AGRICULTURAL MACHINERY

enorossi

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

RT 7 - 9

Hay Rake

USE AND MAINTENANCE MANUAL

rev.3e – 9/2024

ENOAGRICOLA ROSSI s.r.l. - Via dell'Industria, 2 - Calzolaro di Umbertide 06019 - Pg Italia Tel. (39) 075-930 22 22

EC DECLARATION OF CONFORMITY

(Att.IIA Machinery Directive EC/2006/42)

The Manufacturer **ENOAGRICOLA ROSSI s.r.l.**
with office in via dell'Industria, 2 - 06019
Calzolaro di Umbertide (PG) - Italy

declares under its responsibility that the machine

HAY RAKE

……
Name (general and commercial)

RT

…….. *Series/Model*	…… *Serial n.*	…… *Manuf. year.*

which functions are described in this manual

is conform with the essential Health and Safety Protection requisites of which in Machinery Directive 2006/42/CE. To verify Conformity of the above Directives, the following EN Harmonised Standards have been consulted:

EN 13854:2020 - **EN 4413 :2012**
EN ISO 4254-1:2022 - **EN ISO 4254-10:2010** - **ISO 11684 :2023**
EN 12100:2010 - EN ISO 12965:2020
EN ISO 13857:2020 - **ISO 3600:2022**

And authorises Enorossi
Via Cortonese, 36 - 06019 Calzolaro di Umbertide (PG) - Italy
to constitute the Technical File on its behalf

Calzolaro di Umbertide, ……..

GIOVANNINI ADELMO
……
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Harmonised Standards

The RT 7/9 series hay rakes have been designed according to the Standards described in Machinery Directive **2006/42/CE** and in particular, satisfy the following harmonized Standards:

EN 13854:2020 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

EN 4413:2012 Hydraulic fluid power -- General rules and safety requirements for systems and their components

EN ISO 4254-1:2022 Agricultural machinery - Safety - Part 1: Common safety requirements

EN ISO 4254-10:2010 Agricultural machinery - Safety - Part 10: Rakes and Hay tedder

ISO 11684:2023 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Safety signs and hazard pictorials - General principles

EN 12100:2010 Safety of Machinery - General principles of design - Risk assessment and risk reduction

EN 12965:2020 Tractors and machinery for agriculture and forestry. Power take-off (PTO) drive shafts and their guards.

EN 13857:2020 Safety of machinery - Safety distances to prevent hazard zones being reached by lower limbs

ISO 3600:2022 Tractors and machinery for agriculture and forestry, lawn and garden motor equipment - Content and presentation.

⚠ WARNING MANDATORY TASKS

- **<u>GREASING WHEEL HUBS:</u> after the first installation on the tractor, check that the wheel hubs are greased. – afterwards, to check based on the task times and the methods indicated in chapter Maintenance**

- **<u>WHEEL INFLATION:</u> after the first installation on the tractor, check the tire pressure. - afterwards, to check based on the task times and the methods indicated in chapter Maintenance**

- **<u>TRACTOR SPEED FOR ROAD TRANSPORT:</u> do not exceed 32 km/h (20 mph).**

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INDEX

INTRODUCTION

A1 Information about the hay rakes

The hay rake is an agricultural equipment used to collect any other type of previously cut forage. Our **RT 7 – 9** are semi-mounted models and they are equipped with a flexible and strong frame, for working on any type of soil, even on hilly ones. Each hay wheel (from 7 to 9) is independent from the others, because each one is provided with a shock absorbing spring that allows it to follow the contours of the soil. The hay rake can work only if installed on any agricultural tractor equipped with trailer hitch.
Its operation, besides to be hydraulic for the movement of arms and hay wheels, is obtained for effect of the trailing by the tractor to which it is attached.

Information more detailed about the rake operation is described in the relative chapter.

A2 Information about the manual

The company **ENOROSSI** (hereafter mentioned as “Manufacturer”) designed and built the equipment according to the appropriate safety rules with the precise purpose to safe-guard both the personnel operating on the equipment that the whole operative system.

Every rake is supplied with a copy of this manual, which has to be read very carefully before using the machinery. In the manual are described the necessary information about the transport, the use and the maintenance of the equipment as well as the relative safety rules.

The lacking in knowledge of the operational system may cause accidents, with consequent damages to the same equipment. Therefore, even if upon delivery the Manufacturer supplies the Customer all information relating to the hay rake (functioning, use and maintenance), the Customer must read this manual and observe the instructions therein.

The manual supplies the basic information for obtaining the best work and safety conditions but it remains the experience and good sense of the operator the most important factor for the equipment functioning.

This manual was edited based on the current technical and constructive features of the hay rake and does not take into account similar products, produced previously. However, the Manufacturer reserves the right to make modifications to the models in production, in order to improve its product or in case new relative dispositions are issued (Machinery Directive), without the obligation of adjusting the previously manufactured models

This manual constitutes integrating part of the hay rake and, therefore, it must be well preserved, clean and intact in all its parts and kept in appropriate container, placed on the equipment frame or inside the tractor cabin, ready for consultation. In case of transfer of the hay rake, it will be important to verify that the manual is present in its case. In case it is lost, request a duplicate from the Manufacturer.

If during reading of the manual the instructions should be incomprehensible, contact the Manufacturer for the opportune clarifications. Should the manual be translated in other language and part of its content present controversies, the valid text of reference remains that written in the Italian language.

Signals contained in the manual:

IMPORTANT
To signal the information must be known by the operator;

DANGER

To signal a probably dangerous situation regarding the health of the operator and others (slight injuries or accidents) or the efficiency of the rake;

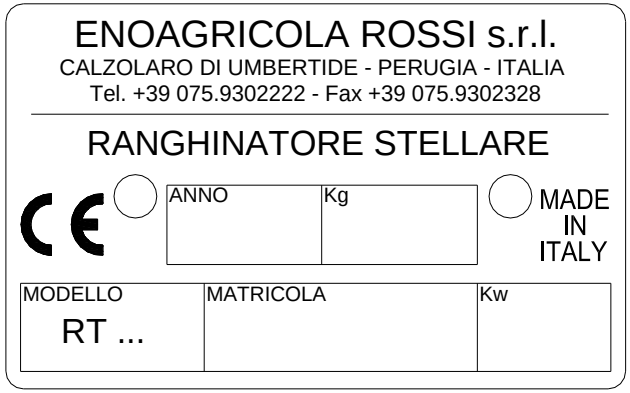
The writing **Note** indicates that the treated matter can make it easier for the operators to carry out their work.

A3 Identification and CE mark

Every equipment is provided with an identification plate applied on the frame and clearly visible, on which the following data is reported:

- the model (and/or version) of the rake;
- serial number;
- minimum power of the tractor (kw);
- total weight (kg);
- year of manufacture.

This data must be quoted every time requesting assistance and spare parts.



IMPORTANT
It is strictly forbidden to alter and/or delete the data on the identification plate. However, the operator must often verify legibility of the data and, when precarious, inform the Manufacturer. The manufacturer will place the data on a new plate and replace the previous one.

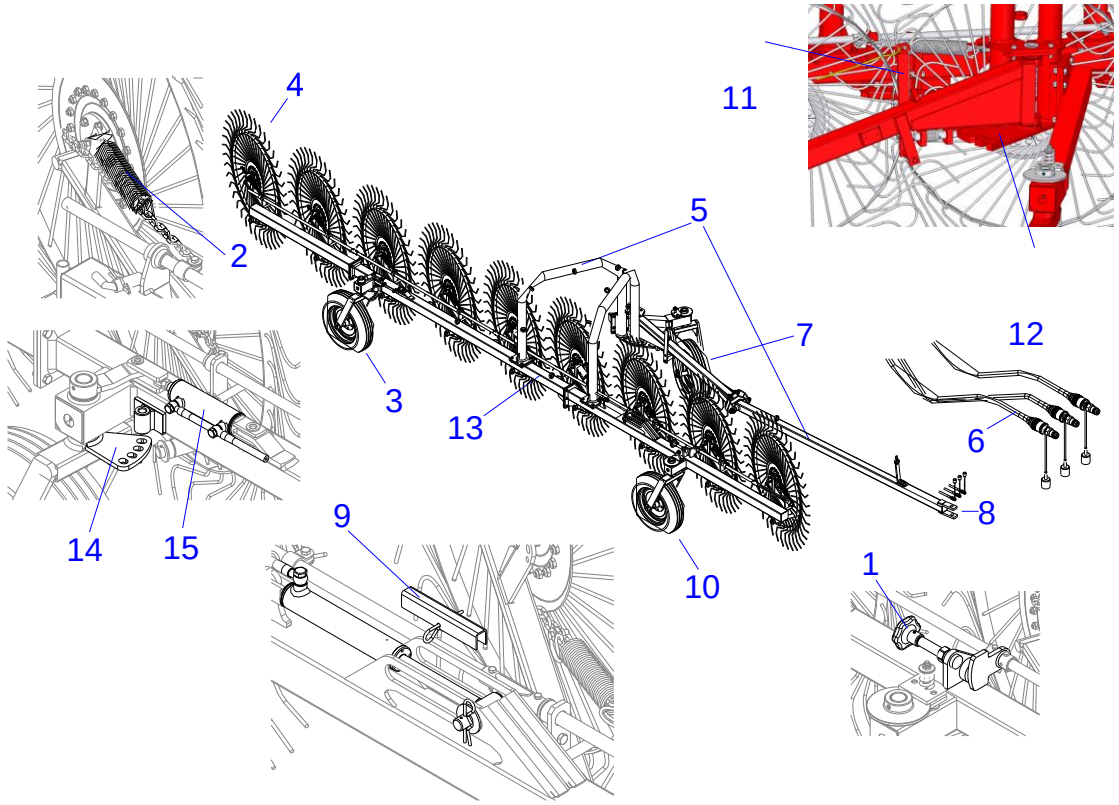
The **CE** mark indicates the manufacturer has complied with the dispositions the Member states of the European Community has adopted on the health and safety and that is known as "**Machinery Directive**". This means the manufacturer has designed and manufactured the equipment in the full respect of all requisites for its use and to avoid all possible deriving risks and dangers. Therefore, the hay rank can freely circulate on the European territory only if provided with this mark and relative declaration of conformity.

A4 Main components and technical data

1. Mechanical end stop (for adjusting the weight of the wheels to the ground)
2. Spring
3. Rear wheel
4. Hay wheel
5. Fixed frame
6. Hydraulic quick couplers
7. Central wheel
8. Coupling device fdor tractor hitch
9. Mechanical lock for cylinder (only for transport)
10. Front wheel
11. Mechanical lock for opening mobile frame (only for transport)

Model	**raking wheel** (VICON)			**width**		**wheels**		**HP**	**weight**
	N°	Teeth	Ø cm	Work. cm	Trans. cm	Type	N°		Kg
RT 7	7	40	7,59	350	200	205/70.15	3	30	645
RT 9	9	40	7,59	450	200	205/70.15	3	30	735

12. Plate working angle mobile frame
13. Mobile frame
14. Lock plate rear wheel
15. Jack rotation rear wheel (optional)



A5 Warranty

The **Enorossi** firm (the Manufacturer) guarantees that all parts of the rake are free of defects as they are all tested before delivery to the Customer. **The warranty is valid for a year from the date specified in the fiscal delivery document, unless arranged otherwise in writing with the Customer.** The Customer, upon receipt of the shipment, must check the components are intact and none are missing. Any claims must be made to the manufacturer in writing within 8 (eight) days of receiving the rake.

Any components with manufacturing or material defects that cause operating faults within the terms of the Warranty are replaced by the Enorossi firm at no charge and at its own premises. – If the components cannot be replaced at its premises, the Manufacturer will return the
defective parts to the Customer's premises. In this case, the Enorossi firm cannot extend the term of the warranty for the time the rake is out of service, nor offer refunds or compensation for expenses or damage, whether direct or indirect. – If the services of one of our technicians are equired, the Customer pays for all manual labour and travel expenses. Only the Manufacturer or technician employed by the Manufacturer should inspect the defect.

However, it must be taken into consideration that:

- the faulty pieces remain the property of the Manufacturer;
- should replacement be carried out at the Customer's establishment, the faulty pieces must be returned and, therefore, sent to the Manufacturer, for subjecting to technical review, integrates without tampering, without tampering and **carriage paid;**
- in case faulty pieces cannot be returned to the Manufacturer within 30 days, from date of receiving the new ones and with the methods described in previous point, the Manufacturer reserves the right to sending an invoice for the new sent pieces.

The warranty is not recognized:

- during transport as the rake travels under Customer responsibility;
- when the faults derive from improper or incorrect use of the rake or operator negligence;
- when the faults are caused by normal wear, even with the rake not working;

- in case of late signaling of the manufacturing defects;
- in case of accidents or fortuitous cases of *force majeure*.

The warranty becomes void in case:
- the rake is used by inadequately trained personnel;
- the indications and/or regulations in these instructions have not been followed or complied with;
- the envisioned maintenance interventions have not been carried out;
- the Customer makes modifications to the rake without the written authorization by the Manufacturer or the same tampers with the components;
- non-original spare parts are used or non-conform with those recommended by the Manufacturer.

However, the warranty period recognized for the rake is not valid for all components not manufactured by the Manufacturer and for which that reported in the relative purchase notes remains valid.

IMPORTANT

The Manufacturer does not guarantee conformity of the rake with the legal dispositions in force and, in particular, with those relating to accident prevention and pollution in the non-E.U. countries. The adjustment of the hay rake to the respective regulations will be the full responsibility and at the expense of the Customer. The Manufacturer is lifted from every responsibility if the compliance with the same regulations should give rise to controversies or cause any type of damage.

SAFETY

B1 Main regulations

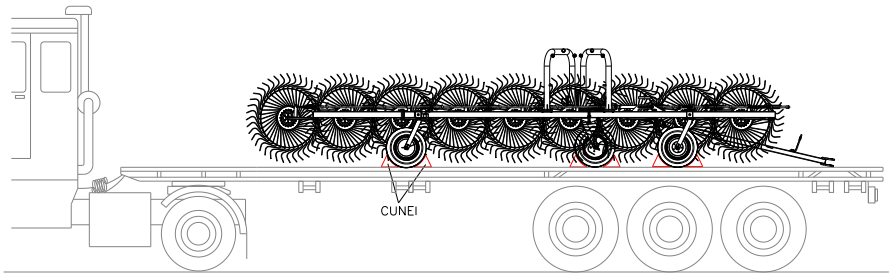
In this manual describes the safety regulations to observe in using the hay rake. As most of the accidents at work occur because the most basic safety regulations are not complied with, **it is compulsory**, before activating any function, to read this manual and scrupulously follow the instructions herein.

The equipment must be used by adult personnel, qualified and trained on its use. **Therefore, the Manufacturer does not answer for accidents caused by operator negligence and/or non-compliance with the safety regulations. Also, both the Manufacturer responsibility and warranty of the hay rake would immediately become void.**

B2 Safety relating to transport, installation, movements and use

Transport (delivery)**:** the equipment is fully dismantled and placed in a crate for the transport. The Customer can then re-assemble the parts quickly and easily, following the detailed instructions. If the rake is sold or handed over to another user, the rake can be dismantled by following the instructions in the reverse order, although it can also be delivered fully assembled. If the rake cannot be transported on road hitched to the tractor for distance problems, it can be easily put on a suitable means of transport, as shown in the figure.

The rake is loaded or unloaded via a ramp attached to the vehicle. When ready for transport, the equipment is first pushed, in reversed, on the floor of the vehicle and, once in place, it is connected to the tractor and equipped with all necessary safety devices for transport.



DANGER

Loading and unloading can involve a certain element of risk so must be carried out taking all due precautions.

Always take the following precautions:

- Loading/unloading must be carried out on a flat surface and at a safe distance from slopes or ditches;
- Always ensure the ramps are strong enough to withstand the rake's weight (given on the identification plate), are firmly attached to the vehicle and are parallel to each other and perpendicular with the edge of the vehicle; Ensure the ramps are clean, without any traces of oil, grease or ice;
- Never change direction when moving the rake onto or off the vehicle. If this does become necessary, bring the rake back down to change its trajectory.

- **Transport** (mounted)**:** as this is a semi-mounted type, it can only be transported if attached to an agricultural tractor. In this case, the device must always be in **its transportation configuration,** as illustrated in figure. This configuration is necessary as the device can be up to 6 metres in width in its working configuration.

You must remember that the transportation configuration entails (in sequence):

- lifting the hay wheels, by using the correspondent lever of the hydraulic system placed in cabin;

- closing the mobile frame, by pulling the string in the cabin that unlocks the mechanical block (**1**) from the plate working angle mobile frame (**2**) and simultaneously going in reverse with the tractor. This movement involves the closing of the mobile frame that will automatically end when the blocking device will found the correspondent hole on the plate and it will be hooked to it;

- the application of the locking pin rear wheel (**3**) on the relative plate. The arrangement of the wheel in the tractor direction is manual on the mechanical version. On the hydraulic version it is necessary to use a special jack;

- the application of the block running device on the jack rod positioning hay wheels (**4**) (in order to avoid its possible retraction) and its locking by using a safety plug.

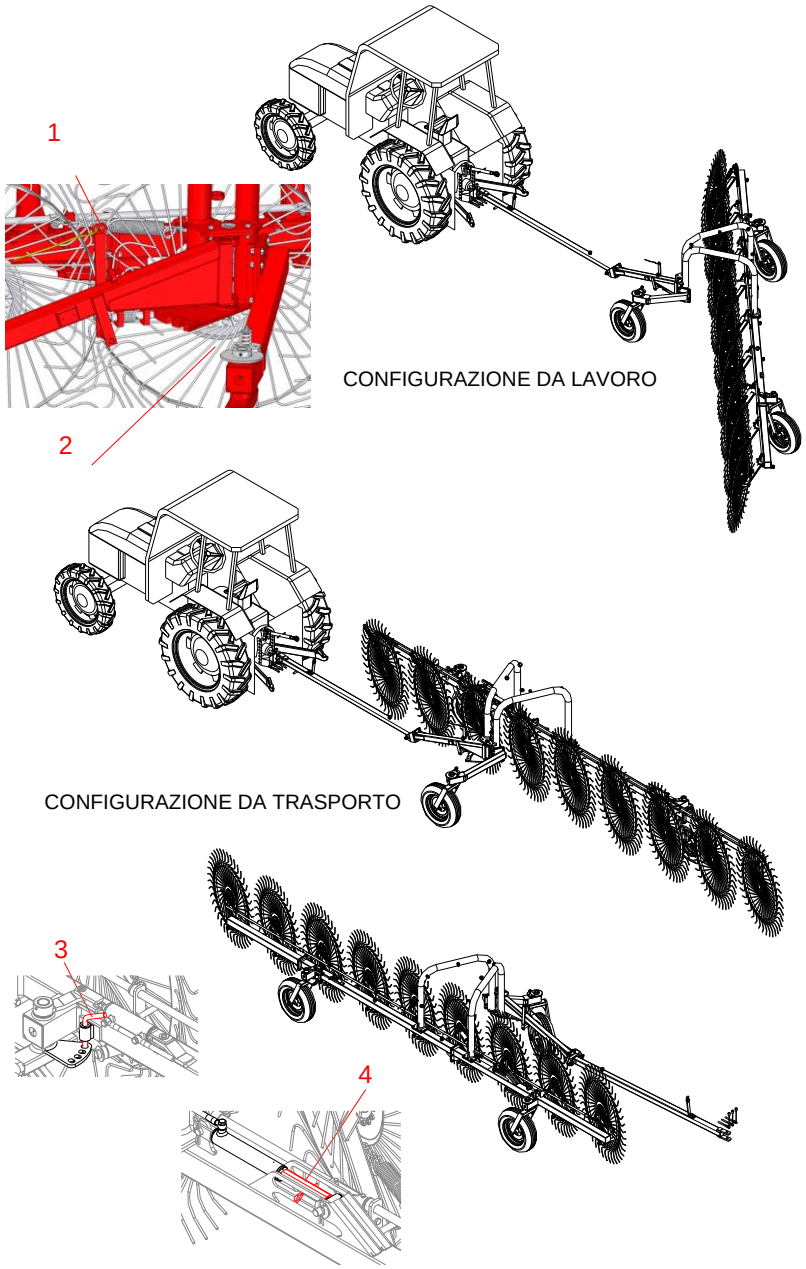
- **always adapt the driving speed to the road conditions and not to exceed 32 km/h (20 mph).**

- **Installation:** the equipment must only be installed on agricultural tractors with universal three-point hitch system and with rear hydraulic connection.

  IMPORTANT

  The tractors must, in turn, be provided with protective roll-bar or ROPS or FOPS approved cabins, as indicated by the current Standards. **It is strictly forbidden to install the equipment on tractors without these protections.**

  However, before installing, the Customer must consult the relative use and maintenance manual to ascertain the tractor has the necessary requisites to use and function the hay rake and/or ballasts are required to eliminate any unbalances that might cause it to overturn. For instructions relating to the installation of the hay rake consult the relative paragraph described below.



B3 Intended use and precautions

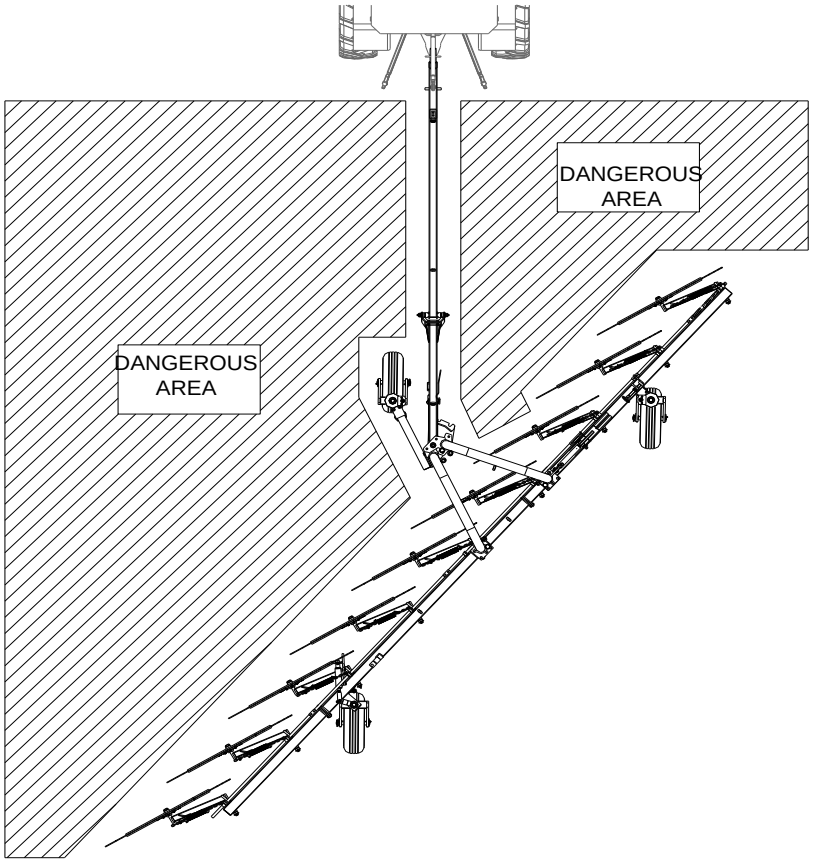
The hay rake is an agricultural equipment used to collect any other type of previously cut forage. Once the windrows (straights of cut hay) are created, the forage is harvested using a special baler.

The rake, as mentioned before, is a mounted type and therefore it has to be attached to an agricultural tractor for it to work. Its functioning is obtained for effect of

its dragging by the machine towing it and for the rotary movement of the hay wheel, that thanks to their teeth will collect the cut forage.

The movement of the hay wheel (lifting and lowering), and in the hydraulic version the alignment of the rear wheel to the tractor, are executed through hydraulic jacks. These jacks are powered by the auxiliary hydraulic system of the tractor by means of pipes with fast couplings, and therefore controlled by the corresponding lever in the cabin.

In any case, the rake must only be operated by qualified and well trained adult personnel who have read the instructions in this manual. Safety is of paramount importance for personnel operating, repairing or maintaining the device. As the instructions given in this manual cannot cover all possible working situations and related risks, personnel must always act with caution and with common sense.



Precautions before use:

- verify the correct installation of the rake on to the tractor and that all relative blocking and
  safety devices are present and intact;

- Do not use the equipment if there are any broken parts or damaged, especially regarding protective parts;
-
- **The opening, as well as the closing of the mobile frame must take place with the hay wheels raised from the ground;**

- the movements of the hay wheels and frame should be done slowly. Avoid violent impacts that may cause damage to parts and components;

- Carry out the daily maintenance (as described on the relevant paragraph). It is important to remember that any kind of intervention (control, adjustment, maintenance or others) **must always be performed with the rake stopped and the tractor engine off;**

- The rake does not require special attention during use as it is not operated directly, being trailed by the tractor; the operator must, however, ensure that no persons or animals come too close in the dangerous areas (as shown in figure) in the interest of their safety;

- The use of the rake is admitted in good visibility and lighting conditions. Should these conditions lack, even partially, it is advised to interrupt work as the normal safe conditions would also lack. Work should only be re-started if the good visibility and lighting conditions are restored.

Precautions during use:

- during operations, always maintain the tractor speed within 10÷15 km/h;

- even for short stops, the operator should never leave the tractor in motion and unattended. Before leaving the tractor he must always disengage the PTO, pull the parking brake, stop the tractor engine and remove the key from the ignition;

- during work breaks, the operator must not allow unauthorized and/or unqualified personnel to replace him;

- before reversing with the tractor or for direction changes at the end of the field, the operator must necessarily place the rake in transport configuration, as described in the previous paragraph. However see also section D2.4 Change of direction or reverse. The machinery could suffer serious damage if the rake is not in the right position.

Immediately interrupt work operations if:

- you are in proximity of resistant objects, such as manholes, wells, trees, etc. since contact could break the teeth, and projected the pieces all around at high speed;

- you hear audible vibrations coming from the machinery. To avoid possible damages, you should stop the tractor, disengaged the PTO, stop the engine and if possible, identify and remedy the situation, always in respect with safety regulations.

B4 Reasonably foreseeable misuses and limitations

Using the rake in a different way from what described in the previous paragraph is to be considered improper and therefore prohibited. In addition, its technical characteristics should never in any way, be altered to change its performance. If this happens, both the warranty and the Manufacturer's responsibility on the machinery **would immediately be cancelled**.

Visibility: in conditions of poor visibility (fog, dust, smoke or other): it is recommended to stop the working operations and wait until the fog, dust, smoke or other subsides. Behave similarly in the case of wind and/or rain.

Dangerous areas: if, during the working operations, a person or an animal enters a danger zones (see previous paragraph), the operator must immediately disengaged the PTO, stop the tractor and remove the intruder. The areas remain at risk and therefore dangerous even during maintenance and/or adjustment operations, therefore, non-authorized people should not stand or move around or in the vicinity of the machinery.

Do not use the machinery if:

- The cut product is wet or damp. Under these conditions, it becomes sticky and easily accumulates on teeth, limiting its operational function;

DANGER

- **no operations should take place in masonry proximity. In these cases apart from the possibility of damaging the teeth there could also be a dangerous projection of relative residues**

For any doubt on the use of the rake and not included in this manual please contact the Manufacturer.

B5 Operator responsibility

Safety is of primary importance for the personnel working around the machinery and for this reason each operator in charge, who must be qualified, trained and of age, is directly responsible for the operational control of the rake, for maintenance, repairs and/or spare parts replacement. This means that each operator cannot delegate someone else, which has not its own requirements, to replace him in his duties. Since the instructions in this manual cannot cover all the possible situations of danger, each operator must always use caution and common sense. Everyone, therefore, becomes liable for damages caused to others, to himself, to animals or things if:

- the machinery is used incorrectly or in improper ways;
- the machinery is used while under the influence of alcohol, drugs, or in a state of tiredness or sickness;
- clothing that can be caught in moving or rotating parts is worn;
- appears to not be aware of the instructions in the manual;
- not having previously verified the requirements, the coupling to the tractor is not suitable (power or characteristics differ from those listed in the technical data table);
- did not carry out the necessary maintenance operations, which although simple, if not carried out properly can result in equipment damage and pose a safety hazard to people exposed;
- has modified to machinery or has run unauthorized interventions on it;
- has used non-original or non-specific spare parts for the rake.

B6 Pictogrames

In addition to the indications contained in this manual, adhesive labels or pictograms that illustrate the safety regulations to be respected are applied in the front of the machinery to help operators. The labels, according to the regulation, vary in shape and colour.

Therefore, those who work should know that the circular signals indicate an **obligation** (light blue and white) or a **ban** (red, white and black), while the triangular shape indicates a **hazard** (yellow and black). Other rectangular labels, apart from containing the danger or prohibition signals, provide additional information on safety standards to be met.

The rules set out by the labels, placed on hay rake are:

1. **Hooking or entanglement risk**. With the arms rotation, the teeth may hang clothes or other objects worn by staff;
2. **Danger of flying objects**. With the arms rotation the teeth could pick up and throw objects form the working site. Minimum safety distance m.10;
3. **Obligation** of reading the use and maintenance manual;

4. **No stopping or transit.** It is prohibited to others than authorized personnel to stop or transit in the hay rake proximity, when it is running. Remain at a safe distance (m. 10). When the machinery is in transport configuration, pay close attention to the teeth. Being tall and bulging they could become a danger to anyone transiting in the machinery proximity;

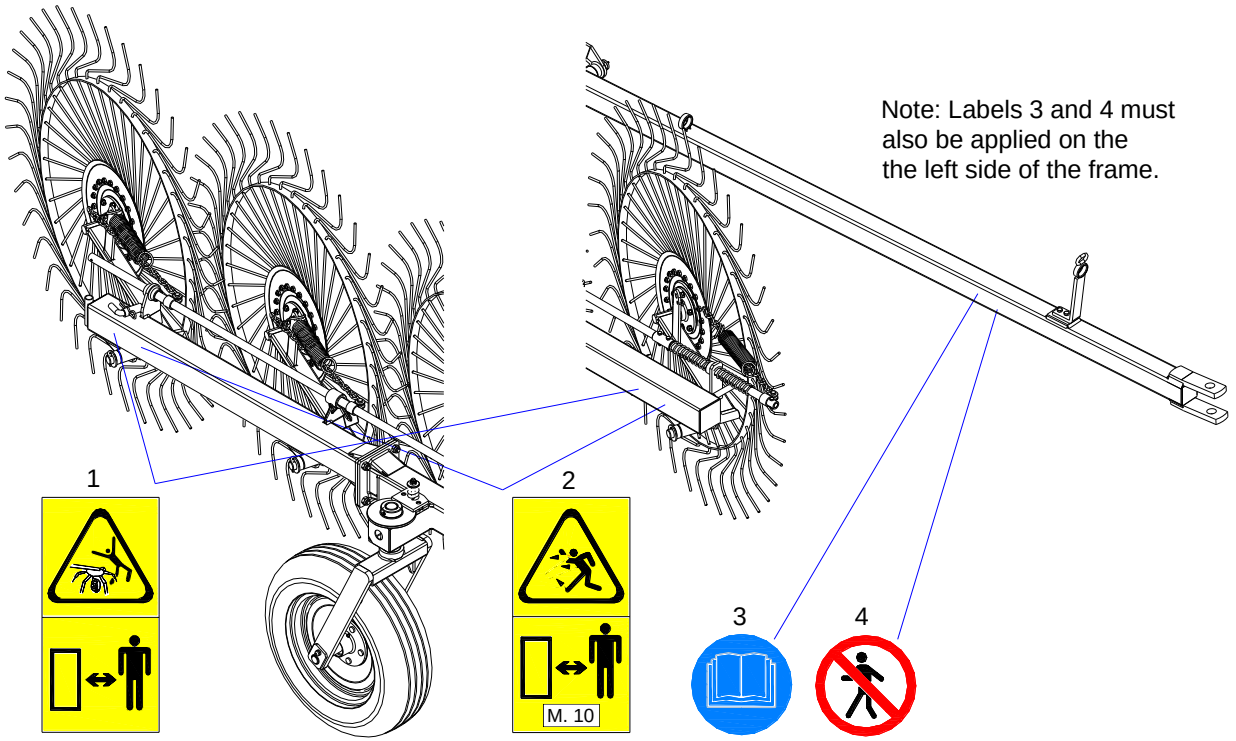
IMPORTANT

The pictograms and instruction labels must necessarily be replaced before they become illegible. If this happens, the operator cannot use the equipment until a new label is applied. Similarly it is utterly forbidden to remove the pictograms or instruction labels placed on the wheel rake. In any circumstances in which this occurs the manufacturer disclaims all responsibility because the equipment would not meet the safety standards with which it was designed and manufactured.

B7 Noise and vibrations

The wheel rake produces little noise other than that of its moving mechanical parts and has no motor. It is likely to be much quieter than the tractor to which it is hitched. The operator does not therefore need any acoustic protection (ear plugs, muffs, etc.). As for the noise produced by the tractor, you are advised to consult the respective use and maintenance manual.

The vibrations produced by the equipment coming to the operator on the tractor have low intensity and a low frequency according to the levels tolerable by the human beings.



INSTALLATION

C1 Rake assembly

As already mentioned, the equipment is delivered entirely disassembled. Detailed instructions allow the customer to assemble it fast and easily. For this operation it is necessary to place the rake on a flat surface. Operators must be aware of all safety rules for the installation and carefully perform the operation.

Once the rake is assembled, install it to the tractor.

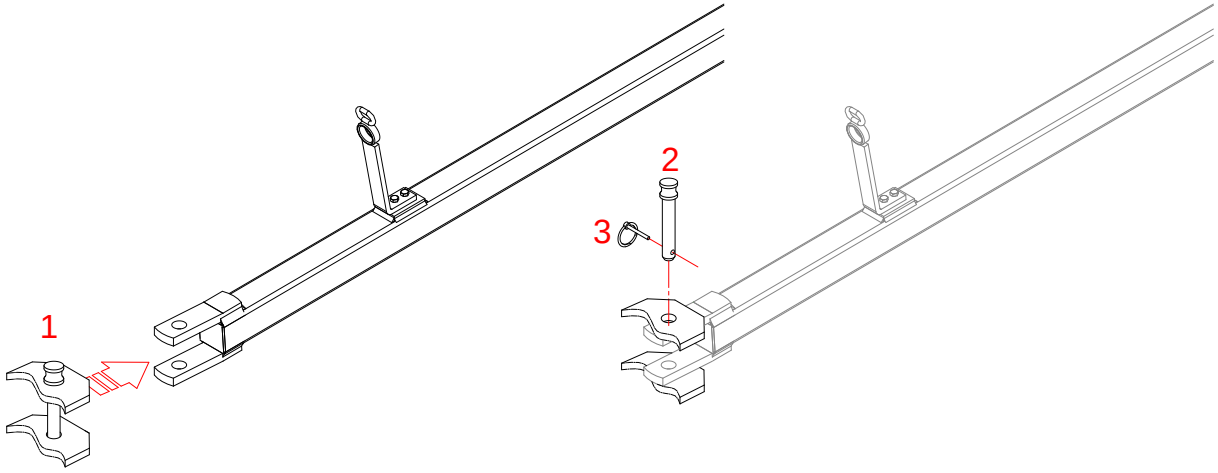
C2 Installation to tractor

The equipment can be installed to any agricultural tractor. For this, the operator must slowly near the tractor to the rake, positioning it in order to facilitate the centring.

IMPORTANT

The alignment of the holes of the tractor's coupling with those of the hay rake (operation defined **centering**), must be carefully and cautiously carried out.

When the tractor is very near to the rake connections (**1**), raise the rake connection so that it coincides with the tractor one. Once it is attached, insert the locking pin (**2**) into the holes of the connections, as shown in figure, and then fasten it using the corresponding pin or safety pin (**3**).



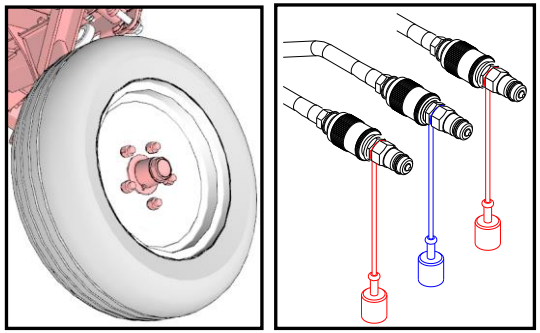
WARNING

After the first installation on the tractor, verify that the wheel hubs result greased, and if necessary, do it. Also carry out a tyre pressure check (see paragraph E5). - Afterwards, grease the wheel hubs and check the tyre pressure based on the task times and methods indicated in the chap. Maintenance..

C3 Hydraulic connections

The movement of the hay wheel (lifting and lowering), and in the hydraulic version the alignment of the rear wheel to the tractor, are executed through hydraulic jacks. These jacks are powered by the auxiliary hydraulic system of the tractor by means of pipes with fast couplings, and therefore controlled by the corresponding lever in the cabin.

Therefore, you cannot perform these functions until the jack pipes are connected (with quick couplings, as shown in the figure) to the corresponding connectors auxiliary system of the tractor.



C4 Removal from tractor

For the hay rake removal from the tractor follow the instructions contained in the previous paragraph, in reverse order. First remove the hydraulic pipes then the equipment.

C5 Storing the hay rake

The Client must provide, within his company, the machinery storage area, making sure it has a wide and easy access. For the hay rake storing, the following interventions are needed:

- park the machinery (in transport configuration) in a safe and secluded area, on a flat and solid surface;
- remove the tractor from the hay tedder, following the instructions in the C4 paragraph;
- protect the equipment with a cloth.

OPERATING AND USE

D1 Preliminary information

An appropriate and optimal use of the hay rake is needed not only to prevent damage and/or injury, but is the only way to get the same high performance and to discover its true potential and performance.

Remember that the rake must be used by trained adult personnel knowledgeable of the instructions in this manual and on the labels. Consequently, he must know perfectly the instructions in this manual, all those reported on the adhesive labels and all the safety regulations for his and others' safety and to safeguard the machinery.

Before each start-up of the tractor, it is important to scrupulously follow the precautions described in paragraphs B3, B4 and B5 and the instructions below:

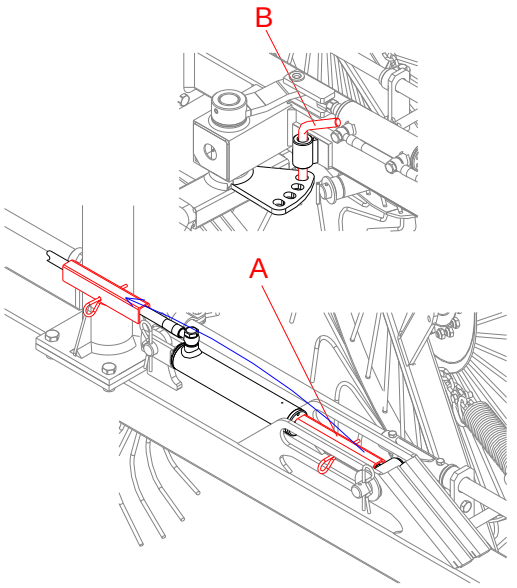
- Ensure all the parts of the rake are in their intended position and are securely fitted;
- Ensure the rake is fitted properly to the tractor;
- Check efficiency of all the protection devices;
- Carry out the daily maintenance checks described in the relative paragraph. **Note**: *should the rake be returned to service after a long period of inactivity, ensure it has been properly maintained and that it has not been damaged in any way by poor weather or storage conditions.*

D2 Functioning and Use

The rake must be taken to the work area in keeping with the instructions in paragraph B2 “Handling and Transportation”.

The tractor driver is personally responsible for the general procedure of conveying the rake and must therefore prepare the rake for transportation as follows:

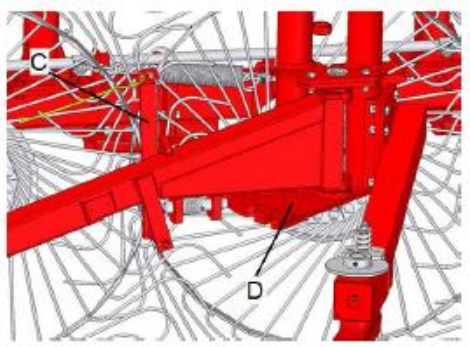
- Firstly, the operator must remove any safety devices that need to be removed for transportation, i.e. The jacks' stop devices for hay wheel movements (**A**):
  - remove the safety pin to free the device, lift the latter from the jack rod and move it further back, as shown in the illustration. Re-fasten the device with the safety pin (do one side at a time);
- always on this side of the equipment, the operator remove the handle pin (**B**) from its housing in order to unlock the rotation of the rear wheel from the transport or stop position;
- from the cab, the operator first unlocks the mechanical lock **C** from the working angle plate mobile frame (**D**) and at the same time he goes with the tractor in reverse. The opening of the mobile frame is made by the placing of the mechanical lock in the housings on the relating plate **D**. A complete opening corresponds to the last external housing on the plate. Therefore, depending on the type of work he has to do, the operator will release the mechanical lock in the corresponding housing. With the string no longer pulled, the lock is

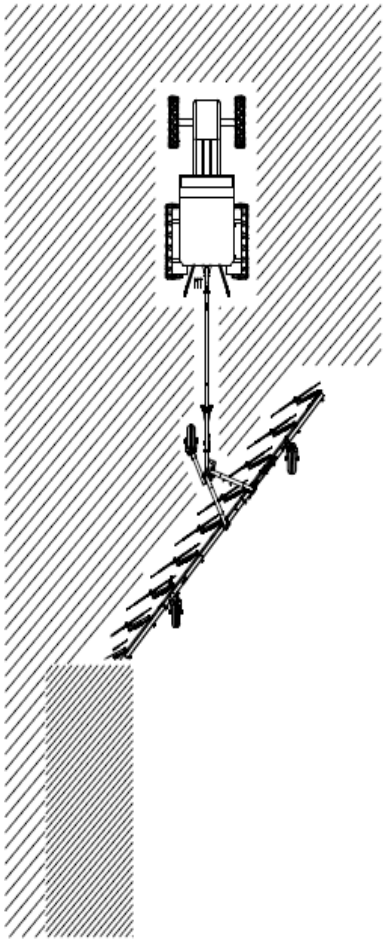


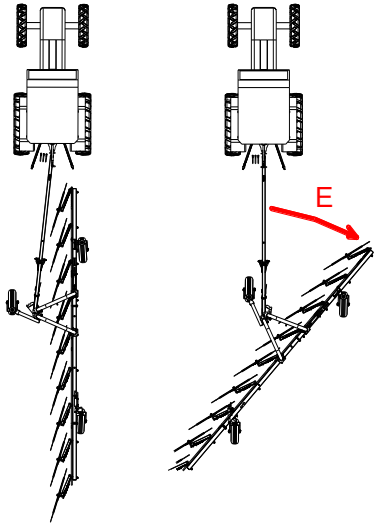
automatically located in the relating housing, hooking the plate and blocking the mobile frame in the selected working position;

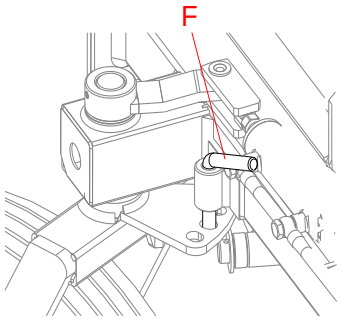
- after the opening of the mobile frame (**E**), with the equipment in working configuration, the rear wheel will be aligned (manually or hydraulically) to the tractor and locked by inserting the handle pin in its housing (**F**) and, on the plate below, in the relating hole;

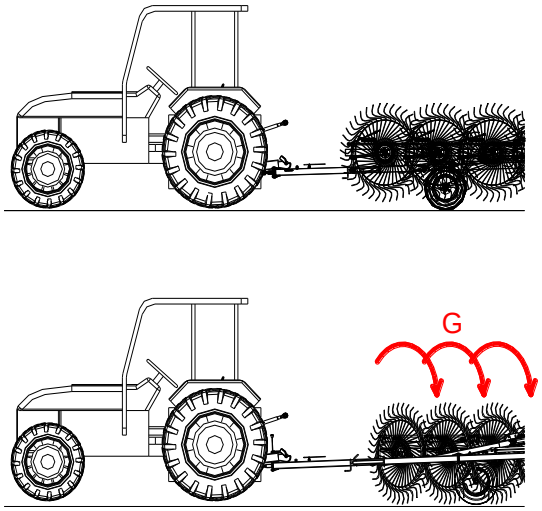
- Finally, the operator controls the lowering of the hay wheels (**G**).











At this time, the rake is ready to operate. The rake's functioning is very simple because, as it is installed on the tractor, it is dragged by it in its forward direction. In this way, the raked wheels brush against the ground for the dragging effect, and because of the rotary movement the teeth will collect the cut forage.

The rake working configuration, as shown in figure, allows you to harvest the cut forage and collect it into a central windrow. This windrow, which can have a 6 metres width, facilitates the working process and reduces the final costs.

IMPORTANT

Remember that the tractor must proceed in a straight line. For direction changes see section D3.

Even for short stops, the operator must always:

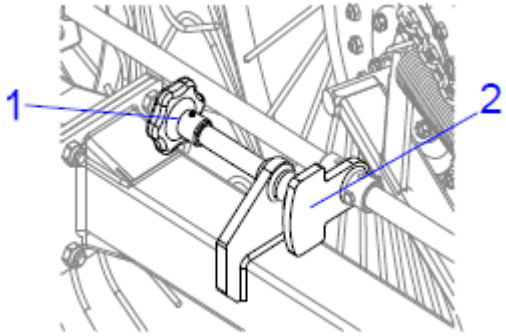
- switch off the engine of the tractor
- engage the parking brake
- remove the key from the dashboard.

At the end of the work, put the rake into the transport configuration before moving.

For the storing of the equipment, follow the instructions described in Section C5.

D3 Hay wheel weight on soil

The effectiveness of the collected cut forage, depends on the hay wheels weight on soil. It can be adjusted, before the hay wheel are lowering, using the relating knob (**1**) located on the mobile frame. The hay wheels weight is perfect when the teeth are almost touching the ground. The teeth must not be too low (weighted wheels), because penetrating into the soil can rapidly wear, and they must not be too high (lightened wheels) as their collection action may be ineffective.



You can adjust the hay wheels weight by getting closer or moving away the end position from its relating plate (**2**), placed on the bar. Turning the knob in clockwise direction the end position comes closer to the plate and, consequently, the hay wheels will be lightened respect to the ground. Turning the knob counter-clockwise the hay wheels will be heavier.

D4 Direction change and reverse

At the end of the field, when the tractor with the hay rake must invert direction or if it goes in reverse for a short distance, the hay wheels must be lifted from the ground and if necessary, put the equipment in the transport configuration (see B2 paragraph) .

To change direction of the rake, the operator controls the raising of the hay wheels and possibly the closing of the mobile frame (see paragraph B2). After this, the operator can change direction in many maneuvers. Finally, the operator will put the rake into the working position again.

D5 End of work

Once work is completed and the tractor must return in its usual parking, set the transport configuration on the hay rake, before moving. Then, stop the tractor's engine, engage the parking brake and remove keys from the dashboard.

To store the equipment, follow instructions described in paragraph C5.

MAINTENANCE

E1 Warnings during maintenance

The windrow rotary rake is agricultural equipment that does not require particular maintenance, or relative programs. However, a periodical intervention is envisioned (described below) that, if scrupulously carried out by the Customer, will maintain the efficiency and work ability of the equipment unaltered, preserving it from every functioning damage.

The operator, who must be an adult, qualified and trained for these interventions, must observe the following:

DANGER

- **any kind of intervention must be carried out on an even surface, sufficiently lighted and free from any person, animal or object that may obstruct every manoeuvre. The equipment must be stable on the ground, the tractor blocked, the parking brake engaged, the engine off and keys removed from the dashboard.**

- for the operator's safety and to prevent damages to the rake, before working a clearly visible sign must be applied on the tractor indicating "**Machine under maintenance**";

- the interventions, maintenance and repair, once started must always be completed and never post-poned;

- he must not work on memory, but always read the instructions in this manual and accurately follow them;

- the use of equipment to carry out maintenance interventions is subject to the relative accident-prevention regulations. However, do not use the equipment improperly like, for example, using petrol to cleanse or pliers instead of an adjustable wrench;

- only use original spare parts or parts suggested by the Manufacturer.

Once maintenance or repair has been completed, clean the area from water, oil, grease, oily cloths, tools or other material.

IMPORTANT

Carefully verify the inspections of loss of fluid under pressure. Proceed with caution, because flowing out through small holes, the fluid can pierce the skin and cause serious infections. Use lenses provided with lateral protections, and in order to search the losses, use a piece of cardboard or wood;

E2 Maintenance instructions

The times of intervention are merely for informative purposes and relate to normal conditions of use. They can therefore vary in relation to the type of service, the work environment (more or less dusty), seasonal factors, etc. The harder the functioning conditions of the equipment, more interventions are required.

E2.1 Checks on a daily basis

Maintenance interventions to be carried out daily before working:

- Verify the integrity of all pipelines (tightening connections, integrity of the protections or hydraulic oil leakage);

E2.2 Checks on a weekly basis or per 50 hours' operation

Maintenance interventions to be carried out weekly or after 50 hours' operation:

- Verify the integrity of all pipelines (tightening connections, integrity of the protections or hydraulic oil leakage);
- Check the hydraulic oil leakages on the circuits of the central wheels. To restore the level, see section C3.
- Verify the integrity of all the adhesive labels;
- check the presence of the various safety pins and R pins blocking the various equipment parts;
- verify the structural integrity of all equipment parts, in particular those subject to wear like, for example, the tire wheels;
- check the fastening of nuts and screws blocking the various equipment parts;

E3 Lubrification

To insert grease into the greaser, first remove their protective caps (where there are caps), then clean them removing any traces of dust, using the appropriate pump, and inject the grease. When the operation is finished, clean the greaser from grease excess and then put the caps on. Use a brush to spread the grease where there are no greaser.

Only use oil type suggested by the Manufacturer (**AGIP GR MU EP 2**). All lubricant points on the rake are indicated by adhesive labels, as shown at the side.


INGRASSATORE


PUNTI DA LUBRIFICARE

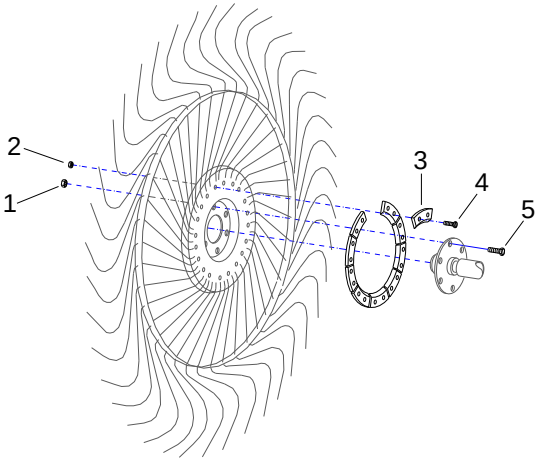
IMPORTANT

To avoid polluting, it is forbidden to disperse oil, lubricants, filtering cartridges or other toxic materials in the environment. Scrupulously comply with the current dispositions for the disposal of liquid and solid substances.

E4 Raked wheel and/or teeth replacement

- **rake wheels:** Should the replacement of rake wheels is required, you must completely remove the six locking nuts (**1**), and the fastening screws (**5**). Now take the rake wheel out of its connection (or hub).
  Place a new rake wheel, insert the six screws and then lock them using the respecting nuts.

- **teeth:** Should the replacement of teeth is required (for wear or damage), remove the block plate (**3**), by removing the 2 locking nut (**2**). Then take off from their housings the screws (**4**) and finally remove plate and teeth.



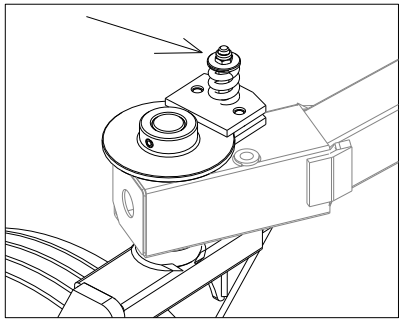
E5 Tyres

Maximum pressure: **3 bar (43.5 PSI)**
Maximum operating pressure: **2 ÷ 2.5 bar (29 ÷ 36 PSI)**

HAZARD

Avoid excessive inflation pressure because it could cause the tires to explode.

E6 Troubleshooting

FAILURE OR INCONVENIENCES	CAUSES	SOLUTIONS
The control for the jacks activation does not work.	Lack of hydraulic oil Hydraulic plant pipes damaged	Add oil Change pipes
A jack moves without the command for its activation	Jack gasket worn	Replace gaskets
Jacks move jerkily	Air in the hydraulic circuit	Run the jacks in vain for a few minutes to drain the air in the hydraulic circuit Check the hydraulic oil level on the tractor.
Partial or inadequate forage harvesting	Teeth too distant from the ground	Adjust hay wheels weight (See paragraph D3)
Excessive vibration of a wheel around its axis	The wheel is not braked properly	 Tighten the nut above the spring of the relating register to properly adjust the wheel brake

Rapid wear of windrow teeth	Teeth are constantly touching the ground	Adjust hay wheels weight (See paragraph D3)
oil overheating	clogged filter tubes crushed lack of oil	Change filter Check and change pipes Add oil
leak of oil	slow connection worn seals	Tighten the pipe Replace the seal

***Note**: for failures or inconveniences that are not reported in the table, please contact the Manufacturer.*

E7 Machine demolition: disposal of materials

When the rake is placed out of service, you must make harmless all parts that could pose a safety risk to persons, animals and the environment when sent for disposal. Materials that make up the rake and should be set aside for segregated disposal are:

- Iron
- steel
- Hydraulic oil
- Rubber
- Plastics

These materials must be disposed of in compliance with relative national legislation in force.

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