

**FLOWMETER**  
**ZCE 18 24 & ZCE 18 42**  
**EMS 12 & EMS 24 & EMS 48**  
Description – Installation – Implementation –  
Maintenance

U509001-e – Revision 1 – 15 July 2009



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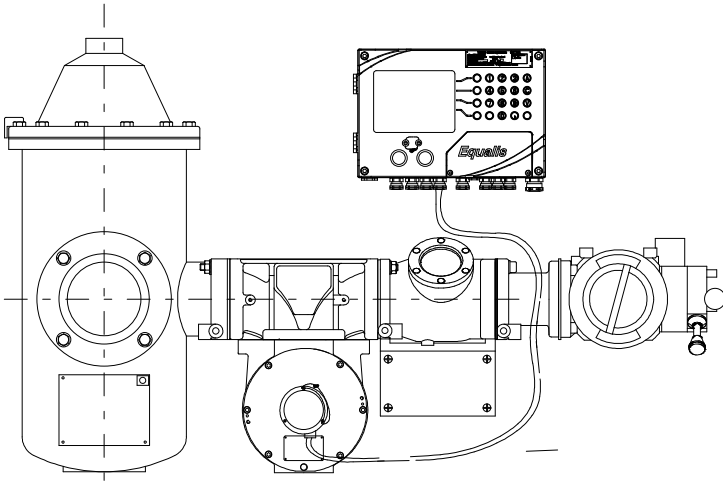
## FLOWMETER ZCE 18 24 & ZCE 18 42 & EMS 12 & EMS 24 & EMS 48 ON LORRY AND FIXED INSTALLATION FOR HYDROCARBONS

### Contents

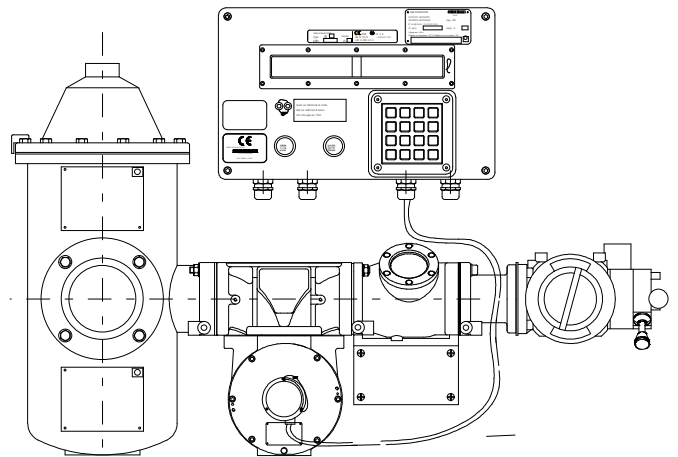
<b>1. Alternative EMS and ZCE 18 Models .....</b>	<b>3</b>
<b>2. General .....</b>	<b>4</b>
<b>3. Description .....</b>	<b>4</b>
3.1. Dimensions .....	4
3.2. Components .....	5
3.3. Conditions of Use .....	6
Maximum and minimum temperatures.....	6
Environmental classification.....	6
<b>4. Installation.....</b>	<b>7</b>
4.1. Delivery .....	7
4.2. Checking Procedure.....	7
4.3. Implementation .....	7
4.3.1. Hydraulic Connections.....	7
4.3.2. Earthing.....	7
4.3.3. Electrics.....	7
4.4. Installation Plans.....	8
4.4.1. Mechanical EMS and ZCE 18.....	8
4.4.2. EMS and ZCE 18 pneumatic control .....	9
<b>5. Implementation .....</b>	<b>10</b>
<b>6. Maintenance .....</b>	<b>11</b>

## 1. Alternative EMS and ZCE 18 Models

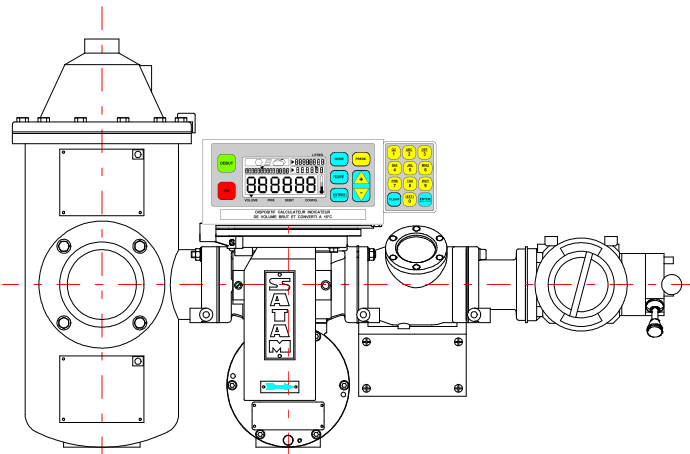
### EMS or ZCE 18 EQUALIS L



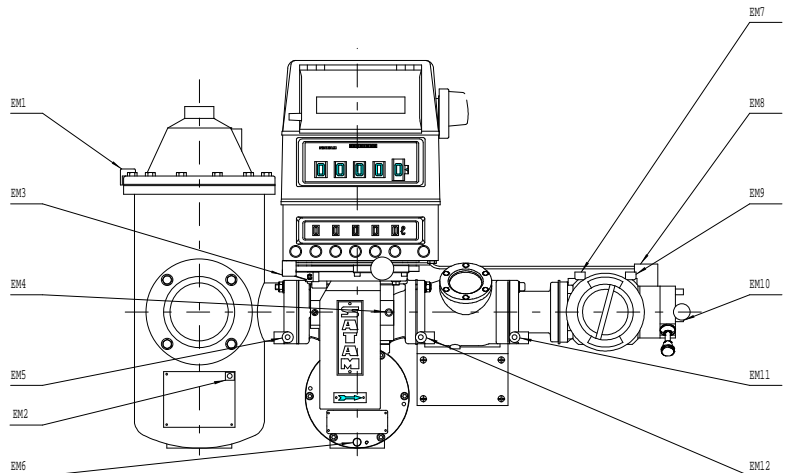
### EMS or ZCE 18 RUBIS



### EMS or ZCE 18 EMR 3



### EMS or ZCE 18 Reader head VEEDER ROOT



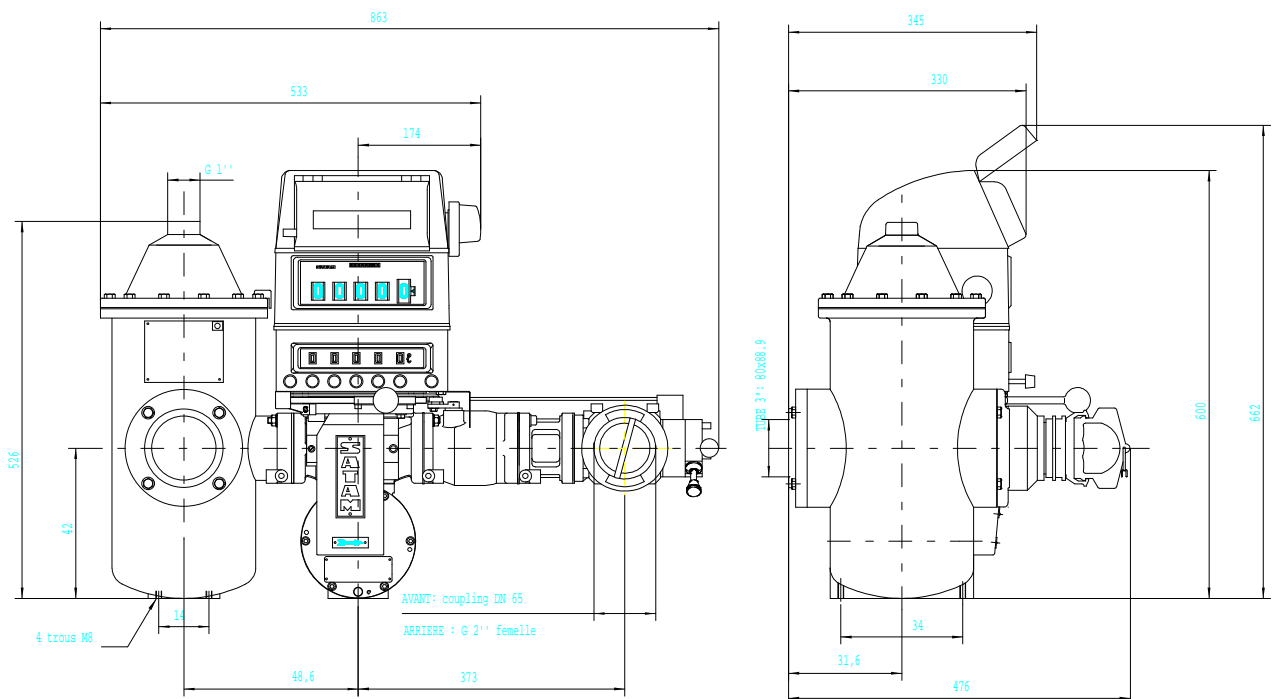
## 2. General

The EMS and ZCE 18 metering units are designed to deliver hydrocarbon liquids at a kinematic viscosity of less than 20 mm<sup>2</sup>/s, industrial oils and fatty acid methyl esters for diesel motors, ethanol delivered by tanker or self-service area.

This section sets out the necessary information for receipt, installation and implementation of the EMS & ZCE 18 metering equipment. The additional information sheets for each of the accessories are provided separately.

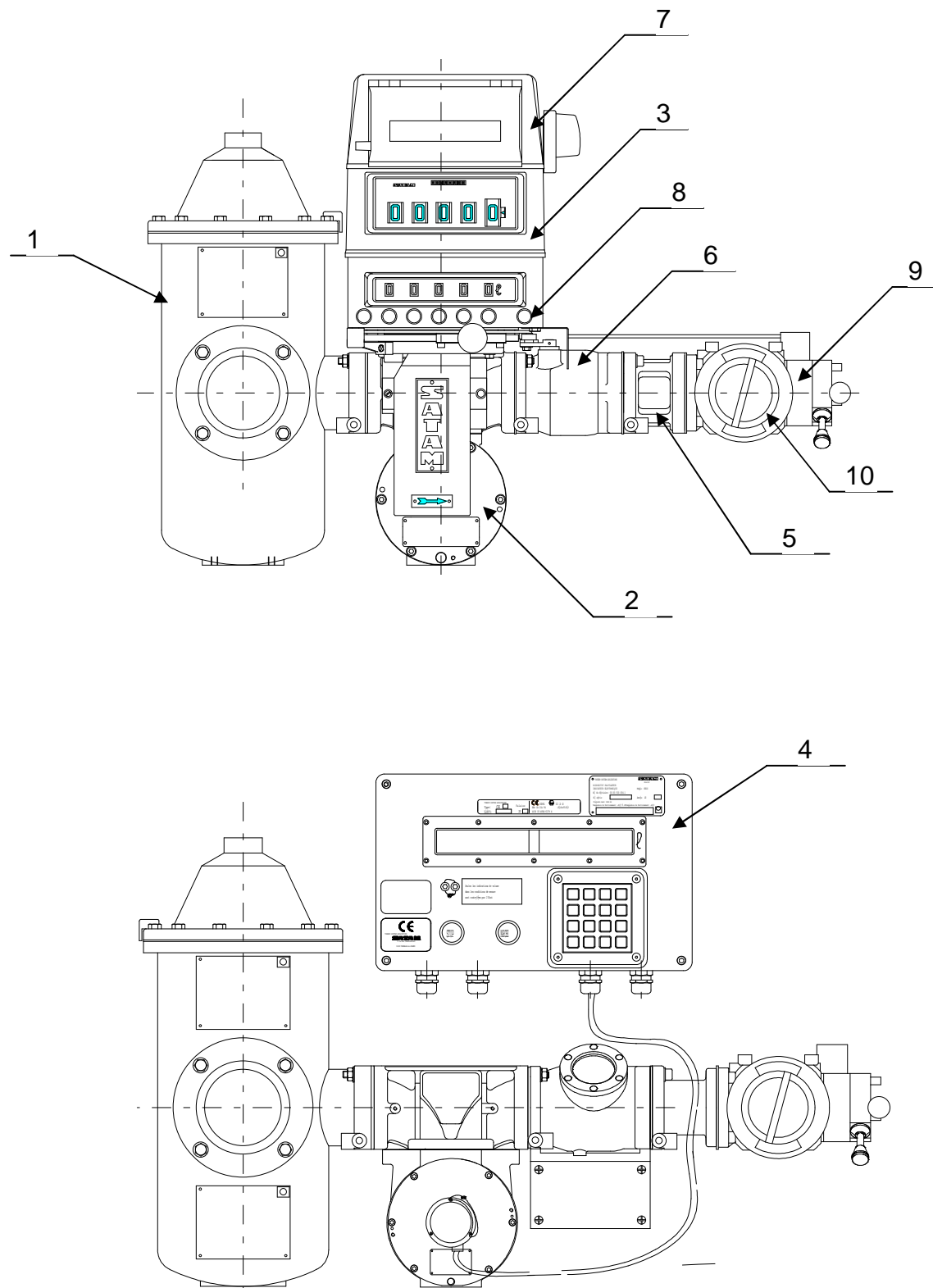
## 3. Description

### 3.1. Dimensions



## 3.2. Components

The EMS and ZCE 18 control delivery meters are made up of the following components:



1 An air separator:

a) For tankers:

A SATAM FS 24 or EC 36-1 air separator filter including a protection filter in stainless steel (200µ for petrol and 450µ for diesel).

b) For a fixed dispenser:

An EC 27-40 type SATAM air separator for flows greater than 24 m<sup>3</sup>/h and for underground storage tanks.

2 A flow counter model : ZC 17 12/12 or ZC 17 12/24 or ZC 17 12/25

ZC17 24/24 or ZC 17 24/48

ZCB 17 24/24 or ZCD 17 24/48

3 A VR type 7887 or Kienzle type M indicator graded in liters or an EQUALIS L, RUBIS or EMR 3 type electronic calculator (4)

5 In the case of EMS 48 and ZCE 18-42, a sensor. Where a pneumatic authorization tap XAD 54 is used, the sensor is incorporated in the body of the tap. This sensor enables the detection of air.

Available on request:

6 A valve of authorization XAD 39 mechanical or electric or a valve of authorization XAD 54 pneumatic.

7 A totalizer ticket printer 7498 or O. start 7951

8 A predetermining counter 7889 on request.

9 A three way tap XAD 46 (9)

10 If necessary provided with a valve box.

The fixed installation is completed by a micro filter water separator for flight or diesel motors.

### 3.3. Conditions of Use

Maximum and minimum temperatures

	Temperature Limits	
	Electronic	Mechanical
Maximum temperature	55°C	55°C
Minimum temperature	- 25°C	- 40°C

Environmental classification

	Environmental classification	
	Tanker and fixed unit + counter	Means of provision
Mechanical environnement	M2	M2
Electromagnetic environnement	E3	E3
Damp environnement	H3	H1

## 4. Installation

### 4.1. Delivery

The apparatus is generally delivered on a wooden plinth packaged in a cardboard box made especially for its transportation to ensure the maximum safety.

If however on receipt of the goods it looks as though they have sustained serious damage (which normally shows by evidence on the outside of the packaging) reservations must be notified to the transporter without delay, and *SATAM* must be advised.

### 4.2. Checking Procedure

Check that the EMS or ZCE 18 counter units to be installed correspond with the product being provided (shown on the certificate of examination of the model or on the identification plate of the unit).

#### **Please note:**

The rules of the country, concerning a premier category liquid, where the EMS and ZCE 18 counters are installed, must be observed.

### 4.3. Implementation

The EMS and ZCE 18 units are installed after the pump.

The atmospheric outlet must be connected with a 1" tube to a container or a recovery tank for the fixed installations.

#### 4.3.1. Hydraulic Connections

The entrance connection of the EMS and ZCE 18 counting unit is made behind the separator filter by a welded flange of Ø 2" (specifically provided by SATAM), for the EMS and ZCE 18 with a three way discharge valve, a female flange of 2" cylindrical gas for the hose and a threaded male flange connector of 2" ½ to receive the valve box.

#### 4.3.2. Earthing

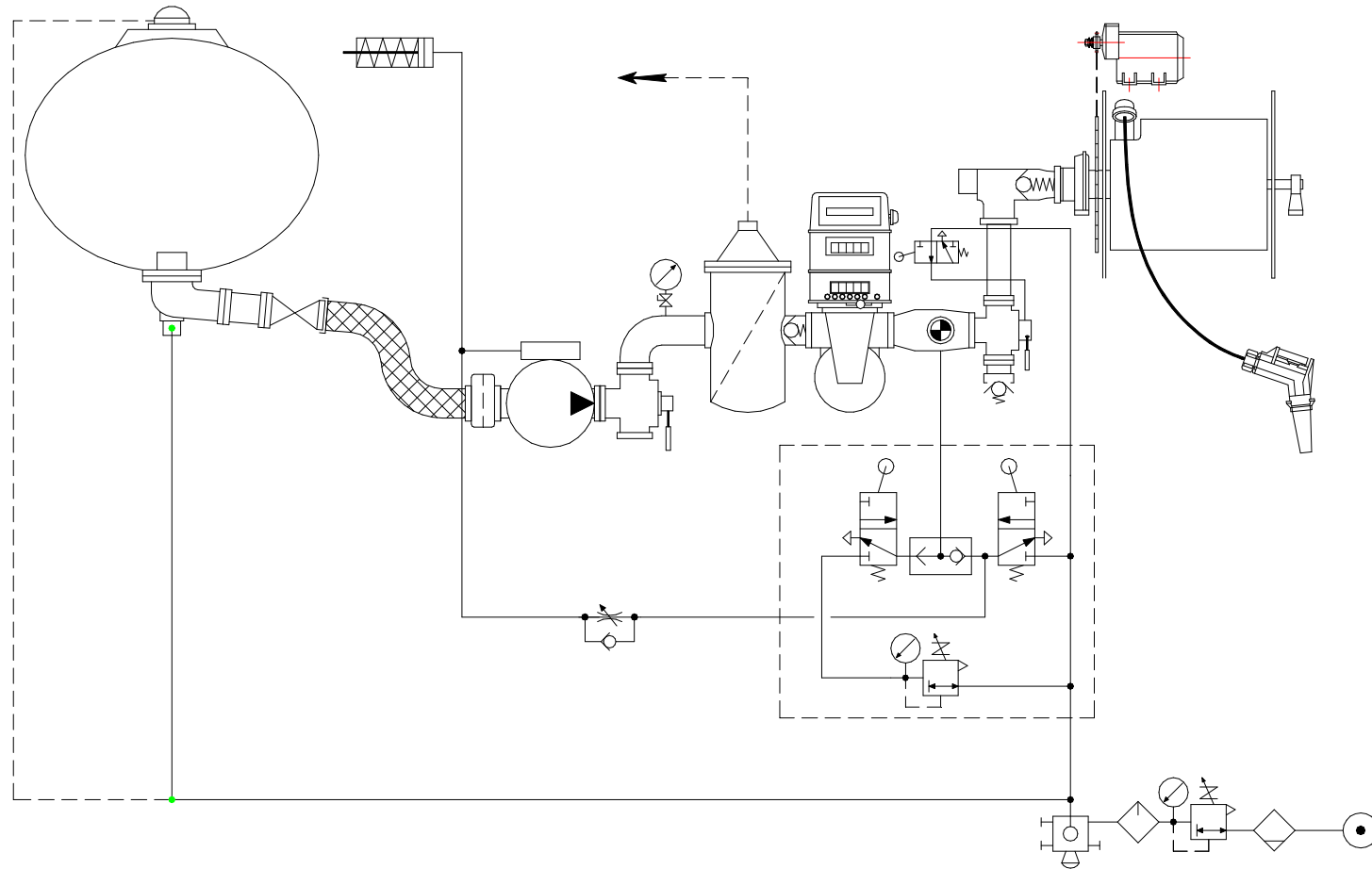
To allow for a continuous supply of electricity to the measuring unit with the installation, it is imperative to connect the junction points to « earth » and ensure an earth for the vehicle.

#### 4.3.3. Electrics

Install a 1,6A fuse cut out on the 24 volt supply of the RUBIS electronic indicator, for EQUALIS L and the EMR 3 the fuse if integral.

## 4.4. Installation Plans

### 4.4.1. Mechanical EMS and ZCE 18



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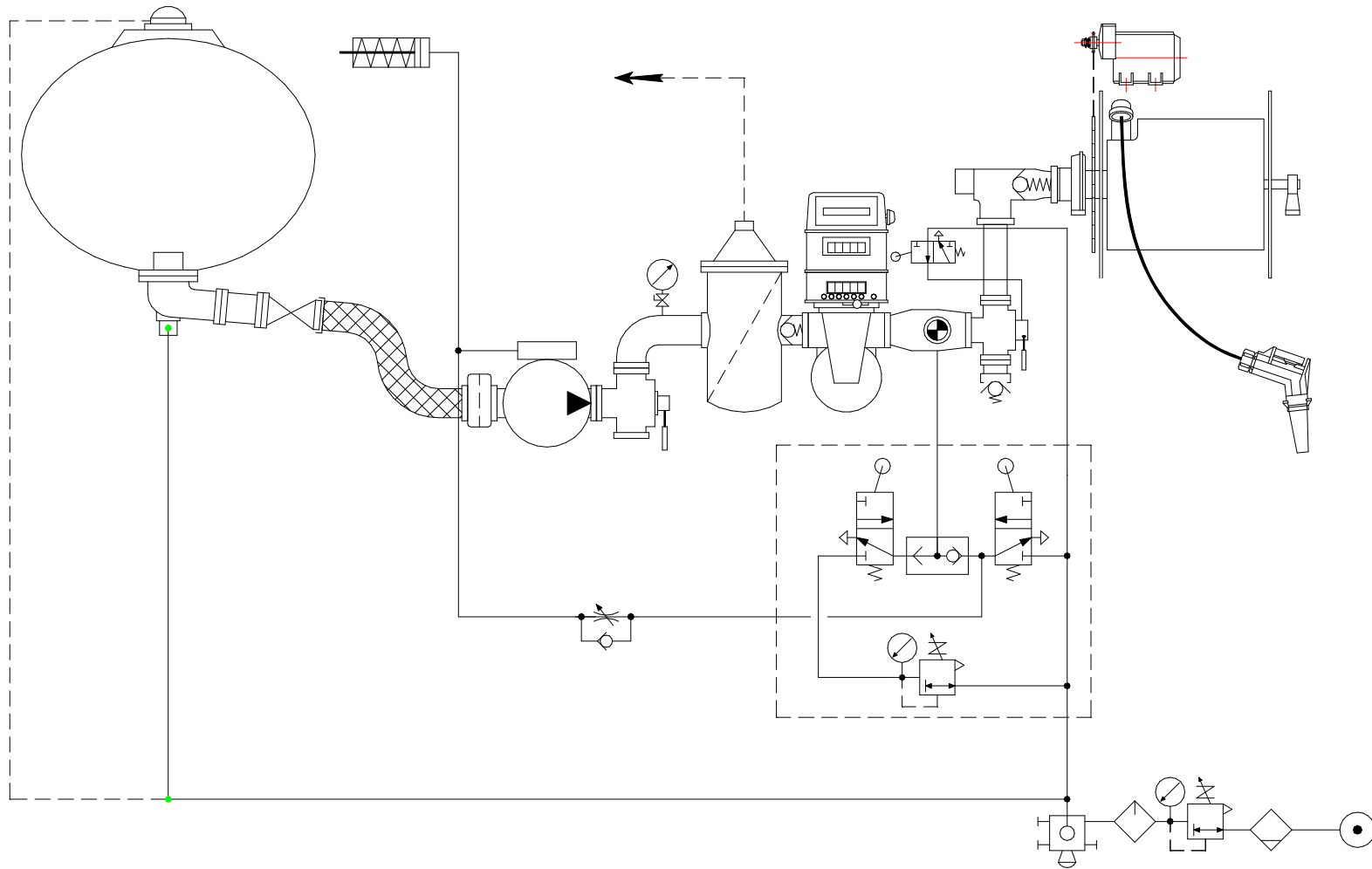
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## 4.4.2. EMS and ZCE 18 pneumatic control



## **Important :**

### Fixed Installations

Whatever the type of pump, the motor must always be protected by a circuit breaker situated on the electricity board, set at the maximum level corresponding to the motor's power.

It is further recommended that the circuit breaker should include a thermal relay of minimum power, to avoid the machine starting up again unexpectedly after a short stop for that reason.

A Stop/Start button must be installed close to the delivered unit in a fireproof casing.

## **5. Implementation**

When the hydraulic and electric connections have been made, it is possible to start to start the counting unit observing the following rules:

- evacuate the unit
- start with a small flow

## **Attention :**

Never lose sight of the dangers in manipulating what is essentially an inflammable product, and observe the safety rules and regulations for using such apparatus. In particular, smoking is forbidden; keep an extinguisher close by etc...

- Earth the lorry, boat or plane.
- Turn the indicator to zero by turning its handle. If the machine has a ticket printer, then turn to zero after inserting the ticket into the slot, the side with writing on facing downwards, and by turning the handle as far as it will go, the ticket will be punched.
- For those units with an electronic reader, RUBIS, EQUALIS L or EMR 3 refer to the instructions for use.
- Open the distribution tap.

### Using a tanker:

- Unroll the distribution hose, attach the nozzle and open it, turn to zero and if appropriate punch the ticket.
- In the case of EMR3 start the distribution on the counter, fully open the valves and open the tank.
- Start the pump.
- With the electronic counter RUBIS or EQUALIS L, the opening of the valves and the starting of the pump is automatic.

## 6. Maintenance

- Check the strainer basket (at least once a month)

Taking out the strainer basket does not require any special tools.

It is imperative to check the strainer basket to avoid too large an amount of impurities which will cause it to clog up.

In normal conditions of use, this operation should be undertaken at least once a month, but this can vary, depending on the quality of the product and the amount delivered.

- The reader head unit

Please see the user manual for instructions and maintenance.

- Metrological check of the measuring units

- A metrological check at the time of use is known as a 'primitive' check.
- An annual metrological check is known as a 'periodic' check.

(These operations are undertaken by appointed companies or by SATAM in the context of the MID directive)

If during a measuring operation, the most substantial flow exceeds the tolerance, it can be readjusted by means of the continuous regulating system AB35 or by changing the correction factor on RUBIS, in the case of EMR3 or on an EQUALIS L the adjustment is automatic.

### **IMPORTANT NOTICE**

In no circumstances may the installation manager ask the manufacturer to undertake this operation on site.

The fitter has to arrange thus necessarily a capacity of 1000 liter capacity minimum, allowing to make the metrological control during the starting.

It is not advisable to clean the counter unit using a high pressure device, which could cause damage to the reader head.