

# DROID.FARM

Precision Agriculture



**Pic. 1. Software interface for Android devices.**

SC10 — universal programming regulator for process control, appointments for automatic control by sections of supply of reeds and the norm of their volute, zgidno with otrimanimi commands via Bluetooth, RS-232, LPD433 interface. The SC10 regulator is selected individually according to the required technical characteristics by the buyer's statements, the application form on the site <https://Droid.Farm>.

This document is intended for users of liquid flow regulators, containing a connection diagram and operating instructions; the appearance of the SC10 regulator is shown in Pic. 2.



**Pic. 2. Appearance of SC10 (not on a 1:1 scale)**

- 1 — Power button with indicator, after installing the system, turn on the device.
- 2 — Connector 4 Pin Jack 3.5mm for NMEA data from external receivers.
- 3 — Automation control cable: contacts of sections, dispenser tap and main valve.
- 4 — PWM output for connecting the electric pump driver.
- 5 — Connector G16 MIC 336 M to connect the flow meter.



The equipment can be supplied with distributors based on ARAG automation,



distributors assembled with electromagnetic valves,



kits for independent conversion of mechanical distributors.

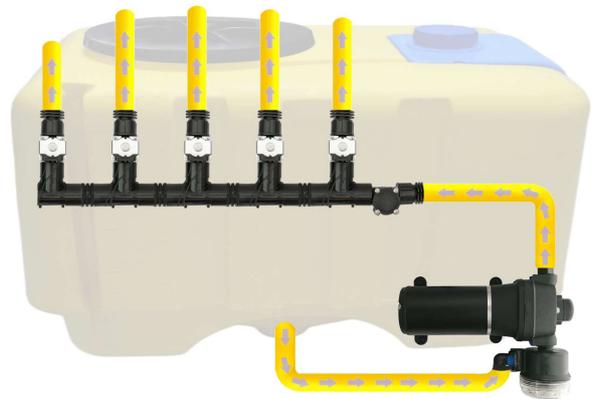


## SC10 — universal regulators with automatic control of liquid injection sections, include two dosing technologies:

Regulation by "dispensing tap" in systems with mechanical piston-diaphragm pumps.



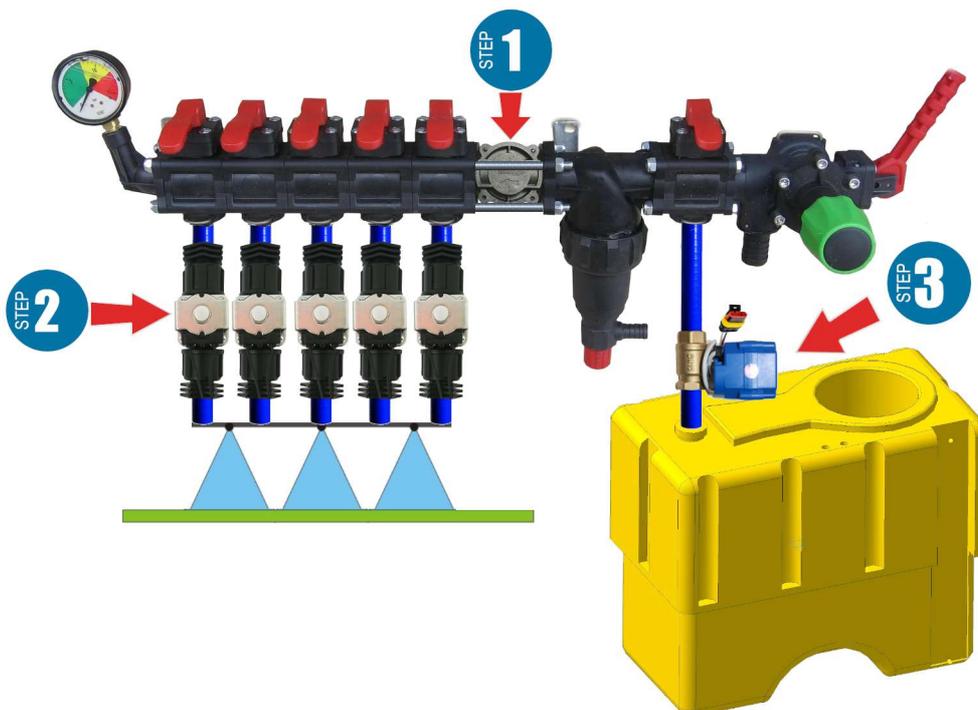
Electric regulation by pulse-width modulation (speed of the electric pump).



PWM technology has a number of advantages compared to electromechanical dosing: saving from 500 g of fuel per 1 ha (does not load the engine), longer pump service life, ease of installation, automatic control and calibration.

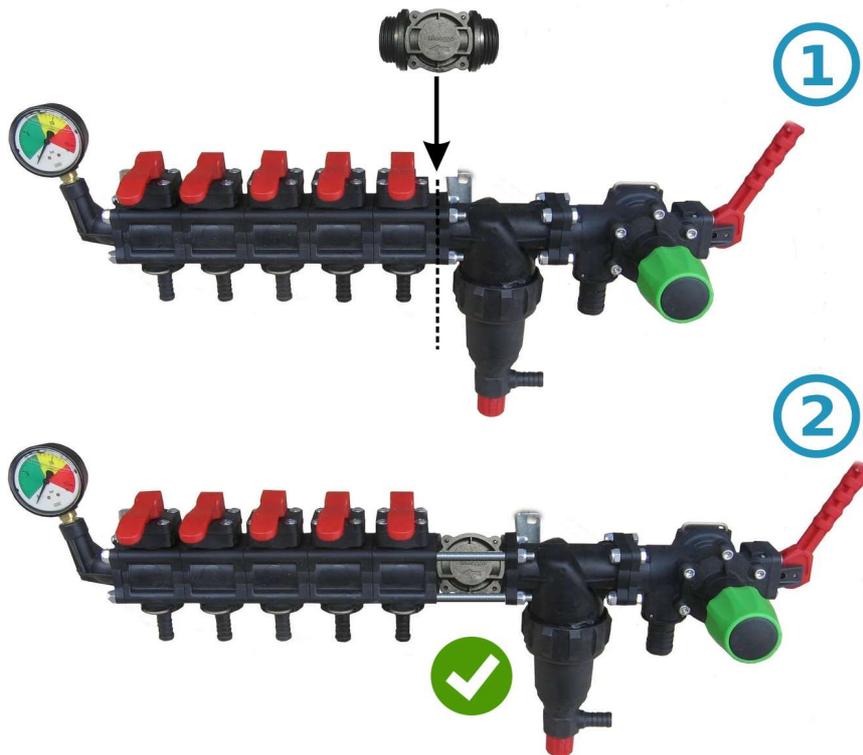
**To convert a sprayer with a mechanical pump, it is necessary to perform only 3 simple steps:**

- 1) — Mount the flow meter in front of the distributor sections.
- 2) — Electric valves of the sections should be installed immediately after the sectional exits or take them to the sprayer rod, dividing it into equal sections.
- 3) — Dosing tap in the outlet of the section in front of the filter, bring the hose from the dosing tap to the top of the barrel, for free pressure release.

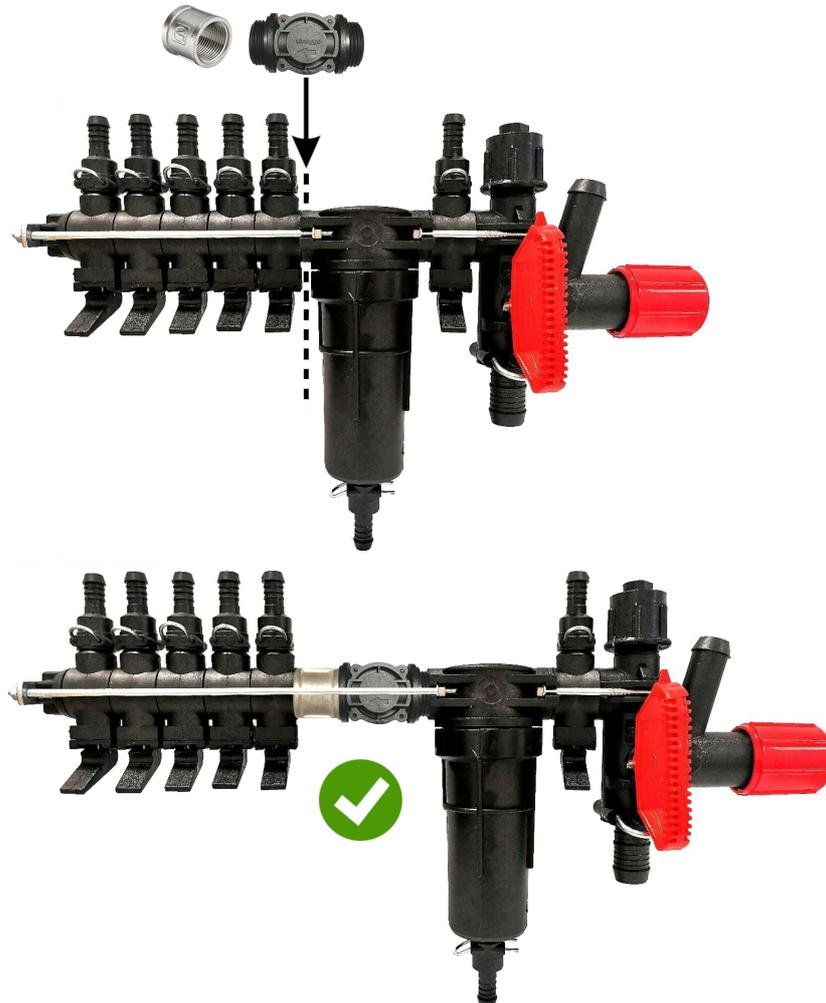


## Installation of the flow meter

The flow meter is mounted in the distributor of the ARAG type, in front of the sections.

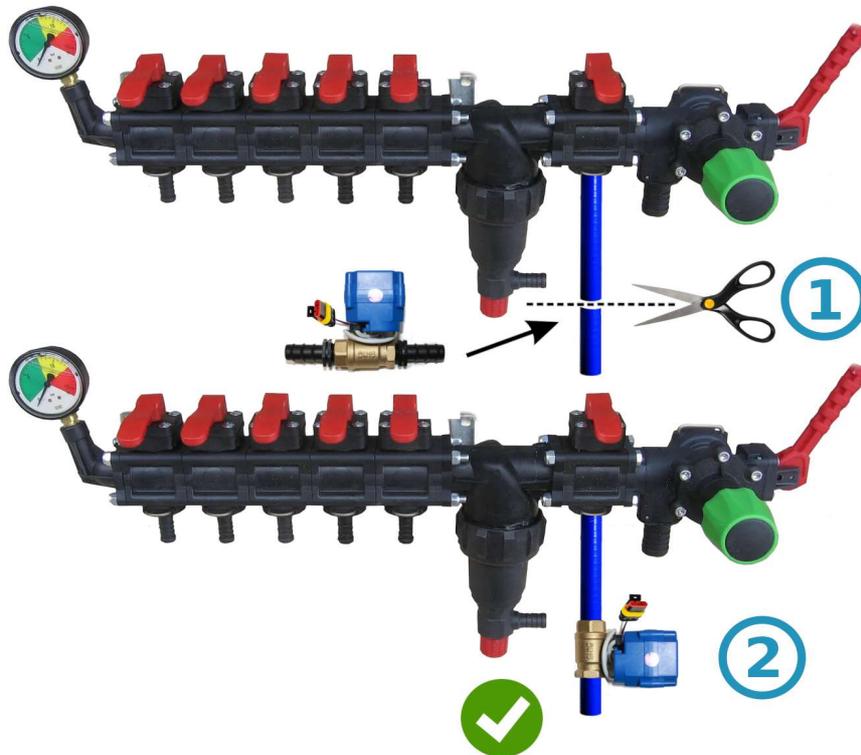


If the distributor is of a different type, then a 1" coupling is installed before the flow meter



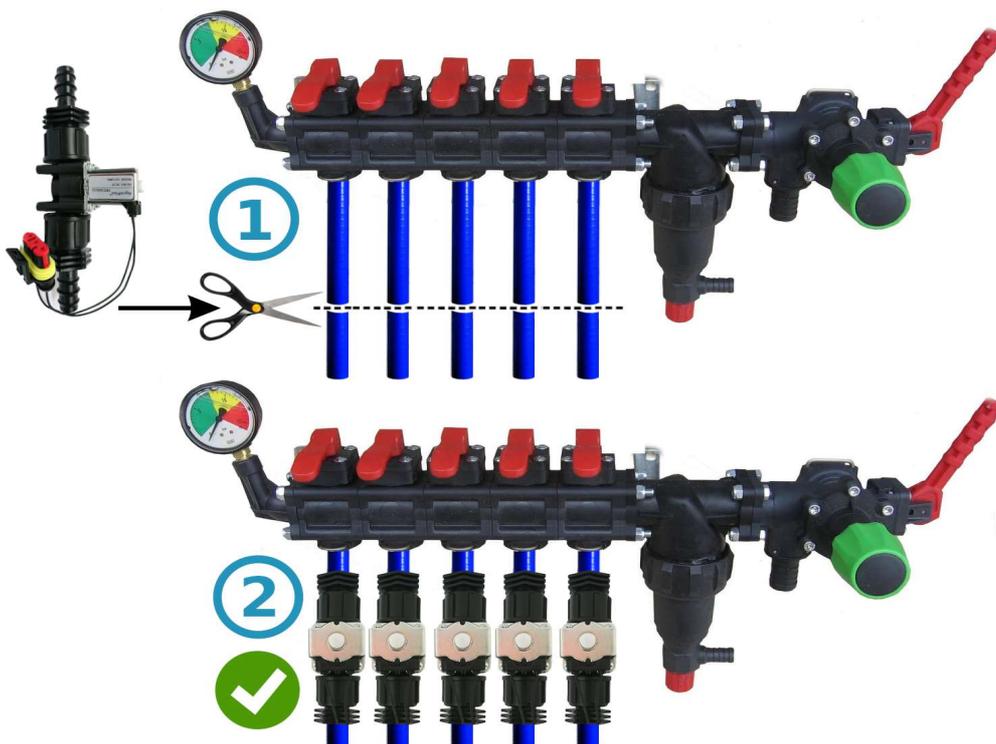
## Installation of a dispenser faucet

The dosing tap is mounted in the outlet of the additional section in front of the filter, and if it is missing, then immediately before the flow meter in the pressure distributor, the hose from the dosing tap should be brought to the top of the barrel. After turning on the SC10, check that the dispenser tap has fully moved to the closed position, if the tap opens, swap its contacts (for versions before 09/01/2023, vice versa).



## Installation of cranes or section valves

Electric faucets and section valves can be installed immediately behind the pressure distributor or carried out on the sprayer boom, dividing it into equal sections.



## General connection diagram of SC10 into the sprayer pressure distributor:



When using the SC10 for metered pouring of liquid together with regulators in which there are section pressure compensators (marked under number #1 in the picture), they must be closed so that the liquid does not go back into the barrel through outlet #2. SC10 calculates the actually poured liquid through the sections, after disconnecting the sections it automatically adjusts the pressure in the system without the need to use pressure compensators.



## Get started in two easy steps:

- 1) — fasten the GNSS receiver in the center on the roof of the equipment, the SC10 controller in the tractor cabin (wireless LPD433 version on the equipment);
- 2) — apply power to the receiver and SC10 from the 12V network of your vehicle.

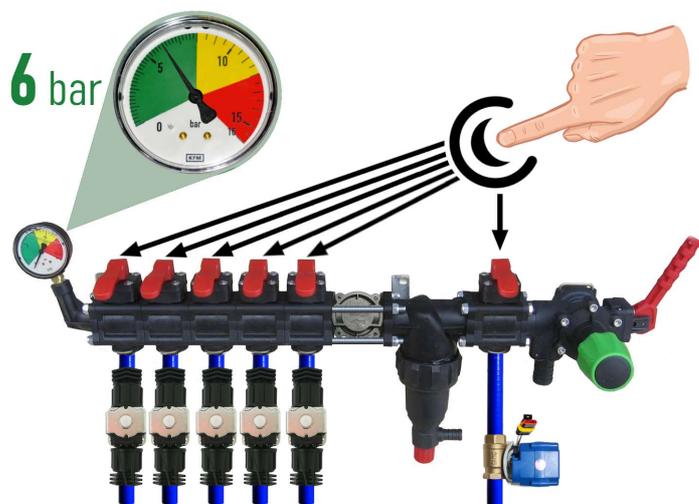


To work with our equipment, use software for Android devices. Download the APK version of the program from the link <https://droid.farm/app/Launcher.apk>. Install and launch the application, turn on Bluetooth and the Internet, activation is simple, enter the 8 digits of the serial number of your device and the PIN code (found in the passport and serial sticker). Minimum device specifications: Android 5.0, 1 GB of RAM; recommended: RAM 4 GB, processor 8 cores.



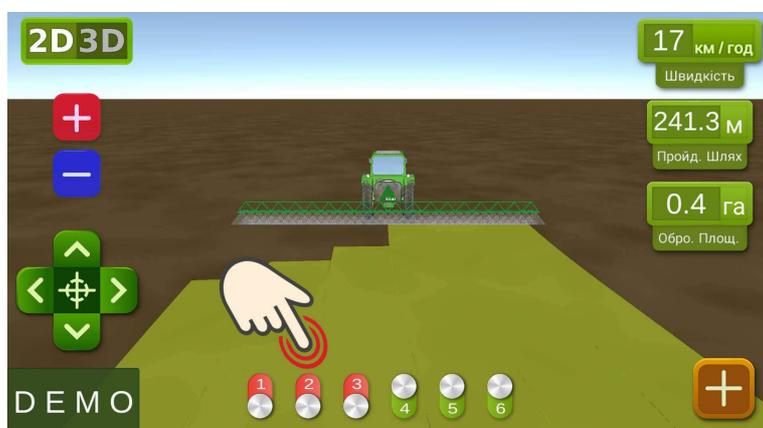
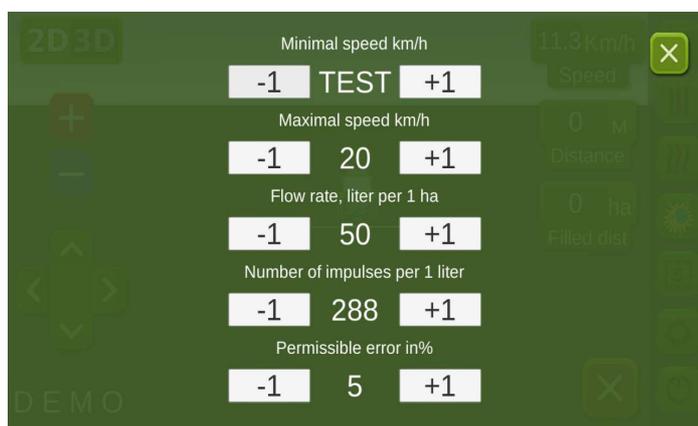
Detailed instructions for working with the program are available on the official website <https://Droid.Farm>

## Setting the maximum pressure in the regulator, testing the system before starting work



Before starting the system, pour clean water into the barrel, adjust the maximum pressure in the regulator. Close all section keys, turn on the pump and specify the maximum allowable pressure for sprayers based on the manometer (standard 6 bar). After adjusting the pressure, open the sectional keys. Depending on the speed of the equipment, while observing the required rate of liquid introduction, the system will adjust the pressure from 0 to the specified value, releasing excess pressure into the barrel through the dosing valve.

While standing still, turn on the pump, select the type of work in the program **"Spraying"**, wait until the system sees the satellites, press the "Play" button (start work). Go to settings **"Plant protection"**, specify the required application rate per 1 hectare, and the minimal speed is less than 2 km/h, the "TEST" mode is activated. Change the maximum speed parameter km/h (for example from 1 to 20), the force of the liquid flow from the nozzles will also change from minimum to maximum, and the discharge through the dispensing valve is inversely proportional, from maximum to minimum (at high speeds).

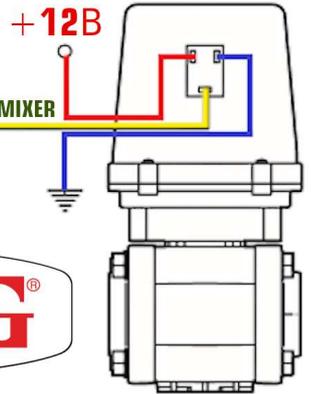


On the work screen, manually check the automation of sections by turning them on or off with virtual switches. After testing the system, return to the settings menu "Liquid pouring rate" and specify the minimum speed of 2 km/h, the system will enter the working mode, the sections will be activated as soon as the speed of movement is higher than 2 km/h. Set the maximum speed to the one above which you will not apply liquid, because in the working mode it limits the application rate for speeds above the maximum, and activates the outline of the treated area in blue.

# Connecting ARAG automation

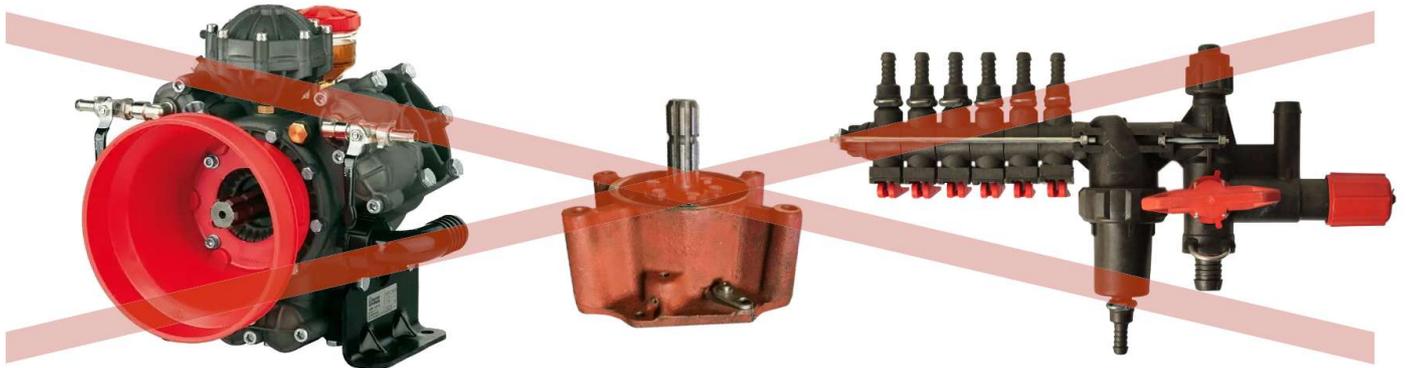
SC10 regulators are designed with universality in mind, any specialized equipment can be connected to the contacts of the regulator. To connect to the ARAG original equipment SC10 unit, use the following diagram, or the wireless version of the SC10 LPD433 controller with DIN 43650 connectors.

Схема підключення 3-х контактних електричних приводів ARAG до контактів регулятора AgroPilot SC10.



# The general scheme of conversion of the sprayer for applying plant protection products with electric pumps

SC10 regulators are equipped with PWM technology for high accuracy of liquid application, there is no need to use expensive sprayers, the most affordable slot or injector type are suitable. PWM technology does not require a diaphragm-piston pump, the regulator is equipped with an electric one, nor does it need to use a specialized distributor with a pressure regulator.

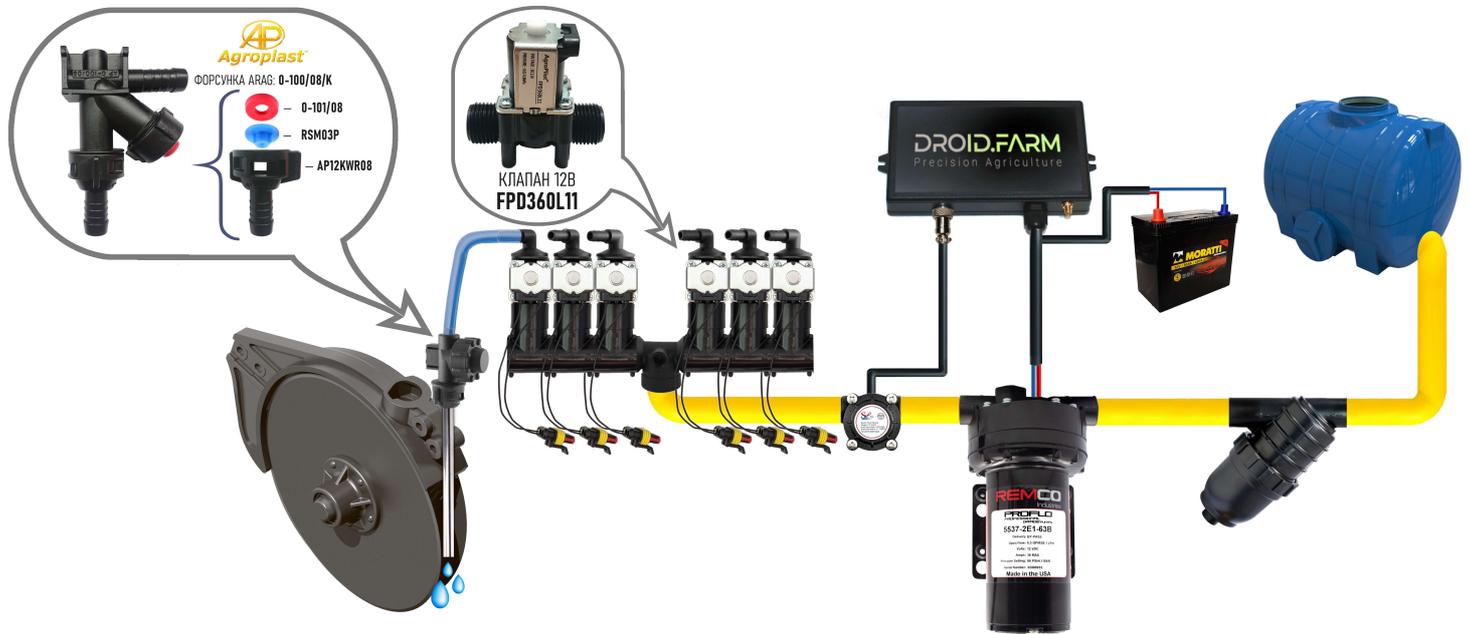


SC10 doses the introduction of liquid by rotations of an electric pump, the kit includes an electric distributor with valves for automatic control of sections. Simple installation, the liquid supply from the barrel is connected to the inlet of the self-priming pump, and the outlet of the pump to the section of the sprayer rod.



# The general scheme of conversion of a seeder or a cultivator for the application of liquid complex fertilizers

Automatic introduction of liquid fertilizers by planters or cultivators, SC10 is supported by various electric pumps. The connection scheme is simple, the pump is connected to the controller, a flow meter is mounted behind the pump, the controller receives data on the amount of flow, pouring out the calculated rate for the actual speed of movement.



Visual ball indicators (rotameters) are used to detect clogged channels. In a budget liquid fertilizer application system, you can use the SC10 regulator with any number of sections, selecting only one section in the settings, and using the WILGER distributor to divide the flow into the required amount.

