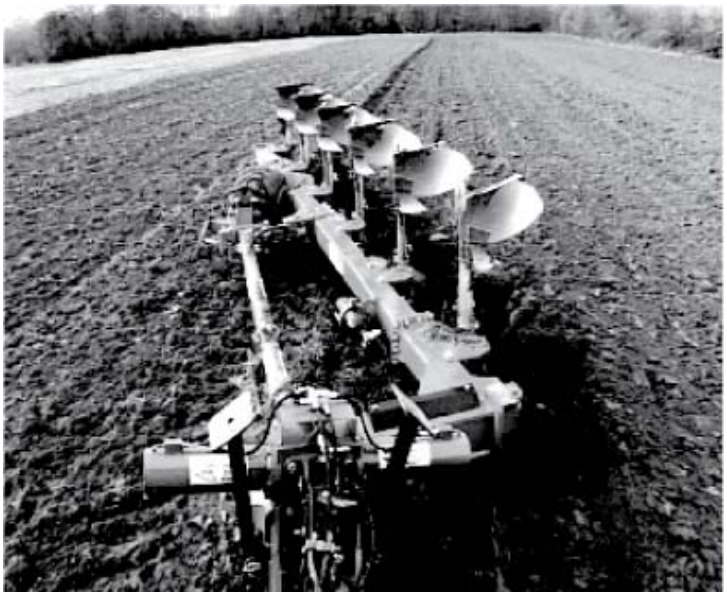
Grégoire Besson

Together into the future

SP9 COMPACT

REVERSIBLE SEMI-MOUNTED SINGLE WHEEL PLOUGH

INSTRUCTION OF UTILIZATION AND MAINTENANCE



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CONTENT OF INSTRUCTION MANUAL

ACKNOWLEDGEMENT OF RECEIPTE AND MACHINE REGISTRATION FORM NEEDED FOR GRÉGOIRE-BESSON GUARANTEE

The GRÉGOIRE-BESSON machine guarantee will be registered if the acknowledgement receipt and registration form are signed by the middleman the user of the first delivery /the customer fills in and signs it then the dealer sends it to the GRÉGOIRE-BESSON company during the first 30 days of delivery/.
The missing of it means that the guarantee may be refused..

Type / Model *Number of plough bottoms* *Plough bottom distance*

Number of series *Date of delivery to the client*

By signing the dealer confirms the following:

- The machine has been assembled properly as it was ordered,
- The working width is adjusted accordingly
- The plough bottoms are mounted properly, as well as its types and alignment, options (jointers, deflectors, coulters …)
- All screws, bolts and screw nuts have been fixed properly. Check if the wheel screws have been loosened during the transportation
- The ordered tyres have been mounted and blown up to the recommended pressure (see Instruction)
- The pulling equipment of the machine is cimopatible to the tractor (the type of the equipment, hydraulic connections, electric joints, flexible pipes leakance),
- The machine greasing and lubrication has been performed properly. Every lubricator is on its place.
- The moving parts are not jammed,
- The hydraulic circuit works properly (the hydraulic circuit is charged, the security cylinders and valves operational, there is not any leakage, the cables are not damaged)
- All security equipment planned by a cunstructor has been mounted.
- The customer/user has been informed about the machine usage, its security, adjustment and maintenance,
- The customer/user has been informed about the conditions and methods of the guarantee
- The Instruction has been given. The client is asked to read the Instruction Manual as well as to follow the rules of maintenance, adjustment and security.

By the signature the Client confirmes the following:

The security equipment on the machine as well as the instructions in the Manual have been explained to the Client and have been understood,
The client has been informed about utilization, security and maintenance.
The Manual has been given to the client and he has been informed that it is important to read it to get knowledge about security, adjustment and maintenance as well as the following of the rules of this instruction.
Acceptance of the guarantee conditions,
The acceptance of the machine equipment.

Dealer : ……..
Address : ……
City : ……..
Code: ……..
Phone: ……..
Name: ……
Signature: ……..

Dealer : ……
Address : ……..
City : ……..
Code: ……
Phone: ……..
Name:: ……
Signature: ……

White copy: should be sent to Grégoire-Bessonl
Yellow copy: has the Dealer
Pink copy: has the Client

Operation manual SP 9 - Compact

1. INTRODUCTION

1.1. . ACKNOWLEDGEMENT

The GRÉGOIRE-BESSON company thanks the owner of the new plough for choosing the GRÉGOIRE-BESSON brand and service.

1.2. CONDITIONS OF UTILIZATION

The design and development of the plough has been performed under strict conditions. Nevertheless it is an agricultural machine which should be used accordingly. The usage should be performed on such fields where cultivation is performed accordingly to the agronomical rules. The GRÉGOIRE-BESSON machines under no conditions should be used for ground leveling, earthing, or as a ripper or for forest cultivating or uncultivated lands. Never use the machine for lifting people or materials. If you want to get the optimal result you should use and maintain the plough accordingly as it is shown in the Instruction.

The aim of this Instruction is to make the usage, adjustment and maintenance of the machine easier

 For your security and safety before using any agricultural machine read its Instruction to the end or ask this machine operator to do it. Be sure that potencial users have read the Instruction and have understood it.

 **Systematically check the machine, examine its adjustment and the fastening of the screws and pins.**

 **Do not perform any changes of the machine or its additions (technical, electrical, hydraulic or pneumatic) without asking for written permission from the Grégoire Besson company.**

 **Use the equipment accordingly. Take into consideration signals of danger and use protective equipment.**

 **During the GRÉGOIRE-BESSON machine usage you should take into consideration the given country rules and laws about the prevention of accidents. You should follow the traffic and medical rules.**

 **The security regulations in this Instruction are not restrictive.**

It may be dangeorus not follow these rules. The Grégoira Besson company is not responsible for any accident or damage.

For further consultations keep this Instruction near by at you work place.

The Instruction should be counted as the element of the machine and as accessory at the selling.

The information in this Instruction is up-to-date nevertheless definite changes can be performed.

The GRÉGOIRE-BESSON COMPANY has all rights to change the machine appearance and characteristics without any advanced announcement or obligation even on already manufactured machines or machines being on sale.

1.3. GRÉGOIRE-BESSON GUARANTEE

The general conditions for GRÉGOIRE-BESSON confirmation and guarantee can be found at the dealer's.

The guarantee is the part of GRÉGOIRE-BESSON service program which is given to such a client who wants to use and maintain the equipment in the way which is shown in this Instruction.

The guarantee is not available for those who damage the equipment or perform such changes on the machine which are not agreeable with the definition of the manufacturer.

The guarantee is not available for those who do not use the spare parts produced by GRÉGOIRE-BESSON company.

1.4. IDENTIFICATION OF THE MACHINE

Write down into the rubrics the type/model of the machine, number of series and the date of the purchasing. (the table on the pulling equipment).
Use this number when you want to order spare parts from the dealer. The service will be more precise.

Date of purchasing	: ……
Model	: ……
Number of series	: ……
Address and phone of the dealer	: ……

Do not take off the manufacturer table as well as CE signalization table fixed on the machine.

1.5. IDENTIFICATION OF WEARING PARTS

To make the order of the wearing parts easy it is recommended to put down the identification number of the spare parts of the plough:

Designation	**Reference Left spare parts**	**Reference Right spare parts**	
Turning chisel end	……	……	
Chisel end screw	……	……	
Screw +nut	……		(left & right)
Square chisel end	……		(left & right)
Coulter	……	……	
Coulter screw (screw + nut)	……		(left & right)
Plough end	……	……	
Plough end screw (screw + nut)	……		(left & right)
Breast	……	……	
Breast screw (screw + nut)	……		(left & right)
	……		(left & right)
Plough sole	……		(left & right)
Plough sole screw (screw + nut)	……		(left & right)
Plough sole supporter	……		(left & right)
Plough sole supporter screw	……		(left & right)
Jointer coulter	……	……	
Jointer coulter screw (screw + nut)	……		(left & right)
Jointer breast	……	……	
Jointer breast screw	……		(left & right)
Security pins of the elements	……		(left & right)
Security pin of the coulter	……		(left & right)
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	
Other	……	……	

Operation manual SP 9 - Compact

2. General safety

2.1. Prudence of plough usage

During the usage and maintenance of the plough we should be always careful. We should follow every safety rules described in the instruction.

Before the usage the operator should know how to operate the machine. The tractor driving can be performed only by a qualified person who knows the Traffic Rules as he has to drive on the public roads.

We should be sure, calm and moderate. It is not necessary to use the total engine power at the end of the field, on the roads or in the traffic (while going across a village).

We should be careful and pay attention to other vehicles or pedestrians. Before starting the machine be sure that there is nobody near it.

If there are children you should be especially attentive.

If any part of the instruction is not clear enough or should be explained, turn to our GRÉGOIRE-BESSON local dealer.

THE PRUDENT MACHINE-OPERATOR IS THE BEST GUARANTEE AGAINST ACCIDENTS

2.2. VISUAL INSPECTION

Check the plough attachments before the usage to be sure that there are not any loose bolts or abraded spare part or damaged welding. Perform the necessary reparations or turn to the local dealer or service. After the maintenance make it sure that everything is in the perfect order, that every spare part or implement is on its place. During the designing or developing of a new machine the most important thing is the safety of the user. The designers built into the machine different safety systems. But you users and owners are responsible for the rules observing.

2.3. THE SIGNS FOR COMPREHENSION OF THE INFORMATION

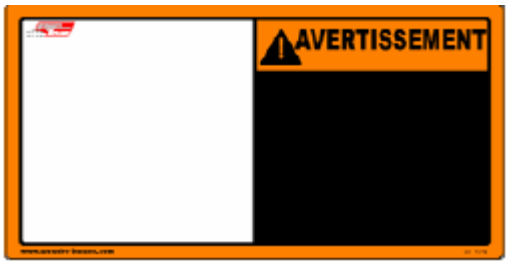
This symbol means alertness.
Be alert, it you see this symbol on the machine or in the instruction, because there can be danger for your life or you can be injured or the machine can be damaged. Make all the necessary precautions and be prudent.

Be especially careful if on the machine or in the instruction you find such warnings. **DANGER, AVERTISSEMENT / WARNING, ATTENTION / CAUTION**

These signs mean different degrees of danger and usually placed the unsafe places of risks.

DANGER: means the most dangerous places.

The sign DANGER directly shows the place of risk.
If you do not change the situation immediately it may cause serious injury or even death.



ALERT/ WARNING : means potential danger. If we do not follow the warnings, such situation can lead to a serious injury or even deathtrap. These warnings show the risks during the removing of the protective equipment or blocking elements. We can see the same warning signs if the utilization is not correct or dangerous.

The DANGER or AVERTISSEMENT signs are placed near places of danger or risks.

ATTENTION / CAUTION : shows possibility of danger.
If this dangerous situation is not eliminated it can cause small or middle injuries
The ATTENTION shows the most general dangerous situation.

2.4. SECURE MATRICES

The secure matrices must be well read without any damages.
If it is necessary the sound matrices should be acquired at the local GRÉGOIRE-BESSON dealer instead of damaged.

READ THE MAINTENANCE INSTRUCTIONS

Before the operation read the safety rules and maintenance instructions and while using the machine take it into the consideration.

Reference: UI 1810

BLOCKING BEFORE THE OPRTATION

Before any action on the machine, use the blocking system.

Reference number: UI 1812

GO AWAY AND STAY FAR FROM THE MACHINE

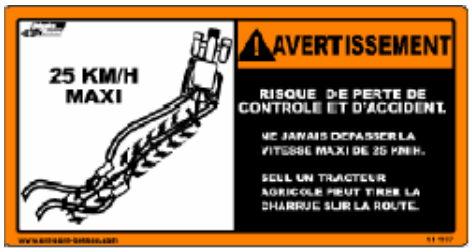
Danger in the working zone.

Reference : UI 1805

LIQUID LEAKAGE AND MAINTENANCE

Be careful of the liquid leakage
under the pressure.

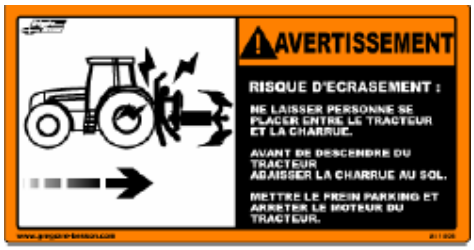
Reference: UI 1804



TRANSPORTING ON THE ROAD

Keep the speed limit

Reference : UI 1807



EKE FELKAPCSOLÁSA

During the plough attachment immobilize the tractor and follow the safety rules.

Reference: UI 1806

DO NOT MOUNT THE PLOUGH

Keep the safety distance from the moving plough.

Reference : UI 1802

DO NOT STAY UNDER THE PLOUGH

Before any intervention place the plough on the ground.

Reference: UI1811

DO NOT PERFORM ANY MODIFICATION IN THE HYDRAULIC ACCUMULATORS

You must not execute any modification on the hydraulic elements.

Reference: UI 1801

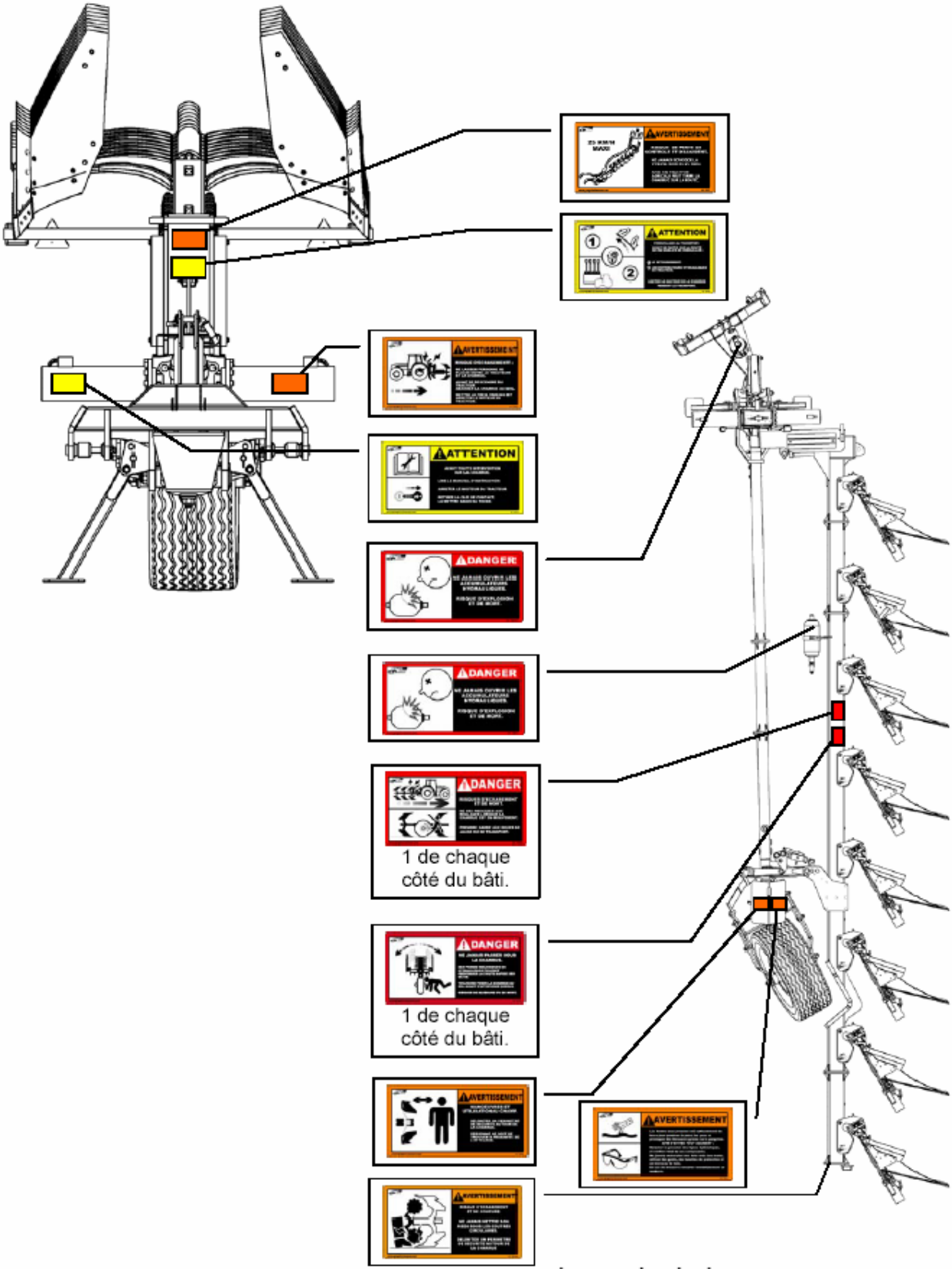
DO NOT PUT YOU FOOT UNDER THE DISC COULTER

Keep the distance if the plough has been put on the ground.

Reference: UI 1813

Follow the instructions during the maintenance.

The placement of the safety matrices on the Compact plough.



2.5. FOLLOW THE SAFETY INSTRUCTIONS

Have time to read the safety instructions or the messages on the mounted matrices.

The safety matrices should be in good condition.

Put the new ones instead of damaged or missed matrices!

Do not remove safety elements!

Control if all the new spare parts are provided with suitable safety signs!

The changeable matrices and safety signs can be got at the local GRÉGOIRE-BESSON dealer.

Learn the acceptable machine utilization.
Acquire reasonable and acceptable adjustments.

- Do not stop learning before your acquire everything!
- Do not allow to use the machine to such a person who has not participated in the training!

Keep the machine in good condition. The unacceptable maintenance and modifications can damage the plough operation, its safety, its endurance and durability. The GRÉGOIRE-BESSON company is not responsible for performance of any modification on the original construction.

2.6. BE PREPARED FOR CRITIC SITUATIONS

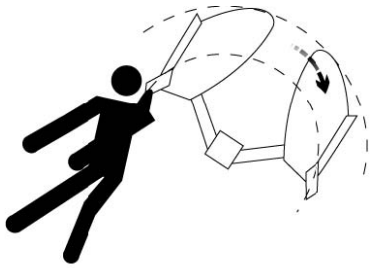
<u>Show precautious attitude:</u>

- Always think of possibility of fire formation!
- Fire-extinguisher and first-aid pack should always be near by.

<u>For the prevention from the fire:</u>

- Keep the machine and accessories clean!
- Clean the plough from plants, straw and leaves, as well as from the lubricant overflow!
- Systematically check the fire-extinguishers and be sure that they have enough coagulation!
-
- After the usage the first-aid pack should be filled again!
- Have the telephone with aid numbers (doctor, ambulance, hospital, fire-brigade and service) near by!
- If the operator or mechanic works alone let his family or neighbors know about the type of his work, the place and the time of coming back!
- They should have CB radio or (charged) mobile telephone to get quick help in the case of emergency.

2.7. DO NOT WEAR LOOSE CLOTHES



Do not wear large clothes, because they can be caught in the machine or in moving spare parts and some parts of your body can be rived. For the work you should wear suitable and of good size clothes. If you have long hair you must bind up it.. Rings, watches or other jewelry can be caught that is why you must take them off before every maintenance or adjustment.

2.8. WEAR PROTECTIVE CLOTHES

The usage and maintenance of a plough requires special clothes wearing, for instance, secure boots (thick), gloves and goggles (shield).

Besides the prolonged noise injury can cause impairment of hearing or even surdity.

Wear protecting auditive appliance for example, ear-protector or ear-plug to reduce the noise in the working environment.

Wear protecting auditive appliance for example, ear-protector or ear-plug to reduce the noise in the working environment.

If special mechanical work should be done, use secure and protective equipment and other means (protective masks, eye-preserves, welder's helmet etc.)

This equipment can be got at your dealer or middleman.

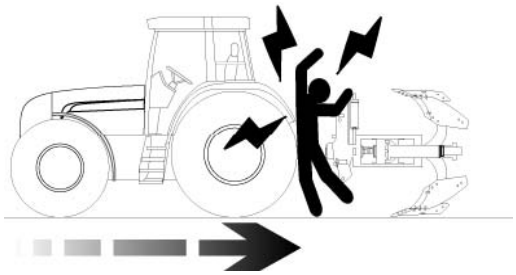
2.9. BE CAREFUL AT STARTING IN ORDER TO AVOID DRIVING OVER

Avoid all such damage or danger of being driven over.

- Do not try to start the engine with short-circuit because the tractor can start at a high speed abruptly.

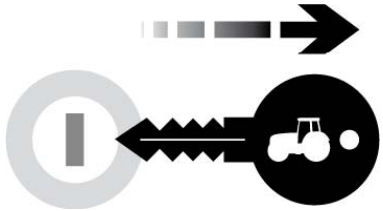
- Do not start the tractor from outside standing on the ground. Start it only being in the cabin!

2.10 BE CAREFUL OF THE DANGER DURING THE PLOUGH ATTECHMENT AND UNHITCHING



- DO NOT ALLOW ANYBODY to stay between the tractor and the plough especially during the plough attachment and unhitching while reversing.
- Before getting of the tractor to unhitch the plough put the gear into the «Parking» position, put on the brake, stop the engine, take out the starting key and put it into your pocket.
- Before unhitching the plough put it totally down on the soil, control if the brake-block is on the plane solid surface of the ground.

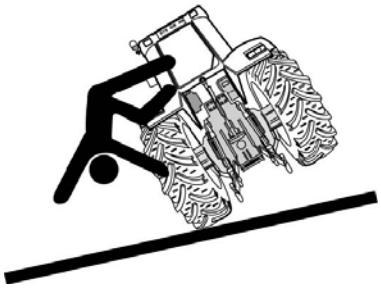
2.11 TAKE THE STARTING KEY OUT



- When you stop the tractor only on short period of time, put the gear in the „Parking" position, put on the hand-brake and stop the engine.
- Take out the key and put it into your pocket.
- Never leave the driving cabin before having put the plough on the soil.

2.12 THE RISK OF TRACTOR OVERTURNING

- Be careful going up or down the hills!
- The tractor can be overturned because the soil can be hilly or because of animals underground holes.

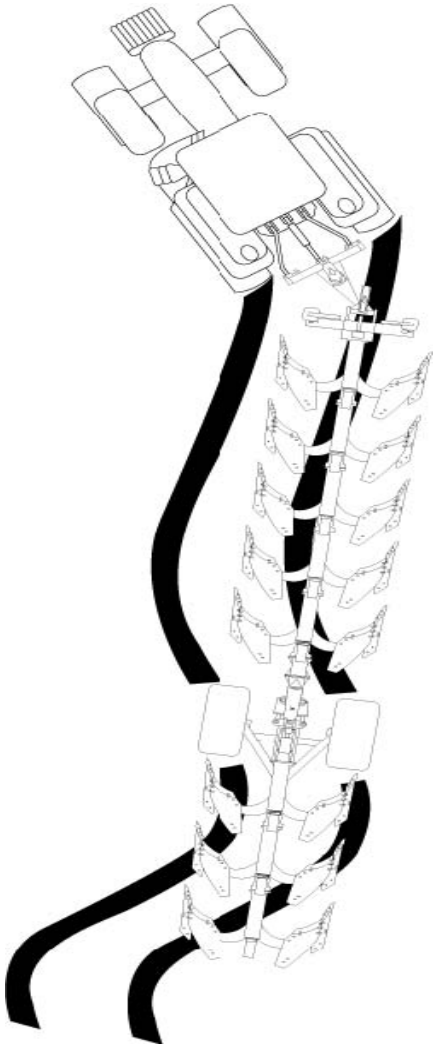


- Do not go near to ditches or rivers. Water and animals can gully out a hole which may collapse under the mass of a tractor.
- Check the ground by standing on it before you go there by tractor.

2.13 BE PRUDENT WHILE DRIVING ON ROADS

When you are driving on the road ploughs must be put in the transporting position.

- During maneuver be sure there is nobody near the plough
- Control the attachment of the 3 point mounting of the shaft (the presence of secure bolts and secure pins) and the blocking of the reverse during the transporting.



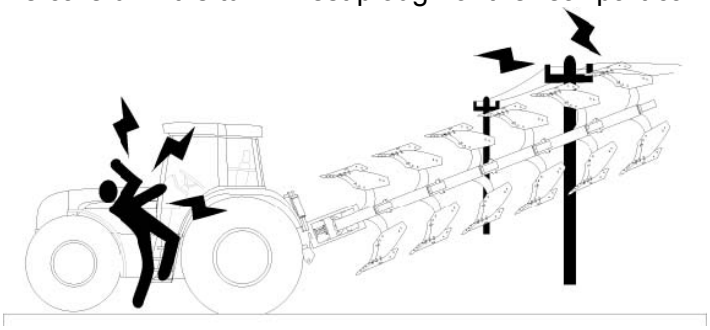
After the preparation for transporting let the transportation wheels down and tractor lifting device in such a way that tilting of the lifting lever should be reduced. Take care that the rear depth adjusting wheel should be untouched.

- Connect back to maximum the hydraulic working width and the cylinder performing the front furrow regulation. With this performance the center of the plough can be put lower.
- If the plough is in the transporting position, from the cabin we should block the unnecessary controlling levers (or hydraulic distributor). This way you can avoid every accidental motion.
- Only an agricultural tractor must be used for plough pulling on roads. This tractor should have the same size and power as for plough. Do not use other vehicles or tractors with less power or mass.
- The speed should be suitable to be possible to rule the machine under any other conditions. Keep all the rules of driving and speed limit. Low the speed at the bends and take into the consideration maneuver of other vehicles.
- Choose the speed and driving style accordingly with the area and traffic conditions. Be very careful and prudent!
- Under all conditions and mainly going down or up the hills drive at low speed, first of all at the bends and avoid sudden directional change.
- Moving down or up the hills avoid abrupt braking or starting.
- If you use the machine on the roads, follow Highway Code. The owner or the user must be informed about the rules in the given country. They should follow the rules and ask the dealers to equip the machines with required devices.

In the case of mounted ploughs you should pay great attention to the traffic especially in the round-about do not allow other vehicles to come closer to the plough. Take into the consideration the plough swinging!
During the transportation do not let tractor to change the direction because of the plough wheels going on the hilly roads in order not to cause the accident.
The bolts, screws can be loosened because of the vibration. You must always control their fastening before participating in the traffic.
Be attentive with other drivers. It makes the good connection with your neighbors easier and contribute to the positive image of agricultural world.

2.14 PAY ATTENTION TO THE ELECTRICAL WIRES

Pay close attention especially when you maneuver near the electrical wires. The electrical shock exists even if you do not touch them. They may cause serious injury or even death.
Especially pay attention if the tractor equipped with the accumulator charging unit.
Be careful if it is turn-wrest plough or the rear part can be hydraulically turned up.



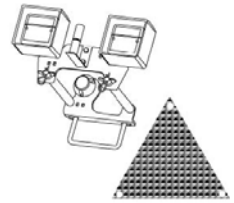
- Keep the safety distance between the plough and electrical wires especially during the maneuvered as well as during going up and down.
- If the machine touches electric wires we must stop the machine and put on the brakes.
- Make sure that you can move out of the present situation without touching the electrical wires.
- Do not touch the electric wires till the voltage has been eliminated.
- Everybody who tries to approach the machine must be warned and asked not to touch the machine till the voltage has been eliminated.
- Take into the consideration the radio or CB aerials or any other later mounted supplements which can change the height of the machine.

2.15 SIGNAL THE POSITION OF THE MACHINE

Systematically examine the condition of the lamps and reflectors according to the rules. Use them accordingly, clean them, they must work correctly and be seen by other drivers.

- Keep the safety equipment in good condition.

- Clean the equipment from dirt, dust and other residues.
- Change the burnt lamps, repair or change damaged or lost signals.
- Head lamps, flash signals, blinker lights and red reflectors must be used accordingly on the tractor and on the plough as well during the day time and during the night.



- Place the slow vehicle sign or use the head lights during transporting on the roads.
- The signals kit can be purchased at the GRÉGOIRE-BESSON dealer.

The owner or the user are responsible for well-seen signals during the traction and for keeping laws and rules.

2.16. CHECK THE WHEELS (TORQUE, STATE AND PRESSURE)

BEFORE DRIVING ON THE ROAD, CHECK THE WHEELS BOLTS, THEIR FASTENING, AND IF IT IS NECESSARY, DRAW THEM, SYSTEMATICALLY CHECK THE PRESSURE.

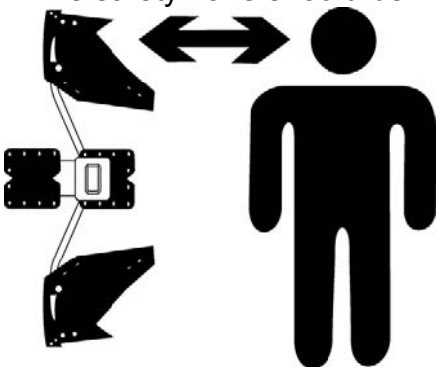
- Examine the tyres at every wheel, inner tube, hubs and hub bolts.
- Never drive with very high or very low wheel pressure, if there are cuttings or tyres are damaged or wheel bolts are loosen or missed.

- If the pressure in the wheel is too high or too low there is the danger that the plough begins to jump.

ATTENTION :
The plough with boltered lock-jointed tyres requires more attention than finned profiled wheels. Because on the land the vibration of the boltered lock-jointed tyres is greater on the roads than in the case of plane tyres. So wheel bolts can be easily loosened.

2.17. UTILIZATION AND MANOUEVRE ON THE LAND

- The safety zone should be marked for other persons.

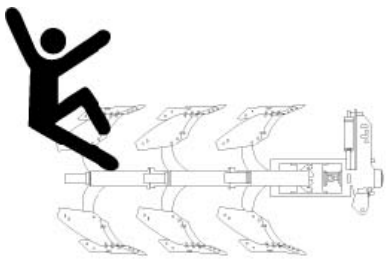


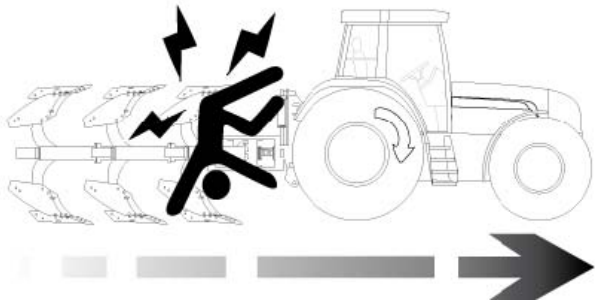
- Be sure that there is nobody near the area of plough operation.
- Be sure that there is enough place for safety maneuvering of the pulled unit.
- At the end of the field reduce the speed at cornering.
- Pay attention that rear tyres of the tractor do not touch the plough during the abrupt cornering.

Children must be kept away from the machine.

2.18. NEVER MOUNT THE PLOUGH

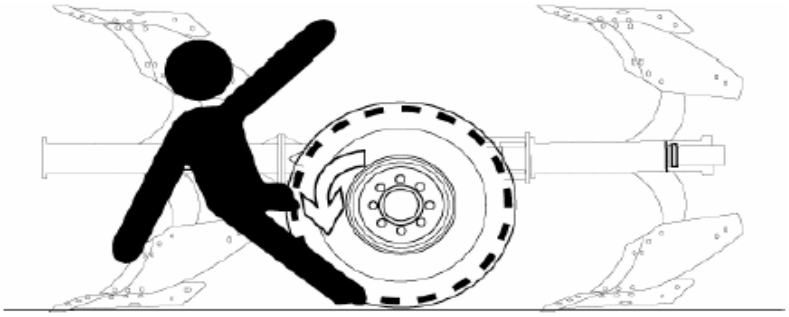
DANGER Either during parking or during moving - NEVER mount the plough..





2.19. DO NOT PERFORM ADJUSTING ON THE MOVING PLOUGH

<u>DANGER</u> IS SERIOUS INJURY OR DANGER! NEVER TRY TO ADJUST, CLEAN OR GREASE THE MOVING PLOUGH!

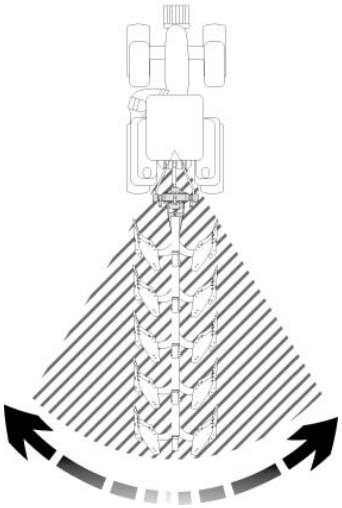


If somebody tries to do any repair work on the moving plough, it can be very dangerous because of sudden jerking or losing the balance or abrupt maneuvered or because of something else the foot or leg can slide and be caught by the machine. Because of the falling the person can be injured or even killed. It is serious risk of life!

2.20. WATCH THE DANGER OF CUTTING OR GETTING NIPPED

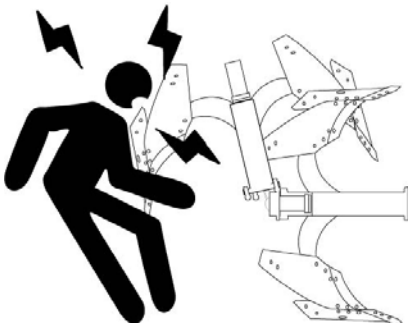
- Never interfere with your hand or foot into the moving parts.
- The mobile, moving parts can cause cutting, getting nipped or getting injured during the plough work or attaching on or off.
- If the plough is equipped with disc coulters they may cause serious injury if you fall under the plough.
- They can be fatal injuries.
- . Be very careful of different injuries, cuttings and getting nipped. Your hands and feet or legs are the most endangering parts of your body.

2.21. BE ATTENTIVE WITH SWINGING



Be careful during the swinging of the moving parts (front furrow width, changeable width, securities, lifting, plough turning up, reversing etc.). Pay attention that nobody and nothing should be in the area of plough motion. And even pay double attention during maneuver, change of direction or backing.

2.22. PAY ATTENTION TO THE PARTS UNDER PRESSURE



Nobody must stay behind the plough safety (non-stop or shearing) or any other unit under pressure. A bolt, spring, oil or any part of the machine being disengaged can cause serious injury or even death.
The rear window of the driving cabin must not be opened during the work or movement.

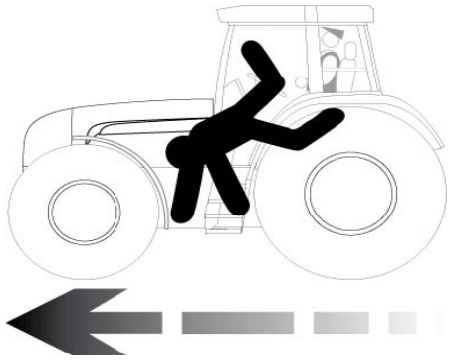
DO NOT LET ANYBODY APPROACH THE NON-STOP SECURITIES OR ANY OTHER CONNECTING POINT OF THE SHAFT.
Do not touch sticked securities. Connect the GRÉGOIRE-BESSON dealers.

2.23. PAS DE PASSAGERS DANS LE TRACTEUR

2.23. NO PASSANGERS ON THE TRACTOR

Only tractor driver can be on the tractor. **NOBODY ELSE ! ! !**

The most frequent cause of death or injury is that the passanger falls out and is run over by the tractor.



- YOU MUST NOT TAKE ANY PASSANGER.
- During jerking a passenger can fall out of the tractor.
- They obstacle the view of the tractor driver and can move at a very bad time and move the direction levers. Such usage of the machine can not be called careful!
- Do not let approach the machine to any visitor especially children. Keep the safety distance near the tractive equipment being in motion.

- During the usage only ONE person can stay in the tractor and it is the tractor driver.

2.24. PAY ATTENTION TO THE FLUIDS AND GASES UNDER THE PRESSURE

- Because of outflow of fluids under the pressure you can be injured if it penetrates on your skin or into your eyes.
- In order to avoid the accident before the connecting or disconnecting the hydraulic tubes you must always cease the pressure. That is why after stopping the tractor and disengaging the plough and putting it on the ground, move the hydraulic distribution lever from the front – back in order to discharge the oil from the pressure.
- Before the putting the hydraulic system under the pressure examine the units, connecting parts (joining, tubes, their flexibility) if they are under the suitable conditions.

- Wear thick gloves and goggles!.
- NEVER try to find leakage with your hand.
- Use a stick and wear thick leather gloves.
- For the better safety use suitable goggles.
- Keep away from any kind of leakage!
- If because of any fluid under the pressure you are injured at once to see a doctor! Any fluid which penetrated onto your skin, remove it as quickly as possible or it may cause gangrene which leads to amputation or even death.
- Every doctor who do not know this type of injury should turn to the specialist.

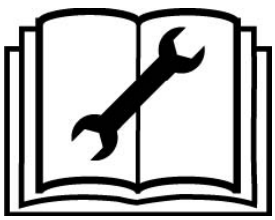
2.25. PRECAUTIONS IN THE CASE OF PLOUGH WITH LARGE QUANTITY OF RESIDUE OR VEGETATION

If we use the plough on such fields where there is large quantity of stubble residue or vegetation (corn, green manure) it is important to examine if the bottom pins of the pulling device have been properly attached and the present of the safety-pin as the corn stems sometimes can tear them out.

Under such conditions it is recommended to mount the safety-pin protection or use lock bolt or brake-screws. Connect the GRÉGOIRE-BESSON dealer who can give you good advice.

2.26. PREPARATIONS FOR MAINTENANCE AND SERVICE

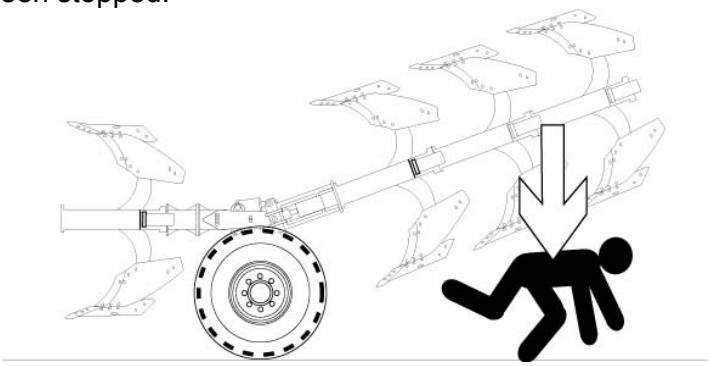
- The machine owner or user is responsible for maintenance.
- Before every usage examine the equipment and machine blocking system.
- Systematically examine the connections and tubes condition.
- Be completely aware of the machine maintenance before you perform any the smallest intervention.



- The instructions about precautions of maintenance and usage of the machine you can fin din the chapter „Greasing and maintenance”.

2.27. PRECAUTIONS IN THE MACHINE-SHED

- At placing the plough in the machine-shed always put it on the ground which must be clean, even and stable.
- Use the brake-block to prevent the plough from moving during or after the disengagement.
- Put the support under the plough wheels.
- NEVER leave the machine in the lifted or instable position.
- Suppress in the hydraulic circulation the pressure with the help of the moving levers back after the tractor engine has been stopped.



- The plough should be place far from any human activity.
- The plough must be put in dry, dust-free place with retracted cylinder bars in order to avoid formation of rust.
- Certain wheels can freely circulate, never lean over them or put something on them which can fall.

ATTENTION: Do not allow children to play near or on the plough.

2.28. MEMENTO

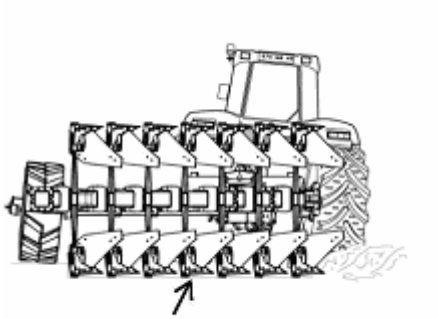
The best assurance against the accidents is ATTENTION AND PRUDENCE of a user.
If you are very tired or in a hurry the possibility of the accident will increase.
If you have any questions about any part of the instruction or about the machine itself connect the GRÉGOIRE-BESSON dealer or constructor.

3. . DESCRIPTION OF THE PLOUGH

A GRÉGOIRE BESSON SP 9 Compact is semi-mounted, reversible, articulated plough with 4 to 8 plough heads.

3.1. GENERAL CHARACTERISTICS

3.1.1. DETERMINATION OF THE RIGHT AND LEFT SIDE OF THE PLOUGH



The partrs on the ground are right parts

The right and left side can be defined if we stand behind the machine in the direction of the tractor and look in the directiion of pulling.

We use the same principle during the definition of the wearing parts (blades, breasts, gib heads etc.) Following this principle the blade mounted to the right side is called right-handed, if the breast puts soil to the right side, it is right-handed breast.

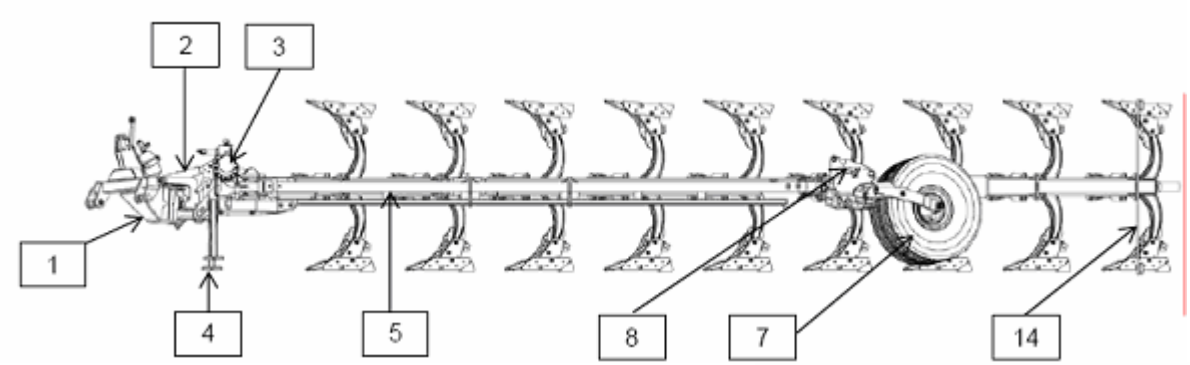
3.1.2. THE IDENTIFICATION OF THE RIGHT OR LEFT WEARING PARTS

On the reversible ploughs most of the wearing parts have right or left identification. These parts comparing to the direction of the plough going are symmetrical.

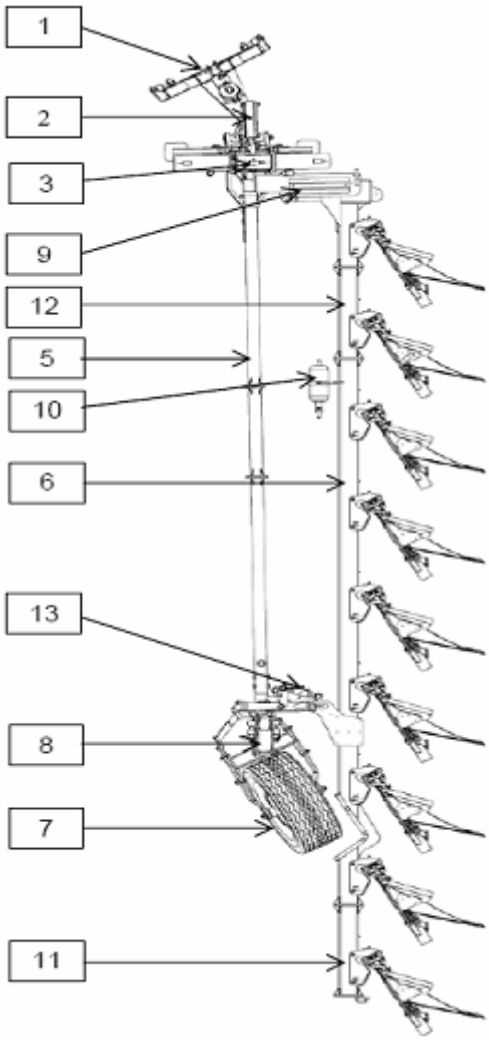
So it if difficult to decide where to mount this part to the right or left side. For the easier recognition of the part the GRÉGOIRE-BESSON applies a very simple principle. On every wearing part for identification of the right or left side the number has been If the last number of the identification is even – it is the right hand part, if the last number of the identification if odd – it is left-hand part.
Ha az azonosítási szám PÁROS SZÁMJEGYRE végződik => JOBBOS DARAB,
ha az azonosítási szám PÁRATLAN SZÁMJEGYRE végződik => BALOS DARABRÓL van szó.

The presence of the GRÉGOIRE-BESSON logo on the wearing part quarantee that it is original GRÉGOIRE-BESSON spare part.

3.2. GENERAL VIEW



1 Pulling cross-rod
2 Hydraulic compensation cylinder
3 Reverse
4 Brake block
5 Bar of stabilizatiion
6. Beam
7. Wheel
8. Arm lifting cylinder
9. First furrow adjusting cylinder (déport)
10. Hydraulic accumulator for security pins adjustment
11. Front additional plough bottoms
12. Rear additional plough bottoms
13. Arm of wheel directing (optionally cylinder)
14. Signalisation with control



3.3. The SP 9- Compact PLOUGH SPECIFICATION

Parts	Standard equipment	Optional equipment
Pulling equipment	• Articulated Cat. II and III. width	Automatic pulling equipment. Quick -Coupler
Reverse	• Mechanism lifting rack bar	
Beam/frame	• Modulated 180 x 180 fastened staff (7''x7''), plough heads can be added	• Other plough heads
Directing during transportation	• In transporting position the wheel can be directed accodingly to the plough inclination.	
Working width	• In the case of 100 cm plough distance it can be variated from 12'' to 20'', in the case of 114 cm it can be variated from 14'' to 22''	
The adjusting of the first furrow (déport)	• Mechanical arm	• During operation it can be adjusted by hydraulic cylinder
Distance between plough ends (plough bottom distance)	• 100 cm (= 39'')	• 114 cm (= 45'')
The height of the end	• 170 cm (= 67'').	• 160 cm (= 63'') • 180 cm (= 71'')
Staff clearance	• 76 cm (= 30'')	
Securities	• Shearing: At the turning the plough do not hold plough mass by this the staff damaging can be avoided	• Non-Stop Hydraulic, Y type: -the highest lifting measurement ≈: 85 cm – the highest loading 600 to 2300 kg ü The variety of cylinder diameter Ø (90 - 100 -110 - 125 mm).
	.	-- The variety of accumulator capacity (150 bars instead of100 bars). • Z type Non Stop hydraulics: • P9 Non Stop mechanical:
The hydraulic controling units of the plough	- The variety of accumulator capacity (150 bars instead of100 bars).	• 2 or 3 functions of hydraulic clitch with controling (grey box) or Cobra lever. . • Simple coupler
Bearing wheels	• Ø 880 mm pneumatic (400/60-15.5); ELS profil.	• 880mm Ø wheel (400/55-17.5) BP profil : 414. • 1000 mm Ø wheel (500/60-15.5) 500 mm width ELS. • 1080 mm Ø wheel (400/70-R20) 415 mm width FS24. • 1115 mm Ø wheel adhesive (16.0/70-20) • 1220 mm Ø wheel (17.5/24) radial, 114 cm plough bottom distance.

Parts	Standard equipment	Optional equipment
Other equipment	• Signalization console *	• Hydraulic adjustment of gear • Grégoire Besson* rear signalization * : If the plough is used in traffic the owner or the used must take responsibility of keeping the rules and regulations of this country* : • Hydraulic arm of the wheel inclination. • Electronical kit for the wheel Dual control or TCE 30.
Plough heads	• Plough heads with self-edging blades and reverse chisel-end • Breasts: short screw (H4 / H5), or universal (American) (3A / 5A), or cylindrical (C 14 / C 16 / P 14 / 16) • adjusting block • Crossing joint adjusting	• choice of the breast (long, screwed, slotted, plastic…) • Breast extensions. • Rostrate blade, guide plough head (35 x 35 mm angular chisel end). • Choice of blade width (blades) : 14'', 16'', 18''.
Complements of wearing parts		• Profiled chisel-end • Deflectors, • Short coulter wing-end, • Long coulter wing-end, • Furrow widening, • Panbreaker
Skim-coulter	• Can be adjusted vertically, forward and back • Security pin protection • Mixed type or for dunging	• Other models: Universal, Euro, Corn

For optimal usage of the plough work there are a lot of possibilities.
The GRÉGOIRE-BESSON dealers know well the environment and soil conditions where ploughs will be used. If necessary they can help you in the choice of engineering decision and can show you innovations (new optional possibilities, new models).
Be sure to turn to the GRÉGOIRE-BESSON dealer to discuss the plough technique.
The GRÉGOIRE-BESSON firm is present at fairs and professional exhibitions.

3.4. THE SIZE AND MASS OF THE SP 9 PLOUGH

Number of plough heads	Beam	Division of the plough heads distance	Working width		Total length (approximately)	Mass (approximately)
5 plough heads	5	100 cm (39'')	12'' - 20''	152 - 254 cm	5.50 m	2575 Kg
6 plough heads	6 1+5 5+1	100 cm (39'')	12'' - 20''	183 - 305 cm	6.50 m	2875 Kg
7 plough heads	7 1+5+1 1+6 6+1	100 cm (39'')	12'' - 20''	213 - 355 cm	8 m	3175 Kg
8 plough heads	7+1 1+7 1+6+1	100 cm (39'')	12'' - 20''	243 - 406 cm	9 m	3475 Kg

Number of plough heads	Beam	Division of the plough heads distance	Working width		Total length (approximately)	Mass (approximately)
4 plough heads	4	114 cm (45'')	14'' - 22''	142 - 223 cm	5.50 m	2325 Kg
5 plough heads	5 1+4 4+1	114 cm (45'')	14'' - 22''	178 - 279 cm	6.20 m	2625 Kg
6 plough heads	6 1+5 5+1 1+4+1	114 cm (45'')	14'' - 22''	213 - 335 cm	7.30	2930 Kg
7 plough heads	7 1+5+1 1+6 6+1	114 cm (45'')	14'' - 22''	249 - 391 cm	8.90 m	3235 Kg
8 plough heads	7+1 1+7 1+6+1	114 cm (45'')	14'' - 22''	284 - 447 cm	10 m	3540 Kg

The plough mass has the following elements :

- Pin securities
- 1000 Ø wheel 500/60-15 ELS profil 500mm width,
- B2 plough head with H5 breast,
- Mixed type jointers

If the plough equipped with hydraulic securities when to every plough head we can add 50 kg.

3.5. WARNINGS IN CONNECTION WITH GRÉGOIRE-BESSON EQUIPMENT AND TECHNIQUE PARAMETERS

For better development of the product and implementation of the new technology the GRÉGOIRE-BESSON company has the right to change the mechanic characteristics of the equipment, used material and the construction without advanced reporting. After selling and delivering of the product the company is not obligatory to perform the changes. Every data about size and mass can be varied depending on the equipment or options. The illustrations can show optional additions and it is not sure that the accessories belonging to this series would be presented. For the sake of your security:

- Before starting to use the agricultural machine, examine it, the attaching part, the wheel bolts fastening, the condition of the signals used in the traffic and their adjustment..
- Use the equipment accordingly to the agricultural working conditions.
- Take into consideration every warning about danger.
- Use the protective equipment.
- Wear suitable clothes and security equipment.
- Keep the traffic rules Highway Code of the given country.

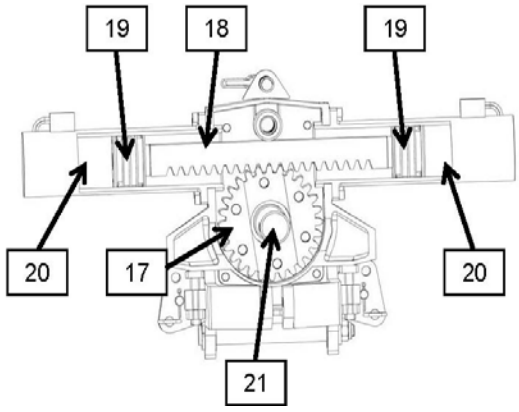
3.6. THE PRINCIPLE OF THE REVERSE PLOUGH

The GRÉGOIRE-BESSON Compact plough is the reverse plough . The principle of the reverse plough make it possible that during the plough of the land to throw earth to the same side, it does not matter which direction we perform the work. At every field end the plough reverse and the tractor is going in the furrow which was previously left. After the plough we can see plane unified land where a furrow cannot be seen. By this the better sowing and plantation can be provided. The reverse plough is economic as at the end of the field it needs less maneuvering. Differently from the bed plough the reverse plough do not compact the soil at the end of the field as on the same place it is going only once.

Another advantage of the reverse plough that you should not wait till the whole field would be cropped in order to start the plough operation.

3.6.1. . RACK PINION OF BARRING GEAR:

The GREGOIRE-BESSON SP 9 Compact plough is equipped with the rack pinion barring gear.

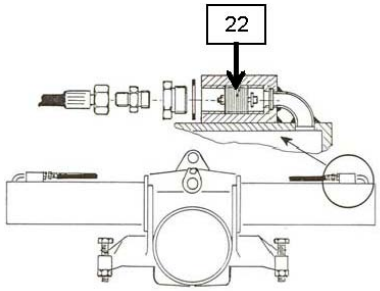


- Gear (17) is under pinion (18) .
- Two pieces of horizontal cylinders work in the opposition to each other, two pistons have been mounted on two ends of the pinion.(19)
- On the oil pressure (20) the pinion moves from left to right.

. Then this motion goes to the gear (17) which provides the plough axle (21) to reverse.
The mechanism advantages are the following:

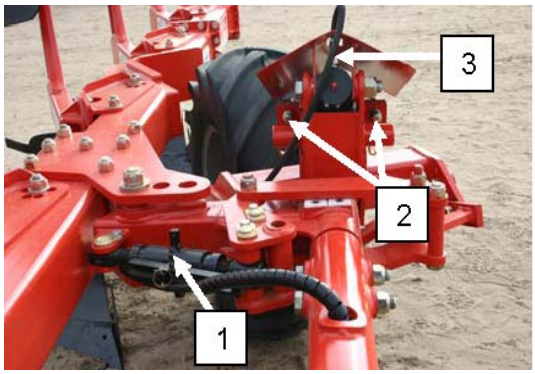
- Flexible utilization: The turning can be stopped at any moment and the change of the direction do not effect the long life of the implement. That is why it is possible to use the turning implement for the direction of the rear wheels during the maneuver at the end of the field.
  - It is totally smooth-working.
- It has maximum security. The turning head can be used on 4 to 14 plough heads ploughs.
- As the two lateral cylinders are fastened there is no danger of backlash.

In the case of tube abruption the turning equipment protection is provided by a clack of parachute type mounted on the two cylinder openings.(22)



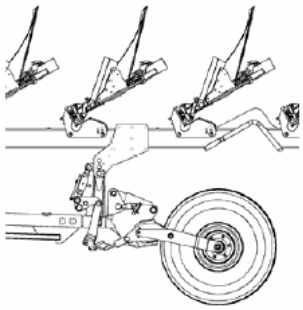
3.7. THE MECHANISM OF THE WHEEL.

The beam formation provides to put the mass point of the plough lower with the aproaching of the plough bottom wheel, it makes the rotation easier. At the same time the usage of the big diameter pneumatics (880 – 1200 mm) can be provided without too big wheels appliance. Combining with big diameter and different profile wheels improves the plough action as during the operation as during the transportation. The driving on wet area or obstacles is becoming easier.



Because of the mechanical or optionally mounted hydraulic adjustment (1) the wheel moves parallel during the work. In the case of hydraulic adjustment the plough pulling direction can be easily corrected on the slopes. The depth can be adjusted by two arresters (2). If it is necessary (on the uneven field) hydraulically the plough can be lifted even during the operation.

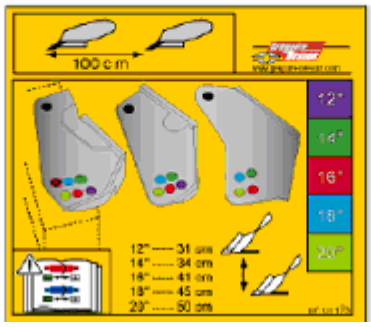
To make the moving forward or back easier is possible by speculating of the rotating position for the directing of the rear wheels.
You must not intervent into the structure of the wheel when the plough is put into the position of transportation from the position of operation or vice versa.

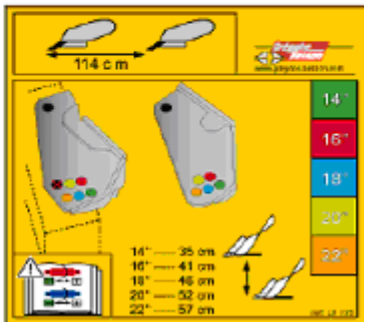


Follow all the precautions not to puncture the rear wheel with the plough end while manoeuvring.

3.8. WORKING WIDTH

All plough bottom working width adjusting should be performed in 5 positions with the help of the helival axle:
• 12'' - 20'' 100 cm for plough bottom distance.
• 14'' - 22'' 114 cm for plough bottom distance.
Every hole ont he beam bearing defines a definite working width.

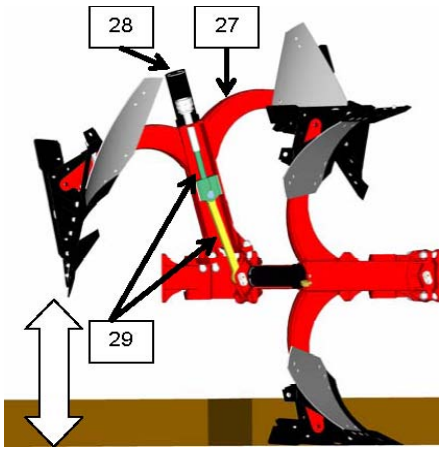




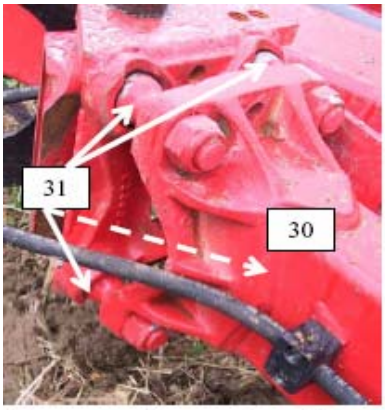
The matrices above according to the plough bottom and color show the working width for evety position.
If you have changed the working width you should adjust the deport again.

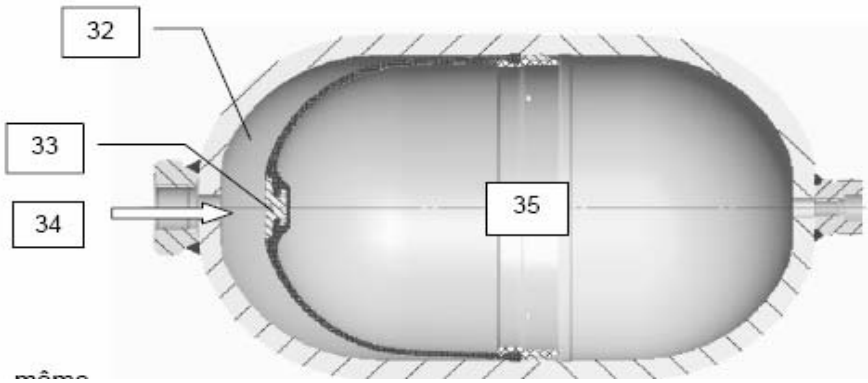
3.9. THE PRINCIPLE OF THE HYDRAULIC NON-STOP SECURITY (Optional possibility)

The hydraulic Non-Stop security elements (27) mechanic circulation connects with close hydraulic circuit which pressure can be changed.
There is one hydraulic cylinder (28) behind every circulating element. It is connected with the frame with the help of the double tringle (29).



The mobile connection between the front part of the tube (30) and the frame of the plough is performed with the help of the 4 axle journal (31).



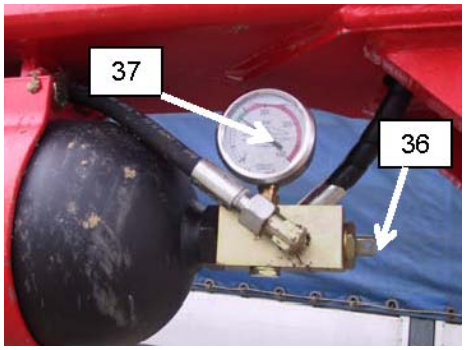


Every cylinder is connected with the same hydraulic accumulator (32).
The task of the hydraulic accumulator (32) to provide suitable elasticity when the part impacts the obstacle and deflects around the axle-journal.
Inside the accumulator there is a flexible membrane (33) which separates the hydraulic olaj (34) coming from cylinders, from nitrogen placed under the pressure (35). The characteristic of the gas nitrogen is that it can be compressed. The gas is compressed in the plant under the certain pressure and cannot be changed.

Anti-bouncing affect can be got by hydraulic oil pressure (34).

- With the injection and the extraction of the oil into and out of the security hydraulic circuit the flexible membran becomes deformed, In this function nitrogen more or less coagulates.
- When the plough head comes across the obstacle the turning of the mechanic disengaging part causes compression. Then the surplus of the oil is absorbed by the accumulator producing the bouncing.
- After the overcoming the obstacle the over pressure in the accumulator gets back into the cylinder and makes the plough heads go back on the soil.

The adjustment of the securities disengaging power is changeable. It is performed with the help of the filler (36) and can be adjusted by manometer (37).



If the variably possibilities of the manometer are not enough, optionally there are two ways to increase the security disengaging power:

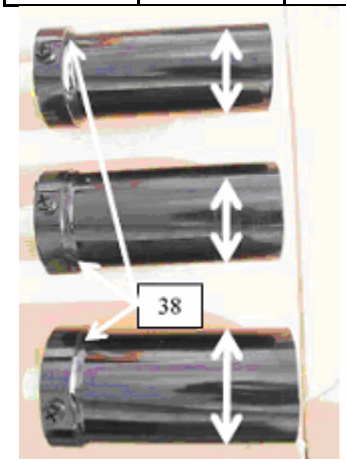
- With the increasing of the security cylinder diameter,
- With the usage of the industrial nitrogen adjustment accumulator.

3.9.1. The security cylinder diameter

The diameter of the cylinder with standar equipment is 90 mm. Optionally there are cylinders of100 mm, 110 mm or 125 mm diameter as well.

At the given hydraulic pressure the bigger the diameter the more difficult to disengage it.

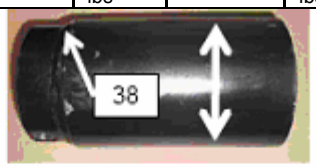
Height measured at the end	Bulk clearance of the shaft	**Security cylinders Ø**	**Disengaging power measured at the end**							
			100 bar pressure with accumulator (with industrial nitrogen adjusting)				**150 bar pressure with accumulator** (with industrial nitrogen adjusting)			
			Minimal hydraulic pressure 110 bar *		**Maximal hydraulic pressure 150 bar ***		**Minimal hydraulic pressure 110 bar ***		**Maximal hydraulic pressure 150 bar ***	
170 cm	76 cm	**90 mm**	590 kg	1 298 lbs	800 kg	1 760 lbs	860 kg	1 892 lbs	1 075 kg	2 365 lbs
170 cm	76 cm	**100 mm**	760 kg	1 672 lbs	1 040 kg	2 288 lbs	1 110 kg	2 442 lbs	1 390 kg	3 058 lbs
170 cm	76 cm	**110 mm**	950 kg	2 090 lbs	1 300 kg	2 860 lbs	1 390 kg	3 058 lbs	1 730 kg	3 806 lbs
170 cm	76 cm	**125 mm**	1 270 kg	2 794 lbs	1 740 kg	3 828 lbs	1 850 kg	4 070 lbs	2 320 kg	5 104 lbs



Ø : 90 mm (≈ 3"1/2)

Ø : 100 mm (≈ 4")

Ø : 110 mm (≈ 4"1/3)

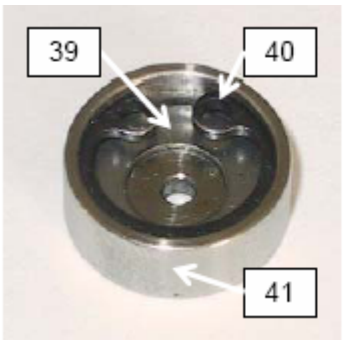


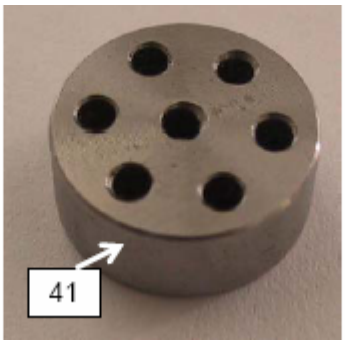
Ø : 115 mm (≈ 5")

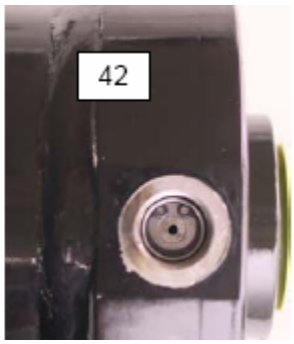
Some cylinders can be easily diversified if at the rear end its diameter is measured. For the specialist the controling mode is the distance between the body and the bumped end (38) of the cylinder.

3.9.2. . Flow limitating pulley (reference: 1 119 037)

For the work ont he extremely gravel soil a pulley has been mounted (GB reference: 1 119 037), which reduces the speed of the oil flowing back into the cylinder whilst keeping the high pressure.
The rattling decreases which protects the security axle-journals.
On the contrary when the plough bottom comes over the obstacle there is no limit for quick oil flowing out.







The principle of the work flow limiting pulley :

Inside the pulley (41) there is a plane spring-washer (39) which fastens circlips (40).

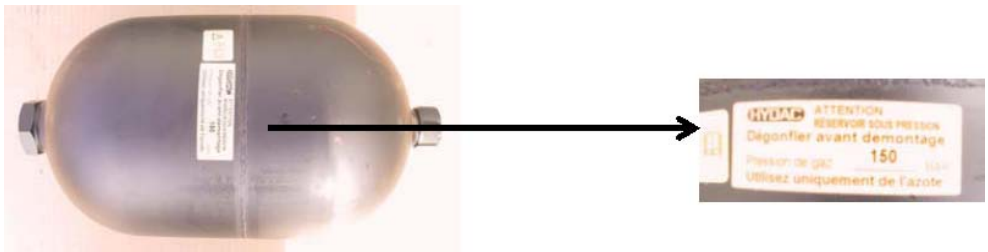
- When the plough bottom disengages, the oil flowing from the cylinder int he whole length catches the spring-washer circlip. The spring-wacher provides the oil flowing across sevel holes in the pulley.
- After the overcoming the obstacle hydraulic system pressure constrains the oil into the security cylinder (42). The oil going back into the cylinder presses down the spring-washer ont he bottom of the pulley. Only the middle hole let the oil flow back with the help of it its flowing becomes slow.

IMPORTANT: Pay attention on the direction during the mounting of the pulley (41) into the cylinder (42). The circlip must look outside.

ATTENTION : The pressure must be decreased to 0 bar before starting any interference. Follow the security instructions (chapters «General security instructions» and «Greasing and maintenance») If it is necessary ask the help from the GRÉGOIRE-BESSON dealer.

3.9.3 Accumulators

The mounted standard accumulators are used with industrial 100 bar pressure adjustment. The plough optionally can be mounted with 150 bar accumulators.



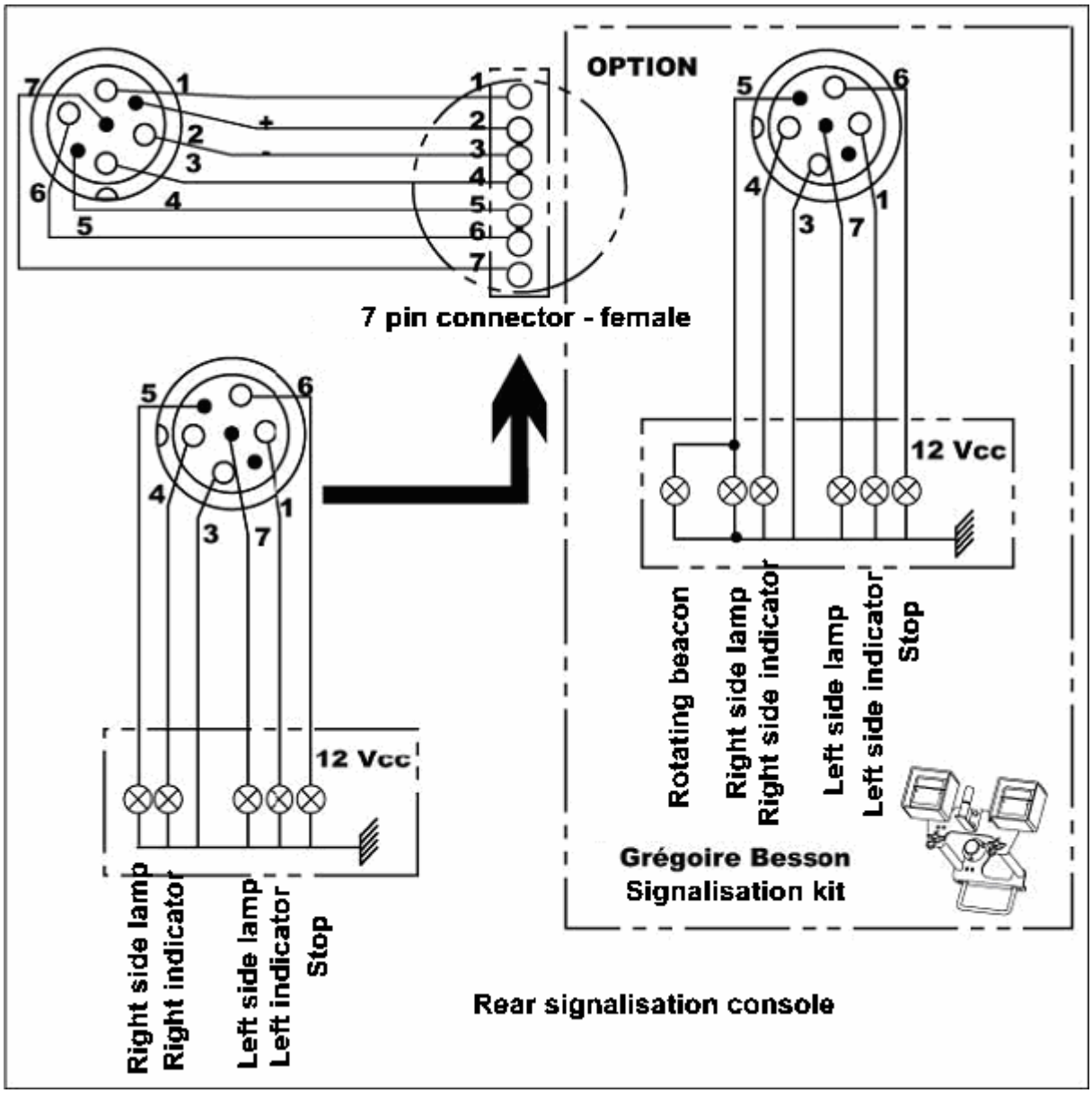
Externally there is no difference between two accumulators, the nitrogen adjustment can be seen ont he label or it is chiseled on the accumulator.

IMPORTANT : In the case of equivalent power measured on the end instead of cylinder with bigger diameter we suggest choosing the accumulator adjusted 150 bar pressure. It provides greater flexibility and there is no difference between 100 and 150 bar nitrogen adjusting accumulators.

During the worok if securities seem to be too rigid or soft, ask the advice from the GRÉGOIRE-BESSON dealer to find the most favourable solution.

3.10. KIT OF GREGOIRE BESSON SIGNALISATION

In some countries if the plough is transported on the road the signaling lamps must be put on its rear part. The plough has a signalisation console which should be dismounted during the ploughing. As optional possibility Grégoire Besson recommends such a signalisation kit which has a signalisation console that can be mounted on the plough for ever.



4. THE PREPARATION OF THE TRACTOR PULLING

4.1. NECESSARY TRACTION POWER

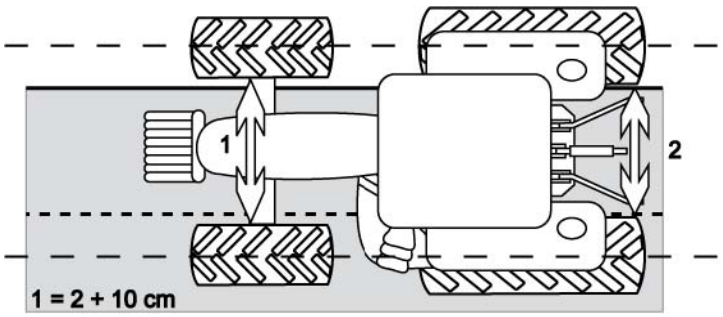
The power necessary for plough traction changes in the function of soil structure and working conditions. The data in the table is informative. The GRÉGOIRE-BESSON dealer knows the country very well where the plough is going to be used. He can give some advice not only in the connection with the traction power but the optional possibilities of the required exceeded the time work.

Number of plough bottoms	Average soil (15 to 30 % clay)	Black land (> 50 % clay)
4 plough bottoms	100 - 140 horse power	120-160 horse power
5 plough bottoms	140 - 180 horse power	160 - 200 horse power
6 plough bottoms	180 - 220 horse power	200 - 240 horse power
7 plough bottoms	220 - 260 horse power	240 - 280 horse power
8 plough bottoms	260 - 290 horse power	280 - 320 horse power

4.2. THE DISTANCE BETWEEN TRACTOR WHEELS

We blow up the rear and front tyres to the pressure specified by the manufacturer. Follow the rules of the instruction and recommendations of the tyre producer. On the both sides of the tractor the pressure should be the same for the plough to work on the proper level.

In general it can be said that the plough with higher number of plough bottoms (> 6 plough bottoms) with the growing of the tractor wheels distance the traction work will be better and better. Besides if there is first furrow adjusting cylinder the plough can be adjusted to the tractor width (in the case if we speak about tractor usage, or during participating in the traffic where the width must be limited or more tractors are used with the same plough).



For the tractor going in the furrow in right direction it is recommended that the center of the front wheel should be in one line with the center of the rear wheel. This way the front driven wheel will not drag the furrow side (gravel may damage the tyre side) so the tractor will be easier directed as on the left as on the right side.

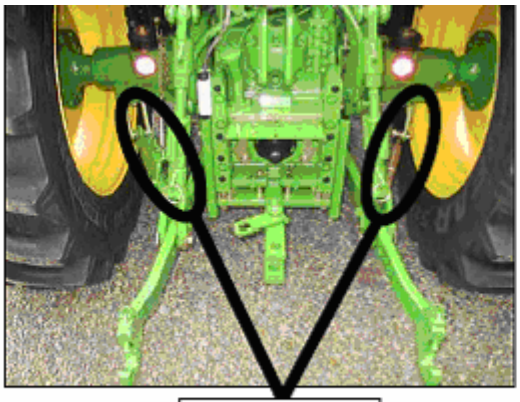
- Rear tyres minimum distance is 140 cm, but there is danger that the tractor may jerk on the black land in the case of plough with big number of plough bottoms.
- Distance between rear tyres is maximum: 180 cm (= 70'').

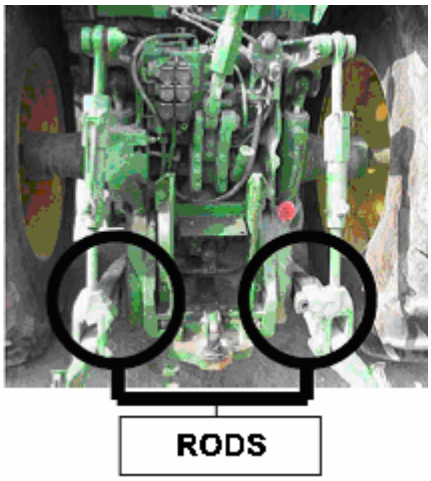
Recommended adjusting of the tyres (distance of the inner side of rear wheels) :

	Distance between tyres (inner side)	**5 plough bottoms**	**6 plough bottoms**	**7 plough bottoms**	**8 plough bottoms**
1 distance	**Front wheel**	158 cm 62''	162 cm 64''	168 cm 66''	172 cm 68''
2 distance	**Rear wheel**	148 cm 58''	152 cm 60''	158 cm 62''	162 cm 64''

On the hills for the traction stability you should apply maximum tyre distance.

4.3. ADJUSTMENT FOR THE STABILIZATTION OF THE BARS AND ROCKERS





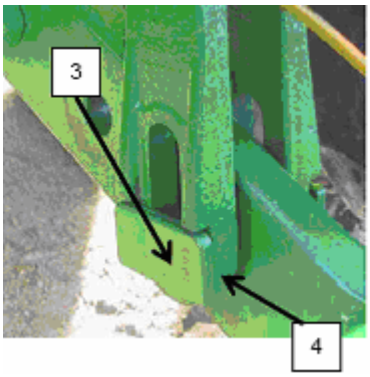
It is easier lubricate and unrust the stabilization screw and pins (rockers and bars) before attaching the plough to the tractor. If it is necessary take time to dismount and adjust these stabilizations and bars in order to perform accordingly the screws lubrication.

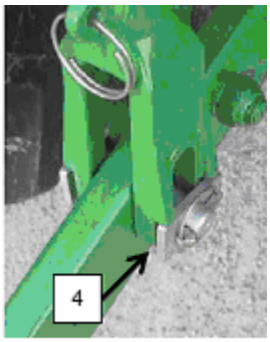
The stabilization of rockers and bars must be placed so that during the plough attachment the lifting levers side clearance should be the smallest (if it is possible ≤ 1 cm ≈ 1/2''). In the case of the GRÉGOIRE-BESSON Compact plough we speak about semi-mounted plough so having the 110° vertical tractive cardan axle the plough if it is necessary can turn left and right. It is not reasonable to (even damaging) to uphold the lateral clearance of the tractor.

If between the stabilization block and lifting levers there is a very big clearance it restrains the precise adjustment of the first furrow width and during maneuvering and transporting the plough and tractor lifting levers can be seriously damaged.

If despite the properly mounted stabilizations the lifting levers have big clearance you should get sleeves to avoid to prevent the levers lateral sliding on the pulling spindle. Control if the spindle and the type of the drawbar compatible (category and Ø).

4.4. LEVERS OF THE LIFTING ARMS

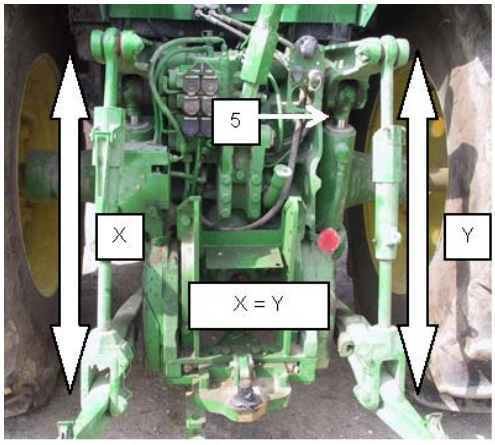




The lifting axis must be vertical to the levers (3) in fixed position (4) to avoid all unnecessary clearance during turning or dangerous jerking.

4.5. THE LENGTH OF THE LIFTING LEVERS

Examine the proper work of the vertical bars of the lifting levers. Before attachment to the tractor it is easier to loosen the lifting lever screws and perform their lubrication.



- The lifting bars of the vertical levers must be in fixed position.
- Be sure that both lifting bars are the same length because the difference between left and right lifting bars may result the wrong adjustment of the vertical position. This way the plough can work deeper on one side or the first furrow width will not be suitable.

- The length of the lifting bars affects the position of the tractor lifting levers. The tractor depth controlling will be the better if the lifting bars can oscillate (in the function of loading to let out and pull in)

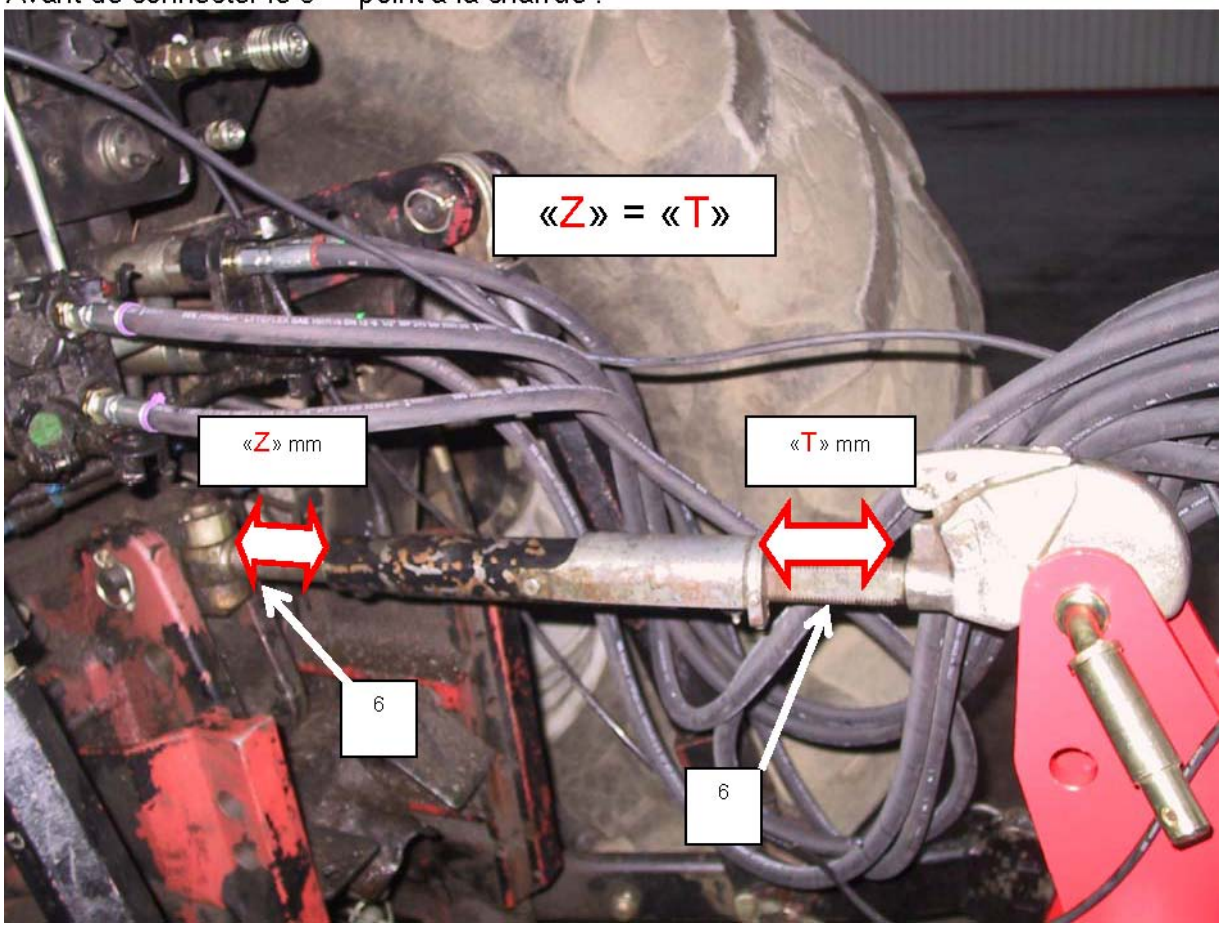
So it is necessary to adjust the lifting bars length to have minimum 30 mm going (5) to be able to pull them back during the work.
Special attention must be paid if the tractor is equipped with wheels of big diameter.

4.6. THE LENGTH OF THE 3RD POINT

The adjustment of the third point is performed when the plough has been attached to the tractor. At the same time the controlling of the work, loosening and lubrication are much more accessible before the plough attachment.

Before joining the third point to the plough:

Avant de connecter le 3ème point à la charrue :



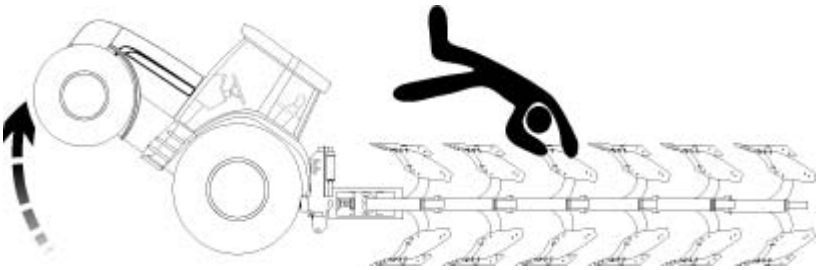
- Vérifier la bonne fixation du palonnier aux 2 bras inférieurs du tracteur.
- S'assurer que les 2 vis du 3ème point disposent de suffisamment de longueur de filetage (6) dans les écrous centraux pour qu'il soit possible de les régler sans risque de déboitement ou d'arrachement.

- Examine if the cross-arm perfectly fastened to the tractor two bottom levers.
- Be sure that two screws of the third point are long enough (6) for the central female screws in order not to damage or tear them off during adjustment
- It must be examined that two edge screw are on the same adjusting level.

Two seen threads (6) should be the same length (Z = T). So being maximum screwed the third point must be the shortest. Or vise versa if it is unscrewed it must be maximum long.

NOTICE : Inside the third point the big quantity of the lubricant can obstacle the shortening. On some tractors the lubricant must be cleared away with the dismounting of the lubricator which release the lubricants being under the pressure.

4.7. THE TRACTOR BALLASTING



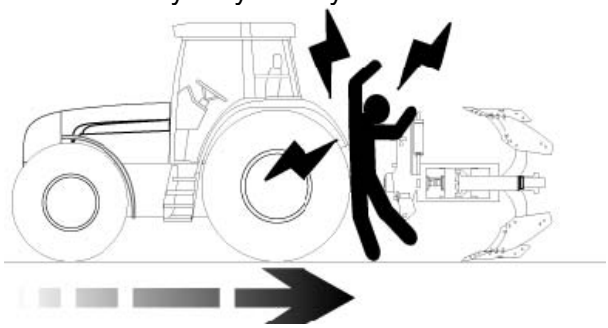
The wheels ballasting (front and back) as well as the necessary of the tractor front ballasting for avoiding too big skidding. The ballasting at the same time improves the stability on the uneven hilly lands.
Generally for every horse power of the ploughing tractor about 50 kg is needed which means in the case of 200 horse power tractor - 10 tons. On the extremely clay fields during the plough it is reasonable to blow up the tyres with water (or antigel or talc).On the black lands it is reasonable to use loading in the inner part of the rear wheels. This way it means 60 kg / horse power. If tractor skidding has been avoided there is no need to any other loading or ballast.
Follow the tractor instructions and ask for the advice from the dealer or agricultural tyres merchandiser.

Operation manual SP 9 - Compact

5. ATTACHMENT AND DISENGAGEMENT

5.1. THE SECURE ATTACHMENT AND DISENGAGEMENT OF THE PLOUGH

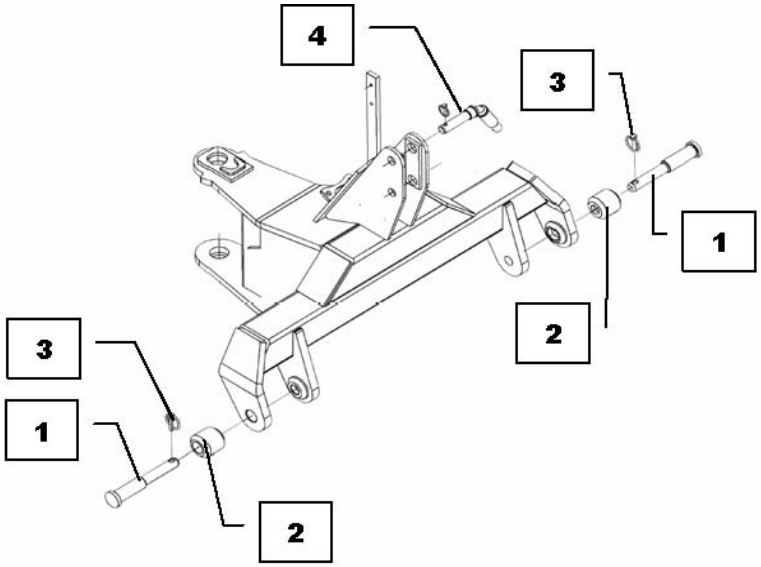
Do not let anybody to stay between the tractor and the plough when it is backing for attachment.



Before leaving the driving cabin put the gear-change into the «Parking» position, pull the hand-brake, stop the engine, take out the starter key and put it into your pocket.

The plough must be put on the ground before disengaging. Make sure that the plough is placed on the stable plane surface.

5.2. THE PLOUGH ATTACHMENT TO THE TRACTOR



5.2.1. In the case if tractor equipped with fixed ball axle-journal bottom lifting levers:

Before every work be sure to control the plough journals and the diameter of the ball axle-journal are the same.

Take out the plough journals (1) and drag binder (2) with the help of pulling out the security pins and bolts (3),

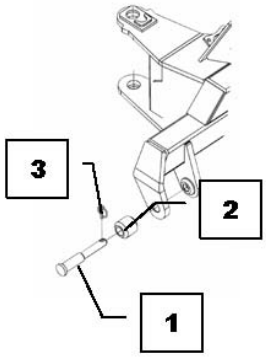
Back the tractor that the holes of the bottom lifting levers be in the same line with the plough traversing rod.

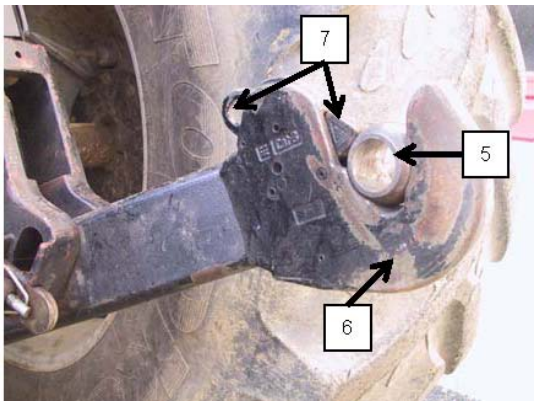
To avoid the lateral slipping of the levers on the pins use the fixing brackets (2). If clearance is too big get the fixing brackets of the suitable length.

Adjust to each other the pins (1) and fixing brackets (2) then fasten them with the help of security pins and bolts (3).

- If it is difficult to put the holes in one line then release the telescoping lever sas it it defined in the tractor instruction. If pins (1) are in the suitable position and fixed then start slow backing for the telescoping levers to find their place and to be fixed again. Carefully examine the connection of the equipment.
- Adjust the stabilization levers and blocks, take care of the pulling binders having the necessary size (2) in order there should be smaller lateral clearance (≤ 1 cm ≈ 1/2'').
- Raise the lifting equipment a little bit for the hook disengagement.
- See in the point 5.2.3 («Disengagement of the traversing hook») the described mode.
- Start the attachment of the third point in such a way that the pin (4) matches the third point of the ball axle-journal and fix it with the safety pin (3). In advance examine that the diameter of the pin (4) and the third point axle-journal fit each other.

5.2.2. If the tractor equipped with the disengaging axle-journal of bottom lifting levers (quick attachment)





Attelage Rapide avec Rotule Amovible

- Take off the plough journals (1) and binders (2) with the help of safety pins and bolts pulling out. (3),
- Take off the disengaging axle-journals (5) from the quickly connecting cheeks (6) which are on the bottom lever of the tractor.
- The disengaging axle-journals (5) attach to the draw pins (1). Carefully examine that the diameter of the axle-journal is the same as the diameter of the pins.
- In order to prevent the levers lateral slipping on the pins use the attaching clamps (2). If the clearance is too big get the attaching clamps of necessary length.
- The adjustment of the pins finish with axle-journals (and attaching clamps) then fix them with safety pins (3) or bolts.
- Move back the tractor till the quick connecting cheeks of the bottom levers (6) reach the plough (equipped with axle-journals) journals.
- Raise the lifting unit till the cheeks catch the axle-journals.
- Raise the lifting unit a little bit for the parking hook to disengage.
- See in the 5.2.3 point of the chapter «Disengagement of the traversing hook» the described mode.

- Raise the plough from the ground to 5 cm (= 2'') and examine if the axle-journal fixing on the cheeks (7) is in the proper position.
- Adjust the stabilization levers and blocks whilst be sure of the attaching clamps being or proper size (2) in order that the drag lateral clearance should be the smaller (≤ 1 cm ≈ 1/2'').

DANGER: Always examine the position of the fixing on the cheeks. If you forget about it because of wrong maneuvering the tractor may turn over and cause fatal accident.

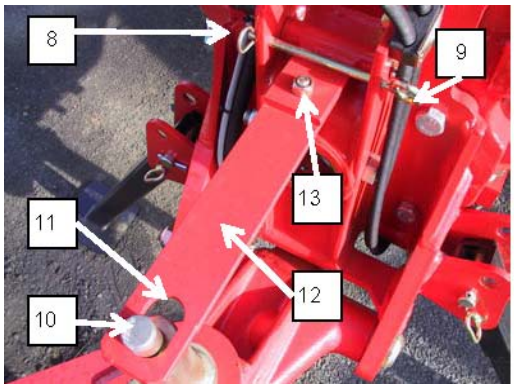
- Start attaching of the third point.

5.2.3. Disengage the traversing bolt (or arrester)

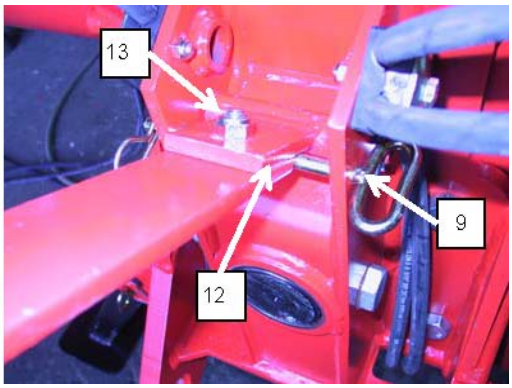
To keep the traverse in the horizontal position there is a bolt (or arrester) between the turning head of the front part and the traverse.

5.2.3.1. The plough equipped with standard traversing

This bolt can be found on the plough with standard traversing.



«the bolt in the disengaged position of the plough



the bolt in the attached position of the plough

- Pull out the elastic safety pin (8),
- Fix it (9),
- Carefully raise the lifting unit to put the vertical cardan axle (10) in the center of the opening (11),
- With your hand lift the bolt (12),
- Adjust again the pin (9), but in such a way that it goes under the surface of the bolt (12) in order the bolt remains in high position when the plough is attached to the tractor,
- Fix the bolt with elastic safety pin (8). The unit has shearing (13) which sheets out in the case of wrong work. At ordering the safety pins (13) :

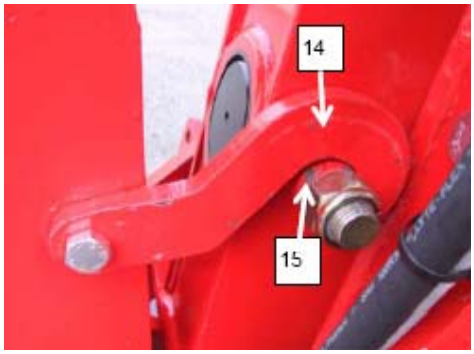
GB identification	Title
VI 2904	Safety bolt HM 12 x 30 8.8 Z
VJ 322	Brake female screw HM 12

DANGER : During the wrong operation the traversing can be dropped which may cause fatal accident.
Always think that the traversing can fall down at any time (for example, the safety pin may be torn off).
Wear protective boots.

5.2.3.2. Ploughs with Hydraulic kit (system) equipped on the traversing

The bolt can be found on such ploughs which optionally have «hydraulic adjustment of ballast transmit.

- Carefully raise the lifting unit in order to engage the strain between the bolt (14) and attaching clap of the safety pin (15),
- With you hand raise and press forward the bolt (15) to be disengaged.



5.2.4. Difficulties during the attachment

If it is difficult to attach the plough because of the slope change the lifting bars length.

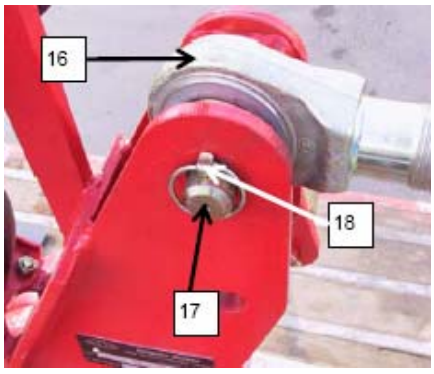
After finishing of the plough attaching, do not forget to adjust the same length of the lifting bars again.

DANGER : If the plough and the tractor are not in the one line position do not try to change it with the help of the tractor lever moving or raising. Because of wrong operation the plough can turn over and it can cause fatal accident.
Start the approaching movement from the beginning till two units really stand in one line.

5.2.5 Connection of the third point

The attachment of the third point start only if you are sure that the traversing is properly fixed to the tractor bottom lever.

In the chapter «Preparation of the tractor to drag» there is instruction how to adjust the third point, follow it.



- Attach the free end of the third point (16) into the binder of the traversing.
- Adjust the axle (17) and fix it with a safety clips (18).

N.B.:The semi-mounted plough and Compact plough do not need the adjusting opening in the binder of the third point as the 110° horizontal cardan axle provides the oscillation between the plough and tractor on the fields, roads or during the maneuvering.

DANGER: Do not try to raise or turn the plough till the third point is properly attached. The plough may turn over and cause the fatal accident.

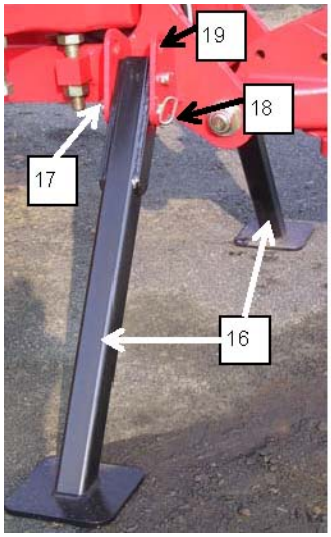
5.2.6. The adjustment of the third point length:

In general, the adjustment of the third point length is performed to have the traversing in perfect horizontal position looking from the plough side.
But this adjustment can be still refined during the plough. **DANGER** : During the third point adjusting take all necessary precautions.

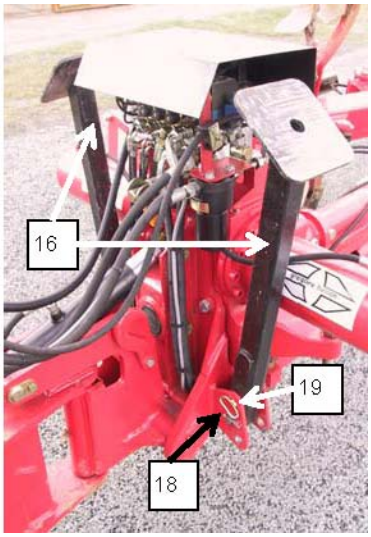
Leave sufficient length of the screw thread to avoid at the wrong time the screw thread damaging or screw loosening. The screw jumping out of its holder may cause fatal accident. Always put on its place the fixing element tat the tractor third point with the turning of the central female screw.

NOTICE : The big quantity of the lubricant in the inner part of the third point can prevent the shortening. Eliminate the lubricant by the dismounting of the lubricator and release the lubricants under the pressure.

5.2.7. Positioning of the brake block



Brake block in the position of disengaged plough



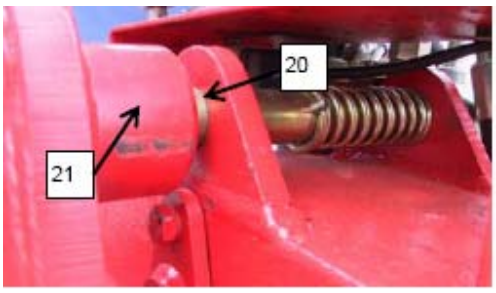
Brake block in the position of attached plough for transporting

The plough have two brake blocks (16) which are placed on the two sides of the turning head.

- After attachment of the plough lift the three point draw bar to let brake blocks out.
- Pull out the elastic safety pin (17),
- Pull it on the bolt (18),
- Move the brake blocks up to place them into the transporting position.
- Adjust the bolt back (18) but in the hole of the upper binder (19).
- Fasten the bolt with the elastic safety pin (17).
- Perform the same operation on the other brake block.

5.2.8. Arrester for the turning equipment

The SP 9 Compact plough has arrester for turning equipment. This unit can be disengaged only on the ground directly before the beginning of the plough. After the finishing of the plough the arrester again must work. With the help of it any danger of accident can be avoided because of the wrong operation which can occur during the transporting and in this way the disengaged plough motion can be prevented.



In the fixed position the axle (20) penetrates into the holder (21) which provides the fastening. The position of the axle can be directed by a lever (22) which can be found at the front of the turning unit.
The axle must be fixed before the plough disengaging.

5.3. The plough disengaging

- Turn the plough to the quarter in order to put the plough into the transportation position (the plough should be put into the horisontal position) and then arrest the turning equipment.

Before disengaging the plough be sure that the soil surface is plane and stable to keep the plough and two brake block bases. Use wood blocks to support the plough bottoms and brake blocks in the soil is wet. Before placing the plough examine the fixation of the brake blocks.

DANGER : When the plough has been put on the ground you must put neither your hands or your feet under the brake blocks. Or under any other spare part of the plough. The getting under the plough may cause the death. Make sure that the brake blocks stay on the ground stable.

When the machine is on the ground put the hydraulic adjusting levers in the self-adjusting position to stop the pressure in the tubes and cylinders (do not forget about „Hydraulic compensation cylinder" optional possibility).
Stop the tractor engine, pull the hand-brake, take out the starting key and put it into your pocket.
Before disengaging the hydraulic tubes examine if they are under the pressure or not. Slowly disengage the plough and take care that there is no any connection between the tractor and the plough.

- Start the plough disengaging contrary to the order of the plough attachment following the logic sequence:
- Fasten the central bearing articulated adaptation,
- Fasten the rotating unit,
- Adjustment of the brake blocks,
- The opening of the tube valve of the hydraulic compensation cylinder (if it presents) and eliminating of the pressure,
- Disengagement of the hydraulic tube valves,
- Disengagement of the third point,
- Adjustment of the traversing bolt,
- The elimination of the fixation of the tractor bottom levers with the help of fix or dismounting axle-journals,
- Perform all the precautions during every work.

Operation manual SP 9 - Compact

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6. HYDRAULIC CONNECTIONS

6.1. THINK ABOUT YOUR PROTECTION BEFORE STARTING THE WORK WITH PIPES AND HYDRAULIC CIRCUITS


Before you start working with pipes and hydraulic circuits always put on thick gloves and goggles.

6.2. BE ATTENTIVE WITH THE FLUID AND MATERIAL UNDER PRESSURE

When the fluid under the pressure flows out and penetrates under the skin or into the eyes it may cause serious injury.



- To avoid the accident or injury before connecting or disconnecting the hydraulic pipe you must eliminate the pressure. That is why after tractor stopping and putting the plough on the ground, move the distributor lever from the front to back to release the oil from the pressure.
- Before putting the hydraulic circuit under the pressure, examine if the components and connecting elements (connections, tubes, pipes) are in the adequate condition. Wear thick gloves and goggles!
- NEVER look for the leakage by your hands. Use a stick and wear thick leather gloves. For bigger security wear protective goggles. Keep the distance it does not matter what kind of leakage it is!

If the fluid under the pressure causes injury at once go to see a doctor. Any fluid which penetrated under the skin must be eliminated as it can cause gangrene which can lead to the amputation or death.. Every doctor who is not experienced in the type of injury should connect with the professional institution.

During the work keep the rear window of the driver cabin closed. The glass can give additional protection in the case of fluid leakage.

6.3. PREPARATION OF HYDRAULIC CONNECTIONS

Be sure that hydraulic connections are compatible to your tractor outputs. Incompatible connection can cause problems.

- The connectors do not stay in the tractor output or it is difficult to adjust them to each other.
- Unsuitable connections (push-pull) prevent the moving in the oil valves inducing oil overheating and/or speed reduction because of the reaction of hydraulic directive lever.

ATTENTION: Clean well the hydraulic connections as on the tractor as on the plough before joining them. If it is necessary clean down the dirt, earth and dust are the greatest enemies of hydraulic circuits. If it is necessary change the dust protection cover of the connections.

The hydraulic circuit of the plough is in advance industrially filled with oil. Nevertheless if we have to fill oil, be sure that in the tractor case there is enough oil. Examine the oil level of the tractor hydraulic and if it is necessary fill it. Use only suitable hydraulic oil accordingly to the instruction of the manufacturer.

6.4. NECESSARY HYDRAULIC POWER

At the tractor hydraulic output the expected power is 180 to 200 bar (2500 - 3000 PSI). The risk of this power is that the plough does not turn over.

6.5. CONNECTION OF THE FLEXIBLE HYDRAULIC PIPES

6.5.1. Connect the flexible pipes logically

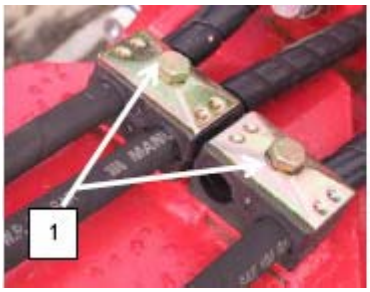
The hydraulic flexible pipes are connected from the driver cabin with the help of the hydraulic levers: For example, if you want to lift the plough pull the double action hydraulic lever and push it forward if you want to put down the plough. Or for example, the most often used functions put on the most attainable levers in the logic order of the work. For example, the first lever direction of the bearing lifting, the second is used, for instance, for turning.

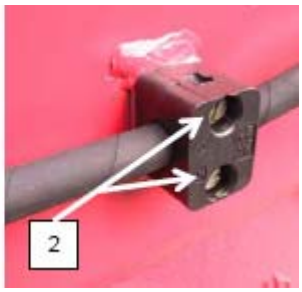
Every tractor driver will connect the hydraulic flexible pipes on the base of his own experience. It is important to follow the system for directing operation to become instinctive. In the case of emergency it makes the proper reaction easier.

Another facility means the usage of different color collars for distinguishing of flexible pipes. Besides the color on every collar it is possible to put the sign of the connection direction **+** cylinder releasing, **-** cylinder pulling back.

These collar can be attained at the GRÉGOIRE-BESSON official dealer.

6.5.2. Check the fixation of the flexible and rigid pipes.





The vibration during transporting or operation can cause the loosening of the fixing bolts in the fixation of the hydraulic flexible and rigid pipes (1 and 2). Systematically view and examine that the bolts belonging to the hydraulic pipes (1 and 2) must be fastened properly.

6.5.3. Examination of the flexible pipes length

Take care that the flexible pipes do not interfere with tractor or plough parts. Think over in advance what length of the pipes is necessary for such maneuvering as going at abrupt bends or the plough putting up and down.

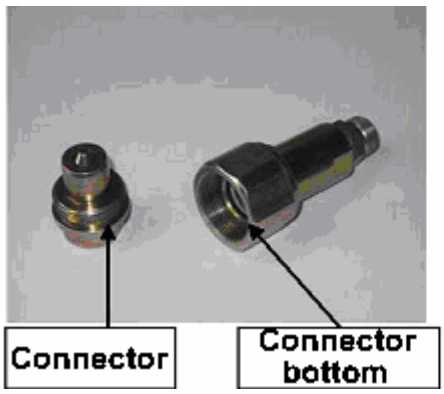
If it is necessary make flexible pipes shorter or longer. The necessary implements you can find at the GRÉGOIRE-BESSON dealers.

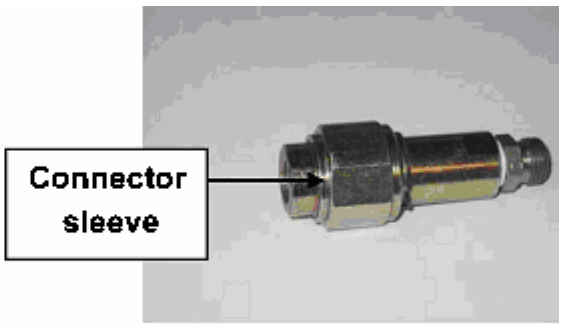
If the flexible pipes get damaged then they will not operate accordingly and become dangerous. Systematically examine the hydraulic circuit condition. Change the damaged or worn pipes.

IMPORTANT: Be careful with tractive equipment of Quick-Coupler tractors (USA model). This tractive equipment often requires the flexible pipes extension.

6.5.4 Examination of the hydraulic connection tightening of the supplementary plough bottom

IMPORTANT : The hydraulic connection securities must be screwed till the end for the supplementary plough bottom locking proper operation. The sleeve of the connector should hit the suitable part of the bottom of the connection.





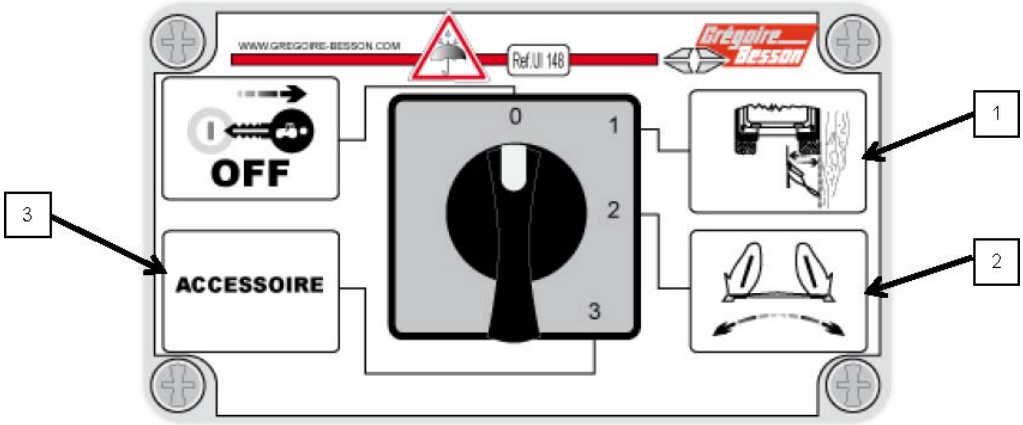
If the connector is not fixed properly if causes damage to the supplementary plough bottoms because during the coming over obstacle the hydraulic oil cannot flow to the hydraulic accumulator.

6.6. . HYDRAULICS MOUNTED WITH 3 FUNCTION SELECTOR

Optionally, 3 functions hydraulic selector is placed on the plough as standard equipment. It can be directed by a selector lever or coupling arm (grey box).

Generally, equipment belonging to a tractor is the following:

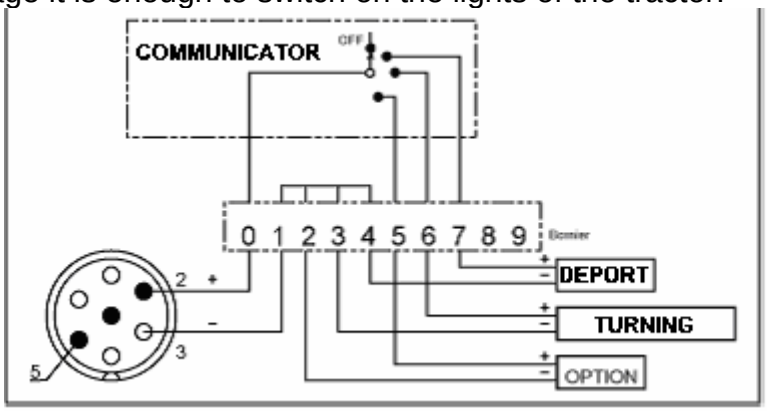
- 1 x DE (Double Effet – double actuation) connected directly to the tractor => rear frame attachment, lifting (and directing),
- 1 x DE (Double Effet – double actuation) connected directly to the tractor => central frame girder lifting,
- 1 x DE (Double Effet – double actuation) connected directly to the tractor => 3 functions switch:
  -1 First furrow width (Deport/dumping),
  -2 Pinion – shaft operation
  -3 Variable optional equipment (wheel control, loading transmitting cylinder, cylinder lever).

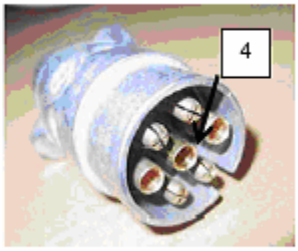


During the maneuvering on the field the switch must be put in the „Pinion-shaft operation" position, this way the plough with three working cylinder double actuation will be easily directed.

Electrical connection :

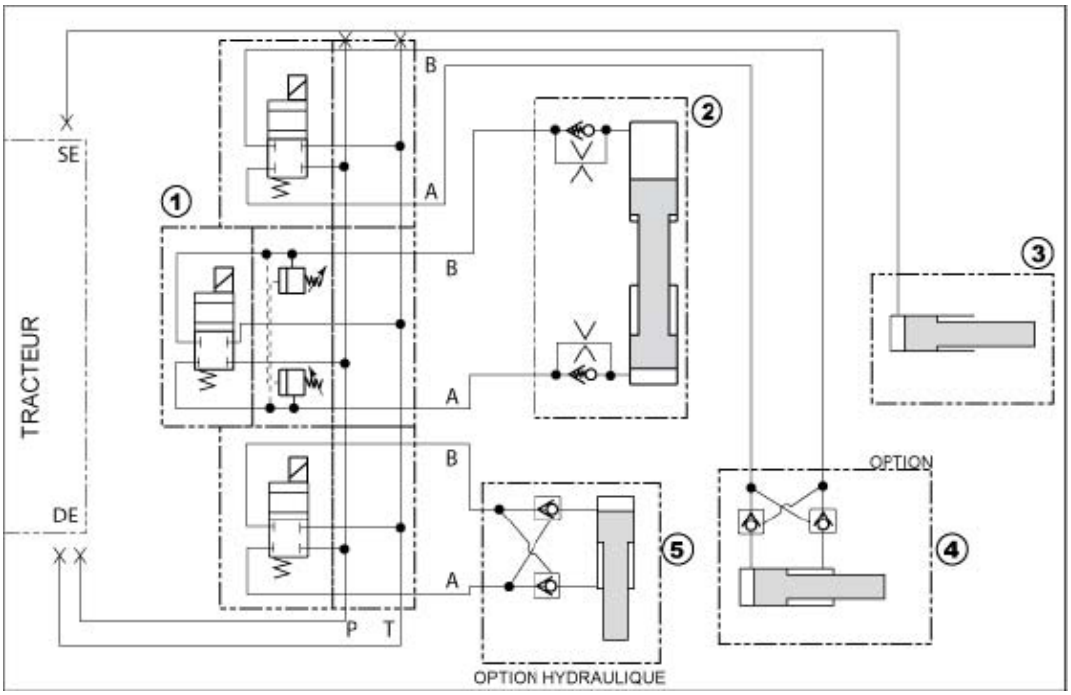
The valve directed by the switch has electric supply of 12 V voltage. The 7 plug-and-socket connector (European standard) (4) should be switched to the connection on the rear bottom part of the tractor (which can be used for lights as well). To give slide valves some voltage it is enough to switch on the lights of the tractor.





The design of the three function hydraulic reversing connection

1. Regulating bloc
2. Reversing cylinder
3. Lifting cylinder
4. Wheel angular offset cylinder (optional)
5. Deport cylinder



Operation manual SP 9 - Compact

7. . PREPARATION OF THE PLOUGH BEFORE THE OPERATION

After attaching the plough to the tractor follow the next examination for the easy adjustment. Belonging here maintenance work you can find in the chapter „Maintenance and lubrication”.

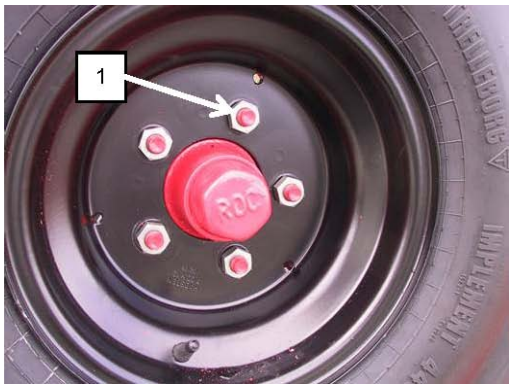
7.1. THE PRESSURE IN PLOUGH TYRES

The pressure in the tyres must be checked every week. Do not allow it descend under the minimal pressure level.

Wheel size	Recommended pressure	Minimal pressure	Maximal pressure	Maximal speed
400/60-15.5	3.6 bar	3.0 bar	4.0 bar	25 km/h 15 mph
400/55-17.5	2.5 bar	2.5 bar	3.5 bar	25 km/h 15 mph
500/60-15.5	3.5 bar	3.0 bar	3.9 bar	25 km/h 15 mph
400/70-R20	2.5 bar	2.5 bar	3.5 bar	25 km/h 15 mph
16.0/70-20	2.5 bar	2.5 bar	3.5 bar	25 km/h 15 mph
17.5/24	3 bar	3 bar	3.5 bar	25 km/h 15 mph

Carefully check the industrial values which are engraved on the tyres side. If the data in the table and on the tyres side are different, you should take into the consideration the last ones. The over blown transporting wheel can be punctured.
In the case of wrong blowing up, the tyre can jump off the wheel or the plough will be unstable during the transporting.
Do not drive if there is very low pressure in the wheels or some cutting or some bulge on the rim, or they are rusted, damaged or some wheel bolts are missed.

7.2. CHECK THE WHEELS BOLT FASTENING



Every day you must check the wheels and tyres if the bolts are properly fastened (1).

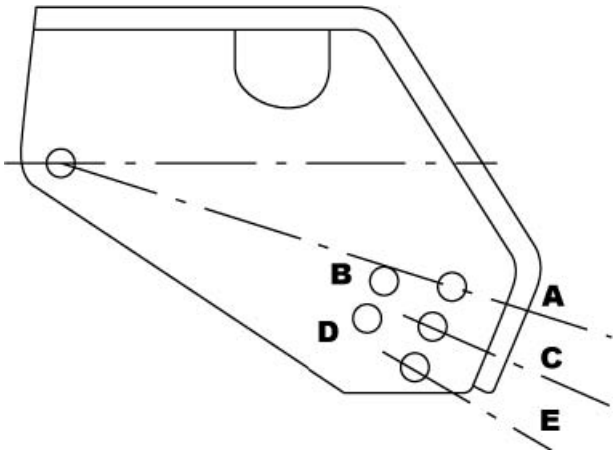
WARNING

- Adhesive clawed tyres require more attention than traditional wheels (ribbed profile). The adhesive clawed wheel provide good adhesion on the ground but on the roads they cause vibration. Because of that wheel bolts can be easily loosened.
- Before starting you must always check the fixation of the bolts and if it is needed to fasten them.

7.3. THE ADJUSTMENT OF THE WORKING WIDTH

The Compact plough every working width can be adjusted accordingly to plough bottom distance between 12'' to 20'' or 14''to 22'' . In the next table you can chose the suitable working width between the plough botom distance. The « X » width suits the working angle.

« X » working angle	A	B	C	D	E
Distance of the plough heads 1000 mm	309 mm (12'')	358 mm (14'')	407 mm (16'')	454 mm (18'')	500 mm (20'')
Distance of the plough heads 1140 mm	352 mm (14'')	408 mm (16'')	468 mm (18'')	518 mm (20'')	570 mm (22'')



The working width is given in mms, as well the most precise value of the colls.

If it is necessary this angle can be modified, for itt he plough should be put into the working position, the plough heads should be 10 cm lifted from the ground.After that you should adjust the screw-bolts into the necessaty position.

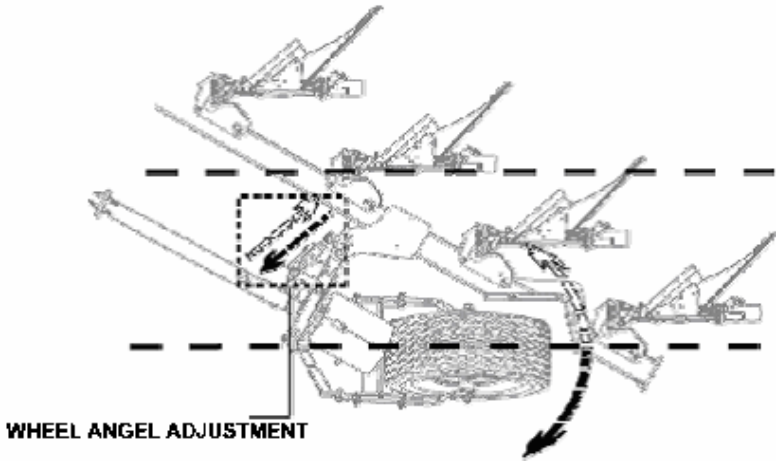
Mode of operation:
a) Disengage the screw-bolts on the front part of the bearing..
b) Put hte rear screw-bolt into the necessary « X » position.
c) Fasten again the screw-bolts on the front part of the bearing.
d) Fasten the rear screw-bolt.
e) Continue with the next plough bottom.

7.4. THE WHEEL ANGLE ADJUSTMENT

The wheel direction adjustment can be performed by the mechanic adjusting arm, which can be displaced optionally by the hydraulic cylinder. With this adjustment the plough tractive line can be controlled.

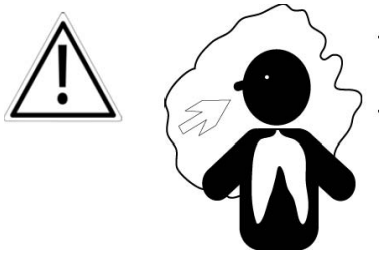
If the working width is changed the wheel angle should be corrected as well. With the help of the adjusting lever put in the same line the wheel axle and the connecting axle.

The wheel axle should be perfectly put in paralell with the plough sole, it can be seen on the figure. When the mechanic controlling lever or cylinder pulls back, the wheel approaches the beam. And vice vise when the mechanic lever or cylinder is pushed the wheel moves off the beam.



7.5. PREPARATION OF THE NEW PLOUGH BEFORE THE OPERATION

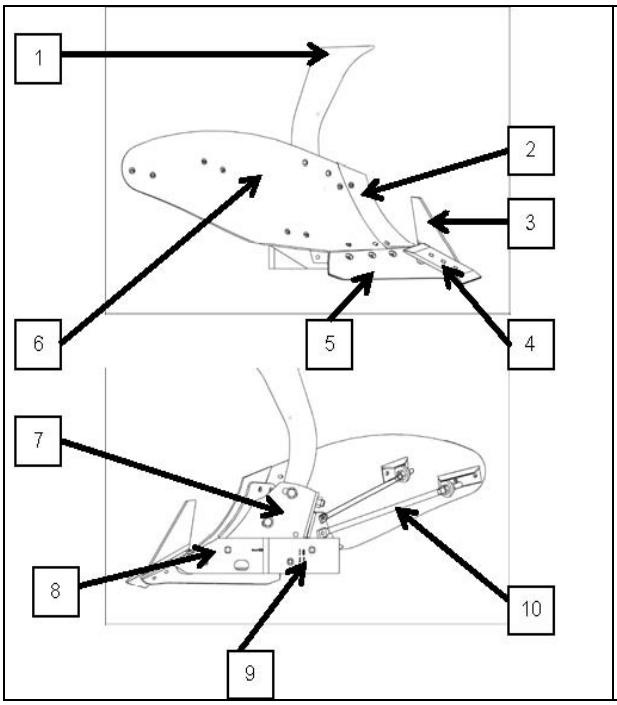
The Grégoire-Besson ploughs are protected against rust before they leave the plant. They are not able to perform correct operation till the protective plaint is abraded because of the chafing to the ground.
The black paint (or clear lacquer) will be chafed in some hectares. But if there is soil which does not have any chafing affect (peat, clay, sludge), it would be better if you rub off the paint before starting to plough. It may happen that ground adhere to the breast and it does not slide. For this purpose apply paint stripper. If it is necessary use stronger material for taking of the paint.



ATTENTION : During the work pay attention to the proper airing if you apply paint stripper to the breast. Wear **goggles** and protective gloves. Pay attention to the direction of the wind.

NB : On the first day to operate the plough easier helps the dismounting of the chisel nose which can make penetration into the soil quickly especially to the heavy soil.

7.6. LEARN THE NAMES OF THE PLOUGH SPARE PARTS

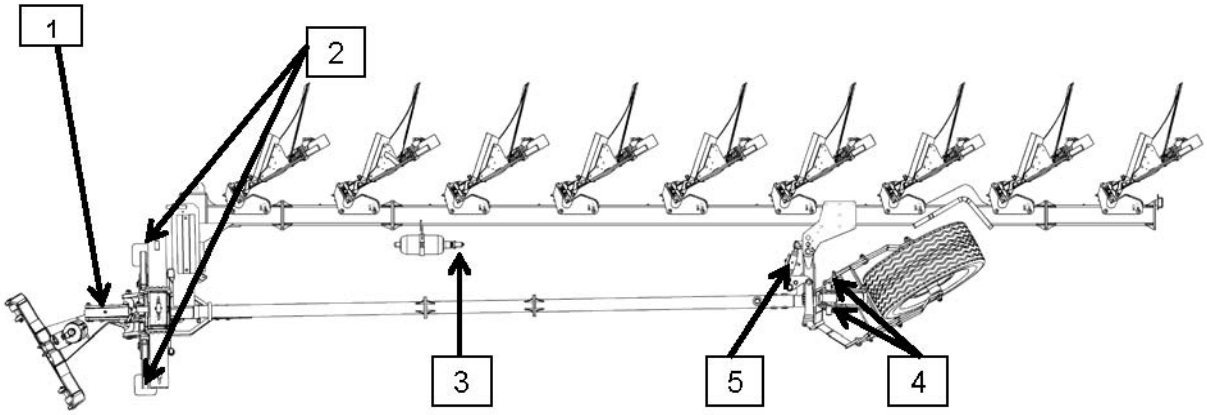


1. Holdfast
2. Plough nose
3. Underground coulter pinion (optional)
4. Reversible chisel end
5. Blade
6. Breast
7. Skate *
8. Reversing plough sole
9. Plough sole tightening
10. Adjusting breast

* The skate is the spare part on which abrasive elements are screwed up.

The model on the figure : TA plough bottom and H8 – right breast

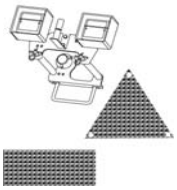
7.7. VIEW WHERE THE PLOUGH ADJUSTING MECHANISMS ARE AND CHECK THEIR WORK



1 Adjusting of hydraulics compensation cylinder (optional)
2 Angular offset adjusting
3 Non-stop hydraulics security pressure adjusting (optional)
4 The wheels depth adjustment
5 The wheels direction adjustment

For attaining the optimal power capacity of the wheel and for quick adjusting on the fields get to know the place of the plough adjusters. Be sure of the adjusting screws or bolts or elements and their suitable operation. If it is necessary lubricate them. These checking tasks are easier to fulfill in the machine-shop than in the filed.

7.8. CHECK THE LIGHTS AND SIGNALIZATION



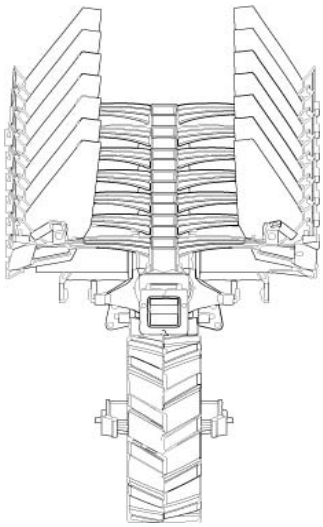
- Examine that accordingly to the local laws and rules reflectors and lights are operating and clean and can be well seen by other drivers.
- Use the reflectors, flashing and signalization day and night.
- Security equipment keep in good condition. Clean them from dust, dirt and residues.
- Change missed or repair damaged signals.

Signalization kit and additional parts can be got at the GRÉGOIRE-BESSON dealers.

IMPORTANT : Vous êtes responsable de la bonne signalisation de votre machine et de son maintien en conformité avec les lois du pays d'utilisation.

IMPORTANT : You are responsible to keep the rules and laws of the given country and to provide your machine with all needed signals and equipment.

8. TRANSPORT



8.1. BEFORE TRANSPORTING

8.1.1. The adjusting of the plough for transportation:

In the transporting position the breasts are placed horizontally and the plough is behind the tractor in one line.
This position (horizontal breasts) are at the same time disengaging position.

8.1.2. Before using the plough on the public roads

Before going onto the public road:

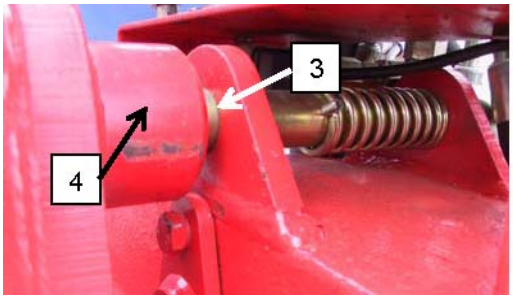
- Put the plough into the transporting position in accordance to the instruction,
- Pay attention that required lights and signals are properly mounted, they must be clean and work well (lights, reflectors, etc.)

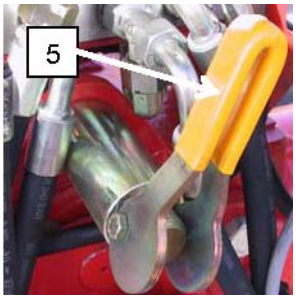
Keep Highway Code rules on the public roads:

- Do not overcome the allowed maximum width or length. If it is bigger than the maximum size follow the rules for special transporting (escort, special tables and signs, authority permission).
- Keep the maximum axle loading and tractor and freight allowed maximum weight. Be sure that the loading of the first tractor axle is never lower than the tractor mass 20 % . If it is necessary put some ballast on the front part of the tractor.

8.1.3 Releasing and blocking of the reverser during the transport

In order to avoid any accident the plough has been mounted with reverse blocking device.
With the help of it the wrong operations during transporting can be avoided.
Because of the blocking device the plough can not turn over in the case of hydraulic pipe or unit disruption.





In tightened condition the axle (3) adapts into the fastening holder (4) which provides the tightening.

The position of the axle can be directed by the lever (5) which is placed at the front of the reversing unit.
Be sure of blocking before transporting the plough.

8.1.4. During transport put the plough centre of gravity lower

In order to reduce the tractor lifting lever unnecessary overloading during the transport we must do everything to put the plough center of gravity lower.

For this purpose perform the following:

- Disengage tractor hydraulic lifting device taking care that cross-bearer do not touch the ground,
- Again close the hydraulic adjuster of the first furrow,
- Again close the hydraulic adjuster of 12'' or 14'' working width,
- Reduce the bearing height.

If the plough is ready for transporting it is recommended from the cabin to block hydraulic adjusting levers. By this any operation performed in unsuitable time can be avoided.

N.B.: Do not forget to perform suitable hydraulic adjustment if again you want to work.

8.2. DRIVING ON THE ROADS

Switch on the lights, different signals and flashings (following the rules).

ATTENTION:

- Check if there is any interference between the tractor and plough.
- Check if the plough accordingly has been fastened for transporting, if the reversing device and articulation have been blocked, if tractor distributors are closed.
- Do not drive faster that 25 km/h (15 mph). Chose reasonable speed not to lose control over the traction.
- On the roads the tractor pulling the plough should be the same size, mass and power as during the ploughing.
- Slow down at the bends and uneven roads.
- Do not use the brakes whilst turning abrupt.
- Because of vibration the wheels screws and bolts can be loosened.
- Always check their tightening before going on the road.
- if you are driving on the roads follow the Highway Code rules of the given country.
- Show calm and polite behavior with other drivers.

IMPORTANT: You are responsible to keep the law of the given country and your machine must be mounted with good signal equipment and be maintained.

9. FIELD SETTINGS

9.1. BE PRUDENT ON THE FIELD

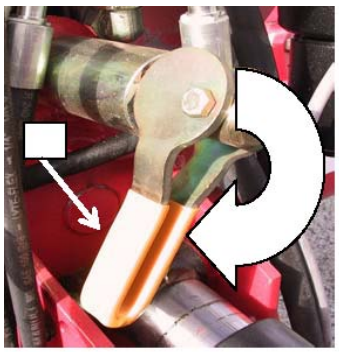
Totally follow the present instructions of the 2 chapter which contains the security rules and the behavior on the fields.

- Systematically check if the plough properly attached to the tractor 3 points mounted lifting device (pins should be in suitable condition and the presence of the security clips or safety bolts of fastening equipment)
- Always be sure during the maneuvering that there is nobody near the tractor.

- Systematically check if the plough properly attached to the tractor 3 points mounted lifting device (pins should be in suitable condition and the presence of the security clips or safety bolts of fastening equipment)
- Always be sure during the maneuvering that there is nobody near the tractor.

- It is dangerous to be jammed between the plough and the tractor during any interference that is why before stopping the engine, put the lifting device into the low position.
- To the persons in your environment point the safety zone.
- Never stay near non-stop securities or any other element under the pressure or which can be reversed.
- Be sure that there is enough place to perform maneuvering without any danger.
- Reduce engine revolution and speed turning at the end of the field..
- Never try to adjust, clean or lubricate the plough during motion.
- Be careful of any dangerous injury or getting nipped.
- For the performing of any adjustment use the proper implements.
- Wear suitable protective clothes.
- Do not get on the machine during the moving.
- Do not let anybody to get on the machine..

9.2. ADJUSTMENT OF THE WORKING POSITION



If you are in the field the plough can be put into the working position:

- Dismount the traffic signal from the back side (if it is equipped on the plough),
- Hydraulic directing levers of the switchboard put into the free position,
- Using the lever release the reversing blocking cylinder (1),
- At the beginning place the tractor and the plough on the left or right edge of the field.
- With the help of reversing hydraulic controlling tilt the plough on the needed side to be prepared to plough.

9.3. CHOICE OF THE PLOUGH DIRECTION

In order for some years to get totally smooth surface of the field it is recommended every years to start plough on the other side of the field, in even year start on the right side, in odd year start on the left side.

9.4. ADJUSTING ON THE FIELD

For optional plough often it is necessary to do plough there and back several times. The adjustment should be adapted to the conditions.

The first course should be treated in other way. As during the first course the tractor can not go in the furrow. The adjustment can be a little bit changed, it may be the depth of the front part of the plough.

IMPORTANT : The change of one given adjustment can be followed by the change of another parameter. It is important to analyze and understand the reasons of the given problem and see the consequents. In the sake of the goal it is recommended to perform only one changing and if there is no result it will be easier to turn back to the beginning.

IMPORTANT : For understanding better different adjustment you should read this chapter carefully, before you start the plough.

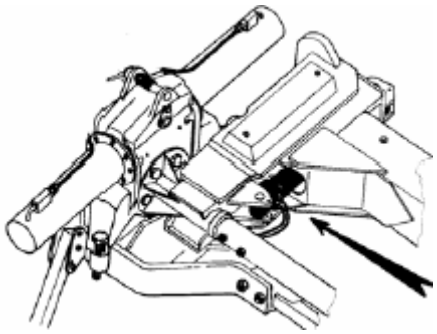
9.5. THE FIRST COURSE

Before starting plough perform the adjustments described in the chapter. It is very important to read the chapter till the end before starting plough.

9.5.1. HYDRAULIC ADJUSTMENT OF THE FIRST FURROW (deport)

At the first course it is often advantageous it here is the maximum lateral displacement/deport in the direction of the external side. By this it can be avoided to go too close to the edge of the forest or ditch.
This adjustment aviable only on ploughs which fitted with hydraulic cylinder and kontroll the position of first furrow.

This option make possibility to compliance with difficult work conditions.



For save the guide rails the adjustment must make on ground. Of course the adjustment of first furrow is possible during operation.

This operation must to make in transport position or when the plough is on the ground. Never carry out this operation, when the beam is in lifted position, because it causes demage on the guide rails.

9.5.2. PUTTING THE PLOUGH ON THE GROUND

At the beginning of the ploughing, when the movement has been started, put the plough slowly on the ground in two phases which follow each other while the blades are penetrating into the soil.

1 – Put down the lifting device of the tractor (lifting lever of the tractor)
2 – Put down the wheel of plough (double action (Double Effet hydraulic control lever)

The purpose is the front plough bottom and the rear one perform the equable and linear work already from the beginning of the field.

9.5.3. ADJUSTMENT OF THE WORKING DEPTH

For adjustment of the working depth it is necessary to have two positions of the devices:

1 – The height of tractors hydraulic lifting system — For first part os plough
2 – The adjustment of ploughs wheel — For middle part of plough

9.5.3.1. The adjusting of the depth with the tractor lifting device height

The tractor lifting device height is adjusted by the lifting lever on the switchboard. At the first course the front breast can not put the ground into the furrow, at it does not exist yet. So it is natural that the lifting device of the tractor should be raised a little to avoid the formation of the very big ground piling performed by the front plough bottom.

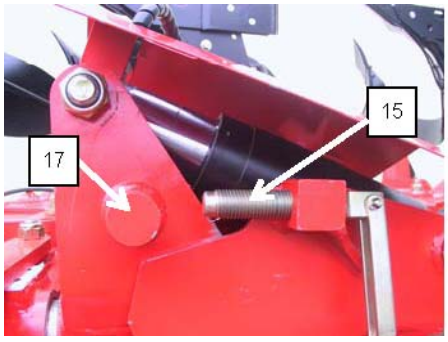
9.5.3.2. Adjustment of the tractor control system (Draft-Control)

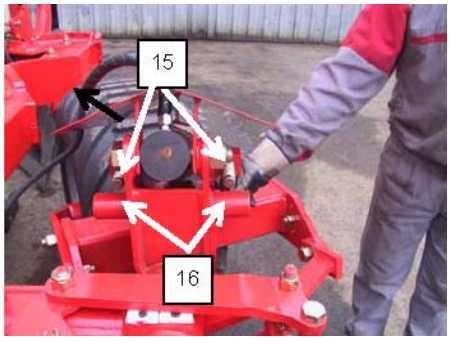
At first it is recommended to put draft control to minimum sensibility (0 - 1), this way it will be easier to control and adjust it later. When the suitable adjustment is performed it will be enough to increase the sensibility of the draft control to optimize tractor adherence.

N.B. (nota bene):

- In some definite cases, when there are unfavorable draft conditions (soft, wet soil, limited draft power), it is impossible to put to the minimum the draft sensibility. In this case take into the consideration the expected reaction of the lifting device performing the average depth.
- If the plough has hydraulic load governor by the action of this device the load governor reaction can be changed. So the height of the tractor lifting device should be corrected.

9.5.4.3. Adjusting of the working depth on the support wheel.

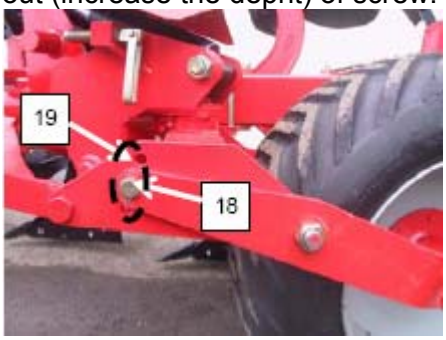




The adjusting of working depth is performed at rear of plough on the support of wheel.

During work the screw (15) of depht limiter rest on pins (17) of wheel support.

If the depht must be adjust, at the time the plough must to lift for move of the wheel cylinder from support cease the pressure to srews, in this way will be possible the turning in (decrease the depht) or out (increase the depht) of screw.



ATTENTION: Do not put your hand between the bolt and tube. It may be injured and lead to the amputation or even death.

If the stroke of the depth limiter or the lifting cylinder isn't appropriate, then changeable the height of beam with positioning the screw (18) to one of the three aviable hole (19).

Depending of diameter of wheel changeble the distance beetwen the beam and wheel with put the axle to one of the three aviable position. This adjustment carryed out in factory, in normal case – if not change the wheel to different diameter – not needs any further adjustment.

9.5.4. ADJUSTING OF INCLAMINATION

Lack of furrow in first course the inclamination of plough isn't permanent, because the four wheel of tractor are horizontal, they are on even ground.
But the adjusting of inclamination may be useful in first course too.
See the adjusting of inclamination in chapter 9.6.1.

9.6. THE SECOND COURSE

Before start the second course do not forget to close the adjuster of first furrow width. If you don't know the reference position of first furrow, then take for base the middle stokr of cylinder.

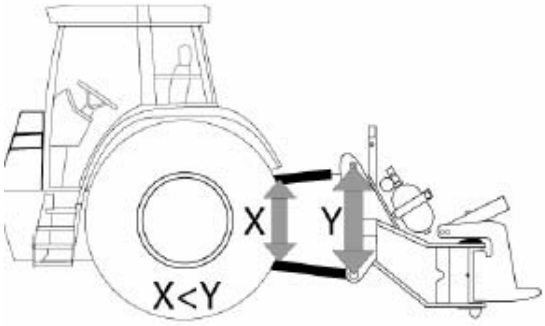
Before the final adjustment:
Make sure, that after some hours operation the breasts polished suitably. For soil must to pass trough without any sticking.
Sometimes on peatly or claily soils it possible, that the soil stick to metal in further too. Besides such conditions – as often as possible – clear the breasts, entirely the soil pass trough without sticking. See in chapter 7.5 in this Manual (Preparing the new breasts to operation). Such extreme conditions may be required plastic breasts. Consult your GRÉGOIRE-BESSON dealer who can help you the choice of the best technical solution.

9.6.1. PUTTING THE PLOUGH INTO THE LEVEL

In the second course the wheels of the tractor are going in the furrow.

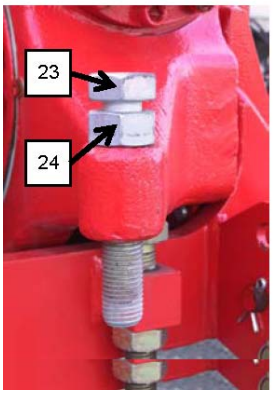
For good ploughing the side part of the plough (inclination from left to right) as well as in longitudinal should be on the same level (from front to back)

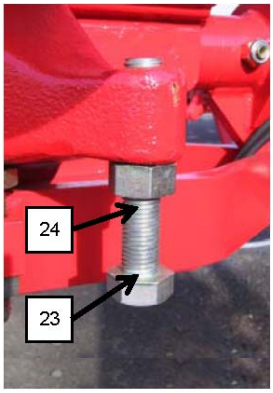
9.6.1.1. The adjustment of the third point position (pusher)



The adjustment of the third point position is performed when the tractor is in the furrow (second course) with the plough being put on the ground. During the work the third point should be higher on the side of the plough (X < Y) usually one hole vertically.
From the side of the tractor using the hinge the height can be changed. The height adjustment from the side of the plough is performed by three point mounting device on the pull-rod with the help of different holes.

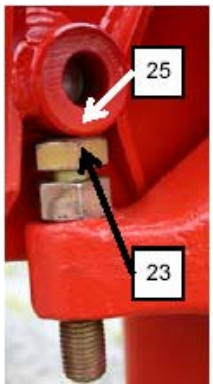
9.6.1.2. Adjustment of inclination (lateral level = vertical balance)





The bolts of the plough inclination (23) are placed under the turning levers. There are two bolts, one on every side.
Be sure that you mount bolts in proper direction (23) on the casting:

- In the case of plough in the furrow the bolts (23) and check nuts (24) should be above.
- In the case of plough out of the furrow they should be beneath.

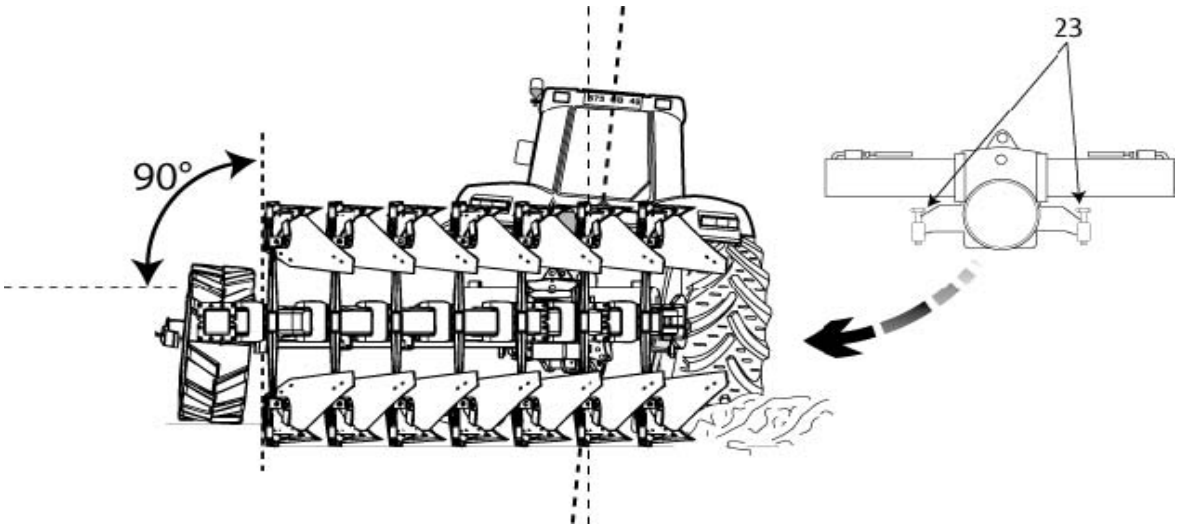


At the beginning of the second course the plough should be put vertically on the ground for adjusting of inclination. To reach the adjustment easily carefully with the help of the turning device disengage the beam from the inclination bolt. To get the necessary inclination the adjustment of the bolts (23) should be corrected. To continue the ploughing do not forget to adjust the stop-piece (25) with adjusting bolt (23).

ATTENTION: Do not put your hand between the beam and the bolt. It is very dangerous and may lead to injury or even amputation or death.

ATTENTION: Do not put your hand between the beam and the bolt. It is very dangerous and may lead to injury or even amputation or death.

Generally, the plough connection must be put on the ground vertically (90°). If we plough on the slope or very clayey soil the plough can be inclined in the plough direction to increase the pressure of the rear part of the breast on the soil surface.



IMPORTANT: If we change the plough depth then the inclination should be changed as well.

IMPORTANT: It is normal if we notice the difference between the height of the inclination bolts (22) as

the supporting part has a big volume.

9.6.2. HYDRAULIC ADJUSTMENT OF THE FIRST FURROW WIDTH (Deport)

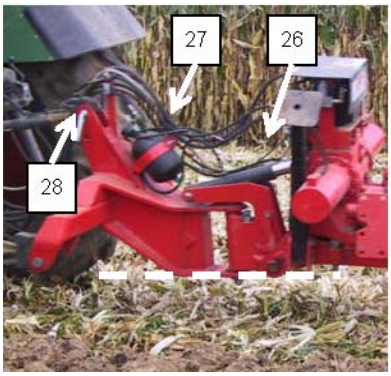
- **a / If the first plough bottom leaves hillocks** it is because of too big furrow edge. The furrow edge quantity is bigger than it is needed for compactness. If the first furrow width is decreased hydraulically (deport) the first plough bottom will tear out less ground and hillocks will disappear.
- **b /If the first plough bottom leaves dishes** it is because it does not tear out enough quantity of the ground for finishing the furrow. With hydraulic increasing of the first furrow width (deport) the first plough bottom more ground will tear out and dishes will disappear. These adjustments can be performed during the plough work. So at once you can see the result of the first furrow adjustment.
- **c / Individual case:** If the deport of the first plough bottom is too big then instead of hillocks there will be dishes. And the width of the rearing is too big for plough capacity. It can be explained that the breast is not long enough to throw more ground to furrow. So the furrow has not been properly backfilled. With decreasing of the first plough bottom tearing width the end of the breast will be able to throw the ground into the furrow and hillocks will disappear.

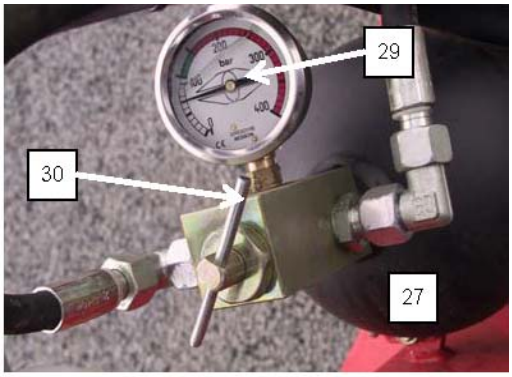
To find the suitable first furrow width is enough to see the result of

previous ploughing (if the lateral and longitudinal level adjustment of the plough has been performed).
N.B. :

- On the slopes or uneven soil surface the first furrow width must be corrected to smooth ploughing.
- Too worn plough blades, coulters can not provide smooth ploughing.

9.6.3. ADJUSTMENT OF THE HYDRAULIC COMPENSATION CYLINDER (Option)





The hydraulic compensation cylinder (GRÉGOIRE-BESSON patent) provides transmission of the tractor draw power to the bottom mounted levers. Because of that the draw force of the tractor ameliorates due to the optimal loading distribution.

A simple hydraulic cylinder (26) connects the upper part of the reverse head to draw equipment with the help of 110° cardan axle. A hydraulic accumulator (27) which has pressure checking manometer (29) and a float needle valve (30) can be found here.

- Perform the adjustment accordingly to the following procedure:
- Adjust the length of the third point put the cross-bearer into the vertical position (white dotted line), when the plough is working under the normal conditions.
- Connect the tractor with the cylinder hydraulic flexible pipe,
- Open the float needle valve (30) 2 to 3 turning,
- Hydraulic circuit put under the pressure and increase the pressure (green line of the manometer (29)). The purpose is that during the plough work, the force should not interact on the third point of the pin (28) The proper pressure will be got if the pin is unloaded (28) . Notice that the pressure is about 100 bar and it is important to check the pin free rotation.
- Close the float needle-valve back (30) if the condition of the balance is got.

ATTENTION: Do not forget to decrease the pressure to 0 bar. If the pressure is not eliminated the disengagement is difficult to perform and the cross-arm can fall on the ground. Because of that you may be injured that leads to amputation or even death.

9.6.4. THE ADJUSTMENT OF <B> SHEAR PINS

In case of up sharing pins breasts:
Never stand in shearing area, keep safety distance when the plough operate.

The disengagment of secureing causing the shearing of two 16 mm diameter, 50 mm long pins in same time.The disengaging load of pins at top of stock influence the temper of pins and the height of plough.

PLOUGH	PINS VI3106+VJ324 Temper 8.8	PINS VI3107+VJ324 Temper 10.9
Height 1m 60	4800 kg	6000 kg
Height 1m 70	4500 kg	5700 kg
Height 1m 80	4200 kg	5300 kg

To make the change of pins easier we advised to take the plough to transport position. In this case the parts are in horizontal position. It render, that the holes are in same level and the pins are changeable without force.

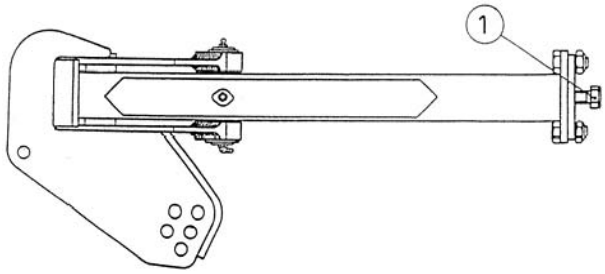
9.6.5. THE ADJUSTMENT OF <S> SHEAR PINS (Optional)

The disengagement load is adjusted by manufacturer for avarage safety use. The load of pins adjustable by srew (1).

For increase the load turn the srew (1) by 1 or 2 turning.

Grease the articulation points regulary (5 grease points).

Tha force on the top of brease is beetwen 1500 and 3000 kg.

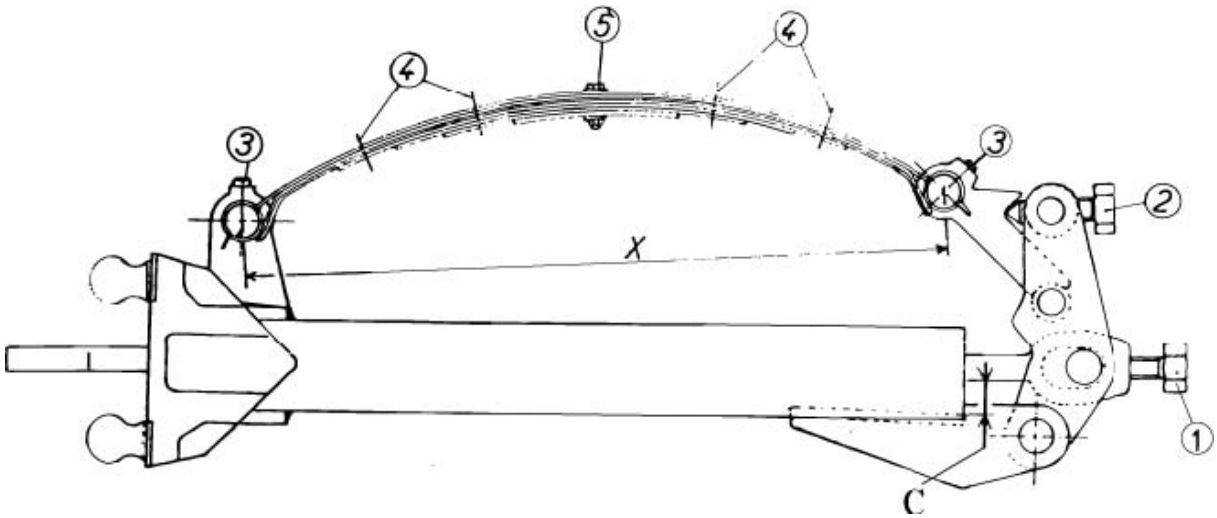


9.6.6. THE ADJUSTMENT OF <S> SHEAR PINS (Optional)

At assemble adjusted the disengaging load to maximum value, but it is adjustable by screws (1) and (2) and determine it values (X and C). [At assemble C=3mm and X=830mm].

In case, when for stock must to get out often (stonly soils), increase the value of C beetwen 3 and 10 mm. For it loosen the srew (2), then adjust the C with screw in screw 1, then screw in screw 2 while reach value X.

NB : It is possible to increase the resistance of spring by added two spring plates: 1 piece plate reference 131622 and 1 piece reference 131624.



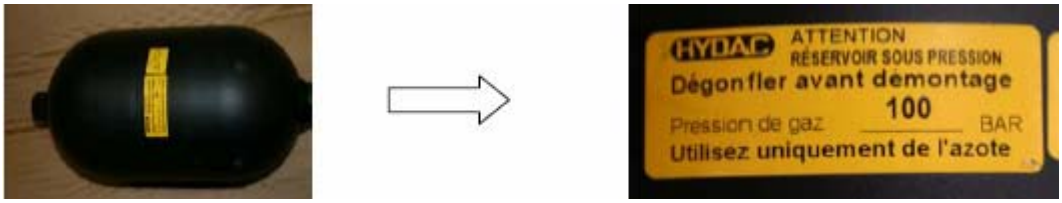
9.6.7. ADJUSTMENT OF HYDRAULIC NON-STOP SECURITIES (Option)

The elements of Grégoire-Besson Varilibre plough can be optionally equipped with Y type hydraulic Non Stop security.

Behind every element there are two pieces of 3.5 liter capacity hydraulic accumulator. On the front and rear beam there is 1-1 accumulator. Two accumulators have the same hydraulic circuit.

Inside the accumulator there is a flexible membrane which devices the hydraulic circuit from nitrogen under the pressure.

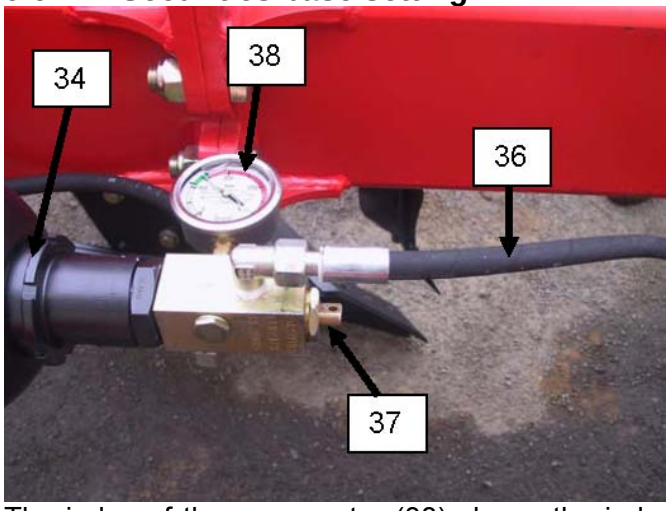
Nitrogen compress pressure in accumulator is given, it is displayed and can be modified.



Indications sur les accumulateurs

Az akkumulátoron található jelölések

9.6.7.1. Securities base setting



- The front accumulator (34) is connected with security cylinder (one on every plough bottom).
- Hydraulic provision of the security circuit provides the flexible pipe (36).
- During the operation (plough) the pin (37) is closed and dosing is stopped, so the hydraulic circuit of the securities becomes totally separated from the tractor.

The index of the manometer (38) shows the industrial hydraulic pressure of the securities. There is mode to modify the pressure if we want to increase or decrease the disengagement torque on the plough blade end.

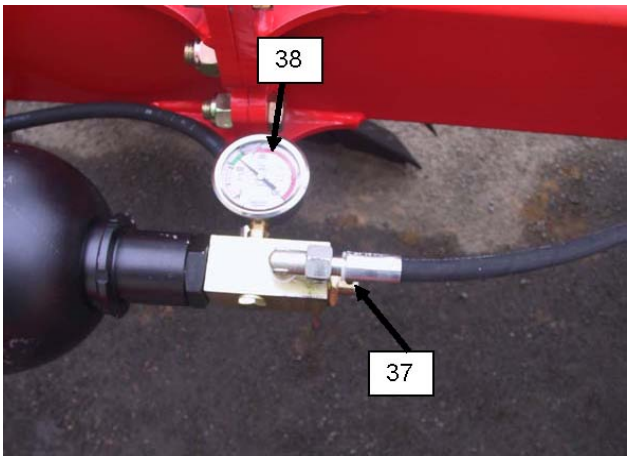
9.6.7.2. The increasing of the disengaging torgue of the plough blade end.

If we would like to increase the measured disengaging torque at the end of the plough blade (heavy soil) in the inner hydraulic circuit of the securities the pressure should be increased.
The pressure can be increased by adding more oil into the system. Oil surplus will be pressed by nitrogen which is on the other side of the membrane. So greater force is needed at the end of the plough blade for security elements to operate.

9.6.7.3. The decreasing of the disengaging torgue of the plough blade end.

If we would like to decrease the measured disengaging torque at the end of the plough blade (light soil) in the inner hydraulic circuit of the securities the pressure should be decreased.
The pressure can be increased by reducing oil in the hydraulic circuit. As the hydraulic pressure will be later, the nitrogen which is on the other side of the membrane will expand. So less force is needed for the operating of the security elements.

9.6.7.4. The operation for modification of the disengaging torque of the hydraulic Non-Stop security.



1. Put the pull device on the ground before beginning the securities base setting.
2. Turn the plough on the right side vertically without putting the plough bottom on the ground.
3. Leave about 15 cm (6'') between the end of the plough and the ground.
4. In the cabin put into the neutral position controling lever of the lifting device.
5. With the help of flat screw-key 2 turning open the doing cock (37).
6. As the security hydraulic circuits are in the opened position, it will be easier to add or take the oil if the directing lever of the rear beam lifting devices is pulled back in the driver cabin.
7. After the movement of the manometer indicator (38) close the cock back (37) when the required pressure was reached.
8. Perform test ploughing to see if the disengagement is suitable.

If the parts hammer and all the time disengage then the pressure of the security circuit should be increased.

If the maximum set in the green line of the manometer is not enough, connect the brand dealer. He can recommend more optional solutions to use the plough in the given conditions.

- The increasing of the security cylinder Ø on every element (100, 110 or 125 mm);
- The equipment of 150 bar pressure accumulator (nitrogen pressure).

If the plough bottom too often catch stones or there are too many stones then the industrial pressure of the securities should be decreased.
If the pressure is too high it may obstacle the disengagement of the plough bottom during the impact. It is dangerous because of the breaking (wearing pieces, bolts, screws, holder) the life of the plough will be reduced because of the beam unnecessary force action.
If you have problems connect with the GRÉGOIRE-BESSON dealer who can recommend you suitable solutions.
IMPORTANT: If the pressure is too low then two upper supporting ball pins turns out of the case and plough bottoms slowly go down to the ground. It is enough if the pressure will be increased again to put the elements into the normal position.

ATTENTION: Too low pressure can result the plough bottoms putting down. It is dangerous as we may be injured or suffer such crush injury which may lead to amputation or even death.

9.6.7.5. ADJUSTMENT WHEN YOU ARE ALONE IN THE FIELD

When only the tractor operator is working it may be too long to hit the security hydraulic circuit pressure You should go forward and back in the driver cabin between the controlling lever and circuit breaker (37). At that time the following simple mode should be applied:

A. Look at the pressure on the manometer compared with the actual one, required pressure value (+ bigger – smaller).
B. Open the cock (37),
C. Go into the driver cabin and alter the rear beam lifting lever to let more oil to enter the circuit. Be sure that the manometer shows higher value of the pressure.
D. Close the cock, in hydraulic circuit there is still more oil. (37).
E. Go back to the driver cabin and put hydraulic directing levers into „self-adjustable" position,
F. Carefully open the cock (37) for the oil overflow go back into the tractor.
G. Quickly close the cock (37) the indicator of the manometer (38) during the pressure reduction reaches the new required value.

ATTENTION : Do not increase the accumulator pressure above the possible used values.
The too big pressure in the hydraulic circuit prevents the operation of the securities. The gas (nitrogen) would be totally presses because of the hydraulic pressure. As the accumulator is full with oil it would not be the buffer and could not absorb the oil coming from the securities..

The nitrogen compress pressure in the accumulator	*Oil pressure set values seen on the manometer*
70 bar	80 - 120 bar
100 bar	110 - 150 bar
150 bar	160 - 200 bar
100 bars	110 à 150 bars
150 bars	160 à 200 bars

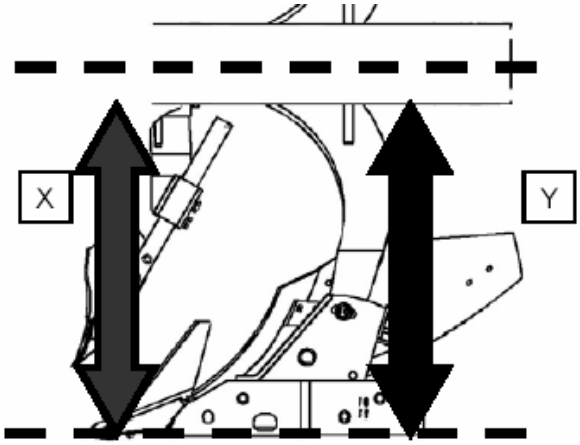
ATTENTION: The hydraulic Non Stop security works as element: The upper plough part and the bottom plough part turn up at the same time. Nobody must stay in the zone of security disengagement.

Do every precaution described in the chapter 2 especially about the pressure in the hydraulic circuits.

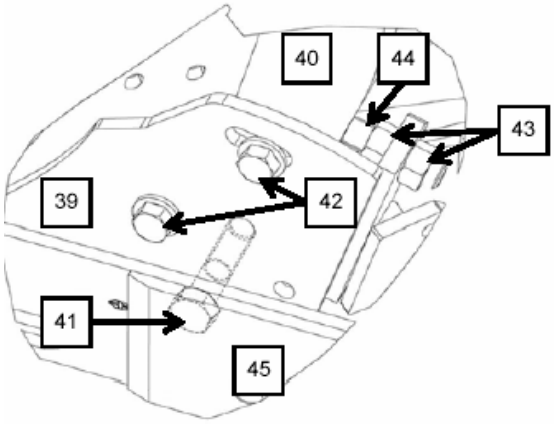
9.6.8. ADJUSTMENT OF THE PENETRATION ANGEL OF THE PLOUGH BOTTOM (Entering)

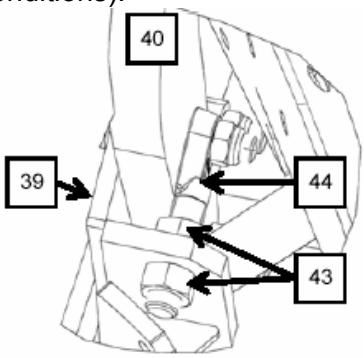
X = Y + 15 mm

~~X < Y~~



The penetration angel is industrially set to produce the 15 mm difference between the front part of the plough-sole the rear part which fixes the plough-sole.
Under the normal condition it is not needed but there is possibility to adjust the penetration angel of the plough bottom (drought, extremely hard, or under special conditions).





For the greater penetrating of the plough, the plough cane (39) relating to the connecting rod should be turned forward (40).
The turning is performed around the bottom fixing bolt (41) it is mounted into the hole of two upper bolts (42) . The angel regulation is provided by adjusting lever (44) with fastening of two female screws (43).

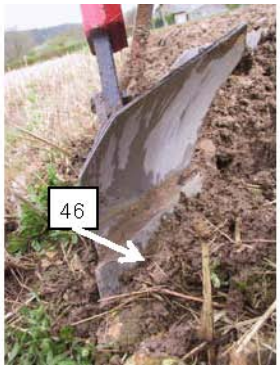
The method to be followed (Operational mode):

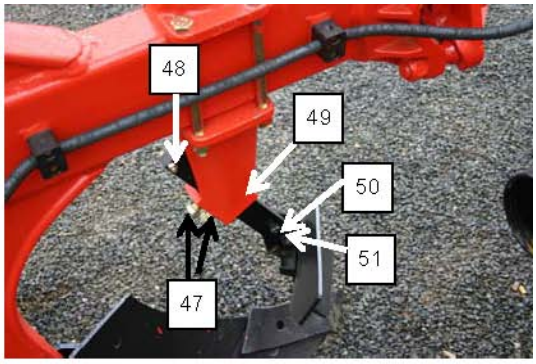
1. Turn the plough vertically on the needed side without putting the plough bottoms on the ground.
2. Clear away the ground and clean the points of admittance to the bolts and control levers.
3. Dismount fastener of the plough sole (45) to be able to reach the bolt (41),
4. Loosen the fastening bolts and transporting bolts (41 and 42) in order two bolts (42) were able to go into the long opening.
5. Loosen the front female screw of the pick control lever (43).
6. In order the plough bottom could penetrate better the rear female screw of the pick control lever (43) should be fastened.
7. To abate the plough bottom penetration the front female screw of the p pick control lever (43) should be loosened.
8. If all adjustment has been finished, all bolts and screws must be fastened and the fastener of the plough sole (45) must be mounted back..

IMPORTANT:

- If we are not going to return to the field before changing the plough bottom angel adjustment, check the wearing parts condition (gib heads and blades). The worn parts prevent the required penetration. The gib heads should be pulled forward and blades should be changed.
- If plough bottoms penetrate too deep, it is difficult to pull the plough, the fuel consumption is being increased, the securities will be disengaged, the ground will slip under the rear part of the breast.
- The rear measured height (Y) must never be less than the front measured height. (X).

9.6.7. ADJUSTMENT OF JOINTERS





The task of the jointers is to cut plants to provide suitable rotation of the residues.
The height of the jointer can be adjusted (from top to bottom) and fron front to back direction.

9.6.7.1. Security pins on the jointers

The jointer is protected by shearing. At hitting the obstacle (stone) the upper pin (50) shears and the sole of the jointer turns round the pin.(51) As standard equipment the shearing was calibrated to 80 kg (GB reference: VI 29 08).
We increase the security resistance, if the 100 kg calibrated pin (GB reference: VI 29 09) is used. The suitable pins can be got from the GRÉGOIRE-BESSON dealer.

9.6.7.2. Adjustment of the jointer hieght

Generally it can be said that the front part of the jointer iron (46) should be adjusted so that it could work in the half height of the soil (about 6 cm / 2''1/2).

- In order to adjust the working depth of the jointer, two cusped screws (47) should be loosened so as to be able to pull them out of the hole of the jointer arm (48)
- Push the jointer arm (48) into the holder (49) till you get the required height.
- Screw back two screws (47) paying attention that the jointer arms (48) go back into the hole.
- In order to put other jointers into the same level, perform the operation accordingly to the number of the holes on the rear part of the jointer.
- The length of the standard jointers is (48) 330 mm (≈ 13''). There are longer models (410 mm / 16'') to use them for less deeper ploughing (Reference: 19 186).

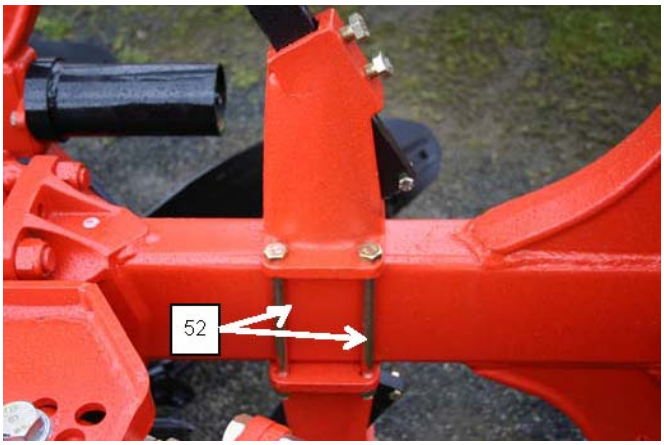
N.B. :

- Changing the depth of the plough, the jointers adjusting should be corrected as well.
- If the jointer is adjusted too high, behind the jointer (and at the rear part of the plough bottom around connecting link) there may be clogging as the plants will not be cut properly.
- If the jointer is adjusted too deep, there may be clogging in front part of the jointer which will not be able to absorb too big quantity of the plant residues. At the same time the plough can be pulled with bigger difficulty and the tractor will use more fuel.
- In both cases it is possible that the plant residues will not be rotated properly.

  Think over this situation till the end before performing the adjusting the jointer.
- The modification of the adjustment start on one or two jointers, then test them. If the result is suitable, adjust the other jointers. In the contrasting situation perform another adjustment.

9.6.9.3. Adjustment of the front/rear part of the jointer

Generally it can be said that the jointer are adjusted in such a way that the end of the jointer iron can be turned vertically to the end of the plough head.



If we push the jointer forward, the plant residues will be rotated onto the bottom of the furrow.

In the case of big quantity of the plant residues the jointer should be pulled back.

In order to push the jointer forward or pull it back four bolts (52) must be loosened.

10. ADDITION OF THE SUPPLEMENTARY PLOUGH

10.1. SAFETY DEVICES

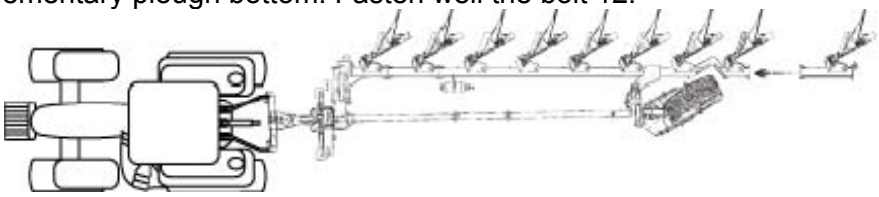
This operation requires such protective equipment for supporting plough and plough fastening, for lifting the supplementary plough bottoms as helmet, protective goggles and gloves as well as safety shoes in good conditions.




Never let it be improvised if you deal with this protecting equipment, connect with your GRÉGOIRE-BESSON dealer.
The plough must be attached to the tractor normally.

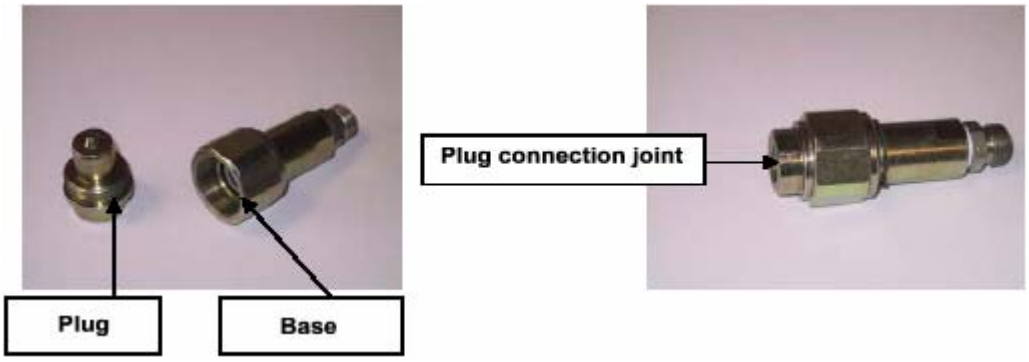
10.2. ASSEMBLE THE SUPPLEMENTARY PLOUGH BOTTOM

1. Before starting the operation put the towing device to smooth ground.
2. Turn the plough side to horizontal position, stocks don't touch the ground, keep 15 cm distance beetwen ground and stocks.
3. Stop the motor and apply the parking brake, get out the starting key and put it to own pocket.
4. Dismount from beam the plate and the signal consol.
5. With lifting device put the plough bottom to beam, mount all 12 screws and fastening them,connect it to plough correctly. Dismount from lifting device the plough bottom.
6. Pour le raccord de la sécurité hydraulique : (option)
5. After that put the whole last plough bottom together with the wheels behind the supplementary plough bottom. Fasten well the bolt 12.



6. A hidraulika biztosítás (opció) csatlakoztatatásához:
    - Csavarozza le a hidraulika kör szorítógyűrűjét az utolsó eketesten.
    - Kapcsolja össze a hidraulika csatlakozót.

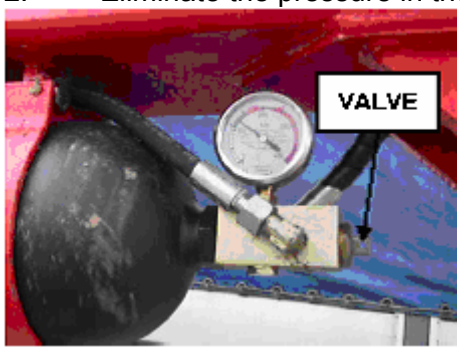
IMPORTANT : The security hydraulic connections should be screwed to the end to have the securities of the supplementary plough bottoms work properly. The ploughs union nut must impact the suitable part of the connection base.



7. Put the non-stop hydraulic circuit under pressure again/ see chapter «9.6.5.4 The performance of the operations for changing of the pressure of the hydraulic non-stop security disengagement».

10.3. HOW TO CONTROL THE SUITABLE WORK AND FITTING OF THE HYDRULIC SECURITY ON THE ADDITIONAL PLOUGH BOTTOM

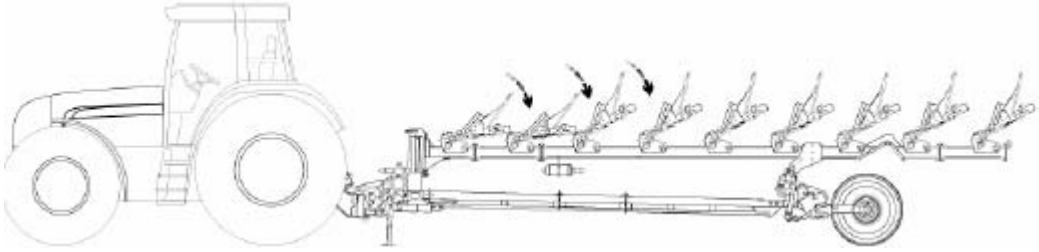
1. Fasten the plough into the transporting position and the plough bottom into the vertical position.
2. Eliminate the pressure in the hydraulic circuit as it follows:



1. Open the pipe valve at the end of the accumulator.
2. The circuit pressure which is in the connection with the accumulator eliminate by putting the distribution lever into self-adjusting position and follow the instructions about tractor usage.

Attention, by eliminating the pressure in the security cylinders, the plough bottoms cannot be kept up and there is the risk that they may fall down. The plough must be fastened.

3. The manometer of the accumulator must show zero.
4. Every plough bottom must go down one by one.

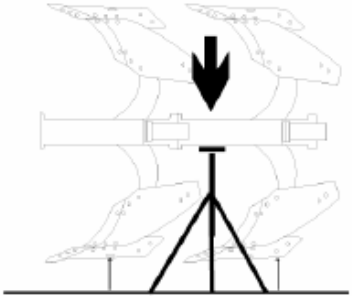


5. If the hydraulic connection has been performed properly, the supplementary plough bottoms should go down as well. If it does not happen we should check the fastening as it described above.
6. For accumulator blowing up and the circuit placing under the pressure the tractor distribution levers should be put into the operation till the manometer indicates in the green line the required pressure.

11. GREASING AND MAINTENANCE

The user and the owner of the machine is responsible for its maintenance.
It is essential to understand the maintenance procedure very well before performing any interference or adjustment on the plough.
Turn for help to the GREGOIRE-BESSON dealer if you have difficulties.

11.1. PREPARATION AND ORGANIZATION OF THE MAINTENANCE



- The area where the plough is maintained must be plane, clean and must not slip.
- Pull the hand brake, the gear must be in the «Parking» position and the plough must be put on the ground.
- Stop the engine, then eliminate the hydraulic pressure in the circuits (SE – DE) with the help of the control levers in the driver cabin.
- Take out the starting key and put it into your pocket.
- Wait till the engine and the spare parts become cool and dry.
- NEVER try to interfere while the machine is in motion.

11.2. SECURITY INSTRUCTIONS DURING THE PLOUGH MAINTENANCE

Follow the rules described in the 2. chapter of the instruction

- Recognize and understand the information signs,
- Follow the security instructions,
- Be prepared for critic situations,
- Do not wear large clothes,
- Wear suitable protective equipment,
- Avoid dangerous situation in connection with overrunning,
- Take out the starting key,
- Pay attention to the electric wires,
- Do not perform adjustment of the moving plough,
- Be careful with cutting and getting nipped,
- Be careful at swinging,
- Pay attention to the elements under the pressure (security etc.),
- There must not be any passengers in the tractor,
- Be careful of gas and fluid under the pressure

Take care of continuous airing of the place if you want to start the tractor. (The engine exhaust contains toxic CO).

10.2.1. APPLY SAFETY PRACTISE

Show responsible and competent attitude:

- At once change all the damaged spare parts,
- Change the worn and broken spare parts,
- Keep the spare part sin good condition and properly mounted,
- Put on the place chain-cases and equipment. If it is needed change them,
- Gathered grease, oil or other pollution must be eliminated and the spare part must be cleaned,
- After finishing the maintenance be sure that there are no any spare parts or tools on the way of the wheels,
- If several persons work on the plough, make sure that every task has been fulfilled (for example, all screws has been put back).

IMPORTANT: If on the original plough we perform any modification, the manufacturer do not take any responsibility and refuse the guarantee.

11.2.2. BEFORE INSPECTION HOSE DOWN THE MACHINE

- Before any maintenance find time to hose down the machine and clean it from the dirt. It is easier to do the inspection and adjustment as well as it is easier to keep clean the area of maintenance

BE CAREFUL with the stream under big pressure:

- The power of the stream under big pressure may cause injury on the body or in the eyes. Use the hose accordingly.
- Be careful, do not damage or pull down the security matrixes on the plough. Put the new ones instead of damaged or missed.
- If you use washing equipment with big pressure, do not keep it too close to the machine and do not direct the stream to the electric equipment, connections, hydraulic pipes, contactors etc.
- After the cleaning check the hydraulic flexible pipes and be sure that they do not leak, that the connections are not loosen or damaged.
- If you notice any damage, repair it at once.
- After washing grease the machine, by this you can clear way the water from axle of the articulated connections and rings.

11.2.3. WORK IN THE AIRED PLACE

- In the workshop where the maintenance is performed the place should be properly aired.
- Never leave the tractor engine go in the closed building. The exhaust can cause asphyxia or cancer.

11.2.4. WORK IN THE CLEAN PLACE

- Think over the necessary place to have proper maintenance.
- Take care that the place is always kept clean, in order and dry.
- Put away and store the dismounted spare parts. For small spare parts use storage boxes.

11.2.5. PUT SECURITY SUPPORTERS

Generally before the maintenance or repairing the plough must be put down.

If it should be kept up:

- Put the tractor in the «Parking» position and putt the tractor hand brakes. Support the plough wheels.
- Do not neglect tractor or plough hydraulic cylinders. If any element of hydraulics breaks away or leaks it may be dangerous because of injuries.
- Every element of the machine must be supported if you are going to work under it.
- Do not support the machine with wood, concrete or stop pieces, they can break, slip, roll off.
- Do not use screwing hydraulic elevator (crick).
- Use supporters in accordance with the security norms (size, loading etc.).

ATTENTION: Be careful while you are working under the machine. If you want to maneuver with the plough, be sure there is nobody under the machine.

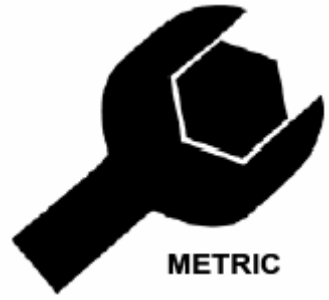
11.2.6. DISCHARGING OF THE ACCUMULATOR

Before welding or any other interference in the electric circuit, pull the negative cable out of the accumulator.(-).

11.2.7. PAY ATTENTION TO THE LIGHTS OF THE WORKING AREA

It is important to work on the illuminated place. It is even more important that our light equipment meets requirements of the security norms. If you use trouble light, be sure that it is in good condition and is protected by metal basket.
A broken lamp may be enough to flare up oil or fuel on the ground.

11.2.8. USE THE PROPER TOOLS



The plough screws are metric. Use only metric implement. Other implement can slip and cause danger of injury. The adapted implements must be used.

11.2.9. THE SCREWS MUST BE FIXED ACCORDINGLY

It is important that every screwing (bolt or screw + female nut) should be used on the place defined by GREGOIRE-BESSON. It is important to fasten every bolt or screw depending on its diameter and brand.

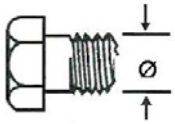
The fastening of the bolts and screws should be in good condition.

- Too strong screwing more often causes breaking of the screws. If the screw is fastened too strong then we have overcome the apparent elastic limit. It will be elongated, even broken. This time the fastening claims can not be met.
- Because of a loosen screw the spare parts can be broken or missed.
- During changing be sure that new screws have the same technical parameters.
- Properly clean the screw-threads and be sure of the first screw-thread grip capacity.
- During assembling (accordingly adjusted) hand wrench or hexagon key can be used. But it is not advisable to use box junction or other tools for increasing of the fastening capacity. It is not only dangerous but the screw can be broken.

11.2.10. NORMS OF SCREW FASTENING

The torque of the fastening depends on the screw diameter and its brand. The following table will help to find the optimal effectiveness of the fastening.

The mark of the screws can be changed by a manufacturer



Dimensions			Kategory 4.8 (40 kg)			Kategory 8.8 (80 kg)			Kategory 10.9 (100 kg)			Kategory 12.9 (120 kg)		
Ø (mm) Srew	Tool size (mm) Norme DIN	Norme EN	N x m	kg x m	lb - ft	N x m	kg x m	lb - ft	N x m	kg x m	lb - ft	N x m	kg x m	lb - ft
M 8	13		14.5	1	11	28	3	21	40	4	30	47	5	35
M 10	17	16	29	3	21	55	6	41	80	8	59	95	10	70
M 12	19	18	50	5	37	95	10	70	140	14	103	165	17	122
M 14	22	21	80	8	59	150	15	111	220	22	162	260	27	192
M 16	24		125	13	92	240	24	177	350	36	258	400	41	295
M 18	27	26	170	17	125	330	34	244	475	48	351	560	57	413
M 20	30		245	25	181	475	48	351	675	69	498	790	81	583
M 22	32	34	330	34	244	650	66	480	920	94	679	1080	110	797
M 24	36		425	43	314	820	84	605	1150	117	849	1350	138	996
M 27	41		625	64	461	1200	122	886	1700	173	1255	2000	204	1476
M 30	46		850	87	627	1630	166	1203	2300	234	1697	2700	275	1993
M 36	55		1450	148	1070	2850	291	2103	4050	413	2989	4750	484	3506

Rigid fastening torque on electroplated/anchored screws (general usage). 1 N x m = 0.1019 kg x m 1 kg x m = 9.81 N x m 1 N x m = 0.738 lb x ft 1 lb x ft = 1.355 N x m Only for information: the length of screws is measured under their head

11.2.11. BE ATTENTIVE WITH ABRASIVE GRIT PIECES

Be very careful when you change such abrasive spare parts as parts of the plough bottoms or disc coulters. Because of the chafing to the soil they can become razor edged.

- The plough sole be so acute that if they go under the skin or penetrate into the eye they can cause very serious injuries.
- The disc coulter can cause deep wound.

The screw heads on the abrasive part of the plough can cause cuttings. NEVER hold the screw with your bare hand, especially if you loosen them with the hexagon key. They may slip and cause serious cuttings. Use clamps or a piece of wood.

To avoid the danger of accident:

Wear thick leather protective gloves.
Wear protective glasses (goggles) every time when you use a welding torch or grinders, cutting off machines to cut some spare part or screw.

11.2.12. PAY ATTENTION TO GAS AND FLUID UNDER THE PRESSURE

The fluid under the pressure during discharging can cause injury getting on your skin or eyes.
Systematically check hydraulic connections and flexible pipes condition.
The hydraulic circuit breaking or leakage must be repaired at once.
To avoid any accident before the hydraulic pipes connecting or disconnecting, you should eliminate the inside pressure.
That is why after the tractor was stopped and the plough put down on the ground, push the hydraulic distribution levers which are in the switchboard, from the front position back in order to release the oil under the pressure.

Before you put the hydraulic circuit under the pressure, check if component parts and connecting elements (joints, flexible pipes) are in good condition.

Wear thick protective gloves and glasses (goggles)!.
NEVER search the leakage with you hand.
Use a stick and wear thick leather gloves.
For bigger safety use protective glasses.
Keep suitable distance in the case of any leakage.

If you are injured because of fluid leakage, at one go to see a doctor! If any fluid has got on your skin you should clean it as it may cause gangrene which leads to amputation or even death.
Every doctor who cannot cure any type of such injury should connect with the professional institution.
During the work the back window of the tractor cabin must be properly shut. The glass provides protection in the case of fluid leakage.

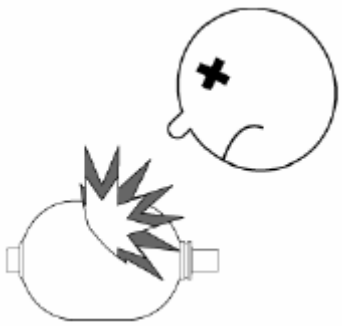
11.2.13. DO NOT PERFORM HEATING OR WELDING NEAR HYDRAULIC AND FLEXIBLE PIPES

Never heat, weld, saw, chisel or use autogenously cutting near hydraulic pipes or any other flammable elements, for example fuel, paint or petrol.
During performing welding disconnect tractor accumulator and protect pipes (mainly rubber pipes) in order not to be damaged which can lead to losing of oil or hydraulic fluid. The heating near hydraulic pipes with high pressure can cause accidental punctuation.
The leaking oil may break into flames and cause serious injuries or even death.

11.2.14. DO NOT OPEN HYDRAULIC ACCUMULATORS!

The plough is equipped with such an accumulator which function as a dash-pot or hydraulic safety element.

These accumulators have been charged under pressure industrially with nitrogen.



- NEVER try to repair them in the case of operation disturbance!
- If you do not follow rules during the reparation it can lead to the leakage of gas or fluid and cause injury on your skin or in your eyes.
- Wear protective glasses and gloves when you are taking the accumulator off the machine.
- Only the official GREGOIRE-BESSON dealer has right to have this equipment repaired in the professional workshop.

Only the official GREGOIRE-BESSON dealer has right to have this equipment repaired in the professional workshop.
In some countries every ten years you can ask for the acceptance test of accumulators under the pressure.
A hydraulic accumulator is a device under the gas pressure. It is forbidden to change its external form with welding, chiseling, drilling or other kind of work.
The hydraulic accumulators and their fastening must be in good condition.

In the case with accumulator you should take all precautions and never exceed the allowed maximum pressure.
After checking or adjusting there must not be any leakage.
Before putting the pressure in hydraulic pipes back, be sure that every joint is accordingly fastened.

11.2.15. BEFORE HEATING ERCH AWAY THE PAINT!

Smoke is toxical. During the paint heating, welding, chiseling or autogenously cutting it can go into the air.

- Such kind of work perform in well aired place.
- Etch off the paint before heating or welding .
- If the painted surface must be sand-blasted or chiseled you should avoid the dust inhalation.
- Use special breathing mask.,
- If you use chemical etch material, wear protective gloves and industrial protective goggles. Then clean them with soap before welding or doing the heating.

ATTENTION : Paint and etch vapour can cause cancer.

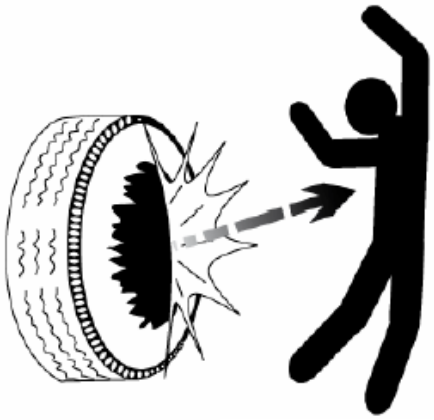
11.2.16. PRECAUTIONS DURING TYRES MAINTENANCE.

The plough and tractor tyres must be regularly checked, the pressure must be on the proper level. Get informed about them in the instruction and compare them with the indication written of the tyre side. If you do not understand something ask from our dealer or tyre manufacturer.

- Do not blow up the tyres above the recommended pressure value
- To perform smooth ploughing in both direction, the wheel-load of the tractor and on the both sides of the plough should be the same
- During blowing up, try to stay as far as you can from the wheel, use a flexible pipe and a fang head.
- Every day check the tyres and wheels.
- Never drive with overblown or under blown tyres or if there are cuttings and bulges, if they are damaged or rusted, or if the wheel bolts or screws are missed.
- Wrong maintenance of the tyres can cause serious accidents as on the roads as on the fields.
- It is dangerous to have too high or too low pressure. The adherence of the tyre tread design will not be optimal. The same can be said about abrasion of the wheels.
- If one of the tares must be changed, be sure that the tyre of the same parameters has been mounted (its profile, width, diameter, maximum speed etc.).
- If you equip the new frame o non side of the bearing it may change the plough-adjustment as well as the machine moving on the roads.
- The pressure in the wheels must be checked after every 50 working hours or once a week.

11.2.17. PRECAUTION DURING REPARATION OF THE TYRES

The reparation of the tyres is a dangerous operation.
Only the professional can perform reparation and equipment on the tyres.

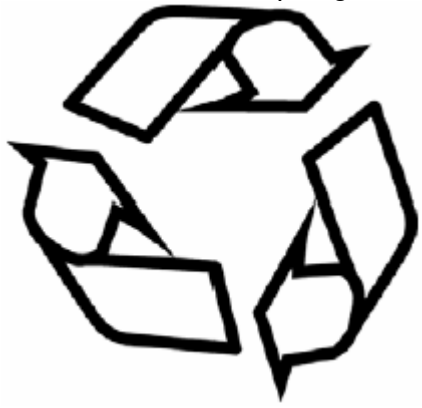


- Do not try to put a tyre on the wheel-band if you do not have suitable experience or the adaptable tool.
- After the equipment back the wheel must be put into the security cage for blowing up.
- If you do not keep the necessary rules the tyre can come apart bursting which may cause serious injury even death.
- Call specialists who are experienced in agricultural tyre wheeling and have adaptable tools and equipment.

You can perform wheeling if you have experience and suitable equipment. If the wheeling has not performed accordingly it can be dangerous. If you doubt call specialists who can help you. You must not wheel tyres with different parameters.

11.2.18. BE RESPONSIBLE FOR WASTE!

Wrong disposal of the waste risks the nature. Throwing out paint-sprayers, hydraulic oil, paint-removers, hydraulic accumulators, fuel oil, coolant, brake-oil, filters, accumulator oil, or tyres used on tractors or ploughs damage and pollute the environment.



- For gathering the polluting fluid you must use well-closed containers. Do not use containers of drinks or food they may be deceiving.
- Never let the impurities go on the ground or near water or drains.
- Never try to punch or burn paint-sprayers.
- Never burn old tyres, send them to recycling.

- According to the local law the waste must be put on the appointed place or be recycled.
- Ask the waste-disposal service about gathering and recycling of the waste.

11.2.20. REMINDER

The best assurance against accidents is a CAREFUL AND ATTENTIVE user. The risk of danger increases if you are in a hurry or tired. If you have any question about any part if this instruction or plough usage connect our GRÉGOIRE-BESSON dealer.

11.3. FASTENING OF BOLTS

Before starting to use the plough be sure that every bolt and screw are fastened accordingly. After 50 working hours check every fastening and fixing, then before every season.
Every day pay special attention to:

- bolt of wheels,
- screwing of the wearing pieces during the usage on the gravel roads (big vibration),
- plough bottoms, if they are mounted with plastic breasts.

11.4. LUBRICATION / GREASING

The adaptable greasing and lubricating of the moving parts provides the GREGOIRE-BESSON plough long life and performance. The lubricants can be found on every rotation point. The lubrication provides the suitable work of the articulated axles and vanishing of the dust out of axle-journals. Use the Unil – Opal MOS2 lubricant or the same quality lubricant. Clean the lubricators well before filling the lubricant into it. The impurities can close the pipes or passages. If the lubricator is plugged or worn, change it or clean it. During lubrication check the uninterrupted movement of the lubricant. If the lubricant overflow mixes with dust it can form the mass of abrasive effect. The over flown lubricant should be cleaned away.

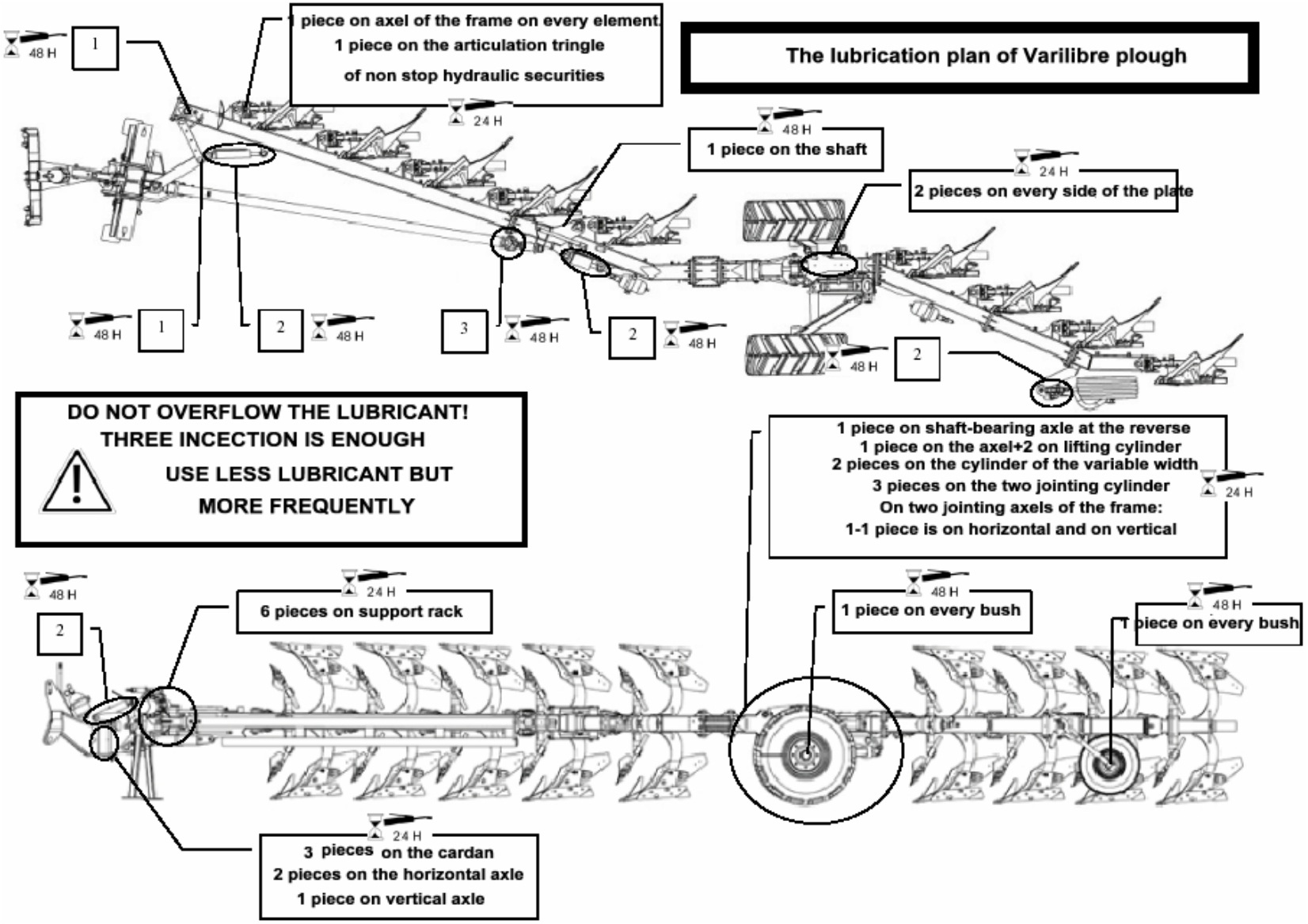
The frequency of the lubrication is set for general usage of the machine you should pay additional attention if you work under hard or special soil conditions.

Study the Varilibre plough lubrication on the next page.

The lubrication contains:

- The position of every lubricator on the plough.
- The number of handling lubricators.
- The 2 pictograms symbolize the frequency of the lubrication on every part of the plough:
  - Lubrication after every 48 working hour. 

  - Lubrication after every 24 working hour. 


The lubrication plan of Varilibre plough
1 piece on axel of the frame on every element
1 piece on the articulation tringle
of non stop hydraulic securities
48 H
1
24 H
48 H
1 piece on the shaft
24 H
2 pieces on every side of the plate
48 H
1
2
48 H
3
48 H
2
48 H
48 H
2
DO NOT OVERFLOW THE LUBRICANT!
THREE INCECTION IS ENOUGH
USE LESS LUBRICANT BUT
MORE FREQUENTLY
1 piece on shaft-bearing axle at the reverse
1 piece on the axel+2 on lifting cylinder
2 pieces on the cylinder of the variable width
3 pieces on the two jointing cylinder
On two jointing axels of the frame:
1-1 piece is on horizontal and on vertical
24 H
48 H
2
24 H
6 pieces on support rack
48 H
1 piece on every bush
48 H
1 piece on every bush
24 H
3 pieces on the cardan
2 pieces on the horizontal axle
1 piece on vertical axle

11.5. THE MAINTENANCE OF PLOUGHS

Protect the surface of the breasts and blades against rust if the plough is not being used.

In the regions where the soil is extremely clingy, it is useful at the leaving of the plough-land to put flake oil coat on the breasts even in the case of some hours inaction. Use the sprayer of WD 40 oil type.

If the plough performance is stopped for longer period of time, the thicker oil coat can stay on the breasts for a longer time. There is such type of the oil which dries during some hours (Shell ENSIS – SX type), which is less polluting.
Dry graphite in the form of spray has got such property and during plough can quickly abrade.

Pay great attention when you pull forward the rod with holes. Screw out the bolts to release the rod. Then pull the rod forward with the help of a hammer or a piece of wood put between the rod and the hammer. In order to protect the machine operator from flying fragments.

THE REPLACEMENT OF THE USED PIECES:

The original GRÉGOIRE-BESSON spare parts are the results of the serious research work and assure good quality work and maximal life of the plough. By the equipping the plough with non-original GRÉGOIRE-BESSON spare parts the guarantee will be broken off.

The used part too late changing can reduce the quality of the work and damage the plough cane.

Reversible points :

Every point should be turned if the bottom of the point is abrading at about 10 mm (= 3/8'') from the blade. If it has been already turned, put it forward or change it.

Blades / coulters:
Replace every blade if it abrades at 15 mm (= 1/2'').

Plough end:
Every plough end should be changed if it does not protect the plough cane from the outside.

Turning plough sole:
Turn every plough sole, if the back part of it has abraded to 3 mm (= 1/8'') thickness. Change it if it has already been turned.

Breasts:
Every breast should be changed before the front part of it becomes hollow. Or the rear part becomes very thin in order to resist the soil loading or in the case if it is too short to turn the soil properly.

11.6. THE PREPARATION OF THE PLOUGH FOR PLACING IN THE MACHINE-SHED

Before storage the plough at the end of the season

1. Clean the plough from dirt and plant residues as they keep the moisture and may cause rust.
2. If the plough is dry lubricate every axle-journal to clear it from water and other impurities.
3. If it is necessary correct the painting. The GRÉGOIRE-BESSON red paint can be got in the form of spray from the brand dealer.
4. Check if there are used or broken spare parts. If it is necessary change them.
5. Check if there are disengaged bolts. Fasten them or change them.
6. Check if there is too big lash of the axle-journal. If it is so then fasten them or change the wear-rings inside.
7. It is more reasonable to perform reparation immediately at the end of the plough season in order not to forget about them later. Do not delay the maintenance till the beginning of the plough season.

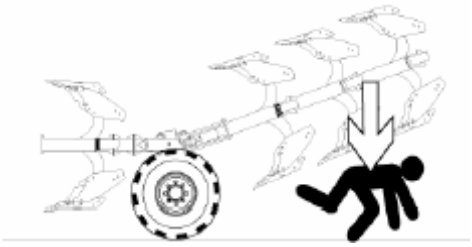
Protect the spare parts which are used for the work in the soil

Protect from corrosion the breasts of the plough and jointer and blades by putting on them the suitable thickness of the oil or graphite coat. A thin paint coat can be put as well but it is easily can be removed during the next ploughing.

Protect the rods of the cylinders which can not be pulled back.

The rust formed on the cylinders can damage their joining. If a push-rod can not be pulled back totally cover it with thin grease or oil coat (Shell ENSIS – SX type).

11.7. PRECAUTIONS DURING THE PLACING IN THE MACHINE-SHED



- Before disengaging the plough, be sure that the storage surface is plane, clean and stable,
- Use blocking implements to prevent from the plough moving during or after the disengaging,
- Stabilize the plough wheels,
- NEVER leave the machine in the turning up position,
- Neutralize the pressure in the hydraulic circuits with the moving the directing levers placed in the cabin from forward back after the tractor engine has been stopped.
- The plough should be placed far from any actions.
- The plough should be put in the dry, dust-proof place (if it is possible in the building), with pulled in cylinder rods in order to avoid rust,
- Some wheel can revolve free, so never lean against them, do not put anything on them that may fall.

ATTENTION: Do not allow children to play on or near the plough either during the storage or engagement to the tractor.

Operation manual SP 9 - Compact

12. POSSIBLE SOLUTIONS OF EMERGING PROBLEMS

12.1. Unacceptable penetration:

Possible causes	Possible solutions
The lifting levers are too short. The tractor lifting levers have been too pulled back. The lifting device can not descend more.	The lifting lever should be prolonged. If the tractor and the plough are working chromium-plated cylinder rods should be out at least 10 mm. See chapter 4: «The preparation of the tractor for pulling».
The position of lifting controller is not suitable.	Put down the tractor lifting controller.
The adjustment of the third hitch is wrong, prevents the first plough bottom penetration.	Adjust the bar of the plough into the vertical position to the surface of the soil.
The plough is not balanced	Put the lifting levers in the position of having the same length.
The plough is not in the horizontal position. The lever adjusting (angel of inflexion is in the direction form front to back) is not suitable.	Adjust the working width at first at the bearing then at the rear wheels and end with the position of the lifting device of the tractor. See chapter 9: «Adjustment of the field – second course».
The reversible points have been worn	Turn, pull forward or change them.
The blades (coulters) have been worn	Change the blades.
The plough goes on its bottom and does not want to penetrate	Lift every penetration angel of the plough bottom. See chapter 9: «Adjusting on the field – second course».

12.2. Imprecise depth:

The blades (counters) have been worn out.	Change the blades or coulters.
The plough is not leveled. The plough is not in the horizontal position. The lever adjusting (angel of inflexion is in the direction form front to back) is not suitable.	Put the plough into the more vertical position. See chapter 9: «Adjustment of the field – second course».
The adjusting of the three point pf the plough depth is not in the suitable position (the height of the lifting device of the tractor, the central axle of the bearing, the depth adjusting wheel)	Check the three depth adjusting points. See chapter 9: «Adjustment of the field».

12.3. The first furrow width is not stable:

Too big lash of the drag lever of the tractor	**Adjust the** STABILIZÁTION LEVERS and controlling rings using the casing and holders in order to avoid and prevent the levers lateral slipping on the pulling pulleys. See chapter 4: «Tractor preparation for pulling». See chapter 5: «The engagement and disengagement of the plough».

12.4. It is difficult to control the position of the lever of the lifting system

The tractor suspension axle affects the precise position of the controlling lever .	If it is possible block the tractor suspension axle during ploughing.

12.5. There are holes in the first furrow

Possible causes	Possible solutions
At the first breast there is not enough soil quantity for earthling the furrow properly. The furrow width (deport) is not sufficient.	Widen the first furrow (deport) position to plough out more earth with the help of the first plough bottom. See chapter 9: «Adjusting on the field – second course».
At the first breast there is not enough soil quantity for earthling the furrow properly. The first plough bottom depth is small.	Put down the lifting device of the tractor for bigger soil quantity. Take care that the plough is horizontal in the direction from front to back. Check the coulter (blade) if it is too worn out. See chapter 9: «Adjusting on the field – second course».
The depth of the first furrow exceeds the capacity of the breast on hard soil or slopes.	Use attachments for breasts. Or reduce the working width. See chapter 9: «Adjusting on the field».
The adjusting cylinder for the first furrow is maximum pulled out.	Reduce the distance between tractor tyres. See chapter 4: «The tractor preparation for pulling».

12.6. The first furrow extremely gathers the earth:

There is too big earth quantity at the first breast. There are humps in the furrow. The furrow width is too big (deport).	To reduce the width (deport) let the cylinder out, this way the earth quantity at the front plough bottom decreases. See chapter 9: «Adjusting on the field – second course».
There is too big earth quantity at the first breast. There are humps in the furrow. The plough depth at the front plough bottom is too big.	Raise the tractor lifting device to take out less earth quantity. Take care that the plough is horizontal in the direction from front to back. See chapter 9: «Adjusting on the field – second course».
The adjusting cylinder of the first furrow is totally closed.	Increase the span between tractor tyres See chapter 4: «The tractor preparation for pulling».

12.7. The tractor is slipping:

The rotation speed is different at the front and rear plough line, as well as at the both sides of the tractor.	Check if the front axle of the tractor and its balance gear are connected.
The tractor is not heavy enough.	Load the tractor (wheel balances at front and back, blow them with water or talc). See chapter 4: «The tractor preparation for pulling».
The pressure of tyres is not sufficient.	Check the pressure values in the table of the tyre manufacture.
Plough bottoms have not been cleaned sufficiently they are rusty. The soil is adhered to the breasts.	Clear away the paint, scrap the rust and soil (earth) from the breasts. See chapter 7: «Preparations of the plough before ploughing». See chapter 10: «Lubricating and maintenance».
The tractor tyres are too wide.	In the case of ploughing under hard conditions, use wheels with bigger Ø instead of wide tyres.
The load transmission of the front part of the tractor is not sufficient.	See the GB standard of «hydraulic compensation cylinder» as optional possibility to get 30% reduction of slipping. See chapter 9: «Adjusting on the field - second course».
The plough penetration angel is too big.	Reduce the penetration angle at every plough. See chapter 9: «Adjusting on the field – second course».

12.8. The tractor pulls in the direction of ploughing:

The load transmission of the front part of the tractor is not sufficient.	See the GB standard of «hydraulic compensation cylinder» as optional possibility to get 30% reduction of slipping. See chapter 9: «Adjusting on the field - second course».
The lifting arms of the tractor are not fastened.	Check if the lifting arms are fastened sufficiently on every side to prevent the plough head oscillation.
The first furrow is too wide and deflects the tractor.	Reduce the working width of the front plough bottom.
The earth is too adherent	Reduce the ploughing width.

The tractor pulls in the direction of ploughing (continuation):

The tractor is not heavy enough.	Load the tractor (ballast the front part, front and rear wheels balancing, blowing up with water, talc, lime powder). See chapter 4: «The tractor preparation for pulling».
The penetration angel of the plough bottoms is too big.	Reduce the penetration angel at every plough bottom. See chapter 9: «Adjusting on the field - second course».
The tyres of the front wheels have bigger distance than the rear wheels.	Check and adjust the distance between the front and rear tyres. See chapter 4: «The tractor preparation for pulling».
The tyre span is not sufficient taken into the consideration the number of the plough bottoms (inner distance of the inner tyres).	Increase the tractor span (the inner distance of the inner tyres). In the case of ≥ 6 plough bottoms the wider the span the better the pulling. See chapter 4: «The tractor preparation for pulling».

12.9. The furrows are not straight:

The hydraulic adjustment of the plough on the front staff are not in the phase with the rear plough bottom. There is air in the circuit.	Synchronize the working width of the front and rear staff expelling the air out of the hydraulic system. See chapter 9: «Adjusting on the field - second course».
The plough is not horizontal. The tractor lifting arms are not of the same length.	Check the length and blocking of two lifting arms axles. See chapter 4: «The tractor preparation for pulling».
The plough is not horizontal Inclination angle is not suitable.	Adjust the boots of inclination angle. See chapter 9: «Adjusting on the field – second course».
The plough is not horizontal. The level adjusting of the fore-and aft direction is not suitable.	Adjust the boots of inclination angle. See chapter 9: «Adjusting on the field – second course».
The plough bottoms are not suitably cleaned (newer rusted ones). The ground adheres to the breasts	Clear away the paint, scrap the rust and ground from the breasts. See chapter 7: «Preparations of the plough before the operation». See chapter10: «Lubrication and maintenance».
The tractor tyres are too wide (≥650 mm) and tread down ploughing.	Mount the lengthening pieces of the breast to throw soil as far as possible. Mount the furrow widening to the last plough bottom to help the tractor wheels moving in the furrows.
The hydraulic securities are too often disengaged.	Raise the pressure in the hydraulic accumulator.
The wheels of the central bearing tread down the ploughing.	Adjust the span of the central bearing wheels. See chapter 9: «Adjusting on the fields».
The plough sole fasteners have been worn or missed.	Check and if it is necessary change them.
The coulters are worn and are not able to cut proper soil pieces.	Change the coulters.

12.10. The plough depth is not the same on both sides:

The plough is not horizontal. The tractor lifting arms are not of the same length.	Check the length and blocking of two lifting arms axles. See chapter 4: «The tractor preparation for pulling».
Three points of the plough depth adjusting are not in the correct position (the tractor lifting device height, the mail axle of the central bearing, the depth adjusting wheel).	Check three points of depth adjusting. The adjustment must be equal on the right and left sides. See chapter 9: «Adjusting on the field».
The tractor or plough tyres height is not the same on both sides.	Check the pressure in the tyres.
The tractor or plough tyres have been worn differently on both sides.	Change and mount the wheels of the same Ø, which have the same technical parameters and the same brand.
The plough is not horizontal Inclination angle is not suitable.	Adjust the boots of inclination angle. See chapter 9: «Adjusting on the field – second course».
The plough bottom are not cleaned properly (new or rusted ones). The soil adheres to the breasts	Clear away the paint, scrape the rust and ground from the breasts. See chapter 7: «The plough preparation before the work». See chapter 10: «Lubrication and maintenance».
On the tractor there is only one stabilization lever (or two levers are not the same). The equipment affects the adjusting control reaction	Check stabilization lever or the adjusting of the controlling system. Mount another stabilization which is the same as on the other side. See chapter 4 : «Tractor preparation for pulling».
The adjusting controlling sensors do not work on the tractor..	Measure the length of the lifting levers during ploughing to the right then to the left (or the length of the chrome-plated bars). If there is difference between the left and right ploughing it is because of the wrong lifting device.

12.11. The ground adheres to the breasts:

The breasts have not been properly cleaned and scraped.	Clear away the paint, scrape the rust and soil from the breasts.. One day work without chisel end on very adhesive soil. Be sure that the plough sole fasteners are in good condition (they affect the soil slipping from the breasts). See chapter 7: «Preparation of the plough before ploughing». See chapter 10: «Lubrication and maintenance».
The plough bottoms do not suit the using conditions.	Use plastic breasts on very adhesive soil. From the GREGOIRE-BESSON types chose the suitable breast or plough bottom model.

12.12. The soil is not turned properly and falls back in to the furrow:

The rear part of the breast is too high. The edge of the breast so not leads the soil properly.	Adjust two bolts of the inclination angle boots. If it is necessary put it on the surface of the ploughing (especially while you plough on slopes) See chapter 9: «Adjusting on fields».
The cutting width is too big for working depth.	Reduce the working width. Increase the plough depth.
The edge of the breast do not throw the soil properly.	Mount the breast lengthening pieces. The plough bottom should be changed soon.
The rear part of the breast is too high. The pic adjusting is too strong and the ground goes under the breast. The edge of the breast does not lead the ground properly.	Adjust two bolts of the inclination angle. If it is necessary put it on the ploughing (especially if you plough on slopes) See chapter 9: «Adjusting on the field – second course».

12.13. The stubble residue is not turned into the soil properly:

The breasts are not cleaned and scraped properly.	Clear away the paint, scrape the rust and soil from the breasts. See chapter 7: «Preparation of the plough before ploughing». See chapter 10: «Lubrication and maintenance».
The jointer breast is not able to absorb the plant residue.	Raise the jointers in order less ground adhere on the jointer breast. In the case of too strong plant residue pull the jointers back. See chapter 9: «Adjusting on the fields – second course».
The blades of the jointer have been worn.	Change the blades of the jointer.
The coulters of the plough bottoms have been worn.	Change the coulters of the plough bottoms.
The plough is too often clogged.	Pull back the jointers.
The plough bottoms are not suitable for the given soil type.	Chose the proper breast or plough bottom model from the GREGOIRE-BESSON types.

12.14. The pins of the security B elements are always sheared:

The security pins are not of proper type. The standard pins (GB reference: VI 3106) are calibrated to 80 kg.	Try pins calibrated to 100 kg (GB reference: VI 3107).
For pin security the soil type is too hard.	Use the non-stop hydraulic security (Y type).

12.15. Hydraulic securities are disconnected:

There is not enough pressure in the hydraulic circuit of the security cylinders.	Increase the disengaging pressure. Use accumulators adjusted to higher values. Use cylinders of bigger Ø. See chapter 9: «Adjusting on the field – second course». Additionally use the flow limiting wheel. See chapter 3: «The description of the plough».
There are a lot of stones and rocks.	Reduce the driving speed. Connect with the GREGOIE-BESSON dealer to chose another security.

12.16. Non-stop hydraulic securities excessive disengagement:

There is not enough pressure in the hydraulic circuit of the security cylinders.	Increase the disengaging pressure. Use accumulators adjusted to higher values. Use cylinders of bigger Ø. See chapter 9: «Adjusting on the field – second course». See chapter 3: «The description of the plough».
The penetration angle of the plough bottom is too big.	Decrease the penetration angle of the plough bottoms. See chapter 9: «Adjusting on the field – second course».

12.17. Non-stop hydraulic securities do not disengage:

There is too big pressure in the hydraulic circuits of the security cylinders.	Reduce the disengaging pressure Use accumulators adjusted for smaller values. Use cylinders of bigger Ø. Never continue the work if the securities do not function. See chapter 9: «Adjusting on the field – second course»..

12.18. The accumulators do not react to beatings:

There is too big oil pressure in the circuit.	Reduce the pressure. During transporting the lifting lever of the bearing at the anti-bounce should never be at the end of the stroke to work properly. See chapter 8: «Transporting».
The anti-bouncing does not affect. The accumulator is damaged.	Have the accumulator changed. Never try to repair the anti-bounce!. See chapter 10: «Lubrication and maintenance».

11.19. The hydraulic controllers do not react:

The 12 V electric current does not reach the switch box in the cabin. (hydraulic switch of 3 functions, multifunction (PCM) «Joystick» lever, distributing box).	Check the current supply. The signal should be on (the red lamp on the distributing box (led)). See chapter 6: «Hydraulics connections»
The 12 V current supply does not reach the block of the plough electrical valve.	Check the current connection between the tractor and the plough. The green lamp non the electric valve should be on (green lamp (leds)) lights when it is on.
One or more Push-Pull plugs are out of the place.	Check the Push-Pull connections See chapter 6: «Hydraulics connections»
The Push-Pull plugs connections are not compatible with tractor connecting base.	Check the Push-Pull connection type. Change the base.
There is little hydraulic oil in the tractor.	Fill in the tractor hydraulic oil container.

11.20. The turning device does not work:

The blocking of the turning device has not been disengaged.	Disengage the blocking of the turning device. See chapter 5: «The engagement and disengagement of the plough».
The Push-Pull plug connection is out of its place.	Check the Push-Pull connections. See chapter 6: «Hydraulics connections»
The dirt entered the bounce keeping valve of the turning cylinder of the hydraulic circuit.	Dismount and clean the bounce keeping valves. See chapter 3: «The description of the plough».

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