

**INSTRUCTION MANUAL
FOR
ELECTRONIC WATER
METER
MODEL NO. :- ELMAG 600W**

SAFETY WARNING & GENERAL INSTRUCTIONS

1. Only qualified and authorized person shall carry out installation, connections, commissioning and service.
2. Read User manual carefully and understand instructions & directions provided in this manual.
3. Only Electronet representative may carry out any repair work and service.
4. To protect instrument from any external hazards, customer should take necessary care while preparing site ready before installation.

FEATURES:

- Reverse Flow Indication : When Flow is in reverse direction Totaliser value is not updated.
- Auto LCD Display Off : After 5 minutes, from last key board operation.
- Data Storage : Totaliser is saved at 00.00 everyday in to EEPROM(4000 daily records with totaliser and flow).
- Unit Conversion : User can set display units for Totaliser as per requirement.
- Real Time Clock : Built in RTC
- Magnetic (Reed) Switch : ENTER key comes with parallel Reed Switch. User can switch ON LCD display or toggle display between flow rate & average mode , by using small magnet without opening instrument enclosure.

INTRODUCTION

ELMAG 600W is a electronic water meter, its design and functionality is implemented such that to reduce power consumption and to increase battery life. Instrument updates LCD display after every 10 seconds. Totaliser value is updated every second. Totaliser value is stored in m³. Separate unit settings are provided for Totaliser, so that user can see display value in unit of his choice.

At every 10-second cycle instrument detects MT Pipe signal once, if MT pipe is detected, Sensor measurement is not considered further and no flow sampling & calculations are performed but the flow rate is set to zero. Again when filled pipe is detected, instrument continues with regular operations of sampling & calculation.

During Parameter setting mode the flow measurement operations are continued only flow rate or Totaliser value is not displayed. ELMAG-600W is having in built RTC with RTC Alarm; instrument stores one Totaliser value every day in to EEPROM . Such 4000 records are stored.

If Instrument detects power failure, power fail early warning is generated and Totaliser value is saved in to EEPROM. At next power on, instrument loads earlier saved Totaliser value. Magnetic key Reed Switch is provided. By using small magnet user can operate Enter key without opening enclosure .

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1. TECHNICAL SPECIFICATIONS

SPECIFICATIONS	DESCRIPTION
Instrument Name	Electronic Water Meter
Model No.	ELMAG 600W
Line Size	1" (25NB)
Flange Connection	1" ASA 150 # RF B 16.5 Table
Serial No.	M-170929 TO M-170931
Media	Water
Minimum Conductivity	>10uS/cm
Calibration Range	0 to 176.66 LPM
Flow Velocity	0.5 to 6 m/s
Flow Accuracy	±1% of full scale(Above 1m/s velocity)
Response Time	10 seconds typical, maximum 15 seconds
Linearity	±1% of full scale
Repeatability	±1% of full scale
Relative Humidity	05 – 95 % RH, non condensing at 25°C
Volume units	M ³ , KL
Unit Conversion	Auto as per selected volume and time unit
Direction of Flow	Forward flow
Automatic Meter Reading	Transmission after every 13 Sec. 868MHz (Optional)
Power Supply	12V DC, (External)
Terminations	Through 2 pin Allied Connector
Power Off retention	Totalized flow
Display	Graphics display (128x64) with back-lit 4 digit flow value & 6 digit totaliser flow value
Auto LCD display OFF Time	5 minutes after Enter key press
Mounting	In Line - Horizontal

Enclosure Material	Coil Housing	MS
	Electrode	SS 316L
	Flange	MS
	Lining	Rubber
ENVIRONMENTAL SPECIFICATIONS:-		
Operating Temperature of Electronics	0 to 50°C	
Operating Pressure of Mechanical Assembly	0 to 10Kg/cm ²	
Relative Humidity of Electronics	05 - 95 % RH ,non condensing at 25°C	

2. ASSEMBLY OVERVIEW

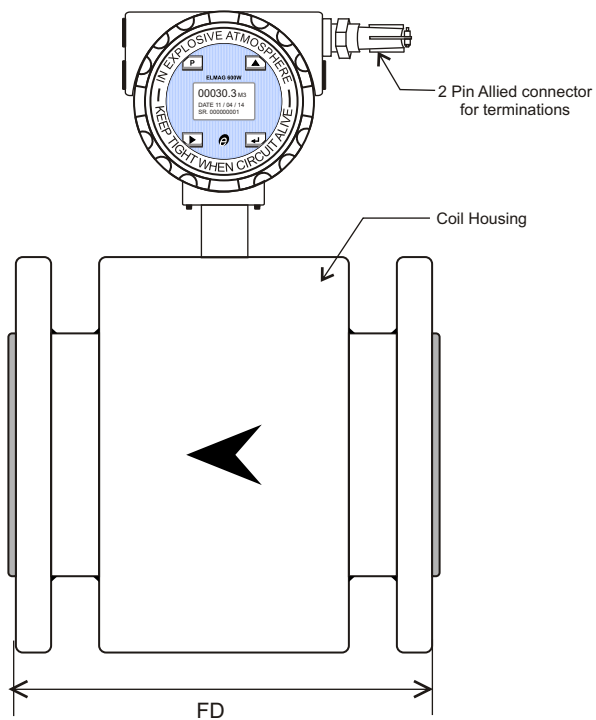


FIG.2 FRONT VIEW

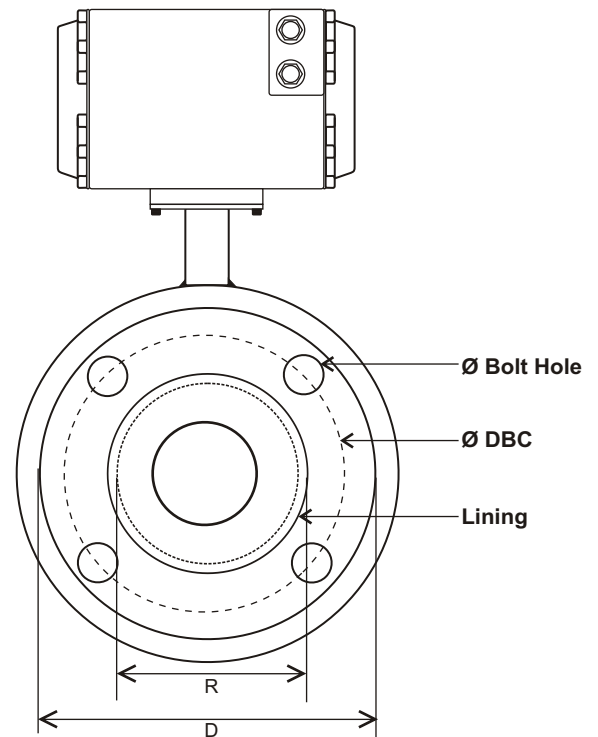


FIG.3. SIDE VIEW WITH FLANGE DETAILS

2 Pin Allied connector
for terminations




TERMINAL NO.	SIGN
A	+ 12 V
B	GND


Flange Dimensional Details :-


Line Size		Flange Diameter D (mm)	Diameter of Raised Face R (mm)	Diameter of Bolt Hole Circle DBC (mm)	Diameter of Bolt Hole (mm)	No. of Holes	Flange of Flange Distance (FD) (mm)	Thickness of Flange	Housing OD (mm)	AS Applicable
Inch	NB									
1"	25	107.9	50.8	79.4	15.9	4	200	14.3	145	✓


Note : All Dimensions are in mm.

2.1.Key Board Details:-

- 
PROGRAM KEY: - This key is used to toggle between Run mode and Program mode.

- 
INCREMENT KEY: - This key is used to
 - 1) Increment the numerical value of any digit, from 0 to 9, by one at each time.
 - 2) Go to the next parameter in Program mode.

- 
SHIFT KEY: - 1)This key is used to shift the cursor to the next digit.

- 
ENTER KEY: - 1)This key is used to validate the function or value of parameter.
 2) Press this key for 5 to 6 sec. to reset the totaliser.

2.2.Internal View:-

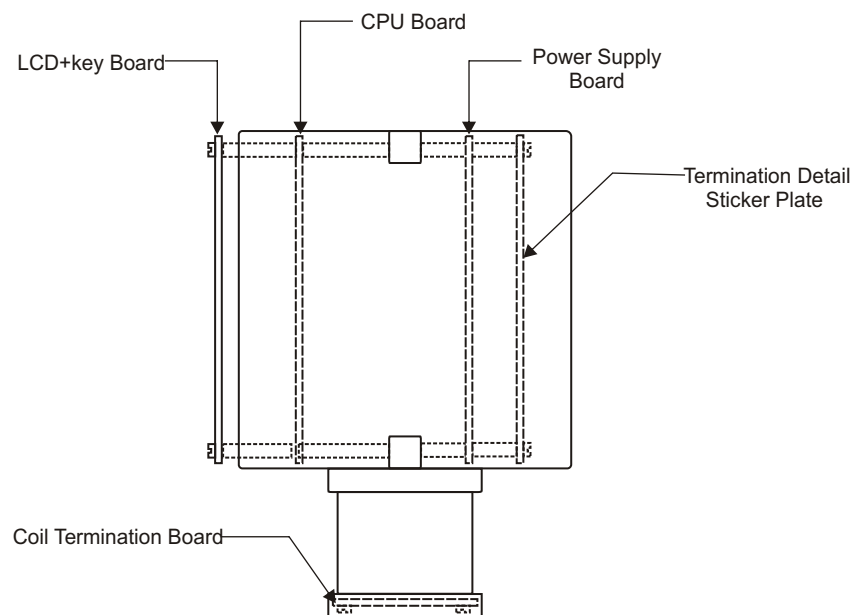


FIG.5. INTERNAL ASSEMBLY LAYOUT

3. INSTALLATION DETAILS

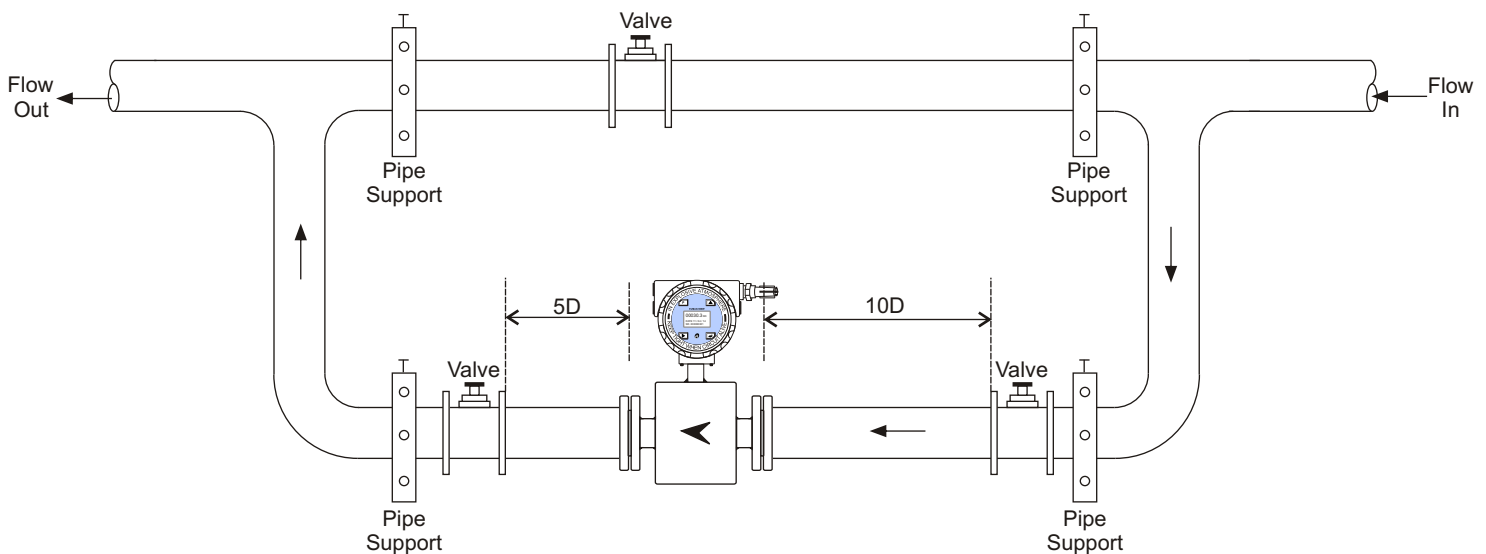
3.1 Safety instructions :

1. Read this manual carefully.
2. Pay attention to the environment on the installation site.

3.2 Mounting location :

- To obtain a stable and accurate flow measurement, it is very important that the flow sensor is mounted correctly in the pipe system.
- There must be no flow fluctuations.
- Avoid locations with vibrations from for example pumps.
- Avoid locations with extensive temperature changes.
- There must be sufficient free space around the flow sensor.
- Observe the flow directions of through the Pipe.
- Avoid corrosive environments and locations with a great risk of condensation, or consult factory for special builds for these locations

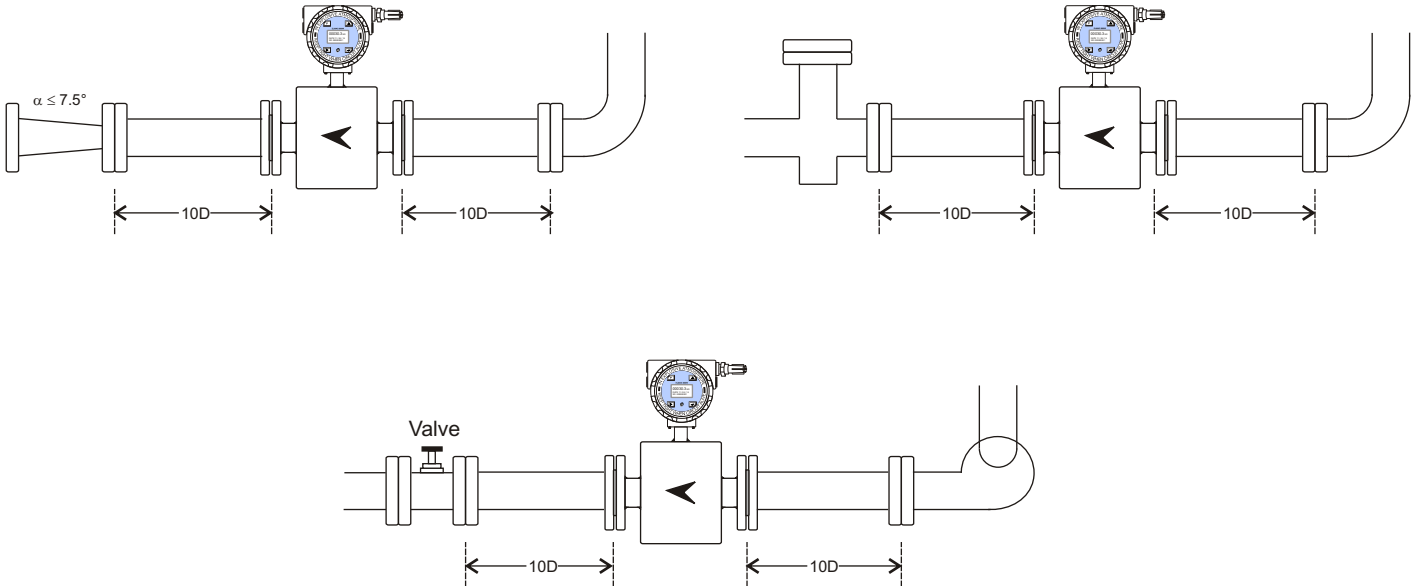
3.3 Installation Position:-



NOTE: Flow meter can be installed in any position either vertical or horizontal. Select a pipe location which will always run full of liquid. Vertical installation with flow from down to top assures full pipe condition.

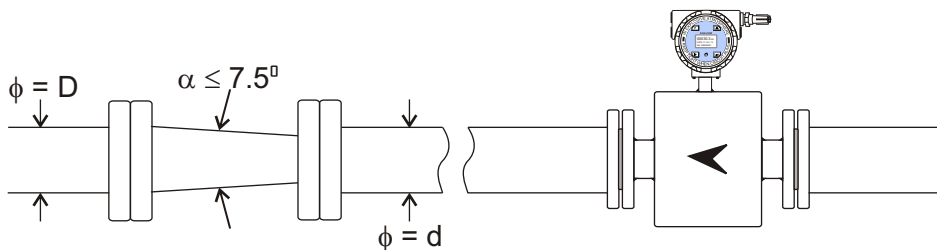
3.4 Pipe System :

1. The flow sensor must be mounted in a location which is free from interfering elements like valves, Ts, bends, pumps, etc. to ensure a laminar flow without turbulence upstream of the flow sensor. For that reason the flow sensor must be mounted in a straight pipe at a distance from interfering elements of minimum 10 x DN upstream and minimum 10 x DN downstream.



Important: Valves should always be mounted on the downstream side of the flow sensor!

2. If it becomes necessary to use reducers, the inner angle must not exceed 7.5°.

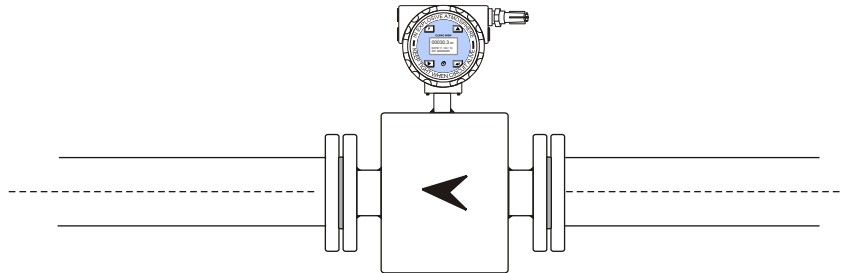


The minimum length to keep the angle below 7.5° can be checked by means of the formula below:
 $L = (D - d) \times 7.63$ where "D" is the large diameter and "d" the small diameter of the reducer.

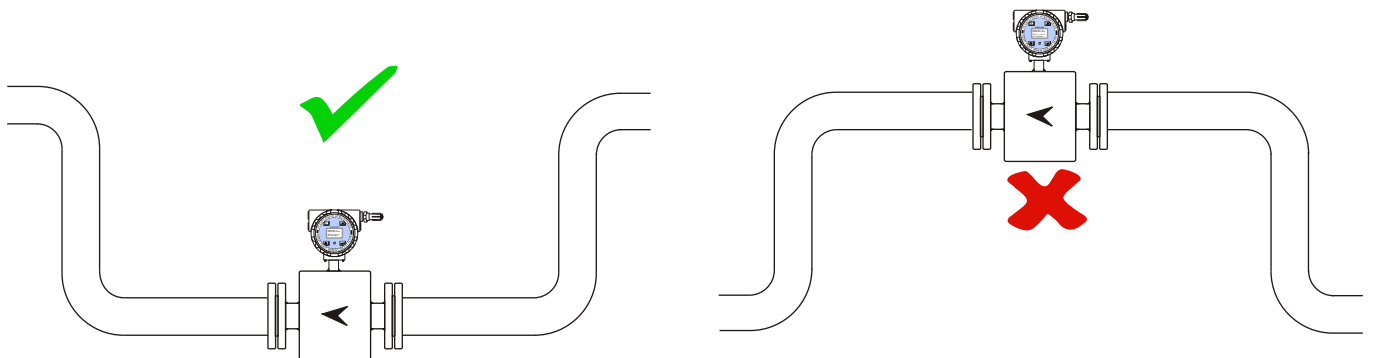
Example: If a flow sensor in dimension DN 65 is mounted downstream of a 80 mm pipe, the reducer must then have a length of minimum 114.45 mm in order to keep the inner angle below 7,5 °.

3. Flange connections must be assembled concentrically on both the upstream and the downstream side. Measuring accuracy will be affected by turbulence in the liquid from poorly made connections.

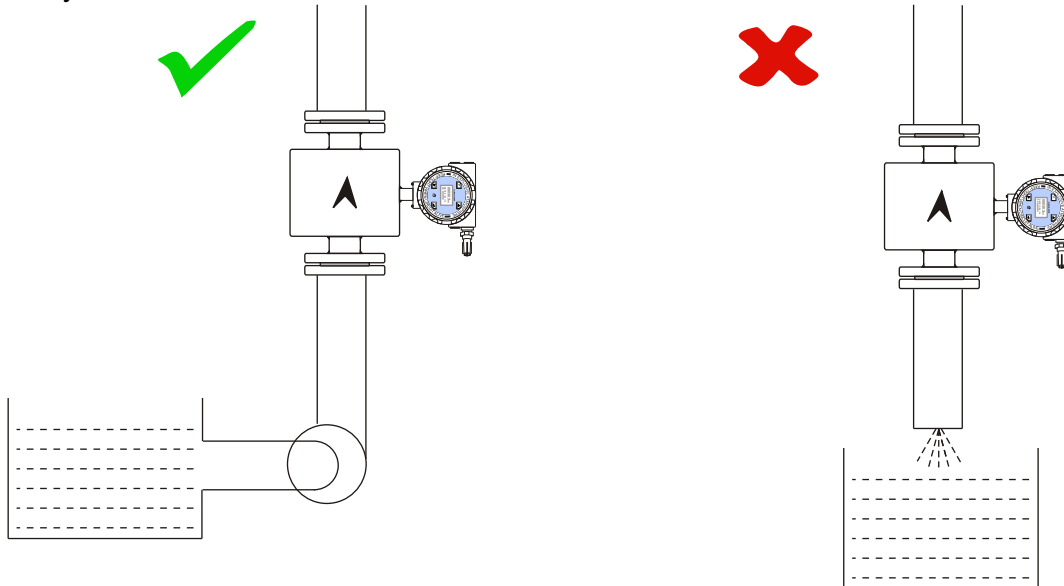
Note:- Gaskets and grounding rings must also be mounted concentrically!



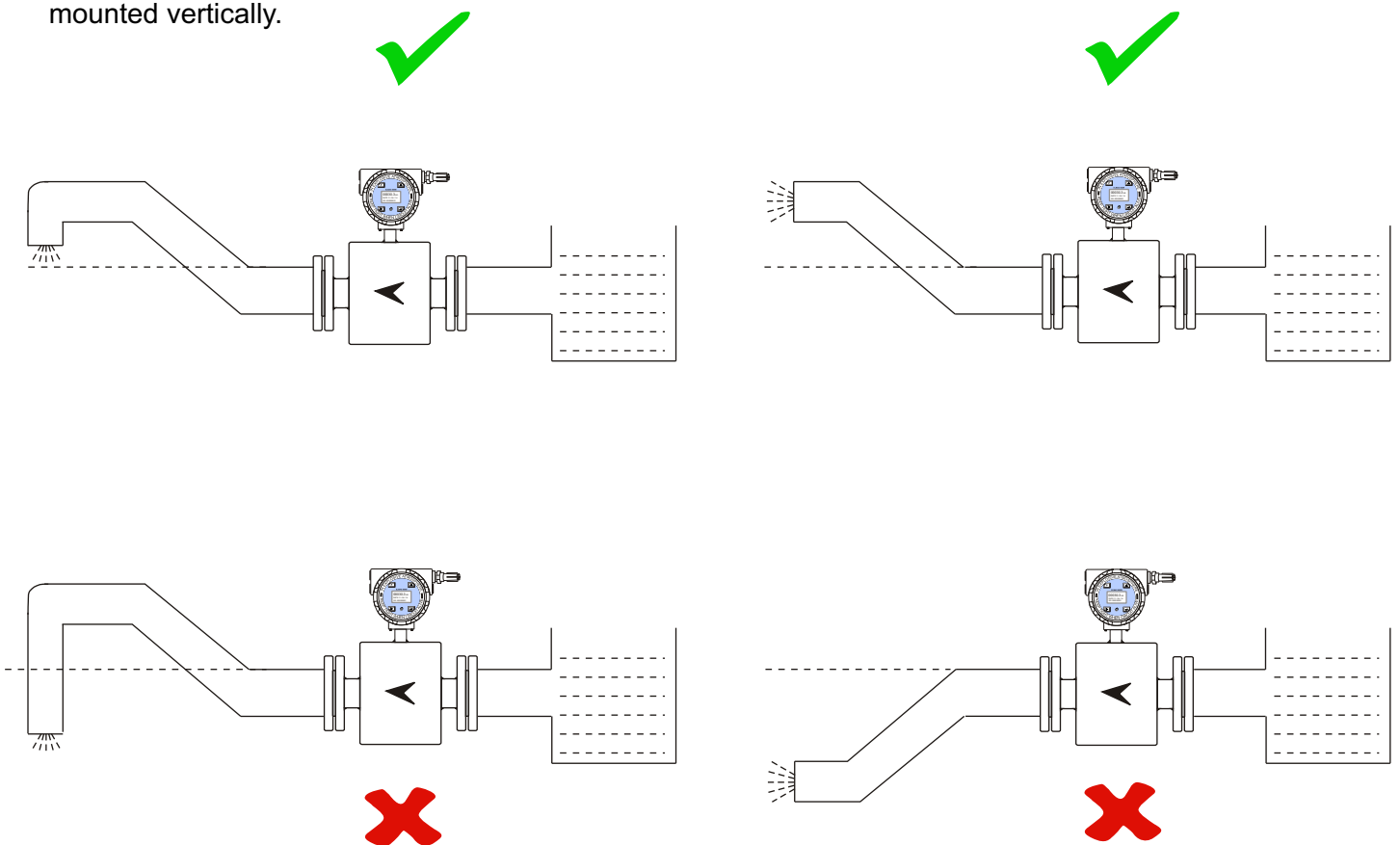
4. The flow sensor should always be filled with liquid. For that reason the flow sensor must not be mounted at the highest point of the pipe system or in free outlets, where gravity could empty or partially empty the pipe.



5. The flow sensor can be mounted vertically or horizontally. If the flow sensor is mounted vertically, the flow direction should always be upwards. In that way the effect from possible bubbles in the liquid will be significantly reduced, just as it will ensure that the the flow sensor is always filled with liquid. In case the liquid is carrying particles, for example when measuring sludge, sewage, etc., the flow sensor must be mounted vertically.

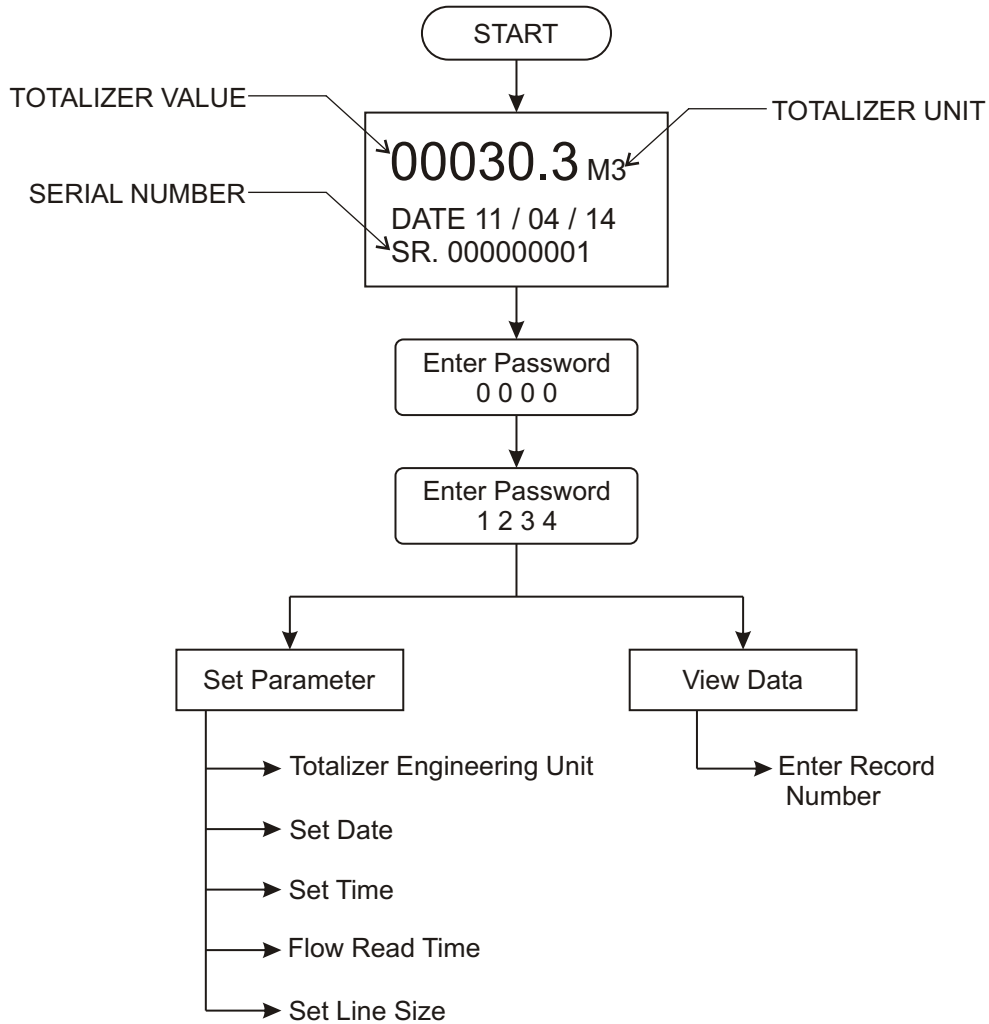


6. When mounting horizontally in pipes with free downstream outlet, the flow sensor should be mounted such that it will always be filled with liquid, for example in a bend situated lower than the height of the outlet. In case the liquid is carrying particles, e.g. when measuring sludge, Sewage etc. the flow sensor must be mounted vertically.

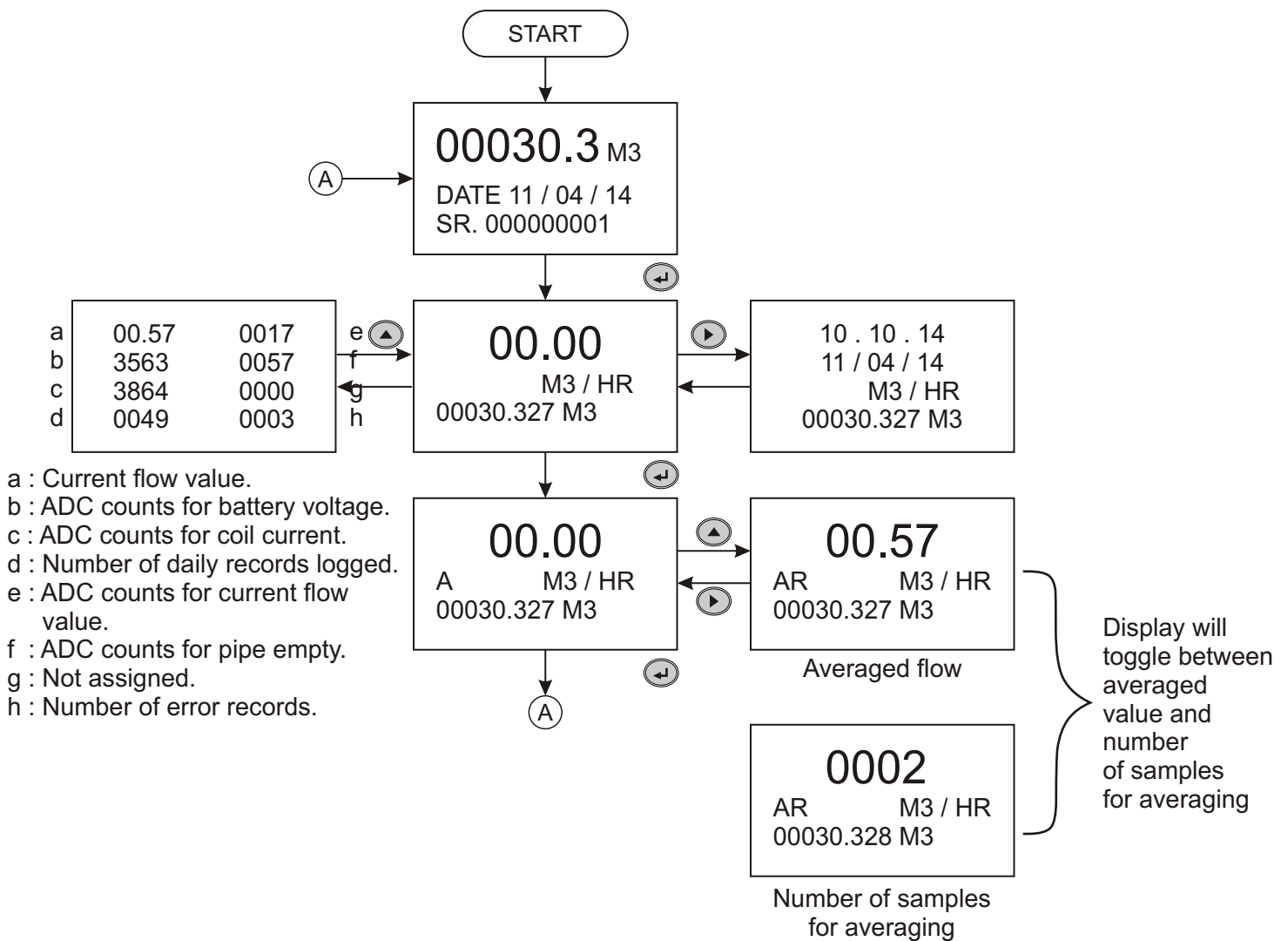


4. OPERATING FLOW CHARTS

4.1 General Overview of Operations :

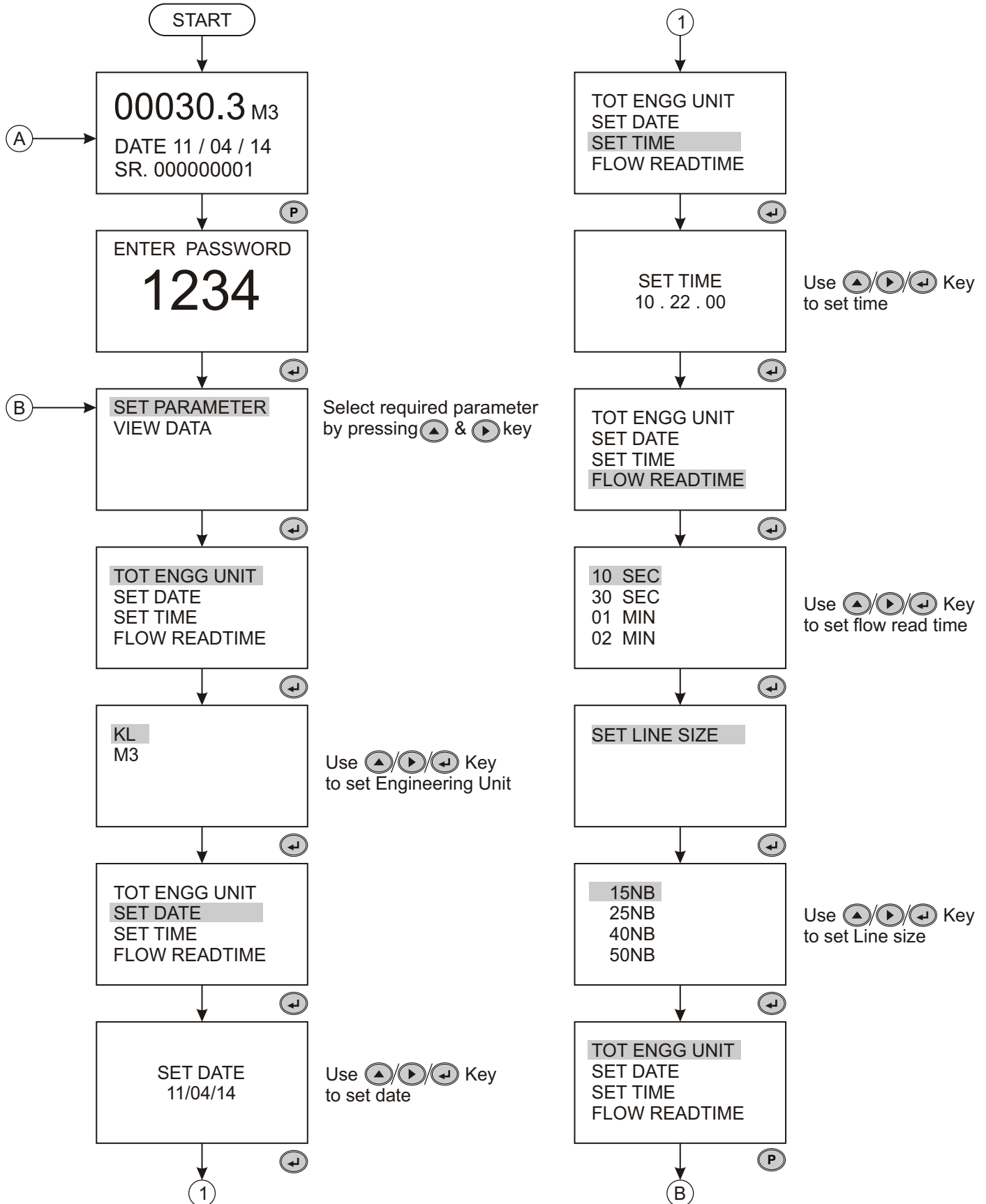


4.2 Average Mode Display :

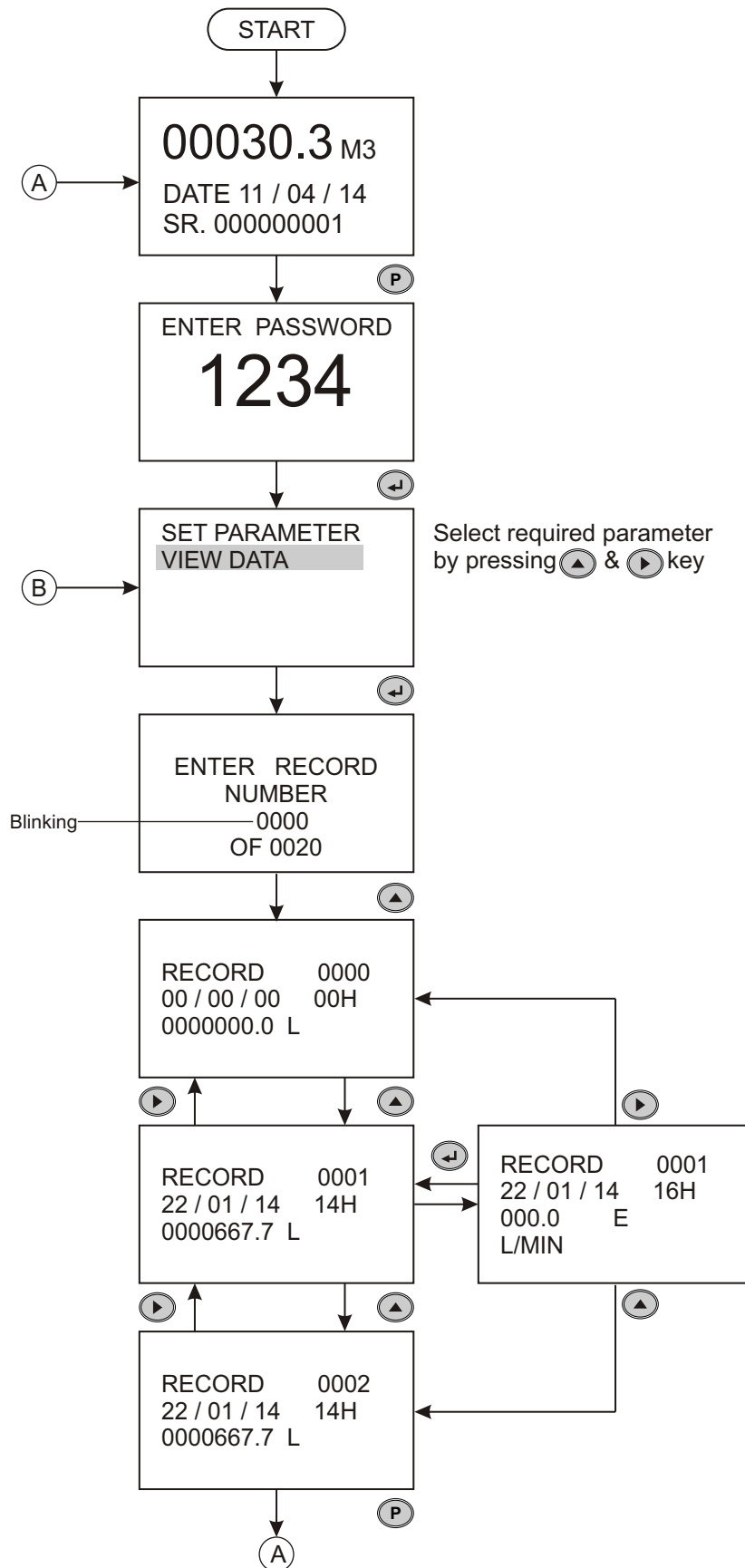


4.3 Configuration Mode :

4.3.1 Parameter Mode :



4.3.2 View Data :



6. DOS & DON'TS

Precautions to be taken on site :-

1. Read the instruction manual carefully before installing the instrument.
2. Do the connections as per the termination details given in the manual.
3. Terminal connections should be tight.

7. TROUBLE SHOOTING PROCEDURE

SYMPTOMS	CAUSE OF FAILURE	ACTION TO BE TAKEN
No display / Blank LCD	Error condition due to battery supply fluctuation	Make battery connections firm & tight
No display / Blank LCD	No Power supply	Check Battery connection & Battery Voltage. Change batteries if required.
Incorrect Flow Display	Incorrect Parameters selected or incorrect calibration or Loose process connection	Check for correct parameters, if this does not solve the problem , Recalibration is required contact Electronet service department.
Constant 0000 display	Calibration disturbed	Recalibration is required contact Electronet service department.

Authorised Dealer



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