



Important: Read all the operating and maintenance instructions in this manual before using or operating the device in any way (EC Machinery Directive 98/37)

PULL TYPE RAKE RAKE CADDY series



USER AND MAINTENANCE MANUAL

rev 0 - 05/09





Harmonised standards

The "RAKE CADDY" side-delivery rakes were designed in accordance with the provisions of EC Machinery Directive 98/37 and comply with the following harmonised standards:

EN 12100-1: Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology and methodology (2003).

EN 12100-2: Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles (2003)

EN 982/92: Safety requirements – hydraulic power systems and their components – Hydraulics

EN 1553: Agricultural machinery – Agricultural self-propelled, mounted, semi-mounted and trailed machines – Common safety requirements (2001)

Others are specified in the technical file.

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INTRODUCTION

A1 About side-delivery rakes

The side-delivery rake is an agricultural device for swathing all types of cut forage.

For the rake to work, it has to be attached to an agricultural tractor with hitch and auxiliary hydraulic connections at the back.

The two moveable frames and central kicker wheel are hydraulic and the entire rake is trailed by the tractor to which it is attached. The wheels (the main feature, of which there can be up to 13) turn as the rake is trailed to ensure uniform and well aerated forage. Our **RAKE CADDY** models, all of them trailed, feature a flexible yet sturdy frame that adapts perfectly to all kinds of terrain, however steep and rugged.

Operation and use of the rake is detailed in the respective chapter.

A2 About the manual

The **ENOROSI** firm (the "Manufacturer") designed and created the device in accordance with the associated safety standards to ensure the safety of personnel and the entire operating system.

Each rake is supplied with a copy of this manual which the operator must read in full before using the equipment. The manual contains all information relating to transportation, use and maintenance of the equipment, as well as safety instructions.

Poor knowledge of the operating system can lead to accidents and therefore damage to the equipment. Although the Manufacturer provides the Customer with all information relating to the rake's operation, use and maintenance, the Customer is still expected to read this manual and take note of all the instructions herein.

The manual provides all the necessary instructions on how to ensure optimal working order and safety. Most important of all, however, is the operator's own expertise and common sense.

The manual was drawn up according to the current technical and structural characteristics of both models of rake and does not cover previous similar models. The Manufacturer therefore reserves the right to modify models in production in the interest of improvement or due to any new legislation (Machinery Directive), without being obliged to modify previous models.

This manual is integral to the rake and must therefore be kept intact, clean and in good condition. It should also be in a container, either on the frame of the device or in the tractor cabin, where it can be easily accessed for consultation.

The manual must be kept in its container if the rake is taken out of service. Ask the Manufacturer for a duplicate copy if the original manual is lost.

Please contact the Manufacturer for any clarifications relating to the instructions in this manual. If the translated copy of this manual is unclear in any way, the valid text of reference is the original one in Italian.

Symbols used in this manual:

IMPORTANT
The operator must take the respective information into account.



ATTENZIONE

Potential danger that could compromise the safety of the operator and of other people (slight accidents or wounds) or the working order of the rake;

Note indicates that the information referred to can facilitate the operator's work.

A3 EC certification and identification

An identification plate is affixed to each machine. Details on the plate are:
The model and/or version of the rake
The serial number



The power capacity of the tractor (Kw);
 The overall weight (kg);
 The year of manufacture.

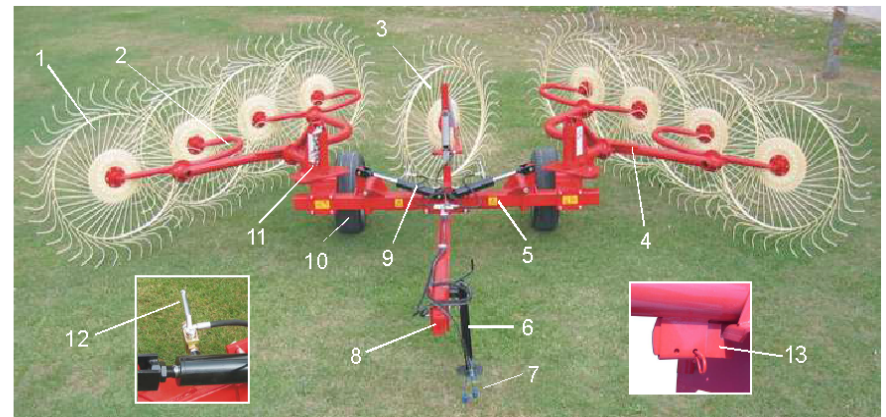
You must have this information at hand when requesting assistance and spare parts.

ENOAGRICOLA ROSSI s.r.l.		
CALZOLARO DI UMBERTIDE - PERUGIA -		
	ANNO	Kg
		MADE IN ITALY
MODELLO	MATRICOLA	Kw

IMPORTANT

It is strictly forbidden to alter and/or eliminate the data on the serial plate. The operator must check the legibility of the data on a regular basis and inform the Manufacturer if it becomes in any way illegible. The Manufacturer will then replace the old plate with a new one bearing the same data.

5. Fixed frame
6. Foot support
7. Hydraulic quick couplings
8. Tractor hitch
9. Jack for folding the side units
10. Tyre
11. Moveable frame
12. Hydraulic valve
13. Frame locking bracket



The EC mark indicates that the Manufacturer has complied with EU health and safety regulations in the “**Machinery Directive**”. This means that the Manufacturer designed and created the equipment in full compliance with all the requisites on use of the rake and avoidance of all possible risks and hazards associated with the same. The rake can therefore be freely distributed throughout Europe providing it features this mark and respective declaration of conformity.

A4 Main components and technical data

1. Toothed wheel
2. Arm with hubs
3. Additional wheel at centre (kicker wheel)
4. Arm support

Model	Wheels			Width		Tyres		HP	Weight
	N°	Teeth	Ø cm	For work cm	For trans. cm	Type	N°		
RAKE CADDY 8	8	40	140	540	250	205/70.15	2	30	600
RAKE CADDY 10	10	40	140	640	250	205/70.15	2	30	667
RAKE CADDY 12	12	40	140	740	250	205/70.15	2	30	737



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 required, the Customer pays for all manual labour and travel expenses. - Only the Manufacturer or technician employed by the Manufacturer should inspect the defect.

Please note:

- Defective parts remain the property of the Manufacturer;
- After parts are replaced at the Customer's premises, the defective parts must be returned to the Manufacturer for a technical inspection. The parts must be returned whole, without signs of tampering, and with **carriage paid**;
- If the defective parts are not returned to the Manufacturer within 30 days of receiving the new ones and not according to the requirements stated above, the Manufacturer reserves the right to invoice for the new parts delivered.

The warranty does not extend to:

- Transport as the rake is delivered at the Customer's own risk;
- Faults due to improper or incorrect use of the rake, or due to the operator's own negligence;

- Faults due to normal wear and tear, even when the rake is not in use;
- Delayed notification of manufacturing defects;
- Accidents or circumstances outside one's control.

The warranty is forfeited when:

- The rake is used by someone who has not been properly trained;
- The rules and instructions in this manual have not been followed or complied with;
- The necessary maintenance is not carried out;
- The Customer makes changes to the rake without the Manufacturer's written consent, or tampers with the components;
- Any replacement parts are not original or not those recommended by the Manufacturer.

The warranty does not cover parts of the rake not produced by the Manufacturer and the terms for which are stated in the respective contract notes.

IMPORTANT

The Manufacturer cannot guarantee the rake's conformity to all the provisions of the law in force and, in particular, to those on the prevention of accidents and pollution in non-EU countries. It is the customer's own responsibility to ensure the conformity of the side-delivery rake to the respective regulations. The Manufacturer cannot assume any liability for the customer's non-compliance with the aforementioned regulations and any ensuing disputes or damage.

SAFETY

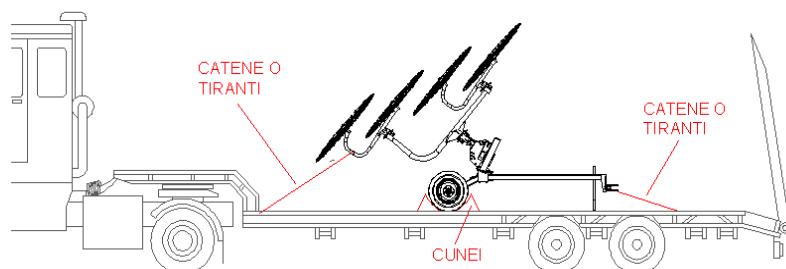
B1 General rules

This manual describes the safety regulations to be followed when using the rake. As most work-related accidents occur due to non-compliance with the most basic of safety regulations, **it is obligatory** to read this manual before using the rake and to follow all the instructions.

The equipment must be used by qualified adult personnel trained in its use. **The Manufacturer cannot be held liable for accidents due to the operator's negligence and/or non-compliance with the safety instructions. In this case the Manufacturer assumes no responsibility and the warranty is forfeited.**

B2 Safety notes on transportation, installation, handling and use

- **Transportation** (delivery): the device is fully dismantled and placed in a crate for transportation. The Customer can then re-assemble the parts quickly and easily on receipt, 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 reverse order, although it can also be delivered fully assembled. If the distance and conditions are such that the rake cannot be transported by road hitched to the tractor, it can be easily put on a suitable means of transport, as illustrated below.



The rake is loaded or unloaded via a ramp attached to the vehicle. The equipment, when ready for transportation, is reversed onto the vehicle, then harnessed in place and fitted with all necessary safety devices for transportation.

IMPORTANT

Do not forget that, for transportation and handling, the rake must be in its transport configuration as described in the chapter "Moving the rake".



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 make sure the ramps are strong enough to withstand the rake's weight (stated 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 necessary, move the rake back down the ramp to turn it around.
- **Installation:** the device must only ever be attached to an agricultural tractor with hitch, auxiliary universal three-point coupling and hydraulic lift.

IMPORTANT

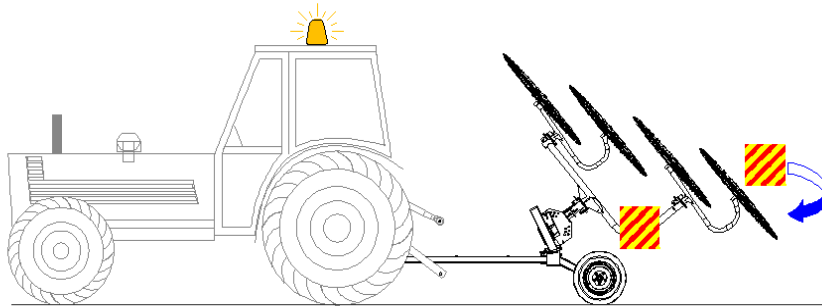
The tractor must also, by law, be fitted with a protective roll-bar or ROPS or FOPS cabin. **It is strictly forbidden to install the rake device on a tractor without the required protection equipment.**

Prior to installation, however, the Customer must check the tractor's operating and maintenance manual to make sure the tractor is compatible with rake, and whether ballasts are needed to prevent unbalance that could cause it to tip over.

Instructions on installation of the tiller and hydraulic connections are given below.



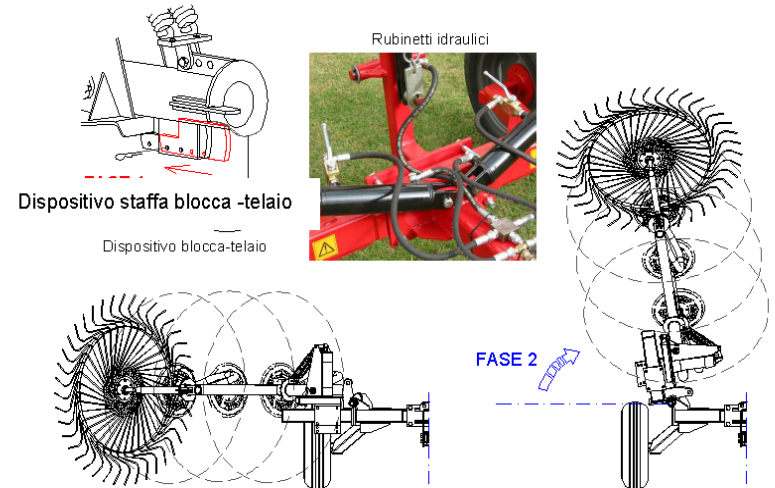
- **Moving the rake:** this is a trailed rake so must be hitched to the back of an agricultural tractor. The complete vehicle (the tractor with rake) does not require any luminous or acoustic signalling devices or panels when used in cultivated fields. You must however do the following for road circulation:
 - **At the back:** the operator must attach the necessary panels on the rake to indicate the back of the tractor. These panels must be put on the three sides visible from the back. They must be retroreflective with fluorescent yellow and red stripes (as illustrated) and of the kind required by law.



The length of the rake must never exceed that of the tractor in front and should therefore always be in its precise **transport configuration**, as illustrated above. This is essential as the rake can extend up to 8 metres in length when in use.

- How to fold the side-delivery rake (when in its work configuration):
- STEP 1:** fasten the moveable frames with their respective frame-locking bracket devices (as illustrated). Do this before putting the moveable frames in their transport configuration: remove the R pin on the frame-locking bracket device and push the latter down to its respective stop. Fasten down the device by inserting the respective R pin. **Note:** this device affixes the moveable frame to the fixed frame, preventing damage to the rake and/or tractor.

- Check the fixed frame to ensure the two (optional) hydraulic



valves, situated on their respective jacks, are open or in the position illustrated.

- Start up the tractor. Wait for a few minutes then use the control lever for the auxiliary hydraulic circuit (in the cabin) to raise the rake's moveable frames, fully extending their respective jacks. **Note:** the additional central wheel (the kicker wheel, illustrated on the right) will, if fitted, be raised together with the two moveable frames as its own jack is extended at the same time.





- d. Lastly, attach the two tool carriers by chaining together their respective supports (as illustrated).



- **Signalling devices:** the tractor must always be fitted with a flashing light and be driven at moderate speed, especially on rough roads, as the heavy weight at the back can make it difficult to drive.
- **Weight:** the weight of the overall vehicle (tractor with rake) should not be over 30% more than that of the tractor's normal weight as stated on the registration certificate.
- **Laws:** you should know and comply with the laws on road circulation in your country.

The driver in the cabin should take the following precautions when driving and using the vehicle (tractor with rake):

- Do not take passengers with you in the tractor;
 - Do not transport people or animals on the rake;
 - It is forbidden to stand between the side-delivery rake and tractor, even when the parking brake is on and the wheels are chocked;
 - Before reversing the tractor, always make sure the rake is NOT in its work configuration – if it is, put it in its transport configuration as otherwise the rake could cause or sustain damage;
- **Use:** the rake must only be put to the use for which it was intended: to rake up, spread and turn over cut forage. **Any other use is therefore improper and forbidden.**

The rake's technical characteristics must also not be altered in any way to modify performance, **otherwise the warranty will be forfeited immediately and the Manufacturer will refuse all responsibility.**

The rake must be used in conditions of good light and visibility. We recommend you do not work when light and visibility is poor as this can compromise normal levels of safety. Recommence work only when light and visibility has improved.

The rake does not require special maintenance during use as it is not operated directly, being trailed by the tractor; the operator must, however, make sure no persons or animals come too close in the interest of their safety.

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 to the personnel operating, repairing or maintaining the device. As the instructions given in this manual cannot cover all possible working situations and associated risks, personnel must always act with caution and use their common sense.

The operator must take the following precautions when using the rake device:

- The tractor must not be left running or unguarded, not even for short periods. The operator must always switch off the tractor's engine and take the key with him;
- The rake device is relatively quiet and does not require use of acoustic protection (ear plugs, ear muffs, etc), although this may not be the case with the tractor. We recommend therefore that you check this in the tractor's operation and maintenance manual.

B3 The operator's responsibilities and safety

Safety is of primary importance to the personnel operating the rake device and each operator is therefore directly responsible for controlling the rake's operation, maintenance, repairs and/or the use of spare parts or consumable materials. This means the aforementioned personnel must never delegate their work to operators without the necessary expertise.



The Manufacturer assumes no liability for:

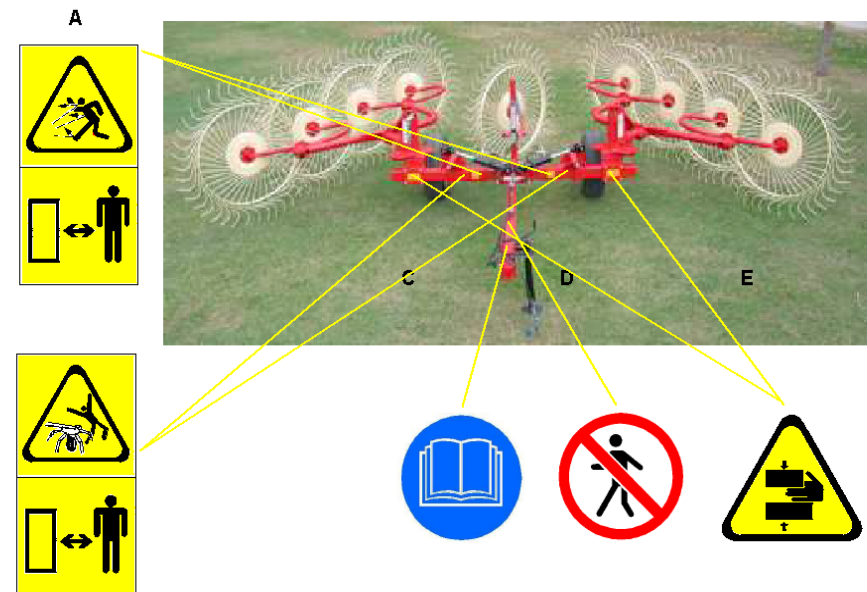
- Improper or incorrect use of the rake device that can cause harm to persons and animals or damage to objects and the actual rake;
- Employment of personnel who have not received proper training and/or has not read and understood the instructions in this manual;
- Lack of essential maintenance;
- Use of spare parts that are not type approved or not compatible with the rake model;

In addition to the instructions in this manual, personnel are given visual aids in the form of labels (shown in the illustration) attached to the front of the rake device stating the necessary safety precautions. These labels are designed to attract the operator's attention and indicate the level of risk.

These labels, however, differ in shape and colour according to the instructions. Personnel must know therefore that a circular label indicates an **obligation** (blue and white) or a **prohibition** (red, white and black), and a triangular label indicates a **hazard** (yellow and black). Rectangular labels feature the hazard or prohibition symbol but also state the safety precautions to be taken. Messages on the labels:

- a. **Risk of flying objects.** Objects in the field of operation may be caught and thrown by the teeth of the rotating star wheels;
- b. **Risk of snagging.** As the star wheel rotates, there is a risk the teeth will snag on the operator's clothes or other objects on the operator's body.
- c. **Obligation** to read the user and maintenance manual;
- d. **Prohibition** for unauthorized persons to stand or move in the rake's field of operation when the rake is being used. Persons must keep at a safe distance and should they need to move in the rake's field of operation, they must do taking all due precautions;

- e. **Risk of crushing and/or cutting upper limbs:** if you need to operate in the area of this pictogram while the tractor is running, you should take all necessary precautions and wear protective gloves.



IMPORTANT

Warning labels and pictograms must be replaced if they become faded and risk becoming illegible. In this case, the operator must not use the rake until any faded labels are replaced with new ones. It is also strictly forbidden to remove the pictograms and labels from the equipment. Should this occur, the Manufacturer assumes no liability as the rake no longer meets the safety requirements for which it was designed and created.

B3 Noise levels

The device 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 user and maintenance manual.

INSTALLATION**C1 Rake assembly**

As mentioned above, the rake is fully dismantled for delivery to the Customer. The rake can be assembled quickly and easily following the easy instructions (see Page 18). Assembly must be carried out on a flat surface prepared especially for the purpose. Assembly operators must be cognizant of the installation safety regulations and work with all due care and attention.

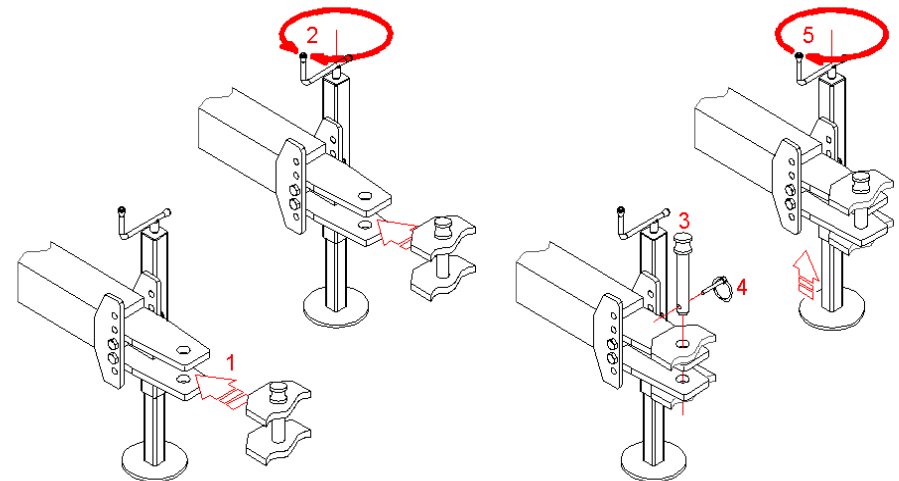
The rake, once it has been assembled, can be installed or hitched to a tractor.

C2 Hitching to the tractor

The rake can be hitched to the attachment of any agricultural tractor. To do so, the operator must move the rake slowly to a position where the joints can be easily aligned (1).

IMPORTANT

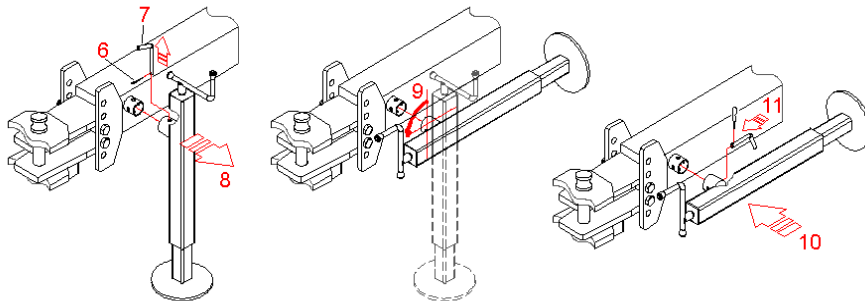
The holes in the tractor's attachment must be aligned with those on the rake's attachment with maximum care and attention.





When the tractor is near the rake's attachment, turn the lever on the foot support (2) to raise or lower the rake's attachment and bring it parallel with that on the tractor. You can then insert the locking pin (3) through the respective holes in the attachments, as illustrated below, and secure it in place with the respective safety pin (4).

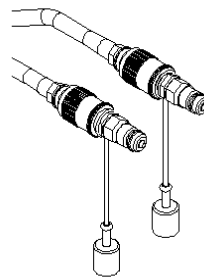
Next, turn the lever (5) on the support foot to raise the latter as high as necessary to move it from its position to that required for trailing the rake.



To move the foot: remove the R pin (6), take out the handle pin (7) and take the foot out of its housing (8). Next, turn the foot anti-clockwise (9) as illustrated and re-insert it in its housing (10). Insert the handle pin in its new housing (11) and fasten it with its respective R pin.

C3 Hydraulic connections

The hydraulic jacks serve to lower and raise the two moveable frames and, if available, the central kicker wheel, for setting up the rake in its transport or work configuration. The jacks are powered by the tractor's auxiliary circuit and controlled by means of the respective lever in the driver's cabin. The tubes of the jacks (fitted with quick couplings, as illustrated) must therefore be attached to the respective points on the tractor's auxiliary circuit.



C4 Removal

To remove the rake from the tractor, follow the above instructions in reverse order. The hydraulic connections have to be removed before the actual rake.

C5 Storing the rake

The Customer must set aside a large and easily accessible area on his premises where the rake can be stored. How to store the rake:

- Park the rake in a safe area set apart for the purpose. The area must be flat and even;
- Install the foot support supplied with the rake and stored in its relative housing on the frame, near the attachment;
- Detach the rake from the tractor, following the instructions in paragraph C2 and C3 in reverse order;
- Place protective material over the rake.

OPERATION and USE

D1 Preliminary information

Suitable and optimal use of the rake not only helps avoid accidents but is also the only way to ensure high yield and make use of the rake's full potential and performance.

As we have mentioned before, the rake must be used by a skilled adult operator trained in its use and operation. The operator must therefore have read and fully understood all the instructions in this manual as well as those on the labels and all safety regulations. This is to ensure the safety of the operator, other people and the rake.

Before starting up the tractor, you should always take the precautions stated in paragraph B2 under the heading "Use" and perform the preliminary checks below.

- Make sure the rake is properly fitted to the tractor;
- Make sure all the parts of the rake are in their intended position and are securely fitted;
- Carry out the daily maintenance checks stated in the respective paragraph. **Note:** *should the rake be returned to service after a long period of inactivity, make sure it is in perfect condition and that it has not been damaged in any way by poor weather or storage conditions.*

D2 Operation and use

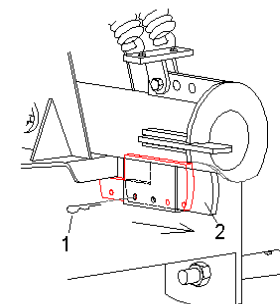
The rake must be taken to the work area according to the instructions in paragraph B2 under the heading "Moving the rake". At the work area, the operator should then do the following before using the rake:

- Prepare the rake for use (consult the photos and drawings in paragraph B2 under the heading "Moving the rake"):
 - a. Stop the tractor, apply the parking brake, take the key out of the ignition and descend from the tractor;
 - b. Remove the chain between the two tool carriers from the left side only. Attach the end of the chain (the end you have removed) to the right-hand support;

- c. Start up the tractor and use the control lever for the auxiliary hydraulic circuit (in the cabin) to lower the rake's moveable frames to the point where the teeth of the wheels are about 30-40 cm above the ground. **Note:** **a:** *if fitted, the optional central wheel (the kicker wheel), as illustrated, is lowered together with the two moveable frames as it has its own jack. - b:* *If necessary, it is possible to lower just one of the two moveable frames. To get it into its particular work configuration, as illustrated, simply close the left-hand hydraulic valve before lowering (OPTIONAL). In this way you lower only the right-hand frame and central wheel.*



- d. Release the moveable frames. Do this one at a time: remove the R pin (1) on the frame-locking bracket device and pull the latter (2) to free the frame from its respective stop. In this way, the wheels can adjust to and follow the contours of the ground. Fasten the device in its new position by inserting the R pin.



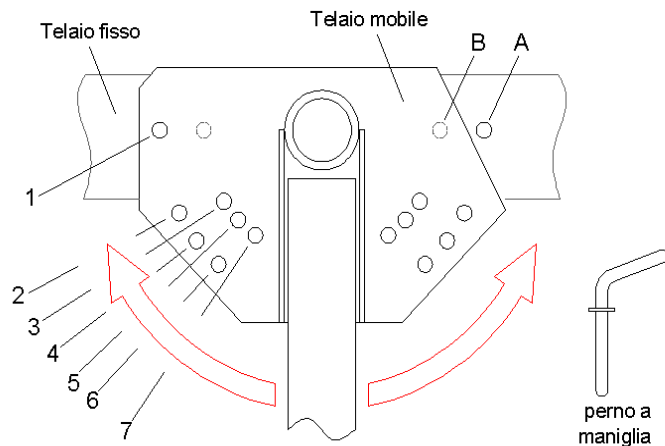
Dispositivo blocca-telaio



- To swath, spread or turn over forage or similar, the star wheels must be slightly inclined and the arms turned on their axes. Instructions are given below.

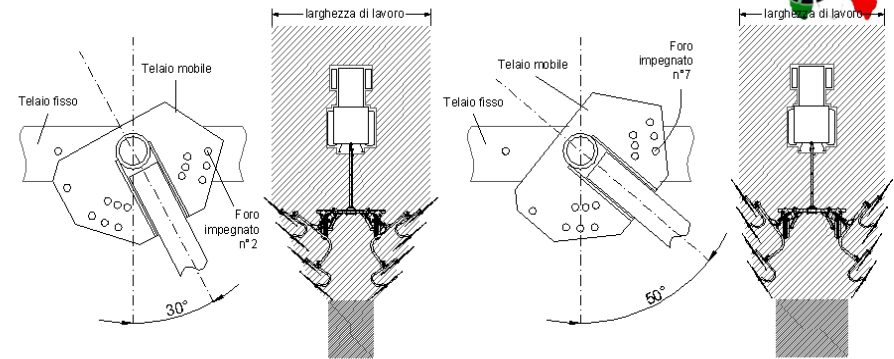
D2.1 Adjusting the inclination of the wheels

The wheels are inclined by turning the moveable frame (as illustrated), together with the arms and wheels, away from the fixed frame. The moveable frame must be as illustrated for transport, with the handle pin in hole 1 (and A below). To set up the moveable frame in its work configuration, you need to turn it in either direction and align the hole for the required inclination (2, 3, 4, 5, 6 or 7) with one of the two holes on the fixed frame (A or B), and fasten it in the required position by inserting the handle pin. The higher the number of the required hole (from 2 to 7), the lesser the inclination of the wheels and the narrower the swath.



D2.2 Work processes

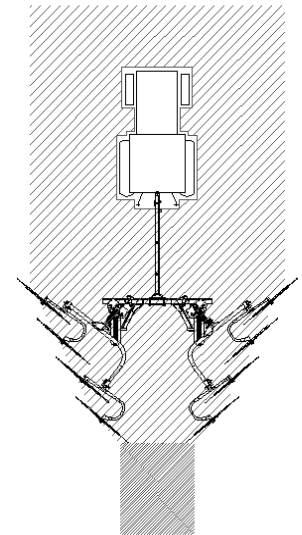
The rake is extremely easy to use in that it just has to be hitched onto the tractor and then trailed in the required direction. In this way, the teeth on the wheels are pulled along the surface of the ground as the rake is trailed; the turning effect of the wheels create swaths or turn or spread the cut forage.



IMPORTANT

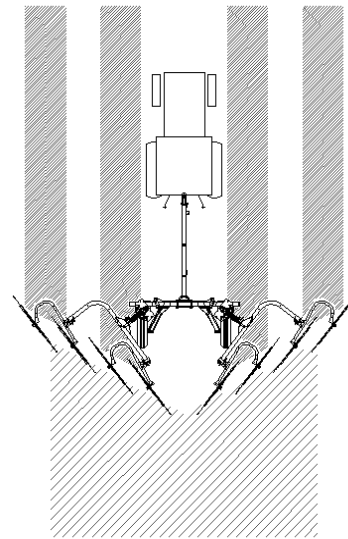
Make sure the moveable frame is unfastened before starting work. If it is still fastened, you need to remove the R pin (1) attached to the frame-locking device (2) and pull the latter to free the moveable frame from its respective stop. Lock the device in its new position by inserting the R pin.

- **Collection (swathing):** the position of the arms and their support should be as illustrated. In this configuration, the rake creates regular, uniform swaths as shown in the picture.
Note: as mentioned above, it is also possible to create lateral swaths when required (see step C of paragraph D2 "Operation and Use").
 Check for any people or animals in the immediate vicinity before boarding the tractor; if there are, ask them to move to a safe distance. Sit in the driver's seat, start up the tractor, release the parking brake and you can then start work.

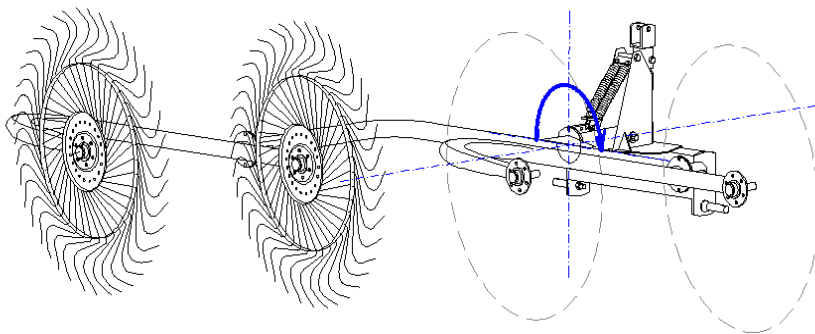




- **Spreading:** this allows you to spread and turn existing swaths, as illustrated. If the rake has been set up for swathing (as described previously), you will need to do the following, one frame at a time:



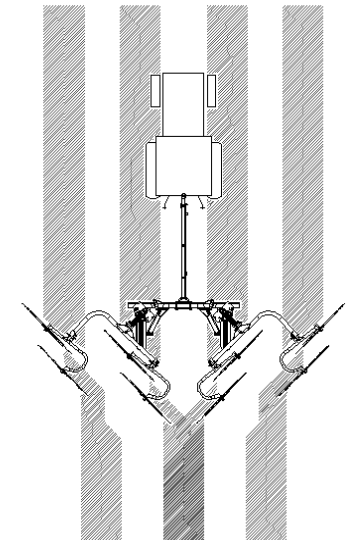
- The coupling and locking device on the frame (see the picture below): remove the R pin on the handle pin and remove the latter from its housing (hole);
- Release the coupling and locking device and turn the entire support, including the arms and wheels, 180° clockwise, as illustrated;
- Reconnect the support with the coupling and locking device, insert the handle pin in its respective hole and fasten it with its R pin;



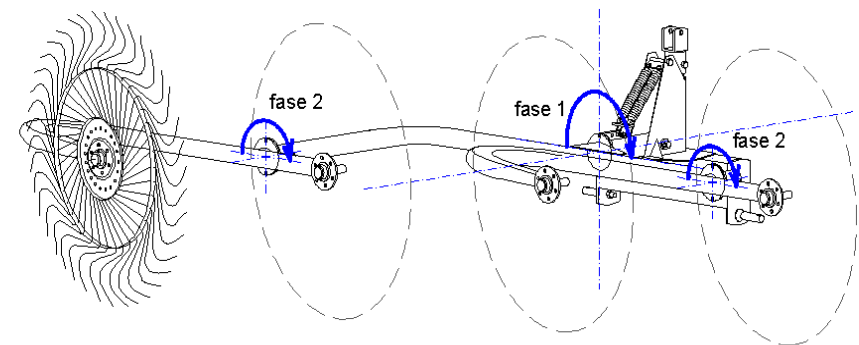
- Repeat this procedure for the other moveable frame.

Check for any people or animals in the immediate vicinity before boarding the tractor; if there are, ask them to move to a safe distance. Sit in the driver's seat, start up the tractor, release the parking brake and you can then start work.

- **Turning:** this allows you to turn swaths, as illustrated. If the rake has been set up for spreading (as described previously), you will need to do the following, one frame at a time:



- Turn the arm support as described previously under "Spreading" (**step 1**) and then turn the arms (**step 2**) as follows;
- The coupling and locking device on the outer attachment of the arm support: remove the R pin on the handle pin and extract the latter from its housing (hole);



- Release the coupling and locking device and turn the outer arm and wheels 180°; as shown in the picture (**step 2**);
- Turn the arm again with the coupling and locking device, insert the handle pin in the respective hole and fasten it with its R pin;
- Repeat this procedure for the other moveable frame.



Check for any people or animals in the immediate vicinity before boarding the tractor; if there are, ask them to move to a safe distance. Sit in the driver's seat, start up the tractor, release the parking brake and you can then start work.

• Notes

IMPORTANT

The tractor must be driven in a more or less straight line. To **change direction** a few metres before the end of the field, the driver needs to use the controls to raise the moveable frames.

The driver can change the direction of the tractor once the frames and forage have been raised. This might take several manouvers.

After changing direction, the driver can lower the moveable frames to continue work.

To move the forage in the area where the swath is formed you need to fit a central **kicker wheel** at the back of the fixed frame, as shown in the picture. It is supplied with an assembly kit and only on request.



Prior to work breaks (even short ones) the operator must always:

- Switch off the tractor's engine
- Apply the parking brake
- Place the gear stick in neutral
- Remove the keys from the ignition;

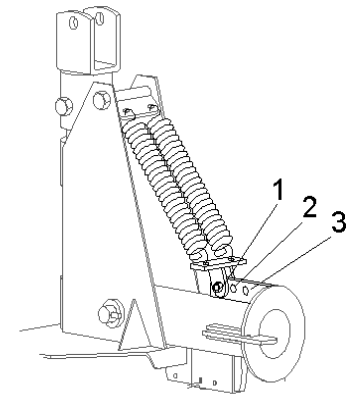
When the operator has finished work for the day, he must return the rake to its transport configuration before returning the tractor to its parking area.

Rake storage instructions are given in paragraph C5.

D2.3 Adjusting the springs

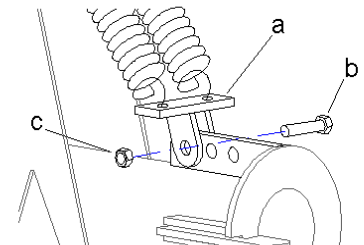
The wheels and their teeth conform to the ground according to the pressure of the springs on the arms' support and on the same arms.

There is a perforated hole at the base of the springs on the moveable frame, (as illustrated) that allows you to adjust the pressure of the springs. For instance, if the springs are associated with hole **1**, they will exercise greater pressure on the arm support and bring the wheels in closer contact with the ground. On the other hand, if the springs are associated with hole **3**, they will exercise less pressure on the support and the wheels are not in such close contact with the ground.



To change the pressure, simply unhook the springs from their lower support (a), fully undo the nut (c) and take the screw (b) right out of the support.

Put the support over the required hole, insert the screw and tighten this in place with the respective nut. Connect the springs to the support, lifting the support with the arms and wheels to make this operation easier.



MAINTENANCE

E1 Maintenance instructions

The Manufacturer has drawn up a rake maintenance schedule based on functional tests. This schedule, if followed assiduously by the Customer, can maintain the rake's working efficiency and capacity without risk of damage. The operator, who must be a qualified technician of working age, must follow these rules:

- All maintenance and repairs must never be left unfinished or postponed;
- The operator must never rely on his memory alone, but always read and follow the instructions in this manual without fail;
- The operator must install a **"Maintenance in progress"** sign in a prominent position on the tractor's dashboard before starting work. This ensures the operator's safety and can prevent damage to the rake.
- All maintenance must be carried out on a flat and well lit surface, with the rake standing in a stable position and the tractor at standstill, with the parking brake applied, the engine off and the keys removed from the ignition;
- Tools for maintenance must be used in accordance with relative accident prevention regulations. Equipment must not, therefore, be put to improper use, e.g. do not use petrol instead of detergent, or pliers instead of a wrench;
- Only use spare parts that are type approved or recommended by the Manufacturer.

After maintenance or repairs, always clear the area of any water, oil, grease, dirty cloths, tools and any other material.

IMPORTANT

Take extra care when checking for leaks of pressurized fluid as the fluid can leak out of tiny, virtually invisible holes, burn through skin and cause serious infections. You must therefore use safety glasses with side protection and a piece of cardboard or wood to look for leaks.

E2 Scheduled maintenance

Scheduled maintenance is purely informative and depends on normal operating conditions. It may therefore differ in relation to the type of service, working environment (which may be dusty), the season, etc. Maintenance should be stepped up the tougher the machine's operating conditions.

E2.1 Daily checks

Checks to be carried out on a daily basis before starting work:

- Check condition of all the fittings (tightness of connections, condition of sleeves and leaks or overflowing of hydraulic oil);

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

Checks to be carried out on a weekly basis or per 50 hours' operation:

- Check condition of all the labels;
- Check condition of all the fittings (tightness of connections, condition of sleeves and leaks or overflowing of hydraulic oil);
- Check the fasteners and safety devices are all fitted and in good condition;
- Make sure all the nuts and bolts are properly fastened;
- Check condition of the entire structure.

E3 Lubrication

To top up the greasers, remove their protection caps (if present), remove all traces of dust and then use the pump to inject the grease. Afterwards, use a cloth to remove any excess grease on the greasers. Use a brush to apply grease wherever there aren't any greasers.

Use only the type of grease recommended by the Manufacturer. All the top-up points are marked with labels like the one illustrated.



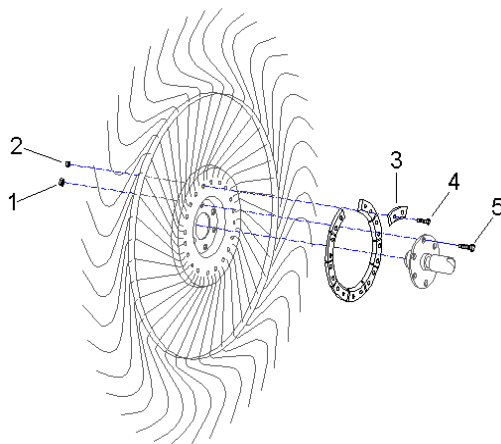
IMPORTANT

To avoid pollution, it is strictly forbidden to dispose of oil, lubricants, filter cartridges or other noxious materials in the environment. Comply with all regulations in force on the disposal of liquid and solid substances.



E4 Replacing a wheel and/or its teeth:

If you need to replace a wheel, fully undo the six retainer nuts (1), undo the respective screws (5) and remove the wheel from its coupling (or hub).



Put on a new wheel, do up the six screws and then also the respective nuts.

Teeth: if you need to replace one or more of the teeth (being worn or broken), you must remove the respective retainer plate (3). To do this, fully undo the two retainer nuts (2) and the respective screws (4). You can then remove the plate and teeth.

Put in the new teeth, reinstall the plate, then do up the two retainer screws and respective nuts.

E5 Troubleshooting

The jack activation command does not respond	Hydraulic oil level low	Top up oil level
	Hydraulic system piping is damaged	Replace piping
	Hydraulic pump is damaged	Replace pump
	Filter is clogged	Replace filter
The jacks only move intermittently	Air in the hydraulic circuit	Operate the pump at no load for a few minutes, using the jacks, to expel any

		air in the hydraulic circuit.
The jacks move even when the command isn't given	Jack seals are worn out	Replace seals
Overheated oil	Filter is clogged	Replace filter
	Pipes are crushed	Check and replace pipes
	Oil level low	Top up oil level
Oil loss	Slow connection	Squeeze the pipe
	Worn out seal	Replace the seal

Note: contact the Manufacturer about any faults or trouble not mentioned in the table.

E1 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:

- steel
- iron
- hydraulic oil
- rubber
- plastics

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