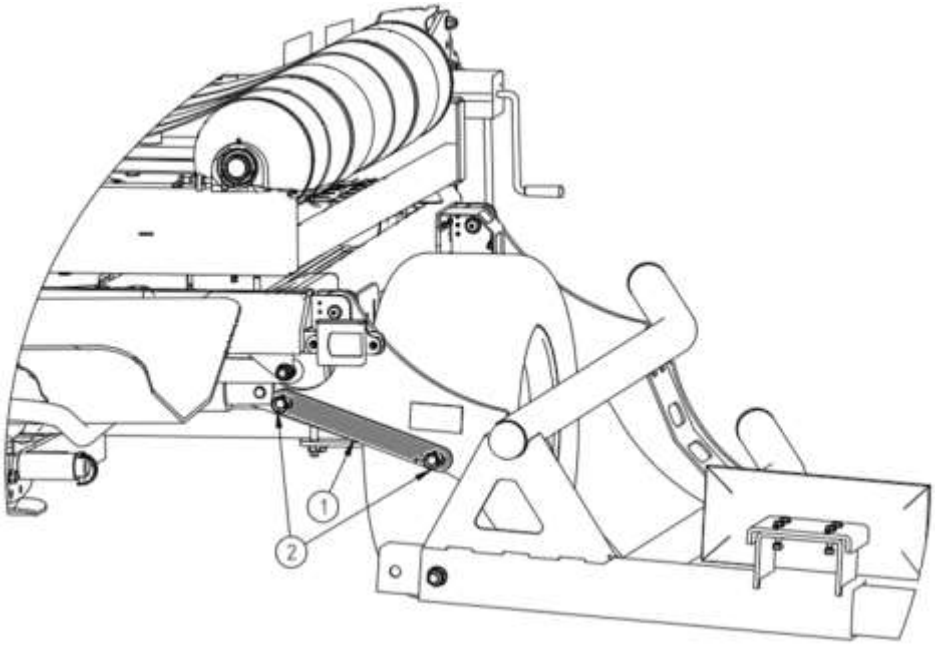
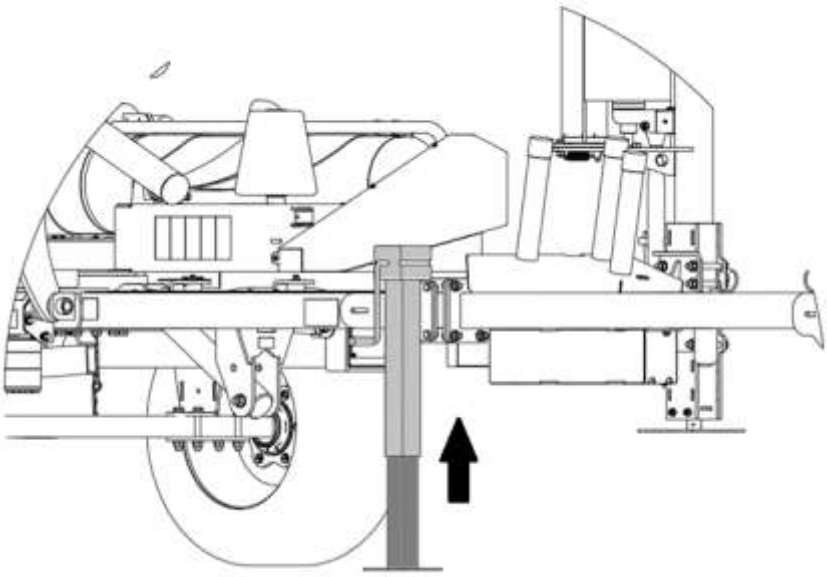


Figure 21 Lift securing in the working position

(1) Locking flat bar, (2) locking pin

After hitching the machine to the tractor (refer to sect. 6.2), raise the support foot, Figure 22.



6.4.1 Principles for driving on public roads

Adhere to the provisions in the Highway Code;
Do not exceed the permitted speeds as specified in the applicable provisions and design constraints.
When driving to the work site, secure the lift arm with a flat bar and a locking pin, see Figure 20.
Attach a warning triangle (SMV sign) for distinguishing a slow-running vehicle for the time of driving on public roads, see Figure 23.
In case of insufficient visibility, attach a red light and reflective element on the rear part of the bale wrapper.
It is forbidden to carry persons on the machine.

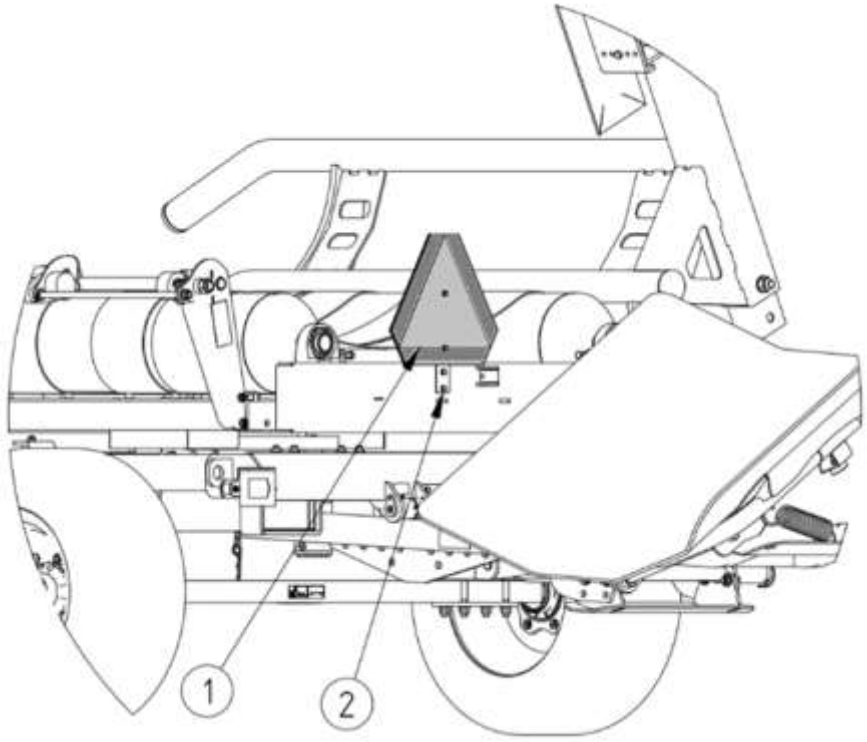


Figure 23 Place for attaching a plate for distinguishing a slow-moving vehicle (SMV)

(1) warning plate, (2) plate holder

Caution!

Any preparations, fitting, dismantling or adjustment can be performed only after the drive has been switched off, the engine stopped, the vehicle immobilised and when all the moving parts of the machine have stopped.

Caution!

Driving the bale wrapper on public roads with a bale loaded is not allowed.

6.5. Switching between methods for unloading bales

The bale tipper gives two options to unload the crop to be wrapped. The first one allows the bale to roll down behind the machine, while the second one involves standing the bale vertically on its bottom to the tipper's left. The way to unload is switched over by selecting the position of the adjustable arm.

1. Rolling the bale behind the bale wrapper

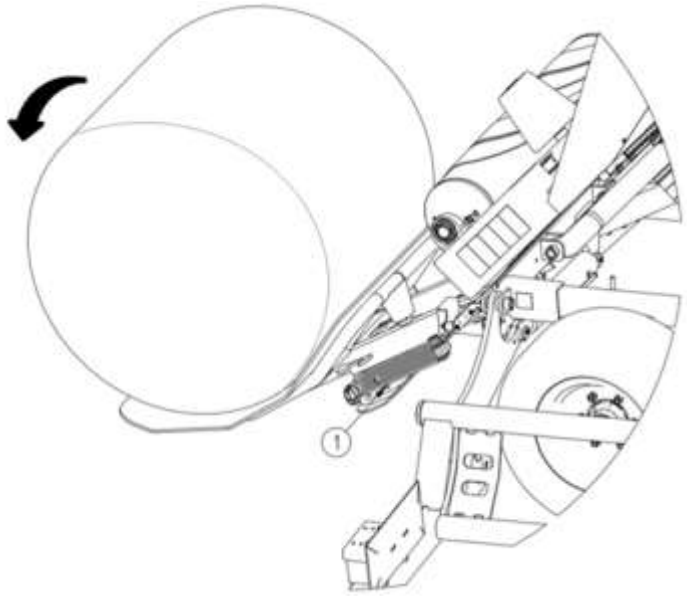


Figure 24 Unloading setting

(1) Adjustable arm

2. Tipping the bale to the side (bottom), to the left of the bale wrapper.

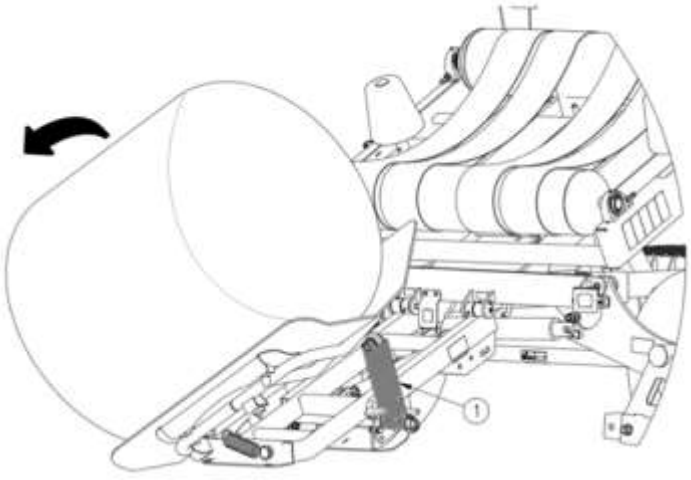


Figure 25 Unloading setting

(1) Adjustable arm

The operation of the bale tipper depends on the position of the adjustable arm (1). When the arm is in the horizontal position, the bale will roll down behind the bale wrapper (Figure 24), while if the arm (1) is in the vertical position (Figure 25), the bale will roll down to the side.

The procedure for switching over the bale unloading way:

- Lift the cradle frame.
- Remove the safety locking pin.
- Switch the adjustable arm.
- Mount the safety locking pin.
- Lower the cradle frame.

To change the position of the adjustable arm, the cradle frame needs to be lifted and the adjustment pin removed.

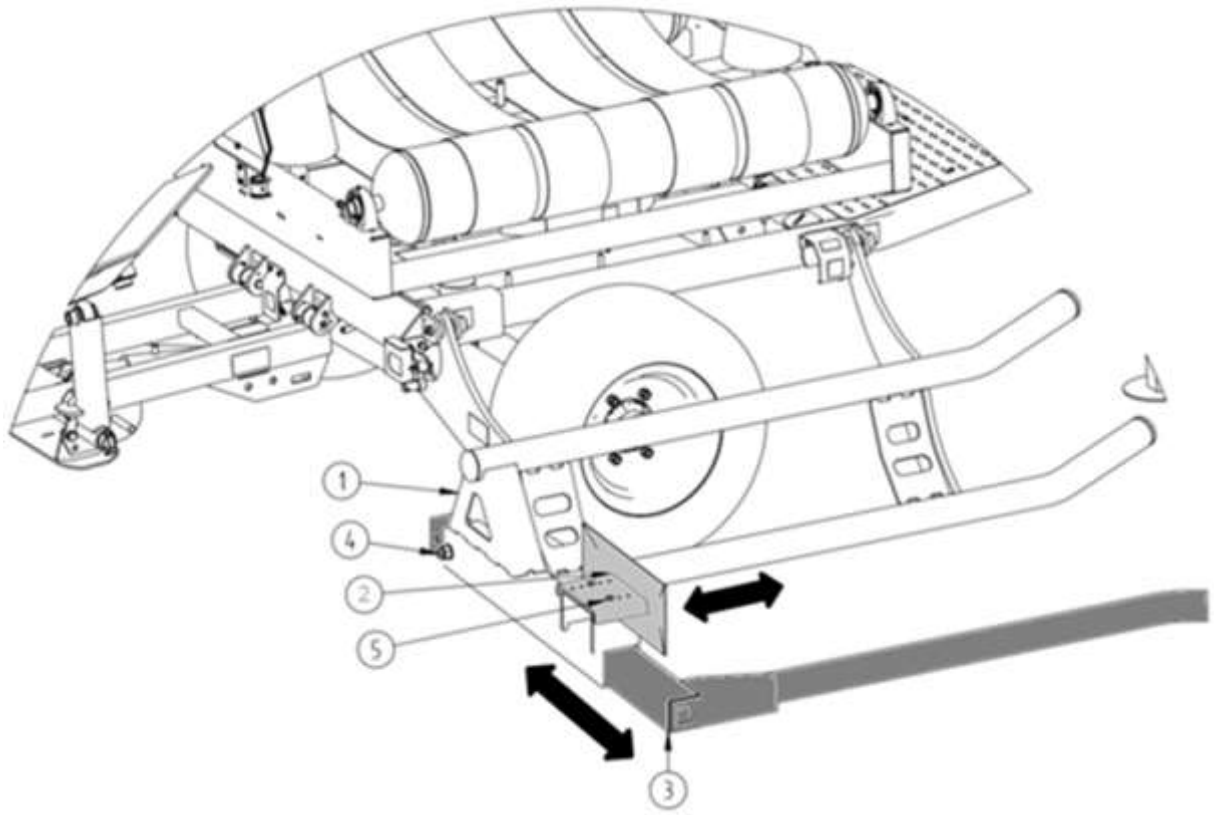


Figure 26 Bale lift arm adjustment

(1) frame, (2) buffer, (3) adjustable arm, (4) lock screw, (5) buffer fixing

Customise the bale lift arm to the size of the baled crop. Setting the adjustable arm (3) ensures the proper loading of the bales onto the table roller assembly. Depending on the length of the bales, set the buffer (2) so that it is in the middle of the table roller assembly when the bale is loaded. The position of the adjustable arm (3) depends on the diameter of the baled crop. Small diameter bales are loaded when the arm is at its shorter setting, whereas larger bales – at its longer one. The adjustable arm (3) must be locked with the screw (4) against being pulled out.

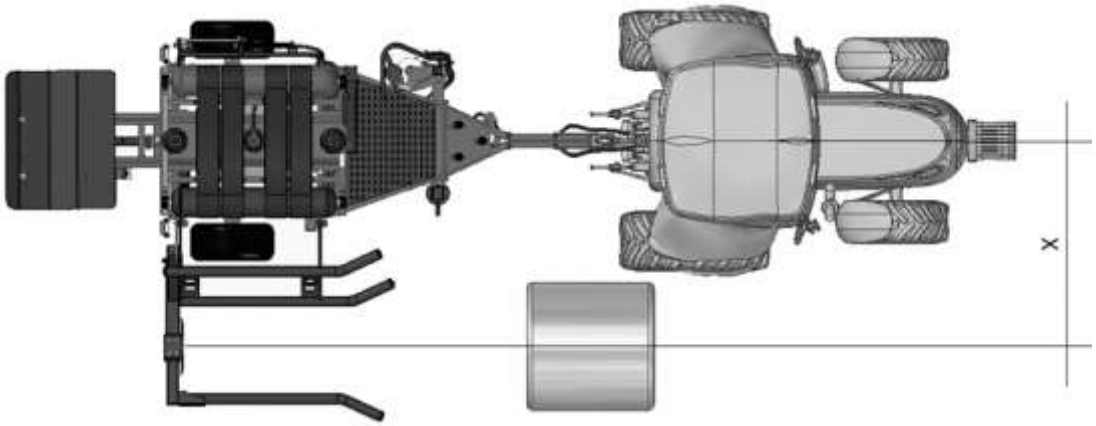
The procedure for adjusting the bale grab arm:

1. Move the bale lift arm to a horizontal position.
2. Unscrew the nut and pull out the lock screw (size 36 wrench).
3. Move the bale lift arm to the desired position.
4. Insert the screw and secure it with a nut – tightening according to Table in Section 9.1.
5. Loosen the buffer adjustment screws.
6. Move the buffer to the desired position.
7. Re-install and tighten the buffer mounting bolts.

When moving the bale wrapper for bale lift adjustment, ensure no unauthorised persons stand in the immediate area surrounding the machine!

6.6.1 Displacement of the tractor's drive centreline in relation to the bale

The determination of the position depends on the position of the adjustable bale lift arm relative to the tractor axle. Adjustments are made according to the diameter of the wrapped bales, where conventionally there are two diameters: 20"and 30".



Dimension "X" for individual diameters:

Bale diameter [ft]	Dimension X [ft]
4'	6'
5'	6.5'

6.7. Film adjustment

The quality of the silage will depend directly on the tension and position of subsequent layers of film. Optimal forage conditions require the adequate squeeze and overlay of the subsequent layers of film. Before starting work, adjust the position of the film dispenser post according to film width, align the dispenser centre with the centre of the bale (Section 6.7.3). Next, measure the film tension (Section 6.7.1) and make adjustments if necessary (Section 6.7.2).

6.7.1 Correct film tension

The width of the film measured at the edge of the bale must be within the range shown in Table 6.

Film size [mm]	Film layer width [in]	
	55%	70%
20”	15”	17”
30”	23”	24”

Table 6 55-70% pre-tension dimensions

The pre-tension check can be done in two ways:

The first way involves measuring the film width at the bale edge and adjusting the tension until the desired narrowing is achieved, depending on the manufacturer's recommendations. The range of the L-dimension must comply with the requirements set out in Table 6.

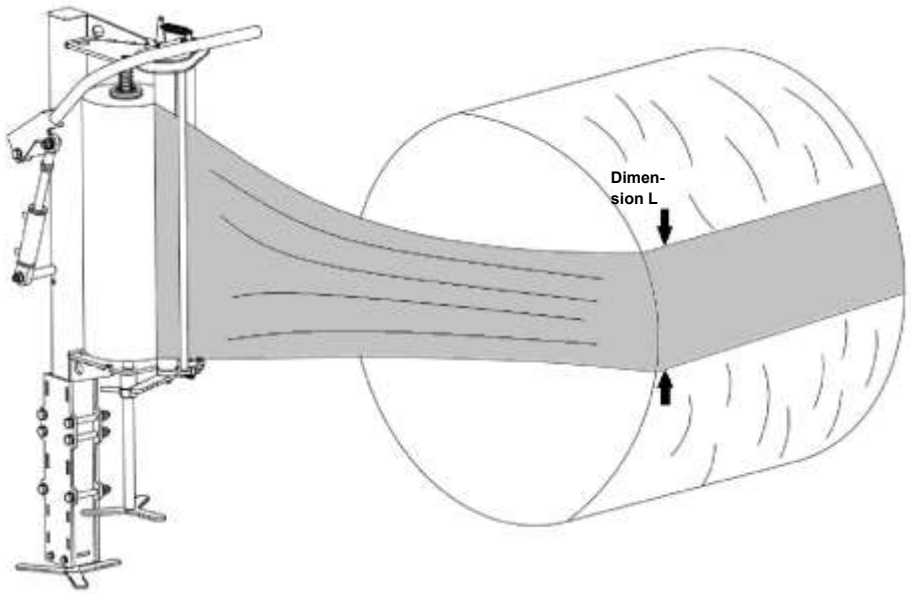


Figure 27 Tension check – method one

Method two involves drawing 2 parallel lines at a distance of 4.00” on a roll placed in the dispenser. As a result of the film stretching, the dimension should increase. The correct distance between lines at the 55-70% film pre-tension must be between 6.00” and 6.50”.

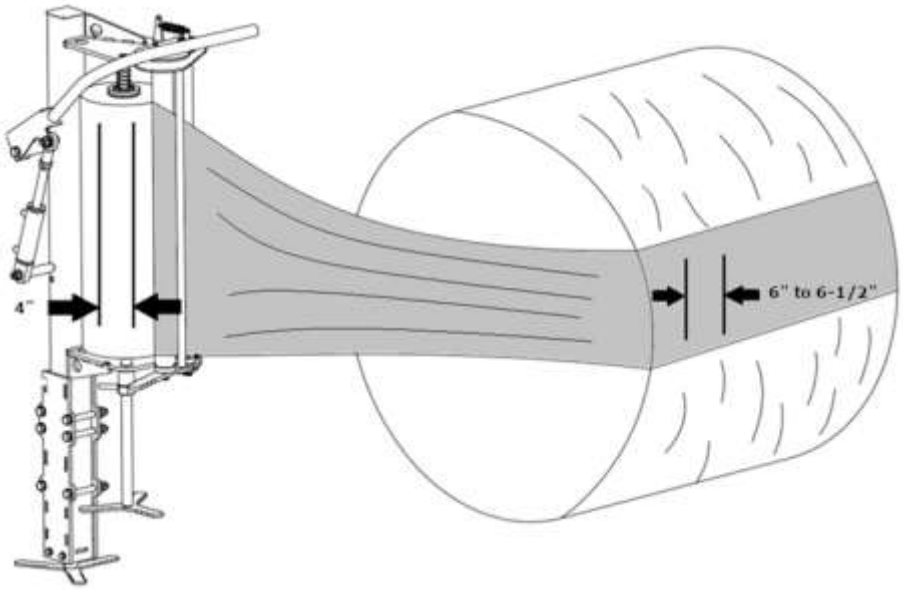


Figure 28 Tension check – method two

Caution!

The dimensions of the film are approximate and are given by the manufacturer of the 70% extensible film. Before you start operating the bale wrapper, read the film manufacturer's instructions for setting the pre-tension carefully.

6.7.2 Adjusting film tension

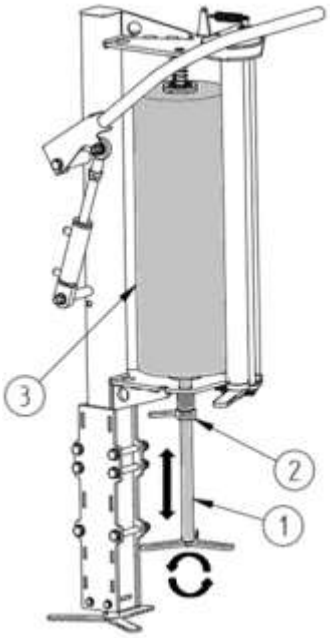


Figure 29 Film tension adjustment

(1) pressure screw, (2) jam nut, (3) film

A sequence of operations for film tension adjustment. Find out the current degree of film tension by ways described in Section 6.6.1.

1. Loosen the jam nut (2) on the pressure screw (1).
2. Adjust the screw pressure by checking the film resistance (3).
   - If the film tension is too high, lower the screw by turning the lever (1) to the left.
   - If the film tension is too weak, lift the screw by turning the lever (1) to the right.
3. Tighten the jam nut (2).
4. Check the tension of the film and repeat the procedure if necessary.

6.7.3 Adjusting film dispenser height

Because you can use different film widths and wrap bales of different diameters, it is necessary to set the film dispenser (2) at an appropriate height. The optimised dispenser position is when the centre of the film is at the same height as the centre of the bale. To adjust the height of the dispenser, use the dispenser post turn lever (1) to move the dispenser unit (2) to the optimum position (Figure 30). The dispenser height should be adjusted after the first bale is loaded.

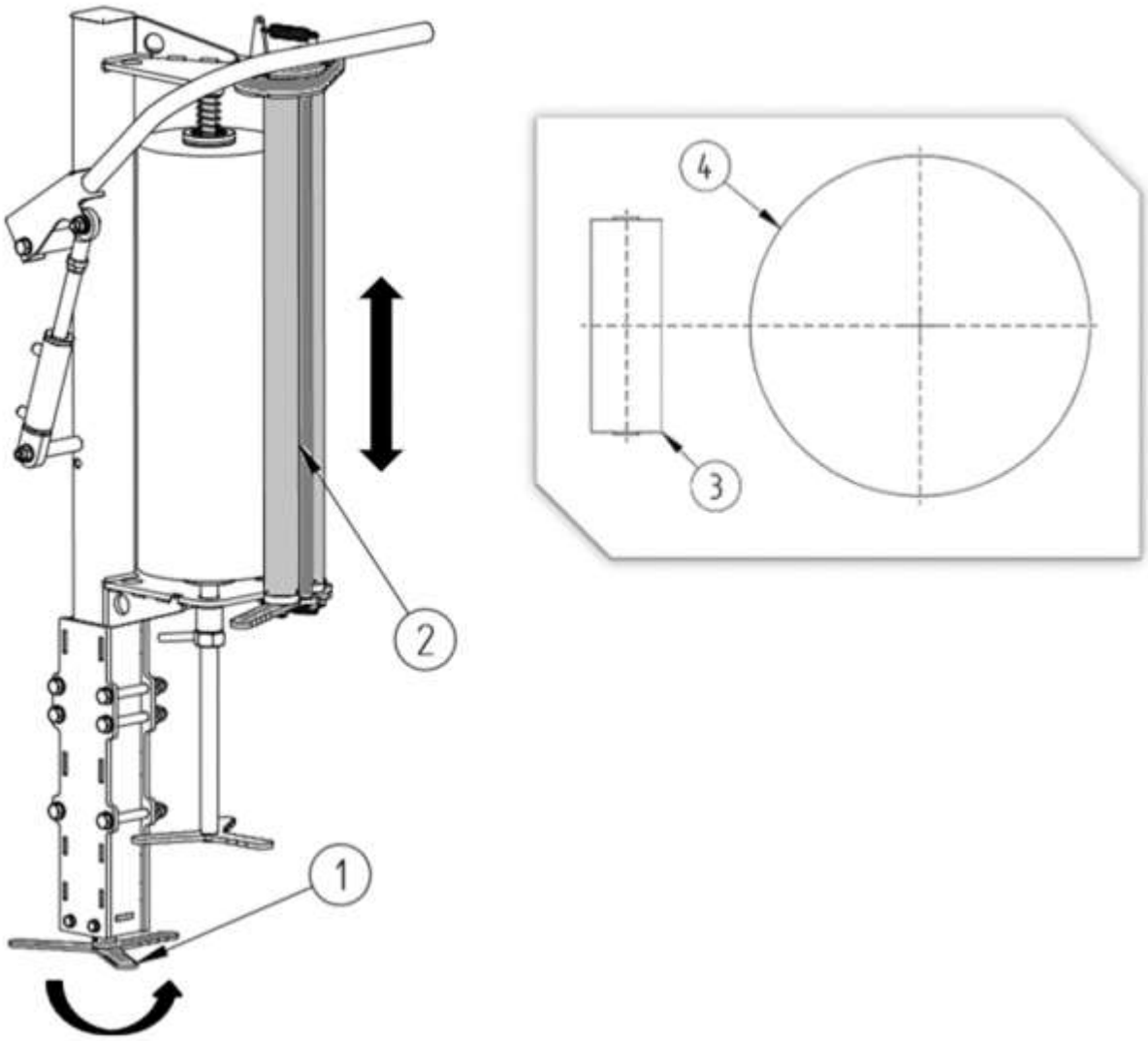


Figure 30 Dispenser height adjustment
(1) dispenser post turn lever, (2) dispenser unit, (3) film, (4) bale

6.8 Film installation

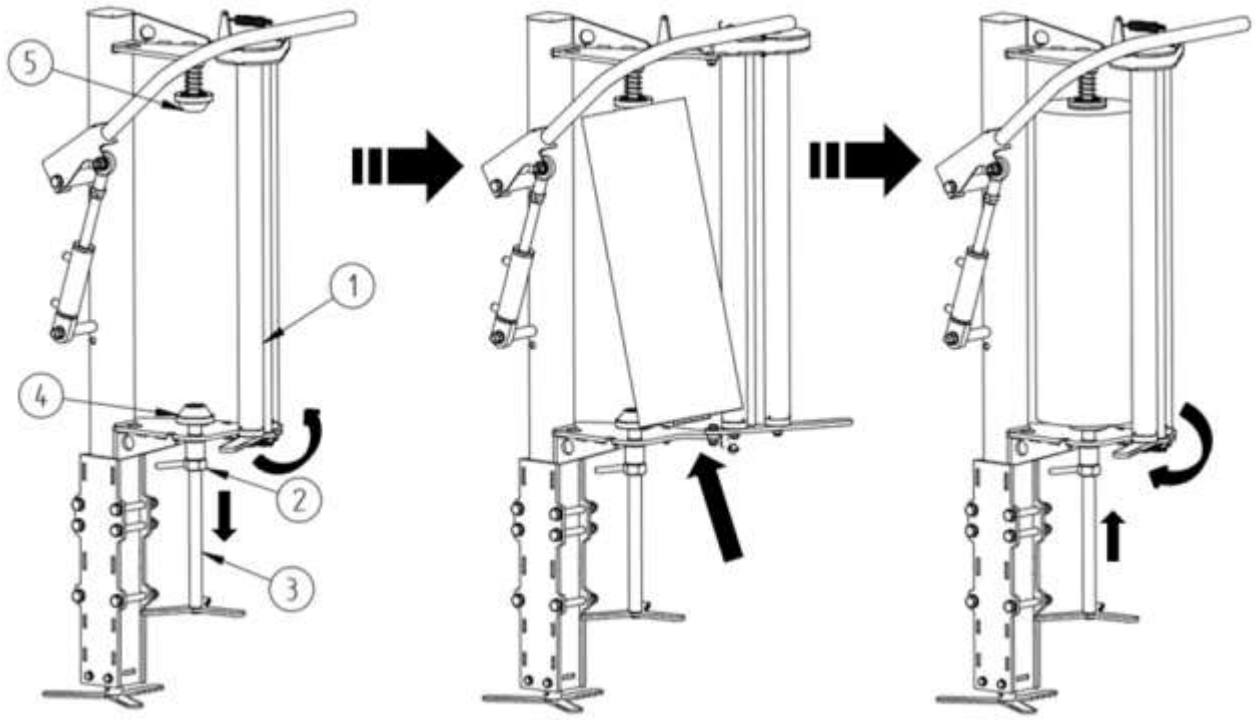


Figure 31 Film installation
(1) roller unit, (2) jam nut, (3) pressure screw, (4) lower holder cone, (5) upper holder cone

To install the film roll, follow the procedure below, maintaining the sequence:

- Clean and lubricate the roller unit (1) of the dispenser using silicone spray.
- Swing the roller unit (1) out.
- Loosen the jam nut (2).
- Lower the lower holder cone (4) by removing the pressure screw (3).
- Position the film roll onto the holder cones (4) and (5), starting from the upper cone (5).
  - The roll must be aligned with the cone centreline.
- Move the lower holder (4) by screwing the screw (3) upwards.
- Secure the position of the pressure screw (3) with the jam nut (2).
- Unroll the initial section of the film.
- Turn the roller unit (1) in such a way that one of them rests on the film.
- Thread the section of film you unrolled through the rollers according to the diagram shown on the dispenser decal

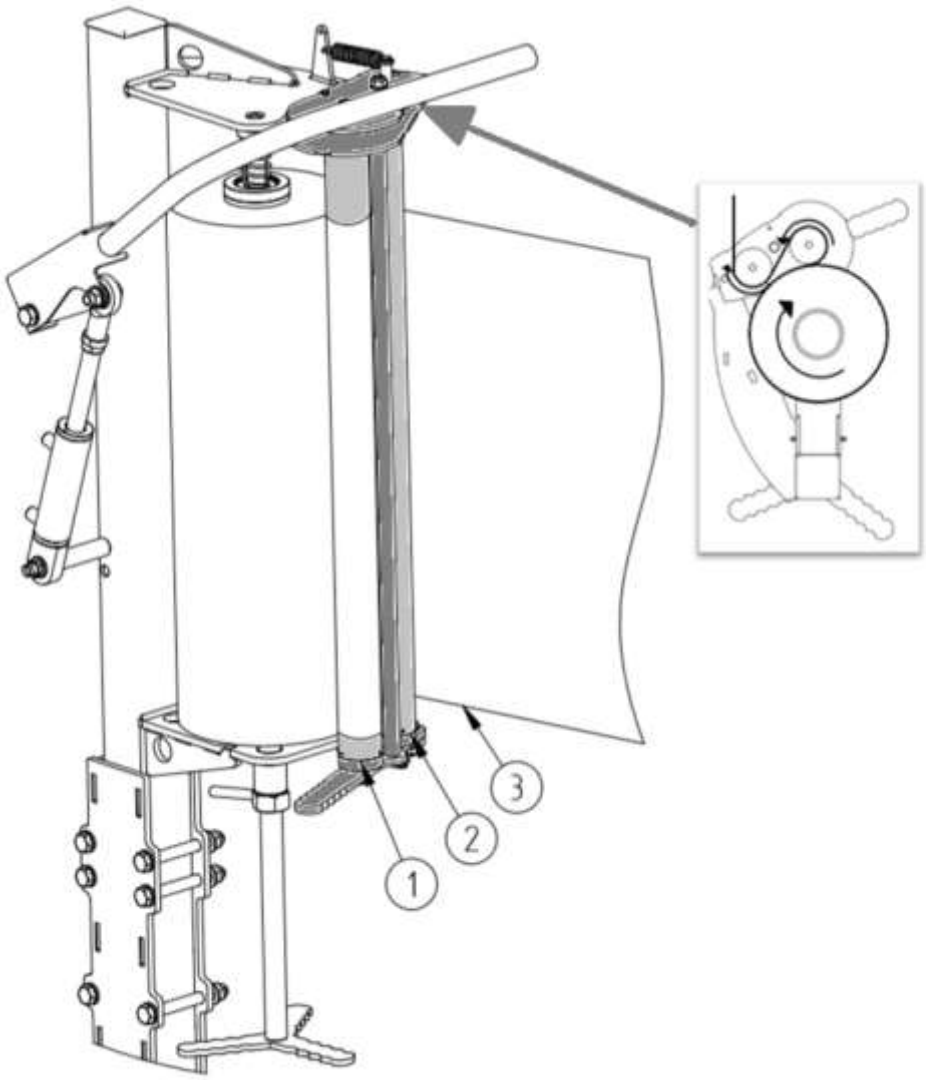


Figure 32 Film threading direction
(1) roller I, (2) roller II, (3) film

Threading the film must follow the direction shown in Figure 31. When mounted correctly, the film (3) is unwound to be wrapped around roller I (1) first, and then routed behind roller II (2) and tied on the first bale to be wrapped.

For installing the 30” wide film you need to adjust the film dispenser to this type of rolls. The use of the wider film requires changing the gear ratio of the turntable. For details, refer to Section 7.5.

7. Technical servicing

7.1. Adjusting the chain tension of the rotary frame

You can access the rotary frame chain after lifting and securing the actuator of the turntable slide base.

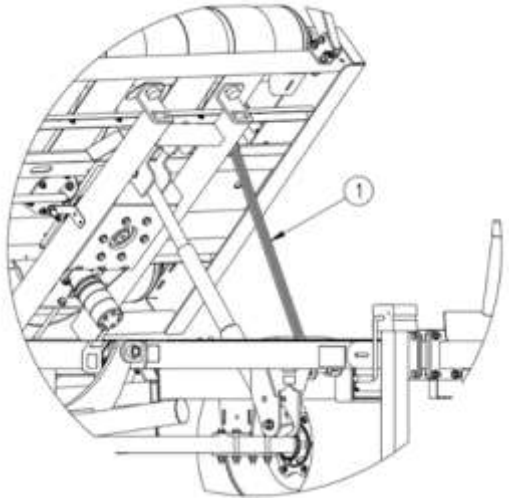


Figure 33 Locking the rotary frame

Caution!

All maintenance works must be carried out with the rotary frame locked with a rod. Turn off the engine of the vehicle and secure it against rolling down.

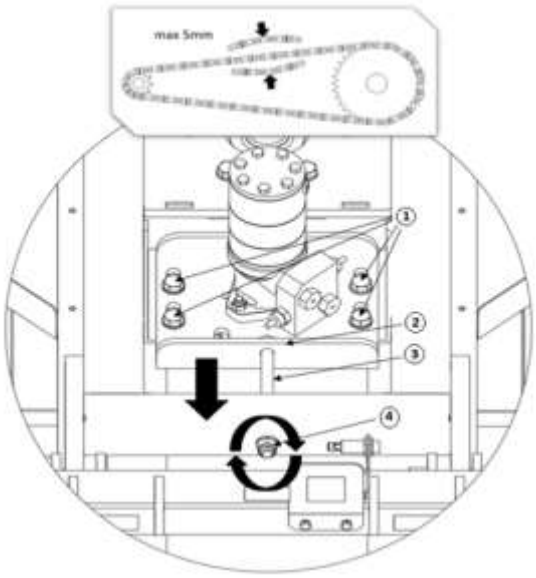


Figure 34 Adjusting the chain tension of the rotary frame

(1) bolts, (2) motor plate, (3) tensioner screw, (4) tensioner nut

Follow the procedure for tensioning the chain of the rotary frame:

1. Loosen the bolt nuts (1) of the motor plate (2) size 24 wrench – Figure 34.
2. Use the screw (3) and nut (4) to adjust the chain tension.
   - The chain tension is increased by turning the tensioning nut clockwise using a size 24 wrench.
3. Chain tension check.
   - Measure the deflection in half the length, with the correct value in the range of 3 to 5 mm.
4. Fix the motor plate (2).
5. Fold the protection rod and lower the table.
6. Carry out the test start of table rotation.

Note that the table movement should be smooth, without jamming or unnatural gear noise.

The first adjustment should be made after 20 cycles, and then check every 200 cycles. The chain tension must always be checked if the gear is not working properly or noisy.

If chain tension adjustment does not bring the desired effect, it may indicate wear (excessive stretch) of the chain, which is a normal sign in this type of drives. In this case, replace the chain with a new one.

7.2. Adjust the tension of the table roller chain

You can access the table roller chain by removing the cover on the outside of the rotary frame.

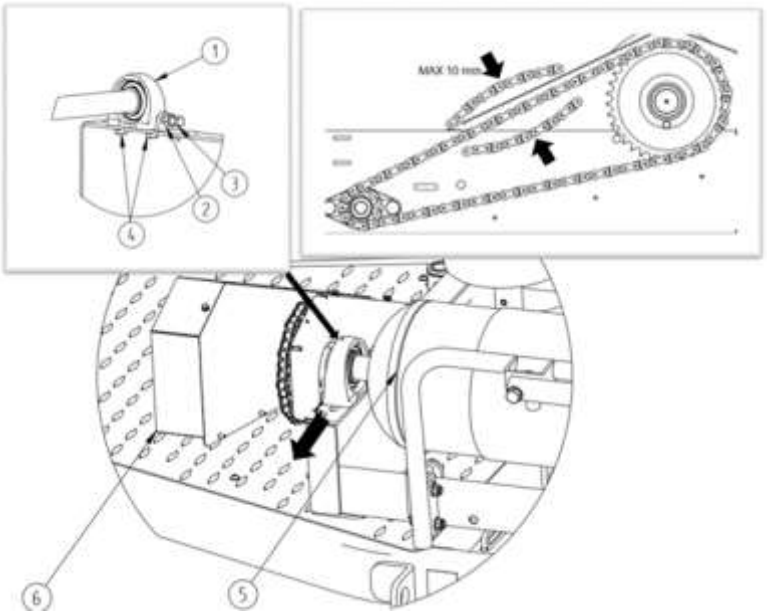


Figure 35 Adjusting the chain tension of the table roller gears

Follow the procedure for tensioning the chain of the table rollers:

1. Remove the chain guard using a size 3 Allen wrench.
2. Check chain tension in half the length - If deflection is more than 3/8”, make adjustments.
3. Loosen the bearing fixing nuts on the driving table roller (size 21 wrench).
4. Loosen the jam nuts on the adjustment screw (size 19 wrench).
5. Screw in the screw to move the bearings away until the required chain tension is reached while ensuring a uniform setting is achieved.
6. Once the correct tension is achieved on the chain, tighten the bearings starting from the one on the sprocket side.
7. Tighten the jam nuts.
8. Reinstall the chain guard.
9. Check rubber belt tensions and make adjustments if necessary.

Caution!

Check the tension of the table rollers’ chain after 20 cycles, and then every 200 cycles, as well as when replacing bearings or sprocket of the driving table roller.

7.3. Adjusting the bale tipper

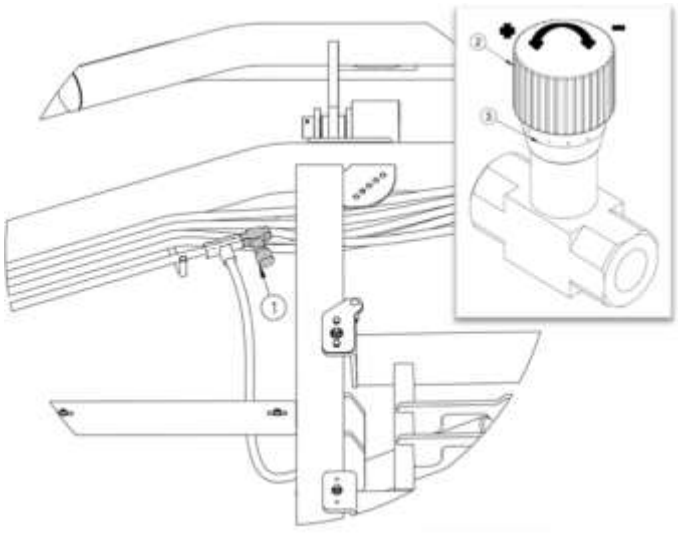


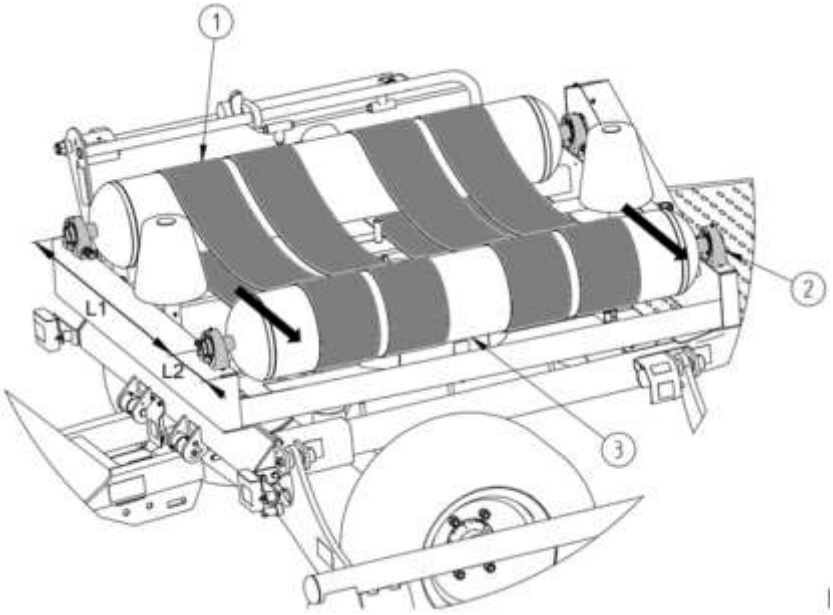
Figure 36 Adjusting the bale tipper dropping speed
(1) flow controller, (2) controller knob, (3) scale

Turn the controller knob to increase or decrease the speed of the cradle drop of the tipper. The bale tipper is lifted at a constant speed and the speed does not depend on the controller setting.

Turn to the right (-) to reduce the speed of the drop.
Turn to the left (+) to increase the speed of the drop.

7.4. Adjusting the tension of the belts

The belts (1) are subject to stretch in the course of the bale wrapper's use. When their lower position is visibly evident, you must adjust the tension.



Follow the procedure for tensioning the belts:

1. Loosen the bearing nuts (2) which lock the idle table roller (size 21 wrench).
2. Move the bearings of the idle table roller outwards, as per the arrows (size 19 wrench).
3. Tighten the bearings which hold the roller in place.
4. Check the L1 distance on both sides of the table rollers.
5. Check the L2 distance on both sides of the table rollers.
    - If the distances L1 and L2 on both sides are equal, this means that the table rollers are positioned correctly, i.e. parallel to each other, which extends the life of the belts.
    - If the distances L1 and L2 are different, the bearing position must be readjusted.

6. The adjustment of the driving table roller must be carried out in the same way, considering the chain tension (see Section 7.2).

CAUTION!

If the stretch of the belts is greater than the adjustment range, the belts must be replaced.

All repairs, adjustments and maintenance works must be carried out when the machine is stationary and secured.

7.5 Changing film width

The bale wrapper can be adjusted to suit the widths of 20” and 30”. This requires changing the ratio on the chain drive of the table roller assembly (Figure 38) and adjusting the lower roll holder of the movable bracket in the film dispenser (Figure 39).

7.5.1 Changing the chain transmission ratio of the driving table roller

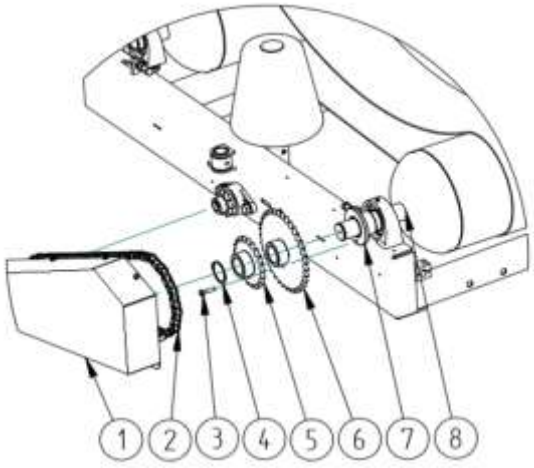


Figure 38 Dismantling the table roller's sprocket
(1) guard, (2) chain, (3) lock screw, (4) circlip, (5) Z-21 sprocket (**standard**), (6) ***Z-35 sprocket (optional)***, (7) hub, (8) driving table roller
(Note: Item 6 is shown in Fig. 38 for reference only and not standard. It is included in Kit TW18264.)

Follow the procedure for changing the chain transmission ratio of the table roller:

1. Stop the tractor and engage the parking brake to prevent movement.
2. Remove the chain guard (1) – size 3 Allen wrench.
3. Find out which of the settings is currently on the bale wrapper.
   - The bale wrapper is set up at the factory to accept 30" film as standard.
   - A kit is available to convert the bale wrapper to accept 20" film and must be ordered separately. (See page 117.)
   - Chose the correct sprocket according to the film width you are using. See Table 7 on page 56.
   - If the sprocket needs to be changed, proceed with the following;
   - If the sprocket does not need to be changed, check the chain tension and attach the guard.
4. Loosen the bearing fixing nuts (size 21 wrench) and the bearing adjustment screw (size 19 wrench) in the driving table roller (8).
5. Remove the drive chain (2).
   - Find the connecting link;
   - Unfasten the lock of the connecting link;
   - Pull out the pin connecting the link plates.
6. Remove the circlip (4).
7. Remove the retaining screw (3) using a size 13 wrench.
8. Remove the sprocket to be replaced.
   - Use an appropriate size bearing puller to dismount the sprocket.
9. Fit the sprocket (5) or (6) depending on the width of the film, as required in Table 7
10. Screw in the lock screw (3) connecting the wheel to the hub (7) with a size 13 wrench.
11. Attach the circlip (4).
12. Mount the chain according to the number of links given in Table 7.
    - The length of the chain is adjusted by adding or removing additional links.
13. Adjust the chain tension (Section 7.2) and remember to tighten the bearing and counter screw.
14. Fit the chain guard (size 3 Allen key).

Film width [mm]	Number of chain links [-]	Number of sprocket teeth [-]
20” (optional)	43	35
30” (standard)	39 - 40	21

Table 7 Choosing a sprocket and chain length according to film width

7.5.2 Changing the lower holder position of the film dispenser post

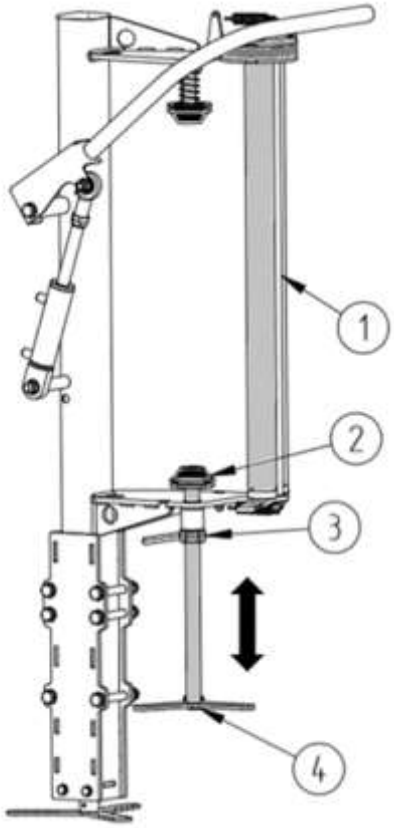


Figure 39 Adjusting the film height settings
(1) film dispenser, (2) bottom holder, (3) jam nut, (4) pressure screw

Changes in the holder position are made when a new roll of film is installed or when it is necessary to adjust the film tension. To do this, push back the film dispenser (1), loosen the jam nut (3), then adjust the holder position (2) with the screw (4). After checking the correctness of the tension of the film, secure the position of the screw (4) against unscrewing with the jam nut (3).

7.6 Maintaining the running axle

Have all replacement, repair or adjustment of the running axle parts carried out by professional workshops having all appropriate technical tools and qualifications to perform this type of works.

The User's responsibility is to:

- Monitor air pressure,
- Assess the technical condition of the wheels and tires,
- Ensure the wheels are tightened properly,
- Check the running axle bearings for play and adjust if necessary.

Work to be assigned to specialist workshops are:

- Replace grease in the bearings of the running axle,
- Replace the bearings, hub seals.

7.6.1 Checking the running axle bearings for play

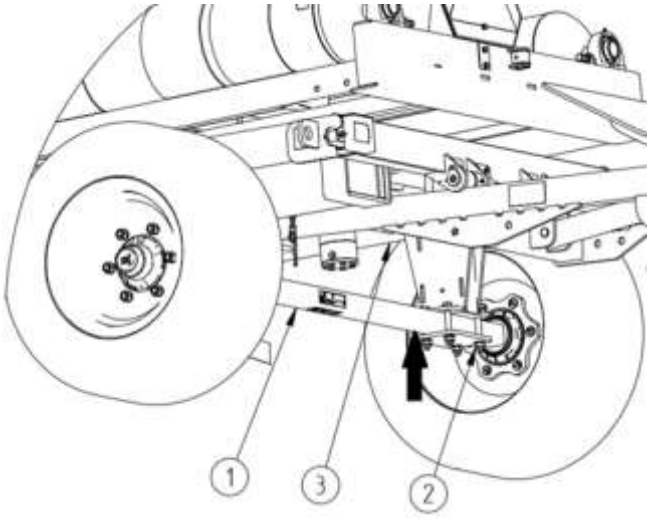


Figure 40 Jacking points

Running axle, (2) bolt, (3) bottom frame

Preparatory activities:

- Connect the bale wrapper to the tractor, engage the tractor’s parking brake to prevent any movement.
- Drive the tractor and the bale wrapper to solid and even ground.
  - Set the steering of the tractor for a straight ride.
- Place wedges under the bale wrapper's wheel. Make sure that the machine does not roll during the check.
- Lift the wheel on the opposite side of the chocks.
  - The jack must be placed next to the bolts (2) which fix the axle (1) to the bottom frame (3), see Figure 40. Recommended jacking points are indicated by an arrow. The jack has to match the bale wrapper's kerb weight.

Check the running axle bearings for play

- By rotating the wheel slowly in two directions, check if the movement is smooth and the wheel rotates without excessive resistance or jamming.
- Move the wheel to rotate very quickly to check for unnatural sounds from the bearing.
- Grip the wheel's upper and lower end to try to feel if there is play.
  - You can use a lever placed under the wheel, with its other end resting on the ground.

A damaged or missing hub cap will let dirt and moisture penetrate the hub, resulting in much faster wear of bearings and hub seals. Bearing service life depends on the conditions the bale wrapper is operated in, load, vehicle speed and lubrication conditions.

If play is perceptible, the bearings must be adjusted. Unnatural sounds from the bearing can be signs of excessive wear, contamination or damage. In such case, the bearing, together with the sealing rings, must be replaced with new ones or cleaned and lubricated again. Check the condition of the hub cap and replace it if necessary. The bearing play check can only be carried out when the bale wrapper is connected to the tractor. Ensure there is no load on the machine.

Checking the running axle bearings for play:

- after riding the first 600 miles,
- before any intensive use of the bale wrapper,
- every 6 months of use or after riding 15,000 miles.

Before starting work, read the instructions manual of the jack and follow the manufacturer’s guidelines. The jack must stand stable on the ground and against the running axle. Make sure that the bale wrapper does not roll during the check for play in the running axle bearings.

7.6.2 Removing play in the running axle bearings

Preparatory activities

Follow the procedure in Section 7.5.1 to prepare the tractor and the bale wrapper for adjustment

Removing play in the running axle bearings

Remove the hub cap (1), see Figure 41
Remove the locking pin (3) which secures the castle nut (2).
Tighten the castle nut to remove play.
- The wheel should turn with slight resistance.

Loosen the nut by at least 1/3 turn to line up the nearest groove of the nut with the hole in the running axle stud. The wheel should turn without any excessive resistance
- The nut must not be over-tightened. Over tightening is not recommended due to the worse bearing operation.

Secure the castle nut with a spring locking pin and fasten the hub cap.
Tap the hub gently with a rubber or wooden hammer.

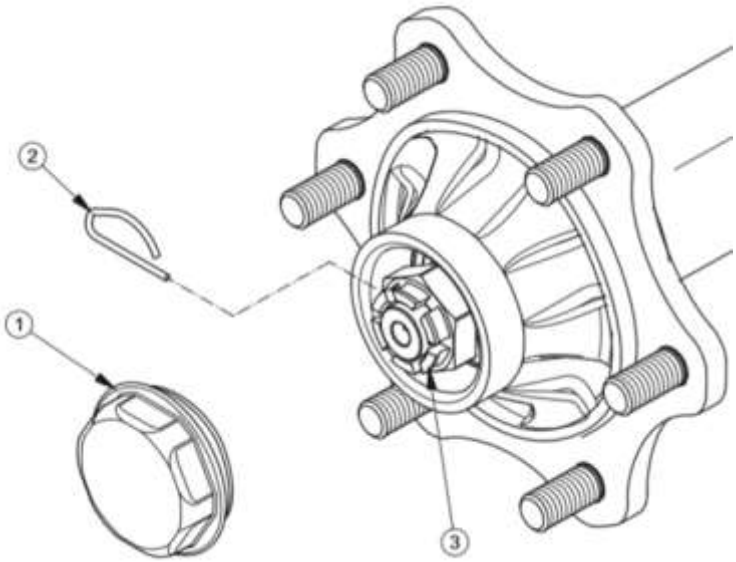


Figure 41 Adjusting the running axle bearings

(1) hub cap, (2) castle nut, (3) cotter pin

The wheel should rotate smoothly, with no jamming or resistance. The bearing play adjustment can only be carried out when the bale wrapper is connected to the tractor and is not loaded.

If the wheel is dismounted, it is easier to check and adjust the bearing play.

7.6.3 Mounting and dismantling wheel, checking nuts for tightness

Dismantling the wheel

- Put wedges under the wheel that will not be dismantled.
- Make sure that the bale wrapper is properly secured and will not roll when the wheel is dismantled.
- Loosen the wheel nuts according to the order shown in Figure 42.
- Place the jack under and lift the bale wrapper.
- Remove the wheel.

Mounting the wheel

- Clean the studs of the running axle and the nuts from dirt.
  - Do not lubricate the nut and stud threads.
- Inspect the technical condition of the studs and nuts and replace them if necessary.
- Put the wheel on the hub, tighten the nuts so that the rim fits tightly against the hub.
- Lower the bale wrapper, tighten the nuts according to the recommended torque and the order shown in Figure 42.

Tightening the nuts

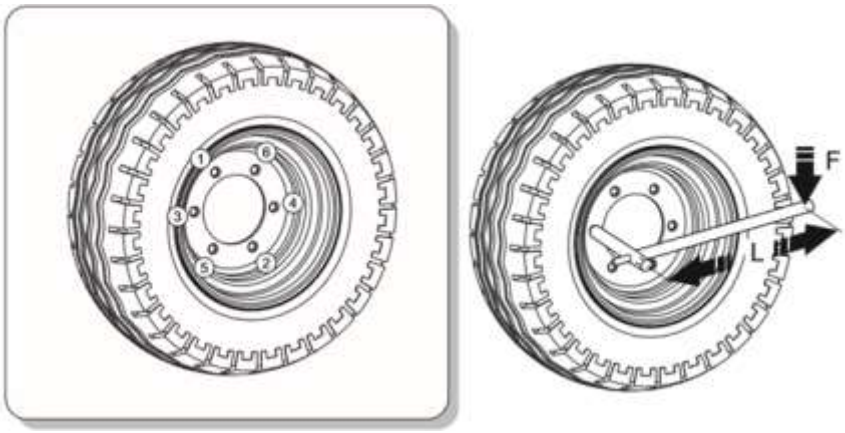


Figure 42 Nut tightening order

(1) - (6) nut tightening order, (L) length of wrench, (F) weight of user

The M18x1.5 wheel nuts should be tightened with a torque of 200 ft lbs.

Use a torque wrench to gradually tighten the nuts, alternating them diagonally in several steps, until the required torque is reached. In the absence of a torque wrench, a normal spanner can be used. The wrench arm (L), Figure (42), should be selected to suit the weight of the person (F) who tightens the nuts. Please note that this tightening method is not as precise as when using a torque wrench.

Check the tightening of the wheels of the running axle:

- after the first time you use the bale wrapper,
- after the first run with a load,
- after riding the first 600 miles,
- every 6 months of use or every 15,000 miles.

In the case of intensive use, the check should be carried out at least every 60 miles. Repeat the whole procedure if the wheel was disassembled.

The nuts of the running wheels must not be tightened with impact wrenches, as there is a danger that the permissible tightening torque may be exceeded, resulting in the break of fastener's thread or the hub stud. The highest tightening accuracy is achieved with a torque wrench. Before you start tightening, make sure that the correct tightening torque is set.

Torque Value Wheel Nuts	Body Weight	Arm Length
200 ft. lbs.	200 lbs.	12.00"
	170 lbs.	14.00"
	150 lbs.	16.00"
	130 lbs.	20.00"

Table 8 Wheel tightening torque

7.6.4 Checking air pressure, assessing the technical condition of tires and steel rims.

A tire pressure check must be carried out each time a wheel is changed and at least once a month. In case of intensive use, it is recommended to check the air pressure more often. The bale wrapper must be unloaded at such time. The check should be carried out before driving, when the tires are not warmed up, or after a prolonged standstill.

Damaged tires or rims can cause a serious accident.

When checking the pressure, pay attention to the condition of the rims and tires too. Look closely at the tire side surfaces, check the tread condition. In case of mechanical damage, consult your nearest tire service centre and check if the defect qualifies for a replacement. Rims must be checked for deformation, material cracks, weld cracks, corrosion, especially in the weld area and the contact with tires. The technical condition and proper maintenance of the wheels significantly extend the service life of these components and ensures an appropriate level of safety for the users of the bale wrapper.

Pressure control and visual inspection of steel rims:

- every 1 month of operation,
- every week for intensive use,
- if required.

8. Control system

The dedicated control for the bale wrapper consists of:

- an electrical box (mounted on the bale wrapper);
- wire set;
- sensors;
- control unit.

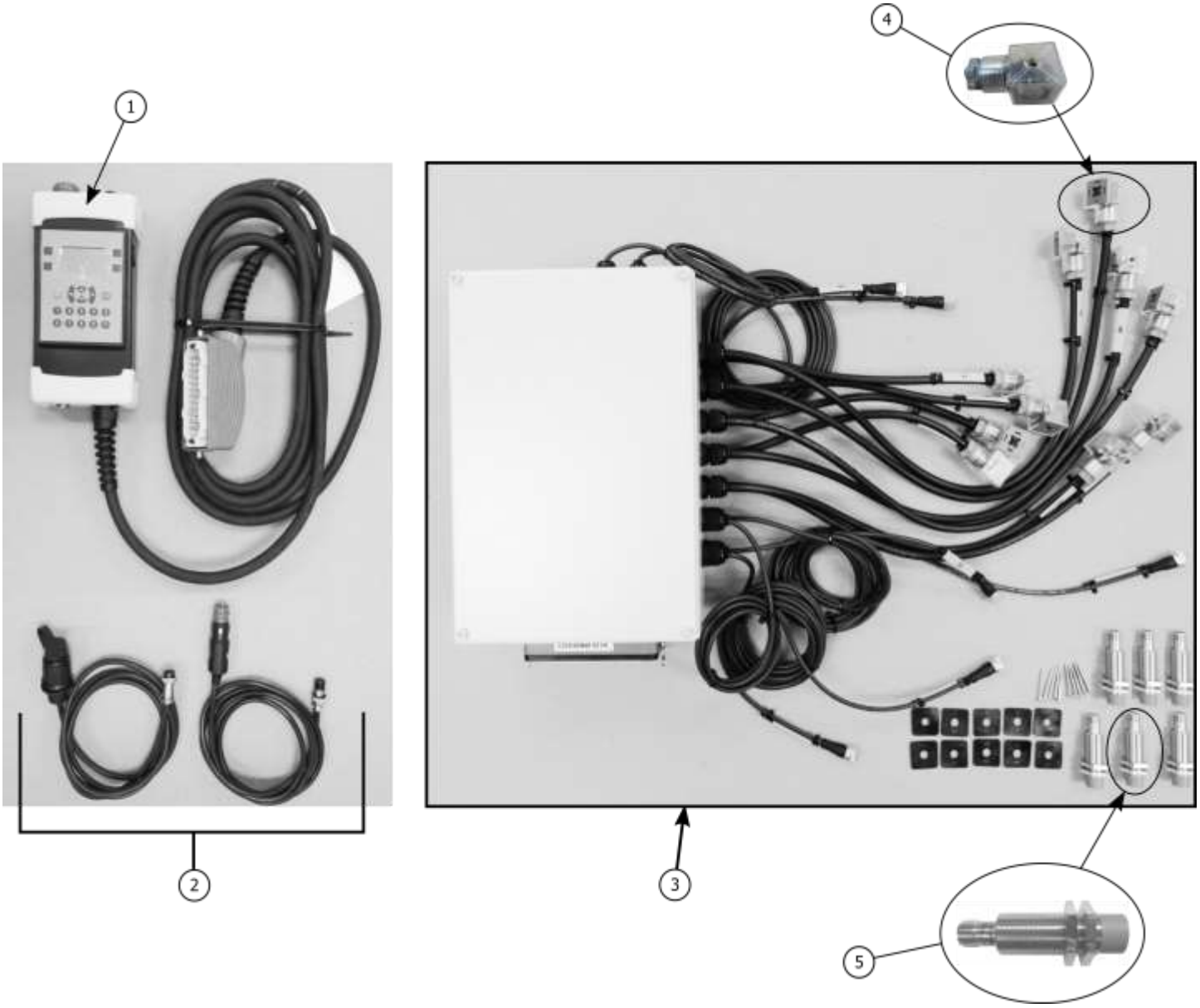
Connection of the control unit requires the H24 communication cable to be plugged into the box located on the bale wrapper, as per the procedure in Figure 15 and Section 5.3.5. The next step is to connect the power cable of the control unit to the tractor power supply.

CAUTION!

Before connecting electrical cables, make sure that they are not damaged and secure them properly, if necessary.

Figure 43 Control unit

(1) emergency push button, (2) fuse 10 A, (3) display, (4) display buttons, (5) control buttons, (6) power cable, (7) control cable



Replacement Parts

Item	Part #	Description	Qty.
1	TW18277	Hand held remote	1
2	TW18278	Cable set for electricity (set of two cables)	1
3	TW18279	Panel box (complete with panel box, cables, cable ends & sensors)	1
4	TW18280	Electric plug	10
5	TW18042	Inductive loading sensor/unloading sensor	6

Note: TW18280 Electric plug & TW18042 inductive loading sensors are included with TW18279, Panel box. These parts can be purchased separately.

8.1.1 Description of functions of the control unit

NO.	KEY	DESCRIPTION
1		Confirms selection
2		Cancels selection and exits the selected screen
3		Moves cursor up
4		Moves cursor down Inserts a dot
5		Moves cursor left
6		Moves cursor right
7		Raises the bale lift Enters “1”
8		Lowers the bale lift Enters “6”

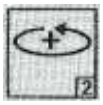
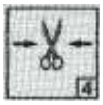
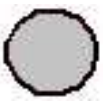
8		Lowers the bale lift Enters “6”
9		Starts wrapping Enters “2”
10		Moves the frame in the opposite direction Enters “7”
11		Tilts the table – bale unloading Enters “3”
12		Lowers the table Enters “8”
13		Cuts and holds the film Enters “4”
14		Releases the film Enters “9”
15		Goes to the menu Enters “5”
16		Lists recent faults Enters “0”
17		Display keys

Table 9 Description of functions of the control unit

8.2. Operating modes

The bale wrapper can be controlled using one of three modes:

- **AUTO mode**
  Select the “AUTO” mode to perform all the movements of individual sections in one full cycle after pressing the start.
- **SEMI-AUTO mode**
  Select the “SEMI-AUTO” mode to operate the machine in two ways. In the first one, you click on the selected control signal for the operation to take place automatically and once finished, wait until you input another signal to be executed. The individual sections are executed separately after they are started. In the other one, you hold down the button for the operation to be carried out until the button is released. The operation is terminated at any time after removing the finger from the button.
- **MANUAL Mode**
  In the “MANUAL” mode, all operations are confirmed by the operator who holds down a control button for the section required. Removing your finger from the button terminates the operation of the section.

8.3. Control panel operation

The control unit is switched on automatically as soon as the power is connected. The screen will display the start sequence, the name of the company with the address, and when finished, a message prompting to confirm that the bale lift lock has been removed, see Section 6.4 Figure 21.

Caution!

It is forbidden to operate the lift actuator with the lift lock on, as it can cause damage to the machine.

Once the lift lock is removed and confirmed, the main screen with basic information is displayed.

Depending on the selected operating mode, the main screen can vary slightly:

- Automatic mode screen

Current operation

Resetting number of rotations

Number of rotations completed

Setting the number of rotations

Stopping the operation

Number of rotations set

Starting the cycle

- Semi-Auto mode screen

Semi-Auto

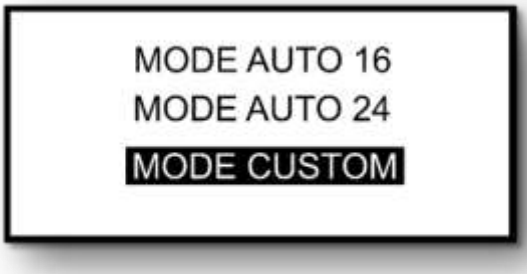
Resuming the operation of the section after the stopping

Moving the rotary frame to the next sensor position

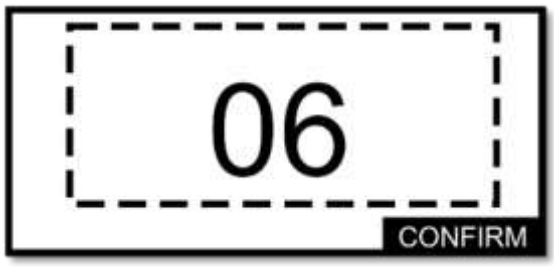
8.3.1 AUTO mode

Select the “AUTO” mode to perform all the movements of individual sections in one full cycle after pressing .

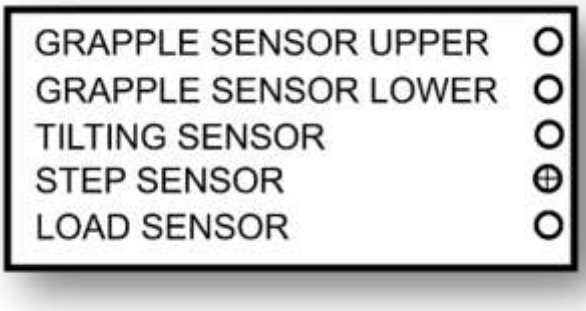
After selecting the display key ROTATIONS , you can change the number of bale wraps to 16, 24 or choose custom number of turns. To execute a change, set the selected quantity using the arrows and confirm with .



By selecting a custom mode you will move to another screen where after pressing Enter you can use the arrows ← → to indicate the number to be changed, and the arrows ↑ ↓ to change its value. Confirm the resulting Enter number using and press the screen key CONFIRM to change the number of turns setting.



The execution of the individual operations depends on protections, the function of which is performed by the sensors. If executing an action is not possible, it will be indicated by a message informing about the positions of the sensors.



If the display shows that a section is not in a position declared for its sensor, the controller will prevent the operation of the section until it is correctly set.

8.3.2 SEMI-AUTO mode

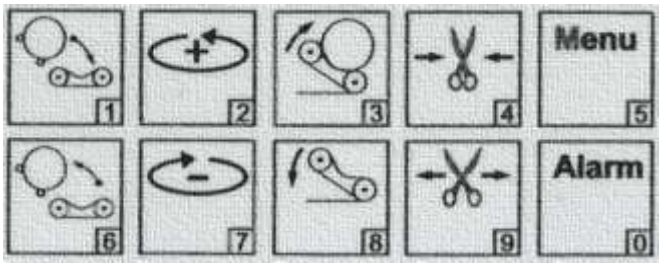
Select the “SEMI-AUTO” mode to operate the machine in two ways. First one involves touching a chosen control signal. This activates an automatic operation and once completed, pauses to wait for the next signal to be executed. The individual sections are executed separately after they are started. The other way involves holding down the button for the operation to be carried out until the button is released. The operation is terminated at any time after removing the finger from the button.

In order to facilitate the work for the operator, the screen comes with a positioning key POSITION. Select it to rotate the rotary frame to move it to the next sensor in an counter-clockwise direction. Pausing or stopping the operation will pause the counting of wraps and using the key will resume it.

8.3.3 MANUAL Mode

In the “MANUAL” mode, all operations are confirmed by the operator who holds down a control button for the section required. Removing your finger from the button terminates the operation of the section.

Keys for controlling sections:



Manual control screen:

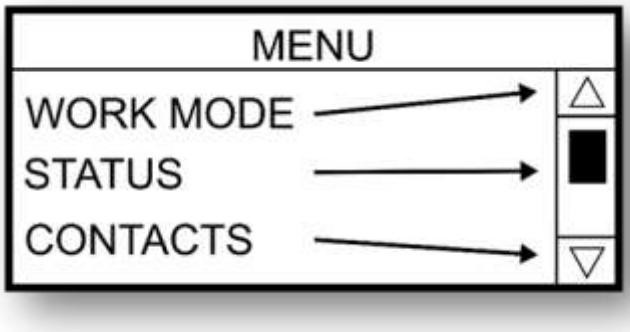
In Manual mode, you can set the speed of the machine from the screen. Change the speed by selecting the screen key SPEED , and then use the keys to move the cursor and select the desired speed; to confirm, touch

The selection of the setpoint speed applies to all sections altogether.

8.4 Menu

By selecting on the panel Menu , you access basic settings to be changed and more information. It is available only after the syste stopped.

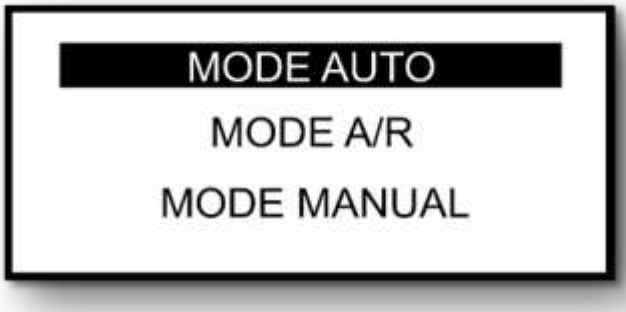
Menu screen:



To enable the selection of options in this mode, press the key, and then use the arrows to select the items, and press to confirm.

8.4.1 Changing the operating mode

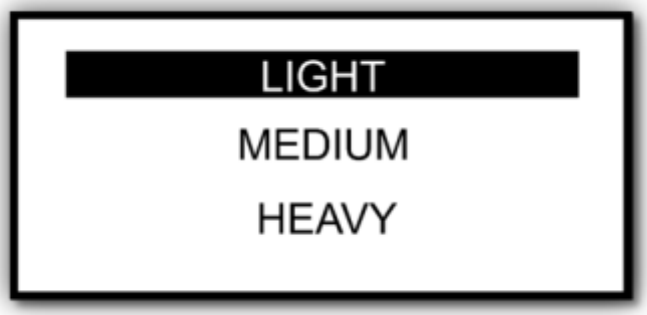
To change the operating mode Menu, move to the menu by pressing and highlight the cursor Enter by pressing ; use arrows to select the “Operating Mode” item and touch ↑ ↓ to confirm Enter.



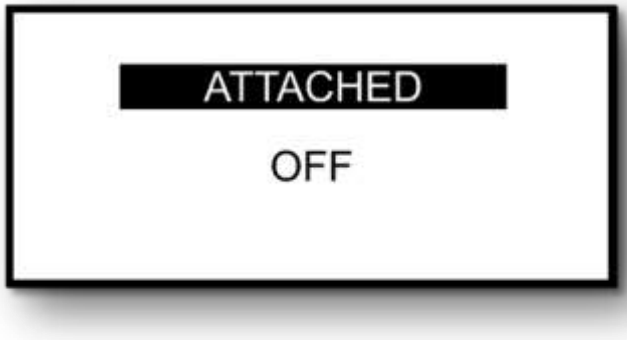
8.4.2 Changing the bale weight

To change the bale weight, move to the menu by pressing Menu and highlight the cursor by pressing Enter ; use arrows to select the “Wrapper” ↑ ↓ item and touch to confirm Enter. You can choose weight in the following ranges:

- “Light” up to 300 kg;
- “Medium” from 300 kg to 600 kg;
- “Heavy” over 600 kg.



It is possible to set the bale weight only when the adaptation feature is disabled.



When enabled, the adaptation feature automatically adjusts the parameters to the operator's selected operating speed, regardless of the bale weight.

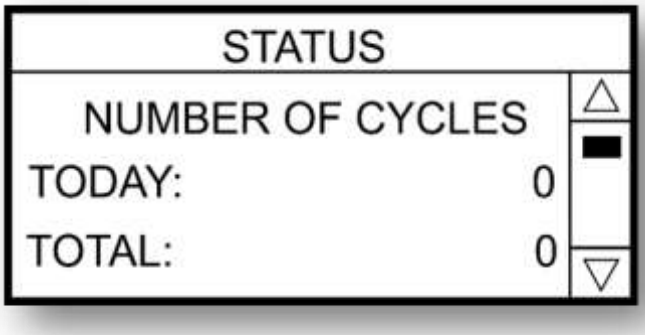
8.4.3 Statistics

To view or restart the Statistics, move to the menu by pressing Enter and highlight the cursor by pressing Menu; use arrows to select the “Status” item and touch to confirm Enter. The information in statistics may be restarted to obtain a new measurement. The tab contains information about:

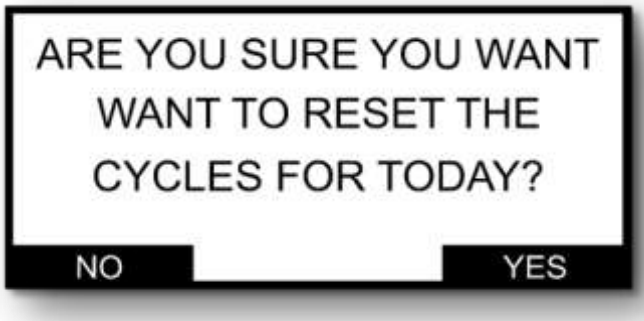
- the number of bales wrapped on a given day and all the bales the machine has ever wrapped.

After selecting the restart, only the day's count of bales can be reset. Confirm the restart with the key on the screen.

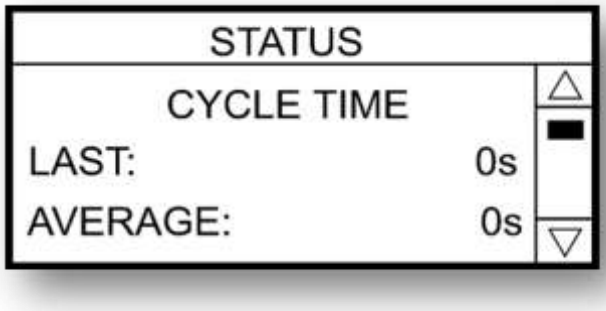
The number of cycles completed on a given day and all the cycles the machine has ever completed.



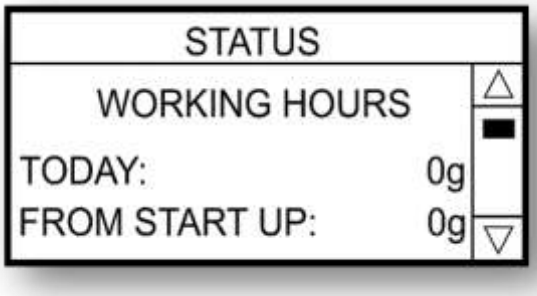
After selecting the restart, only the day's count of cycles can be reset. Confirm the restart with the key on the screen.



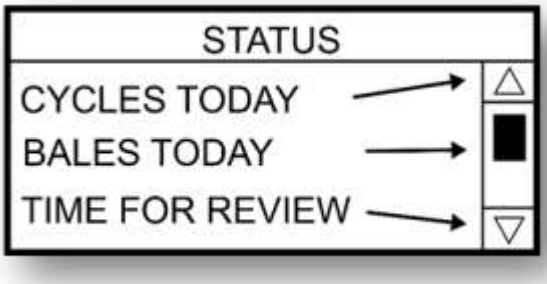
Cycle times



The average time from the last 5 complete cycles is given.



Time left before inspection



An approximate time before the next machine inspection is also given.

Carrying out the inspection will require the timer to be restarted for the next inspection.

Confirming the inspection requires a service password.

8.5 Changing speed in automatic and semi-automatic modes

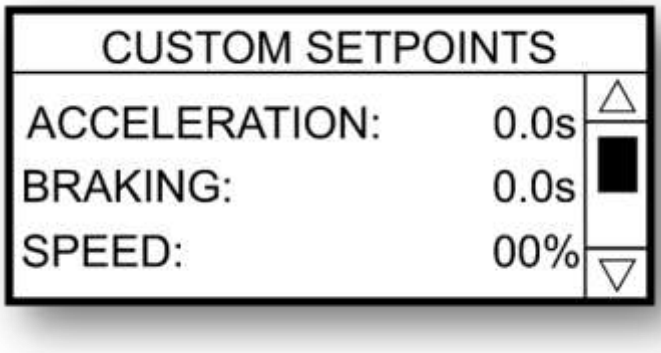
You can change the speed over 3 basic settings: slow, medium, fast, or choose custom settings.

Changing the speed in AUTO and Auto/Manual modes to custom settings requires a password.

Entering a password and confirming involves the risk of exceeding the safe operating speed of the machine, so it is forbidden for an unauthorised person to change parameters.

Caution!

The manufacturer's approval is required for changing the setpoints on your own.



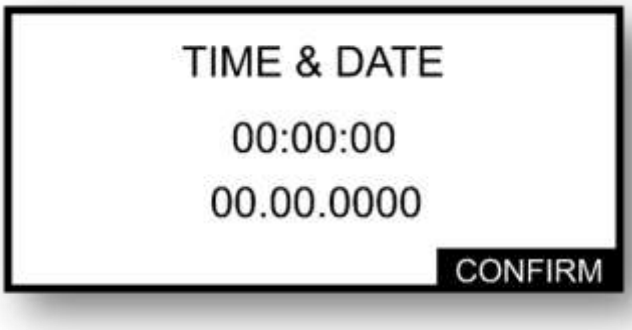
Custom mode setpoints.

8.6. Contact details

To view the contact details, move to the menu by pressing Menu and highlight the cursor by pressing Enter ; use arrows to select the “Contact” item and touch to confirm Enter . The screen will then display the name of the machine manufacturer, the country of origin and the contact telephone.

8.7 Date and time settings

To set the date and time, move to the menu by pressing Menu and highlight the cursor by pressing Enter ; use arrows to select the “Time & Date” item and touch to confirm Enter . The highlighted cursor will hover over the items, and if you need to adjust them, touch Enter , use arrows to select a digit to be changed and indicate its value using arrows or selecting the numbers from the control keys. Press to confirm the resulting values, and use to confirm the final setting.



8.8. Choosing the language

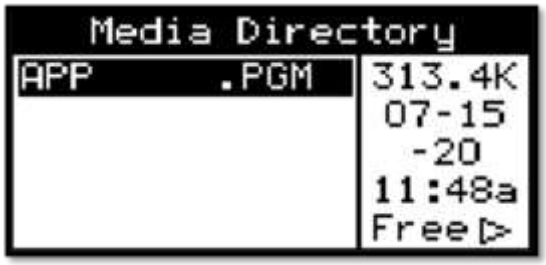
To choose the language, move to the menu by pressing Menu and highlight the cursor by pressing Enter ; use arrows to select the "Language" item and touch to confirm Enter. Move the cursor up and down to select the language and confirm with.

8.9 Application update

To make an update, move to the menu by pressing Menu and highlight the cursor by pressing Enter ; use arrows to select the "Update" item and touch Enter to confirm. The screen will prompt you to use the screen keys to confirm or reject that you want to update the application.

If you confirm but the card is missing or a reading error occurred, the following message will be displayed

If the process is correct, the name of the file to be confirmed with will be displayed.



The system will ask again if you want it to upgrade to a new version: to confirm, press Enter , to cancel, press Esc .

8.10 Last warning

There is also a key on the panel that informs the operator Alarm about the status of the machine's safety sensors.

- No alarm
- Lifting time exceeded
- No info on whether the lift is lowered
- No item to unload found
- No signal from the load sensor
- No info on the rising action of the table tilt
- No info on the lowering action of the table tilt
- Number of rotations exceeded
- Lift lowering time exceeded
- No info on whether bale tipper is lowered

If the messages are displayed, set the items to the required position. If the item is correct but the error is still displayed, check the sensor for offset range or damage.

9. Maintenance

9.1. Maintenance after work

After the work is finished, the machine should be thoroughly cleaned and washed with a running water stream. In the case of high-pressure devices, exercise caution and do not direct the stream directly towards any types of labels on the machine and elements such as bearings, shaft joints, etc. It is recommended that cleaning and washing be carried out on the wash equipped with a water treatment system or a settlement tank for waste neutralisation.

Having performed the cleaning and drying of the machine, check the general technical condition of all sub-assemblies and, if needed, remove any found damage or replace a worn element with a new one.

In case of varnish coating damage, remove any mechanical residues of an old painting, degrease, and then apply a primer coat. When the primer coat is dry, apply the paint coat. Replace damaged and worn out parts with new ones. Check all the screwed joints, tighten the loose screws and nuts according to Table. The manufacturer of the machine, Tar River Implements, provides all spare parts.

Caution!

Nuts with polyamide insert – self-locking (jam) are disposable and cannot be reused after disassembly. Replace them with new ones.

Caution!

For servicing and maintenance operations, general-purpose hand tools such as combination spanners, socket wrench, Allen keys and other tools should be used in accordance with their operating instructions, taking into account their operability and safety requirements

Torque Specifications for Common Bolt Sizes

Inches

Bolt Head Identification

Bolt size (inches)	Thread pitch	Grade 2 N.m	Grade 2 ft-lb	Grade 5 N.m	Grade 5 ft-lb	Grade 8 N.m	Grade 8 ft-lb
1/4"	20	7	5	11	8	16	12
1/4"	28	8	6	13	10	18	14
5/16"	18	15	11	24	17	33	25
5/16"	24	17	13	26	19	37	27
3/8"	16	27	20	42	31	59	44
3/8"	24	31	23	47	35	67	49
7/16"	14	43	32	67	49	95	70
7/16"	20	48	36	75	55	106	78
1/2"	13	66	48	102	75	144	106
1/2"	20	75	55	115	85	163	120
9/16"	12	95	70	147	109	208	154
9/16"	18	106	79	164	121	232	171
5/8"	11	132	97	203	150	287	212
5/8"	18	149	110	230	170	325	240
3/4"	10	233	172	361	266	509	376
3/4"	16	261	192	403	297	569	420
7/8"	9	226	167	582	430	822	606
7/8"	14	249	184	642	473	906	668
1"	8	339	250	873	644	1232	909
1"	12	371	273	955	704	1348	995
1-1/8"	7	480	354	1077	794	1746	1288
1-1/8"	12	539	397	1208	891	1958	1445
1-1/4"	7	677	500	1519	1120	2463	1817
1-1/4"	12	750	553	1682	1241	2728	2012
1-3/8"	6	888	655	1992	1469	3230	2382
1-3/8"	12	1011	746	2268	1673	3677	2712
1-1/2"	6	1179	869	2643	1949	4286	3161
1-1/2"	12	1326	978	2974	2194	4823	3557

Metric

Bolt Head Identification (5.8 / 8.8 / 10.9)

Bolt size (metric)	Thread pitch	Class 5.8 N.m	Class 5.8 ft-lb	Class 8.8 N.m	Class 8.8 ft-lb	Class 10.9 N.m	Class 10.9 ft-lb
M5	0.08	4	3	6	4	9	7
M6	1	6	4	10	7	15	11
M8	1.25	16	12	25	18	36	27
M8	1	17	13	26	19	38	28
M10	1.5	31	23	48	35	71	52
M10	1.25	33	24	51	38	75	55
M10	1	35	26	53	39	78	58
M12	1.75	54	40	84	62	123	91
M12	1.5	56	41	87	64	128	94
M12	1.25	59	44	90	66	133	98
M14	2	84	62	133	98	195	144
M14	1.5	94	69	142	105	209	154
M16	2	131	97	206	152	302	223
M16	1.5	141	104	218	161	320	236
M18	2.5	181	133	295	218	421	310
M18	2	196	145	311	229	443	327
M18	1.5	203	150	327	241	465	343
M20	2.5	256	189	415	306	592	437
M20	1.5	288	212	454	335	646	476
M22	2.5	344	254	567	418	807	595
M22	1.5	381	281	613	452	873	644
M24	3	444	327	714	526	1017	750
M24	2	488	360	769	567	1095	808
M27	3	656	484	1050	774	1496	1103
M27	2	719	530	1119	825	1594	1176
M30	3.5	906	668	1420	1047	2033	1499
M30	2	1000	738	1600	1180	2250	1659
M36	4	1534	1131	2482	1830	3535	2607

Notes:

This chart is an approximate estimate of torque values.

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for Metric hardware.

Make sure that fastener threads are clean and that you properly start thread engagement.

9.2. Machine lubrication

Appropriate periodical maintenance works considerably decrease the wear and tear of mating components and additionally protect against corrosion.

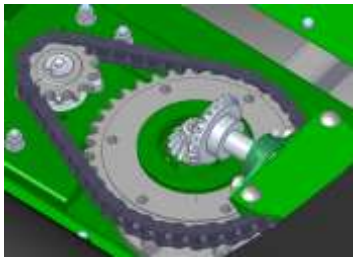
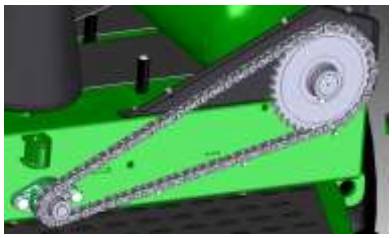
You should lubricate all the lubrication points enumerated below. The lubrication should be performed with use of a greaser. Before commencement of lubrication works, the point to be lubricated should be cleaned from any dirt and residues of previous grease layers and the grease nipple should be checked for damage. Replace the grease nipple, if damaged. After the lubrication has been performed, excessive grease should be removed in order to limit dirt adherence.

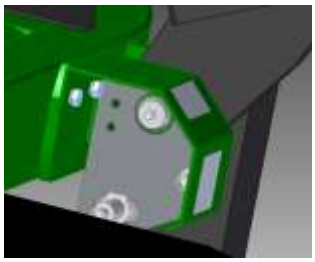
All maintenance works should be done with the switched off engine of the vehicle, released pressure and stopped rotations, and with both, the vehicle and machine

properly secured.

Avoid contact with oil!

Use the personal protective equipment: protective clothing, safety footwear, gloves and goggles.

No.	Lubrication point	Description	Lubrication interval	Lubricant
1		Gears in the turn-table slide base	Pre-seasonally, every 30 hours of work or 1x a year	Machine grease for chain drives
2		Table roller drive gear	Pre-seasonally, every 30 hours of work or 1x a year	Machine grease for chain drives
3		Film dispenser gears	Pre-seasonally, every 30 hours of work or 1x a year	Machine grease
4		Lower spindle	10 hrs or at least 1x a year	Machine grease
5		Tipper bushings	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease for heavy-duty compo-nents

6		Bale lift pin	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease for heavy-duty components
7		Bale lift pin	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease for heavy-duty components
8		Tilt actuator	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
9		Table roller bearings	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
10		Film scraper actuator fasteners	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
11		Tilt actuator	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease

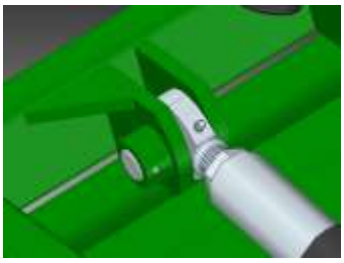
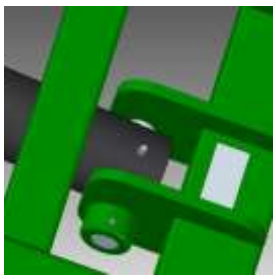
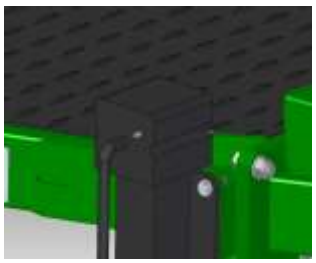
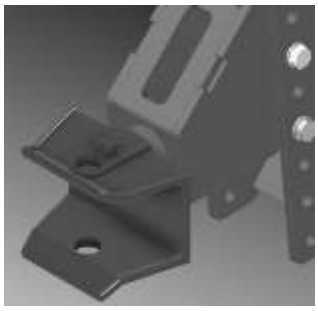
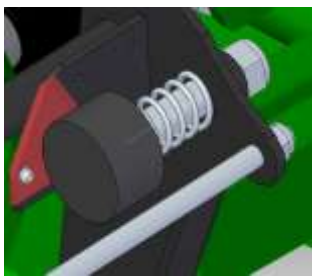
12		Bale tipper actuator	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
13		Bale tipper actuator	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
14		Support foot	Pre-seasonally, every 30 hours of work or 1x a year	Machine grease
15		Hitch	Pre-seasonally, every 10 hours of work or 1x a year	Machine grease
16		Bumper pin	Pre-seasonally, every 10 hours of work or 1x a year	Silicone spray lubricant
17		Dispenser rollers	Pre-seasonally, every 10 hours of work or 1x a year	Silicone spray lubricant

Table 11 Lubrication schedule

* Machine grease for chain drives:

  FUCHS LAGERMEISTER TS grease

* Machine grease:

  FUCHS RENOLIT MOLITEN 2 grease

9.3. Storage

All the tasks listed in Section 9.1 (Maintenance after work) are to be carried out during storage. It is recommended that the machine be kept in a closed and roofed room in order to limit the environmental factors causing corrosion and ageing of any materials. Additionally, during long downtimes (e.g. winter) it is recommended to:

- Lubricate any moving joints with fresh grease;
- Apply commercially available anti-corrosion silicone based agents on the surface of bolts and pins to inhibit the corrosion onset.
- Apply commercially available tire maintenance products on the tires 2-3 times a year to protect them from UV rays.
- In the case of long time of downtime, the machine should be slightly moved in order to change the tire position, so that it not be deformed and the air pressure in tires should be checked. This procedure should be carried out once a month on average.

Store the controller and the wire in a domestic environment during periods of downtime.

9.4 Troubleshooting

FAULT	CAUSE	REPAIR
Controller does not start.	No power supply.	Check the connection between the controller and the relay box.
		Check the fuses on the tractor and on the controller.
		Check the wire for damage.
No movement of hydraulic actuators.	Supply and return lines connected incorrectly.	Swap the supply and return lines of the hydraulic system.
Incorrect operation of the hydraulic system.	Damage to the hose or actuator.	Replacement or regeneration.
	Dirty oil filter.	Replacement of the filter cartridge.
	Incorrect viscosity of the hydraulic oil.	Check the oil quality, make sure that the oils in both machines are of the same grade. If necessary, change oil in the tractor and/or in the bale wrapper.
	Tractor pump failure.	Repair a defective system.
Hydraulic oil does not return from the actuators.	Hydraulic pump delivery flow rate of the tractor too high.	Reduce the delivery flow rate.
	Hose blockage.	Check the hoses for kinks or damage. Replace if necessary.
Actuator travel range incomplete; intermittent operation of the turntable.	Hydraulic pump delivery flow rate of the tractor too low.	Check the oil filter and replace if necessary.
		Increase the delivery flow rate of the tractor.
Chain drive noise.	Loose chain.	Adjust the tension of the chain.
		Drive chain stretch too high. Replace the chain.
	Gear system contamination.	Check bearings, clean and lubricate chains or replace them in the event of excessive wear.
Unnatural noise from the running axle during ride.	Worn bearing.	Replace the bearing.
	Bearing play.	Adjust the bearing.
	Hub component damaged.	Replace the damaged component.
Film tension too low.	Lower roll holder height adjusted incorrectly.	Adjust the film roll holder.
	Film slides on the film dispenser rollers.	Clean and spray the knurled surfaces of the dispenser rollers with silicone spray.

Film breaking.	Film roll compression too high.	Reduce the film compression by adjusting the lower roll holder.
	Damaged film.	Check film and replace if necessary.
	Dispenser rollers damaged or jammed.	Replace dispenser rollers.
		Check dispenser bearings, sprockets and gears and replace if necessary.
	Irregular bale shape.	Reduce the rotational speed during wrapping. Ensure correct bale formation.
	Film parts stick with each other in the wind.	Check the film tension.
	Rotational speed too high.	Reduce the rotational speed during wrapping
Bale wrapping asymmetrical.	Incorrect dispenser height.	Adjust the height of the film dispenser to suit the bale size.
The bale falls off the machine during wrapping.	Rotational speed too high.	Reduce the rotational speed during wrapping.
	Terrain slope too high.	Carry out wrapping on level fields if possible.
	Irregular bale shape.	Ensure correct bale formation / reduce the wrapping speed.
Film is not cut	Blade damaged or blunted	Replace the cut and hold blade.
Cut and hold does not hold film or lets it go too fast.	Film does not hit the correct grab position.	Adjust the position of the cut and hold frame on the turntable.
	Film is released before a new cycle begins.	Check the hydraulic accumulator pressure and adjust if necessary.

10. Disassembly, disposal, and environment protection

In the event the machine is worn to the extent which prevents its further use, it should be scrapped. This also applies to regular repairs and replacement of damaged parts. Clean the machine thoroughly before scrapping. Drain oil from the machine and have the machine decommissioned. Next, disassemble the machine by segregating its parts based on the applied materials. Segregated parts should be transported to a scrap yard or disposed of.

The machine is 100% environmentally friendly. 98% of the materials used in the production process are recyclable. Worn machine parts must be disposed of in line with the local environment protection regulations. Prevent oil leakage throughout the period of use of the machine, as oil may pollute the environment.

Protect your hands (and body) against injuries, and the harmful effects of lubricants and oils. Use personal equipment measures and tools which are in good mechanical condition. Machine elements, which when dismounting can move or rotate, must be properly secured.

Worn or damaged parts removed during repair (disassembly) should be stored in a separate location, with limited access for persons and animals. Worn out metal parts must be delivered to the scrap metal collection points. Worn out plastics must be delivered to the chemical waste collection (disposal) points.

When filling up or replacing the oil, avoid its spillage. Store the waste oil in sealed containers, and periodically deliver it to the special collection (disposal) points.

Abandoned parts or machine components, and spilled oil, may pose a risk of accident, cause an environmental pollution and violate applicable laws.

11. Additional equipment

Additional equipment is only available on request in the premium version by prior agreement with the manufacturer. Table 12 presents additional equipment.

EQUIPMENT	VERSION	
	STANDARD	PREMIUM
Additional film dispenser	NO	YES
Work cycle auto-start	NO	YES
Workstation lighting	NO	YES
Turning support wheel	NO	YES
Radio control	NO	YES
Additional film storage	NO	YES

Table 12 Refitting options for the premium version

12. Spare parts catalogue

Spare parts ordering method.

Each order form should include the following:

- Address of the buyer,
- exact shipping address (place where machine is located or other means for delivery collection),
- terms of payment,
- serial number and year of production of the bale wrapper (according to the plate located on the machine),
- spare part number,
- spare part name,
- number of parts ordered.

Spare parts must be ordered at the points of sale of the machines or from the manufacturer. Use only the original spare parts provided by the manufacturer, to guarantee safe and reliable operation of the machine. The use of not original spare parts or parts, which have been repaired, will void the warranty.

The manufacturer reserves its right to make changes in the construction of parts presented on the particular assembly drawings in this spare parts catalogue. Such changes may not always be updated in the User Manual and in the spare parts catalogue. Individual drawings may differ from the actual look of the parts.

Self-loading Bale Wrapper

EW-1800T

Parts Manual

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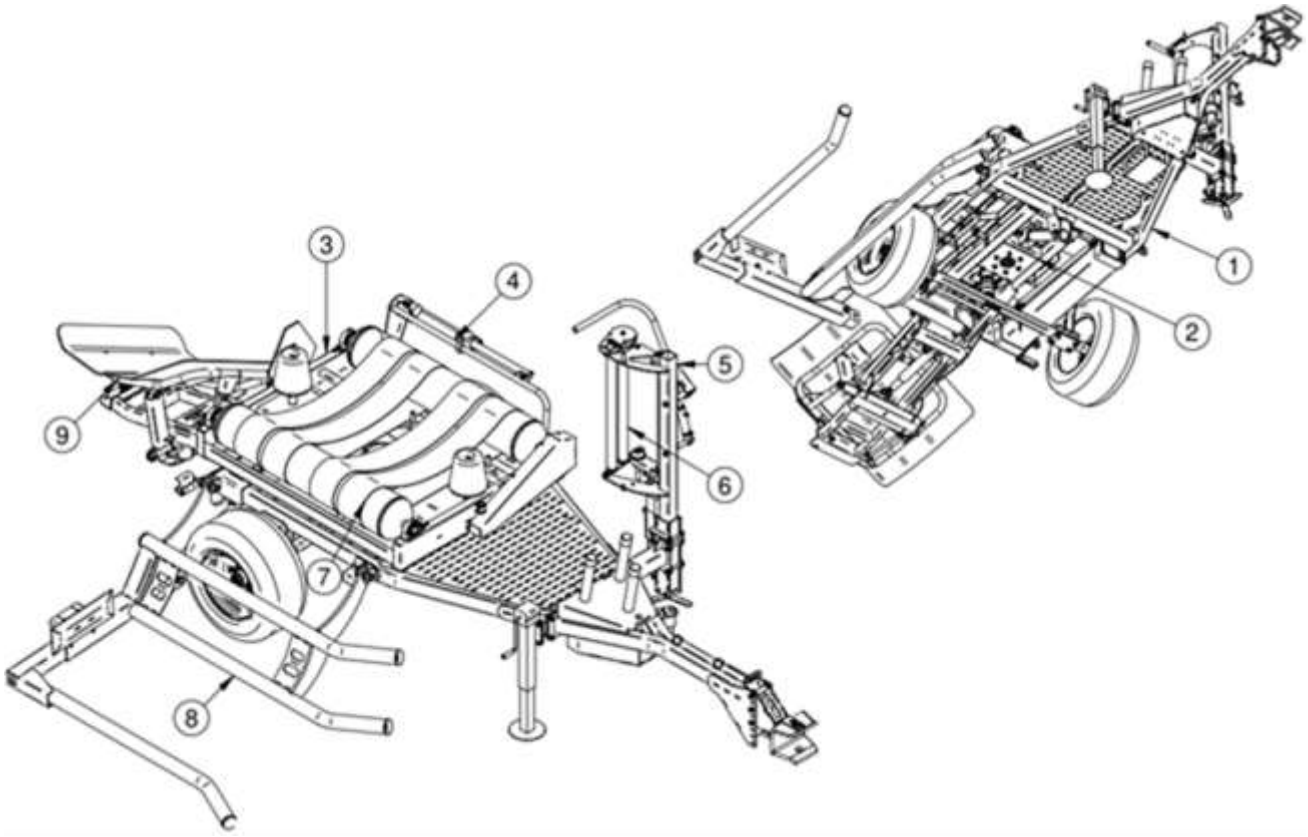
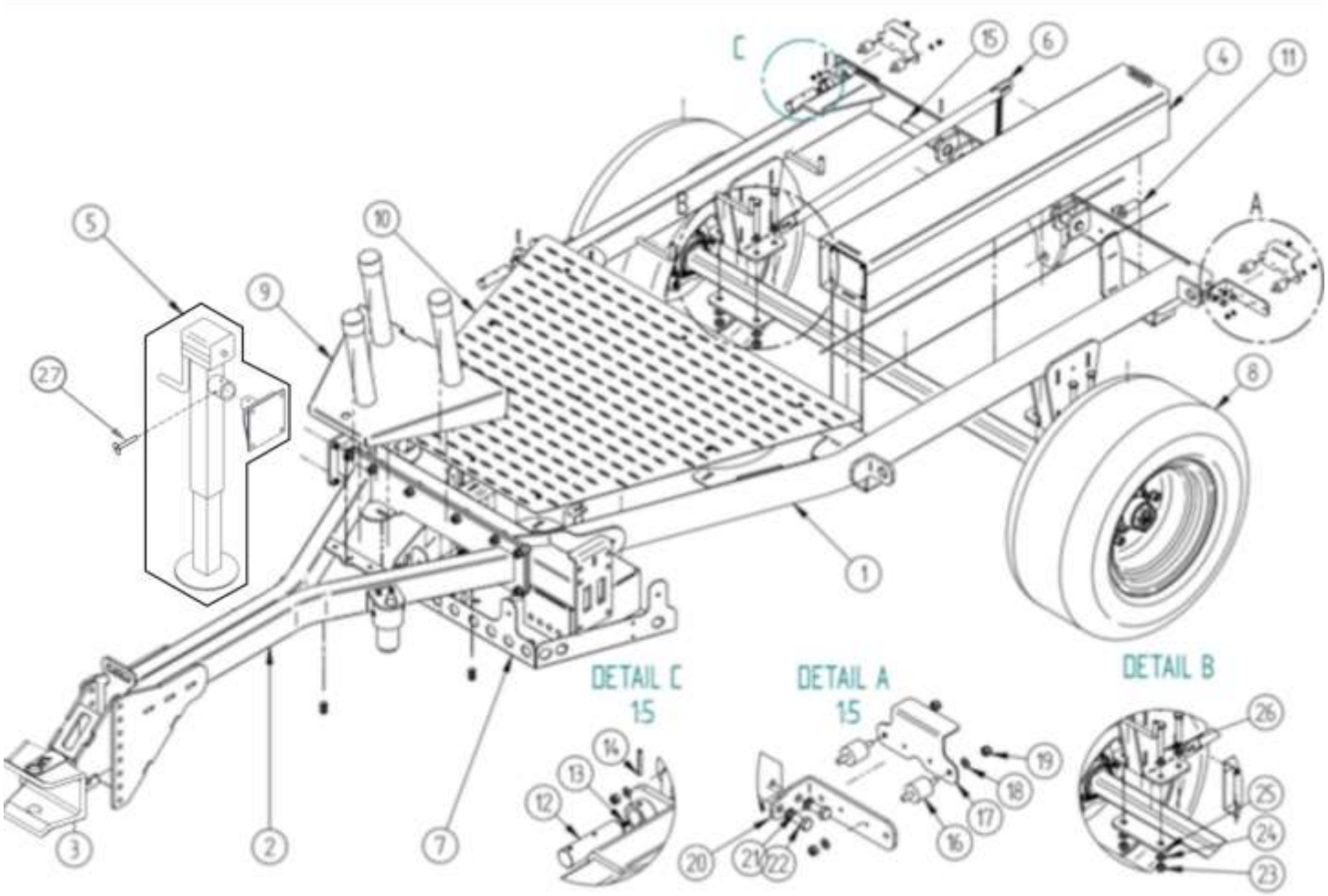
12.1. General design



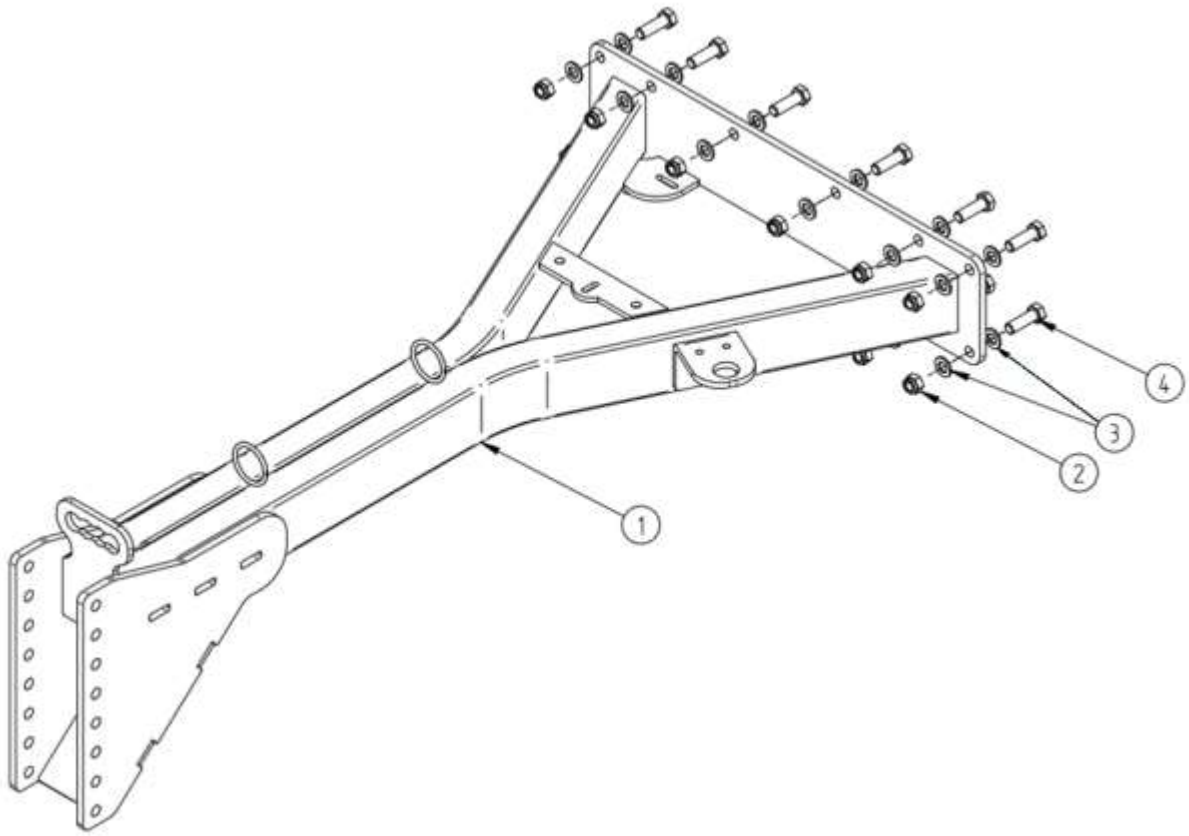
Item	Part #	Description	Qty.
1	TW18001	Bottom frame, set	1
2	TW18002	Turntable slide base	1
3	TW18003	Rotary frame, set	1
4	TW18004	Film cut and hold	1
5	TW18005	Dispenser post	1
6	TW18006	Film dispenser	1
7	TW18007	Table rollers	1
8	TW18008	Bale lift	1
9	TW18009	Bale tipper	1

12.2 Bottom frame, set



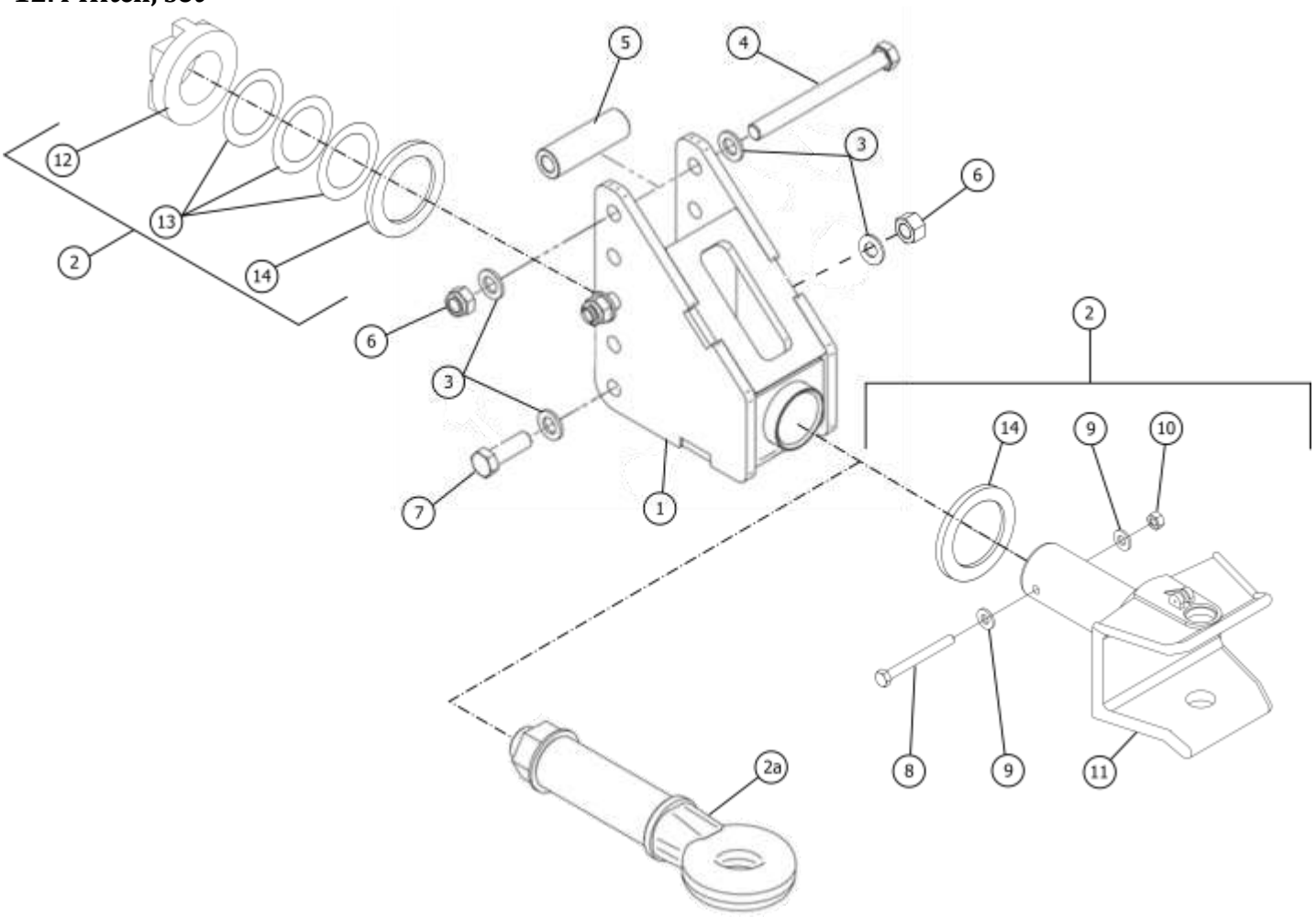
Item	Part #	Description	Qty.
1	TW18010	Welded frame	1
2	TW18011	Drawbar, set	1
3	TW18012	Hitch mount	1
4	TW18013	Counterweight, set	1
5	TW18014	Jack stand with receiver plate (2 pcs)	1
6	TW18015	Safety arm, set	1
7	TW18016	Manifold fixing, set	1
8	TW18017	Running axle	1
9	TW18018	Film storage, set	1
10	TW18019	Platform, set	1
11	TW18020	Lift actuator pin	1
12	TW18021	Bale lift pin	2
13	GN061S	Straight grease nipple M6x1	2
14	TW18166	Spring-type straight pin fi6x45 St	4
15	TW18022	Slide base pin	2
16	TW18023	Vibration damper	4
17	TW18024	Light mount	2
18	FWØ8	Flat washer Φ 8-galv.	10
19	TW18180	Self-locking nut	8
20	TW18025	Light mount, frame	2
21	LW12	Lock washer Φ 12-galv.	4
22	TW18181	Bolt HH M12x25-8.8-GAL	4
23	EP302-0204	Nut HH M16-8-galv.-self-lock.	8
24	FW16	Round washer Φ 16-galv.	16
25	TW18026	Running axle flange	2
26	TW18182	Bolt HH M16x110 np.gw	8
27	TW18253	Adjustable arm locking pin	1

12.3 Drawbar, set



Item	Part #	Description	Qty.
1	TW18011	Drawbar, set	1
2	EP302-0204	Nut HH M16-8-galv.-self-lock.	10
3	FW16	Washer Φ 16-galv.	20
4	TW18183	Bolt HH M16x50-8.8-galv.	10

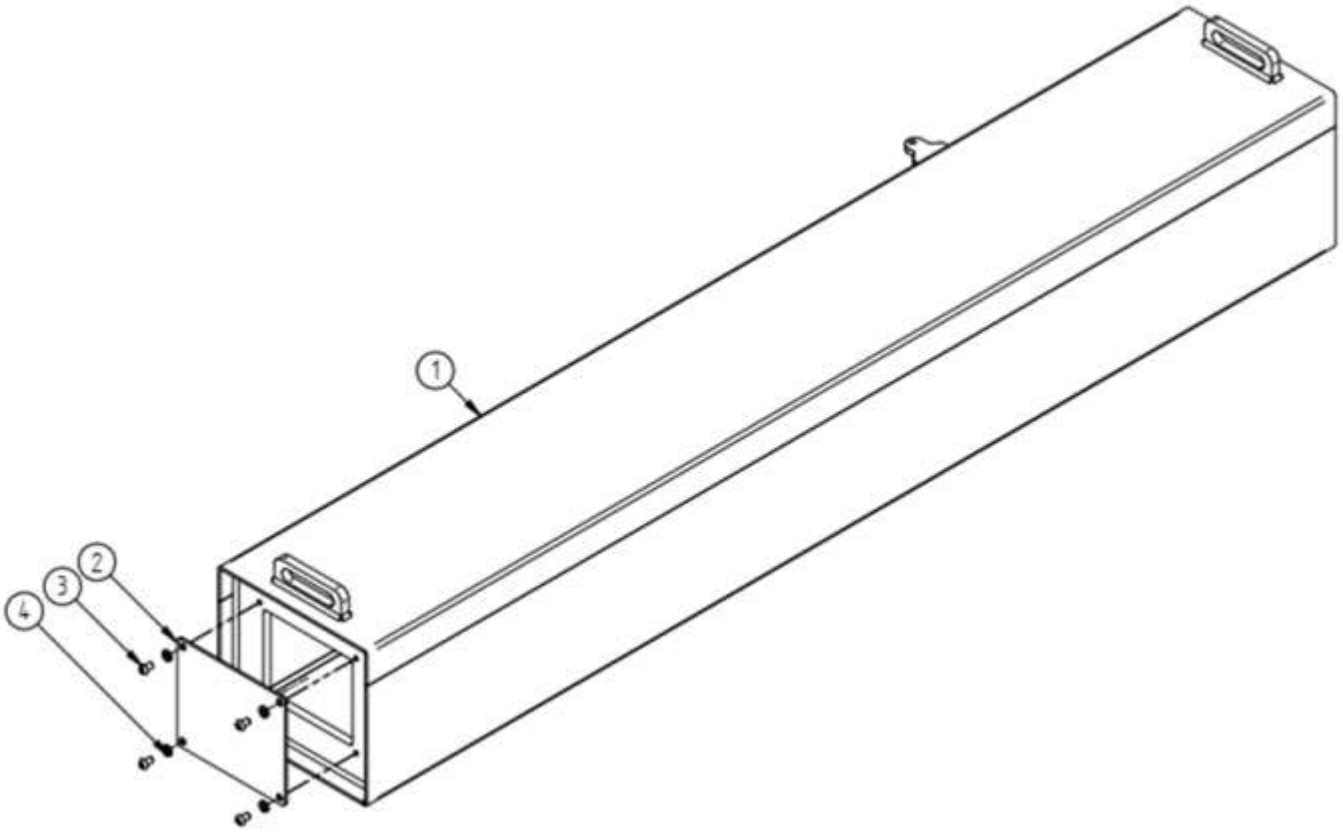
12.4 Hitch, set



Note: Item 2, Part # TW18027 is standard equipment and Item 2a, Part # TW18028 is optional. These parts can be interchanged depending on the application.

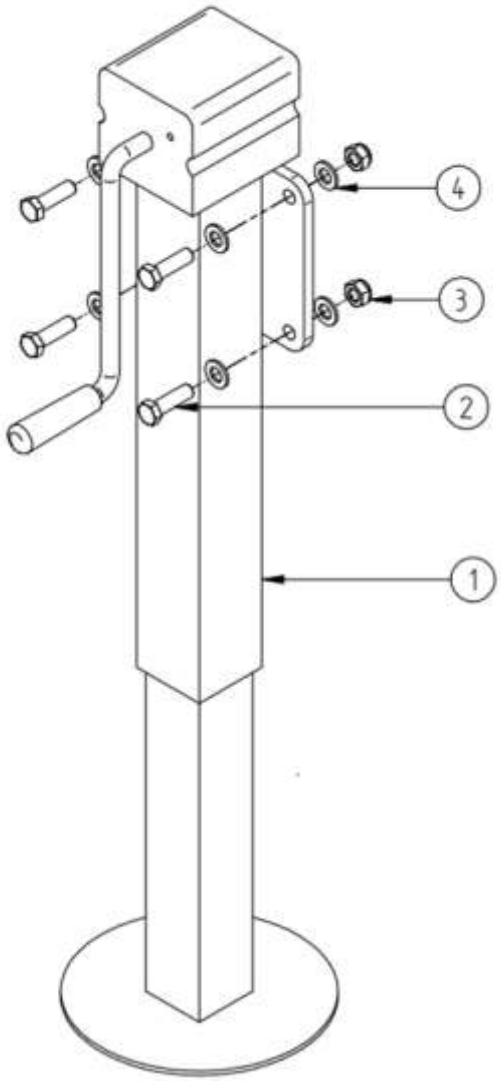
Item	Part #	Description	Qty.
1	TW18012	Hitch mount	1
2	TW18027	Hitch block complete (standard)	1
		Note: TW18027 Includes items 8, 9, 10, 11, 12, 13 & 14	
2a	TW18028	Hitch eye (optional)	1
3	FW16	Washer Φ 16-galv.	8
4	TW18184	Hex Bolt M16x170-8.8-galv.	2
5	TW18029	Hitch fixing spacer	2
6	LNM1620	Self-locking nut M16	4
7	TW18185	Bolt HH M16x50-8.8-galv.	2
8	BM0812580	Bolt HH M08-1.25x80 8.8	1
9	FW08	Flat washer M08	2
10	LNM08125	Lock nut M08-1.25	1
11	TW18271	Hitch block	1
12	TW18074	Nut, hitch block	1
13	TW18073	Shim, hitch block	3
14	TW18072	Flat washer 5x51x70	1

12.5. Counterweight, set



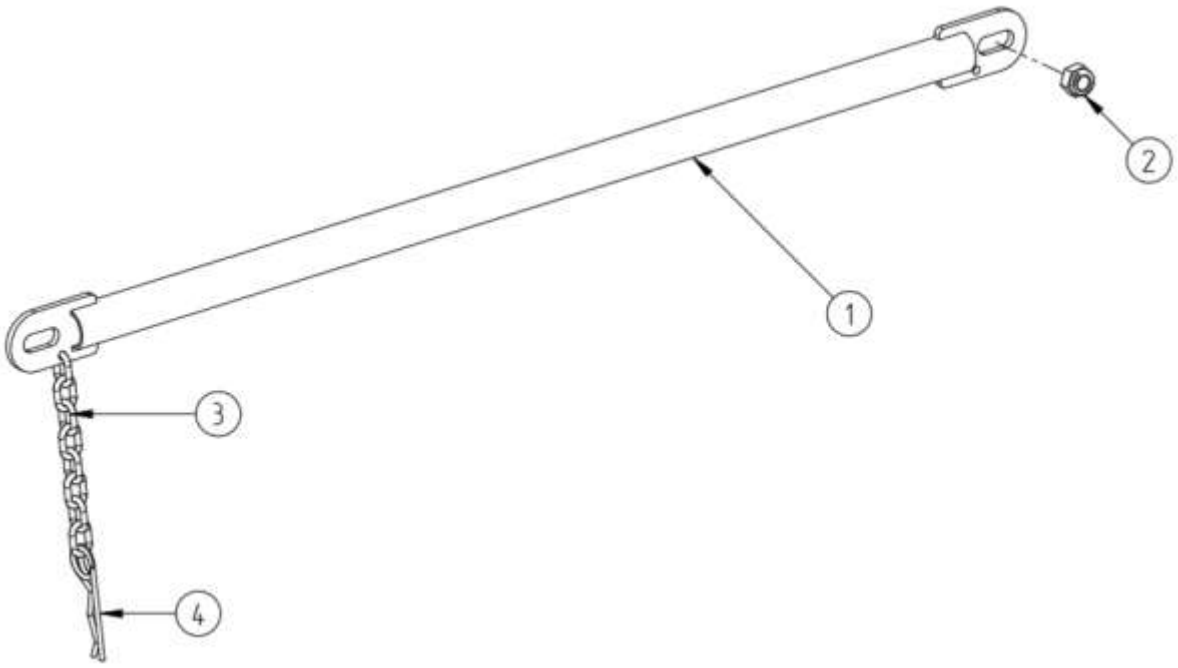
Item	Part #	Description	Qty.
1	TW18013	Counterweight	1
2	TW18030	Lid	1
3	TW18186	Round head bolt M6x10 galv.	4
4	EP303-0158	Lock wash. Φ 6-galv.	4

12.6. Foot support, set



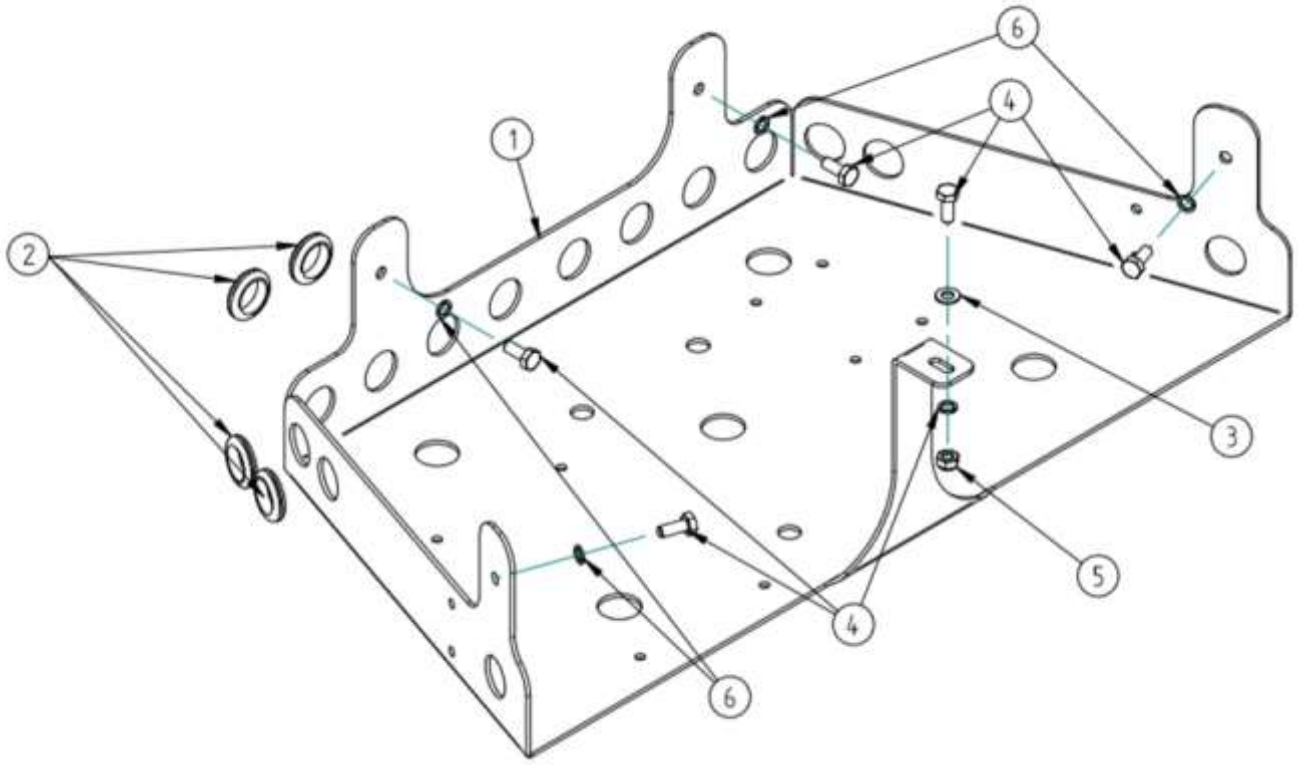
Item	Part #	Description	Qty.
1	TW18014	Support foot	1
2	TW18187	Bolt HH M12x40-8.8-galv.	4
3	EP302-0304	Nut HH M12-8-GAL-self-cl.	4
4	LW12	Washer Φ 12-galv.	8

12.7. Safety arm, set



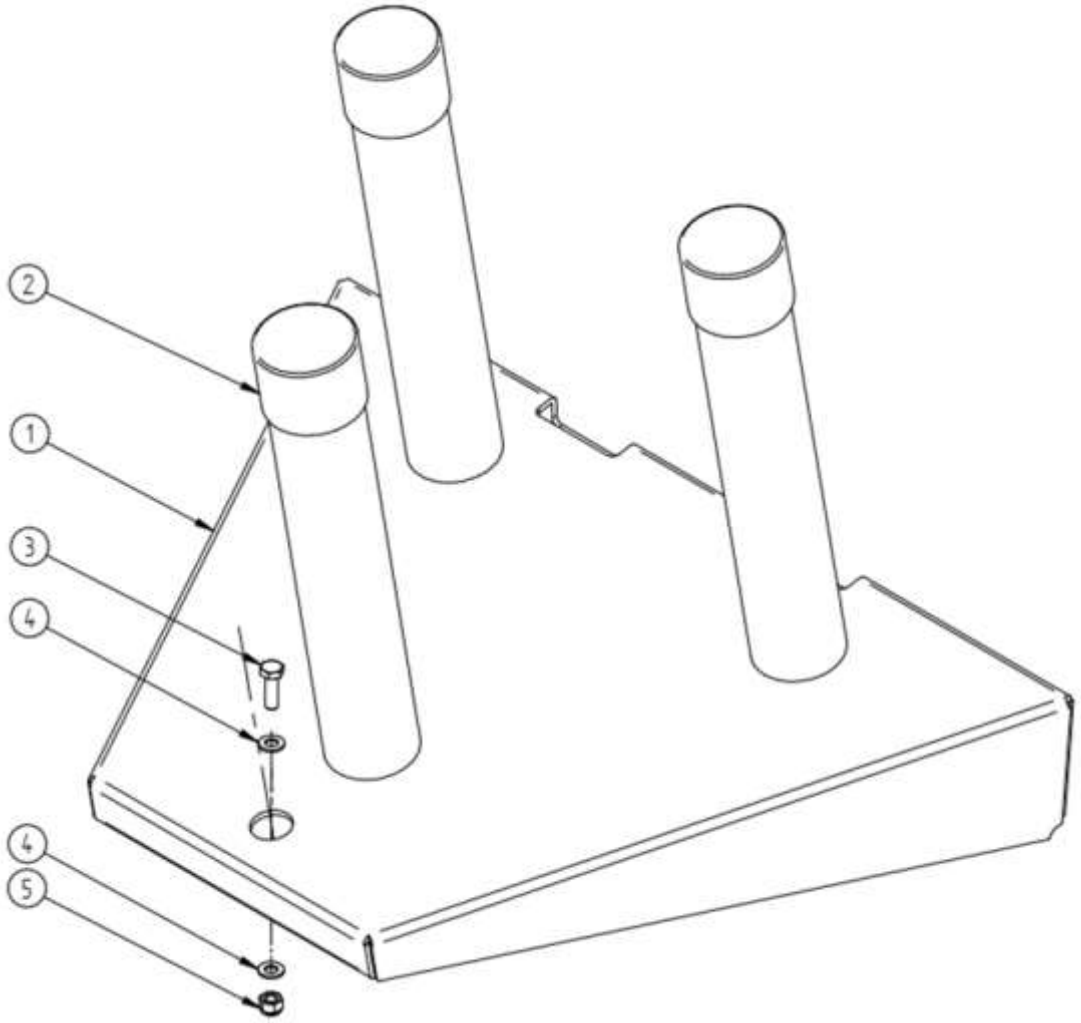
Item	Part #	Description	Qty.
1	TW18015	Safety arm	1
2	TW18188	Hex nut M14-8-galv.-self-lock.	1
3	TW18031	Chain	1
4	TW18189	Double locking pin	1

12.8. Manifold fixing, set



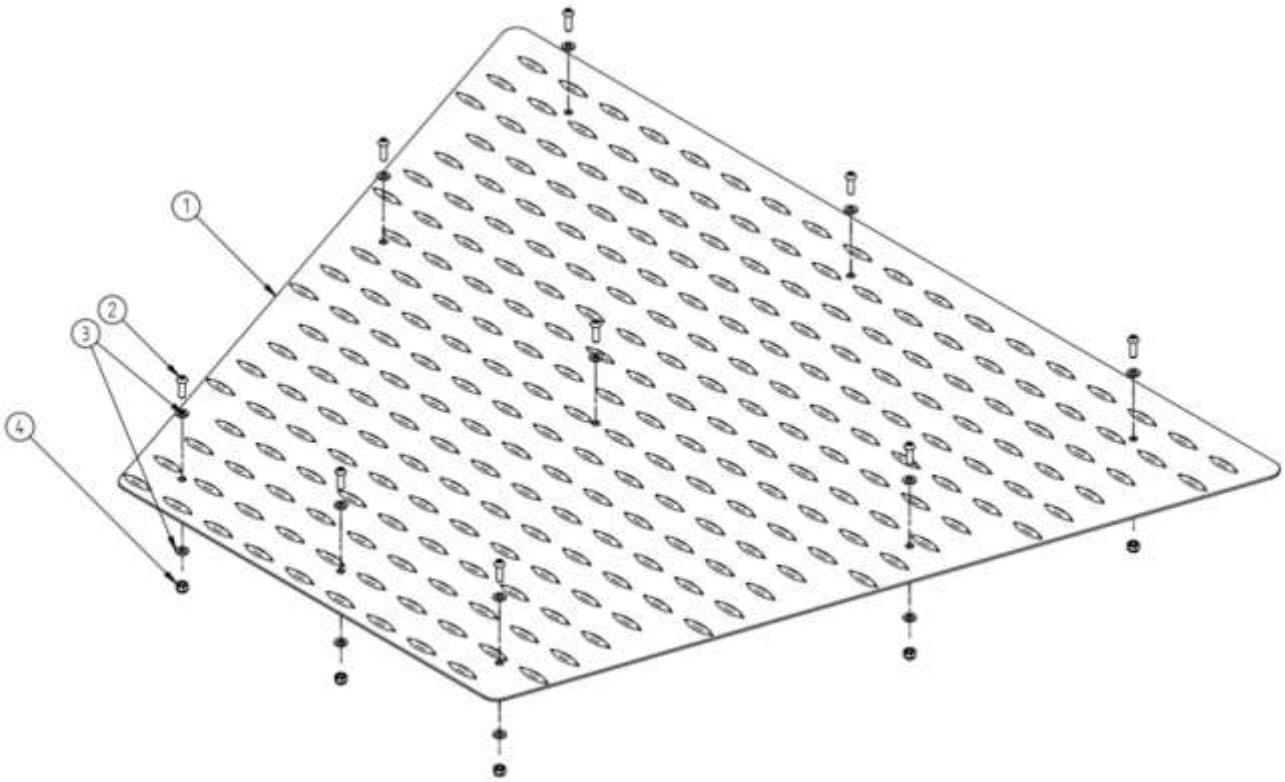
Item	Part #	Description	Qty.
1	TW18016	Manifold mount	1
2	TW18032	Grommet	2
3	FW10	Washer Φ 10-galv.	1
4	TW18190	Bolt HH M10x25-8.8-galv.	3
5	EP302-0328	Nut HH M10-8-GAL self-cl.	1
6	LFW10	Lock washer Φ 10-galv.	5

12.9. Film storage, set



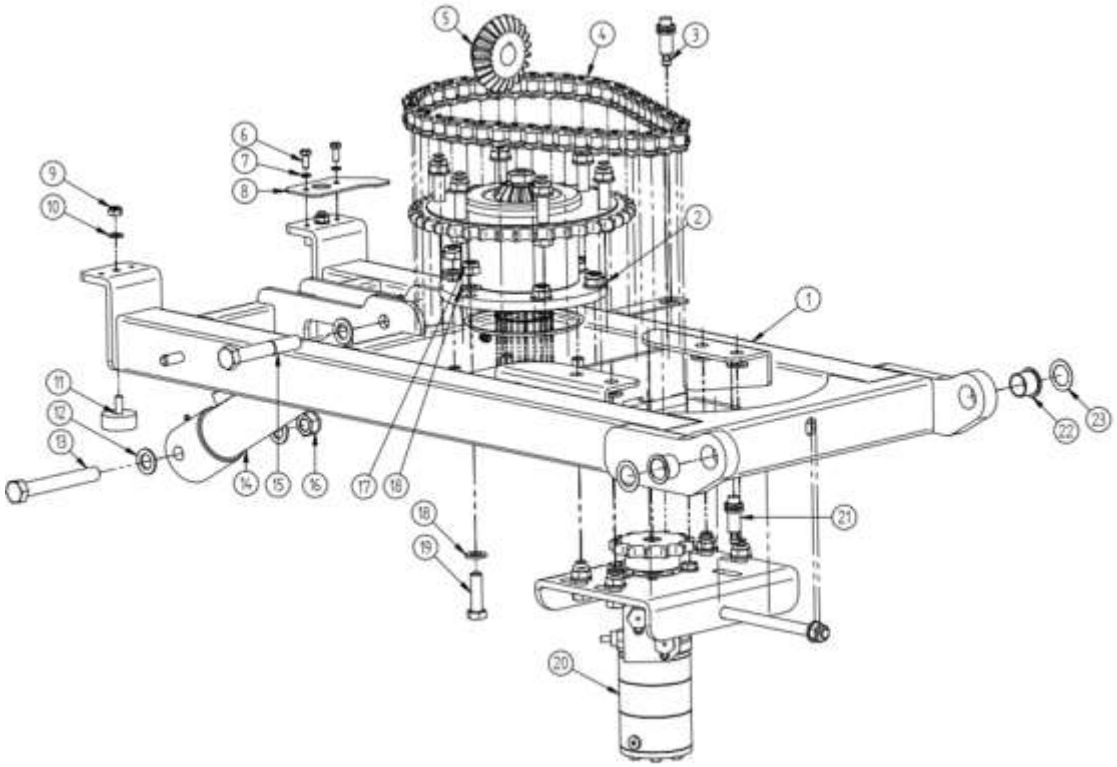
Item	Part #	Description	Qty.
1	TW18017	Film storage	1
2	TW18032	Pipe caps	3
3	TW18191	Bolt HH M8x25-8.8-GAL	1
4	FW08	Washer Φ 8-galv.	2
5	EP302-0209	Self-locking nut M8	1

12.10 Platform, set



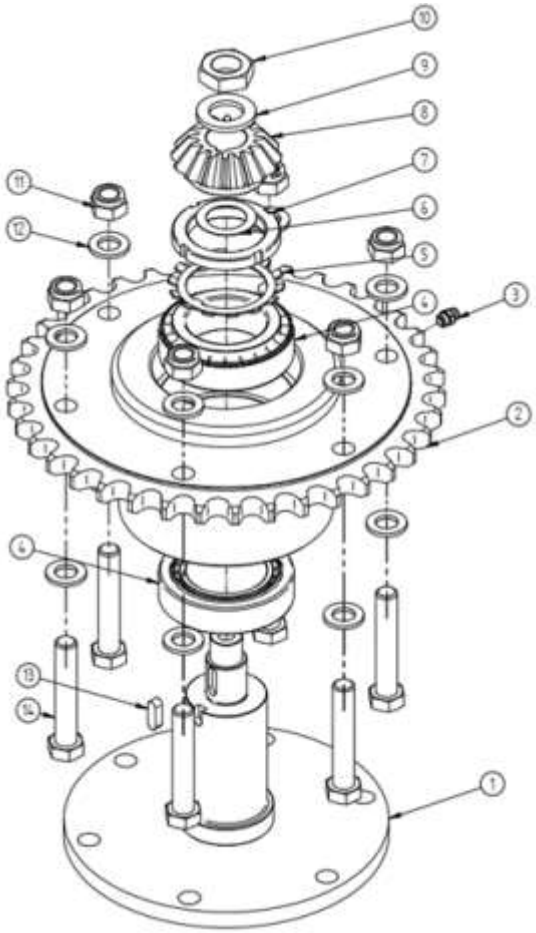
Item	Part #	Description	Qty.
1	TW18019	Platform	1
2	TW18192	Round head bolt M8x25 galv.	9
3	FW08	Washer Φ 8-galv.	18
4	EP302-0209	Nut M8-galv.-self-lock.	18

12.11. Turntable slide base, set



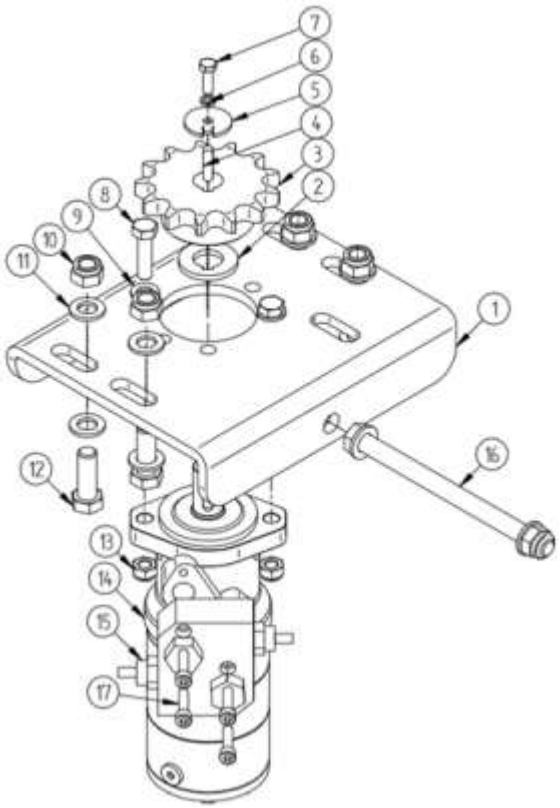
Item	Part #	Description	Qty.
1	TW18033	Slide base frame	1
2	TW18034	Rotary base	1
3	TW18035	Unloading sensor	1
4	TW18036	Rotary frame rotation chain (24 links)	1
5	TW18037	Cone wheel, large	1
6	TW18193	Bolt M8x20	2
7	LFWØ8	Lock washer Φ 8	2
8	TW18038	Slide sensor position plate	1
9	EP302-0203	Self-locking nut M10	2
10	FW10	Washer Φ 10	2
11	TW18039	Bumper	2
12	FW20	Washer Φ 20	4
13	BM2025150	Bolt M20x150 np.gw.	1
14	TW18040	Slide base actuator	1
15	TW18194	Bolt M20x130 np.gw.	1
16	TW18195	Self-locking nut M20	2
17	EP302-0204	Self-locking nut M16	6
18	FW16	Washer Φ 16	12
19	TW18185	Bolt M16x50	6
20	TW18041	Drive assembly	1
21	TW18042	Loading position sensor	
22	TW18043	Slide base sliding sleeve	2
23	TW18196	Washer Φ 30	2

12.12. Rotary base



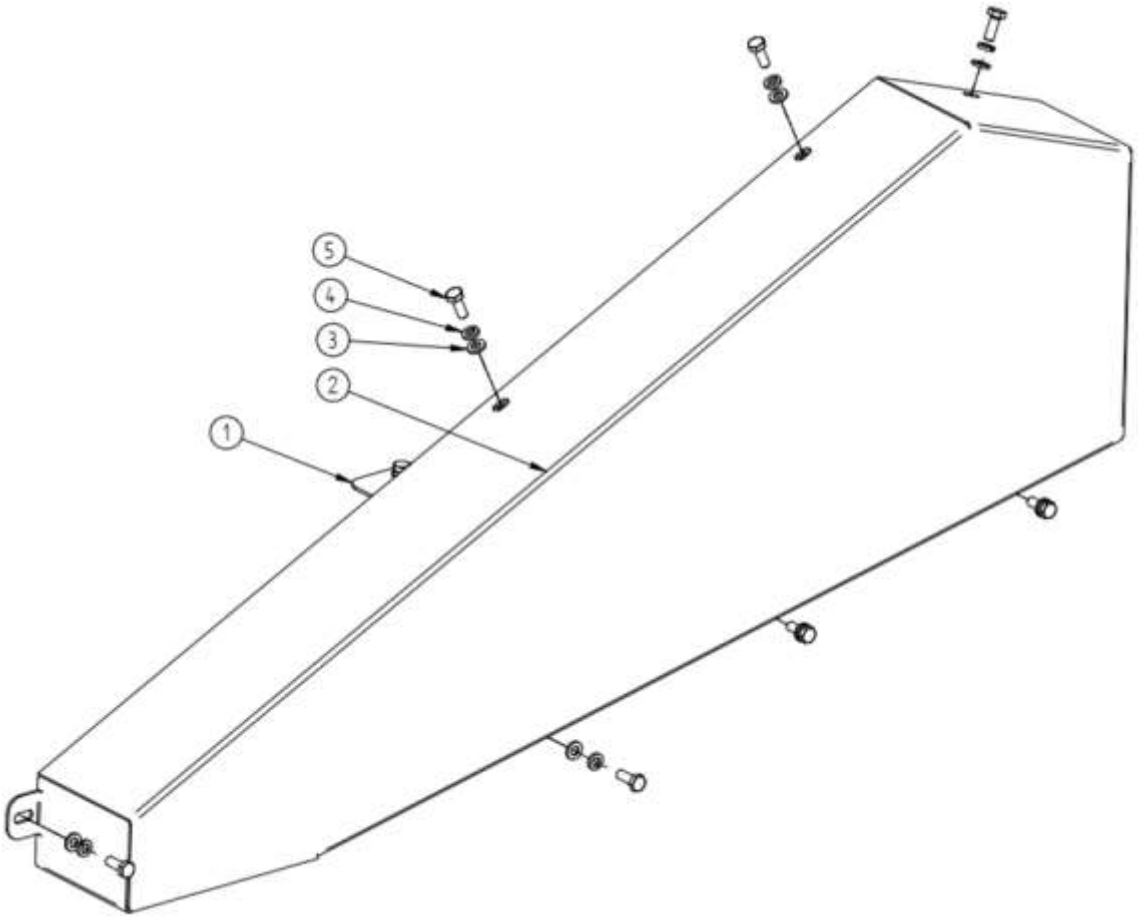
Item	Part #	Description	Qty.
1	TW18044	Spindle, rotary base	1
2	TW18045	Hub, rotary base	1
3	TW18197	Grease nipple M10x1	1
4	TW18198	Bearing	2
5	FW12	Washer mb12	1
6	TW18199	Shim Φ 30	-
7	TW18200	Nut KM12	1
8	TW18046	Conical gear	1
9	FW25	Washer Φ 25	1
10	TW18201	Nut M24x1.5-low	1
11	TW18202	Self-locking nut M16	6
12	FW16	Washer Φ 16	12
13	EP311-0001	Key 8x7x25	1
14	TW18203	Bolt M16x90	6

12.13. Drive assembly



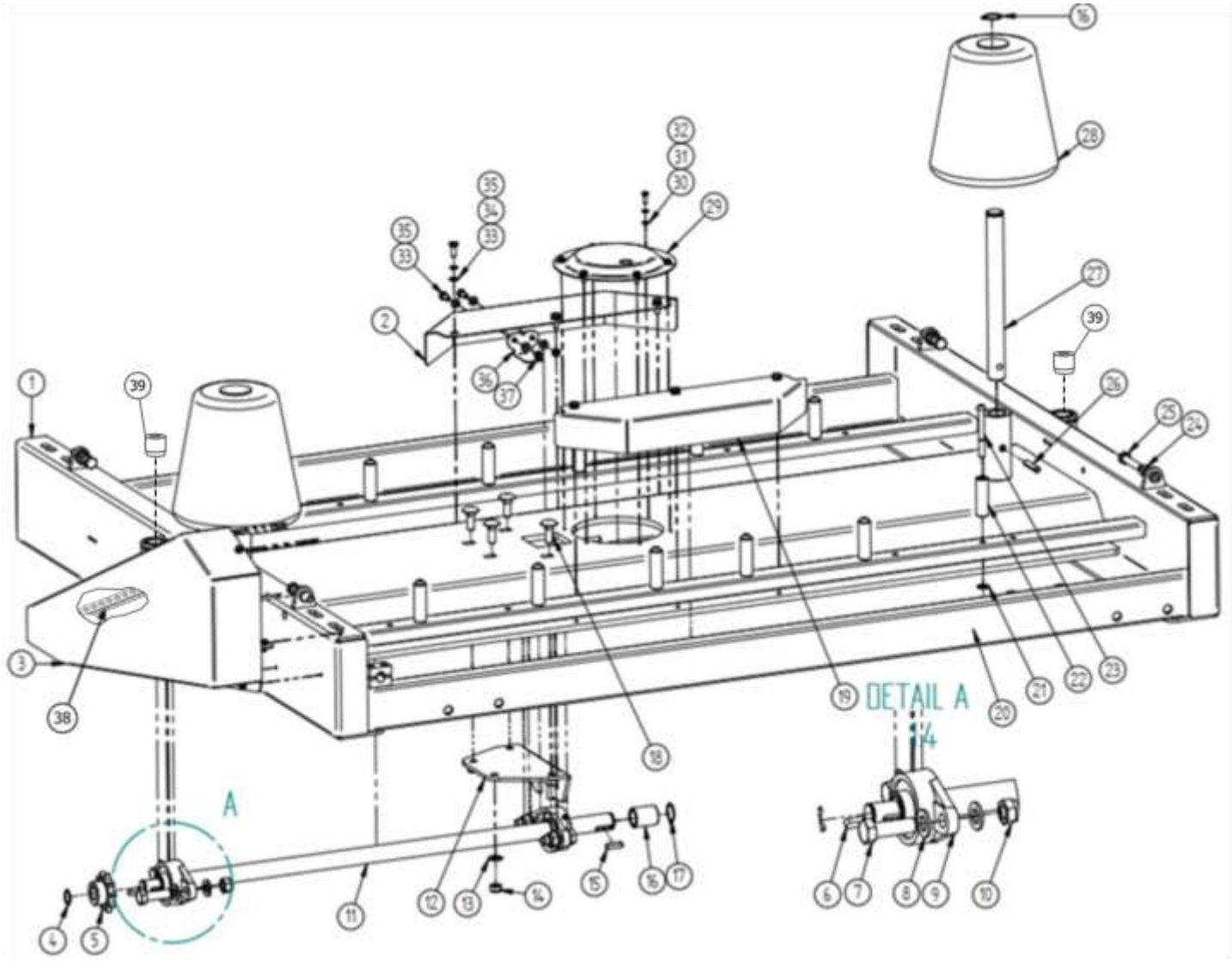
Item	Part #	Description	Qty.
1	TW18047	Motor mount	1
2	TW18048	Washer, special	1
3	TW18049	Motor gear wheel	1
4	KM080732	Key 8x7x32	1
5	TW18050	Washer, special	1
6	LFW08	Lock washer Φ 8	1
7	TW18191	Bolt M8x25	1
8	TW18204	Bolt M12x45	2
9	FW12	Washer Φ 12	2
10	EP302-0204	Self-locking nut M16	5
11	FW16	Washer Φ 16	10
12	TW18205	Bolt M16x45	4
13	EP302-0202	Self-locking nut M12	2
14	TW18051	Motor	1
15	TW18052	Motor valve	1
16	TW18206	Bolt M16x220	1
17	TW18207	Hex socket head screw M8x35	4

12.14. Chain guard



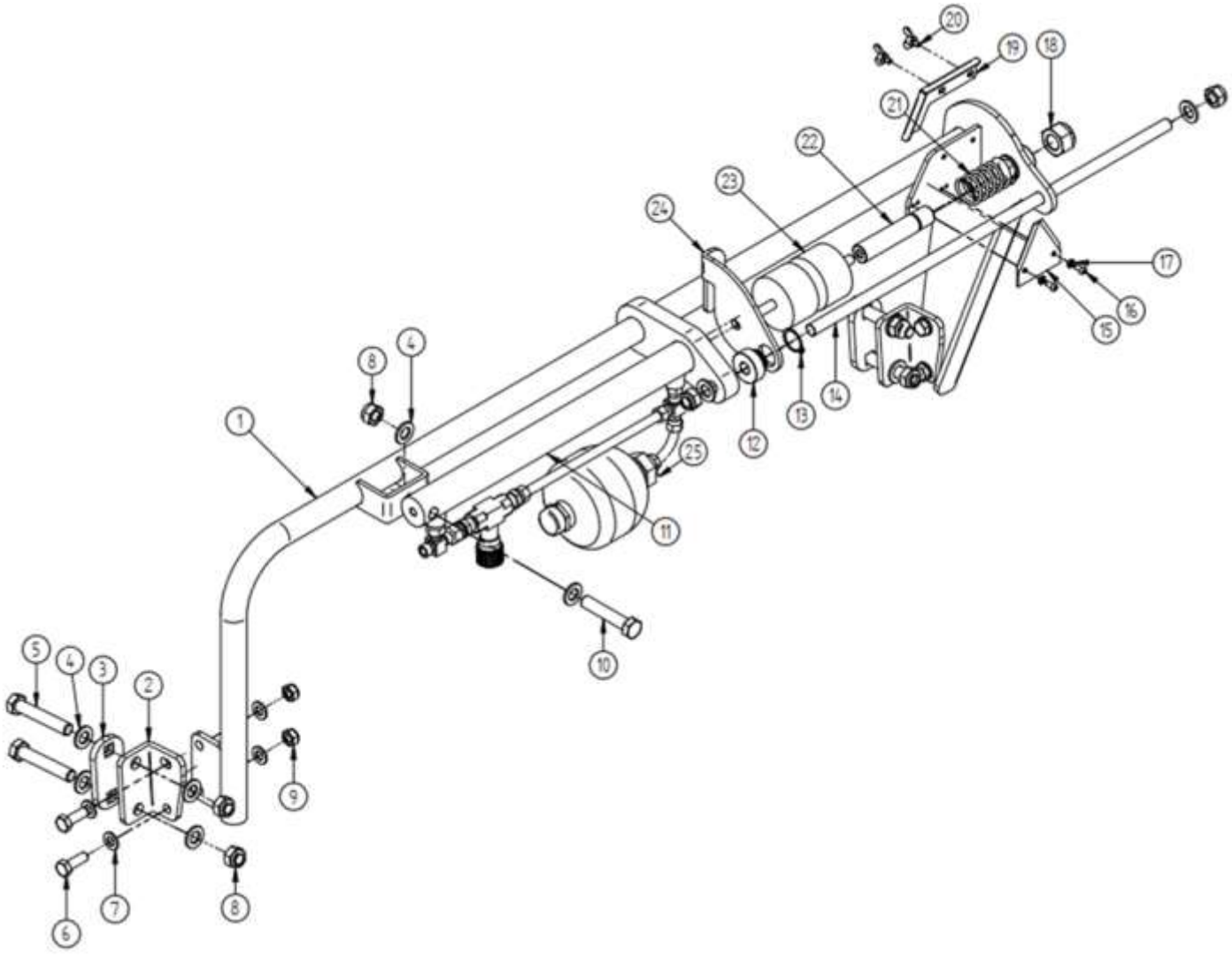
Item	Part #	Description	Qty.
1	TW18053	Guard rear wall	1
2	TW18054	Chain guard	1
3	FW06	Washer Φ 6	10
4	LFW06	Lock washer Φ 6	10
5	TW18218	Bolt M6x16	10

12.15. Rotary frame, set



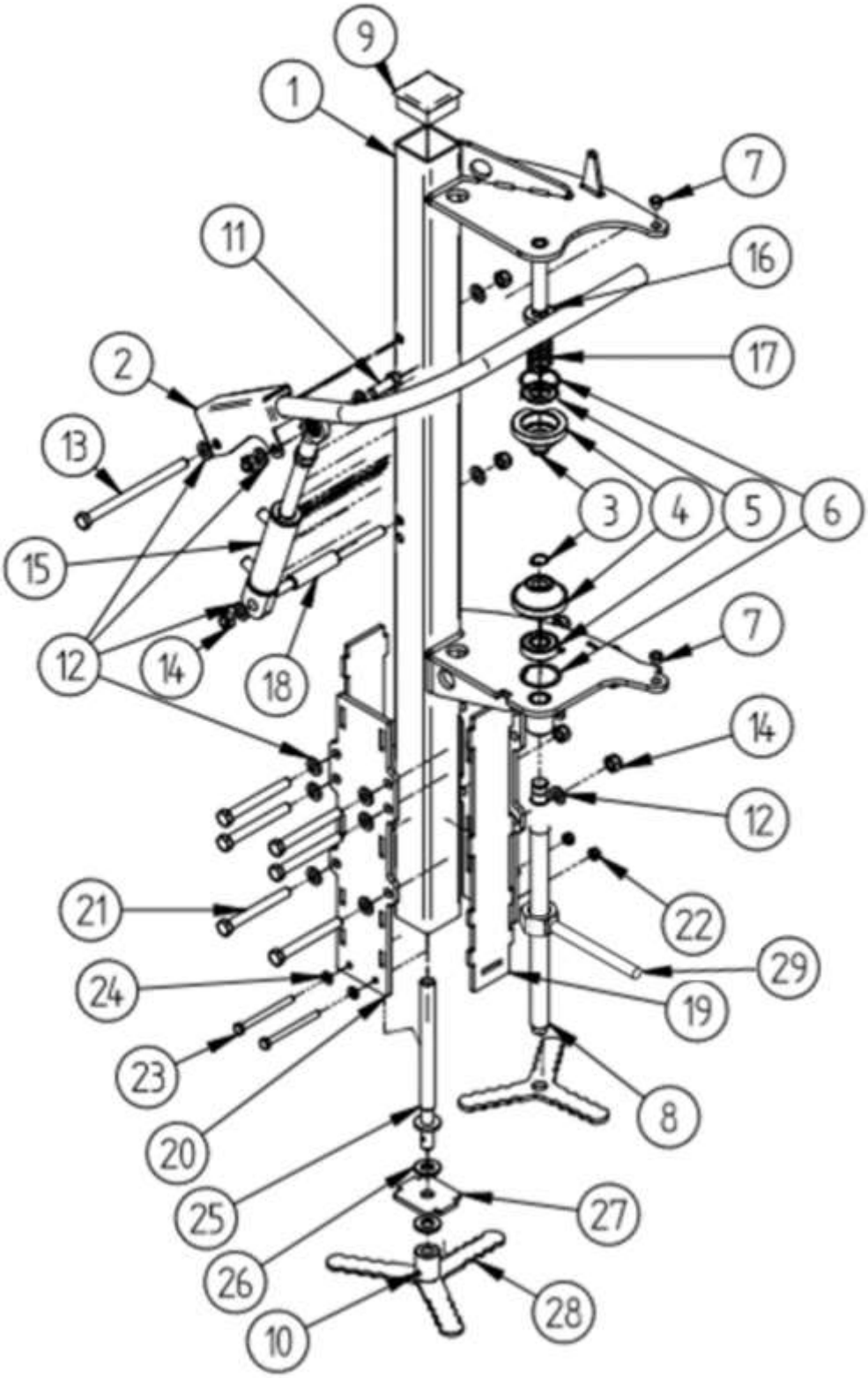
Item	Part #	Description	Qty.
1	TW18055	Rotary frame	1
2	TW18056	Frame rotation chain guard - sensor	1
3	TW18057	Chain guard, set	1
4	TW18208	Circlip Z22	1
5	TW18058	Table roller drive wheel gear	1
6	EP311-0001	Key 8x7x25	1
7	TW18209	Bolt M16x50	4
8	FW16	Washer Φ 16	8
9	TW18210	Drive shaft bearing	2
10	EP302-0204	Self-locking nut M16	4
11	TW18059	Table roller drive shaft	4
12	TW18060	Internal bearing fixing	1
13	FW12	Washer Φ 12	4
14	EP302-0202	Nut M12 self-locking	4
15	KM080732	Key 8x7x32	1
16	TW18061	Spacer sleeve KS	1
17	TW18211	Circlip Z30	3
18	TW18212	Carriage bolt M12x35	4
19	TW18062	Frame rotation chain guard	1
20	EP302-0203	Nut M10 self-locking	12
21	FW10	Washer Φ 10	12
22	TW18213	Belt guiding sleeve	12
23	TW18214	Button screw M10x90	12
24	EP302-0202	Nut M12	4
25	TW18215	Bolt M12x70	4
26	TW18216	Spring-type straight pin Φ10x50	2
27	TW18063	Bumper axle	2
28	TW18217	Side bumper	2
29	TW18064	Drive cover	1
30	FW06	Washer Φ 6	6
31	LFW06	Lock washer Φ 6	6
32	TW18218	Bolt M6x16	6
33	FW08	Washer Φ 8	10
34	LFW08	Lock washer Φ 8	6
35	TW18193	Bolt M8x20	8
36	TW18065	Rotary frame position sensor plate	1
37	EP302-0209	Nut M8 self-locking	2
38	TW18261	Chain, table roller	1
39	TW18275	Bumper Bushing	2

12.16. Film cut and hold, set



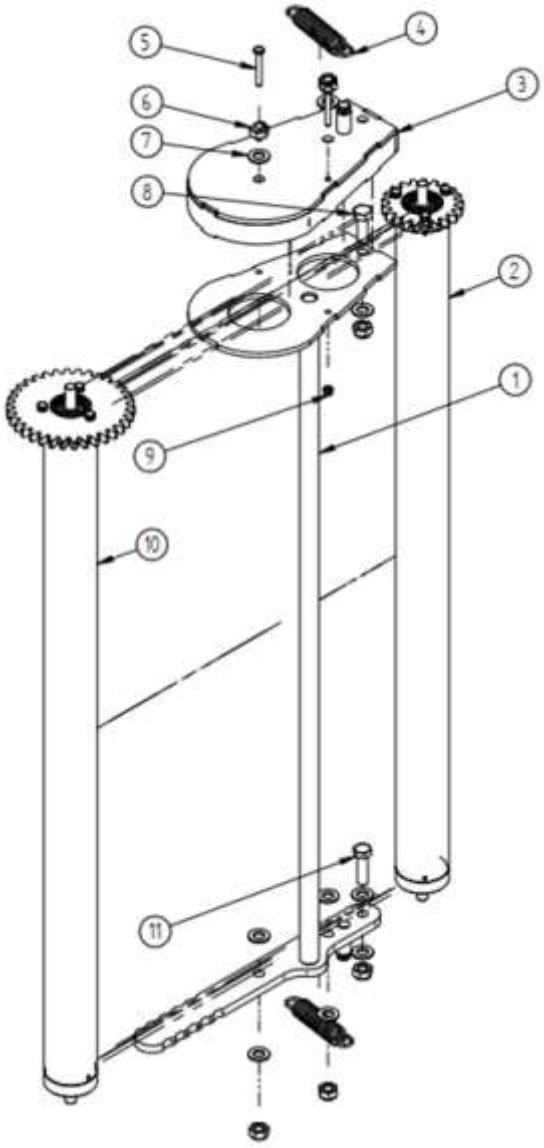
Item	Part #	Description	Qty.
1	TW18066	Cut and hold frame	1
2	TW18067	Bend clamp, heavy-duty	1
3	TW18068	Heavy-duty clamp	1
4	FW16	Washer Φ 16	12
5	TW18219	Bolt M16x90 np.gw.	4
6	TW18220	Bolt M12x45	4
7	FW12	Washer Φ 12	8
8	EP302-0204	Self-locking nut M16	7
9	EP302-0202	Self-locking nut M12	4
10	TW18221	Bolt M16x80 np.gw.	1
11	TW18222	Film cut and hold complete actuator	1
12	TW18069	Guide sliding sleeve	1
13	TW18211	Circlip Z30	1
14	TW18070	Guide	1
15	TW18223	Blade	1
16	TW18224	Button screw M6x12	2
17	LW06	Lock washer Φ 6	2
18	EP302-0337	Nut M24	1
19	TW18071	Blade guard	1
20	TW18225	Wing bolt M6x12	2
21	TW18226	Spring	1
22	TW18072	Bumper pin	1
23	TW18227	Rubber bumper	2
24	TW18073	Film scraper	1
25	TW18267	Hydraulic adaptor male	1

12.17. Dispenser post, set



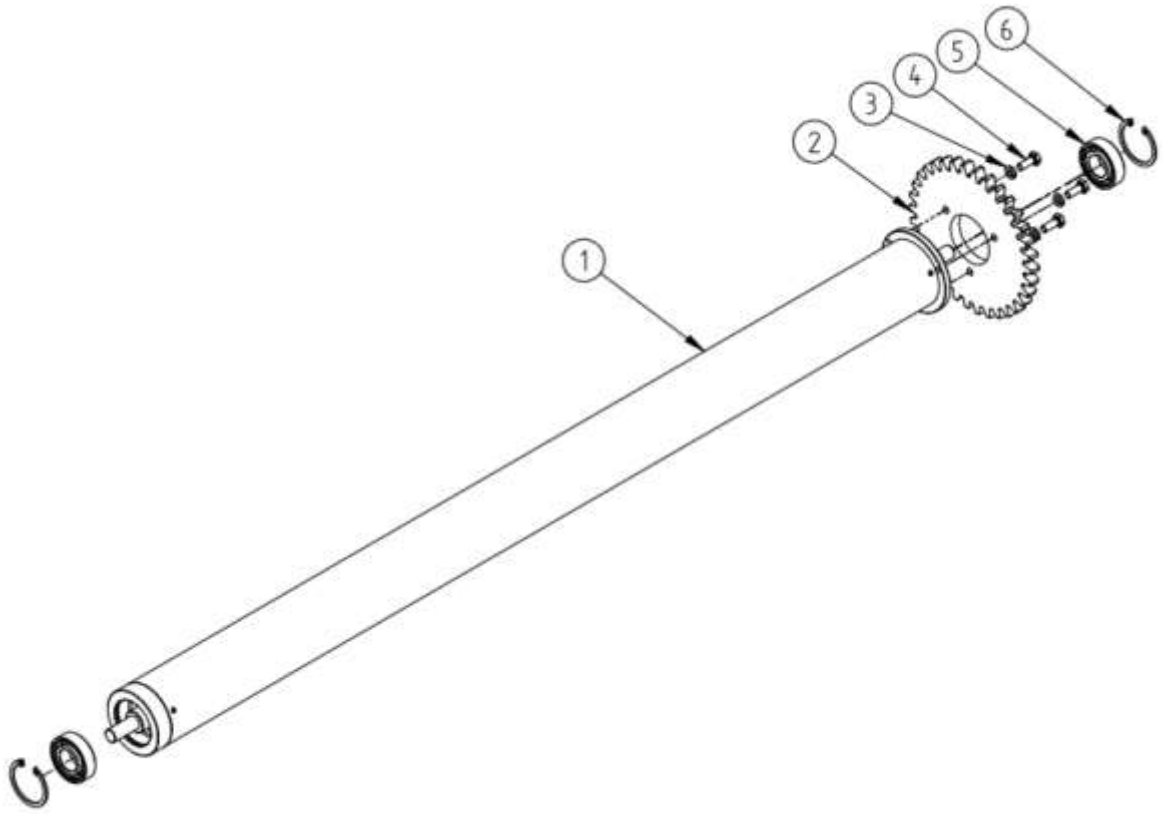
Item	Part #	Description	Qty.
1	TW18074	Welded dispenser post	1
2	TW18075	Film puller arm	1
3	TW18228	Circlip Z25	1
4	TW18076	Poppet	2
5	TW18229	Poppet bearing	2
6	TW18230	Circlip W62	2
7	TW18231	Sliding sleeve	2
8	TW18077	Bottom pressure screw	1
9	TW18232	Profile stopper 80x80	1
10	TW18233	Spring-type straight pin 6x45	1
11	TW18205	Arm upper bolt	1
12	FW16	Washer Φ 16	20
13	TW18234	Bolt M16x230 np.gw.	1
14	LNM1620	Self-locking nut M16	12
15	TW18235	Film scraper actuator	1
16	TW18078	Spring washer Φ 50	1
17	TW18236	Corner closing spring	1
18	TW18079	Arm actuator pin	1
19	TW18080	Plate of dispenser post 2nd clamp	2
20	TW18081	Plate of dispenser post 1nd clamp	2
21	TW18237	Bolt M16x140 np.gw.	6
22	EP302-0201	Self-locking nut M10	2
23	TW18238	Bolt M10x120 np.gw.	2
24	FW10	Washer Φ 10	4
25	TW18082	Pin M24	1
26	TW18083	Slide washer	2
27	TW18084	Dispenser post clamp bottom	1
28	TW18085	Welded handle	1
29	TW18282	Tension adjustment handle	1

12.18. Film dispenser, set



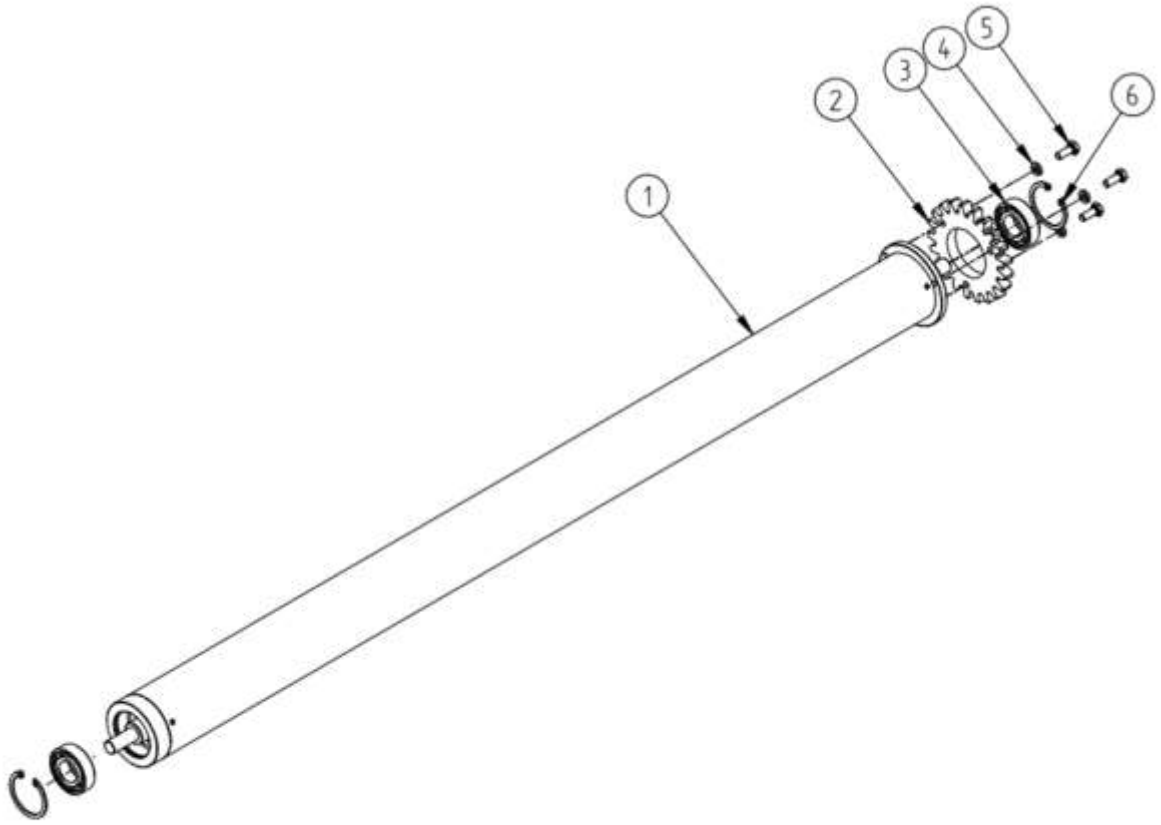
Item	Part #	Description	Qty.
1	TW18086	Dispenser rack	1
2	TW18087	Dispenser roller No. 2	1
3	TW18088	Gear cover	1
4	TW18239	spring 5223/89-036/0	2
5	TW18240	Bolt M6x45	2
6	EP302-0304	Nut M12	6
7	FW12	Washer Φ 12	9
8	TW18141	Bolt M12x35	1
9	EP302-0213	Nut M6 self-locking	2
10	TW18090	Dispenser roller No. 1	1
11	TW18242	Bolt M12x40	1

12.19. Dispenser roller No. 1



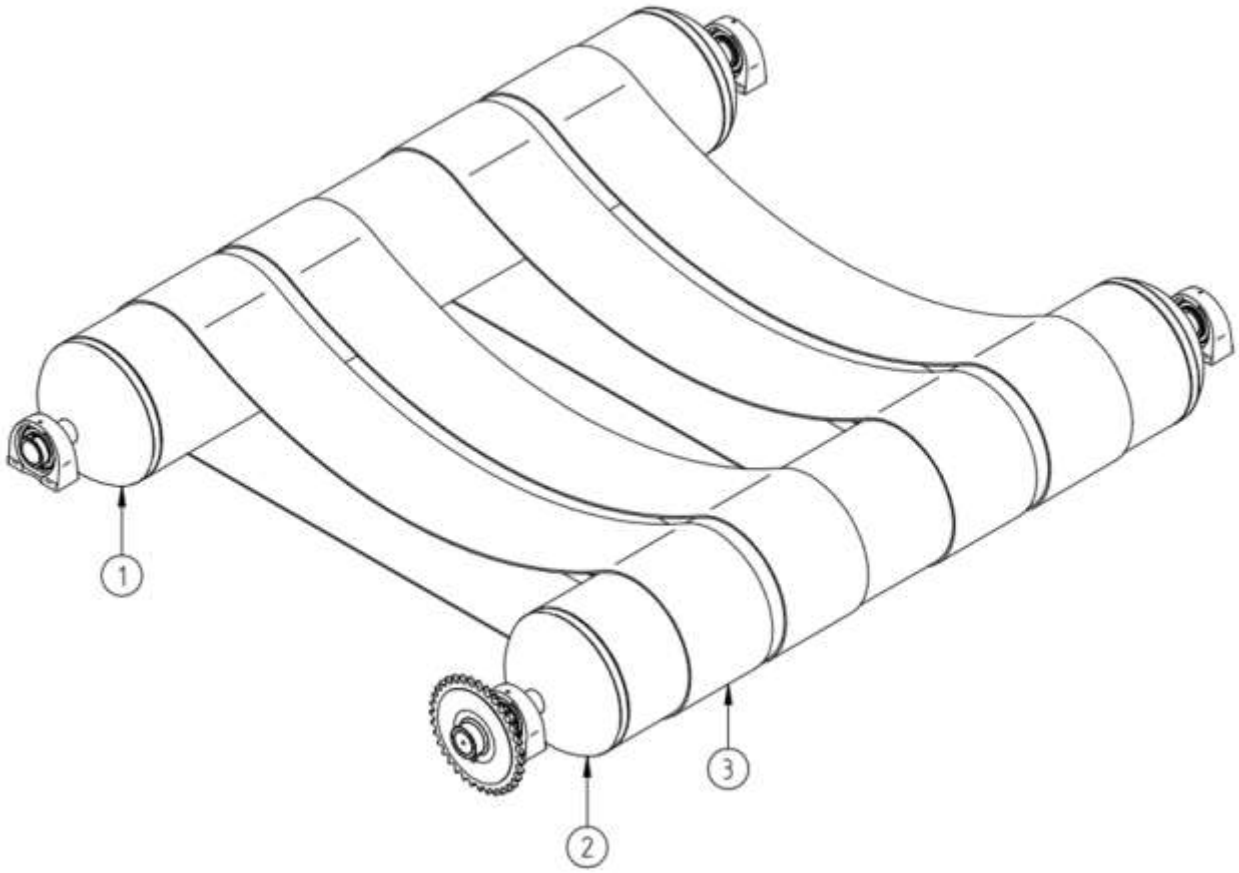
Item	Part #	Description	Qty.
1	TW18090	Dispenser roller No. 1	1
2	TW18091	Gear wheel, large	1
3	LFW06	Lock washer Φ 6	1
4	TW18218	Bolt M6x16	2
5	TW18244	Bearing	2
6	TW18245	Circlip W42	2

12.20. Dispenser roller No. 2



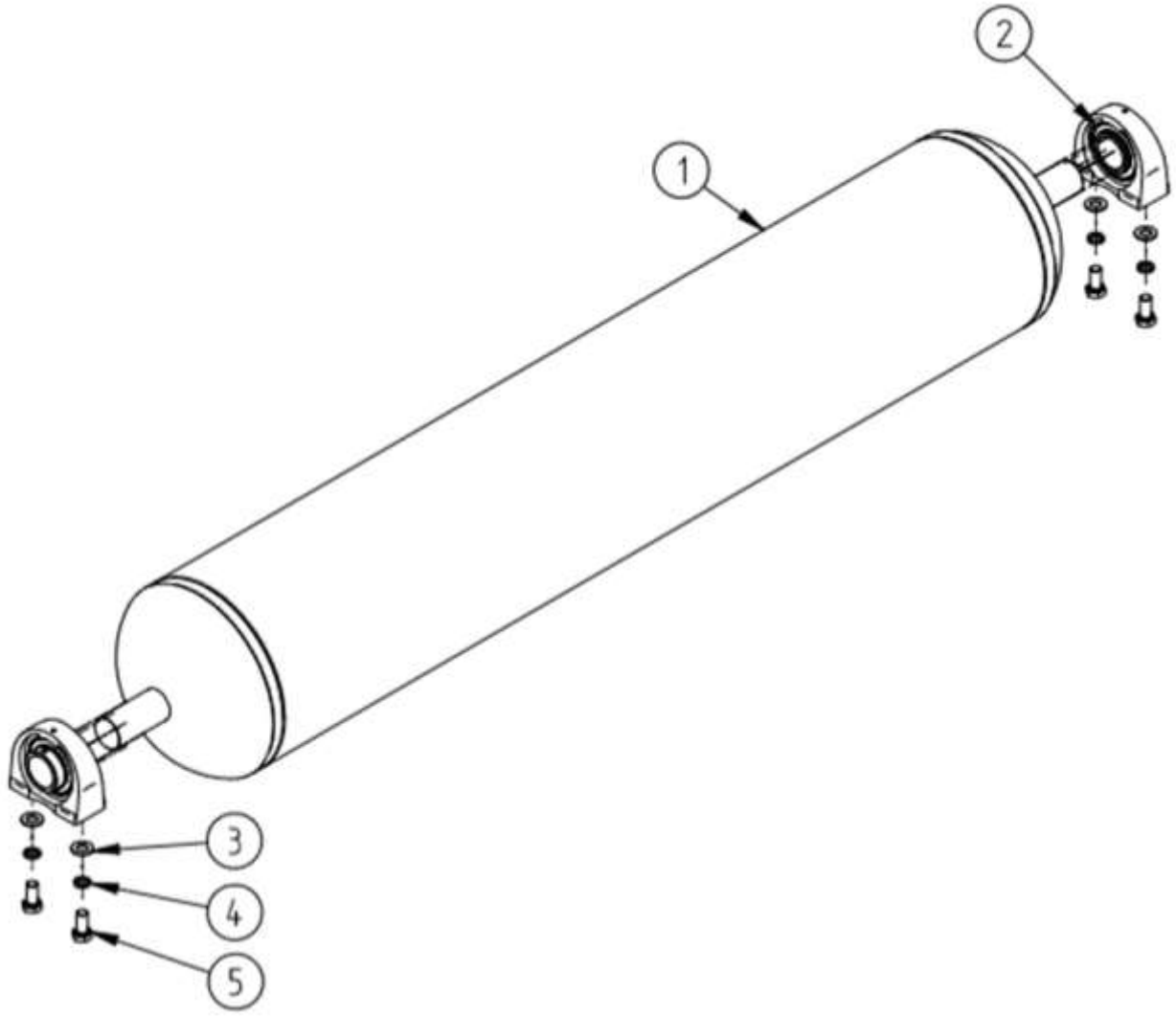
Item	Part #	Description	Qty.
1	TW18087	Dispenser roller No. 2	1
2	TW18092	Gear wheel, small	1
3	LFW06	Lock washer Φ 6	1
4	TW18243	Bolt M6x16	2
5	TW18240	Bolt M6x45	2
6	TW18245	Circlip W42	2

12.21. Table rollers



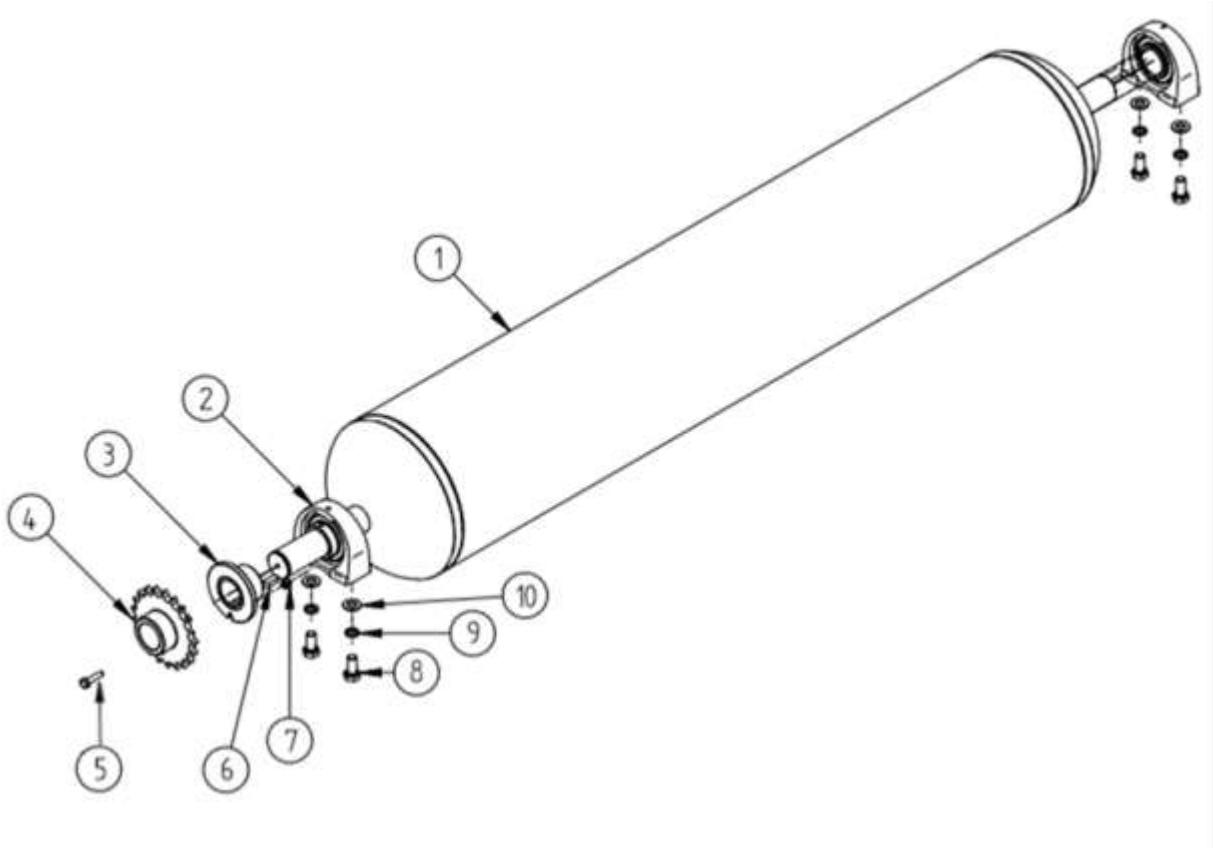
Item	Part #	Description	Qty.
1	TW18093	Idle table roller, set	1
2	TW18094	Driving table roller, set	1
3	TW18095	Rubber belt (conveyor belt)	4

12.22. Idle table roller, set



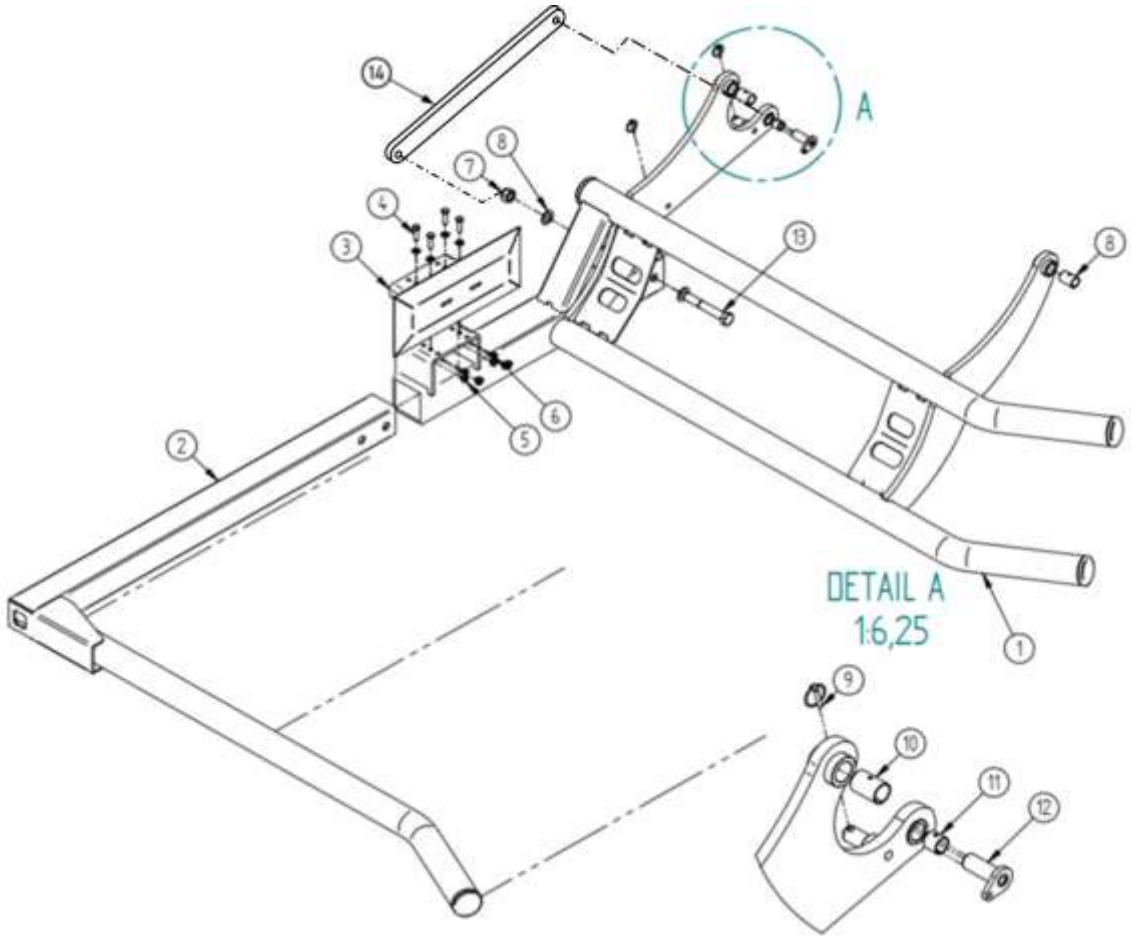
Item	Part #	Description	Qty.
1	TW18096	Idle table roller	1
2	TW18246	Table roller bearing	2
3	FW14	Washer ϕ 14	4
4	LFW14	Lock washer ϕ 14	4
5	TW18247	Bolt 14x30	4

12.23. Driving table roller



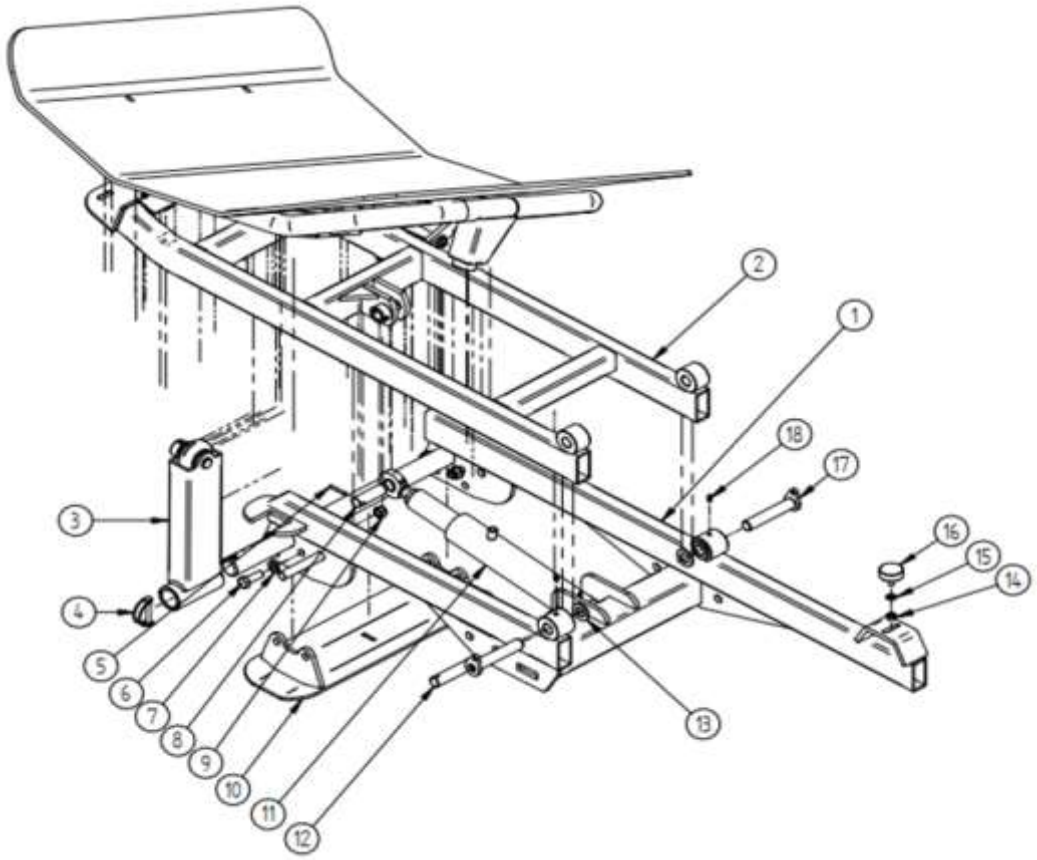
Item	Part #	Title	Quantity
1	TW18097	Driving table roller	1
2	TW18246	Table roller bearing	2
3	TW18098	Hub	1
4	TW18099	Gear wheel 3/4", Z21	1
5	TW18248	Bolt M8x35	1
6	TW18249	Key 10x8x28	1
7	EP302-0209	Self-locking nut M8	1
8	TW18247	Bolt 14x30	4
9	LFW14	Lock washer ϕ 14	4
10	FW14	Washer ϕ 14	4
	TW18264	Optional 20” film kit (includes gear, chain and master link) See page 55 for installation instructions.	1

12.24. Bale lift, set



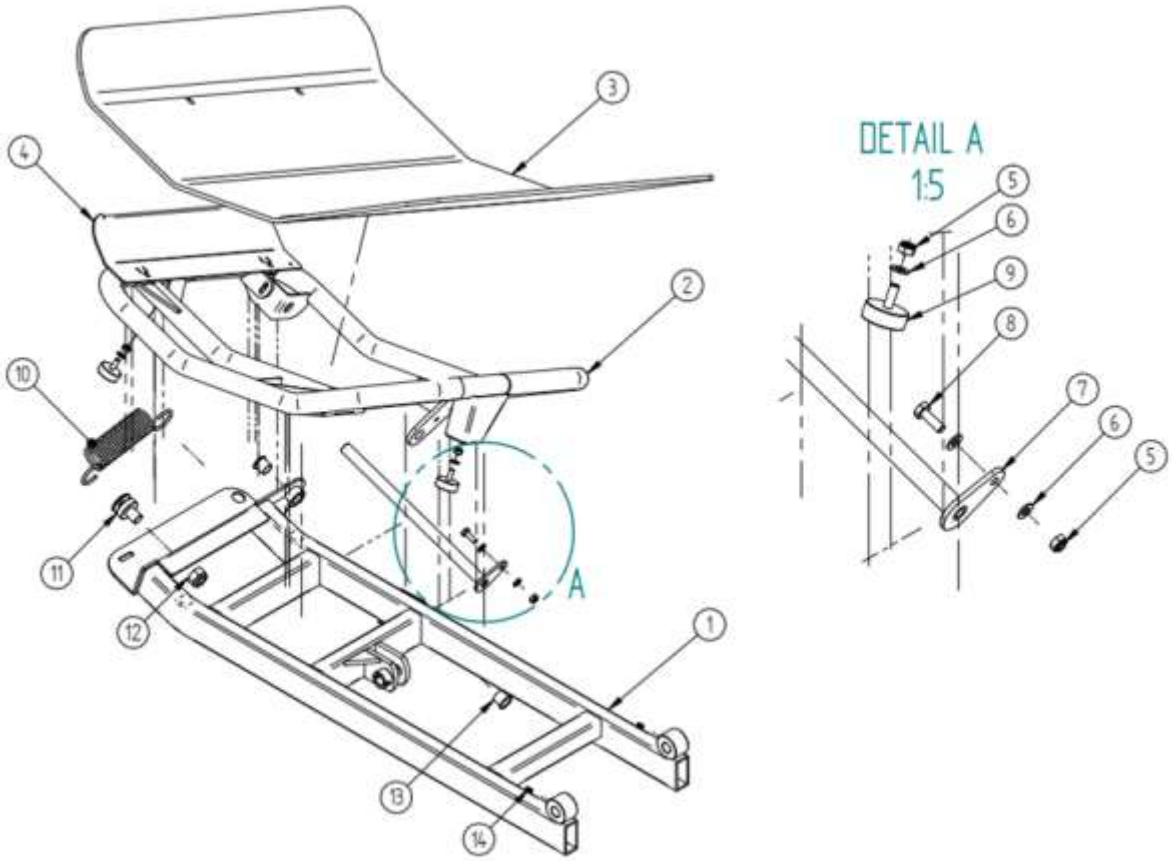
Item	Part #	Description	Qty.
1	TW18101	Lift arm	1
2	TW18102	Adjustable arm	1
3	TW18103	Buffer	1
4	TW18242	Bolt M12x40	4
5	EP302-0202	Self-locking nut M12	4
6	FW12	Washer Φ 12	8
7	TW18250	Self-locking nut M24	1
8	FW25	Washer Φ 25	2
9	TW18251	Locking pin 6.0*27/32	2
10	TW18104	Lift sliding sleeve	2
11	TW18105	Lift actuator sliding sleeve	1
12	TW18106	Lift actuator pin	1
13	TW18252	Bolt M24x160 np.gw.	1
14	TW18268	Cylinder lock flat plate	1

12.25. Bale tipper, set



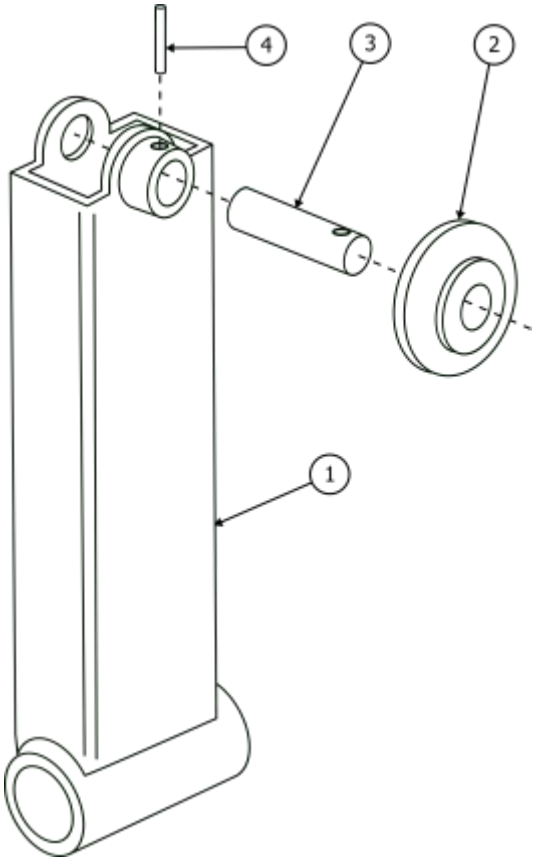
Item	Part #	Description	Qty.
1	TW18107	Outer frame	1
2	TW18108	Tipper cradle, set	1
3	TW18109	Adjustable arm, set	1
4	TW18253	Adjustable arm locking pin	1
5	TW18254	Spring-type straight pin 6x45	2
6	TW18205	Bolt M16x45	4
7	FW16	Washer ϕ 16	8
8	TW18110	Actuator pin, short	1
9	LNM1620	Nut M16	4
10	TW18111	Bale tipper resistance	1
11	TW18112	Bale tipper actuator	1
12	TW18113	Actuator pin, long	2
13	TW18255	Tipper nylon washer	2
14	EP302-0201	Nut M10 self-locking	1
15	FW10	Washer ϕ 10	1
16	TW18114	Vibration damper 50x18	1
17	TW18115	Tipper pin	2
18	TW18256	Grease nipple M6	2

12.26. Tipper cradle, set



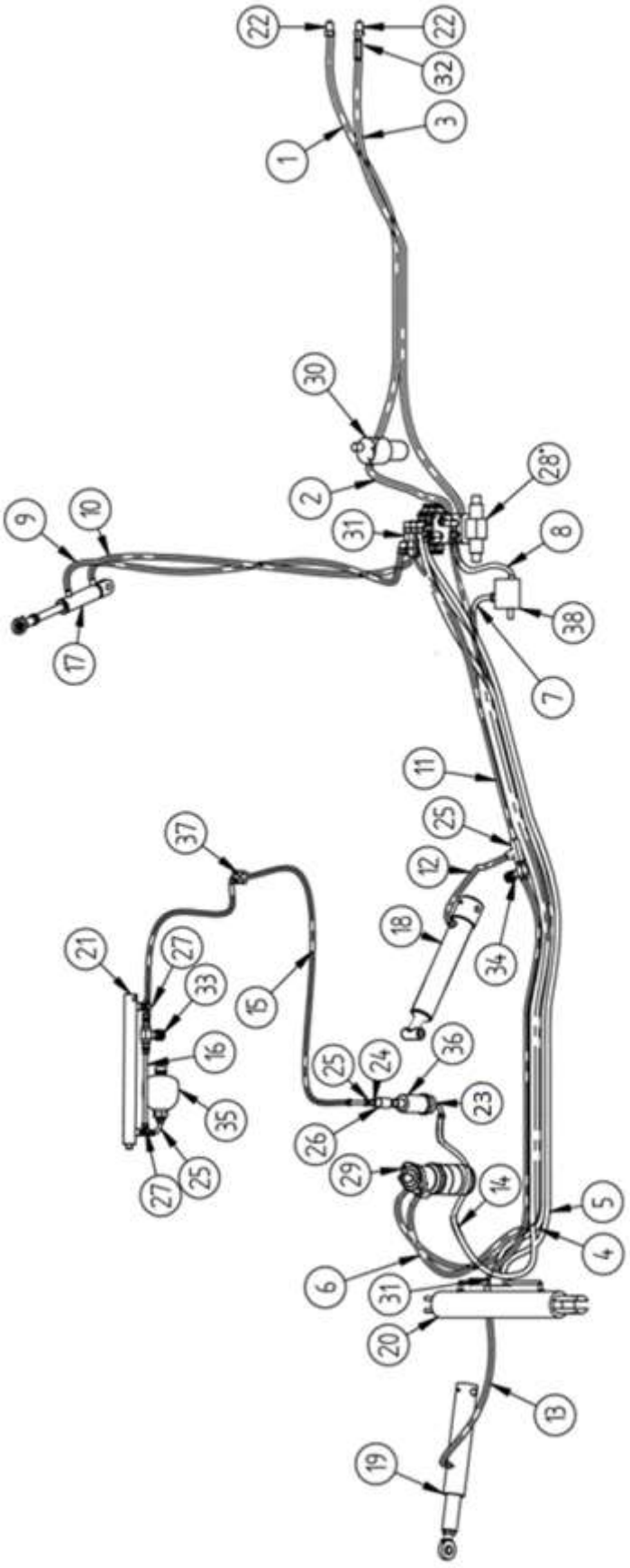
Item	Part #	Description	Qty.
1	TW18116	Tipper slide base	1
2	TW18117	Cradle frame	1
3	TW18118	Sheet	1
4	TW18119	Cradle corner	1
5	EP302-0201	Nut M 10 self-locking	3
6	FW10	Washer ϕ 10	4
7	TW18120	Cradle pin	1
8	TW18257	Bolt M10x30	1
9	TW18121	Vibration damper 50x21 D	2
10	TW18122	Tension spring fi6xfi60x250_r	1
11	TW18123	Spring pin	1
12	TW18250	Nut M24 self-locking	1
13	TW18124	Cradle pin sliding sleeve	2
14	TW18256	Grease nipple M6x1	2
15	TW18258	Carriage bolt M12x60	1
16	TW18259	Carriage bolt M12x80	1

12.27. Adjustable arm, set



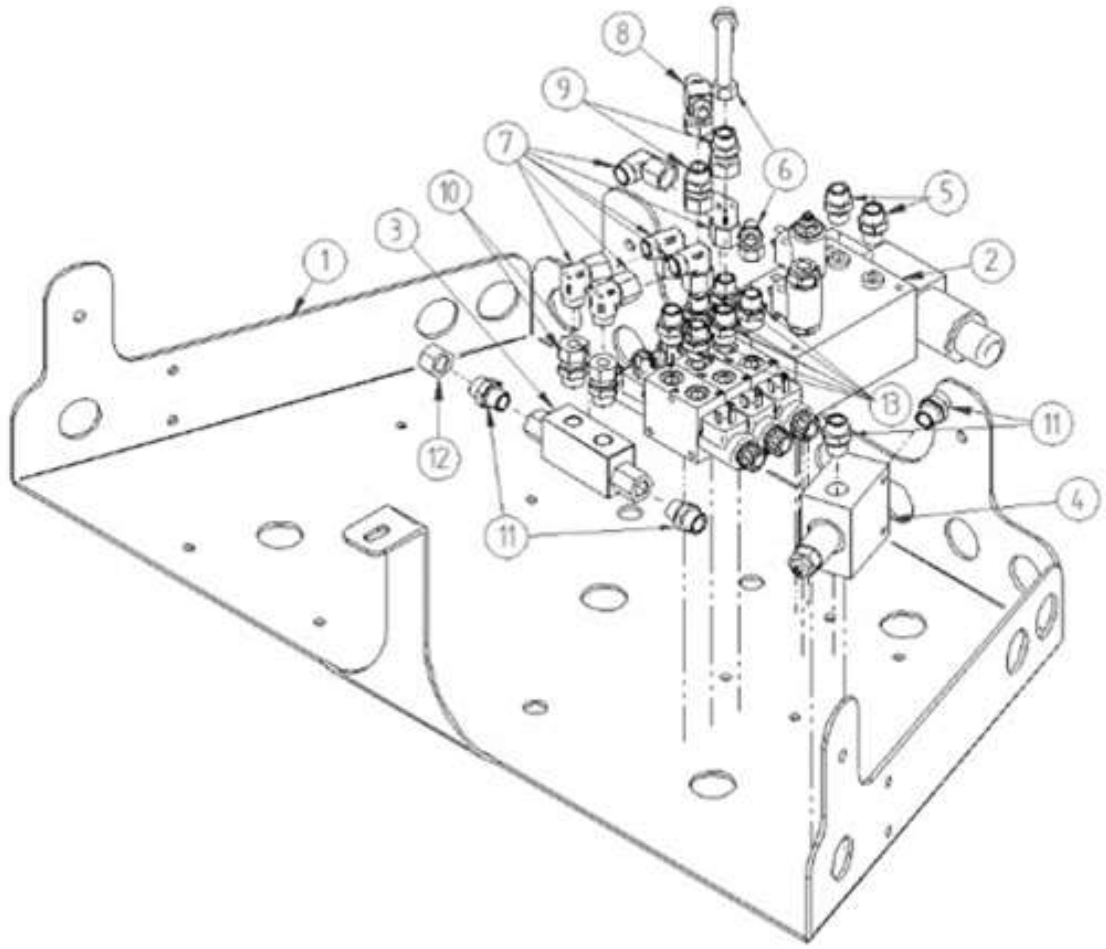
Item	Part #	Description	Qty.
1	TW18125	Adjustable arm	1
2	TW18126	Arm disc	1
3	TW18127	Arm disc pin	1
4	TW18260	Spring-type straight pin fi8x40	1

12.28. Hydraulic system

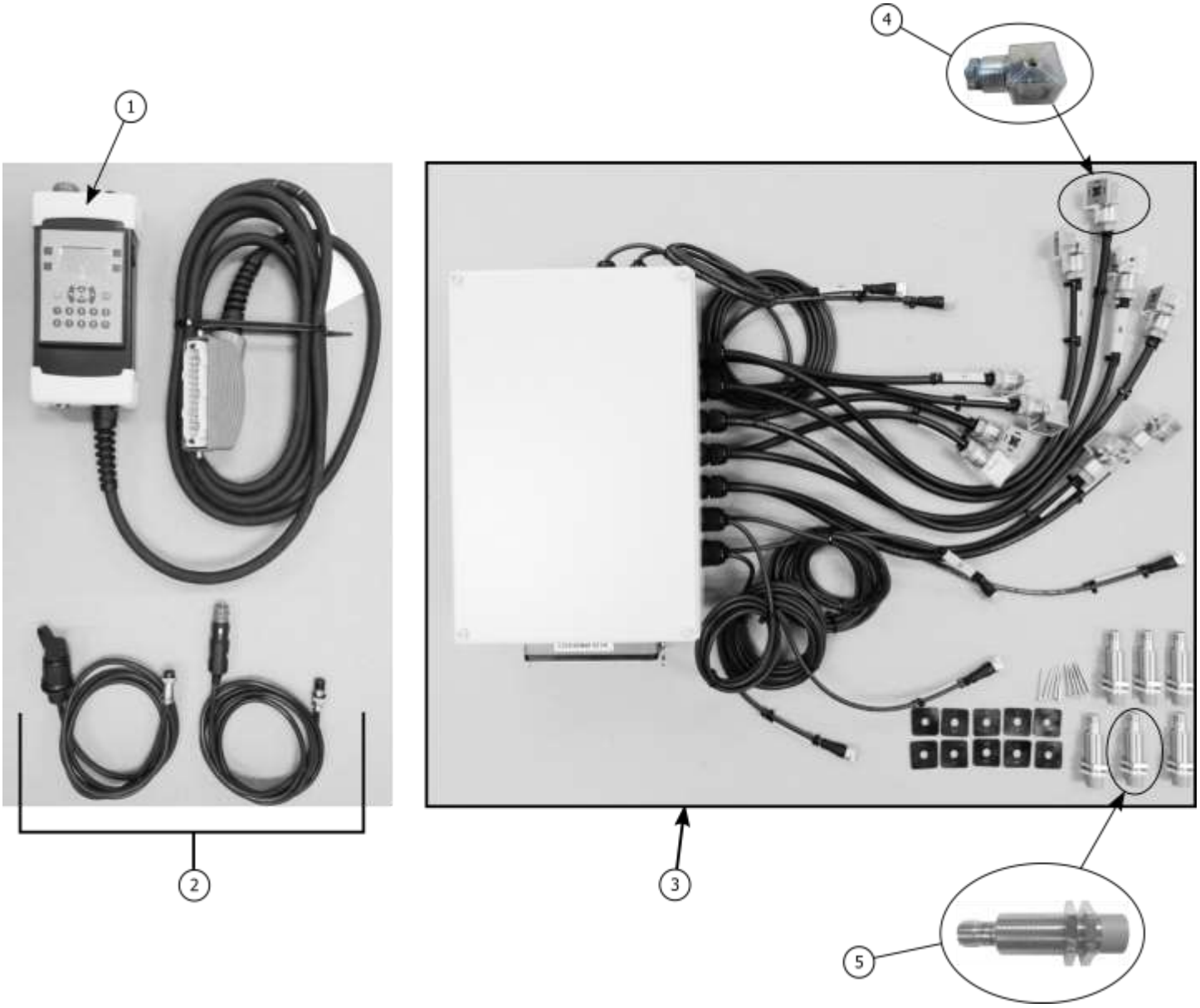


Item	Part #	Description	Qty.
1	TW18128	Power supply cable	1
2	TW18129	Filter hose	1
3	TW18130	Return hose	1
4	TW18131	Bale lift hoses	1
5	TW18132	Bale lift hoses	1
6	TW18133	Hydraulic motor return hoses	1
7	TW18134	Hydraulic motor supply hoses	1
8	TW18135	Regulator cable	1
9	TW18136	Scraper return hoses	1
10	TW18137	Scraper supply hoses	1
11	TW18138	Tipping hose	1
12	TW18139	Tipping actuator hose	1
13	TW18140	Tipper actuator hose	1
14	TW18141	Cut and hold hose	1
15	TW18142	Cut and hold actuator hose	1
16	TW18143	Hydraulic accumulator hose	1
17	TW18144	Scraper actuator	1
18	TW18145	Tilt actuator	1
19	TW18146	Bale tipper actuator	1
20	TW18147	Lift actuator with lock	1
21	TW18148	Cut and hold actuator	1
22	TW18249	Quick release coupling	2
23	TW18150	Straight connector	1
24	TW18151	Straight connector	1
25	TW18172	Angle connector	1
26	TW18153	Rotary joint	1
27	TW18154	T-connection	4
28	TW18155	Manifold	1
29	TW18156	Hydraulic motor	1
30	TW18157	Filter	1
31	TW18158	Lock	2
32	TW18159	Directional valve	1
33	TW18160	Throttling valve	1
34	TW18161	Throttling valve	1
35	TW18162	Hydraulic-accumulator	1
36	TW18163	Pin OW	1
37	TW18164	Clamp	1
38	TW18165	Flow controller	1

12.29. Manifold



Item	Part #	Description	Qty.
1	TW18016	Manifold mount	1
2	TW18167	Manifold	1
3	TW18168	“Lock”	1
4	TW18169	Regulator	1
5	TW18170	Straight coupling	2
6	TW18171	Curved connector	2
7	PR-T1222	Elbow coupling	6
8	TW18173	T-connection	1
9	TW18174	Straight connector	2
10	TW18175	Straight connector	2
11	TW18176	Straight coupling	4
12	TW18177	Stopper	1
13	TW18178	Straight coupling	6
14	TW18179	Straight coupling	4



Replacement Parts

Item	Part #	Description	Qty.
1	TW18277	Hand held remote	1
2	TW18278	Cable set for electricity (set of two cables)	1
3	TW18279	Panel box (complete with panel box, cables, cable ends & sensors)	1
4	TW18280	Electric plug	10
5	TW18042	Inductive loading sensor/unloading sensor	6

Note: TW18280 Electric plug & TW18042 inductive loading sensors are included with TW18279, Panel box. These parts can be purchased separately.

LIMITED WARRANTY

Belco Resources Equipment Division, LLC warrants to the original purchaser of any new Belco Resources, Inc equipment, purchased from an authorized Belco Resources, Inc dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use, ninety (90) days for commercial use from date of retail sale. Warranty for rental purposes is thirty (30) days. The obligation of Belco Resources Equipment Division, LLC to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Belco Resources Equipment Division, LLC dealer during regular working hours. Belco Resources Equipment Division, LLC reserves the right to inspect any equipment or parts, which are claimed to have been defective in material or workmanship.

This limited warranty does not apply to and excludes wear items such as shear pins, tires, tubes knives, blades or other wear items. Oil or grease is not covered by this warranty.

All obligations of Belco Resources Equipment Division, LLC under this limited warranty shall be terminated if:

- Proper service is not performed on the machine.
- The machine is modified or altered in any way.
- The machine is being used or has been used for purposes other than those for which the machine was intended.

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Belco Resources Equipment Division, LLC obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items war- ranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Belco Resources Equipment Division, LLC; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery.

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