

Figure 1: transplanting element

➤ INTRODUCTION

The TIMING CONTROL application on Ferrari transplanting machine allows the distributor phase to be adjusted in relation to ejector via an independent hydraulic system and two proximity sensors per element.

The transplanter is equipped with an ELEMENT CONTROL board for each element, which allows management of the distributor and CANbus communication with the PSC (Plant Spacing Control) unit that controls the movement of the ejector.

This configuration also provides the transplanter with the WATERMELON function. If activated, from the PSC control unit monitor, plants are transplanted following a repetitive and regular pattern that alternates between two types of plants.

Alternatively, the ELECTRONIC TIMING function is activated, which provides for the electronic timing of the plant fall via the PSC. The latter regularly sends an impulse to the control element of the distributor to rotate the latter by the set parameter in relation to the encoder motor of the PSC.

➤ ASSEMBLY

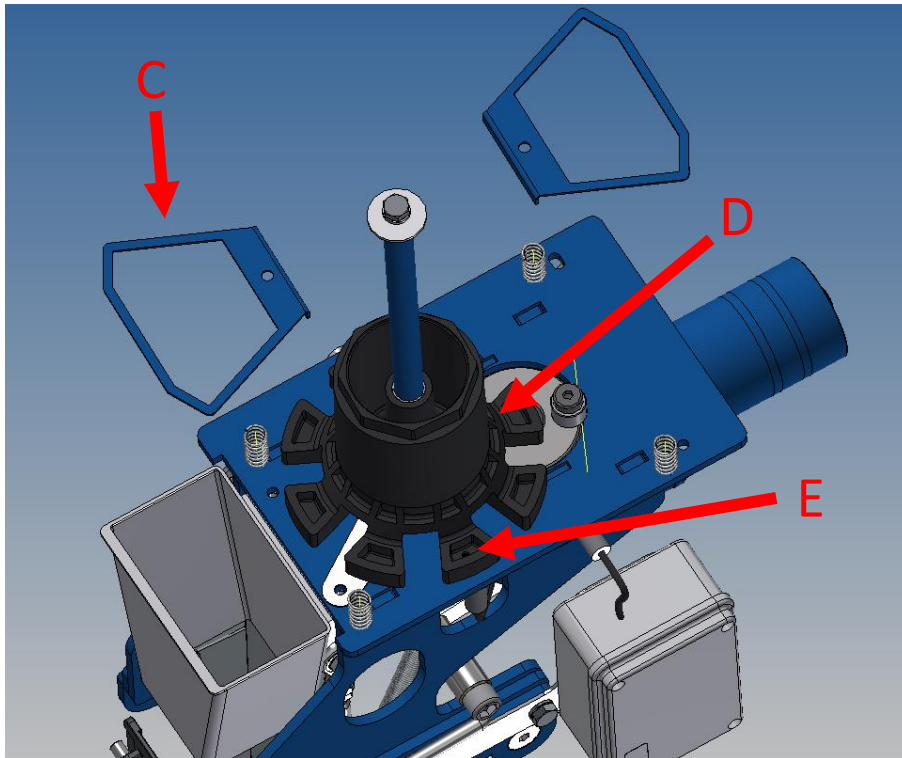


Figure 2: cup covers on discharge, intermitter, screw on intermitter

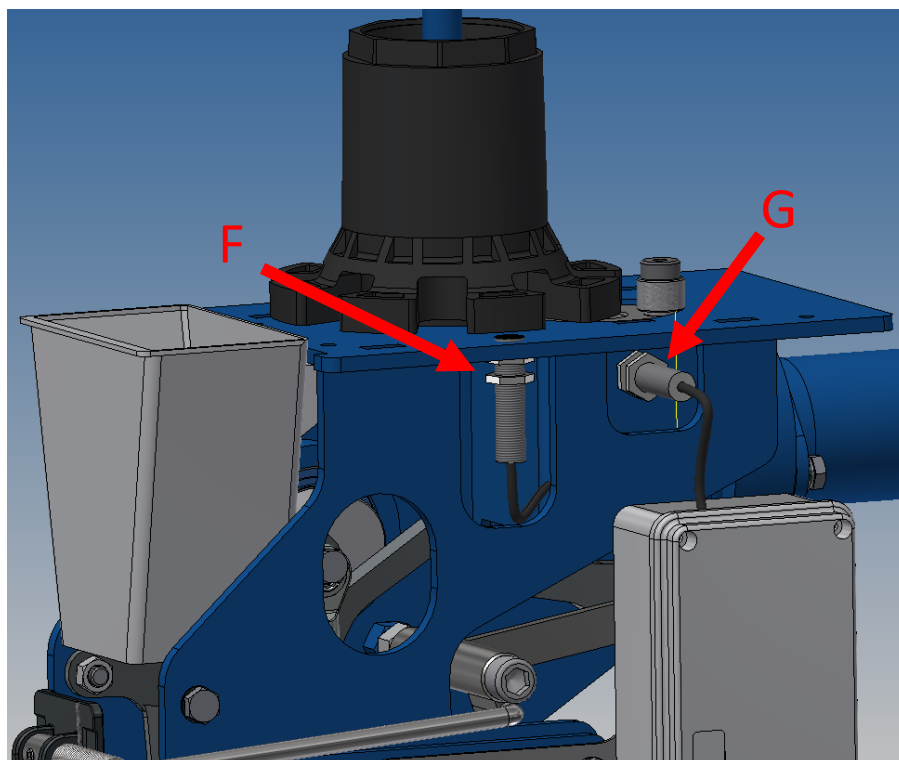


Figure 3: two proximity sensors

➤ ASSEMBLY REFERENCES

- point A, *figure 1*: **cup cover**.
The cup covers indicate the two cups for which the WATERMELON function is valid, i.e. the points where the type 2 plant is inserted.
- point B, *figure 1*: **distributor**.
The element in which the plants are placed for transplanting is controlled by the ELEMENT CONTROL board.
- point C, *figure 2*: **plant discharge**.
Point at which plant fall occurs, used as a reference to adjust the Distributor phase parameter.
- point D, *figure 2*: **intermitter**.
This component is inserted before the distributor and allows the latter to move. Two screws are installed at two opposite points on this part, reference point E.
- point E, *figure 2*: **screw on intermitter**.
This screw allows the reading of the proxy alignment, a parameter for detecting the position of the two cup covers on the distributor cycle.
- point F, *figure 3*: **proxy alignment**.
This proxy is only detected twice during the distributor cycle, namely when it encounters the two screws mounted on the intermitter.
- point G, *figure 3*: **proxy stop**.
This proxy allows the distributor to stop after each movement.

In case of maintenance, these components are installed as follows:

- place one of the two intermitter teeth with screw on the proxy alignment sensor (point F, *figure 3*) (the other tooth with screw will be on the opposite side);
- insert the distributor above the intermitter so that one of the two blue cup covers is on the plant discharge point (point C, *figure 2*);
- the second cup cover must be installed on the opposite side of the discharge.

➤ **Plant Spacing Control (PSC)**

The TIMING CONTROL application is provided from version 11.6 of the PSC.

The parameters for the TIMING CONTROL application can be activated and configured on the PSC operator panel:

▪ **Sync. Distributor board selection**

This page allows to disable or enable the following function for Distributor control transplanter models.

◀	S	y	n	c	.	D	i	s	t	r	i	b	.	▶
			n	o		<	<	y	e	s	>	>		

▪ **Watermelon mode board selection**

This page only appears if Sync. Distributor is enabled.

In this mode, plants are transplanted following a repetitive and regular pattern that alternates between two types of plants. After three consecutive Type 1 plants, a Type 2 plant is placed at half distance from the main layout.

◀	W	a	t	e	r	m	e	l	o	n		m	o	d	▶
			n	o		<	<	y	e	s	>	>			

▪ **Distributor phase Φ**

This page only appears if Sync. Distributor is enabled.

The parameter is set relative to the PSC encoder motor value and allows you to anticipate (button ▼) or delay (button ▲) the rotation of the distributor by acting on the fall time of the plant.

◀	D	i	s	t	r	i	b	u	t	o	r		Φ	▶
							9	0	°					

▪ **WORK MENU with WATERMELON MODE: NO**

⌄	◀	3	2	.	0	c	m	▶	⌄	Φ	9	0	°		
		8	3	3	0	0	⌄	/	h	a	1	2	.	8	V

▪ **WORK MENU with WATERMELON MODE: YES**

⌄	◀	3	2	.	0	c	m	▶	⌄	W	9	0	°		
		8	3	3	0	0	⌄	/	h	a	1	2	.	8	V

The Distributor phase parameter can also be set on the work page.

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