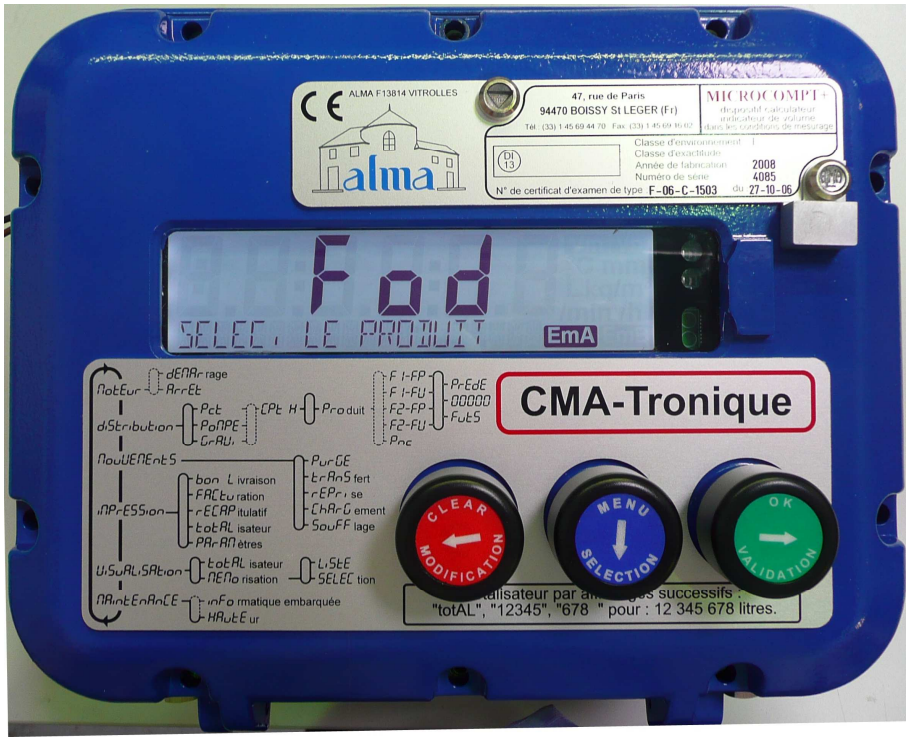
OPERATING MANUAL

CMA TRONIQUE



Rev.	Date	Nature of modifications	Writter	Approb.
A	30/06/09	Creation – Cancel and replace ME4054-EN-1	DSM	XS

SOMMAIRE

1. GENERAL PRESENTATION AND DESCRIPTION

The CMA TRONIQUE measuring system must be fitted on road tankers to measure liquids such as fuel, diesel, ethanol and ad-blue. It has no gas elimination device because its principle of functioning avoids the introduction of a gaze phase into the pump.

It performs the following functions:

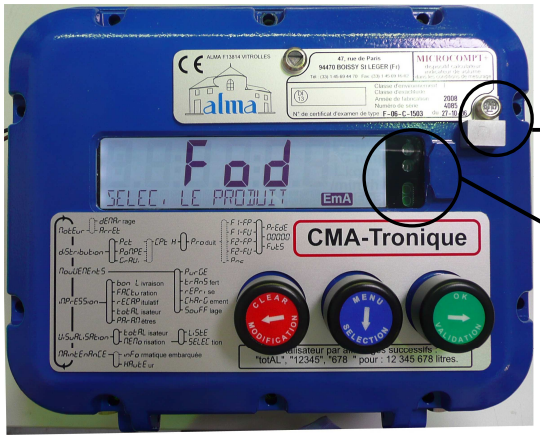
- measure products when they are delivered to the station,
- monitor the reception of products (lorry/wagon),
- split compartments,
- measure product returns,

The CMA TRONIQUE measuring system comprises:

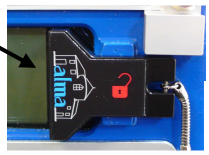
- a turbine meter
- a MICROCMPT+ electronic calculator-indicator
- a relative pressure sensor with its associated hydraulic shock absorber
- a pump
- a sight glass just downstream the meter
- either one (or two) full hoses or an empty hose or a mix of a full hose and an empty hose
- a pneumatic valve in case of double delivery way
- if required, a temperature sensor
- a printer

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

Presentation of the MICROCOMPT+ calculator-indicator:

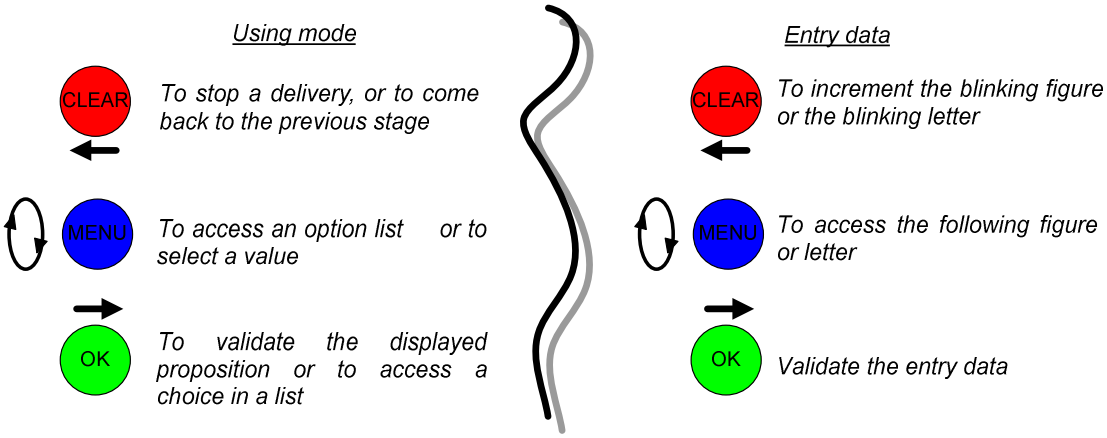


Sealed cup protecting access to metrological functions



SUPERVISOR key to access to configuration and gauging menu

Buttons function:



The MICROCOMPT+ calculator-indicator manages measuring operation and computerizes the measuring system defaults.

2. OPERATING RECOMMENDATIONS

When using the CMA TRONIQUE, the operator must make sure that the following conditions are satisfied:

- the tank operating position does not differ by +/- 2° (dependant from tank design, refer to tank manufacturer) 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 hose (3'' diameter) is 12 metres;
- 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 .

3. CONFIGURATION, SETUP AND GAUGING

3.1 CONFIGURATION

To access the METROLOGICAL mode, the MICROCOMPT+ has to be unsealed. Only an authorized person can remove the seal.

According to the METROLOGICAL configuration, the CMA TRONIQUE would manage one or two distribution ways.

Refer to METROLOGICAL MODE for configuration.

3.2 SETUP

To access the supervisor mode, the key must be set at the right of the MICROCOMPT display. This mode is used to set the measuring system and to access the calibration menu. Before using the CMA TRONIQUE, enter the value of the parameters such as:

- ⇨ Products: name, price, additivation, correction
- ⇨ Vehicle identification
- ⇨ Volumes and flow rates settings
- ⇨ Date and time
- ⇨ Printer settings
- ⇨ Temperature calibration

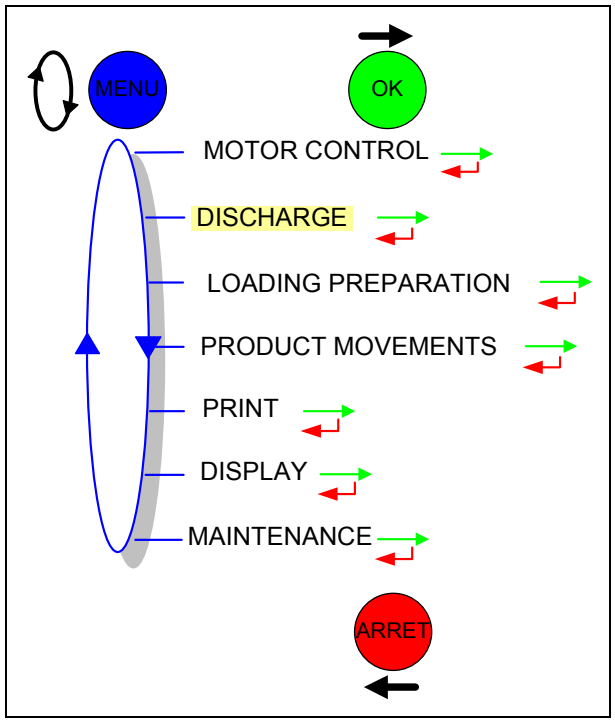
Refer to SUPERVISOR MODE for setup.

3.3 CALIBRATION

Having made the proving of the metering, this menu "CALIBRATION/GAUGING" allows calculating the error and the new coefficient.

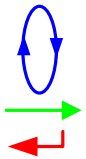
Refer to SUPERVISOR MODE for details on the gauging procedure.

4. USER GUIDE



4.1 DISCHARGE: WHICH CONFIGURATION FOR YOUR CMA TRONIQUE?

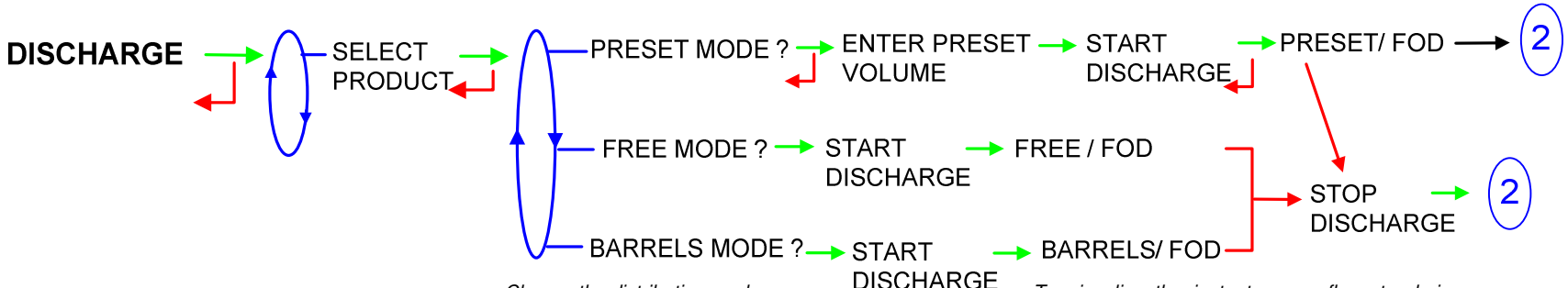
LEGEND:



Press the button (red, blue or green) as many times as necessary to display the next message

A. ONE DISTRIBUTION WAY

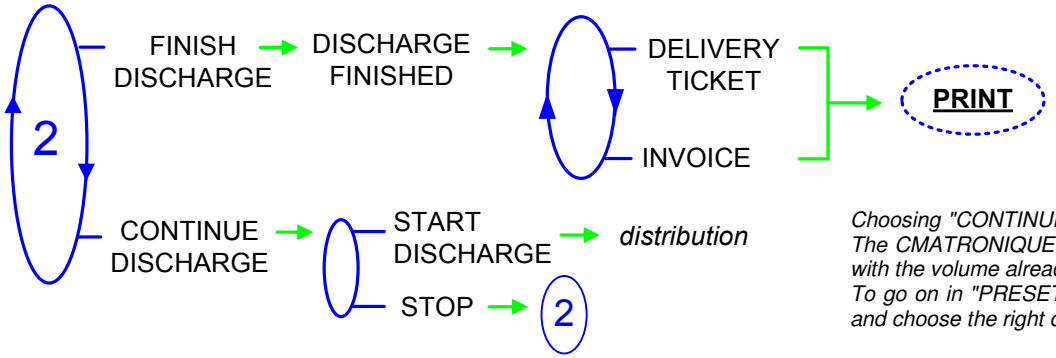
A.1 DISCHARGE



Choose the distribution mode:
1)PRESET, 2)FREE, 3)BARRELS
The volume value must be set for 1).
The CMATRONIQUE device displays "START" with the preset volume or with the volume already flew out.

To visualize the instantaneous flowrate during distribution, push blue button (m^3/h).
The product height appears after pushing blue button one more time (mm).
If the "temperature" option is chosen press blue button third time (°C).

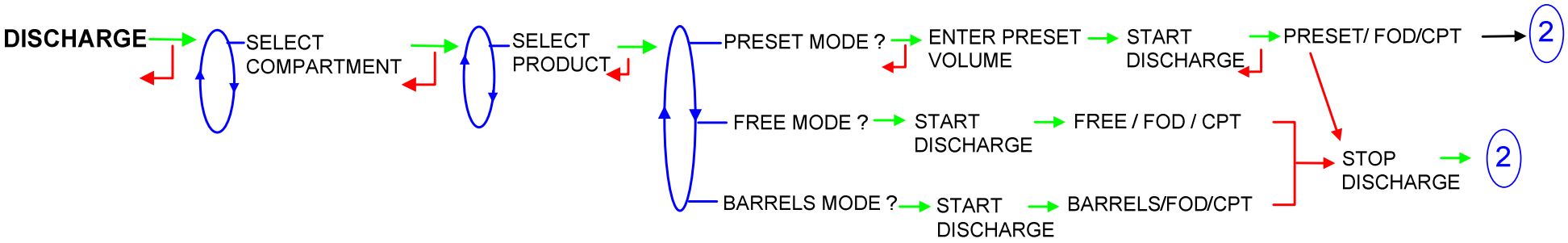
A.2 FINISH/CONTINUE



Choosing "CONTINUE DISCHARGE" makes the product flowing again.
The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered.
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

B. ONE DISTRIBUTION WAY + COMPARTMENT SELECTION

B.1 DISCHARGE



Choose the distribution mode:
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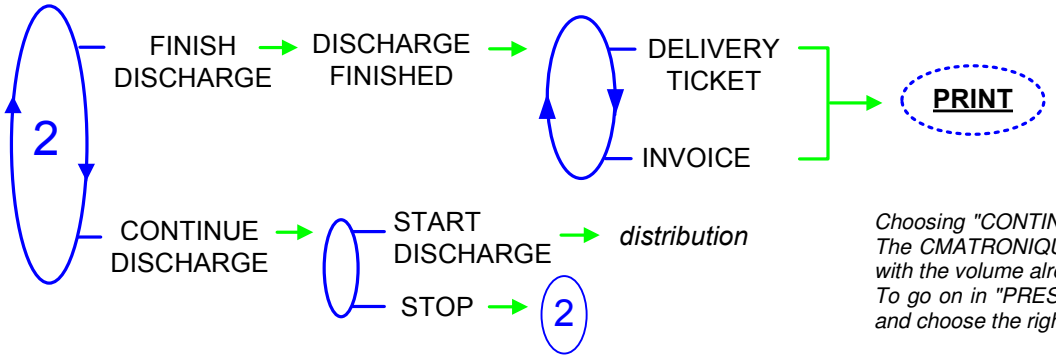
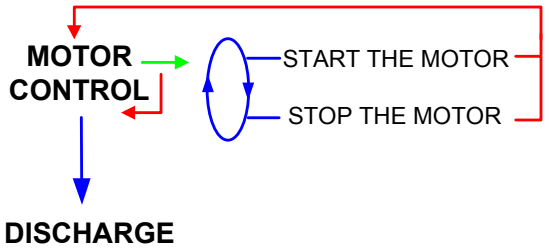
B.2 FINISH/CONTINUE



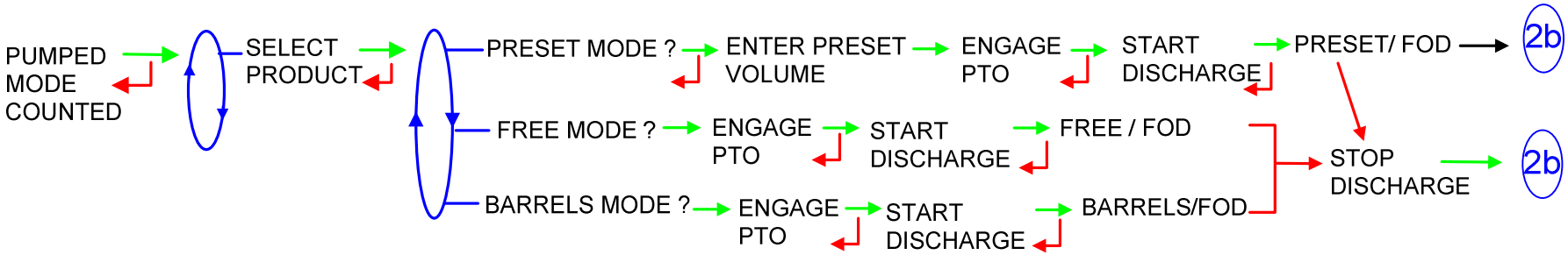
Choosing "CONTINUE DISCHARGE" makes the product flowing again.
The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered.
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

C. ONE DISTRIBUTION WAY + MOTOR CONTROL (PTO)

C.1 DISCHARGE



C.1.1 PUMPED MODE COUNTED



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The volume value must be set for 1).
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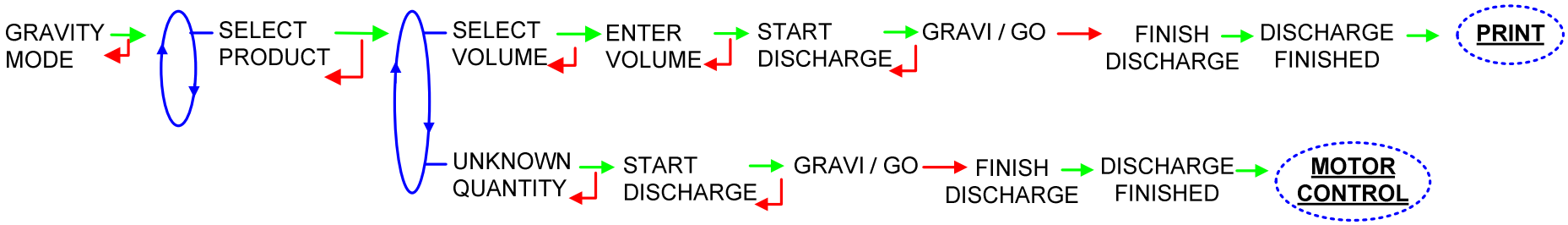
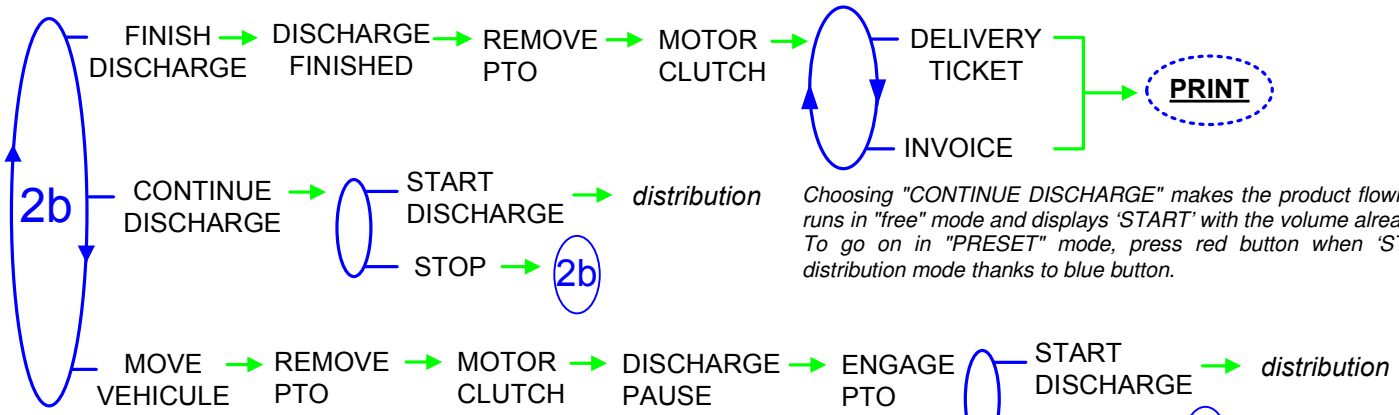
C.1.2 GRAVITY MODE



C.2 FINISH/CONTINUE



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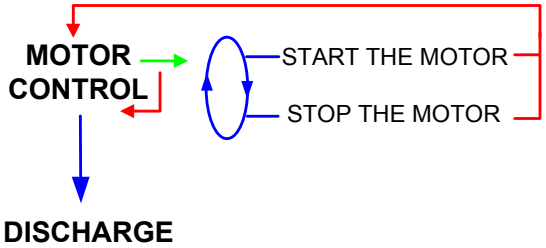
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the "MOVE" item. The CMATRONIQUE device switches off the power take-off, clutches the engine and freezes the MICROCOMPT indicator on "PAUSE". Press green button to carry on distribution. The quantity already delivered is displayed with 'START'.

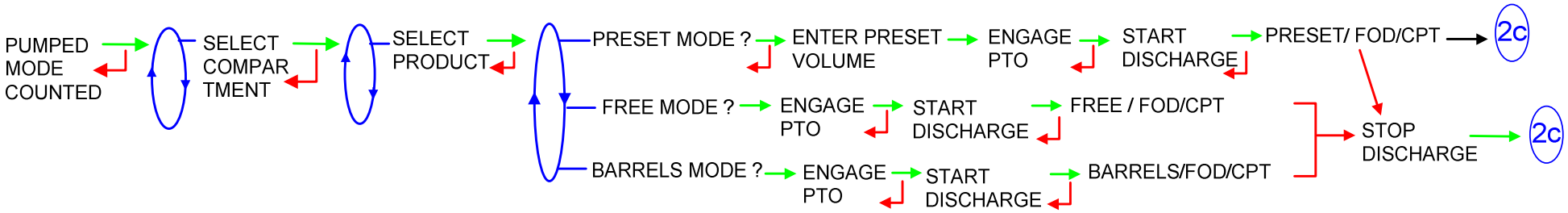
D. ONE DISTRIBUTION WAY + COMPARTMENT SELECTION + MOTOR CONTROL (PTO)

D.1 DISCHARGE



The commands for the pump clutch/declutching and for the power take-off switching on/switching off are realised by the MICROCOMPT device at the beginning and at the end of distribution.

D.1.1 PUMPED MODE COUNTED



Choose the distribution mode:
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The product height appears after pushing blue button one more time (mm).
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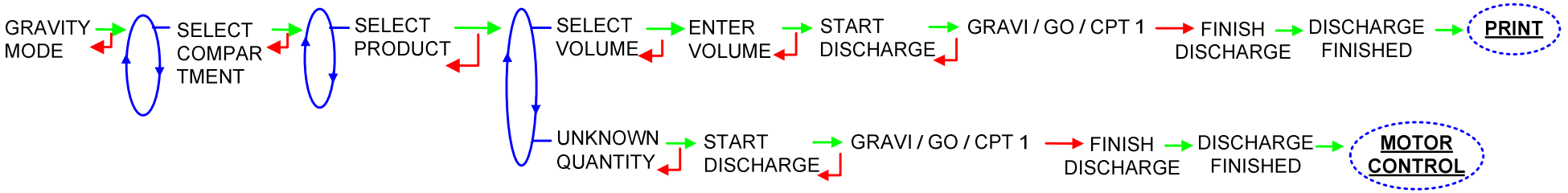
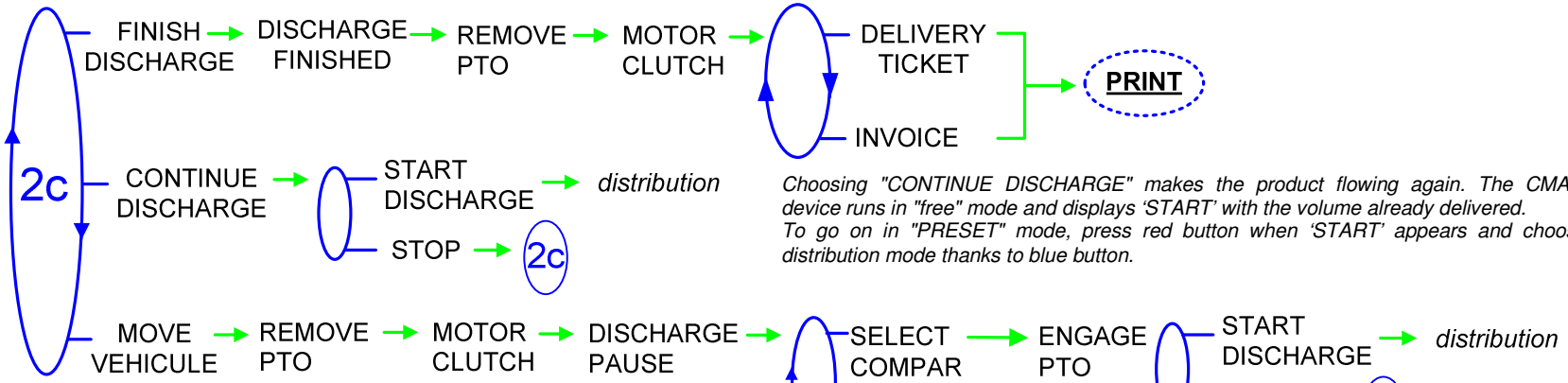
D.1.2 GRAVITY MODE



D.2 FINISH/CONTINUE



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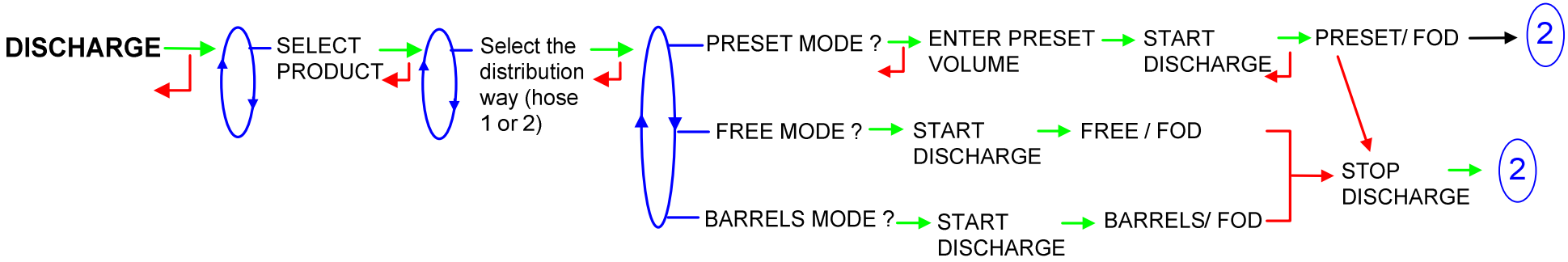
E. TWO DISTRIBUTION WAYS

E.1 DISCHARGE



Choose the distribution mode:
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The volume value must be set for 1).
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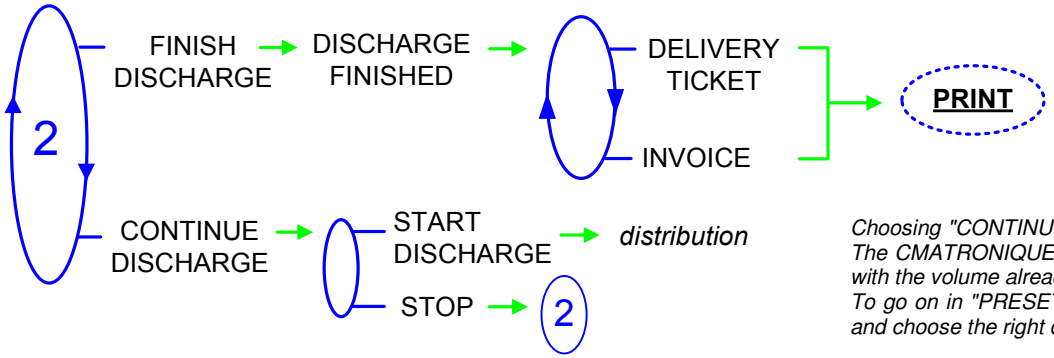
E.2 FINISH/CONTINUE



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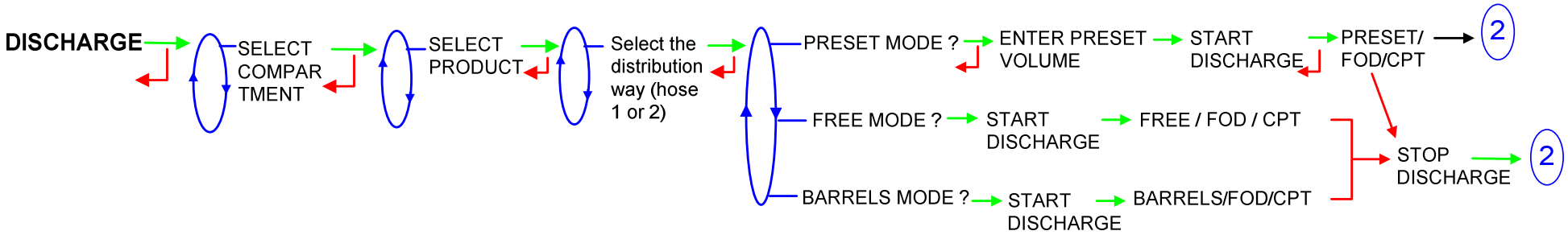
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

F. TWO DISTRIBUTION WAYS+ COMPARTMENT SELECTION

F.1 DISCHARGE



Choose the distribution mode:
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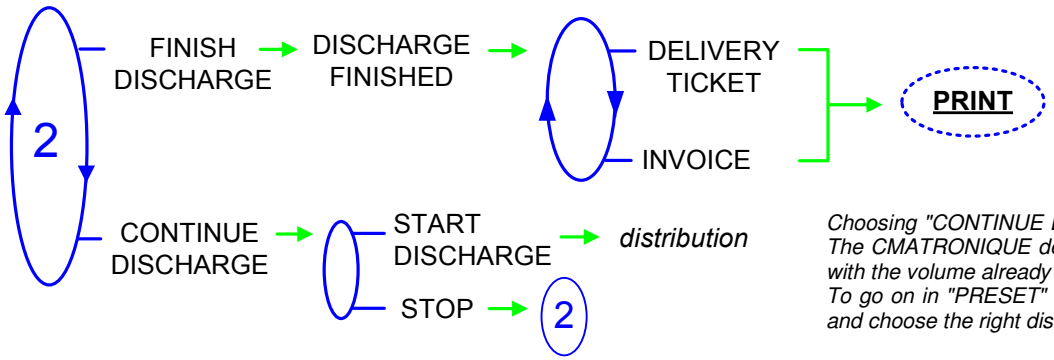
If the "temperature" option is chosen press blue button third time (°C).

F.2 FINISH/CONTINUE



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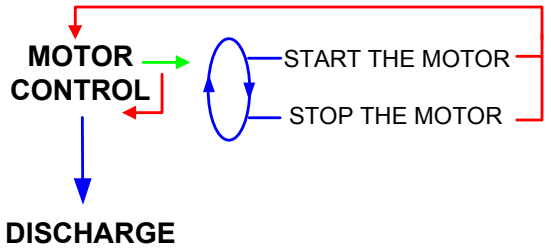
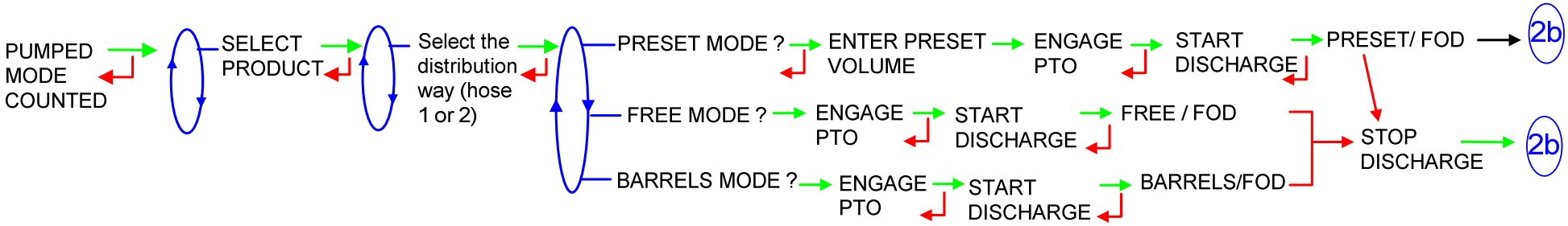
G. TWO DISTRIBUTION WAYS + MOTOR CONTROL (PTO)

G.1 DISCHARGE



The commands for the pump clutch/declutching and for the power take-off switching on/switching off are realised by the MICROCOMPT device at the beginning and at the end of distribution.

G.1.1 PUMPED MODE COUNTED



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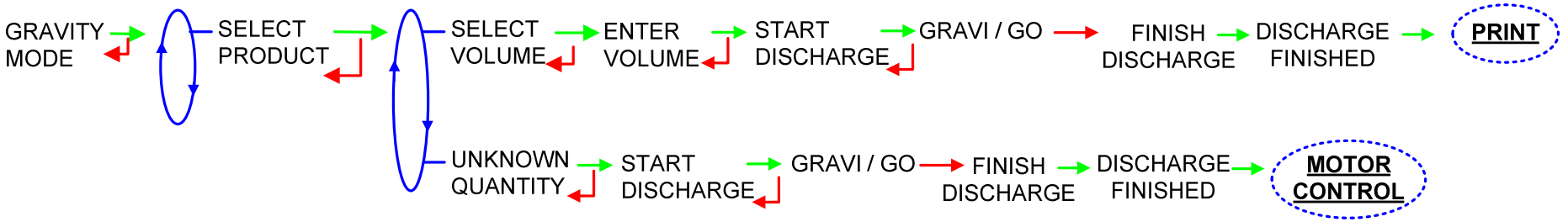
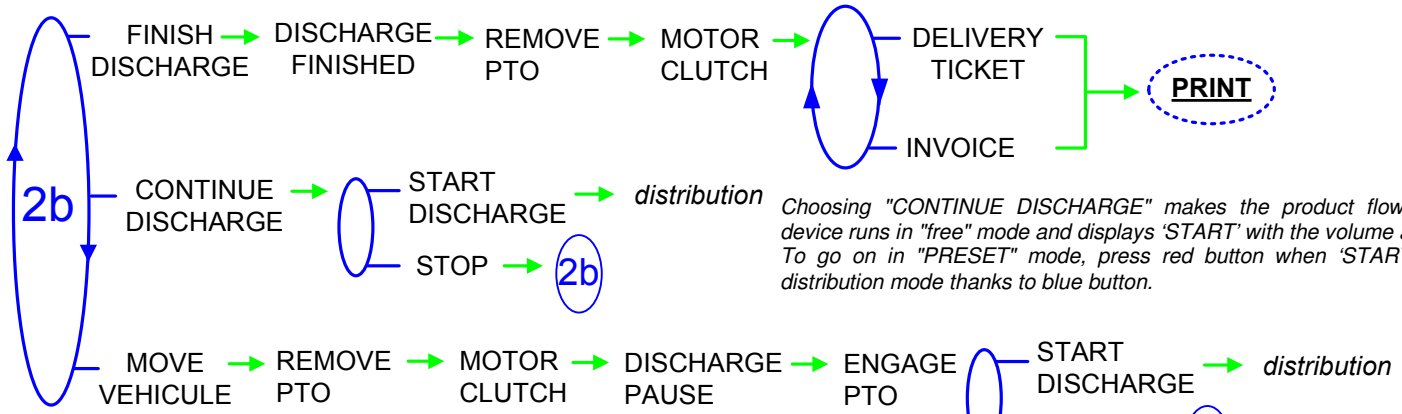
G.1.2 GRAVITY MODE



G.2 FINISH/CONTINUE



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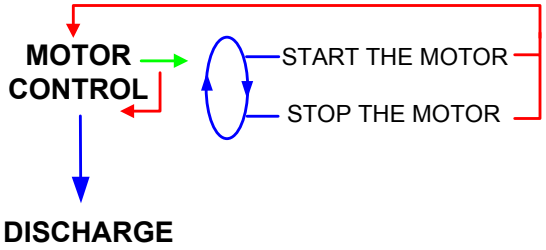
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the "MOVE" item. The CMATRONIQUE device switches off the power take-off, clutches the engine and freezes the MICROCOMPT indicator on "PAUSE". Press green button to carry on distribution. The quantity already delivered is displayed with 'START'.

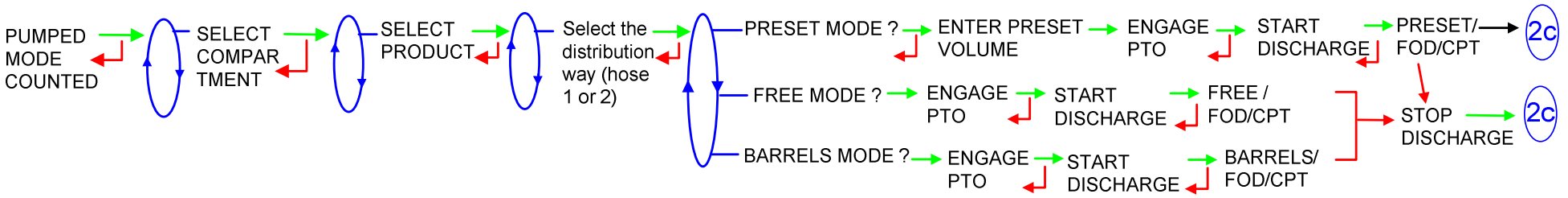
H. TWO DISTRIBUTION WAYS + COMPARTMENT SELECTION + MOTOR CONTROL (PTO)

H.1 DISCHARGE



The commands for the pump clutch/declutching and for the power take-off switching on/switching off are realised by the MICROCOMPT device at the beginning and at the end of distribution.

H.1.1 PUMPED MODE COUNTED



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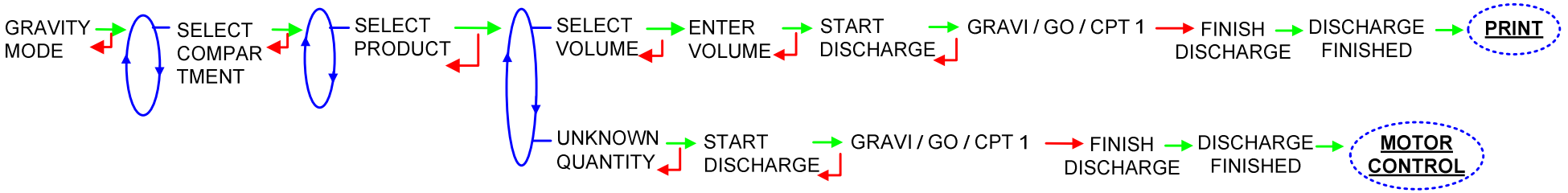
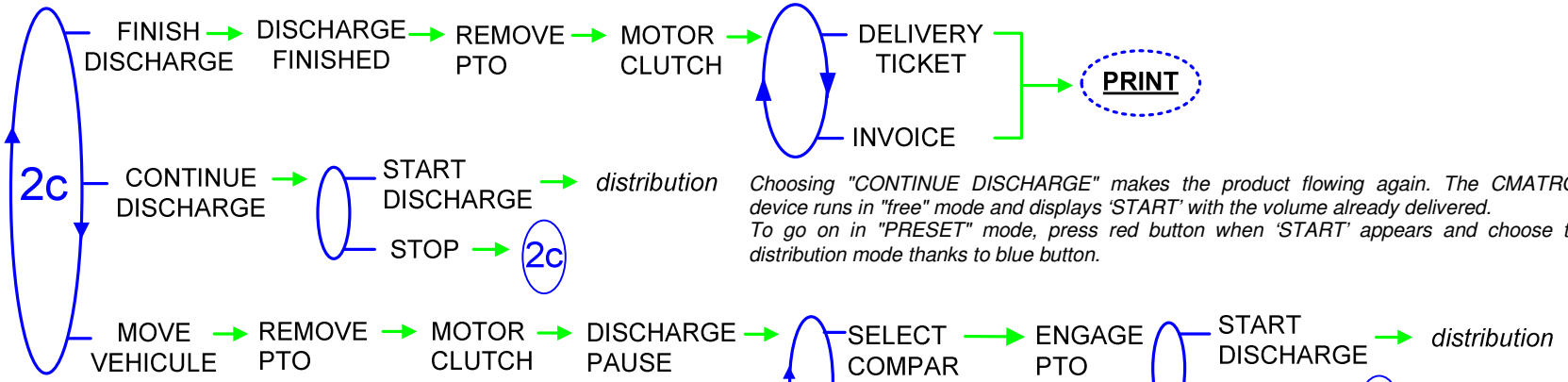
H.1.2 GRAVITY MODE



H.2 FINISH/CONTINUE



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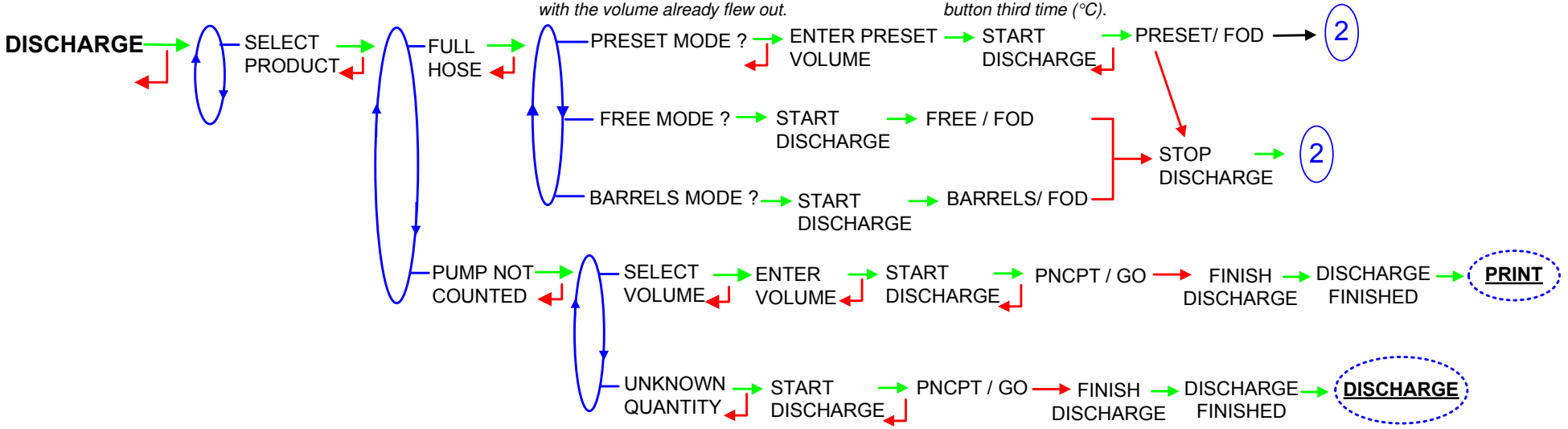
I. PUMPED COUNTED/NC RULE

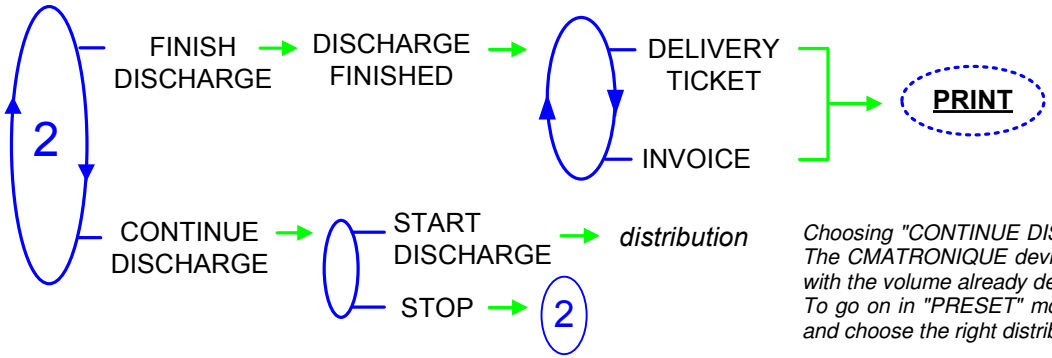
I.1 DISCHARGE

Choose the distribution mode: 1)PRESET, 2)FREE, 3)BARRELS. The volume value must be set for 1). The CMATRONIQUE device displays "START" with the preset volume or with the volume already flew out.

To visualize the instantaneous flowrate during distribution, push blue button (m^3/h). The product height appears after pushing blue button one more time (mm). If the "temperature" option is chosen press blue button third time (°C).



I.2 FINISH/CONTINUE



Choosing "CONTINUE DISCHARGE" makes the product flowing again. The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered. To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

J. PUMPED COUNTED/NC RULE + COMPARTMENT SELECTION

Choose the distribution mode:
1)PRESET, 2)FREE, 3)BARRELS
The volume value must be set for 1).
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To visualize the instantaneous flowrate during distribution, push blue button (m^3/h).
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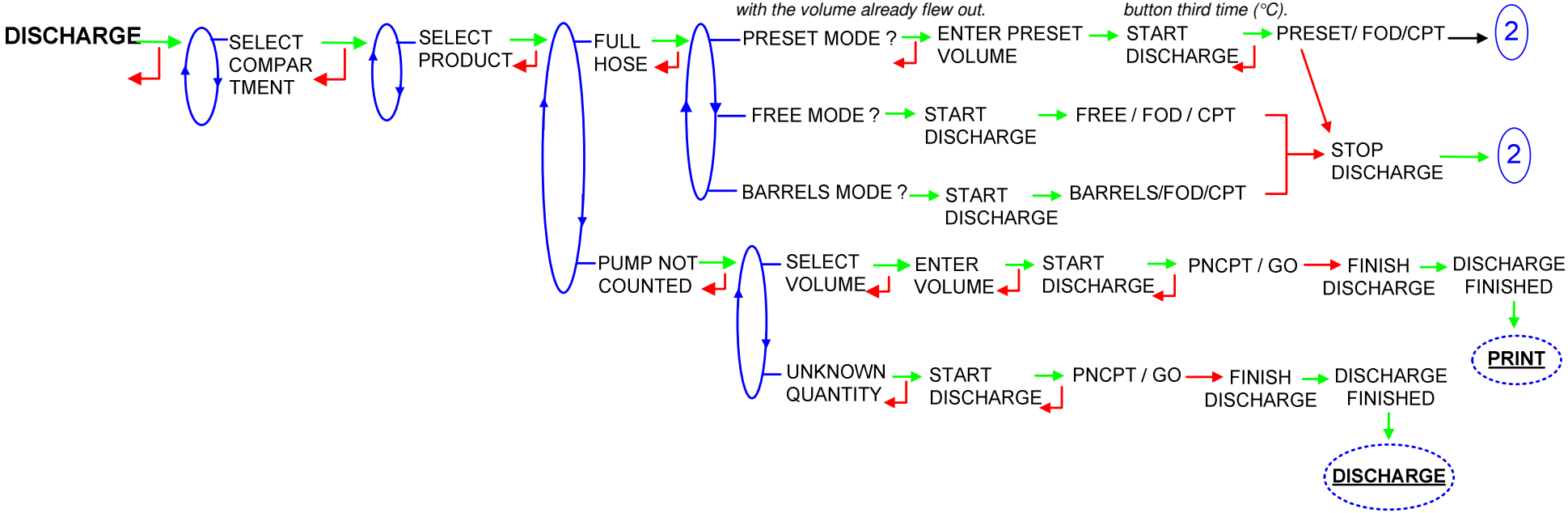
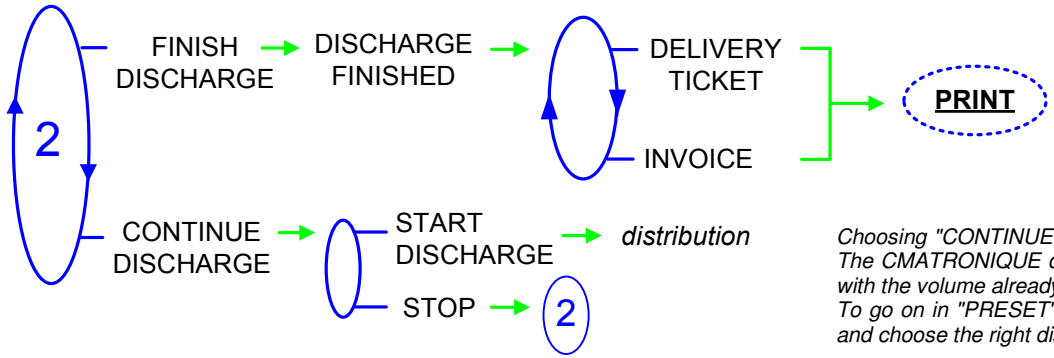
If the "temperature" option is chosen press blue button third time (°C).

J.1 DISCHARGE



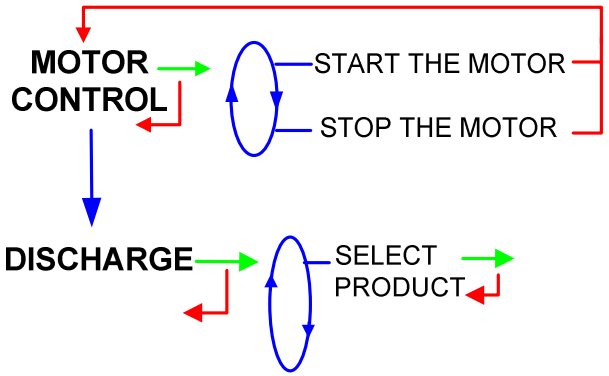
J.2 FINISH/CONTINUE



Choosing "CONTINUE DISCHARGE" makes the product flowing again.
The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered.
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

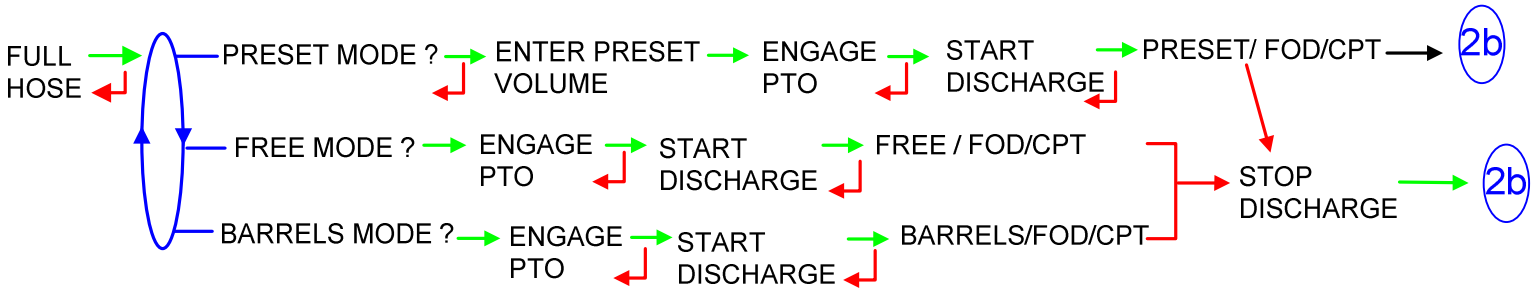
K. PUMPED COUNTED/NC RULE + MOTOR CONTROL (PTO)

K.1 DISCHARGE



The commands for the pump clutch/declutching and for the power take-off switching on/switching off are realised by the MICROCOMPT device at the beginning and at the end of distribution.

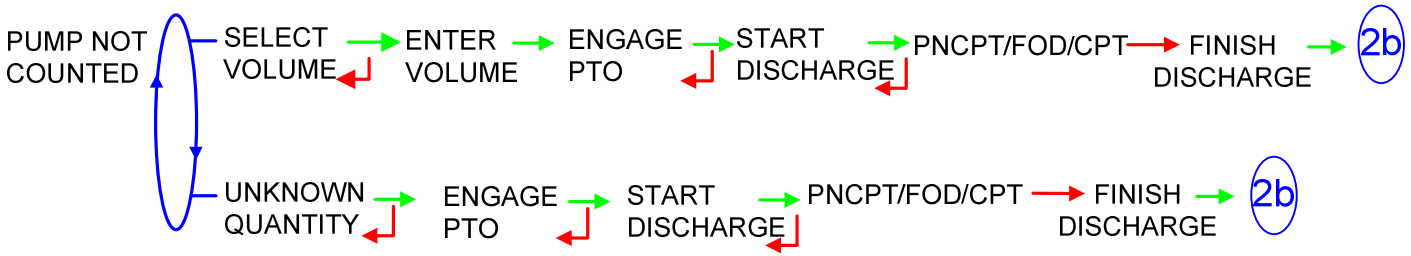
K.1.1 FULL HOSE



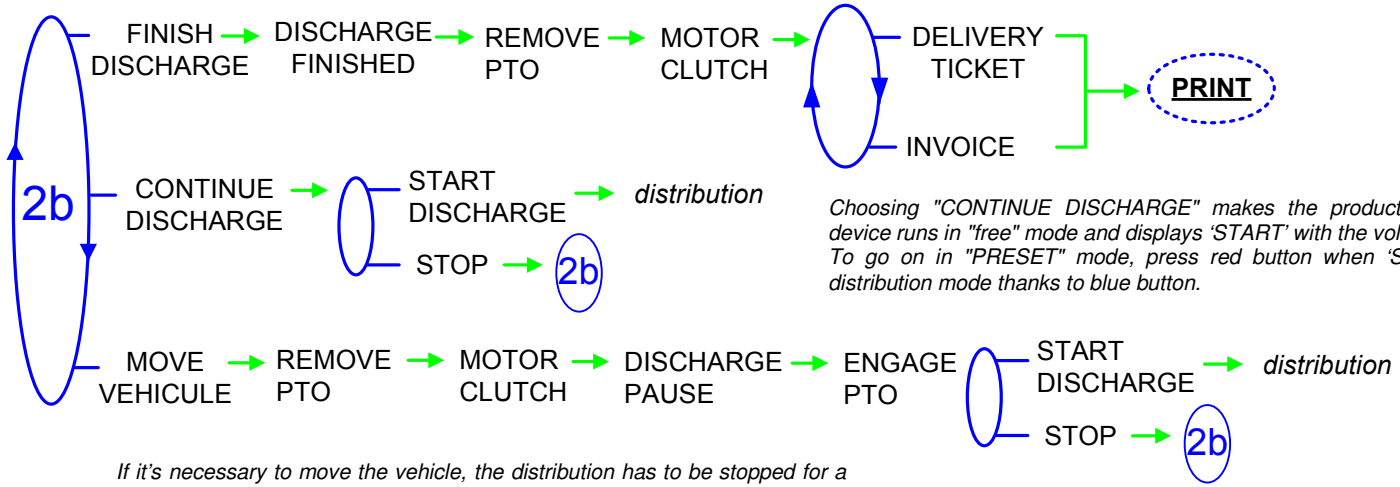
Choose the distribution mode:
1)PRESET, 2)FREE, 3)BARRELS
The volume value must be set for 1).
The CMATRONIQUE device displays "START" with the preset volume or with the volume already flew out.

To visualize the instantaneous flowrate during distribution, push blue button (m^3/h).
The product height appears after pushing blue button one more time (mm).
If the "temperature" option is chosen press blue button third time (°C).

K.1.2 PUMP NOT COUNTED



K.2 FINISH/CONTINUE

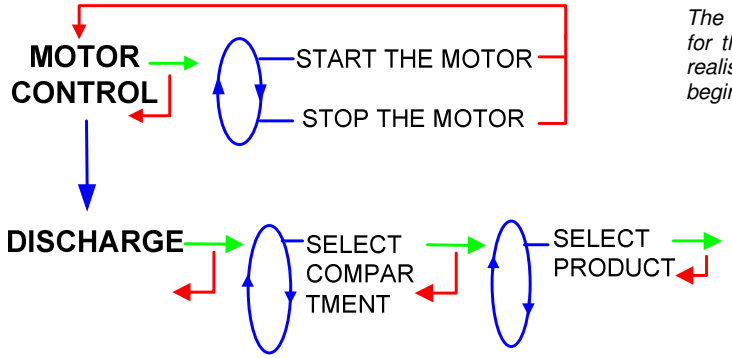


Choosing "CONTINUE DISCHARGE" makes the product flowing again. The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered.
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the "MOVE" item. The CMATRONIQUE device switches off the power take-off, clutches the engine and freezes the MICROCOMPT indicator on "PAUSE". Press green button to carry on distribution. The quantity already delivered is displayed with 'START'.

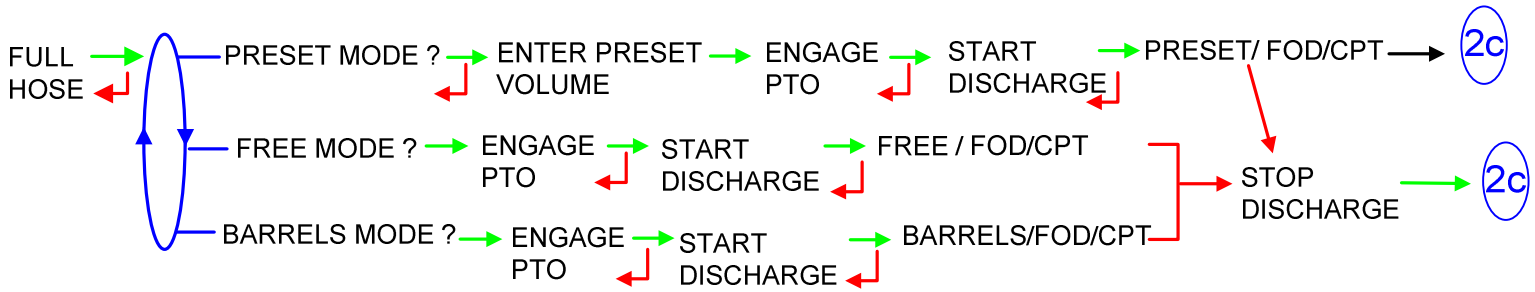
L. PUMPED COUNTED/NC RULE + COMPARTMENT SELECTION + MOTOR CONTROL (PTO)

L.1 DISCHARGE



The commands for the pump clutch/declutching and for the power take-off switching on/switching off are realised by the MICROCOMPT device at the beginning and at the end of distribution.

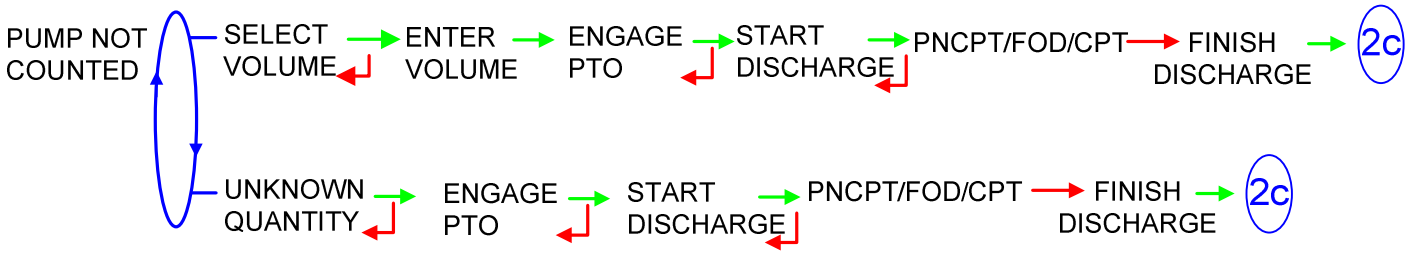
L.1.1 FULL HOSE



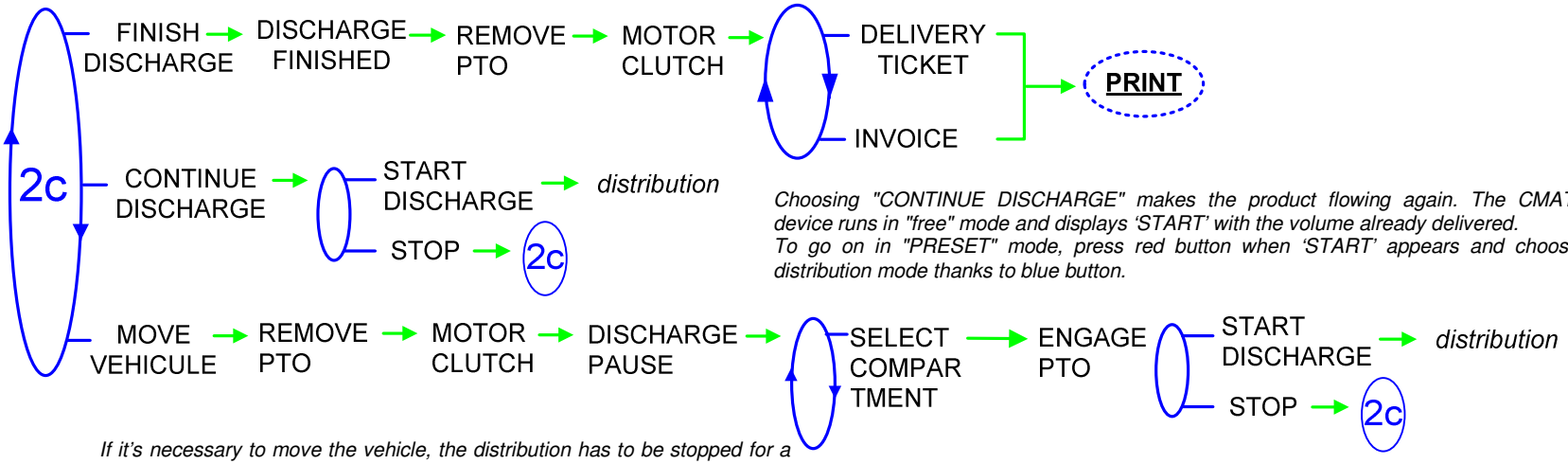
Choose the distribution mode:
1)PRESET, 2)FREE, 3)BARRELS
The volume value must be set for 1).
The CMATRONIQUE device displays "START" with the preset volume or with the volume already flew out.

To visualize the instantaneous flowrate during distribution, push blue button (m^3/h).
The product height appears after pushing blue button one more time (mm).
If the "temperature" option is chosen press blue button third time (°C).

L.1.2 PUMP NOT COUNTED



L.2 FINISH/CONTINUE

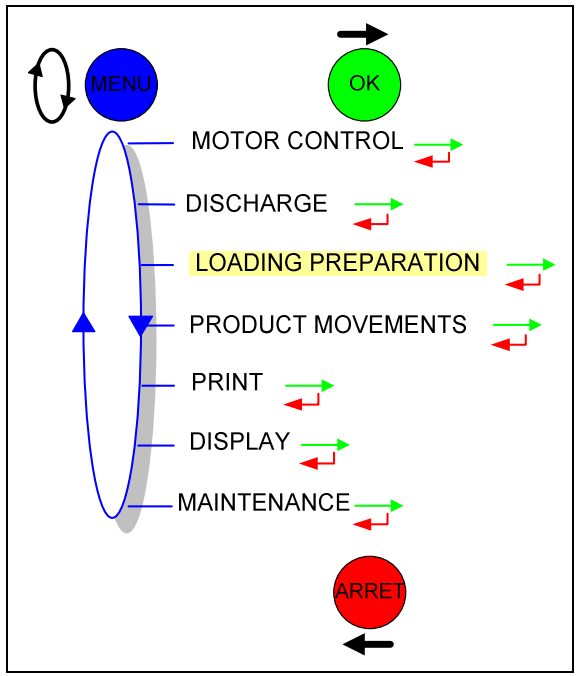


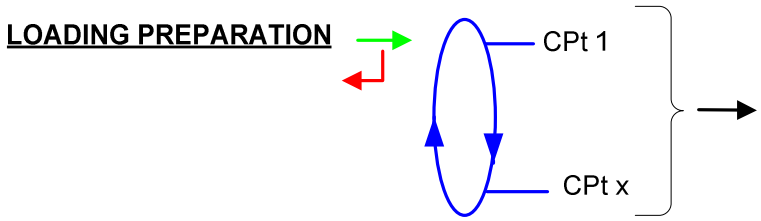
Choosing "CONTINUE DISCHARGE" makes the product flowing again. The CMATRONIQUE device runs in "free" mode and displays 'START' with the volume already delivered.
To go on in "PRESET" mode, press red button when 'START' appears and choose the right distribution mode thanks to blue button.

If it's necessary to move the vehicle, the distribution has to be stopped for a moment, then choose the "MOVE" item. The CMATRONIQUE device switches off the power take-off, clutches the engine and freezes the MICROCOMPT indicator on "PAUSE". Press green button to carry on distribution. The quantity already delivered is displayed with 'START'.

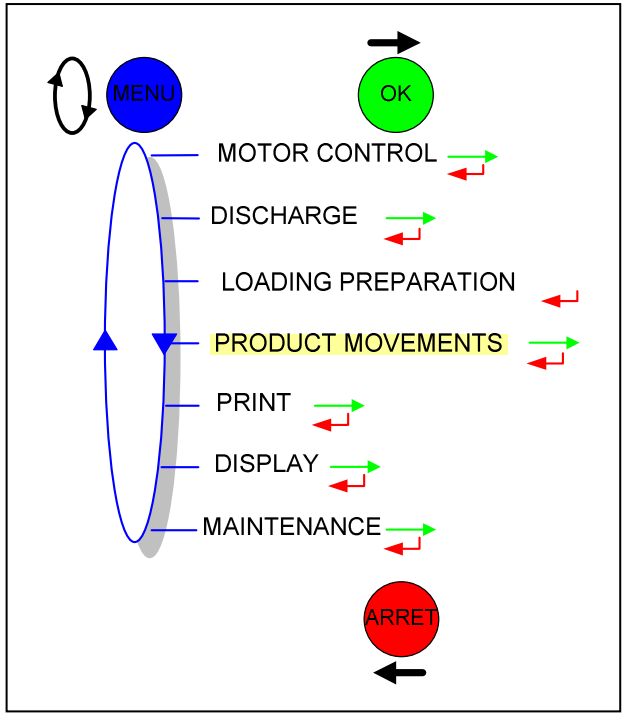
4.2 LOADING PREPARATION: In case of rupture during delivery, this menu guarantees the quality of the product delivered later on.

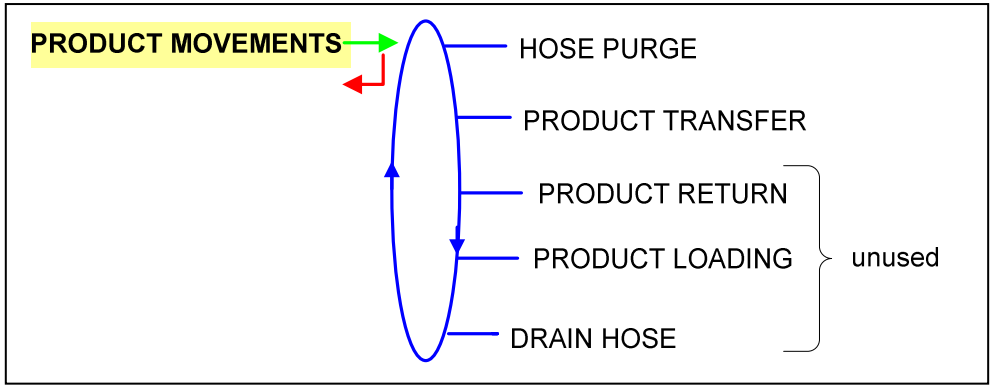
Before filling an empty compartment, use the LOADING PREPARATION menu to guaranty that the compartment is really empty. Then fill the compartment. The quality of the product delivered hereafter is guaranteed.



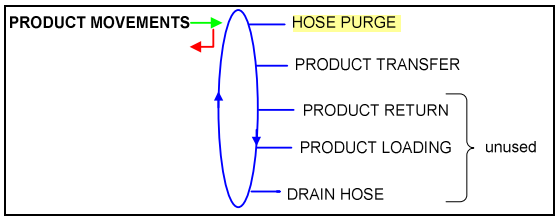


4.3 PRODUCT MOVEMENTS

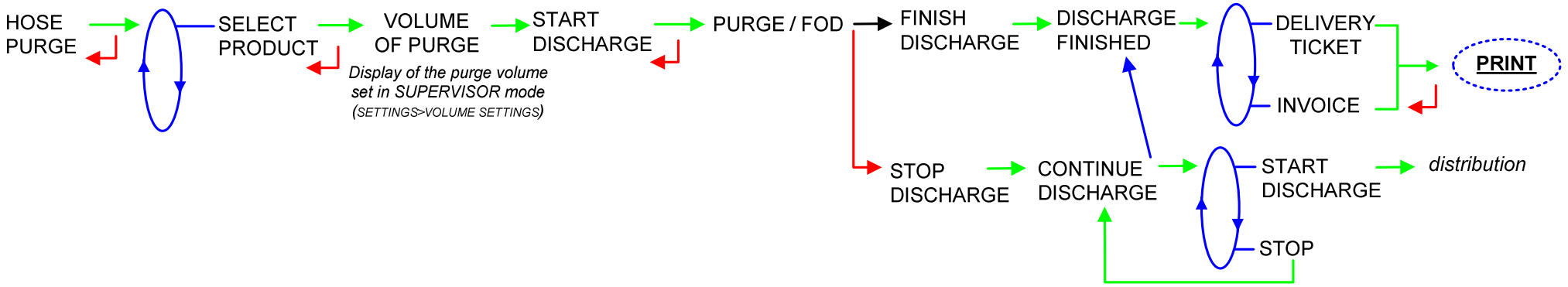




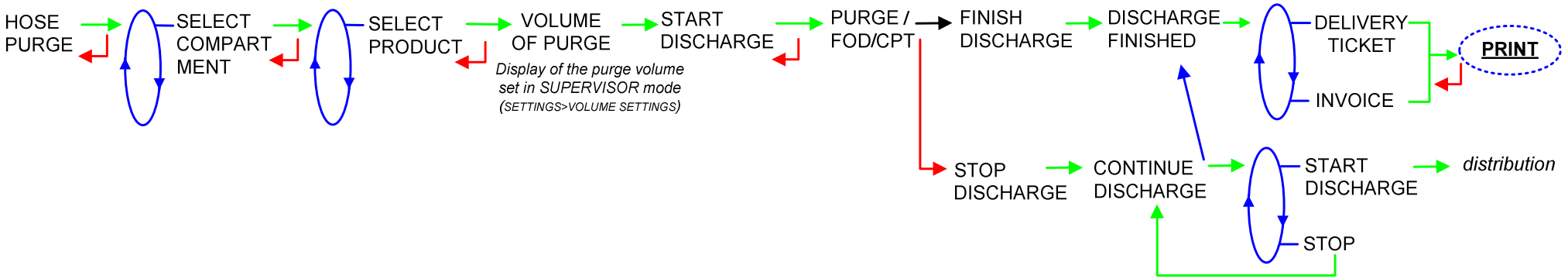
4.3.1 HOSE PURGE: WHICH CONFIGURATION FOR YOUR CMA TRONIQUE?



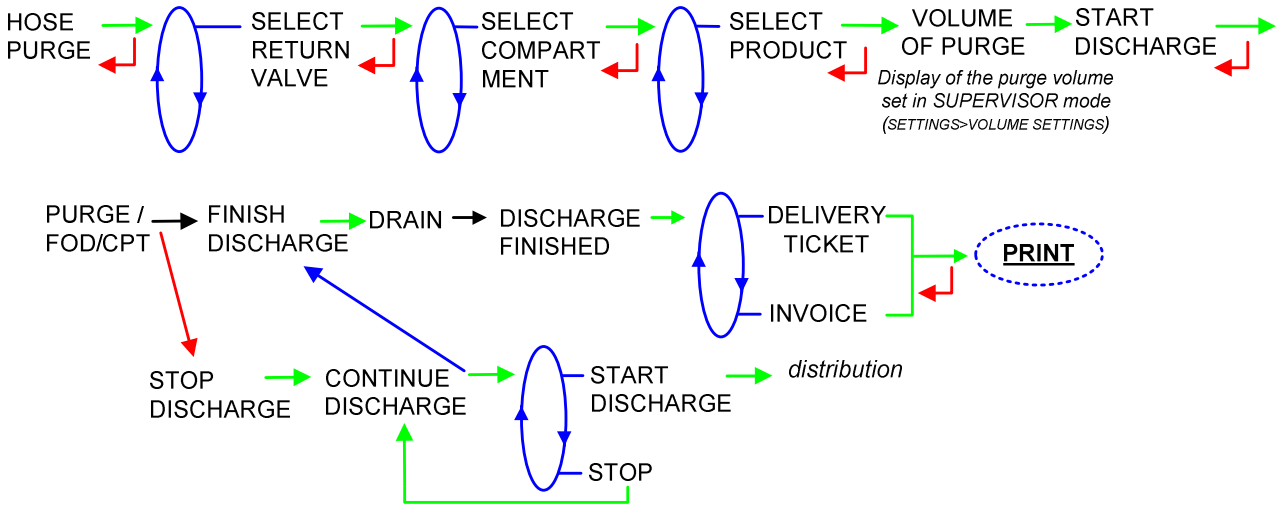
A. STANDARD



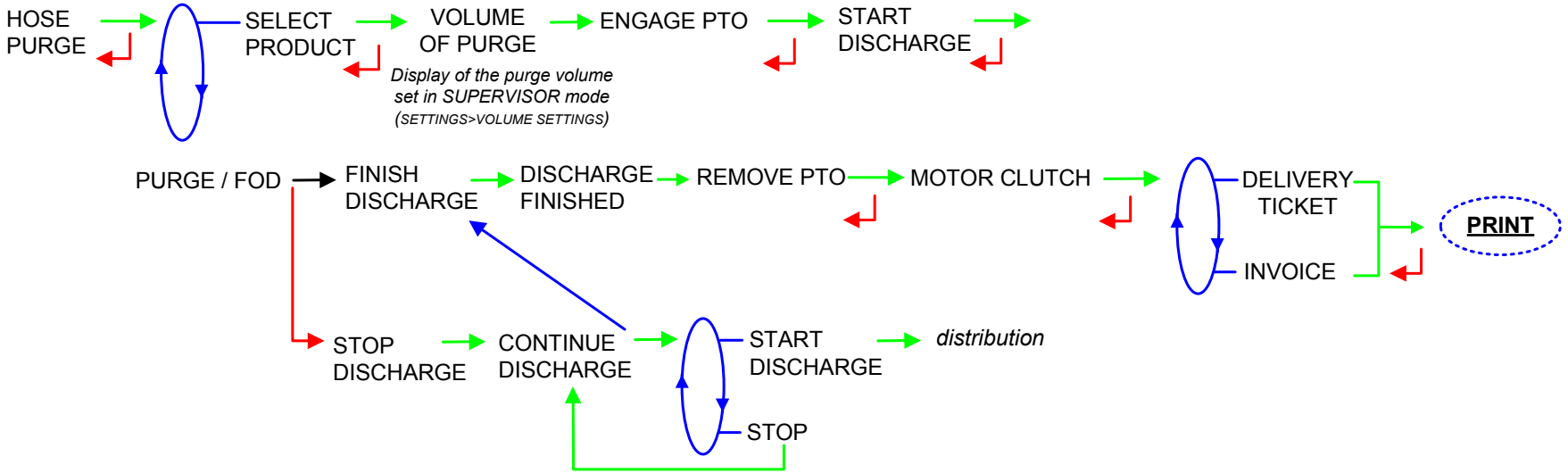
B. COMPARTMENT SELECTION



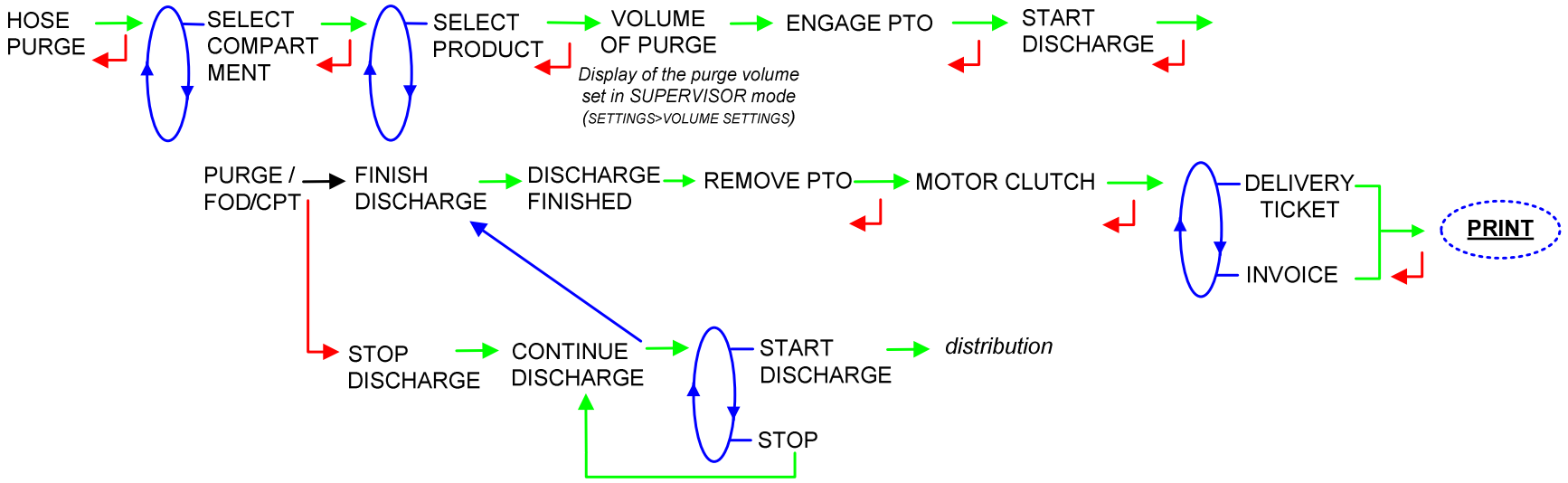
C. COMPARTMENT SELECTION + RETURN VALVE OPTION



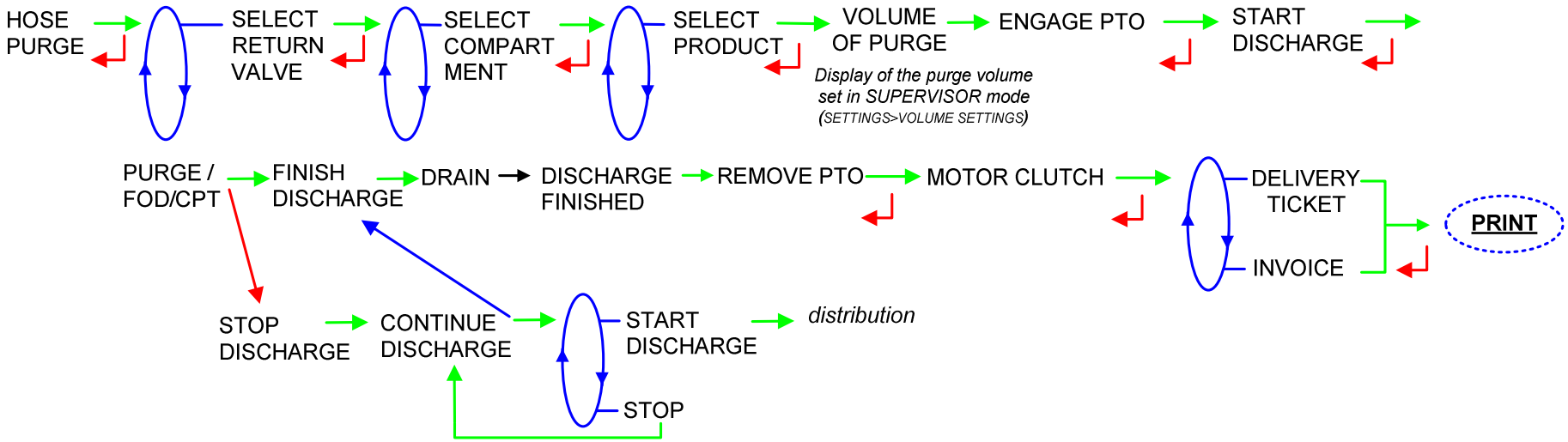
D. STANDARD + MOTOR CONTROL (PTO)



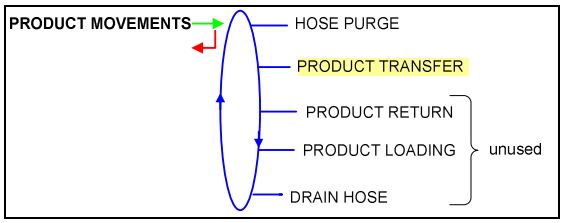
E. COMPARTMENT SELECTION + MOTOR CONTROL (PTO)



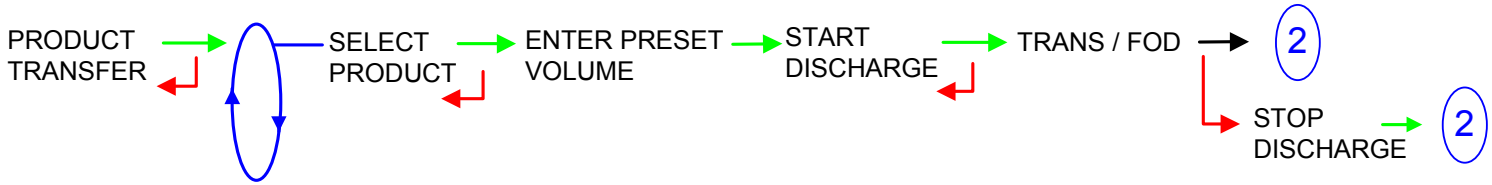
F. COMPARTMENT SELECTION + RETURN VALVE OPTION + MOTOR CONTROL (PTO)



4.3.2 PRODUCT TRANSFER

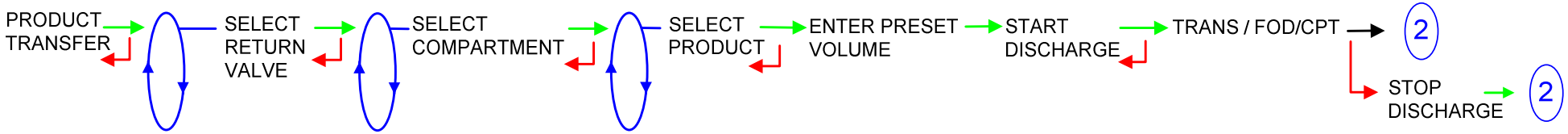


A. STANDARD

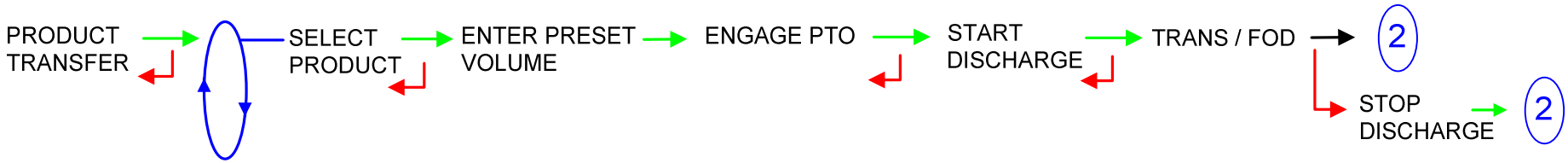


B. COMPARTMENT SELECTION

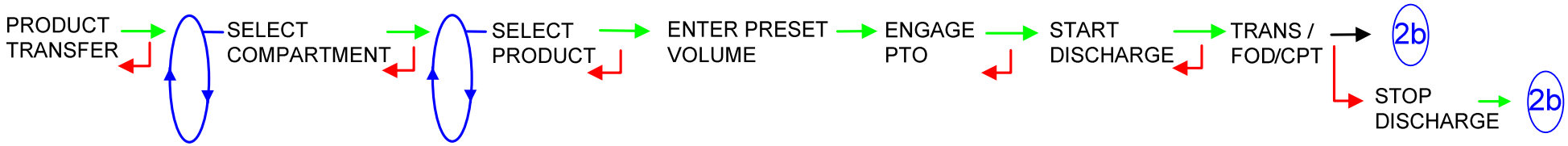
C. COMPARTMENT SELECTION + RETURN VALVE OPTION



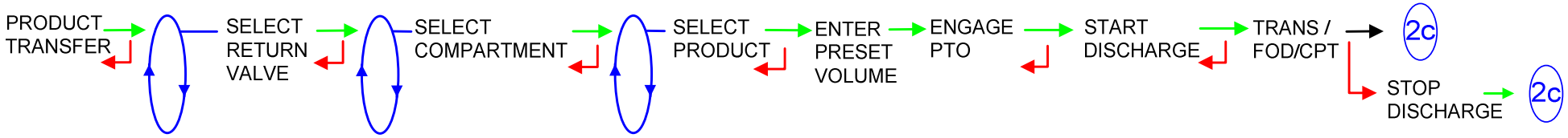
D. STANDARD + MOTOR CONTROL (PTO)



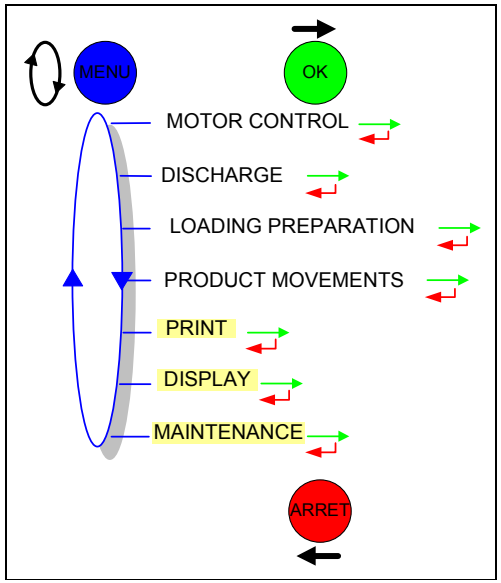
E. COMPARTMENT SELECTION + MOTOR CONTROL (PTO)

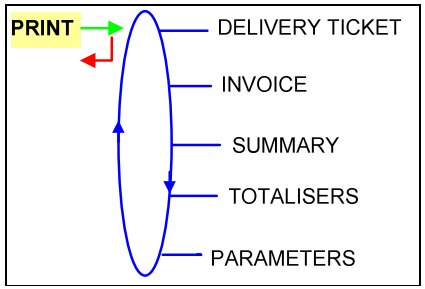


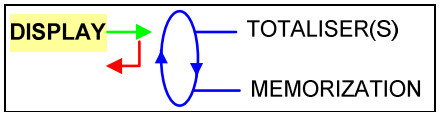
F. COMPARTMENT SELECTION + RETURN VALVE OPTION + MOTOR CONTROL (PTO)

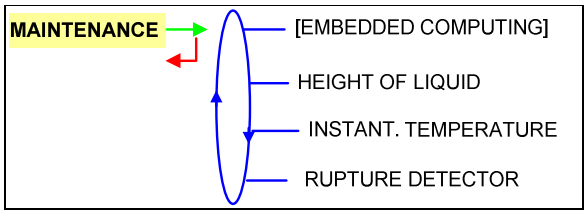


4.4 ADDITIONAL FUNCTIONS



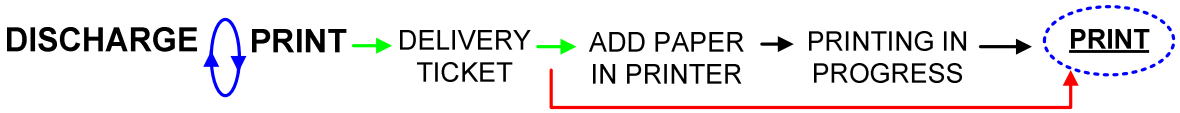




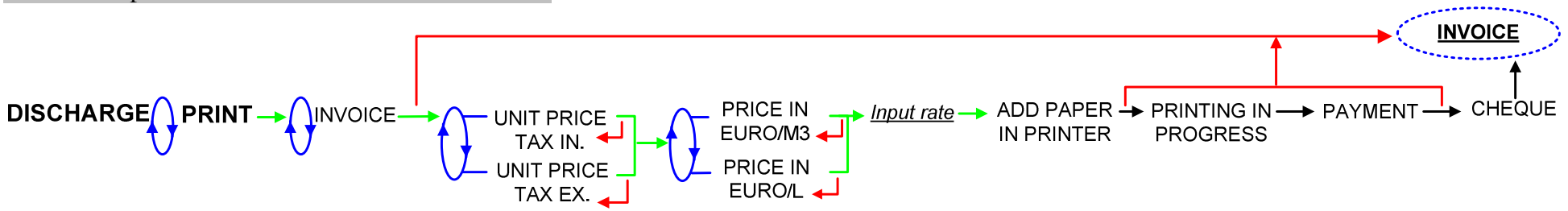


4.4.1 PRINT

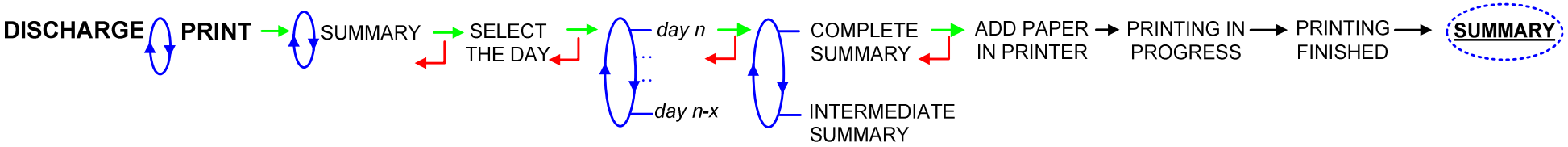
DELIVERY TICKET: print the last delivery order



INVOICE: print the invoice of the last measurement



SUMMARY: print a daily summary. For the present day it can be a complete or an intermediate summary (ANNEX)

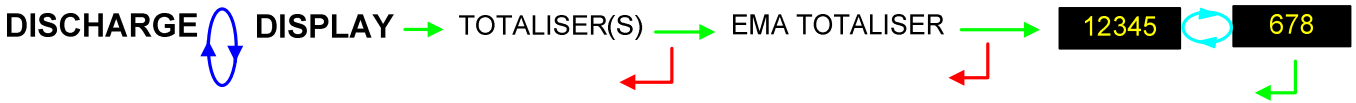


TOTALISERS: print the internal totaliser (general and by product) (ANNEX)

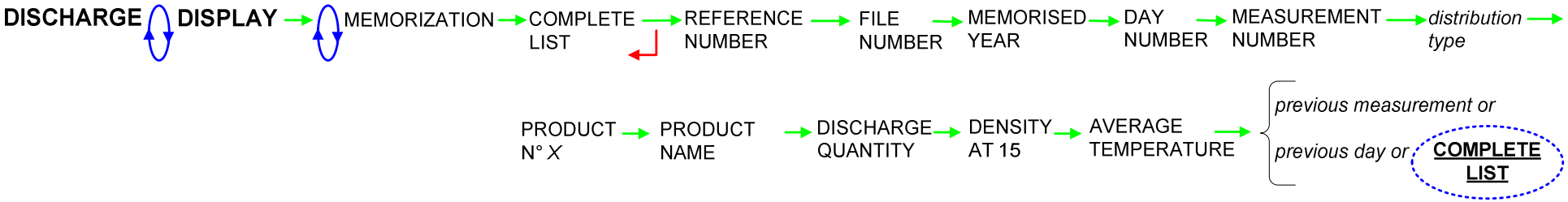
PARAMETERS: print the calculator parameters (ANNEX)

4.4.2 DISPLAY

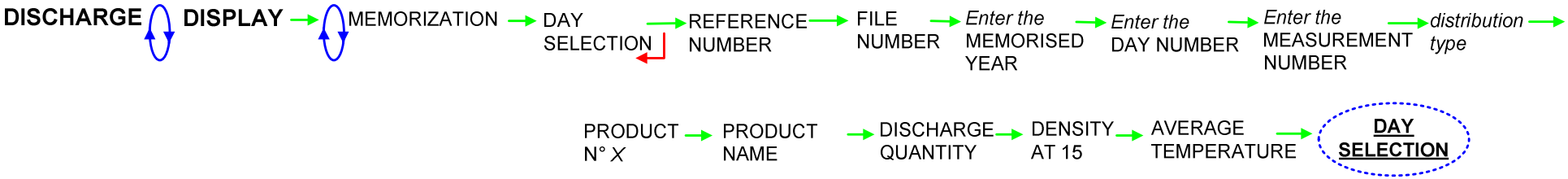
TOTALISER: general totaliser displayed in liters



ALL THE MEASUREMENTS: display sequence of all measurements results memorized by the MICROCOMPT, from the last to the first one, sorted by day number and then by measurement number in the day.

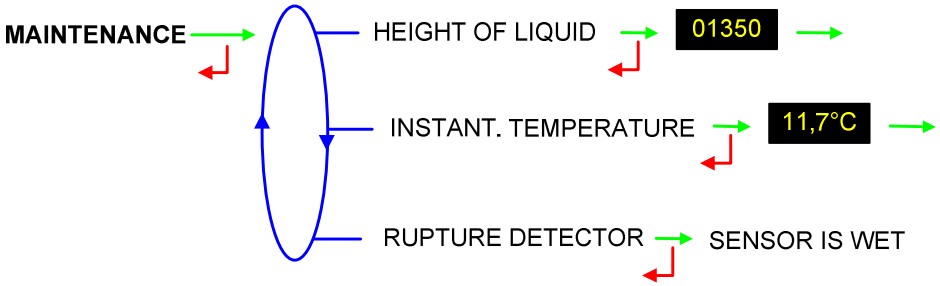


A PARTICULAR MEASUREMENT: display sequence of a particular measurement that is chosen by setting the day number and the measurement number

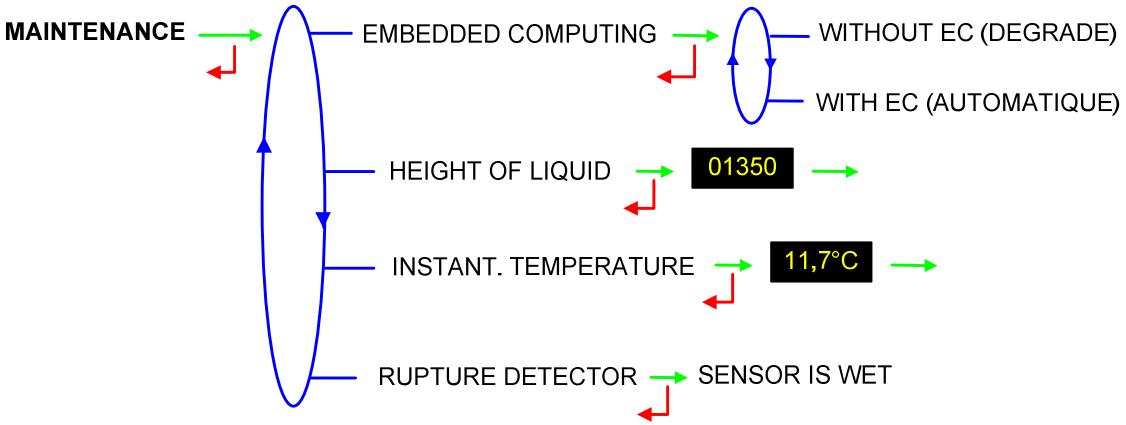


4.4.3 MAINTENANCE

STANDARD MENU: displays the dynamic height of product, the instantaneous temperature and indicates the rupture detector status



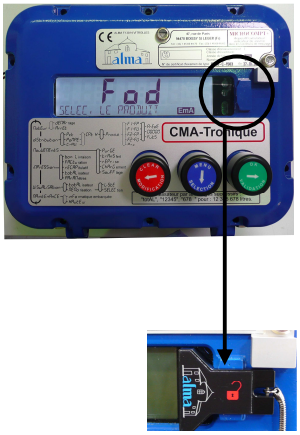
MENU WITH EMBEDDED COMPUTING OPTION: allows to work without embedded computing in case of failure (degraded mode). Displays the dynamic height of product, the instantaneous temperature and indicates the rupture detector status

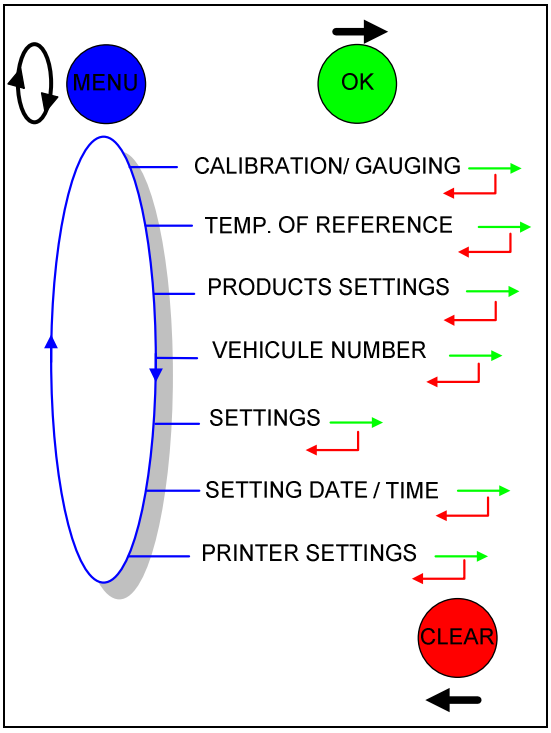


4.5 CMA TRONIQUE FAULTS PROCESSING

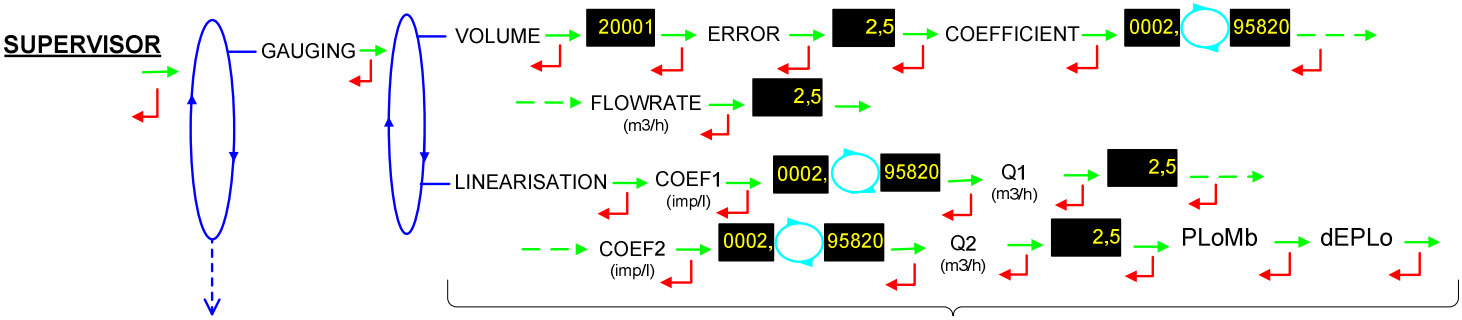
display	meaning	plausible cause	action
ProM	PROM out of order		Component must be changed
rAM	RAM out of order		Component must be changed
EEPro	The EEPROM content is invalid		Acknowleged in metrological mode
SAvE rAM	The saved RAM content is invalid		Component must be changed
COMM	Communication failure with the printer	The printer is not connected or out of order	Control connections, fuse and switch
PuLSE	Coherence failure in metering lines	2H00 transmitter is badly or not connected, or out of order	Authorized repair service
totAL	The secured totalizer content is invalid		Component must be changed
PoVEr	Power outage during measurement		Acknowledge ends measurement and forces timekeeping
diSPL	Secured display out of order		Move it or change it
L-FLo	Flowrate is too low	The nozzle is too closed	Open up the nozzle
H-FLo	Flowrate is too high		
dEb_A	Flowrate at the end of measurement greater than 15m^3/h		
dOG	Watch-dog not rearmed		
tiME	Time clock out of order	Setup is lost	make a new setup in SUPERVISOR mode
MEMO	Secured memorisation content is invalid		acknowleged in metrological mode
FuLL	Secured memorisation is full		Acknowledged by results ageing
tEMP	The temperature is out of the range		
PrESS	The current of the 4-20mA pressure transmitter is less than 1mA or greater than 19mA		
P_ASP	The pressure is less than -200mb for more than 100 liters during the flow of liquid	Fouling of the strainer	Acknowledge to go on in low flowrate
urGEn	Emergency shutdown engaged		

5. SUPERVISOR MODE





5.1 CALIBRATION

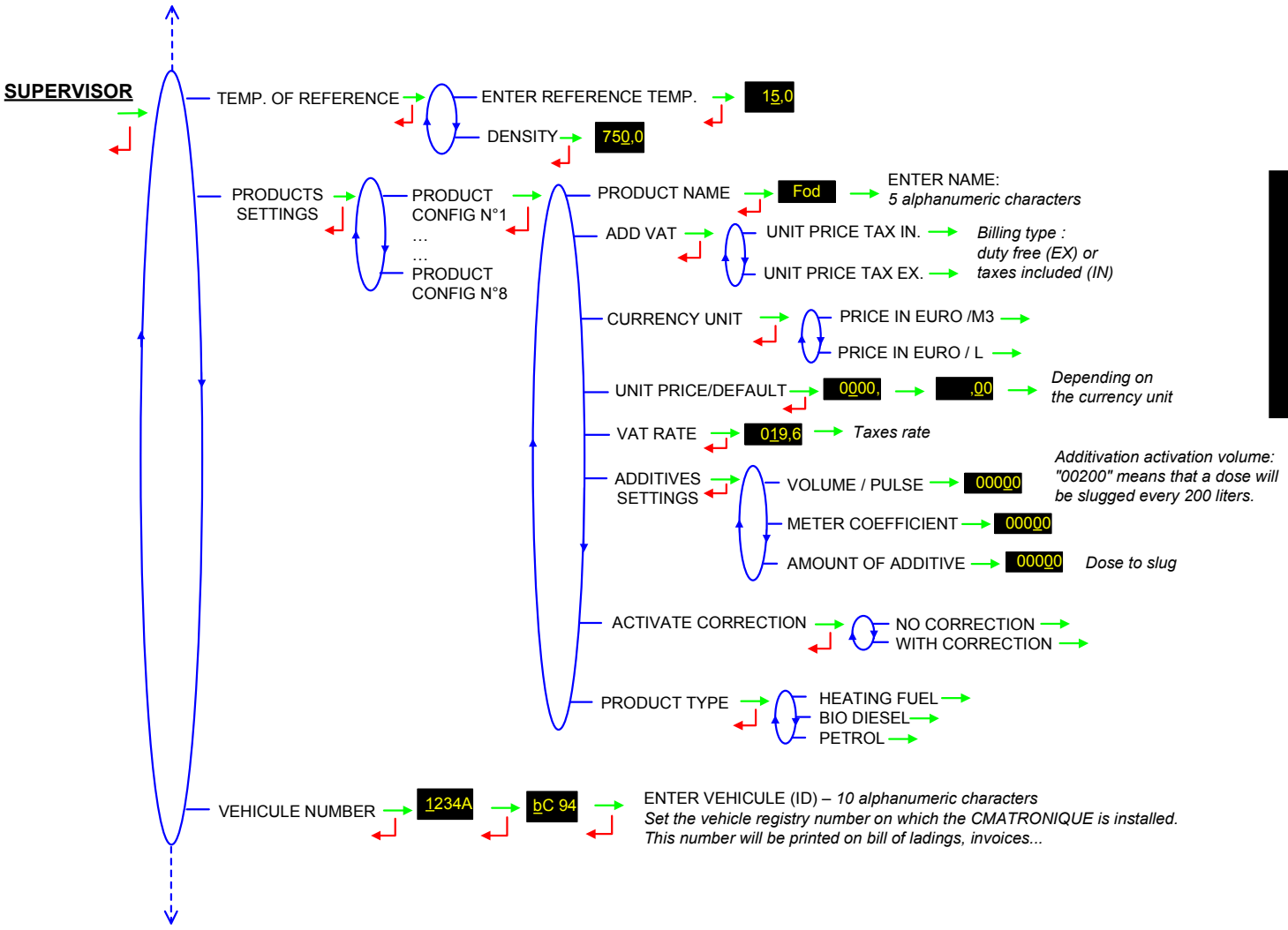


Set the volume read on the gauge increased by factor 10.
The MICROCOMPT calculates and displays the signed error in % and the average flow of the delivery.

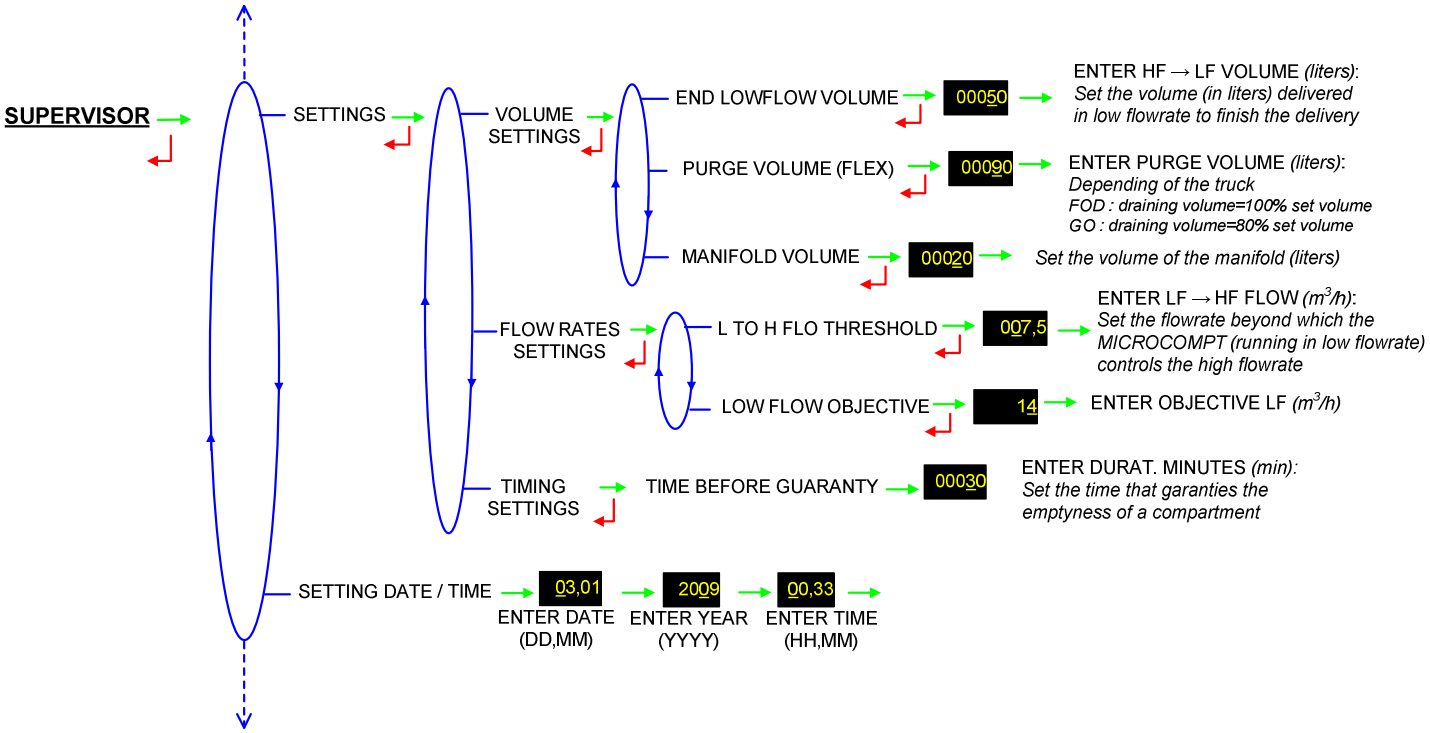
It is possible then to linearize the curve on 2 points of measurement.
Without linearization, the MICROCOMPT calculates the new coefficient.
For linearization, two tests must be carried out: in running flow (HF) and in low flow (LF). At the end, the MICROCOMPT calculates the average coefficient and the slope of the linearization line.

5.2 SETUP

5.2.1 REFERENCE TEMPERATURE, PRODUCTS SETTINGS, VEHICLE NUMBER

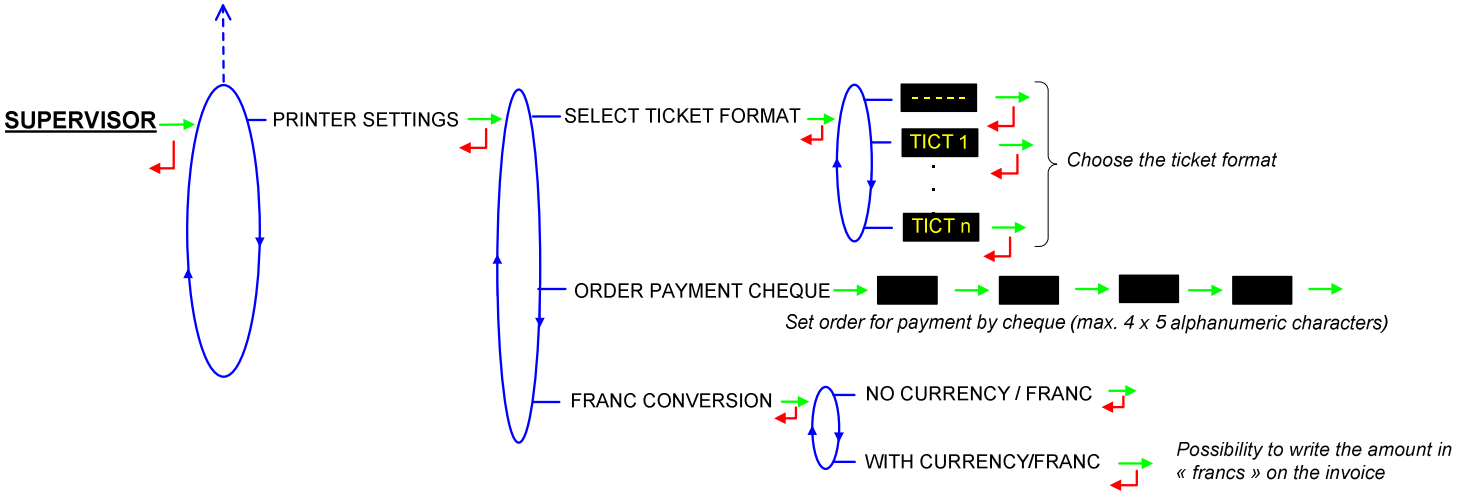


5.2.2 SETTINGS, SETTING DATE/TIME

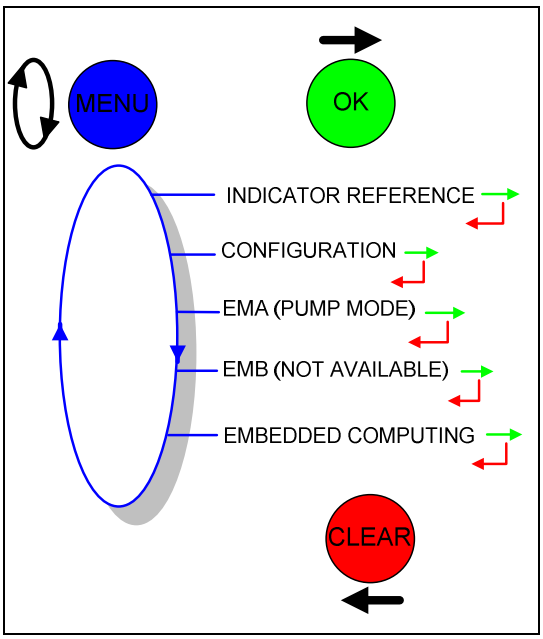


SUPERVISOR

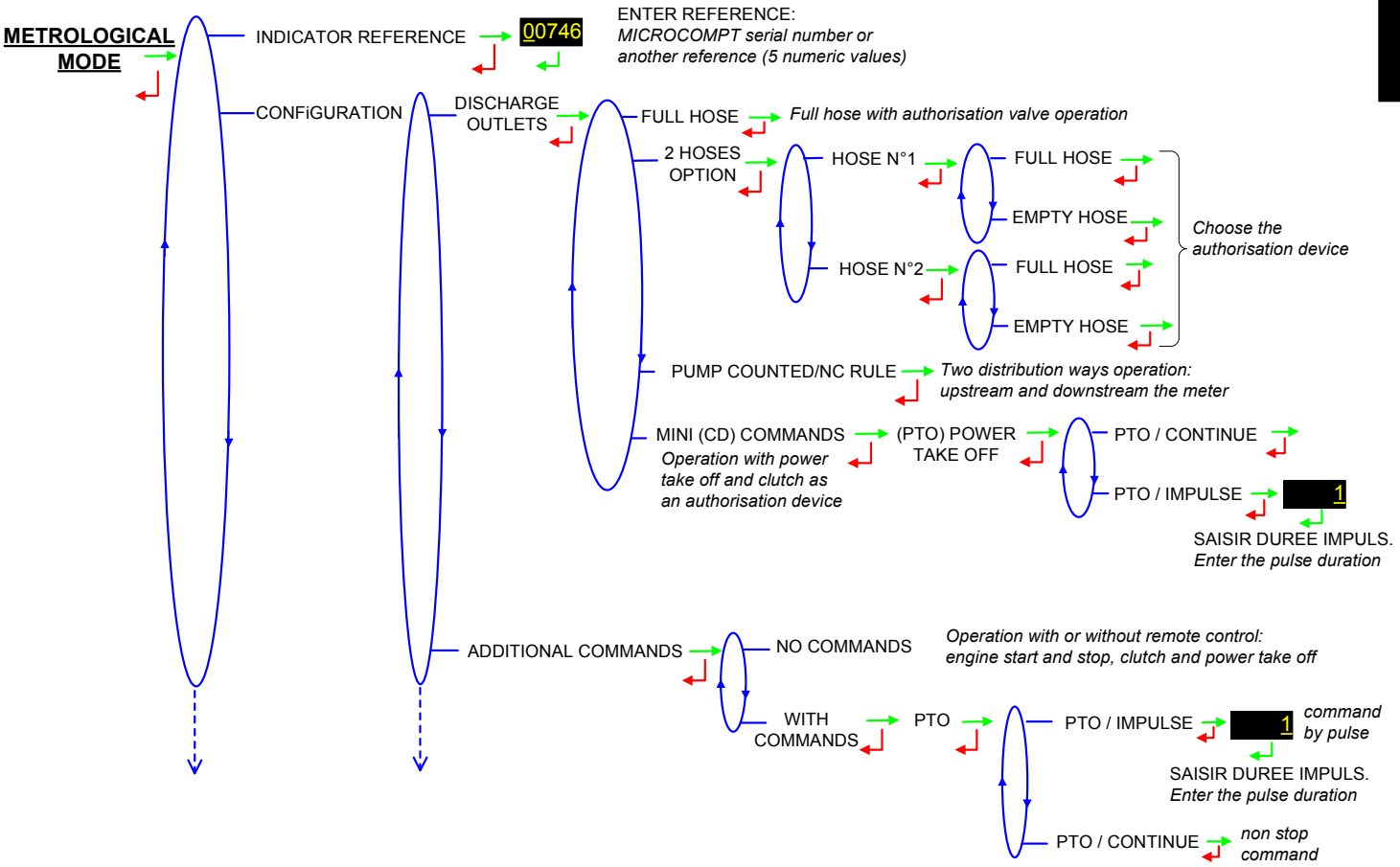
5.2.3 PRINTER SETTINGS



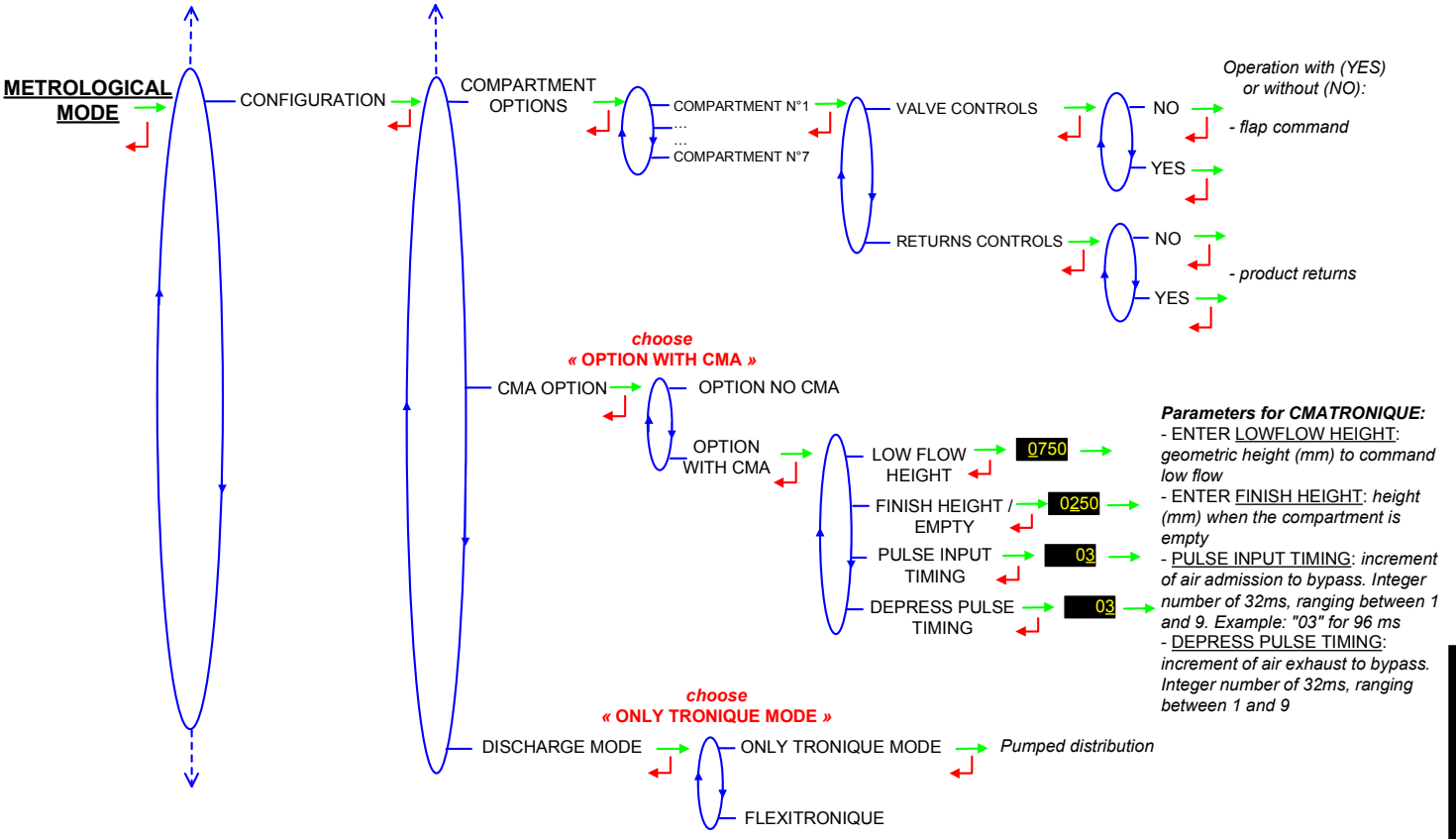
6. METROLOGICAL MODE

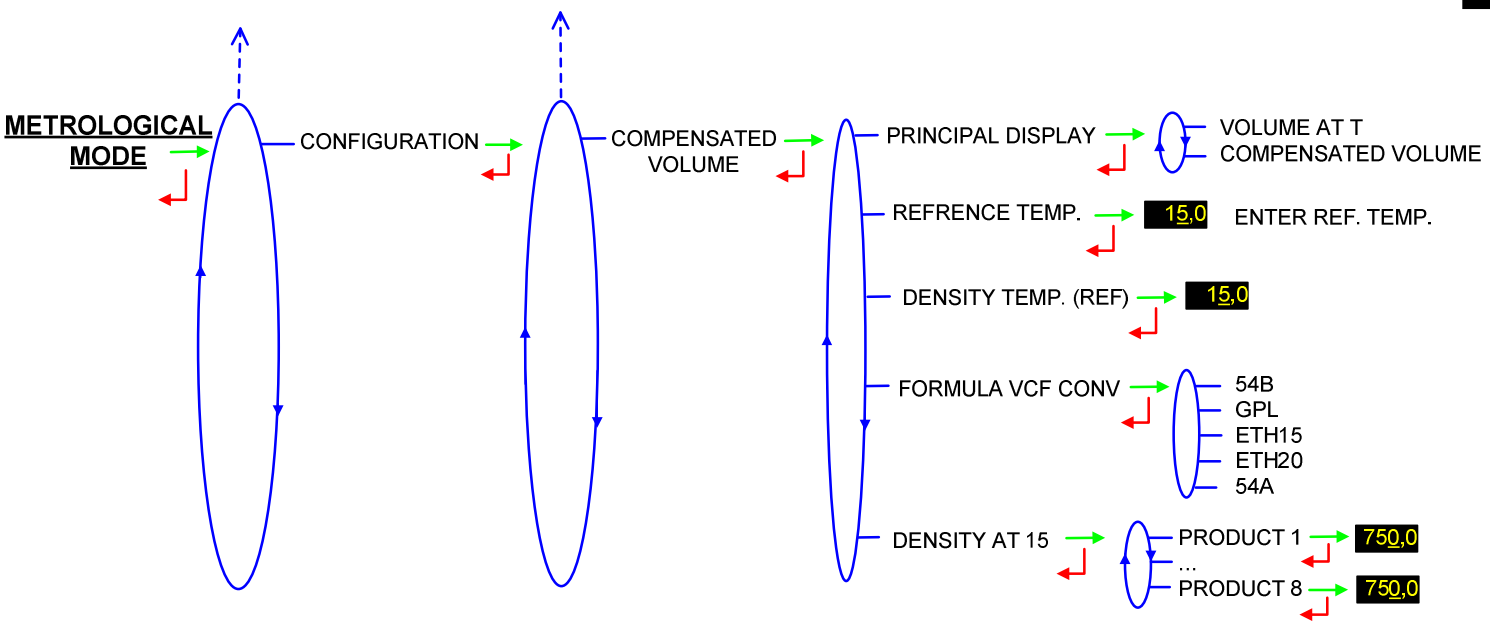


6.1 INDICATOR REFERENCE, CONFIGURATION



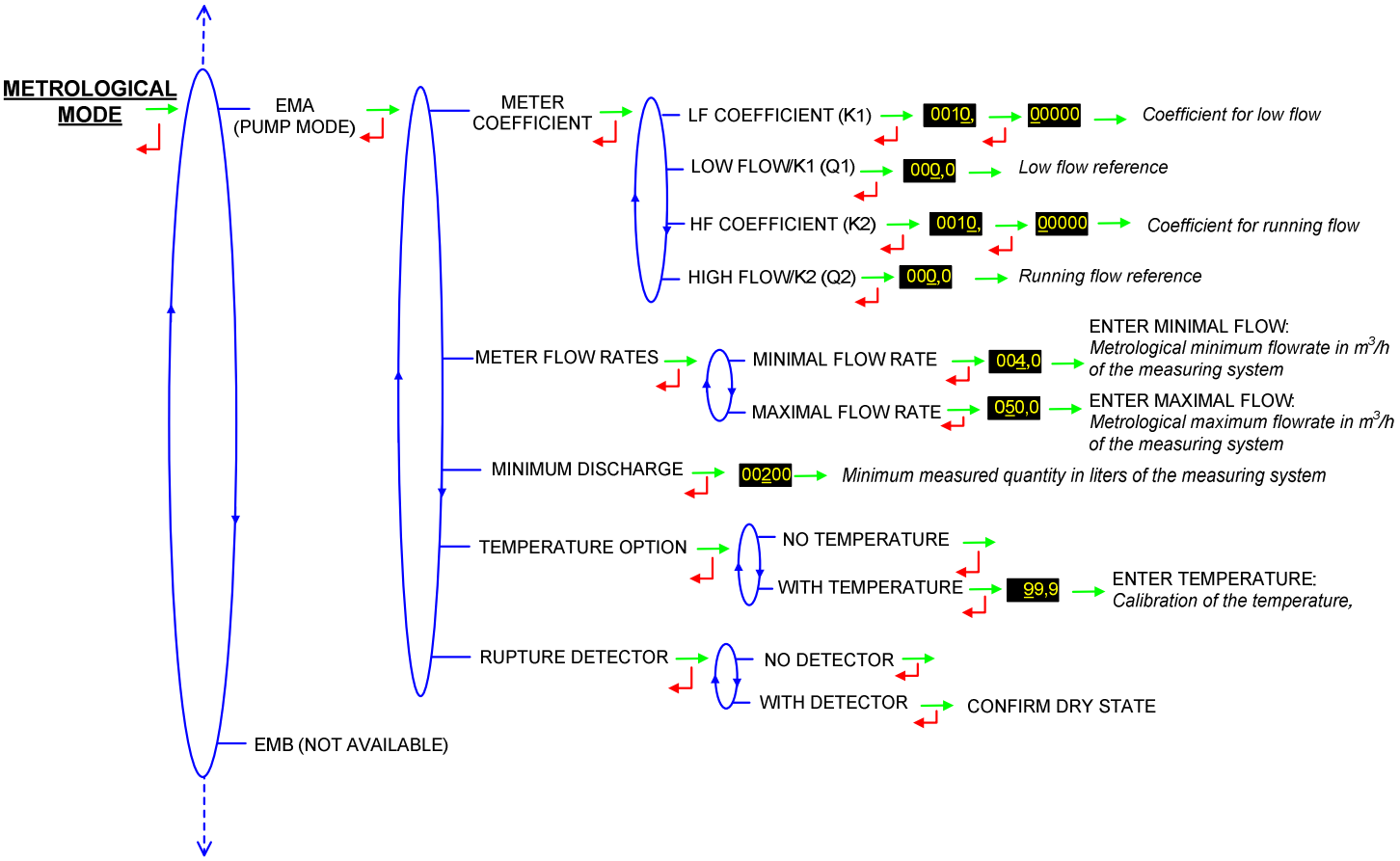
6.2 CONFIGURATION



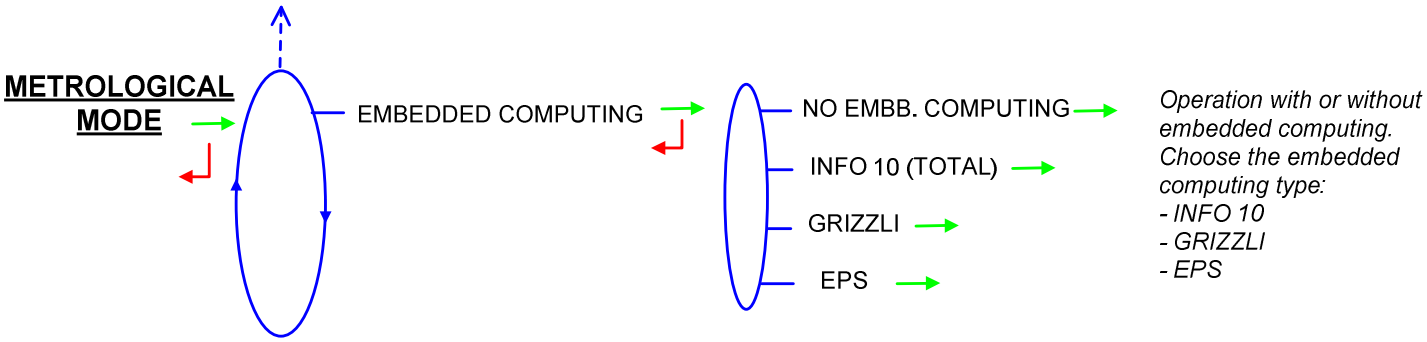


METROLOGICAL

6.3 EMA (PUMP MODE), EMB (NOT AVAILABLE)



6.4 EMBBEDED COMPUTING

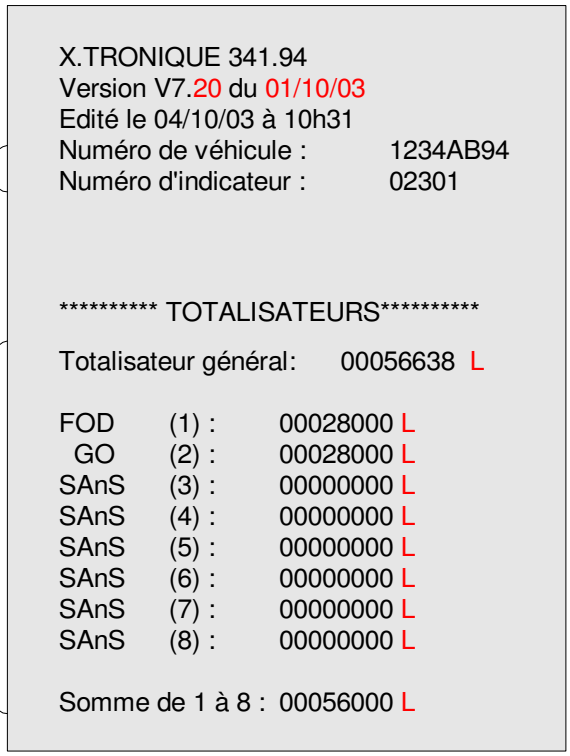


ANNEX

TOTALISERS: print the internal totaliser (general and by product)

Le numéro de véhicule est modifiable en mode CHEF (dongle CHEF), le numéro de d'indicateur est modifiable en mode METROLOGIQUE (déplombé).

Totalisateurs sans remise à zéro comprenant un totalisateur général et un totalisateur par produit.
Le totalisateur général est égal à la somme des totalisateurs par produit et des écoulements sans autorisatiion (fuites).



SUMMARY: print a daily summary. For the present day it can be a complete or an intermediate summary

Le numéro de véhicule est modifiable en mode CHEF (dongle CHEF), le numéro d'indicateur est modifiable en mode METROLOGIQUE (déplombé).

Impression du type de récapitulatif (intermédiaire ou définitif) de la date, du quantième et du nombre de résultats de la journée imprimée.

Totalisateurs journaliers comprenant un totalisateur par produit et leur somme ainsi que la température moyenne pondérée en volume par produit si l'option est configurée en mode métrologique.

Liste des résultats de mesurage du 04/08/03 constituée:
- du quantième
- de l'heure de début de coulage
- de l'heure de fin de coulage
- du type de mode de livraison (prédé, libre, fûts, purge)
- du numéro de mesurage dans la journée
- du libellé du produit
- de la quantité délivrée
- de la température moyenne pondérée en volume si l'option est configurée en mode métrologique.

X.TRONIQUE 341.93
Version V7.11 du 12/05/03
Edité le 04/08/03 à 10h31
Numéro de véhicule : 1234AB94
Numéro d'indicateur : 02301

Récapitulatif définitif
des mesurages du 04/08/03
Jour 216 - 003 résultats mémorisés

**** TOTALISATEURS JOURNALIERS ****

FOD	(1) :	00026000 L	+11,3°C
GO	(2) :	00005000 L	+10,6°C
SAnS	(3) :	00000000 L	+00,0°C
SAnS	(4) :	00000000 L	+00,0°C
SAnS	(5) :	00000000 L	+00,0°C
SAnS	(6) :	00000000 L	+00,0°C
SAnS	(7) :	00000000 L	+00,0°C
SAnS	(8) :	00000000 L	+00,0°C
Somme de 1 à 8 :		00031000 L	+11,2°C

********** RECAPITULATIF **********

hre deb	hre fin	N° Mesur	Prod	(L) Volume	(°C) Temp
09:40	09:50	D01	FOD	14000	+11,3
09:51	10:01	L02	FOD	12000	+11,3
10:02	10:23	L03	GO	05000	+10,6

pré(D)é; (L)ibre; (F)ûts; (P)urge

PARAMETERS: print the calculator parameters