

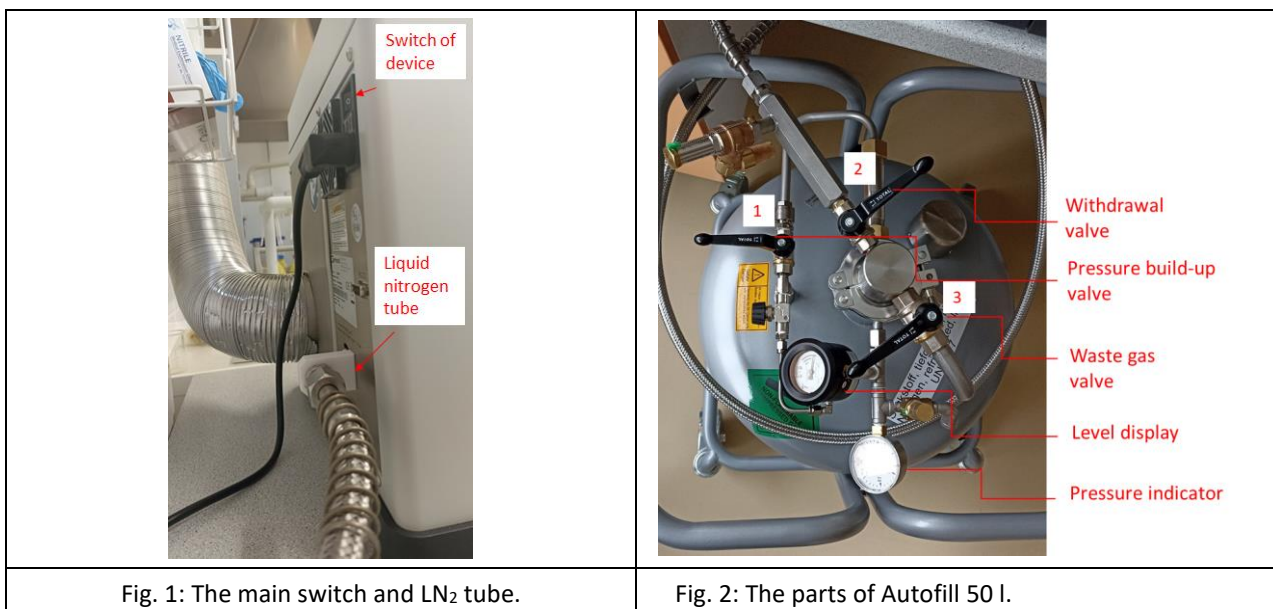
## CRYOMILL (RETSCH)

The device is suitable for gently melting and homogenizing material sensitive to temperature, soft, fibrous, hard, and fragile. These materials should be dry or wet. The device enables melting at cryotemperature (cooling with liquid nitrogen). The melting cell has a volume of 50 ml and is made such as the melting ball from steel. The material should fill 1/3 volume of the cell.

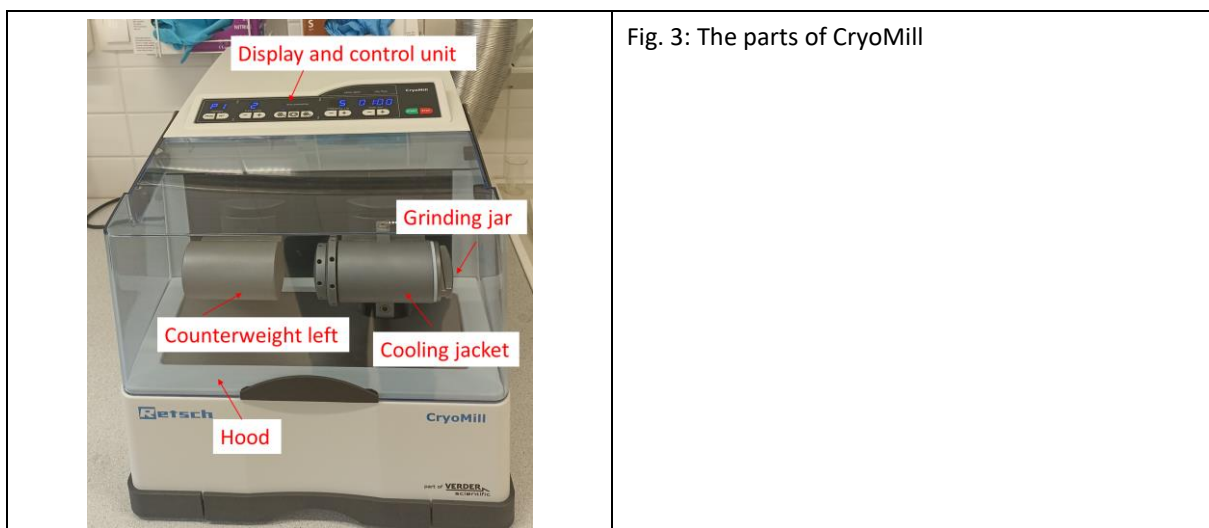
**Before using, check the cell, cell cover, and ball (must be clear and dried).**

1. If you need **liquid nitrogen** cooling, connect the tube of Autofill to the CryoMill (left side, back) (**Fig. 1**).
2. Switch on the nitrogen (**Fig. 2**):
  - a. For the suitable pressure switch on the **pressure build-up valve (1)**
  - b. Check the pressure level in the **pressure indicator**
  - c. Switch on the **withdrawal valve (2)** to allow the liquid nitrogen flow
  - d. Never open the **waste gas valve (3)**.

Cooling of the system takes 10 min.



3. Switch on the CryoMill (back of the device, Fig. 1). All parts of the CryoMill are shown in Fig. 3.



- Add the sample and grinding ball to the grinding cell (Fig. 4).



Fig. 4: Components for grinding.

- Insert the grinding cell into the cooling jacket (Fig. 5-1.) and tighten it (Fig. 5 – 2.). Tighten the smaller screw (Fig. 5 – 3.) by hand and with the locking pin in the direction of the arrow. Then tighten the bigger lock nut (Fig. 5 – 4.) by hand and firmly against the cooling jacket with the locking pin. Tighten it in the direction of the arrow. You can see the details in the CryoMill Manual, page 33.

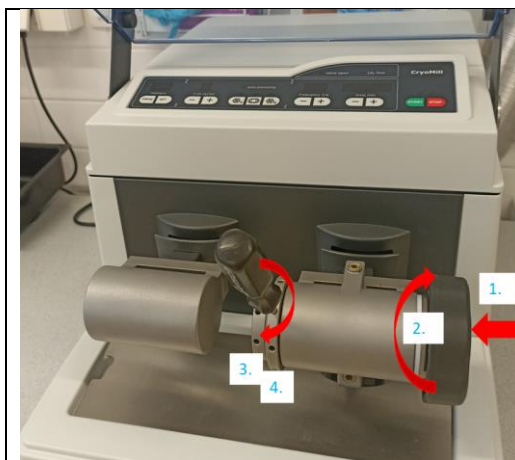


Fig. 5: Tightening of the grinding cell.

- Set Up the program (Fig. 6). If you need cooling, press the Precooling button, the minimum frequency is 5 Hz, and the system's cooling takes 5 mins. After cooling, always use gloves, sheets, and the opening aid for manipulating the cell. It is possible to set up five cycles. Recommended time for the first grinding cycle is about 2 minutes. Check the grinded sample in the cell, and continue if necessary. Grinding protocols for different materials are available in the printed version or on the website [Application Database - Milling & Sieving - RETSCH](https://www.retsch.com/en/application-database/milling-sieving). More details for set up are in the Manual, page 40. Push the Start button.
- After grinding, firstly, enable the bigger locking pin and, secondly, the smaller one. Open the cell with the opening aid. Use gloves in the case of LN<sub>2</sub> cooling.
- Put away grinded material, separate the seal with a tweezer from the hemisphere part of the grinding cell, wipe the seal with a cloth, wipe with a brush, blow out with compressed air, and precisely wipe the threads. Wipe the bowl with a cloth. Leave all parts on the dish.
- Switch off the instrument (ON/OFF Fig. 1) and leave the hood open. Put the cloth under the cooling jacket and counterweight.
- Switch off the nitrogen using **pressure build-up valve 1** and **withdrawal valve 2** (Fig. 2)

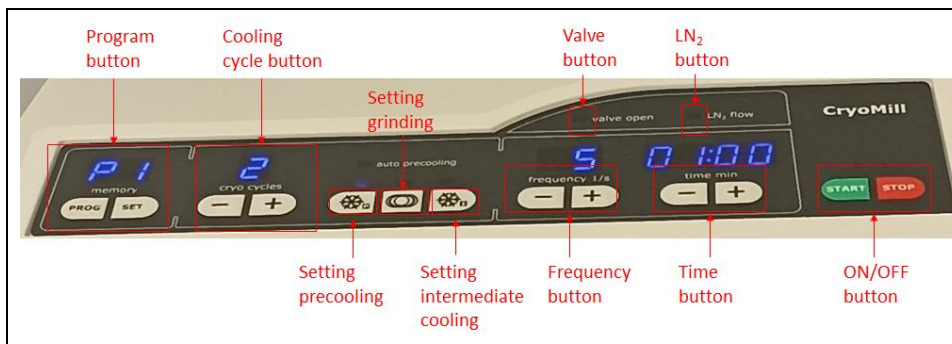


Fig. 6: Operating controls, displays and functions.