USER MANUAL

MU 7071 EN H

GRAVITRONIQUE

Issue	Date	Nature of modifications	Written by	Approved by
H	04/01/2023	Evolution of the parameters and the recordings.	TABTI-BENHARI	NC
G	2022/04/26	New software platform. Control of a reel. Pollution and DSPGI blocking operation. Two-step purge. Viscosity correction in %. RCT5 remote control. Import ICOM settings on SD card. Number of injectors in metrological mode. Release quantity. Empty hose operation.	DSM	FDS

CONTENTS

1 GENERAL PRESENTATION AND DESCRIPTION

The GRAVITRONIQUE measuring system is designed to measure volumes of liquid in preset or free mode from each compartment of a road-tanker. It can be used for gravity or pumped distribution.

The GRAVITRONIQUE measuring system comprises:

- ⇨ An ALMA MICROCOMPT+ electronic calculator-indicator device
- ⇨ An ALMA pressure sensor type CP-3000 which indicates the level of product into the compartment to the calculator-indicator device
- ⇨ A manifold connected to each truck compartment
- ⇨ A gas detector used as end-of-metering probe located upstream of the turbine meter. It detects the absence of liquid and triggers the end of metering
- ⇨ A filter located upstream of the turbine meter (optional if a pump prefilter is installed upstream the pump in pumped mode circuit)
- ⇨ An ALMA ADRIANE turbine meter DN80-80 or DN100-80
- ⇨ A sight glass which can be integrated to the meter
- ⇨ A temperature probe (option)
- ⇨ A printer (option).

Pumped mode:

- ⇨ A selection valve for pumped mode
- ⇨ A pump prefilter (optional if a filter is installed upstream the meter)
- ⇨ A pump which flowrate and pressure characteristics are compatible with the meter
- ⇨ A set of delivery devices including:
  - One (or two) full and/or empty hose(s) equipped with its (their) closing controls,
  - A possible third empty hose.

Gravity mode:

- ⇨ A selection valve for gravity mode
- ⇨ A gas detector used as vacuity sensor located downstream of the turbine meter. It controls the complete draining of the shared piping
- ⇨ If necessary, a transfer valve which regulates flow.

The GRAVITRONIQUE performs the following functions:

- ⇨ Measure products when they are delivered to the station, with or without volume preset
- ⇨ Split compartments
- ⇨ Control the product movements (transfer, loading, product returns, purge, drain).

Depending on the hydraulic configuration, the system can manage up to three distribution ways for pumped delivery and one distribution way for gravity delivery. If the feature is enabled, a delivery channel is available for pumped not counted distribution.

According to hardware configuration, it controls up to six compartments (if supplied with the Alma control box) or up to nine compartments. You can configure 16 different products.

It can be connected to DSPGI anti-contamination systems. DSPGI devices provide product identification for each compartment and update the MICROCOMPT+. This eliminates any mixture of product. Each compartment is equipped with a DSPGI.

The system can control one or two additive injection devices. This injection has to occur upstream the meter.

In option, the system controls the product temperature.

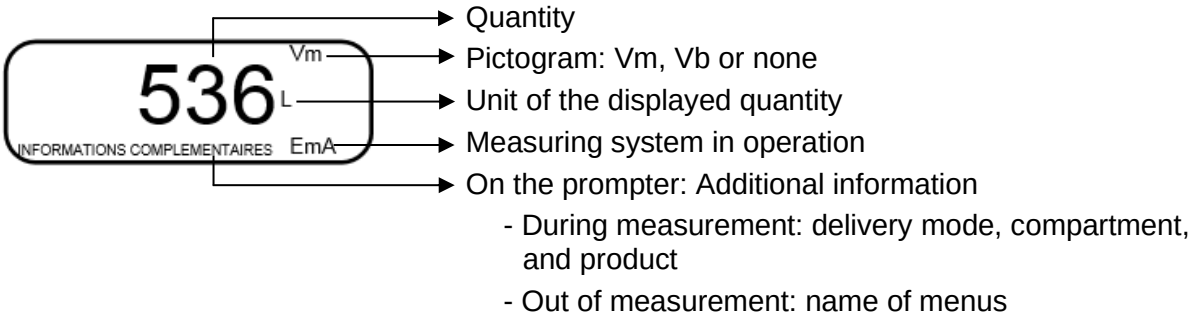
In addition, it may be connected to a printer for delivery tickets, internal totalisers, parameters or diary printings.

NOTE: The information printed by the printer has no metrological value. Only the indications displayed by the indicator shall be considered legally valid.

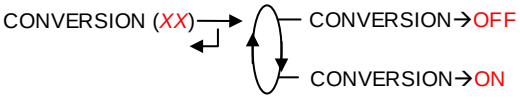
The MICROCOMPT+ has one display:

The displayed quantity depends on the system configuration. The user is informed by a pictogram at the top-right of the display according to the conventions below:

- ⇨ Volume in metering conditions: pictogram Vm
- ⇨ Volume converted to the reference temperature: pictogram Vb
- ⇨ Mass: no pictogram



Configured data are pre-visualized thanks to menus. In the example above, XX corresponds to the value given to the conversion, either OFF or ON.



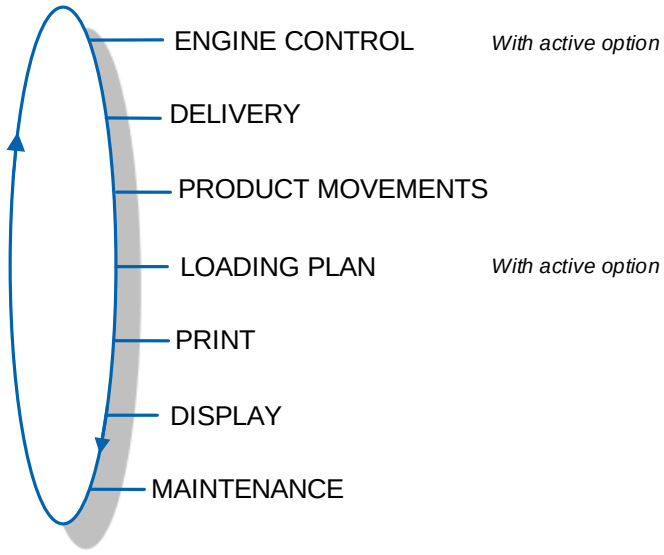
The MICROCOMPT+ has three pushbuttons:

	Increment a blinking figure or letter Come back to the previous step Stop the measurement
	Select a figure, a letter or a menu
	Validate the data

Use the RFID keys:

	Blue key: Level-User This key is associated to a single MICROCOMPT+. It is used to switch into SUPERVISOR mode.
	Green key: Level-Manager This key is associated to a single or several MICROCOMPT+. It is used to switch into SUPERVISOR mode.

2 USE THE GRAVITRONIQUE: USER MODE



The use of the GRAVITRONIQUE depends on the hardware configuration of the truck, the features and the configuration of the equipment carried out during commissioning.

Therefore, the user menu depends on several items:

- ⇨ The instrumentation of the power take-off,
- ⇨ the number of distribution ways (from one to three),
- ⇨ the remote control,
- ⇨ the number of compartments,
- ⇨ the control of the compartment flaps,
- ⇨ the control of the return product system (SRP, Système de Retour Produit in french),
- ⇨ the delivery mode (counted pumped, uncounted pumped, gravity),
- ⇨ the print mode,
- ⇨ the management of the overflow probes,
- ⇨ the temperature control (conversion of the volume),
- ⇨ the volume conversion.

2.1 Menu DELIVERY

There are several distribution modes:

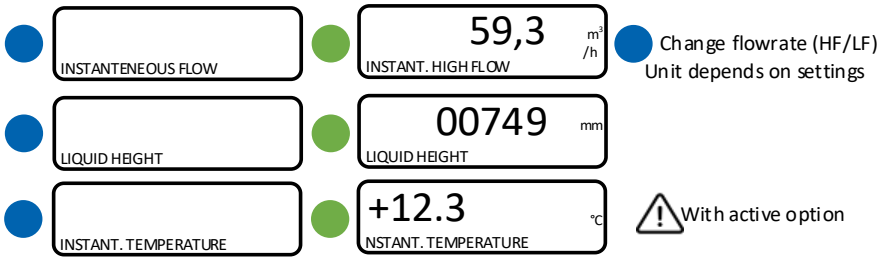
- ⇨ **PRESET**: It allows to deliver a quantity of product previously entered. The delivery is stopped automatically
- ⇨ **PRESET+PURGE**: It allows to deliver a quantity of product previously entered and the purging of the hose. The delivery is stopped automatically
- ⇨ **FREE**: It allows to deliver a quantity of product in low or high flow. A user action is required to stop the delivery.

At rest, the MICROCOMPT+ displays a flashing number and the product label corresponding to the last quantity delivered.

During measurement, the following information may be displayed:

- ⇨ The instantaneous high or low flow rate. The unit depends on settings
- ⇨ The level of liquid in the compartment is use
- ⇨ The temperature (°C) if it is taken into account.

Simply follow the indications below:

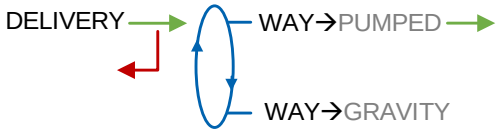


DO NOT PRESS RED CLEAR BUTTON TO KEEP FROM INTERRUPTING DELIVERY.

Before starting measuring, the driver must initialize the MICROCOMPT+ calculator device by validating the pumped or gravity distribution mode, if necessary the distribution way, the product. He can choose if the distribution is made by presetting the volume (PRESET or PRESET+PURGE) or not (FREE).

Pumped distribution mode:

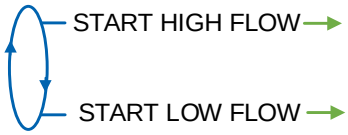
Choose DELIVERY>WAY→PUMPED:



For a preset distribution, the choice is given to end with the manifold full or empty.

If the last delivery ends with the manifold empty or if the manifold has been emptied through the menu EMPTY MANIFOLD→PUMPED (release) or EMPTY MANIFOLD→GRAVITY (draining), the GRAVITRONIQUE opens the compartment bypass flap in order to fill the manifold. FILLING is displayed during this sequence.

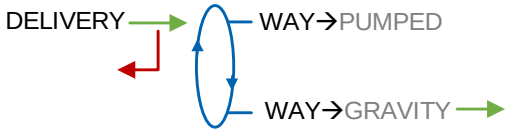
Delivery can be performed in high or low flow. This choice is made at the display of the message START HIGH FLOW. The blue MENU BUTTON switches on the display START LOW FLOW. The choice is made by pressing the green OK BUTTON. Switching is possible during the delivery by pressing the blue MENU BUTTON.



NOTE: In the event of a delivery interruption, improper handling of the pushbuttons may enter the menu DISPLAY (totalisers, memory). Simply press the red button to display DISPLAY and then the blue button to return to DELIVERY STOP. Confirm with the green button to select the next step.

Gravity distribution mode:

Choose DELIVERY>WAY→GRAVITY:



At the beginning of a delivery:

If the manifold is empty, the GRAVITRONIQUE opens the compartment bypass flap in order to fill the manifold. FILLING is displayed during this sequence, then the delivery starts.

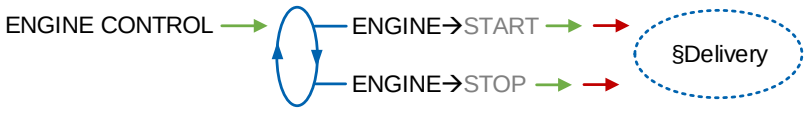
If the product in the manifold and the product selected for the delivery are the same, the delivery starts.

If the product in the manifold is different from the product selected for the delivery, the message MANIFOLD CONTAMINATION is displayed. This user decides whether or not to purge the manifold. However, if the contamination is blocking, it is mandatory to empty the manifold.

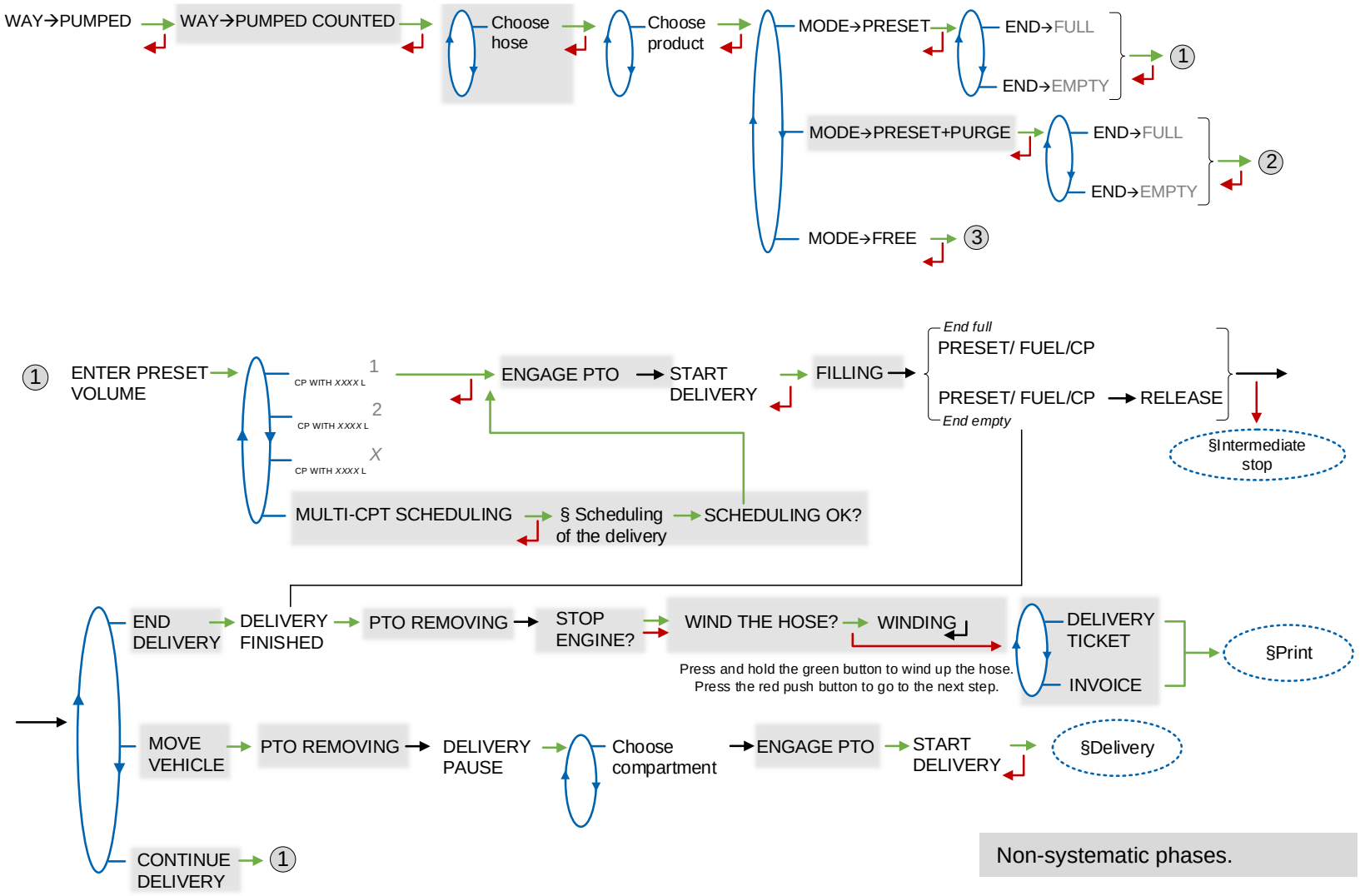
2.1.1 Pumped counted distribution mode

2.1.1.1 Engine control

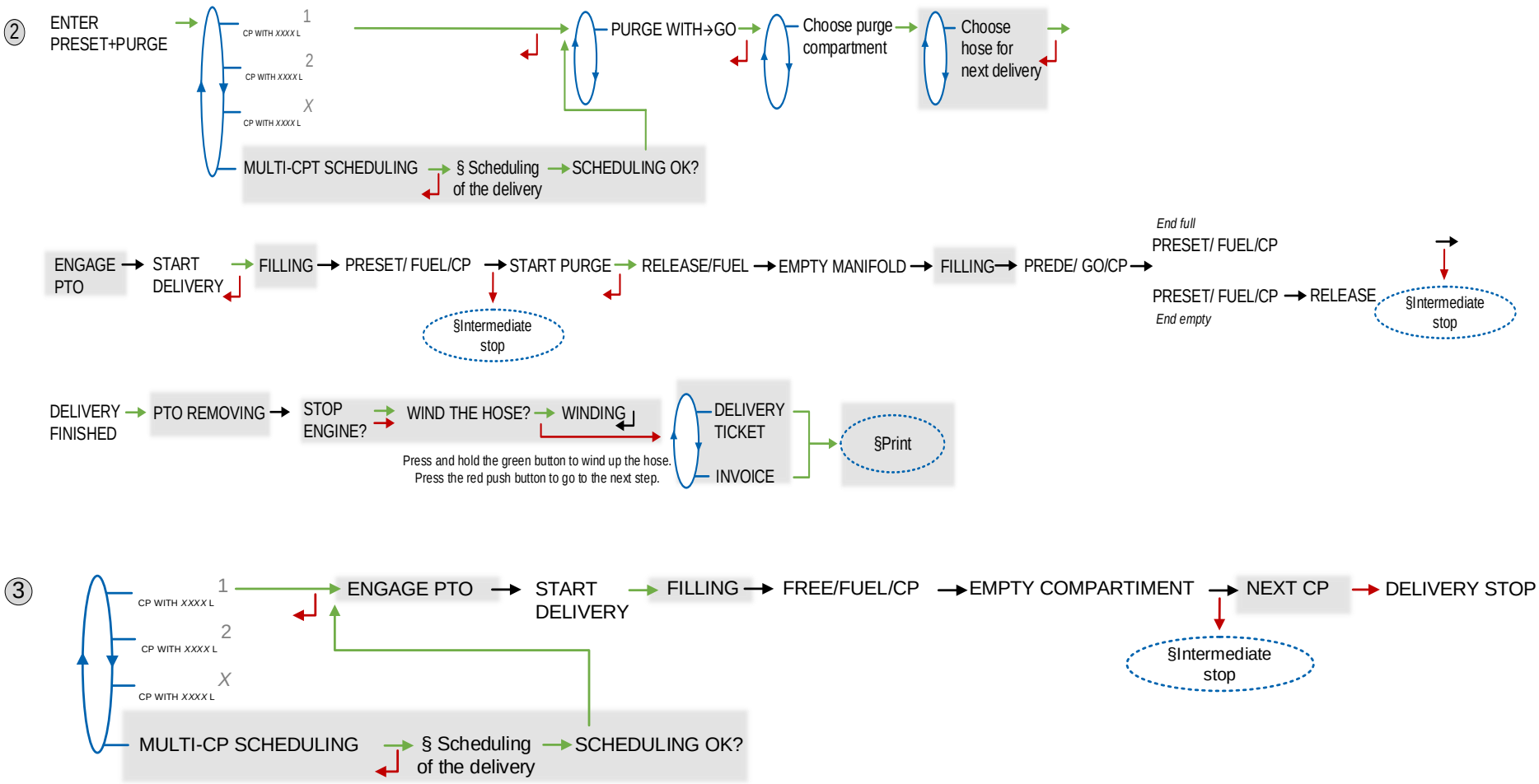
With active option, the commands for the pump clutching/declutching and for the power take-off control are realized by the GRAVITRONIQUE at the beginning and at the end of distribution.


ENGINE CONTROL
ENGINE→START
ENGINE→STOP
§Delivery

2.1.1.2 Delivery



Non-systematic phases.



Non-systematic phases.

NOTE: To apply PRESET+PURGE, please refer to the sub-chapter 2.2.2.1 Two-step purge.

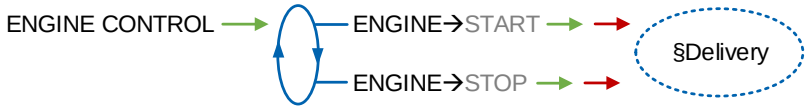
2.1.2 Pumped not counted distribution mode

This delivery mode is used with two distribution outlets: upstream and downstream the meter.

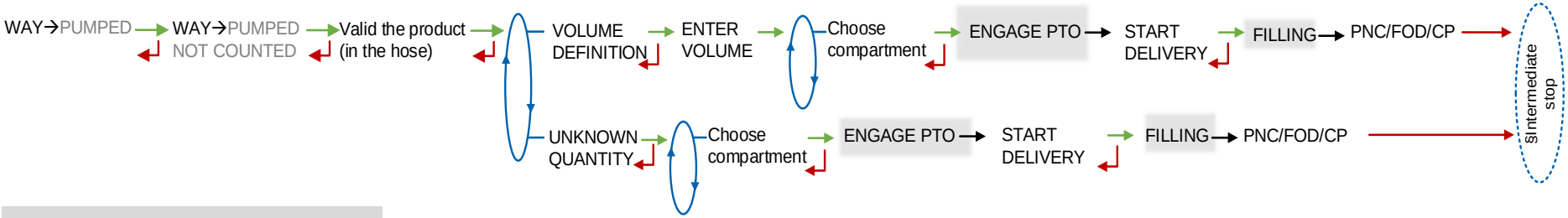
⚠ To prevent any contamination, the delivery is made with the product in the line. To use another product, purge the line and repeat the operation.

2.1.2.1 Engine control

With active option, the commands for the pump clutching/declutching and for the power take-off control are made by the GRAVITRONIQUE at the beginning and at the end of distribution.



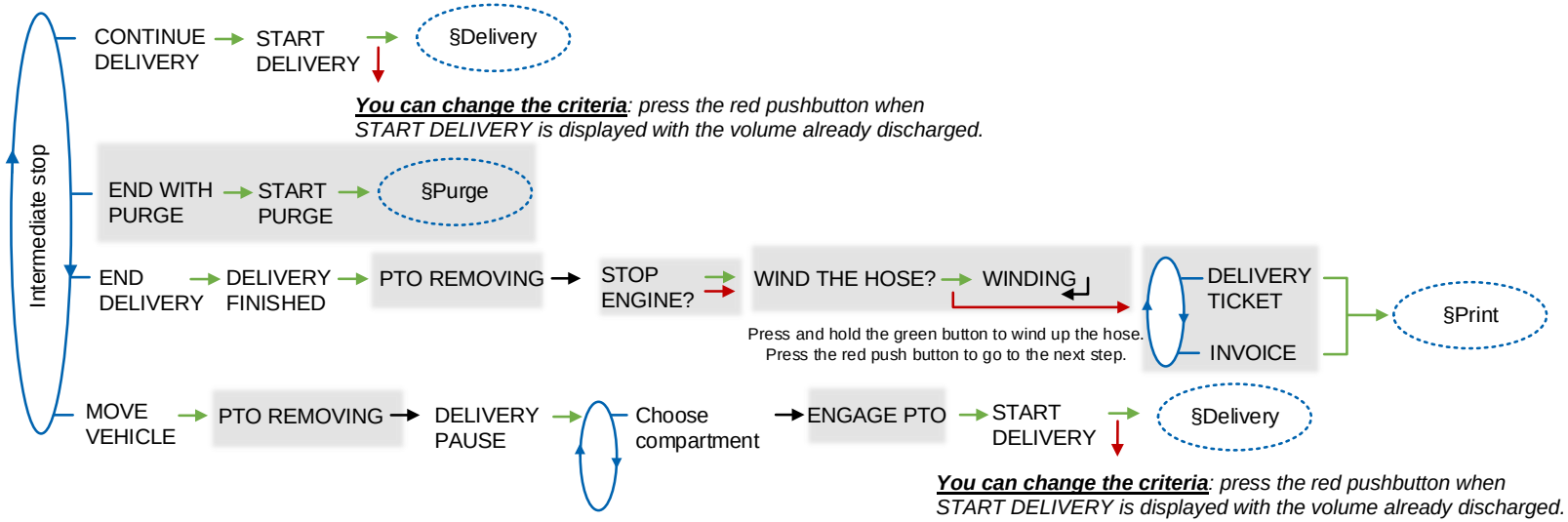
2.1.2.2 Delivery



Non-systematic phases.

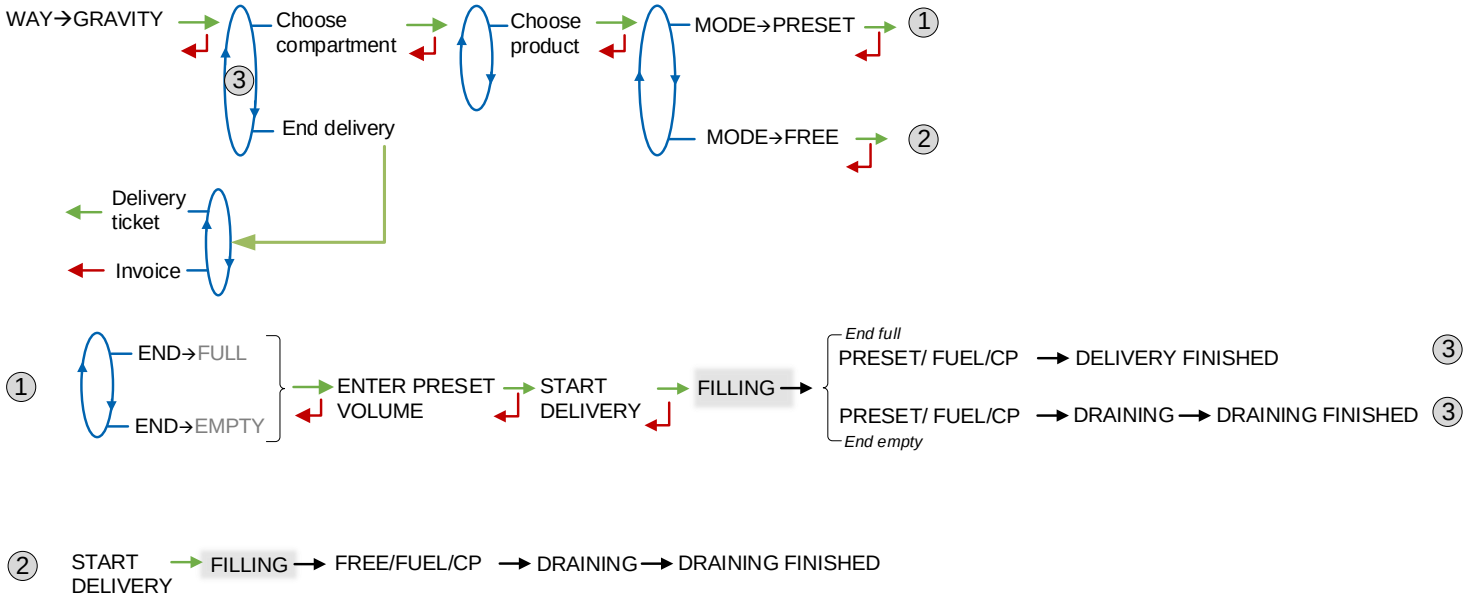
2.1.3 Intermediate stop of the delivery

If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the MOVE VEHICLE item. The GRAVITRONIQUE switches off the power take-off, clutches the engine and freezes the MICROCOMPT+ indicator on DELIVERY PAUSE. Press green OK BUTTON to continue distribution.



Non-systematic phases.

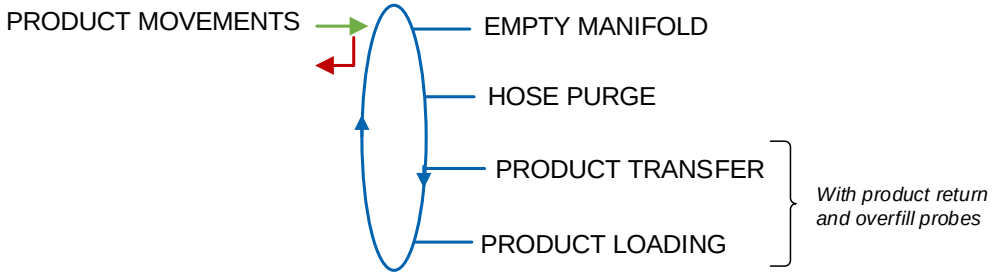
2.1.4 Gravity delivery



Non-systematic phases.

2.2 Menu PRODUCT MOVEMENTS

Product movements HOSE PURGE and PRODUCT TRANSFER are performed in low flow rate.

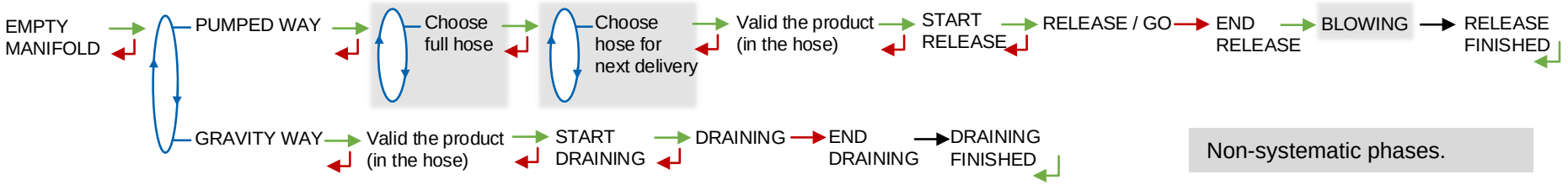


2.2.1 Sub-menu EMPTY MANIFOLD

This operation is possible if the collector is instrumented with piloted flaps and connected to the compartments roof (gaseous atmosphere). This sequence is used to prevent any mixture of product. The draining is recorded in the summary '(V)DRAINING'.

WAY→PUMPED: This release procedure is used to empty the manifold to the vacuity sensor. The quantity taken into account corresponds to the release quantity.

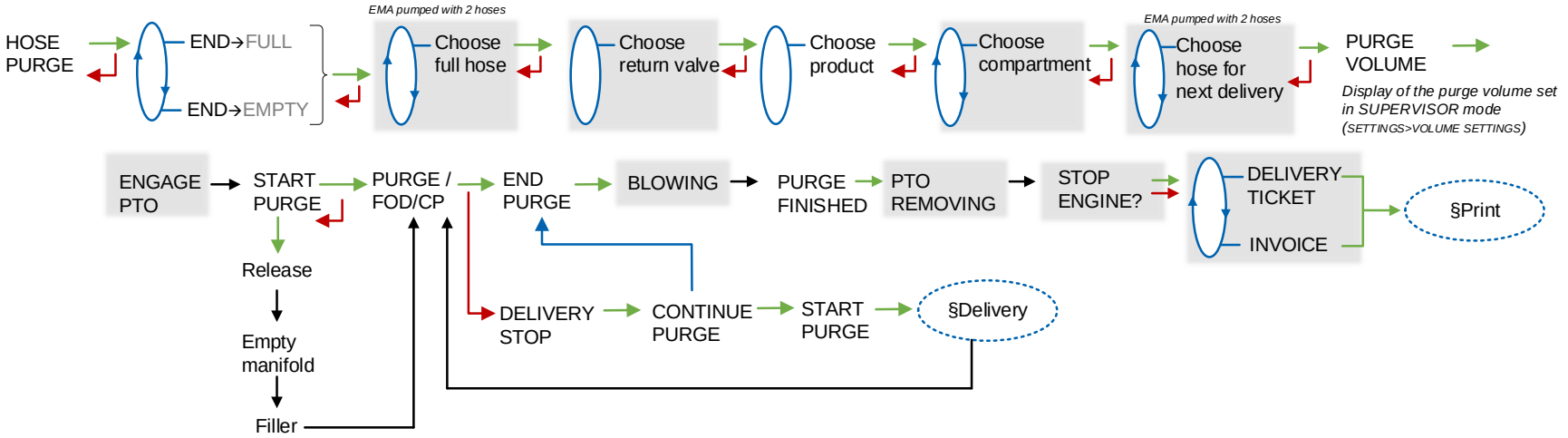
WAY→GRAVITY: This draining procedure is used to empty manifold to the gravity valve. The quantity taken into account corresponds to the fixed quantity.



2.2.2 Sub-menu HOSE PURGE

This menu allows purging the hose in order to change the quality of the product.

Operating with blocking contamination, the hose purge must have been completed before starting a new delivery.

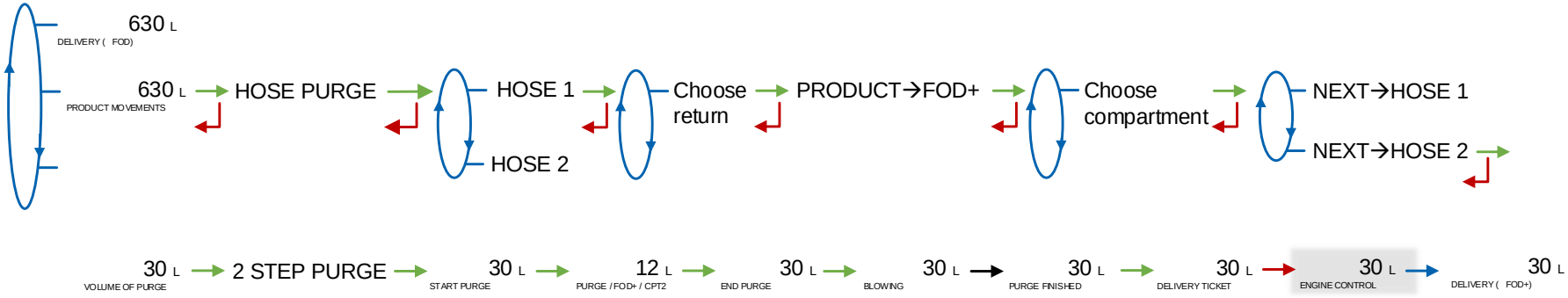


2.2.2.1 Two-step purge

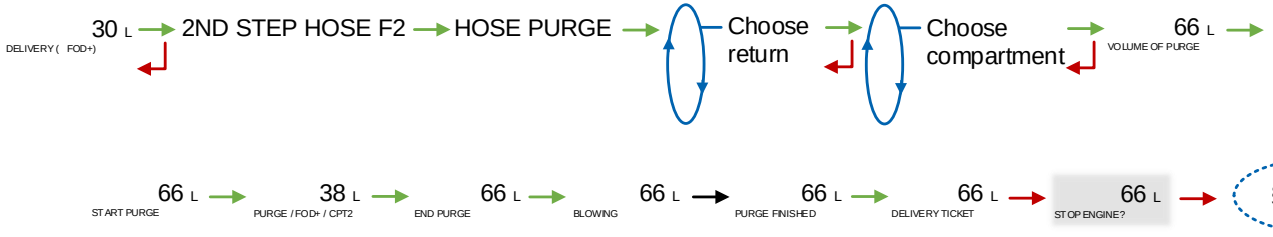
Some delivery scenarios require a two-step purge.

SCENARIO 1: Both hoses and the common pipe are filled with FOD. For the next delivery, we want to deliver FOD+ with hose 2.

<u>First step: Purge hose 1 with menu PRODUCT MOVEMENTS>HOSE PURGE</u>



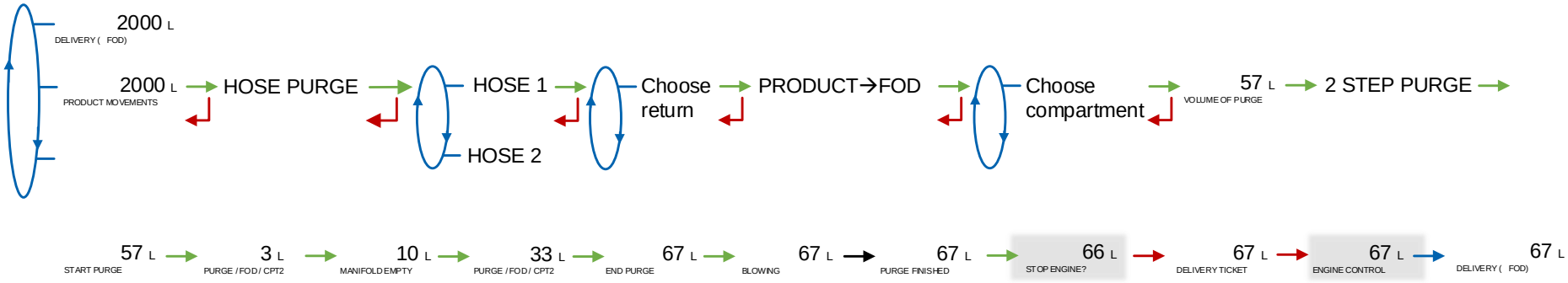
Second step: Purge hose 2 and common pipe with menu DELIVERY



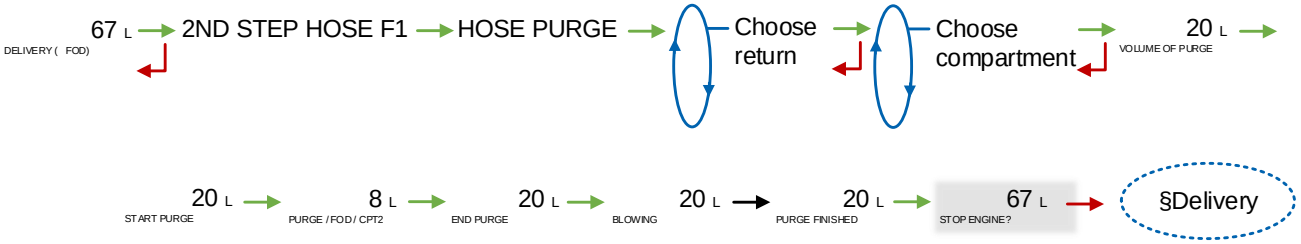
Non-systematic phases.

SCENARIO 2: Hose 1 is full of FOD, hose 2 and the common pipe are filled with FOD+. For the next delivery, we want to deliver FOD with hose 1.

First step: Purge common pipe with menu PRODUCT MOVEMENTS>HOSE PURGE



Second step: Purge hose 1 with menu DELIVERY

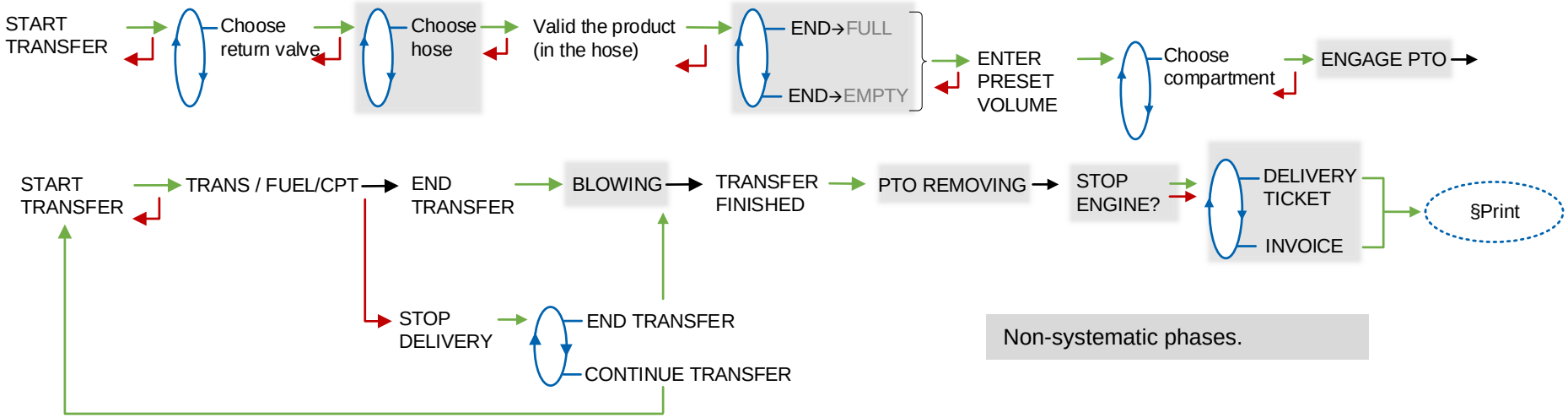


Non-systematic phases.

2.2.3 Sub-menu PRODUCT TRANSFER

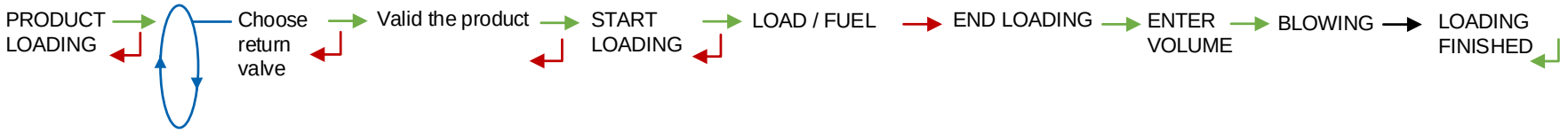
This menu is used to transfer product from one compartment to another; transfer is performed in low flow rate. This operation is permitted with the pumped measuring system only. It is available when at least one line is set with full hose, product return and overfill probe.

⚠ To prevent any contamination, the delivery is made with the product in the line. To use another product, purge the line and repeat the operation.



2.2.4 Sub-menu PRODUCT LOADING

This menu is used to do a loading via a product return with the overfill probes set.



2.3 Menu LOADING PLAN (option)

⚠ With active option.

The LOADING PLAN menu is used to display the quality and the quantity of the products available in each compartment according to the information received from the embedded computing or entered manually. The volumes per compartment are be updated as the deliveries and product movements continue. They will be displayed at the compartment selection.

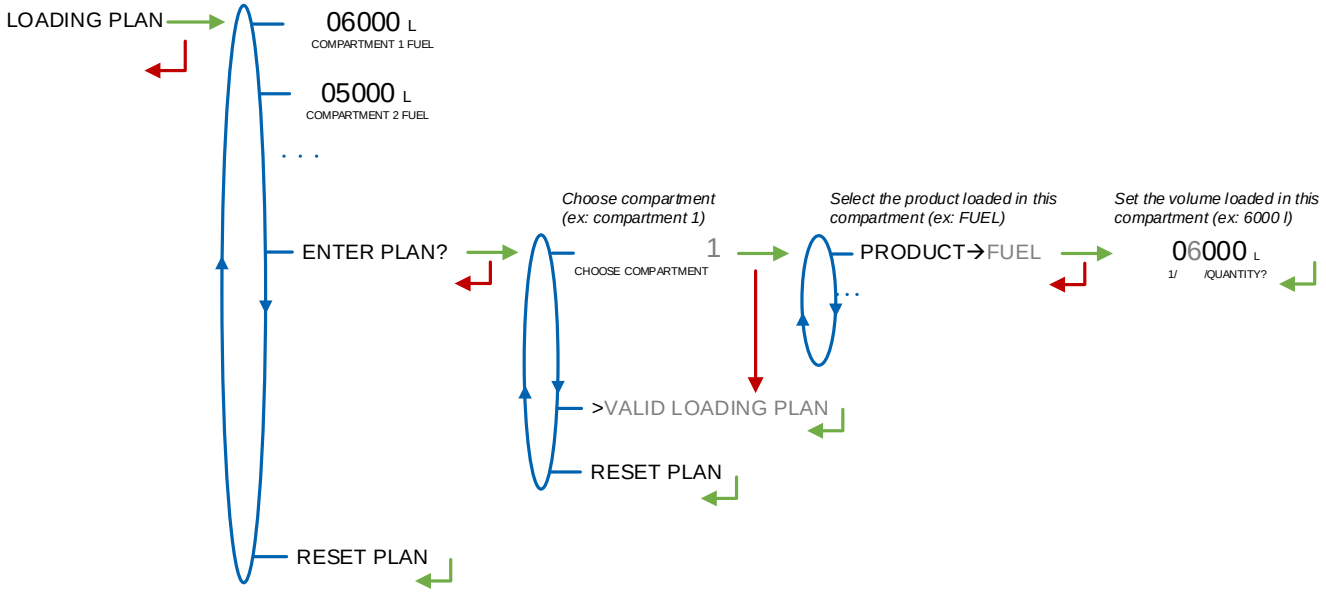
In case of a blocking function, an empty compartment will not be available for a delivery until you enter a new product quality via this menu. A compartment is considered as empty if the end height is reached and if CPT X EMPTY is displayed during the delivery.

The loading plan can be entered manually:

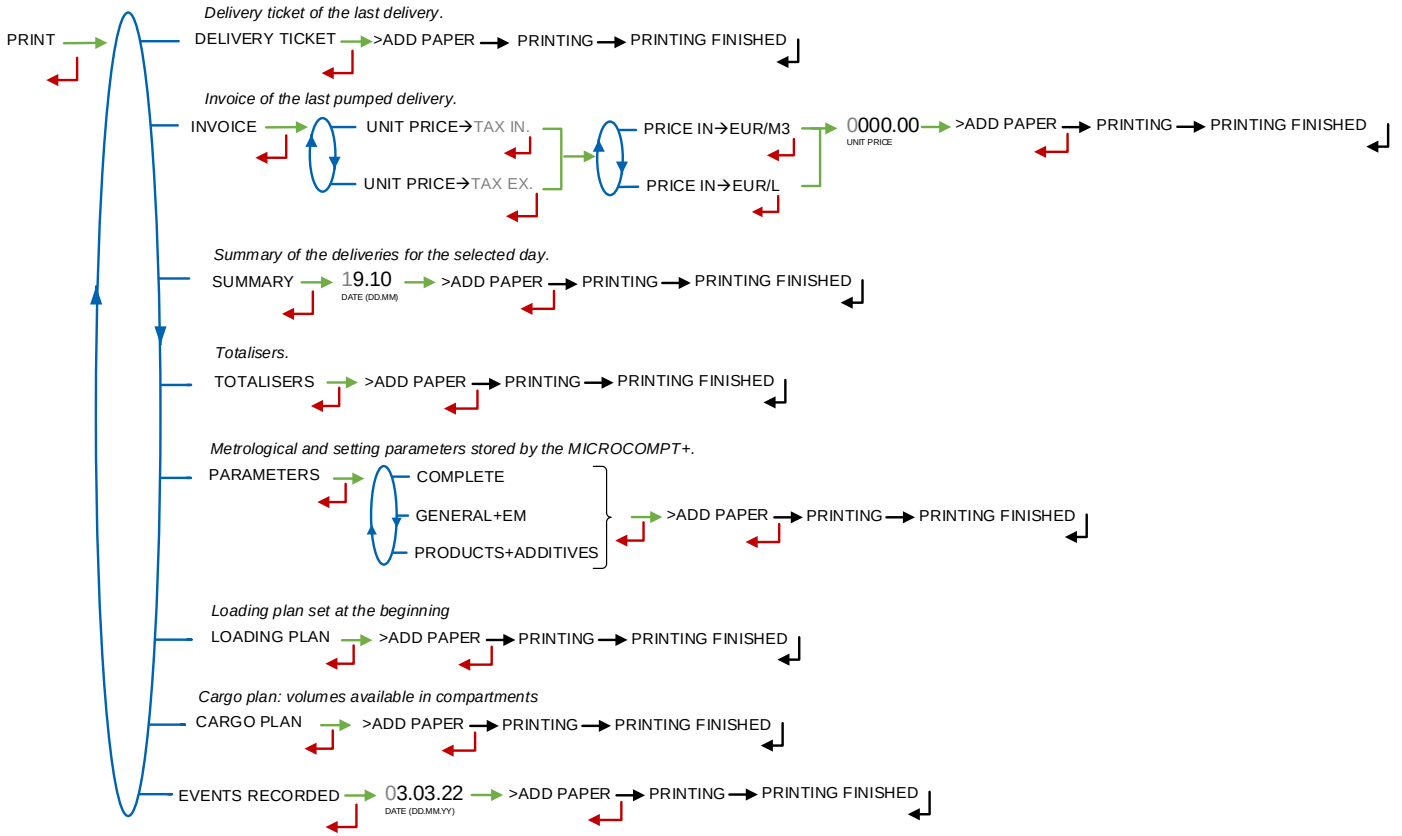
ENTER PLAN: For each compartment, select the product name and set the loaded volume. With DSPGI, the product name is blank. Then you must validate the loaded plan

VALID LOADING PLAN: This step validates the manually entered loading plan.

RESET PLAN: The loading plan can be cancelled by this menu.



2.4 Menu PRINT (option)



According to the needs, the **PARAMETERS** sub-menu prints all or part of the parameters. Three sub-menus are available:

COMPLETE: The general parameters are printed first, then remove the sheet and add another one to print the parameters of the measuring system (EM), and do the same to print the product and additive parameters.

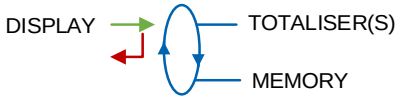
GENERAL+EM: The general parameters are printed first, then remove the sheet and add another one to print the parameters of the measuring system (EM).

PRODUCTS+TOTALISERS: Printing of the product and additive parameters

NOTE: Between each sheet, the message PRINTING FINISHED is displayed.

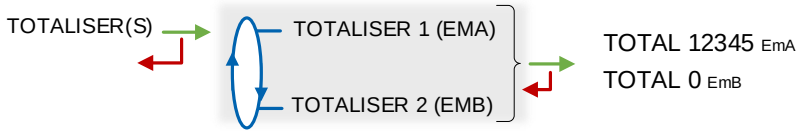
2.5 Menu DISPLAY

This menu is available in stand-by mode or during an intermediate stop. It allows the proofreading of totalisers and measurement results.



2.5.1 Sub-menu TOTALISER(S)

Display of the totaliser(s). Vb is available when conversion is active.

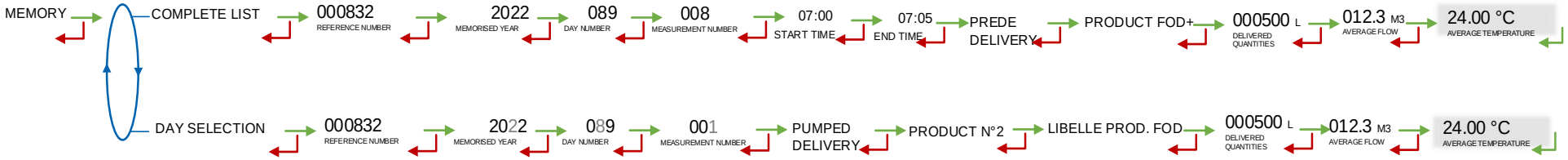


2.5.2 Sub-menu MEMORY

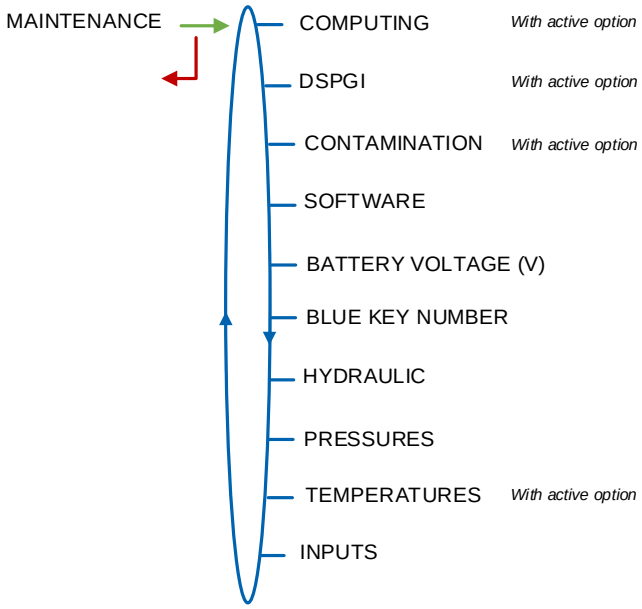
You can read all the measurement results stored by the GRAVITRONIQUE. That can be done in two ways:

COMPLETE LIST: Display all the measurement details recorded, from the newest to the oldest, sorted by day then by measurement number.

DAY SELECTION: Display a specific measurement by selecting the day number.



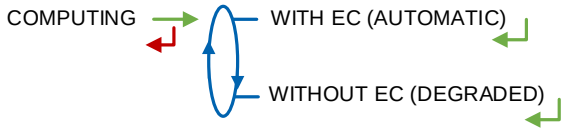
2.6 Menu MAINTENANCE



2.6.1 Sub-menu COMPUTING (option)

With active option.

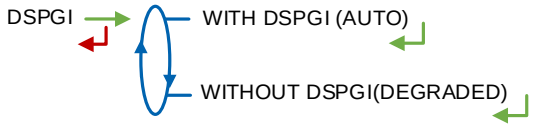
In case of embedded computing failure, choose COMPUTING>WITHOUT EC (DEGRADED) to operate without embedded computing



2.6.2 Sub-menu DSPGI (option)

With active option.

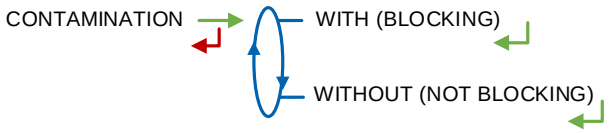
When the DSPGI is faulty, choosing WITHOUT DSPGI (DEGRADED) is used to temporarily force a non-blocking DSPGI operation in order to perform or complete an operation. At the end of this operation, the initial situation is restored.



2.6.3 Sub-menu CONTAMINATION (option)

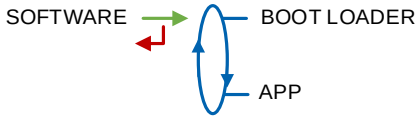
⚠ With active option.

In case of a hose contamination, choosing WITHOUT (NOT BLOCKING) is used to temporarily force a non-blocking operation in order to perform or complete an operation. At the end of this operation, the initial situation is restored.



2.6.4 Sub-menu SOFTWARE

Display the software version of the boot loader and the app.



2.6.5 Sub-menu BATTERY VOLTAGE

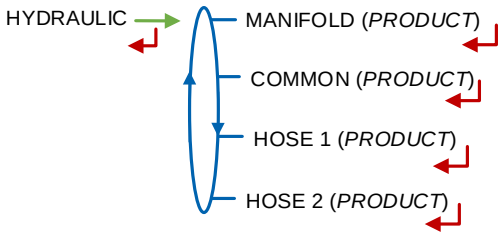
Display the voltage of the battery.

2.6.6 Sub-menu BLUE KEY NUMBER

Display number of the blue key associated to the MICROCOMPT+.

2.6.7 Sub-menu HYDRAULIC

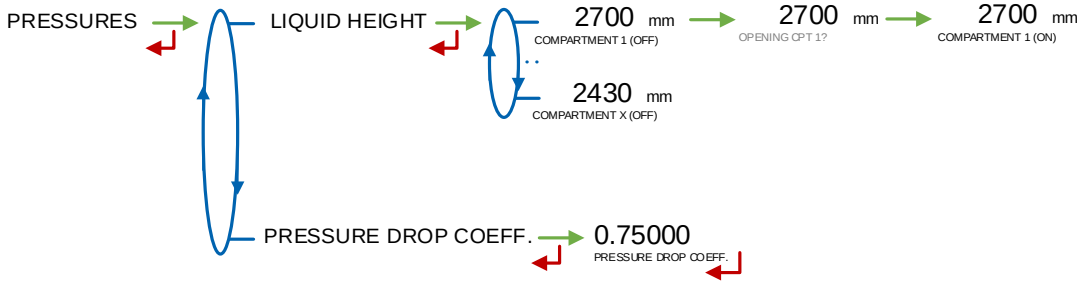
This menu is used to display the product quality contained in the different parts of the pipe.



2.6.8 Sub-menu PRESSURES

LIQUID HEIGHT: Gives the height of the product in each compartment with instrumented flaps.

PRESSURE DROP COEFF: Gives the pressure drop coefficient.

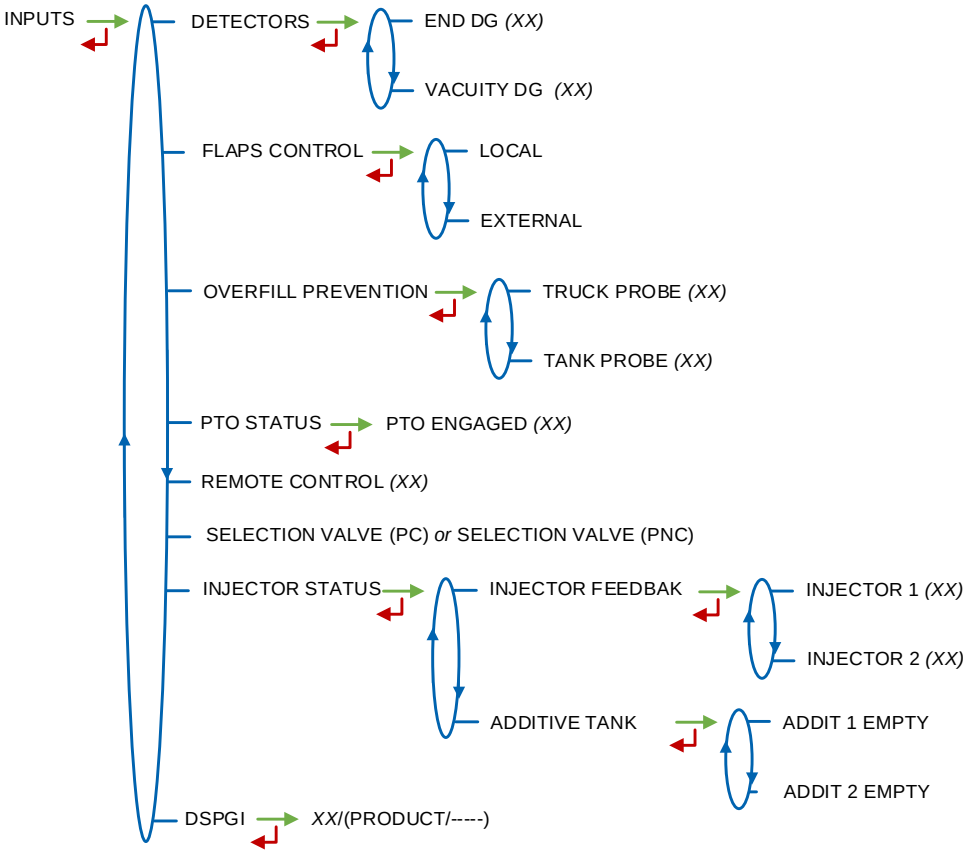


2.6.9 Sub-menu TEMPERATURES (option)

Gives the product instantaneous temperature.

2.6.10 Sub-menu INPUTS

Display the status of the inputs to ease maintenance.



DETECTORS: Status of the gas detectors used as end-of-metering probe and vacuity sensor. DRY / WET / FAILURE

FLAPS CONTROL: Flaps position

OVERFILL PREVENTION:

- **TRUCK PROBE**: Status of the truck overfill probe.
- **CUSTOMER TANK**: Status of the customer overfill probe.
- **PTO STATUS**: Status of the power take-off.

REMOTE CONTROL: Status of the remote control. STANDBY, ES: Emergency stop, LF-HF: low flow-high flow or R-S: run-stop

SELECTION VALVE (PC) or SELECTION VALVE (PNC): Only with the pumped counted/pumped mode activated on a measuring system. Position of the selection valve on pumped counted or pumped not counted

INJECTOR STATUS:

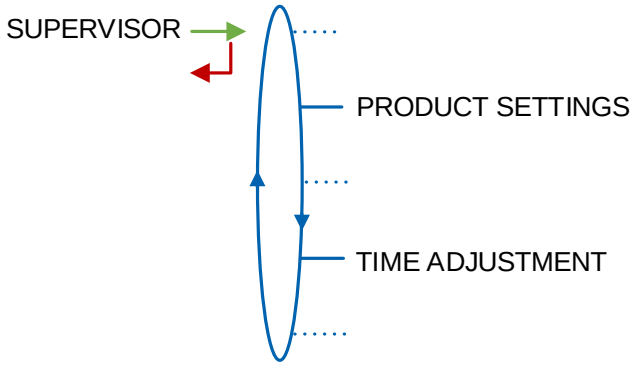
- **INJECTOR FEEDBACK**: Status of the injectors feedback: OFF/ON
- **ADDITIVE TANK**: Empty additive tanks: OFF/ON.

DSPGI: Number of the compartment associated to the DSPGI and name of the product.

3 SET THE GRAVITRONIQUE

Setup and configuration of the system are described in the MM 9008 Operating and Maintenance Manual. However, the most common operations performed by the owner operator, such as time adjustment or products setting, are briefly described below.

To access the setup, you must use an RFID key.



PRODUCT SETTINGS: The products are factory-set according to the list provided by the customer or during the commissioning of the system.

If you change the configuration of a product, make sure that its name and its type (composition) are consistent.

TIME ADJUSTMENT: You can adjust time (±2h) one time a day. Use French format, for example: 14.41 means 2.41 pm.

4 CONNECTED FEATURES

The wireless connection enables the MICROCOMPT+ to communicate with an embedded computer or with a PC/tablet/portable device, in hazardous area (ATEX).

The connected functions of the MICROCOMPT+ are the following:

- ⇨ Incoming data flow processing
- ⇨ Management of the communication modules below

Communication modules are listed below:

- ⇨ Wi-Fi (IEEE 802.11 b/g/n (2.4GHz) **OR** Bluetooth Low Energy 4.1
- ⇨ GSM (2G, 3G, 4G) / GPS
- ⇨ RFID NFC allowing the reading of an RFID key to switch in SUPERVISOR mode
- ⇨ Ethernet Base 10/100

The GSM module associated to the GPS navigation system allows the device tracking. Two antennas are located outside the MICROCOMPT box.

Three tricolored LEDs on the MICROCOMPT+ front face are showing the wireless connection status as described in the table below:

5 ALARMS & DIAGNOSTIC

5.1 List of alarms

		DISPLAY	MEANING	ACTION
USER	COMMON	DELIVERY STOP	Intentional interruption of the discharge	Continue, stop or finish delivery or product return
		EMERGENCY SHUTDOWN	Emergency stop triggered by remote control	Continue, stop or finish delivery or product return
		EC COMM.DEFAULT	Communication problem with the embedded computing	Try again and switch to degraded mode if the problem persists. COMPUTING→WITHOUT EC (DEGRADE)
		PRINTER DEFAULT	Communication with the printer lost	Make sure the connections are ok: cable, on-off switch and fuse
		The ticket is jammed	Jammed paper in the printer	Use the RELEASE button to eject the paper
		POWER SUPPLY PROBLEM	Power supply cut during operation	Check the cause / Restore power supply
		PTO DEFAULT	Incoherence PTO return / run command	Check the power take-off status in the driver's cab
		DSPGI DEFAULT	Communication problem with the DSPGI	Make sure the DSPGI device is in operation
		INCOHERENCE WAY C/NC	Incoherence choice for Pumped Counted/Pumped Not Counted circuit	Make sure the manual selection valves are well-positioned
		OVERFILL DEFAULT	Overfill detected on a compartment	Transfer the product in another compartment
		PURGE NOT FINISHED	The purge sequence is not finished	Finish the purge of the manifold (and/or hose)
		FLOW PUMP DEFAULT	No flow after switching on the pump	If necessary, adjust the timer parameter
		ADDITIVATION FAULT	Problem with the additive system (cannot be managed properly)	Check the additive system
		ADDITIVE Y LOW LEVEL	(Y=1 or 2) Low level of the additive tank	Fill the additive tank
		ADDITIVE Y CONTROL	(Y=1 or 2) Non-guaranteed injection of the additive rate	Check the hydraulic system
		OVERFILL CLIENT DEF.	Overfill detected on the customer tank	End delivery

REPARATOR	EMA	EMA LOW FLOW DEFAULT	Flow<Qmin consecutively during 0,2*MMQ	Check the parameters and the hydraulic system (valve, strainer, nozzle…)
		EMA HIGH FLOW DEFAULT	Flow>Qmax consecutively during 3 sec	Check the parameters / Reduce flowrate
		EMA METERING PROBLEM	Incoherence of metering channels	Check the pulse emitter indicators are blinking and the wiring Change the pulse emitter if required
		EMA PULSES PROBLEM	Problem with the metering pulses	Check the pulse emitter indicators are blinking and the wiring Change the pulse emitter if required
		EMA TEMPER. DEFAULT	Temperature determination failure T<Tmin or T>Tmax	If steady alarm, check with a repairer for trouble shooting
		EMA K-FACTOR DEFAULT	Deviation between coefficients K1 and K2 greater than 0.5%	Change the low-flow coefficient (K1)
		EMA TOTALISER LOST	Totalisers integrity problem	Change the backup battery
		EMA PRESSURE DEFAULT	Pressure sensor out of range 4/20 mA	If steady alarm, check with a repairer for trouble shooting
		EMA DG-3001 DEFAULT	Problem with the gas detector	Use the maintenance menu to do a check of the detector status
		EMA CONVER. DEFAULT	Problem during volume conversion	Check the consistency of the set density.
	COMMON	LEAK DETECTED	Metering detection without measurement	Check the tightness of the check valve
		GAZ DETECTED	Detection of air during high flow delivery	See a repairer for troubleshooting
		DISPLAY DEFAULT	Integrity problem between the display and the display RAM proofreading	If steady alarm, change the display card
		WATCHDOG DEFAULT	Triggering the watchdog function	Switch on-off the MICROCOMPT+ If steady alarm, substitution of the faulty card If steady alarm, change the faulty card
		DATE AND TIME LOST	Problem with the clock	Set date and time
		DIARY DEFAULT	The events diary is lost	Acknowledge the alarm, make sure the date is ok If steady alarm, change the backup battery
		MEMORY LOST	The measurements diary is lost	Acknowledge the alarm (enter then exit the metrological mode) If steady alarm, change the backup battery
		MEMORY OVER LOADED	Measurement storage area saturated (too many registrations over 90 days)	Acknowledge the alarm (enter then exit the metrological mode) If steady alarm, change the backup battery
		BOOT LOADER DEFAULT	Inconsistency between the app and the version of the boot loader	Match the application software with the boot loader
		PARAMETER LOST	No more integrity of a secured memory area (SUPERVISOR parameters, preset end coeff...)	Acknowledge the alarm If steady alarm, substitution of the backup battery
		EEPROM MEMORY FAIL	Loss of metrological parameters	Change the AFSEC+ electronic card
		SAVE MEMORY DEFAULT	Integrity problem with memorized data	Change the AFSEC+ electronic card
		FRAME WORK DEFAULT	Integrity problem with software	Change the AFSEC+ electronic card

5.2 Connectivity

Three tricolored LEDs on the MICROCOMPT+ front face are showing the wireless connection status as described in the table below:

AT POWER ON		
Flashing of the middle LED		
		Current update
	Number of flashing 1 2 3 4 5 6	 No micro card SD No update folder No update file The update file does not open Problem writing to flash memory No app and no update file

IN OPERATION						
	Left-hand LED: Bluetooth or Wi-Fi		**Middle LED: GSM / GPS**		**Right-hand LED: NFC (RFID)**	
Steady light	Bluetooth Wi-Fi	Connection OK		Waiting for internet connection		
				Internet connection OK		
		Waiting for initialization		Waiting for initialization		
Flashing light	Bluetooth Wi-Fi	Slow flashing: Waiting for connection	every 2 seconds	GPS OK		Authentication of the RFID key OK
	Bluetooth Wi-Fi	Rapid flashing: Communication in progress		Transfer in progress		RFID key not accepted, but authentication is ok
			every 2 seconds	Coordinates not found		
		Initialization error		Initialization error		Authentication error of the RFID key

6 SPECIFIC FEATURES

6.1 Use with DSPGI device

If compartments are equipped with DSPGI devices, the DSPGI code associated to the product quality must be set. A specific menu also allows you to assign a DSPGI code to an empty compartment.

Operation with DSPGI may or may not be blocking. If it is blocking, it is possible to suspend the blocking for the current operation.

The name of the product that is supposed to be in the hose, is displayed in brackets at the right hand of DELIVERY, for example: DELIVERY (GO+). The product's name given by the DSPGI device is also displayed at the compartment selection or a return.

In case of communication failure with the DSPGI device, depending on the configuration, you can switch in manual mode without DSPGI.

The product's name is replaced by warning messages in the following cases:

- DSPGI DEFAULT: The DSPGI is ON and there is a communication problem
- ?????: The DSPGI is ON and its drum is located between two positions
- DSPGI MISMATCH: Inconsistent data in loading plan and DSPGI (product or compartment)

The messages below are printed in the event log:

- DSPGI ERROR: A DSPGI default has been recorded
- DSPGI CONFLICT: When the product selected in degraded mode is different from the product known by the DSPGI.

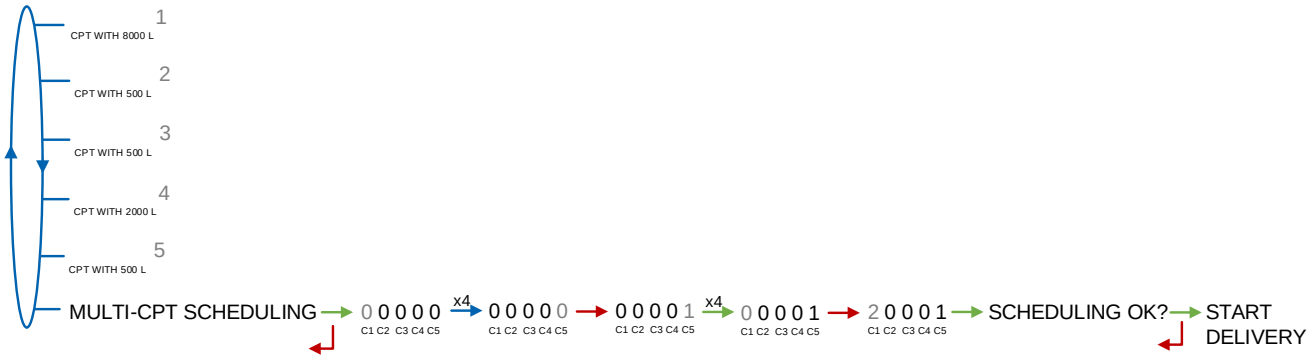
6.2 Scheduling of the delivery

If the scheduling of the delivery is activated in SUPERVISOR MODE, you can use several compartments to make the delivery. These compartments are filled with the same product.

The compartments are used in the definite sequence. When the compartment is empty before the end of measurement, the MICROCOMPT+ waits for 5 seconds and then orders to close the flap. It waits 5 seconds more and then orders to open the flap of the next compartment according to the definite sequence. Delivery starts again when the product height is enough, and so on until the measurement end.

The user can choose which compartment will be used for the delivery and in which order. If the option DSPGI or loading plan are ON, the compartments proposed for scheduling are those containing the selected product.

E.g.: Delivery of 800 liters of FOD+. Compartment 5: 500 liters of FOD+ and compartment 1: 8000. Sequence: compartment 5 then compartment 1. The scheduling menu is as follows:



Loading plan

```
DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 16:26
VEHICLE :  AA-215-EL
REFERENCE :  03201

********** LOADING PLAN **********

CPT N°   PROD.      QUANTITY (L)
1        FOD+        8000
2        GO          8000
3        GO          5000
4        GO          1000
5        FOD+         500
```

Cargo after delivery of FOD+

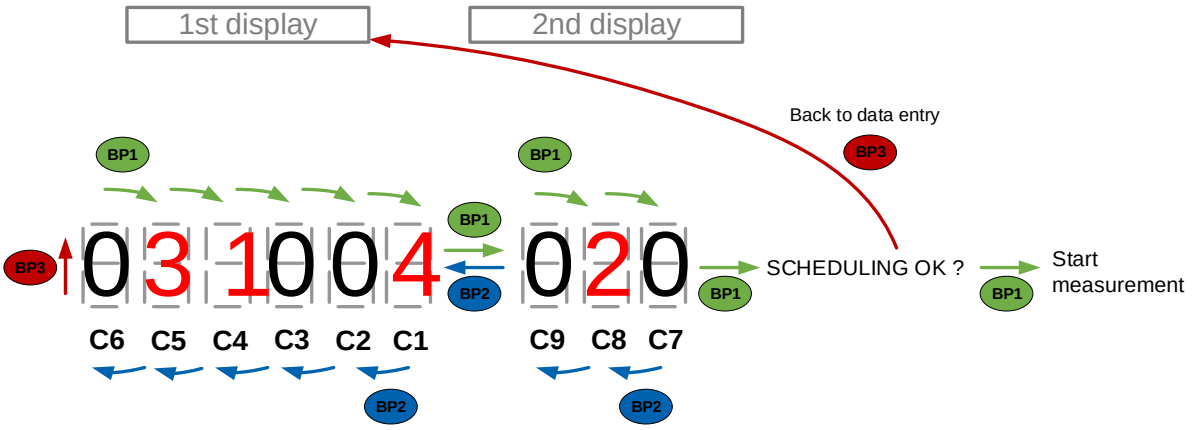
```
DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 16:50
VEHICLE :  AA-215-EL
REFERENCE :  03201

********** CARGO PLAN **********

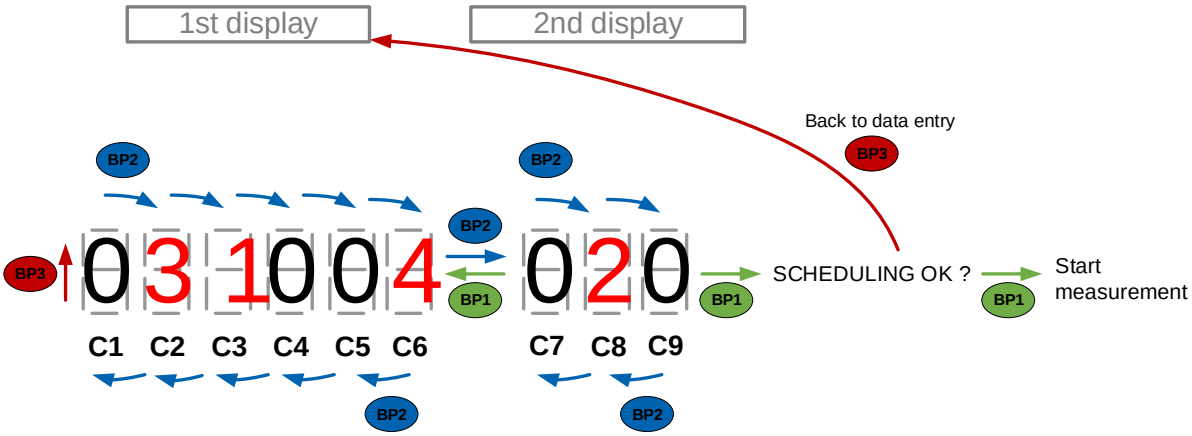
CPT N°   PROD.      QUANTITY (L)
1        FOD+        7700
2        GO          8000
3        GO          5000
4        GO          1000
5        FOD+           0
```

The ergonomics of the scheduling menu is as follows. It changes according to the array set in menu SUPERVISOR>CONFIGURATION>SCHEDULING→ON>ARRAY: compartments displayed from right to left or from left to right (menu).

Left to right sequence number:



Right to left sequence number:



To include a compartment into the delivery, move on to the digit related to the compartment with BP1 (to the right) or BP2 (to the left), then validate with BP3. When you validate, the value 0 becomes the order number. When you validate again with BP3, the compartment is removed from the delivery, then the order numbers of the previous compartments are all decremented by one.

Select the right-hand digit and use BP1 to:

- Access the scheduling validation menu if there's no other compartment

- Access the second display. This display is used to include the other compartments into the delivery Select the left-hand digit and use BP2 to reach the first display. When the last compartment digit is selected, use BP1 to access the scheduling validation menu.

When you see the scheduling validation message SCHEDULING OK?, use BP3 to return to the first display.

6.3 Contamination control

According to the nature of the products, the GRAVITRONIQUE calculates the purge volumes in order to ensure a downgrading of the brewing areas in order to never contaminate the noblest product.

The GRAVITRONIQUE memorizes permanently the quality in hose 1, hose 2, manifold and the common pipe. It systematically displays the product contained in all these elements. When the quality is not defined, in case of mixture for example, it displays the first product.

The GRAVITRONIQUE declares if a risk of pollution can occur. There's a mismatch between the selected product and the quality contained in the common pipe and the hose selected for delivery. This alert does not prevent the product selection. However, if the blocking contamination feature is activated CONTAMINATION>BLOCKING C.→ON, this situation requires a purge. It is possible to suspend the blocking for the current operation using the menu MAINTENANCE>CONTAMINATION>WITHOUT (NOT BLOCKING) when activated.

6.4 Distribution mode PRESET+PURGE

The distribution mode PRESET+PURGE can include a step that forces to select the hose for the next delivery. It is used to determine the volume of purge.

If the delivery has not been completed and if the purge has begun, you must complete the purge before starting the next delivery (menu PRODUCT MOVEMENTS>HOSE PURGE).

The delivery mode PRESET + PURGE is not available:

- If the GRAVITRONIQUE doesn't control the compartment flap
- In gravity distribution mode

7 OPERATING RECOMMENDATIONS

For a use of the GRAVITRONIQUE in pumped mode:

- ⇨ Install the unloading hose to ensure an easy outflow during delivery; the maximum length of the discharge DN80 hose, is 12 meters.
- ⇨ Stay beside the metering system during delivery to stop the flow, if necessary, by closing the API valve on the outlet of the tank compartment.

For a use of the GRAVITRONIQUE in gravity mode:

- ⇨ Make sure the piping linking each compartment and the transfer valve have a minimum pitching of 3%. The vehicle on which the measuring system is installed must be fitted with a device to ensure it is horizontal.
- ⇨ The end-of-metering probe is placed so that it can detect the vacuity of the collector on the smallest free surface.

APPENDIX 1: PRINTINGS

PARAMETERS: COMPLETE PRINTING

```
  DUALTRONIQUE 4053+.001
  VERSION 02.02.00 DATED 07.12.22
  BOOT LOADER 05.00.00 (B6A97AA1)
  PRINTED ON THE 07.12.22 AT 11:24
  VEHICLE :  AA-215-EL
  REFERENCE :  03201

********* GENERAL PARAMETERS  *********

TRANSMIS. AUTOMATIC      :PULSE 4s
PTO                      :EMA
PUMPED NOT COUNTED       :EMA
OVERFILL PROBE           :LOCAL
CUSTOMER PROBE           :ON
PETROL BY PUMP           :ON
CONVERSION               :ON
 REF T.: 15.0°C  D.T. REF: 15.0°C
COMPUTING                :ON
 PRODUCT CODE            :ON
 PRINTER                 :WITHOUT
PUMPED TICKET            :XXX
GRAVITY TICKET           :XXX
CURRENCY                 :EUR
EJECT TICKET             :ON
FORCED TICKET            :OFF
SUMMARY                  :DETAILS
LANGUAGE CATALOG         :xxx
SCHEDULING               :ON(C3C2C1)
START LOW FLOW VOLUME    :10 L
END LOW FLOW VOLUME      :30 L
DSPGI                    :OFF
LOADING PLAN             :(OPTIONAL)
BLOCKING CONTAMINATION   :OFF
REMOTE CONTROL           :OFF
DEADMAN SWITCH           :OFF
REEL CONTROL             :OFF
BLOWING TIMING           :5 s
WET DETECTOR TIMING      :10 s
ANTI-VORTEX TIMING       :5 s
BACKUP TEMP:+12.3°C - PD EH:1.23

NAME LINE OR MEASURING SYSTEM:
 LINE 1   : FLEXIBLE 1
 LINE 2   : FLEXIBLE 2
PURGE CONFIGURATION:
              EMA/H1  EMB/H2    COMMON
PURGE V.      90L     30L         30L
BREWING V. 13L        13L
PRODUCT       01      02          02
NUMBER OF CPT: 4
CPT/FLAP/RETURN/PROBE   /LF.H /VENT
  1  /ON   /ON      /ON      /0750  /2
  2  /ON   /OFF     /OFF     /0750  /2
  3  /ON   /OFF     /OFF     /0750  /2
  4  /ON   /OFF     /OFF     /0750  /2
CPT PLEXMI: N,     RETURN PLEXMI: N
```

```
  DUALTRONIQUE 4053+.001
  VERSION 02.02.00 DATED 07.12.22
  BOOT LOADER 05.00.00 (B6A97AA1)
  PRINTED ON THE 07.12.22 AT 11:26
  VEHICLE :  AA-215-EL
  REFERENCE :  03201

********* EM PARAMETERS *********

EMA: GRAVITRONIQUE (2376) FH-FH-EH
 VALVE TYPE               :INCREMENTAL
 MINIMUM QUANTITY         :    200L
 MIN FLOW: 08.00  / MAX: 080.00 M3/H
 COEFFICIENT K1           :10.0000 IMP/L
 FLOW Q1 (LF)             :  0.000 M3/H
 COEFFICIENT K2           :10.0000 IMP/L
 FLOW Q2 (HF)             :  0.000 M3/H
 CORRECTION VISCO         :+0.0%
 CORRECTION GRAVI         :+0.0%
 TEMPERATURE              :+22.5°C
  MIN (-10.0°C) - MAX (+50.0°C)
 CMA OPTION               :ON
  HYSTERESIS LF-HF        :150 MM
  END HEIGHT              :200 MM
  HYSTERESIS END-LF       :100 MM
  HEIGHT: 1242 MM / PD COEF: 0.75
ZERO FLOW TIMING H1   :180s
ZERO FLOW TIMING H2   :200s
MANIFOLD FILL TIMING  :30 s
MANIF. DRAIN TIME     :30 s
LF/HF: 007.0
OBJ LF: 9.0 – OBJ SLF EH:5.0M3/H
MANIFOLD QUANTITY     :12L
FIXED QUANTITY        :5L
RELEASE QUANTITY      :5L
CONVERSION FORMULA    :API54A
STOP FLOW  0.000 M3/H WITH 0.2 L
PRESET END COEFF.     :0.0992
```

```
  DUALTRONIQUE 4053+.001
  VERSION 02.02.00 DATED 07.12.22
  BOOT LOADER 05.00.00 (B6A97AA1)
  PRINTED ON THE 07.12.22 AT 11:28
  VEHICLE :  AA-215-EL
  REFERENCE :  03201

********* ADDITIVES PARAMETERS *********

ADDITIVE INJ             1 :EMA
ADDITIVE RETURN            :OFF
ADDITIVE LEVEL CTRL        :OFF
ADDITIVE PULSE             :0.5 s
ADDITIVE INJ             2 :EMB
ADDITIVE RETURN            :OFF
ADDITIVE LEVEL CTRL        :OFF
ADDITIVE PULSE             :0.5 s

********* PRODUCT PARAMETERS *********

FOD+  (01/-) OFF CO+BA+A
EMA+EMB 20L(INJ1) 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0

FOD   (02/-) OFF CO+BA+NA
EMA+EMB NON ADD 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0

GO+   (03/-) OFF NC+10+A
EMA+EMB 30L(INJ2) 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0

GO    (04/-) OFF NC+10+NA
EMA+EMB NON ADD 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0

GNR+ (05/-) OFF CO+10+A
EMA+EMB NON ADD 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0

GNR   (06/-) OFF CO+10+NA
EMA+EMB NON ADD 0840.0Kg/m3
UP:0000.0 EUR/M3 TTC TAX : 0020.0
```

SUMMARY:

```
DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 15:40
VEHICLE :  AA-215-EL
REFERENCE :  03201

SUMMARY OF DELIVERIES OF
07.12.22 (DAY 341)
006 MEMORISED RESULTS

**** DAILY TOTALISERS ****

FOD+     (01) :     00001400 L   +10,5°C
FOD      (02) :     00000300 L   +11,3°C
GO+      (03) :     00000000 L   +00,0°C
GO       (04) :     00001090 L   +11,2°C
GNR+     (05) :     00000500 L   +11,9°C
GNR      (06) :     00000000 L   +00,0°C

TOTAL FROM 1 TO 6: 00003290 L


********** DAILY SUMMARY **********
 HR     HR   NO  E             (L)     (°C)
START END  MES M PROD  VOLUME  TEMP
09:40  09:42 A01 A  FOD    00300    +11,3
10:26  10:29 D02 A  FOD+   01000    +10,3
10:38  10:40 A03 A  FOD+   00400    +11,1
10:02  10:07 D04 A  GO     01000    +11,2
11:29  11:31 P05 A  GO     00090    +11,5
11:51  11:54 D06 A  GNR+   00500    +11,9

(D) PRESET; (L) FREE;
(A) PRESET+PURGE; (P) PURGE;
(T) TRANSFER;(C) LOADING;
(V) DRAINING; (B) RELEASE;
(G) GRAVITY; (-) UNDEFINED
```

```
DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 15:40
VEHICLE :  AA-215-EL
REFERENCE :  03201

SUMMARY OF DELIVERIES OF
07.12.22 (DAY 341)
006 MEMORISED RESULTS

**** DAILY TOTALISERS ****

FOD+     (01) :     00000300 L   094%
FOD      (02) :     00001400 L   - - -
GO+      (03) :     00001090 L   - - -
GO       (04) :     00000000 L   - - -
GNR+     (05) :     00000000 L   099%
GNR      (06) :     00000500 L   - - -

TOTAL FROM 1 TO 6: 00003290 L


********** DAILY SUMMARY **********
HR     HR   NO  E             (L)     (%)
START END  MES M PROD  VOLUME  RATE
09:40  09:42 A01 A FOD    00300    - - -
10:26  10:29 D02 A FOD+   01000    100
10:38  10:40 A03 A FOD+   00400    080
10:02  10:07 D04 A GO     01000    - - -
11:29  11:31 P05 A GO     00090    - - -
11:51  11:54 D06 A GNR+   00500    099

(D) PRESET; (L) FREE;
(A) PRESET+PURGE; (P) PURGE;
(T) TRANSFER;(C) LOADING;
(V) DRAINING; (B) RELEASE;
(G) GRAVITY; (-) UNDEFINED
```

With active option

TOTALISERS:

DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 15:40
VEHICLE : AA-215-EL
REFERENCE : 03201

********** TOTALISERS**********

TOTALISER EMA (VM) : 00056638 L

FOD+	(01) :	00000399 L
FOD	(02) :	00000198 L
GO+	(03) :	00000000 L
GO	(04) :	00000999 L
GNR+	(05) :	00000000 L
GNR	(06) :	00000000 L
	(07) :	00001000 L
	(08) :	00000000 L
	(09) :	00000000 L
	(10) :	00000000 L
	(11) :	00000000 L
	(12) :	00000000 L
	(13) :	00000000 L
	(14) :	00000000 L
	(15) :	00000000 L
	(16) :	00000000 L

TOTAL FROM 1 TO 16 : 000002196 L
NO ALLOCATED VOLUME : 00000008 L

Main display according to the configuration:
VM, VB or blank (for masses)
Unit: depending on the set scale interval

LOADING PLAN

DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 14:47
VEHICLE : AA-215-EL
REFERENCE : 03201

********** LOADING PLAN **********

CPT N°	PROD.	QUANTITY (L)
1	FOD	1000
2	FOD+	2000
3	GO	3000
4	GO+	4000
5	GNR	5000

DELIVERY TICKET (according to customer)

Date	: 07/12/22
Starting	: 14:48
Vehicle	: AA-215-EL
Indicator	: 03201
Product	: FOD
Temperature	: +11.2°C
Quantity	: 199 L
Index 012 before	00005461
Index 013 after	00005660

In case of dispute, the measurement results stored by the main indicating device providing proof.

CARGO PLAN

DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 14:52
VEHICLE : AA-215-EL
REFERENCE : 03201

********** CARGO PLAN **********

CPT N°	PROD.	QUANTITY (L)
1	FOD	500
2	FOD+	2000
3	GO	1500
4	GO+	3000
5	GNR	5000

MULTI-PRODUCTS TICKET:

```
DUALTRONIQUE 4053+.001
VERSION 02.02.00 DATED 07.12.22
BOOT LOADER 05.00.00 (B6A97AA1)
PRINTED ON THE 07.12.22 AT 18:05
VEHICLE   : AA-215-EL
REFERENCE :  03201

********** DELIVERY **********

Delivery started measurement n°003

Compartment            : 1
Product                : FOD+
Mesurement n°  1       :       499 L (VM)
Temperature            : +24.0°C
Mesurement n°  2       :       299 L (VM)
Temperature            : +24.0°C
                       ----------
Total Cpt      1       :       798 L (VM)
Compartment            : 2
Product                : GO+
Mesurement n°  1       :       999 L (VM)
Temperature            : +24.0°C
Compartment            : 3
Product                : GNR
Mesurement n°  1       :       199 L (VM)
Temperature            : +24.0°C
Mesurement n°  2       :       299 L (VM)
Temperature            : +16.8°C
Mesurement n°  3       :       499 L (VM)
Temperature            : +13.4°C
                       ----------
Total Cpt      3       :       997 L (VM)

In case of dispute, the measurement
results stored by the main indicating device
providing proof.
                                    Page 1
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RELATED DOCUMENTS

GU 7071	User Guide Gravitronique
DI 015	Installation guide Gravitronique
MM 9008	Commissioning & maintenance manual