

seed drill

## TRISEM and TRICOMBI



194/R - 294/R 294/R ESP

> STARTING MANUAL MAINTENANCE DOSAGE SPARE PARTS

Ref.: CN-811003 12<sup>a</sup> Edition - 05-2010

It is forbidden the total and partial reproduction

We can modify the specifications without prior notice

Seed drills and Fertilizer Spreadrs SOLA are produced in a factory particularly specialized in this kind of machines and they are guaranteed for the experience of the users.

They are machines based on state-of-the-art technology and the are manufactered with recognized safety requirements for doing an excellent work with a minimal maintenance.

The purpose of this operating manual is to enable you to familiarise yourself with the working of your seed drill and to achieve your purposes.



Quality certificate

## **TABLE OF CONTENTS**

1. INTRODUCTIO	ON	4
2. TECHNICAL S	SPECIFICATIONS	5
3. SAFETY INST	RUCTIONS	7
4. ESSENTIAL C	CONCEPTS FOR SOWING	12
5. OPERATING		
	5.1 Coupling	
	5.2 Dispenser device	
	5.3 Seed dosage	
	5.4 Seed dosage test	
	5.5 Land test	
	5.6 Combined distribution	
	5.7 Combined hopper	
	5.8 Combined dosage	23
	5.9 Sowing arms adjustment	25
	5.10 Depth control	25
	5.10 Depth control 5.11 Scrapers	20
C ODTIONAL EC		
6. OPTIONALEC	QUIPMENT	
	6.1 Wheel breakers	
	6.2 Leveler	
	6.3 Harrow EPI-6 and EPI-7	
	6.4 Harrow ESP	
	6.5 Markers	
	6.6 Hectare counter	
	6.7 Cultivator	
	6.8 Variator clutch	
7. MAINTENANC		
	BLES	
9. SPARE PART	<sup>-</sup> S	
	9.1 Introduction	47
	9.2 Chassis	
	9.3 Working device	50
	9.4 Seed variator	52
	9.5 Fertilizer variator	
	9.6 Hopper. Combined seed drill	56
	9.7 Big capacity Hopper. Combined seed drill GC	58
	9.8 Combined seed drill. Distribution	
	9.9 Markers	62
	9.10 Harrow EPI-6	64
	9.11 Harrow EPI-7	
	9.12 Harrow ESP	
	9.13 «Ransome» track erasers	
	9.14 «Spring» track erasers	
	9.15 Cultivator	72
	9.16 Leveler	
	9.17 Hectare counter	
	9.18 Automatic coupling	
	9.19 Automatic coupling	
	9.20 Finishing	
	3.20 i iiisiiliy	10

## 1. INTRODUCTION

Before any use of the machine it is very important to read the instruccions and suggestions in this booklet, in order to reduce the danger of accidents and to prevent damages to the seed drill due to incorrect use or defective maintenance. You will increase its performance and useful life.

This booklet must be read by any operator of the machine, during its operation, repairs, maintenance and transport. It is and integrating part of the product, and ust be kept in a safe place for consultation during the whole life span of the machine.

SOLÀ will not asume any responsibility for damages or breakdowns caused by non-observance of the instructions given in this booklet.

In the first chapters you will find the Technical Data and Safety Instructions, also some Essential Sowing Concepts. In the Rules of Use and Maintenance chapters are the basic knowledges for using the machine. The booklet is completed with a seed dosage table and Spare parts list.



SOLÀ reserves the right to modify drawings and technical data given in this manual if this can help to improve the seed-drill quality.

## 2. TECHNICAL SPECIFICATIONS

## 2.1 TRISEM-194/R - TRISEM-294/R

TYPE	ARMS	WORK.	TOTAL		CAPACITY	HOP.	WHEELS
ARMS	DISTANCE	WIDTH	WIDTH	LITRES	KGS	(kg)	
250/19	13 cm	2,50 m	2,68 m	540	390	680	6.00-16
300/22	13,5 cm	3,00 m	3,17 m	665	480	760	6.00-16
350/25	14 cm	3,50 m	3,80 m	790	570	830	10.80-12
400/28	14 cm	4,00 m	4,29 m	920	660	910	10.80-12

## 2.2 TRICOMBI-194/R - TRICOMBI-294/R

TYPE ARMS	ARMS DISTANCE	WORK WIDTH	IOTAL	HOPPER ( LITRI WHEAT	CAPACITY ES FERTIL.	HOPPER TRIGO	CAPAC. FERT.	WEIHG <sup>-</sup> (kg)	WHEELS
250/19	13 cm	2,50 m	2,68 m	270	270	195	320	750	6.00-16
300/22	13,5 cm	3,00 m	3,17 m	335	335	245	400	840	6.00-16
350/25	l '	<b>'</b>	3,80 m		400	295	480	910	10.80-12
400/28	l	<b>l</b> ′	4,29 m		460	345	560	990	10.80-12

## 2.3 TRISEM-194/R-GC - TRISEM-294/R-GC

TYPE ARMS	ARMS DISTANCE	WORK. WIDTH	TOTAL WIDTH	HOPPER C	APACITY KGS	WEIH <b>G</b> N (kg)	. WHEELS
300/22 350/25 400/28	14 cm	3,00 m 3,50 m 4 00 m4	3,80 m	826 1027 1188	625 740 860	931 1060	10.80-12 10.80-12 10.80-12

## 2.4 TRICOMBI-194/R-GC - TRICOMBI-294/R-GC

TYPES ARMS	ARMS DISTANCEL		TOTAL WIDTH	HOPPER LITRES		HOPPER CAP. LITRES WHEAT	WEIHG .(kg	NEUMÁTI
300/22 350/25 400/28	14 cm	3,00 m 3,50 m 4 00 m	3,80 m	503	442 524 606		985 1100 1195	

## 2.5 TRISEM-294/R-ESP

TIPO Y	SEPARACIÓN	ANCHO	ANCHO	CAPACIDA	AD TOLVA	PESO	NEUMÁTICOS
BRAZOS	BRAZOS	LABOR	TOTAL	LITROS	KILOS	(kg)	
250/16	15,5 cm	3,00 m	2,68 m	540	390	680	6.00-16
300/19	16 cm		3,17 m	665	480	760	6.00-16
350/22	16 cm		3,80 m	790	570	830	6.00-16
400/25	16 cm		4,29 m	920	660	910	6.00-16

#### 2.6 TRICOMBI-294/R-ESP

TIPO Y BRAZOS	SEPARACIÓN BRAZOS	ANCHO LABOR	ANCHO TOTAL	-	AD TOLVA ITROS ABONO	CAPACID EN K TRIGO	AD TOLVA (ILOS ABONO	PESO (kg)	NEUMÁTICOS
250/19	15,5 cm	2,50 m	2,68 m	270	270	195	320	750	6.00-16
300/22	16 cm	3,00 m	3,17 m	335	335	245	400	840	6.00-16
350/25	16 cm	3,50 m	3,80 m	400	400	295	480	910	6.00-16
400/28	16 cm	4,00 m	4,29 m	460	460	345	560	990	6.00-16

#### 2.7 STANDARD EQUIPMENT

- Seed variator
- Fertilizer variator (combined version)
- Seed dispensen roller (normal and small seed)
- «spring» sowing arms (194/R) three rows
- «ransome» sowing arms (294/R and 294/R-ESP) three rows
- Right coulters
- Sowing depth adjustment device
- Fast coupling
- Selecting sieve for fertilizer. Combined version
- Grain level
- Indicator for machine leveling
- Plate, weighing machine and grain counter (excepting types ESP)
- Hopper apron (excepting types ESP)
- Wheel scrapers (excepting types ESP)
- Set of lights (excepting types ESP)

## 2.8 OPTIONAL EQUIPMENT

- Double tube for combined machines
- Harrow with: flexible tines, step, types EPI-6 and EPI-7 (4 m)
- Harrow with flexible tines type ESP (only types ESP)
- «Ransome» wheel breakers
- «Spring» wheel breakers
- Hectare counter
- Disc markers
- Variator control
- Cultivator
- Central leveler
- Automatic coupling

## 3. SAFETY INSTRUCTIONS

## 3.1 SAFETY SIGNS

You will find, in this operating manual, three types of safety and danger symbol:



To facilitate operation with the seed drill.



To avoid damages on the machine or in the optional equipments.



This symbol warns of the risk of injury.

On the machine you will find the following symbols:



Please, read the safety instructions contained in this operation manual with care and also observe all warning signs



Stay away of the tractor back part during the coupling operation, during the manoeuvring

Danger of serious

lesions



Stop the tractor engine and avoid its start during the maintenance or repairing works in the seed drill.

Consult operating manual.



Do not place under the sowing equipment or under swinging areas.

Danger of serious lesions



Do not ride on the seed drill stairs when the machine is working.



Supervise
hydraulic pipes.
Consult operating
manual for service
procedures. Danger of
serious lesions.



Close the hopper cover with care.
Do not place the hand into the hopper to avoid lesions.



Do not place under the track markers.

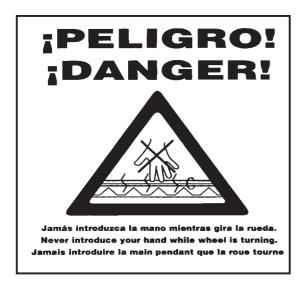
Danger of serious lesions.



Respect the maximum weight



Handling point for lifting.



Do not place the hand into the hopper while the agitator shaft is turning **Danger of lesions.** 

#### 3.2 **USE**

- Seed drills **TRI-194/R** y **TRI-294/R** have been manufactured for the agricultural works, specially for cereals sowing and the other grain sowing.
- SOLÀ can not be held liable for any consequential damage resulting from incorrect use, metering or distribution.
- All relevant accident prevention, as well as other generally acknowledged safety and road traffic regulations, must be observed.
- All the machine modifications realised by the user, automatically exempt SOLÀ from its/his liability in respect on ensuing damages.

## 3.3 SAFETY ARRANGEMENTS

- Before to start the machine it is very important to read the operation safety and road safety.
- Road traffic regulations and signs must be observed.
- It is strictly forbidden to ride on the machine during working and transport.
- Before starting, familiarize with all activation elements, as well as with general operation.
- Pay special attention during coupling and uncoupling operation.
- During the seed dosage test, pay attention to dangerous points, specially the agitator teeth inside the hopper and the wheel scrapers.
- The fast-coupling clamps must be unblocked during normal operation. They must be blocked only for uncoupling.

- Never leave the driver seat during machine operation.
- Do not place strange elements into the hopper.
- Before working on hydraulic system, leaves the machines on the floor, eliminate circuit pressure and stop the engine.
- The hydraulic system generates extremely high pressure. All piping, hoses and connections must therefore be checked regularly for leakage and visible external damage. Useful life for these elements is not more than six years. You must change them after this time.
- When the seed drill is raised, the tractor front axle discharges. Verify that the charge is enough to avoid lodging danger. In this situation, verify direction and braking capacity.
- During the transport with the seed drill raised, block the descent control. Before descending of the tractor, place the machine on the ground and remove starting keys.
- Be extremely careful when working with the machine in raised position. Use support elements to avoid a possible descent of the machine.

#### 3.4 LOADING AND UNLOADING

It is necessary to load and to unload the truck, if it is possible, with a bridge crane. The drawings 1 and 2 show the towrope position for the operation and the fastening points: coupling and harrow-scraper support.

Pay attention with the operations. They must be done by responsible and experienced people.

To avoid serious damage, do not stay under the machine during the operation.





fig. 2





## 4. SOWING ESSENTIAL CONCEPTS

#### **4.1 SOIL**

To have the better quality of sowing, it is very important the soil condition. Over big patch or variable furrow it is not possible to do a good work. Althoug SOLÀ machines are able to take hard efforts in extreme conditions, sowing will have not good quality if the sowing land has not good conditions.

### **4.2 SEED**

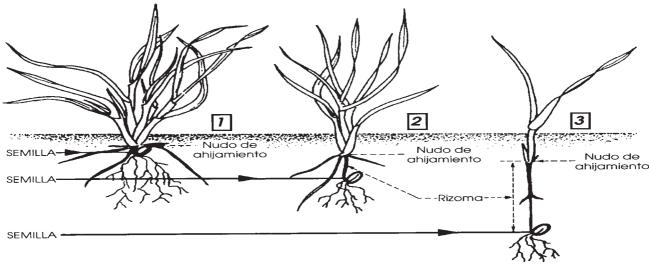
It is very important use quality and clean seed. When sowing barley, use trimmed one.

## 4.3 DEPTH

The suggested sowing depth is from three to five centimetres. To deepen more is an error, as the rizome could not get the surface, resulting in the plant's death. It does not matter if some grains are visible: the spring harrow will cover them.

Sowing depth has influence in the birth and vigour of the plant and consequently in its resistence to both frost and drought. The sprouting node will be always between 1 or 2 cm under the surface, independently of the sowing depth.

Deeper sowing does not mean deeper roots. Only a few roots arise from the bottom of the seed. The main root mass is born from the sprouting node, just under the ground level.





#### Sowing depth 2 to 4 cm

Thick stem, short rhizome, good freezing endurance

Multiple sprouting, 3 to 6 shoots and a lot of blades (6 to 10)

Big tuft of roots, 5 cm wide and 10 to 12 cm deep

With less grains per square meter, we obtain more ears



#### Sowing depth 5 to 6 cm

Thin stem, rhizome exposed to freezing

Delayed and poor sprouting, one shoot (sometimes none) large rhizome that can be not many blades, 3 or 4

Medium tuft of roots, 3 cm wide and 5 cm deep

We need more grains per square meter to obtain the same quantity of ears as in the first case



#### Sowing depth 8 to 10 cm

Very thin stem. No sprouting and a single blade

The grain reserves become depleted by forming a easily cutted off by ice

Poor tuft of roots, just 1 cm wide and 3 cm deep

We need twice the grains per square meter to obtain the same quantity of ears as in the first case



In very cold areas, successive frosts may cause soil surface fluffing up, involving the risk of releasing the incipient plant roots and causing its death.

To avoid this danger, it is recommendable to deepen more the seed or to pass a roller in order to compact the land after sowing



In all SOLA machines, the seed distributor speed variator is activate by the right wheel.

Bends must be done counterclockwise, as turning around the drive wheel will cause a lower distribution of seed



Once the machine is working, seed will not be delivered in the first groove meter. On the contrary, when the machine stops, the remaining grain inside the pipes will slide down and pile up.



Work always at a regular speed. Hard brakes and sudden accelerations result in irregular seed distribution.

#### 4.4 SEED DOSE ADJUSTMENT

With current use of high quality certificated seed, it is not enough to set the weight that has to be distributed by the seed drill, since the success of the harvest depends on the number of plants that reach complete ripeness.

Each plant requires its living space from which feeds on. In this way, as poor could be an high plant density as a low. To decide the adequate dose, we must know the number of plants per square meter we are going to sow.

Orientatively, the plant number recommended for wheat and barley in dry land is as follows:

AUTUMN: Early sowing 200 plants per m<sup>2</sup>

Late sowing 265 plants per m<sup>2</sup>

SPRING: Early sowing 310 plants per m<sup>2</sup>

Late sowing 445 plants per m<sup>2</sup>

Notice that, in spring, sprouting is always lower and, consequently, more seed is needed to obtain the same results that in autumn.



MAQUINARIA AGRÍCOLA SOLÀ, S.L., thinks that is recommendable to seed advice about recommended dosification in some technical sowing center



The seed dose must be adjusted to each soil depending on its texture, fertilization level, dampness an sowing time, grain quality, germinative value, etc.

Moreover, it must be took into account that the maximum germinative value is variable and depends on a lot of factors. Experimentally, it can be established between 70% and 80%, that is equivalent to multiply by 1,43 and 1,25 respectively the number of grains needed.

Find as follows a method to determine the kgs per hectare to sow starting from plants per square meter we want obtain.

1) Introduce «grain counter» in the seed bag. Then, verify that in each hole we have only one seed (100 grains in total) Repeat the operation 10 times (you will obtain 1000 grains) If the machine is type TRI-294/R-ESP, the operation will be manual.

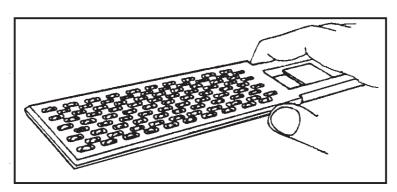


fig. 4

- 2) To weight the 1000 grains in the precision weighing machine. The weight will be the OPERATIVE WEIGHT.
- 3) When we know the grains per square meter to sow, the kgs per hectare to adjust in the dosage control are:

kgs per hectare = (grains per m<sup>2</sup> x OPERATIVE WEIGHT) / 100

# 5. STARTING OPERATION 5.1 COUPLING

The machines are equiped with a quick coupling device to the tractor hyddraulic lifter. The pulling bar allows the machine adjustment to terrein unevenness. For uncoupling, with the machine lifted, open both blocks (1, fig. 5), and fix (2, fig. 5) from lever (3, fig. 5) to axle of Ø16 mm (4, fig. 5).

When the tractor arms are too short, it is necessary to place the AUTOMATIC COUPLING, that place on the same time the three points of the elevator and hold up 12 cm the machine from the tractor.

All the machines are fitted with a support for transport securement. Do not forget to dismantle this support before working.

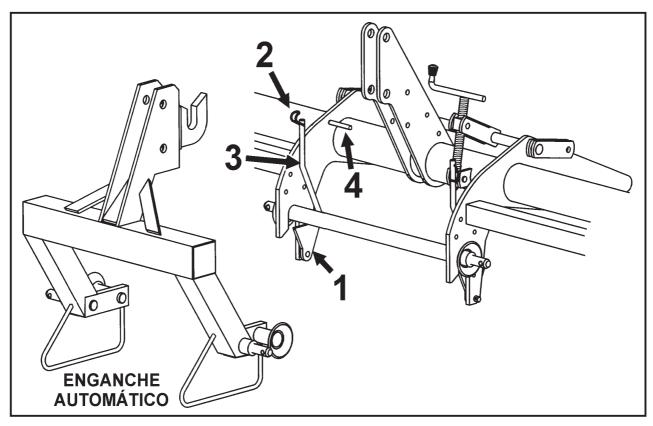


fig. 5

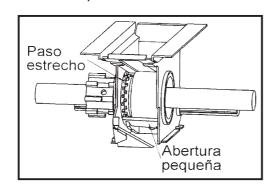


Verify that nobody is between the seed drill and the tractor during coupling operations.

#### 5.2 DISPENSER MECHANISM

Solà dispenser roller can be adjusted with two working positions:

- Narrow cog with small teeth for small seed (fig. 6).
- Wide cog with large alternated teeth for normal and big seed (figs. 7 and 8).



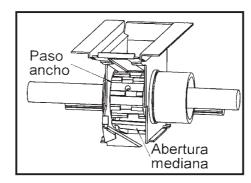
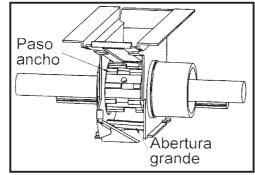


fig. 7

fig. 6



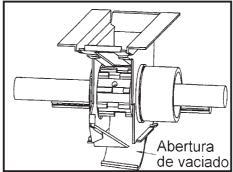


fig. 9

fig. 8

The seed mobile bottom has two objectives:

- To adjust the lower seed dispenser opening according to the grain size (figs. 6, 7 and 8).
- Open the distributor system to empty the hopper (fig. 9).



When shifting the seed dispenser roller between NARROW and WIDE positions, make sure the roller is empty.

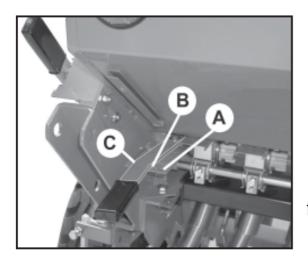
Once the seed dispenser roller position (wide or narrow) is decided and the moble bottom adjusted, the seed flow depends only on the rollers turning speed.

The seed speed variator accomplishes this mission, by allowing to deliver from 0 to 600 kg/ha, with rigorous precisition.

## 5.3 SEED DOSAGE

Verify that the seed dispenser trapdoors are opened and allow the seed flow. Before filling the hopper, attach the agitator to the seed speed variator axle.

Make sure that there are no strange bodies in the hopper.



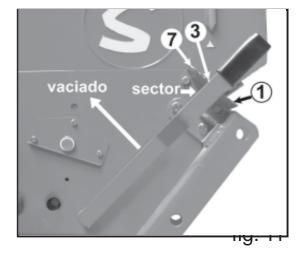
Place the position lever of the dispensers:

- A. right, wide cog for wheat, barley, etc. (fig. 10)
- B. centre, medium cog for sunflower, peas, etc. (fig. 10)
  C. fig. 10
  left, narrow cog for lucerne, rape, etc. (fig. 10)

Place the mobile bottom lever (on the left side of the hopper) on the sector of 7 positions:

Nº 1, for small seed (fig. 11) Nº 3, for wheat and barley (fig. 11) Nº 5, for big seed

To empty the hopper, place the plate under dispensers and take the lever to the front further on number 7. (fig. 11)





Finally, select the seed speed variator, place the lever on the sector from 0 to 100 and fix again on the number selected (fig.12). See the tables (pgs. 38-41).

fig. 12

#### 5.4 SEED CONTROL

Once the dispensers position is correct, the mobile bottom opening and the variator lever, it is very important and necessaty to test the seed dose.

FIRST: slide the distribution bar (1, fig. 13) along its rails by releasing the clamps (2, fig. 13) just in the correct position in order to place the plate.

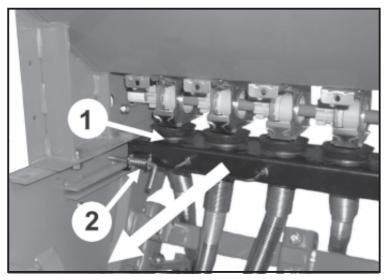


fig. 13

SECOND: slide the plate (3, fig. 14) from the transport position (4, fig. 14) under the dispensers.

Machine TRI-294/R-ESP does not fitted with the plate. In this case you must use a plastic film under the dispensers to collect the

seed.

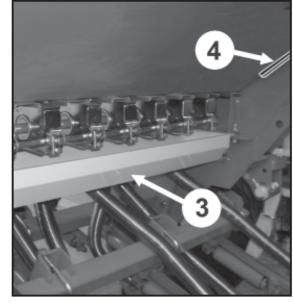
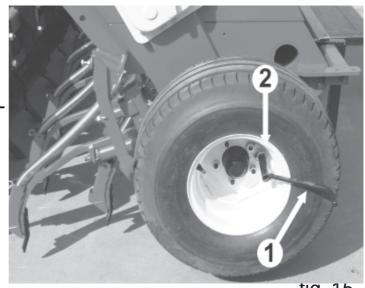


fig. 14

THIRD: place the shaft lever (1, fig. 15) in its place (2, fig. 15) on the right wheel and give some clockwise turns to the driving wheels, until some seed is delivered. Collect up the seed and return it to the hopper. The machine is ready for the real test. If your machine is TRI-294/R-ESPtype, you will have to turn manually.



tig. 15

type	wh 6.00-16	wh 10.80-12
250 300 350 400	. 44 turns 36,5 turns 31,5 turns 27,5 turns	46 turns 38 turns 33 turns 29 turns

Give the turns indicated in the table above, aproximately on turn per second. The number of turns may vary depending on the soil conditions, the wheel manufacturer or the tyre pressure.

It is very important to do a land test as you have in the 5.5 part of this booklet.

After, collect and weight up the delivered seed in the plate or in the plastic film. Multiplying the result by 40 we obtain the kgs per hectare that the machine will distribute.

To realise these operations, it is very important that the machine is coupled to the tractor and slightly lifted (the wheels must turn freely), and it is also recommended to fill only half-hopper in order to make possible the wheel turning.

If the seed has an excess of preservation powder it may result in a flow decrease. So, it is recommendable to do a second dose test after having sow three or four hoppers.



Be careful with the wheel. You could damage with the wheel scraper.

## 5.5 LAND TEST

If it seems that there are significant differences between the dose test and the actual dispensed dose, due to an irregular or soft terrain, a field test can be performed.

First, with a measuring tape, signpost the test distance in meters in the plot of land that is to be sown.

Machine type	Distance (m)
252	400.0
250	100,0
300	83,3
350	71,4
400	62,5

Second, with the seed drill in working position, cover that distance. Count the wheel turns needed to complete the path. Put a mark on the tyre to make this easier.

.

With theses operations we will obtain the turns number for the seed test. If we do the test with this turn number, we are going to obtain the kgs per hectare delivered by the seed drill.

#### 5.6 COMBINED DISTRIBUTION

Combined dispensers are one part by stainles steel and another part in Delrin.

Seed distribution roller is the same than the seed drill dispenser (see 5.2) and the fertilizer dispenser has constant step, fitted on hexagonal axle, to make easy to dismantle, without tools.

The fertilizer mobile bottom its a detachable stainless steel cover, this allows fertilizer roller cleaning (fig. 16).

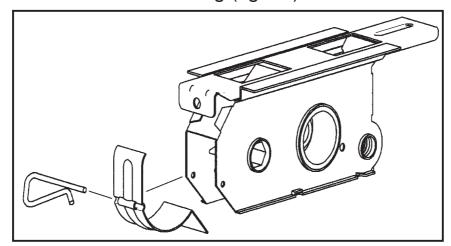


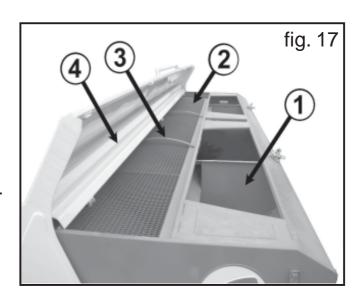
fig. 16

## 5.7 COMBINED HOPPERS

Combined hopper has two compartments: back compartment for seed (1, fig. 17) and the front compartment for fertilizer (2, fig. 17). The fertilizer compartment has a mesh cover (3, fig. 17) in order to avoid strange bodies, like stones, damaging the dosage mechanism.

Each compartment is fitted with its own flow control device.

The fertilizer compartment has a folding device (4, fig. 17) to avoid the fertilizer overflowing between the hopper and the cover. This folding device is not fitted with the machine TRI-294/R-ESP



## 5.8 COMBINED DOSAGE

On the combined machines, dosage and seed control is the same to the seed drills.

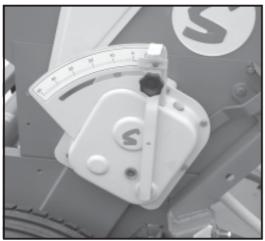
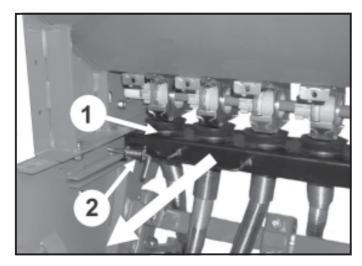


fig. 18

The fertilizer dosage has to be done by means of the fertilizer variator placed on the left side of the machine (fig. 18), positioning the lever on the graded scale from 0 to 50 and fixing it on the number selected in the dosage tables.

(page 42).

These tables are for guidance only. The fertilizer density can vary depending on manufacture process. So, we recomend to carry out a fertilizer dose test likewise that of the seed:



FIRST: slide the distribution bar (1, fig. 19) along its rails releasing the clamps (2, fig. 19), in the working position in order to place the plate.



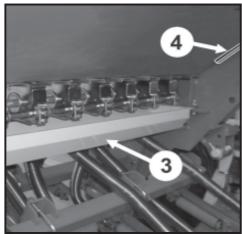


fig. 20

SECOND: slide the plate (3, fig. 20) from the transport position (4, fig. 20) and place it under the dispensers.

Machine TRI294/R-ESP does not fitted with the plate. In this case, use a plastic film to collect the seed.

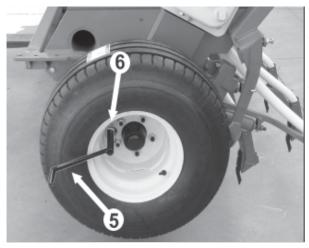


fig. 21

THIRD: place the lever (5, fig. 21) in its place (6, fig. 21) on the left wheels and five some clockwise turns to the driving wheel, until some seed is delivered. The machine TRI-294/R-ESP does not fitted with the lever, you will have to turn manually. Collect up the fertilizer and return it to the hopper and and give the turns as follows:

type	wheels	wheels
туре	6.00-16	10.80-12
250	44 turns	45 turns
300	36,5 turns	37,5 turns
350	31,5 turns	33 turns
400	27,5 turns	29 turns

The fertilizer collected, multiplied by 40, are the fertilizer kgs per hectare that the machine will distribute with the lever in the sector choosed. It is very important to do a precision test with the fertilizer, to verify the fiability level of the table. (pag. 42).



Beware of getting injuries from the scraper when turning the wheel



Optionally, combined machines can be delivered with one or two seed and fertilizer tubes

In the double tube option and with wet weather, it is VERY IMPORTANT to clean de fertilizer compartment of the nozzle, in order to avoid the blockage danger.

It is important to clean with plenty of water nozzles, pipes and coulters for preventing rust.

#### **5.9 ARMS ADJUSTMENT**

## 5.9.1 TRI 294/R - Height and depth

We can adjust each arm, working(A, fig. 22) on two bolts.

On wet and solft lands, the mark of the tractor wheel waits on the soil. It is verty important adjust with more pressure in the coulters that coincide with the wheels and to elevate the coulters of the centre. With track breakers arms is not necessary to adjust it.

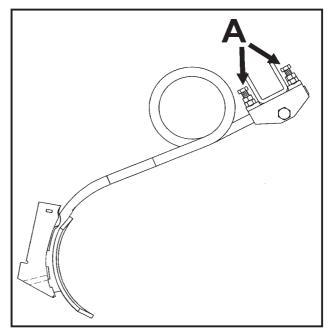


fig. 22

## 5.9.2 TRI 194/R - Constant adjustment

To adjust the arm fixing to the support by a special bolt SOLÀ (1, fig. 23) fitted with autoblocking bolt.

Working on this bolt we can control the lateral position. The arms will be always in good position. pre perfectamente ajustados. Para To adjust the coulter pressure, we must work on the coulter strut (2, fig. 23).

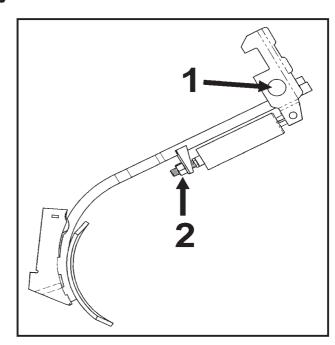


fig. 23

#### 5.10 LEVELING AND DEPTH CONTROL

We can adjust the arms depth by a central bolt (1, fig. 24). Before, we inform you about the way to adjust the arms.

The machine has to work with the hopper in a flat position. The oscillating arrow has to coincide with the mark (2, fig. 24). We can adjust the position with the tractor hydraulic elevator.

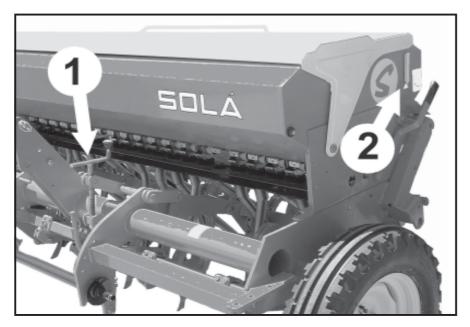


fig. 24

## 5.11 WHEEL SCRAPERS

We can adjust the scrapers by a bolt placed in the superior part of the arm (does not fitted in type ESP).

Some times, when the machine is lifted to the tractor, the wheels are turning because of its fitting with bearings, and the seed goes on falling.

To avoid this, we can adjust the scraper bolt in such a way that touch lightly the wheel. This small brake is enough to avoid the wheels turning.

BLOCKING: in wet and clayei land it can be interesting to block the scrapers, blocking the spring joint.

We can place a bolt in the borer coincidence of the scrapers and its support.

## 6. OPTIONAL EQUIPMENT

## **6.1 TRACK ERASERS**

Track erasers are the best and effective otion to erase the tractor tracks. We can adjust the four arms in height and length depending of vehicle width.

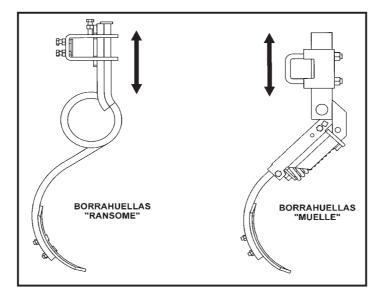


fig. 25

## 6.2 LEVELER

The leveler adjusts the land roughness.

The regularity in the land makes easy the seed deposition to the correct depth. With two springs (A, fig. 26) we can adjust the pressure.

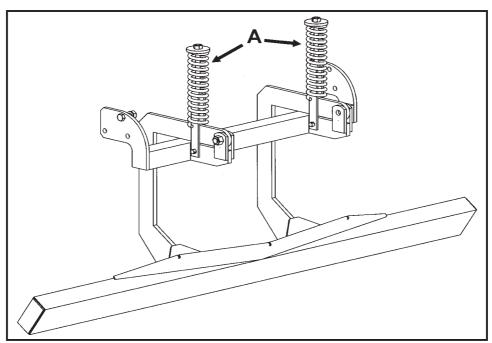


fig. 26

# 6.3 HARROW WITH FLEXIBLE TINES. TYPE EPI-6 AND EPI-7

The seed drill TRI is supplied with a parallelogramic spring harrow. The springs are double-toothed(3, fig.27) in order to cover the furrow with the taken out soil.

Adjusting the upper bolts of both arms, the working pressure is (1, fig. 27) increased or decreased. Adjusting the lower bolts (2, fig.27), modifies working depth.

.

The parallelogramic articulation achieves and excellent adaptation of the double-toothed springs to the terrain unevennes, vertically and horizontally.

Always you must order original SOLA tines, they have had an strict quality control.

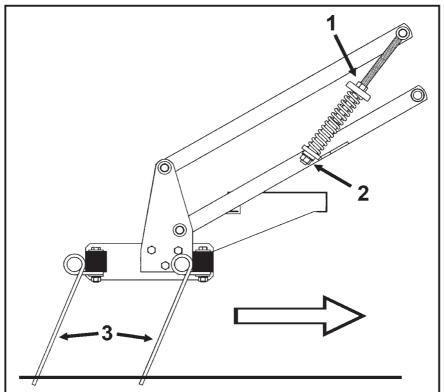


fig. 27



It is forbidden to ride on the harrow when the machine is working.

## 6.4 SPRING HARROW. «E» TYPE

The seed drill TRI-294/R-ESP can be delivered with flexible tines harrow. Double tines springs (3, fig. 28) help to cover the furrow with the taken out soil.

Adjusting the upper bolts of the arms, the working pressure is (1, fig. 28) increased or decreased. Adjusting the lower bolts (2, fig. 28), we can modify the working depth.

.

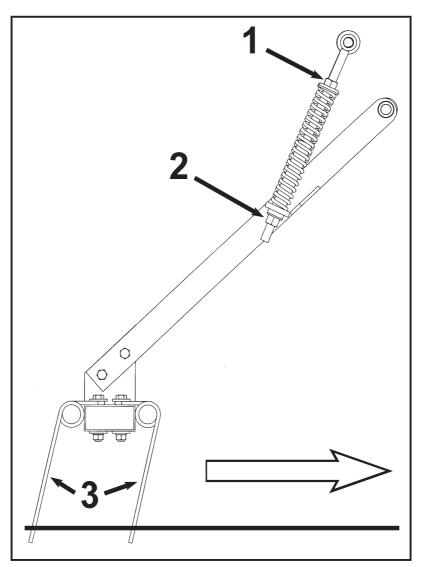


fig. 28



It is forbidden to ride on the harrow while sowing.

#### 6.5 DISC MARKERS

## 6.5.1 Hydraulic disc markers

Place the markers by three bolts on the platen placed in the machine lateral.

The working cylinder must be connect to a double effect device in order to control the arms position. When one arm is in vertical position, the other is in working position.

The cylinders have a throttle inside in order to slow down the track markers lift.

Verify, before to working, that the track marker goes fine.

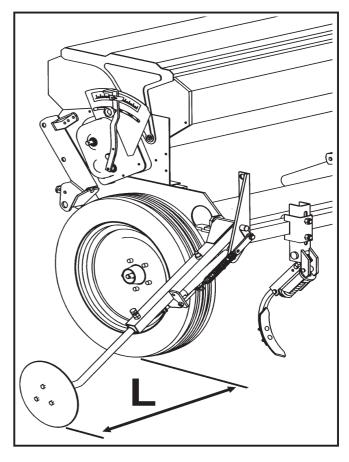


fig. 29

Track markers arms are extensible in order to adjust them and the disc can be adjusted in order to obtain the correct position.

For the hydraulic action, we can obtain a supplementary springs in order to adjust the disc pressure on the land.

To calculate the distance between the disc and the wheel exterior part (L, fig. 29) we can apply the following formula:

L = seed drill working width -

front line tractor width + machine total width

2



Pressure oil can be penetrate in the skin. Danger of serious damages. Keep the tubes, pipes, in good conditions.



Never place in the folding race of the markers

To circulate with the machine by the road, it is very important circulate with the markers in vertical position, fixed with the clamp to avoid their descent during the transport (fig. 30).

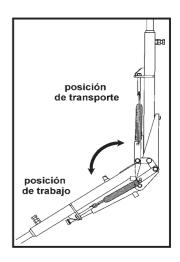


fig. 30



Pay attention with hydraulic tubes.

.

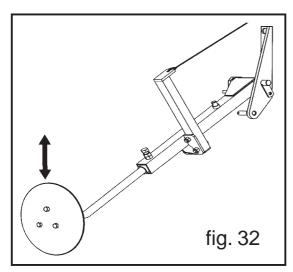


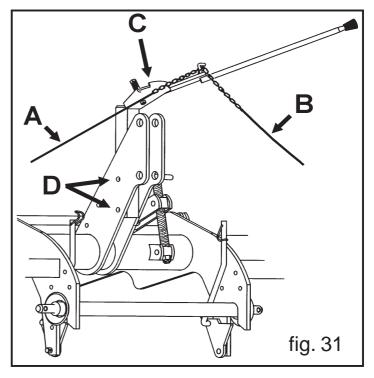
It is not convenient to exceed with the spring pressure and verify the disc position to avoid damages.

## 6.5.2 Mechanical disc markers

Mechanical disck markers are assembled on both sides of the machine. Its operation is by cables (A and B, fig. 31), by a central control (C, fig. 31), fitted to the machine tripod. (D, fig. 31).

Track markers activation is alternative changing the position of the control lever (C, fig. 31).





## **6.6 HECTARE COUNTER**

The hectare counter is placed on the right side of th machine under the seed speed variator. It must be fitted in the (A, fig. 33) shaft that juts out the seed speed variator and screwed in the M-8 thread hole.

A special non-trapping screw (B, fig. 33) is supplied together with the hectare counter.

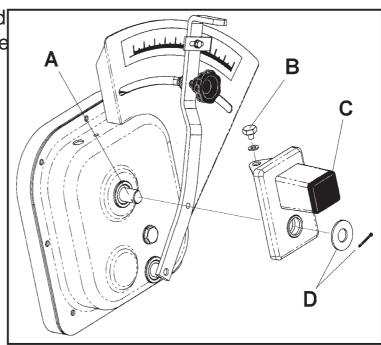


fig. 33

Removing the black lid (C, fig. 33) from the transparent box, the initializing command will be accessible.

Finally, fit a washer and its pin at the end of the variator shaft (D, fig. 33). Make sure that the pin doesn't brusch against the hectare counter box.

Hectare counter «SOLÀ 90» has direct scanning (in both hectare and square meters). Transmission gears are specific for each machine, as follows:

Machine	Motor pinion	Drived pinion
250	Z-28	Z-65
300	Z-32	Z-61
350	Z-34	Z-59
400	Z-37	Z-56



If the hectare counter is not supplied with the machine it is very important to verify if the gears are correct.

#### 6.7 CULTIVATOR

The cultivator is an optional equipment for the soil preparation before sowing. It is fitted between the tractor and the seed drill. The joint with the first is an coupling bar (1, fig. 34) and with the second by two coping arms (2, fig. 34) and a strut (3.

fig 34) thats links the two coupling points of the tripods of the machine and the cultivator.

The cultivator working must be superficial, excepting for the arms placed on track marks that must be adjusted to erase the track markers. Each arm can be adjusted in horizontal and vertical way.

The cultivator can be adjusted for four different working depth, limiting the coupling arms with a bolt (4, fig. 34).

The cultivator has a lateral movement and the height is independent on the seed drill. It is possible to elevate it while the seed drill rests on the soil.

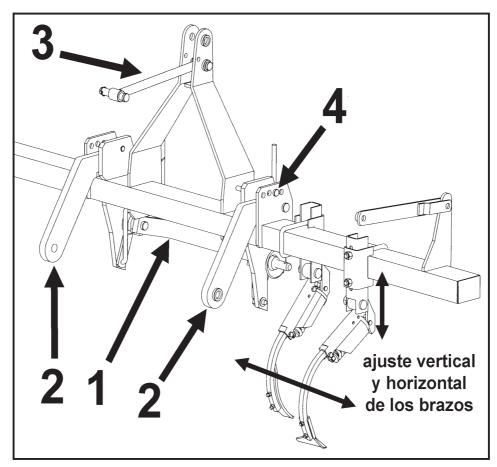


fig. 34

#### 6.8 VARIATOR HYDRAULIC CONTROL

Both variators can be fitted with hydraulic controls for the distance work.

The control is fitted with a simple effect hydraulic cylinder with return spring, that works the variator lever on the positions "closed" (circuit with pressure) and "sowing" (circuit without pressure). This one is the seed or fertilizer dose that we have selected placing a stop (5, fig.35) in the scale.

The cylinder (1, fig. 35) is fitted in the variator lever (2, fig. 35) by a bolt (3, fig. 35) and in the side of the machine with a support (4, fig. 35). The cylinder goes with a small belt to connect to a tractor pressure exit of 1/2".

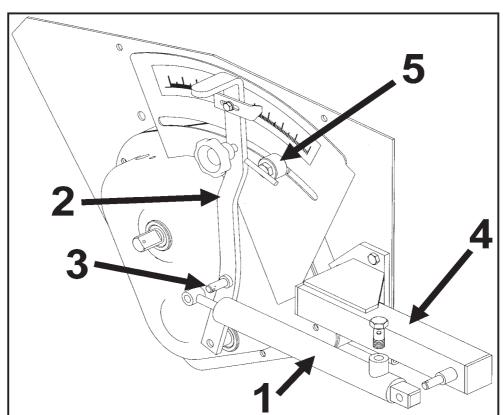


fig. 35



Pressure oil can penetrate in the skin and to cause dangerous damages. Pay attention with tubes and pipes.

## 7. MAINTENANCE 7.1 GREASING

Grease regularly the following parts:

Wheel axles, removing the pressure tap.

Calcic dense grease (1, fig 36)

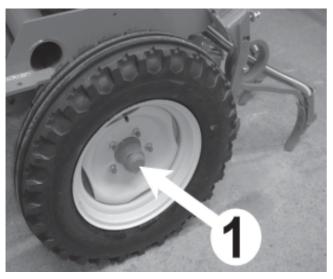


fig. 36

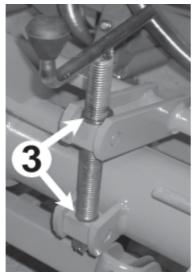


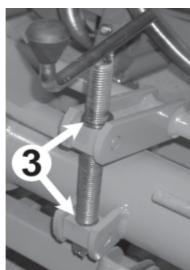
fig. 38

Arms

(3,

fig. 38)

pressure central spindle. Calcic dense grease



Do grease not the dispensers.

Wide-narrow switching roller. Calcic dense grease. (2, fig. 37)

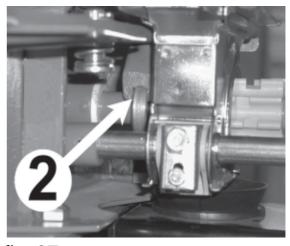
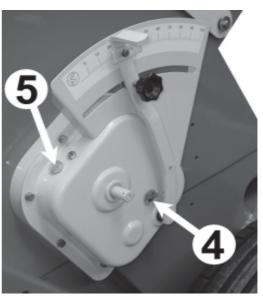


fig. 37

fig. 39



Verify variator oil level through the spyhole (4, fig. 39) and if necessary remove the plug and refill with SAE 30 oil (5, fig. 39)

#### 7.2 TYRE PRESSURE

The following data is corresponding with the full-load pressure prescribed by the tyre manufacturer.

Tyre 6.00 -16 --- 3,75 kg/cm<sup>2</sup>
Tyre 10.80 -12 --- 3,75 kg/cm<sup>2</sup>

Generally, in poor prepared soils, we recommend to reduce a bit the pressure in order to overcome the terrain irregularities and achieve more sowing regularity.

#### 7.3 NUTS AND BOLTS

After some working hours, all bolts must be inspected and tightened if necessary, specially those tying the coulters.

For these bolts, a special tube key

(1, fig. 40), is supplied with the machine.

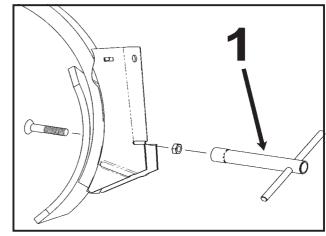


fig. 40

#### 7.4 ANTIOXIDE CONTROL (COMBINED MACHINE)

Once the sowing season is finished, antioxide maintenance must be carried out as follows:

- a) Dismantle the pipes, the nozzles and dispenser stainless-steel covers. Clean them thoroughly.
- b) Wash with water jet the whole machine, specially inside the hopper and the dispensers (with the covers removed).

Turn the left wheel so that the fertilizer rollers can be completly washed.

- c) Give a coat of paint to those parts with oxidation signs, specially those made of metal sheet.
- d) Verify the general greasing.

#### 7.5 PROBLEMS SOLUTION

Sometimes and working with the machine, you can have some problems. Find as follows the problems more usual problems.

.

#### Problems with distribution system:

- Verify there are not strange elements into the distributors.
- Verify the distributors exit trap-doors. Trap-doors must be totally open.
- Verify the trap-doors are in the correct position.
- Verify the distribution rollers.
   They can be damaged.
- Avoid to work in very closed circles: it could produce a bad seed distribution.

The dose is not correct (it is inferior).

- Please, follow the booklet instructions to adjust the dose.
   Pay attention with the pressure wheels, wheel sliding on the land, etc.
- If the driving wheel do not touch the soil, verify the tractor hydraulic arms are well adjusted.
- Verify the conection fastener between the variator and the distributor axle.
- Wheel scrapers can brake the drive wheel.
- Verify the transmission device: bushing tooth, chain and variator pinion.
- After doing all the checking and the problem exists, please ask your SOLÀ dealer. Do not try to repair the variator.

## 8. DOSAGE TABLES



The quantities you have found in the tables are for guidance only. The flow can vary due to preservation powder, seed size, density and humidity.



To do a precision sowing, please follow the process described in sections 5.4 and 5.5 you can found in this manual.



As a general rule, small grain needs less opening than the big, round grain needs less opening than length and light grain needs more opening than the heavy.

# 8.1 SEED DOSAGE TABLE (kg/ha)

	WH	EAT	BAR	LEY	TRITI	CALE	PEAS		BEA	ANS
Adjust. (cm)	12	13,5	12	13,5	12	13,5	24	27	12	13,5
14 16 18 20 22 24 26 28 30 32 34 36 38 40 45 50 55 60 65 70 75 80	89 100 111 120 132 140 147 158 168 177 188 210 232 255 277 300 324 347 370	78 88 98 106 123 138 143 148 156 165 204 225 244 264 285 305 326	69 77 85 95 103 113 120 140 148 157 177 195 224 235 255 273 293 310	61 68 75 84 91 99 106 115 123 130 138 156 172 197 207 224 240 258 273	67 74 82 89 98 106 116 127 139 148 157 173 189 208 226 244 263 281 299	59 65 72 78 86 93 102 112 122 130 138 152 166 183 199 215 231 247 263	46 51 55 61 67 74 77 82 88 92 97 101 110 115 124 152 165	40 45 48 54 59 65 68 72 77 81 85 89 97 101 109 134 145 155	81 97 115 136 152 168 192 210 228 248 265 288	71 85 101 120 134 148 169 185 201 218 233 253
85 90 95 100	390 411 433 457	343 362 381 402	330 347 366 384	290 305 322 338	316 335 353 373	<ul><li>278</li><li>295</li><li>311</li><li>328</li></ul>				
dispenser position	WIE		WIDE		WID		WID	E	W	IDE
Mobile bottom lever position	3	3	3		3	3	2	4	Ę	5
1000 grains operative weight	40	g	46	g	30	g	293	3 g	53	0 g

# TRI-194/R AND TRI-294/R

# Wheels 6.00-16

RAF	PE	SAINF	OIN	VES	SCE	RAY-0	GRAS	LUC	ERNE	SPINA	.СН
24	27	12	13,5	12	13,5	12	13,5	12	13,5	12	13,5
4.0 5.3 6.0 7.0 8.5 9.7 10.7 12.4 14.1 15.3 16.8 18.8 20.5 22.6 24.7 27.7	3.5 4.7 5.3 6.2 7.5 8.5 9.4 10.9 12.4 13.5 14.8 16.5 18.0 19.9 21.7 24.4	24 30 35 40 44 49 55 61 68 77 84 94 98 105 117	21 26 31 35 39 43 48 54 60 68 74 83 86 92 103	76 92 111 128 148 163 178 201 222 233 257	67 81 98 113 130 143 157 177 195 205 226	10.1 11.3 12.5 14.0 15.1 16.6 18.0 18.9 20.1 21.8 23.9 26.8 31.8 36.1 45.5	8.9 9.9 11.0 12.3 13.3 14.6 15.8 16.6 17.7 19.2 21.0 23.6 28.0 31.8 40.0	13.6 16.6 20.1 22.7 26.0 28.1 30.7 34.9 37.5 40.9 44.3 47.7 52.3 59.1 63.6 71.6 75.0 80.7	12.0 14.6 17.7 20.0 22.9 24.7 27.0 30.7 33.0 36.0 39.0 42.0 46.0 52.0 56.0 63.0 66.0 71.0	5.9 7.0 8.8 10.5 12.5 14.0 15.7 17.4 19.1 20.9 22.5 23.9 26.1 30.7 34.8 38.6 46.6	5.2 6.2 7.7 9.2 11.0 12.3 13.8 15.3 16.8 19.8 21.0 23.0 27.0 30.6 34.0 41.0
NARR		WID	2	WID 3		NARI	ROW	NARR		NARF	1
	<b>-</b>	19	g	44	g				-	12	2 g

# 8.2 SEED DOSAGE TABLE (kg/ha)

	WH	EAT	BAR	LEY	TRITI	CALE	PEAS		BEA	ANS
Adj. (cm)	12	13,5	12	13,5	12	13,5	24	27	12	13,5
14 16 18 20 22 24 26 28 30 32 34 36 38 40 45 50 55 60 65 70 75 80	90 102 113 122 134 142 150 161 171 180 191 214 236 259 282 305 329 352 377 396	79 100 108 118 125 141 150 168 207 228 248 268 290 310 331	70 79 87 97 105 114 122 132 142 150 159 228 239 259 277 298 315 335	62 69 76 85 92 101 108 116 125 132 140 159 175 200 210 228 244 262 277	68 75 83 90 99 107 118 129 141 150 159 176 192 211 230 248 267 285 304 321	60 66 73 79 87 95 104 114 124 132 140 154 169 186 202 219 235 251 267	46 52 55 62 68 75 79 83 89 94 98 103 112 117 126 155 168 179	41 46 49 55 60 66 69 73 78 82 86 91 99 103 111 136 147 158	82 98 117 139 155 171 195 214 232 269 292	72 86 103 122 136 150 172 188 204 222 237 257
85 90 95 100	418 440 464	349 368 387 409	335 352 372 390	295 310 327 344	321 341 359 379	283 300 316 333				
dispenser position	WIE	ÞΕ			WID	E			WID	E
Palanca fondo móvil en el nº	3	3	3		3	3	2	4	Ę	5
Peso operativo de 1000 granos	40	g	46	g	30	g	293	3 g	53	0 g

### TRI-194/R AND TRI-294/R

### Wheels 10.80-12

RAPE         SAINFOIN         VESCE         RAY-GRAS         LUCERNE         SPINA           24         27         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         13,5         12         6.0	СН	
4.1       3.6       25       22       77       68       13.9       12.2       6.0         5.4       4.8       30       26       94       82       16.9       14.8       7.2         6.1       5.4       36       31       113       100       20.4       18.0       8.9         7.2       6.3       40       36       131       115       23.1       20.3       10.6         8.7       7.6       45       40       150       132       26.5       23.3       12.7         9.8       8.6       50       44       165       145       28.5       25.1       14.2         10.9       9.6       55       49       181       160       10.3       9.0       31.2       27.4       15.9         12.6       11.1       62       55       204       180       11.4       10.1       35.5       31.2       17.7         14.3       12.6       69       61       225       198       12.7       11.2       38.1       33.5       19.4         15.6       13.7       79       69       237       208       14.2       12.5       41.6       36.6<	SPINACH	
5.4         4.8         30         26         94         82         16.9         14.8         7.2           6.1         5.4         36         31         113         100         20.4         18.0         8.9           7.2         6.3         40         36         131         115         23.1         20.3         10.6           8.7         7.6         45         40         150         132         26.5         23.3         12.7           9.8         8.6         50         44         165         145         28.5         25.1         14.2           10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3<	13,5	
6.1         5.4         36         31         113         100         20.4         18.0         8.9           7.2         6.3         40         36         131         115         23.1         20.3         10.6           8.7         7.6         45         40         150         132         26.5         23.3         12.7           9.8         8.6         50         44         165         145         28.5         25.1         14.2           10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5	5.3	
7.2         6.3         40         36         131         115         23.1         20.3         10.6           8.7         7.6         45         40         150         132         26.5         23.3         12.7           9.8         8.6         50         44         165         145         28.5         25.1         14.2           10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8	6.3	
8.7         7.6         45         40         150         132         26.5         23.3         12.7           9.8         8.6         50         44         165         145         28.5         25.1         14.2           10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8         48.5         42.7         24.3           20.8         18.3         99         87         18.2         16.9	7.8	
9.8         8.6         50         44         165         145         28.5         25.1         14.2           10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8         48.5         42.7         24.3           20.8         18.3         99         87         18.2         16.9         60.1         52.9         31.2           25.1         22.1         119         105         20.4         18.0 <td>9.4</td>	9.4	
10.9         9.6         55         49         181         160         10.3         9.0         31.2         27.4         15.9           12.6         11.1         62         55         204         180         11.4         10.1         35.5         31.2         17.7           14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8         48.5         42.7         24.3           20.8         18.3         99         87         18.2         16.1         53.1         46.8         26.6           23.0         20.2         106         94         19.2         16.9         60.1         52.9         31.2           25.1         22.1         119         105         20.4         18	11.2	
12.6       11.1       62       55       204       180       11.4       10.1       35.5       31.2       17.7         14.3       12.6       69       61       225       198       12.7       11.2       38.1       33.5       19.4         15.6       13.7       79       69       237       208       14.2       12.5       41.6       36.6       21.3         17.1       15.0       86       75       261       230       15.4       13.5       45.0       39.6       22.9         19.1       16.8       96       84       16.9       14.8       48.5       42.7       24.3         20.8       18.3       99       87       18.2       16.1       53.1       46.8       26.6         23.0       20.2       106       94       19.2       16.9       60.1       52.9       31.2         25.1       22.1       119       105       20.4       18.0       64.7       56.9       35.3         28.2       24.8       24.3       21.3       76.2       67.1       47.4         27.3       24.0       82.0       72.2       32.3       28.5       36.7       3	12.5	
14.3         12.6         69         61         225         198         12.7         11.2         38.1         33.5         19.4           15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8         48.5         42.7         24.3           20.8         18.3         99         87         18.2         16.1         53.1         46.8         26.6           23.0         20.2         106         94         19.2         16.9         60.1         52.9         31.2           25.1         22.1         119         105         20.4         18.0         64.7         56.9         35.3           28.2         24.8         24.3         21.3         76.2         67.1         47.4           27.3         24.0         82.0         72.2         32.3         28.5         36.7         32.3         32.3         32.3         32.3	14.0	
15.6         13.7         79         69         237         208         14.2         12.5         41.6         36.6         21.3           17.1         15.0         86         75         261         230         15.4         13.5         45.0         39.6         22.9           19.1         16.8         96         84         16.9         14.8         48.5         42.7         24.3           20.8         18.3         99         87         18.2         16.1         53.1         46.8         26.6           23.0         20.2         106         94         19.2         16.9         60.1         52.9         31.2           25.1         22.1         119         105         20.4         18.0         64.7         56.9         35.3           28.2         24.8         24.3         21.3         76.2         67.1         47.4           27.3         24.0         82.0         72.2         32.3         28.5         36.7         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         32.3         3	15.6	
17.1       15.0       86       75       261       230       15.4       13.5       45.0       39.6       22.9         19.1       16.8       96       84       16.9       14.8       48.5       42.7       24.3         20.8       18.3       99       87       18.2       16.1       53.1       46.8       26.6         23.0       20.2       106       94       19.2       16.9       60.1       52.9       31.2         25.1       22.1       119       105       20.4       18.0       64.7       56.9       35.3         28.2       24.8       24.3       21.3       76.2       67.1       47.4         27.3       24.0       82.0       72.2       32.3       28.5       36.7       32.3       28.5       36.7       32.3	17.1	
19.1       16.8       96       84       16.9       14.8       48.5       42.7       24.3         20.8       18.3       99       87       18.2       16.1       53.1       46.8       26.6         23.0       20.2       106       94       19.2       16.9       60.1       52.9       31.2         25.1       22.1       119       105       20.4       18.0       64.7       56.9       35.3         28.2       24.8       24.3       21.3       76.2       67.1       47.4         27.3       24.0       82.0       72.2       32.3       28.5       36.7       32.3       32.3       32.3       32.3	18.7	
20.8       18.3       99       87       18.2       16.1       53.1       46.8       26.6         23.0       20.2       106       94       19.2       16.9       60.1       52.9       31.2         25.1       22.1       119       105       20.4       18.0       64.7       56.9       35.3         28.2       24.8       24.3       21.3       76.2       67.1       47.4         27.3       24.0       82.0       72.2       32.3       28.5       36.7       32.3 <td>20.1</td>	20.1	
23.0         20.2         106         94         19.2         16.9         60.1         52.9         31.2           25.1         22.1         119         105         20.4         18.0         64.7         56.9         35.3           28.2         24.8         22.2         19.5         72.8         64.0         39.3           24.3         21.3         76.2         67.1         47.4           27.3         24.0         82.0         72.2           32.3         28.5         36.7         32.3         82.0         72.2	21.3	
25.1       22.1       119       105       20.4       18.0       64.7       56.9       35.3         28.2       24.8       24.8       22.2       19.5       72.8       64.0       39.3         24.3       21.3       76.2       67.1       47.4         27.3       24.0       82.0       72.2         32.3       28.5       36.7       32.3	23.4	
28.2     24.8       28.2     19.5       72.8     64.0       39.3       24.3     21.3       76.2     67.1       47.4       27.3     24.0       32.3     28.5       36.7     32.3	27.4	
24.3 21.3 76.2 67.1 47.4 27.3 24.0 82.0 72.2 32.3 28.5 36.7 32.3	31.1	
27.3 24.0 82.0 72.2 32.3 28.5 36.7 32.3	34.6	
32.3 28.5 36.7 32.3	41.7	
36.7 32.3		
46.2 40.7		
NARROW WIDE WIDE NARROW NARROW NARROW	ROW	
1 2 3 1 1 1	1	
19 g 44 g 12	2 g	

# 8.3 SEED DOSAGE TABLE (kg/ha)

	WHEAT	BARLEY	TRITICALE	PEAS	BEANS
arms dis. Adj. (cm) lever	16 cm	16 cm	16 cm	32 cm	16 cm
14					61,3
16					73,4
18					87,2
20	67,4	52,7	51,0	36,4	103,6
22	76,0	58,7	56,1	40,9	115,7
24	84,6	64,8	62,2	43,6	127,8
26	91,5	72,5	67,4	49,1	146,0
28	100,2	78,6	74,3	53,6	159,8
30	106,2	85,5	80,3	59,1	173,6
32	119,2	91,5	88,1	61,8	188,3
34	120,0	98,5	96,7	65,5	201,2
36	127,8	106,2	105,4	70,0	218,5
38	134,7	112,3	112,3	73,6	
40	142,5	119,2	119,2	77,3	
45	159,8	134,7	131,3	80,9	
50	176,2	148,5	143,3	88,2	
55	193,5	170,1	158,0	91,8	
60	210,7	178,8	171,9	99,1	
65	228,0	193,5	185,7	121,8	
70	246,1	207,3	199,5	131,8	
75	263,4	222,8	213,3	140,9	
80	281,5	235,8	227,1		
85	296,2	250,5	240,1		
90	312,6	263,4	254,8		
95	329,0	278,1	268,6		
100	347,2	291,9	283,3		
dispensers position	WIDE	WIDE	WIDE	WIDE	WIDE
mobile bottom lever position	3	3	3	4	5
1000 grains operative weight	40 g	46 g	30 g	293 g	530 g

### TRI-294/R-ESP

# Wheels 6.00-16

	RAPE	VESCE	RAY-GRAS	LUCE R	SPINACH
arms adj. Adj. (cm) lever	32 cm	16 cm	16 cm	16 cm	16 cm
14 16 18 20 22 24 26 28 30 32 34 36 38 40 45 50 55 60 65	3,2 4,3 4,8 5,6 6,8 7,7 8,5 9,9 11,3 12,3 13,5 15,0 16,4 18,1 19,7 22,2	57,9 70,0 84,6 97,6 112,3 123,5 135,6 152,9 168,4 177,0 195,2	7,7 8,6 9,5 10,6 11,5 12,6 13,7 14,3 15,3 16,6 18,1 20,4 24,2	10,4 12,6 15,3 17,3 19,8 21,3 23,3 26,5 28,5 31,1 33,7 36,3 39,7 44,9 48,4 54,4 57,0 61,3	4,5 5,4 6,7 7,9 9,5 10,6 11,9 13,2 14,5 15,9 17,1 18,1 19,9 23,3 26,4 29,4 35,4
70 75 80 85 90 95 100			27,5 34,6		
dispensers position Mobile bottom position	NARROW 1	WIDE 3	WIDE 1	WIDE 1	NARROW 1
1000 grains operative weigh		44 g			12 g

#### 8.3 DOSAGE TABLE. FERTILIZER

Fertilizer dosage (kg/ha)

	TRI-194/ wheels6			/R-294/R 10.80-12	294/R-ESP
sector No	13,50 cm	12 cm	13,50 cm	12 cm	16 cm
0	0	0	0	0	0
2	31	35	32	36	27
5	80	91	82	93	69
7	120	136	123	140	104
10	172	195	177	201	149
12	222	252	228	259	192
15	275	313	283	322	238
17	329	374	338	384	284
20	386	439	397	451	333
22	439	499	451	513	379
25	498	566	512	582	430
27	551	626	566	643	476
30	614	698	631	717	530
32	658	748	676	768	568
35	721	819	741	842	623
37	763	867	784	891	659
40	825	938	848	964	713
42	858	975	882	1002	741
45	918	1043	943	1072	793
47	947	1076	973	1106	714
50	987	1122	1014	1152	852

The combined machine only admits granulated fertilizers.



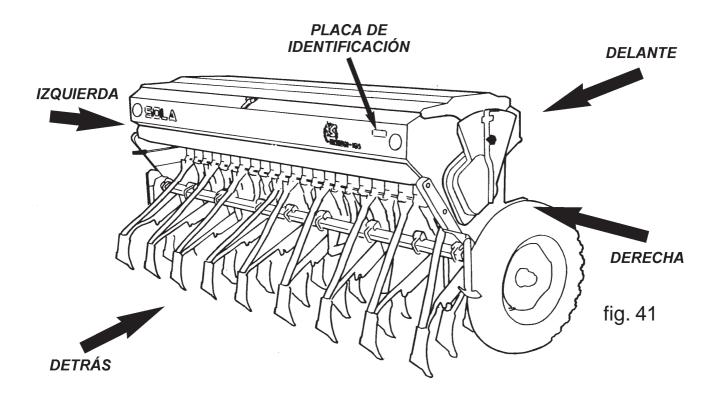
We suggest to use high concentration mixture fertilizer. Otherwise, the fertilizer hopper capacity would not be synchronized with that of the seed hopper.

# 9. SPARE PARTS 9.1 INTRODUCTION

The RIGHT, LEFT, FRONT and BACK denominations are referring to the machine working direction (fig. 41).

In the drawings, mirror parts are not repeated. Read the code in the codelist.

Do not forget to indicate the serial number and machine type in your spare parts order. Both informations are in the IDENTIFICATION PLATE.Do n





Do not forget that you could take injuries with sharp edges while replacing components or assembling optional equipment.



Avoid to work under the machine. If you must do it, please secure it.

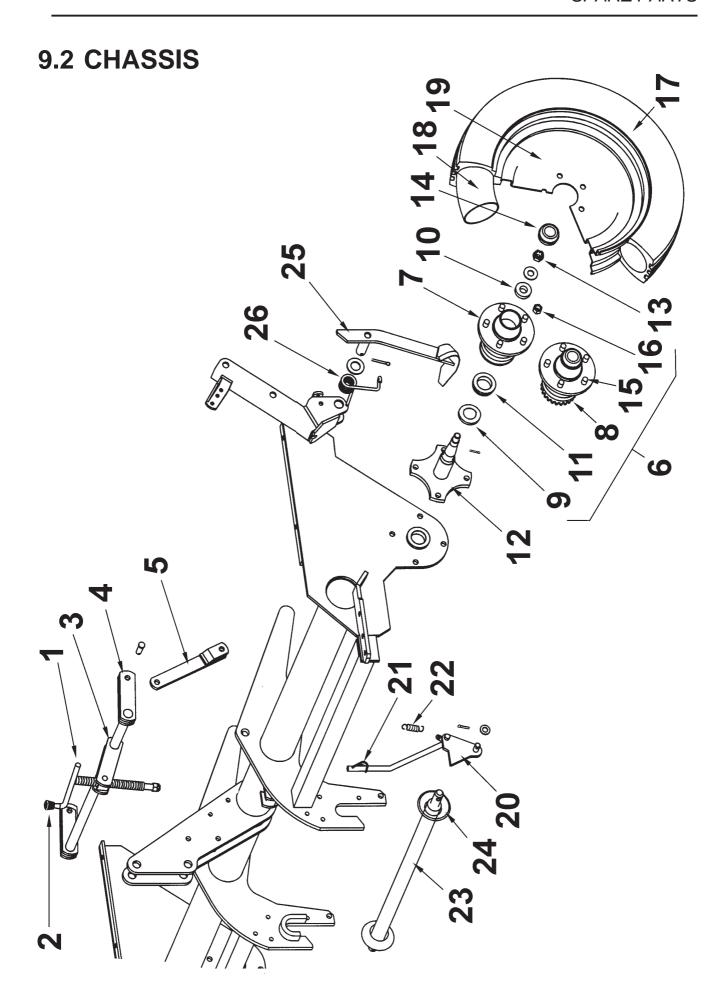


Figure	Code	
1	PS-0104	
2	PL-010200	
2 3	PS-2607	
4	EE-040305	
5	PS-2606	
6	MO-040112	
6	MO-040111	
6	RE-040300	
6	MO-040110	
6	MO-040105	
6	RE-040301	
7	ME-040211	
7	ME-040212	
8	ME-040209	
8	ME-040209	
9	FE-601009	
9	FE-601001	
10	FE-600021	
10	FE-600021	
10	FE-600007	
11	FE-600023	
11	FE-600023	
11	FE-600002	
12	PS-2668	
12	PS-2669	
12	PS-2670	
13	935 20/150	
13	935 27/150	
14	EE-040231	
14	EE-040231	
15	FE-614000	
16	917 16/150 BI	
17	PL-040300	
17	PL-040301	
18	PL-040302	
18	PL-040303	
19	CO-040303	
19	CO-040303 CO-040302	
20	PS-2602/D	
20	PS-2602/I	
21	ML-010100	
22	ML-010101	
23	PS-0108	
23	PS-010102	
24	EE-010226	
25	PS-2604/D	
25	PS-2604/I	
25	PS-2605/D	
25	PS-2605/I	
26	ML-010300/D	
26	ML-010300/I	
	IVIL-0 10300/1	

# 9.3 COULTER WORKING TRAIN

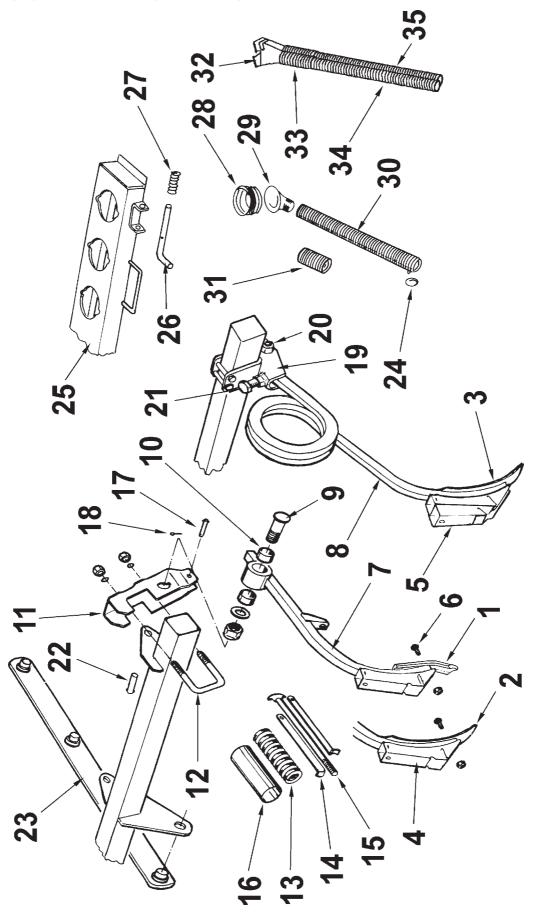


Figure	Code	
1	FO-050300	
2	FO-050301	
3	FO-060300	
4	MB-233	
5	MB-164	
6	608/934 9X40	
7	PS-2611	
7	PS-2611/D	
7	PS-2611/I	
8	PS-2612/D	
8	PS-2612/I	
8	PS-2662/D	
8	PS-2662/I	
9	RE-050300	
10	PL-050302	
11	CO-050302	
12	EE-050314	
13	ML-050300	
14	EE-050301	
15	FO-050303	
16	EE-050310	
17	BU-050302	
18	94 3,5X20 BI	
19	MS-60	
20	933 16X45 8.8 B	
21	933 12X50 8.8 B	
22	BU-050303	
23	PS-2614	
24	ML-050103	
25	PS-1505/6/7/8	
26	BU-050300	
27	ML-050202	
28	PL-050300	
29	PL-050301	
30	ML-050302	
30	ML-050306	
30	ML-050303	
30	ML-050304	
30	ML-050319	
30	ML-050305	
31	VA-1604	
31	VA-1606	
32	EE-050313	
32	MB-114	
33	VA-1613	
34	ML-050313	
34	ML-050110	
34	ML-050323	
35	ML-050311	
35	ML-050107	
35	ML-050324	

#### 9.4 SEED VARIATOR

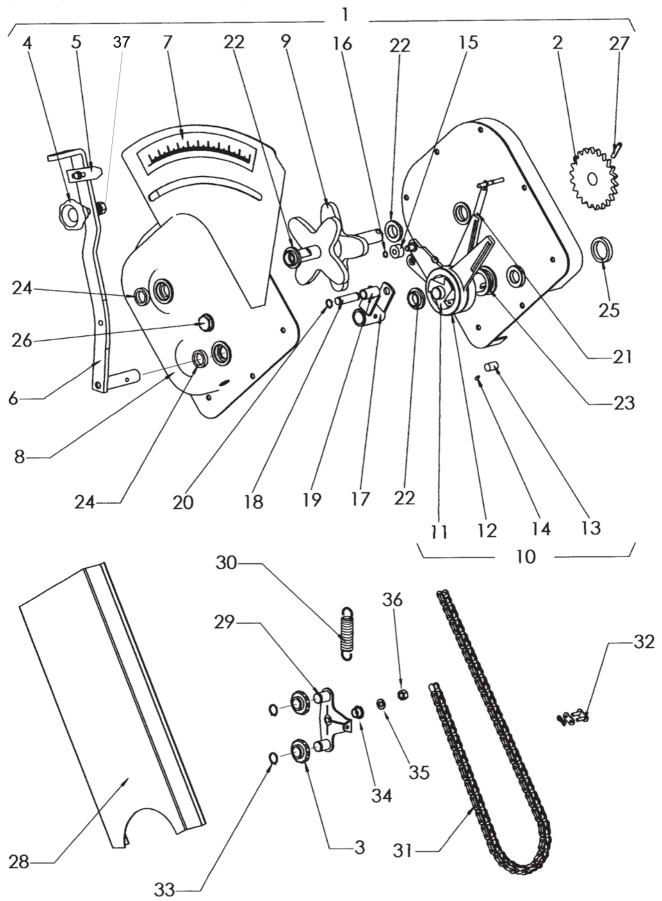
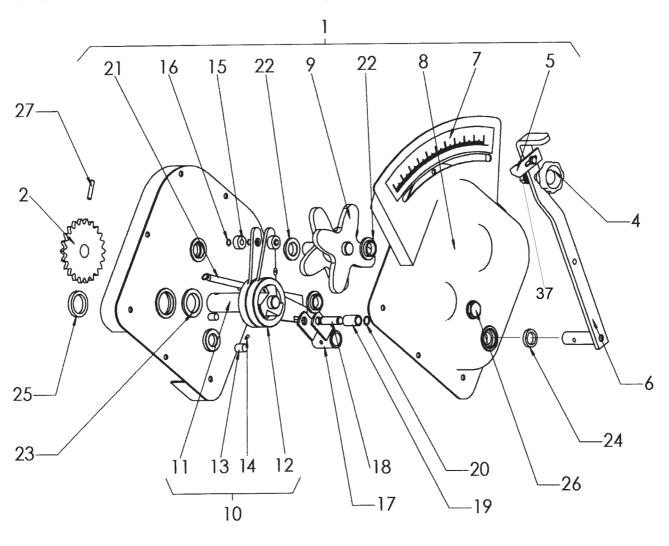
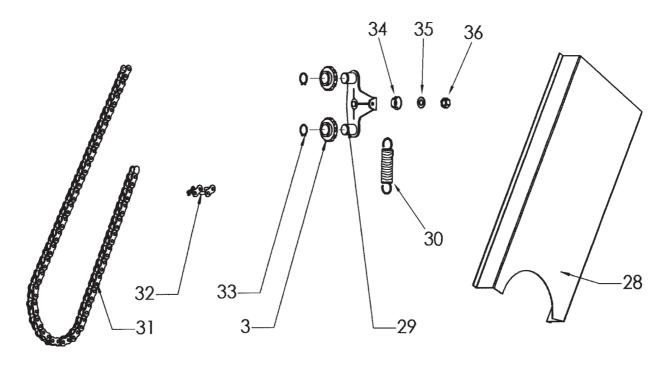


Figure	Code	
1	MO-0601	
2	ME-040100	
3	PL-040100	
4	MV-09	
5	PX-040204	
6	PS-0610	
7	AD-040200	
8	PS-0618	
9	TA-0618	
10	MO-0605	
11	RE-040201	
12	ME-040226/D	
12	ME-040226/I	
13	RODILLO 12X18	
14	RE-040202	
15	PL-040200	
16	471 8	
17	PS-0611	
	BU-040200	
	PL-040206	
20	471 12	
21	ML-040101	
22	PL-040207	
23	PL-040208	
24	FE-601004	
25	FE-601005	
	HI-707005	
27	1481 6X40 BI	
28	PS-2641	
29	CO-040300	
30	ML-010101	
31	FE-605008	
32	FE-605025	
33	471 16	
34	FE-600008	
35	125 8 BI	
36	985 8 095 40 l	
37	985 10 l	

### 9.5 FERTILIZER VARIATOR





igure Code MO-0602 1 2 ME-040101 3 PL-040100 4 MV-09 PX-040204 5 6 PS-0619 7 AD-040201 8 PS-0627 9 RE-040200 10 MO-0606 11 RE-040203 12 ME-040232/D 12 ME-040232/I 13 **RODILLO 12X18** 14 RE-040202 15 PL-040200 16 471 8 17 PS-0620 18 BU-040200 19 PL-040206 20 471 12 21 ML-040101 22 PL-040207 23 PL-040208 24 FE-601004 25 FE-601005 26 HI-707005 27 1481 6X30 BI 28 PS-2642 29 CO-040300 30 ML-010101 31 FE-605009 32 FE-605025 33 471 16 FE-600008 34 35 125 8 BI 36 985 8 37 985 10 I

# 9.6 SEED/FERTILIZER HOPPER

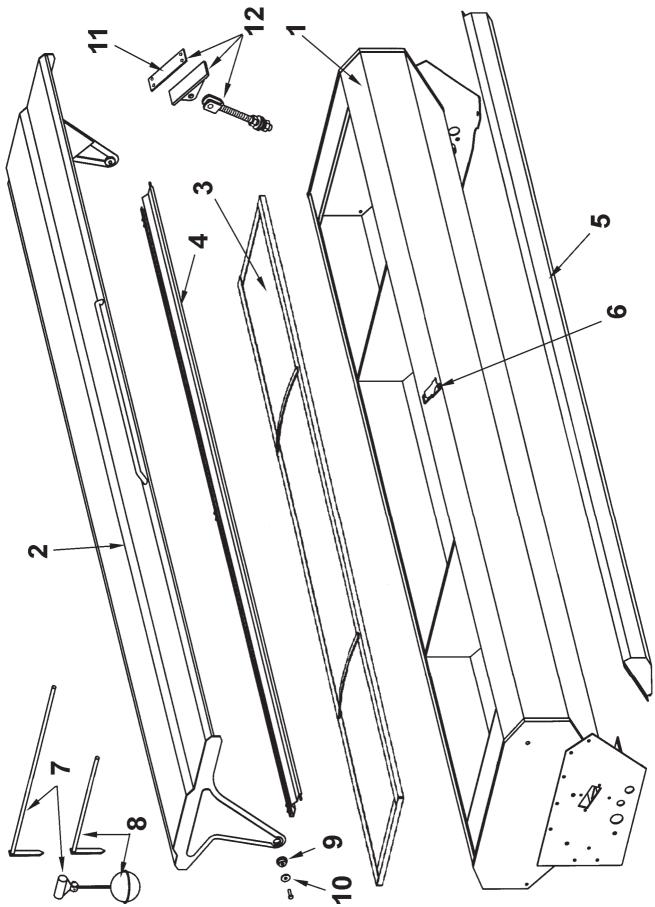


Figure	Code	
1	PS-0404	
	PS-0405	
1	PS-0406	
1	PS-0407	
1	PS-0501	
1	PS-0502	
1	PS-0503	
1	PS-0511	
1	PS-2671	
1 1	PS-2672	
1	PS-2648	
1	PS-2673	
1	PS-2674	
1	PS-2675	
1	PS-2652	
1 1	PS-2676	
2	PS-1301	
2 2 2 3 3 3	PS-1302	
2	PS-1303	
2	PS-1304	
3	PS-1401	
3	PS-1402	
3	PS-1403	
3	PS-1404	
4	PS-1309	
4	PS-1310	
4	PS-1311	
4	PS-1312	
4	PS-1305	
4	PS-1306	
4	PS-1307	
4	PS-1308	
5	MB-60 MB-61	
5	MB-62	
5 5	MB-63	
6	MO-1638	
7	RE-020200	
8	RE-020200 RE-020202	
9	BU-020700	
10	EE-030200	
11	PL-020201	
12	RE-020201	
'-		

# 9.7 SEED/FERTILIZER GC HOPPER

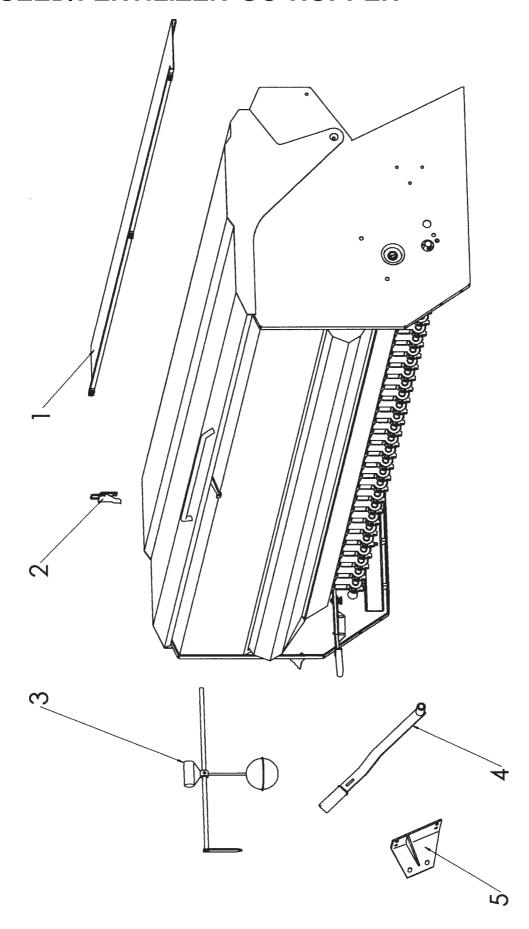


Figure	Code	
1	PS-030808	
1 1	PS-030809	
1 1	PS-030810	
2	MO-1638	
3	RE-021000	
4	PS-020912	
5	PS-021000/D	
5	PS-021000/I	

# 9.8 SEED / FERTILIZER HOPPER

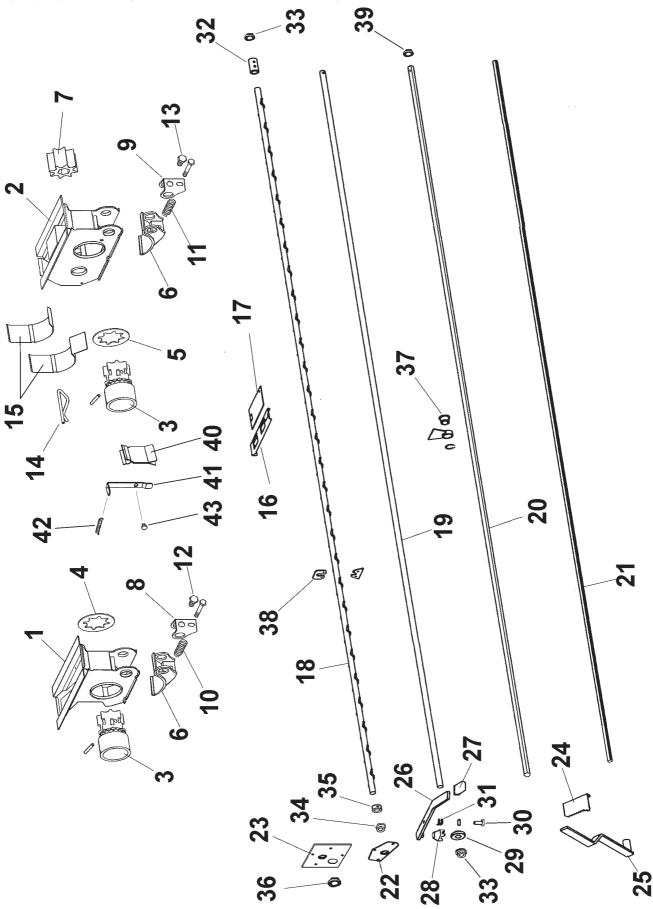


Figure	Code	
1	MD-11	
2	MD-12	
3	PL-040201	
4	EE-040201	
5	EE-040202	
6	PL-040205	
7	PL-040202	
8	EE-040232	
9	EE-040232/P	
10	ML-020200	
11 12	ML-020201 933 8X20B PUNTA	
13	933 8x201 PUNTA	
14	ML-040203	
15	EE-040227	
15	EE-040226	
16	EE-040228	
16	EE-040229	
17	EE-040230	
18	TA-0402/16/17/18	
19	PM-0408/09/10/11	
20	TA-0506/07/08/12	
21	PM-0402/12/13/14	
22	EE-020215	
23	PX-020218	
24	EE-040219	
25 26	PS-0410 PS-0408	
27	PL-040203	
28	ME-040223	
29	ME-040214	
30	BU-040208	
31	ML-020202	
32	ME-040227	
33	PL-020204	
34	PL-020205	
35	ME-020202	
36	PL-040208	
37	PL-020203	
38	EE-040215	
39	PL-020206	
40 41	EE-040303	
41 42	EE-050201 ML-020100	
43	EE-040100	

# 9.9 DISC MARKERS

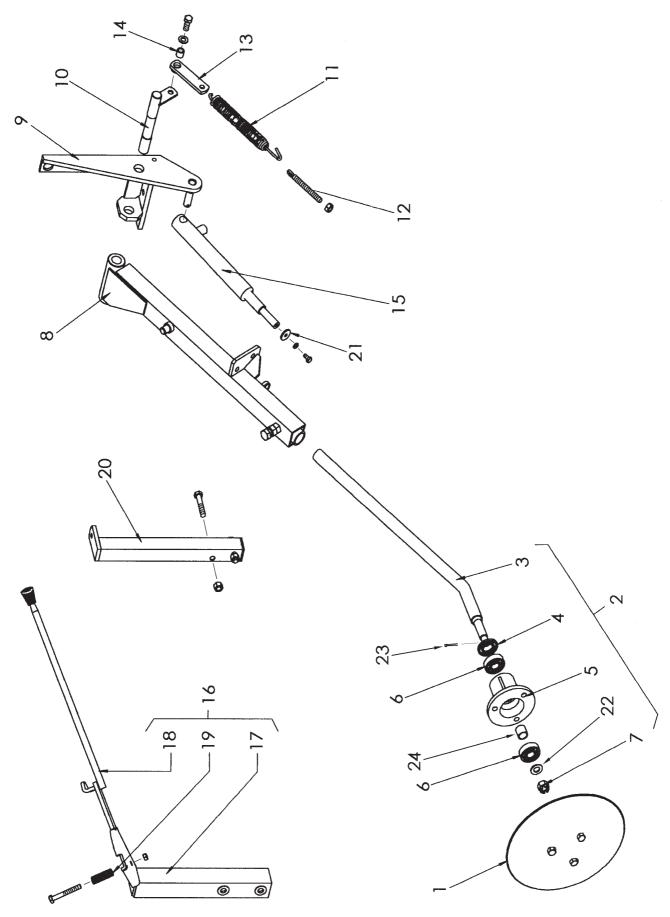


Figure	Code	
1	EE-100217	
2	RE-100300	
3	PR-100201	
4	FE-601000	
5	ME-100214	
6	FE-600005	
7	935 16 BI	
8	PS-1803/D	
8	PS-1815/D	
8	PS-1803/I	
8	PS-1815/I	
9	PS-101303/D	
9	PS-101303/I	
10	PS-101304	
11	ML-050201	
12	EE-100219	
13	PS-1805	
14	ME-100200	
15	CO-100200	
16	MO-100305	
17	PS-100301	
18	PS-1810	
19	ML-100700	
20	PS-1812/D	
20	PS-1812/I	
21	EE-030200	
22	125 16 BI	
23	94 3,5X28 BI	
24	CT-100800	

### 9.10 HARROW WITH FLEXIBLE TINES EPI-6

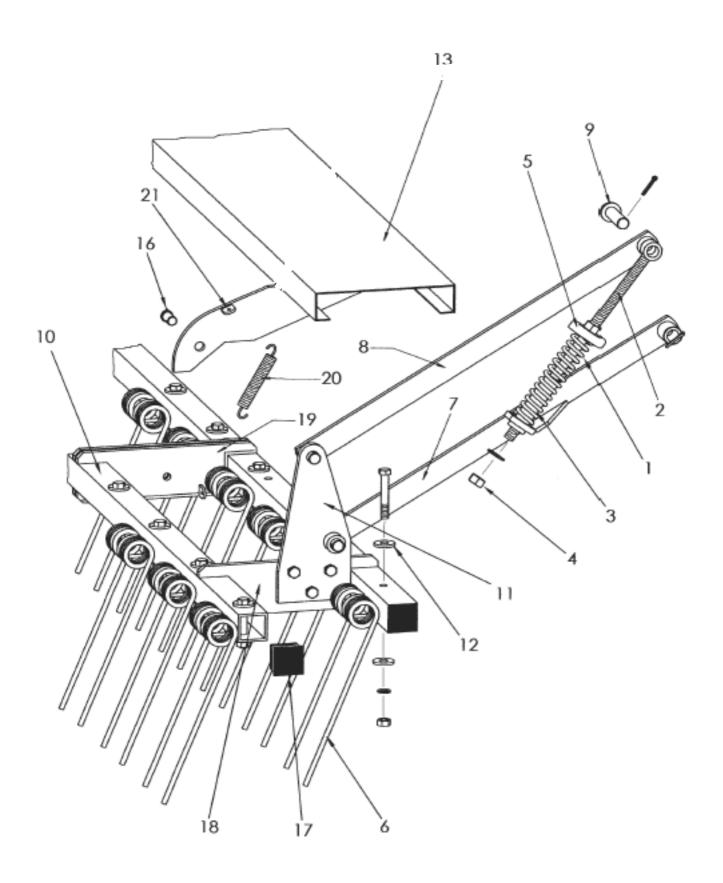


Figure	Code	
1	ML-080104	
2	PS-1710	
3	PS-1735	
4	985 16	
5	EE-080306	
6	ML-080103	
7	PS-1741/D	
7	PS-1741/I	
8	PS-1734	
9	BU-080202	
10	PS-1736/37/38	
11	PS-1736/D	
11	PS-1736/I	
12	ME-080202	
13	PS-1740	
16	BU-080206	
17	CN-817001	
18	PX-080207	
19	PX-080201	
20	ML-080101	
21	EE-080206	

## 9.11 ARTICULATED HARROW 4 METRES EPI-7

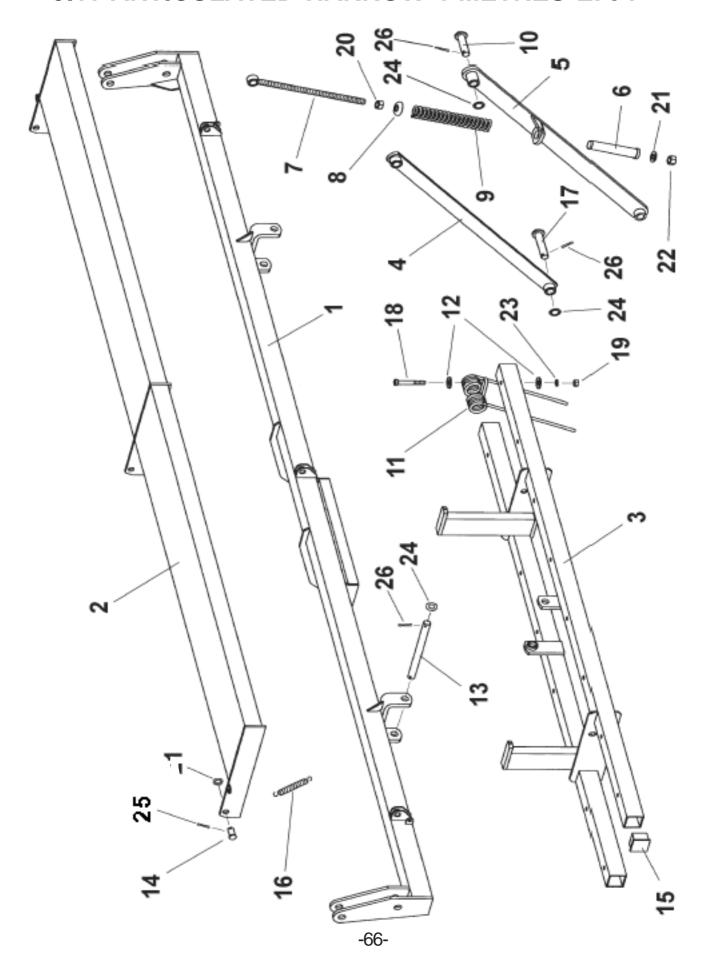


Figure	Code	
1	PS-080311	
2	PS-080312	
3	PS-080310	
4	PS-080307	
5	PS-080308/D	
5	PS-080308/I	
6	PS-1735	
7	PS-080306	
8	EE-080306	
9	ML-080104	
10	BU-080202	
11	ML-080103	
12	ME-080202	
13	BU-080302	
14	BU-080206	
15	CN-817001	
16	ML-080101	
17	BU-080205	
18	931 12X80 8.8B	
19	934 12 BI	
20	934 16 BI	
21	125 16 BI	
22	985 16	
23	7980 12 BI	
24	125 20 BI	
25	94 5X25 BI	
26	94 5X32 BI	

# 9.12 HARROW TYPE «E»

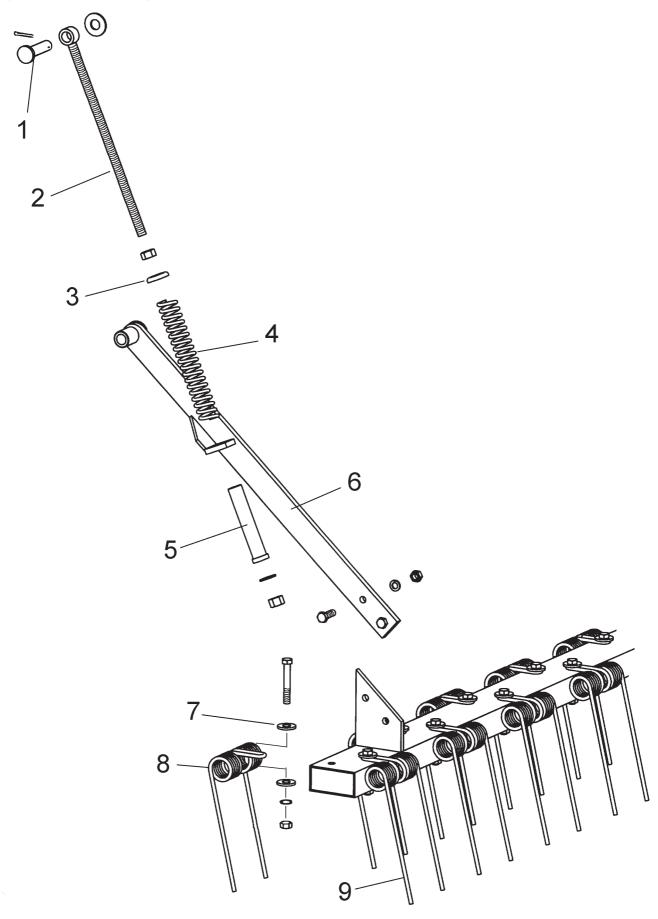
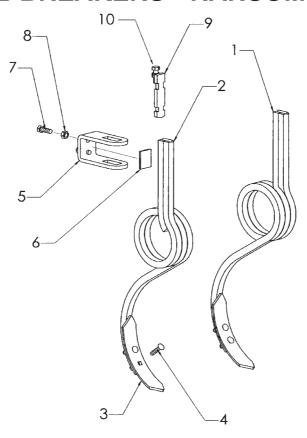


Figure	Code	
1	BU-080202	
2	PS-1710	
3	EE-080306	
4	ML-080104	
5	PS-1735	
6	PS-2610/D	
6	PS-2610/I	
7	ME-080202	
8	ML-080000	
9	ML-080001	

# 9.13 WHEEL BREAKERS «RANSOME»



## 9.14 WHEEL BREAKERS «SPRING»

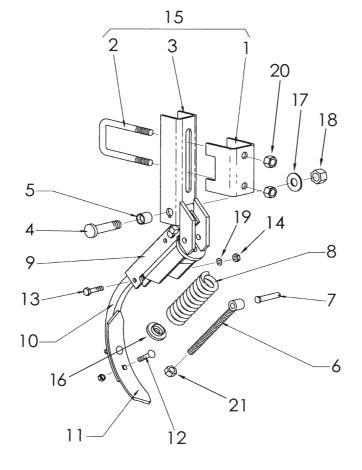
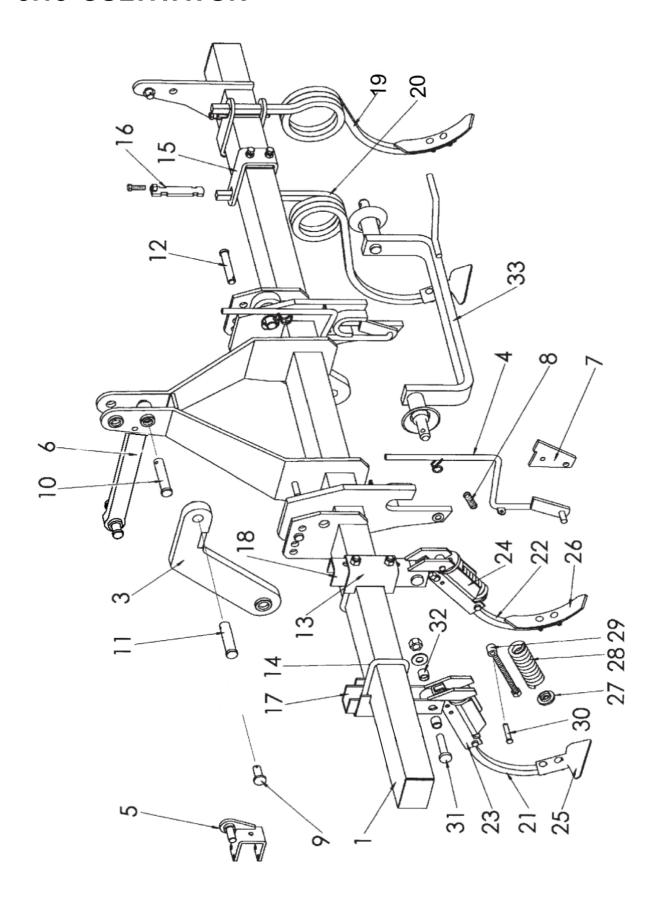


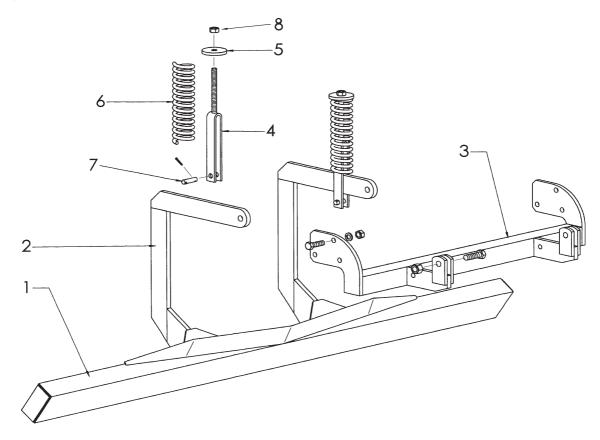
Figure	Code	
1	PS-1105/D	
2	PS-1105/I	
3	FO-060300	
4	608/934 9X40	
5	EE-060307	
6	PX-060200	
7	933 12X35 8.8 B	
8	934 12 BI	
9	CO-060200	
10	933 12X40 8.8 B	

Figure	Code	
1	PX-060201	
2	EE-060228	
3	PS-1113	
4	EE-050312	
5	PL-050302	
6	FO-060202	
7	BU-060300	
8	ML-060300	
9	PS-1120	
10	FO-060302	
11	FO-060300	
12	608/934 9X40	
13	931 10X45 8.8 B	
14	934 10	
15	MO-0719	
16	PS-1115	
17	125 20 BI	
18	985 20/150	
19	127 10	
20	985 16	
21	980 14 BI	

# 9.15 CULTIVATOR



# 9.16 LEVELER



# 9.17 HECTARE COUNTER

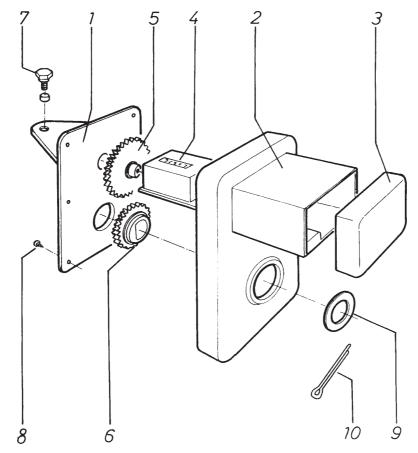
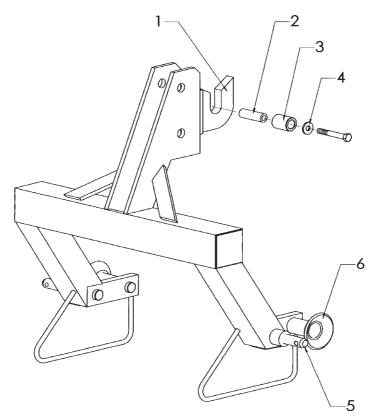


Figure	Code	
1	PS-2624/L	
1	PS-2624/C	
2	PS-2623	
3	PS-2665/L	
3	PS-2665/C	
4	MB-13	
5	EE-060303	
6	ML-080100	
7	BU-080702	
8	934 12/150 BI	

Figure	Code	
1	PL-100200	
2	TA-100102	
3	PL-100201	
4	MV-100200	
5	PL-100300	
5	PL-100301	
5	PL-100101	
5	PL-100303	
6	PL-100304	
6	PL-100305	
6	PL-100105	
6	PL-100307	
7	ME-100211	
8	7971 7X3/8 BI	
9	125 20 BI	
10	94 3,5X28 BI	

### 9.18 AUTOMATIC COUPLING



# 9.19 AUTOMATIC COUPLING. FLOATING CULTIVATOR

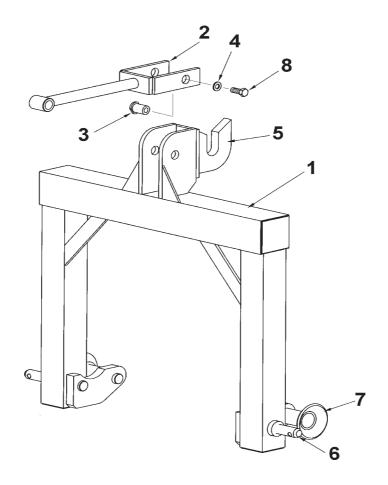


Figure	Code	
1	OX-100203	
2	ME-100206	
2	ME-100207	
3	ME-060207	
4	ME-080202	
5	BU-010100	
6	EE-010226	

Figure	Code
1	PS-100202
2	PS-100201
3	ME-060209
4	ME-080202
5	OX-100203
6	BU-010100
7	EE-010226
8	933 14X14 8.8B

### 9.20 FINISHINGS

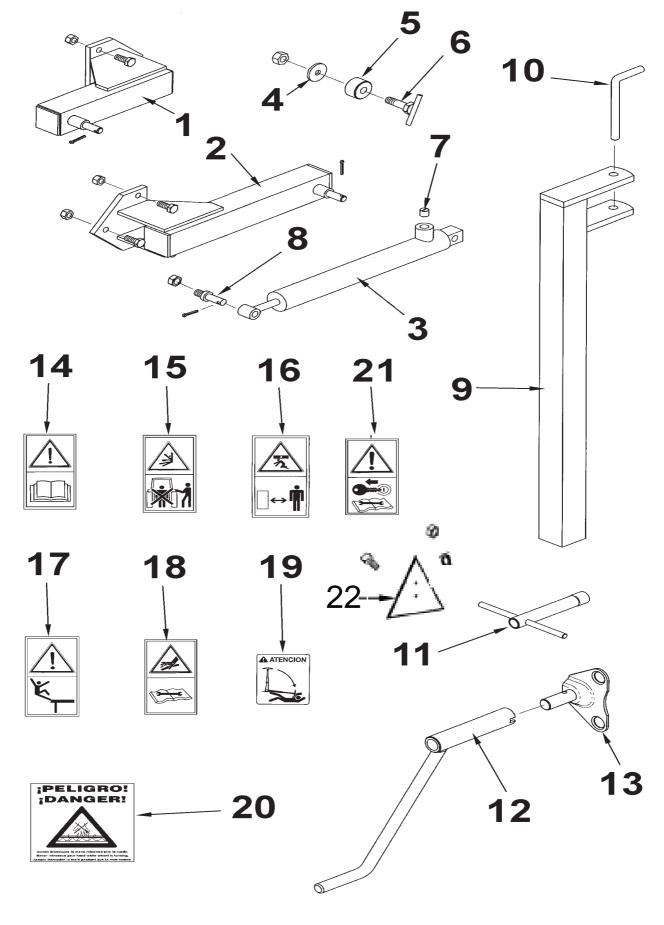


Figure	Code	
1	PS-0609	
2	PS-0608	
3	CO-100201	
4	EE-030202	
5	ME-100202	
6	PS-0607	
7	ME-100210	
8	BU-100204	
9	PS-2631	
9	PS-1601	
10	BU-070100	
11	ML-12	
12	CO-070300	
13	MO-1637	
14	AD-070206	
15	AD-070214	
16	AD-070207	
17	AD-070215	
18	AD-070222	
19	AD-100200	
20	AD-030200	
21.	AD-070227	
22	CN-818019	

