REGERO

INSTRUCTION

AND

MAINTENANCE

MANUAL

R 2106 TP

INSTRUCTION AND MAINTENANCE MANUAL

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VERY IMPORTANT NOTE: Read chapter II – Safety instructions – before first use of the machine.

I - CHARACTERISTICS

The R2106 planting machine has been set up in REGERO plant for using 4x4x4 cm cubic blocks (except otherwise requested in customer's order). In any case the machine has been designed to plant blocks from 3,5 to 4,5 cm. The block height must not exceed 5 cm, which corresponds to the maximum adjusting height of the channel guides.

The R2106 planting machine is made for high production rates, up to 3000 plantings per hour and per row.

Quality and plantation speed depend on the loading capacity of the users and on the following factors:

- The size of the blocks: The plantation is optimum when the height of the plants is between 6 and 10 cm (including the block). Higher plants can be used if the leaves are strong and concentrate.
- The block separation must be clear, square and requiring a reasonable effort.
- The block must be consistently pressed with no or few crumbling when handled. The moisture of the block must be medium, meaning not too wet and not too dry. If too dry, the separation of the block will require a larger effort and the reduced size of the block when dry will alter the grasping by the nippers. If too wet, the blocks will have a tendency to crumble during the loading and to crush in the channels or in the nippers when these latter grasp the blocks.

The R2106 planting machine is equipped with two frames:

A carrying frame (tracted-mounted or self-propelled) which supports the operators and the trays.

A planting frame of constant weight which is hung loosely in the tracted-mounted frame. Consequently, the planting frame is following continuously the bed whatever could be the bed profile and the trackwidth shape. The planting depth is constant and reliable.

Moreover the R2106 machine is provided with hydraulic assistance for vertical motions. This avoids the bed or the plastic film to be damaged.

IMPORTANT NOTE:

The planting frame is common to the 2 versions: tracted-mounted or self-propelled. Consequently it is possible at any time to buy one of these frames from REGERO. Ask REGERO or its dealer in your country.

II - SAFETY INSTRUCTIONS

IT IS NECESSARY TO READ THIS CHAPTER BEFORE USING THE MACHINE.

This machine must be only used by trained and dedicated people. These latter have to be informed of the safety instructions described in this chapter.

The R2106 planting machine is designed and equipped according to the European requirements for safety, health, environment and customer protection (EN 292).

Any machine modification by the customer and any disrespect of the safety instructions as described below would discharge REGERO of its responsibility.

Before hanging the machine to the three point-linkage of the tractor (if tracted-mounted version), please check the state of the linking pins:

- Nut tightening of lower pins
- Straight pins (not twisted or bent)
- Locking pins in good state.

All pins must have their safety pins.

BEFORE USING THE MACHINE, check:

- The safety guards.
- The lifting arms of the planting frame (or the cylinder bolts).
- The good state of the operator platform floor.
- The channel extensions: Cutting edges could injure the operators when loading the plants (Damages to the channel extensions can stem from tool or plant tray shocks).

WHEN USING THE MACHINE:

Never put the hands neither in tilting air cylinders, in chains nor in mechanism.

Taking into account that the planting frame is « floating », never put the hands neither in the front axle area, nor the lifting arms (if tracted-mounted version) or the cylinder shackles (if self-propelled version).

Generally speaking never put the hands in the areas between the planting frame and the carrying frame. All interventions in these areas must be done when the machine is stopped.

DURING MAINTENANCE OPERATIONS:

Do not forget to put the safety guards back – if they have been removed for intervention – and tighten all guard bolts.

If maintenance operations under the machine, it is much safer to move the machine above a repair pit.

If not possible, lift up the planting frame with the tractor (or the cylinders of the trailed frame, if any).

BEFORE WORKING UNDER THE MACHINE, INSTALL AT LEAST TWO STABLE PILLARS OF 500 KG MINIMUM CAPACITY EACH. CHECK THE STRENGTH AND STABILITY OF THE ASSEMBLY.

III – CONDITIONS OF WARRANTY

The REGERO planting machines have one year warranty concerning all manufacturing defaults. This warranty starts from the delivery date to the customer.

This warranty is strictly limited to the replacement or repair of the defective parts as stated by REGERO or its agreed dealers.

ONLY REGERO is entitled to decide whether replacement, repair or modification has to be done.

Wearing parts such as springs, rollers, nippers, chains ... aso, are excluded from warranty.

REGERO disclaims of warranty and safety responsibility in case of damages and/or breakdowns occurring because of :

- accidents
- unexpected use of the machine
- repairs or modifications made by the customer on his own decision and without the agreement or/and the management of REGERO or its agreed dealers.

During the warranty time, REGERO will not take charge of the repair or modification costs from suppliers chosen by the customer on his own decision, but if REGERO has first given its expressed and written agreement.

The responsibility and warranty of REGERO would be disclaimed if any replacement of parts would not have been done with genuine REGERO parts.

Interventions or part replacements during the warranty do not extend the warranty time.

In no event REGERO shall be liable for any implied warranty of merchantability or fitness for any particular purpose or for any consequential, incidental or indirect damages (including but not limited to damages for loss of business profits, business interruption) arising from the use or inability to use the machine.

IV – STARTING AND USING CONDITIONS

This chapter is about the tracted-mounted version (R2106 TP). As explained above the planting frame is the same for the self-propelled version.

4.1 – Starting

Hang the machine to the three point-linkage of the tractor with respect to the safety instructions (Proceed to chapter II).

4-1-1 Electrical connection:

The planting machine must be connected to the tractor when this latter is stopped.

Proceed as following:

- Push the emergency button on
- Connect the electrical plug onto the tractor (following the above instructions)
- Switch on the tractor
- **Push the emergency button off** (turn the button)
- The white light switches on
- The red light switches on (if the air pressure is too low then proceed to chapter IV)

The above instructions must be fully respected in order to avoid inevitable over tensions into the electrical box when starting the tractor.

Connect the electric plug onto the rear socket of the tractor. The **REGERO** plug is deliberately not linked to the electric wire of the machine. Indeed many tractor sockets are not wired accordingly to the European requirements.

It is necessary to first check the socket of the tractor in order to find out the earth and the 12 Volt output. Then connect the pins of the REGERO plug accordingly to the following colours:

Brown wire: 12 VoltBlue wire: Earth

Warning: With some tractors 12 V is only obtained by switching on the lights.

The machine only accepts 12 Volt supply direct current power.

4-1-2 Air compressor starting:

The **REGERO** machine runs using a compressor driven by the tractor PTO through a multiplier:

Connect with a cardan shaft the tractor PTO to the fluted shaft of the machine multiplier. **Set-up the PTO on 540 RPM.**

PAY ATTENTION TO THE CARDAN SHAFT LENGTH: WHEN YOU LIFT UP THE MACHINE WITH THE TRACTOR, THE CARDAN GETS SHORTER. SO IF TOO LONG IT COULD DAMAGE THE MULTIPLIER SUPPORT AND/OR THE MULTIPLIER ITSELF.

4-1-3 Plants load:

Load the plant trays upon the upper gallery of the machine (maximum height: 4 boxes).

Load a tray on each tray holder.

Unfold the side carriers made for empty trays (optional extra). The side carriers have a locking device in the hinges meaning they are locked in vertical position. This prevents them from falling when the machine is up behind the tractor during road moving.

Consequently, to unfold them to the horizontal position, it is necessary to pull them up vertically before turning them down.

Lift down the machine in planting position (using the three point-linkage of the tractor): The driving roller and the rear press wheels first lay onto the bed. Continue to lift down. Note only the carrying frame keeps moving down. Stop when the 4 wheels of the carrying element lay into the trackwidth.

Check that:

The arms of the carrying frame are in horizontal position

The front yoke of the planting frame is free along the front axle

If not, adjust the three-points of the tractor.

Load the plants by rows into the channels of the machine. Press gently the rows to get them go down steadily into the channels.

When the channels are fulfilled, start planting.

When planting let the plants slide down by themselves onto the channel belts without pushing them. The channels must always be at least half filled in order to get a smooth feeding of the bottom planting mechanisms. If the channels are not enough filled, "lacks of planting" on the bed can be observed.

The planting depth is set up through the 2 cranks at the rear of the machine. These cranks lift up and down the rear press wheels.

The space between the rear press wheels can be adjusted. Each wheel is located on the shaft by two sleeves with tightening screws.

4.2 – Set-up of the planting spacing

The planting spacing is given through the intermediate gear situated on the left side of the planting frame (rear view), under the chain cover. Two different planting spacings can be provided using a double planting gear.

To get another planting spacing:

- Remove the retaining ring of the planting gear.
- Remove the chain from the chain tensioner (loosen the chain-adjusting screw if necessary).
 - Remove the chain from the gear.
 - Fix the new gear or turn over the current one.
 - Put the chain back on the planting gear.
 - Put the stop sleeve back.
 - Adjust the chain tensioner.

IMPORTANT NOTE: AT ANYTIME REGERO CAN PROVIDE NEW PLANTING GEARS.

Define the different planting spacings you need, then REGERO will supply the appropriate planting gears.

Here following are some common examples:

Number of notches	Planting spacing (mm)
16	253
19	300
22	348

4.3 – Adjustment of the channels

The channels are preset by REGERO for 4x4x4 cm blocks (except otherwise stated in the customer's order). If any of these three blocks' dimensions is different from this standard, the channels have to be adjusted.

The counter-channels can be adjusted through the elongated holes. The channel corners can be adjusted in height (3 to 4 mm above the block height).

Check that when planting the blocks move down smoothly but clearly.

V – CLEANING AND USUAL MAINTENANCE

As with every kind of machines the life time mainly depends on a simple but necessary maintenance. Cleaning the machine after each plantation is an essential part of this maintenance.

5.1 – At each plantation.

Before planting, check:

- The free rotation of rear press wheels around their shaft.
- The free movement of the front pivot of the planting frame (allowing up and down movement of the planting frame on the bed).

After each plantation, proceed to a complete cleaning of the machine, if possible with dry pressure air, or high pressure water (without additional washing product and nozzle held at least 30 cm from the machine).

Emphasis on the following points:

- Elimination of sand and dust from the driving pulleys and belts..
- Cleaning of the toboggan bottoms (close to the block stops).
- Cleaning of the last but one blades in order to prevent blade blockages due to sand, dust or block pit.
- Cleaning of the rear press wheels.
- Cleaning of the front axle and joint of the planting frame.
- Cleaning of the drive roller.

5.2 – During the planting season.

The frequency of the following operations depends on the quantity of planted blocks and the planting conditions (a sandy soil is more corrosive than a light one).

With planting burdens from 50000 to 100000 blocks per week, a check every month is required:

- Greasing of all the machine bearings
- Complete cleaning of the front axle and linking of the planting frame
- Check the tension of the row belts and their state (**Rep 19**)
- Cleaning of the gap between the belts and the driving pulleys.

5.3 – At the end of the season.

- Complete cleaning of the machine with a high pressure equipment (all guards dismantled for a better access). The nozzle must be at least 30 cm from the machine.
- Greasing of all bearings (Stop grease injection when grease comes out the bearings).
- Check of the row mechanisms:

Block stop sleeves Block stop yokes

- Check belts, channels, last but one blades. If these latter are bent then dismantle and correct them.
- Before storing the machine for wintering, spray or swipe all non-painted parts with a light oil.

VI - AIR EQUIPMENT OF THE MACHINE

The R2106 planting machine is equipped with a 49 m³/hr air compressor revolving with a rotation speed of 1200 RPM. This compressor is driven by a multiplier. A QP2XPZ type belt (1700mm length) provides the transmission.

This compressor can provide a pressure of 10 Bar max.

Before reaching the electrical box the air circuit is made up of:

- An automatic draining equipment
- A filter equipped with a gauge and an adjusted press stud

NOTE: The pressure value indicated on the manometer must be between 6 and 8 Bar maxi (when planting).

For the pressure regulation, lower the black button next to the filter top.

Turn clockwise to rise the pressure.

The manometer green hand indicates the pressure under which the control box red light shows (the control box is the blue box the operator can see when working). When this red light shows the operator knows the machine can break down due to a lack of air pressure.

The red light showing means:

- a leak in the air circuit leading to a pressure drop.
- the air compressor speed is not high enough so the air rate is too low.
- the planting speed is too high (if none of the 2 previous circumstances).

The minimal release pressure through the green hand position can be adjusted as follow:

Open the translucent manometer bonnet.

Helped with a thin screwdriver, turn the screw situated in the lower part of the dial.

Close the bonnet.

The filter output is connected to the electrical box input through a translucent tube in order to control the air quality going into the box. A tube going quickly dirty means either a bad purge or a bad filtering.

The machine is equipped with high quality air cylinders. If these latter are used with pure air they can work thousands of cycles without any maintenance.

VII - ELECTRIC EQUIPMENT OF THE MACHINE

The cylinders are controlled with **air valves** (**Rep 10**) which have one or more functions each. The motions are coordinated owing to an **automate** (**Rep 7**) and its **extension** (**Rep 8**) fixed inside the electrical box.

The automate and the extension require a 24~V direct current. This explains that the electrical box is provided with a 12/24~V DC converter.

Two fuses protect the converter.

THE MACHINE MUST NECESSARILY BE SUPPLIED WITH A 12 VOLT DC POWER

VIII - HYDRAULIC ASSISTANCE FOR PLANTATION

Hydraulically assisted planting motion means:

A rotary hydraulic distributor, called **orbitrol** (**Rep 13**) is driven by the flat roller through a chain. This orbitrol releases oil to the **hydraulic motor** situated at the left rear of the machine. This oil flow is proportional to the rotation speed and therefore to the motion speed.

The rotation of the spade connecting rods is driven by the hydraulic motor through a planting gear which is defined according to the working planting spacing (Proceed to 4.2).

Moreover the machine is equipped with an hydraulic lift. This reduces the weight impact of the machine on the soil. Consequently the bed is undamaged.

A pressure valve (Rep 16) is adjusted according to the machine weight.

Adjustment of the pressure valve:

- Unscrew the valve cap
- Loosen the security nut
- Adjust the valve screw (BTR key)

Turn clockwise to rise the pressure through the valve. Consequently the planting frame weight on the soil is reduced.

- Tighten the security nut
- Screw the cap back

IX - GUIDE OF MAINTENANCE OPERATIONS

9-1 - Adjustment of the Last But One block (L.B.O) tightening

When the L.B.O is tight the whole row of blocks is stopped but the last block which is then separated and released (owing to 2 nippers) into the spade.

This tightening device is made up of a blade (2031126) controlled with a cylinder and of a counter blade (9061031), these two fixed on the front part of the mechanism support.

The L.B.O blade which is synchronised with the mechanism stops the blocks' row when the last block is removed. The blade releases the blocks' row while the blocks slide down.

A - Longitudinal adjustment of the L.B.O blade.

The position of the blade is optimum if its end part is accurately situated at the separation between the L.B.O block and the last one. The blade can be moved back or forward using the two screws (Key N° 10) fixed on the mechanism support (two elongated holes are cut in the blade).

- Helped with the drive roller, the mechanism must be situated on the planting row in order to get the blade open (blocks ungripped by the blade).
- Loosen the two screws.
- Move back or forward the blade after checking this latter is parallel in height to the mechanism support lower part.
- Tighten the two screws.

B - Adjustment of the pressure supplied on the blocks' rows.

For the pressure regulation, turn the counter blade screw (Key N° 17) located on the mechanism support left side (the cylinder is on the right side).

- Screw tight : rising pressure.

- Screw loose : lowering pressure.

NOTE: The counter screw nut has to be tight for a perfect adjustment.

9-2 - Adjustment of the blocks' release

This adjustment is set up by REGERO with good quality blocks and a speed of 3000 plantings per hour and per row.

However, in certain circumstances:

- High planting speed.
- Bad quality blocks.

The best way to understand how to adjust the machine is to observe the blocks when released.

- Blocks falling on the spade front edge and rocking backward means blocks are released too early: release must be delayed.
- Blocks falling on the spade rear edge and rocking forward means blocks are released too late: release must be faster.

On the top right side of the planting frame, a detector cam (**Rep 4**) turns along the shaft supporting the connecting rods. Two sensors (**Rep 5**) detect separately odd and even rows. These detectors are adjustable as two elongated holes are cut in the support plate.

To adjust the release of the blocks:

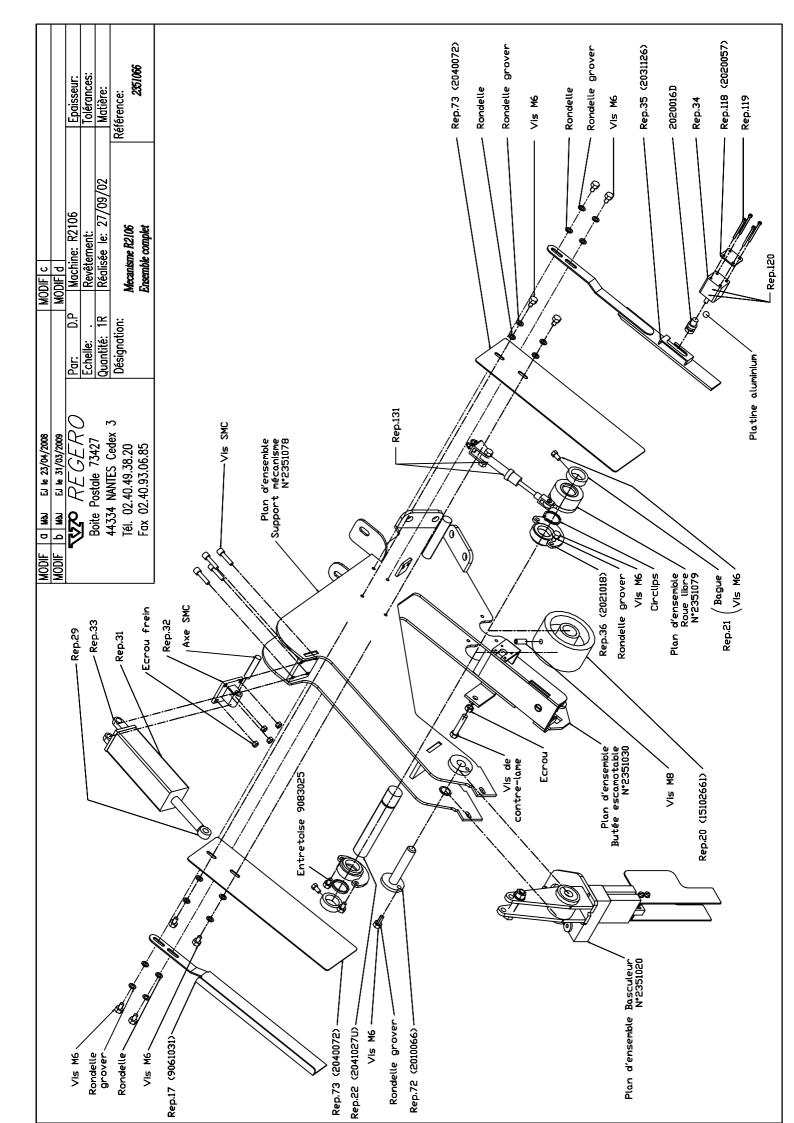
- Identify the sensor connected to the rows to be modified
- Loosen the sensor nuts (do not remove the sensor itself)
- Very gently move up or down the sensor in order to get a perfect release
- Tighten the sensor nuts.

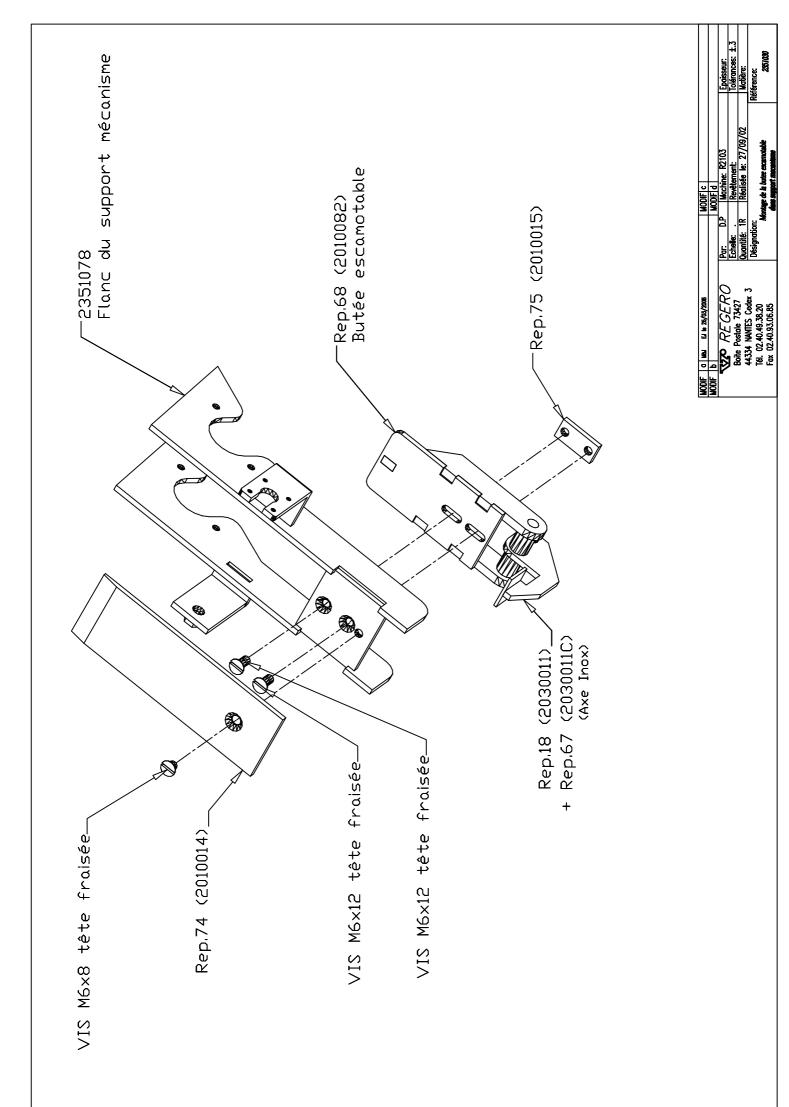
X - SPARE PART LIST

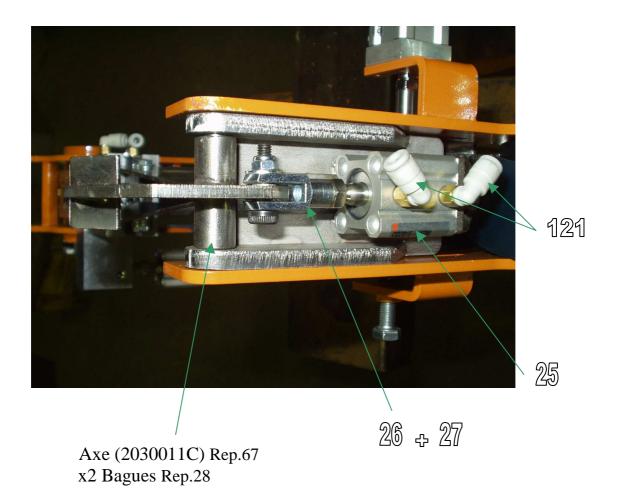
All the following references are linked to the photos and drawings from the guidebook.

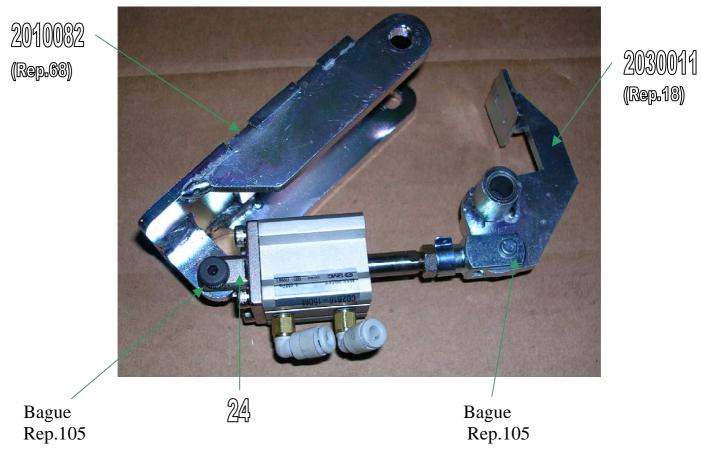
N°-	Reference	Designation
	2351066	Mechanism support assembly
35	2031126	L.B.O blade (Last But One block)
17	9061031	L.B.O counter-blade
73	2040072	Nipper guide
	2351030	Block stop assembly
74	2010014	Toboggan plate
68	2010082	Block stop support
18	2030011	Block stop
28	2030011	Sleeve
67	2030011C	Stop axle
75	2010015	Toboggan counter-plate
20	15102661	Driving pulley
20	9083025	9 1 V
22		Driving pulley spacer
22	2041027U	Pulley axle
36	2021018	Driving pulley support
21	2251052	Pulley axle stop sleeve + Screw
38	2351073	Conveyor advance connecting rod
70		Conveyor advance sleeve
71 72	0040077	Non-driving wheel seal
72	2010066	Rocking device axle
	2351020	Rocking device assembly
60	2351021	Rocking device – welded elements
42		Rocking device bearing
61	2040011	Rocking device block
62		Bearing for rotating nippers
63	2350020	Spacer
64	2040012	Left nipper
65	2040013	Right nipper
19		Conveyor band
37		Bearing
44		Twisting cylinder
	2351079	Conveyor advance device
39		Cylinder for conveyor advance
41		Cylinder rear support
26+27		Rod support
105		Sleeve
34		LBO cylinder
54	2020016D	LBO cylinder end
107	2020010D	Angular nipper tightening
25		Block stop cylinder
25 24		Stop cylinder support
31		Rocking device cylinder
33		·
		Female cylinder support
32		Male cylinder support
43		Ball joint
29		Ball joint

118	2020057	LBO cylinder counter-plate
119		LBO cylinder screw
120		Air fitting
121		Air fitting
131		Air fitting
		Bearing
4	2351140	Sensor cam
5		Sensor
	2030060B	Roller support
49	2030060A	Spade connecting rod
50		Connecting rod guide
	2351171	Opening cam support
	2350167	Spade cam
	2351170A	Spade assembly
	2351170B	Right spade
	2351170C	Left spade
13		Orbitrol
14		Orbitrol shaft
15		Orbitrol gear
16		Pressure valve
		Electronic hub
7		Automate
8		Automate extension
10		Air valve
135		Manometer
100		G 1/2 regulator
		G 1/2 regulator





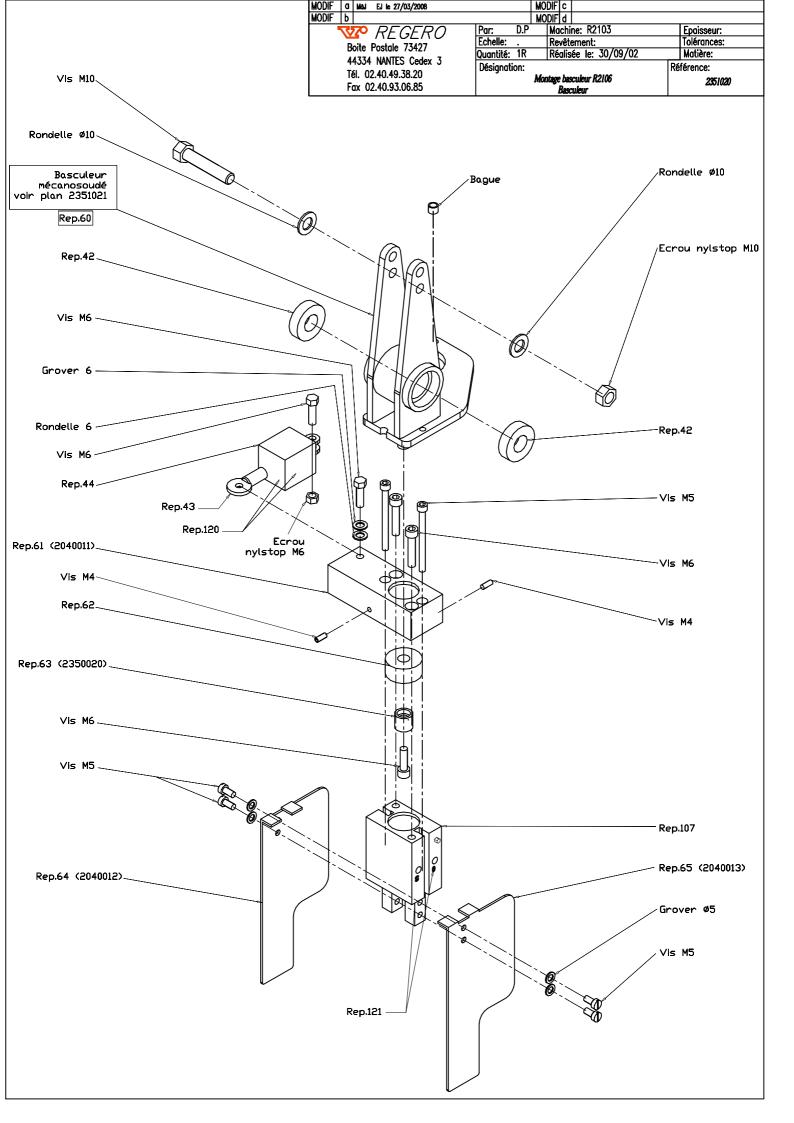


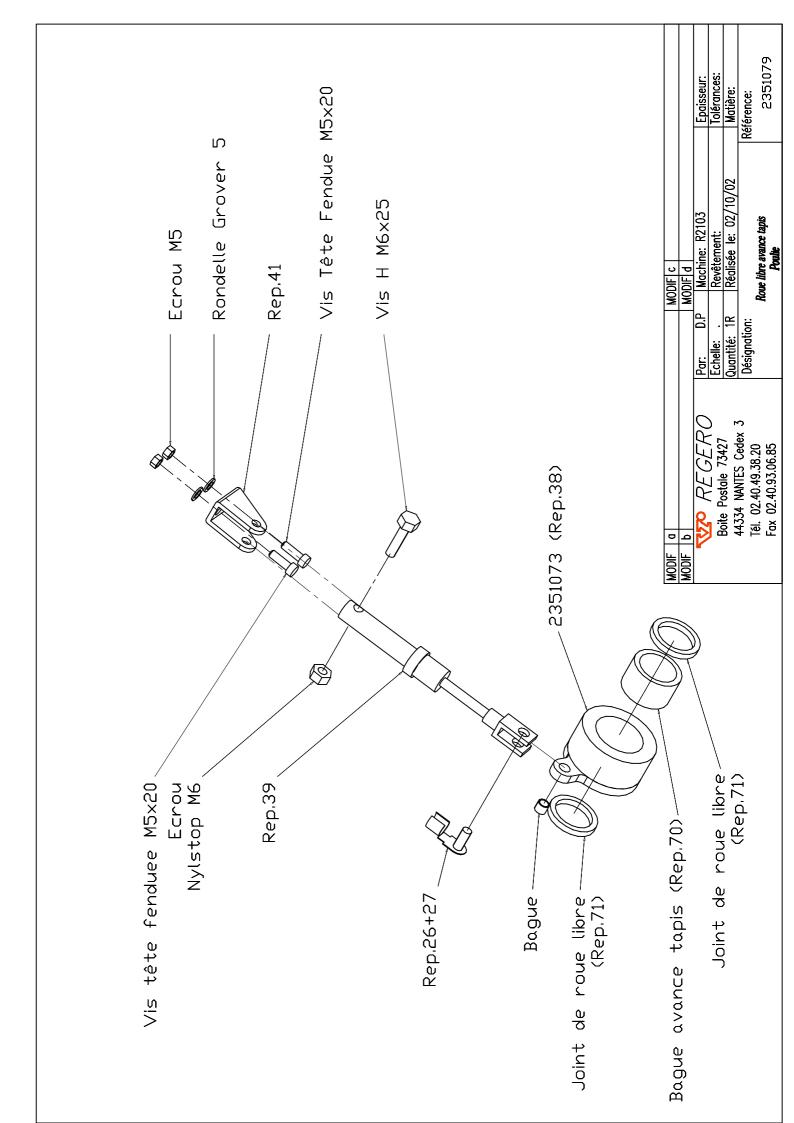




<u>Pièces par rang de plantation :</u>

Rep.20	x 1	Poulie motrice (15102661)
_	x 2	Vis
	x 1	Entretoise poulie motrice (9083025)
	x 1	Circlips
Rep.22	x 1	Axe de poulie (2041027U)
Rep.36	x 2	Support poulie motrice (2021018)
Rep.21	x 2	Bague avec Vis
Rep.38	x 1	Bielle avance tapis (2351073)
Rep.70	x 1	Bague avance tapis
Rep.71	x 2	Joint
Rep.19	x 1	Bande transporteuse
Rep.37	x 2	Roulement





Détecteur (Rep.5)

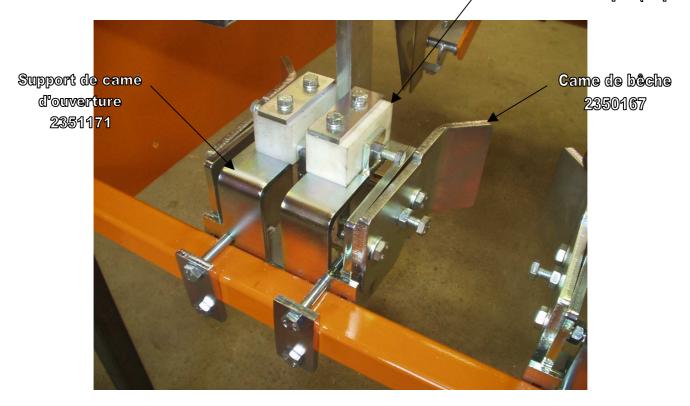


Palier

Excentrique ou bielle de bêche 2030060A (Rep.49)



Guide d'excentrique (Rep.50)

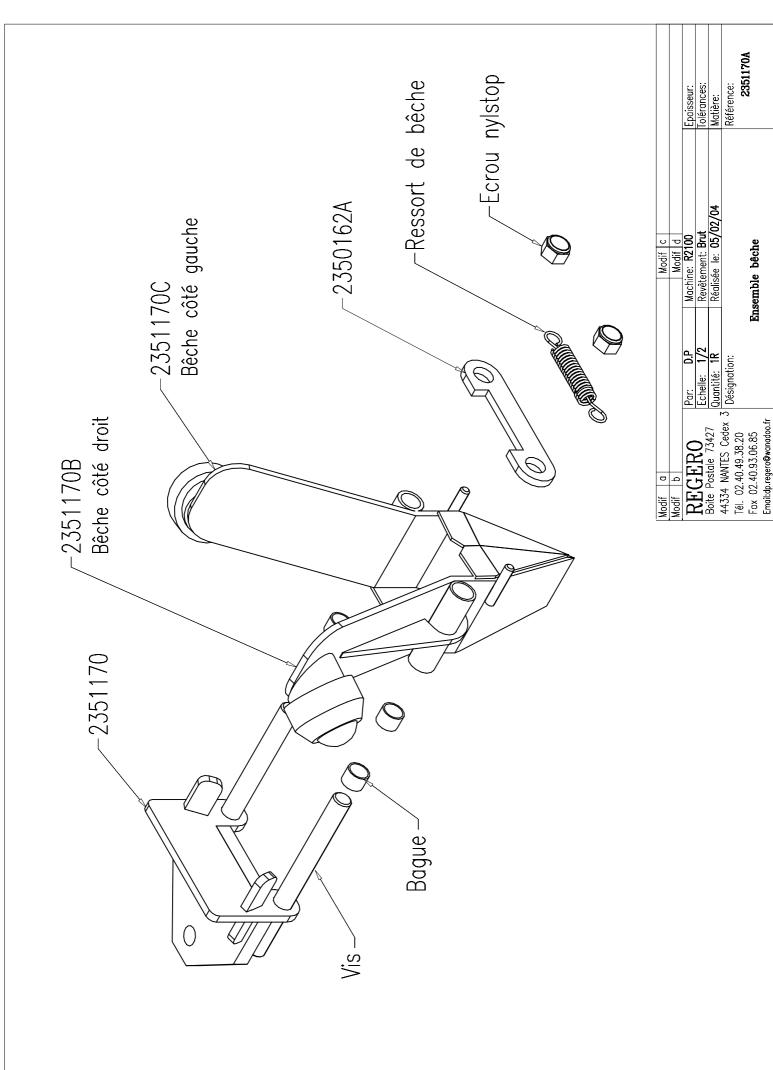


Bille de bêche

Bêche côté droit 2351170B

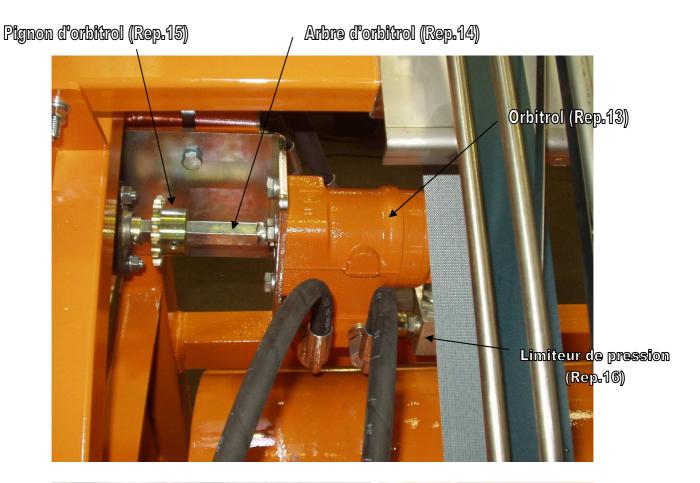


Bêche côté gauche 2351170C



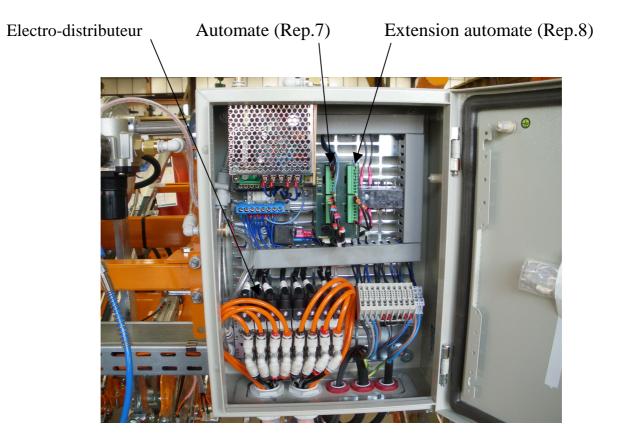
Référence: **2351170A**

Ensemble bêche

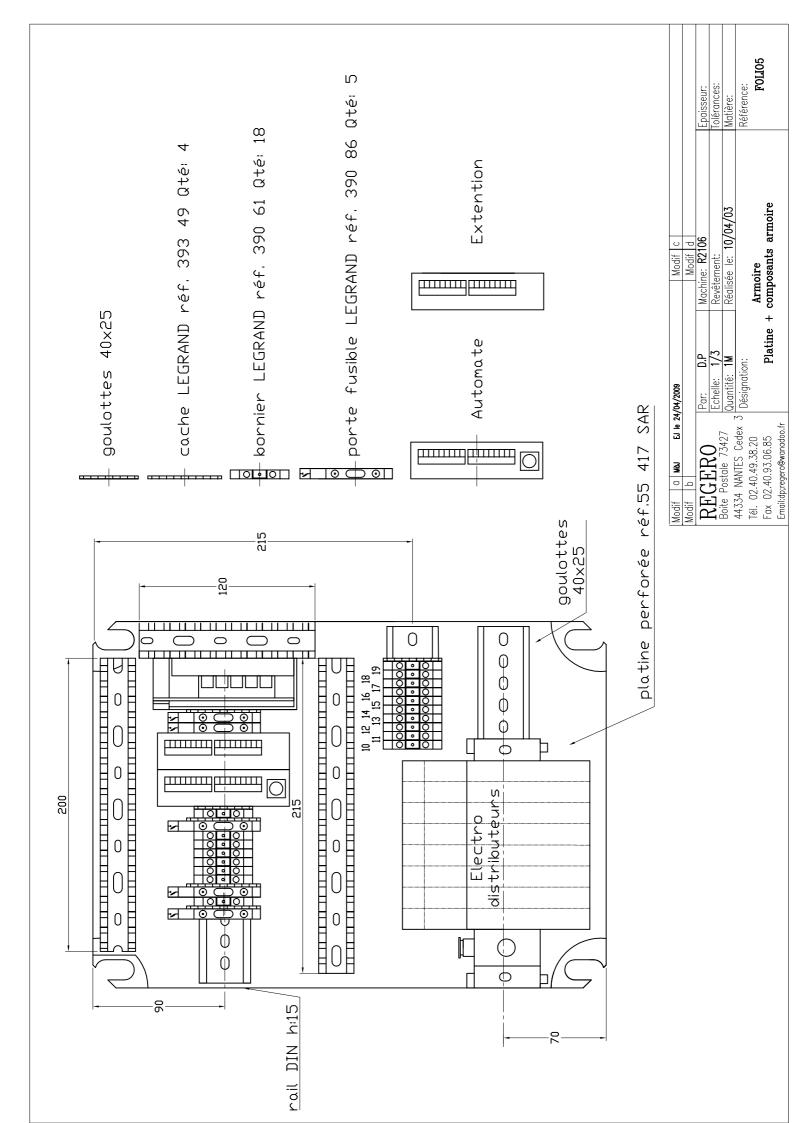


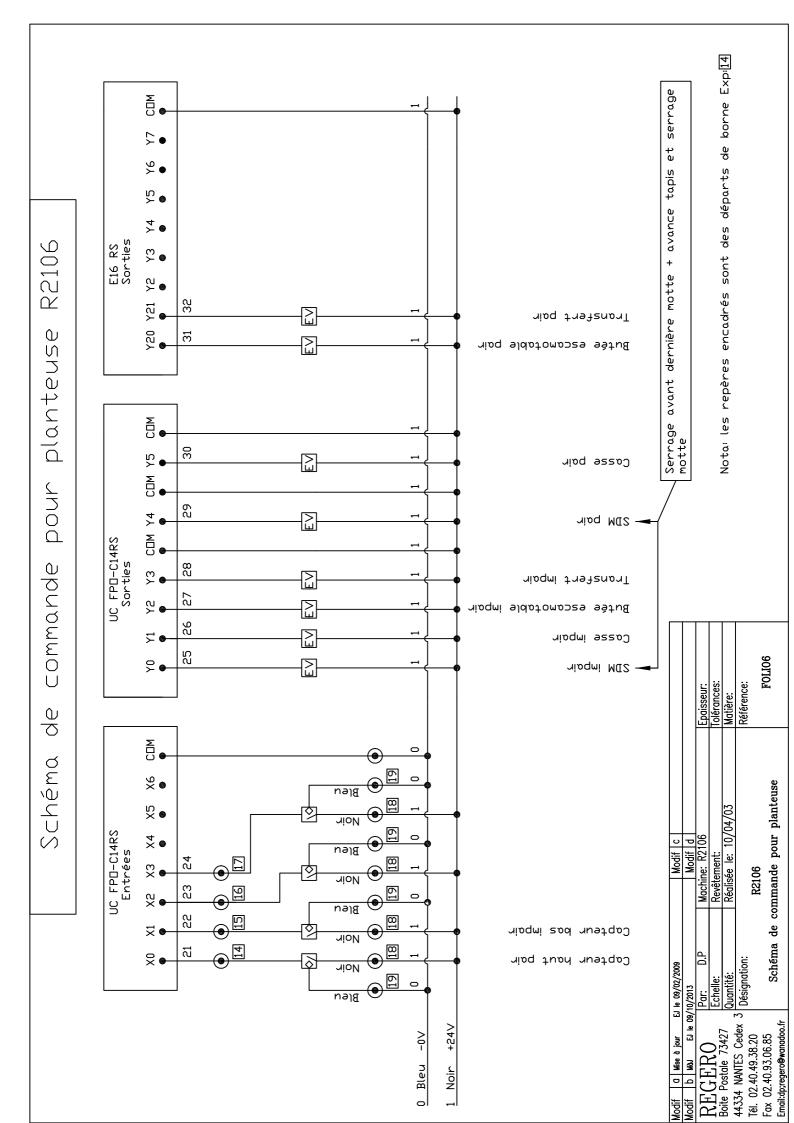


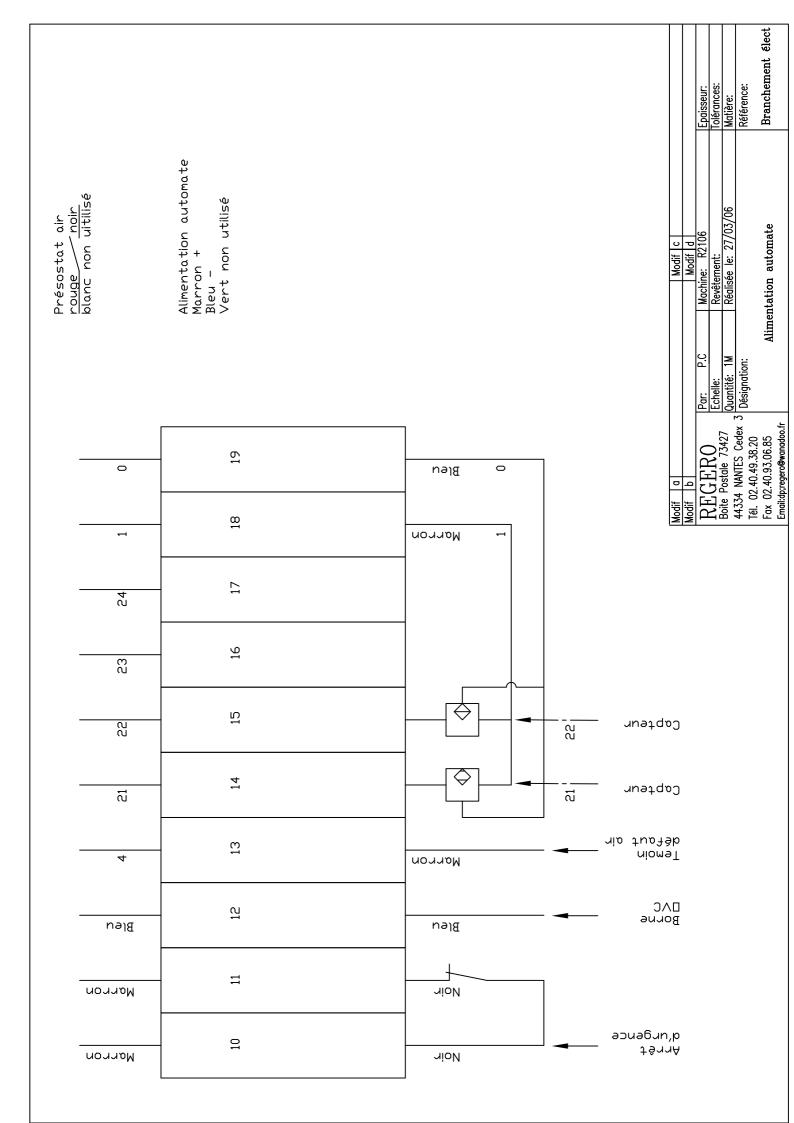
Pignon de plantation : le nombre de dents Zi détermine le pas de plantation.

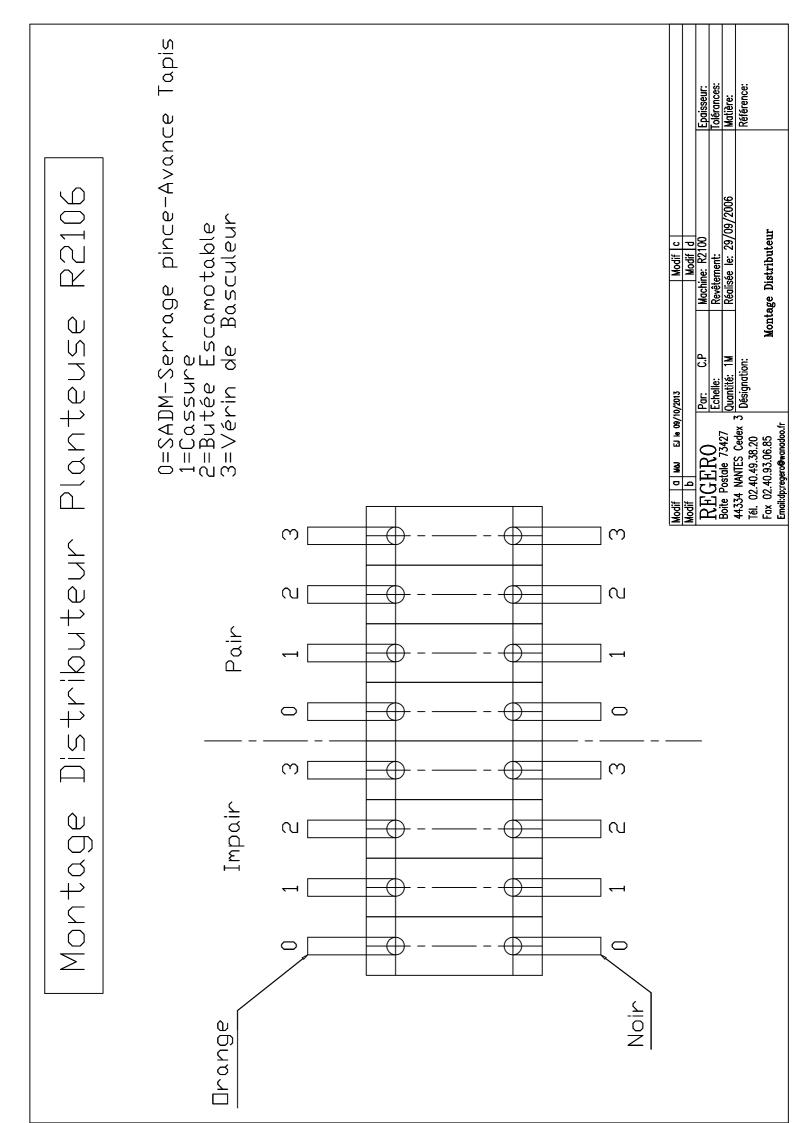


Electrovannes pneumatiques (Rep.10) de gauche à droite :











BOITIER DE CONTROLE avec BOUTON D'ARRET D'URGENCE



SOUFFLETTE + FILTRES + MANO-CONTACT