



OPERATING THE FD80

Document No. OP-007
Version: 1
Effective Date: July 22, 2022

1 PURPOSE

To outline the steps taken to operate the FD80.

2 SCOPE

This procedure applies to the freeze dryer (FD80) in the BT80.

3 RESPONSIBILITIES

Head of Product Innovation, Food Scientist and
Food Safety Specialist or its designate

1. Revising the work instruction.

Department Manager, Supervisor or its
designate

1. Ensure that personnel follow this work instruction.

4 DEFINITIONS

BT80

Mobile Biotrim Unit

FD80

Freeze Dryer with a capacity to freeze dry 80kg of
wet product in 24hrs



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5 EQUIPMENT AND MATERIALS

5.1 FD80

5.2 Trays

6 PROCEDURE

6.1 Prestart Actions

6.1.1 Before starting the machine, take the following actions:

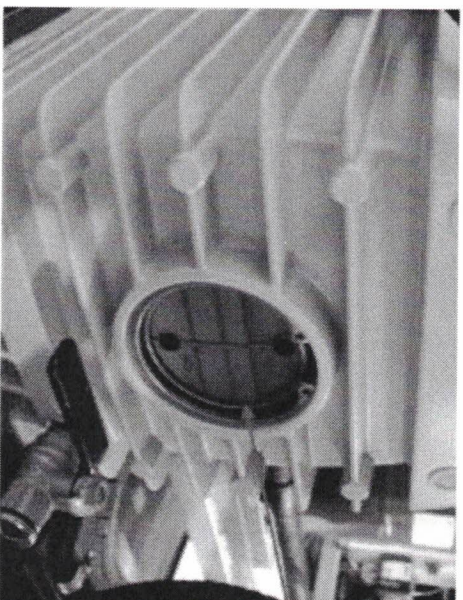
6.1.1.1 Check that the power has been on for at least 3 hours to give the sump heater time to warm up the compressor.

6.1.1.2 If the mains power has been turned off for an extended period, call a Refrigeration Engineer to supervise the start up.

6.1.1.3 Check the compressed air is connected and that all isolation valves are open.

6.1.1.4 Check the oil level on the vacuum pump via the sight glass. Also check the quality of the oil in the sight glass.

6.1.1.5 Check oil level in the sight glass on every run



Check level in oil sight glass.

Figure 1 Vacuum Pump Oil Check on FDD80

6.2 Starting the Machine

- 6.2.1 Check that the machine is clean inside and out and clear of any free water.
- 6.2.2 Ensure the door seal is clean. Figure 8: Door Seal and Weir on FDD80 GP
- 6.2.3 Freeze Mode Freeze Mode should be used to cool the heat plates to the correct temperature before drying. It can also be used to freeze in place.
- 6.2.4 Select FREEZE on the HMI touchscreen.
- 6.2.5 Allow temperature of the shelves to reach -20°C .
- 6.2.6 If freezing product in place, ensure the chamber door is firmly and evenly closed.

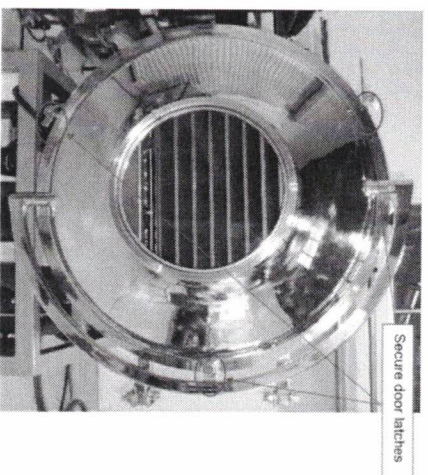


Figure 3 Door Closing Latches

6.5 Select the required recipe (press Recipe on the main screen)

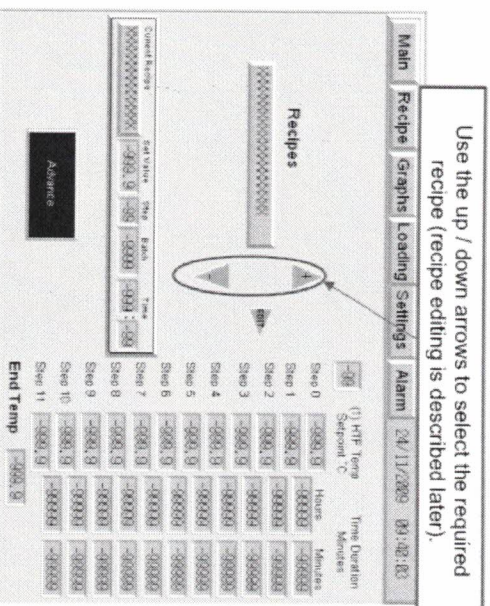


Figure 4 Recipe Set-up on FD80

6.16 Freeze Override

- 6.16.1 Freeze Override is a product and machine protection mode that will start automatically if the chamber vacuum rises above Dry Mode HTF Vac Setpoint High Vacuum (Set point 124) for longer than the timer (default 20min), or if the heat plates drop below their minimum temperature for more than 5 minutes.
- 6.16.2 The timer will start counting any time the vacuum rises above 3mbar after the initial pull down.
- 6.16.3 If the dryer goes into Freeze Override, the Freeze Override button will appear on the screen and be GREEN, and the shelf temperature will drop to the Freeze Setpoint to re-freeze the product.

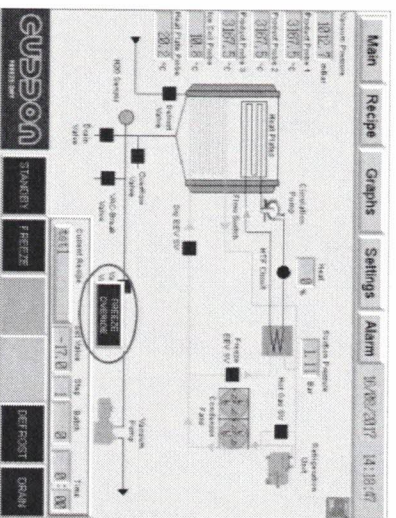


Figure 6 Freeze Override on FDS80

- 6.16.4 Once in Freeze Override, make a decision to either Vacuum Break and unload the product, or continue with Drying.
 - 6.16.5 Select VAC BREAK to unload the product. Select DRY to put the dryer back into Dry Mode.
 - 6.16.6 If Dry is selected, the recipe will restart from the beginning of the recipe.
 - 6.16.7 The 'Advance' button on the Recipe page can be used to bring it back to where it was before Freeze Override started.
- ### 6.17 Completion of Drying

6.17.1 At the end of the cycle, there are three indicators that can be used to predict if the product is dry without breaking the vacuum:

6.17.1.1 All three Product Probes are at the same temperature as the Heat Plates.

6.17.1.2 The Ice Coil probe is at a very low temperature.

6.17.1.3 The Vacuum Pressure is very low.

6.17.1.4 All three indicators must be present to be confident that the product is really dry. If any of the three has not occurred, the Dry cycle should be continued.

6.18 When ready to open the Dryer:

6.18.1 Release the door latches.

6.18.2 Press VAC BREAK on the HMI touchscreen.

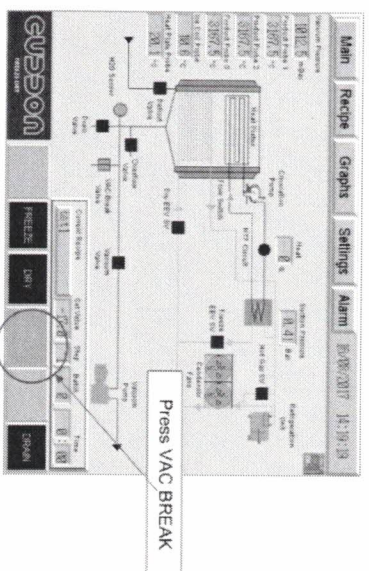


Figure 7 Vacuum Break on FD80

6.18.3 Allow vacuum to release then unload product.

6.18.4 Data logging stops automatically.

6.18.5 The vacuum is released once the pressure reaches around 1013 mBar and is not rising anymore.

6.18.6 The door should open freely if the vacuum has been sufficiently released.



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6.18.7 If the door does not open freely, wait a few minutes before trying to open the door again.

6.18.8 Unplug the temperature probes.

6.18.9 Make sure that the PT100 probes and cables are not damaged.

6.18.10 Probes should be removed by the plug only, do not pull on the wire.

6.18.11 It is important to have storage for the product to ensure the dry product does not have the opportunity to absorb moisture from the atmosphere.

7 REFERENCES

Not applicable

8 REVISION HISTORY

| SOP Version | Effective Date | Summary of Changes | Revised By |
|-------------|----------------|--------------------|------------------|
| 1 | Jul 22, 2022 | NEW | Precious Chigumo |