



**INSTRUCTIONS FOR**  
**ADJUSTMENT AND MAINTENANCE**

**ON-LAND SEMI-MOUNTED REVERSIBLE  
PLOUGHS**

**WITH CENTRAL CARRIAGE**

**SPEL-9 ELECTRONIC**

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## **[1] INTRODUCTION**

### **CAREFULLY READ THESE INSTRUCTIONS**

For the start and optimal use of your plough, respect the following instructions.

These instructions must be considered an integral part of the plough and handed over in case of reselling.

The left or right side of the plough is determined by looking from the rear of the plough towards the headstock.

All the information, drawings and specifications indicated in these instructions are the newest at the time of publication.

We reserve the right to bring modifications at any time without previous notice.

Arbitrary modifications made on the plough exclude the manufacturer's responsibility if any damage should result from these modifications.



This sign is used throughout the leaflet to call your attention to the instructions regarding your safety. Respect them at all times.

**A CAREFUL USER  
IS THE BEST GUARANTEE AGAINST ACCIDENTS**

## [2] GENERAL SAFETY INSTRUCTIONS

### [2-1] ADJUSTMENTS AND MAINTENANCE

- ☞ Carry out adjustment and maintenance work only when the plough is not in operation.
- ☞ Wear appropriate safety clothes when doing maintenance work.
- ☞ Ensure a safety zone for other people.
- ☞ Carry out adjustment and maintenance work with a maximum carefulness. Do not carry out any adjustment and maintenance work without perfectly understanding the procedure.
- ☞ For all maintenance work, use the appropriate tools and equipment..
- ☞ When doing adjustment or maintenance work on a lifted plough, always support it for safety reasons.
- ☞ After any maintenance work, remove all tools away from the plough.

### [2-2] USE OF THE PLOUGH

- ☞ Get used to the plough functioning and plough controls. Do not let anybody use the plough without previous training.
- ☞ Only the operator is allowed to be in the tractor cab. He must not leave the seat while working.
- ☞ Nobody is allowed to climb onto the plough during work.
- ☞ Before each sequence, be sure that nobody is standing in the plough turnover area. Operate turnover only from the tractor cab !
- ☞ Always lower the plough onto the ground when not in use.

### **ATTENTION !**

**Ploughs "GREGOIRE-BESSON" are manufactured to be used only for usual agricultural work.**

**The operator is responsible for every use out of this context.**

### [2-3] FLUIDS UNDER PRESSURE

- ✱ Leaking fluids (oil) can come through the skin and provoke serious injuries and illnesses such as gangrene.
- ✱ To avoid such risks, release the pressure in the hydraulic circuit before all maintenance work and check that the spool-valves and hoses are clean and in good working order..
- ✱ Use a piece of wood or cardboard to search for a leak, but :

### **NEVER SEARCH FOR A LEAK WITH YOUR HAND**

**In case of injury, consult a doctor immediately, for a leak which has come through the skin must be stopped in the following hours by surgical operation.**

### [2-4] DURING TRANSPORT

- ✱ Always put the plough into transport position before each transportation on road. Position the safety pin.
- ✱ Before every road transport, fold and lock the press arm.
- ✱ Always use "GREGOIRE-BESSON" ploughs in accordance with rules and instructions regarding road safety.
- ✱ Drive at a reasonable speed in conformity with the laws to be able at any time to control both tractor and plough.
- ✱ On road transport, the plough must be fitted with warning lights, which are to be removed during work to prevent them from damage.
- ✱ During transport as during work, take care of your turning circle.

### **BE CAREFUL FOR YOUR SAFETY AND THE SAFETY OF OTHERS**

### **[3] PRESENTATION**

The range of SPEL-9 ploughs with rotating central frame is comprised of models from 7 to 12 bodies for working in furrow or on land.

Minimum number of furrows : 4 + 3

Maximum number of furrows : 7 + 5

Interbody clearance : 1000 mm (or 1140 mm as an optional equipment)

Height : 1,60m - 1,70m - 1,80m as an optional equipment

Following safety devices on these models are available :

Shearbolts safety device : B9

Mechanical safety device : S9

Mechanical auto-reset safety device : K9

Hydraulic auto-reset safety device : Y9

Reinforced hydraulic auto-reset safety device : Z9

The working width is adjustable from 12" to 20", making the angle between body and frame vary. This adjustment is to be carried out in your works.

Interbody clearance 1000mm : 12" - 14" - 16" - 18" - 20"

Interbody clearance 1140mm : 14" - 16" - 18" - 20" - 22"

#### **★ ★ ★ STANDARD EQUIPMENT ★ ★ ★**

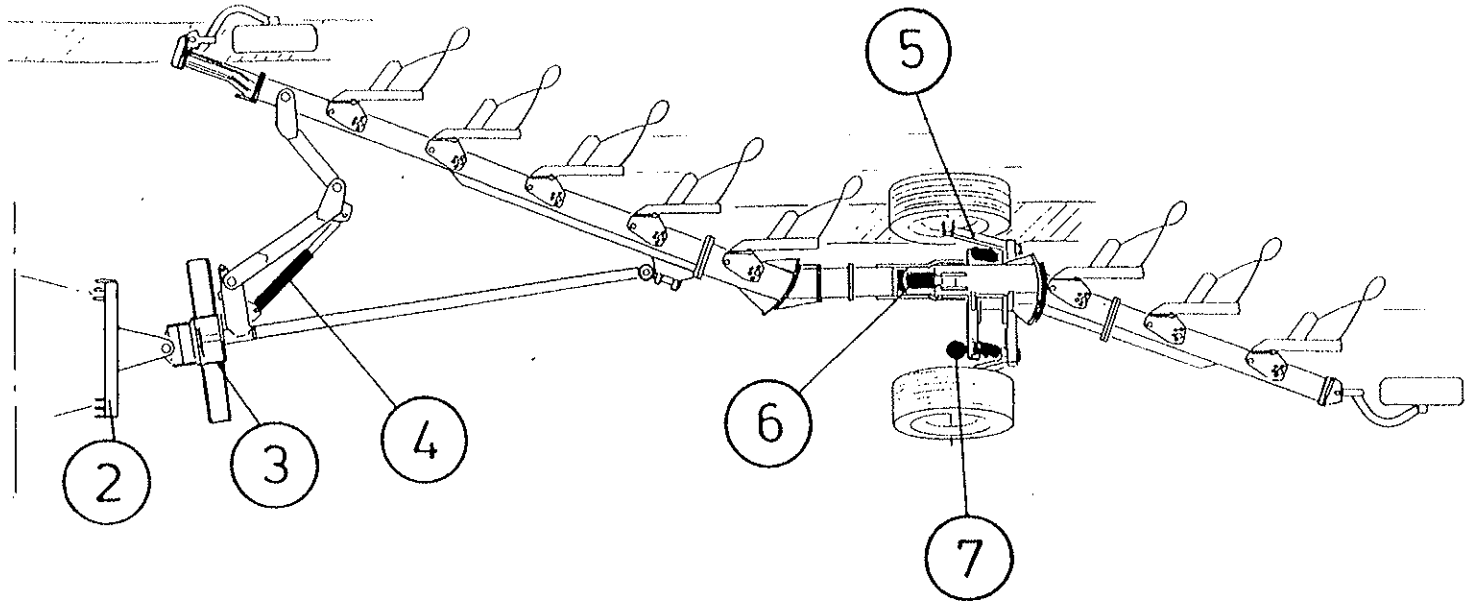
- (1) Automatic or manual control of hydraulic functions by means of 4 electro-hydraulic spool valves operated from the tractor cab through an electronic control box.
- (2) Pivoted headstock allows 90° turning angle.
- (3) Rack and pinion turnover operated by 2 single-acting rams.
- (4) Front furrow adjustment, allowing to correct the position of first body during work.
- (5) Reversed central carriage operated by 2 single-acting rams
- (6) Central articulation system of rear frame operated by 2 double-acting rams, making ploughing and manoeuvres easier. (see page 8)
- (7) Hydropneumatic shock absorber linked to the hydraulic lifting circuit of the central carriage, making road transportation easier.
- (8) Rear lighting board.

#### **★ ★ ★ OPTIONAL EQUIPMENT ★ ★ ★**

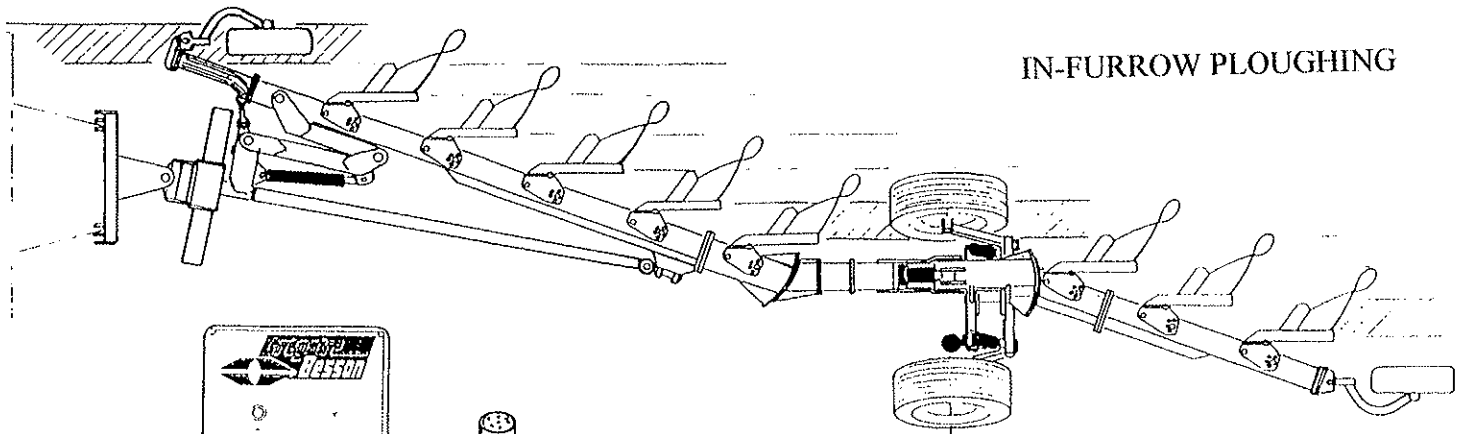
- (9) Lights on central carriage.



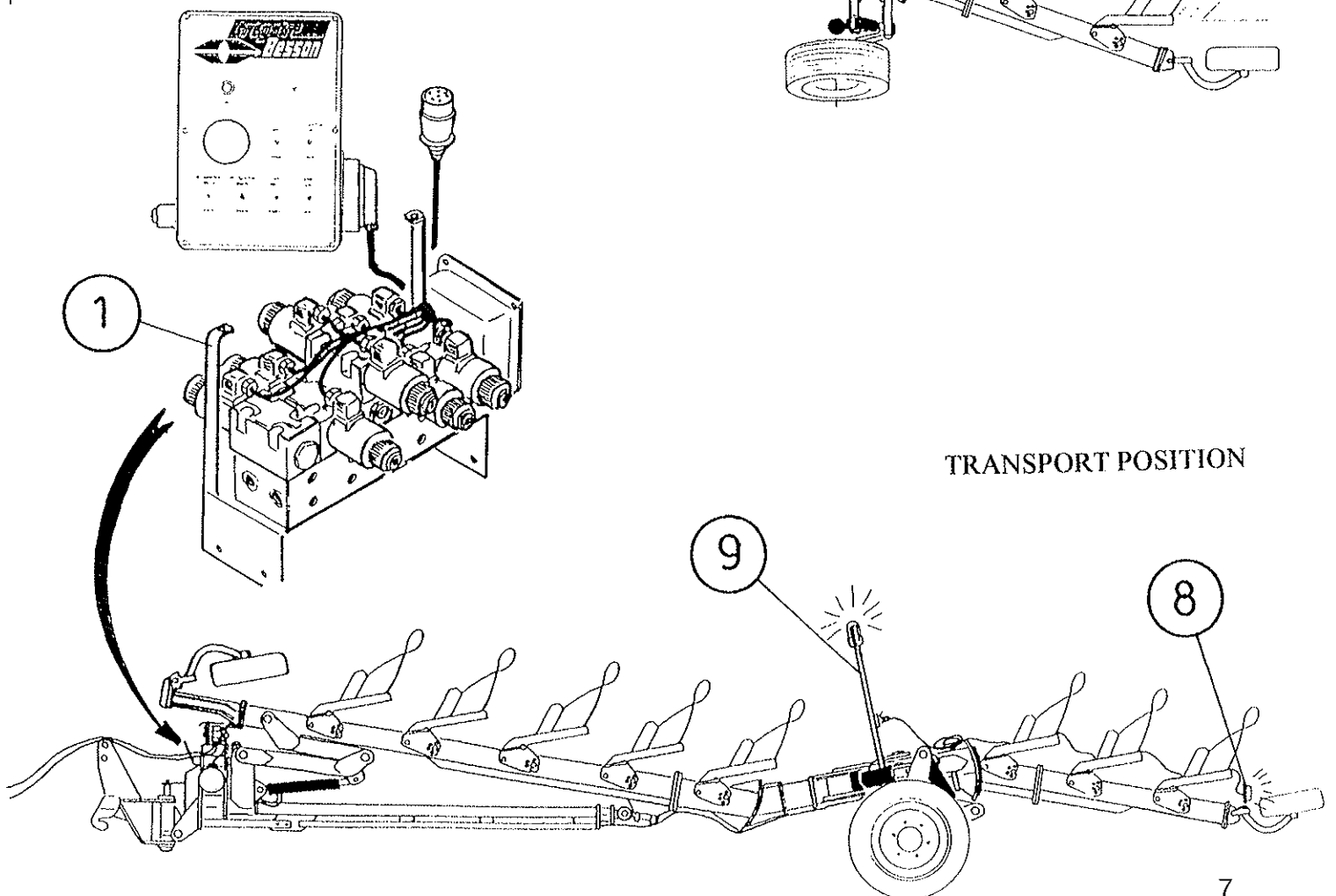
# FRONT-FURROW PLOUGHING



# IN-FURROW PLOUGHING

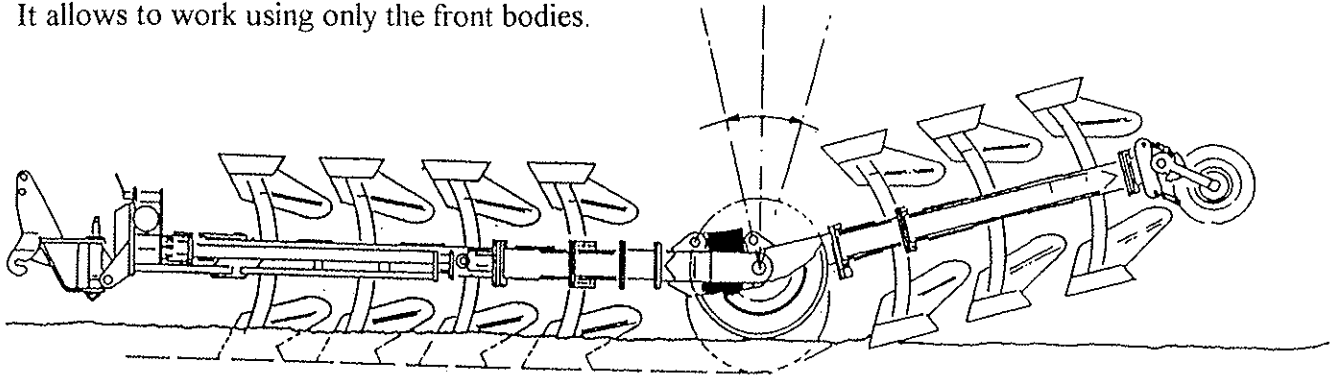


# TRANSPORT POSITION



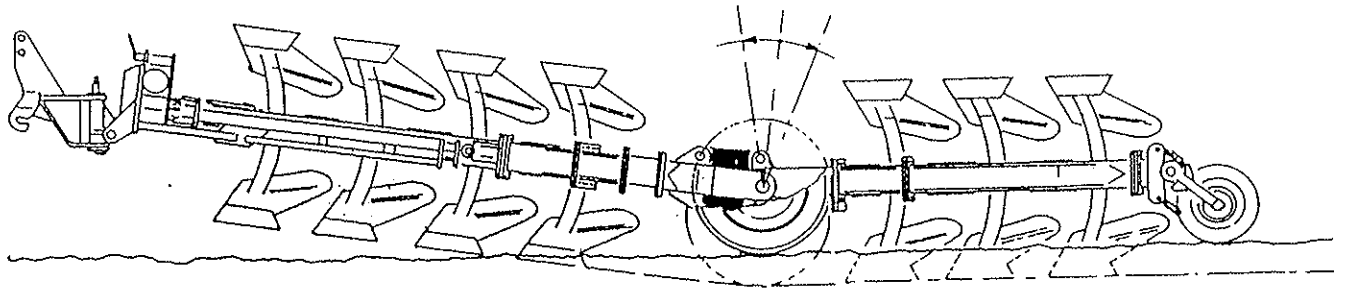
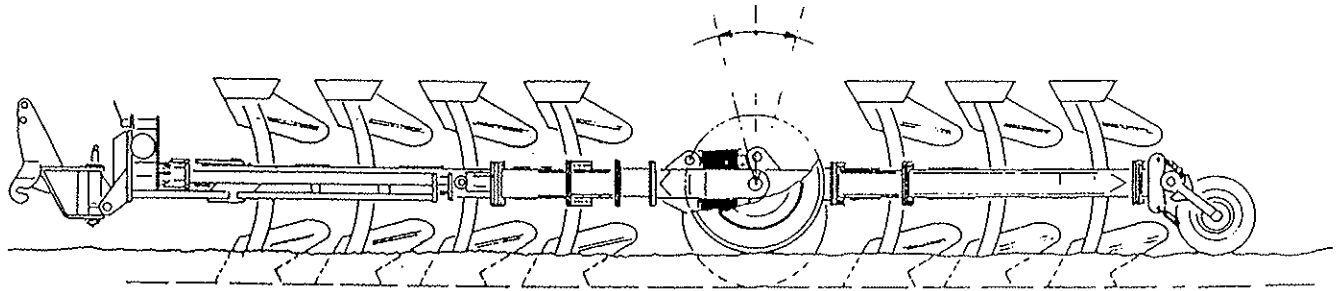
a) Lifting of rear bodies

It allows to improve the penetration in soil while reducing the headlands.  
It allows to work using only the front bodies.



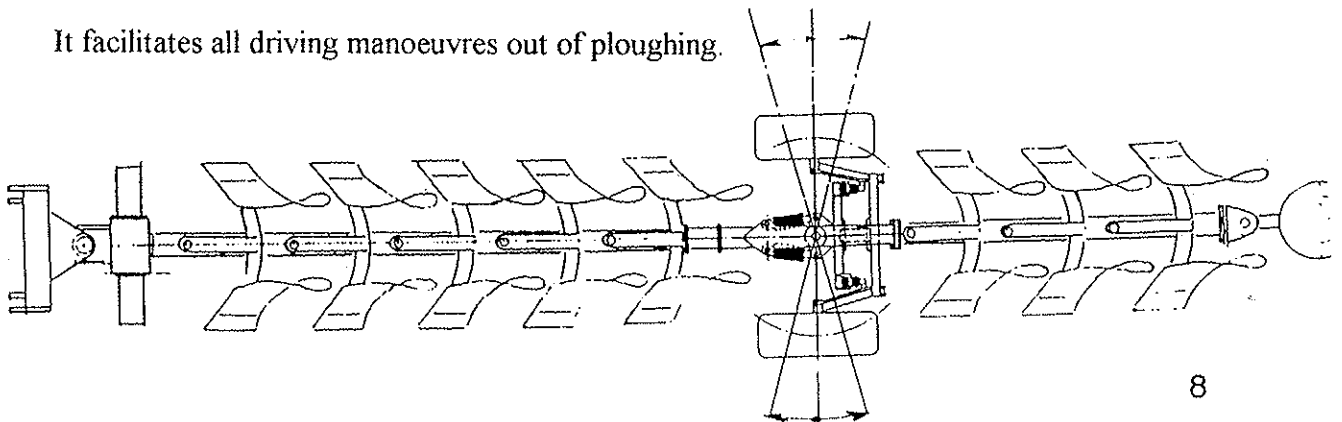
b) Articulation of front bodies against rear bodies

It improves ploughing and facilitates straightening of outs.



c) Orientation of central carriage in transport position

It facilitates all driving manoeuvres out of ploughing.



#### [4] COUPLING



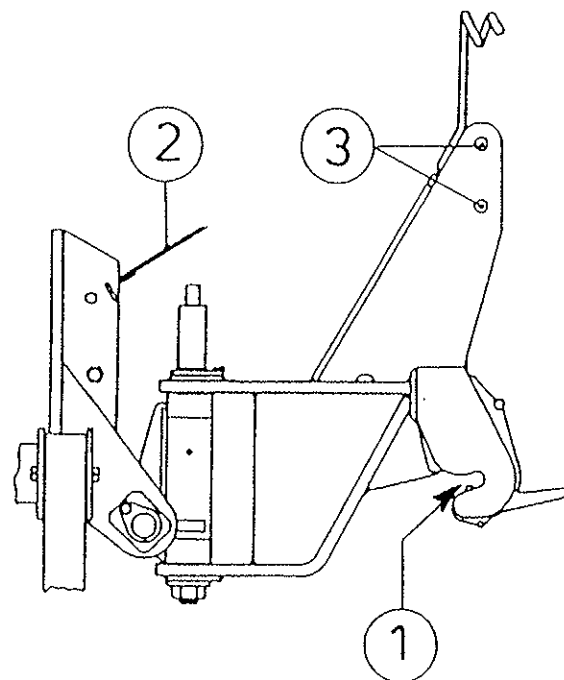
Before hitching or unhitching the plough, lock the 3 point linkage to avoid non-intentional movement.

Linkage categories on the tractor and on the plough must coincide.

This range can be fitted with automatic hitch bar or fixed coupling "Quick-Coupler".

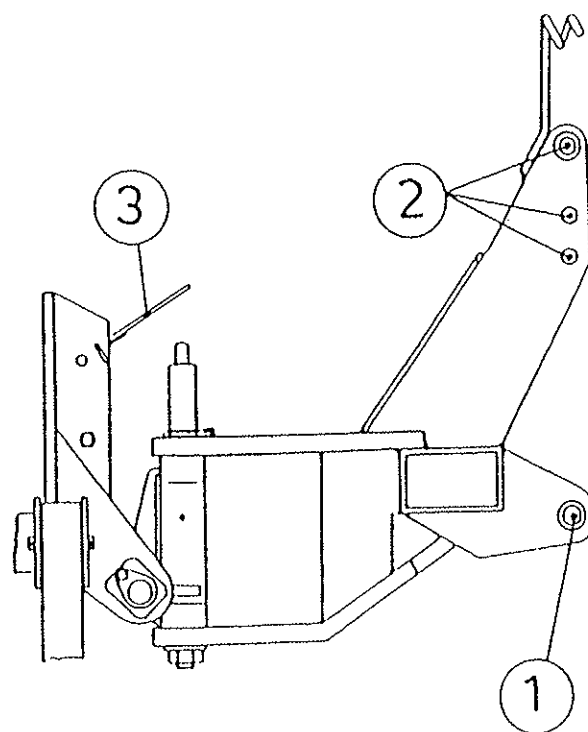
##### AUTOMATIC HITCH BAR

- Fix the drawbar on the end parts of tractor link arms.
- Adjust tractor link arms so as to position the drawbar parallel to the ground.
- Reverse tractor and insert drawbar into the jaws (1) of the headstock.
- Raise the flange (2) to release the hitch point.
- Fix the top link (3).
- Lock stabilizers of the link arms (recommended)



##### FIXED COUPLING " QUICK-COUPLER"

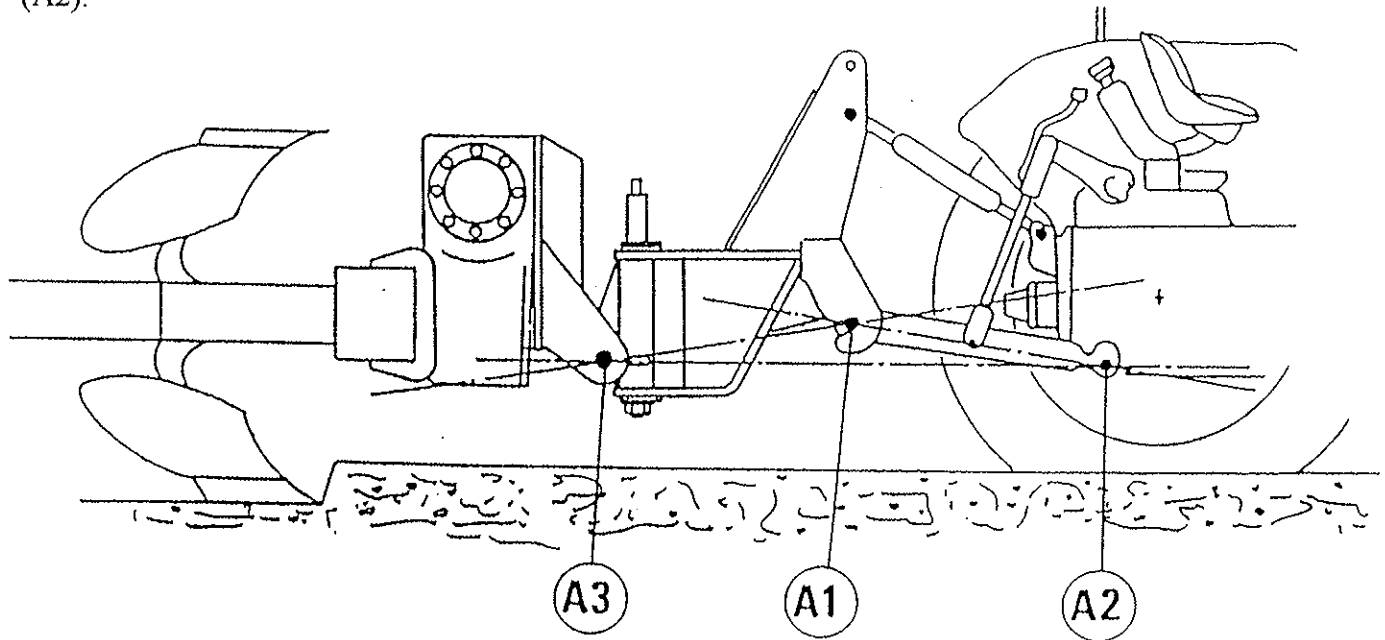
- Adjust tractor link arms so as to position the drawbar parallel to the ground.
- Reverse tractor for hitching the unit (1 and 2)
- Raise the flange (3) to release the hitch point.
- Lock stabilizers of the link arms (recommended)



## [5] TOP LINK ADJUSTMENT

To help the load transfer on tractor front wheels, the top link must operate as a push bar.

For this purpose, the drawbar (A1) must be higher (about 5cm) by comparison with a line formed by the horizontal axis of the joint (A3) and the articulation axis of the tractor link arms (A2).



## [6] CONNECTIONS

### [6-1] HYDRAULIC CONNECTION



**Keep connection hoses clean and in good order.**



**Do not fold hoses ; check them regularly.**



**Before each plough turnover, be sure that nobody is standing in the turnover area.**



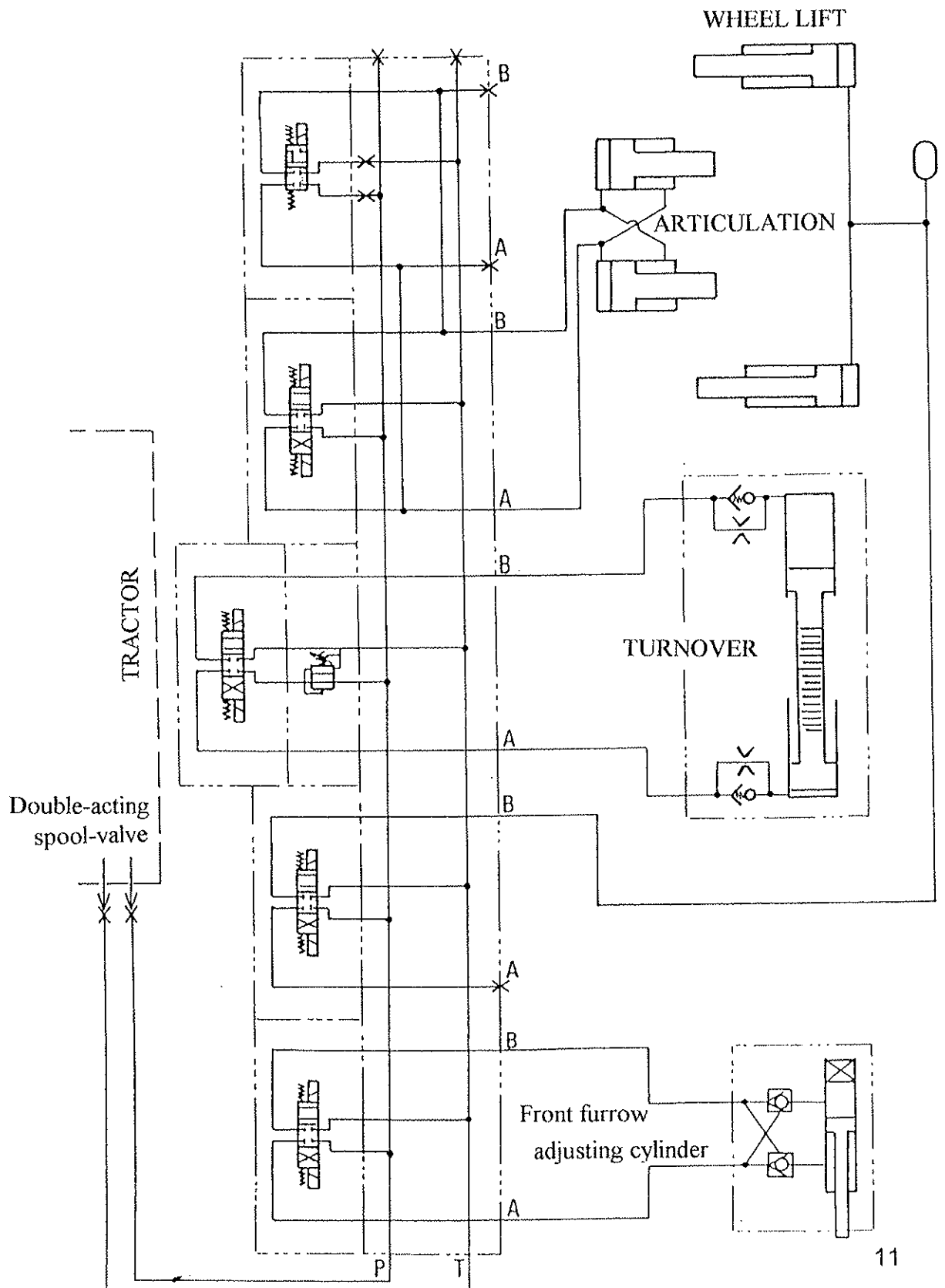
**An oil leak under pressure can provoke serious injuries which can quickly infect. If the case arises, consult a doctor immediately.**

**To search for a leak, use a piece of wood or cardboard, but never search for a leak with your hand !**

## PLAN FOR STANDARD HYDRAULIC CONNECTION

Connect the 2 hoses to a tractor double-acting spool valve.

**IMPORTANT :** The hydraulic system requires a permanent oil supply to the valves unit. For this purpose, lock the tractor spool-valve in closed circuit.

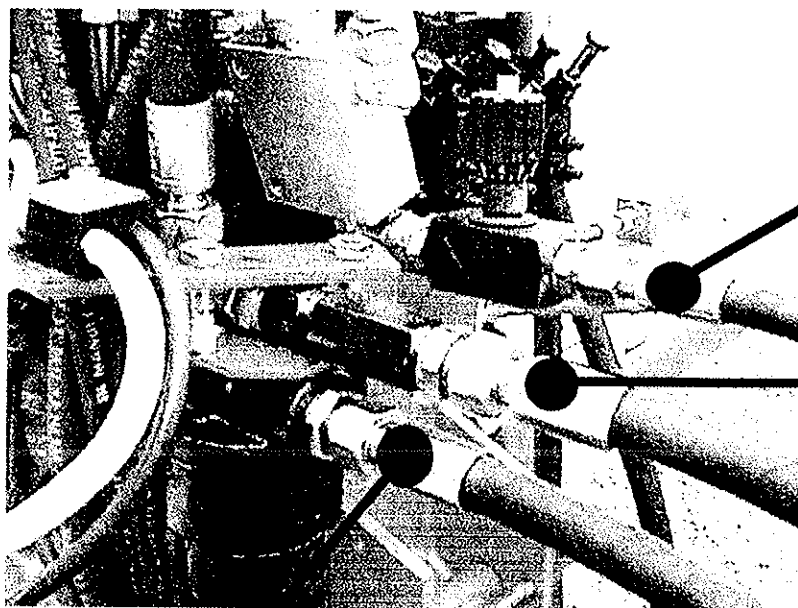


# PLOUGHS SPEF – SPEL

**ADDITIONAL INFORMATION TO HITCH OR UNHITCH THE PLOUGHS SPEF – SPEL, EQUIPPED WITH ELECTRONIC CONTROL SYSTEM AND LOAD – SENSING HYDRAULIC CIRCUIT.**

**ATTENTION : the non-respect of the below described procedure can cause damage to the load-sensing spool-valve (oil leaks or deformations).**

- 1 . Stop imperatively the tractor motor and depressurize the hydraulic circuits before every connection to the plough.**
- 2 . To hitch the plough, connect first the oil return hose, then the pressure and load-sensing hoses (see picture).**
- 3 . To unhitch the plough, disconnect first the pressure and load-sensing hoses, then oil return hose.**



**LOAD-SENSING HOSE**

**OIL RETURN HOSE**

**PRESSURE HOSE**

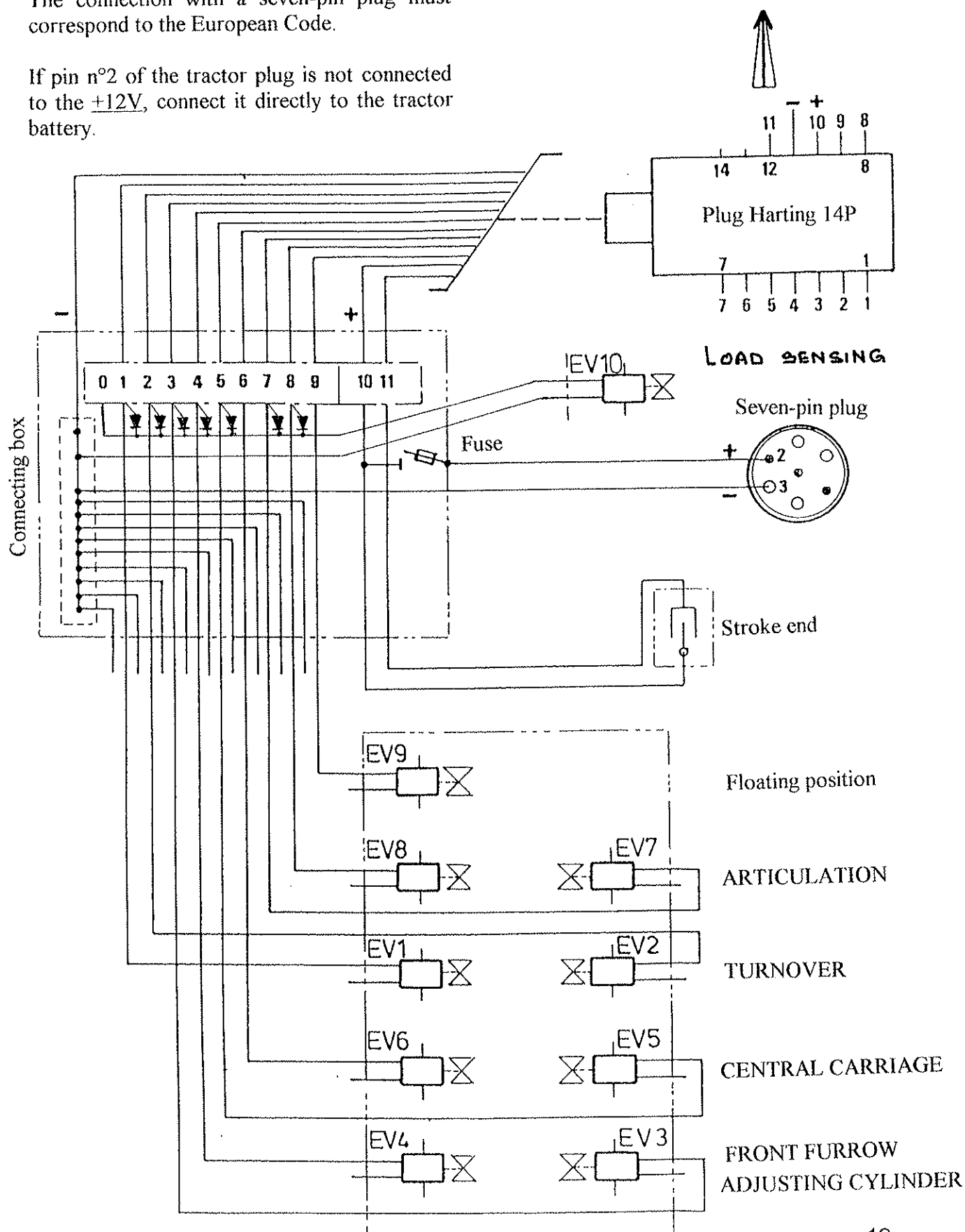


## [6-2] ELECTRIC CONNECTION

Connect the seven-pin plug of the plough to the tractor plug.

The connection with a seven-pin plug must correspond to the European Code.

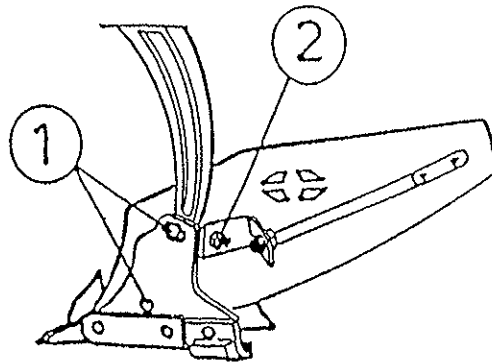
If pin n°2 of the tractor plug is not connected to the +12V, connect it directly to the tractor battery.



## [7] ANGLE OF PENETRATION

Our bodies are fitted with a penetration angle adjusting device, making it possible to adjust the penetration for each body. The penetration angle is adjusted in factory when assembling the plough and corresponds to normal use conditions.

- When the soil is very hard, open the penetration angle.
- When the soil is very rocky or very loose, close the penetration angle.

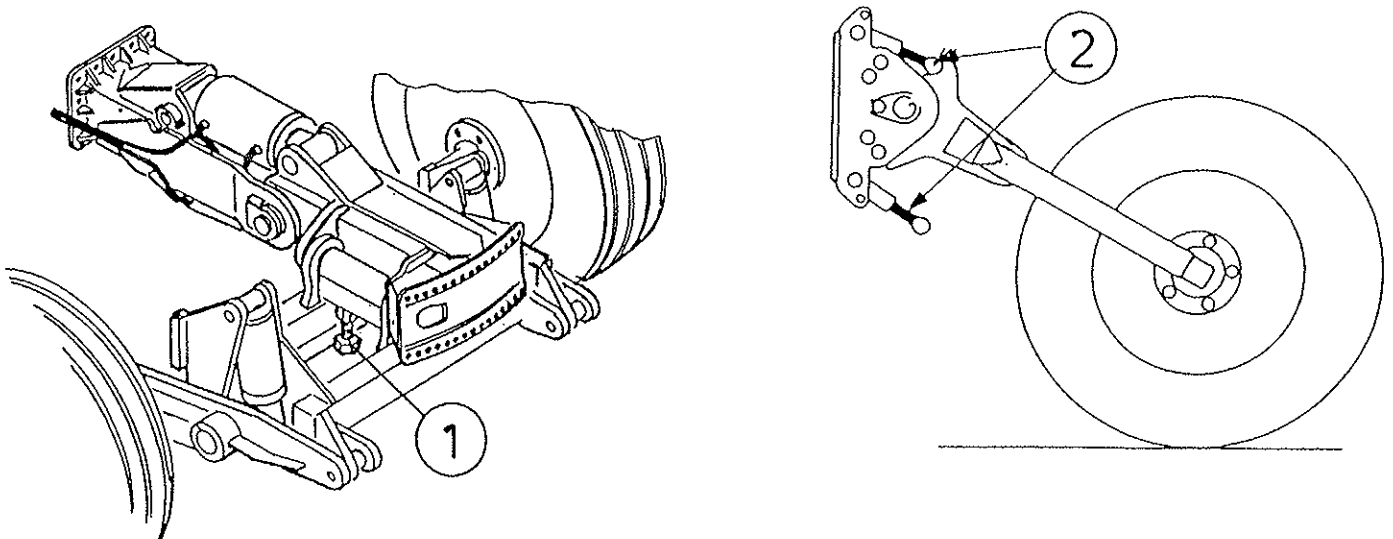


Loosen the bolts (1) and adjust by means of the screw (2) to equivalent penetration angle on each body. After adjusting, tighten bolts and nuts carefully.

## [8] WORKING DEPTH

According to the required working depth :

- Raise the central carriage and adjust the depth by means of the central screw (1).
- Adjust stops (2) of the depth wheel to regulate depth of rear bodies.
- Adjust lifting of the tractor to regulate depth of front bodies.





## [9] WORKING WIDTH ADJUSTMENT



Carry out adjustment work with maximum care. Do not carry out any adjustment without perfectly understanding the procedure.

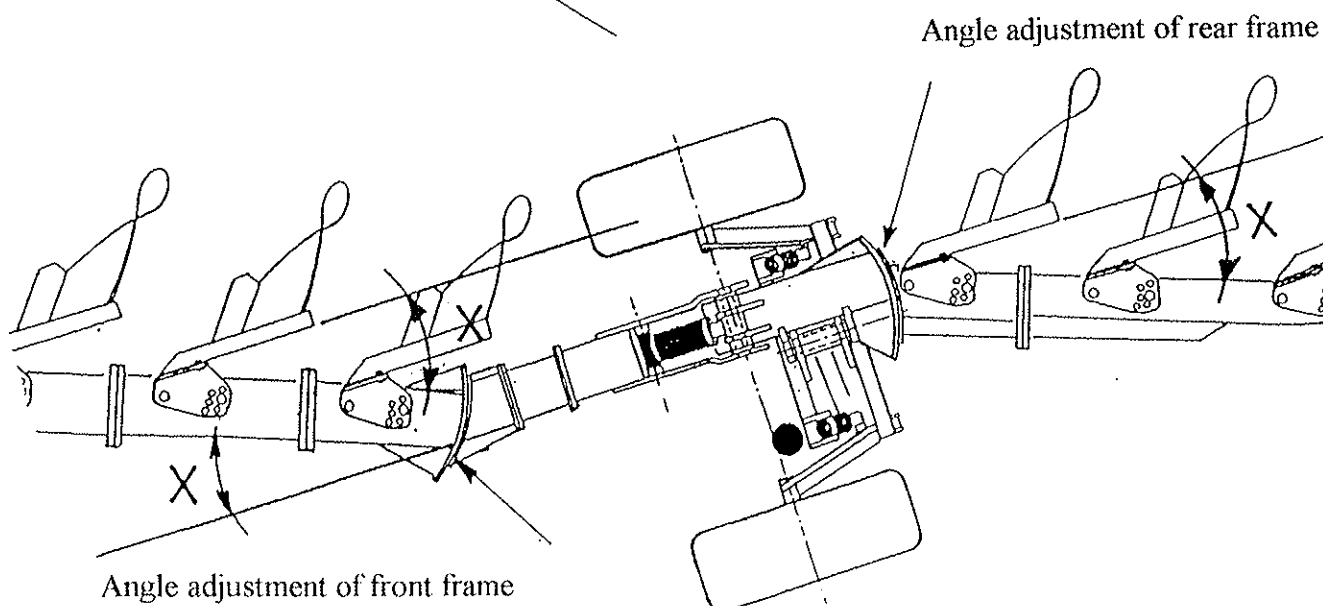
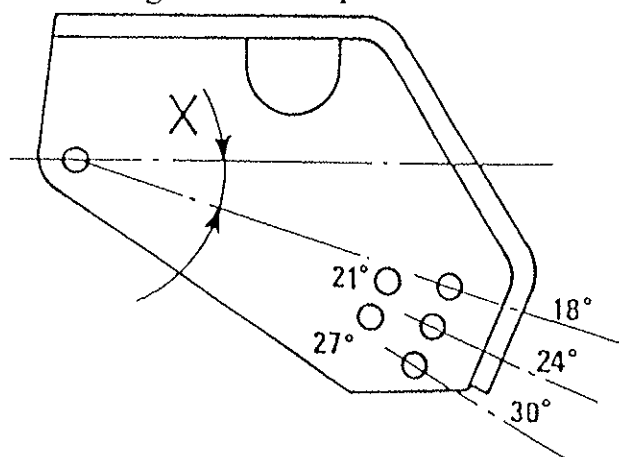
For all maintenance work, use the appropriate tools and equipment.

For this range, the working width is adjustable as follows : 12", 14", 16", 18", 20" and 22" according to the interbody clearance.

In the following table, choose a working width in accordance with the plough interbody clearance. This width corresponds to a cutting angle (X).

ANGLE X	18°	21°	24°	27°	30°
INTERBODY CLEARANCE 1000mm	309mm (12")	358mm (14")	407mm (16")	454mm (18")	500mm (20")
INTERBODY CLEARANCE 1140mm	352mm (14")	408mm (16")	468mm (18")	518mm (20")	570mm (22")

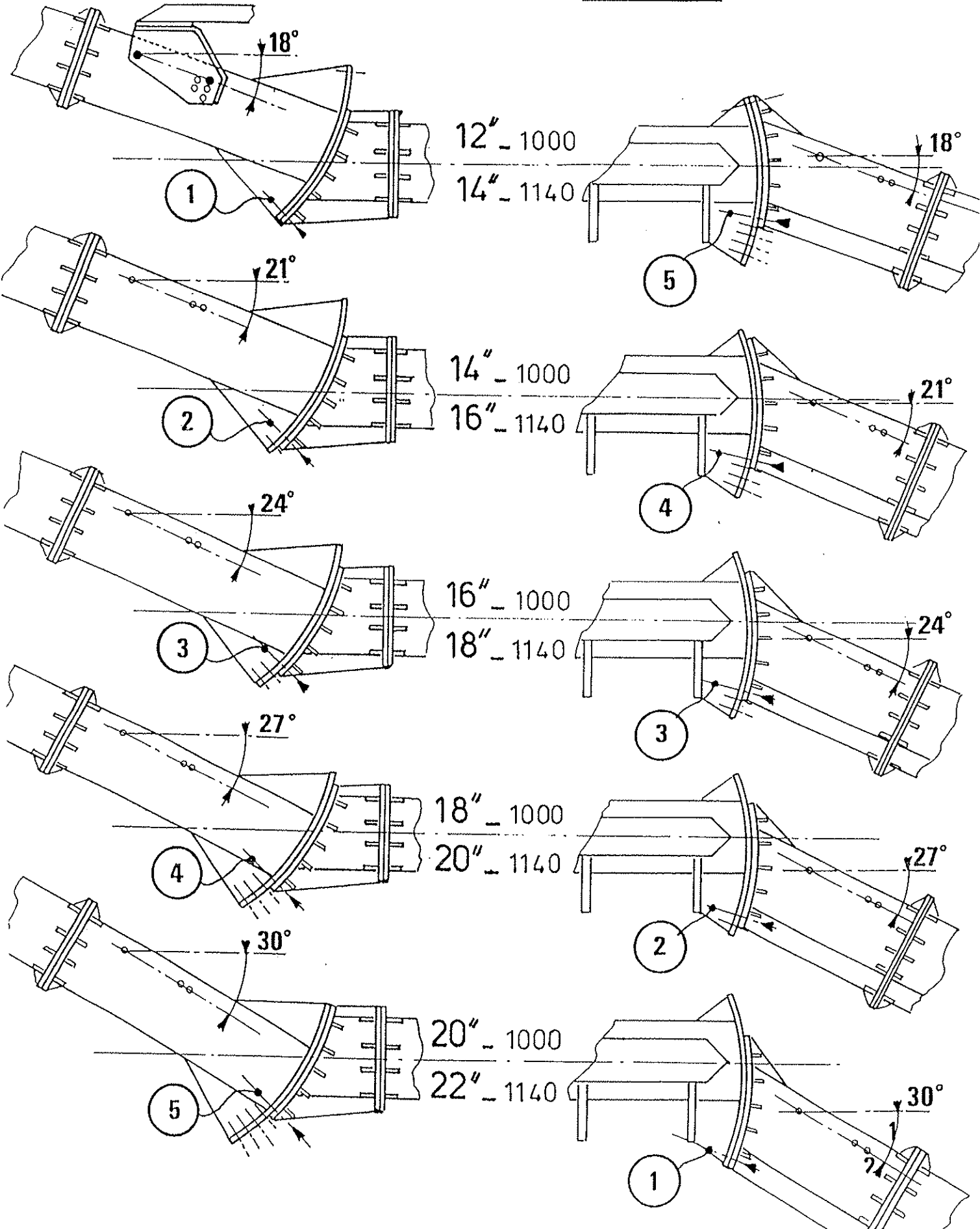
Working widths are expressed in millimeters with their nearest values in inches.



# WORKING WIDTH ADJUSTMENT

FRONT FRAME

REAR FRAME



## [10] TURNOVER

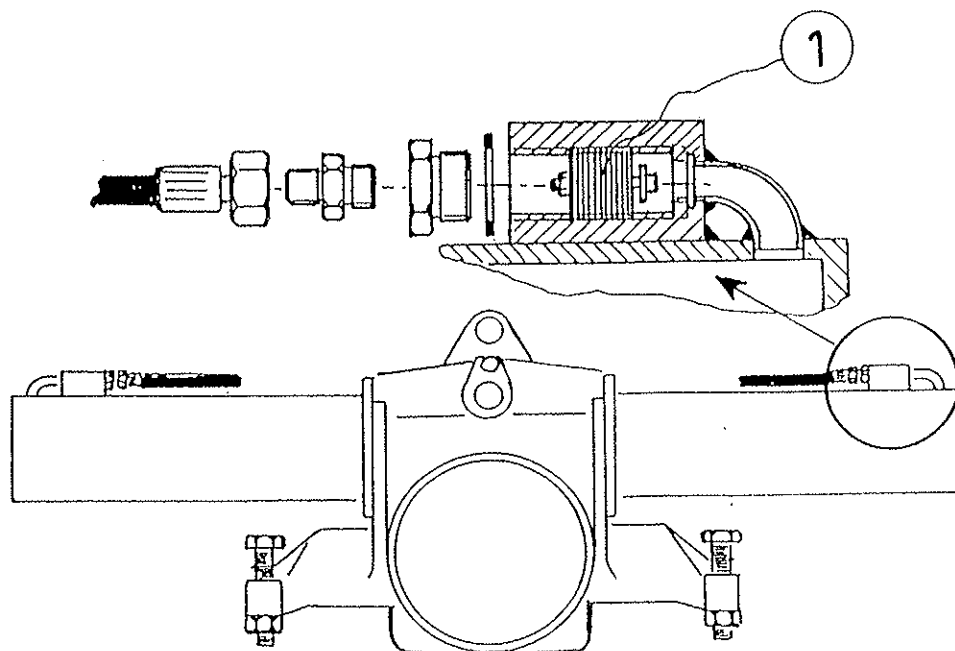


**Before each sequence, be sure that nobody is standing in the plough area.  
Operate hydraulic turnover only from the tractor cab !**

The turnover is made by a rack and pinion system operated by 2 lateral single-acting rams.

Each ram is fitted with a relief-valve (1) that reduces the oil flow in case of a too much flow (leak in hydraulic system).

If the plough reverses very slowly, there could be a partial obstruction of the valve. In this case, disassemble the supply hose, unscrew the valve, remove it and clean it carefully before replacing it.

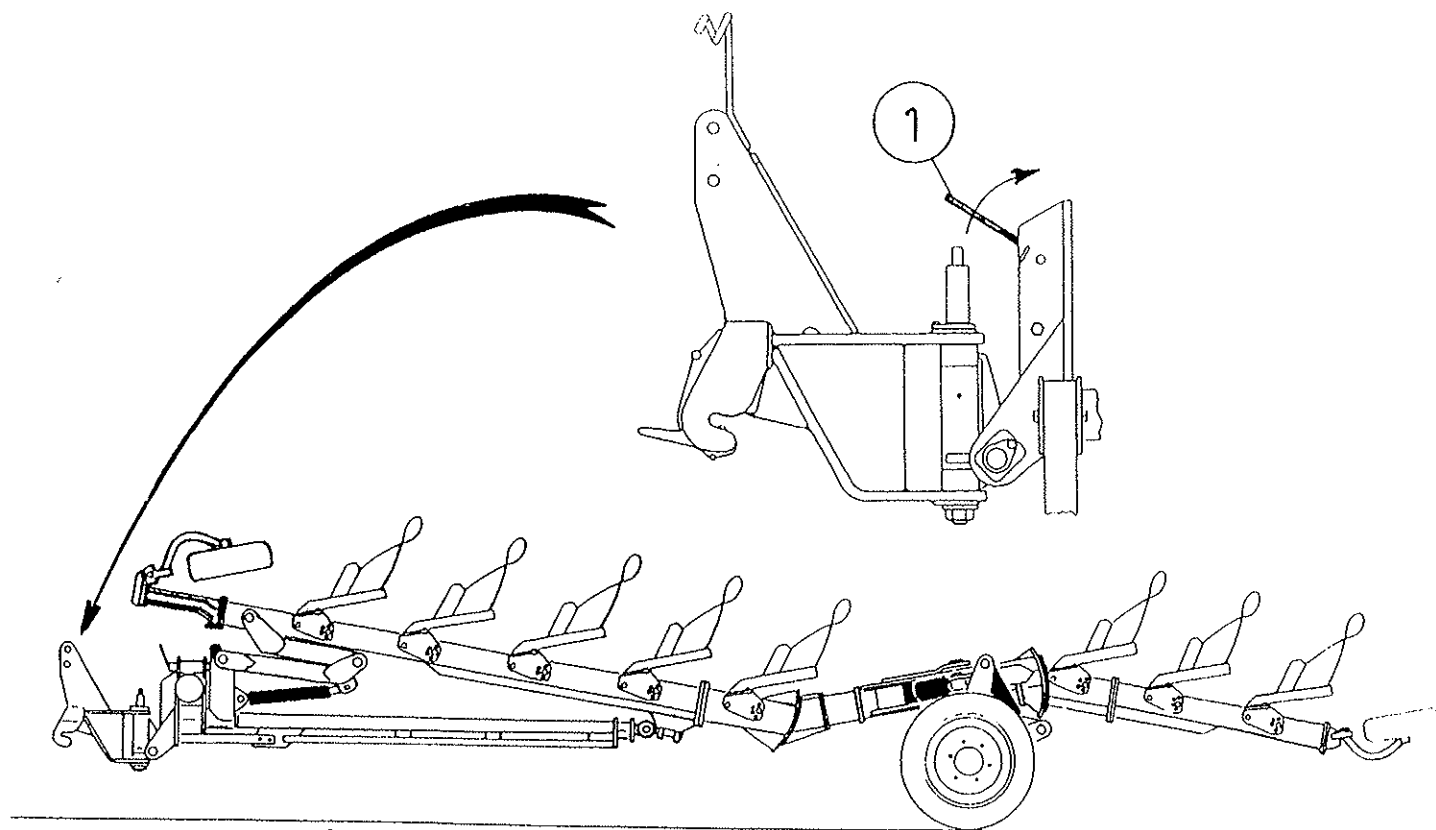


## [11] TRANSPORT POSITION (electronic control box in manual mode)

- This operation must be done with the plough folded.
- Check the removal of the flange (1)
- Raise the central carriage.
- Reverse the plough so as to place the bodies in horizontal position.
- Lock the plough with the pin (2)
- Lower slightly the central carriage.



**This plough is fitted with warning lights placed at rear of the frame and removable when working.  
You must use this lighting board on road transportation and comply with the Highway Code.**



## [12] TYRE INFLATION PRESSURE



**ATTENTION :** Explosion of the tyre with the rim can provoke serious injuries.

Only experienced people are allowed to repair tyres and rims with the appropriate tools.

### TYRES OF CENTRAL CARRIAGE

Types of tyres	Pressure	Load (Maxi)	Speed (Maxi)
Reinforced tyre 15 R 22.5 (Ø 1070)	4.0 bars	4000 kg	30 km/h
Strakes tyre 16.0 /70-20 (Ø 1115)	2.5 bars	3015 kg	30 km/h

### TYRES OF REAR WHEEL

200/60-14.5	6.8 bars	1140 kg	30 km/h
7.00-12	9.0 bars	2500 kg	25 km/h

## CHECK REGULARLY THE INFLATION PRESSURE

This is very important for the tyre life.

**CHECK AND RETIGHTEN REGULARLY ALL WHEEL NUTS AND BOLTS.**

### [13] START



Get used to the plough and tractor controls.



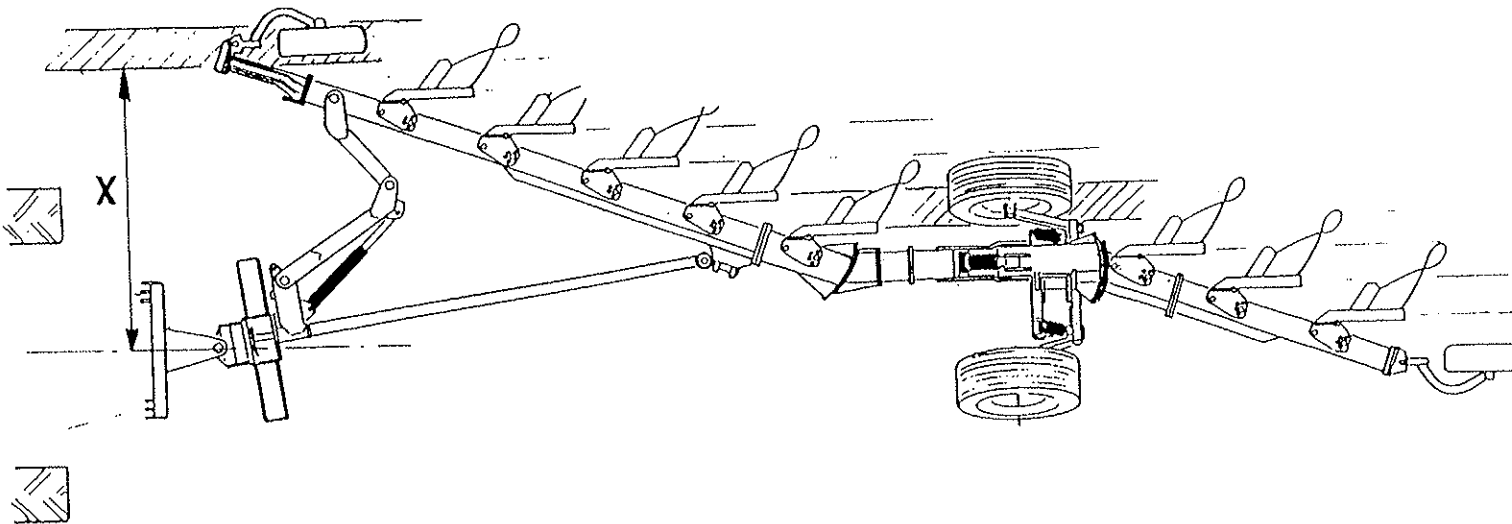
Do not let anybody use the machine without previous training.

When manoeuvring, be sure that nobody is standing in the machine moving area.

### **BEFORE WORKING, CHECK AND GREASE THE PLOUGH GREASING POINTS**

#### ★ ON LAND PLOUGHING ★

	Maximum width X (+/- 50mm)				
	12"	14"	16"	18"	20"
1000	4620	4560	4510	4430	4370
1140	4720	4660	4610	4530	4370

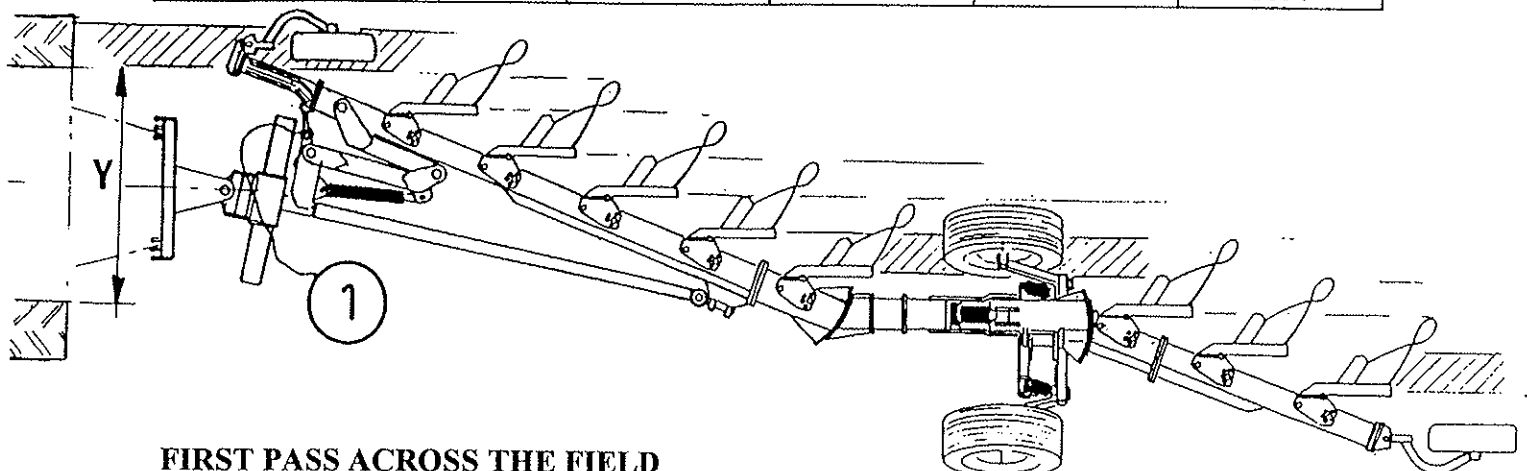


### **FIRST PASS ACROSS THE LAND**

- Regulate the working depth (central carriage, rear wheel and tractor lifting)
- Check that all the electric and hydraulic connections are correct.
- Choose a working method : either manual or hydraulic.
- Comply with the instructions for "Electronic Control Box" (section Operation and Programming) before starting with the first pass across the land.

## ★ IN-FURROW PLOUGHING ★

	Interwheel clearance Y (+/- 50mm)				
	12"	14"	16"	18"	20"
1000	1700	1670	1630	15900	1550
1140	1800	1770	1730	1690	1650



### FIRST PASS ACROSS THE FIELD

- Fold the plough and place the flange (1) after carrying out depth adjustments.
- Then observe the same instructions as for on-land ploughing.

### ATTENTION !!!

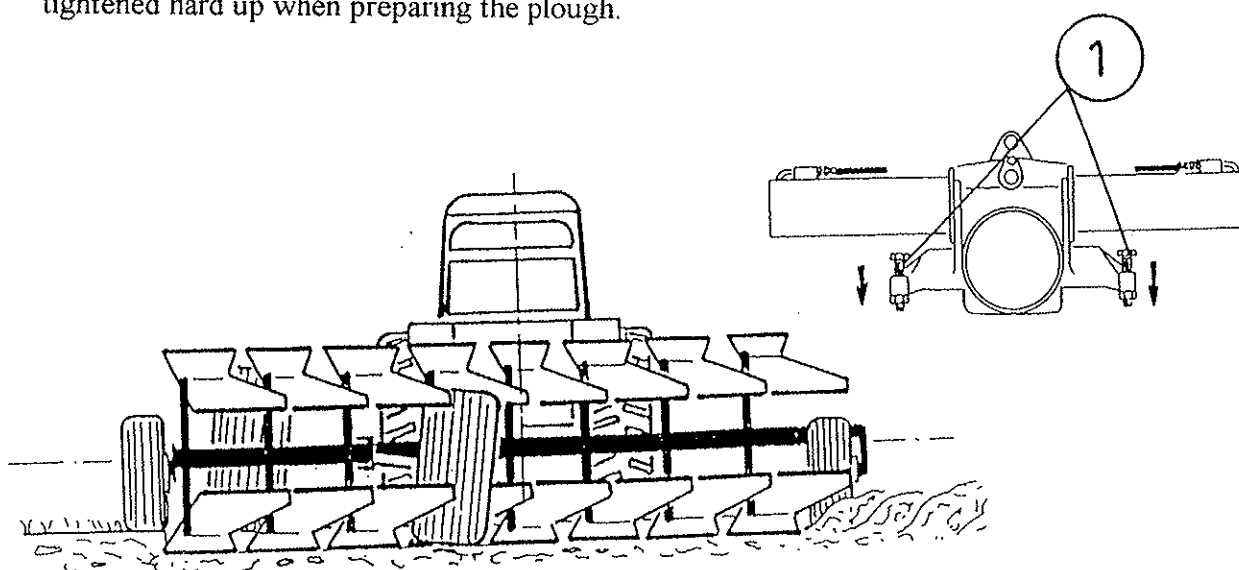
When working in automatic position, set the temporizations to zero.

## [14] ADJUSTMENTS FOR THE SECOND PASS ACROSS THE FIELD

### [14-1] PLOUGH INCLINATION

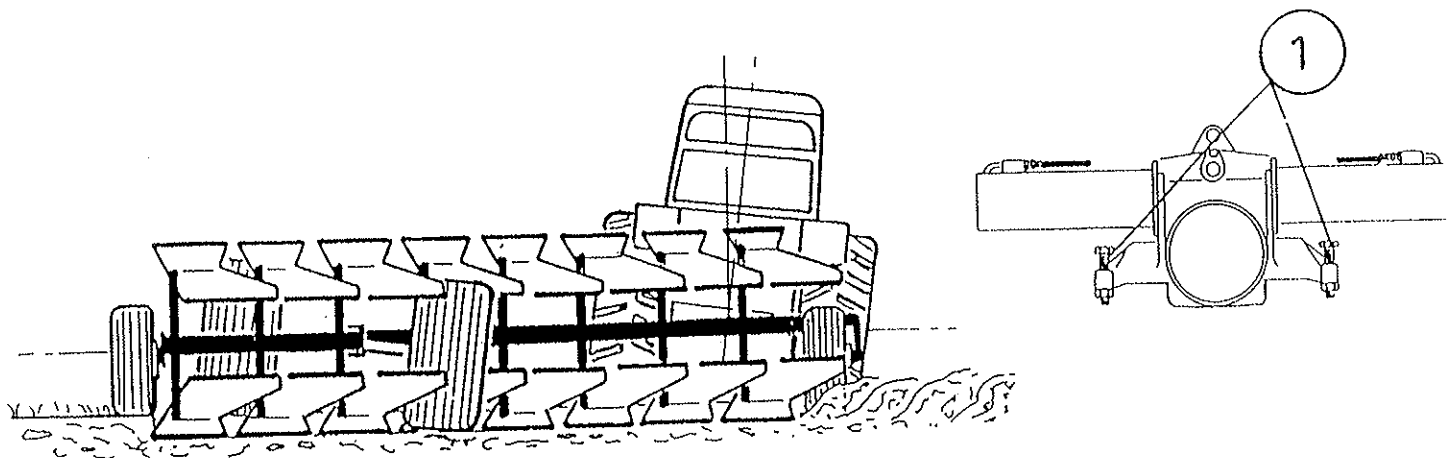
## ★ ON-LAND PLOUGHING ★

In this case, it is not necessary to adjust the plough inclination. The adjusting screws (1) will be tightened hard up when preparing the plough.



## ★ IN-FURROW PLOUGHING ★

- When starting the second pass across the field, the plough must be perpendicular to the ground.



- Loosen the frame from the stop of turnover end.
- Adjust inclination by means of screws (1)

### [14-2] WORKING WIDTH

Adjust once again the depth of central carriage, rear wheel and front wheel, so that the stabilization bar (round tube) remains parallel to the ground.

### [14-3] FRONT FURROW ADJUSTMENT (in-furrow ploughing)

When the plough is folded for in-furrow ploughing, the locking of the flange does not allow the plough front furrow adjustment.

Before working in-furrow, the tractor interwheel clearance (Y) should have been adjusted to the working width.

Working width 14" : interwheel clearance 1.54m

Working width 16" : interwheel clearance 1.64m

### [14-4] RAISE OF REAR FRAME (in manual mode)

It is possible to work with lifted rear frame.

For this purpose, do not place the central carriage completely on the depth stop in order to keep the hydraulic circuit lifting under pressure.

When the carriage comes again onto the stop, the frame lowers automatically to articulated position.

**REFER TO INSTRUCTIONS FOR "ELECTRONIC CONTROL BOX"**

## [15] SAFETY DEVICES

### [15-1] SHEARBOLTS SAFETY DEVICE : B9



**Safety devices on plough bodies release upwards when hitting an obstacle. Never stand in releasing zone during work. Always keep sufficient safety distance.**

This safety device releases through simultaneous shearing of two treated bolts Ø 16 mm.

The release pressure (in Kg at the share point) depends on hardness of the bolts and height of the plough. (Do not use a hardness superior to 10.9)

Plough type SPEF-B9	Bolts - Hardness 8.8	Bolts - Hardness 10.9
Height 1,60 m	4 800 Kg	6 000 Kg
Height 1,70 m	4 500 Kg	5 700 Kg
Height 1,80 m	4 200 Kg	5 300 Kg

### [15-2] MECHANICAL SAFETY DEVICE : S9

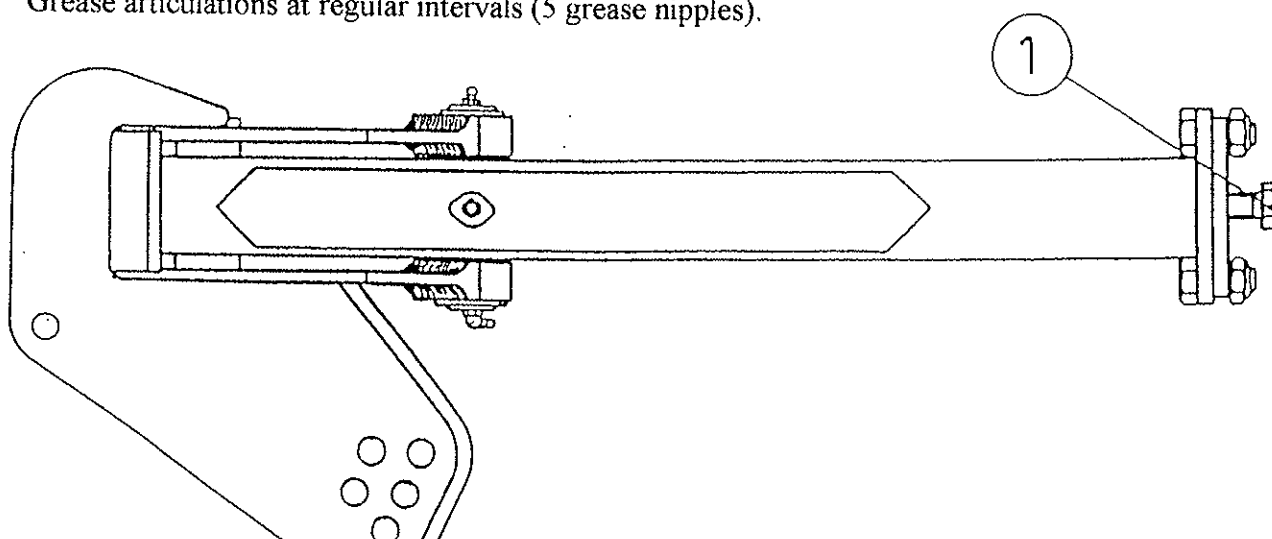


**Safety devices on plough bodies release upwards when hitting an obstacle. Never stand in releasing zone during work. Always keep sufficient safety distance.**

The release pressure is adjusted in factory when assembling the plough and corresponds to the normal use conditions for this safety type. However, the pressure can be modified by means of a screw (1).

To increase the release pressure, tighten the screw (1) by 1 or 2 turns.

Grease articulations at regular intervals (5 grease nipples).





[15-3] MECHANICAL AUTO-RESET SAFETY DEVICE : K9



**Safety devices on plough bodies release upwards when hitting an obstacle. Never stand in releasing zone during work. Always keep sufficient safety distance.**

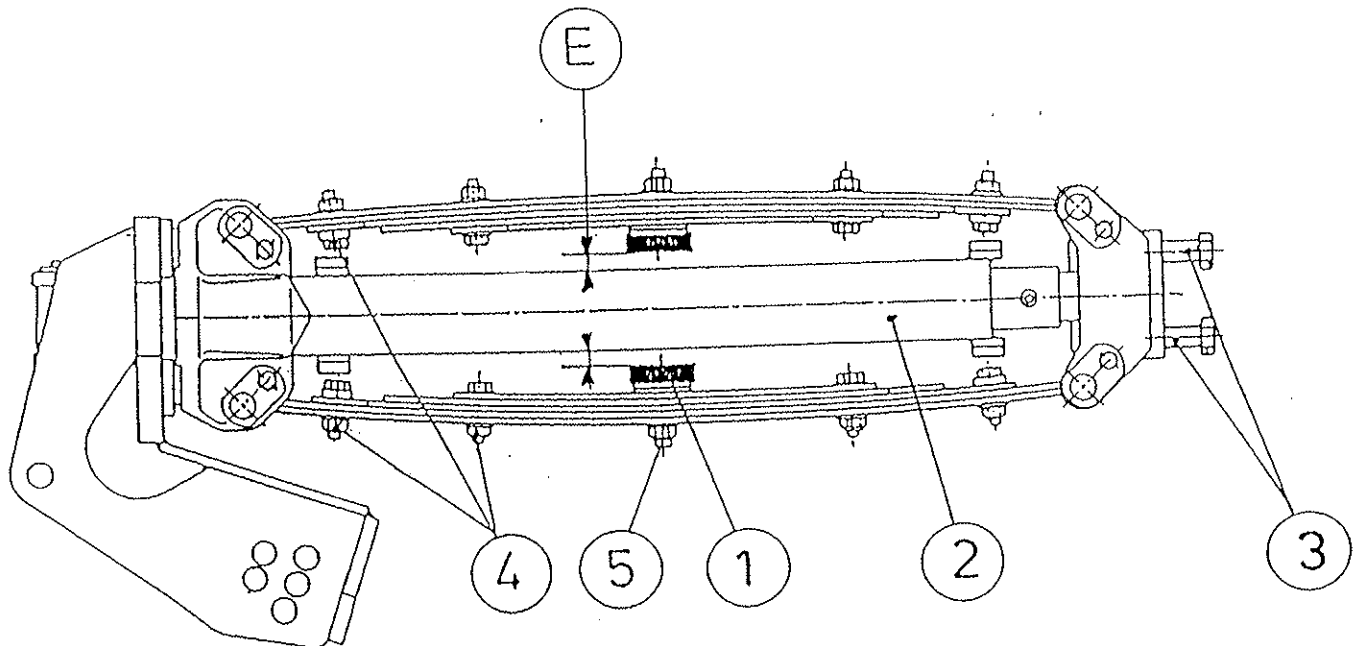
The release pressure is adjusted in factory when assembling the plough and corresponds to the normal use conditions for this safety type.

This adjustment is determined by the dimension (E) (when assembling the plough: E=15mm) between the rubber stops (1) and beam (2).

However, after 10 working hours, a second adjustment of the tension has to be done. Springs must be tightened again by means of the rear screws (3).

- When soil conditions are difficult (very hard soil), increase spring tension by loosening screws (3), which reduces dimension (E).
- When the safety device often releases (very rocky soil), increase dimension (E) by tightening screws (3).

The balance between the two springs is not essential to the good functioning of the safety device, but one of the two springs must show a minimum clearance (E) of 20 mm, the other spring will then balance by itself during work.



**Side bolts (4) keep the springs in touch with one another, but must never be tightened hard up, to allow movement between the springs.**

**Only bolts (5) must be tightened hard up.**

#### [15-4] HYDRAULIC AUTO-RESET SAFETY DEVICES : Y9 AND Z9



Safety devices on plough bodies release upwards when hitting an obstacle. Never stand in releasing zone during work. Always keep sufficient safety distance.



An oil leak under pressure can provoke serious injuries which can quickly infect.

If the case arises, consult a doctor immediately



Use a piece of wood or cardboard to search for a leak but never search for a leak with your hand.

#### NITROGEN INFLATION PRESSURE IN THE ACCUMULATOR

Nitrogen inflation pressure is determined from the factory, engraved on the accumulator (1) and can not be modified.

The adjustment depends on working conditions of the plough.

Normal working conditions : 100 bars

Easy working conditions : 70 bars

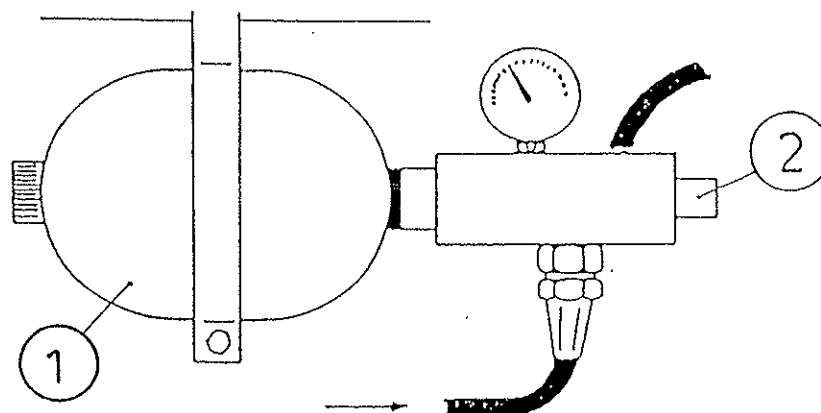
Hard working conditions : 150 bars



Inflation pressure engraved on the accumulator must never be exceeded.  
If the case arises, the manufacturer's responsibility will be excluded and warranty invalid.



The Board of Mines recommends to check the accumulator every 10 years.



## ★ CALIBRATION OF SAFETY DEVICES ★

According to the number of bodies, the ploughs SPEL-Y9 and SPEL-Z9 are fitted with one or two hydropneumatic accumulators; but in both cases, the whole hydraulic circuit will be calibrated in the same way.

### ACCUMULATOR FOR FRONT BODIES

- 1) Loosen locking screw (2) by 2 or 3 turns.
- 2) Put hydraulic circuit under pressure and adjust the pressure (green zone on the manometer) according to the release effort required at share point.
  - Accu. 70 bars : mini 80 bars to maxi 120 bars
  - Accu. 100 bars : mini 110 bars to maxi 150 bars
  - Accu. 150 bars : mini 160 bars to maxi 200 barsRelease effort at the share point increases with the calibration pressure.
- 3) Tighten locking screw (2).

### ACCUMULATOR FOR REAR BODIES

Observe the same instructions as for front bodies, using the lifting circuit of central carriage.

## ★ CONNECTION OF AN ADDITIONAL FRONT BODY ★



### **ATTENTION !!!**

**The hydraulic connection of an additional front body is possible only when the safety device is deflated.**

After fitting the additional body, proceed in the same way as for a normal start.

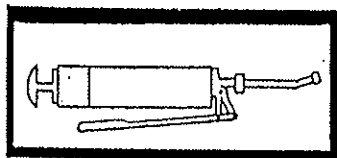
## ★ CONNECTION OF AN ADDITIONAL REAR BODY ★

The hydraulic connection of an additional rear body (the rear body is removable) is ensured by a screwed valve which can be coupled or uncoupled under pressure by means of two spanners.

## [16] MAINTENANCE

**During maintenance work, always respect the safety instructions.  
Maintenance zone must be clean, dry and well-lit.**

- ☞ All the articulations must be greased at regular intervals with quality grease.  
The presence of grease nipples on the plough is indicated by a sticker :



- ☞ Check regularly tightening of nuts and bolts.
- ☞ Keep a correct tyre inflation pressure. Do not exceed recommended inflation pressure.



**Attention : Explosion of the tyre with the rim can provoke serious injuries.**

**Only experienced people are allowed to repair tyres and rims with appropriate tools.**

- ☞ Always use genuine GREGOIRE-BESSON parts ; these parts only correspond to the manufacturer's technical particularities.
- ☞ If the plough should not be used even for a short time, clean it and grease wearing parts and adjusting devices.

### ★ STORAGE OF THE PLOUGH ★

When ploughing time is finished :

- ☞ Clean the plough carefully to prevent from every risk of corrosion and dampness.
- ☞ If necessary, carry out paint touchings up.
- ☞ Check that there are no worn or broken parts on the plough. If the case arises, order the parts and ensure maintenance work.
- ☞ Grease mouldboards, shares, points,...
- ☞ Park your plough under cover from bad weather.

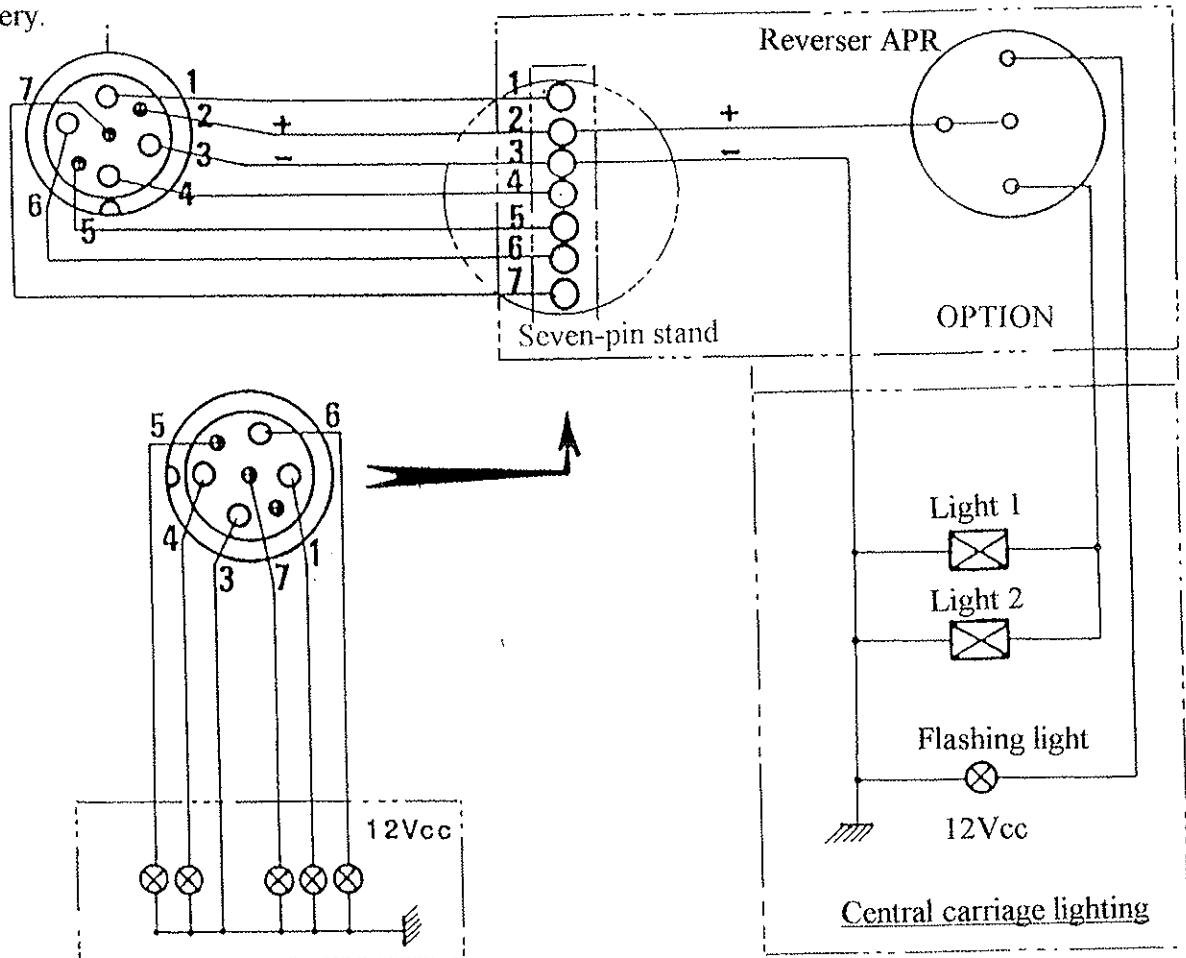
**The good maintenance of your plough guarantees its long life.**

## [17] OPTIONAL LIGHTS ON CENTRAL CARRIAGE

Connect the seven-pin plug of the plough to the tractor plug.

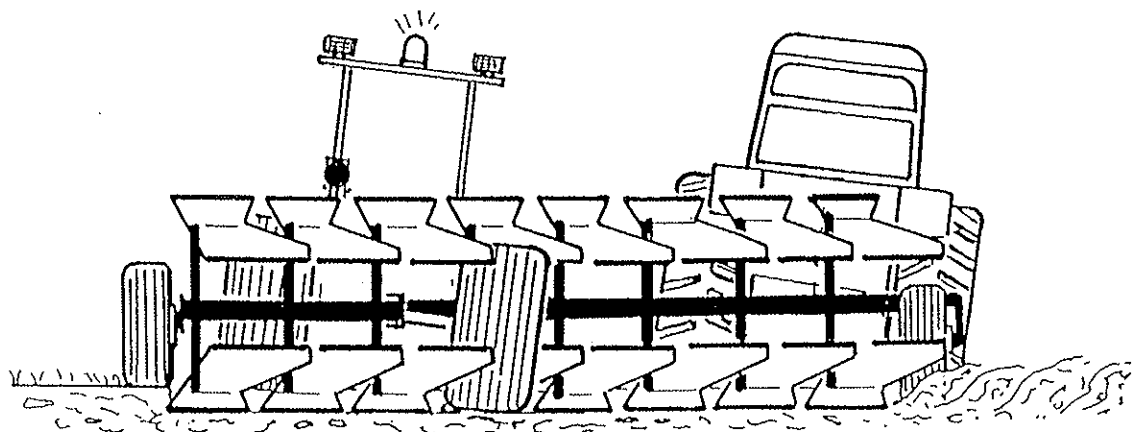
The connection with a seven-pin plug must correspond to the European Code.

If pin n°2 of the tractor plug is not connected to the +12V, connect it directly to the tractor battery.



Right rear light  
Right indicator  
Left rear light  
Left indicator  
Stop light

Rear warning light board









A l'épreuve du temps

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