

SNIJDERS SCIENTIFIC B.V.

ISO9001 certified by Lloyd's

FACTORY INSTALLED BACK UP SYSTEM (OPTIONAL)

The to build in system consists out of:

- ST9002 accubox
- CO₂/LN₂ accu
- Solenoid valve CO₂/LN₂
- Connections for solenoid valve
- Connection for CO₂/LN₂ inlet
- Fuse holder
- Fuse
- Cooling pipe ¼" (CO₂) & ½" (LN₂)

The ST9002 accubox must be connected on the input-voltage (220-240V) of the ST9002 temperature controller. The CO₂ accu is connected on the battery-inlet off the ST9002 accubox, serial with the RY5 contact of the ST9002 temperature controller.

The battery-charger of the ST9002 temperature controller must be connected to the ST9002 accu-box.

Normally without CO ₂ / LN ₂ system	1,2 Ah
Including CO ₂ / LN ₂ system	12,0 Ah



CAUTION! Be sure that the polarity connections + and – are well done.

(CO₂ back up system, ordernumber S700E; LN₂ back up system, ordernumber S600E.)

CO₂/ LN₂ precautions

The following are precautions for using liquid CO₂/ LN₂ backup systems.

WARNING! If a CO₂/ LN₂ cylinder falls and a valve is knocked off, the cylinder becomes a deadly and completely unguided missile. Transport the cylinders in a hand truck or cart with secure chain ties for the cylinder. After cylinders are connected to the freezer, securely attach them with chains to a solid, stationary object such as a building column.



WARNING! CO₂/ LN₂ liquids are non-poisonous, but are very cold and will burn unprotected skin. Always wear protective eyewear and clothing when changing cylinders or working on the piping systems attached to an active source of liquid refrigerant.



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WARNING! The gases produced by evaporation of CO₂/ LN₂ are non-poisonous, but displace the oxygen in a confined space and can cause asphyxiation. Do not store the cylinders in subsurface or enclosed areas.



CAUTION! When closing the cylinder valve, make sure that the injection solenoid is energized to allow all the liquid to bleed off instead of being trapped in the supply tubing. Failure to do this results in activation of the pressure relief device, which could damage the freezer and requires replacing if it's activated.



CAUTION! For freezers ordered with a factory installed back up systems, the flow of liquid CO₂/ LN₂ will be discontinued if the door or lid is opened during operation of the back up system.

CO₂/ LN₂ cylinders

The end user needs to take care of a cylinder CO₂/ LN₂ incl. rising pipe their self (advise to use a cylinder of 50 litre, UN1013, see below picture).

Liquid Nitrogen (LN₂)

This system uses portable and locally refillable bottles. These bottles keep the liquid at low temperature and pressure by continually venting a small amount of gaseous N₂.

Liquid CO₂

This system uses portable and locally refillable bottles that are not vented and have a virtually unlimited standby life unless they develop a leak. These containers hold liquid at room temperature and high pressure.

Weight bottle

When the CO₂ bottle is delivered by the local supplier, please do the following:

- place the bottle on a scale and check the total weight
- check the TARA-weight on the bottle
- subtract the TARA-weight from the total weight of the bottle and write down this value (= the quantity CO₂ inside the bottle)
- measure the quantity every month, so you know when you need to contact the local supplier for the refill.

Installation



CO₂ back up system:

On the backside of the freezer a connection ($\frac{1}{4}$ ") is situated for the CO₂ inlet. The freezer can be shipped with a 2 meter high pressure hose to connect the freezer to the bottle. Straighten the high pressure hose and connect one end to the CO₂ inlet on the freezer and the other end to the CO₂ bottle or building supply fitting.

Accessories for CO₂ back up system:

- high pressure hose, length: 2 meter (ordernumber AC0007E)
- hose, length: 1 meter (ordernumber AC0006E)
- connection coupling (ordernumber AC0004E).

For 1 freezer and 1 cylinder: 1x AC0007E.

For 1 freezer and 2 cylinders: 1x AC0007E, 1x AC0006E, 1x AC0004E.

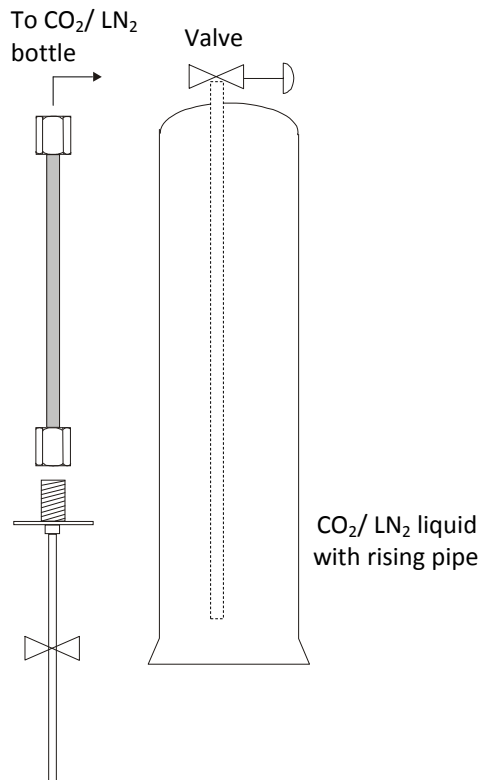
For 2 freezers and 1 cylinder: 2x AC0007E, 1x AC0004E.

For 2 freezers and 2 cylinders: 2x AC0007E, 2x AC0004E, 1x AC0006E.

Upright freezer connected to 50 litre CO₂ bottle by means of high pressure hose.

LN₂ back up system:

On the backside of the freezer a connection ($\frac{1}{2}$ ") is situated for the LN₂ inlet. For accessories Snijders advises to contact the sales department in the Netherlands.



To CO₂/ LN₂ inlet connection
of the backside of the freezer

Schematic diagram installation CO₂/ LN₂
from inlet connection freezer to CO₂/ LN₂ bottle.

CO₂/ LN₂-alarm test

Maximum CO₂/ LN₂-alarm temperature:

- If the correct access code is used, press the '**PRG**' button for approx. 2 seconds. The display will show P30. When the '**+**' button is pressed three times, the display will show **P50**.
- Press '**SETP.**' and the display will show the adjusted value of the maximum CO₂-alarm temperature.
- Press '**SETP.**' and '**-**' at the same time, till the alarm temperature (P50) is above the setpoint.
- The status led **BACK UP** will go on and CO₂/ LN₂ will be injected inside the freezer.
- The display will go to it's normal status when during 30 seconds no button is used.

CO₂/ LN₂ injection time & - interval

- | Controller button | Display digits |
|------------------------|-----------------------|
| • Press 'CODE' | ---- after acceptance |
| • Press 'BATT.' | 6 |
| • Press 'POWER ON/OFF' | 65 |
| • Press 'PRG' | 652 |
| • Press 'POWER ON/OFF' | 6525 after acceptance |
- Press the 'PRG' button for approx. 2 seconds. The display will show P1.
 - Press the '+' button several times till the display will show **P51**.
 - Press 'SETP.' and the display will show the adjusted value of the pulse CO₂/LN₂ back up cooling.
 - If you want to change the parameter push the 'SETP.' and '+' or '-' button till the desired value appears.

Note: write down the value and look what the problem could be before you change the settings in the parameter list.

- When the parameter P51 have been adjusted, loosen all buttons and press '+' till the display will show **P52**.
- If you want to change the parameter push the 'SETP.' and '+' or '-' button till the desired value appears.
- The display will go to it's normal status when during 30 seconds no button is used.



WARNING! Don't change other parameters if it's not necessary. Changing these parameters can destruct the freezer. This is not Snijders' responsibility!

P51 = Pulse CO₂/LN₂ back up cooling (adjustable from 1...999 seconds, standard = **10 seconds**).

P52 = Interval CO₂/LN₂ back up cooling (adjustable from 1...999 seconds, standard = **10 seconds**).

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Operation

The emergency back up system comes into operation in case of, for example, temperature failure or a power failure.

The temperature on which the back up system has to inject CO₂/ LN₂ (P50) can be set on the temperature controller ST9002.

The backup system can run for a minimum of eight hours on battery power.

Note: since rechargeable batteries degrade over time, Snijders advises that the battery should be replaced after approximately three years.