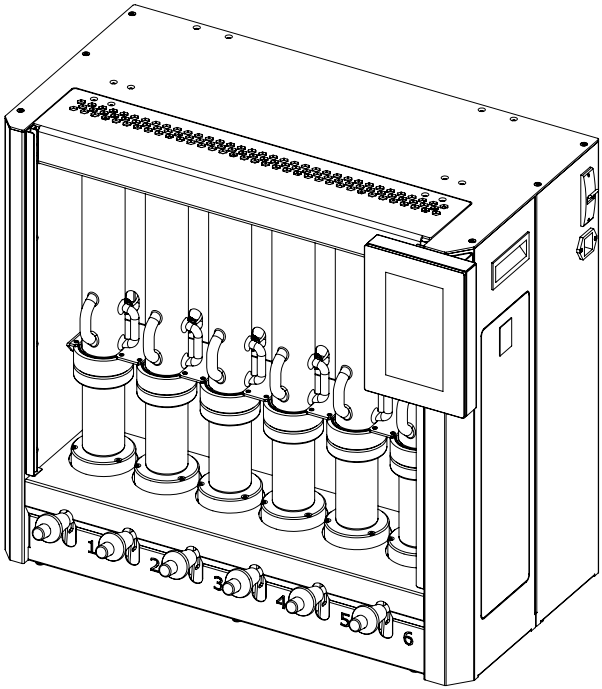
LABQUEST BY BOROSIL®

FAT EXTRACTOR
SEMI AUTOMATIC

OPERATING MANUAL
FAS060



DEALER :

THANK YOU NOTE

We Borosil, one of India's most customer oriented brands truly appreciate your business and express our gratitude for the trust you have placed on us.

We hope your choice serves you well in your scientific endeavors and aspire to have the pleasure of doing business with you for years to come.

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PRODUCT SPECIFICATIONS

PARAMETERS	FAS060
External Dimensions (L x B x H)	750 x 400 x 650 mm
Mains Voltage	220 - 240 VAC
Frequency	50 Hz
Current Consumption	7 A
Power Consumption	1600 W
Fuse Rating	10 A
Heater	Micro Tubular Heater
Display	7″ Touch Screen
Temperature Probe	PT - 100
Solvent Recovery	80 - 85 %
Randall Beaker Volume	150 mL
Randall Condenser Volume	50 mL
Recovery Tank Volume	2 L
Flow Sensor	Yes
Hose Connection	10 x 14 mm
Recommended Water Flow	12 LPM
Recommended Water Pressure	1 Bar
Inlet Cooling Temperature	10 - 15°C
No. of Extraction Positions	6
Body Material	MS Powder Coated
Heater Tray Material	SS 304
Glassware Material	Borosilicate Glass

PACKING LIST

Sr. No	Description	Quantity
1	Fat Extractor Semi-automatic Unit	01 No.
2	Vacuum Condenser	01 No.
3	Recovery Tank	01 No.
4	Manifold	01 No.
5	Beaker	06 Nos.
6	Randall Condenser	06 Nos.
7	GL14 Ferrule Grabber for 6mm PTFE Tube	02 Nos.
8	GL14 Ferrule Pincher for 6mm PTFE Tube	02 Nos.
9	GL14 Ferrule Locator for 6mm PTFE Tube	02 Nos.
10	GL14 Ferrule Connector for 6mm PTFE Tube	02 Nos.
11	GL14 Ferrule Grabber for 3.2mm PTFE Tube	12 Nos.
12	GL14 Ferrule Pincher for 3.2mm PTFE Tube	12 Nos.
13	GL14 Ferrule Locator for 3.2mm PTFE Tube	12 Nos.
14	GL14 Ferrule Connector for 3.2mm PTFE Tube	12 Nos.
15	PTFE Tube - 4mm ID x 6mm OD	12 Nos.
16	PTFE Tube - 1.80mm ID X 3.20mm OD	01 No.
17	NRV Assembly GL14	06 Nos.
18	Suction Cap	06 Nos.
19	Metric Screw M3 CSK Star SS 10 Len	24 Nos.
20	Cellulose Thimble 33 X 80mm	06 Nos.
21	Viton Seal	06 Nos.
22	Viton Gasket	06 Nos.
23	Glass Seal Hub	06 Nos.
24	Silicon Tube- 08mm ID x 12mm OD with GL14 Cap	06 Nos.
25	Silicon Tube- 08mm ID X 12mm OD (4m)	01 No.
26	Power Cord	01 No.
27	Cable Tie	10 Nos.
28	Teflon Tape	01 No.

WARNING AND SAFETY

WARNING SYMBOLS

The following symbols are displayed in this user manual or on the unit:

SYMBOL	MEANING
	General Warning Read the accompanying text carefully.
	Hot Surface Do not touch the hot plate in case of FAS060 directly when the unit is in hot condition.
	Electrical Hazard Equipment being maintained or serviced must be turned off to prevent possible injury. Inadequate earthing at the installation facility can lead to Hazardous electrical shocks. The manufacturer is not liable for any injury or death resulting from electrical hazards due to faulty earthing in the lab.
	Lifting Hazard Warning The Fat Extractor Semi-automatic (FAS060) unit weighs more than 55 kg. Take adequate safety measures when moving this device. Equipment being maintained or serviced must be turned off and locked off to prevent possible injury.

CAUTION :

- Always use the proper protective equipments (clothing, gloves, goggles and face mask etc.)
- Always follow the good hygiene practices.
- Each individual is responsible for his or her own safety.
- Do not keep the unit on wet bench top.
- Do not wash the unit with water.
- Wipe the unit with dry cloth after usage.
- Ensure that no fluid is spilled on the top surface of the equipment.
- The unit should be plugged to standard 230V, 50Hz, 16A, 3 pin power socket.
- The unit should be plugged into the power socket, having proper earthing.
- Use only distilled water to operate the unit.

SAFETY :

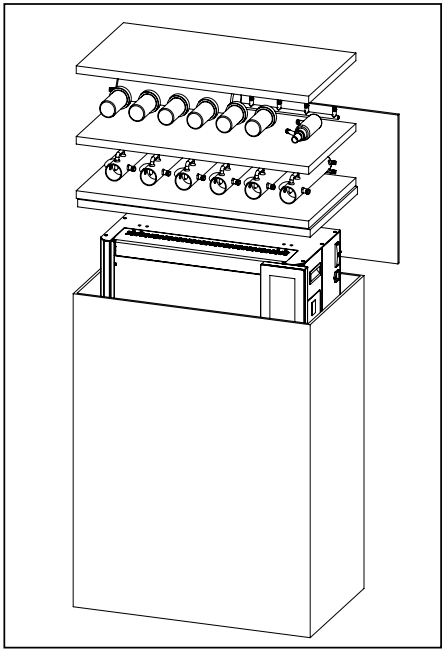
The Fat Extractor Semi-automatic (FAS060) is engineered for extraction of samples using specific solvents and for the determination of fat content in samples. The solvents are as follows:

1. Petroleum ether 40-60
2. Petroleum ether 60-80
3. nHexane
4. Acetone
5. Ethanol
6. Chloroform
7. Toluene
8. Custom

UNBOXING OF THE PRODUCT

UNPACKAGING INSTRUCTION

Remove the unit from the Box



FOR ACCESSORIES :

1. Remove from the packaging
   - Vacuum Condenser
   - Recovery Tank
   - Manifold
   - Randall Beaker
   - Randall Condenser
   - Suction Cap
   - Cellulose Thimble 33 X 80 mm
   - Thimble Holder
   - Glass Seal Hub
   - Viton Seal
   - Viton Gasket
2. Remove from pouch
   - GL14 Ferrule Grabber for 6 mm PTFE Tube
   - GL14 Ferrule Pincher for 6 mm PTFE Tube
   - GL14 Ferrule Locator for 6 mm PTFE Tube
   - GL14 Ferrule Connector for 6 mm PTFE Tube
   - GL14 Ferrule Grabber for 3.2 mm PTFE Tube
   - GL14 Ferrule Pincher for 3.2 mm PTFE Tube
   - GL14 Ferrule Locator for 3.2 mm PTFE Tube
   - GL14 Ferrule Connector for 3.2 mm PTFE Tube
   - PTFE Tube- 4mm ID x 6mm OD
   - PTFE Tube - 1.80 ID X 3.20mm OD
   - NRV Assembly GL14
   - Metric Screw M3 CSK Star SS 10 Len
   - Power Cord

PRODUCT IDENTIFICATION

A. RANDALL CONDENSER

B. GLASS SEAL HUB ASSEMBLY

C. RANDALL BEAKER

D. ACRYLIC DOOR (TRANSPARENT)

E. TOP PIVOT PANEL

F. NEXTION DISPLAY

G. LIFTING MECHANISM

H. POSITION LED

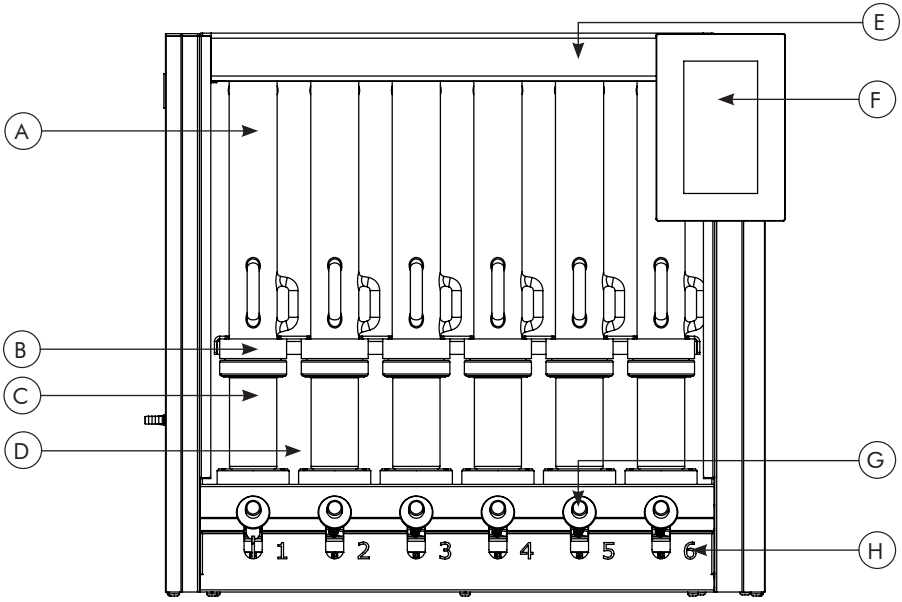


Fig. No. 11.1

PRODUCT IDENTIFICATION

A. SWITCH ON/OFF (MCB)

B. LIFTING HANDLE

C. POWER SOCKET WITH 10 A FUSE

D. CONTROL PANEL DOOR

E. DRAIN VALVE

F. DRAIN CONNECTOR

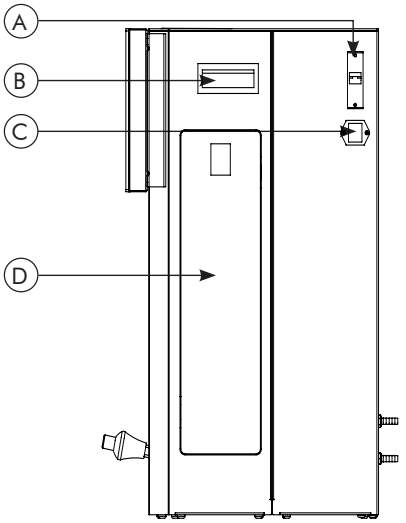


Fig. No. 12.1

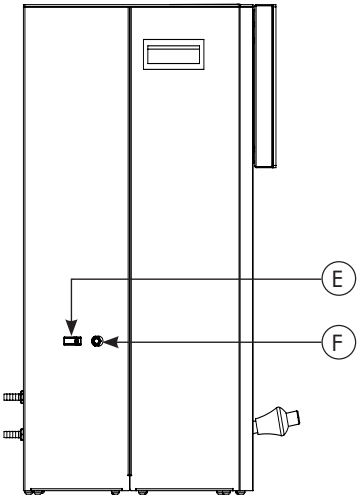


Fig. No. 12.2

PRODUCT IDENTIFICATION

A. SOLVENT RECOVERY CIRCUIT

B. MANIFOLD

C. VACUUM CONDENSER

D. RECOVERY TANK

E. CONDENSER INLET

F. CONDENSER OUTLET

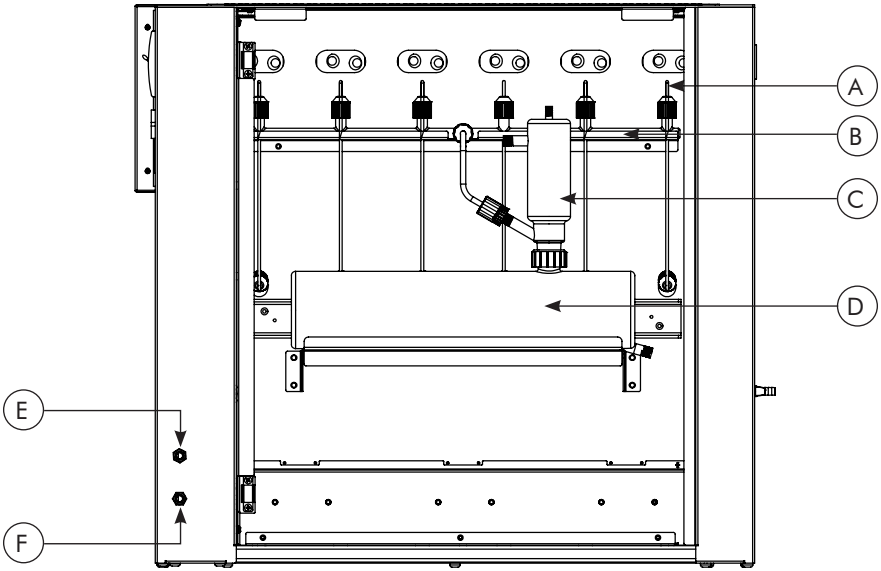


Fig. No. 13.1

GLASS PART IDENTIFICATION

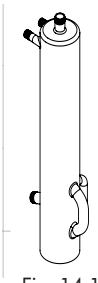


Fig. 14.1

RANDALL CONDENSER

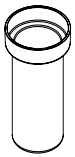


Fig. 14.2

RANDALL BEAKER

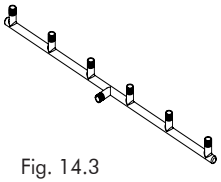


Fig. 14.3

MANIFOLD

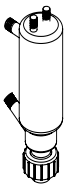


Fig. 14.4

VACUUM CONDENSER WITH GL28 CAP

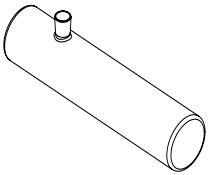


Fig. 14.5

RECOVERY TANK

PART IDENTIFICATION

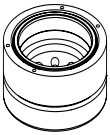


Fig. 15.1

GLASS SEAL HUB WITH VITON SEAL AND GASKET

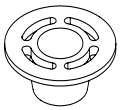


Fig. 15.2

THIMBLE HOLDER

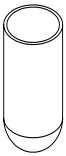


Fig. 15.3

CELLULOSE THIMBLE 33 X 80 MM

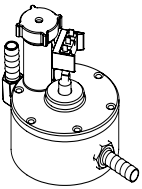


Fig. 15.4

FLOW SWITCH

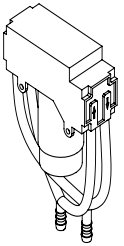


Fig. 15.5

VACUUM PUMP

INSTALLATION OF UNIT

CHECK BELOW POINTS BEFORE INSTALLATION OF THE UNIT

1. The required water pressure for the unit should be around 1-2 bar (70psi)
2. Distilled water is recommend to prevent scaling.
3. Installation should be done on a firm and level surface.
4. Install the unit inside a fume hood (recommended) or minimum 500 mm space present above the instrument.
5. Ensure that no instruments producing heat or corrosive vapors are placed inside the same fume hood.
6. Take into consideration the maximum dimensions and weight of the product.
7. Avoid exposing the instrument to external thermal loads, including direct sunlight or other ignition sources.
8. Use only power supply provided.
9. Ensure that all connected devices are properly grounded.
10. Ensure that the power plug remains easily accessible at all times.
11. Keep flammable devices and substances away from the instrument, as the heat from the top plate could cause ignition.
12. Ensure that cables and tubes are routed safely.

Note: It is mandatory to connect chiller (1 kW) to condenser unit.

INSTALLATION OF GLASS PARTS

- Remove all glass parts, accessories and FAS060 from wooden box carefully.

Removing Acrylic Door Assembly

1. Lift the top pivot panel upto its maximum limit.
2. Unscrew the stopper and magnet mount from both sides as shown in the Fig. 17.1, and store them securely.
3. Use the handle to lift the acrylic door and place it in a safe location to prevent scratches.

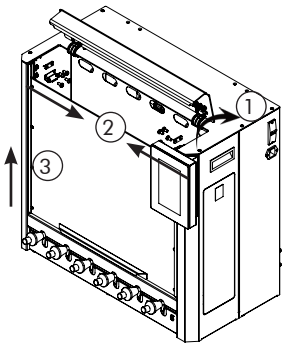


Fig. 17.1

Installing the Randall Condensers

1. Fix randall condensers into the glass seal hub assembly as shown in Fig. 17.2.
2. Place the subsequent assembly into the condenser clamp.
3. Tighten the glass seal hub using 4 M3 CSK screws provided in the accessories pouch.
4. Repeat these steps for all 6 randall condensers.
5. Reverse the steps from “Removing Acrylic Door Assembly” to reinstall the acrylic door.

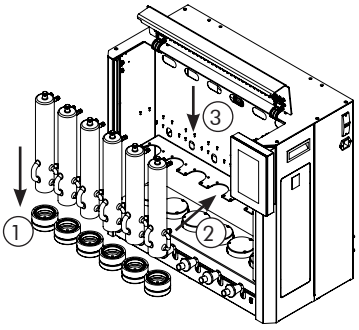


Fig. 17.2

Loading the Randall Beakers

1. Insert the thimble into the holder by twisting it to prevent breakage. Place the thimble holder inside the beaker as shown in the Fig. 18.1.
2. Load the beakers onto the glass seal hub gasket. Ensure an airtight fit.

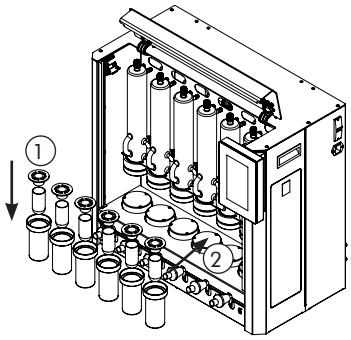


Fig. 18.1

Installing Recovery Tank, Vacuum Condenser

1. Place the recovery tank on the reservoir base. Use the velcro strap to tighten the tank on the base.
2. Align the vacuum condenser's ground joint with that of the recovery tank and tighten its GL cap as shown in the Fig. 18.2.
3. Connect the recovery tank to the drain connector using a GL14 Cap with silicone tube.
4. Connect the 8 mm GL14 silicone tube connector from the vacuum pump to the vacuum condenser.

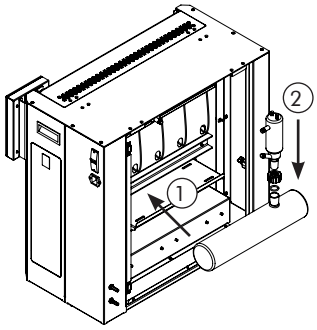


Fig. 18.2

Installing the Manifold and Solvent Recovery Circuit

1. Place the manifold onto the manifold base.
2. Connect the 3.2 mm PTFE ferrule connector assemblies as shown in the Fig. 19.1 to the drain tube of the randall condenser and the manifold. Make the connection to the subsequent position of the manifold.
3. Connect the 6 mm PTFE ferrule connector assembly as shown in the Fig.19.2 to the vacuum condenser. Push the 6 mm PTFE tube inside the vacuum condenser till it reaches the opening of the recovery tank.
4. Tie the manifold using cable ties to secure its position on the manifold base.

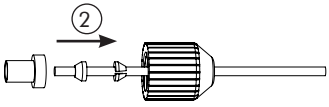


Fig. 19.1

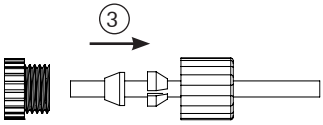


Fig. 19.2

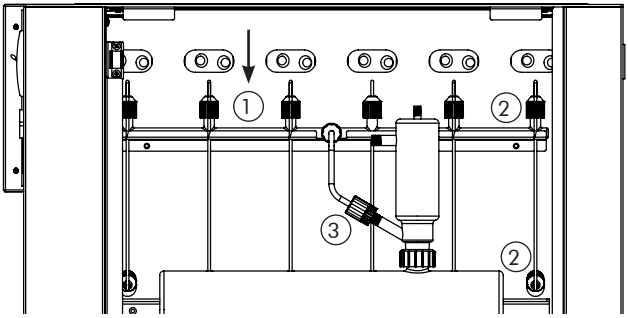


Fig. 19.3

PRODUCT DESCRIPTION

The Fat Extractor Semi-automatic (FAS060) performs solvent extraction and determines fat percentage using the Randall Extraction Method, also known as Hot Extraction.

Hot Extraction

This method is carried out in 3 stages:

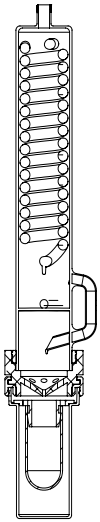


Fig. 20.1

1. Boiling

- The sample is placed inside a thimble kept in a beaker containing the solvent.
- The solvent is heated, causing its vapors to rise to the condenser.
- The vapors condense and drip back into the thimble, coming into contact with the sample.
- The sample is completely immersed in the solvent during this process.

2. Rinsing

- The solvent in the beaker is heated, causing it to evaporate.
- The vapor rises to the condenser.
- The condensed solvent drips back into the thimble containing the sample.
- The vacuum pump operates periodically, allowing the condensed solvent to flow into the recovery tank.
- Separation between sample and solvents occurs as the solvent level gradually decreases.

3. Recovery

- The solvent is heated, causing its vapors to rise to the condenser, where they condense and flow into the tank.
- The analyte remains in the thimble and fat gets collected in the beaker.

OPERATING THE UNIT

HOME MENU (Ref. Fig. No. 21.1)

The home screen consists of six menus:

1. New Process - Start a new process by selecting solvent and setting parameters.
2. Presets - Use saved presets with predefined solvent and process parameters
3. Favourites - Quickly access frequently used solvent combinations.
4. Settings - Configure system settings and perform maintenance tasks.
5. Data - View and Calculate FAT% data from completed processes.
6. Help - Access the User manual by scanning a QR code.

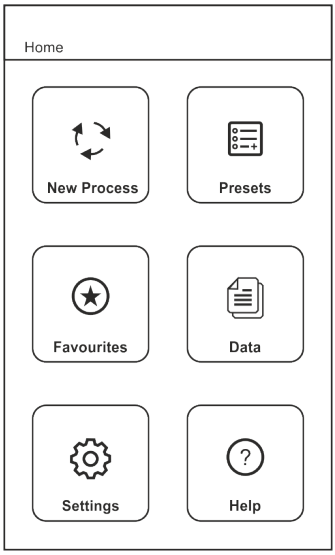


Fig. No. 21.1

Below is the detailed operation guide for the New Process, Presets, Favourites, Settings, and Help menus:

1. NEW PROCESS

a. Prepare & Place Samples

- Place the prepared samples into beakers & place in their respective positions (up to 6 positions available).

b. Start New Process (Ref. Fig. No. 22.1)

- Click on the "New Process" button.
- The Solvent Select menu will appear. Choose the appropriate solvent from the 8 available options.

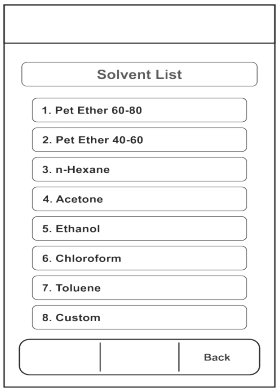


Fig. No. 22.1

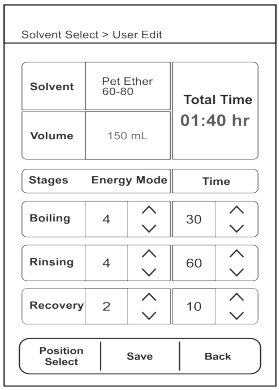


Fig. No. 22.2

c. User Select Menu (Ref. Fig. No. 22.2)

- The system for each process i.e. Boiling, Rinsing and Recovery will display default values :
  - » Energy modes
  - » Time
- You can either :
  - » Proceed with the default values.
  - » Modify the values and proceed.
  - » Modify and save the new values and proceed to Position select.

d. Position Selection

- The next menu will prompt you to select the desired positions (1 to 6) (Ref. Fig. No. 23.1).
- After position selected the particular position will glow up & LED will glow red (Ref. Fig. No. 23.2).
- A minimum of 1 position must be selected.

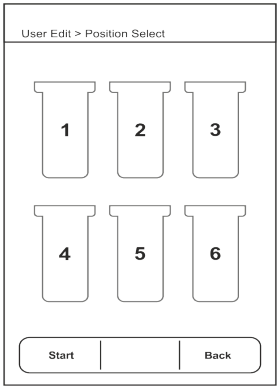


Fig. No. 23.1

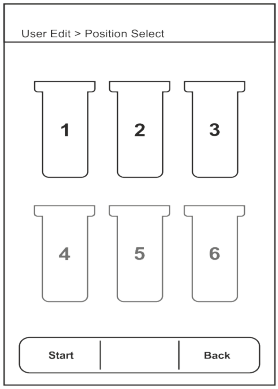


Fig. No. 23.2

e. **Process Initialization** (Ref. Fig. No. 23.3 & 23.4)

- On the Process Initialize page:
  - » Check the flow status if the flow sensor is enabled/active in settings.
- The system will then navigate to the **Process Run** menu.

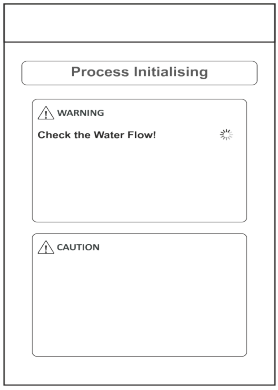


Fig. No. 23.3

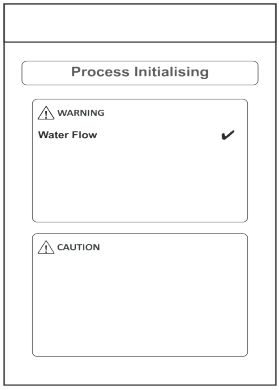


Fig. No. 23.4

f. **Process Run** (Ref. Fig. No. 24.1 to 24.4)

- The Process has 3 stages Boiling, Rinsing, Recovery.
- You can terminate the process at any time if required.
- The process will run until the end of the specified time.
- **Manual vacuum** control is available during the process for recovery.
- **Details button** enables user to select/ deselect the positions during the process.

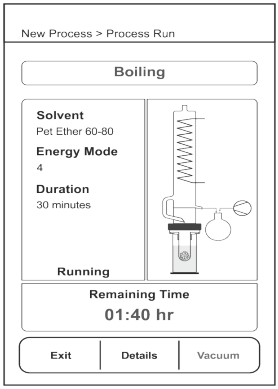


Fig. No. 24.1

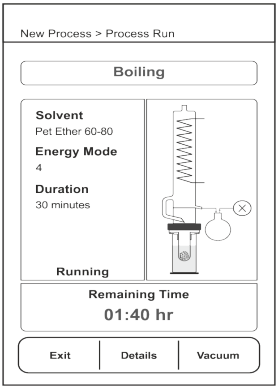


Fig. No. 24.2

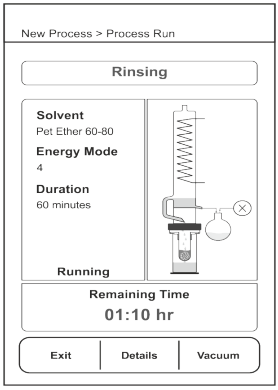


Fig. No. 24.3

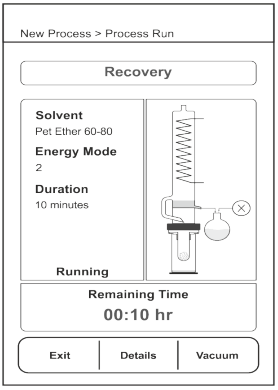


Fig. No. 24.4

g. **Process Summary**

- Process Completion (Ref. Fig. No. 25.1) : Once the process is complete,
  - » the system will navigate to the Process Summary page.
  - » Manual vacuum control is also available on this page.
- Process Termination (Ref. Fig. No. 25.2) : If the process is terminated,
  - » The system will navigate to the Process Summary page.
  - » Manual vacuum control is available on this page.

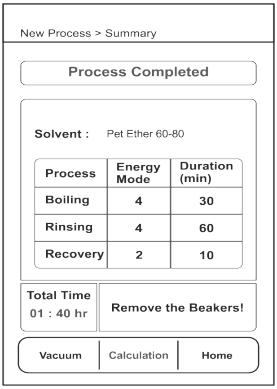


Fig. No. 25.1

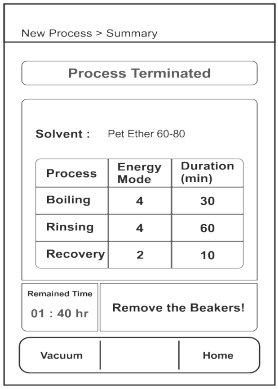


Fig. No. 25.2

2. PRESET

a. **Select Preset** (Ref. Fig. No. 25.3)

- Click on the **"Presets"** menu.
- The **Solvent List** menu will appear.
- Out of 8 solvent options, select the appropriate solvent.

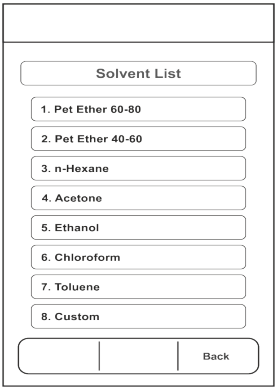


Fig. No. 25.3

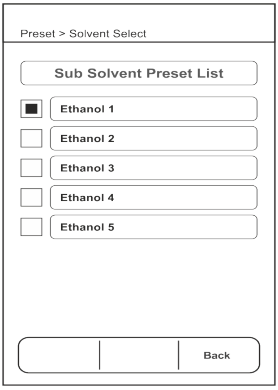


Fig. No. 25.4

b. **Solvent Selection** (Ref. Fig. No. 25.4)

- Each solvent has 5 sub-solvent options.
- Select any one sub-solvent from the list.
- There are checkboxes available; if you select/unselect a checkbox, the corresponding sub-solvent will be added/ deleted from the **Favourites** list (maximum of 5 sub-solvents).

c. **Preset Edit Menu** (Ref. Fig. No. 26.1)

- After selecting a sub-solvent, you will be directed to the Preset Edit menu.
- You can:
  - » Amend the preset values.
  - » Proceed with the existing preset values.
  - » Resave new solvent parameter values.

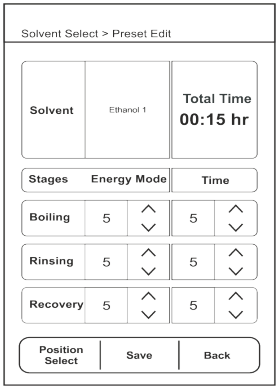


Fig. No. 26.1

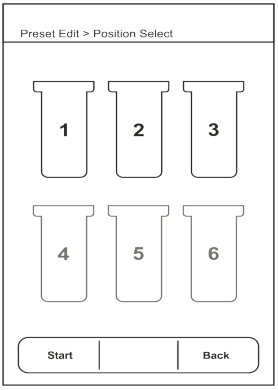


Fig. No. 26.2

d. **Position Selection** (Ref. Fig. No. 26.2)

- The next menu will prompt you to select the desired positions (1 to 6).
- A minimum of 1 position must be selected.

e. **Process Initialization** (Ref. Fig. No. 27.1 & 27.2)

- On the Process Initialize menu:
  - » Check the flow status if the flow sensor is enabled/active in settings.
- The system will then navigate to the **Process Run** menu.

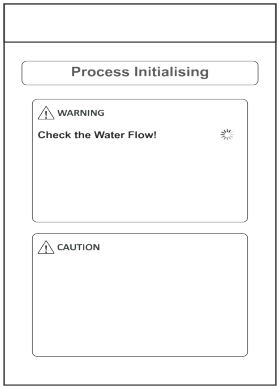


Fig. No. 27.1

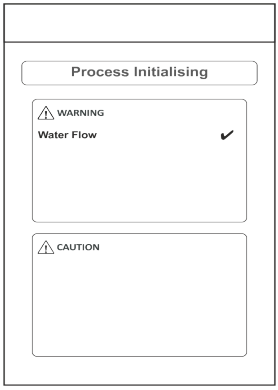


Fig. No. 27.2

f. **Process Run** (Ref. Fig. No. 27.3)

- The process will run until the end of the specified time.
- You can terminate the process at any time if required.
- **Manual vacuum** control is available during the process for recovery.
- **Details button** enables user to select/ deselect the positions during the process.

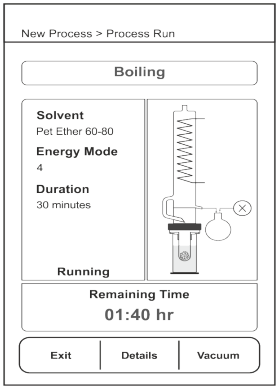


Fig. No. 27.3

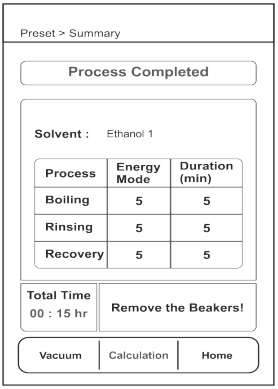


Fig. No. 27.4

g. **Process Summary**

- **Process Completion** (Ref. Fig. No. 27.4): Once the process is complete, the system will navigate to the **Process Summary** page.
  - » **Manual vacuum** control is also available on this menu.
  - » The process completion page includes a **Data Menu**, which directs to the **Data Calculation** menu for further processing.

- **Process Termination** (Ref. Fig. No. 28.1)
  - If the process is terminated manually:
    - » The system will navigate to the **Process Summary** page.
    - » **Manual vacuum** control is available on this page.

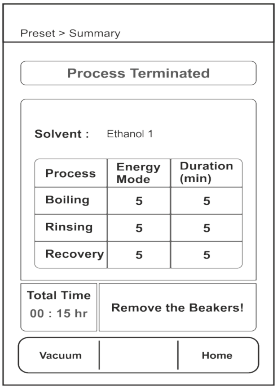


Fig. No. 28.1

3. FAVOURITES

a. **Select Favourite** (Ref. Fig. No. 28.2)
- Click on the **"Favourites"** menu.
- Select any one from the list of 5 saved favourites.

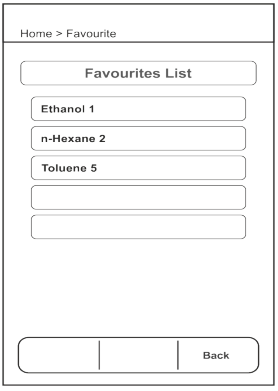


Fig. No. 28.2

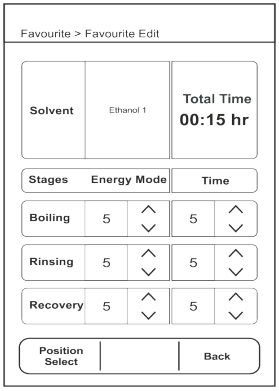


Fig. No. 28.3

b. **Favourite Edit Menu** (Ref. Fig. No. 28.3)
- After selecting a favourite, you will be directed to the **Favourite Edit** menu.
- You can edit the parameters if required but cannot save the changes.
- Proceed to the **Position Select** menu.

c. **Position Selection** (Ref. Fig. No. 29.1)

- The next menu will prompt you to select the desired positions (1 to 6).
- A minimum of 1 position must be selected.

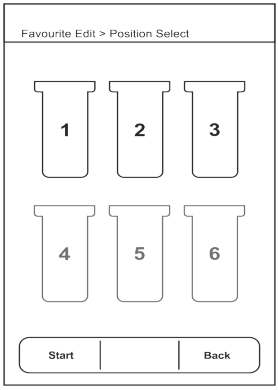


Fig. No. 29.1

d. **Process Initialization** (Ref. Fig. No. 29.2 & 29.3)

- On the Process Initialize page:
  - » Check the flow status if the flow sensor is enabled/active in settings.
- The system will then navigate to the Process Run menu.

e. **Process Run** (Ref. Fig. No. 29.4)

- The process will run until the end of the specified time.
- You can terminate the process at any time if required.
- **Manual vacuum** control is available during the process.
- You can also select or deselect positions during the process using the **Details** button.

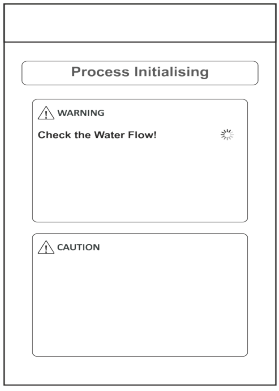


Fig. No. 29.2

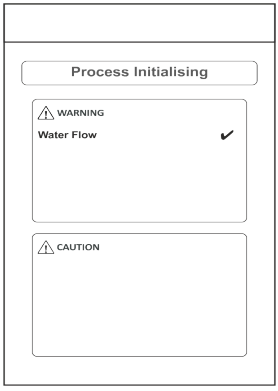


Fig. No. 29.3

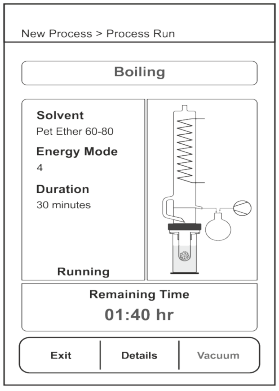


Fig. No. 29.4

f. **Process Completion** (Ref. Fig. No. 30.1)

- Once the process is complete, the system will navigate to the **Process Summary** menu.
- **Manual vacuum** control is also available on this page.
- The process completion page includes a **Data Menu**, which directs to the **Data Calculation** menu for further processing.

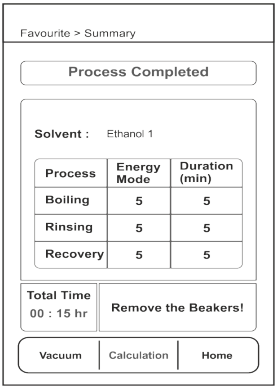


Fig. No. 30.1

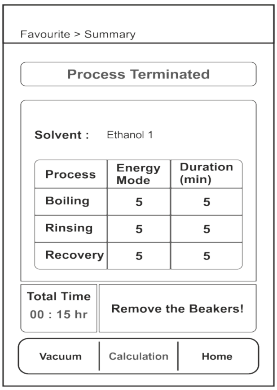


Fig. No. 30.2

g. **Process Termination** (Ref. Fig. No. 30.2)

- If the process is terminated manually:
  - » The system will navigate to the Process Summary page.
  - » **Manual vacuum** control is available on this page.

4. SETTINGS

The Settings menu contains four sub-menus (Ref. Fig. No. 31.1):

a. Sensor Override

b. Vacuum Pump Duration

c. Solvent Rinsing Cycle

d. Factory Reset

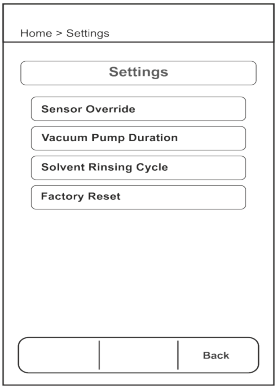


Fig. No. 31.1

a. Sensor Override

If the flow sensor malfunctions, you can use this option to bypass it (Ref. Fig. No. 31.2).

- Click on "Sensor Override".
- By default, the sensor is in Active Mode. If needed, switch it to Override Mode to bypass the flow sensor.
- Exit the menu.

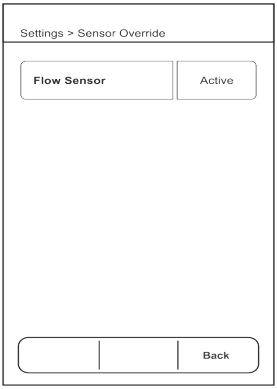


Fig. No. 31.2

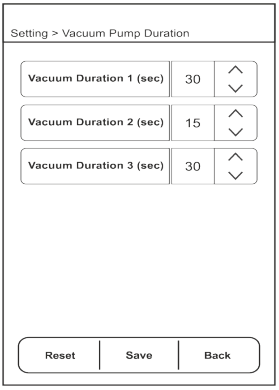


Fig. No. 31.3

b. Vacuum Pump Duration

This option is used for setting the automatic vacuum duration during the process (Ref. Fig. No. 31.3).

- Click on "**Vacuum Pump Duration**".
- Set the desired automatic vacuum duration.
- If facing issues with automatic vacuum during the process, always press the "**Reset**" button and save the settings.

c. Solvent Rinsing Cycle

This menu is used when you need to change the solvent by running a dry run without any samples, using only the solvent (Ref. Fig. No. 32.1 & 32.2).

Steps to follow:

- Click on "Solvent Rinsing Cycle".
- Edit the parameters (Time and Energy Mode) according to the solvent.
- Select the number of positions.
- Click the "Start" button to initiate the process.
- Manual vacuum control is available; press the button when needed.

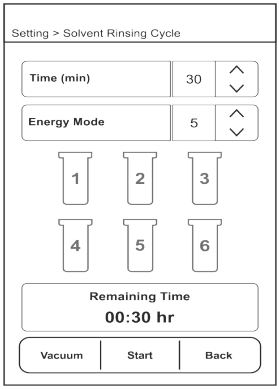


Fig. No. 32.1

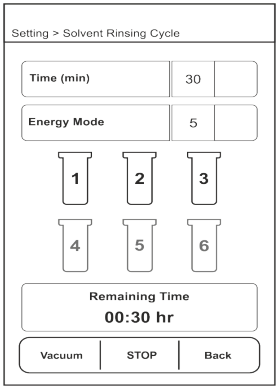


Fig. No. 32.2

d. Factory Reset Menu

The Factory Reset menu contains three sub-menus (Ref. Fig. No. 33.2):

i. Factory Reset

ii. Temperature Probe Calibration

iii. Cycle Count

Note :

Please Login using the password provided during the installation (Ref. Fig. No. 33.1)

Fig. No. 33.1

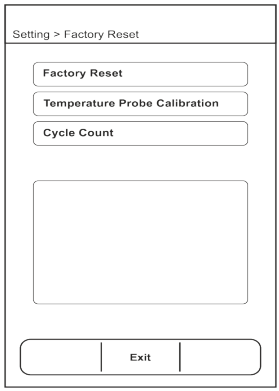


Fig. No. 33.2

i. **Factory Reset** (Ref. Fig. No. 33.3)

This option restores all settings to their default values, except for the probe calibration.

- Click on "**Factory Reset**".
- If you want to proceed with a factory reset, click "**Yes**" otherwise, click "**No**".

Fig. No. 33.3

ii. Temperature Probe Calibration

(Ref. Fig. No. 34.1)

Use this option to calibrate the temperature probes for each position.

Steps to follow:

- In the **Settings** menu, open **Factory Reset > Temperature Probe Calibration**.
- Place the master probe on the heater surface for each position.
- Enter the values of the master probes for the respective positions at room temperature.
- Repeat the process for all 6 positions.
- Press **"Calibrate"**.
- The probes will be calibrated at room temperature.

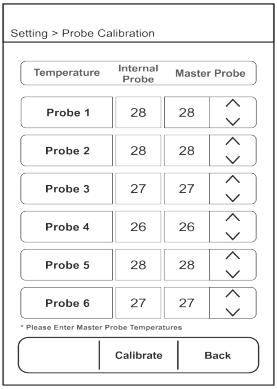


Fig. No. 34.1

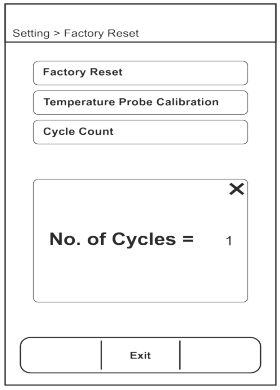


Fig. No. 34.2

iii. Cycle Count (Ref. Fig. No. 34.2)

This option displays the total number of process completed cycles.

Steps to follow:

- Click on **"Cycle Count"**.
- A pop-up will display the total cycle count.
- Click the **"X"** to close the pop-up.
- Exit the menu.

5. HELP

Help Menu Guide (Ref. Fig. No. 35.1)

1. Click on the "**Help**" menu.
2. A QR code scanner will appear. Also there is helpline number & Email available.
3. Use your phone to scan the QR code.
4. View or Download Manual:
   - » The manual will appear on your phone.
   - » You can view it online or download it for offline use.

Fig. No. 35.1

WARNINGS

The system displays warning messages during critical operations to alert the user.

1. **Position Select Warning** (Ref. Fig. No. 36.1)
   - This warning appears if no position is selected.

Fig. No. 36.1

2. Flow Error Warning
   - **Initialization Warning** (Ref. Fig. No. 36.2):
     Before the process run starts, if there is a flow error, a warning message will be displayed.
   - **Process Run Warning** (Ref. Fig. No. 36.3):
     If a flow error occurs during the process run, a warning message will be displayed along with a beep sound and a pictorial representation of the error.

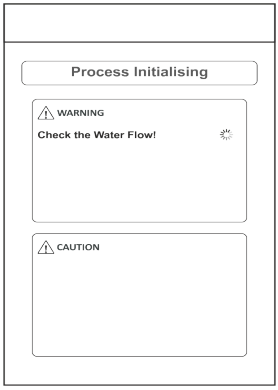


Fig. No. 36.2

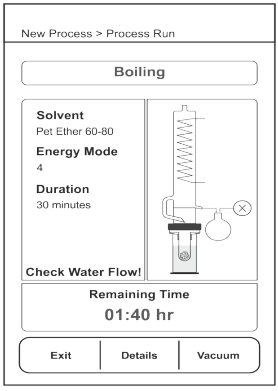


Fig. No. 36.3

SAMPLE PREPARATION

Abstract :

Lipids are present in various forms like monoglycerides, diglycerides, triglycerides, and sterols and free fatty acid and phospholipids and carotenoids and fat soluble vitamins. Lipid is soluble in organic solvent and insoluble in water, because of this, organic solvents like hexane, petroleum ether have the ability to solubilize fat and fat is extracted from food in combination with the solvent. Later the fat is collected by evaporating the solvent. Almost all the solvent is distilled off and can be reused.

Solvent Properties :

Primarily solvents like N-hexane and petroleum ether are in use due to their low boiling point.

Requirement :

1. Weighing balance.
2. **Randall apparatus Labquest by Borosil FAS060**.
3. Thimble/ filter bag.
4. Glass rod.
5. Desiccator with silica gel.
6. Petroleum ether (Boiling point 60-80°C) or any solvent.

Sample Preparation :

1. First of all we have to dry the sample/ product and remove moisture in order to facilitate entry of the organic solvent, because moisture restricts the entry of organic solvents. Then size is there to increase the surface area and due to it, there is a larger exposed surface.
2. Grind sample to make it homogeneous.

Procedure :

1. Rinse all the glass apparatus with Acetone/solvent and dry it in the oven at 102°C and after removing it keep it in the desiccator.
2. Weigh the empty beakers (6) individually.
3. Weigh 1-10 grams of grounded and dried sample and place it in the thimble either wrapped in whatman or butter paper. (Sample amount will vary as per fat content).
4. Place the thimbles in preweighed beakers using a thimble holder.
5. Fill the beaker as 150 mL with solvent in respective positions.
6. Turn on the chiller supply, the chiller temperature should be 15°C.
7. Lift the handle and place the beaker position wise.
8. Turn on all positions manually.
9. In the control Panel select “New Process” , keep the preset values the same and single press ‘set button’. The process has started.
10. The process will go through the Boiling- Rinsing - Recovery Stage with the total set time - 1hour and 10 minutes to 2 hours 10 minutes.
11. After the process is completed, remove the beakers and keep them in the oven for at least 30 minutes-1hour.
12. After 1 hour, remove the beaker carefully and proceed for the cooling in the desiccator for a minimum of 30 minutes.
13. Weigh all the beakers and calculate the fat content as per formula given below.
14. Follow the drying and cooling procedure up to getting two constant weights of beakers.

Calculation :

Direct method

Fat(%) w/w = 100 x (W2-W1) / W

Where,

W1 = wt of the beaker before removal of fat in g

W2 = wt of the beaker after removal of fat in g

W = wt of sample in g

Precaution :

1. Beaker should be dried and rinsed with the solvent to be used before using.
2. Chiller temperature should be kept 15°C.
3. Ideally the sample should be moisture free. If not, calculation should be on the moisture and moisture free basis.
4. Make sure the sample is homogeneous and ground properly.
5. Make sure the sample should not dry out while in the process.

Maximum Process Time :

Process	Energy Mode	Time
Boiling	3	60
Rinsing	4	60
Recovery	2	10

CHEMISTRY TROUBLESHOOTING

Sr. No.	Errors/ Issues	Possibilities	Troubleshooting
1	Less Extration	1. Less extraction due to improper grinding and non homogenous samples, contains high moisture	1. Homogenous and proper grinded, moisture free.
		2. Less time	2. Sufficient time for the extraction as given in the SOP.
		3. Heater Failure	3. Heater Calibration.
		4. Leakage	4. Usage of proper beakers to avoid any leakages.
2	High Extraction	1. Improper Water circulation in all 6 condensers	1. Usage of chiller with proper water circulation.
		2. Bumping and frothing of the sample due to high heat or voltage	2. Heater Calibration and Checking Voltage , using Voltage stabilizer.
		3. Improper energy mode and time	3. Sufficient time for the extraction as given in the SOP.

TROUBLESHOOTING

Sr. No.	Errors /Issues	Possibilities	Troubleshooting
1	Solvent Not Boiling	1. Position not selected	1. Select position(s), wait for 5 min to let it start boiling.
		2. Heater is damaged	2. Verfy resistance across heater, change if needed(contact service engineer).
2	Flow Error	1. Flow error at initialisation page or in process run page	1. Verify the water flow to condenser, else heater will be turned off after 2 min and also after 5 min process will get terminated if no action is taken.
		2. Flow switch is damaged	2. "Override" sensor from settings menu resume process, contact service engineer.
3	Position Error	Position select error message	Select atleast 1 or desired no. of position.
4	Solvent Not Recovering	1. Recovery knob is opened	1. Close the knob.
		2. Any position is empty while in process and below cap is not fitted	2. Fit the cap to empty position.
		3. NRV flow is not unidirectional	3. Check NRV.
		4. Vacuum pump pipe is not connected or fitted properly	4. Verify pipe connection then proceed.

TROUBLESHOOTING

1. The unit is not turning ON.
    - Check the power supply in AC mains.
    - Make sure the power cable is inserted to the socket properly.
    - Check whether the main switch is ON or OFF.
    - Check if the illuminated switch is OFF.
    - Ensure the main switch is ON.
2. If the flow error is displayed.
    - Check the water flow and increased the water flow if needed.
    - If the water flow is adequate to the unit and still it is showing the flow error, “Override” the sensor and conatct Borosil’s Service Engineer.

WARRANTY REGISTRATION

Please handover this registration form to the distributor from where you have purchased this product. The warranty is valid only when this warranty registration form is received by us within 30 days from the date of purchase.

Product : FAS060 Product Sr. No.: _____

Date of Invoice : _____ Invoice No.: _____

Customer name & address

Name : _____

_____

Address: _____

_____

_____

_____

Telephone: _____

E-mail: _____

Customer sign & seal

Dealer name & address

Name : _____

_____

Address: _____

_____

_____

_____

Telephone: _____

E-mail: _____

Dealer sign & seal

"PERSONALIZE YOUR EXPERIENCE"

Welcome to your Fat Extractor Unit! This page is designed exclusively for you to jot down any notes, observations, or reminders related to your experience with the Fat Extractor unit. Whether it's a maintenance schedule, specific settings, or personal insights, feel free to make this space your own.

Use this section to: Record Maintenance Dates, Custom Settings, Observations, Upcoming Service Dates etc.

Remember, your notes are valuable – they contribute to the ongoing optimization of your Fat Extractor Unit. Feel free to revisit this page and add more insights as you continue to explore the capabilities of your unit.

Thank you for choosing our Fat Extractor Unit. We appreciate your feedback and commitment to maintaining the highest standards in your laboratory or industrial processes.

BOROSIL®
Scientific

STATEMENT OF WARRANTY

Borosil confirms that this product has been manufactured in accordance with our technical specifications and quality requirements.

- Borosil warrants the product from manufacturing and workmanship defects for a period of 12 months from the date of invoice.
- Warranty is void, if equipment and apparatus is not operated as prescribed in the operating manual supplied along with the unit.
- To be covered under warranty.
  - Units have to be connected to standard 230V, 50Hz, 6A wall sockets with proper earthing.
  - Corrosion damage due to spillage of chemical will not be covered under warranty.
  - Glass being Fragile in Nature - **NO WARRANTY** for Glass Parts is applicable.
  - Warranty does not cover rust and physical damage to metal parts due to corrosive environment in the lab.

Terms:

- In the event of malfunction due to defect, the buyer will have to follow the Borosil's service process.
- Certain units can not be serviced/rectified at the buyer's place and the units may have to be brought to Borosil's service center as advised by Borosil's representatives.
- In no event shall Borosil be liable for consequential or incidental damages.

INVOICE DATE	BUYER	AFFIX SERIAL NUMBER
INVOICE#		

Dealer name & address	Dealer sign & seal

BOROSIL SCIENTIFIC LIMITED
Corporate Office : 1101, Crescenzo G-Block, Opp. MCA Club, Bandra Kurla Complex, Bandra (E), Mumbai-400051, India

LABQUEST BY BOROSIL®

: MANUFACTURED BY :

Borosil Scientific Limited

Plot No. 7, Sr. No. 234, 235 & 245,
Indialand Global Industrial Park,
Hinjewadi Phase 1, Pune - 411057.
Write to us on above address.

: MARKETED BY :

Borosil Scientific Limited

1101, G-Block, Parinee Crescenzo,
BKC, Bandra East, Mumbai - 51
Maharashtra, India.

: CUSTOMER CARE CONTACT :

Phone : 1800 22 4551 | Email : lab.support@borosil.com

Website : www.borosilscientific.com