



# FIBRAN 20

## COAGULATION ANALYSER

### I. INTENDED USE

FIBRAN 20 is a coagulation Analyzer used for performing plasmatic clotting assays that are commonly used for screening tests that evaluate the functioning of both the patient's intrinsic and extrinsic coagulation systems.

Results are displayed in Seconds, R (%) and INR in the LCD Display.

### II. WARNING

FIBRAN 20 is designed to be grounded through power supply lead for proper operation. Make sure that the Instrument is connected to a 3-Pin socket that has effective earthing.

The instrument is designed for use in environment free from high noise and vibration.

### III. GENERAL SYSTEM DESCRIPTION

FIBRAN 20 is a coagulation analyser working on a combination of optical scanning and the mechanical motion of a rotating ball. This Opto-mechanical measuring system, patented in numerous countries, ensures an extremely high sensitivity with all reagents. The analyser is controlled by a dedicated Micorcontroller, which is communicated to the display.

### IV. THE MEASURING PRINCIPLE

The combination of an optical and a mechanical measuring principle ensures very high measurement sensitivity up to the coagulation point. Besides a homogeneous mixing process of the sample with the reagent, the rotating ball causes a definite crystallization of the coagulum within the fluid medium. Thus, the formatting fibrin network forms a distinctly perceptible coagulum as a clot, depending on the concentration (increase of turbidity). The ball with its circular surface neither acts on the coagulum nor crushes it.

#### **Triggering the measuring time:**

The change in turbidity or turbulence, occurring at the start by the reagent pipetting operation, is discerned optically and triggers the start of the measuring time. This eliminates the problem of using a cable-connected starting pipette.

**Idle Time:**

Conditioned by the altered turbidity of the sample / Reagent mix after the start, the automatic brightness control re-equilibrates, while the rotating ball homogenizes the mix.

Only after the automatic internal level adjustment has taken place, is the electronic range activated for taking the measuring time of a subsequent coagulation.

In other words: this idle time varies in relation to the time sequences, until turbulence has ceased by the blending plasma / reagent (Approx. 3 – 5 Sec.); this eliminates any possibility of an incorrect reading.

The Measuring System includes an Ultra Bright Blue LED (Light Emitting Diode) which ensures a homogeneous fluoroscopy of blood test in the measuring cuvette and eliminates the interfering “ helical distortion effect” on the Photodetector.

An Electronic control system, operating in conjunction with the light source and the Photodetector, automatically adjusts the light to a constant intensity. When there is no sample analysis.

Underneath the optical measuring channel there is a motor on the shaft of which a plastic disk is fitted with a magnet embedded on its edge. Once the motor starts rotating, the magnet rotates too, and causes the small stainless steel ball to rotate in the cuvette by magnetic coupling.

As the classical coagulation measurement of blood plasma should be conducted at human body temperature, the measuring system has been integrated in a solid aluminum incubator block, thermostated at 37 ° C. or 98.6 ° F.

**V. TECHNICAL DATA****LED (LIGHT EMITTING DIODE)**

Ultra Bright Blue LED (Light Emitting Diode) which ensures a homogeneous fluoroscopy of blood test in the measuring cuvette and eliminates the interfering “ helical distortion effect” on the Photocell.

**Photo sensor**

Max. Spectral sensitivity at 470 nm.

**Magnetic agitator**

A ‘ DC motor’ with a shaft fitted with magnet rotates the steel ball in the cuvette, the rotation of the ball in the cuvette occurs correspondingly.

**Temperature regulation**

37°C, ± 0.5 C, electronically controlled by temperature comparator circuit.

**Display and Timer**

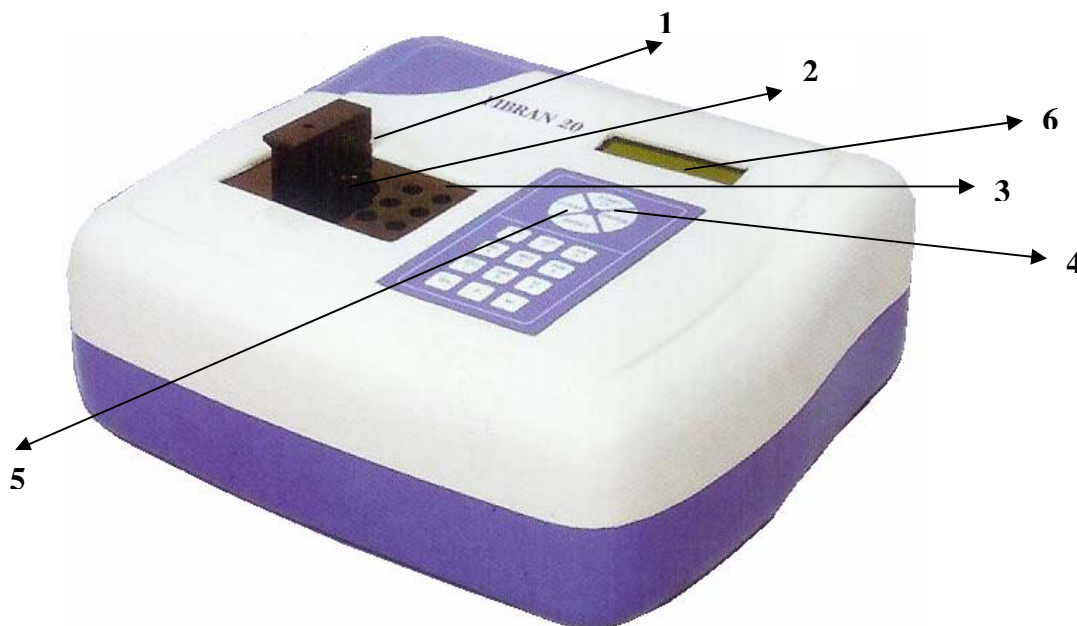
Double row, 16 character LCD display,  
Timer: 000.0 – 999.9 seconds

**Incubation**

6 incubation stations for Sample cuvettes  
1 incubation station for Reagent Vial.

**VI. ANALYSER SPECIFICATION**

Size	:	Length	:	273 mm
		Breadth	:	165 mm
		Height	:	115 mm
Weight	:			2 Kg
Power Supply	:			220 VAC / 1.0 Amp (Fast Blow)
Frequency	:			50 Hz
Power Consumption	:			Max.70VA
Operating Temperature	:			15 – 35 °C

**VII. THE FUNCTIONAL ELEMENTS OF FIBRAN 20**

### **1. Measuring channel with light protection flap**

This is the station where the incubated sample is measured. This is covered by a light protection cap, which eliminates interference from external light. The reagent should be pipetted through a hole located on top of the light protection cap. This automatically starts the timer, which stops when coagulation commences.

### **2. Incubation station for Reagent:**

The reagent, required for measurement, can be maintained at 37 ° C (98.6 ° F).

### **3. Incubation station for Samples:**

6 patient's plasma samples can be prepared by incubation at 37 ° C (98.6 ° F) simultaneously.

### **4. Reset Key:**

Operation of this key will reset the display to 000.0 – and the next measuring operation can be started.

### **5. Start – Stop Key:**

This function makes it possible to use the display as a Stop – Watch. The first press of the button starts the timer; the second press stops it.

### **6. Display:**

Double row 16-character digital LCD display to display Program details, Test result and time (measurement or stop-watch) up to 999.9 seconds.

## **VIII. INSTALLATION PROCEDURE**

Take care in unpacking so as not to damage any electronic components. Inspect the carton and contents for any shipping damage.

Check the following items to verify that you have received them:

- FIBRAN 20 Coagulation Analyser
- Ball Dispenser
- Sample Cuvettes
- Steel Balls
- Dust Cover
- Power chord
- Operation Manual

### **1. PROCEDURES TO SWITCH ON THE INSTRUMENT**

- A. Check the mains earthing

- B. Check whether 5amps / 250V 3 pin power socket is being used
- C. Connect the power chord to the rear side of the unit
- D. Connect the power chord into a power socket.
- E. UPS connection is ideal for continuous sample analysis.

## **2. TURN SYSTEM ON**

- A. Push the ON/OFF switch at the back of the unit to ON position
- B. After a few seconds the message on the display reads.....SM DIAGNOSTICS PVT LTD INDIA V 3.0.
- C. The display shows 'Temperature Wait' till the block temperature reaches 37<sup>0</sup> C. and thereafter the temp control circuit continuously monitors and adjusts the temp to stay at 37<sup>0</sup> C.
- D. Wait for an another 5-min so that the instrument reaches a stable working condition.

## **3. BASIC MENU FUNCTIONS**

- 1. PROGRAM
- 2. RUN**

### **PROGRAM**

Using this menu we can program different coagulation assays like PT, APTT, TT, FIB and other Factors.

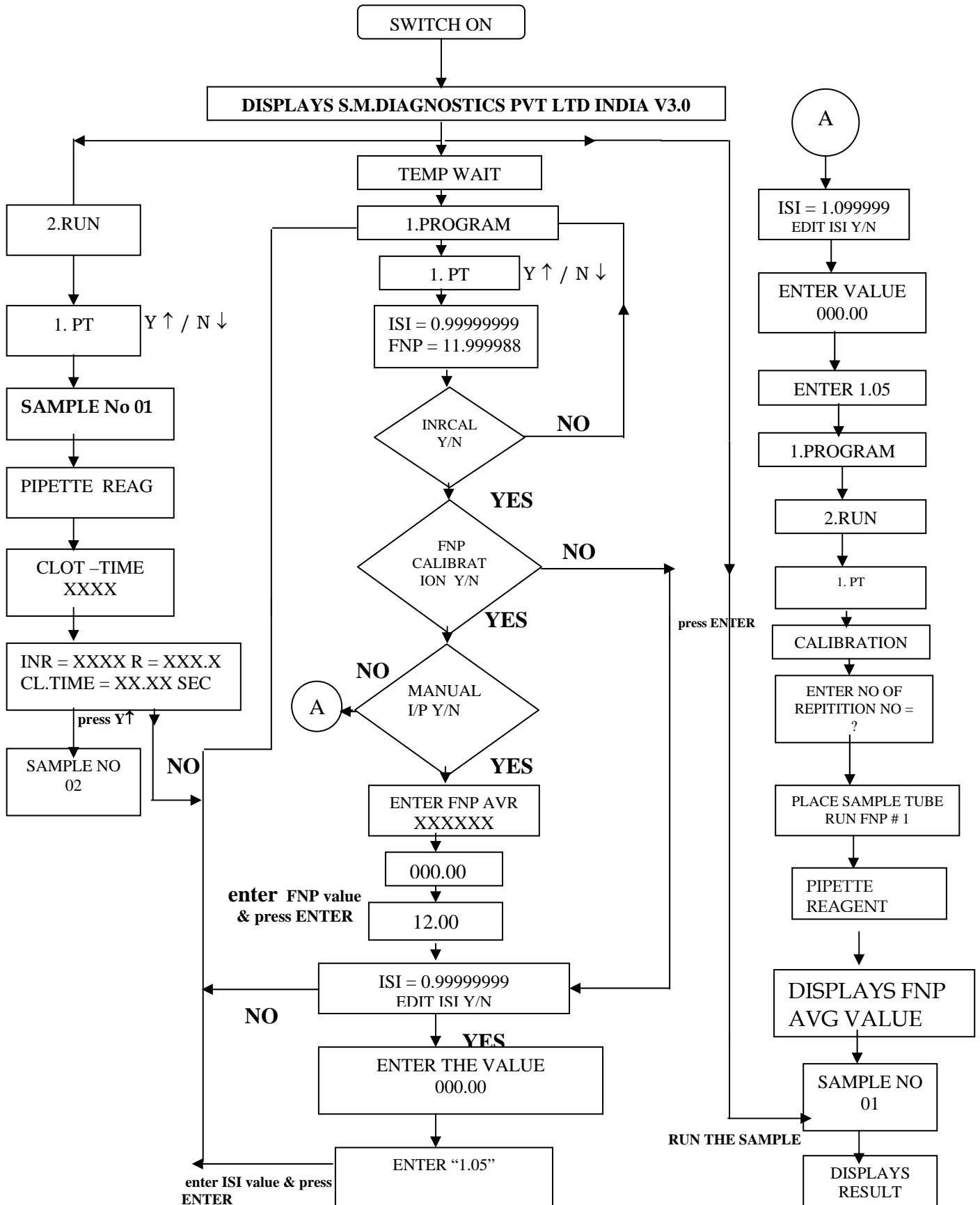
- 1. Select the assay that you want to program by using YES / NO KEY
- 2. ↑↓ Keys are provided for scrolling or moving the program menus.
- 3. Results can be obtained as SECS only or as R(%) , SECS & INR
- 4. ISI value in the memory can be edited as per the kit used
- 5. FNP average value can be entered manually (or)
- 6. You can run 1 to 9 normal plasma samples in the machine and the machine will calculate the FNP average value.

### **RUN**

Using this menu we can run different coagulation assays like PT, APTT, TT, FIB and other Factor assays. By using Yes key or the No key we can select the assay that we want to run.

\* Ref the flow chart for operational sequence.

### 4.FLOW CHART FOR FIBRAN 20



## 5. HOW TO RUN PATIENT SAMPLES

Insert the cuvettes in the incubation station and the reagent in the reagent station. Use the ball dispenser to dispense one ball into each cuvette (for this operation, the dispenser should be placed on the cuvette in such a way that no ball may rebound). Depending on the method used, plasma is transferred by pipette into a cuvette and incubated.

**CAUTION: Do not incubate in the measuring channel.**

On completion of the incubation period the cuvette, filled with plasma, is inserted into the measuring channel.

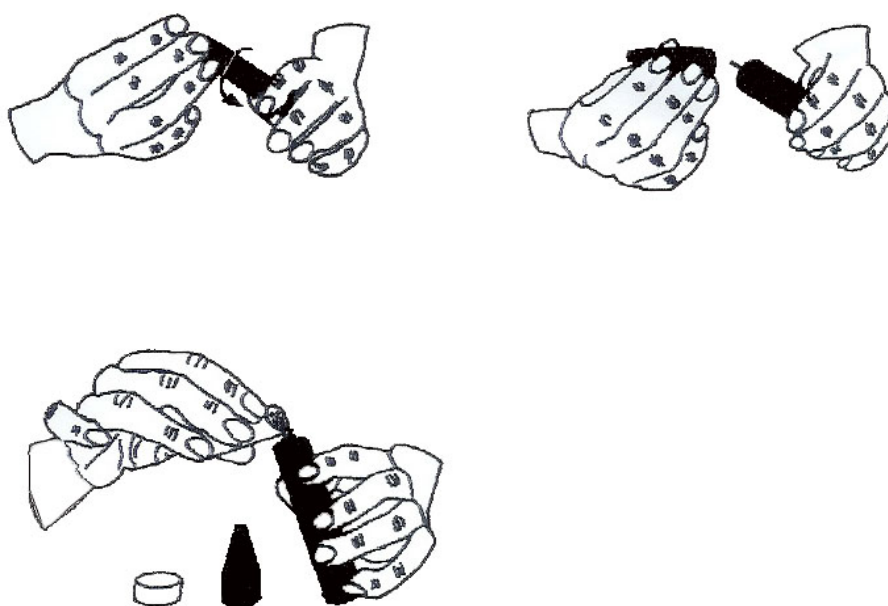
The light protection flap is then closed.

Introduce the reagent through the hole in the light protection flap using a micropipette.

Reagent pipetting automatically starts the coagulator. On commencement of the coagulation process, the digital display stops and the result will be displayed in sec, INR and % Ratio in the LCD display.

## 6. Refilling the Ball Dispenser:

The tip of the ball dispenser should be unscrewed.



The balls should be filled from the receptacle into the cavity of the ball dispenser, whereafter the tip must be rescrewed.

### IX. SOURCES OF ERRORS

<b>SYMPTOM</b>	<b>POSSIBLE CAUSES</b>	<b>EXPLANATIONS</b>
Premature stop or bad reproducibility	Erratic pipetting?	This may cause the formation of bubbles or insufficient volume, which may disturb measuring operations.
	Dirt in the Cuvettes?	This may cause interference with measuring operations.
	Insufficiently dissolved reagent?	An insufficiently dissolved reagent may cause the formation of flakes, likely to interfere considerably with measuring operations.
	Insufficient total volume of sample + reagent	The minimum total sample reagent volume is 150µl. With less than this, the perfect functioning of the system can no longer be ensured.
	Sample cuvette without ball?	Testing the sample without steel ball will cause uneven and slow activation of coagulation process, which may result in erratic values.
	Excessive heat at Incubation Block?	This may be caused by direct sunlight, heating up the incubator additionally. If so, the location of the unit should be changed or protected from sunlight. In addition to this, a room temperature of more than 30°C may cause the unit to overheat.
No stop	Check Sample Preparation as well as test procedure	The system cannot make out the occurrence of coagulation. In this case the sample should be tested once again, and run the sample once again.

**X. STEPS TO BE FOLLOWED WHILE RUNNING THE SAMPLES:**

- After you 'SWITCH ON' the Instrument, Please wait for Ten minutes before running any test.
- Please bring the reagents into 'ROOM TEMPERATURE' before use.
- Before running the samples, bring them into BODY TEMPERATURE (37°C) by incubating in the incubation block.
- During reagent pipetting, please make sure that the angle of the pipette is exactly perpendicular (Straight) to the surface.
- During APTT, please pipette the second reagent forcibly.
- After placing the sample cuvette in the reading slot, please wait for 5 seconds before pipetting the reagents to start timer.
- Always ensure of proper 'sample incubation' as per the assay procedure.
- Please don't forget to put a steel ball into the cuvette before adding sample into it.

**XI. MAINTENANCE**

The unit and the measuring system are maintenance-free. Electronic calibration of the system is NOT necessary. Any alterations in the system (e.g. aging of the lamp) will be compensated automatically.