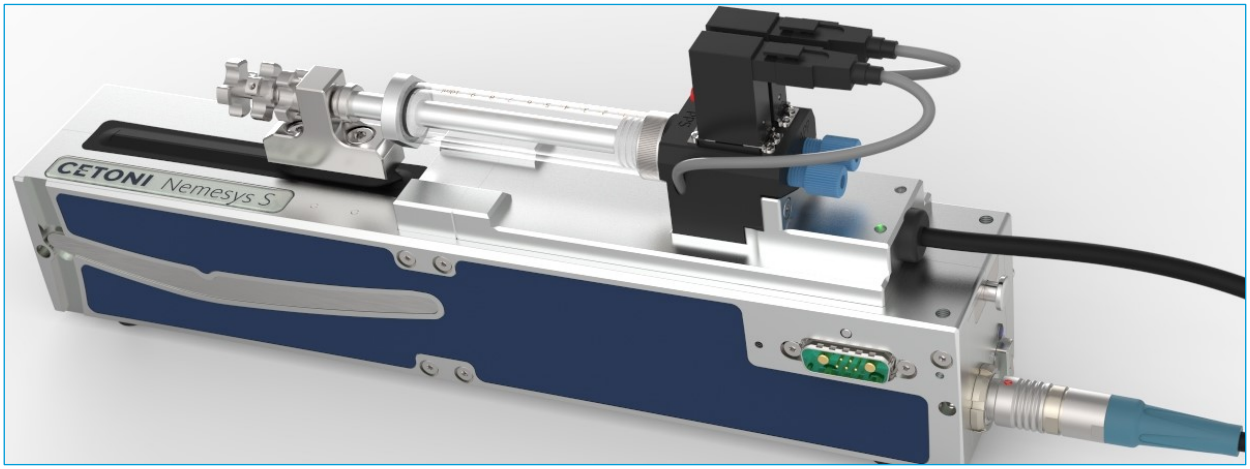
CETONI

CETONI Nemesys S

Hardware Manual



ORIGINAL INSTRUCTIONS 1.02 – SEPTEMBER 2021

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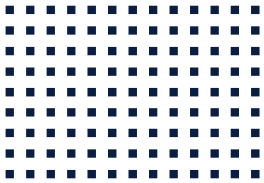


1 Overviews & Directories

1.1 Table of Contents

1.2 Revision History

REV	DATE	CHANGE	VALID FOR
1.00	27.05.2021	Creation	Type NEM-B124-02 A NEM-B124-02 B
1.01	29.06.2021	Minimum velocity corrected to 0.765 nm/s	
1.01	06.09.2021	Device revision B	

IMPORTANT. In its current revision, this manual applies only to the product types listed in the last line. Should you require a manual from a previous revision, please do not hesitate to contact us. Please let us know your device type and email address and we will send you the appropriate manual as a pdf file.

The type of your product can be found on the label behind "Type:", according to the marked number in the following example:

2 Introduction

2.1 Preface

Thank you for purchasing a product from CETONI. With this user manual we would like to support you as well as possible when handling the device. If you have any questions or suggestions, please do not hesitate to contact us.

2.2 Symbols and Keywords Used

The following symbols are used throughout this manual to help you navigate through this document:

HINT. Indicates application tips and useful hints to facilitate operation.

IMPORTANT. Indicates important information and other particularly useful information that does not describe dangerous or harmful situations.

ATTENTION. Indicates a potentially harmful situation. If it is not avoided, the product or something in its environment may be damaged.

CAUTION. Indicates a potentially dangerous situation. If it is not avoided, slight or minor injuries and property damage may result.

2.3 Norms and directives

CETONI GmbH declares under its sole responsibility, that the CETONI Nemesys S complies with the health and safety requirements of the relevant European directives.

2.4 Application Purpose

2.4.1 General Description of the Device

The CETONI Nemesys S is a syringe pump. It allows emptying and filling syringes by the relative linear movement of a syringe- and a piston holder. The use of two CETONI Nemesys S equipped with Contiflow Valves enables uninterrupted fluid dispensing.

2.4.2 Intended Use

The CETONI Nemesys S is used for highly precise and low-pulsation dosing of fluids in the range of nanoliters to milliliters per second.

Application usually takes place in laboratory-like rooms.

2.4.3 Reasonably Foreseeable Faulty Application

A use for applications distinct from the intended purpose can lead to dangerous situations and is to be omitted.

CAUTION. The CETONI Nemesys S must not be used as a medical device or for medical purposes.

CAUTION. It is not allowed to use the CETONI Nemesys S in an explosive atmosphere or with potentially explosive substances.

2.4.4 Safety measures

The safety of the user and a failure-free operation of the CETONI Nemesys S are assured only if original parts are used. Only original accessories may be used. Warranty claims will not be accepted for damage due to the use of alien accessories or expendables.

The CETONI Nemesys S has been developed and constructed in such a way as to largely rule out hazards due to its intended use. Nevertheless, you must observe the following security measures in order to exclude any remaining hazards:

- CETONI GmbH points out the responsibilities of the operator for the operation of the devices. The laws and regulations of the place of installation must be observed while operating the devices! To ensure a safe work routine, operators and users must assume responsibility for adhering to regulations.
- Before operating the device, the user must ensure the functional safety and proper condition of the device, its accessories and the cables. The device must not be operated if there is any visible damage.
- The user must be familiar with the operation of the devices and the software.
- Cables must be laid in a way that avoids any risk of stumbling.
- Any moving parts must not be touched whilst the devices are in operation. There is a risk of crushing!
- Relieve the pressure in the system before loosening connections.
- Check the leak tightness of all fluidic connections after connection and at regular intervals.
- Only use connection material that is specified for the expected pressures.
- The device is designed and approved to work in fluidic systems, which fall within the scope of Article 4 Paragraph 3 of the Pressure Equipment Directive 2014/68/EU. This means that the system may not exceed a maximum volume of 1 liter. With the use of fluids from Group 1 according to Article 13 of the Pressure Equipment Directive 2014/68/EU, the maximum allowable system pressure is 200 bar. For fluids from Group 2 it is 1000 bar. If different, product-specific values for the maximum pressure are given in the section "Technical Data", these values must be complied with. Regarding the maximum operating temperature, the specification from the section "Technical Data" must be observed.

  CETONI GmbH is not liable for consequences that may arise if the user expands the system by peripheral devices, such that one of the values or both values are exceeded.

It is the user's responsibility to become familiar with the mentioned Pressure Equipment Directive and to comply with the prevailing requirements.

- Wear protective glasses and, if necessary, additional personal protective equipment when working with corrosive, hot or otherwise dangerous substances during assembly work on the device. In these cases, use a safety cabinet.
- Transportation, storage or operation of the devices below 0°C with water in the fluid passages may cause damage to the modules.

2.4.5 Measures for Safe Operation

2.4.5.1 ELECTROMAGNETIC EMISSIONS

The CETONI Nemesys S is intended for use in any type of facility, connected directly to the public power supply network that supplies buildings used for domestic purposes.

2.4.5.2 ELECTROSTATIC DISCHARGE

Floors should be made of wood, concrete, or ceramic tiles. If the flooring is made of a synthetic material; the relative humidity must be at least 30%.

2.4.5.3 ELECTRIC DISTURBANCES

The quality of the supply voltage should be to the standard of a typical business or hospital environment.

2.4.5.4 MAGNETIC DISTURBANCES

Do not place power connector cables, even of other appliances, in close proximity of the devices and their cables. Mobile communication devices may not be used in closer proximity of the devices or their cables than the recommended safety distance!

2.4.5.5 SAFETY DEVICES ON THE SYSTEM

The system can be switched off at any time in an emergency using the mains switch on the Base Module (toggle switch on the side of the housing); this will cause no damage to the unit.

2.4.5.6 CONDITION OF THE DEVICES

Irrespective of the faultless manufacture of the devices, damage can occur whilst the unit is in operation. With this in mind, always carry out a visual check of the components mentioned before use. Pay particular attention to crushed cables, damaged tubing, and deformed plugs. If you should notice any damage, please do not use the devices and inform CETONI GmbH without delay. CETONI will put your devices back to an operational condition at the earliest. Do not attempt to repair the devices yourself.

2.5 Warranty and Liability

The devices left our company in perfect condition. Only the manufacturer is permitted to open the devices. All warranty and liability entitlements, particularly damage entitlements due to personal injuries, are void if the devices are opened by an unauthorised person.

The duration of the warranty is 1 year of technical equipment (expect wear parts) from the day of delivery. It is not extended or renewed due to work carried out under warranty.

CETONI GmbH considers itself responsible for the devices with regard to safety, reliability and function only if assembly, new settings, changes, extensions and repairs are carried out by CETONI GmbH or an authorised centre, and if the devices have been used in accordance with the instruction manual.

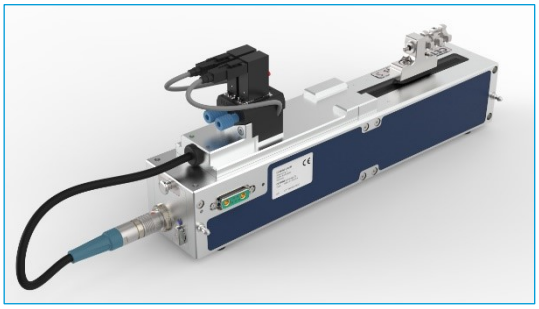
The product conforms to the basic safety regulation standards. Industrial property rights are reserved on the circuits, methods, names, software programs, and units.

3 Scope of Delivery

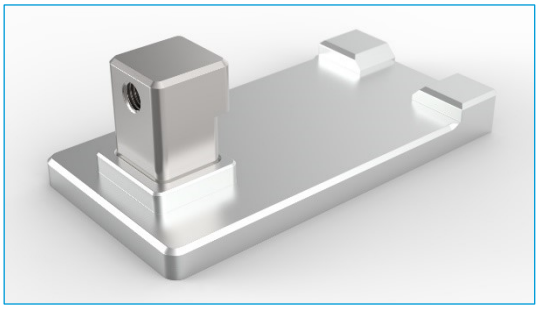
The following items should be included:

CETONI NEMESYS S

- With Contiflow Valve in the ordered version



SCREW-IN SYRINGE HOLDER



Other accessories such as syringes, tubing material, pressure sensors etc. have to be purchased separately.

4 Technical Data

4.1 Environment

TEMPERATURE (OPERATION)	-20 – 50 °C
TEMPERATURE (STORAGE)	-40 – 75 °C
AIR HUMIDITY	10% to 90%, non-condensing

ATTENTION. Transportation, storage or operation below 0°C with water in the fluid passages may cause damage to the device.

4.2 Mechanical Data

DIMENSIONS (L x W x H)	310 x 56 x 108 mm
WEIGHT	2,25 kg

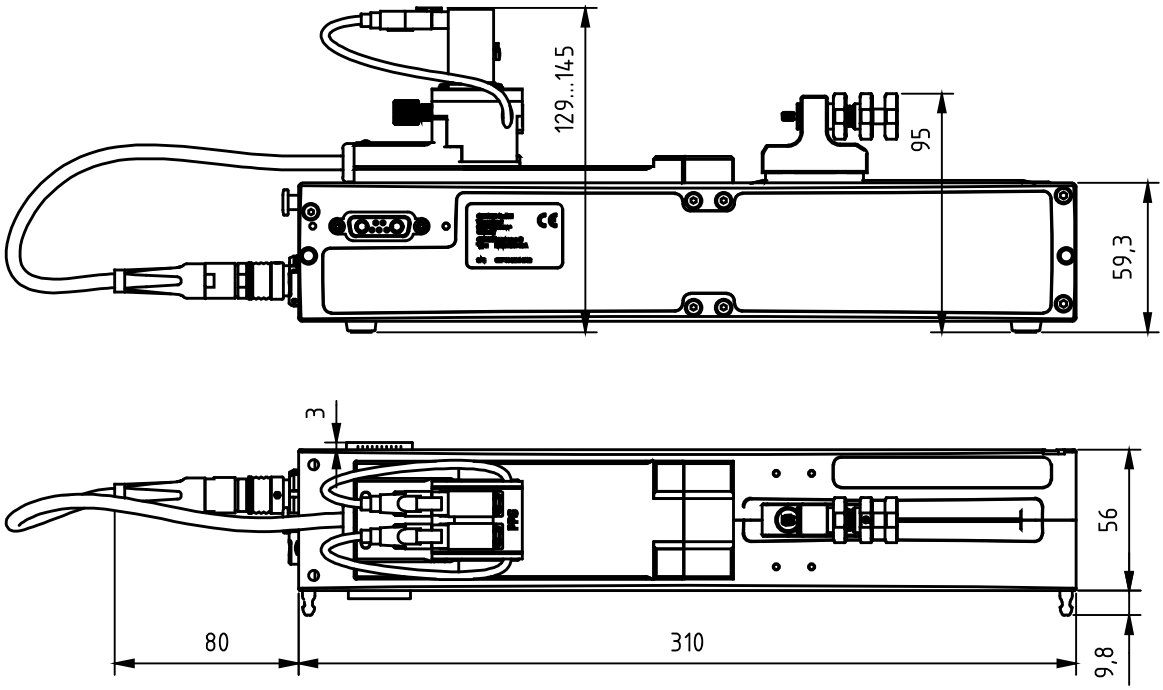
4.3 Electrical Data

SUPPLY VOLTAGE (POWER SUPPLY UNIT)	24 V DC
POWER CONSUMPTION	9 W

4.4 Interfaces

CAN	1 Mbit/s
RS-232	Section 5.8
ACCESSORY PORT	Section 5.7

4.5 Dimensional Drawing



4.6 Dosing Performance

With the CETONI Nemesys S, only SETonic glass syringes (see section 5.13) optimized for these modules may be used. Only with the Universal Syringe Holder Nemesys S (see section 5.12) the use of other syringes is permitted, whereby the reliable and safe function in this case must be ensured by the operator and cannot be guaranteed by CETONI GmbH.

The following table gives an overview of the minimum and maximum dosing speeds and the resulting flow rates. Below the speeds and flow rates referred to as pulsation-free, the dosing precision slowly decreases.

The table also shows the maximum pressure permitted for the syringes. The pressure indicated on the syringe leaflet and packaging refers only to the pressure resistance of the glass cylinder. With the 25 ml and the 50 ml syringe, the maximum permissible pressure of the syringes cannot be reached with the power of the CETONI Nemesys S. Here, the maximum working pressure is additionally indicated in brackets. Additional explanations can be found in Section 5.9.

ATTENTION. Take appropriate measures to prevent the maximum pressure from being exceeded, otherwise the syringe may be damaged.

Speed			Minimum travel
Minimal [nm/s]	**Minimal pulsation free [nm/s]**	**Maximum [mm/s]**	**[nm]**
0,765	168,141	6	5,605

	Flussrate			
	Minimal	**Minimal pulsation free**	**Maximum**	**Max. Pressure**
Syringe	**[pl/s]**	**[nl/s]**	**[ml/s]**	**[bar / psi]**
10 µl	0,142	0,031	0,0011	10 / 145
25 µl	0,319	0,070	0,0025	10 / 145
50 µl	0,638	0,140	0,005	10 / 145
100 µl	1,275	0,280	0,01	10 / 145
250 µl	3,188	0,701	0,025	10 / 145
500 µl	6,377	1,401	0,05	10 / 145
1 ml	12,754	2,802	0,1	10 / 145
2,5 ml	31,885	7,006	0,25	10 / 145
5 ml	63,769	14,012	0,5	10 / 145
10 ml	127,538	28,023	1	10 / 145
25 ml	318,845	70,059	2,5	10 / 145 (8 / 116)
50 ml	637,690	140,117	5	8 / 115 (4 / 58)

4.7 Materials in Contact with Media

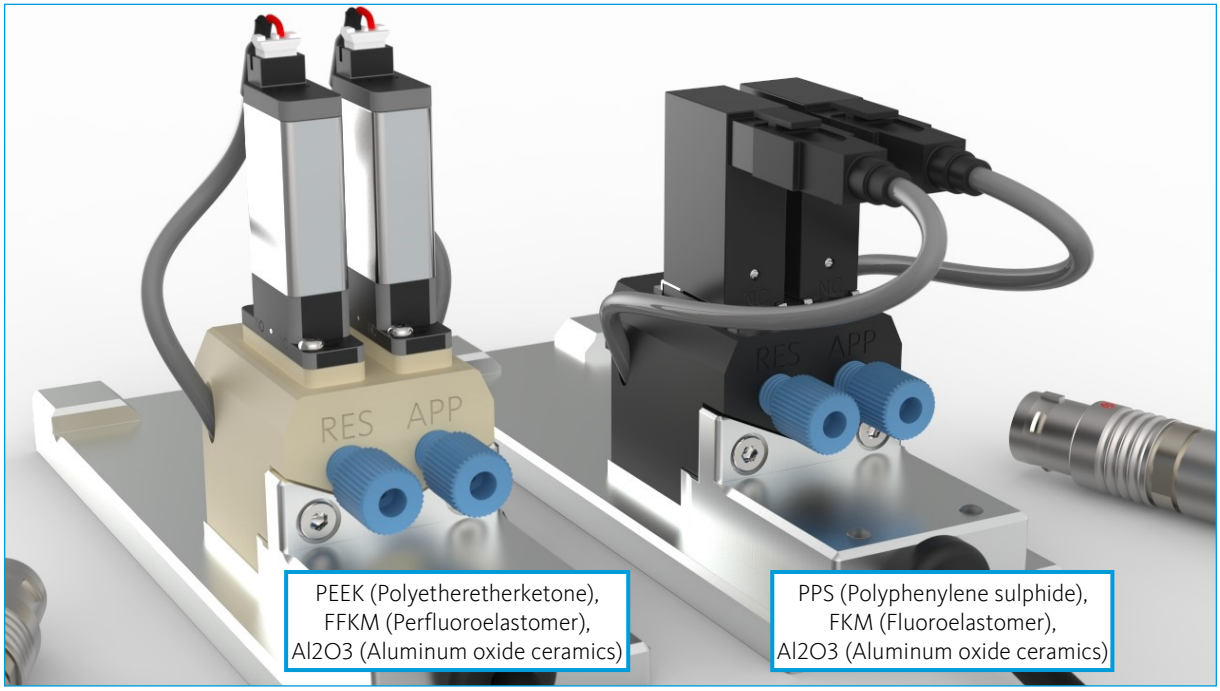
ATTENTION. Before use, check the compatibility of the materials listed below with your media.

4.7.1 Syringes

The parts of the syringes in contact with the medium are made of borosilicate glass, PTFE and PCTFE.

4.7.2 Contiflow Valve

There are two types of the Contiflow valve, which differ in the materials in contact with the media. The materials of the variant you are using can be found in the following picture. The material (PPS or PEEK) is also engraved on the base body.

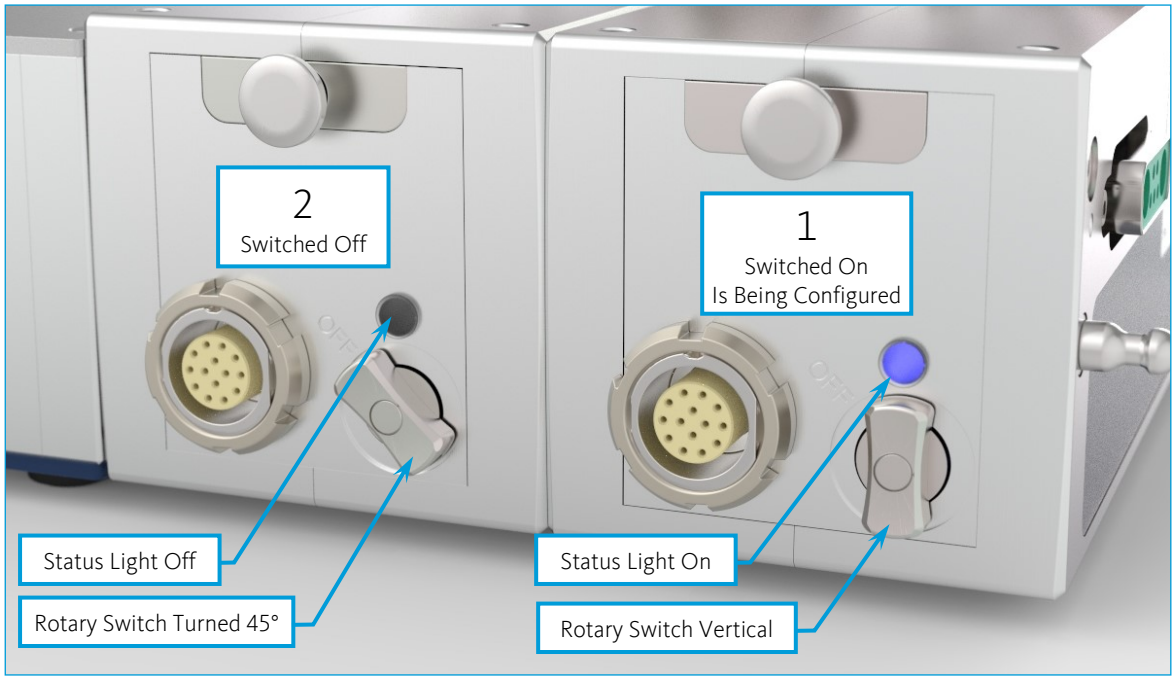


5 Operating the Hardware

5.1 Initial Startup

The initial start-up, i.e. connecting, configuring and separating a system, is described in the CETONI system manual. However, there are the following deviations when configuring the CETONI Nemesys S and when separating:

(1) The CETONI Nemesys S is equipped with a rotary switch. This allows the module to be switched off so that it can remain connected to the system while other modules are being configured. The module that you want to configure [1] must be switched on - the rotary switch is then in vertical alignment and the status light lights up blue. All other modules [2] must be switched off during configuration - the rotary switch is turned 45° counterclockwise to OFF and the status light is off.



IMPORTANT. If the status light is red, the internal fuse of the device is defective. In this case, please contact CETONI GmbH to clarify the further procedure.

(2) Separating the module from the system is done in a slightly different way than described in the system manual, as the CETONI Nemesys S has a separating mechanism. To separate, press the button 1 on the front of the module firmly. This releases the plug connection to the previous module. Then pull the other end of the module off the system by pulling the centering pin 2. You can now remove the individual module and reconnect the bus terminating plug (terminator) to the last module of the remaining system.

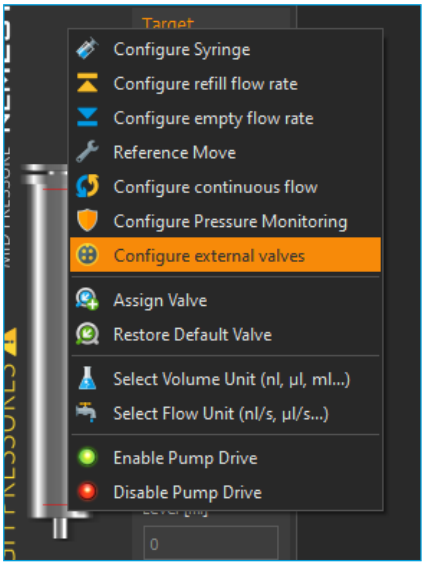
5.2 Configuration Contiflow Valve

The CETONI Nemesys S is supplied with a Contiflow Valve. The installation on the device is described in section 5.10, the electrical connection in section 5.7.

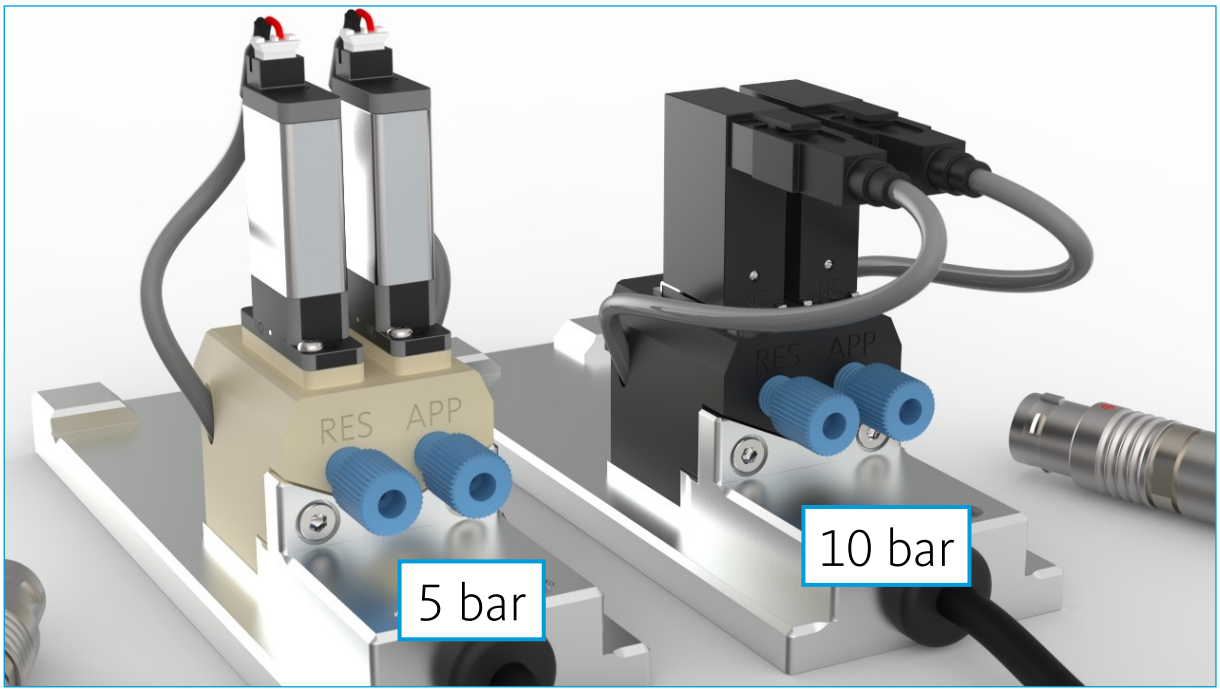
If you have created a configuration with your CETONI Nemesys S in the software, you must assign the Contiflow Valve you have in hand to it.

To do this, right-click on the pump panel of the CETONI Nemesys S and select the item *Configure external valves*. Then select the Contiflow Valve from the list.

For more detailed information, please refer to the corresponding software manual.



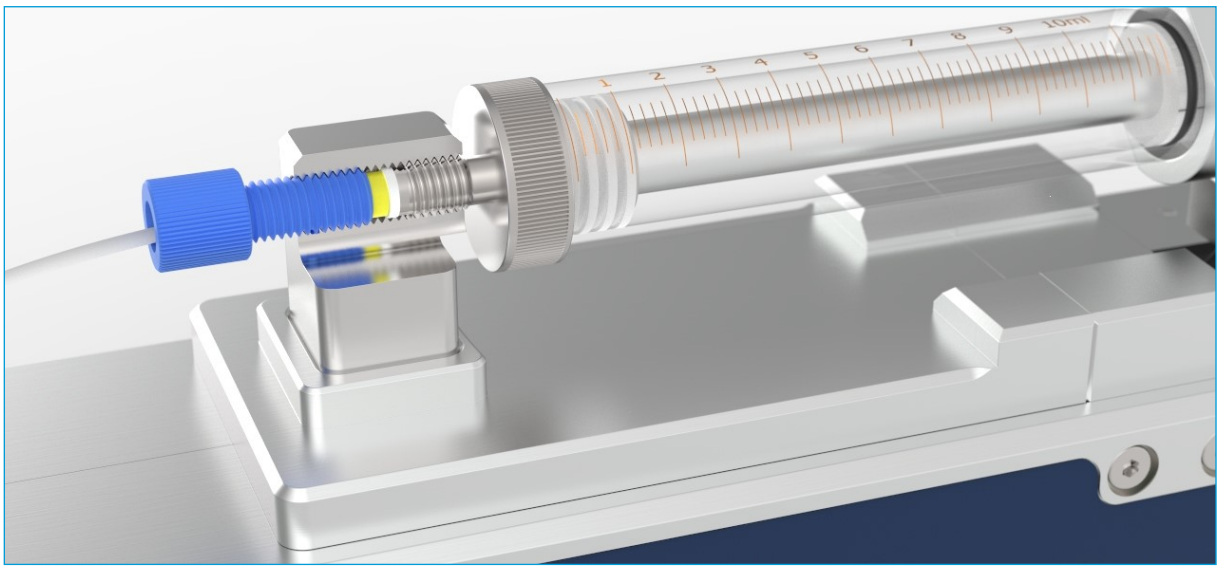
The two types of the Contiflow Valves differ not only in the materials (see 4.7.2) but also in the pressure range (see following picture). If you have selected the Contiflow Valve as described above, the integrated pressure sensor is automatically configured and the pressure monitoring function of the software is activated to prevent damage to the valves. Nevertheless, be careful and take appropriate protective measures if pressure peaks are expected from your application.



ATTENTION. Do not exceed the permissible pressure range to avoid damaging the valves. Therefore, use the pressure monitoring function of the software.

5.3 Dead volume free syringe holder

The dead volume free syringe holder is included in the scope of delivery of the CETONI Nemesys S and can be mounted instead of the Contiflow Valve (see 5.10). It is particularly suitable for use with small syringes when a continuous fluid flow is not required. In this case, the syringe is screwed directly against the downstream capillary. You can use both, flanged capillaries and fittings with ferrule. The following sectional view illustrates the principle:



The syringe is mounted in the same way as on the Contiflow valve, which is described below:

5.4 Mounting a Syringe

The following procedure describes the mounting of the SETonic glass syringes specially optimized for the Nemesys S (for more information, see 5.13). If you would like to use other syringes, please refer to the information on the Universal Syringe Holder Nemesys S under 5.12.

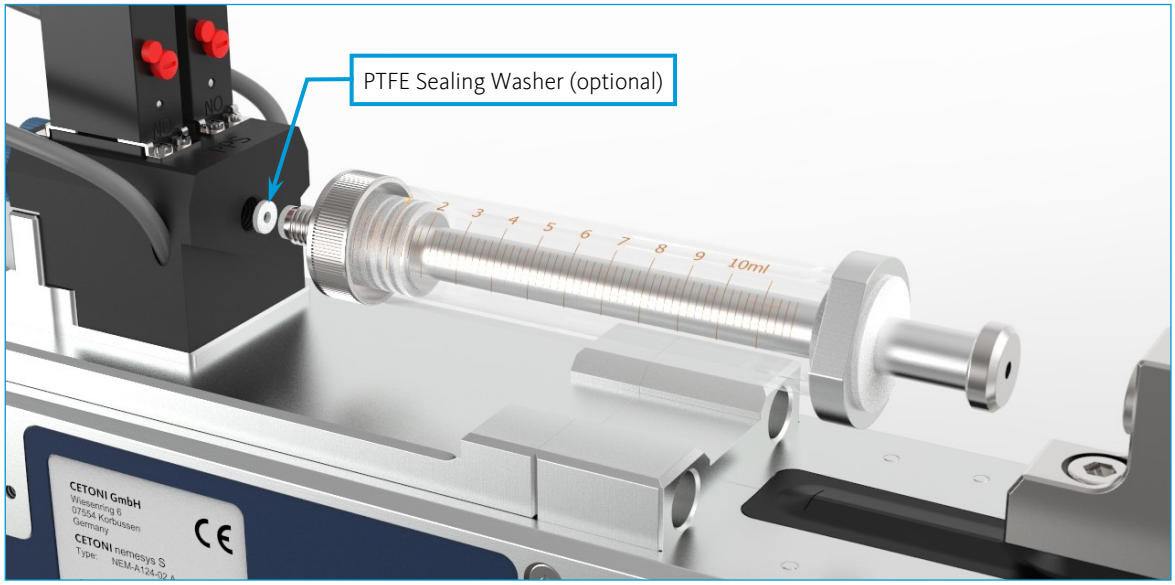
Before you mount a syringe on the CETONI Nemesys S, it must be selected in the software. The SETonic glass syringes are already preconfigured. The procedure is described in the software manual.

Proceed as follows to mount a syringe on the CETONI Nemesys S

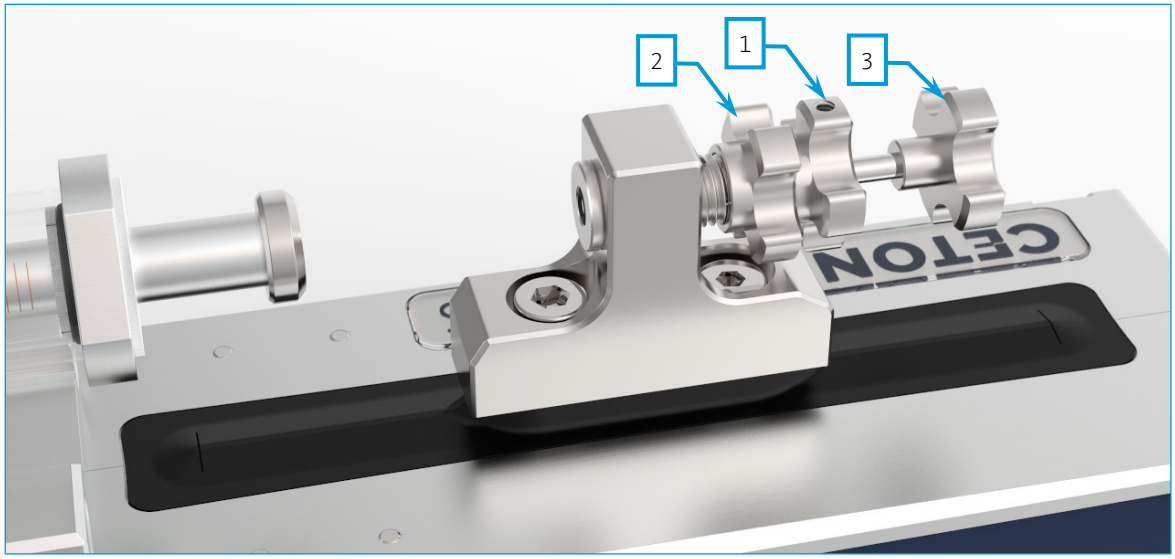
(1) Push the syringe piston completely into the syringe.

(2) Use the software to bring the piston holder into a position that allows the syringe to be screwed into the syringe holder.

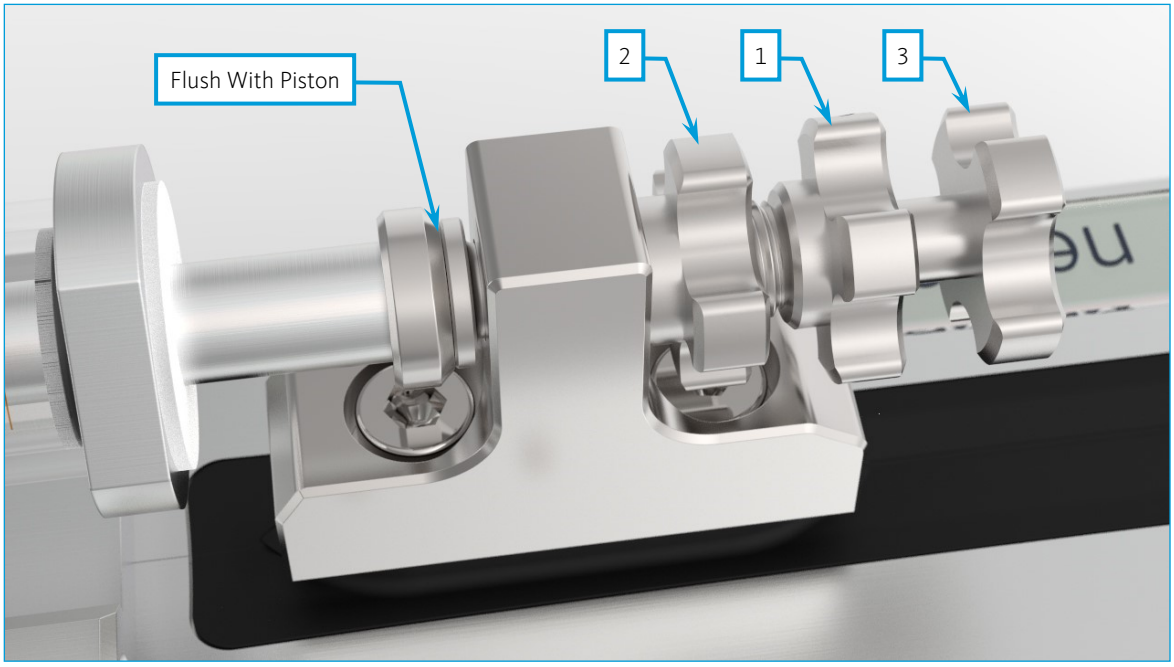
(3) Screw the syringe into the syringe holder. If there is no tight connection when screwing it in directly, insert a PTFE sealing washer (AD:5,2 mm x ID:1,9 mm x T:0,9 mm) into the bore of the syringe holder. You can obtain this from CETONI.



(4) Fully unscrew the adjusting screw 1 of the piston holder and fully turn back the lock nut 2. Furthermore, pull the fixing screw 3 back until its tip disappears in the adjusting screw.



(5) Use the software to move the piston holder to the foremost position (syringe empty). Screw the adjusting screw 1 in until it contacts the syringe piston. This ensures that the syringe can be completely emptied. Secure the position by tightening the lock nut 2 and finally screw the fixing screw 3 into the syringe piston.



IMPORTANT. Adjust the piston holder as described above each time you change the syringe. Otherwise, a collision may occur during emptying or a residue may remain in the syringe due to tolerances.
If the piston holder is set for a particular syringe, you can remove this syringe and, for example, insert it again when it is filled.

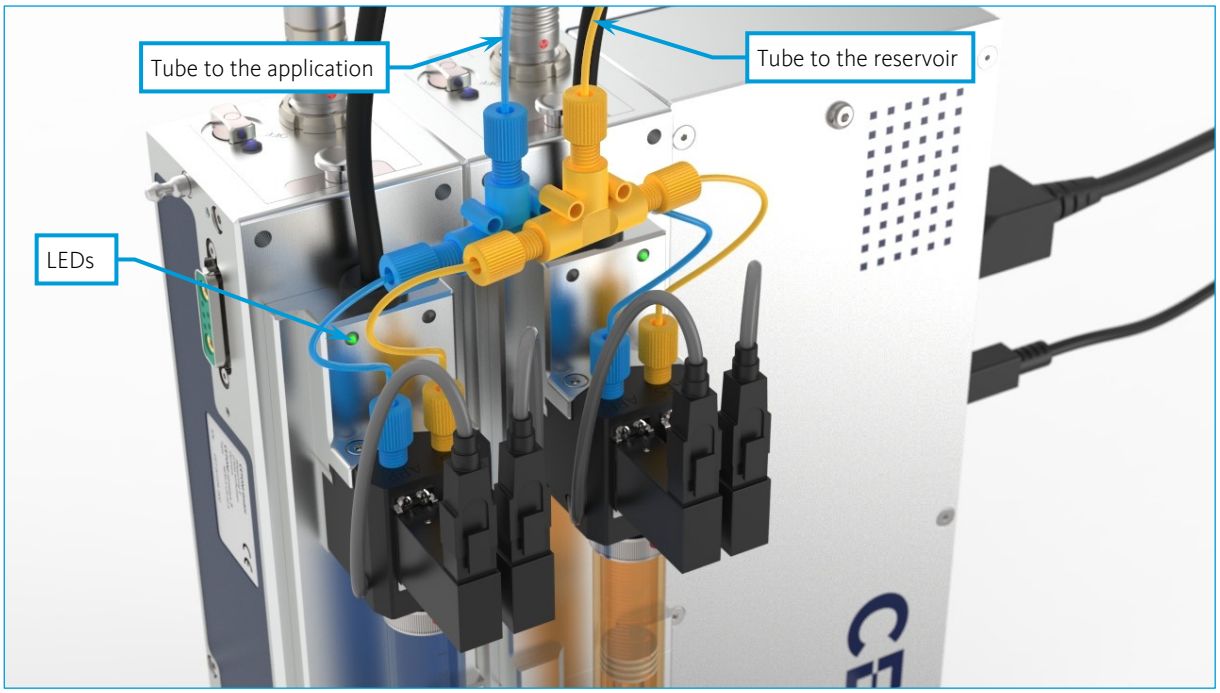
IMPORTANT. Syringes, and particularly the seals, are wear parts. Check them on a regular basis and replace them if necessary.

5.5 Fluidics

Two syringe pumps equipped with Contiflow valves are required for uninterrupted fluid dispensing. A Contiflow valve has three connections with ¼"-28 UNF thread. The connection for the syringe is on one side and is not labeled. The syringe is screwed directly into this connection.

The connections for application and reservoir are on the opposite side and are labeled RES and APP. For continuous operation, connect the APP connections of both devices, for example via a T-piece, with your application (blue in the picture) and both RES connections to your reservoir (orange in the picture).

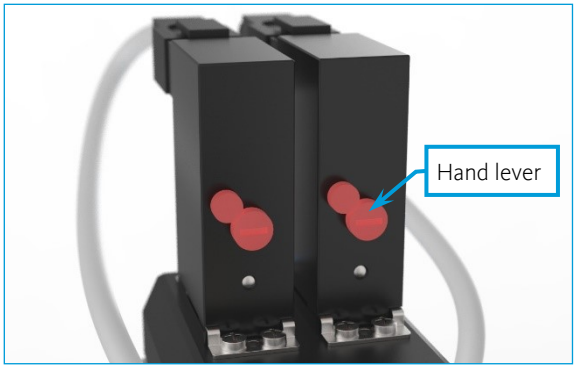
An LED under the respective port lights up to indicate the current switching position. If the LED lights green, then this port is connected to the syringe. Tube to the reservoir.



For information on how to configure the Continuous Flow in the software, please refer to the software manual.

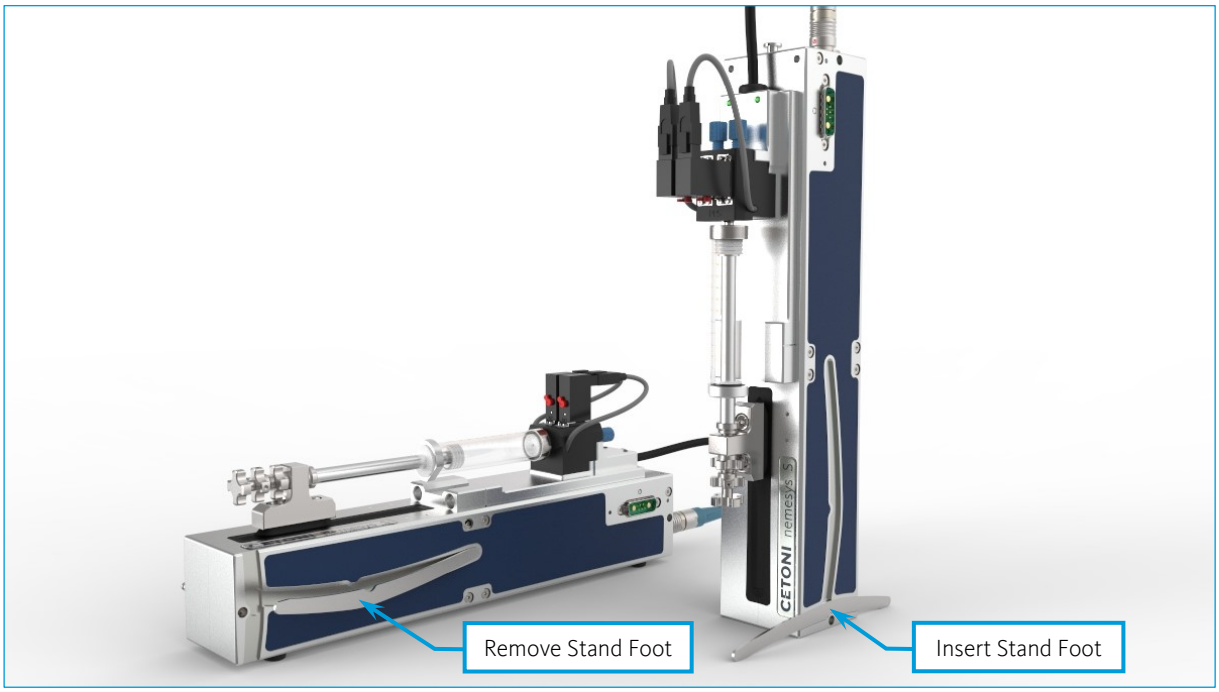
ATTENTION. Only use fittings and hoses that are approved for the expected pressure and check the tightness of all fluidic connections after connection and at regular intervals.

IMPORTANT. Some valve types have a hand lever for manual actuation. Please leave this in the normal position shown. Otherwise, the proper functioning of the Contiflow Valve cannot be guaranteed.



5.6 Upright Operation

For easier bleeding of the syringes, it is often helpful to operate the syringe pump upright. To increase the standing safety in this case, the CETONI Nemesys S is equipped with a stand foot. This is magnetically located in a recess on the side. Take it out, turn the module upright and put the stand foot back in place rotated by 90°.



ATTENTION. Place the devices at least 30 cm from the edge of the table, even when using the stand foot. For permanent upright operation of larger systems, we recommend using the optional system clamp.

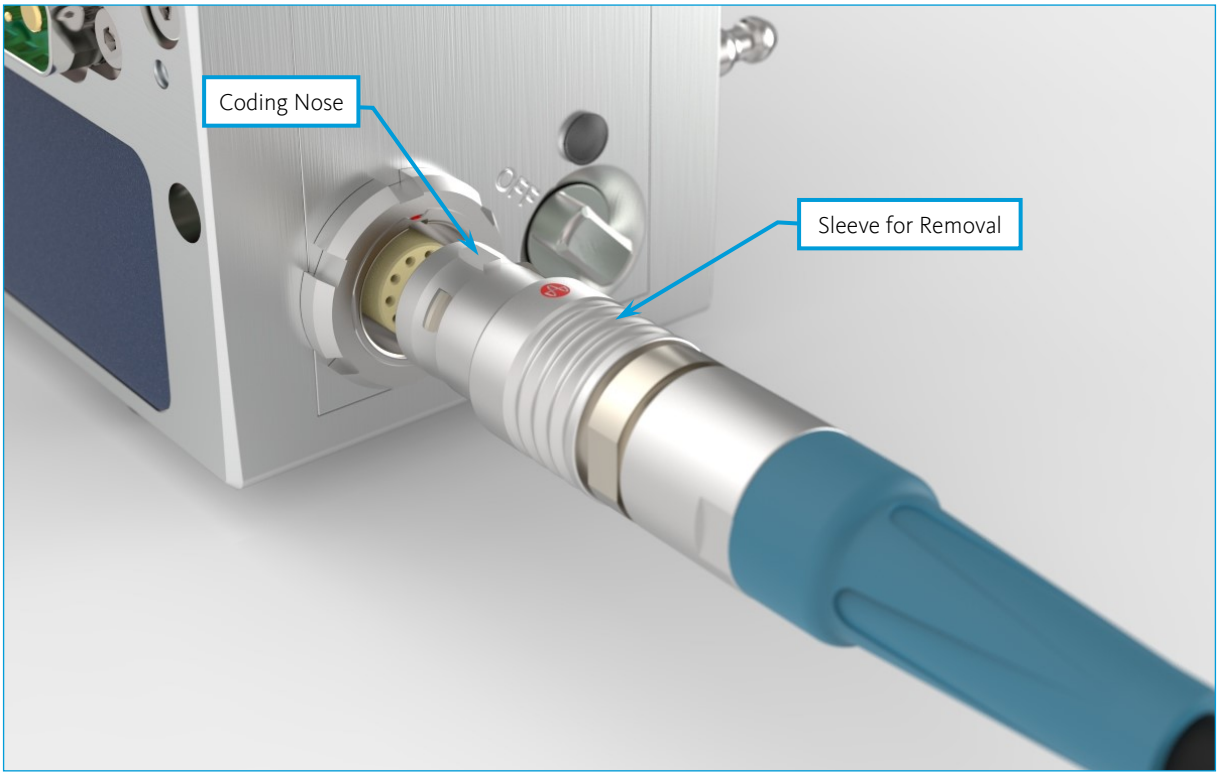
5.7 Accessory Port

IMPORTANT. Only devices or accessories from CETONI may be connected to the interfaces.
Please read and observe the respective section of the associated software manual before connecting and using accessories.

CAUTION. Danger of stumbling due to connecting cables! Place cables and tubing in such way as to avoid any danger of stumbling!

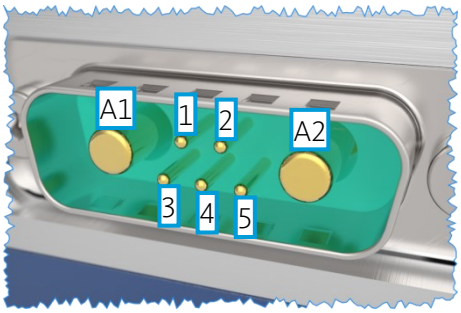
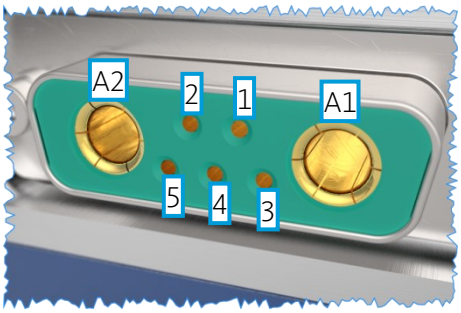
The accessory port allows the integration of accessories such as valves and pressure sensors. To do this, plug the cable connector of the accessory component into the socket of the CETONI Nemesys S until it engages. Make sure that the plug can only be inserted when the coding nose is pointing upwards.

To remove the accessory component, pull on the metal sleeve of the plug. This releases the lock and the plug can be easily removed.



5.8 RS-232 Connection

5.8.1 Pin Assignment of Module Interfaces

	PLUG	SOCKET
		
PIN		
1	Not connected	RS232 RX
2	Not connected	RS232 TX
3	CAN High	CAN High
4	CAN Low	CAN Low
5	Signal GND	Signal GND
A1	+24 V	+24 V
A2	GND	GND

5.8.2 OEM RS232 Cable Set

5.8.2.1 OEM RS232 CABLE SET

Insert the mixed D-Sub plug of the cable into the socket of the final module. The system should be deactivated when you do this. Tighten both screws on the plug manually. You do not need a bus termination plug, since the plug of the RS232 cable already contains a bus termination resistor.

Now, plug the 9-pin D-Sub socket of the cable into an RS232 connection on your PC or other controller. For greater distances to the socket please use a 1:1 cable with a 9-pin D-Sub plug.

Now, you can reactivate your system and send or receive data through RS232. Since every module contains a gateway from RS232 to the system's internal CAN bus, you can now address each module of your system with only one RS232 cable.

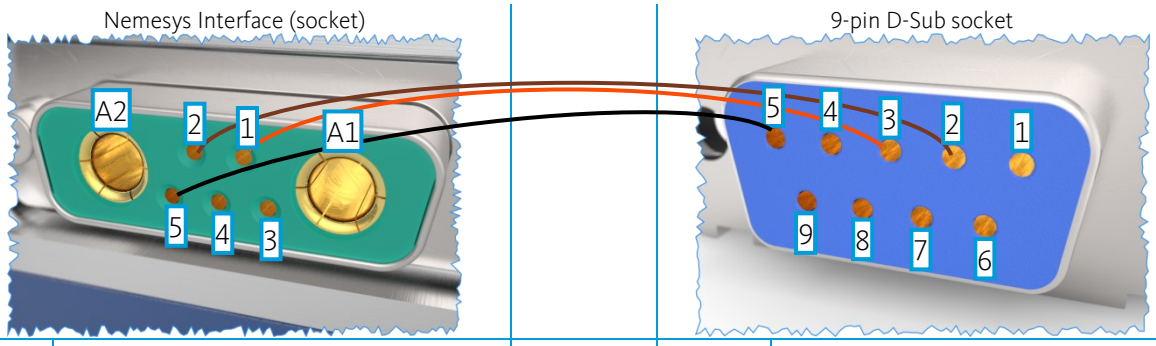
5.8.2.2 COMMUNICATION SETTINGS

For a functioning communication with the Nemesys Modules you have to make the following communication settings for the serial interface on your PC or other controller:

- Baud rate: 115200
- Data bit rate: 8
- Parity: none
- Stop bits: 1
- Flow control: none

5.8.2.3 PIN ASSIGNMENT OF THE RS232 CABLE

The OEM RS232 cable adapts the Nemesys device interface to a standard 9-pin D-Sub plug. The following table shows the pin assignment of the Nemesys interface and the 9-pin D-Sub:



Pin		Cable	Pin	
1	RS232 RX	Orange	3	TXD Transmit Data
2	RS232 TX	Brown	2	RXD Receive Data
5	Signal GND	Black	5	GND Signal GND
	D-Sub housing = shielding	Shielding		

5.9 Overload shut-off

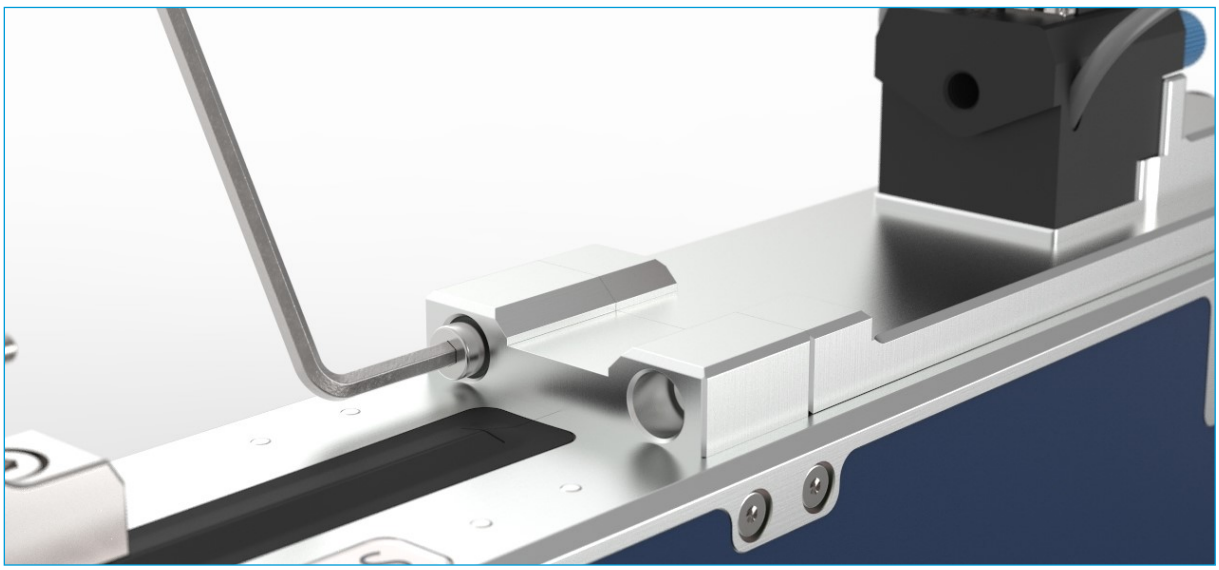
The CETONI Nemesys S has a nominal thrust force of 400 N, which enables pressure to be built up in the syringe as well as the associated application. To protect the device and the application from damage due to overload, it is equipped with a force measuring device. If the nominal force of 400 N is exceeded by 20%, the drive is switched off. If in this case the pressure and thus the force does not reduce on its own, the error condition must be rectified manually. The description of this can be found in the software manual under "What to do after a force overload stop".

In addition, you can define a second lower limit yourself. The procedure is explained in the software manual and the Nemesys Pump Firmware Specification.

ATTENTION. For very small syringes, pressures that are critical for the application and the syringe can already be generated at forces that are so low that they cannot be reliably detected by the force measuring device.

5.10 Changing the syringe holder

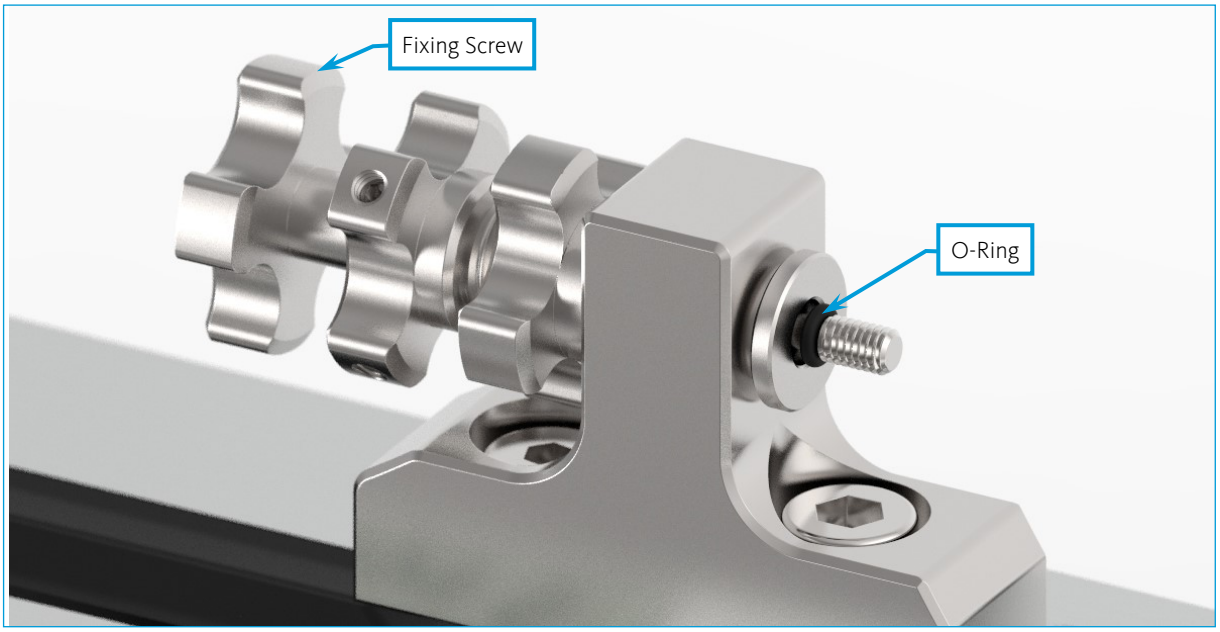
If a Contiflow valve is mounted, remove the connector from the accessory port as described in section 5.7. Then loosen and remove the two fastening screws with a 3 mm Allen key. Now you can take off the syringe holder easily.



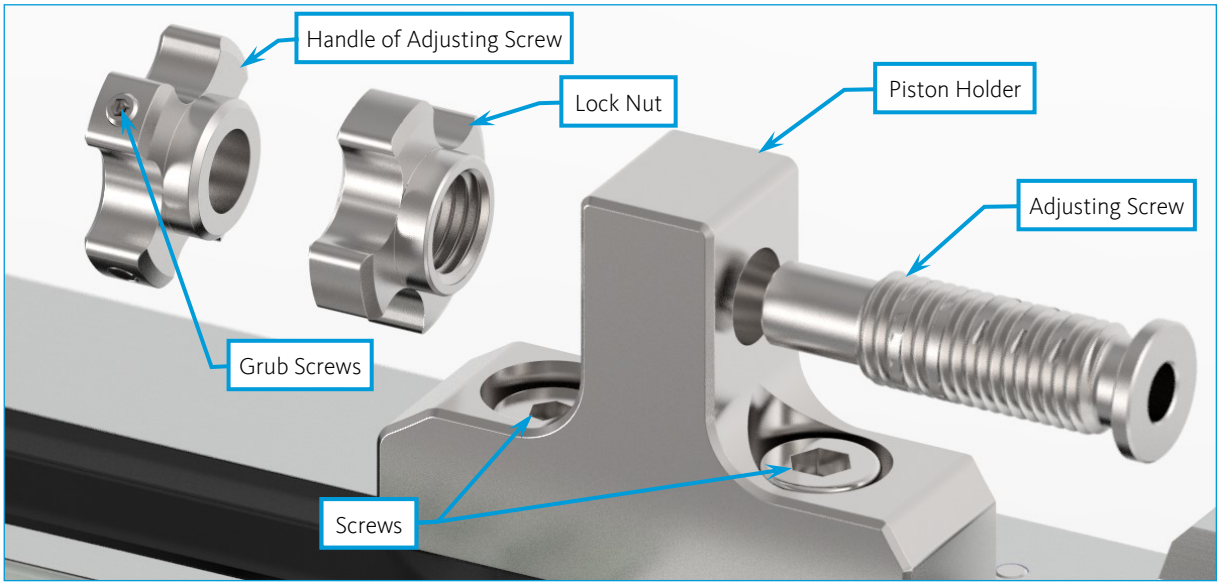
To mount another syringe holder, simply proceed in reverse order. Make sure that the syringe holder lies flat on the device when being screwed on.

5.11 Changing the Piston Holder

First pull the fixing screw all the way back and then push it all the way forward. A small O-ring will become visible, which prevents the screw from falling out. Remove this; you can then pull out the screw.

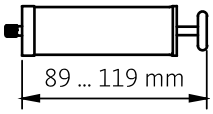


Loosen the two grub screws in the handle of the adjusting screw with a 1.3 mm Allen key and remove it. After you have also unscrewed the lock nut and unscrewed the rest of the adjusting screw, the two screws with which the piston mount is fastened are accessible. You can unscrew these with a 3 mm and a 4 mm Allen key and then change the piston holder.



5.12 Universal Syringe Holder Nemesys S

Before mounting a syringe on the CETONI Nemesys S, it must be configured and selected in the software. The procedure is described in the software manual. For this you need the Volume (*Scale Volume*), the nominal stroke (*Scale Length*) and the maximum stroke (*Piston Stroke*). In combination with the counter holder, you can use syringes that are between 89 and 119 mm long when empty excluding the connection nozzle and have a diameter between 8 and 30 mm. The operation is explained below:

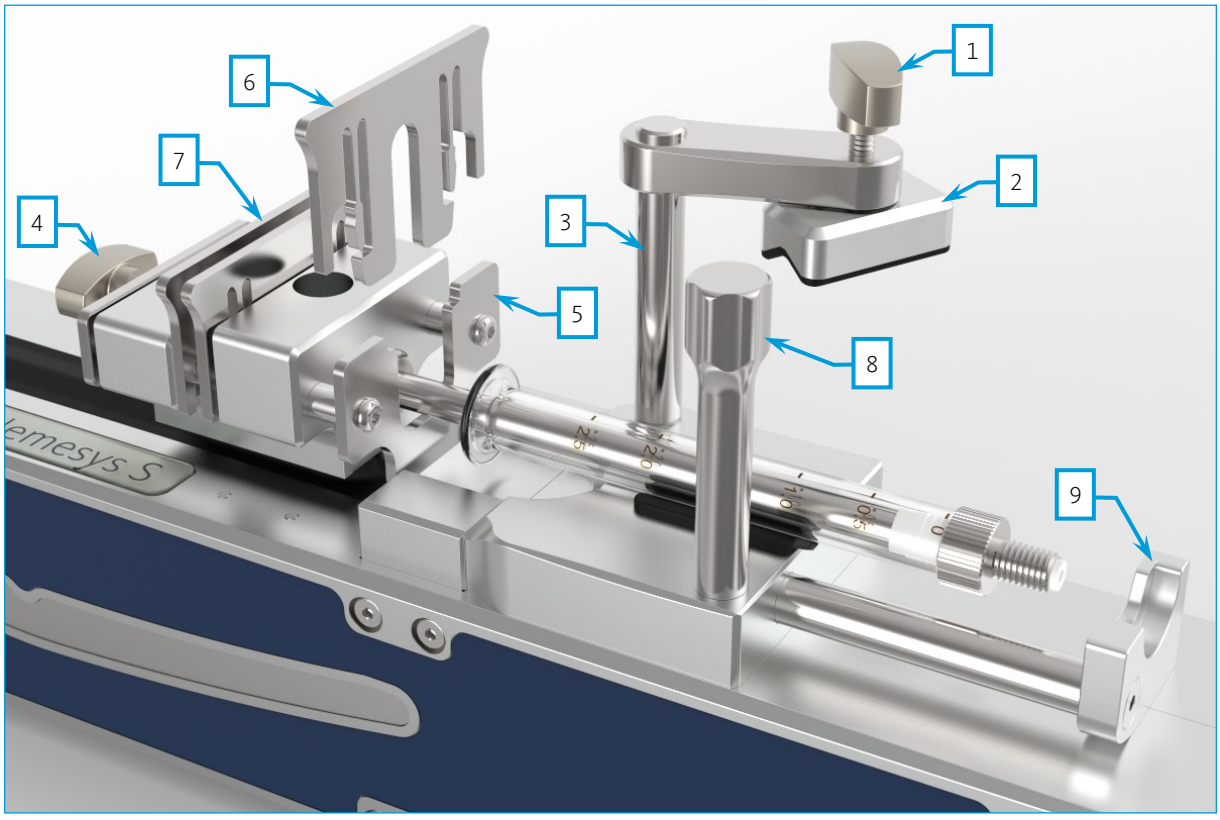


(1) Push the syringe piston completely into the syringe and bring the piston holder to the foremost position (syringe empty) via the software.

(2) Unscrew the clamping screw 1 of the syringe down holder 2 completely and rotate the syringe down holder to the side or pull it upwards off the guide rod 3 so that you can insert the syringe. (To adjust the height, reach as close as possible to the guide rod).

(3) Loosen the clamping screw 4 of the piston holder and push the movable part 5 forward. If necessary, select an adapter plate 6 matching your syringe piston from the storage position 7.

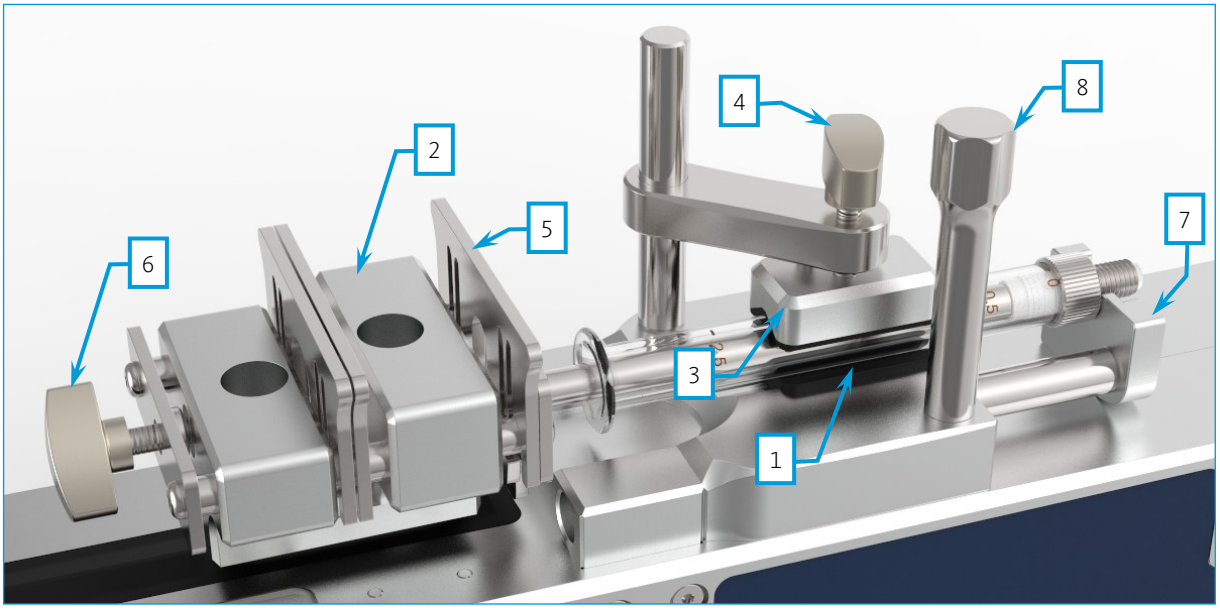
(4) Loosen the clamping screw 8 of the counter holder 9 and pull it out so far that you can insert the syringe.



(5) Place the syringe on the lower part of the syringe holder 1 and push the syringe piston against the base body 2 of the piston holder. Then rotate the syringe down holder 3 over the syringe, slide it down until it rests on the syringe and tighten the clamping screw 4 until the syringe is securely clamped.

(6) Insert the adapter plate 5 (if required) over the syringe piston and tighten the clamping screw 6 of the piston holder until the piston is fixed.

(7) Finally, push the counter holder 7 against the syringe and fix the position with the clamping screw 8. The counter holder prevents the syringe from slipping at higher pressures.



ATTENTION. If you switch off the device and there is still pressure in the system, it is possible that the piston holder will be pushed back. As a result, the piston may be pressed out of the syringe and the dosed medium may escape.
Therefore, relieve the pressure in the system before switching it off.
In the event of an unexpected voltage drop (e.g. power failure), take appropriate measures to prevent push-back (e.g. check valve).

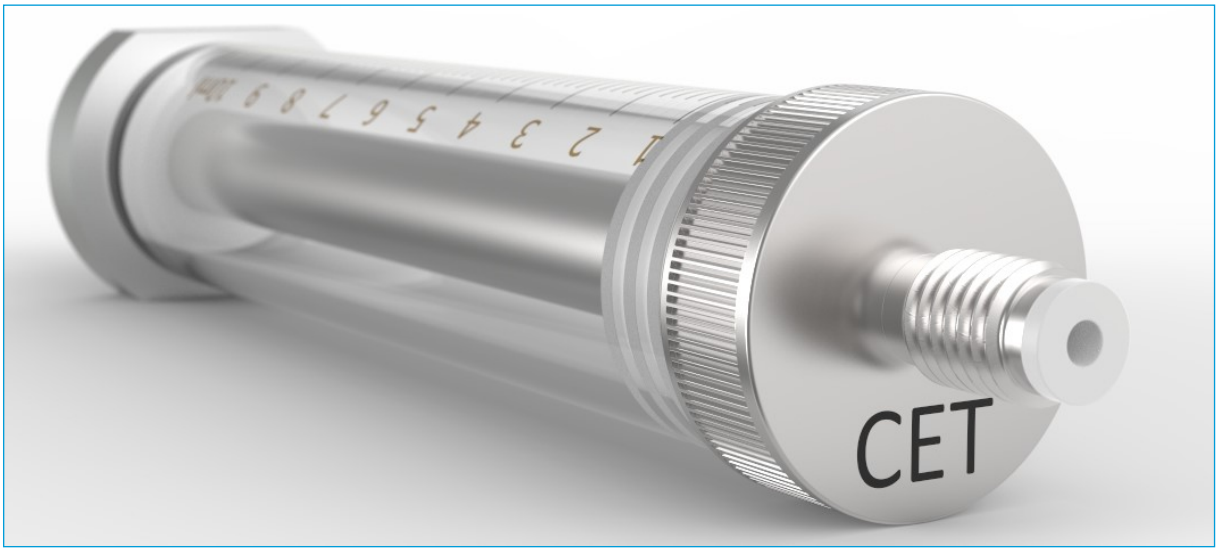
IMPORTANT. CETONI does not give any guarantee that any syringe will fit into the Nemesys S universal syringe holder.
The accuracy of the dispensing depends on the correct configuration of the syringe. Furthermore, especially in the case of plastic syringes, deviations in dosing accuracy may occur due to deformation.
Use syringes that are approved for the expected pressure.

5.13 Glass Syringes - Instructions for Use

With the CETONI Nemesys S, only SETonic glass syringes optimized for these modules may be used. These syringes are matched to the CETONI Nemesys S with regard to their dimensions. The use of other syringes can lead to collisions and thus to damage to the syringe or the device.

You recognize these syringes by a CET label on the front cap.

Only with the Universal Syringe Holder Nemesys S (see section 5.12) the use of other syringes is permitted, whereby the reliable and safe function in this case must be ensured by the operator and cannot be guaranteed by CETONI GmbH.



ATTENTION. Unless you use the Universal Syringe Holder Nemesys S, only the SETonic glass syringes marked CET may be used with the CETONI Nemesys S. The use of other syringes can lead to collisions and thus to damage to the syringe or the device.

CETONI is not the manufacturer of the syringes. However, with the following information we would like to support you as much as possible in handling the syringes.

- Check the syringes for cracks before using.
- After delivery, give the syringes approximately 24 hours to acclimate to room temperature before using them.
- The humidity of the working environment should be as stable as possible.

IMPORTANT. Use the syringes only between room temperature (20°C) and max. 40°C. Below room temperature, PTFE contracts strongly, which can lead to leakage. For this reason, the syringes should not be used directly under air conditioning systems.

- There are special autoclavable syringes up to 10,0ml available upon request.

ATTENTION. Before autoclaving, the plunger must be removed from the syringe and the following times must not be exceeded:

- 150°C – 15 min
- 120°C – 30 min
- 110°C – 60 min

After autoclaving, give the syringes time to readapt to room temperature before using them.

Repeated autoclaving will shorten syringe life.

The syringes may be sterilized with ethylene oxide

- Use the syringes only in the designated pressure range (see 4.6).

CAUTION. There is a risk of explosion when dosing gases! Use only with protective cover and personal protective equipment (safety goggles)

- The syringes can be chemically disinfected. Recommended disinfecting chemicals are Microcide SQ®, 10% bleach, acetone or ethanol.
- For cleaning, pull the piston out of the syringe.
    - The parts can then be cleaned in an ultrasonic bath.
    - At the end of the cleaning process, it is best to use a solvent with a low boiling point (e.g., alcohol).
    - Dry the cylinder and the piston in an air stream.

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ATTENTION. Do not immerse the complete glass body into solvents! The glued parts may detach.

6 Transport and Storage

Please do not lift and transport the devices in the plugged together state, unless you use the original packaging.

The CETONI Nemesys S contains a lithium metal battery. A consignment may consist of a maximum of two packages, each containing a maximum of four devices. No further markings are required for shipping. However, for the battery, a test summary report in accordance with UN 38.3 must be provided to the transport company. Please decontaminate the unit before returning it, if necessary, and enclose the completed decontamination declaration. Please contact us before returning the equipment so that we can provide you with the required documents (test summary report and declaration of decontamination). Alternatively, these are also available at www.cetoni.de/downloads/anleitungen.

It is recommended to use the original packaging for any returns as this ensures optimal protection of the equipment during transport. If this is no longer available, please ensure that the equipment is safely stored within a stable box. Please also take care of enough cushion material to protect the equipment for mechanical shocks.

Observe the specifications in chapter "Technical data" for storage.

ATTENTION. Risk of damaging the device. Do not transport the devices in the plugged together state, unless you use the original packaging.

7 Maintenance and Care

If used in accordance with intended purpose, the device is maintenance-free. Should there be a failure despite this, which you cannot eliminate yourself, or which requires opening the device, please contact CETONI GmbH to coordinate further actions. The device may only be opened by CETONI GmbH or thereby authorized service staff. Otherwise, the warranty claims are void.

Software-related troubles are dealt with in the software manual.

For cleaning it please rub the surface gently with a soft, damp cloth. The cloth must not be wet, so that no fluency can trickle into the device. In case of a heavier soiling, you can also use a little bit of detergent or alcohol.

8 Disposal

Please send your old devices back to CETONI GmbH. We will take care of proper disposal. The device contains a battery and must not be disposed of with domestic waste. Please follow the instructions in chapter 6 for the return shipment.

If necessary, please decontaminate the device before sending it back and attach a completed decontamination declaration with your shipment.