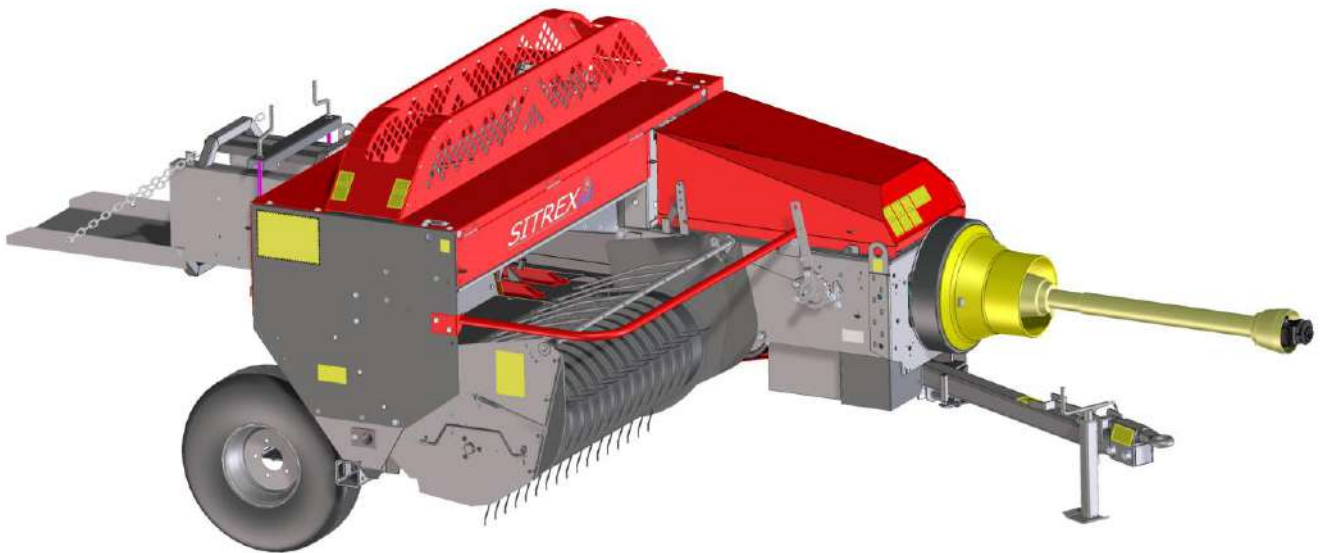




ENGLISH

USE AND MAINTENANCE MANUAL SQUARE BALER

M 60 MINI/S
M 60 MINI
M 60 SUPER



SITREX S.p.A. – Agricultural Machinery
Zona Industriale – Viale Grecia, 22 – 06018
Trestina (PG) – Italy

Original instructions.

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1 INFORMATION REGARDING THE MANUAL

This manual is to be considered an integral part of the machine and must accompany the machine if it is resold and until it is demolished.

Together with this manual you will also find the use and maintenance manual for the PTO shaft.

This manual must be kept carefully and must accompany the machine, so that it is easily reached in case it is necessary to consult the usage information regarding machine operation and safety

If the manual is lost or damaged, request a copy from the manufacturer or from the dealer. Ask all operators to read this manual carefully and to keep it near at hand for prompt consultation. Read this manual to ensure that you have a complete understanding of how to use this machine safely, correctly, and to obtain the best machine performance.

There are a number of pictographs on the machine. It is the operator's responsibility to make sure they remain perfectly visible and to replace them when they are no longer legible. The manufacturer reserves the right to make improvements or modifications when the improvements or modifications become practical and possible, without incurring any obligation to make modifications or additions to machines and equipment sold previously.

2 MARKING AND IDENTIFICATION

Upon receipt of the machine, check the marking.

Each machine is equipped with a CE nameplate and a declaration of conformity in compliance with Directive 2006/42/EC and subsequent amendments.

Location of the nameplate

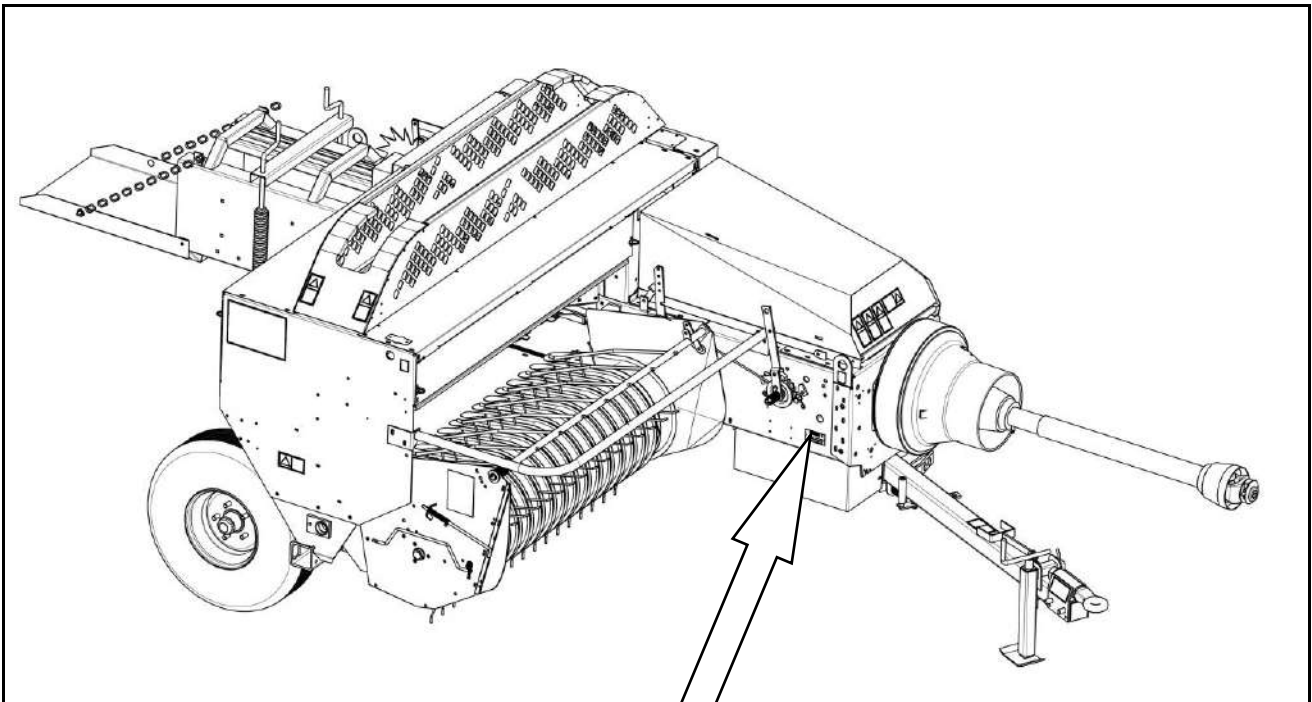


Fig. 2.1

2.1 Machine nameplate example



Fig. 2.2

2.2 CE certificate example

ENGLISH

Dichiarazione CE di conformità
Déclaration CE de conformité
EC Declaration of conformity
EG-Konformitätserklärung
Declaración CE de conformidad



La Ditta - L'Enterprise - The Company - Die Firma - La Empresa

SITREX Spa

V.le Grecia, 22 - 06018 Trestina (PG) Italy

dichiara sotto la propria responsabilità che la macchina
déclare sous sa responsabilité que la machine
declares on its own responsibility that the machine
erklärt auf ihre Verantwortung, daß die Maschine
declara bajo su responsabilidad que la máquina

ROTOPRESSA M50 MINI ROTO / ROUND BALLER M50 MINIROTOR
MATRICOLA / N. DE SERIE : 285764

è conforme ai requisiti essenziali di sicurezza e di tutela della salute
di cui alla Direttiva 2006/42/CE
est conforme à les requises essentielles de sécurité et de sauvegarde de la santé
relatives à la Directive 2006/42/CE
meets the essential requirements of safety and protection of health
as conforming to the Directive 2006/42/CE
den wesentlichen erforderlichen Eigenschaften von Sicherheit und von Gesundheitsschutz
folgt gemäß der Richtlinie 2006/42/CE
es conforme a los requisitos esenciales de seguridad y de tutela de la salud
referentes a la Directiva 2006/42/CE

Norme di riferimento - Instructions de référence - Reference regulations
Bezugsanweisungen - Normas de referencia:



Trestina

25.10.2018



sitrex Spa
Giovanni Signorelli

2.3 Machine specifications

MODEL		M60 MINI/S	M60 MINI	M60 SUPER
Tying type		Twine	Twine	Twine
Bale chamber	cm (in)	34x44 (13.4x17.3)	34x44 (13.4x17.3)	34x44 (13.4x17.3)
Straw bale weight	kg (lb)	13-20 (28-44)	13-20 (28-44)	13-20 (28-44)
Hay bale weight	kg (lb)	18-28 (39-62)	18-28 (39-62)	18-28 (39-62)
Bale length	cm (in)	40-130 (16-51)	40-130 (16-51)	40-130 (16-51)
Bale production capacity/minute		3-9	3-9	3-9
Plunger strokes/minute		80-90	80-90	80-90
P.T.O. power requirement	CV(HP)	20-25 (20-25)	20-25 (20-25)	20-25 (20-25)
Maximum pickup width	cm (in)	90 ÷ 95 (35-37)	105 (41)	140 (54)
Weight	kg (lb)	850 (1874)	900 (2000)	1000 (2205)
Overall width	cm (in)	169 (66,5)	180 (71)	210 (83)
Overall width with side wheel mounted behind the pickup	cm (in)	149 (58,7)	160 (63)	190 (75)
Length	cm (in)	395 (155)	395 (155)	395 (155)
Height	cm (in)	135 (53)	135 (53)	135 (53)
Tires		7.00/12 or 195/75-14 165/80-13	7.00/12 or 195/75-14 165/80-13	7.00/12 or 195/75-14 165/80-13

STANDARD EQUIPMENT

- Twine knotter
- Pickup lift crank
- Bale counter
- PTO shaft
- Third wheel bracket

OPTIONAL EQUIPMENT

- Third wheel
- Third wheel with bracket
- Pickup wheel
- Hydraulic pickup lift
- Hydraulic drawbar adjustment
- Wide-angle PTO shaft
- Long chute and trailer hitch
- Lights kit
- Pickup support roller

2.4 Machine parts identification

ENGLISH

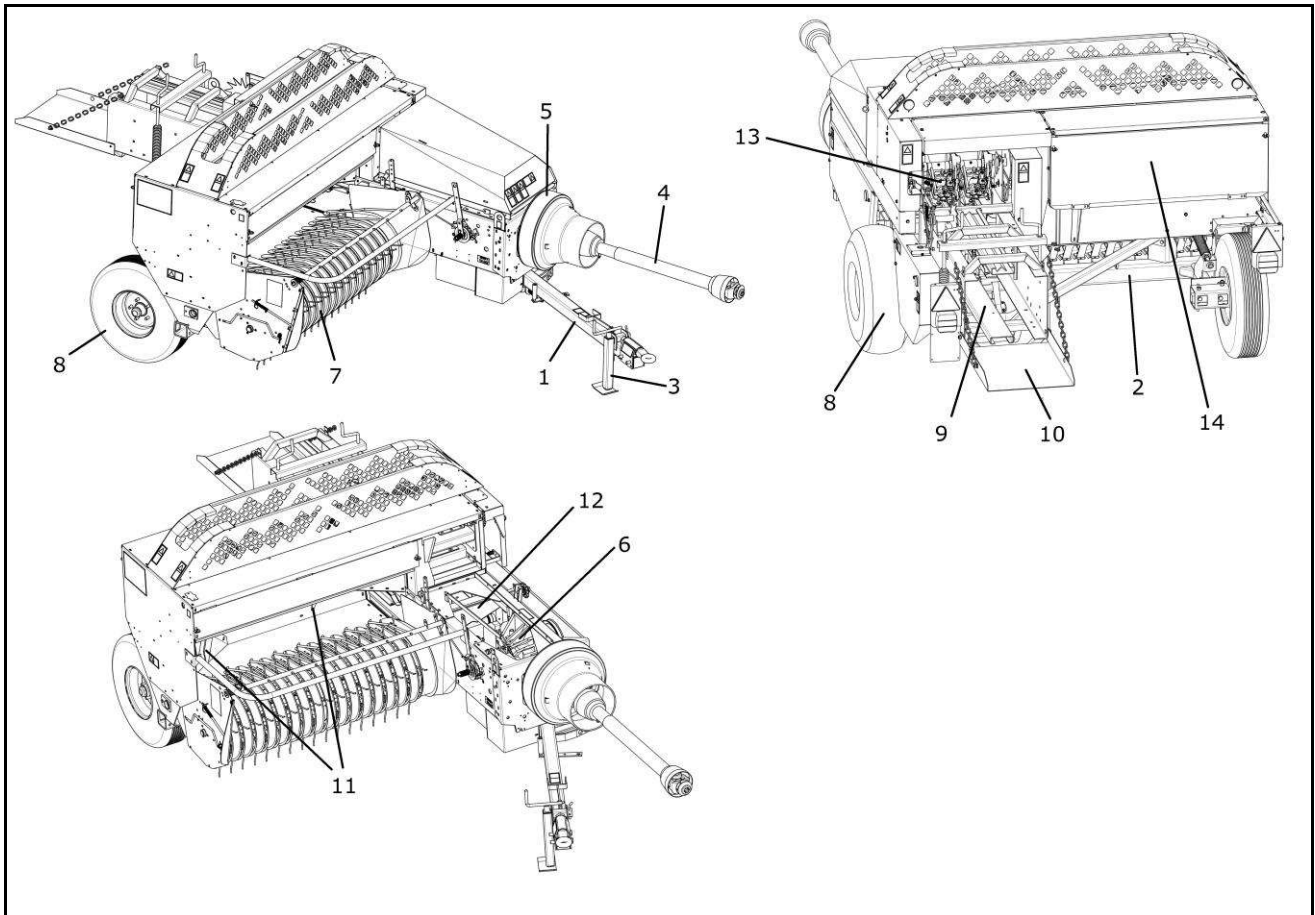


Fig. 2.3

1. Tongue
2. Chassis
3. Parking stand
4. PTO shaft
5. Flywheel
6. Reduction gear
7. Pickup
8. Wheel
9. Bale chamber
10. Bale chute
11. Forks
12. Plunger
13. Knotter
14. Twine box

3 SAFETY

3.1 General safety rules



WARNING!

- The manufacturer of the PTO shaft or universal joint is responsible for these components. As regards the PTO shaft or universal joint, the manufacturer of these will issue the required EEC declaration of conformity together with the machine.
- Familiarize yourself with the controls and the correct use of the machine and learn how to turn off the engine quickly. Do not stand in the work area.
- It is important to keep animals and other people away from the machine. Do not allow children or unqualified persons to use the machine.
- When working with the machine, wear suitable clothing and heavy duty shoes (do NOT wear loose clothing).
- Make sure you have attached the protective systems, guards, and safety devices in accordance with the regulations in force.
- Have defective or damaged parts repaired or replaced.
- Work during the daylight hours or with adequate artificial light.
- Stop the machine before crossing main roads, country roads, lanes or paths.
- If you hit a heavy object or if the machine vibrates excessively, turn off the engine, check for damage, and have all necessary repairs done by qualified personnel before restarting the machine.
- Stop the engine, apply the parking brake and remove the key from the ignition before getting off the tractor.
- Wait until all moving parts have stopped turning or moving before approaching the machine.
- Keep your hands and feet away from moving parts of the machine.
- Always keep in mind the usage and accident prevention rules. Therefore, for correct use of the machine, you must pay attention to the warning signs and signals.
- Before starting any type of work, the operator should familiarize himself with the machine, its parts and their functions, and especially when driving on roads, the operator must comply with the traffic rules.
- Always check that the machine is perfectly clean to avoid dangerous accidents. Never carry other persons on the machine while working.
- If the pickup becomes clogged, clean it **ONLY** with the engine turned off, the key removed from the ignition, the parking brake engaged and the machine stopped.
- Do not tamper with the safety systems or controls.
- The machine must be assembled according to the instructions.
- Use all necessary caution during assembly and disassembly operations and when disconnecting the machine from the tractor. Always check the loads per axle, the overall weights and the dimensions allowed for transit.
- Make sure that lights, warning signs and protective devices have been installed, and install any that are missing or damaged.
- The operating speed of the machine must be compatible with the environmental conditions. Avoid making sudden or sharp turns when going uphill or downhill. Do not work on very steep slopes.
- The machine can be started only when the protective devices have been installed.
- Make sure there are no persons near the machine during operations involving tipping and moving hydraulic parts. The parts driven by external forces have sharp, pointed ends.

- It is absolutely prohibited to stand between the machine and the tractor unless the brakes are engaged and the shut-off devices are activated.
- Do not operate the machine indoors or in closed environments .
-

**WARNING!**

- When the machine is running, people and animals should stay at least 40 meters away!
- Therefore keep away from the movable rear chamber which ejects the bales and creates a hazardous situation.
- When the machine is parked on loose or soft ground, the additional support must be inserted underneath the parking stand for proper stability.
- The machine described in this “Use and Maintenance Manual” should be repaired or disassembled only by authorized mechanics or by the manufacturer.

POWER TAKE-OFF (PTO)**WARNING!**

- Only the CE-type approved PTO shafts can be used with this machine, and the user must follow the instructions given in the Use and Maintenance Manual issued by the manufacturer of the PTO shaft.
- The power take-off protective shields must be installed in the correct position.
- The PTO shaft can be mounted and removed only if the PTO is disengaged, the engine is turned off, the ignition keys are removed from the ignition and the parking brake is engaged.
- Make sure that the PTO shaft is mounted correctly.
- Make sure that the chains are attached to the PTO shaft protective shield to prevent rotation.
- Before engaging the PTO, check that the machine rpm is the same as the tractor PTO rpm (max 540 rpm) and that the PTO direction of rotation is counterclockwise. Make sure there is no one in the danger area of the machine.
- Never engage the PTO when the engine is running.
- When working with the PTO, it is prohibited to stand near the PTO shaft or the PTO, and the PTO must be disconnected if the angles are too great.
- Do not get too close to the machine even when the PTO is disengaged.
- To clean or lubricate the machine or to carry out maintenance and repairs, turn off the engine, disengage the PTO, remove the keys from the ignition, and engage the parking brake. Once the PTO shaft has been disconnected from the power take-off, it must be supported with a special support so that it does not touch the ground and become damaged or dirty.
- The PTO protective guard must always remain at least 50 mm below the cardan protection guard.

**NOISE LEVEL**

The noise level in the driver's seat is: $L_{eq} = 79.5$ dBA. Ear protectors are recommended when using the tractor without a soundproof cab (if the noise level exceeds 85 dBA)

There are 3 levels of danger warnings

-  DANGER

“DANGER” indicates maximum danger and warns that if the operations described are not carried out correctly, they will cause serious injury, death or long-term risks.

-  WARNING

“WARNING” warns that if the operations described are not carried out correctly, they may cause serious injury, death or long-term risks.

-  CAUTION

“CAUTION” warns that if the operations described are not carried out correctly, they may cause damage to the machine and/or injury to person.

3.2 Location of safety signs

ENGLISH

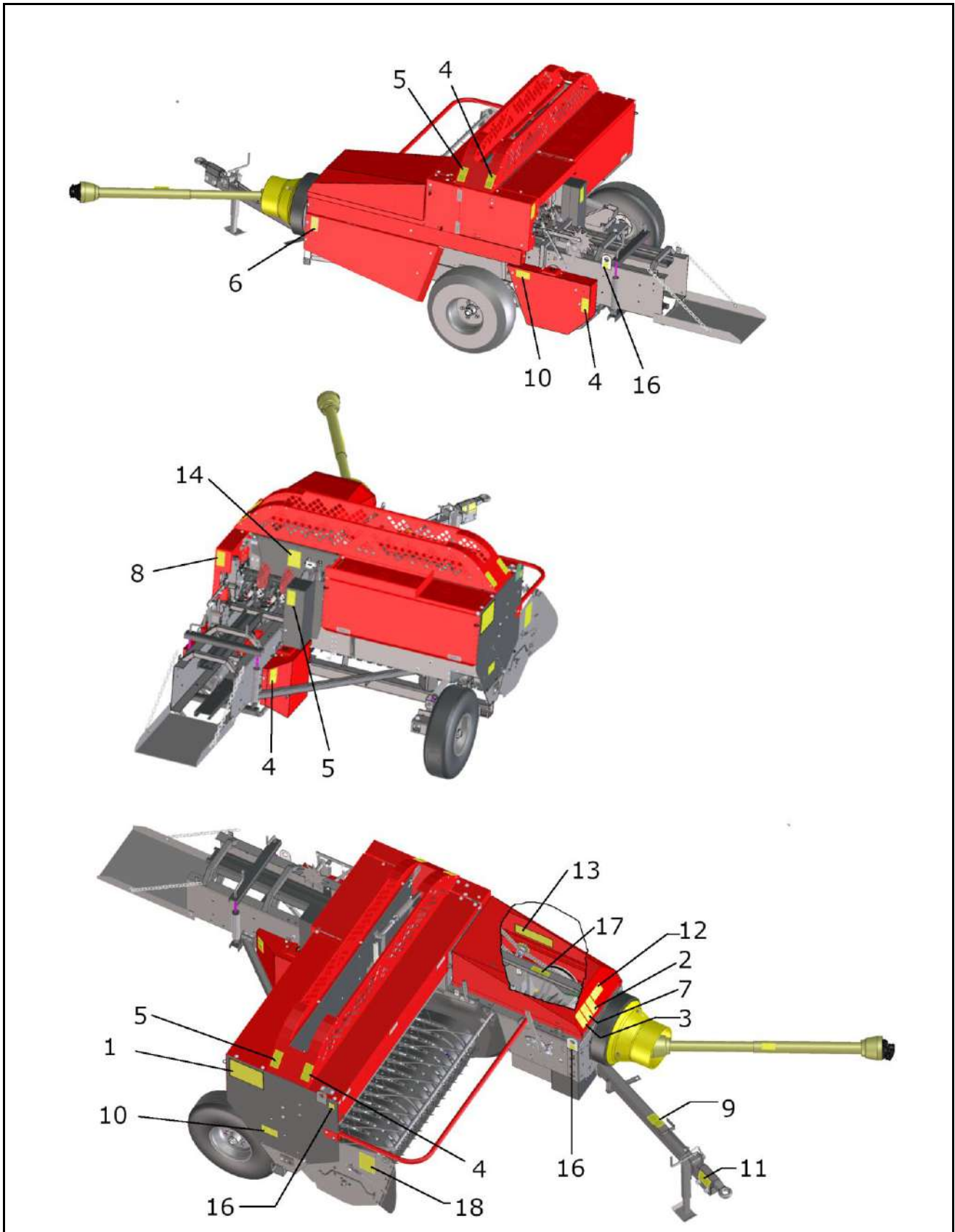


Fig. 3.1

3.3 Meaning of the pictographs







1)



WARNING! Do not leave the machine unattended when there are parts in motion.





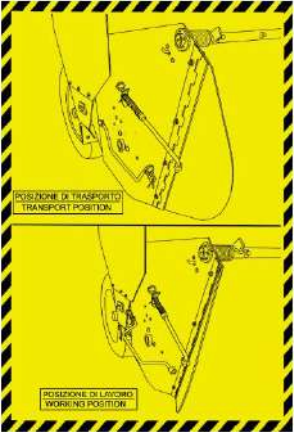
- Do not do any maintenance work, lubrication, adjustment, cleaning, or any other operation when there are parts in motion.
- All operations must be done when the machine is stationary and with the tractor engine turned off.
- Do not use the machine without its protective guards.
- Whenever the operator needs to get down from the tractor, he/she must disengage the PTO, turn off the engine, apply the parking brake and wait for all the parts and equipment to be fully stopped before getting off. Getting back into the driver's seat, the operator must make sure that dirt or mud does not make it difficult to use the controls.
- The machine can be used only if towed by a suitable tractor and controlled by a suitable PTO shaft, which is driven by the tractor PTO. Any other way of using the machine is strictly prohibited.
- No persons other than the operator are allowed on the tractor.
- No persons or objects may be carried on the equipment.
- During normal operation keep people outside the machine's operating range.
- When working on slopes, follow the tractor manufacturer's instructions to avoid rollovers. Reduce your speed and use caution when turning, maneuvering, etc..
- Before unhooking the equipment from the tractor, rest it on the ground and stabilize it with the stabilizer.
- After unhooking, check the stability of the equipment.
- Do not push the product into the pickup using your hands or feet.
- When transporting the machine, you must use the customary signals.
- The firm declines all liability if the aforesaid rules and instructions are not followed.

ENGLISH

<p>2)</p> 	<p>Before starting any operation, make sure you have read and understood this manual. All maintenance or modification work must be done following the instructions given in this manual. Failure to do so may cause accidents or machine breakdowns.</p>	<p>3)</p> 	<p>Turn off the tractor before doing any work on the pickup.</p>
<p>4)</p> 	<p>Do not put your hands between the casings when closing the rear chamber.</p>	<p>5)</p> 	<p>Keep a safe distance from the machine.</p>
<p>6)</p> 	<p>The casings MUST be closed before starting the machine.</p>	<p>7)</p> 	<p>Maximum rotation speed of the PTO shaft.</p>

<p>8)</p>	<p>It is mandatory that the belt be inserted or regulated only after having removed the protective guard with the motor turned off.</p>	<p>9)</p>	<p>When the machine is parked on soft ground, use an additional support underneath the parking stand.</p>
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<p>10)</p>	<p>Warning: Chock the wheels when the machine is disconnected from the tractor.</p>
<p>11)</p>	<p>Indicates the maximum vertical load on the towing eye.</p>
<p>12)</p>	<p>Keep away from the PTO and PTO shaft when the machine is operating.</p>
<p>13)</p>	<p>Warning</p>

<p>14)</p> 	<p>Maintenance notice</p>
<p>15)</p> 	<p>Greasing points</p>
<p>16)</p> 	<p>Anchor points</p>
<p>17)</p> 	<p>Oil level check</p>
<p>18)</p> 	<p>Indicates the transport and working positions</p>

3.4 Intended use of the machine

- The machine is designed for baling hay, straw and/or similar material
- Automatic operation from the tractor without manual controls
- The maximum forward speed is 5 km/h
- Hydraulic interlocks pressure: 200 bar
- Hydraulic fluid flow: 20-50 liters/min
- Lights power supply: 12 V DC
- Hitch behind the tractor with tow hook or bar
- Swath width for which the machine can be used: 90-140 cm, depending on the model (see the Technical Data Sheet, section 2.3)
- Maximum slope 35° (special ground conditions: wet, slippery, loose and liable to slide; a tractor that is too light reduces stability)
- Transmission via PTO shaft at the maximum speed of 540 rpm.
- Transport speed: 15-25 km/h
- Must be used only by qualified personnel

3.5 Incorrect use

The machine is not intended to be used for transporting people, materials or other objects, and it is not suitable for towing other machines, carts, etc. on the road. .

The transport speed limit is 15-25 km/h. If the machine is used where there is a lower speed limit, this must be followed.

The machine is not suitable for baling materials that are especially hard, inadequately dried, or difficult to cut.

The pressure of any hydraulic accessories must not exceed 220 bar.

Do not use the PTO at any speed other than 540 rpm.

The machine is not suitable for working at temperatures above 80°C or below -5°C.

3.6 Danger zones

There are areas around the machine where, even if every possible precaution and protective device has been added, there are residual risks in correlation to the operations being carried out. These risks can go so far as to cause people's death, therefore the utmost care and attention must be given to observing safety distances.

The zones with residual risks are identified in Fig. 3.2.

The three zones identified have a different degree of hazardousness, depending on the operations that are being carried out; more specifically, the following three zones are hazardous:

Zone A, residual hazard during all the operations in which the PTO is active and while the machine is moving and maneuvering;

Zone B, residual hazard during all the operations in which the PDF is active and/or while moving forward;

Zone C, residual hazard during the baling operation (bale discharge), while moving in reverse, and during maneuvers.

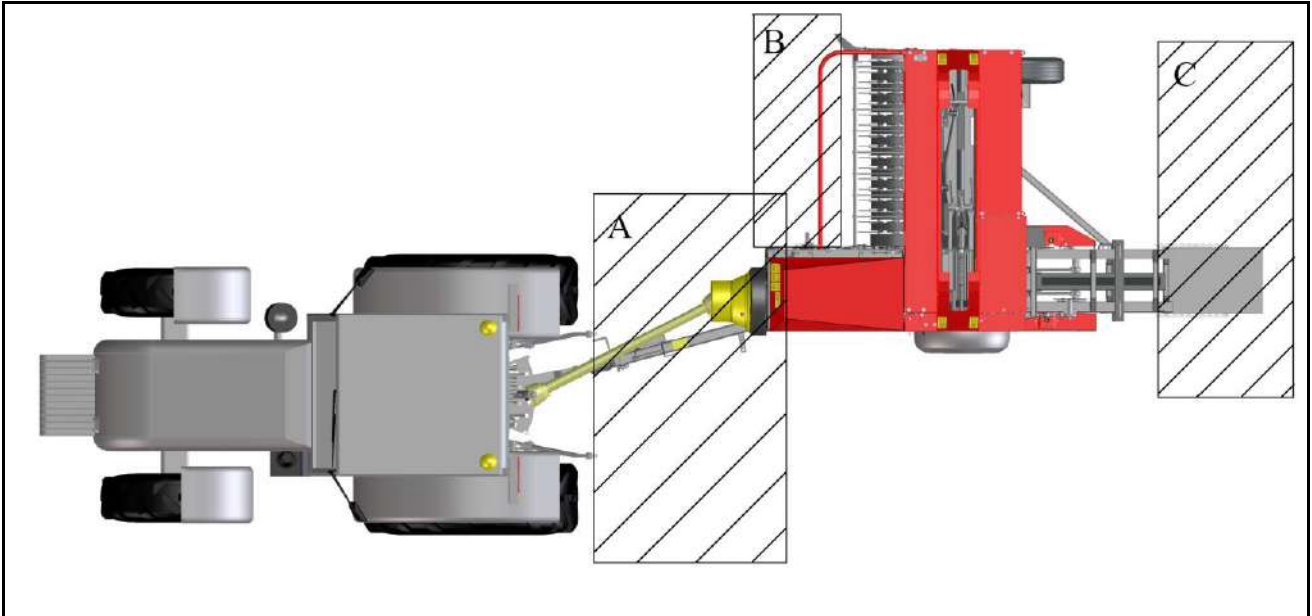


Fig. 3.2

4 SHIPPING, ASSEMBLY AND HANDLING



DANGER

Handling operations for heavy and suspended loads are very dangerous.

Do not stand near the load, and do not go underneath the suspended load. The operations must be carried out by qualified personnel, with suitable individual protection systems.



WARNING

Assembly operations can cause personal injury, including serious injury.

There are shearing, cutting and crushing risks, therefore the operations must be carried out by qualified personnel, and suitable individual protection systems must be used.

4.1 Shipping the machine

(shipment parts and packaging system)

For a shipment lot of 8 machines (or a multiple thereof), the shipment is organized as shown in Fig. 4.1 below, in a 40-foot Hi-Cube container.

For shipment quantities of less than 8 units, the machines can be shipped with other packing systems; some parts can be disassembled for an efficient transport system.

The parts that can be disassembled for shipping are (Fig. 4.2):

- Tongue (3),
- Wheels (1, 2),
- Upper protective guards (4),
- PTO shaft (5)
- Joint protective casing (6)

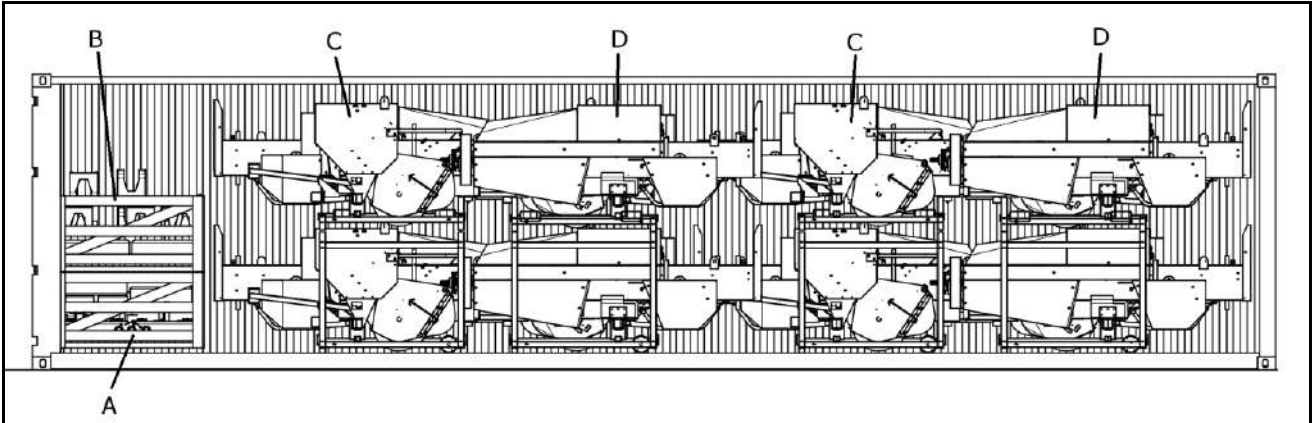


Fig. 4.1

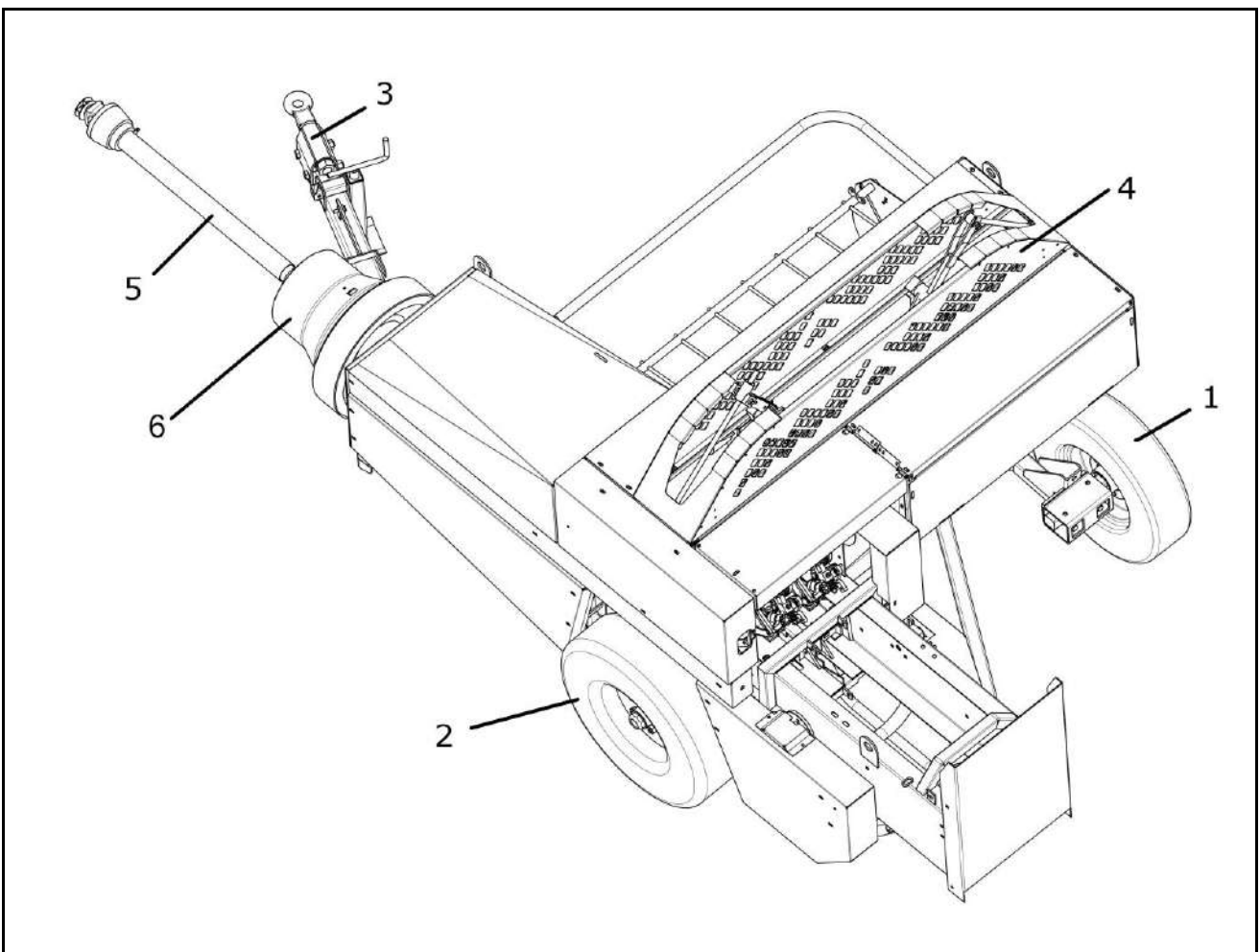


Fig. 4.2

Some parts that are supplied with the machine can be disassembled; these are packed as shown in Fig. 4.3

- Ref. 1 Shear bolts supplied
- Ref. 2 Joint protective casing;
- Ref. 3 PTO shaft;
- Ref. 4 Manuals.

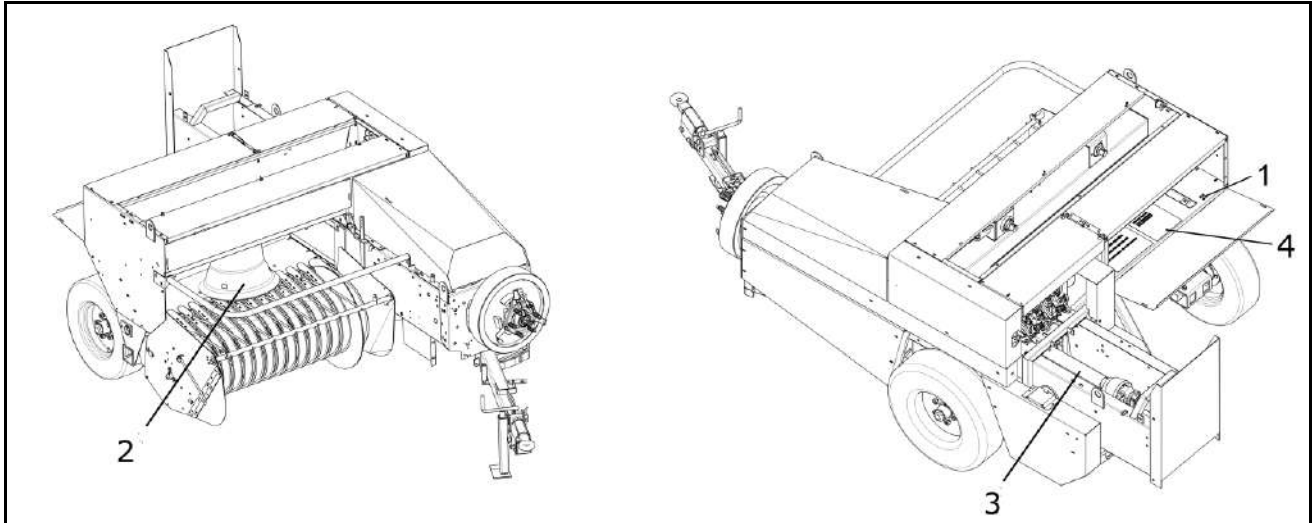


Fig. 4.3

4.2 Machine assembly



These operations are hazardous and must be carried out by a qualified person capable of handling heavy and suspended loads. There is a risk of serious injury or death, therefore keep people not involved in the operations and loose animals outside of the operating range.

It is necessary to have a lifting hoist of adequate capacity, and hooks must be attached to the machine as shown in Fig. 4.4.

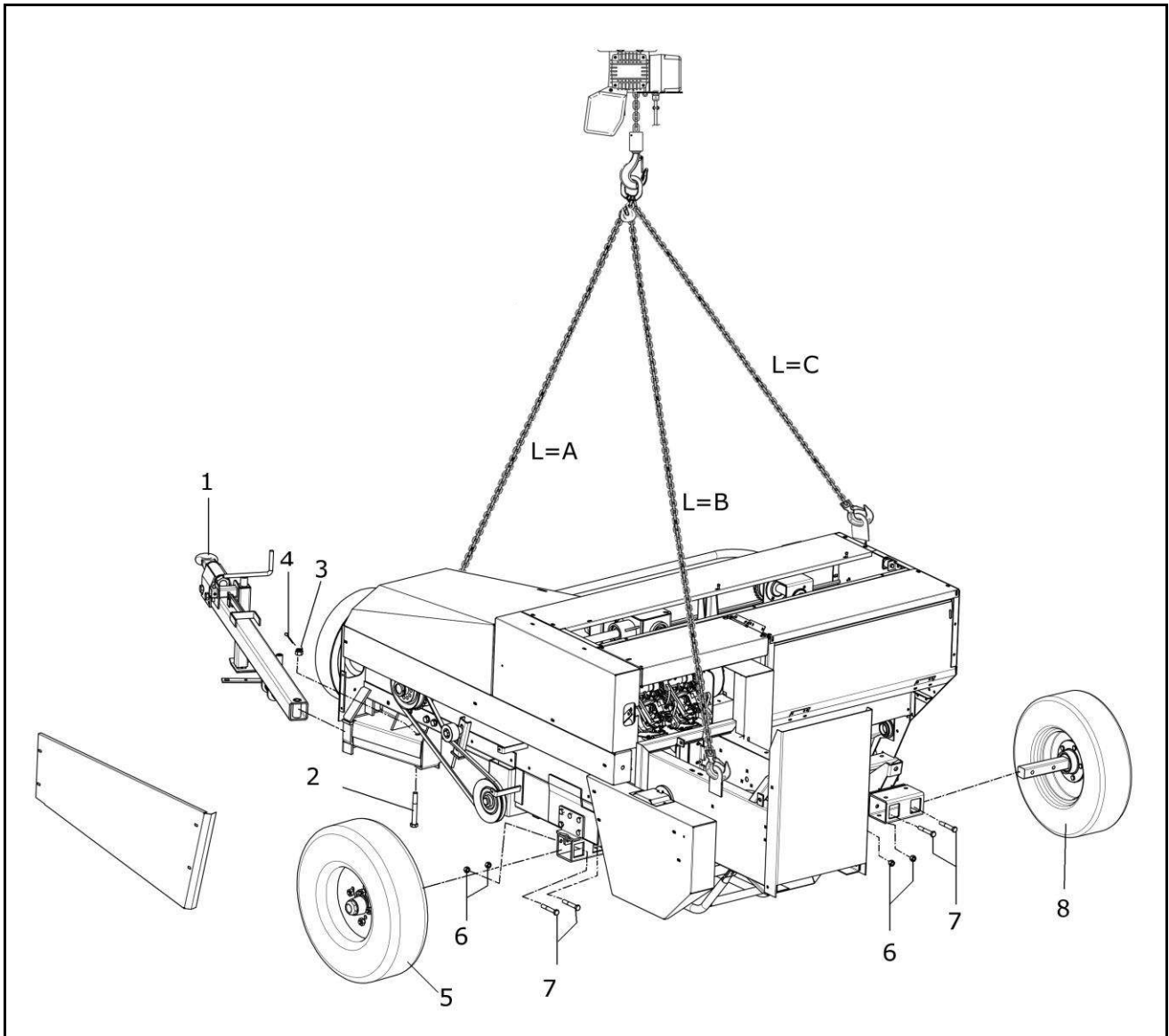


Fig. 4.4

Lift the machine with chains attached in the positions indicated by the pictograph and with the machine in a level position.

	A [cm]	B [cm]	C [cm]
M60 SUPER	189	212	170
M60 MINI	189	212	160
M60 MINI/S	189	212	160

Remove components 1, 5, 8 from the crate along with their nuts and bolts.

Keeping the machine raised off the ground, assemble the components, making sure that the bolts are securely tightened.

Set the machine on the ground on a flat surface that is free of obstacles, make sure that the parking stand is in the parking position and there are chocks to block the wheels and prevent movement.

Other parts that can be disassembled are:

The upper guards and the PTO shaft protective shield.

Figure 4.5 shows how they are to be assembled.

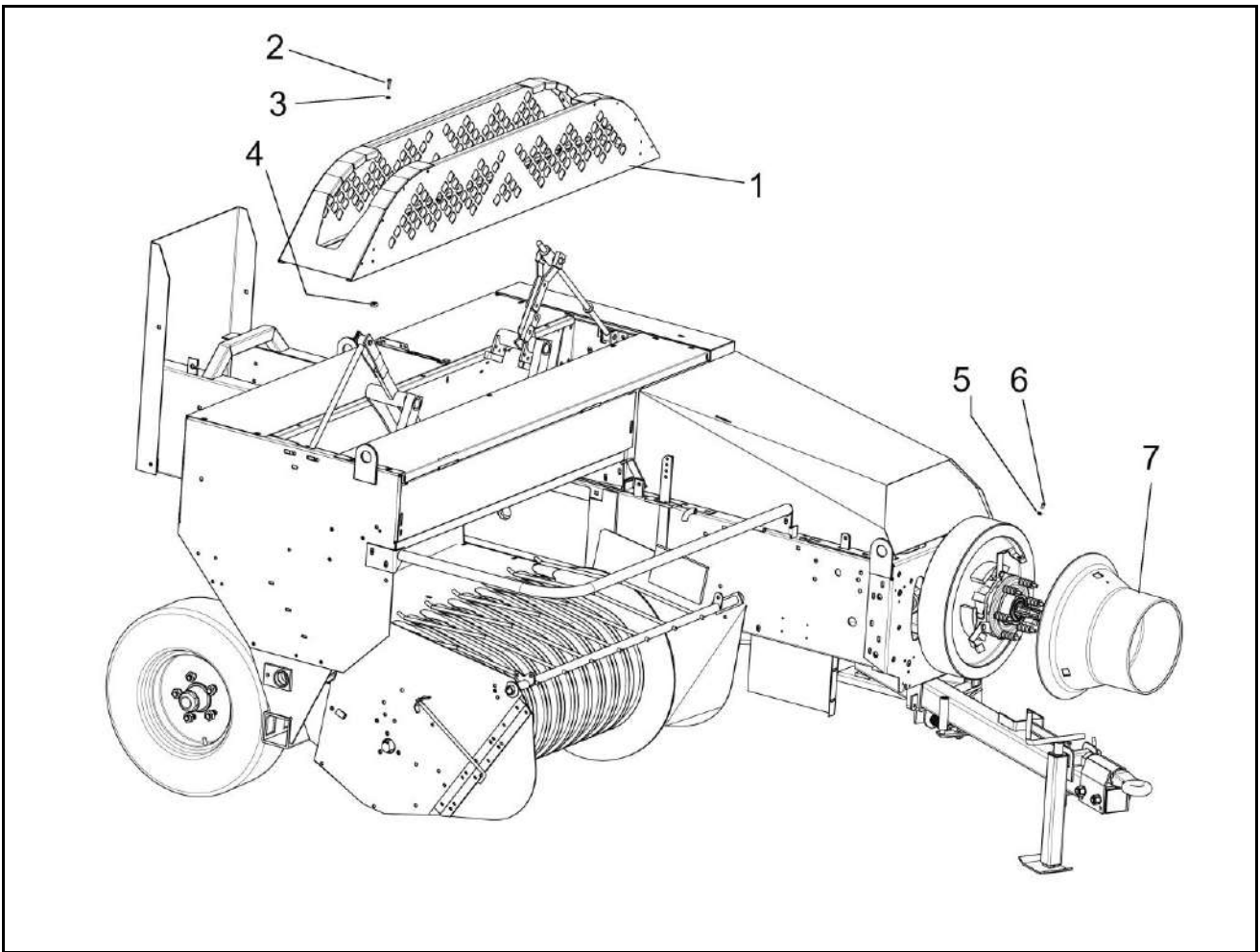


Fig. 4.5

5 PUTTING INTO OPERATION AND USE

The steps to be carried out for using the machine are listed below:

- checks before putting into operation;
- attachment to the tractor;
- transporting the machine;
- setting up for work;
- loading the twine;
- baling;
- adjustments;
- maneuvers at the end of the row;
- setting up for transport;
- parking the machine.



DANGER

While the machine is being used there are danger zones connected with the operations that are being carried out: keep objects and people away from these zones.

There is danger of death, serious injury, or long-term risks.

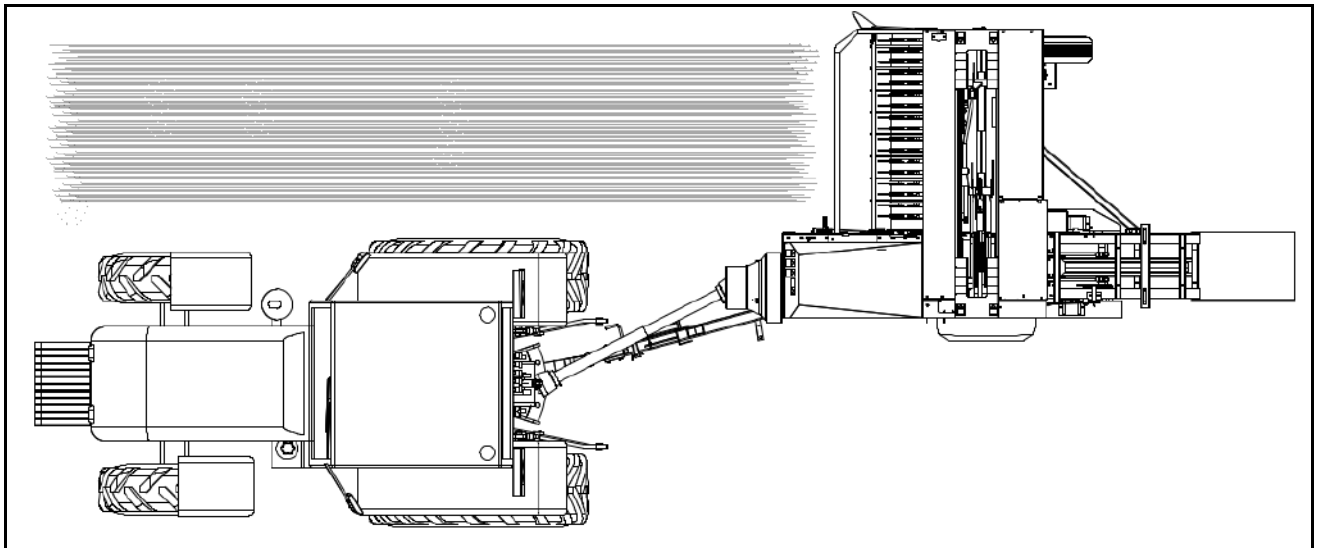


Fig. 5.1

5.1 Checks before putting into operation

Before putting the baler into operation, carry out the following steps:

Check all the lubrication and greasing points (see “Lubrication and Maintenance” chap. 6). Check to make sure the nuts and bolts have not loosened, and tighten them if necessary.

WARNING! Before putting the machine into operation, see Table 6.1.

Check that there is twine and the correct tensioning (see chapter 5.5).

Check that all shear bolts are in good condition.

Check to ensure that the control mechanisms move freely.

Clean the chamber guides from any residue buildup.



DANGER!

All protective guards must always be closed before starting the machine, and must be reopened only after stopping the machine, engaging the parking brake, turning off the tractor engine and removing the ignition key.

When starting, the hydraulic jacks are empty, and when first activated they can cause sudden movements or parts of the machine to fall. Operate them several times using great caution and keeping people away from the machine.

All movements with the tractor must be made checking to make sure there are no persons or objects in its path.

Failure to do so can result in death or serious injury.

5.2 Hitching to the tractor

The baler is hitched to the fixed bar of the tractor and is driven by the PTO. Position the machine horizontally using and regulating the parking stand so that the bale chamber is parallel to the ground. Hitch the machine to the tractor in reverse, positioning the towing eye at the desired height (adjusting the height position of the tractor if necessary) and making sure it is securely fastened.

Next, raise the machine parking stand, placing it in the position shown in Fig. 5.2.

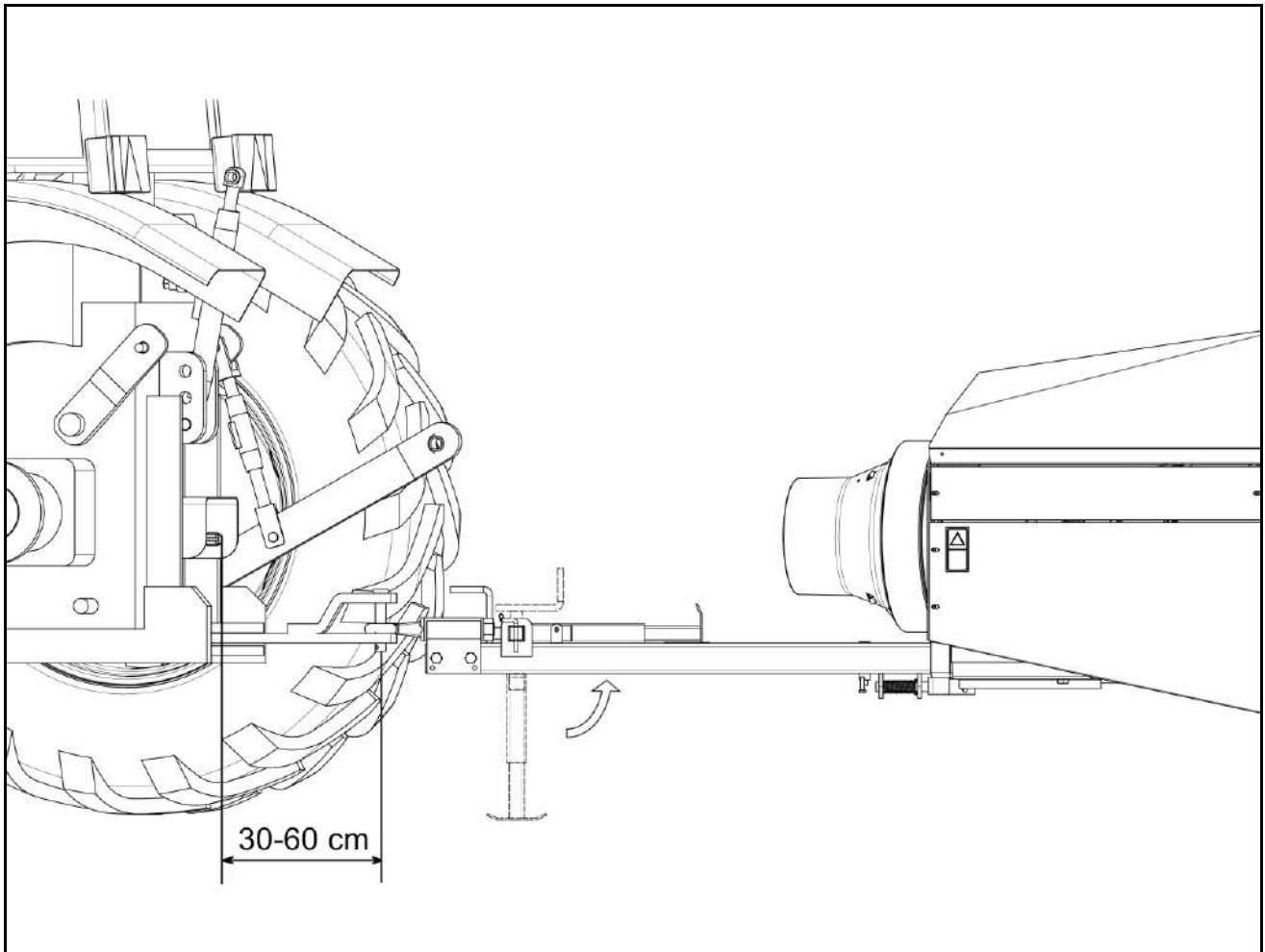


Fig. 5.2

The baler towing eye must be positioned as shown in Fig. 5.2.

The tractor hitch fork and the baler towing eye must be positioned so that the bale chamber is parallel to the ground. The eye must be about 30-60 cm from the PTO and the transverse position of the eye must be such that it is from 0 to 5 cm to the right with regard to the axis of the tractor PTO (Fig. 5.3)

Secure the hitch pin with a suitable locking pin (keeper pin).

Incorrect hitching to the tractor subjects the PTO shaft universal joints to abnormal loads and causes the baler to operate abnormally, with possible damage to its parts.

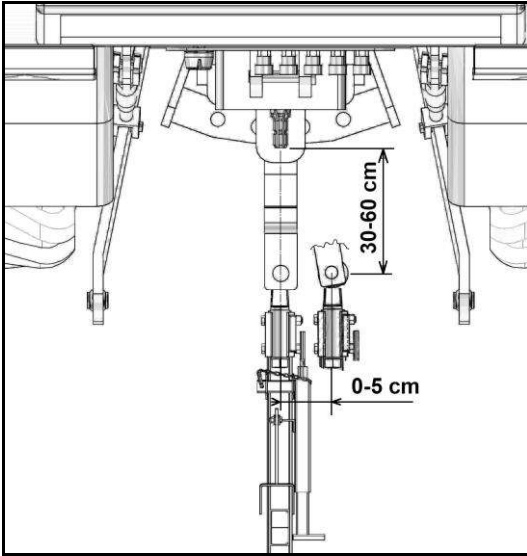


Fig. 5.3

5.3 Transporting the machine

When transporting the machine, make sure that the overall dimensions are in compliance with the local laws in force. Check the condition of the tires, remove the PTO shaft, put the drawbar in the transport position, close the bale discharge chute, raise the pickup to the transport position, make sure there are no people on the machine, and remove any materials or objects that may fall off the machine.

Check that the parking stand is in the transport position (raised) and that the hitch is correctly attached.

Limit the transport speed so as to ensure the stability of the tractor and machine, for complete control of the vehicle in usage conditions.

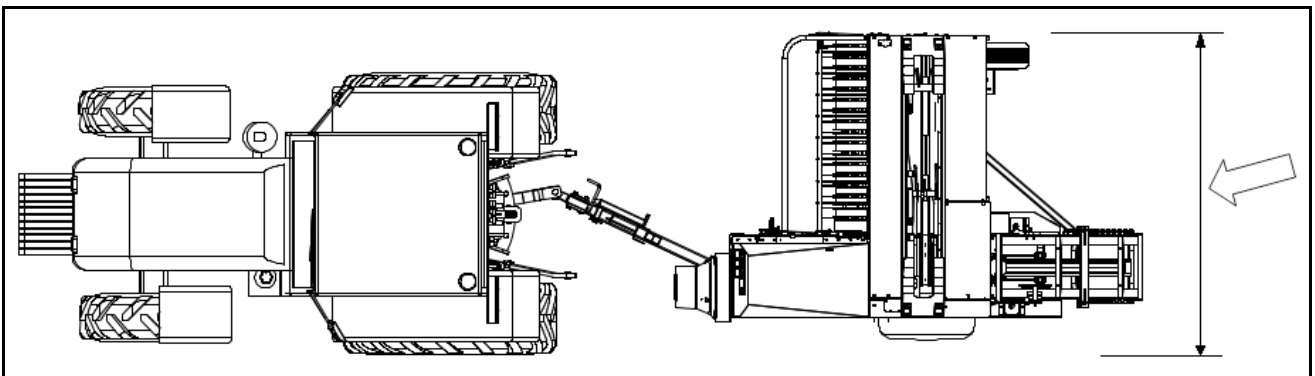


Fig. 5.4

5.4 Setting up for work

- 1) Place a chock in front of the right wheel.
- 2) Pull the lever to release the drawbar (or pull the lever from the tractor by means of cable 5).
- 3) Move the tractor forward, causing the drawbar 6 to go into the “drawbar open” position.
- 4) Release the lever to lock the drawbar in the “drawbar open” position (or release the lever from the tractor by means of cable 5).
- 5) Make sure that the pin is inserted in one of the two positions.

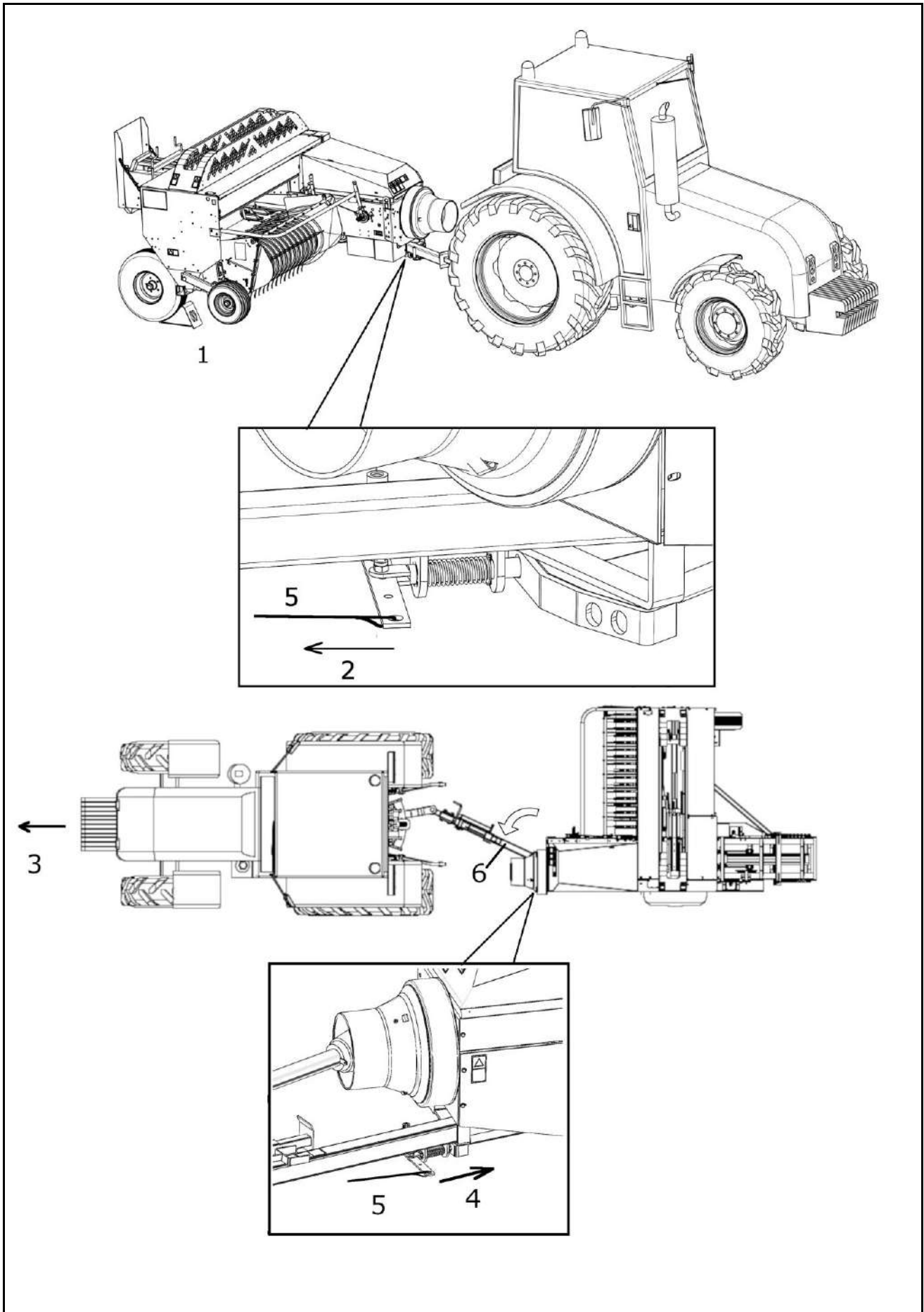


Fig. 5.5

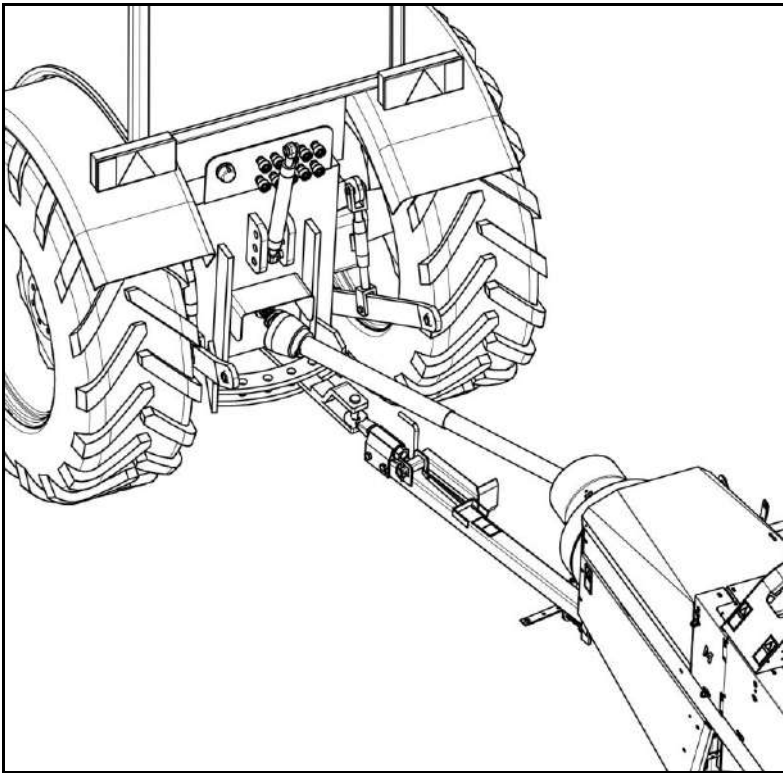


Fig. 5.6

6) Connect the PTO shaft (or wide-angle shaft, optional) to the machine and then to the tractor (the machine side is indicated on the shaft).

See sect. 7.10 for adjusting the length of the PTO shaft.

Make sure that the shaft remains in connection connected for the right length.

Check to make sure it is well connected to the tractor PTO and to the machine and that it is not subject to slipping, coming loose or jamming in any position.



DANGER

Carry out this operation with the engine off, parking brake on and having removed the key from the ignition. There is danger of death or serious injury.

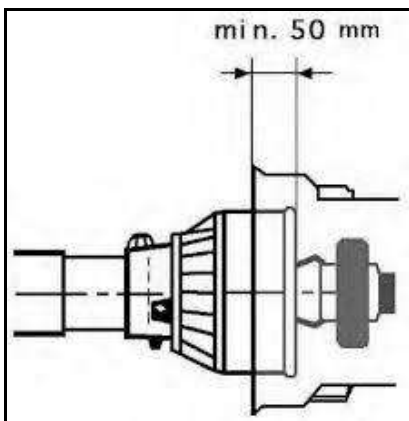


Fig. 5.7

Check that there is an overlap between the protective shields of at least as much as that shown in Fig. 5.7

5.5 Loading the twine



DANGER!

All protective shields must always be closed before starting the machine, and must be reopened only after stopping the machine, turning off the tractor engine, engaging the parking brake, and removing the ignition key. There is danger of death or serious injury.

- 1 Insert the spools of the right type of twine in the twine box (see Table 6.2). Make sure that the spools are placed correctly in the container, so that the twine unwinds counterclockwise when you pull the central end (the spool has the TOP position indicated; follow this indication). This will prevent the twine from getting tangled while unwinding. Arrange the spools and join the ends carefully following what is shown in Fig. 5.8
- 2 Thread the twine as shown in Fig. 5.8. To adjust the twine tension, see section 7.4.6
- 3 Tie the ends of the twine to the lower crossbar of the bale chamber. (Fig. 5.8).
- 4 Fully raise the lever 1 which can be seen in Fig. 5.10 by turning the toothed wheel 2 in Fig. 5.10 to engage the knotter.
- 5 Rotate the flywheel anticlockwise so as to set the needle/knotter system in motion until the twine is held in the twine holder disc (sect.7.4.1, Fig. 7.12) of the knotter. Then continue the rotation of the flywheel until the needles are in the rest position (the needle holder arm must be in the rest position with the needles retracted)
- 6 Remove the two pieces of twine that are still tied to the crossbar.

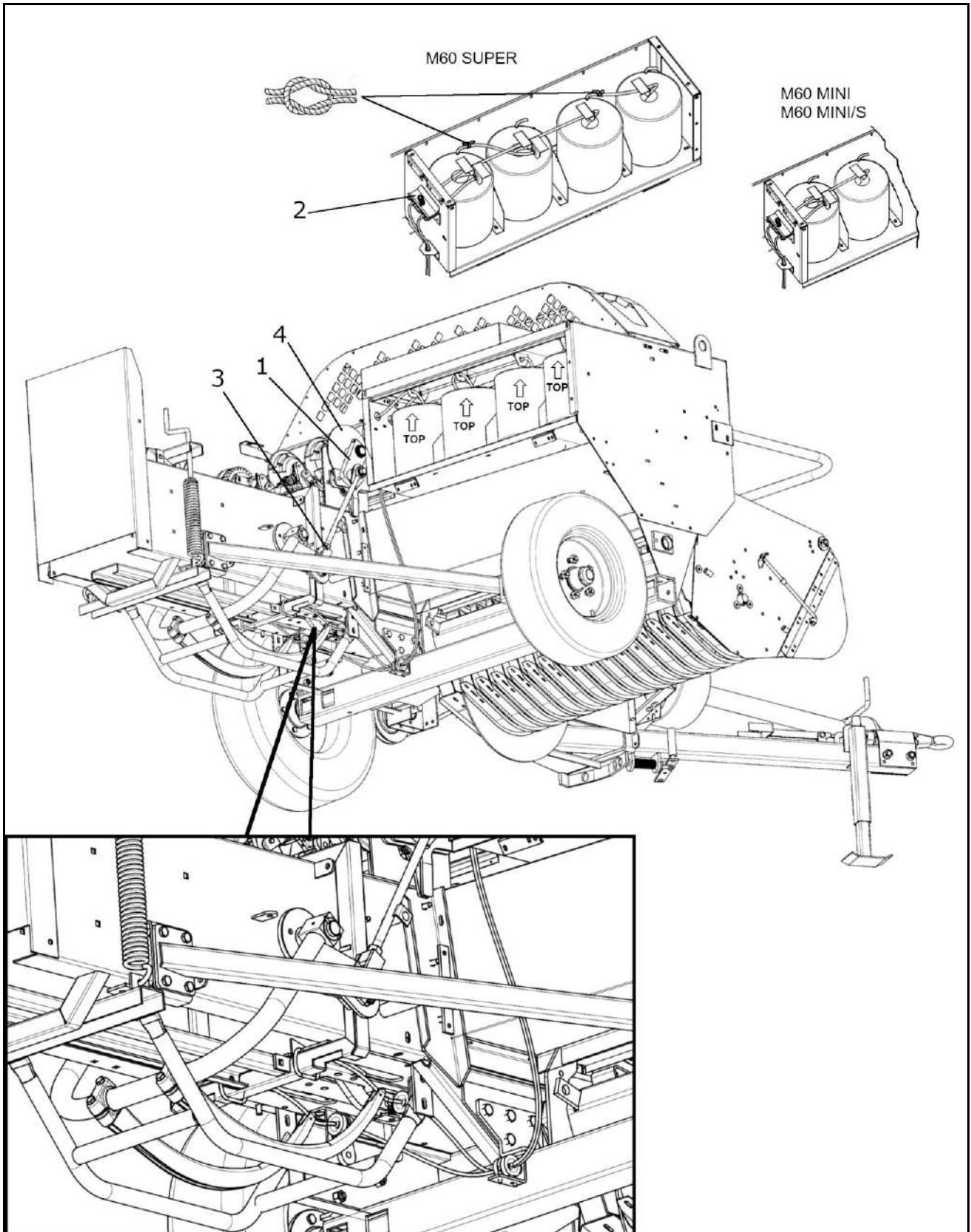


Fig. 5.8

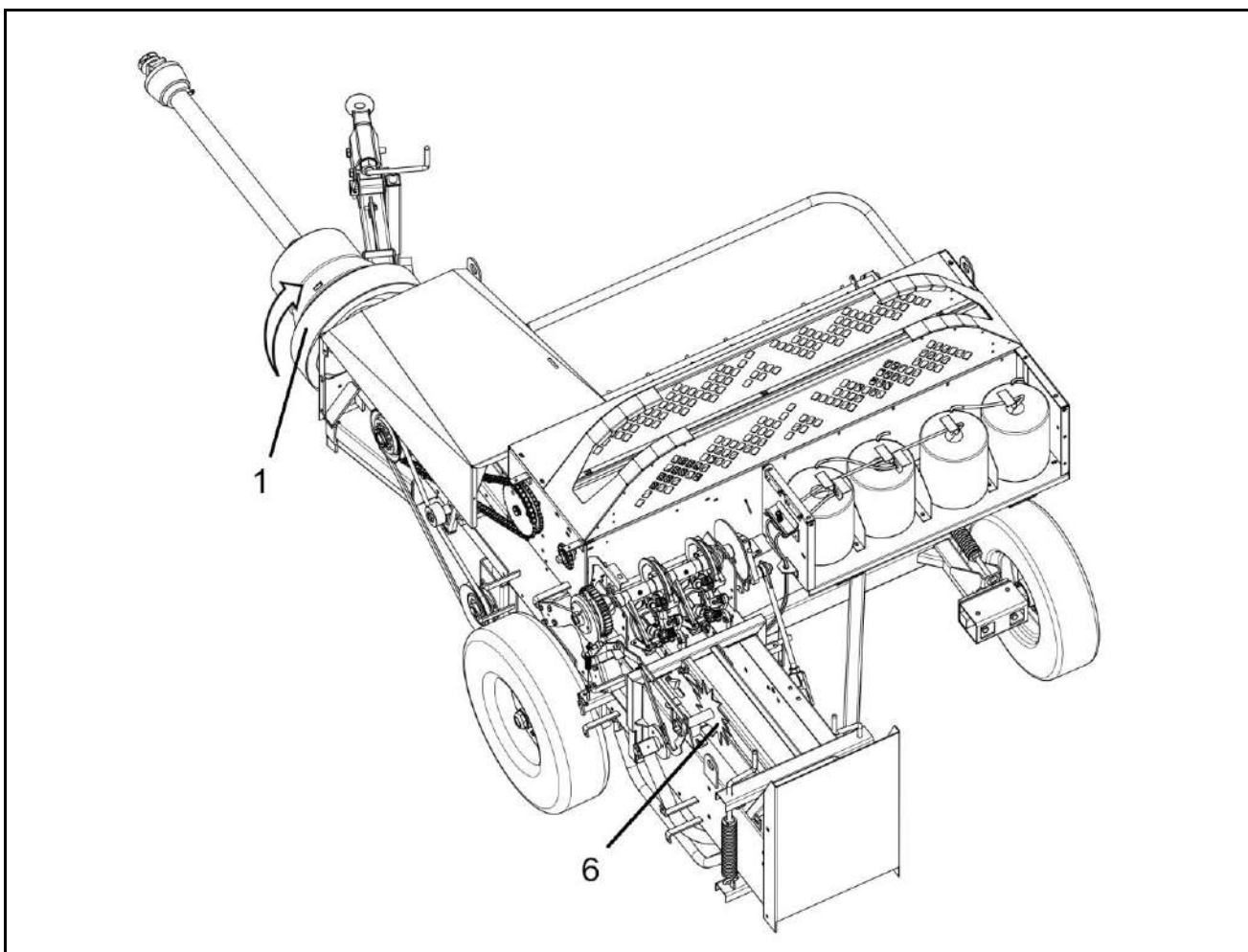


Fig. 5.9

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5.6 Baling

To put the machine into operation, proceed as follows:

Lower the bale discharge chute (no.8, Fig. 5.10) and reduce the tension of the bale chamber springs by adjusting the cranks 4 in Fig. 5.10.

Adjust the height of the pickup from the ground (see sect. 7.7).



DANGER

Before starting the PTO and during baling, make sure that there are no persons or objects in the danger zones that can be injured or damaged by the machine - there is danger of death or serious injury.

With the tractor aligned with the machine, and the PTO shaft properly connected, engage the tractor PTO (540 RPM) at low speeds, and bring the press speed to 80/90 strokes per minute. (Checking the number of strokes is simple - just count the number of revolutions of the feeder forks or the number of plunger strokes).

Drive forward with the tractor so that the pickup comes to the swath of hay or other material, regulate the tractor forward movement so that the baler forks can process the loaded material (see section 7.5.2).

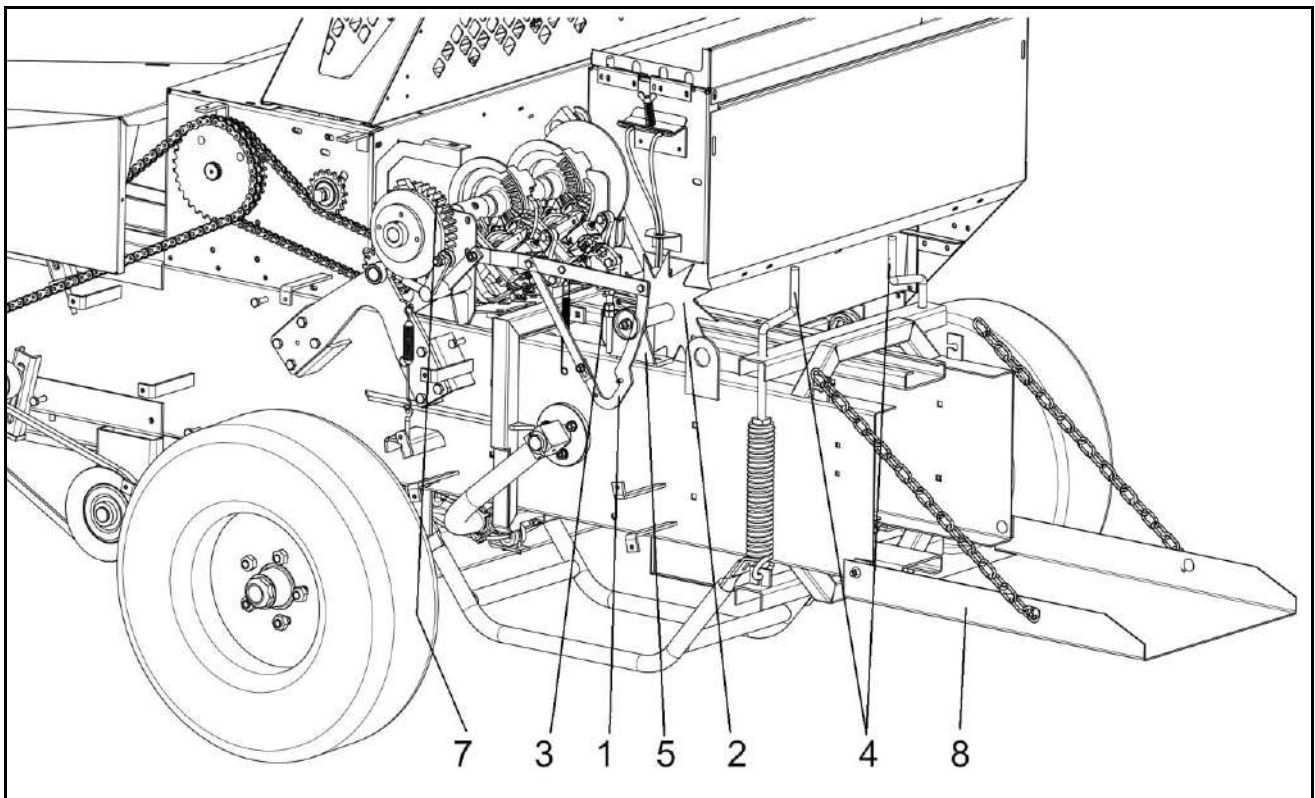


Fig. 5.10

After baling a few bales, check to see if they are well bound and have the required weight and length. For any adjustments, see section 7.5.

5.7 Maneuvers at the end of the row

At the end of the row, when the swath is finished, slow down the PTO speed, turn with a large radius to get in position for a new swath, increase the PTO rpm to full speed and continue baling.

If you need to make a tight turn, stop the rotation of the PTO in order to prevent damaging the PTO shaft; (a homokinetic PTO shaft, which allows maneuvering with a smaller turning radius, is available as an accessory).

If necessary, move in reverse in order to get aligned with the swath.



DANGER

While maneuvering at the end of the row, make sure that there are no persons or objects in the danger zones that can be injured or damaged by the machine - there is danger of death or serious injury.



ATTENTION

The machine maneuvers are different for turning left or right, therefore it is necessary to have adequate experience to maneuver the machine.



CAUTION

Turning too tightly causes the tractor wheel to come into contact with the PTO shaft or the tongue; avoid this situation, because it may cause damage to the machine or injury to persons.

5.8 Setting up for the transport position

- 1) Remove the PTO shaft from the machine (Do this with the engine off, the parking brake engaged and the key removed from the ignition).
- 2) Put a chock behind the right wheel.
- 3) Pull the lever to release the drawbar (or pull the lever from the tractor by means of cable 5).
- 4) Move the tractor in reverse, causing the drawbar 6 to move to the “drawbar closed” position.
- 5) Release the lever to lock the drawbar in the “drawbar closed” position (or release the lever from the tractor by means of cable 5).

See Fig. 5.11.

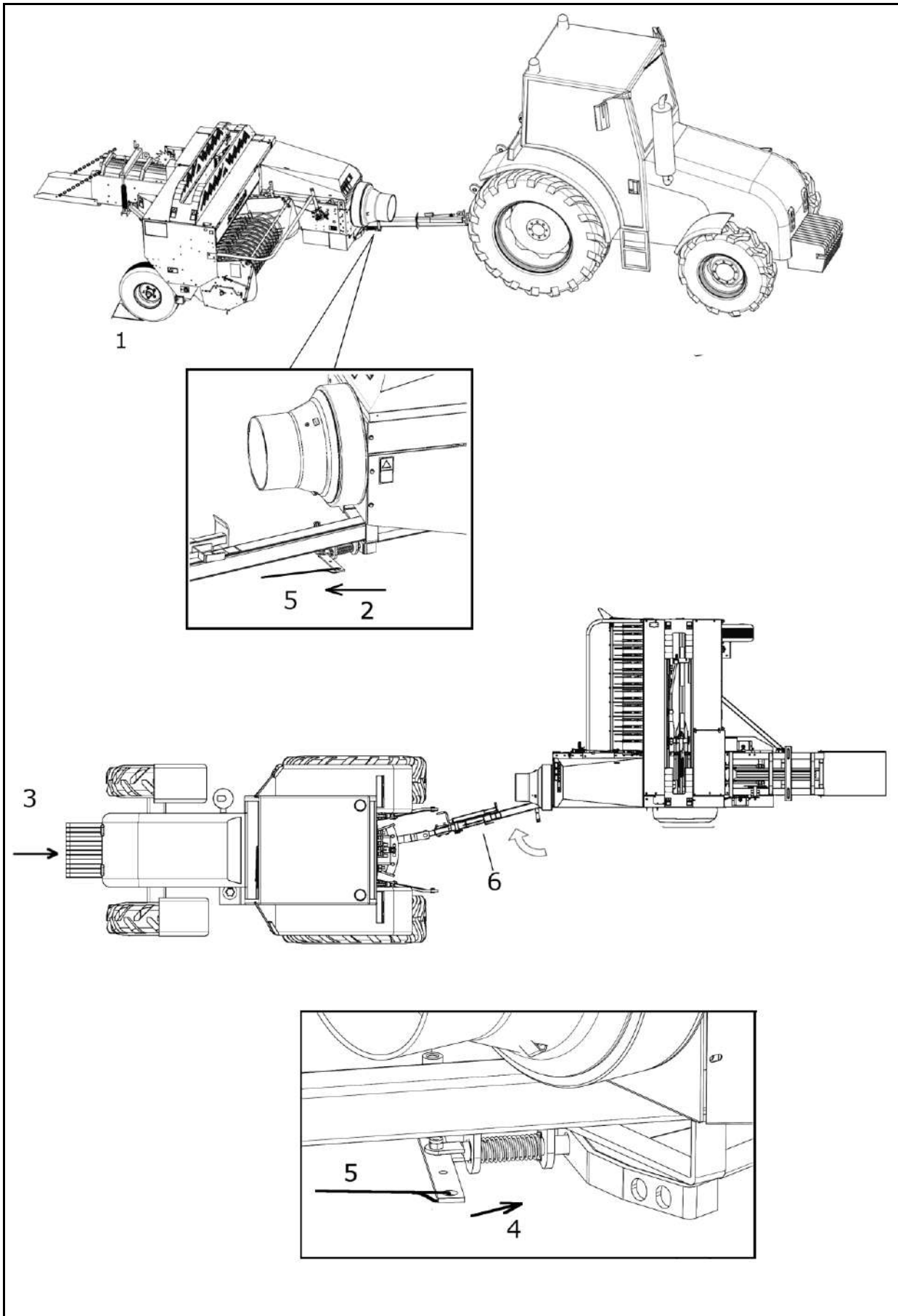


Fig. 5.11

5.9 Parking the baler

Position the baler on adequately firm, flat ground, and place the parking stand so that it stably supports the tongue. Lower the stand (Fig. 5.12) until the baler's towing hitch is raised above that of the tractor. If the ground is soft under the parking stand, place something underneath it that can increase the support surface, guaranteeing the stability of the machine.

Make sure that the machine will not move from this position, otherwise chock the wheels both in front and behind.

With the tractor with the engine off, the parking brake engaged and the key removed from the ignition, wait for the parts to stop moving completely, and then remove the PTO shaft. Set the PTO shaft on a suitable support so that the shaft and its protective shields are not damaged (see Fig. 5.12); alternatively, remove the PTO shaft from the machine.

Release the pressure in any hydraulic connections and remove the hoses. Remove any electrical connections.

Remove the hitch pin, ensuring that the machine remains stationary by itself in the parking position.

If the machine is to remain parked for a long time (end of season), see Chapter 9.

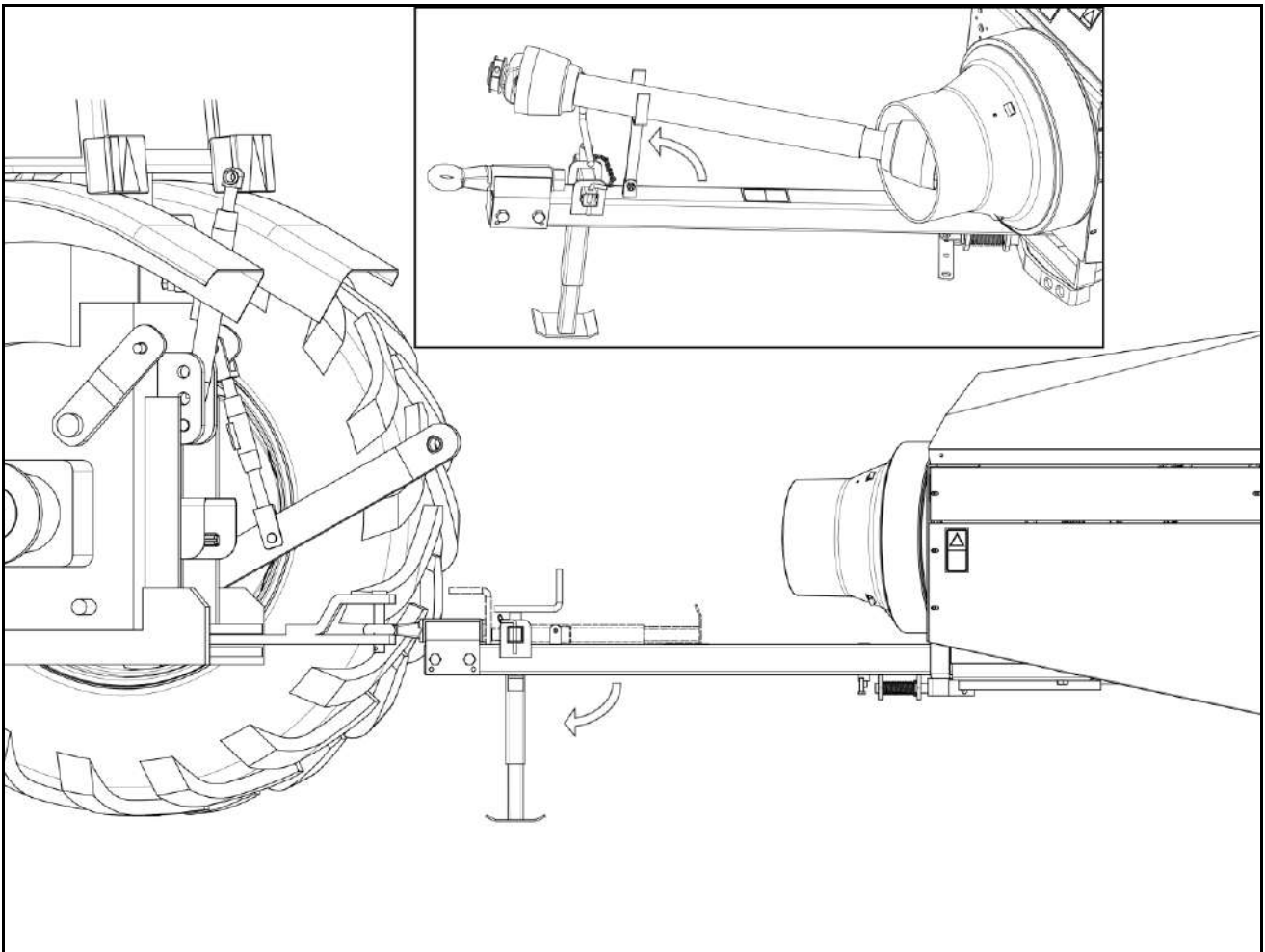


Fig. 5.12

6 MAINTENANCE



DANGER

All maintenance must be carried out with the machine stationary and stable on a flat surface, with the tractor engine turned off, parking brake engaged, and key removed from the ignition; the PTO shaft removed, the hydraulic connections removed, and the electrical connections removed. There is danger of death or serious injury.



WARNING

Some maintenance work is done by separating parts of the machine or working on parts that move when subjected to a force, and/or the handling of heavy parts. These operations can cause crushing, shearing, and cutting, therefore use maximum caution to prevent the parts from moving, and use suitable personal protective and lifting equipment.

The releasing of fluids under pressure and the replacement of fittings or hoses can cause serious injury. The replacement of jacks or jack seals involves disassembling the jack from the machine. This can cause the uncontrolled movement of moving parts; therefore, before disassembling the jack, secure the moving parts of the machine, releasing the pressure while protecting yourself adequately from any jets or sprays of oil and from any moving parts. Replace the hydraulic components with components having suitable technical specifications.

Hazardous situations with the risk of death or serious injury may be generated.



CAUTION

Handling parts of the baler.

Handle all parts with care. Do not put hands or fingers between the parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective eyewear, gloves and safety footwear.

Failure to do so could result in minor or moderate injury.

The maintenance personnel must know the machine and be trained and able to carry out these operations.

The balers are designed to require minimal lubrication. Remember, however, that the time needed for lubrication is not wasted, as it protects the machine against costly breakdowns and considerably extends its service life.

To lubricate the machine correctly, refer to the following lubrication and maintenance table.

ATTENTION! The machines are delivered with oil and lubricated; however, check the gearbox oil before putting them into operation.

The parts to be lubricated or greased are shown in Fig. 6.12 and are identified by stickers applied on them (sect. 3.2).

Check to make sure all safety stickers are present and in good condition; if necessary, replace or restore them as indicated in sect. 3.2.

Table 6.1 lists the maintenance operations and indicates where and when to carry them out.

Table 6.2 indicates the materials needed for maintenance operations.

6.1 Maintenance Table

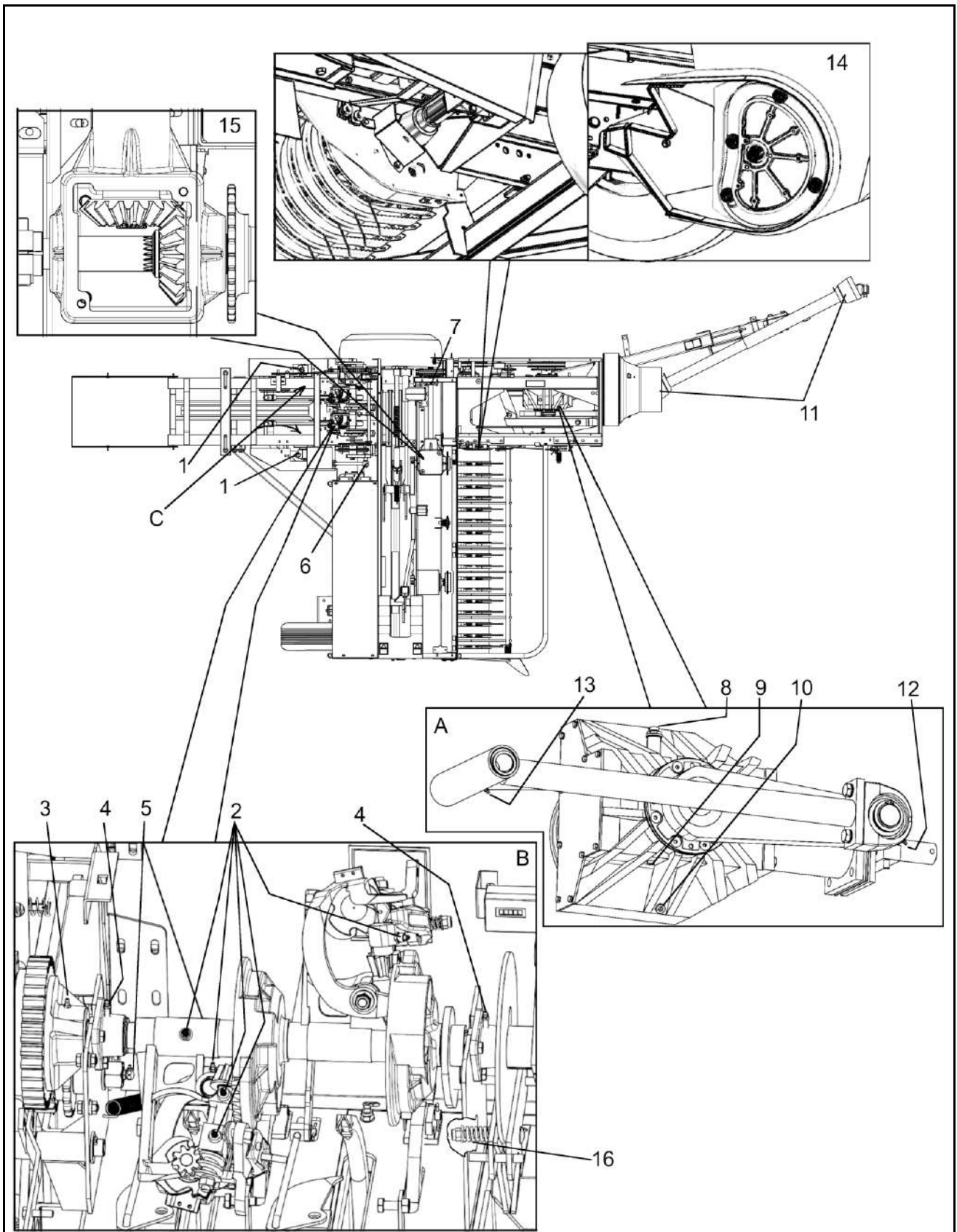


Fig. 6.1

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Operation	Ref. (Fig. 6.1)	Starting	After the first 16 h	After the first 40 h	every 8 h	every 40 h	every 250 h	every 500 h /Seas.
Grease	(1,2,3,4,5 ,6,11,13)				x			
Grease	7,12					x		
Grease	14							
Grease	15							x
Lubricate chains							x	
Clean chains						x		
Clean and blow out knotter compartment	B				x			
Clean bale chamber	C					x		
General cleaning								x
Change oil	A							x
Carriage–chamber knife adjustment	sect. 7.3.2					x		
Tension chains	sect. 7.2.3		x			x		
Tension belt	sect. 7.2.3					x		x
Check pickup cam	14							x
Check brake	16 sect.7.4.1					x		
Check tire pressure	sect. 7.12	x				x		
Check tightness of nuts, bolts, screws	sect. 7.13	x	x			x		
Check carriage– chamber knife	sect. 7.3.2							x
Check twine					x			
Check protection systems		x				x		
Check that needle rollers rotate freely							x	
Check hydraulic hoses for fluid leaks			x				x	
Check safety decals							x	
Check wear of twine guides								x
Check wear								x
Check electrical system					x			

Table 6.1

6.2 Table of maintenance equipment

- grease pump
- brush
- compressed air
- wrenches
- hoisting devices

6.3 Table of maintenance materials

Ref.	Part	Lubricant	Qty.	Position
1	Hydraulic fluid	ENI MULTITECH 15W-40		
2	Chain lubrication	ISO – VG 100		
3	Gearbox	SAE 90-120 -140EP	MAX 2 LT	Point A
4	Feed box	Grease		Point 15
5	Grease	MAX NLGI 2		Point 1,2,3,4,5,7,11,12,13,14
6	Sisal twine	180-200 m/kg		
7	Nylon twine	350 m/kg		

Table 6.2

6.4 Safety device replacement

All parts of the baler are protected by devices designed to interrupt the transmission when irregular operation occurs.

The machine has the following safety systems:

Flywheel clutch

Flywheel shear bolt

Pickup control safety device

Knotter control shear bolt

1st fork shear bolt

2nd fork shear bolt

To avoid altering the operation of these safety devices, restore them with components having equivalent mechanical specifications.

6.4.1 Flywheel clutch

The clutch on the flywheel is designed to protect the cardan drive shaft. It should never slip during normal baler operation.

The clutch is equipped with a freewheel with pawls that allows the flywheel and the other parts to rotate freely, due to the effect of inertia, during the PTO stopping stage; therefore do not approach the machine during this stage until the parts have fully stopped.

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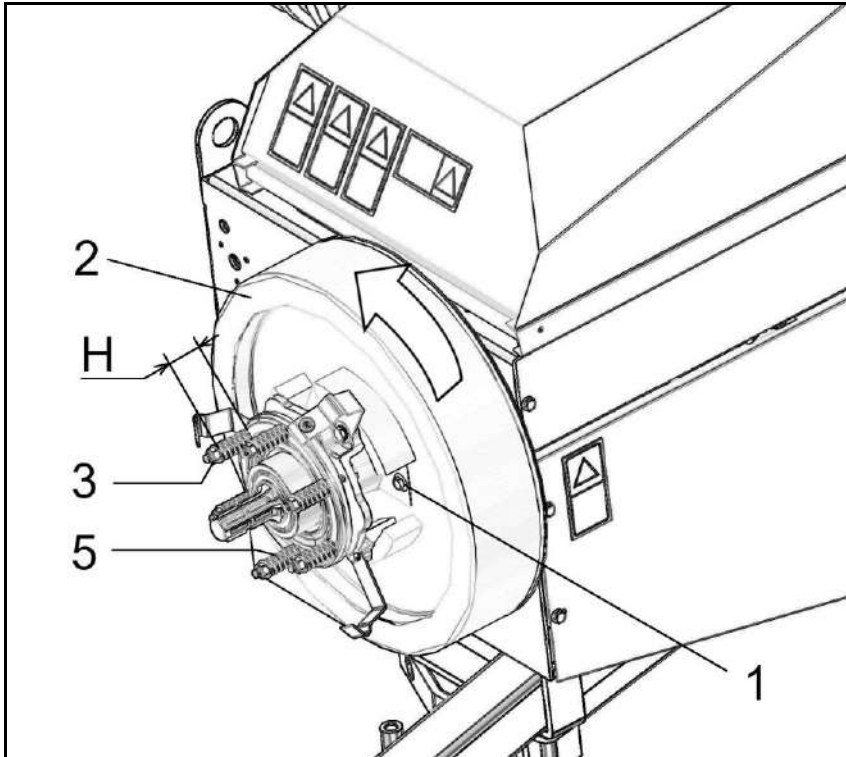


Fig. 6.2

6.4.2 Flywheel shear bolt

The bolt is an M8 x 60 mm class 8.8 with self-locking nut (ref. 1, Fig. 6.3).

This bolt is designed to protect the main gearbox from overloads; when this bolt intervenes all the parts operated by the PTO are released from the PTO shaft.

Its position is indicated by ref. 1, Fig. 6.3.

Before restoring the bolt, identify the cause and eliminate it, making sure that there are no damaged machine parts.

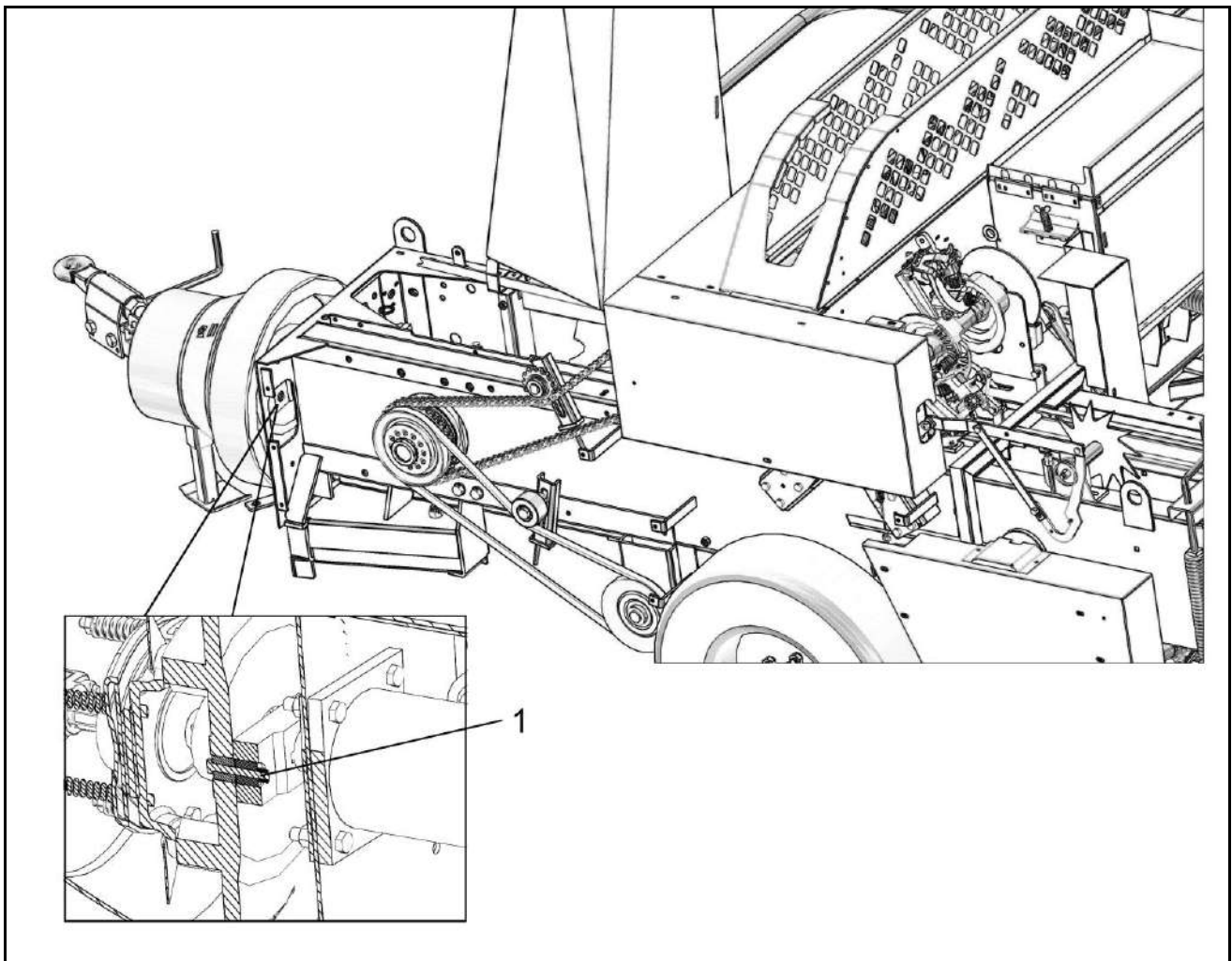


Fig. 6.3



ATTENTION!

To increase the life of the shear bolt, make sure that it is tight. When the bolt breaks, wait for the flywheel to stop before approaching the machine.

6.4.3 Pickup control shaft safety device

V-belt, C profile DIN 2211 (ref. 5, Fig. 6.4)

The various parts of the pickup are protected from this drive belt.

This belt (ref. 5, Fig. 6.4) should never slip during normal baler operation.

It slips when the pickup offers too much resistance.

It can be adjusted by means of the tensioner (ref. 8, Fig. 27); to adjust it, see sect. 7.2.3.

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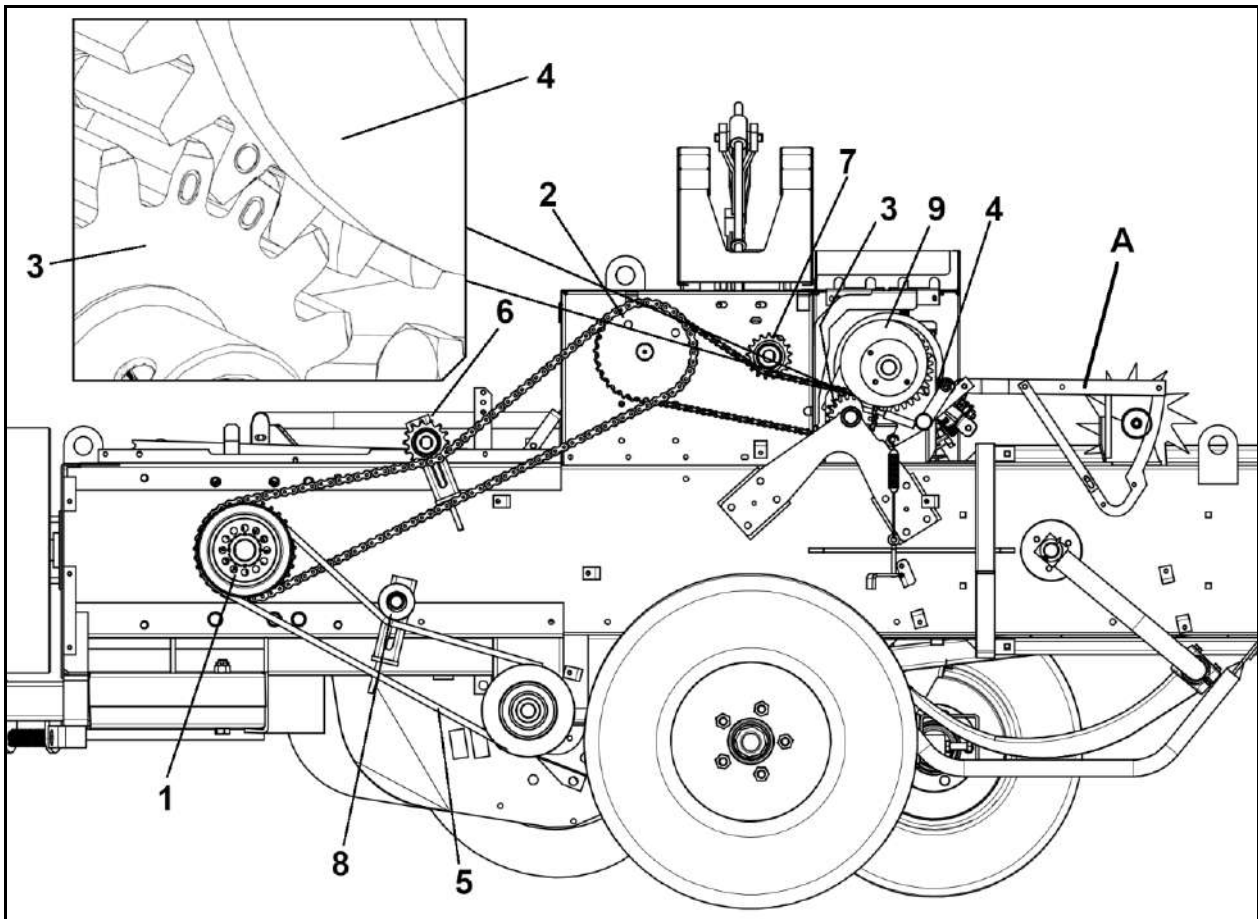


Fig. 6.4

6.4.4 Knotter control shear bolt

Shear bolt M5x45 mm, class 8.8 with self-locking nut (ref. 1, Fig. 6.5).

This bolt (no. 1, Fig. 6.5) is designed to protect the various knotter components when there is excessive resistance in the upward movement of the needles and movement of the knotter.



ATTENTION!

Lock the toothed sector lever to avoid engaging the knotter, and consequently the needles, before doing any maintenance work on the knotter.

This means locking the lever A (Fig. 6.4) in the low position as shown in the figure:

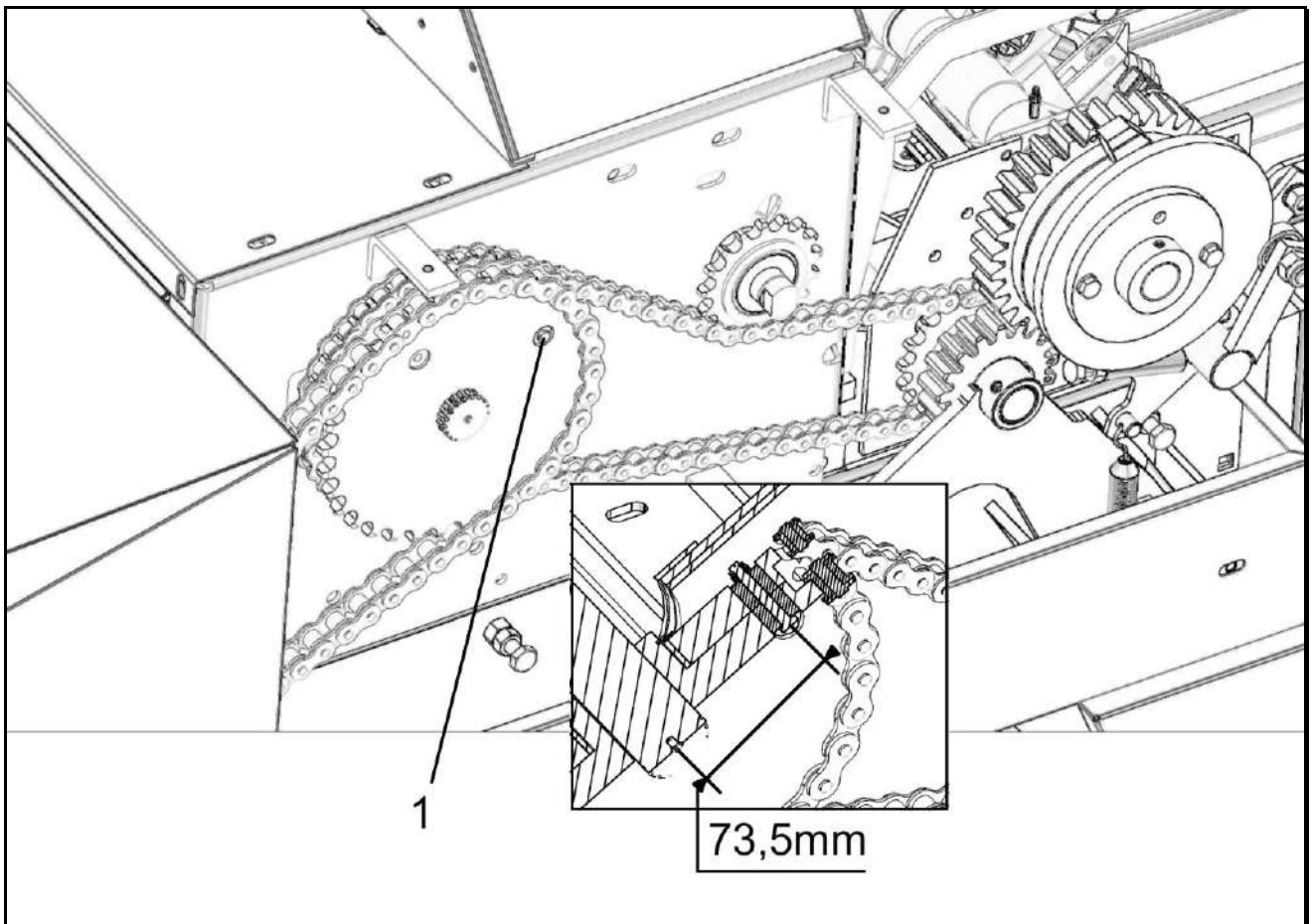


Fig. 6.5

6.4.5 1st Fork shear bolt

Shear bolt M6x50 mm, class 8.8 with self-locking nut (ref. 1, Fig. 6.6).

This bolt is used to protect the 1st feeder fork if there is abnormal resistance. It functions when the fork encounters resistance while moving, due to: having picked up a foreign body, an excessive amount of product, product that is not sufficiently dried, or when the first fork strikes the side of the plunger due to a complete lack synchronization.

Remove the cause of the break, time the fork (if necessary) and insert the new bolt.

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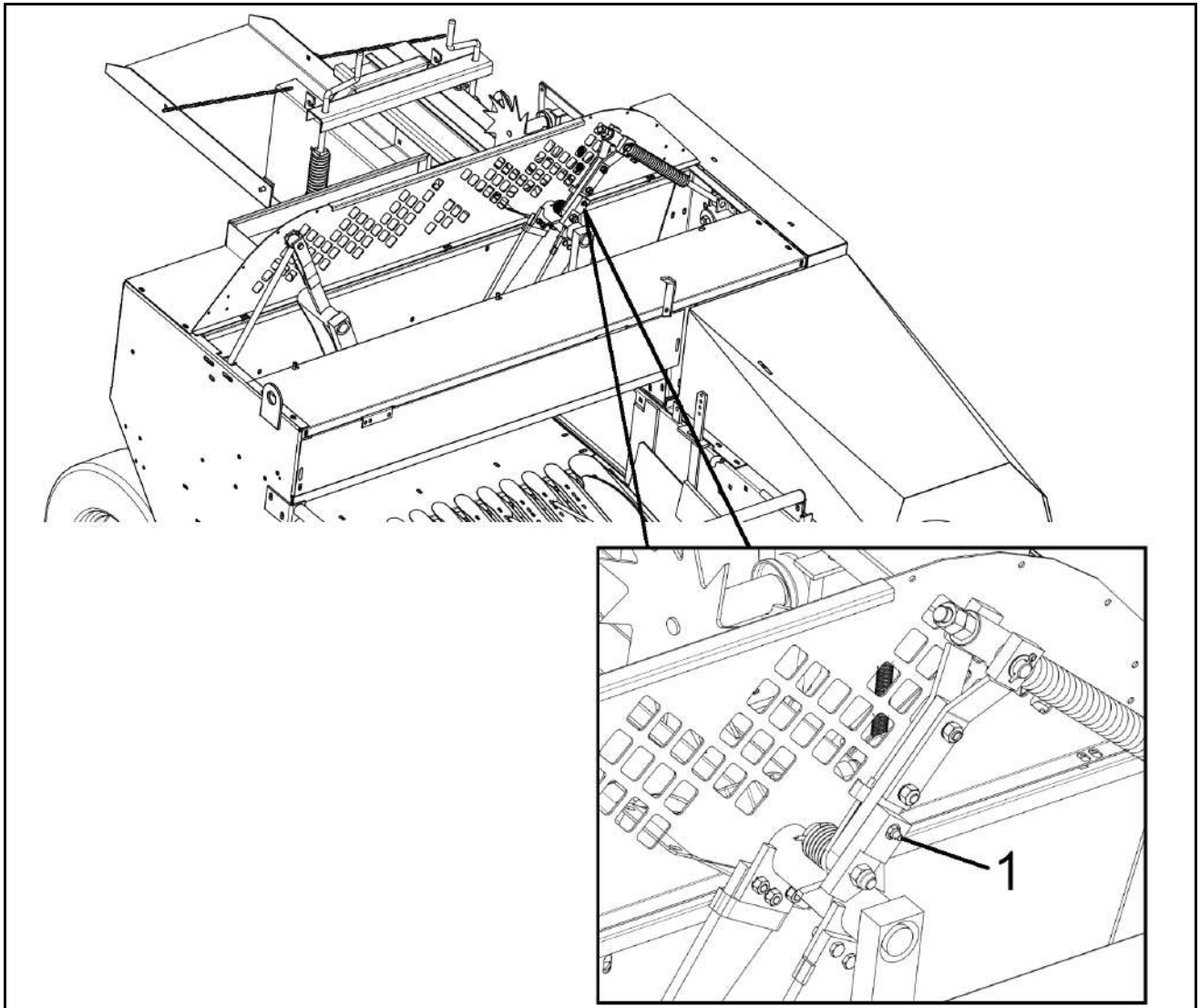


Fig. 6.6

6.4.6 2nd Fork shear bolt

Shear bolt M5x55 mm, class 8.8 with self-locking nut (ref. 1, Fig. 6.7).

This bolt breaks when the 2nd fork encounters excessive stress. The cause may be: a foreign body has been picked up, an excessive amount of product, insufficiently dried product.

Remove the cause of the break, time the fork and insert the new bolt.

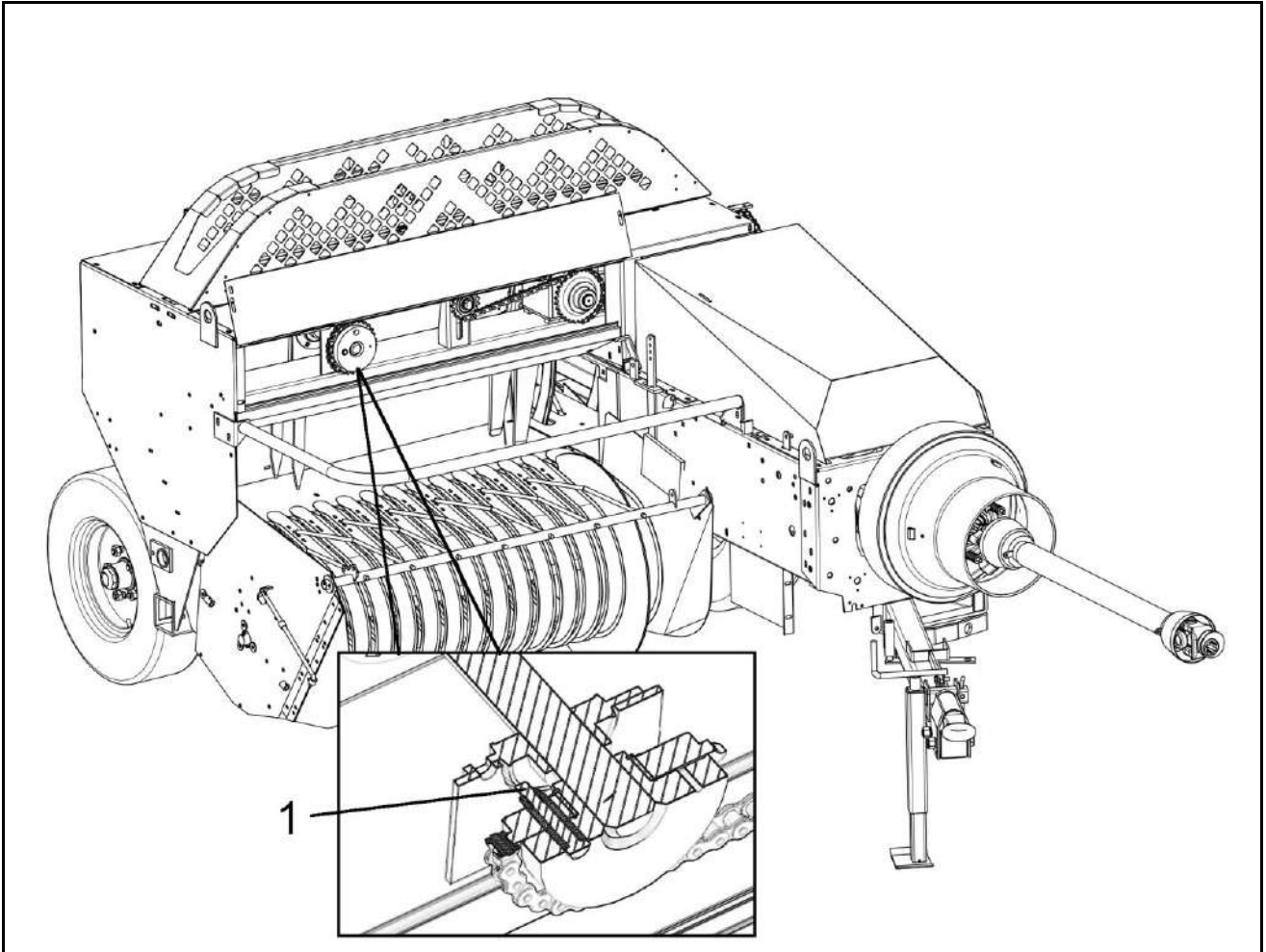


Fig. 6.7

6.5 Pickup springs replacement

It is important to straighten the spring teeth that have bent while working and to replace those that are broken and those that cannot be straightened.

To replace the springs, proceed as follows, referring to Figure 6.8: remove the band (ref. 1) by unscrewing its fastening screws, loosen the bolt (ref. 2), and replace the spring (ref. 3).

To assemble, repeat the operations in reverse order, being careful to align the spring and the band in the right position so that the spring does not touch the band while moving.

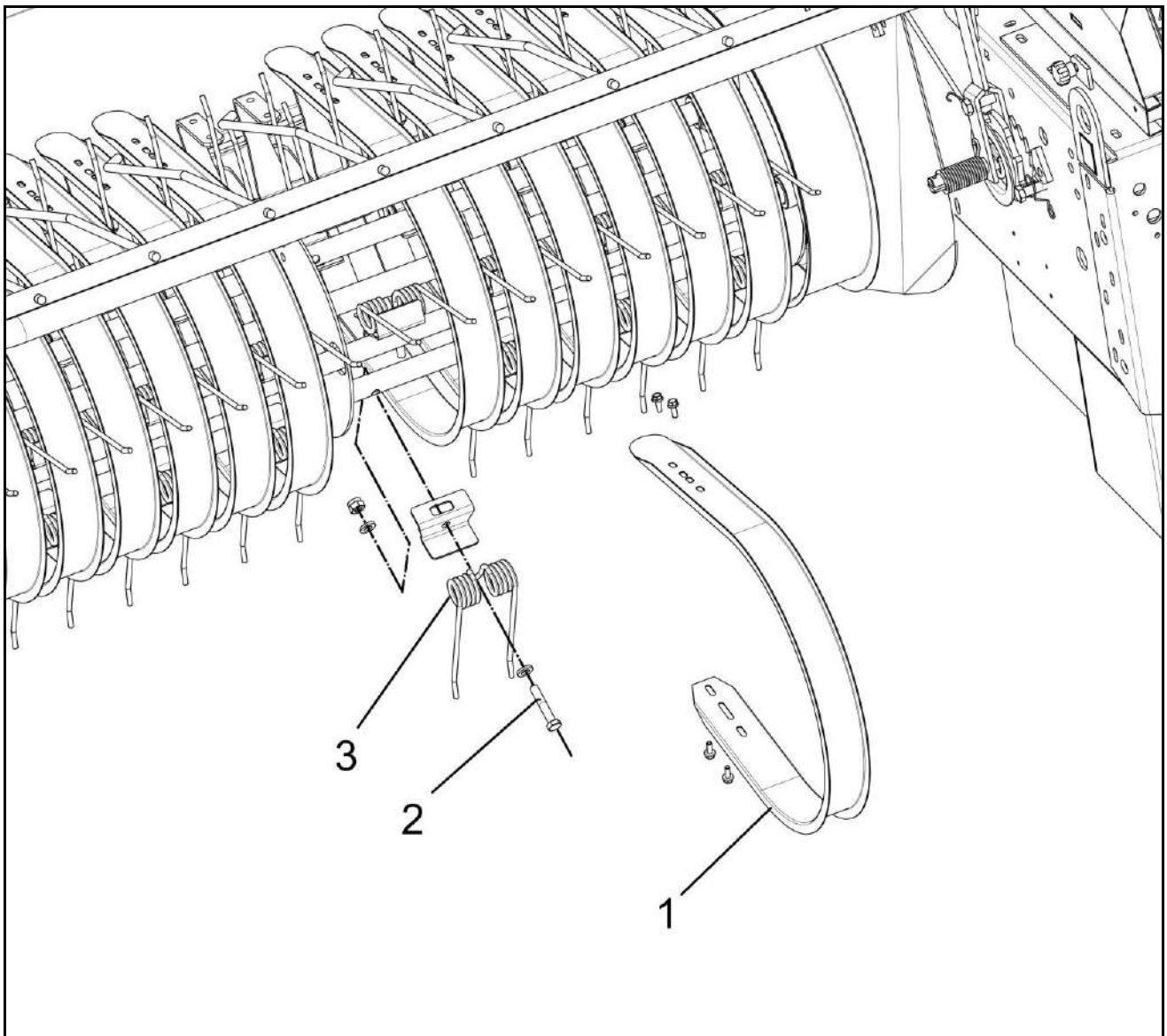


Fig. 6.8

6.6 Clogging

If a large jam occurs, disengage the PTO, turn off the tractor, engage the parking brake, remove the key from the ignition and manually remove the material causing the clogging. Also remove the material in front of the pickup and near the bale chamber, so that the pickup springs and carriage are not in contact with the material.

Look for the defect that caused the clogging, referring to Tables 11.1 and 11.2 of Chap. 11.



ATTENTION

Do not go near the machine when it is clogged until the PTO has been disengaged, the motor turned off, the parking brake engaged, and the key removed from the ignition.

7 ADJUSTMENTS

7.1 Tongue adjustment

The baler tongue must be adjusted according to the tractor, so that the chamber is level with the ground.

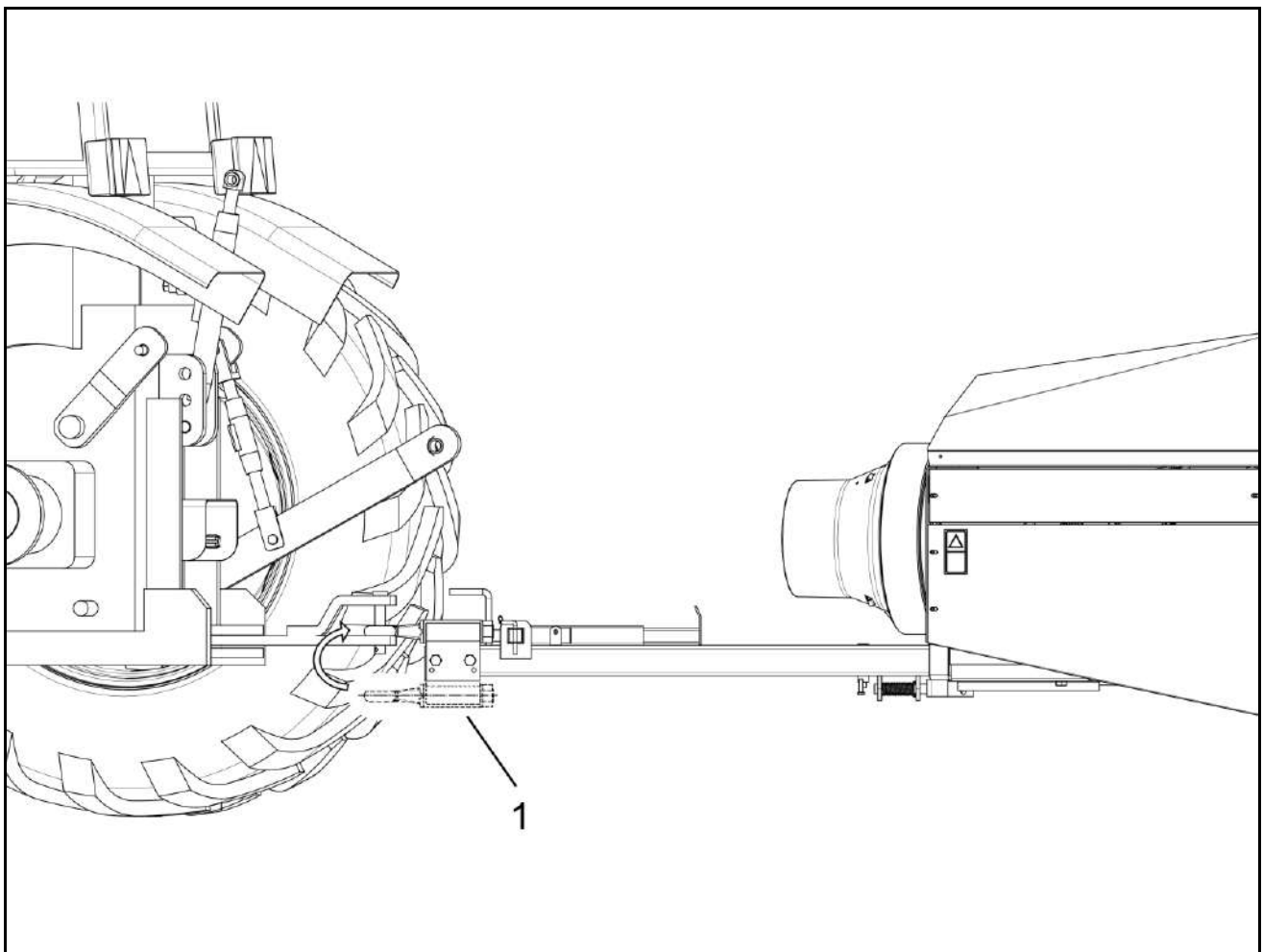


Fig. 7.1

The baler tongue has a tow hitch that can be mounted in two positions, allowing it to be adapted to the dimensions of the tractor (ref. 1, Fig. 7.1).

The tongue can have two possible working positions (ref. 1 and ref. 2, Fig. 7.2); in position 2, the machine increases the distance between the tractor and the hay swath, adapting to greater tractor widths.

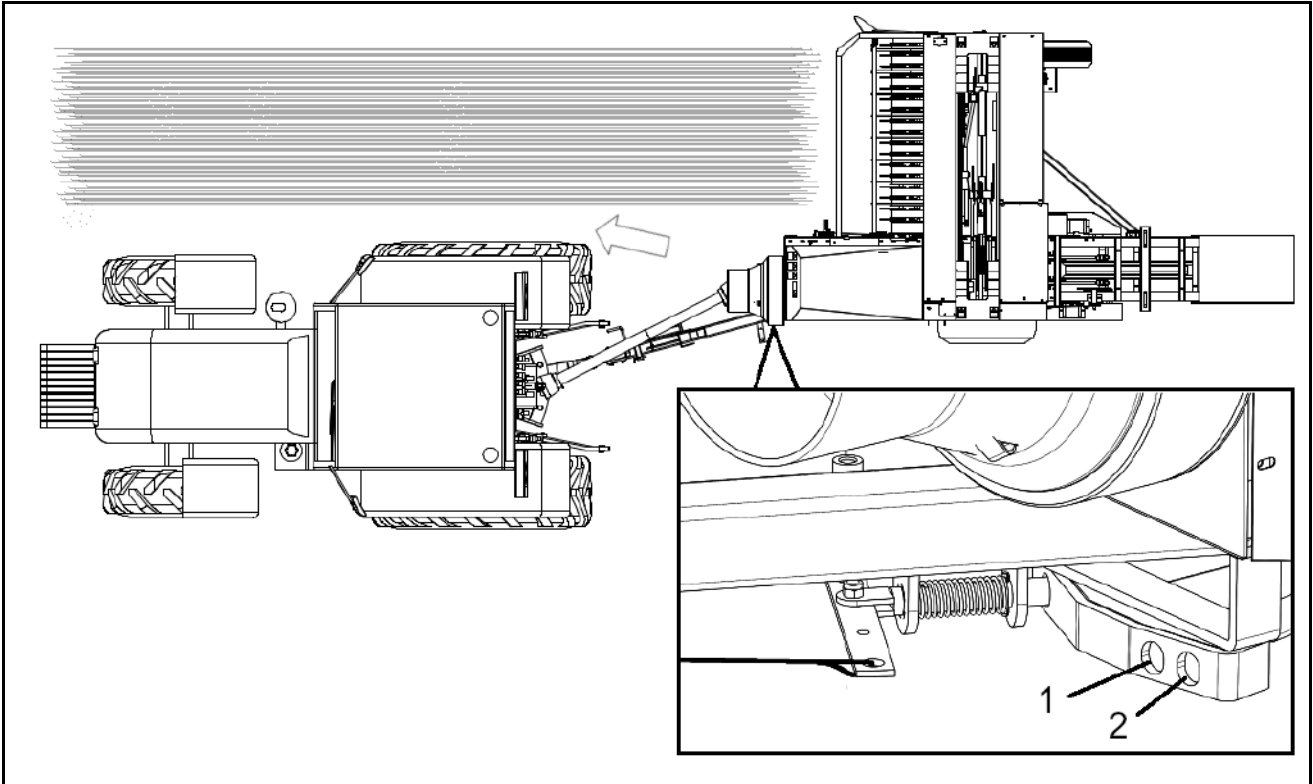


Fig. 7.2

7.2 Drive adjustment (TIMING)

The timing of the machine is done in two stages:

- the timing of the forks with the carriage (A);
- the timing of the knotter/needles with the carriage (B).

7.2.1 Forks/carriage timing (A)

Timing of the forks with the carriage

1) Make the connection with the chain 10 (Fig. 7.3) between the gear 1 (Fig. 7.3), made idle on its axle by loosening the socket head (Allen) screws, and the fork control gear of the double gear 2 (Fig. 7.3).

2) Move the carriage forward up to the reference position A (tips of the carriage in the plane of the fork passage slot) and position the crank of the first fork so as to have a distance of about 65 to 95 mm (if the fork is mounted with the inclined side towards the bale chamber, Fig. 7.4) or about 45 to 65 mm (if the fork is mounted with the perpendicular side towards the bale chamber, Fig. 7.5).

Under these conditions, the gear 1 (Fig. 7.3) is secured to its axle with the Allen screws.

The multi-hole flange system makes it possible to lock the gear 1 (Fig. 7.3) in the required position with a minimum deviation.

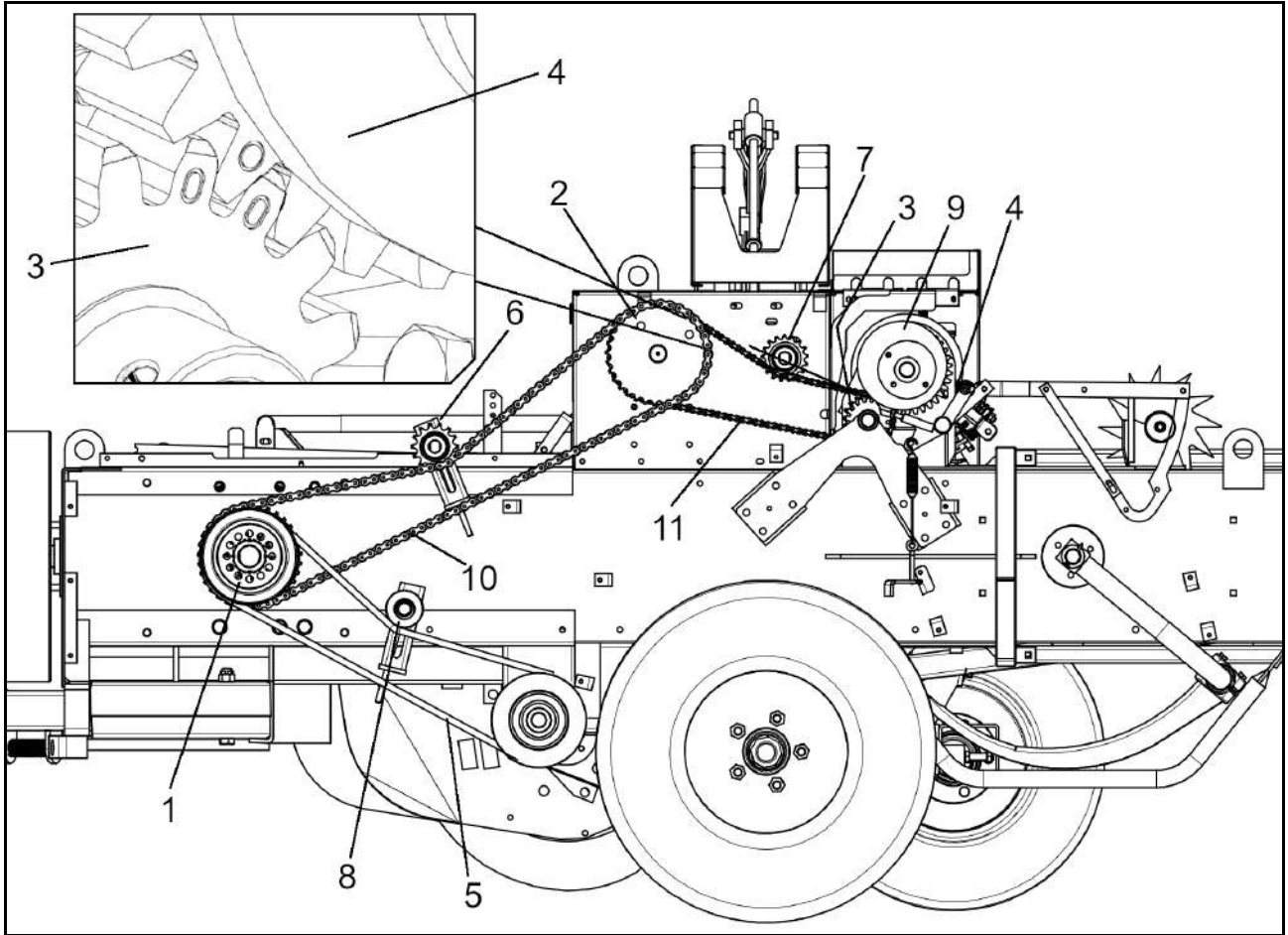


Fig. 7.3

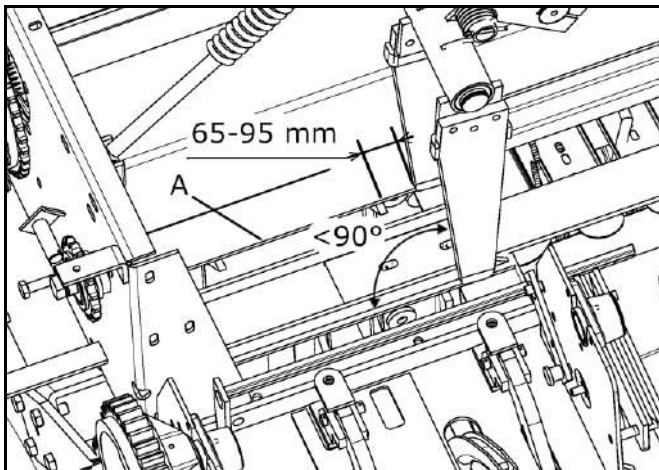


Fig. 7.4

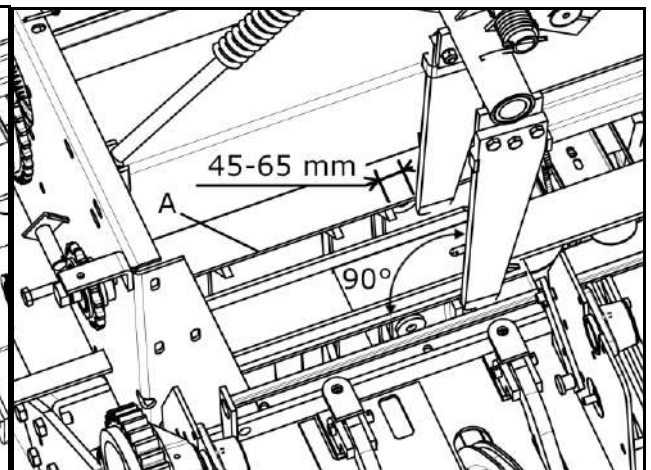


Fig. 7.5

3) Once the first fork has been timed with the carriage as described above, it is possible to continue with the timing of the second fork by connecting gear 1 and gear 2 by means of chain 3 (Fig. 7.6), after having put the second fork crank parallel to the first fork crank (for the M60 Mini and M60 Mini/S), or perpendicular to the first fork crank (for the M60 Super) (see Fig. 7.6). For long and tough products, it is recommended that the second fork be timed as indicated in section 7.6.2.

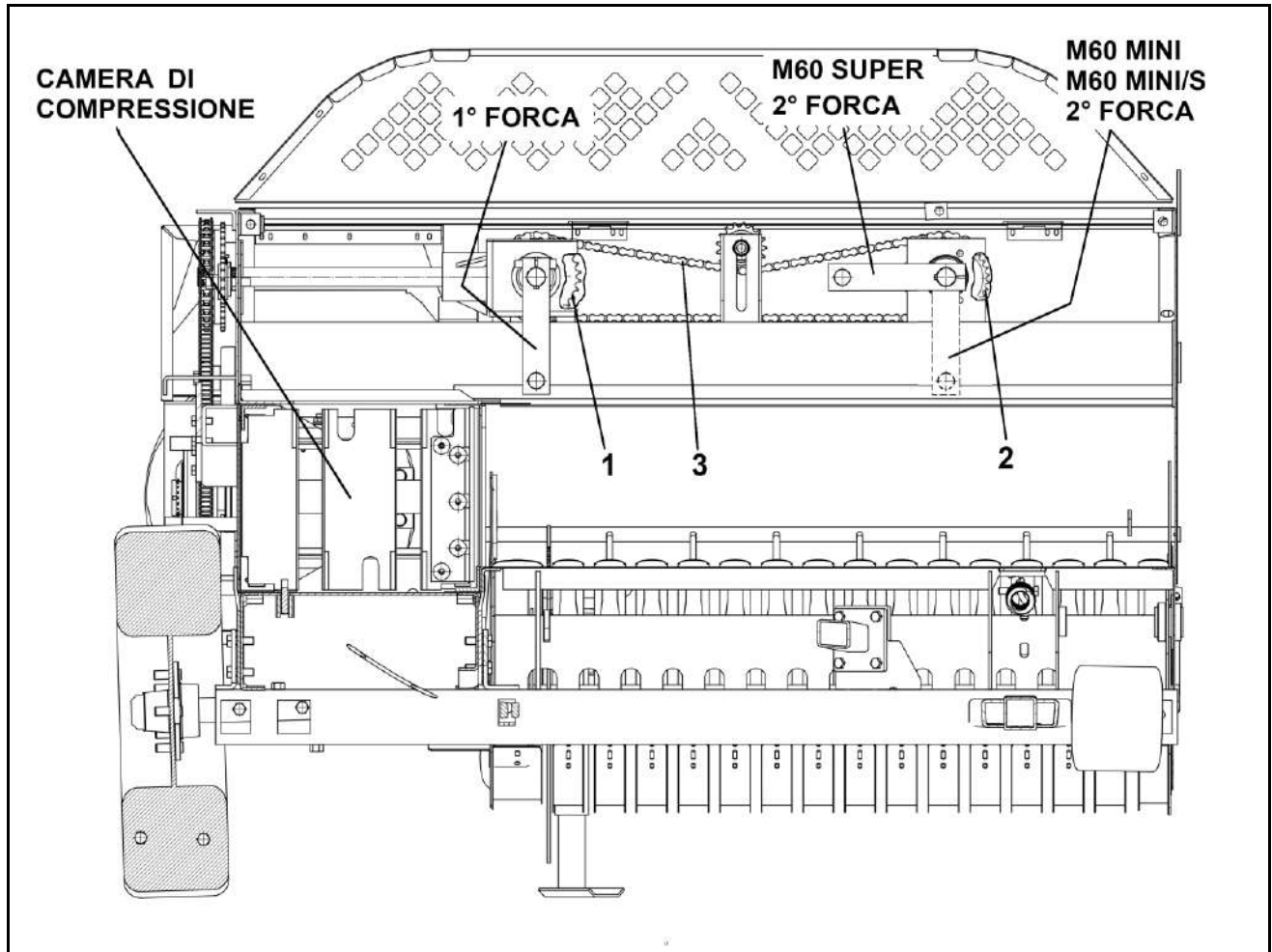


Fig. 7.6

BALE CHAMBER	1ST FORK	2ND FORK	2ND FORK
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7.2.2 Timing of the knotter/needles with the carriage (B)

Timing of the knotter/needles with the carriage.

Once the forks/carriage timing has been done, the timing of the knotter/needle with the carriage can be carried out as follows:

- 1) Make the gear 7 idle by removing the chain 1 (Fig. 7.7).
- 2) Put the needles in the rest position by bringing the needle holder arm 5 (Fig. 7.7) back to the end of the stroke.
- 3) Engage the knotter by bringing the sector lever 4 (Fig. 7.7) to its maximum height by rotating the bale star wheel spacer 6 (Fig. 7.7).

Then manually rotate the bell gear 3 (Fig. 7.7) counterclockwise, until it locks in the dragging position of the knotter shaft.

- 4) Continue to rotate the bell gear 3 (Fig. 7.7) counterclockwise, moving it repeatedly with a series of "clicks," until the needle holder arm is lowered so that the needle tips are level with the lower edge of bale chamber (Fig. 7.7).

- 5) Then, turning the flywheel counterclockwise (Fig. 7.7), bring the carriage into the position so that the front spurs (ref. C, Fig. 7.7) are approximately 0 to 10 mm from the needle tips positioned previously.
- 6) With the needles and the carriage thus positioned, connect the chain 1 (Fig. 7.7) without moving the gears 7 and 3 from the position in which they are found; pull the chain tensioner 2 (Fig. 7.7) checking that there is no movement between the gears.

When the sequence of operations A and B has been performed, the machine has been fully timed and is in phase.

ATTENTION!

The checking of the timing is facilitated by the presence of colored reference punches on the stationary and moving parts. When the timing of the machine is correct, these punches must match.

To eliminate going out of phase due to the slackening of the chains, always keep the main chains under tension using the tensioners (ref. 8-2, Fig. 7.7) and lubricating as specified. When it slackens, the chain becomes longer and could even fall off the gear teeth. In either case this situation could cause the machine to be out of phase.

ATTENTION!

If it was necessary to disassemble the entire knotter, before doing the timing it is advisable to assemble the knotter, respecting the positions between gears 9 and 10 as shown in Fig. 7.7 (the O marked on gear 10 must be placed between the two O's marked on gear 9).

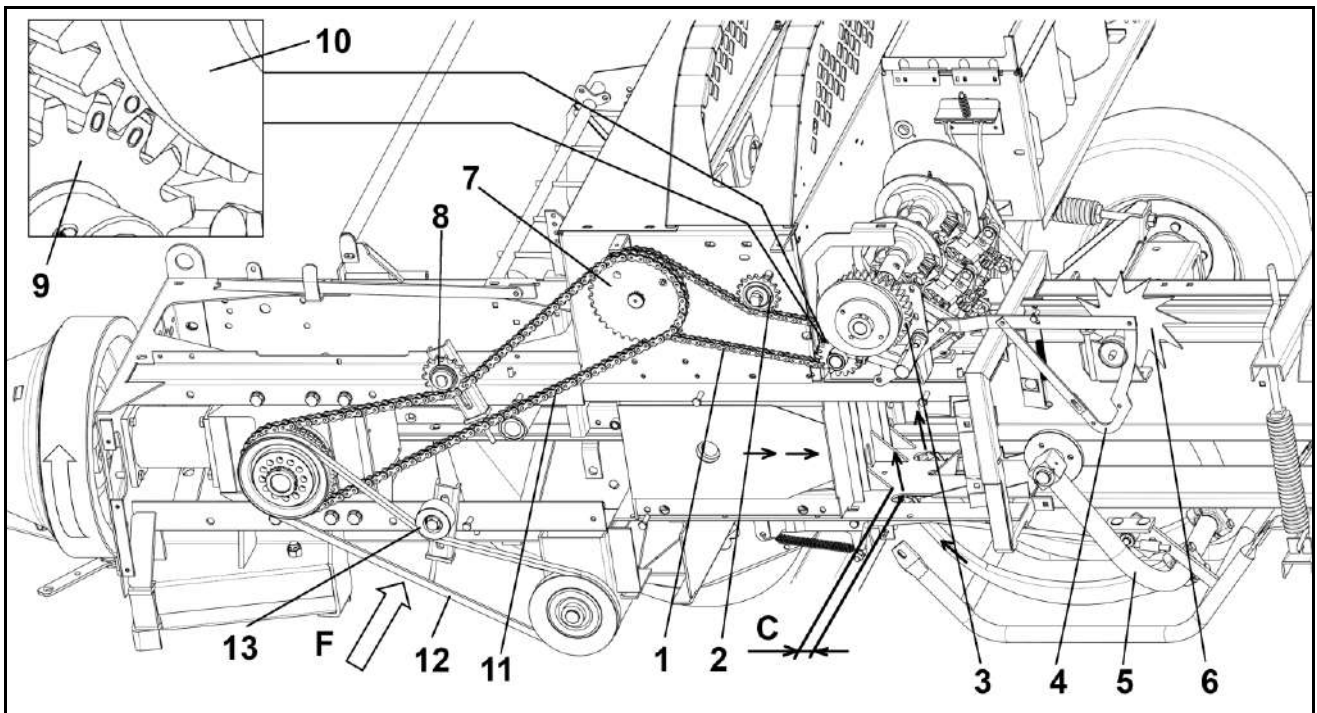


Fig. 7.7

7.2.3 Chain and belt tension adjustment

The belt (ref. 12 Fig. 7.7) that transmits power to the pickup must be correctly tensioned; the tension can be increased or decreased by means of the tensioner (ref. 13 Fig. 7.7).

The correct tension is checked as follows: applying a force F of 60 N (Fig. 7.7 - applied at the middle of the free side directed perpendicular to the belt itself), the belt must have a maximum deflection of 9 mm.

The chains must be tensioned for correct use.

Checking on the free side, the chains must be tensioned so that:

chain 11 (Fig. 7.7) must flex max. 1.5 mm;

chain 1 (Fig. 7.7) must flex max. 1 mm;

chain 3 (Fig. 7.6) must flex max. 1 mm.

7.3 Bale chamber adjustment

The adjustment of the bale chamber involves two parts:

- the plunger guides,
- carriage knife,

The plunger guide must be adjusted first, as it affects the position of the carriage and the knife. Before making this adjustment, thoroughly clean the chamber and the carriage, so as to avoid adjustment errors caused by the presence of residues.

7.3.1 Plunger guides adjustment

The plunger is mounted on sealed bearings and is guided by steel blades. In the bale chamber it slides on adjustable steel guides. The lateral adjustment must be made such as to leave a space of 0.5 mm in which the plunger can move. Despite the minimal play, the plunger must not be stopped in its stroke. This adjustment should be done rarely, unless it is noted that the plunger has too much play. To obtain the correct clearance of the plunger, it is necessary to adjust the left side guides of the plunger (ref. 10, Fig. 7.8).

Loosen the bolts 1 and 2 (Fig. 7.8) and then push the guides (first the lower then the upper one) by means of the pressure bolts 3 and 4 (Fig. 7.8) until the plunger side guides are 0.5 mm or less from the left side guides of the chamber.

At this point, retighten the bolts 1 and 2 (Fig. 7.8).

The aforementioned adjustment on the left guides makes it possible to compensate the excessive play due to the wear of the left guides and also the small amount of play due to a possible limited wear of the right guide. (Fig. 7.8)

Once the left side guides have been adjusted, it is necessary to compensate any play that may occur between the upper part of the upper right corner guide and the slide block 6 (Fig. 7.8) by moving, by means of the adjustment and fastening screws, the aforementioned slide block so that there is a maximum play of not more than 0.5 mm.

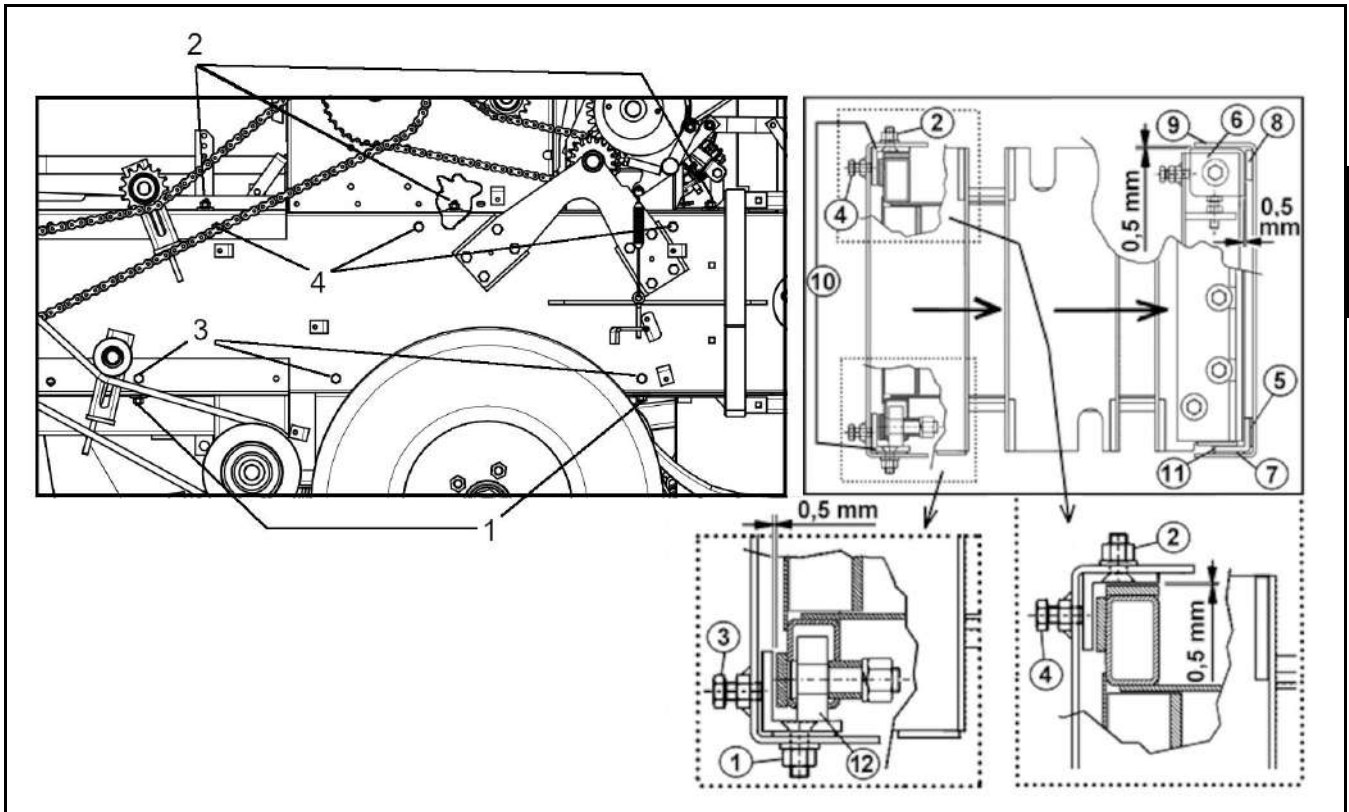


Fig. 7.8

The lower right corner guide 11 (Fig. 7.8) is fixed and is mounted on the bale chamber with the insertion of the shims 5 and 7 (Fig. 7.8). If the lower right guide is fairly worn, the guide must be removed and other shims inserted to compensate.

If the lower right guide shows considerable wear and allows play, it is necessary to remove the guide and replace it with a new one, inserting the original shims.

Work on the lower right guide must be done out with the carriage disassembled and before doing any possible work on the left guides.

The upper right side guide is fixed and is fastened to the bale chamber with screws. Any excessive play that occurs between the plastic slide block 6 (Fig. 7.8) and the aforementioned guide is compensated by moving the slide block in question by means of adjustment and fastening screws so that there is a maximum play of not more than 0.5 mm.

In the same way, it is necessary to make adjustments to compensate for any play produced between the slide block 6 and its upper right guide 9 (Fig. 7.8).

The plunger height can be adjusted using the eccentric pins of the 4 journal bearings 12 (Fig. 7.8), after having removed the plunger from the bale chamber.

In the event that the guides on which the plunger slides are clogged with soil or other materials, it is necessary to remove the plunger from the bale chamber and clean the guides or, if necessary, remove the guides, clean them and reassemble them.

7.3.2 Bale chamber knives adjustment

The knives (fixed on the chamber, ref. A, and ref. B on the carriage, Fig. 7.10) are designed to separate successive layers of material sent into the bale chamber by the feeder forks.

It is very important to adjust the knives to obtain quality bales and to avoid frequent breakage of the shear bolt on the flywheel.

The distance between the knife fastened to the bale chamber and the movable knife fastened to the plunger should be 0.8 - 1.5 mm. This play must be as little as possible but such as to allow free movement of the plunger in the bale chamber.

After having checked the adjustment of the carriage side guides (see sect. 7.3.1 for further details), the distance between the knives can be varied by changing the position of the angular knife fastened to the plunger by means of bolts in slots (Ref. 1, Fig. 7.9).

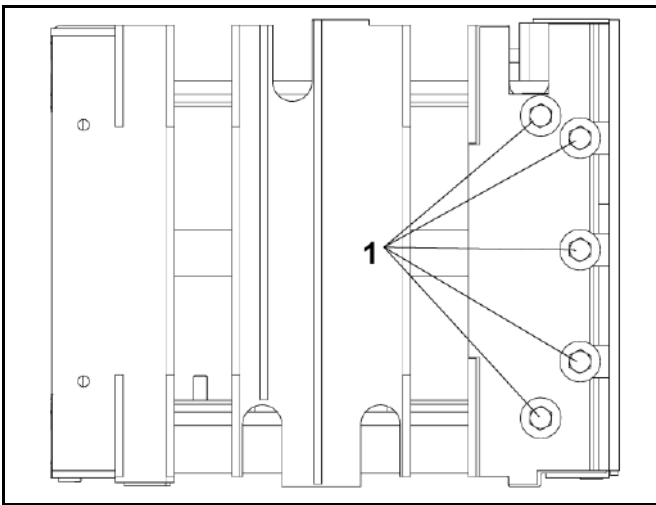


Fig. 7.9

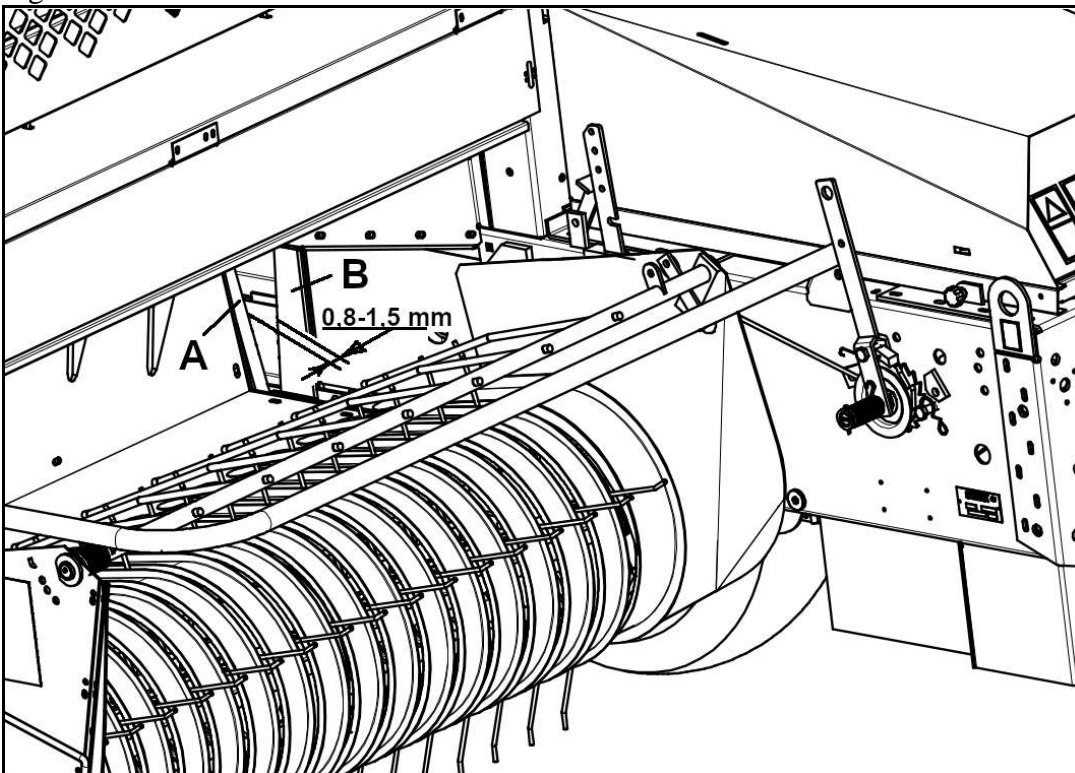


Fig. 7.10

7.4 Knotter adjustment

There are several possible knotter adjustments, and they are generally necessary only when there is wear on the components.

7.4.1 Knotter brake adjustment

This brake (ref. 7 Fig. 7.11) is designed to make the motion of the knotter uniform during the tying cycle and to hold it still when it is not working.

The adjustment is done by turning the adjustment screw to increase or decrease the compression on the spring 3 (Fig. 7.11). The reference measure $H = 25$ mm.

ATTENTION: do not fully compress the spring, as this will stop the movement of the knotter and possibly cause the breakage of the shear bolt.

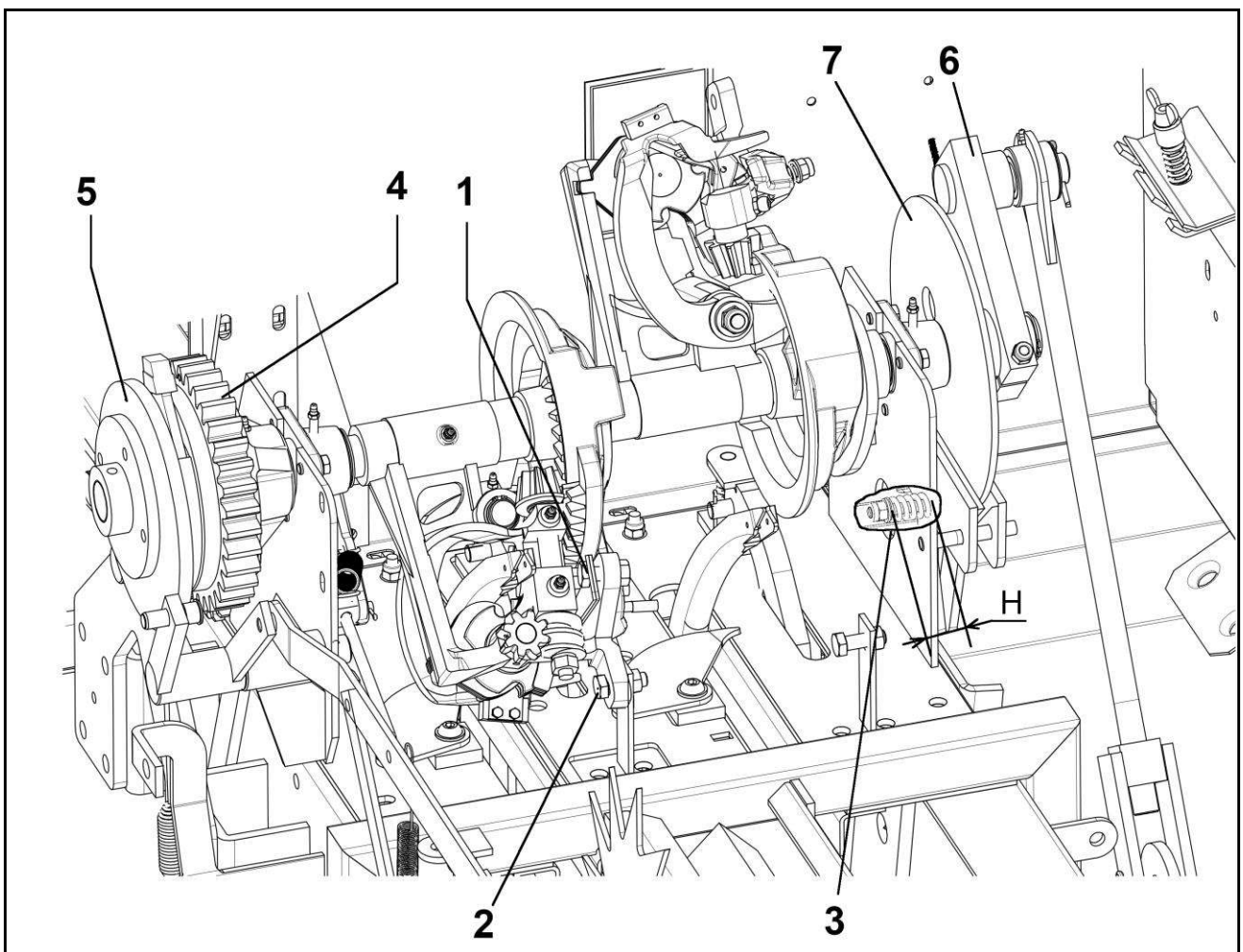


Fig. 7.11

Tighten the screw if the needles move during compressing; loosen the spring if the knotter is blocked during the tying stage.

7.4.2 Holder disc pressure adjustment

Make this adjustment with 1/3-1/2 of a turn for each attempt.

The pressure of the holder discs must hold the twine pulled taut by the proceeding of the bale, but at the same time it must allow the knoter billhooks to extract the amount of twine necessary to form the knots.

The pressure is adjusted by adjusting the flat spring 1. To do this, loosen the lock nut 3 and turn the screw 2 (Fig. 7.12).

To find the correct holder disc pressure, proceed as follows: the twine must be inserted and pressed in the holder disc. Adjust the spring 1 in Fig. 7.12 as described previously, so that the twine runs only when subjected to a force F of 40 to 60 kg. If necessary, adjust the flat spring 1 (Fig. 7.12) until the distance A is approximately 2–3 mm.

ATTENTION! The twine knoter compartment must be blown out and cleaned at least once a day to avoid the clogging and jamming of parts that may prevent them from functioning properly (for example: the crescents control shaft, the straw trap pawls, etc.)

ATTENTION! If the knoter is uncovered during use, the operator must be very careful to avoid any possible risk.

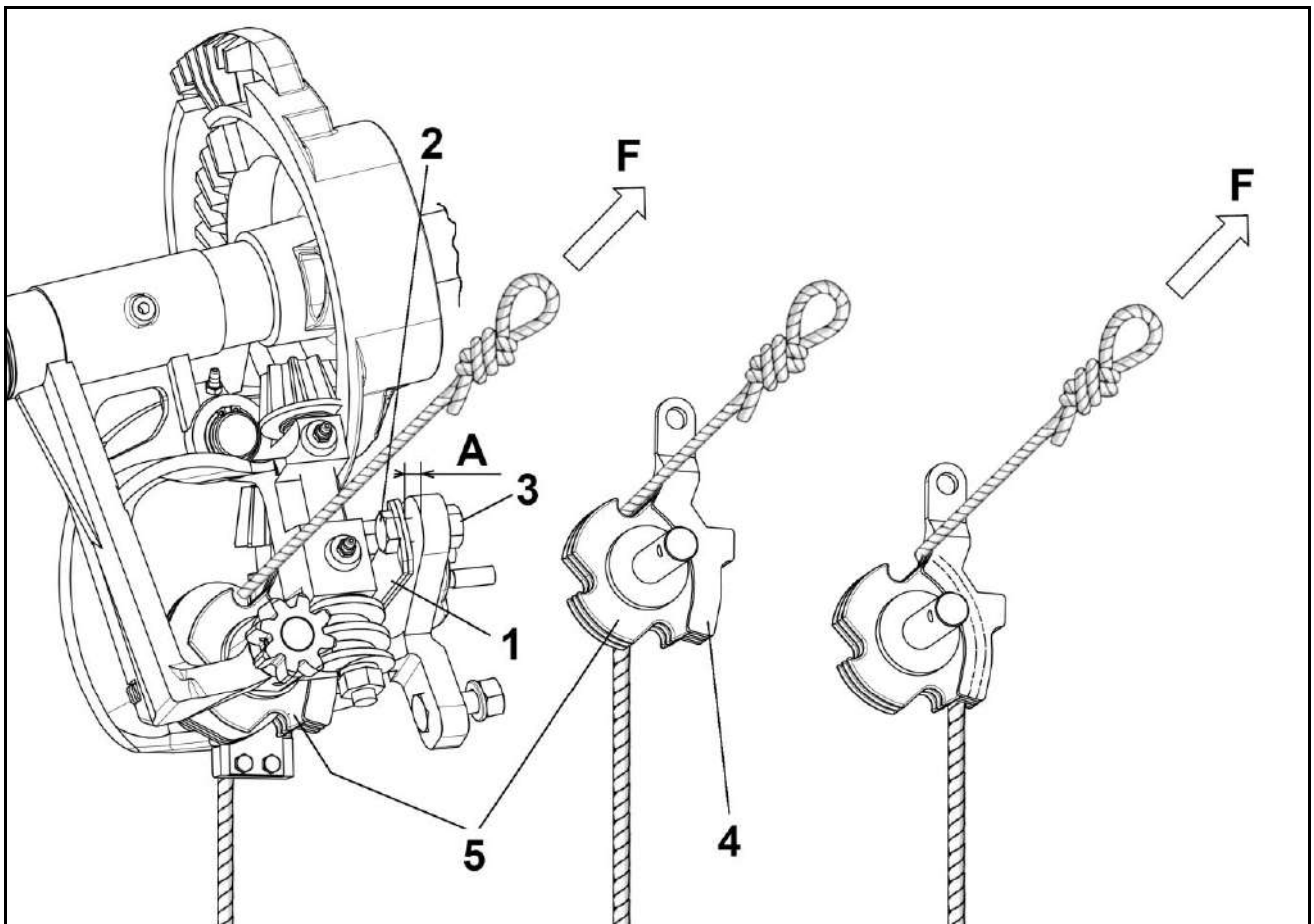


Fig. 7.12

7.4.3 Holder disc position adjustment

The position of the holder disc (ref. 5, Fig. 7.12) must be adjusted so that the twine carried by the needle is gripped in its notches (ref. 7, Fig. 7.13). The adjustment must be done so that the distance between the knotter frame and the left edge of the notch of the holder disc (see ref. B Fig. 7.13) is between 10 and 12 mm (7–9 mm in old knotters, approximately up to the year 2005).

To make this adjustment, proceed as follows:

Loosen the nut 1 (Fig. 7.13) by about 3 mm.

Give the bolt a sharp blow with a hammer in the direction of the pin, where it moves in order to release the worm gear 4 (Fig. 7.13), which is held in place by a conical connection.

Place the holder disc in the position described above and illustrated in Fig. 7.13.

Turn the worm gear 4 (Fig. 7.13) counterclockwise until it comes into contact with the gear 5 (Fig. 7.13), to eliminate any play in the adjustment.

Secure on its conical axis the gear 4 (Fig. 7.13) thus positioned by tightening the nut 1 (Fig. 7.13).

ATTENTION!

When the disc is too delayed in movement, i.e. the distance between the frame of the holder disc and the left side of the notch is too great, the twine can become tangled around the knotter billhook.

Standard adjustment reference measurements

B=10-12 mm; (7–9 mm in old knotters, approximately up to the year 2005)

C= 0.5–1 mm;

D= 18–22 mm;

E= 80–85 mm

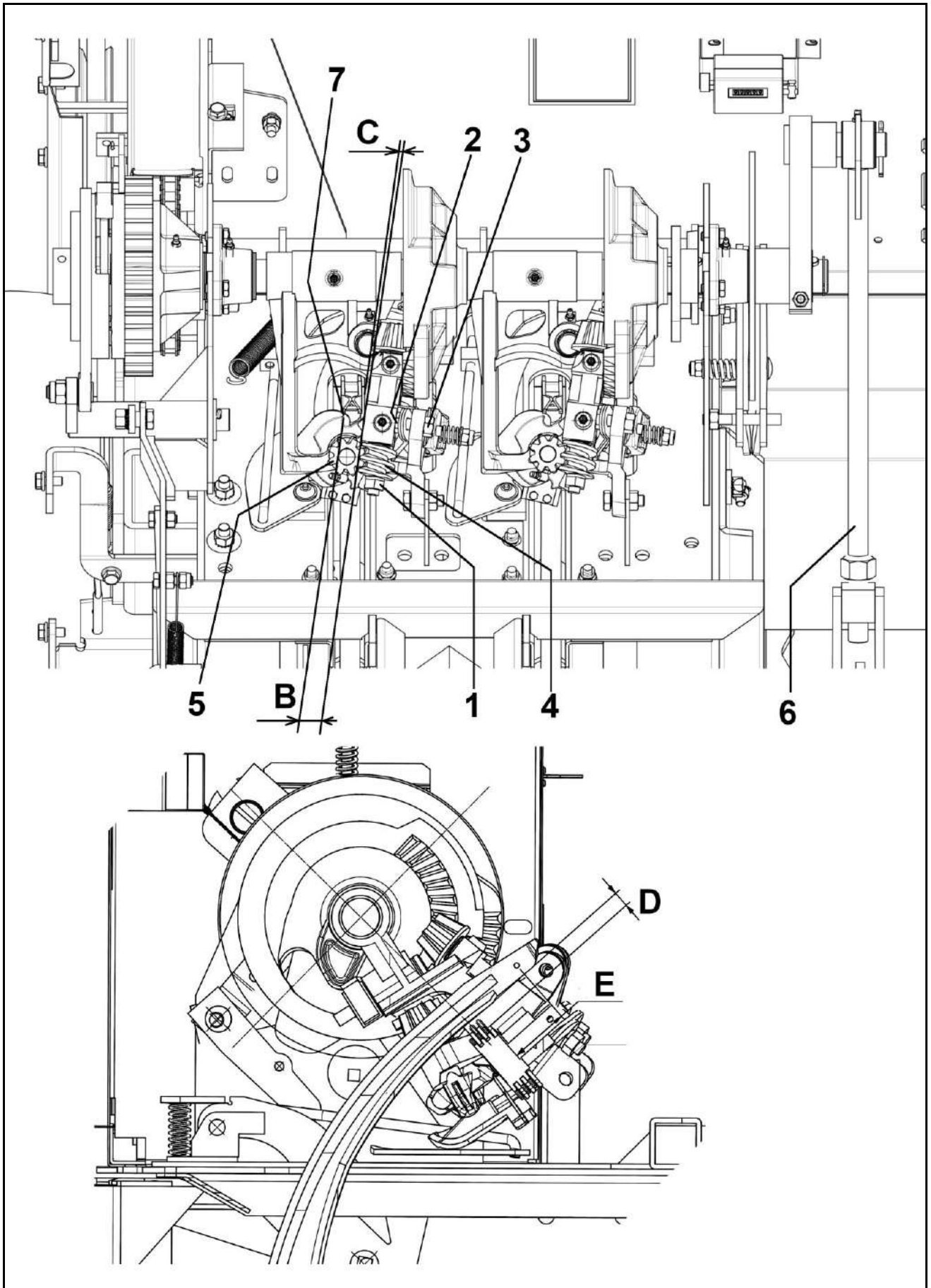


Fig. 7.13

7.4.4 Needles adjustment

The needles are adjusted using screws 1 and 2 as shown in Fig. 7.14.

- 1) To reduce the distance between the needle tips and the holder disc when they bring the thread to the knotter, loosen screw 2 by a fraction of a turn and tighten screw 1 by the same amount.
To increase the aforementioned distance, make the adjustment in the opposite manner.
- 2) To move the needles sideways, bend them as much as necessary.
To obtain an accurate regulation, refer to the measurements below:
Adjustment of the crosswise position of the needles.
The distance between the side of the needle and the knotter frame must be 0.5 to 1 mm (ref. C, Fig. 7.13), i.e. the needle must almost touch the knotter frame (Fig. 7.13).
This adjustment is usually made with the needle arm in neutral, bending the needle itself.
- 3) Needle height adjustment.
When the needle is at the upper end of the stroke, the distance between the lower side of the needle and the bottom of the notch of the holder disc must be 18–22 mm (ref. D, Fig. 7.13).
This adjustment is usually made with the needle arm in neutral, loosening or tightening screws 1 and 2 (Fig. 7.14).
- 4) Needle advancement adjustment.
When the needles reach the upper end of the stroke (ref. E, Fig. 7.13), the distance between the holder disc and the center of the needle roller must be between a minimum of 80 mm and a maximum of 85 mm.
To adjust this height, use the adjustable fork of the needle holder arm (ref. 6, Fig. 7.13).

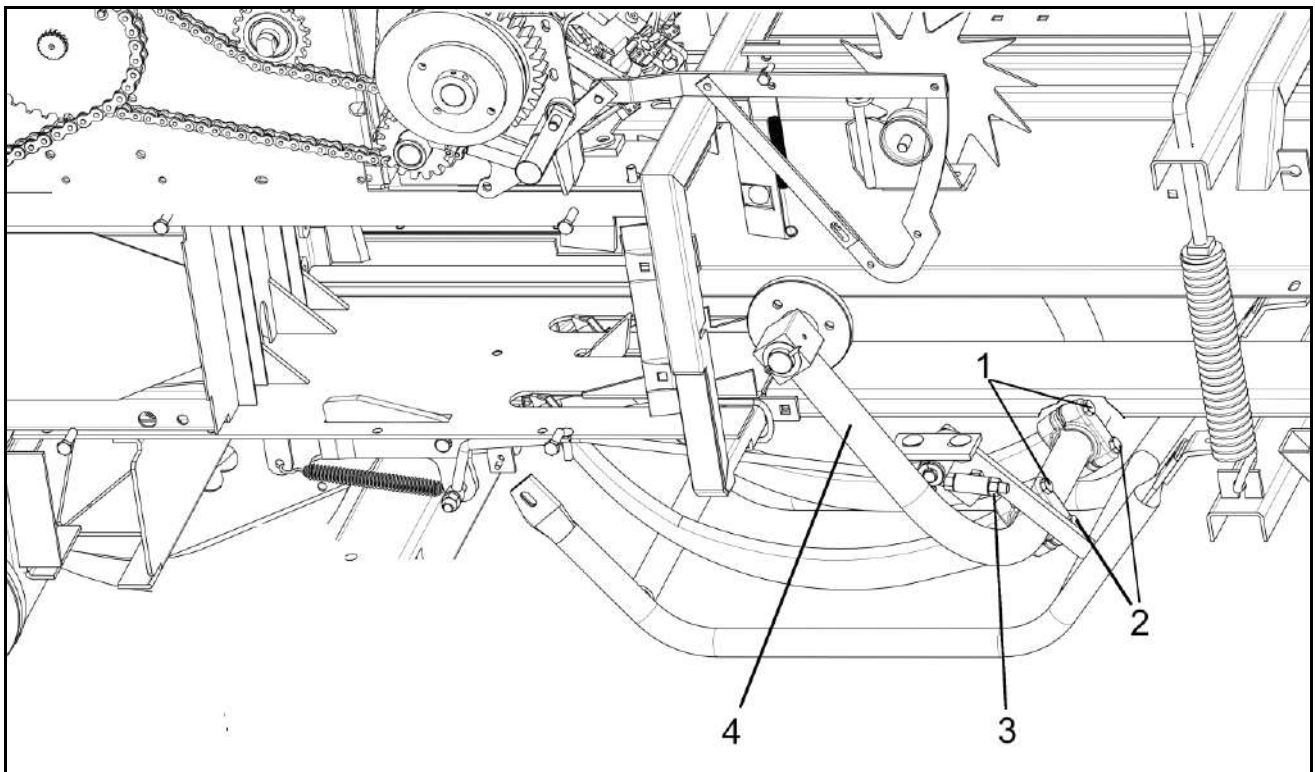


Fig. 7.14

7.4.5 Crescent aligner/twine guide cam adjustment

The play between the twine guide cams 3 (Fig. 7.15) and their pins must be the minimum needed to allow them to move freely.

In the rest position, the tips of the twine guide cams must be in line with the edges of the passage holes for the twine carried by the needles, with a maximum tolerance of 2 mm towards the inside (ref. G1, Fig. 7.15).

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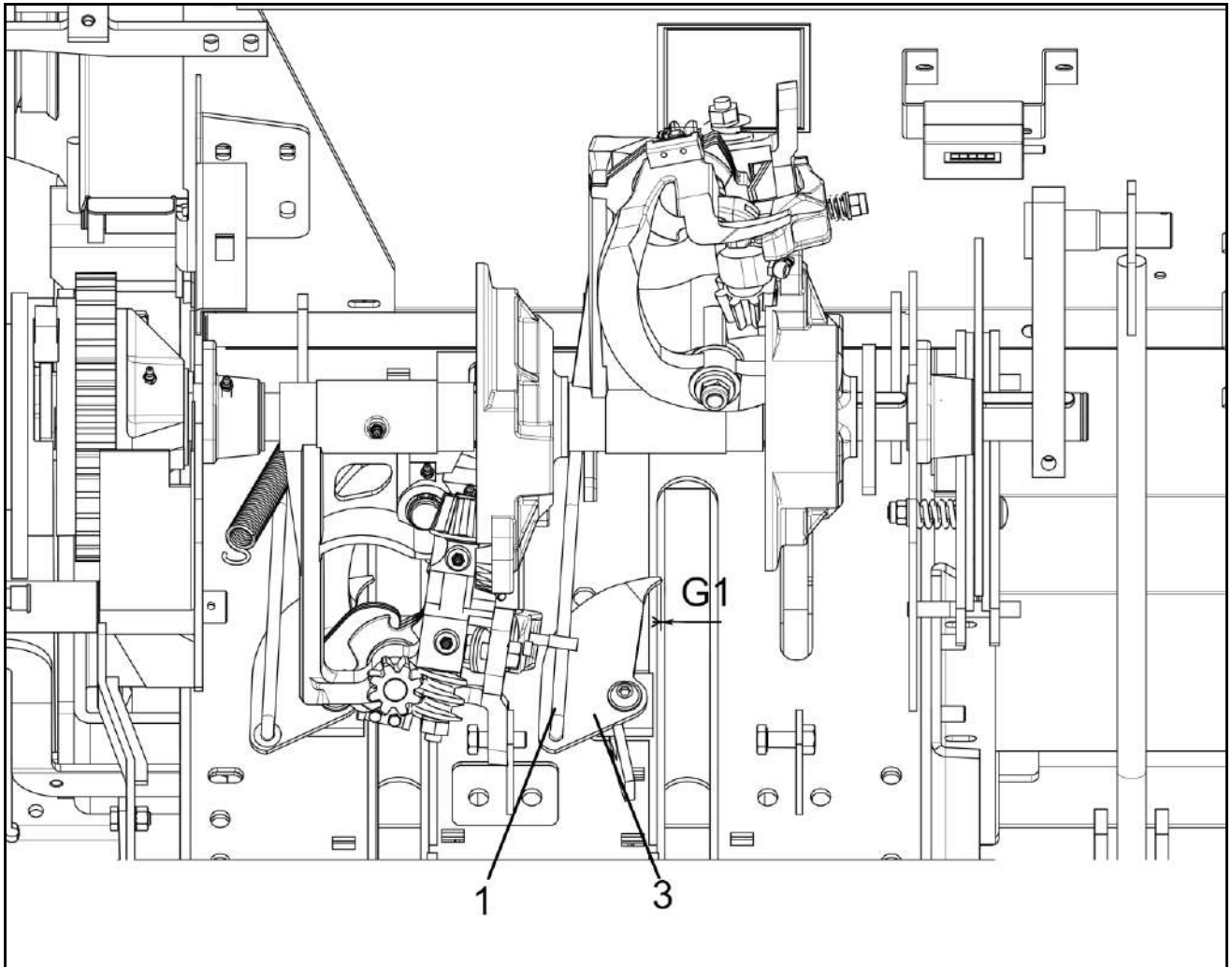


Fig. 7.15

To adjust this, tighten or loosen the lug 2 (Fig. 7.16) with respect to the control rod 1 (Fig. 7.16.)

With the needle arm in neutral, during the raising of the needle, the minimum distance between the tip of the twine guide cam and the inner side of the needle must be 2–3 mm (ref G2, Fig. 7.16). If the needle height adjustment made as indicated in section 7.4.4 does not allow the above distances from the crescents to be complied with, the previous needle height adjustment will have to be corrected.

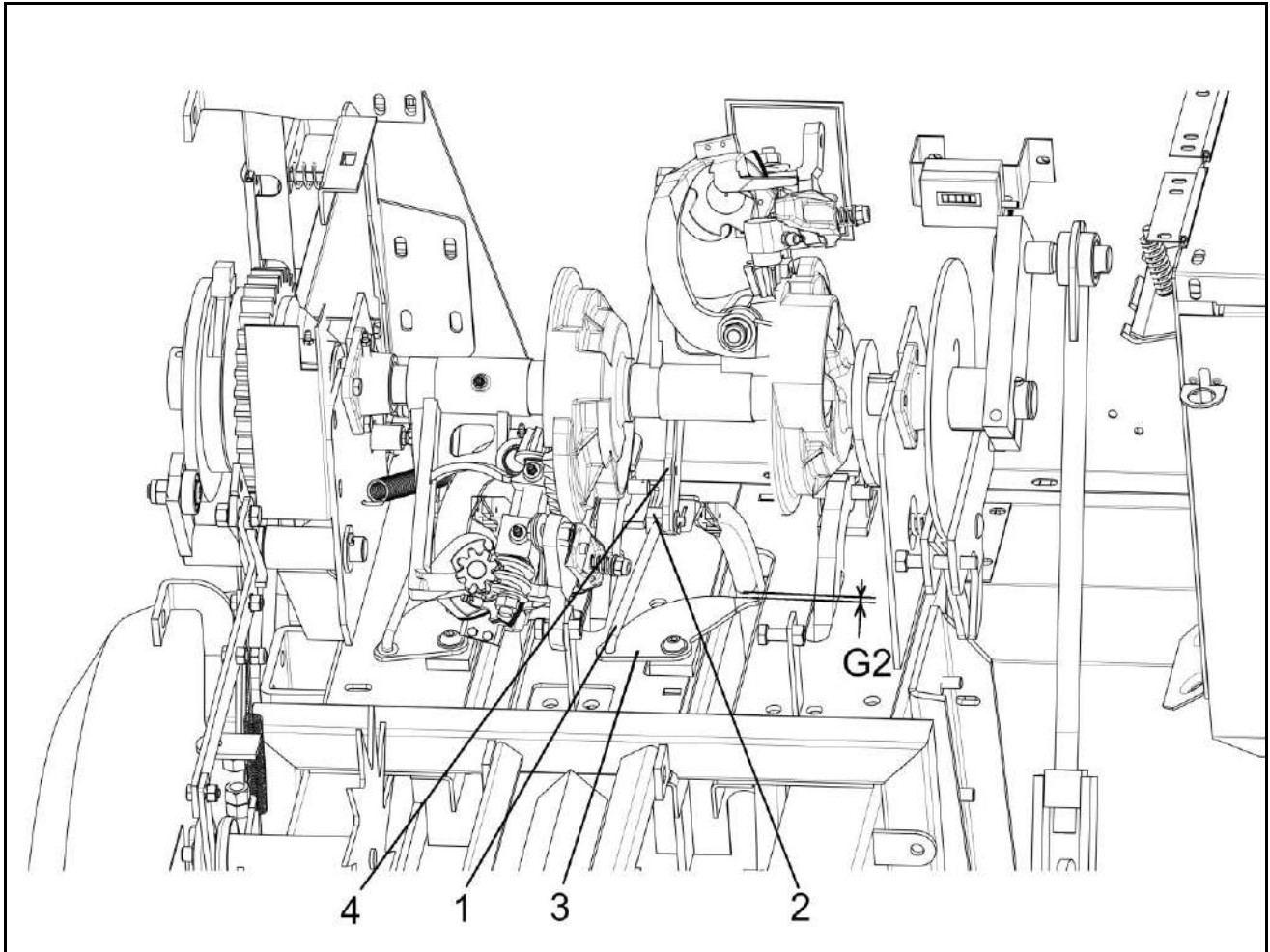


Fig. 7.16

7.4.6 Twine tension adjustment

Each twine must come out of the clamp (ref. 1, Fig. 7.17) when subjected to a force $F_1 = 2-3 \text{ kg}$ (Fig. 7.17) and must run along its path outside the needle when subjected to a force $F_2 = 10-14 \text{ kg}$ (Fig. 7.17). If necessary, adjust the pressure of the clamp 1 (Fig. 7.17) with the screw 2 (Fig. 7.17).

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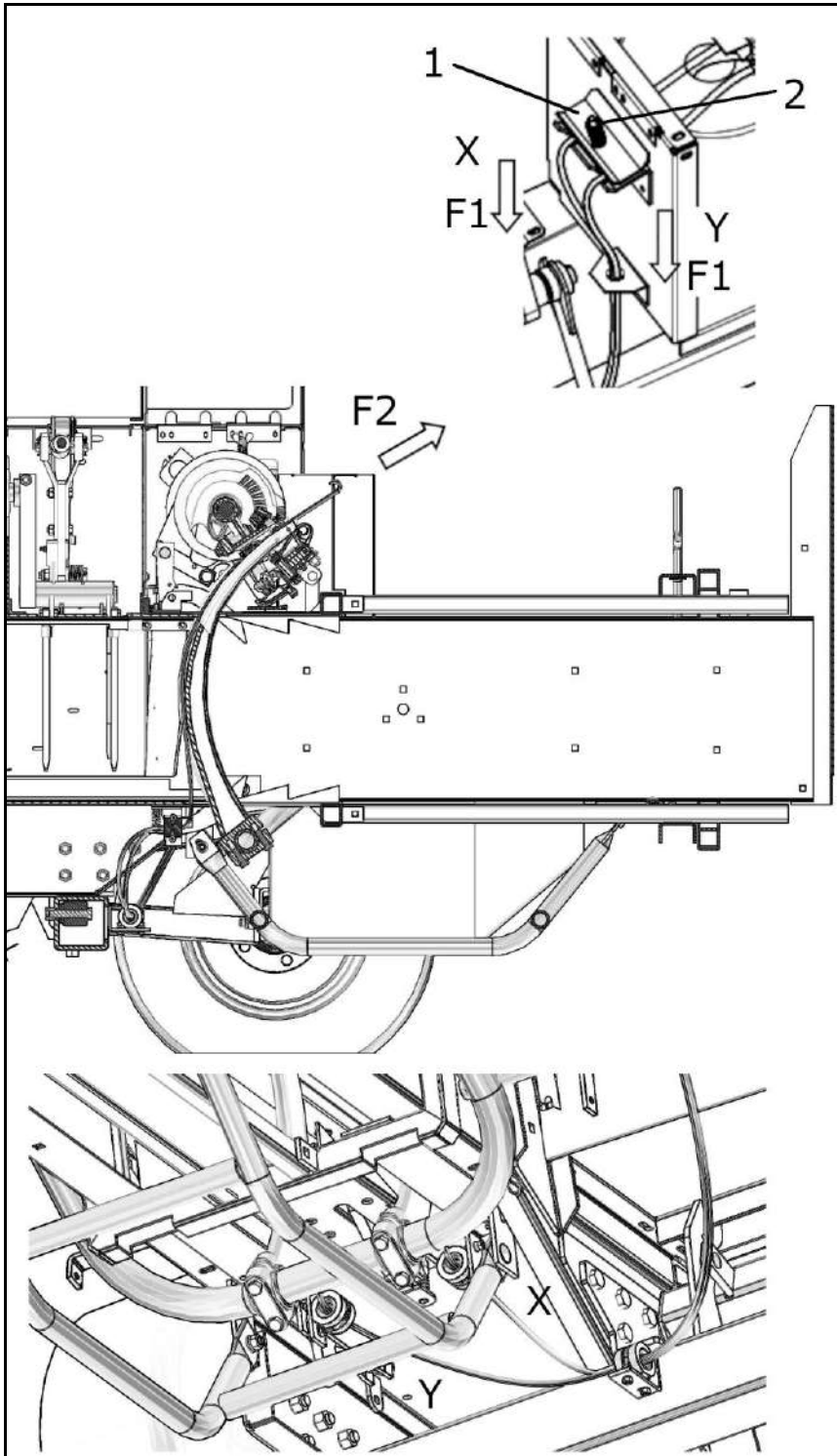


Fig. 7.17

7.4.7 Knotter billhook tongue adjustment

With the knotter in the rest position, the billhook tongue (ref. 1, Fig. 7.18) must open if subjected to a force between 5 and 10 kg. If necessary, tighten or loosen the spring (ref. 2, Fig. 7.18).

ATTENTION! The twine knotter compartment must be cleaned (see Table 6.1) to avoid the clogging and jamming of parts that may prevent them from functioning properly (for example: the crescents control shaft, the straw trap pawls, etc.)

ATTENTION! If the knotter is uncovered during use, the operator must be very careful to avoid any possible risk.

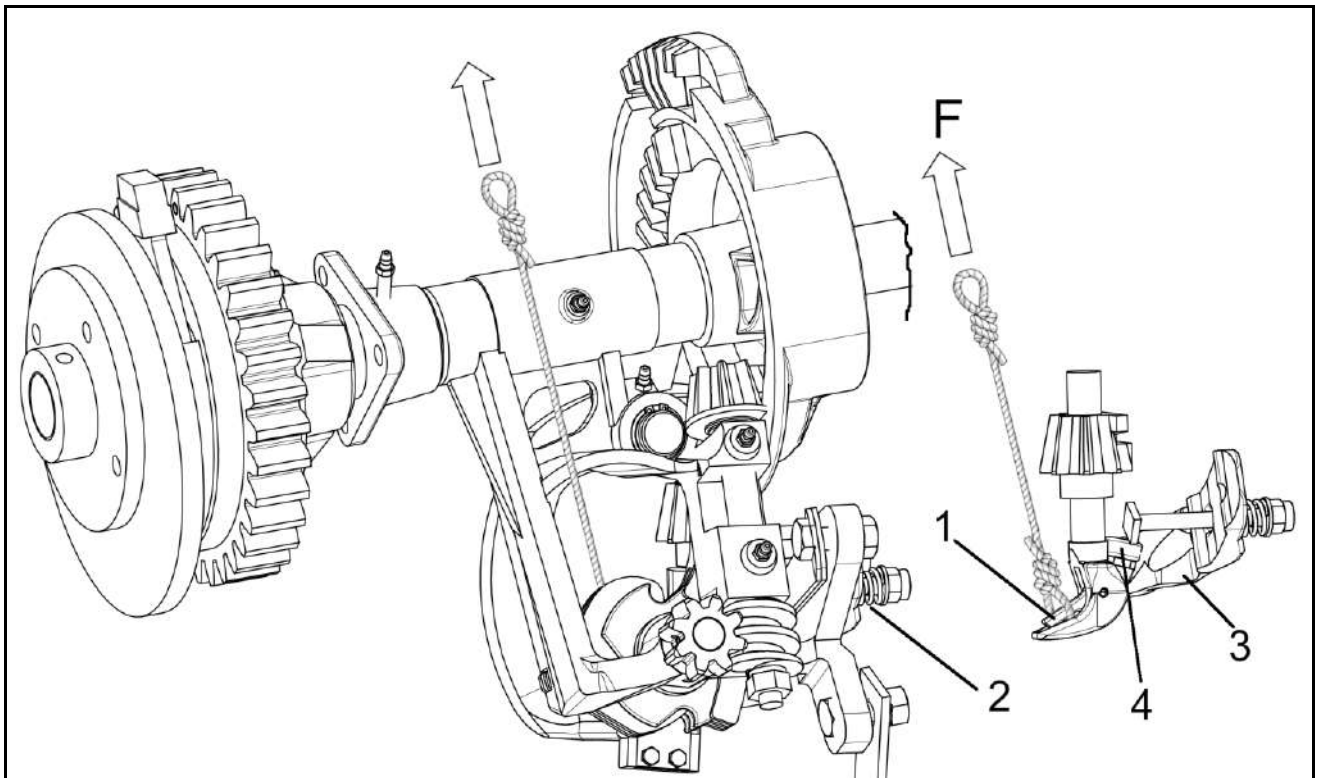


Fig. 7.18

7.4.8 Ejector arms and knife holder adjustment

The ejector arms and knife holder (ref. 8 Fig. 7.19) must cut the excess twine and pull the knots out of the knotting billhooks.

There is no adjustment for the knives. It is only necessary to keep the knife sharp or to replace it. The adjustment of the ejector arms instead is very important, and must meet the following requirements:

- 1) In its movement, the ejection tongue (ref. 4, Fig. 7.20) must rub with a slight pressure against the back of the knotting billhook (ref. 2, Fig. 7.20).
- 2) The tongue is curved to follow the back of the knotting billhook. The curve of the tongue must be centered with the back of the aforesaid billhook.
- 3) During the ejection movement, the tongue must go beyond the tip of the billhook by no less than 6 mm and no more than 12 mm (ref. L, Fig. 7.20).

To check the adjustment of the ejector arms and to sharpen the knives, remove the bolts (ref. 16, Fig. 7.19) from the knotter assembly concerned and lift it upward as shown with the right knotter (Fig. 7.19). This operation must be done with the needles in the rest position.

When the knotter assembly is raised, the ejector arm follows its own movement and makes it easier to check the adjustment.

To make adjustments 1 and 2, bend the ejector arm in the desired direction. It is not necessary to remove the ejector arm nut (ref. 15, Fig. 7.19 / ref. 3, Fig. 7.20) for adjustments 1 and 2.

If the parameters given in point 3 are not found due to wear or impact, it is necessary to replace the roller (ref. 1, Fig. 7.20) mounted on the ejector arm or to replace the complete ejector arm or, after having disassembled the entire knotter, repair or replace the cam with the knotter control disc (ref. 5, Fig. 7.19).

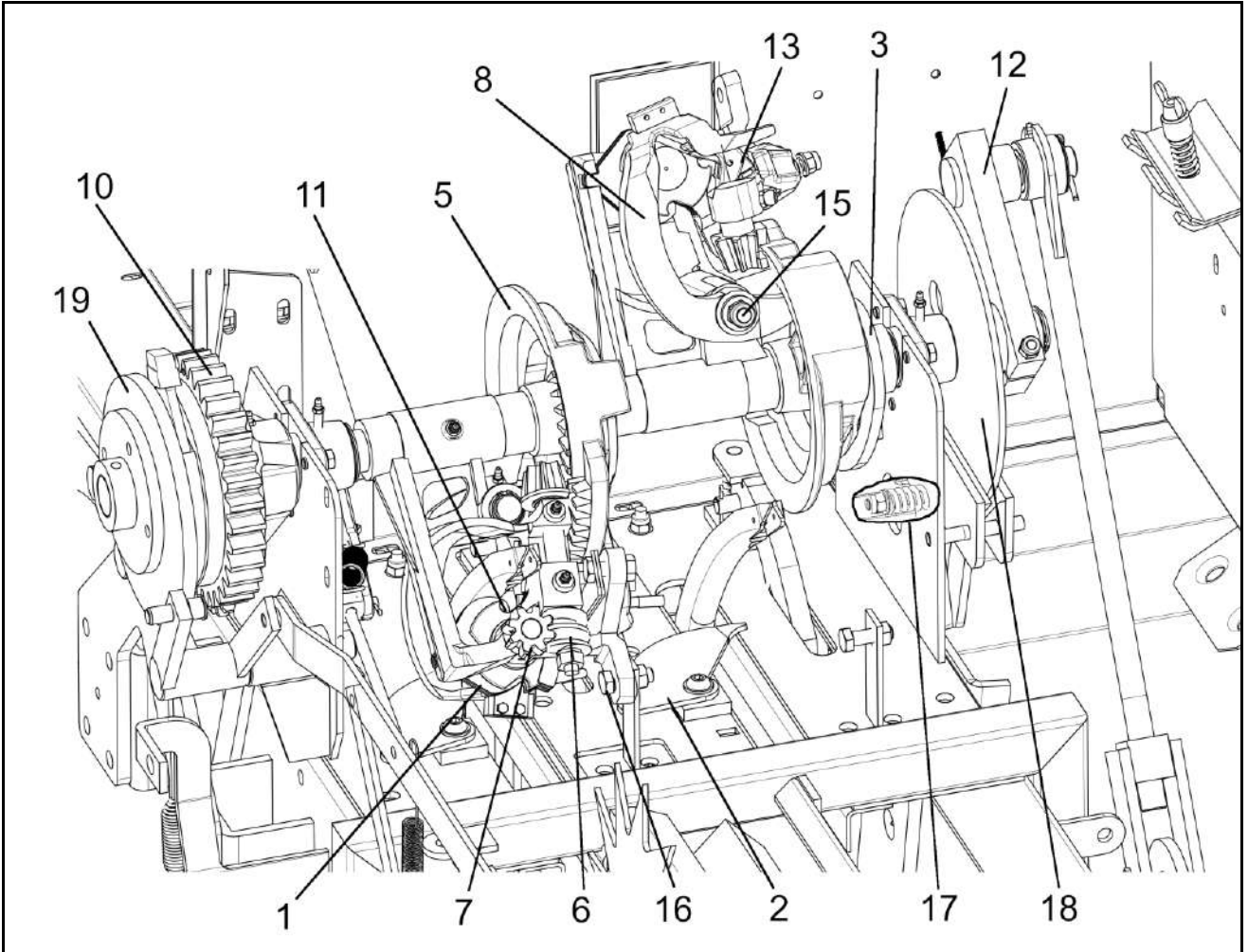


Fig. 7.19

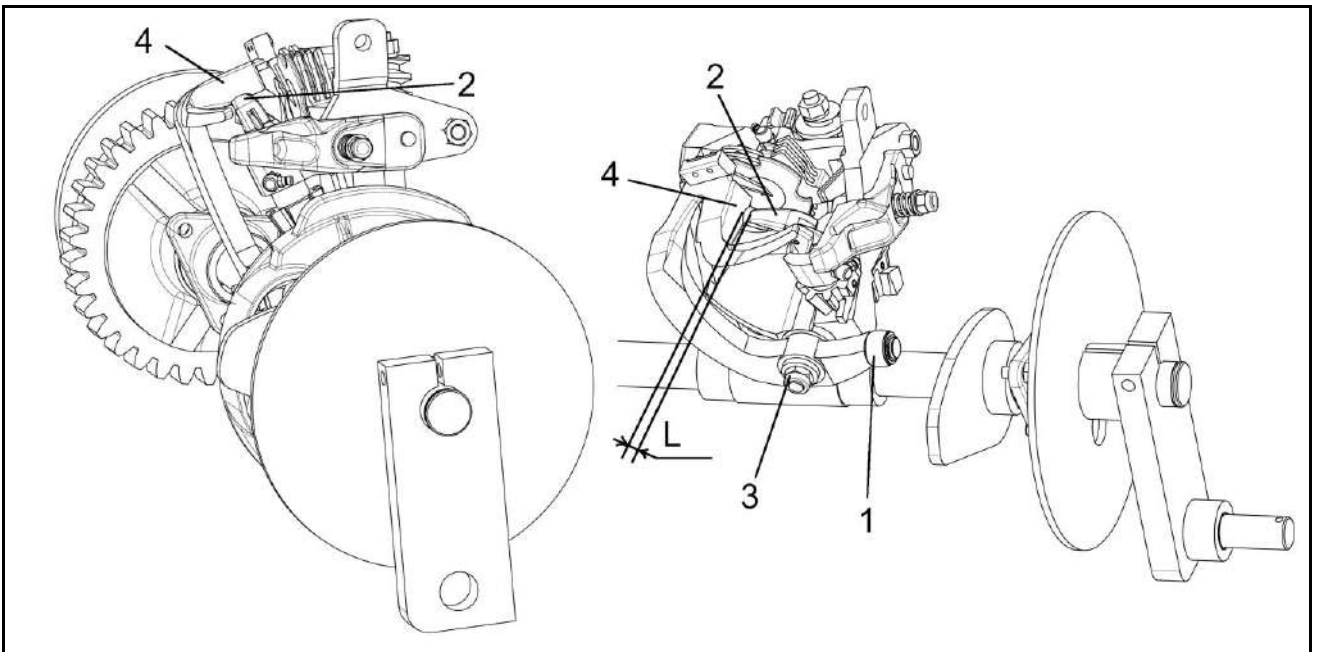


Fig. 7.20

7.5 Bale adjustment

There are some procedures/adjustments for improving the shape and size of the bale that we will describe below.

7.5.1 Bale length adjustment

Adjustments are made with the adjustment screw (ref. 3, Fig. 7.21), after loosening the lock nut.

For shorter bales, screw in the adjustment screw, moving it upward.

For longer bales, unscrew the adjustment screw, moving it downward.

The length of the bales can vary from 40 to 130 cm.

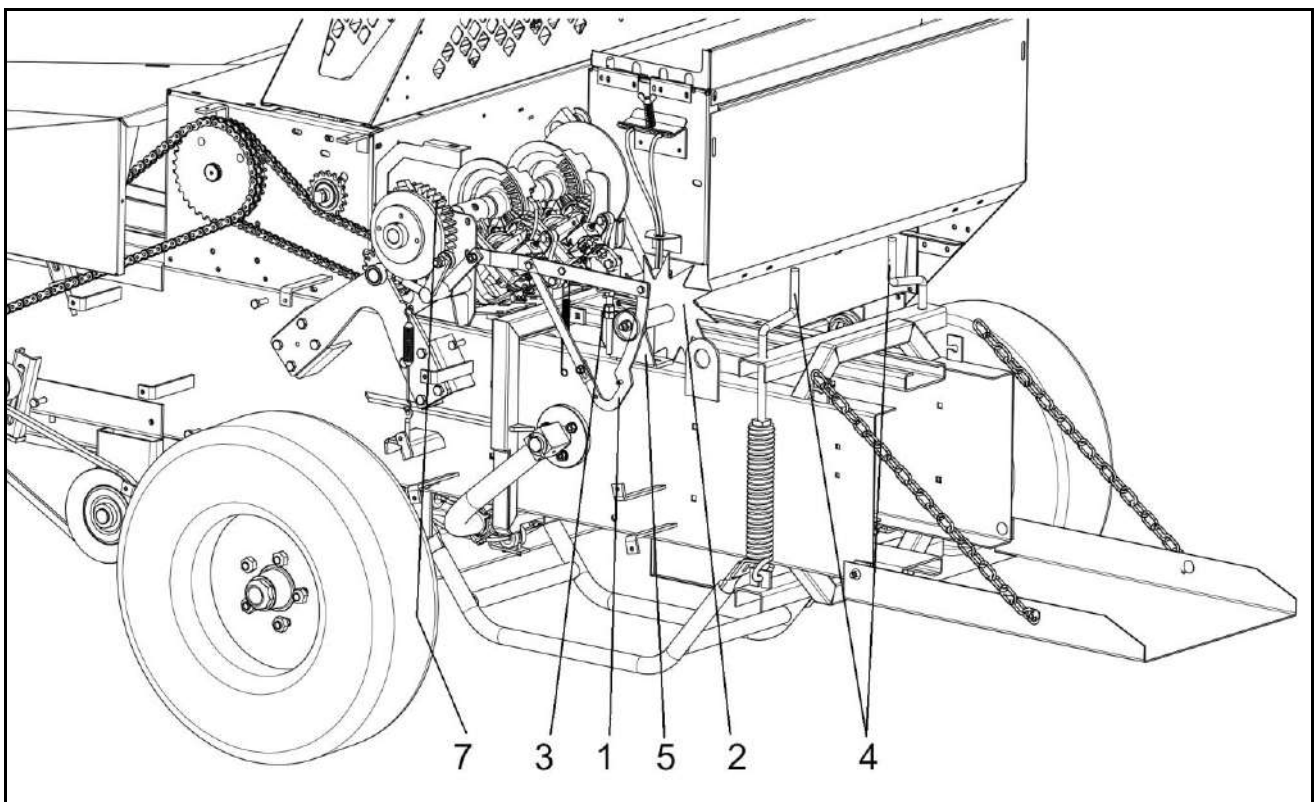


Fig. 7.21

7.5.2 Chamber filling adjustment

The first rule for obtaining perfectly shaped bales is to feed the baler at a constant rate, without overloading.

This means having a uniform swath of material to be baled, moving forward steadily and uniformly with the tractor, and adjusting the forks to fill the chamber evenly (this depends greatly on the material).

To adjust the forks, look at Fig. 7.22 and proceed as follows:

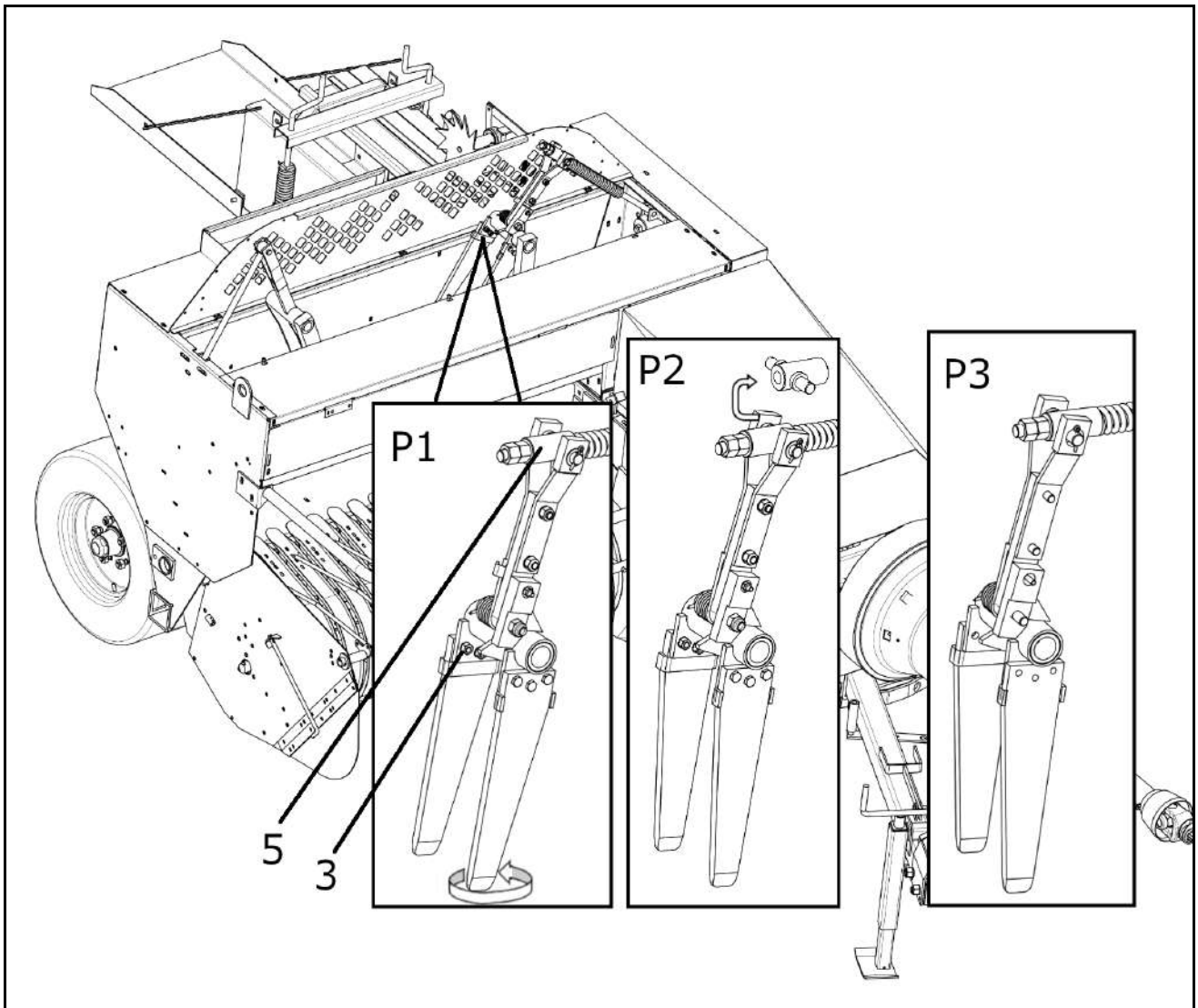


Fig. 7.22

- A) If the bales come out of the bale chamber looking like that in Fig. 7.23A (i.e. the bales are longer/fuller on the outer side of the bale chamber) the teeth of the first fork must be assembled as shown in Fig. 7.22, ref. P1, with the slanted side of the fork facing the bale chamber. It is rotated by removing the screws 3 (Fig. 7.22). This adjustment is necessary mainly when baling short product.
- B) If the bales come out of the bale chamber looking like that in Fig. 7.23B (i.e. the bales are longer on the inner side/knife side of the bale chamber), the teeth of the first fork must be assembled as shown in Fig. 7.22, ref. P2, with the side perpendicular to the attachment bracket facing the bale chamber, by means of the three fastening screws 3 (Fig. 7.22). If this is not enough to solve the

problem, assemble the head-cross support 5 (Fig. 7.22) positioned at 180° (ref. P3, Fig. 7.23). This adjustment is necessary mainly when baling long product.

These adjustments allow the shifting of the first fork towards the left side of the bale chamber, bringing the material into the area with less material.

Turn the flywheel by hand to check that all components move freely.

Carry out this check using the utmost caution – there is a danger of serious injury.

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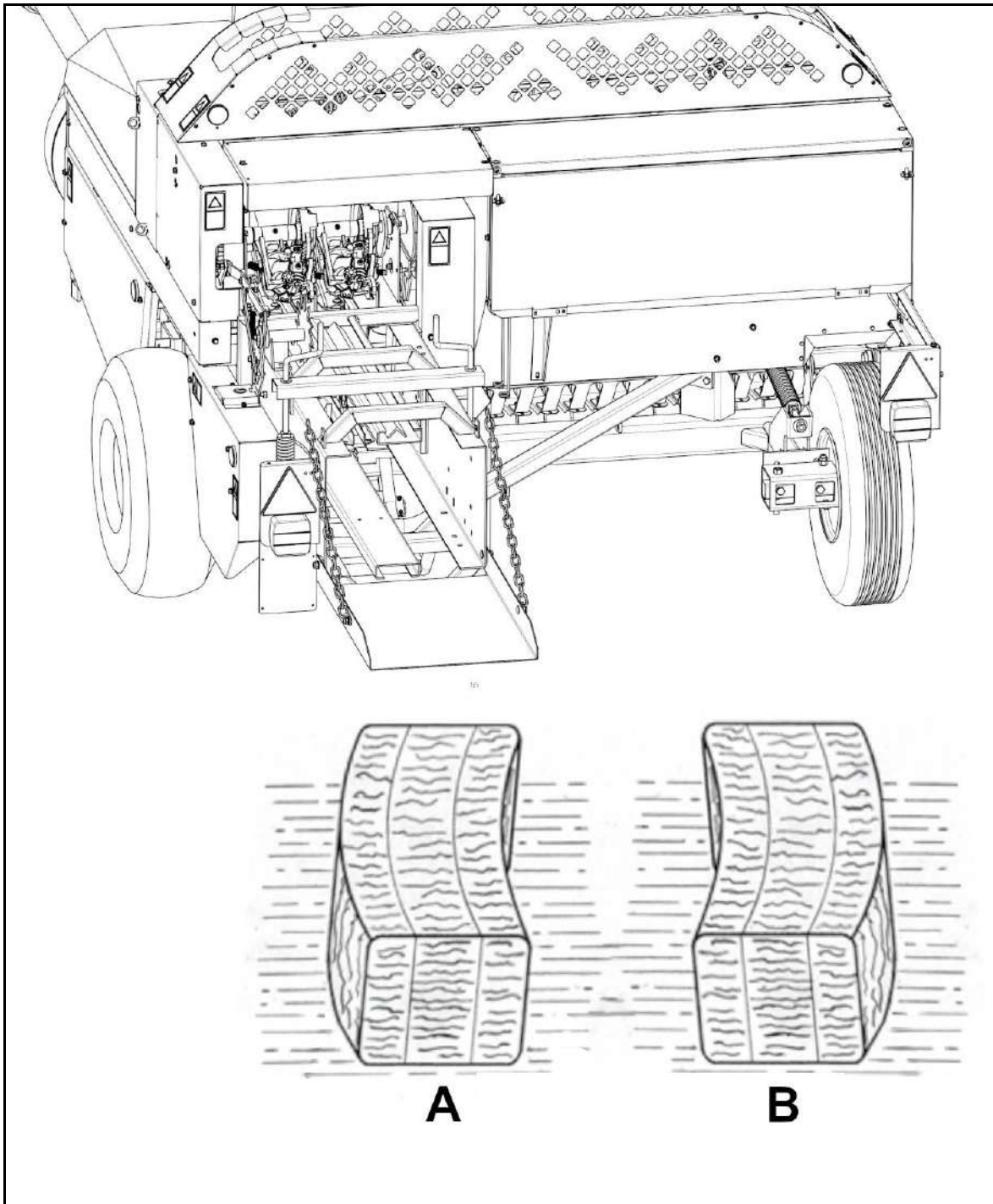


Fig. 7.23

7.5.3 Bale density (weight) adjustment

The weight of the bales is determined by the quality of the material to be baled and the density and length of the bales.

The density can be adjusted by turning the cranks 6 (Fig. 7.24); screwing in the cranks brakes the outgoing material more and increases the density of the bale.

To further increase the density, straw trap wedges 3 (Fig. 7.24) are inserted into the appropriate holes in the bale chamber (ref.5, Fig. 7.24).

When there is humidity, in the evening and at night, the pressure applied must be reduced by unscrewing the cranks 6 (Fig. 7.29).

The operator will learn through experience the correct adjustment for obtaining the desired bale weight in all conditions.

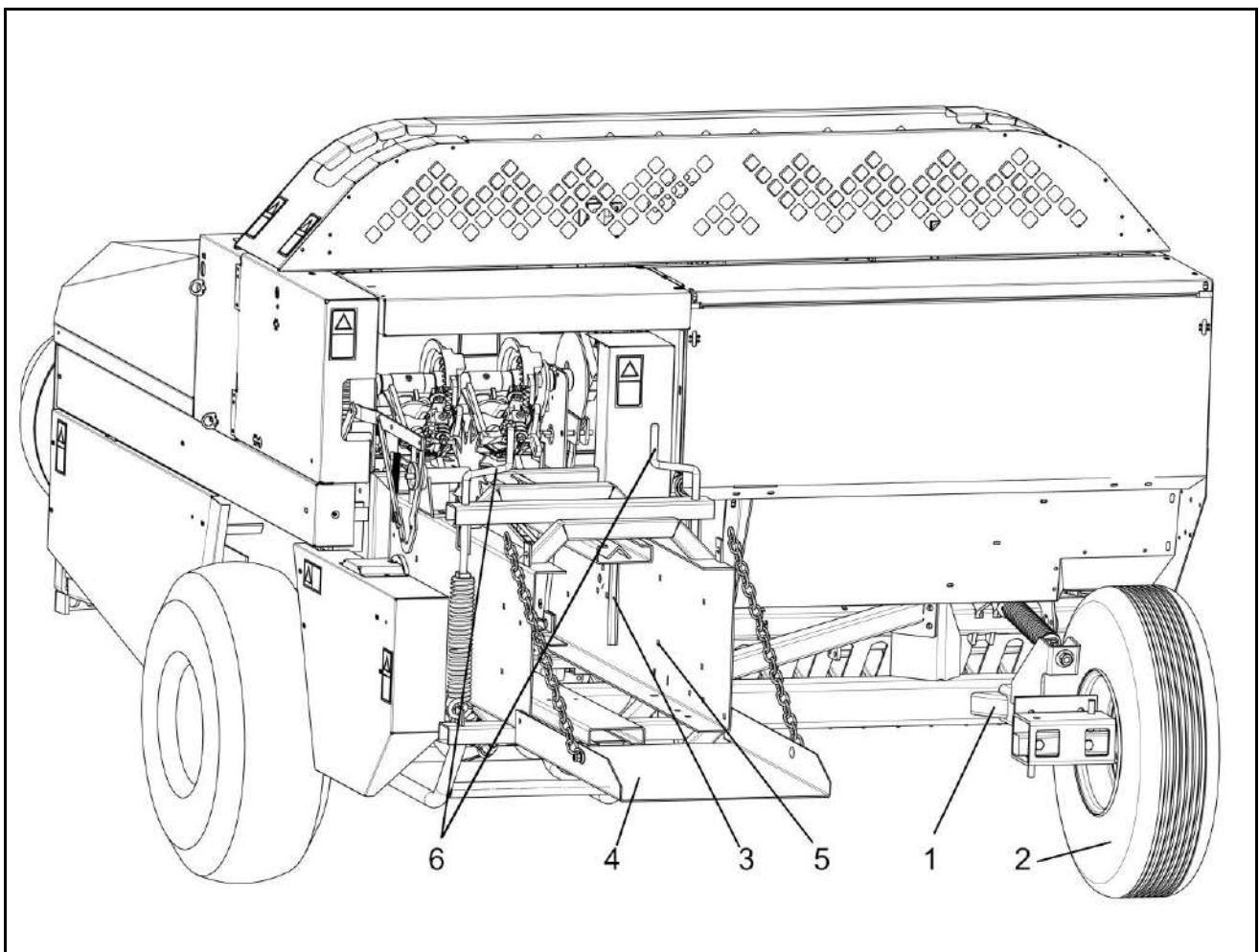


Fig. 7.24

7.6 Forks adjustment

In certain conditions there is the need to change the position of the forks. The adjustment for the first fork was described in sect. 7.5.2; for the second fork, the adjustments are described in the following paragraphs.

7.6.1 Standard adjustment

The standard position in which the machine is shipped is indicated in sect. 7.2.1

7.6.2 Adjustment for particular materials

This timing is valid only for the “M60 SUPER”.

For long and tough materials, it is recommended that the 2nd fork be timed with the 1st as indicated in Fig. 7.25. or as in Fig. 7.26.

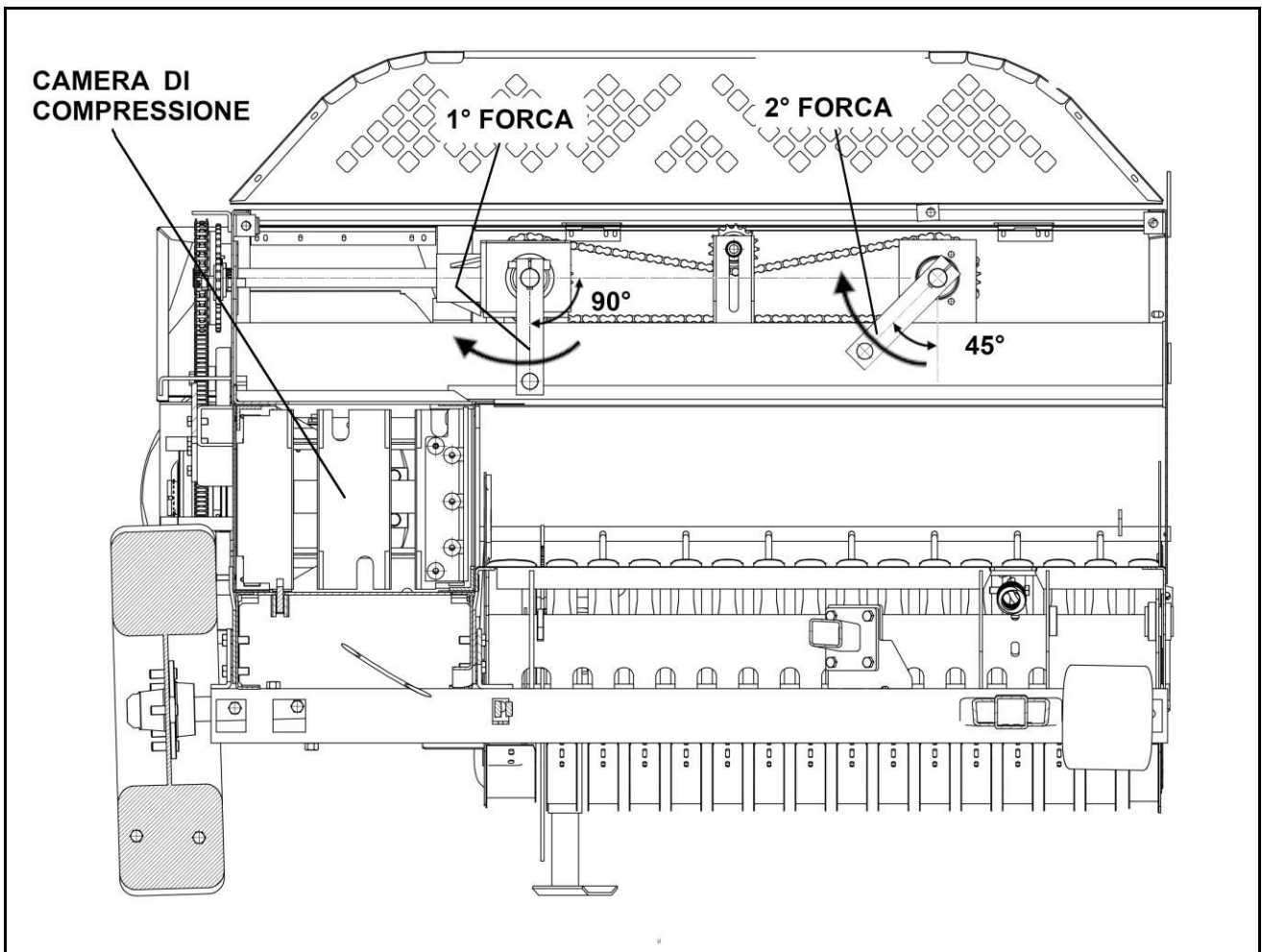


Fig. 7.25

BALE CHAMBER **1ST FORK** **2ND FORK**

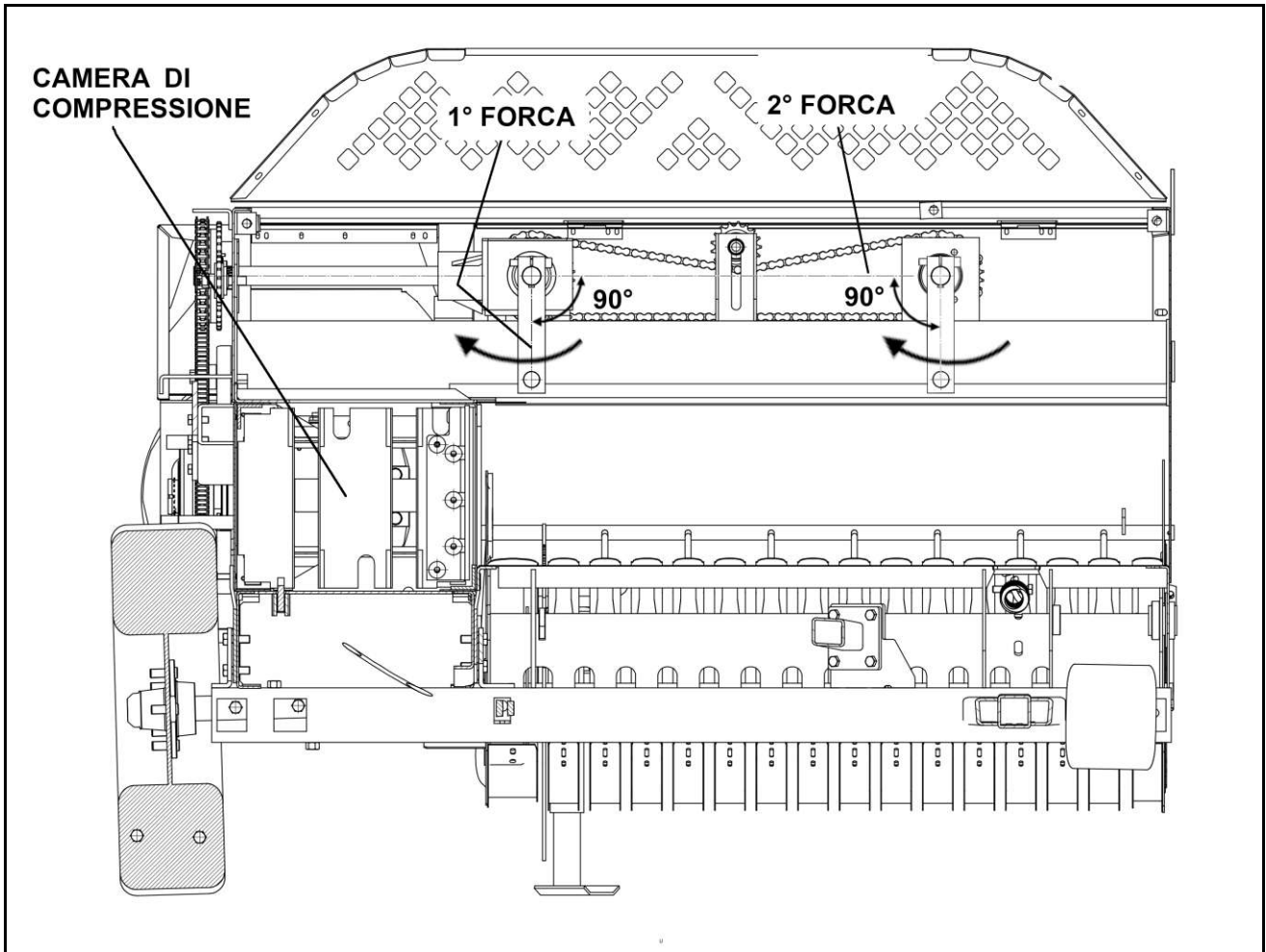


Fig. 7.26

BALE CHAMBER	1ST FORK	2ND FORK
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7.7 Pickup adjustment

This component collects the material to be baled and conveys it to the feeder forks. A certain number of spring-loaded teeth brush against the ground and, after having lifted the material to the maximum height defined by their rotation, they retract with a movement brought about by a special cam.

When the machine works on uneven ground, the spring-loaded teeth can bend or break, and must therefore be replaced (see sect. 6.5).

The pickup has two positions:

- 1) Transport position: in this position it is possible to move the lever 2 (Fig. 7.27) forward and lock it in place with the retainer 3. This ensures that the pickup remains in the raised position during transport.
- 2) Working position: by lifting the retainer 3 and moving the lever 2, the pickup is allowed to move downwards, in order to collect the material to be baled.

The complete pickup (in the working position) can be regulated up and down using the lever 1 (Fig. 7.27); the working position can be changed to adapt to the optimum collection conditions.

If the pickup is positioned too low, unwanted materials can be collected, and bumping against the ground can damage the machine, especially in the case of hollows, uneven ground or stones protruding from the ground.

If the pickup position is too high, the springs will not be able to pick up all the material, some of which will thus be lost.

To facilitate the picking up of the material, the pickup is equipped with a side deflector 4. By adjusting the spring split pin 5 (in the various positions), the deflector can be moved from the position aligned with the side (transport position) so that it protrudes laterally to the right (working position).

On the right side of the pickup there is the roll-bar 6 (Fig. 7.27), which is positioned as shown in ref. A, Fig. 7.27 for transport, and is positioned as shown in ref. B, Fig. 7.27 for working.

In the working position (moved to the right) it conveys the material towards the pickup springs, allowing the picking up of material outside the line of movement of the baler.

An accessory is available for the hydraulic control of the up-and-down movement of the pickup, facilitating the adjustment of the pickup (see sect. 8.4).

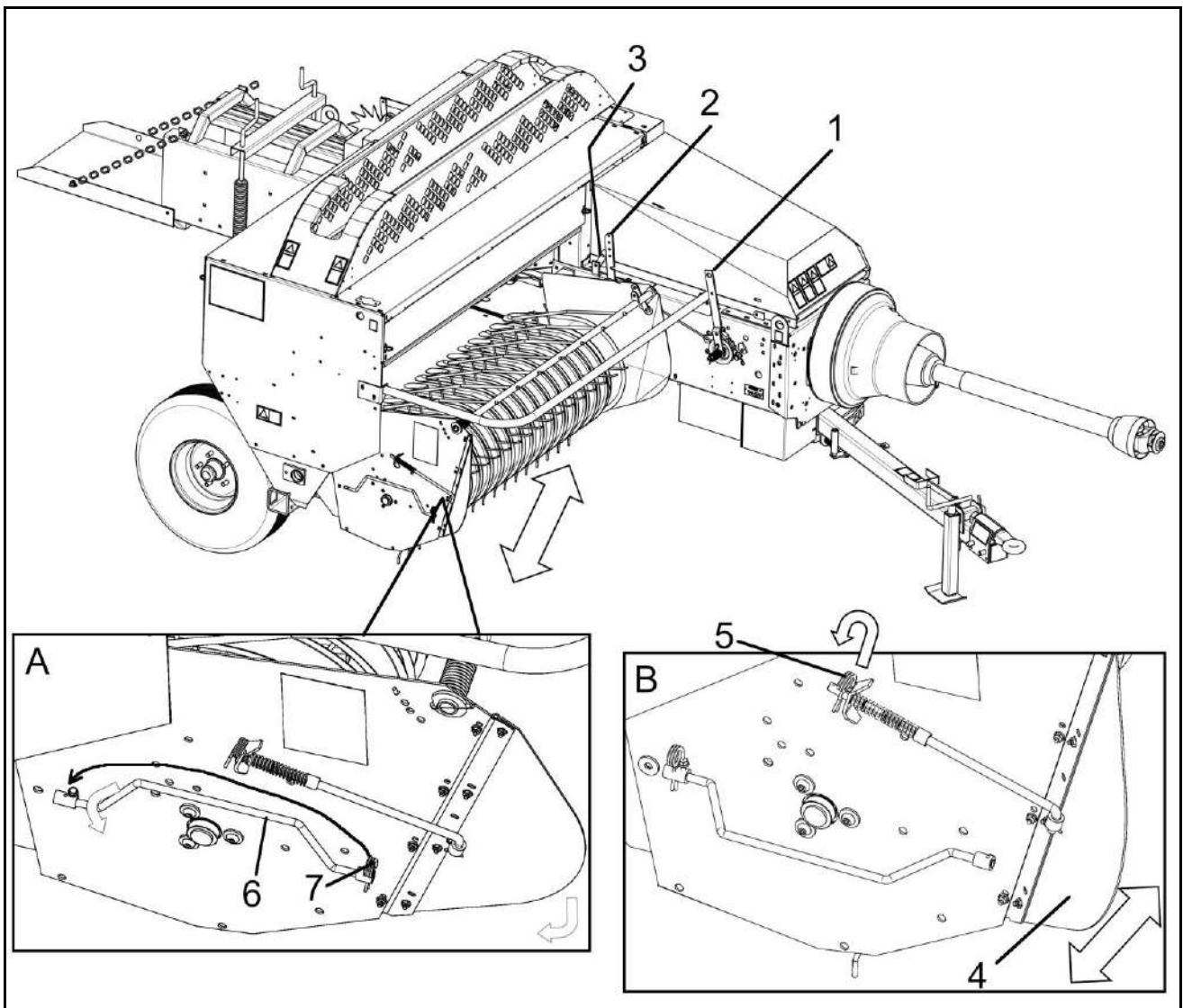


Fig. 7.27

7.8 PTO shaft overload clutch adjustment

The torque limiter clutch on the flywheel is usually supplied with a standard calibration of 59 daNm and springs (ref. 5, Fig. 7.28).

This clutch can be adjusted by means of the bolts 3 (Fig. 7.28), which compress the springs 5 (which should never be fully tightened). If the clutch plates are in good condition, the correct height H should be 46.9 mm.

A clutch that is too tight (lower H) causes it to act at a torque that is too high, with the possible breakage of the drive components.

A clutch that is too loose (greater H) causes it to act at a torque that is too low, causing it to slip continuously. It is not possible to work in this condition; prolonged slipping causes very high clutch temperatures, resulting in the burning out of the clutch and creating a hazard due to the high temperatures of the part.

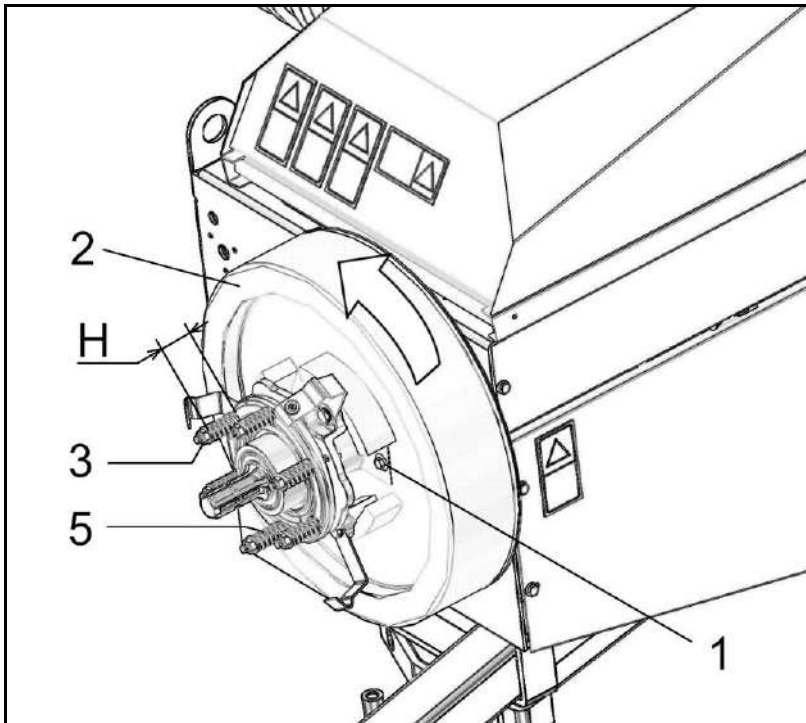


Fig. 7.28

7.9 Plunger safety catch adjustment

This component is designed to protect the knoter needles.

It consists of a metal pawl 1 (Fig. 7.29) controlled by the needle holder arm by means of the tie rod 2 (Fig. 7.29).

It is adjusted correctly when, with the machine properly timed, during the return movement of the needles, the tips of the needles and the stop pawl are flush with the lower edge of the bale chamber, while the distance B between the carriage striker and the pawl is 9-11 cm (Fig. 7.29).

To adjust the position of the pawl, turn the nuts 3 (Fig. 7.29).

WARNING!

Never disconnect the PTO until the feeder and the compressing parts (pickup + forks + plunger) have come to a complete stop and are clear of material and can move freely. Also make sure that the knoter is not engaged.

To identify the cause of any irregularities, see Chap. 11.

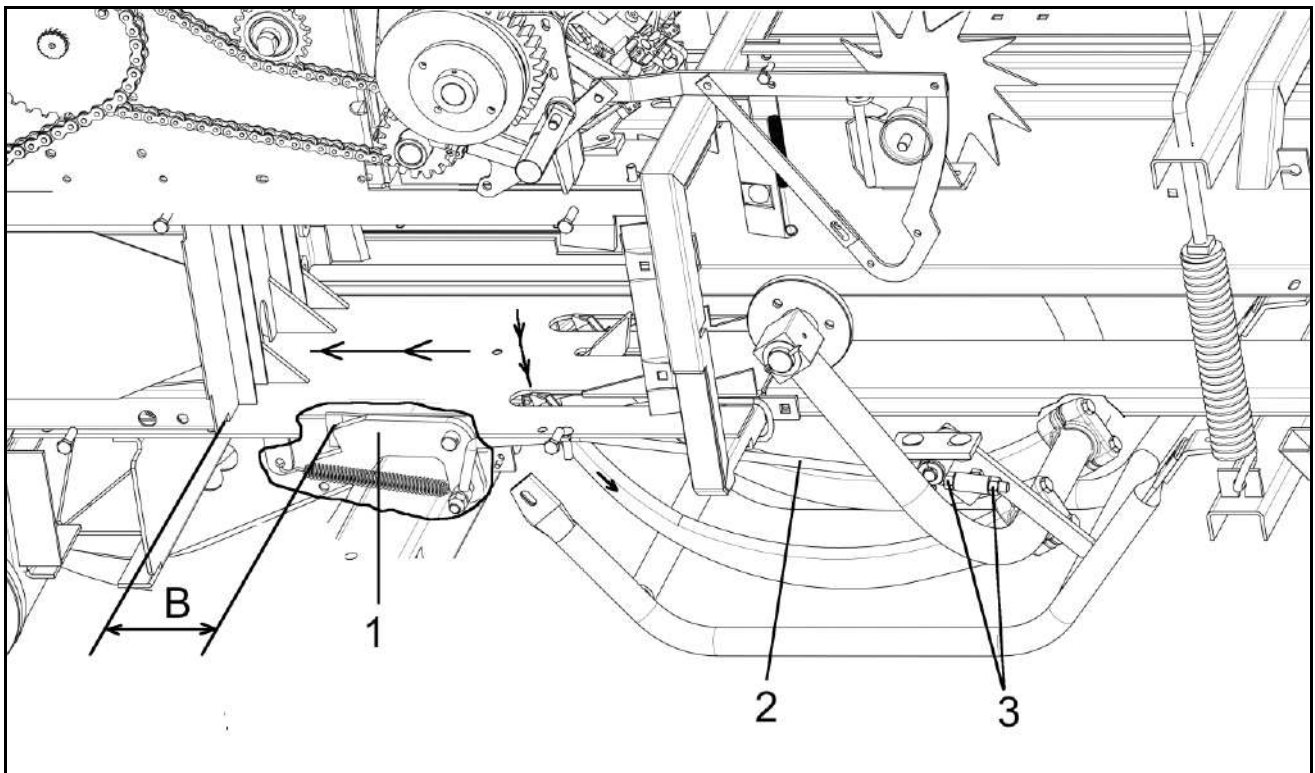


Fig. 7.29

7.10 PTO shaft length adjustment

The length of the PTO shaft can be reduced if necessary; more specifically, the protective shields and the two pipes that transmit the motion must be cut by the same amount.

The minimum and maximum measurements that the shaft can support are indicated in Figure 7.30. See the PTO shaft manual for further information regarding safety.

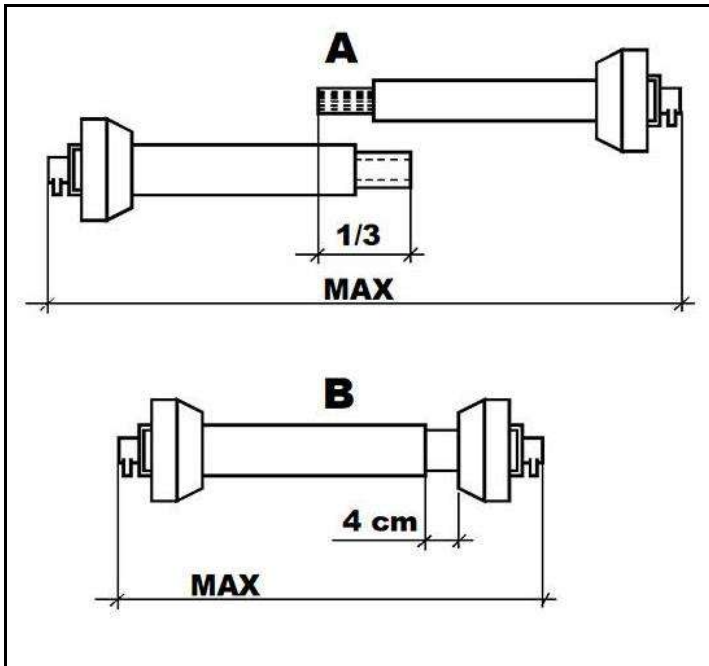


Fig. 7.30

7.11 Toothed wheel adjustment

The function of the toothed wheel is to activate the tying stage at a certain bale length.

The operations comprising a complete cycle are shown in Fig. 7.31.

Operation A Fig. 7.32: starting situation of the toothed sector in abutment and meshing with the toothed wheel; a too-far-advanced position of the wheel does not allow proper contact between the toothed sector and the toothed wheel.

Operation B Fig. 7.32: the toothed sector, in contact with the rotation of the toothed wheel, rises to the maximum height. At this point the tying stage is activated, the toothed wheel reaches position 7 of the toothed sector, the support rotates in shaft 8 and the lug 2 is freed from the stop 3, the knotted shaft 6 (Fig. 7.32) rotates (the tying stage begins).

Operation C Fig. 7.32: During the tying stage, the toothed sector distances itself from the contact with the toothed wheel and goes back into the starting position. In this operation it is necessary to adjust the position of the toothed wheel so that there is a minimal play of 2.5-3 mm throughout its downward stroke, indicated by X in Fig. 7.32.

Operation D Fig. 7.32: the toothed sector rests against the screw 4 (Fig. 7.32), blocks the rotation of the knotted shaft 6 by means of the lug 2 in contact with the stop 3 (Fig. 7.32); the making of a new bale begins again.

The correct toothed wheel position is that for which during operation C (Fig. 7.32), the measurement X must be between 2.5 and 3 mm. To obtain this measurement, the entire toothed wheel bracket 5 (Fig. 7.31) is moved by means of the fastening screws.

Check that, with the toothed sector lever (ref. A, D - Fig. 7.32) in the rest position, the release lever 3 (Fig. 7.32) fits together completely with the surface of the coupling lug 2 (Fig. 7.32); the knotted shaft must remain stationary throughout the forming of the bale until the desired length is reached.

Check that during operation A there is close contact between the toothed wheel and the toothed sector 9 (Fig. 7.32) the entire time the toothed sector is rising; if slippage occurs between the toothed sector and the freewheel, the bale length will not be regular.

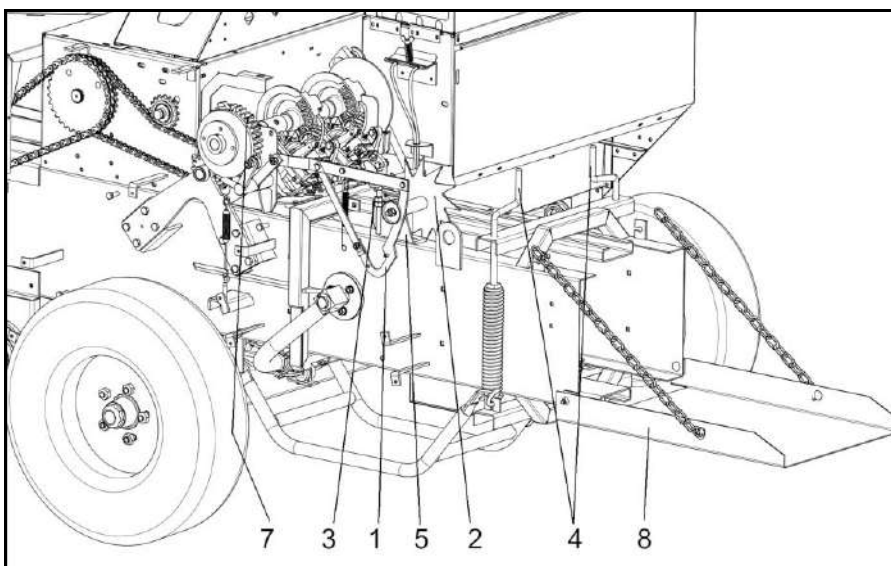


Fig. 7.31

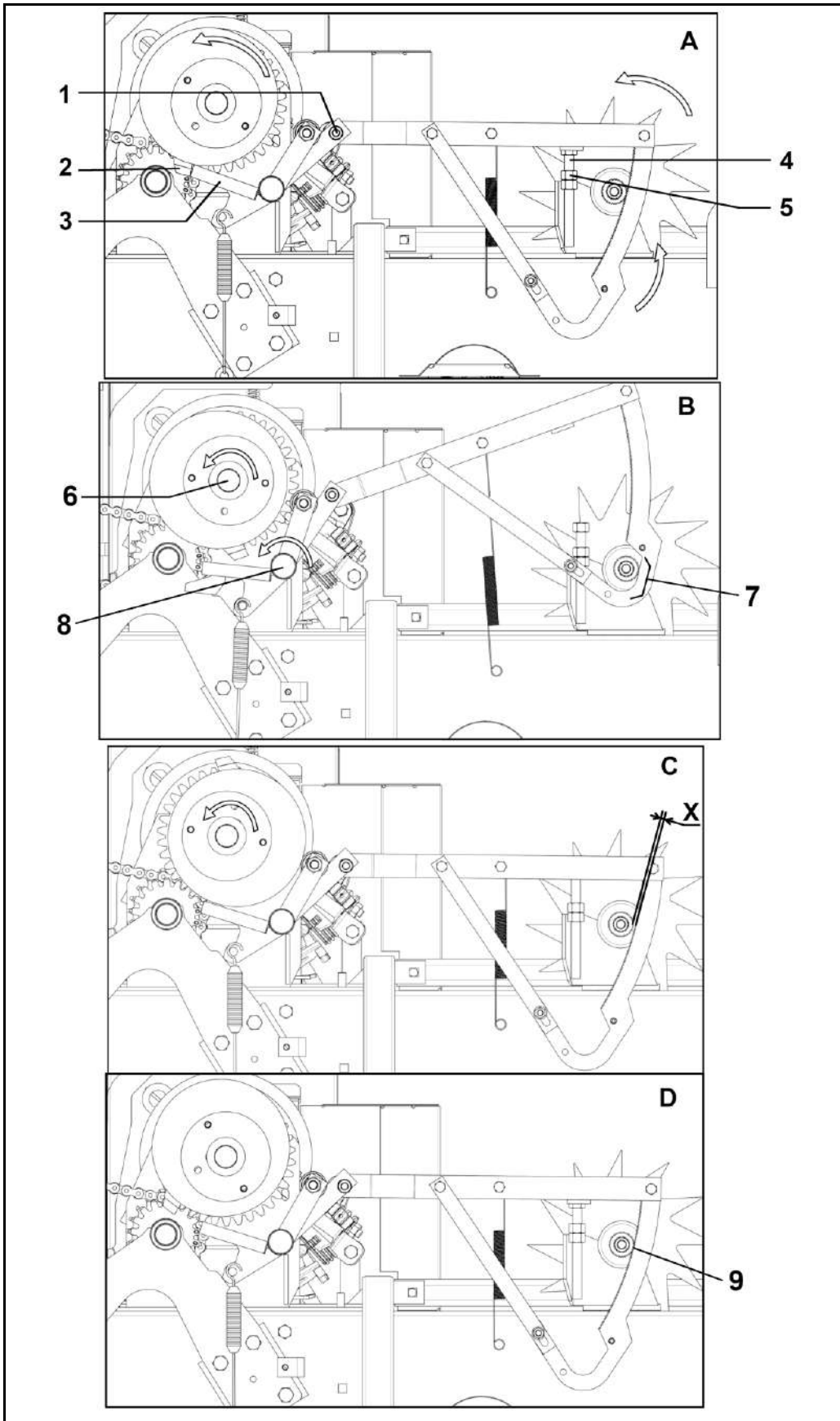


Fig. 7.32

7.12 Tire pressure

The wheels supplied are listed below, along with their inflation pressures.

Wheel	no. of plies	Pressure (Bar)	MAX Pressure (Bar)
7.00/12	6PR	2.0	2.5
195/75-14	6PR	2.0	2.5
165/80-13	8PR	3.2	4.5
10.0/80-12	8PR	2.2	2.5

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7.13 Bolt and nut tightening torques

Metric hex head nuts and bolts

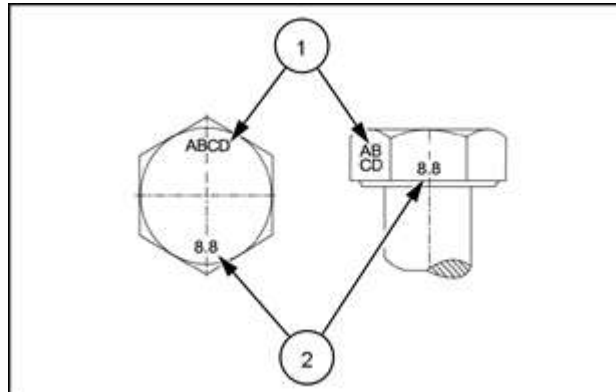
Nominal Size	Class (CL) 8.8 bolt and Class (CL) 8 nut	Class (CL) 10.9 bolt and Class (CL) 10 nut	Locknut CL 8 w/CL 8.8 bolt	Locknut CL 10 w/CL 10.9 bolt
	N·m (lb in)	N·m (lb in)	N·m (lb in)	N·m (lb in)
M4	3.5 (31)	5.0 (44)	1.4 (13)	2.8 (25)
M5	7.0 (62)	10 (88)	2.9 (26)	5.5 (49)
M6	11.8 (104)	17 (150)	4.9 (43)	9.4 (83)
M8	28.8 (255)	41.3 (366)	11.9 (105)	23 (204)
	N·m (lb ft)	N·m (lb ft)	N·m (lb ft)	N·m (lb ft)
M10	57 (42)	82 (60)	24 (17)	45 (33)
M12	100 (74)	143 (105)	41 (30)	79 (38)
M14	159 (117)	227 (168)	66 (48)	125 (92)
M16	248 (183)	354 (261)	102 (75)	195 (144)
M18	352 (260)	487 (359)	145 (107)	268 (198)
M20	500 (369)	690 (509)	206 (152)	380 (280)
M24	865 (638)	1195 (882)	357 (263)	657 (485)

Metric flanged hex head nuts and bolts

Nominal Size	Class (CL) 8.8 bolt and Class (CL) 8 nut	Class (CL) 10.9 bolt and Class (CL) 10 nut	Flange locknut CL 8 w/CL 8.8 bolt	Flange locknut CL 10 w/CL 10.9 bolt
	N·m (lb in)	N·m (lb in)	N·m (lb in)	N·m (lb in)
M4	3.8 (34)	5.5 (49)	4.2 (37)	6.1 (54)
M5	7.7 (68)	11 (97)	8.5 (75)	12 (106)
M6	13 (115)	18.7 (166)	14.3 (127)	20.6 (182)
M8	31.7 (281)	45.5 (403)	35 (310)	50 (443)
	N·m (lb ft)	N·m (lb ft)	N·m (lb ft)	N·m (lb ft)
M10	63 (47)	90 (66)	69 (51)	99 (73)
M12	110 (81)	157 (116)	121 (89)	173 (128)
M14	175 (129)	250 (184)	193 (142)	275 (202)
M16	272 (201)	389 (287)	299 (221)	428 (316)
M18	387 (286)	535 (395)	426 (315)	589 (435)
M20	550 (406)	759 (560)	605 (447)	835 (616)
M24	951 (702)	1315 (970)	1046 (772)	1447 (1067)

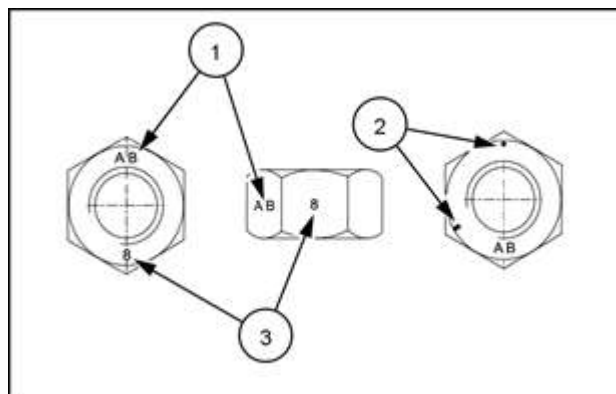
Bolt marking identification

- Metric hex head bolt, Metric flange hex head screw, Class (CL) 05 or higher.



1. Manufacturer's mark
2. Strength class

- Metric hex nut, metric hex locknut, Class (CL) 05 or higher



1. Manufacturer's mark
2. Clockwise type markings indicate the property class and may include the manufacturer's identification (if applied), Example: property class marks at 240° (shown) in the eight o'clock position indicate a property class 8 and the 300° marks at ten o'clock The clock position indicates a property class 10.
3. Property class

ENGLISH

8 Accessories

The accessories supplied are shown in Fig. 8.1

In detail:

- 1) Third wheel
- 2) Third wheel with bracket
- 3) Pickup wheel
- 4) Hydraulic pickup lift
- 5) Hydraulic tongue adjustment
- 6) Wide angle PTO shaft
- 7) Long chute and trailer hitch
- 8) Lights kit

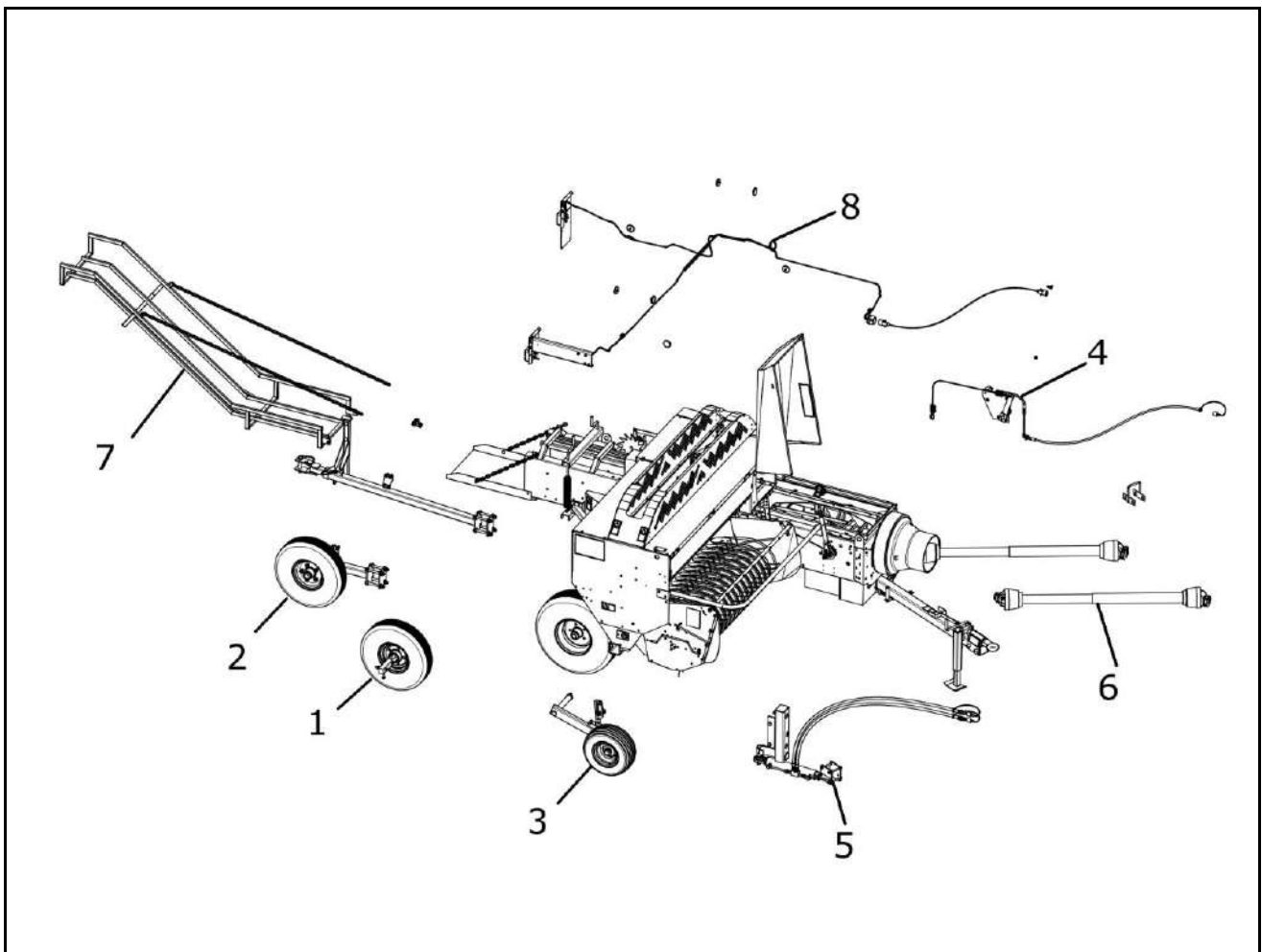


Fig. 8.1

8.1 Third Wheel

This provides support on the ground behind the swath so that the pickup and the entire machine follow the ground and are not affected by holes in the ground.

It is mounted on the same bracket as the right wheel 1 (Fig. 8.2) and the related bolts 2 (Fig. 8.2).

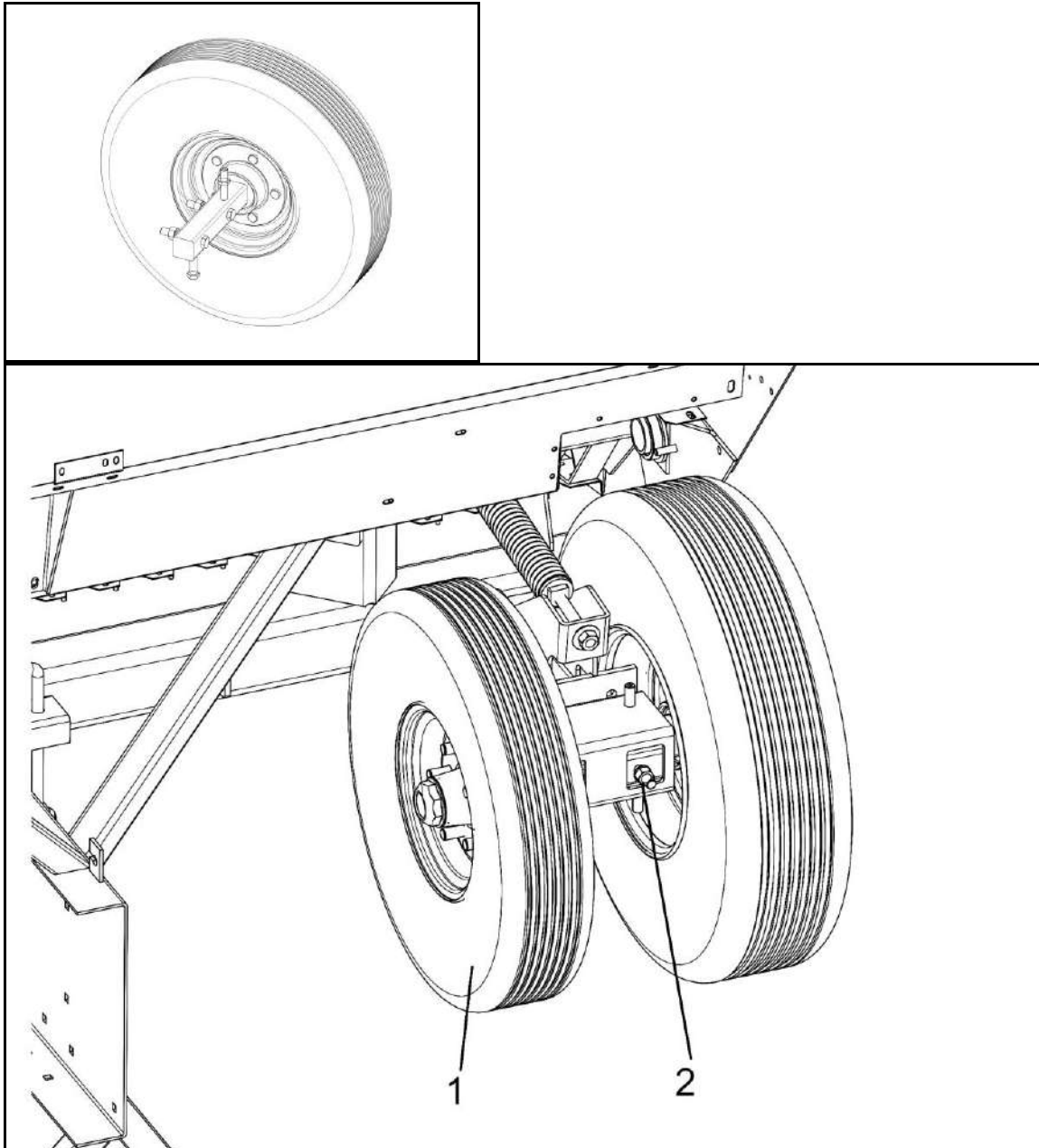


Fig. 8.2

8.2 Third wheel with bracket

This has the same function as the previous wheel, but it is positioned more centrally, and is assembled to the frame.

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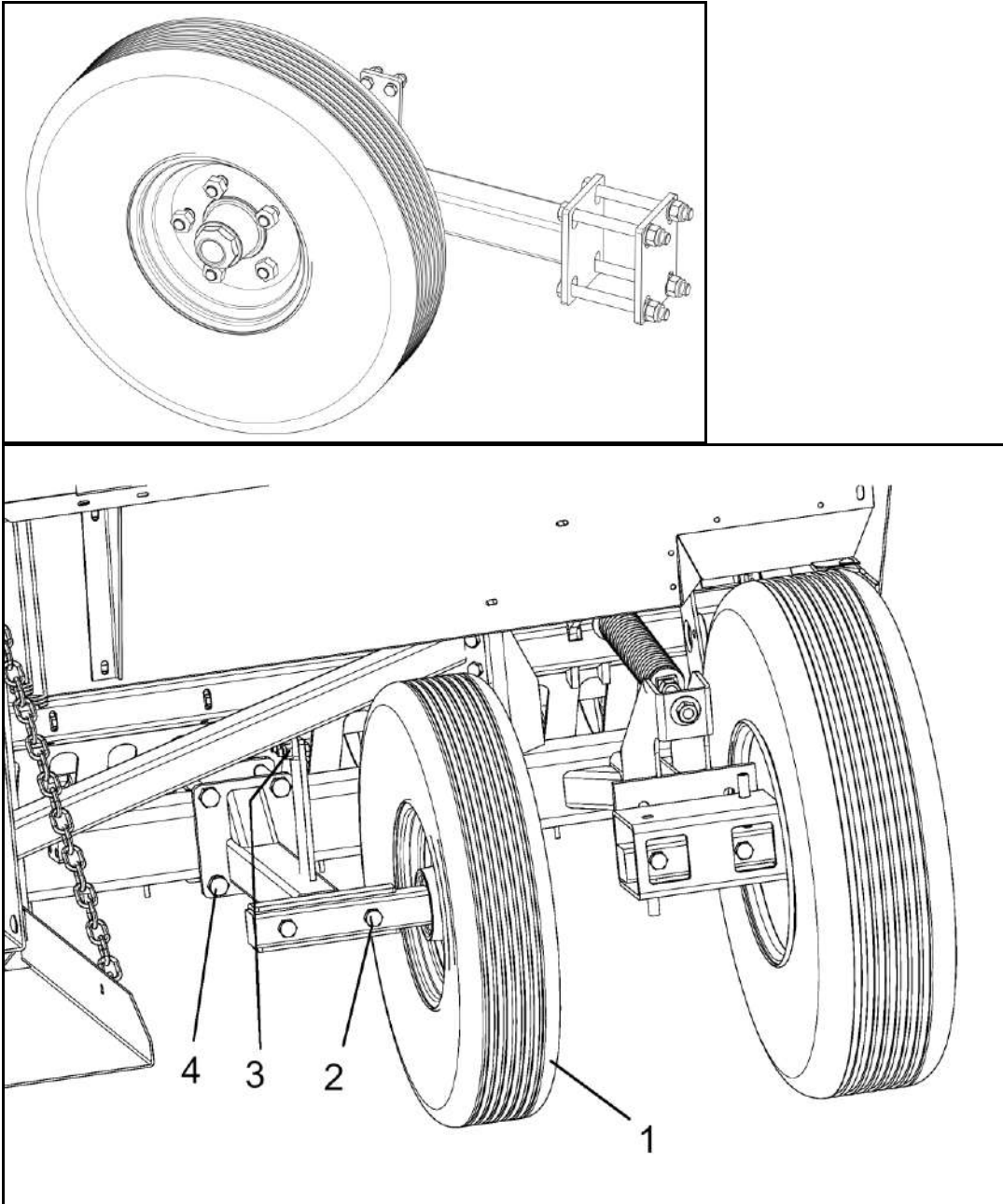


Fig. 8.3

8.3 Pickup wheel

This wheel is mounted on the side of the pickup and keeps it raised above the ground at an adjustable height.

When working on uneven ground, the pickup follows the contour of the ground, avoiding:

- the contact of the pickup springs with the ground;
- too great of a height above the ground, leaving uncollected material in the field.

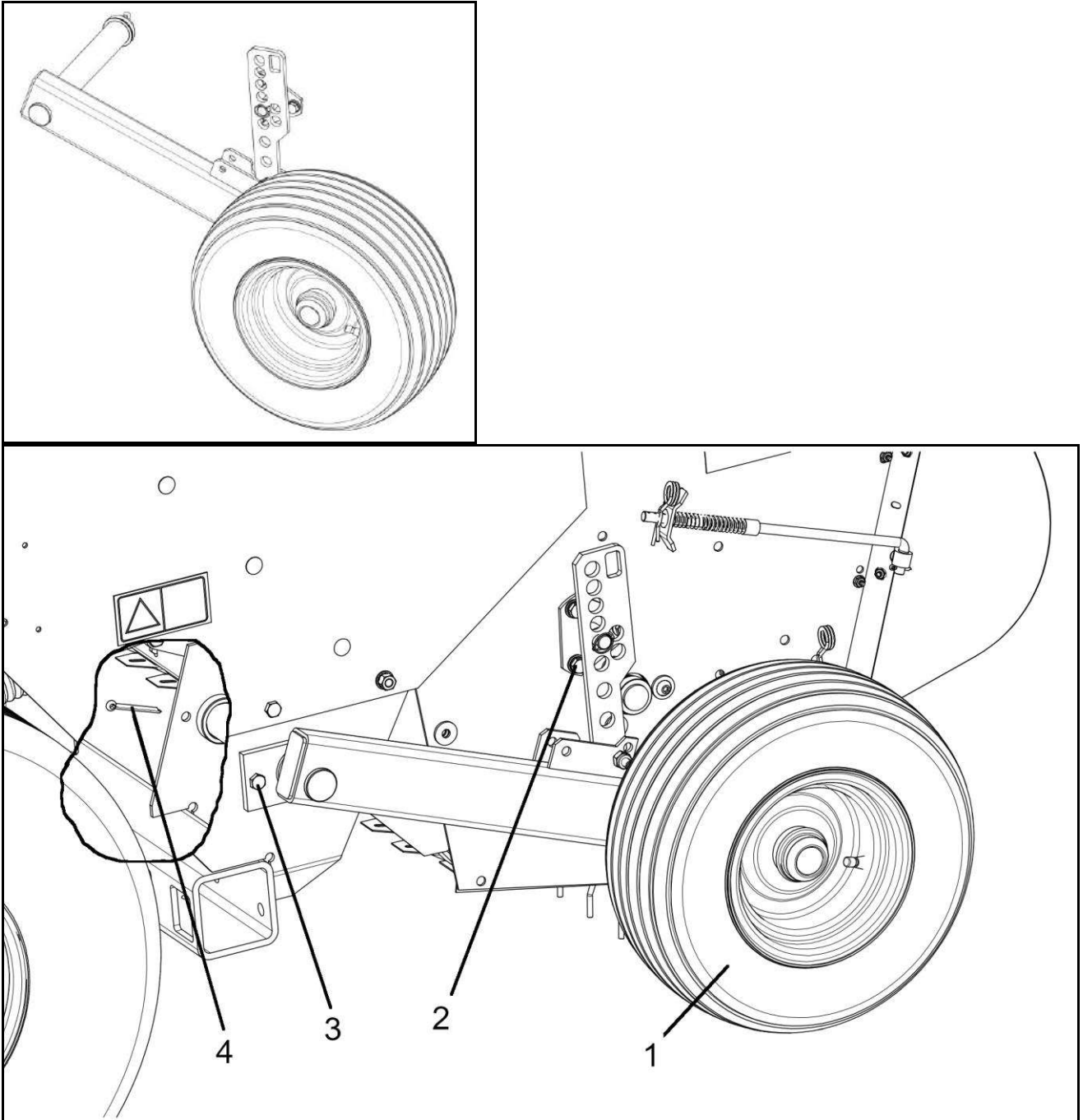


Fig. 8.4

8.4 Pickup hydraulic control

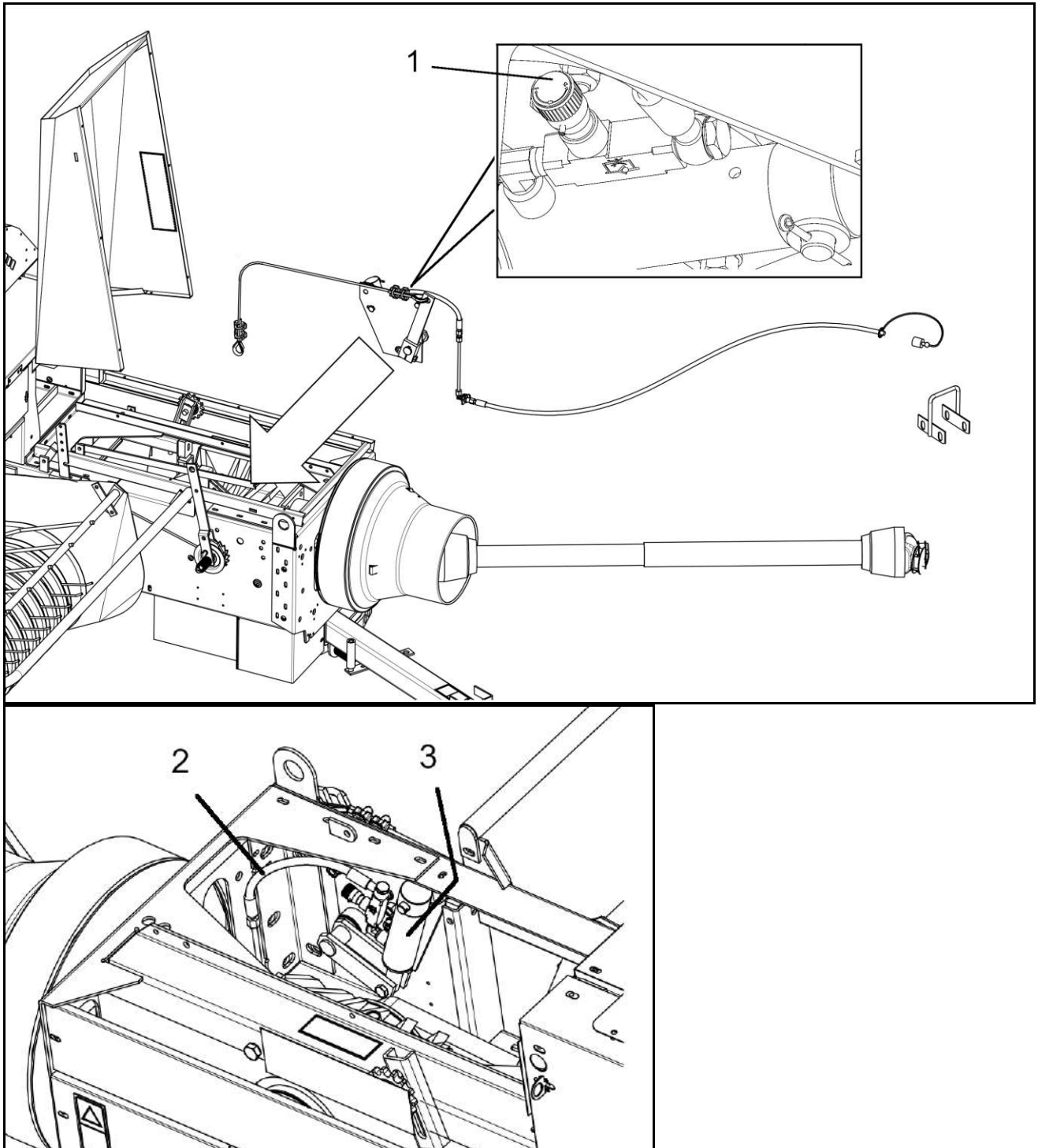
The baler can be equipped with a hydraulic accessory for lifting the pickup.

It allows the movement to be activated by means of a single-acting jack, which (under pressure from the tractor distributor) raises the pickup and puts it in the transport position.

The lifting speed can be adjusted by means of the valve 1 (Fig. 8.5).

The pickup can be lowered to the working position by releasing the pressure with the control lever on the tractor.

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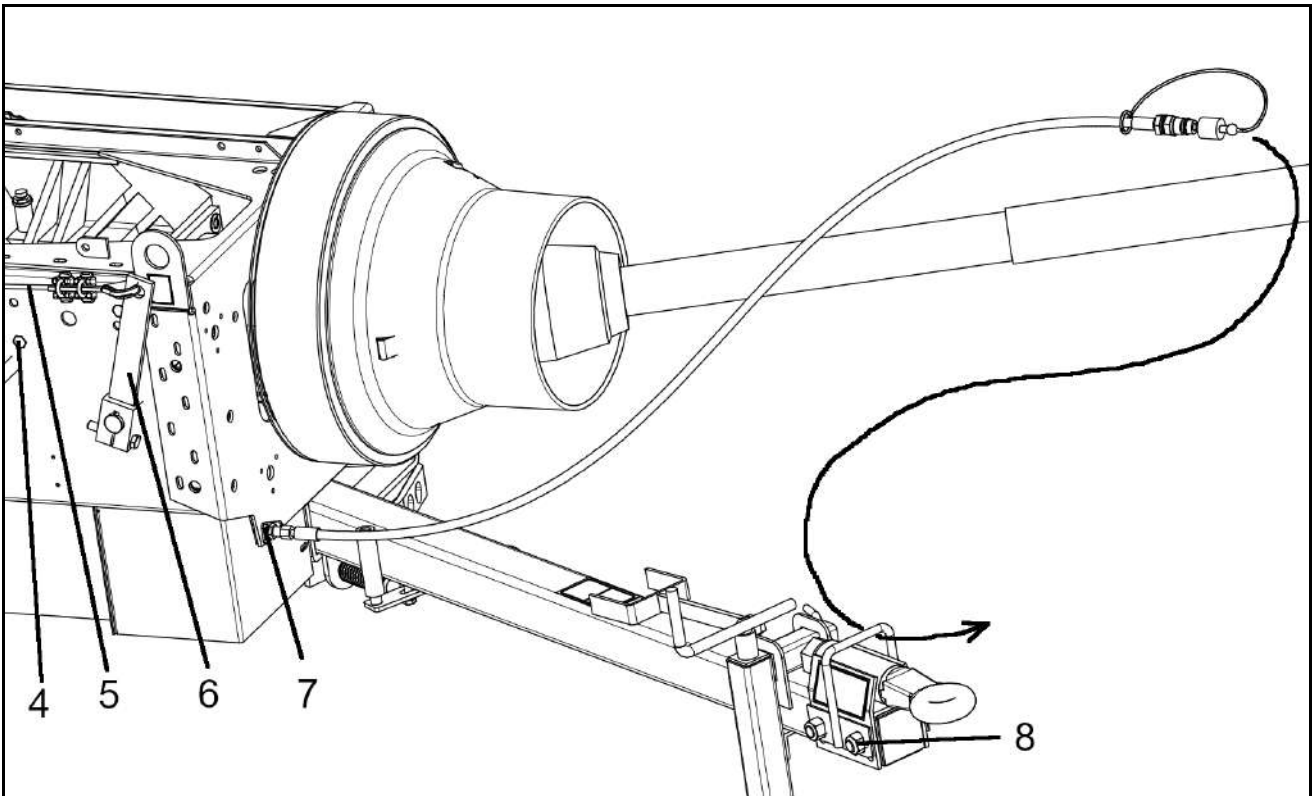


Fig. 8.5

Mount the jack 3 with its bracket and bolts as indicated in Fig. 8.5.

8.5 Drawbar hydraulic control

The machine can be equipped with a hydraulic piston (Fig. 8.6).

It can be operated by means of a hydraulic control lever located on the tractor.

It is mounted between the front of the chamber and the drawbar.

When it is first used there is some air remaining inside the circuit, and sudden and uncontrolled movements of the jack can occur; keep well away from the moving parts and operate with caution. Attention: before operating the jack, deactivate the lock lever by inserting the cotter pin 1 (Fig. 8.6).

In this way the position of the tongue is controlled only by the hydraulic jack.

For assembly, see the position as shown in Fig. 8.6. Use the bolts supplied with the kit.

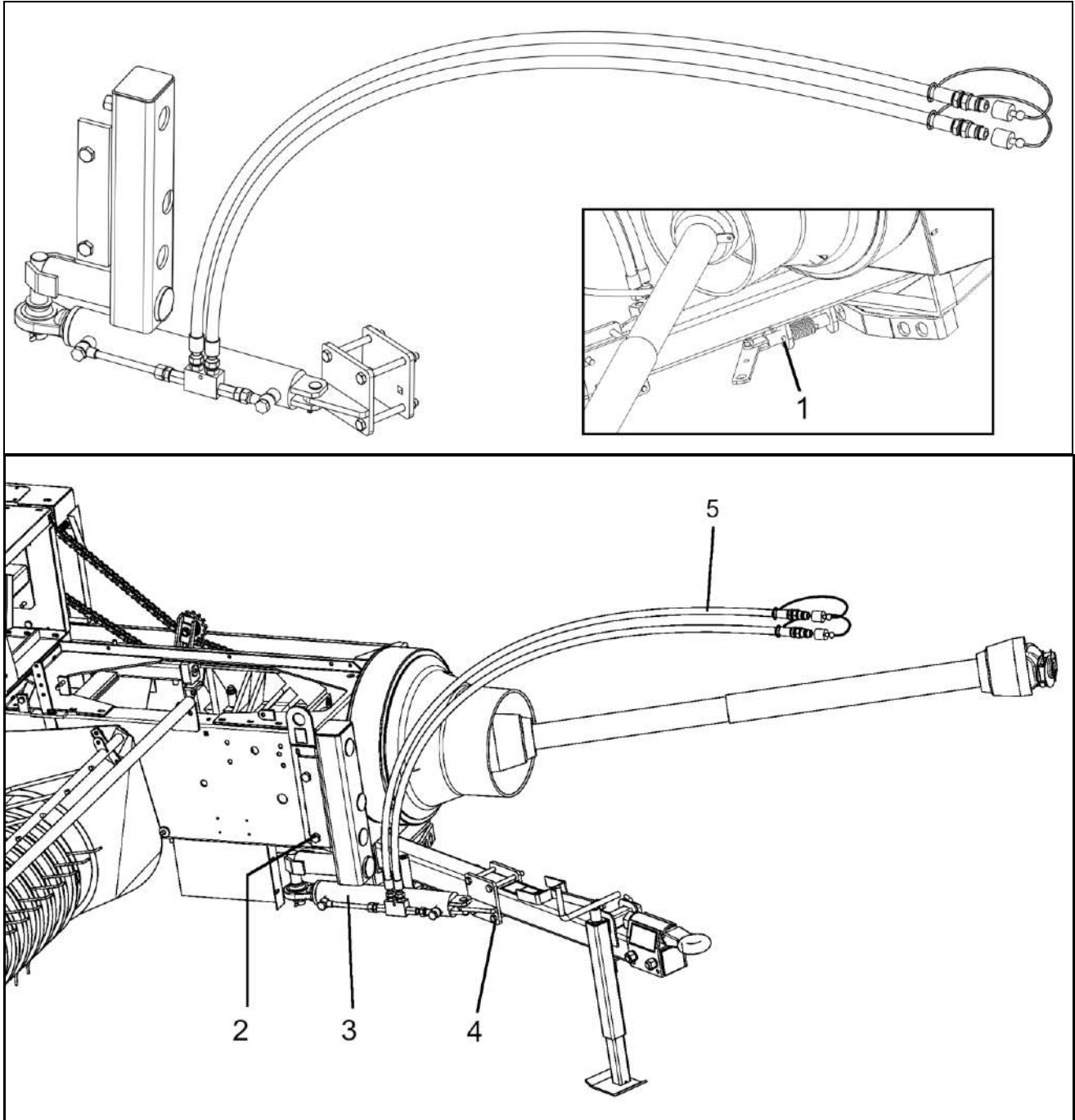


Fig. 8.6

8.6 Wide angle PTO shaft

Compared to the PTO shaft supplied, this shaft able to work at greater angles, allowing maneuvers at the headland with a tighter turning radius, facilitating maneuvers. Replaces the standard PTO shaft.

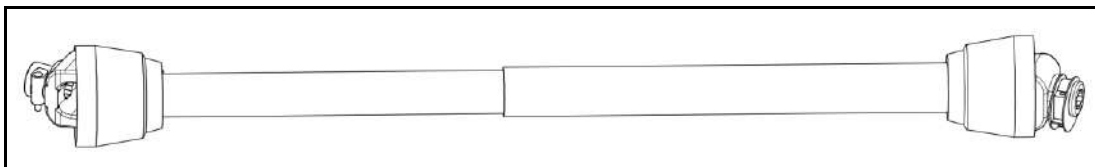


Fig. 8.7

8.7 Long chute and trailer hitch

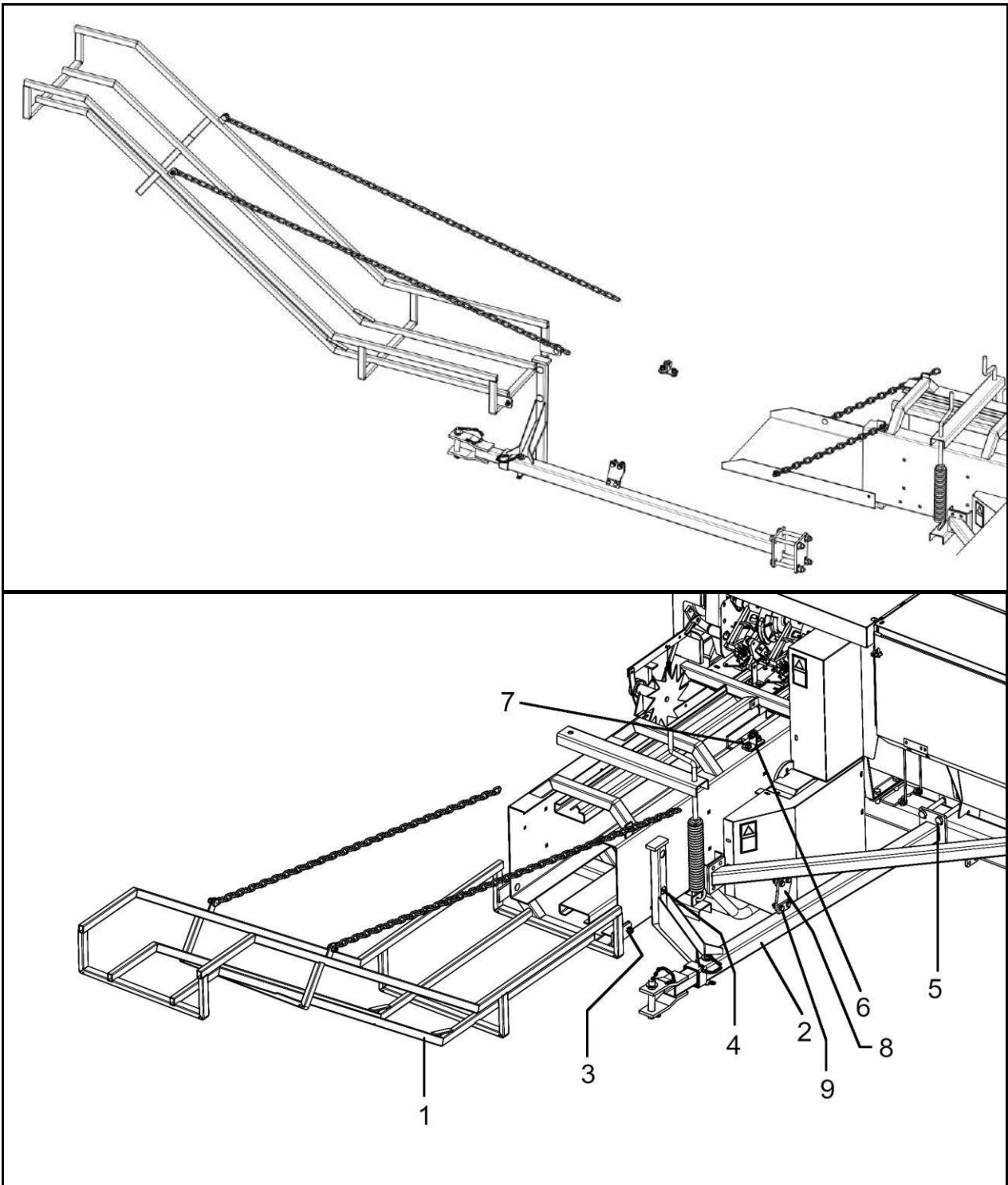


Fig. 8.8

This allows the bales to be conveyed onto a trailer attached to the special drawbar. It replaces the chute supplied with the machine.

The drawbar cannot be used for road transport. Use great caution when maneuvering in the field. Assemble parts 1,2,6,8 (Fig. 8.8) as shown in the figure, using the bolts 3,4,5,7,9 (Fig. 8.8).

8.8 Lights kit

The lights kit allows you to duplicate the tractor lights, providing machine visibility in dark conditions. The assembly is shown in Fig. 8.9 with the relative bolts.

The kit is connected to the tractor via a 7-pole male plug, conforming to ISO 1724 voltage 12 V DC.

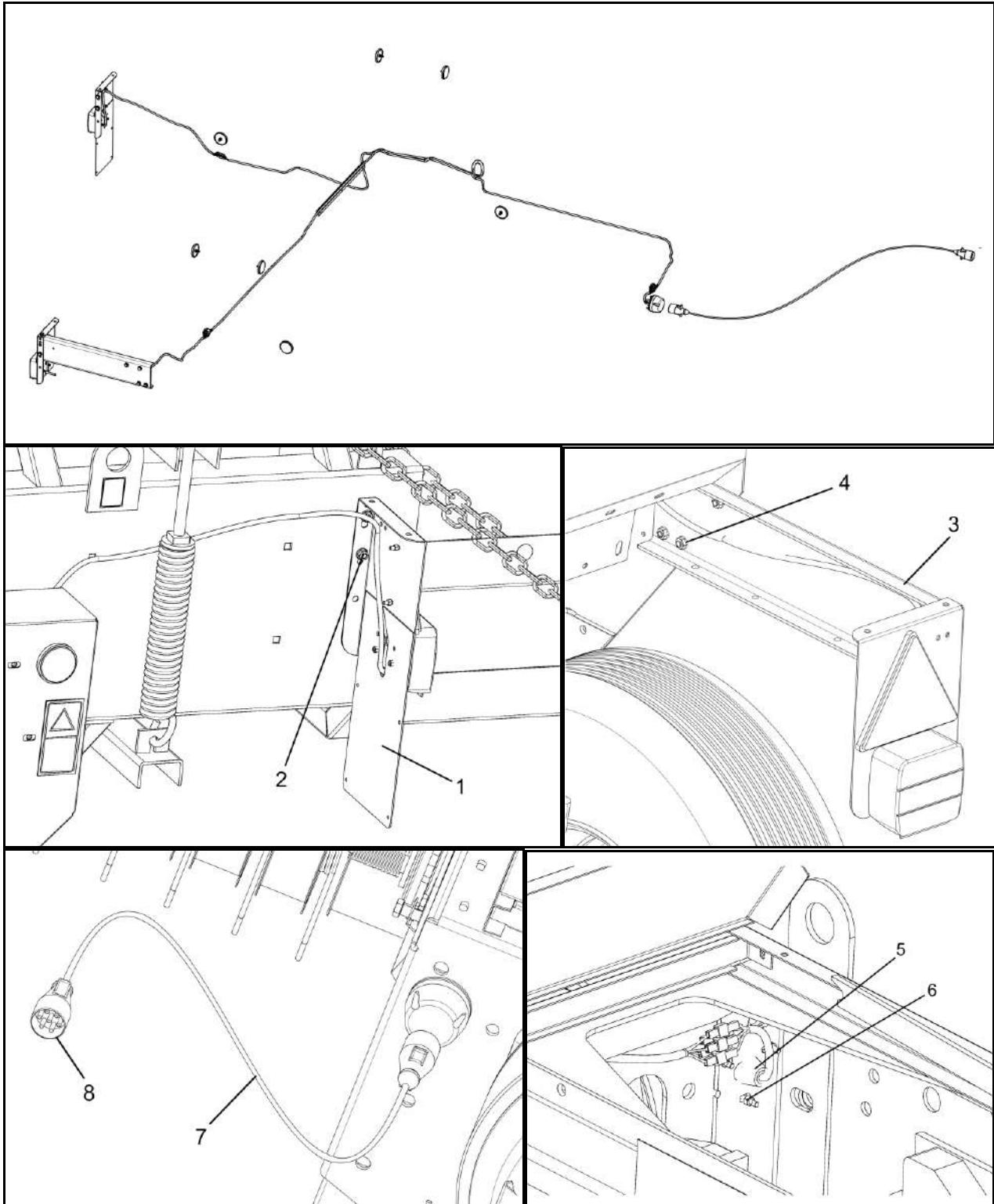


Fig. 8.9

9 END OF SEASON STORAGE

After you have cleared all the crop residues, disengaged the tying system and removed the twine, carry out the following operations:

Thoroughly clean the inside and outside of the machine. Dirt and moisture can cause rust to form. Important! Attention! Clean the machine using compressed air. Do not use water jets (pressure washer), which could damage parts of the machine causing the formation of residual deposits of material that solidifies after washing.

Loosen the V-belts.

Inspect and disassemble the moving parts, such as the belt tensioning rollers, the PTO shaft, etc.; clean them and check them for wear. If necessary, replace with new parts.

Oil all parts of the PTO shaft.

Thoroughly lubricate the machine.

Clean the gears and change the oil.

During long periods of nonuse, the hydraulic cylinder rods that remain exposed must be carefully protected with a layer of grease.

Replace worn or damaged parts.

Touch up paint defects and spray a rust inhibitor on the exposed spots.

Store the machine in a dry environment that is protected from weather and guarded or locked to prevent access to the machine for those who are not authorized to use it.

Inflate the tires.

Make a list of the spare parts needed and order them in advance (it will be easier for your dealer to prepare spare parts out of season). In this way your machine will be ready for use for the new season.

10 PREPARATION FOR THE NEW SEASON

PREPARATION FOR THE NEW SEASON

Lubricate the entire machine.

Check the oil level, and top up if necessary.

Check that the screws and bolts are well tightened.

Check all machine adjustments. Make readjustments if necessary.

Check the tension of the V-belt.

Replace worn parts.

Repair any damaged parts.

Check that the parts move freely.

Check the safety decals.

Check that the protective guards are mounted and in good working condition.

Carefully reread this use and maintenance manual.

11 TROUBLESHOOTING

To find any problems/causes, see Tables 11.1 and 11.2 below.

11.1 TABLE OF DEFECTS-CAUSES-SOLUTIONS

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Problem	Cause	REMEDY
Flywheel shear bolt breakage	<ul style="list-style-type: none"> - Too much material in the bale chamber - Carriage and chamber knives improperly adjusted - Presence of foreign objects - Material too moist - Bales too dense - Improper pawl adjustment - Shear bolt bushings damaged out of place - Non-compliant bolt - Needles brake too tight - Knotter triggering device does not work 	<ul style="list-style-type: none"> - Reduce the forward speed - Increase the PTO rpm (80-90) - Adjust knives, Sect. 7.3.1 - Remove objects - Adjust pickup, Sect. 7.7 - Dry the material - Adjust the density, Sect.7.5.3 - Adjust the pawl, Sect. 7.9 - Replace the bushings and the bolt - Install bolt with suitable specifications, Sect. 6.4.2 - Adjust needles brake, Sect. 7.4.1 - Adjustment, Sect. 7.11.
Knotter shear bolt breakage	<ul style="list-style-type: none"> - The needles strike an obstacle - Bent or displaced needles strike against some part of the machine - Needle obstructed by twine that does not run 	<ul style="list-style-type: none"> - Avoid land with too many hollows and depressions and maneuvers where there is roughness, stones or objects. - Straighten bent needles, following the specifications given in Sect. 7.4.4 - Check the twine tension Sect. 7.4.6 - Check for branches and/or objects that obstruct the twine, remove the obstacle - Check to see if twine guide is

	<ul style="list-style-type: none"> - Needle obstructed by tangled twine - Non-compliant bolt - Loose bolt - Shear bolt bushings ruined - Knotter shaft seizes in its supports - Knotter obstructed by a foreign object 	<p>worn, replace</p> <ul style="list-style-type: none"> - Check passage of twine, Sect. 5.5. - Replace the bolt with a suitable one - Tighten the bolt, replace if necessary - Replace the bushings and the bolt - Replace the ruined parts, lubricate. - Remove the foreign object and the damaged parts 	
1st Fork bolt breakage	<ul style="list-style-type: none"> - Presence of objects in the material being picked up - Material not dried - Fork strikes the plunger 	<ul style="list-style-type: none"> - Remove the foreign object - Allow the material to dry properly - Time the machine, Sect.7.2.1 	
2nd Fork bolt breakage	<ul style="list-style-type: none"> - Presence of objects in the material being picked up - Material not dried - Incorrect timing 	<ul style="list-style-type: none"> - Remove the foreign object - Allow the material to dry properly - Time the machine, Sect.7.2.1 	
Clogging	<ul style="list-style-type: none"> - Excessive speed - Swath too big - Slow PTO rotation speed - 1st fork, 2nd fork bolt breakage 	<ul style="list-style-type: none"> - Reduce the forward speed - Reduce the forward speed - Increase the PTO rotation speed to 80-90 - Replace the ruined shear bolt 	
Leaves too much material on the ground	<ul style="list-style-type: none"> - Swath too wide - Pickup too high - Material trampled. - Pickup springs broken or bent 	<ul style="list-style-type: none"> - Widen the right side deflector, Sect. 7.7 - Adjust the pickup height, Sect. 7.7 - Drive the tractor so that the wheels do not run over the swath - Adjust the tongue, Sect.7.1 - Lift up the swath with a rake - Replace the springs with new 	

	<ul style="list-style-type: none"> - Ground with many hollows/depressions - Machine is not level 	<ul style="list-style-type: none"> ones - Attach the third wheel - Adjust the tongue, Sect. 7.1 	
Irregular bale length	<ul style="list-style-type: none"> - Irregular feeding of the bales - Deformation of the toothed sector lever - Release lever locked/stuck in position - Incorrect toothed wheel position - Toothed wheel does not touch the advancing bale 	<ul style="list-style-type: none"> - Adjustment, Sect.7.5.2 - See Sect.7.11 - Free the lever, lubricate, replace any damaged parts, Sect. 7.11 - Toothed wheel adjustment, Sect. 7.11 - Check toothed wheel position 	
Curved bale shape	<ul style="list-style-type: none"> - Irregular bale filling 	<ul style="list-style-type: none"> - Filling adjustment, Sect.7.5.2 	
Pick-up drive belt slips	<ul style="list-style-type: none"> - Loose belt - Excessive pickup strain 	<ul style="list-style-type: none"> - Tighten the belt, Sect. 7.3.2 - Remove pickup obstruction - Clean the pickup - Remove foreign material - Straighten/replace the pickup springs, Sect.6.5 	

Table 11.1

11.2 TWINE KNOTTER MALFUNCTIONS

Some tying defects can result from incorrect use of the baler, for example:

- Too fast or too slow work pace;
- Excessive or insufficient compression of the product;
- Irregular feeding, product too wet or too dry;
- Irregular tying twine thickness.



In addition, with wear, some parts completely independent from the knotters can impair their operation.

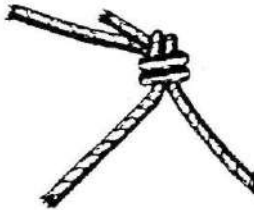
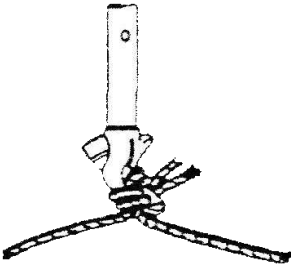
Check the following areas:

- Imprecise twine tension (see Sect. 7.4.6);
- Incorrect needle/knotter positioning;
- Twine prevented from running by possible blockage of the needle rollers, by tangling of the twine, or by wear on the twine guide bushings.

Therefore we suggest the following:

- First check the knotter adjustment parameters (see sect. 7.4).
- Secondly, the shape of the knot helps to identify the cause of the tying defect; therefore, in the following table, you can see the main problems and their solutions.

	Problem	Cause	Remedy
FIG. A 	Correct knot with 2 clean cut ends and no loop.		
FIG. A 2 	Knot with loop.	The twine slips too much in the retainer/twine holder. The knife doesn't cut properly.	Adjust the holder disc, Sect. 7.4.2 - Sharpen or replace the knife. - Ensure that the ejector arm is correctly adjusted, Sect. 7.4.8.

	Problem	Cause	Remedy
FIG. B 	The twine ends of the knot are of different lengths.	The knife is worn. The twine holder of the disc does not apply enough pressure. The bales are too loose.	Sharpen the knife or replace it if necessary. Adjust the holder disc, Sect. 7.4.2 Adjust the bale density, Sect. 7.5.3
FIG. C 	The knots don't slide out from the knotter billhook.	The ejection tongue does not adhere to the knotter billhook The knife holder arm does not come out of the knotter billhook. There is too much pressure on the tongue 1 of the knotter billhook. The knotter billhook is worn. Too much pressure in the bales.	Bend the knife holder arm until the ejection tongue rubs against the back of the billhook. See Sect. 7.4.8. Adjustment, Sect. 7.4.8. Decrease the pressure, making the adjustment described in Sect. 7.4.7. Replace the knotter billhook. Bale adjustment, Sect. 7.5.3.

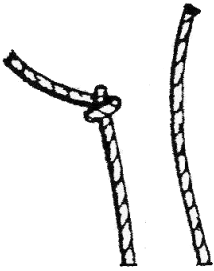
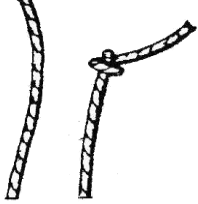

<p>FIG. D</p> 	<p>Only the front twine gets knotted (front twine = twine held by the holder disc 5, Fig. 7.12)</p>	<p>The twine is inserted incorrectly.</p> <p>The crescent aligner/twine guide cam (no.3, Fig. 7.15) does not return to its proper rest position.</p> <p>The needle holder arm is deformed and does not bring the twine into the notch in the knotter billhook.</p>	<p>Check the insertion of the twine, Sect. 5.5</p> <p>Check the adjustment of the crescent, Sect. 7.4.5.</p> <p>Replace the deformed part. Check the position of the needles, Sect. 7.4.4</p>
<p>FIG. E</p> 	<p>Only the rear twine gets knotted. (rear twine = twine held by the needle)</p>	<p>The holder disc takes only one twine.</p> <p>The tongue and roller of the knotter billhook are deformed or worn.</p>	<p>Increase the pressure on the twine holder, Sect. 7.4.3.</p> <p>Replace these parts.</p>
<p>FIG. F</p> 	<p>The twines are not cut or are broken off after the knot.</p>	<p>The ejector arm is too close and is not perfectly centered at the back of the knotter billhook.</p>	<p>The ejector arm must brush lightly and uniformly against and be centered at the back of the knotter billhook (Sect. 7.4.8)</p>

Table 11.2

12 END OF LIFE

Separate the recyclable parts from the non-recyclable parts. Dispose of the machine according to the laws in force in the country of use.

13 WARRANTY

Check upon delivery that the machine has not been damaged during transport and that all enclosures are present. Complaints must be made in writing to the agent within 8 days of receipt.

The manufacturer warrants the new machine upon delivery to the original purchaser to be free from defects in material and workmanship when properly installed and used in compliance with this Operator's Manual.

The manufacturer will repair or replace free of charge any defective part, which must be returned by the purchaser (shipping prepaid), that is found to be defective following inspection authorized by the manufacturer during the warranty period.

This warranty will be valid for 12 (twelve) months from delivery of the goods to the original purchaser.

In the event that the customer is unable to return the defective part to the manufacturer, the manufacturer cannot be held liable for any costs due to the repair or replacement of any part of the machine; the manufacturer will only supply the part or parts necessary for repair and/or replacement. The warranty shall be void when it is evident that the machine has been used improperly, is insufficiently maintained, has parts assembled incorrectly, or has otherwise been repaired without authorization.

The manufacturer assumes no liability for any obligation or agreement reached by any employer, agent or reseller that is not in compliance with the aforementioned warranty.

The manufacturer cannot be held liable for consequential damages. This warranty supersedes any and all other warranties, expressed or implied, and any other obligations of the manufacturer.

NOTE: ALL WARRANTY WORK OR REPAIRS MUST BE APPROVED BY THE MANUFACTURER BEFORE COMMENCING WORK. ANY WORK OR REPAIRS CARRIED OUT PRIOR TO APPROVAL MAY NOT BE COVERED BY THE WARRANTY. PLEASE NOTIFY YOUR SALES AND SERVICE DEPARTMENT ABOUT THIS POLICY.

14 ORDERING SPARE PARTS

To order spare parts, you will need to provide certain information, and specifically:

- Name of the company making the order;
- Reference of the person handling the order process;
- Machine serial number;
- Order number and item number of the part;
- Quantity of the part to be ordered;
- Reference of the spare parts catalog from which the references were taken.

15 SPARE PARTS CATALOGUE

Provided separately from this manual.

