USER MANUAL

MU 7071 EN E

GRAVITRONIQUE

Issue	Date	Nature of modifications	Written by	Approved by
E	2021/02/01	Upgrade of purge operation	DSM	NC
D	2017/10/30	Tickets for gravity measurements *[MDV569]* Connected MICROCOMPT+ *[PJV120]*	DSM	XS
C	2017/05/09	Setting of vent orders	DSM	AH
B	2016/09/22	Choice to end full or empty for preset delivery. New menu empty manifold / Calibration gauge for gravity mode. Timeout to prevent the pump from running idle / Choice for pumped valve. Conversion and loading plan improved *[MDV424]* PRESET+PURGE only with full hose No.1	DSM	AH
A	31/03/2015	Creation	DSM	AH

CONTENTS

1 GENERAL PRESENTATION AND DESCRIPTION

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

It performs the following functions:

- ⇨ Measure products when they are delivered to the station
- ⇨ Monitor the reception of products (lorry/wagon)
- ⇨ Measure product returns.

Le GRAVITRONIQUE is designed to measure volumes of liquid (pre-set or not).

It controls up to six compartments (according to hardware configuration). You can configure 16 different products.

Depending on the configuration, the GRAVITRONIQUE can control:

- ⇨ One or two distribution ways for pumped delivery and one distribution way for gravity delivery
- ⇨ Three distribution ways for pumped delivery. Hoses 1 and 2 are full hoses, and hose 3 is an empty hose.

The GRAVITRONIQUE can be equipped with an additive injection device. This injection has to occur upstream the meter.

The volume displayed by the GRAVITRONIQUE depends on the METROLOGICAL configuration. On the right side of the display screen, the pictogram ‘Vm’ indicates a volume at temperature whereas the pictogram ‘Vb’ indicates a converted volume.

In option, the GRAVITRONIQUE 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 GRAVITRONIQUE measuring system comprises:

- ⇨ An ALMA MICROCOMPT+ electronic calculator-indicator device
- ⇨ An ALMA pressure sensor type CP3000 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).

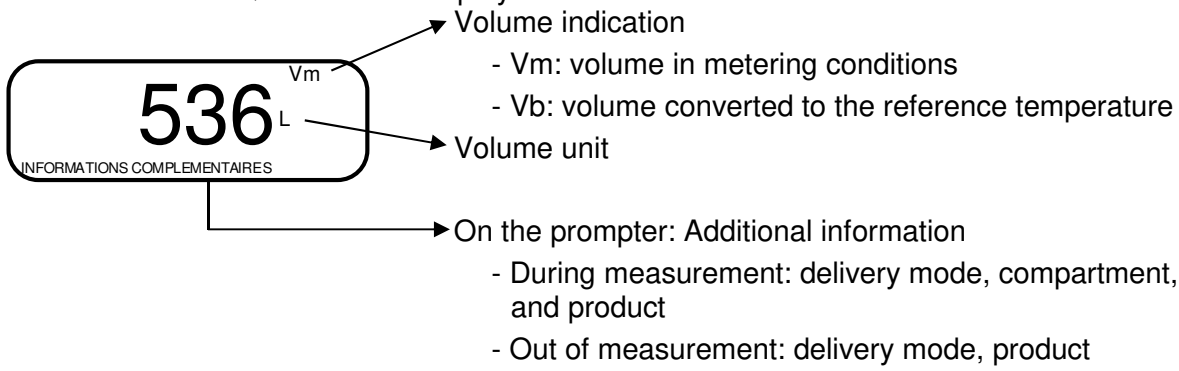
Pumped mode:

- ⇨ 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 hose(s) equipped with its (their) closing controls,
  - or an empty hose,
  - or a mix of a full hose and an 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 has one display:



The GRAVITRONIQUE 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:

	RFID blue key: Level1-User This key is associated to a single MICROCOMPT+. It is used to switch into SUPERVISOR mode
	RFID green key: Level2-Manager Many of these keys can be associated to a single MICROCOMPT+. Likewise, a single key can be associated to one or many MICROCOMPT+. RFID key is used to switch into SUPERVISOR mode. Specific menus are available that allow the manager to configure the MICROCOMPT+ for its communication with the external environment. The specific menus are indicated by green boxes within the ANNEX 1.
	RFID red key: Level3-Maintenance This key doesn't need to be associated to the MICROCOMPT+. It is used to switch into SUPERVISOR mode. Specific menus are available that allow the maintenance operator to change parameters. The specific menus are indicated by red boxes within the ANNEX 1.

2 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
- ⇨ Updating of the app, tickets and language catalogues as far as the MICROCOMPT+ has been switched into METROLOGICAL mode.

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 tricolor LED on the MICROCOMPT+ front face are showing the wireless connection status as described in the table below:

	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

3 OPERATING RECOMMENDATIONS

For a use of the GRAVITRONIQUE in pumped mode, the operator must make sure that all of the following conditions are met:

- ⇨ The tank operating position does not differ by ± 2% from the horizontal reference position (to avoid product retention)
- ⇨ The unloading hose must be installed to ensure an easy outflow during delivery; the maximum length of the discharge DN80 hose, is 12 meters
- ⇨ The operator must remain 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, the operator must make sure that all of the following conditions are met:

- ⇨ The piping linking each compartment and the transfer valve must 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.

4 CONFIGURATION, SETTINGS AND CALIBRATION

CONFIGURATION: METROLOGICAL mode	SETTINGS: SUPERVISOR mode menu ICOM MENUS	SETTINGS, CALIBRATION: SUPERVISOR mode
§ CONFIGURE THE GRAVITRONIQUE: METROLOGICAL MODE	§ANNEX 1	§SET THE GRAVITRONIQUE: SUPERVISOR MODE §ANNEX 1
You must configure the GRAVITRONIQUE during commissioning and sometimes during metrological controls.	You must set the GRAVITRONIQUE before any operation and sometimes during metrological controls (specific menus)	You must set the GRAVITRONIQUE before any operation You must control the accuracy of the GRAVITRONIQUE cyclically
NOTE: Only approved persons are permitted to remove the seal	**NOTE**: Only approved persons are permitted to change parameters of the specific menus	**NOTE:** Only approved persons are permitted to change parameters or to make calibration.
- Unseal the cup - Remove the seal	- Put the RFID key at the right side of the display 	- Put the RFID key the right side of the display 
		

5 PURGE CONTROL

5.1 Pollution control on both full hoses

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 pollute the noblest product.

The GRAVITRONIQUE memorizes permanently the quality in each hose and in the common pipe.

It always displays the product contained in the common pipe and in the selected hose. When the quality is not defined, in case of mixture for example, it displays the most downgraded quality.

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 hose selected for delivery. This alert does not prevent the product selection.

5.2 Distribution mode PRESET+PURGE

The distribution mode PRESET+PURGE allows the GRAVITRONIQUE to prepare the piping for the following delivery. At the end of the predetermination, the GRAVITRONIQUE anticipates the necessary volume and automatically carries out the purging in order to end at the desired volume while preparing the piping.

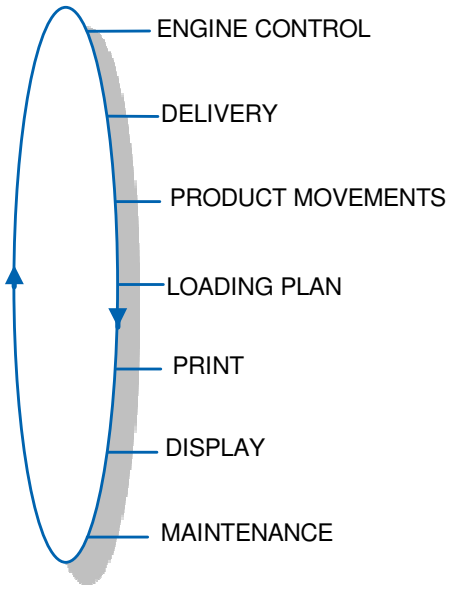
When several hoses are set up, the GRAVITRONIQUE allows you to choose the hose to do the purge. When the conditions are met, it also allows you to select the hose that will be used for the next delivery.

If product returns are set, the purging sequence always ends with a blowing phase in order to push the product still present.

The delivery mode PRESET + PURGE is not available:

- If the GRAVITRONIQUE doesn't control the compartment flap
- In gravity distribution mode:
- If the product in the hose is undefined.
- In case of pollution of the hose

6 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 number of distribution ways (from one to three)
- ⇨ The remote control
- ⇨ The number of compartments
- ⇨ The control of the compartments flaps
- ⇨ The control of the return product system (SRP)
- ⇨ The distribution mode (pumped, gravity)
- ⇨ The temperature control (conversion of the volume).

In USER mode, the GRAVITRONIQUE displays a blinking volume which is the last delivered volume.

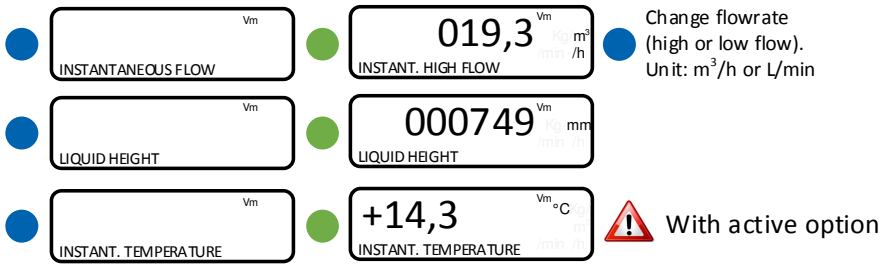
There are several delivery modes:

- ⇨ PRESET: Delivery with volume preset
- ⇨ PRESET+PURGE: Delivery with volume preset and hose purge
- ⇨ FREE: Delivery with nozzle

During measurement, the following information may be displayed:

- ⇨ The instantaneous flow rate in high or low flowrate (m^3/h or L/min; depending on the display unit set)
- ⇨ The product height (mm)
- ⇨ The temperature (°C) if it is taken into account.

Simply follow the indications below:

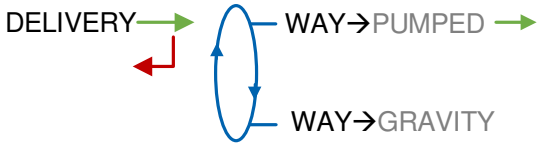


Back to normal display is automatic: DO NOT PRESS RED CLEAR BUTTON TO KEEP FROM INTERRUPTING DELIVERY.

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

Pumped distribution mode:

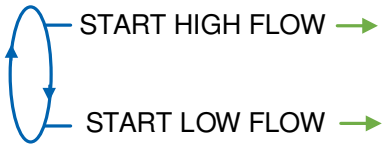
Choose DELIVERY>WAY→PUMPED:



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.

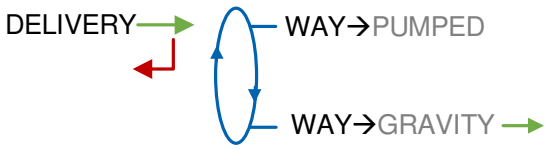
Delivery can be performed in high or low flow. This choice is made for pumped deliveries at the display of the message START HIGH FLOW. The blue MENU BUTTON switches on the display START LOW FLOW. The choice is made by pressing the green OK BUTTON. Switching is possible during the delivery by pressing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



The choice is made by pressing the green OK BUTTON. Switching is possible during the delivery by pressing the blue MENU BUTTON.

Gravity distribution mode:

Choose DELIVERY>WAY→GRAVITY:



For a preset distribution, the choice is given to end with the manifold full or empty. However if the gravity delivery is made with a product different than the last pumped-delivered product, the GRAVITRONIQUE requires to end with the manifold empty in order to avoid any mixture of product:

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

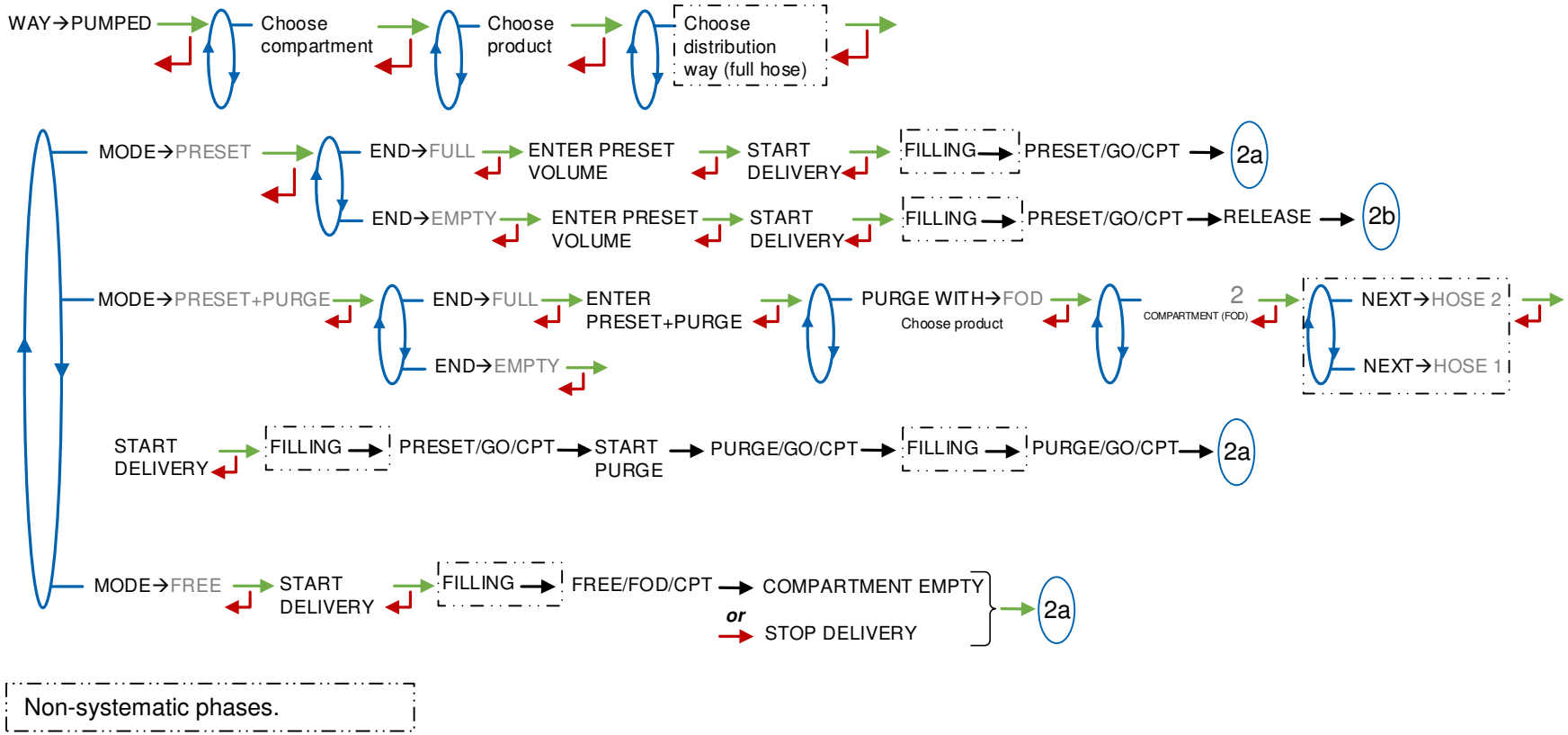
If the manifold is not empty at the beginning of a delivery, a draining is done to avoid any mixture of product. But if the product in the manifold is the same as those used for the current gravity delivery, draining is not required. The delivery starts with full manifold.

6.1 Menu DISCHARGING

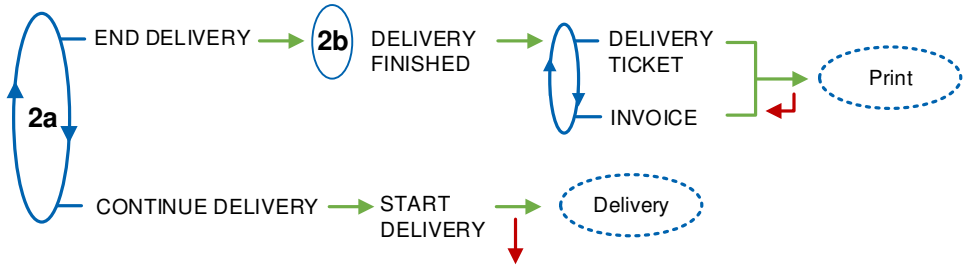
If the option loading plan is active, the name of the product in the compartment is displayed next to the compartment number: e.g.:C1/GO. Also, the remaining volume in the selected compartment: REMAINING VOLUME is displayed after the product is chosen.

6.1.1 Pumped delivery: one or several distribution ways

6.1.1.1 Delivery



6.1.1.2 Finish/Continue

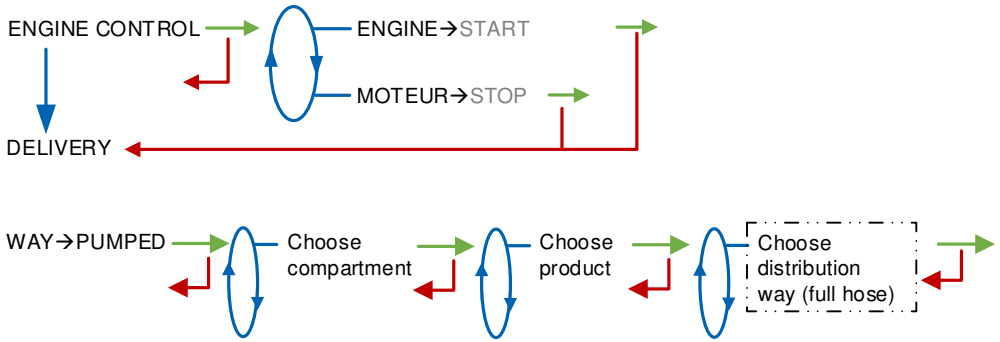


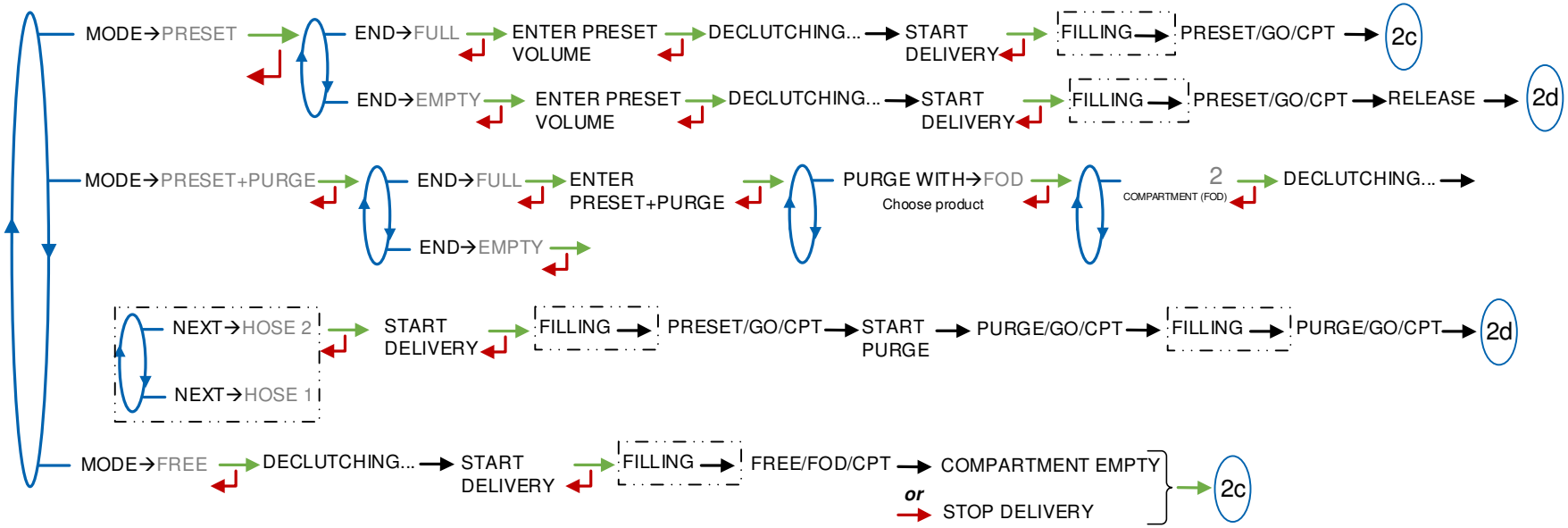
***You can change the criteria**: press the red pushbutton when START DELIVERY is displayed with the volume already discharged.*

6.1.2 Pumped delivery: one or several distribution ways + engine control

6.1.2.1 Delivery

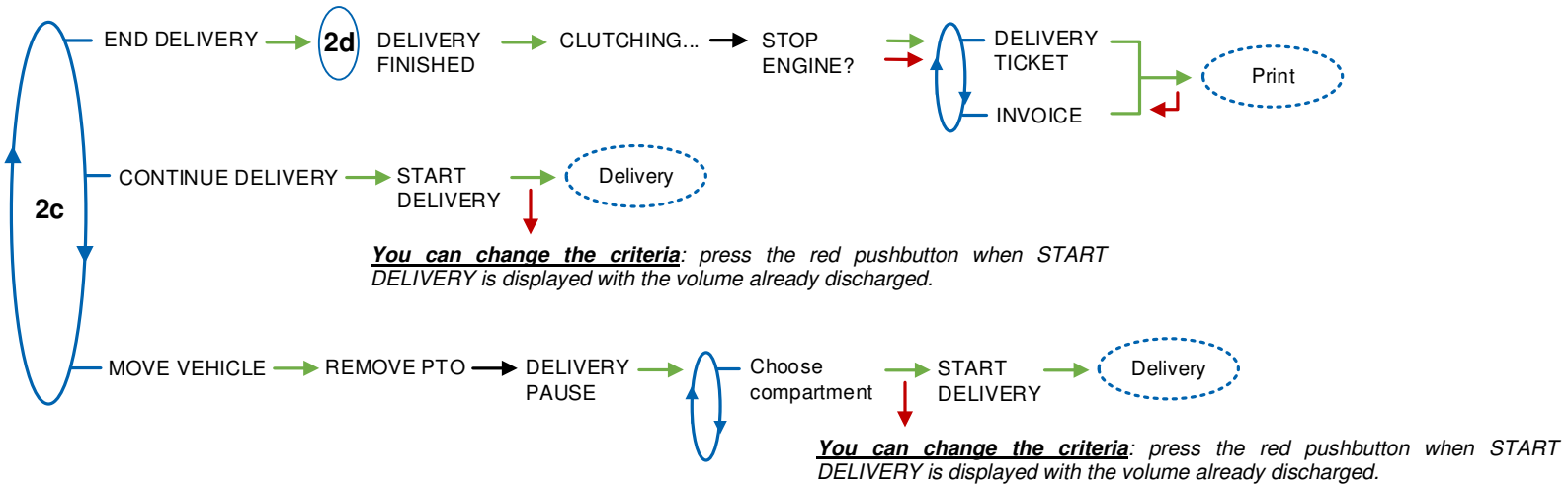
The commands for the pump clutching/declutching and for the power take-off control are realised by the GRAVITRONIQUE at the beginning and at the end of distribution.





Non-systematic phases.

6.1.2.2 Finish/Continue

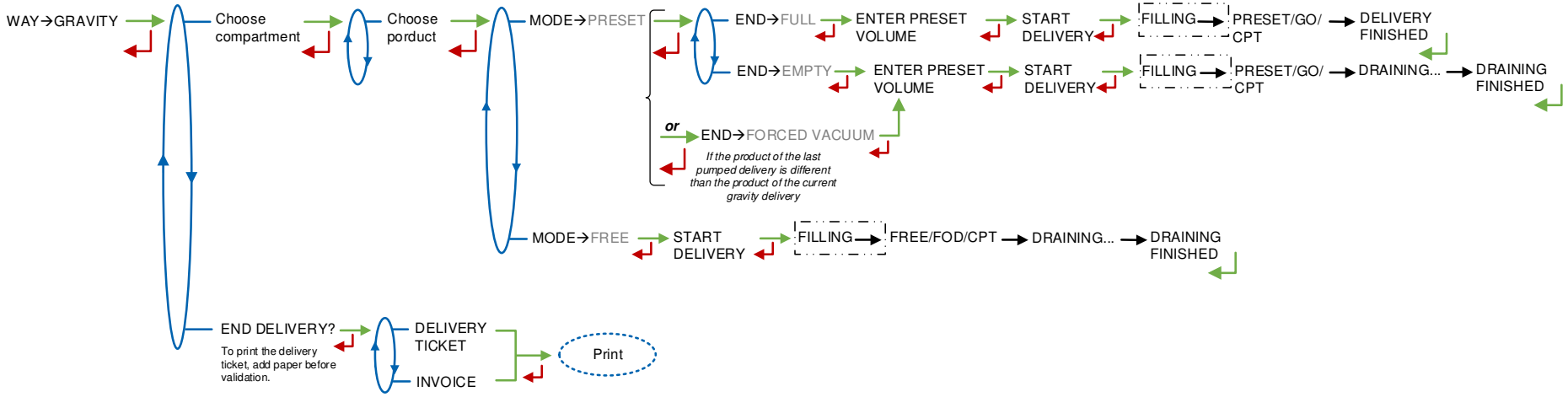


If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the MOVE VEHICLE item. The GRAVITRONIQUE switches off the power take-off, clutches the engine and freezes the MICROCOMPT+ indicator on DELIVERY PAUSE. Press the green OK BUTTON to continue distribution

6.1.3 Gravity delivery

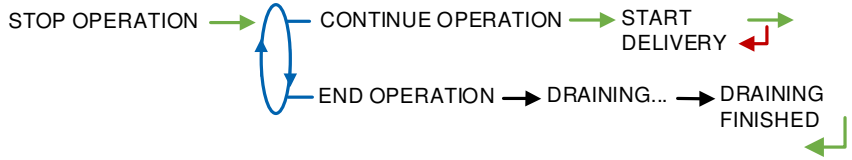
REMINDER: If the manifold is not empty at the beginning of a delivery, the GRAVITRONIQUE displays MANIFOLD NOT EMPTY and requires to drain the manifold to avoid any mixture of product. But if the product in the manifold is the same as those used for the current gravity delivery, draining is not required. The delivery starts with full manifold.

If the option loading plan is active, the name of the product in the compartment is displayed next to the compartment number: e.g.:C1/GO. Also, the remaining volume in the selected compartment: REMAINING VOLUME is displayed after the product is chosen.



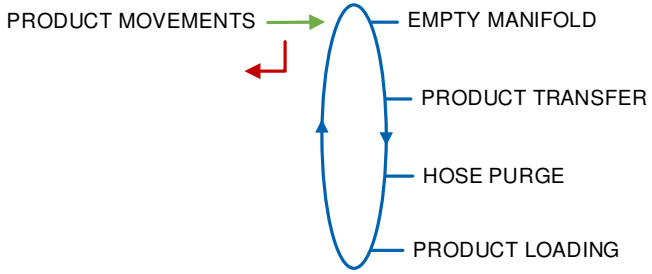
Non-systematic phases.

In case of an intentional interruption of delivery with the red STOP BUTTON, the following sequence is proposed:



6.1.4 Menu PRODUCT MOVEMENTS

Product movements PRODUCT TRANSFER and PRODUCT LOADING are performed in low flow rate. They are available when at least one product return with overfill probe is set in METROLOGICAL mode: CONFIGURATION>COMPARTIMENT OPTIONS>.



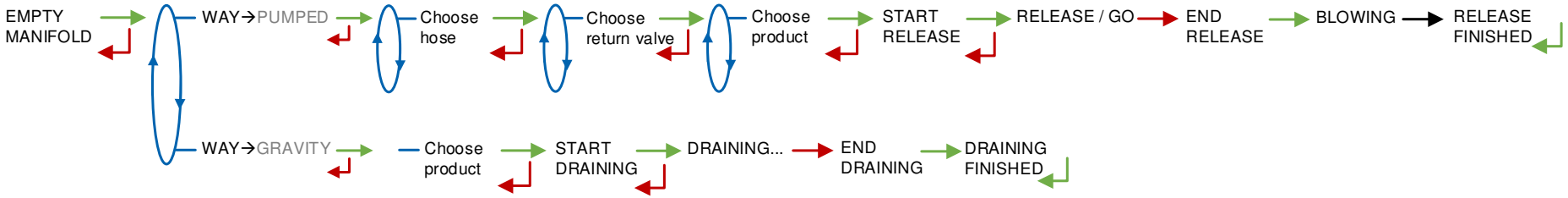
6.1.5 Sub-menu EMPTY MANIFOLD

This operation is possible if the collector is instrumented with piloted flaps and connected to the compartments roof (gazeous atmosphere).

This sequence is used to empty the manifold when switching from a pumped delivery to a gravity delivery, and back again, to prevent any mixture of product

WAY→PUMPED: This release procedure allows to empty the pipe between the end-of-metering probe and the vacuity sensor by using the pumped line.

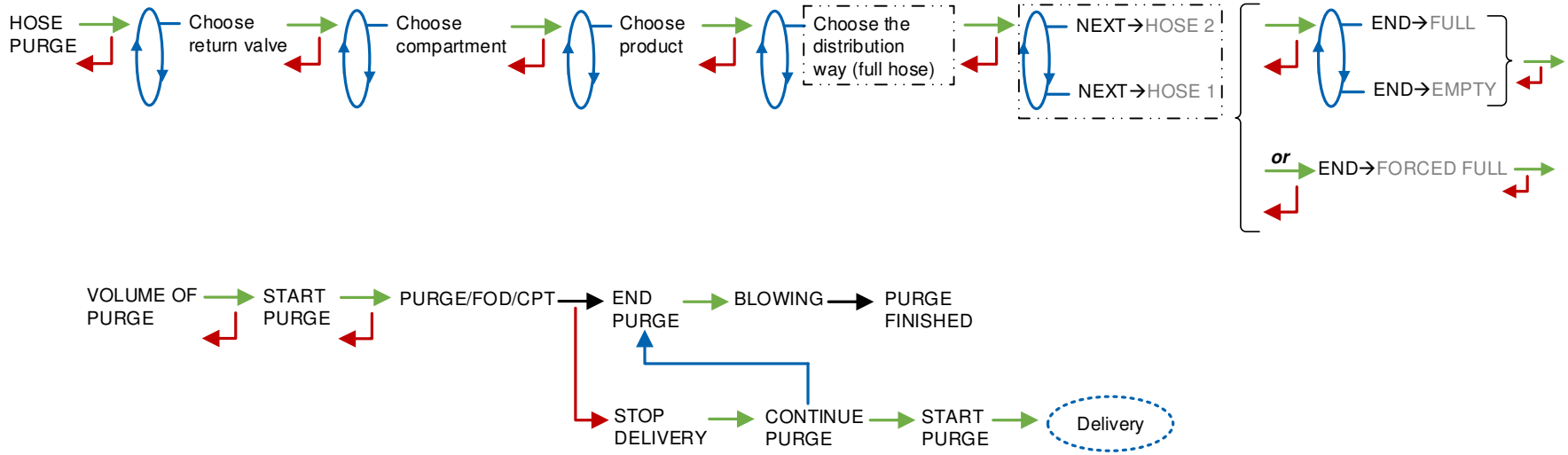
WAY→GRAVITY: This draining procedure allows to empty the pipe between the end-of-metering probe and the vacuity sensor by using the gravity line. When both gas detectors are wet, the added volume is calculated by summing up the manifold volume and the fixed volume. When the end-of-metering probe is dry and the vacuity sensor is wet, the added volume is the fixed volume. The draining is recorded in the summary '(D)RAINIG'.



6.1.6 Sub-menu HOSE PURGE

This menu allows purging the hose in order to change the quality of the product. It is available when at least one product return with overfill probe is set in METROLOGICAL mode.

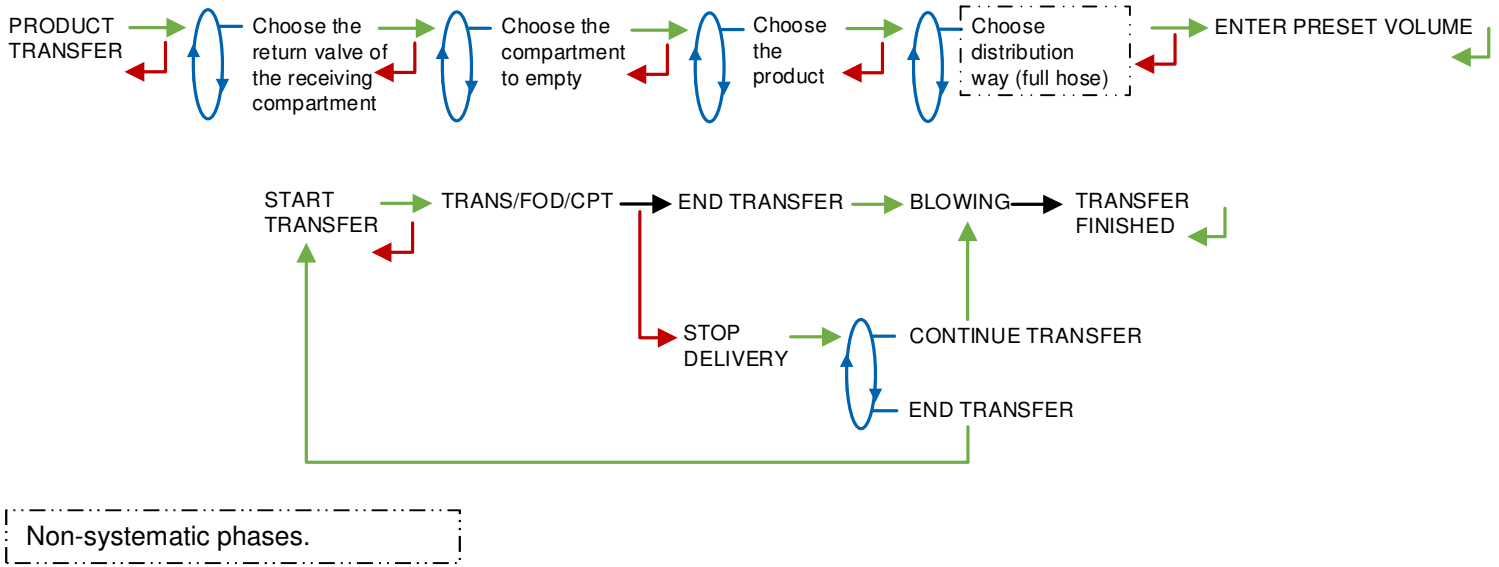
The volume of purge depends on the configuration SUPERVISOR>SETTINGS>VOLUME SETTINGS.



Non-systematic phases.

6.1.7 Sub-menu PRODUCT TRANSFER

This menu allows unloading the product from one compartment either to another compartment or to a compartment of another truck or to a loading terminal. It is available when at least one product return with overfill probe is set in METROLOGICAL mode. Product transfer is performed in low flow rate.



6.1.8 Sub-menu PRODUCT LOADING

This menu allows shifting product from one truck to another truck. It is available when at least one product return with overfill probe is set in METROLOGICAL mode

6.2 Menu LOADING PLAN

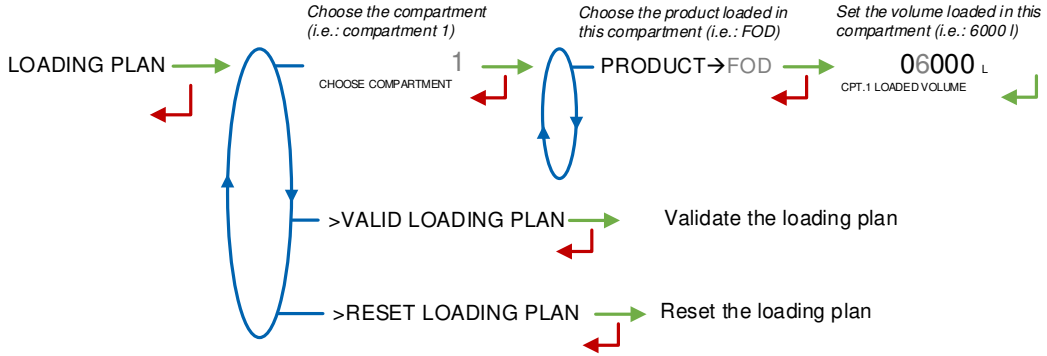
Depends on METROLOGICAL configuration. Not used if the function has not been activated.

The LOADING PLAN menu is used to determine the quality and the quantity of the products available in each compartment. The volumes per compartment will 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 won't 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.

COMPARTMENT SELECTION: For each compartment, select the product name and set the loaded volume.

>VALID LOADING PLAN: Record the loading plan.

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

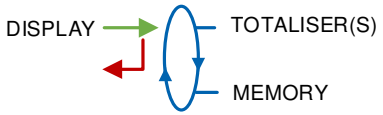


6.3 Menu PRINT

If the delivery ticket requires more than one page, the MICROCOMPT+ asks for a new sheet of paper.

6.4 Menu DISPLAY

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



6.4.1 Sub-menu TOTALISER(S)

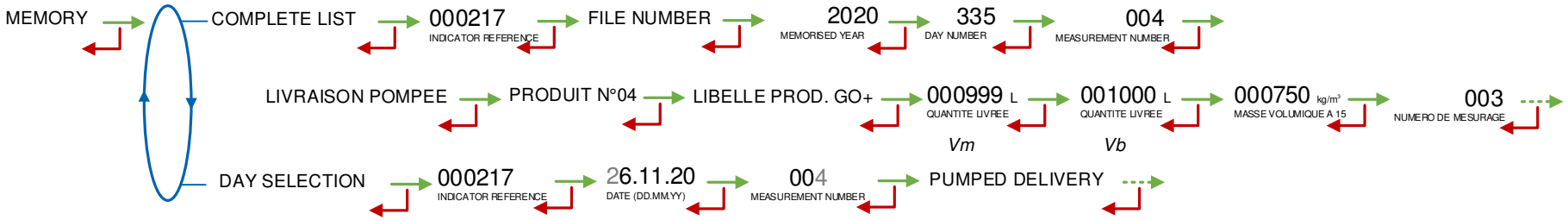
Display of totaliser Vm, and totaliser Vb if conversion is active.

6.4.2 Sub-menu MEMORISATION

You can read all the measurement results stored by the GRAVITRONIQUE. These results depend on the configuration. 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.

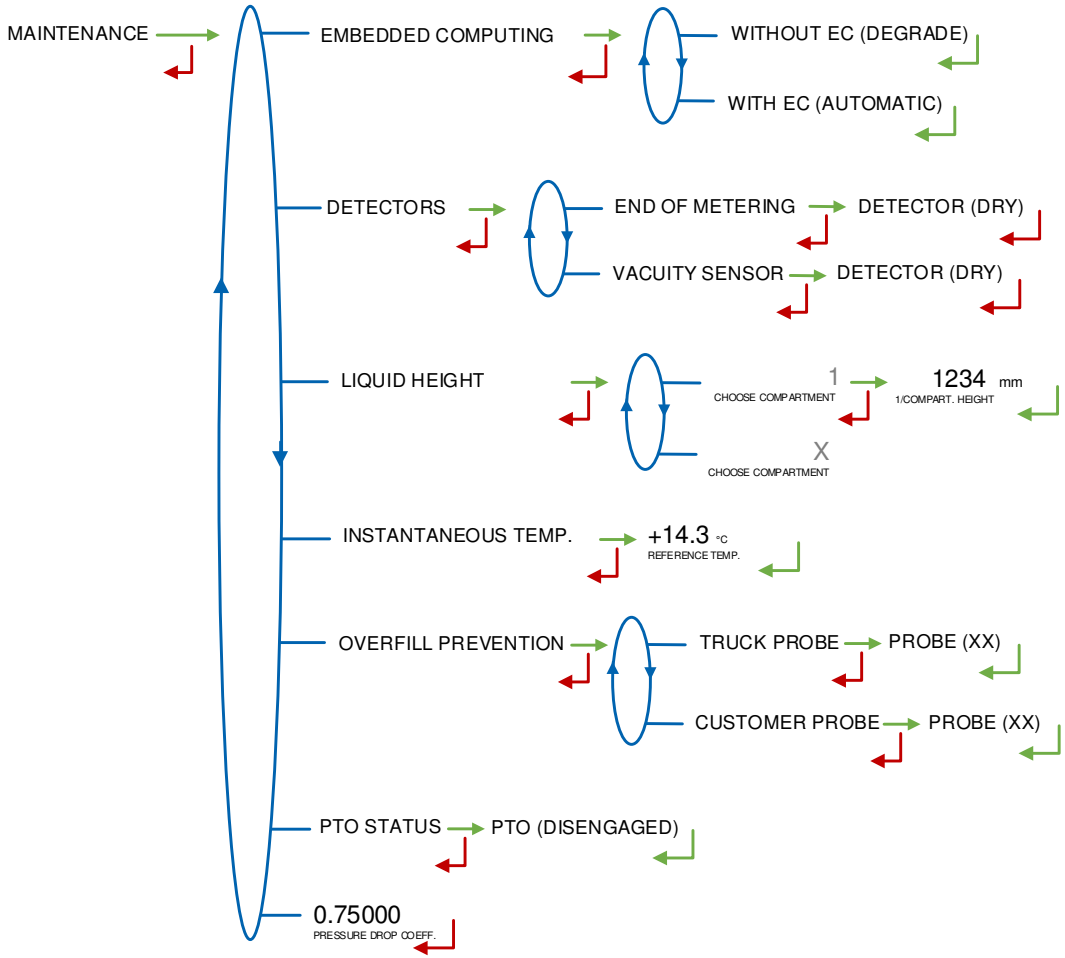
DAY SELECTION: Display a specific measurement by selecting the day number.



For each measurement, are displayed: the distribution mode (pumped or gravity), the product number and name, the delivered quantity Vm then Vb, the density.

6.5 Menu MAINTENANCE

This menu depends on the configuration of the measuring system



In case of failure of the embedded computing, choose 'WITHOUT EC'.
If option METROLOGICAL>EMBEDDED COMPUTING is set to ON.

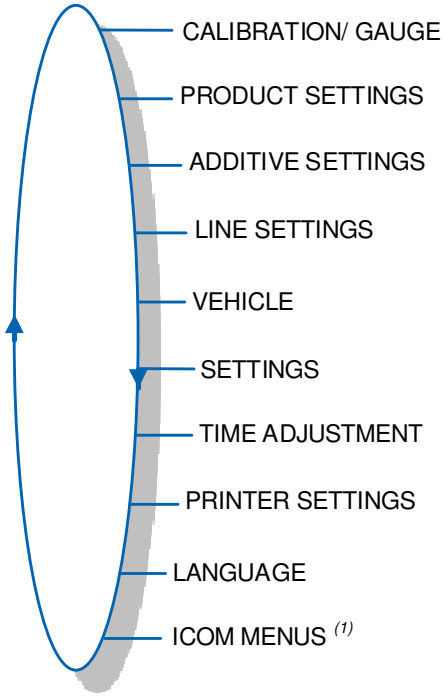
NOTE: Indication on the gas detector LED diodes

GREEN LED ON: gas detector powered on / RED LED ON: gas detector dry / RED LED OFF: gas detector wet

6.6 List of alarms

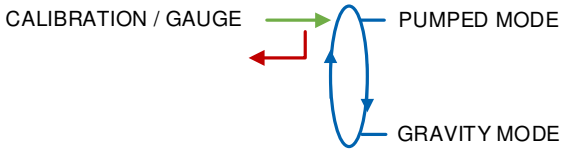
		DISPLAY	MEANING	ACTION
USER	COMMON	STOP DELIVERY	Intentional interruption of delivery	Continue, stop or finish the delivery
		PRINTER DEFAULT	Communication with the printer lost	Check the connection cable, on-off switch and fuse
			Jammed paper in the printer	Use the RELEASE button to eject the paper
		POWER SUPPLY PROBLEM	Power outage during delivery	Check the cause / Restore power supply
		ZERO FLOW DEFAULT	Zero flow	Check if the pulse transmitter is powered (red indicators)
		LOW FLOW DEFAULT	Low flowrate (less than 4m^3/h)	Check the hydraulic system (valve, strainer, nozzle…)
		HIGH FLOW DEFAULT	High flowrate (greater than maximum flowrate)	Check the parameters / Reduce flowrate
		DIARY DEFAULT	Reset of the events diary	Acknowledge the alarm, check the date in supervisor mode (magnet key)
	PUMPED	EMA METERING PROBLEM	Metering problem with the measuring device	Check if the pulse transmitter is powered (red indicators), if not check the wiring / Change the sensor if required
		OVERFILL DEFAULT	Overfilling during a product movement	Transfer product in another compartment
		PTO DEFAULT	Check the power take-off status in driver's cab	Vérifier l'état de la prise de mouvement en cabine
		PURGE NOT FINISHED	Purge of manifold (and/or hose) not finished	Finish the purge of the manifold (and/or hose)
		RUPTURE GD DEFAULT	Rupture detector failure	Use the maintenance mode to check the status of the detector
		GAS DETECTOR DEFAULT	End-of-counting detector failure	Use the maintenance mode to check the status of the detector
	GRAVITY	MANIFOLD NOT EMPTY	The manifold is not empty at the beginning of the operation	Follow the manifold release sequence
		FILLING DEFAULT	The manifold is not full of product	Fill the manifold
		FLAP LEAK DEFAULT	Product leakage from a flap	Check the flap
REPARER	COMMON	DISPLAY DEFAULT	Problem with display card	If steady alarm, substitution of the display card
		WATCHDOG DEFAULT	Fault with display or power card or AFSEC+ card	Switch on-off the MICROCOMPT+ / If steady alarm, substitution of the faulty card
		VOLUME CONVER DEFAUT	Problem during conversion of volume	Problem with temperature or density configuration / If steady alarm, substitution of the AFSEC+ electronic card
	PUMPED	TOTALISER 1 LOST	Loss of totalizer	Substitution of the backup battery
		TEMPERATURE 1 DEFAULT	Temperature determination failure	If steady alarm, see a reparator for trouble shooting
		PRESSURE DEFAULT	Pressure determination failure	If steady alarm, see a reparator for trouble shooting
	BLOCKING	MEMORY LOST (PILE)	Loss of saved memory	Substitution of the backup battery
		MEMORY LOST	Delivery diary lost	Enter and exit the METRO mode / If steady alarm, substitution of the backup battery
		EEPROM MEMORY LOST	Loss of metrological configuration	Substitution of the AFSEC+ electronic card
		MEMORY OVER LOADED	Delivery diary is full	Substitution of the AFSEC+ electronic card
		RAM DEFAULT	Saved memory fault	Substitution of the AFSEC+ electronic card
		PROM DEFAULT	Loss of software or resident integrity	Substitution of the AFSEC+ electronic card
		DATE AND TIME LOST	Loss of date and time	Set date and time in supervisor mode (magnetic key)
		COEFFICIENTS DEFAULT	Deviation between coefficient LF/HF greater than 0.5%	Modification of the low flow coefficient (K1)
		GAS DEFAULT	Detection of air during high flow delivery	If steady alarm, see a reparator for trouble shooting

7 SET THE GRAVITRONIQUE: SUPERVISOR MODE

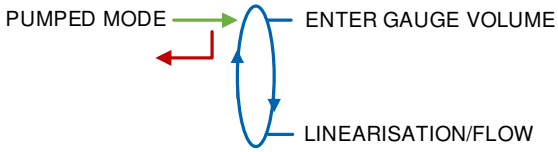


ICOM MENUS *(1)*: The sub-menus are different according to the level of access: Level1-Supervisor, Level2-Manager and Level3-Maintenance. See §7.10 and Annex.

7.1 Menu CALIBRATION/GAUGE



7.1.1 Sub-menu PUMPED MODE



7.1.1.1 Enter gauge volume

This menu allows you to check the accuracy of the measuring system by calculating the measuring device error, the new corrected coefficient and the average flow. It is possible then to linearize the curve on 2 measuring points.

First, fill the gauge (USER mode) in high or low flow with predetermination of the volume.

Switch to SUPERVISOR mode, choose CALIBRATION/GAUGE>PUMPED MODE>ENTER GAUGE VOLUME and validate.

Enter the volume read on the reference meter (tank prover or master meter) and validate. The MICROCOMPT+ displays the information that follows:

- The signed error in %
- The coefficient revised as a function of the error
- The average flow of the delivery.

7.1.1.2 Linearisation/Flow

This menu is used to make a flow-correction for two measuring points (at low and high flowrate). The MICROCOMPT+ stores flowrate and coefficient calibrated values in order to define both correction points: at low and high flowrate.

Linearisation is proposed only for the main product. **When you validate the menu LINEARISATION/FLOW, the calibrated values are displayed; you need to unseal the MICROCOMPT+ to switch in** METROLOGICAL mode and enter the values via the EMA>METER COEFFICIENT menu.

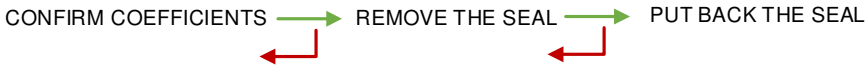
To linearize the curve, two tests are necessary:

- Fill the gauge in high flow [flowminx3]≤high flow<[flowmax], and enter the volume read on the gauge in the menu CALIBRATION/GAUGE>ENTER GAUGE VOLUME as described above
- Fill the gauge in low flow [flowmin]≤low flow≤flowminx2], enter the volume read on the gauge in the menu CALIBRATION/GAUGE>ENTER GAUGE VOLUME as described above
- Choose CALIBRATION/GAUGE>PUMPED MODE>LINEARISARION/FLOW and validate. It is then possible to see the coefficients and the flow rates data for the two tests carried out.

If the procedure failed, the MICROCOMPT+ can display the information that follows:

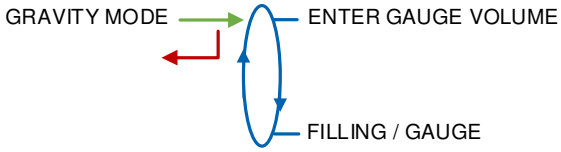
- LARGE GAP K1/K2: correction between both measuring points >0.5%
- FLOWS TOO CLOSE: High flowrate value is out of range. It needs to be: [flowminx3]≤high flow<[flowmax].
- LO-FLOW OUT OF RANGE: Low flowrate value is out of range. It needs to be: [flowmin]≤low flow≤[flowminx2]
- ONLY ONE GAUGE: One of the tests has not been done (at low or high flowrate).
- NO VALID GAUGE: Both tests have not been done (at low and high flowrate).

When the procedure is completed, the MICROCOMPT+ displays the sequence that follows:



The new coefficient and flow rates values are taken into account.

7.1.2 Sub-menu GRAVITY MODE



7.1.2.1 Enter gauge volume

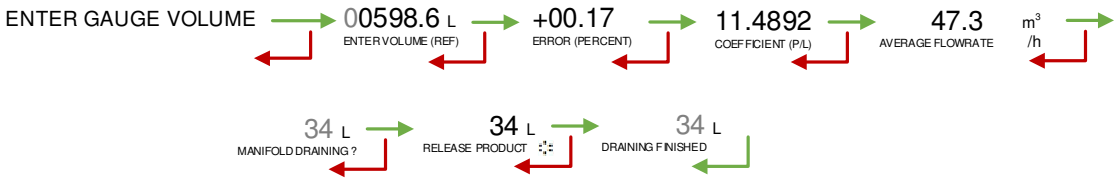
This menu allows you to check the accuracy of the measuring system by calculating the measuring device error, the new corrected coefficient and the average flow.

First, fill the gauge (USER mode) in high or low flow with predetermination of the volume.

Switch to SUPERVISOR mode, choose CALIBRATION/GAUGE>GRAVITY MODE>ENTER GAUGE VOLUME and validate.

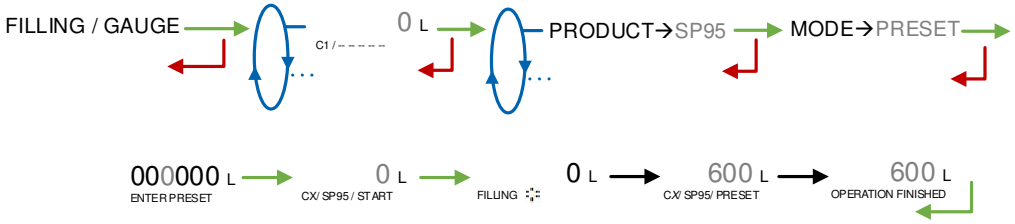
Enter the reference volume (read on the gauge and corrected), then validate. The MICROCOMPT+ displays the information that follows:

- The signed error in %
- The coefficient revised as a function of the error
- The average flow of the delivery.

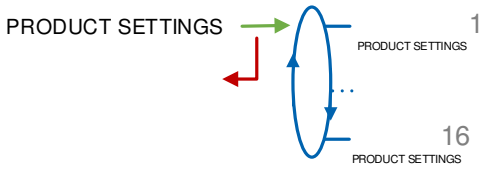


7.1.2.2 Gauge filling

This menu is used for filling the gauge with keeping the manifold full of product. Use it the same way as the USER mode; but at the end of the operation, the manifold is not drained.



7.2 Menu PRODUCT SETTINGS



You can configure the parameters that follow for a maximum of 16 products:

NAME: Record or enter the name of the product. Default names of the first six products: FOD, FOD+, GO, GO+, GNR, GNR+

PROD TYPE: Select the product quality:

- **COLORATION**: Product with coloration or not
- **ADDITIVE**: Product with additive or not
- **10 PPM**:

UNIT PRICE: Select if the price includes taxes or not.

PRICE IN (EUROS): Select the unit

UNIT PRICE/DEFAULT: Record the default value of the price

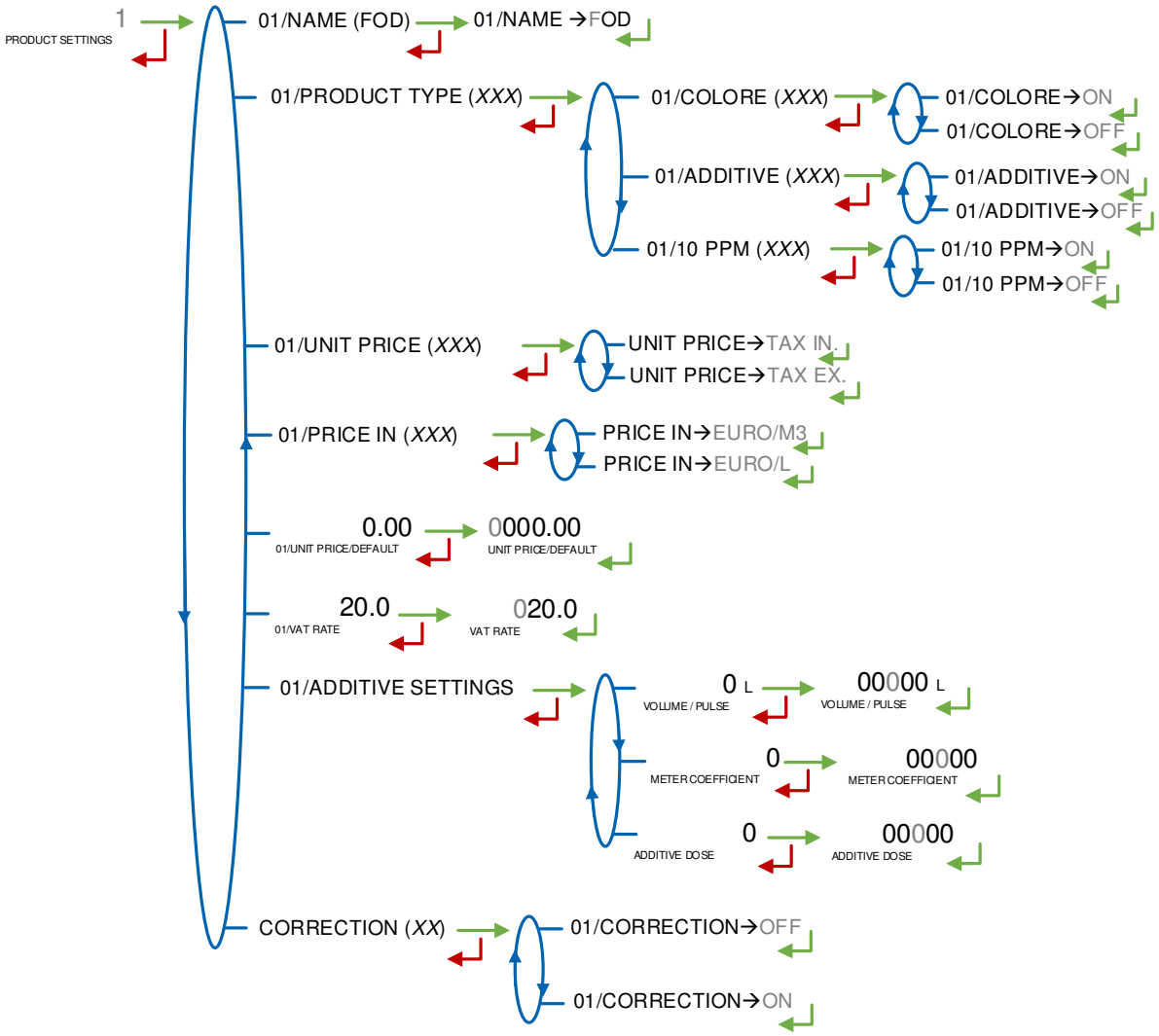
VAT RATE: Tax rate (in %)

ADDITIVE SETTINGS: If the GRAVITRONIQUE controls an additive injection device, you must configure the parameters that follow:

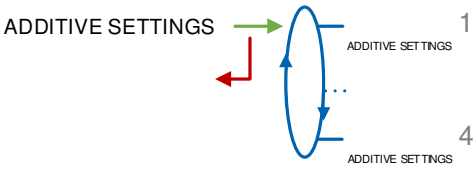
- **VOLUME/PULSE**: Volume of primary product. For example “00200”: the GRAVITRONIQUE puts a dose of additive every 200 liters of primary product (minimum value: 10L).
- **METER COEFFICIENT**: Coefficient of the additive injection device.
- **ADDITIVE DOSE**: Volume of the additive dose in liter.

CORRECTION: Select if the correction is “ON” or “OFF” for the product (see METROLOGICAL>EMA (PUMP/GRAV)>CORRECTION).

Example for product 1 (FOD):



7.3 Menu ADDITIVE SETTINGS



You can configure up to 4 additives:

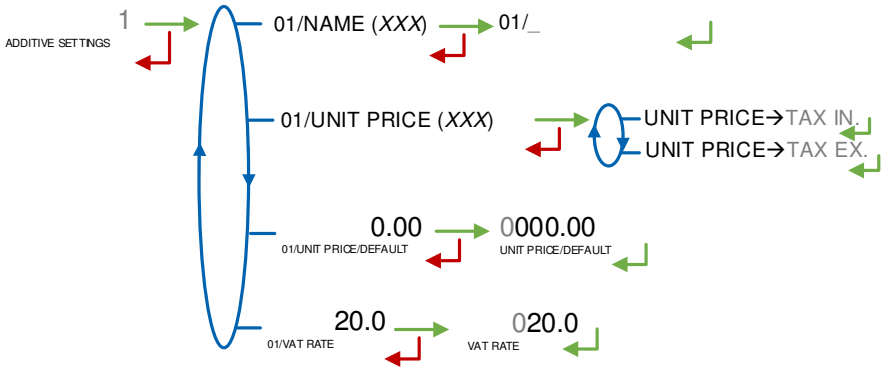
NAME: Name of the additive

UNIT PRICE: Select if the price includes taxes or not.

UNIT PRICE/DEFAULT: Record the default value of the price

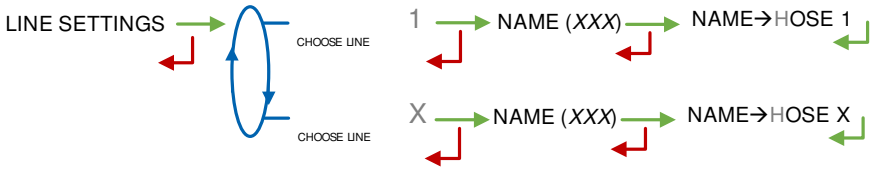
VAT RATE: Tax rate (in %)

Example for additive 1:



7.4 Menu LINE SETTINGS

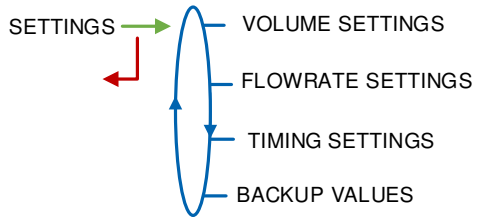
Definition of the distribution lines: acknowledge or enter the line name. The number of lines depends on the hydraulic configuration of the installation, there are as many line as there are pumped distribution ways set in METROLOGICAL mode, menu HYDRAULIC→DISTRIBUTION WAY. X=1 to 3.



7.5 Menu VEHICLE

Set the vehicle registration number on which the GRAVITRONIQUE is installed. This number is printed on delivery tickets…

7.6 Menu SETTINGS



7.6.1 Sub-menu VOLUME SETTINGS

You can set the volume parameters that follow:

END LOW FLOW VOLUME: Volume (in liters) delivered in low flowrate to finish the delivery

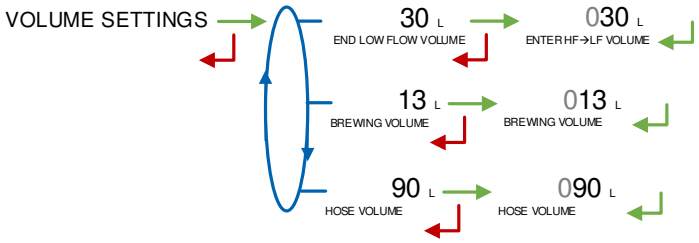
The volumes of purge depend on the truck hydraulic configuration (manifold, hose...), they are set at commissioning. If the volume is at 0, the manifold is not drained, the flap is directly opened.

BREWING VOLUME: Brewing volume V_B. It corresponds to the quantity of product in the piping for which the quality is indefinite due to the mixture of products.

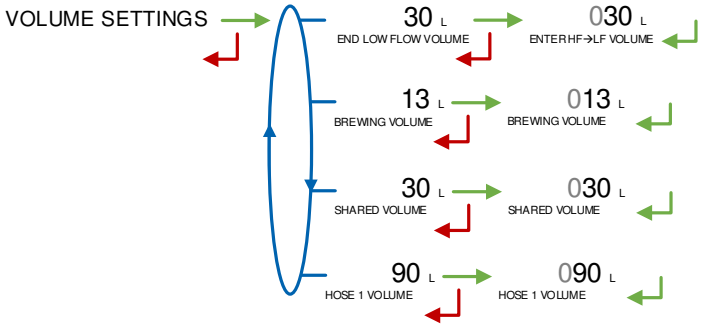
SHARED VOLUME: When several hoses are set V_C. Quantity of product contained in the part of the piping located between the manifold and the hose attachment point. The common volume includes the brewing volume. $V_C \geq 1.5 \times V_B$

HOSE VOLUME: V_F. Quantity of product contained between the manifold and the outlet of the full hose. The hose volume includes the common volume. $V_F = V_C + V_{full\ hose}$

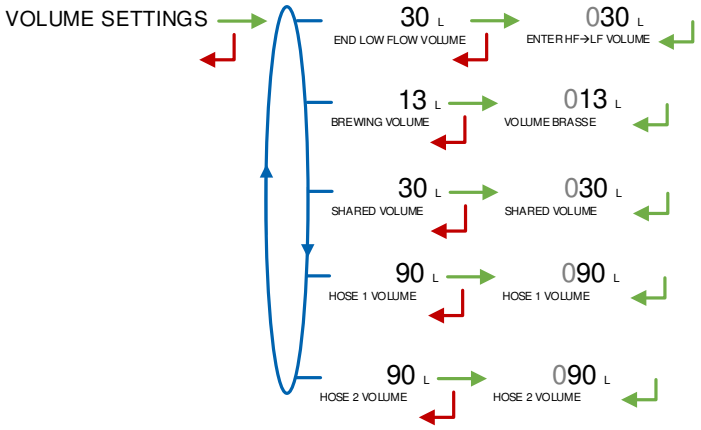
7.6.1.1 One distribution way full hose



7.6.1.2 Two delivery ways one full hose and one empty hose



7.6.1.3 Two full hose distribution ways or three distribution way



7.6.2 Sub-menu FLOWRATES SETTINGS

You can set the flowrate parameters that follow:

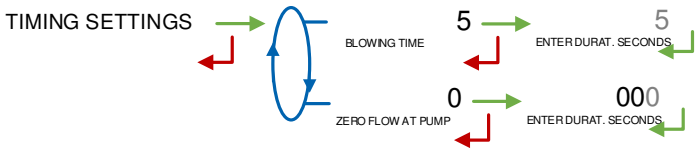
LF--HF FLOWRATE: Set the flowrate beyond which the GRAVITRONIQUE (running in low flowrate) controls the high flowrate.

7.6.3 Sub-menu TIMING SETTINGS

You can set the timing parameters that follow:

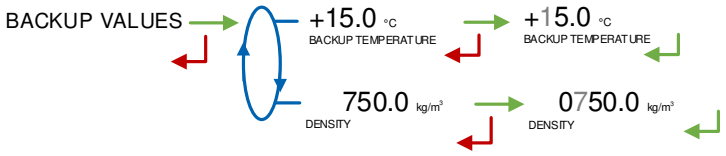
BLOWING TIME: Blowing time (in seconds).

ZERO FLOW AT PUMP: Timeout beyond which the MICROCOMPT+ reports a default in order to prevent the pump from running idle (at the beginning of a delivery when the flow is still null). This prevents the pump to run idle. When it is set to 0, the option is not managed. Recorded on the parameters printing as: Flow timing.



7.6.4 Sub-menu BACKUP VALUE

This menu allows setting the backup values for temperature and density. This menu is available when the conversion is ON in METROLOGICAL mode: CONFIGURATION>CONVERSION→ON.



7.7 Menu TIME ADJUSTMENT

Date and time are set in METROLOGICAL mode. You can adjust time (±2h) one time a day. Use French format, for example: 14.41 means 2.41 pm.

7.8 Menu PRINTER SETTINGS

This menu is used toc configure the printing of the different documents (delivery tickets, invoices, cheques, and summary).

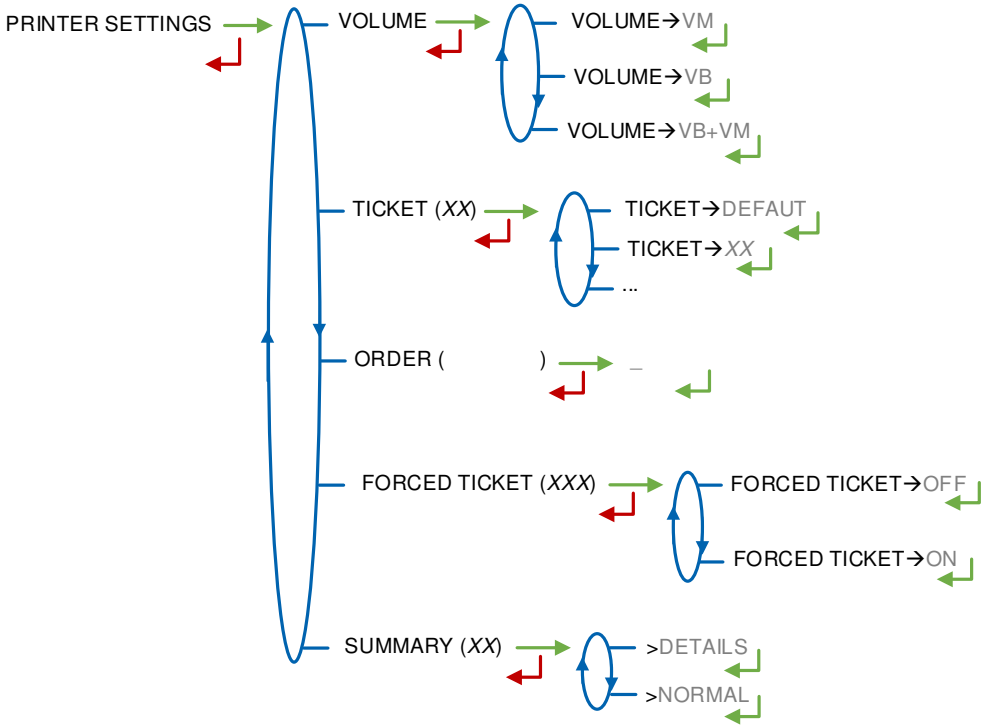
VOLUMES: Choose the type of volume for printing the ticket of gravity delivery. VM, VB or VB+VM.

TICKET: Choose the ticket format for printing the ticket of a pumped delivery.

ORDER: If you record this field, you can print the invoice and the payment at the end of the measuring operation. Set the order for payment with a maximum of 20 characters. You can print the delivery ticket later with the menu: DRIVER>PRINT>DELIVERY TICKET.

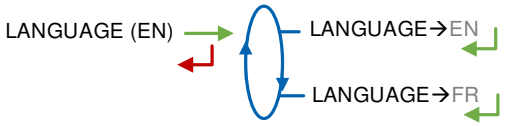
FORCED TICKET: At the end of delivery the printing of the delivery ticket or invoice printing is proposed. It is possible to force the printing by choosing FORCED TICKET→ON.

SUMMARY: Choose to make appear or not details of the deliveries when printing the summary.



7.9 Menu LANGUAGE

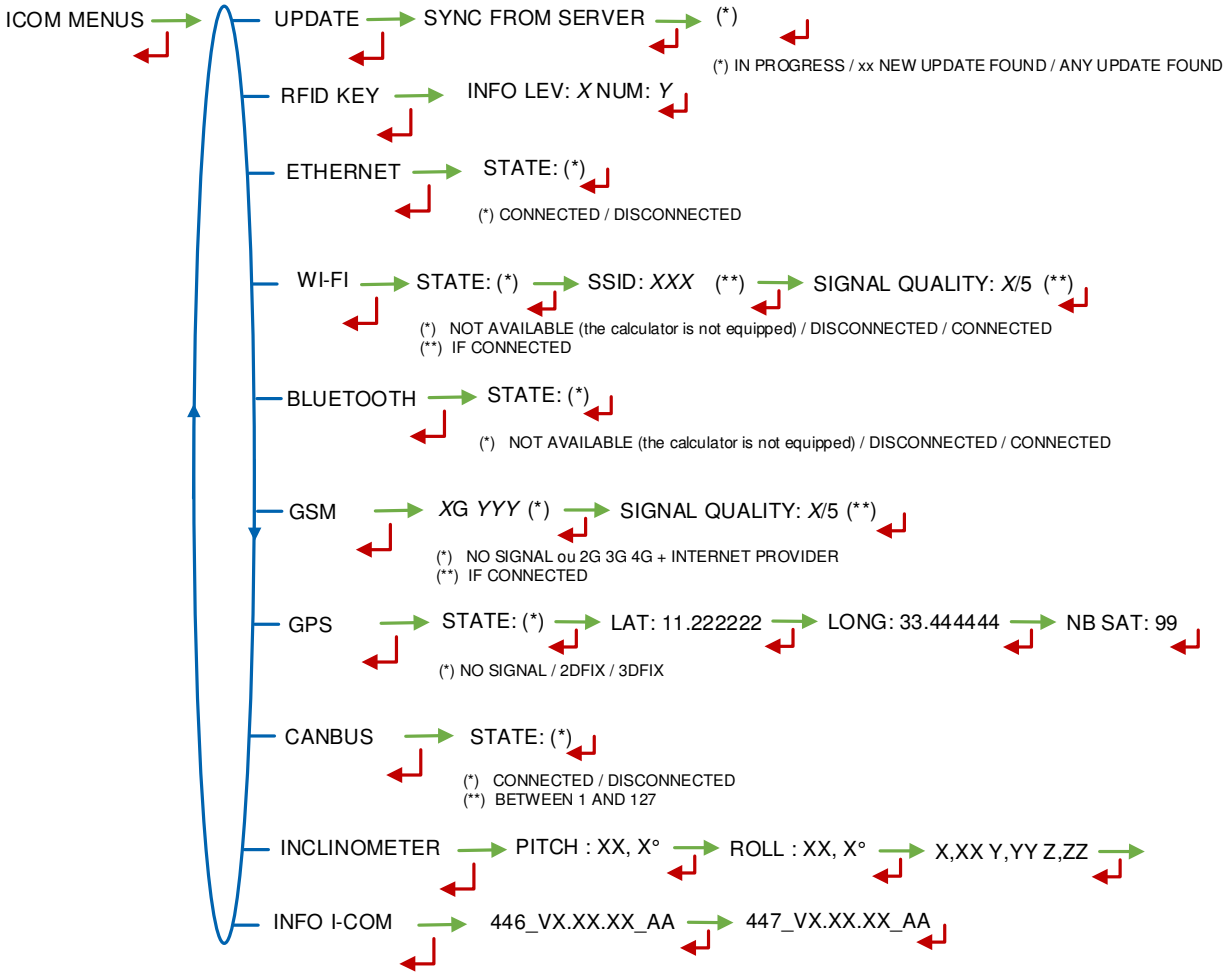
Select the display language. This menu is available if a translation catalogue is uploaded in the MICROCOMPT+.



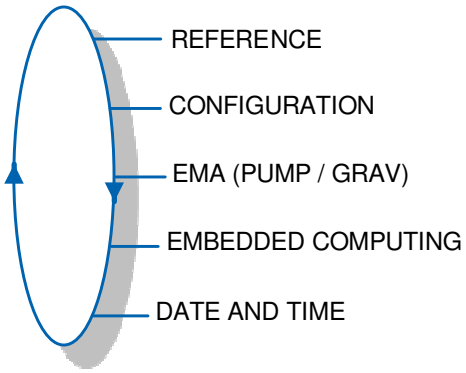
7.10 Menu ICOM MENUS

The sub-menus are different according to the level of access: The ANNEX 1 shows all the sub-menus available.

Put the RFID blue key Level1-User to display the available parameters as shown below:

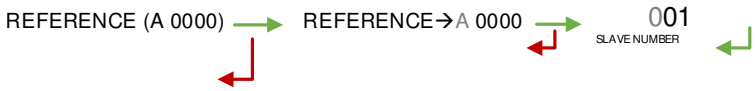


8 CONFIGURE THE GRAVITRONIQUE: METROLOGICAL MODE

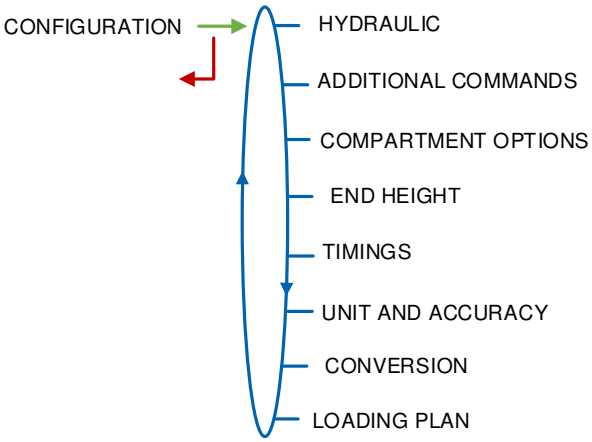


8.1 Menu REFERENCE

Record the MICROCOMPT+ serial number and then the slave number. That is useful for commissioning and maintenance operations with the µConfig tool.



8.2 Menu CONFIGURATION



8.2.1 Sub-menu HYDRAULIC

This menu is used to set the hydraulic configuration of the installation depending on the number and the type of distribution ways.

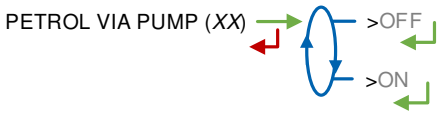
8.2.1.1 Pumped delivery only

Number of distribution ways for a pumped delivery: from 1 to 3

DISTRIBUTION WAY:

- **FULL HOSE**: Full hose with authorization valve operation
- **2 HOSES**: Operation with two hoses. Operation with 2 hoses. The second one may be full hose or empty hose
- **3 HOSES**: Operation with three hoses. Hoses 1 and 2 are full hoses, and hose 3 is an empty hose. This menu is only available if no gravity valve is defined in the menu EMA (PUMP/GRAV)>VALVES>GRAVITY MODE→NONE. In that case the number of compartments must be less than 5

PETROL VIA PUMP: This menu is used to allow pumped delivery for petrol. This configuration requires to pay attention to the kind of pump used for the delivery. By default this feature is inactive.

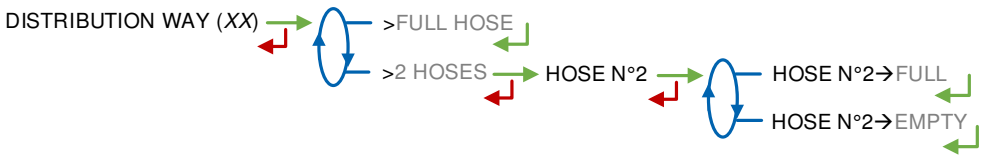


8.2.1.2 Pumped and gravity delivery

Number of distribution ways for a pumped delivery: from 1 or 2

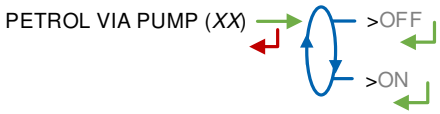
Number of distribution ways for a gravity delivery: 1

DISTRIBUTION WAY:



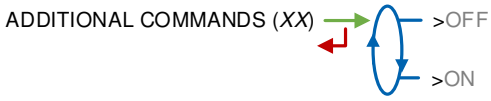
- **FULL HOSE**: Full hose with authorization valve operation
- **2 HOSES**: Operation with two hoses. The second one may be full hose or empty hose

PETROL VIA PUMP: This menu is used to allow pumped delivery for petrol. This configuration requires to pay attention to the kind of pump used for the delivery. By default this feature is inactive.



8.2.2 Sub-menu ADDITIONAL COMMANDS

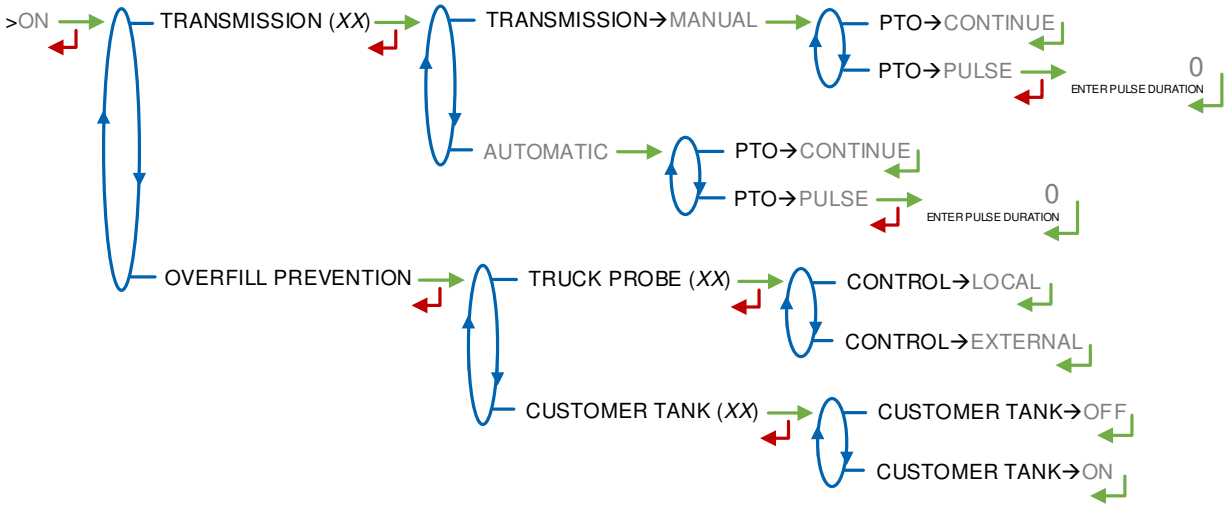
Operation with or without a remote control.



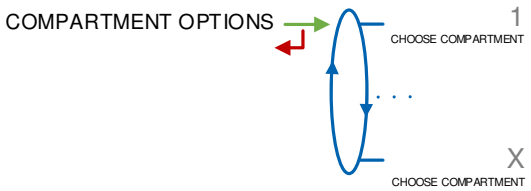
If additional commands is active, this menu allows to choose the transmission type. It is used to take into account the engine start and stop, clutching and power take off.

TRANSMISSION: Choose the type of transmission (automatic or manual) and the type of command: non-stop command or by pulse

OVERFILL PREVENTION: Control of the overfill protection of the truck and of the customer tank.



8.2.3 Sub-menu COMPARTMENT OPTIONS



This menu is used to set the configuration of the compartments. The maximum number of compartments is 5 or 6.

The sixth compartment is available when a single distribution way is set CONFIGURATION>HYDRAULIC>DISTRIBUTION WAY→FULL HOSE. If the compartment No6 is used, it must be defined with flap control OR with product return to manage a special recovery tank.

FLAP: Operation with or without flap control

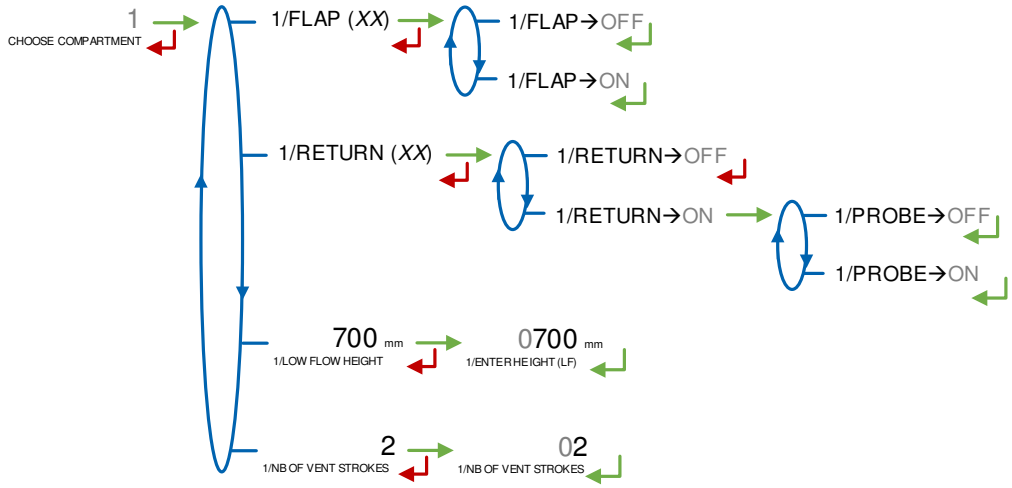
RETURN: Operation with or without product return

- **PROBE**: Overfill protection probe of the compartment

LOW FLOW HEIGHT: Geometric height to command low flow (mm)

NB OF VENT STROKES: Number of vent orders after a filling phase in order to evacuate the air from the piping before delivery. The number of vent orders is directly related to the quantity of air

Example for compartment 1:



8.2.4 Sub-menu END HEIGHT (EMPTY)

Enter the height of liquid from which the compartment is considered as empty (mm).

8.2.5 Sub-menu TIMINGS

This menu allows setting the duration parameters:

PUMP BYPASS:

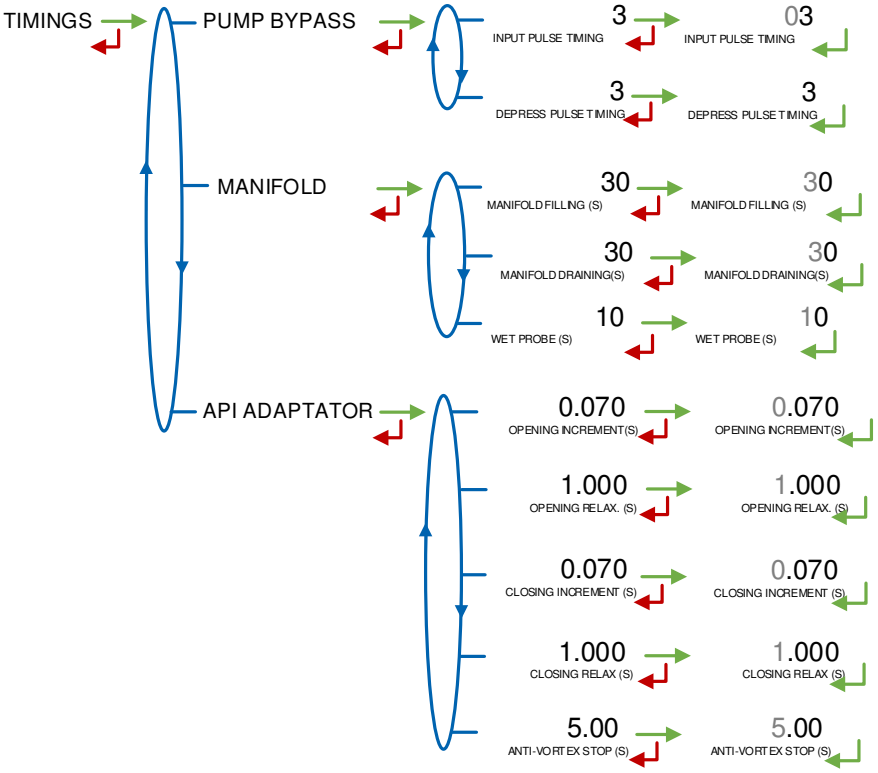
- **INPUT PULSE TIMING**: Set the increment of air admission to bypass. Integer number of 32ms, ranging between 1 and 9.
- **DEPRESS PULSE TIMING**: Set the increment of air exhaust to bypass. Integer number of 32ms, ranging between 1 and 9.

MANIFOLD:

- **MANIFOLD FILLING(S)**: Duration of the manifold filling (in seconds). Minimum value: 20 second. Maximum value: 59 seconds. Default value: 30 seconds
- **MANIFOLD DRAINING**: Duration of the manifold draining (in seconds) to ensure a good emptiness of the manifold before introducing a new product. Minimum value: 20 second. Maximum value: 59 seconds. Default value: 30 seconds
- **WET PROBE (S)**: Maximum duration before the end-of-metering sensor becomes wet (in seconds). Minimum value: 20 seconds. Maximum value: 99 seconds. Default value: 20 seconds

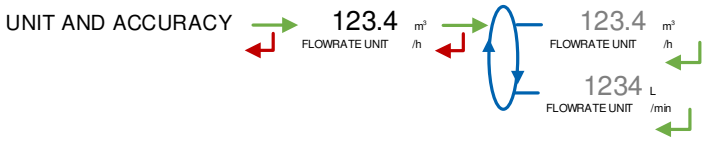
API ADAPTER:

- **OPENING INCREMENT(S)**: Duration of the command increment of the API adapter opening valve (in seconds). Minimum value: 0.03 second. Maximum value: 3.999 seconds. Default value: 0.070 second (70 milliseconds).
- **OPENING RELAX (S)**: Relaxation duration between two API adapter opening command increments (in seconds). Maximum value: 3.999 seconds. Default value: 1 second
- **CLOSING INCREMENT(S)**: Duration of the command increment of the API adapter closing valve (in seconds). Maximum value: 3.999 seconds. Default value: 0.070 second (70 milliseconds).
- **CLOSING RELAX(S)**: Duration of the command increment of the API adapter closing valve (in seconds). Maximum value: 3.999 seconds. Default value: 1 second
- **ANTI-VORTEX STOP(S)**: Duration of the API adapter closing after an anti-vortex breakdown. Default value: 5 seconds



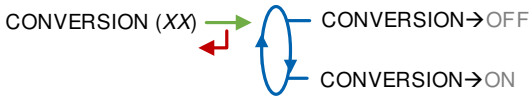
8.2.6 Sub-menu UNIT AND ACCURACY

Choose the unit of the flow rate that will be displayed and printed.



8.2.7 Sub-menu CONVERSION

The GRAVITRONIQUE can operate with conversion or without conversion.



When conversion is active, the following parameters must be set:

MAIN DISPLAY: Select the type for displayed quantity

- **VM**: volume in metering conditions
- **VB**: volume converted to the reference temperature

REFERENCE TEMP.: Reference temperature for conversion. Default value: 15°C for the most common conversion.

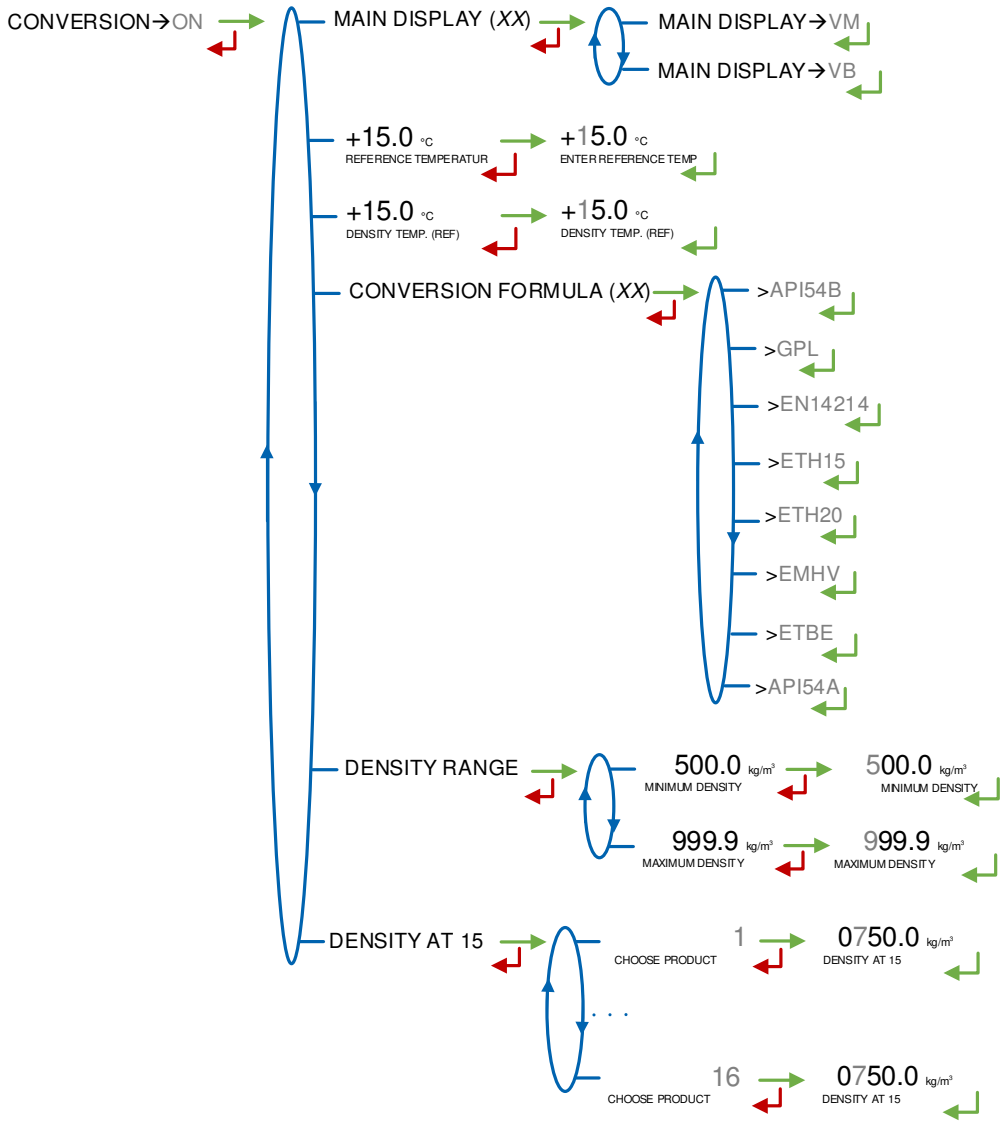
DENSITY REF TEMP: Record the reference temperature for set up densities. Default value: 15°C for density at 15°C (MV15).

CONVERSION FORMULA: The choice of the conversion formula causes an implicit definition of valid density and temperature ranges to guarantee the conversion result. See the table below to select the conversion table that corresponds to type of fuel used:

Product	Conversion formula
Crude products	API54A
Refined products	API54B
LPG and bitumen	LPG
Blended biofuels	EN14214
Ethanol at 15°C	ETH15
Ethanol at 20°C	ETH20
Fatty acid methyl esters	FAME
Ethyl tert-butyl ether	ETBE

DENSITY RANGE: Enter the density minimum and maximum values in Kg/m^3

DENSITY AT 15: For each product, record the product density at 15°C in Kg/m^3.

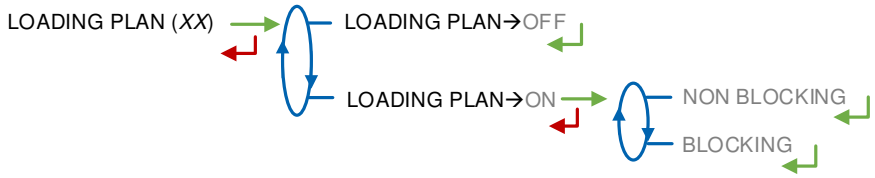


8.2.8 Sub-menu LOADING PLAN

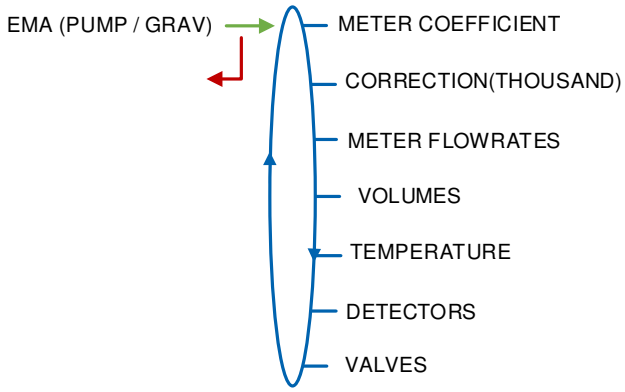
The CMA TRONIQUE can operate with loading plan or without loading plan.

LOADING PLAN→ON: When the function is active, a specific menu allows the user to determine the product quality and quantity for each compartment.

- **BLOCKING:** When a compartment is empty, it won't be available for a delivery until the user enters a new product quality via the menu LOADING PLAN of the USER mode.



8.3 Menu measuring system EMA (PUMP/GRAV)



8.3.1 Sub-menu METER COEFFICIENT

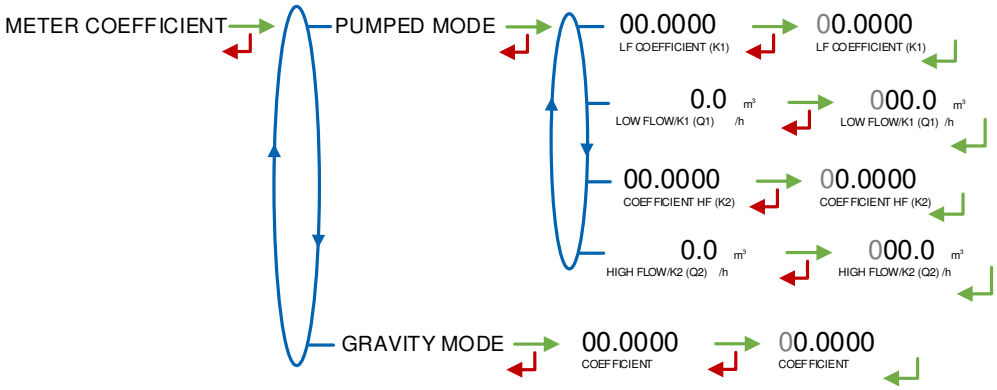
Enter the coefficient of the measuring system meter (pulses/liter).

PUMPED MODE: For pumped distribution mode, set the four items that follows

- **LF COEFFICIENT (K1)**: Coefficient for low flow (pulses/liter)
- **LOW FLOW/K1 (Q1)**: Low flow reference (m^3/h)
- **HF COEFFICIENT (K2)**: Coefficient for high flow (pulses/liter)
- **HIGH FLOW/K2 (Q2)**: High flow reference (m^3/h)

PUMPED MODE: For gravity distribution mode, set the following item:

- **COEFFICIENT**: Coefficient of the measuring system meter (pulses/liter)



8.3.2 Sub-menu CORRECTION/ THOUSAND

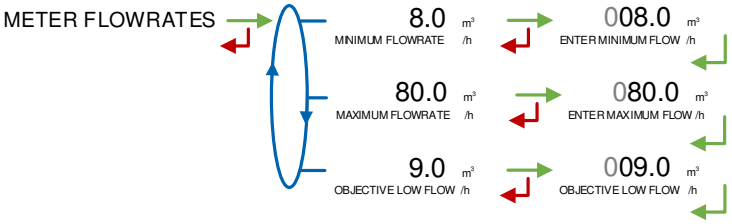
Set the correction factor per thousand (‰) of the measuring system for a measurement with low viscosity products. See the marking of the turbine meter or see the ALMA calibration certificate. See the verification manual MV5007 for further information.

8.3.3 Sub-menu METER FLOWRATES

MINIMUM FLOWRATE: Set the metrological minimum flowrate of the measuring system in m3/h or l/min, depending on the configured flow unit

MAXIMUM FLOWRATE: Metrological maximum flowrate of the measuring system in m^3/h or l/min, depending on the configured flow unit.

OBJECTIVE LOW FLOW: Objective flowrate in m^3/h or l/min, depending on the configured flow unit. In low flow phases, a regulation will be done around this value with a tolerance of ±3m^3/h. This value increased by 3 must be less than the maximum flowrate.

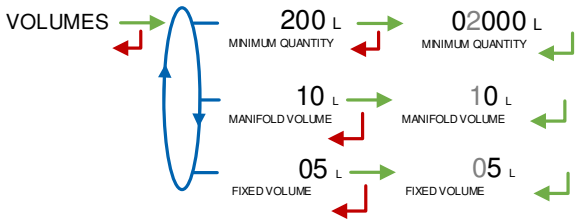


8.3.4 Sub-menu VOLUMES

MINIMUM QUANTITY: Set, in liters, the minimum measured quantity of the GRAVITRONIQUE to guaranty the measurement (authorized volume).

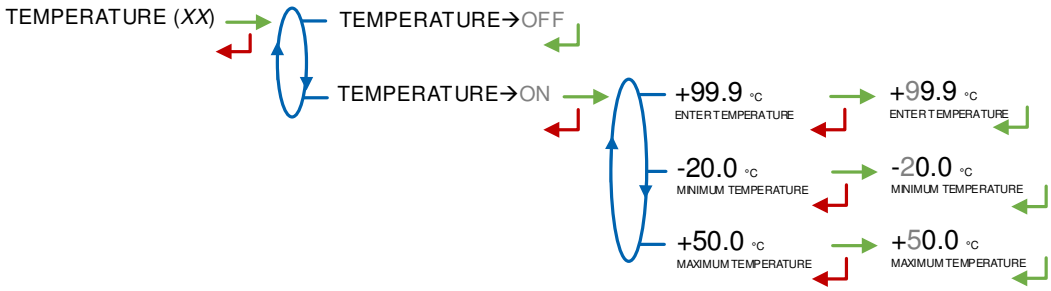
MANIFOLD VOLUME: Fixed volume of product required to completely rinse the horizontal part of the manifold (depends on the compartments number). If this volume is set to zero, there's no manifold drain, the flap is directly opened. Maximum value: 29 liters

FIXED VOLUME: Fixed volume included between the end-of-metering probe and the vacuity sensor, in liters.



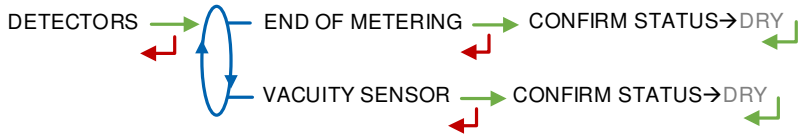
8.3.5 Sub-menu TEMPERATURE

This menu is an option. It is used to calibrate the temperature into the MICROCOMPT+. See maintenance sheet FM 8510 for temperature calibration.



8.3.6 Sub-menu DETECTORS

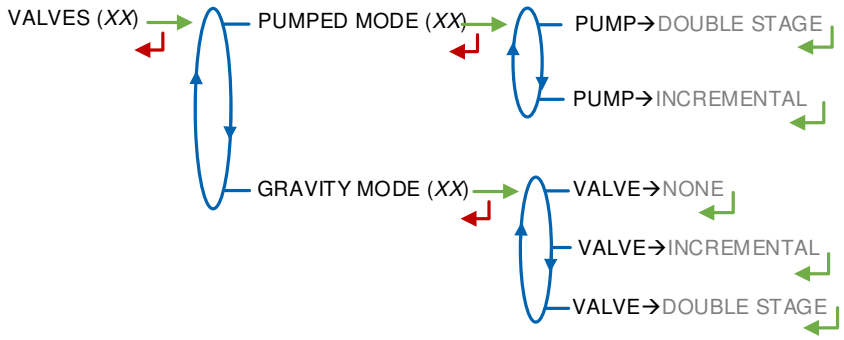
This menu allows to validate the status of the gas detectors used as end-of-metering probe and vacuity sensor.



8.3.7 Sub-menu VALVES

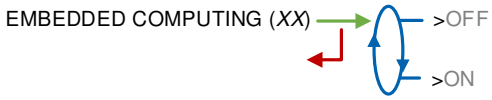
PUMPED MODE: The type of the valve used for pumped deliveries is defined here.

GRAVITY MODE: The type of the valve used for gravity deliveries is defined here. To have a gravity distribution way, you must set a maximum of 2 hoses for pumped distribution CONFIGURATION>HYDRAULIC>DISTRIBUTION WAY.



8.4 Menu EMBEDDED COMPUTING

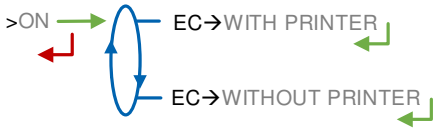
Operation with or without embedded computing.



Operating with embedded computing allows to choose the printing protocol:

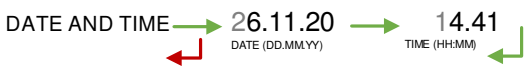
EC→WITH PRINTER: The delivery ticket and the invoice must be printed via the embedded computing. They cannot be printed via the MICROCOMPT+ device.

EC→WITHOUT PRINTER: The delivery ticket and the invoice can be printed via the MICROCOMPT+ device



8.5 Menu DATE AND TIME

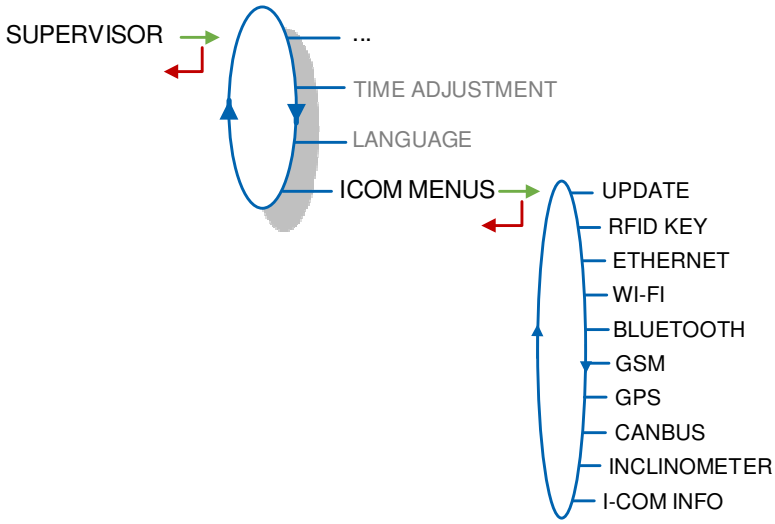
Record date and time.



ANNEX 1: PRESENTATION OF THE MENU SUPERVISOR>ICOM MENUS

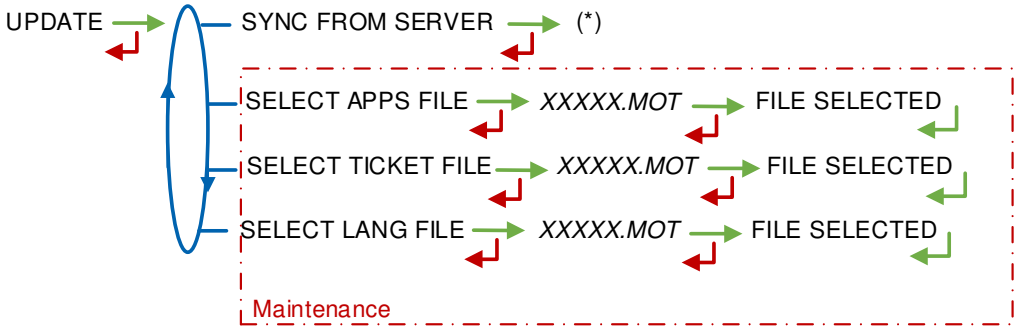
The sub-menus are different according to the level of access:

- ⇨ Level1-User: Use the RFID blue key to display the non-highlighted menus (see simplified presentation § Menu ICOM MENUS)
- ⇨ Level2-Manager: Use the RFID green key to see the sub-menus are indicated in green boxes
- ⇨ Level3-Maintenance: The sub-menus are indicated in red boxes



1.1. Menu UPDATE

The MICROCOMPT+ connects to the server via Wi-Fi, Bluetooth, Ethernet or GSM.



(*) IN PROGRESS / xx NEW UPDATE FOUND / ANY UPDATE FOUND

SYNC FROM SERVER: Synchronization of the updated files from ALMA server. If an update of the functions or the communication configuration is uploaded, it will be applied on the next reboot of the MICROCOMPT+.

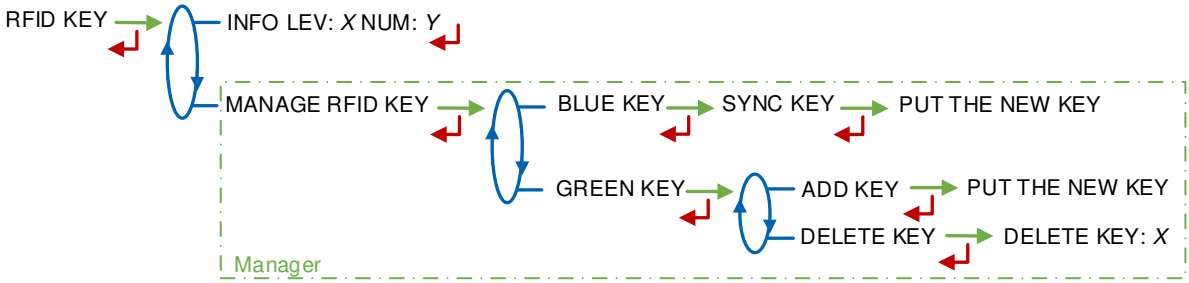
SELECT APPS FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the application available on the SD card. NO FILE is displayed if there's no file to download.

SELECT TICKET FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the ticket file available on the SD card. NO FILE is displayed if there's no file to download.

SELECT LANG FILE(*) – *Access restricted to the Maintenance*: Used to display and select the version(s) of the translation catalogue available on the SD card. NO FILE is displayed if there's no file to download.

(*) Selected files are automatically downloaded onto the AFSEC board when switching the MICROCOMPT+ into 'Resident' mode. See the operating manual MU 7037 (§2).

1.2. Menu RFID KEY



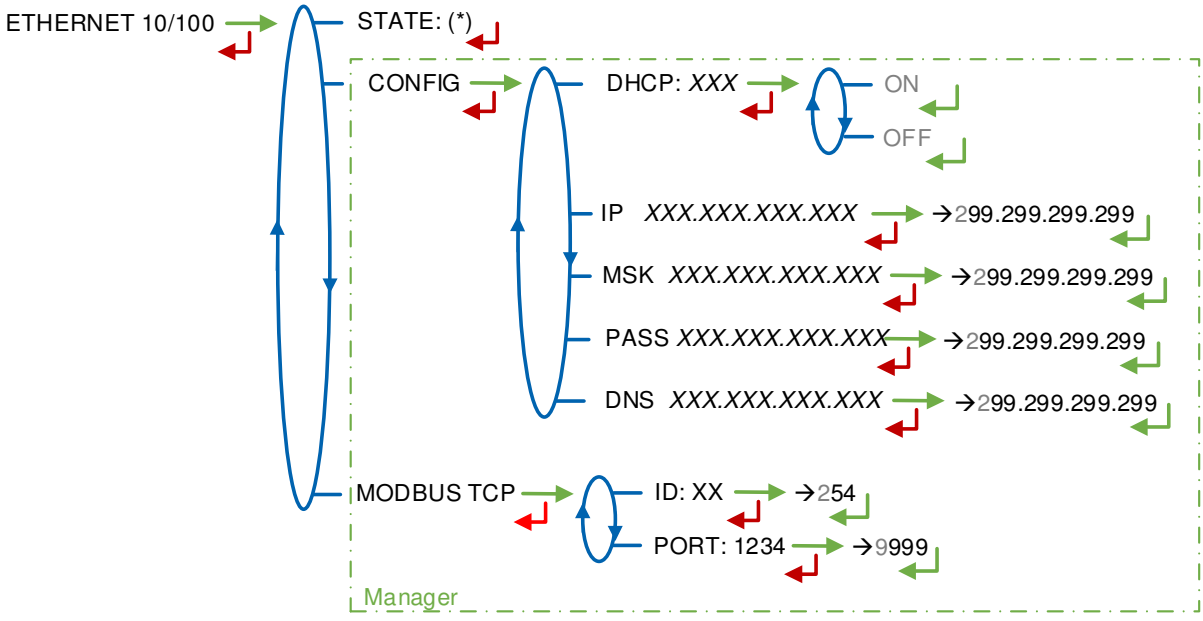
INFO: Display of the level and the identifier of the RFID key (blue key: Level1-User, green key: Level2-Manager, red key: Level3-Maintenance)

MANAGE RFID KEY – *Access restricted to the Manager*:

BLUE KEY: Used to associate an RFID key Level1-User to the MICROCOMPT+

GREEN KEY: Used to associate an RFID key Level2-Manager to the MICROCOMPT+ or to remove keys that have already been associated.

1.3. Menu ETHERNET



(*) CONNECTED / DISCONNECTED

STATE: Status of the Ethernet connection

CONFIG – *Access restricted to the Manager*:

DHCP: If ON is enabled, IP parameters can be initialized through the DHCP protocol. If OFF is enabled, parameters are set manually

IP: IP: eMICROCOMPT+ IP address

MSK: Subnet mask (IP mask for the internal IP address allocation)

PASS: Gateway (IP Address for the internet access of the Ethernet interface)

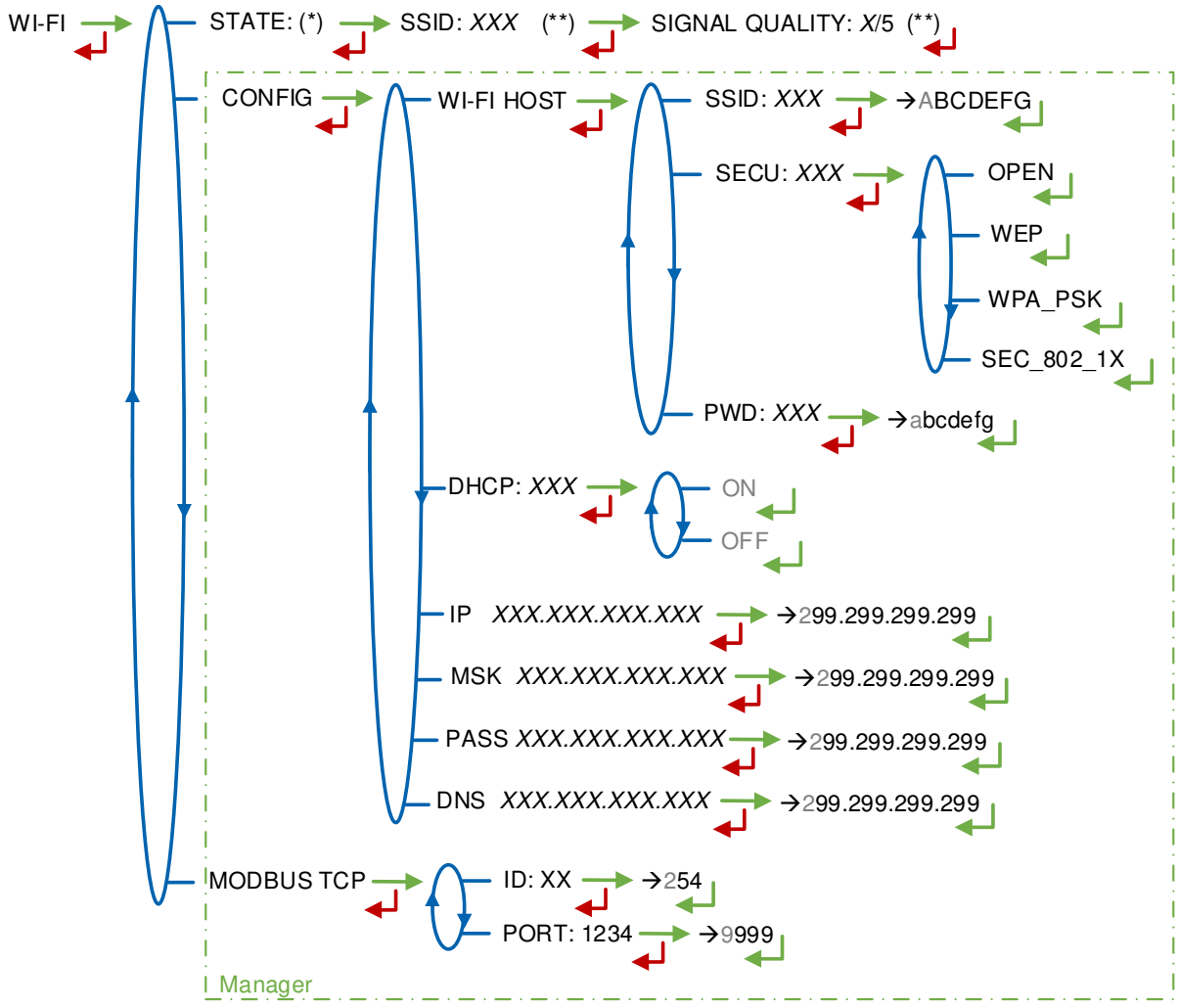
DNS: IP Address to access a DNS server

MODBUS TCP – *Access restricted to the Manager*:

ID: eMICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

1.4. Menu Wi-Fi



(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED
(**) IF CONNECTED

STATE: Status of the Wi-Fi connection. If connection is successful, you can do a check of SSID and quality

CONFIG – *Access restricted to the Manager*:

WI-FI HOST: Set the characteristics of the wireless network access point

SSID: 32 characters-alphanumeric key that identifies the wireless network uniquely

SECU: Type of security protocol for the network

OPEN: Free Wi-Fi

WEP: Encryption protocol by a key encoded in 64 or 128 bits

WPA_PSK: Encryption protocol by a 128 bits-dynamic key

SEC_802-1X: Encryption protocol compatible with the standard IEEE 802.1X

PWD: Network password. Permitted character: <space>!"#$%&'()*+,-./ 0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

DHCP: If ON is enabled, IP parameters can be initialized through the DHCP protocol. If OFF is enabled, parameters are set manually

IP: IP: eMICROCOMPT+ IP address

MSK: Subnet mask (IP mask for the internal IP address allocation)

PASS: Gateway (IP Address for the internet access of the Ethernet interface)

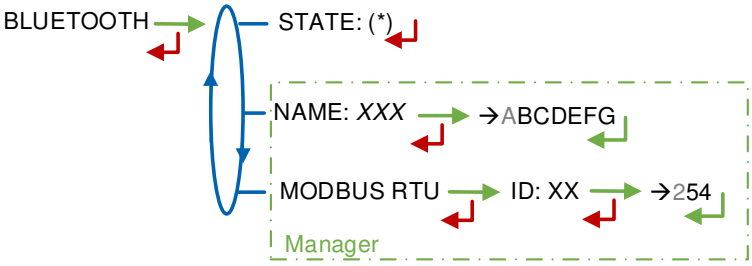
DNS: IP Address to access a DNS server

MODBUS TCP – *Access restricted to the Manager*:

ID: eMICROCOMPT+ Modbus identifier between 0 and 255

PORT: TCP/IP access port for Modbus protocol

1.5. Menu BLUETOOTH



(*) NOT AVAILABLE (the calculator is not equipped) / DISCONNECTED / CONNECTED

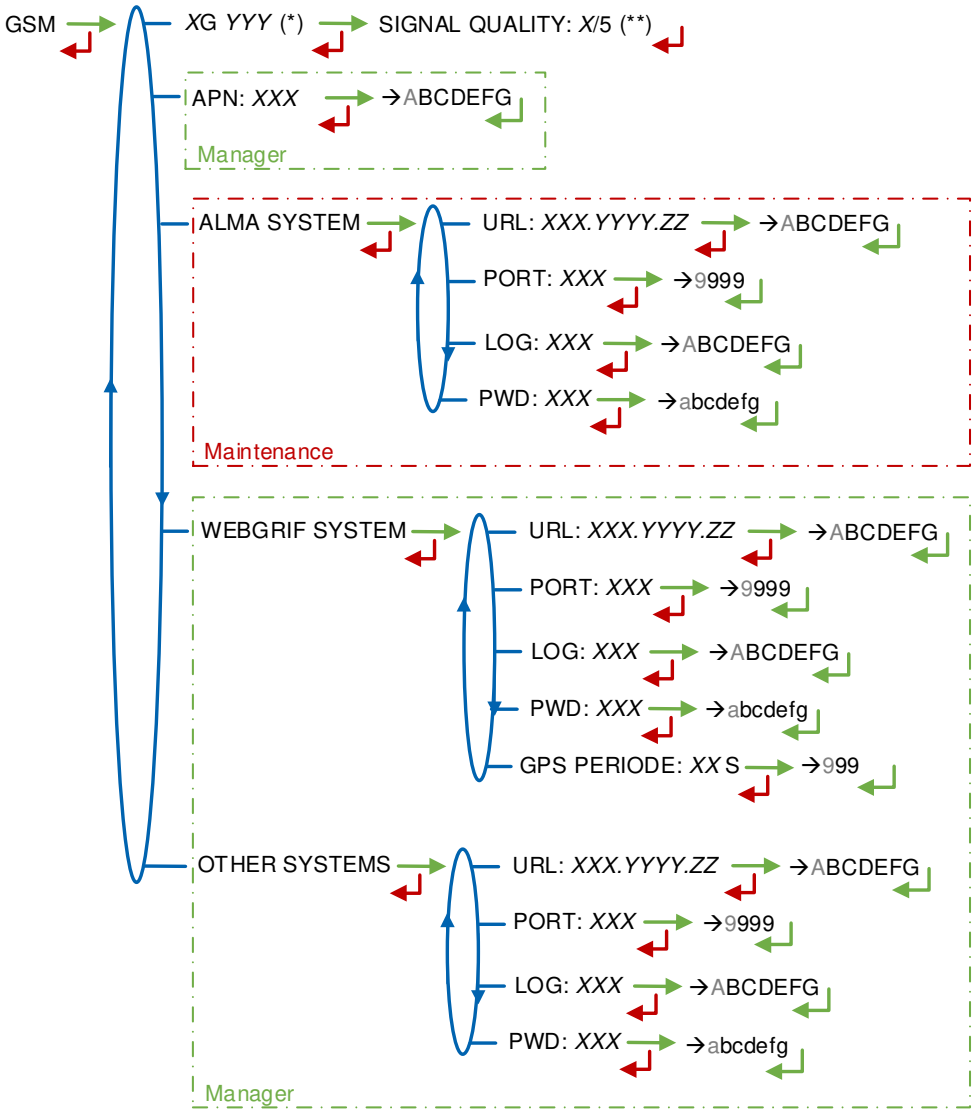
STATE: Status of the Bluetooth connection

NAME – *Access restricted to the Manager*: Set the connection name

MODBUS RTU – *Access restricted to the Manager*:

ID: Modbus identifier via Bluetooth (between 1 and 254)

1.6. Menu GSM



(*) NO SIGNAL ou 2G 3G 4G + INTERNET PROVIDER
(**) IF CONNECTED

XG YYY: The signal is being received: the type of mobile network is displayed (with X=2 for 2G, X=3 for 3G, and X=4 for 4G) according to the protocols GSM / GPRS / EDGE, UMTS / HSPA+ / LTE, followed by the name of the service provider. Otherwise NO SIGNAL is displayed

APN – *Access restricted to the Manager*: Name of the internet access point, only if ALMA does not supply it

ALMA SYSTEM – *Access restricted to the Maintenance*: Information of connection to the ALMA FTP server for files transfer

URL: Web address of the ALMA FTP server (host)

PORT: ALMA FTP server port, default value: 21

LOG: ALMA FTP server identifier

PWD: ALMA FTP server password. Permitted characters: <space>!"#$%&'()*+,-./

0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

WEBGRIF SYSTEM – *Access restricted to the Manager*: Information of connection to the Webgrif FTP server for files transfer

URL: Web address of the Webgrif FTP server (host)

PORT: Webgrif FTP server port, default value: 21

LOG: Webgrif FTP server identifier

PWD: Webgrif FTP server password. Permitted characters: <space>!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

GPS PERIOD: Backup period of GPS coordinates (from 1 to 999 seconds)

OTHER SYSTEM – *Access restricted to the Manager*: Information of connection to the FTP server for files transfer

URL: Web address of the FTP server (host)

PORT: FTP server port, default value: 21

LOG: FTP server identifier

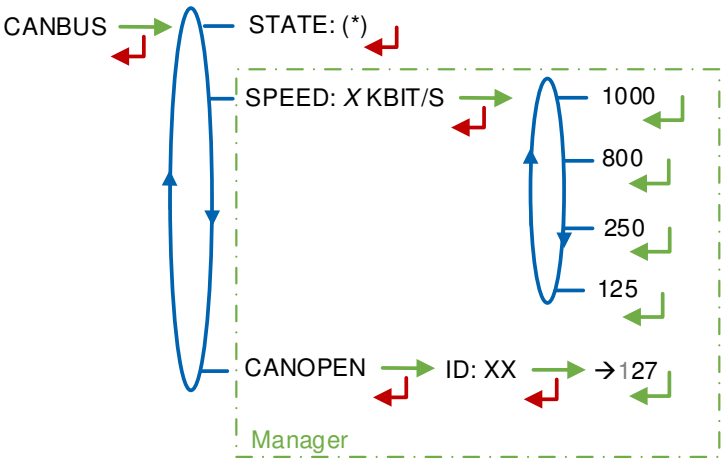
PWD: FTP server password. Permitted characters: <space>!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~<DEL> (See §3 visualization on the MICROCOMPT+ display)

1.7. Menu GPS

(*) NO SIGNAL / 2DFIX / 3DFIX

STATE: The signal is being received: the type of signal is displayed 2DFIX or 3DFIX. Validating the data makes the GPS coordinates appear (latitude then longitude), and lastly appears the number of satellites which signals are simultaneously received (that gives information about the position accuracy). Otherwise NO SIGNAL is displayed.

1.8. Menu CANBUS



(*) CONNECTED / DISCONNECTED
(**) BETWEEN 1 AND 127

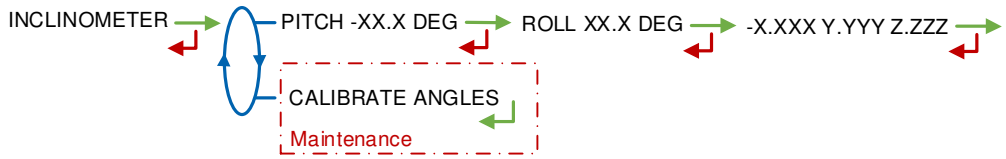
STATE: Status of the CANBus connection

SPEED – *Access restricted to the Manager*: Speed of the CANBus connection

CANOPEN – *Access restricted to the Manager*:

ID: Identifier for the CANopen protocol (between 1 and 127)

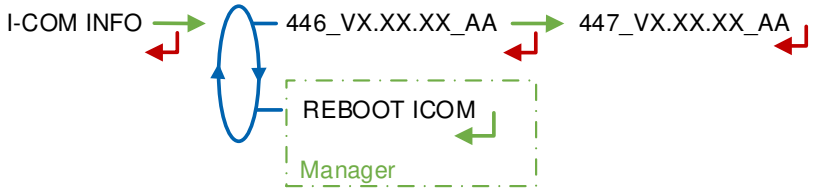
1.9. Menu INCLINOMETER



PITCH…: Used to display the bank angles of the truck and the inclinometer raw data

CALIBRATE ANGLES – *Access restricted to the Maintenance*: Used to reset the angles 'pitch' and 'roll' when the truck has a horizontal position in order to correct the assembly tolerances of the MICROCOMPT+ on the truck.

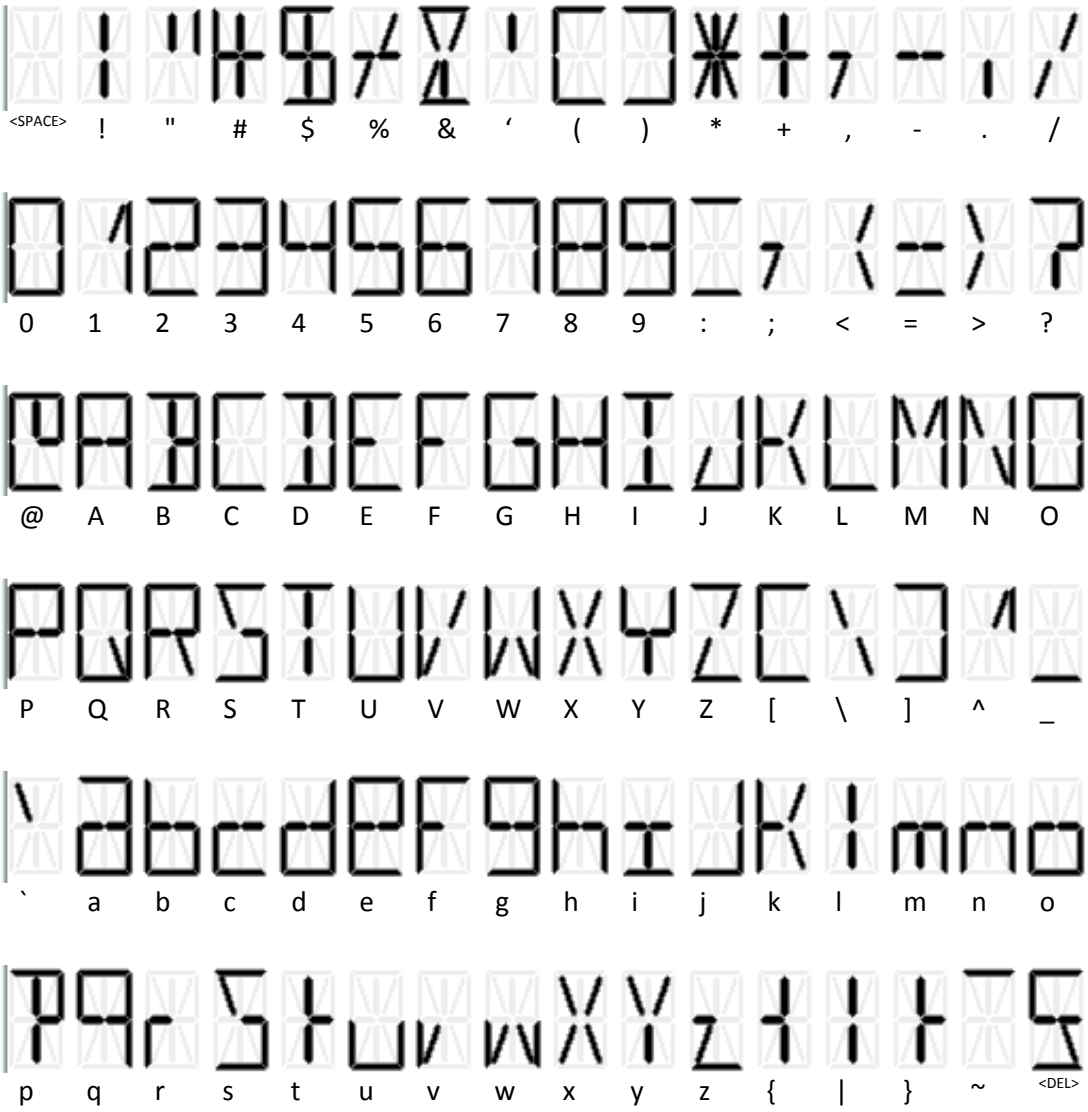
1.10. Menu I-COM INFO



446_V…: Software's number and version

REBOOT COM – *Access restricted to the Manager*: Reset of the 'interface com' board.

ANNEX 2: VIZUALIZATION OF THE PERMITTED CHARACTERS ON THE MICROCOMPT+ DISPLAY



ANNEX 3: PRINTINGS

DELIVERY TICKET:

Example for a gravity delivery with printing configuration VB+VM (SUPERVISOR>PRINTER SETTINGS>VOLUMES>VB+VM):

```
GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule   :  AA-000-AA
Indicateur :  A 03000

********** LIVRAISON **********

Livraison debutee mesurage n°006

Compartiment      : 1
Produit           : FOD
Mesurage n 1      : 01290 L (VM)
                    01295 L (VB)
Temperature       : +11.4°C
Mesurage n 2      : 00820 L (VM)
                    00824 L (VB)
Temperature       : +11.4°C
                    ----------
Total Cpt 1       : 02110 L (VM)
                    02119 L (VB)
Compartiment      : 2
Produit           : GO
Mesurage n 1      : 00940 L (VM)
                    00937 L (VB)
Temperature       : +17.1°C
Mesurage n 2      : 00620 L (VM)
                    00619 L (VB)
Temperature       : +17.1°C
                    ----------
Total Cpt 2       : 01560 L (VM)
                    01556 L (VB)


En cas de litige, les resultats
de mesurage memorises par
l'indicateur font foi.
```

Example for a pumped delivery with ticket format VB+VM (SUPERVISOR>PRINTER SETTINGS>TICKET>ENGLISHMB):

```
Truck N°              AA-000-AA
Delivery N°           005
Register N°           00000
Delivery date         26/11/20
Day number            331
Starting              11:58
Ending                12:00
Product               GO
Quantity VB (15°C)    00731 liters
Quantity VM           00729 liters
Temperature           +13.2°C
Total before and after
Index   004 before 00003670
Index   005 after  00004399
```

EVENTS RECORDED:

```
GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule   : AA-000-AA
Indicateur :  A 03000


41 enregistrement(s)

14:49:55 Produit non affecte
14:49:53 Pollution flexible
14:30:03 Arret operation
14:24:33 Defaut debit haut
...


09:47:15 Reset application
09:47:06 Perte memorisation
09:42:57 Défaut watchdog
09:12:36 Mode chauffeur
08:59:02 Mode superviseur
08:58:57 Mise sous tension
```

TOTALISERS:

```
GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule   : AA-000-AA
Indicateur :  A 03000

********** TOTALISATEURS **********

Totalisateur general 1:        00012123  L

FOD       (01) :      00006928 L
FOD+      (02) :      00002997 L
GO        (03) :      00001099 L
GO+       (04) :      00001099 L
GNR       (05) :      00000000 L
GNR+      (06) :      00000000 L
...
Somme de 1 a 16 :0012123 L
```

SUMMARY:

```
GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule   : AA-000-AA
Indicateur :  A 03000

Récapitulatif
des mesurages du 26/11/20
Jour 331   004 résultats mémorisés


**** TOTALISATEURS JOURNALIERS ****

FOD       (01) :      00002110 L    +11.5°C
FOD+      (02) :      00000000 L     + 0.0°C
GO        (03) :      00001560 L    +17.1°C
GO+       (04) :      00000000 L     +0.0°C
GNR       (05) :      00000000 L     + 0.0°C
GNR+      (06) :      00000000 L     + 0.0°C


Somme de 1 a 6 :  0003670 L       +13.8°C


********** RECAPITULATIF **********
 Hre    Hre   N°                 (L)      (°C)
 deb    fin   Mesur  Prod        Vm       Temp
09H57  10H08  I01    FOD        01290    +11.4
10H09  10H13  I02    FOD        00820    +11.4
10H17  10H21  I03    GO         00940    +17.1
10H22  10H25  I04    GO         00620    +17.1

Pre(D)e plein; prede v(I)de; (L)ibre;
Li(B)eration; (P)urge; (V)idange;
(T)rans; (A)nticipation de purge.
```

PARAMETERS:

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GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule  : AA-000-AA
Indicateur :  A 03000

********** PARAMETRES **********

Voies/vanne                 : F1P-F2P
Option CD                   : OUI
Boîte automatique           : continue
Sonde antidebordement       : externe
Option    Trappes/Retours/Sondes
  N^ CPT:1      2      3      4      5
  Trappe :0     0      0      0      0
  Retour  :0    0      0      0      0
  Sonde  :0     0      0      N      N
  Ht PD: 400   400    400    400    400
  Event  :2     2      2      2      2
Hauteur de fin              : 100 mm
TPSIA:  3UT      /   TPSID: 3UT
Increment d'ouverture       :  0.070 s
Relaxation en ouverture     :  1.000 s
Increment de fermeture      :  0.070 s
Relaxation en fermeture     :  1.000 s
Arret anti-VORTEX           :  5.00 s
Remplissage collecteur      :  10 s
Vidange du collecteur       :  10 s
Mouillage                   :  10 s
Essences par voie pompe     :  NON
Antidebordement cuve        :  OUI
Plan de chargement:OUI  / Bloquant: NON
Unites de débit             :  m3/h
Conversion                  :  OUI
  Indicateur                : VM
  Temperature de base       : +15.0°C
  Temperature MV (REF)      : +15.0°C
  VCF                       : API54B
  MV minimum (kg/m3)        : +500.0
  MV maximum (kg/m3)        : +999.9
  Num prod        MV (REF) (kg/m3)
       1          750.0
       2          750.0
       3          750.0
       4          750.0
       5          750.0
       6          750.0
Informatique                :  NON
Ticket                      :  ALMA
Catalogue langue: env1.2.0
EM1
  Pompee
    Coefficient K1  : 10.0000 impl/l
    Debit Q1 (PD)   : 0.0 m3/h
    Coefficient K2  : 10.0000 impl/l
    Debit Q2 (GD)   : 0.0 m3/h
  Gravitaire
    Coefficient     :  5.0000 impl/l

                Page 1
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GRAVITRONIQUE 4035.01
Version 01.03.01 du 13.11.20
Edite le 01/12/20 a 10h05
Vehicule  : AA-000-AA
Indicateur :  A 03000

  Corr. pour mille          : +0
  Debit Min: 8.0   /Max:  80.0 m3/h
  Petit debit objectif      : 9.0 m3/h
  Quantité minimale         : 00200 L
  Volume collecteur         : 10 L
  Volume forfaitaire        : 5 L
  Température               : +11.4°C
  Type de pompe             : DEUX DEBITS
  Vanne gravitaire          : DEUX DEBITS
FOD     (01) Co+nA+Ba non 00000L/rec
FOD+    (02) Co+A+Ba  non 00000L/rec
GO      (03) nC+nA+10 non 00000L/rec
GO+     (04) nC+A+10  non 00000L/rec
GNR     (05) Co+nA+10 non 00000L/rec
GNR+    (06) Co+A+10  non 00000L/rec

Volume en PD de fin         : 30 L
Débit activant le GD        : 7.5 m3/h
Volume brasse               : 13 L
V. commun purge complete    : 30 L
Volume purge ligne 1        : 90 L
Volume purge ligne 2        : 90 L
Partie COMMUNE LIGNE1 LIGNE2 LIGNE3
Produit     03        01       01       --
Soufflage                   :  5 s
Tempo. de debit nul         : 10 s
Jetee pompe
  Arret a 10.0 m3/h avec 0.8 L
  Coefficient               : 0.0766
Jetee gravitaire
  Arret a 17.5 m3/h avec 1.0 L
  Coefficient               : 0.1700

                Page 2
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RELATED DOCUMENTS

GU 7071	Operating Guide Gravitronique
MV 5007	Verification Guide Gravitronique
MU 7037	Update of the MICROCOMPT+
FM 8001	Diagnostic support for power supply failure
FM 8002	Diagnostic support for a display failure
FM 8003	Diagnostic support for DEB_0 or ZERO FLOW DEFAULT alarm
FM 8004	Diagnostic support for GAS or PRESENCE GAS alarm
FM 8005	Diagnostic support for METERING PROBLEM alarm
FM 8007	Diagnostic support for MEMORY LOST or DEF MEMO alarm
FM 8008	Diagnostic support for a DATE alarm
FM 8010	Diagnostic support for EEPROM MEMORY LOST alarm
FM 8011	Configuration of jumpers and adjustment of metering thresholds on the AFSEC+ electronic board
FM 8013	Replacement of the backup batteries on the AFSEC+ electronic board
FM 8510	Adjustment of a temperature chain in a MICROCOMPT+