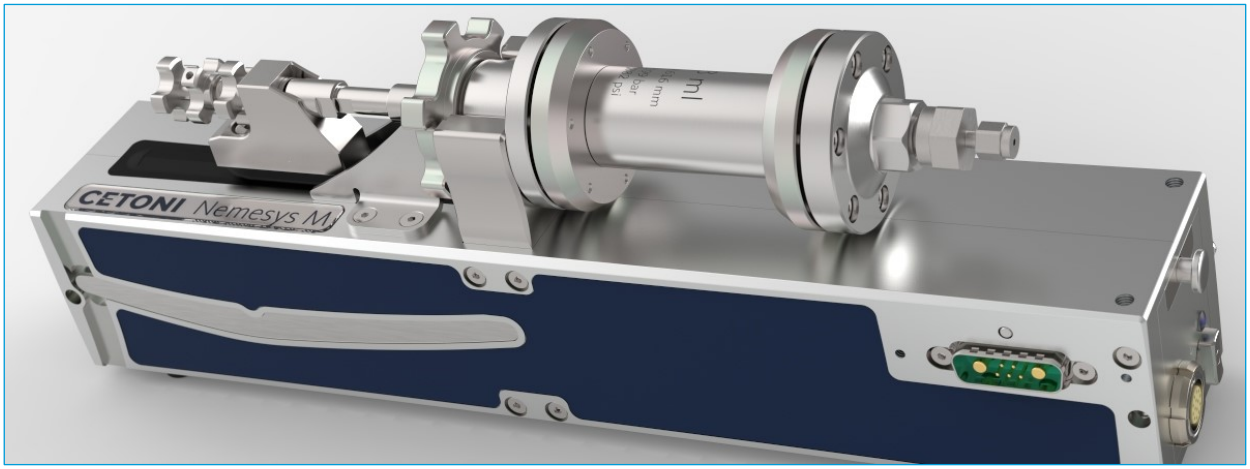
CETONI

CETONI Nemesys M

Hardware Manual



ORIGINAL INSTRUCTIONS 1.02 – SEPTEMBER 2021

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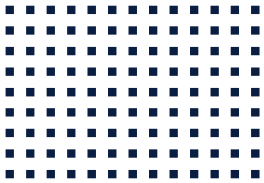


1 Overviews & Directories

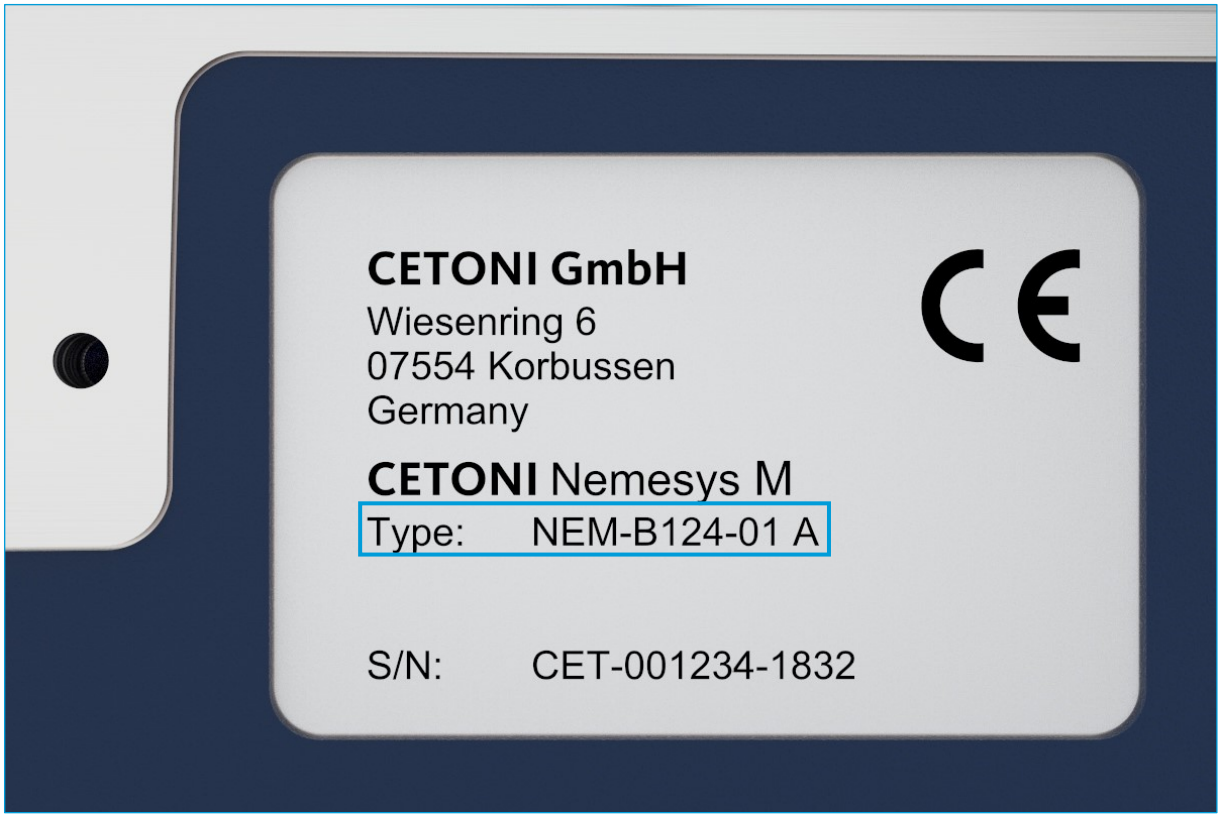
1.1 Table of Contents

1.2 Revision History

REV	DATE	CHANGE	VALID FOR
1.00	08.04.2021	Creation	Type NEM-B124-01 A NEM-B124-01 B
1.01	29.06.2021	Minimum velocity corrected to 0.765 nm/s	
1.02	06.09.2021	Additions in section syringe maintenance, 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 M 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 M is a syringe pump. It allows emptying and filling syringes by the relative linear movement of a syringe- and a piston holder.

2.4.2 Intended Use

The CETONI Nemesys M is used for highly precise and low-pulsation dosing of fluids in the range of nanoliters to milliliters per second. Pressures of over 100 bar can be achieved.

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 M must not be used as a medical device or for medical purposes.

CAUTION. It is not allowed to use the CETONI Nemesys M 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 M 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 M 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 M 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.

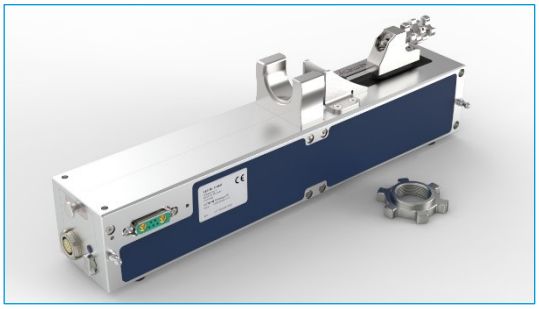
The product conforms to the basic safety regulation standards. Industrial property rights are reserved on the circuits, methods, names, software programs, and units.

3 Scope of Delivery

The following items should be included:

CETONI NEMESYS M

- Star nut for syringe fixation



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

4.2 Mechanical Data

DIMENSIONS (L x W x H)	310 x 56 x 108 mm
WEIGHT	2,3 kg

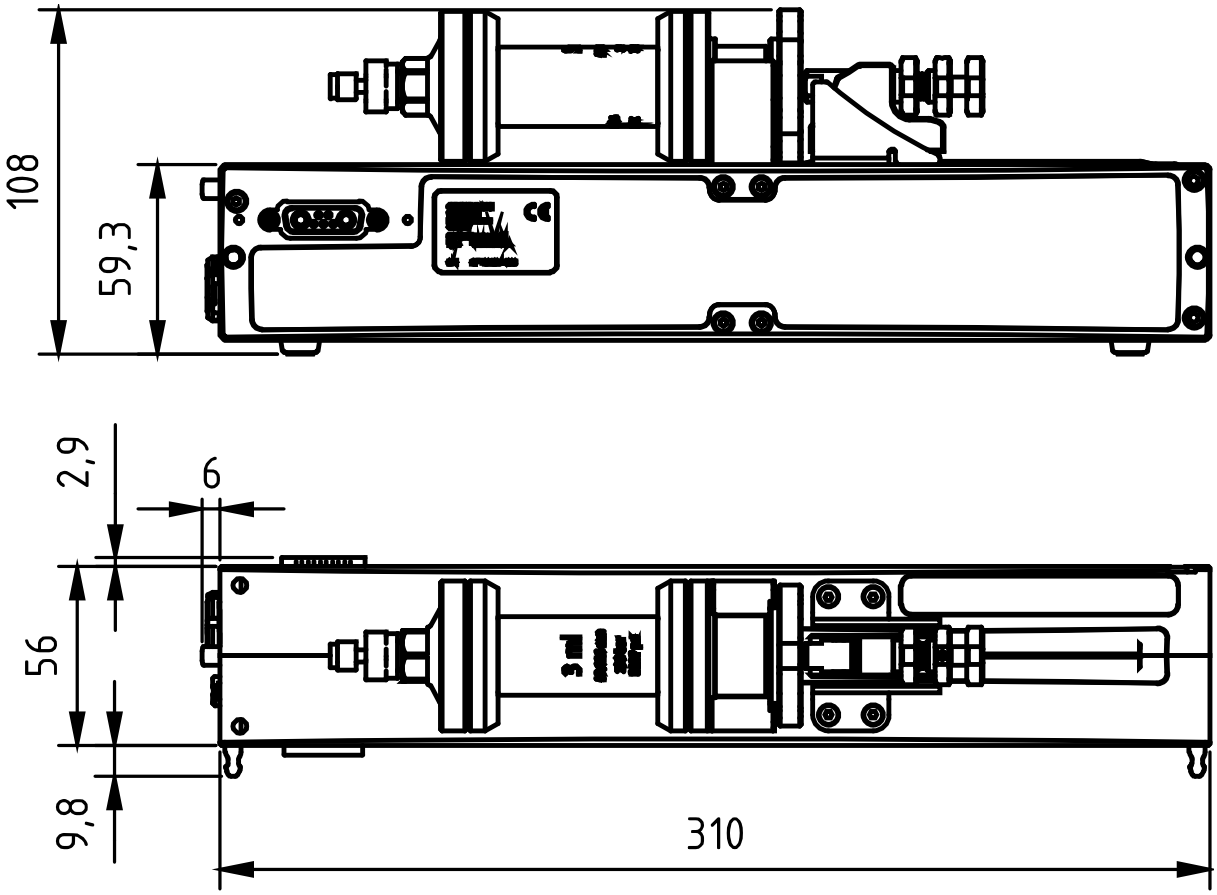
4.3 Electrical Data

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

4.4 Interfaces

CAN	1 Mbit/s
RS-232	Section 5.6
ACCESSORY PORT	Section 5.5

4.5 Dimensional Drawing



4.6 Dosing Performance

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

Furthermore, the table shows the maximum pressure achievable with the respective syringe. Supplementary explanations can be found in section 5.7.

You need the nominal and maximum stroke to configure the syringes in the software. Please read the corresponding sections in the software manual.

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

	Nominal stroke/ Maximum stroke	Flow Rate			
Syringe	**[mm]**	**Minimal [pl/s]**	**Minimal pulsation free [nl/s]**	**Maximum [ml/s]**	**Pressure [bar / psi]**
3 ml	59,616 / 61	38,508	8,461	0,302	199 / 2882
5 ml	58,797 / 61	65,073	14,298	0,510	118 / 1706
10 ml	58,878 / 61	129,968	28,558	1,019	59 / 854
25 ml	59,106 / 61	323,668	71,119	2,538	24 / 343
50 ml	59,145 / 61	646,908	142,142	5,072	12 / 172

4.7 Materials (Syringes)

The wetted parts of the syringes are made of stainless steel with the EN material number 1.4404 (316L). As customer-specific variation the material can also be other stainless steels or even special alloys. For evaluation of compatibility with the used reagents please refer to the particular material you are using.

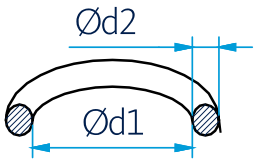
O-rings are used as seals in the syringes. Either an O-ring in combination with a backup ring or a sliding ring pretensioned with an O-ring can be used as a piston seal.

Backup rings prevent the O-ring from being damaged under high pressure. They are not in direct contact with the medium, but come into contact with leakage. O-rings have significantly less leakage, but wear out faster and generate more abrasion. Sliding rings wear more slowly, but do not seal as well.

The O-rings mounted as standard are made of FKM (fluoroelastomer), the sliding rings and backup rings are made of PTFE with 25 % coal.

For the 3 ml and the 5 ml syringe, the O-ring hardness should not be less than 80 shore A, for the three larger syringes 70 shore A is sufficient. The dimensions of the O-rings can be found in the following table.

Ød1 = inner diameter
Ød2 = cord diameter
Example: O-ring 12x2 → Ød1=12; Ød2=2



SYRINGE	CAP	PISTON (BACKUP RING)	PISTON (SLIDING RING)	SEAL WASH SET (PISTON)	SEAL WASH SET (CYLINDER)
3 ml	10x1,5	5,5x1,5	5,5x1	7x1,5	17x1,5
5 ml	12x1,5	7x2	7x1,5	7x1,5	17x1,5
10 ml	16x1,5	11x2	11x1,5	7x1,5	17x1,5
25 ml	24x1,5	18x2,5	18x2	10x1,5	34x1,5
50 ml	34x1,5	28x2,5	28 x 2	10x1,5	34x1,5

Although the syringes are made of corrosion-resistant material, surface corrosion may be caused by media residues during storage. For that reason, disassemble and clean the syringes prior to periods of non-use.

ATTENTION. Before using the syringes, please check the compatibility of the materials used with your medium.

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

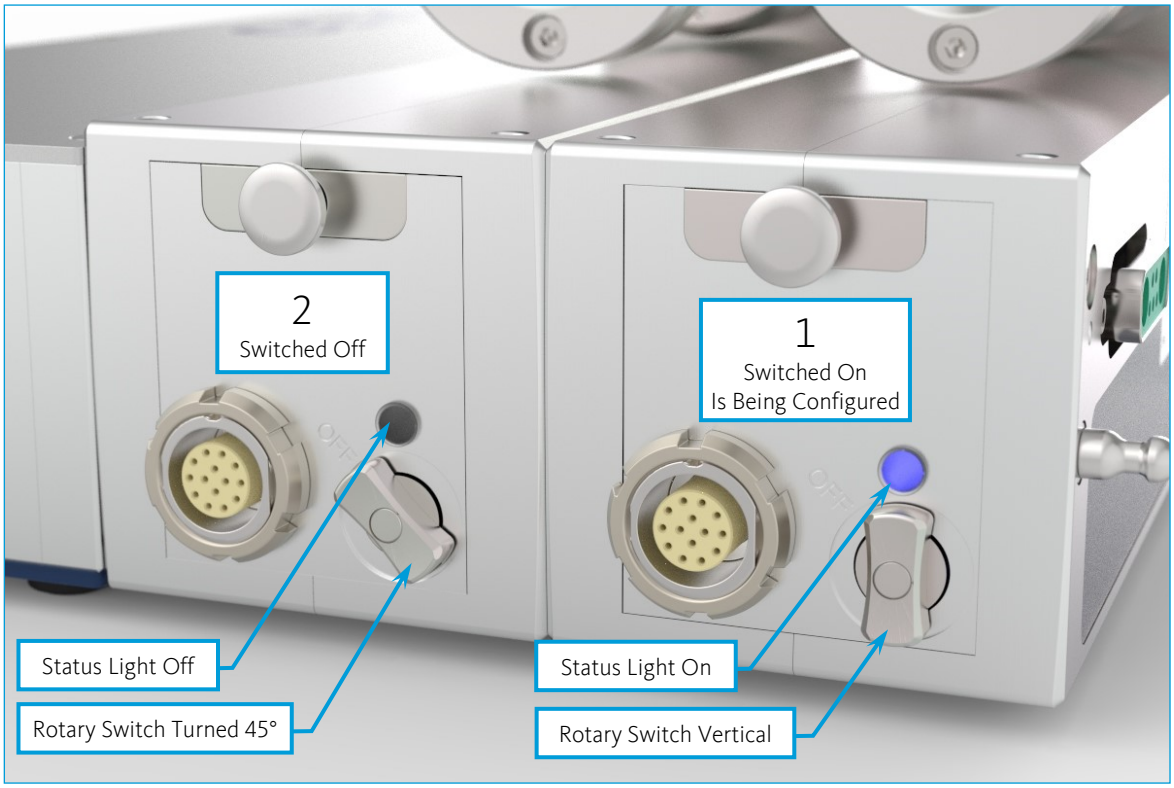
IMPORTANT. When used for the first time, sliding rings require a few syringe strokes until they achieve their full sealing effect. This can also be done manually and with an empty syringe. Please also take this into account after a seal change.

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 M and when separating:

(1) The CETONI Nemesys M 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 M 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.

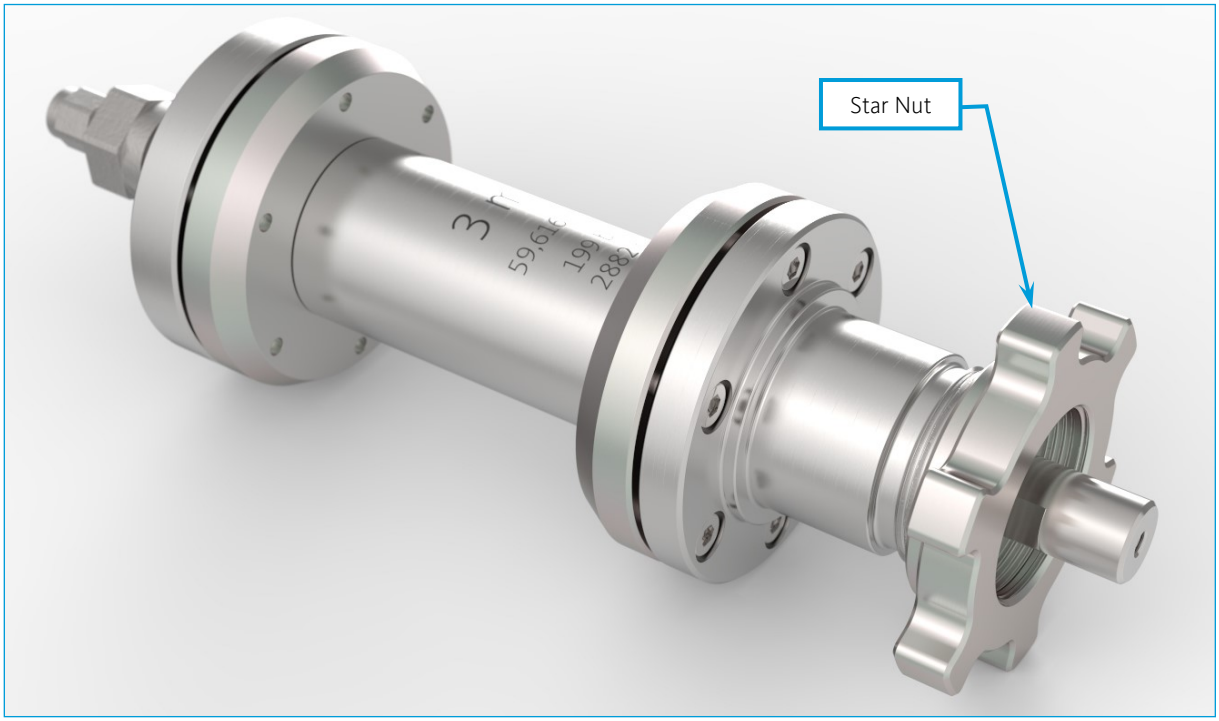
5.2 Mounting a Syringe

The Nemesys M may only be used with the dedicated CETONI stainless steel syringes.

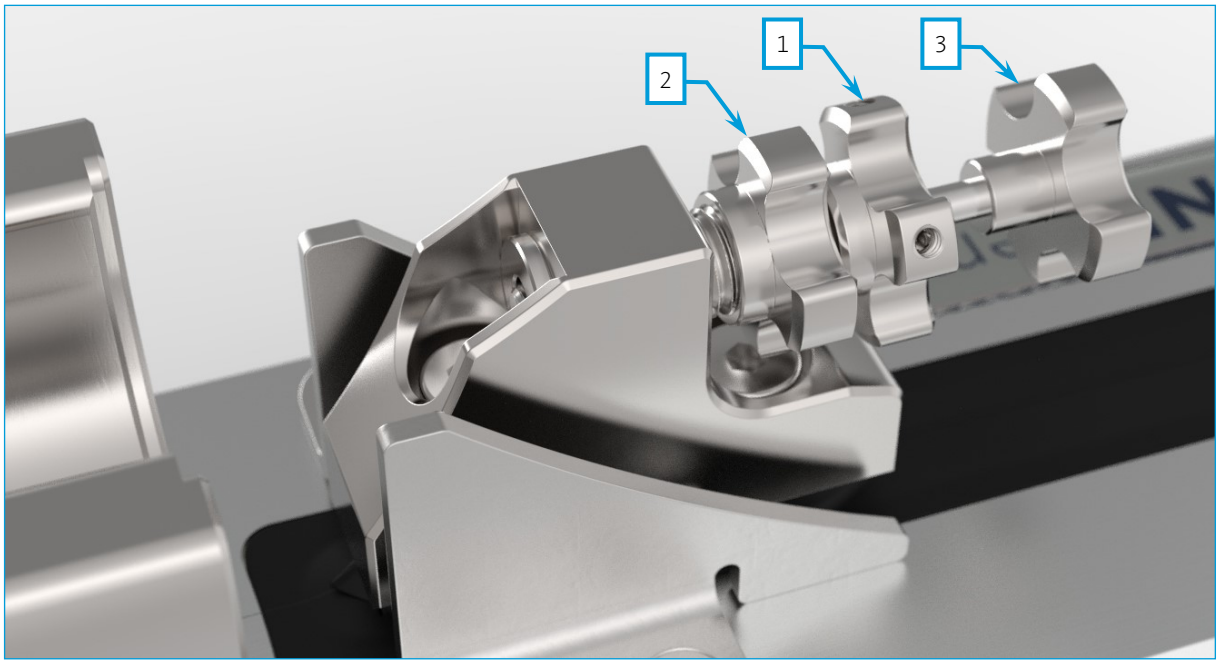
Before you mount a syringe on the CETONI Nemesys M, it must be selected in the software. The syringes are available to you preconfigured in the software.

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

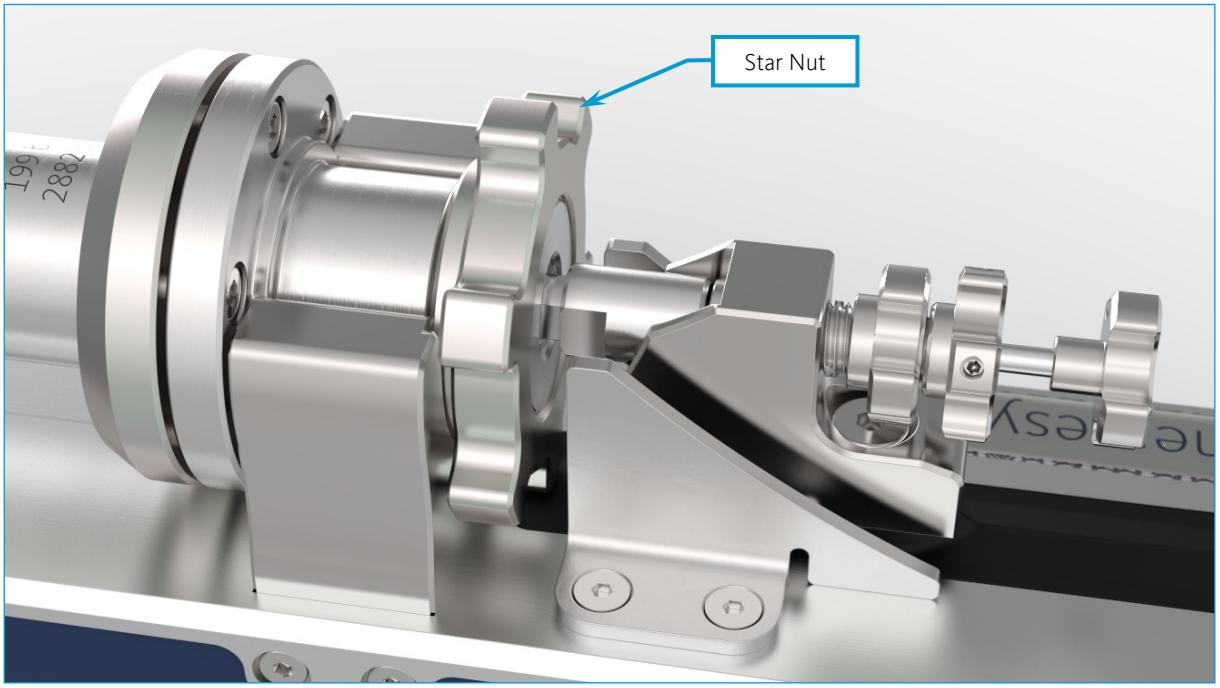
Use the software to move the piston holder to the foremost position. Push the syringe piston into the syringe as far as it will go and screw the star nut onto the syringe by six to seven turns:



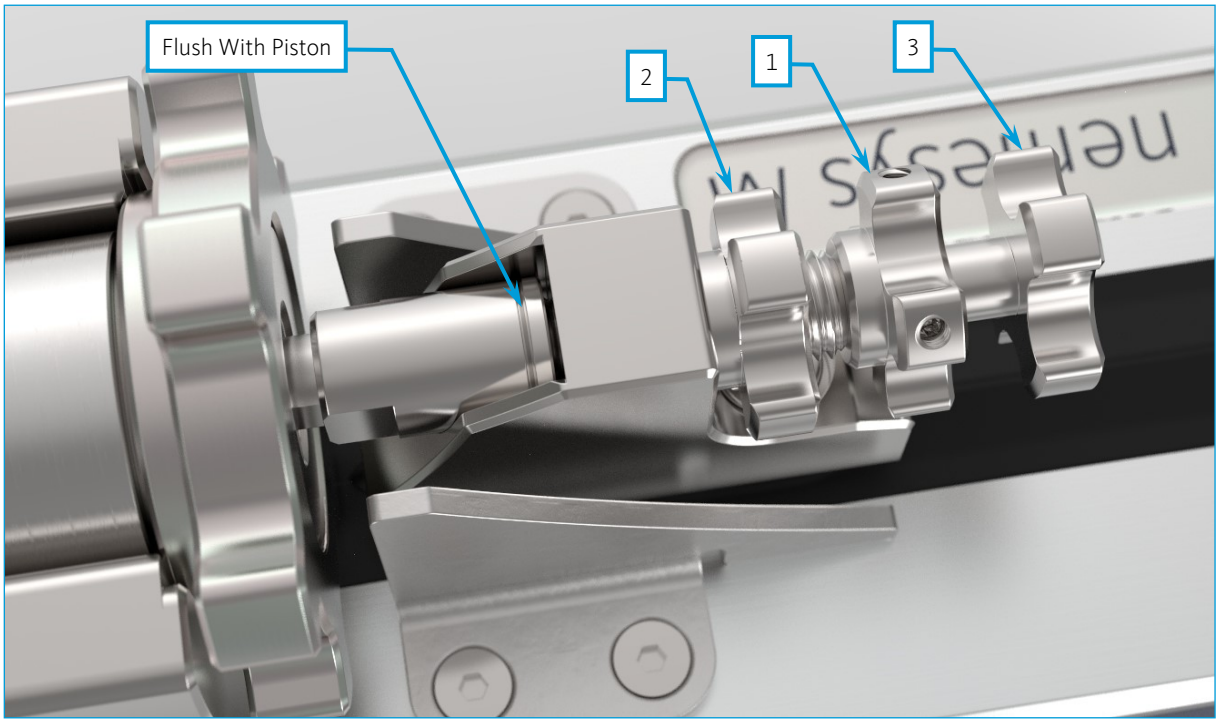
Fully unscrew the adjusting screw 1 of the piston holder and fully turn back the lock nut 2. Furthermore, pull the fixing screw 3 back until its tip disappears in the adjusting screw.



Now insert the syringe into the syringe holder and tighten the star nut hand-tight.



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.

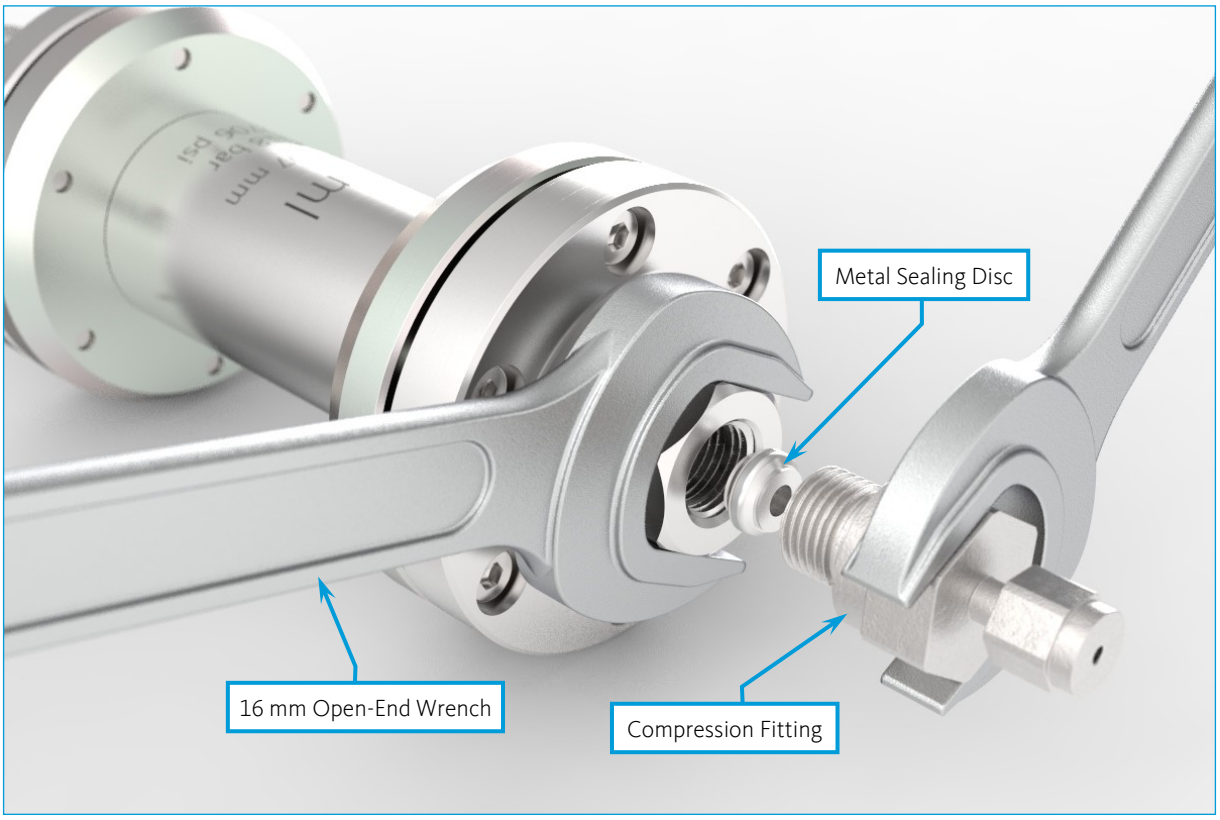
IMPORTANT. Syringes, and particularly the seals, are wear parts. Check them on a regular basis and replace them if necessary.

5.3 Fluidic Connection

The syringes have G1/8" connection holes into which compression fittings can be screwed. For a tight connection, a metal sealing disc is inserted into the hole before the compression fitting is screwed in. The compression fittings you have ordered are already fitted to the syringes.

If you want to replace the compression fittings, hold the cover of the syringe with a 16 mm open-end wrench and loosen or fasten the compression fitting with one of the open-end wrenches of the following size. The required tightening torque is 45 Nm.

- 9/16" for compression fittings for 1/16" and 1/8" pipes
- 14 mm for compression fittings for 2, 3 and 4 mm pipes

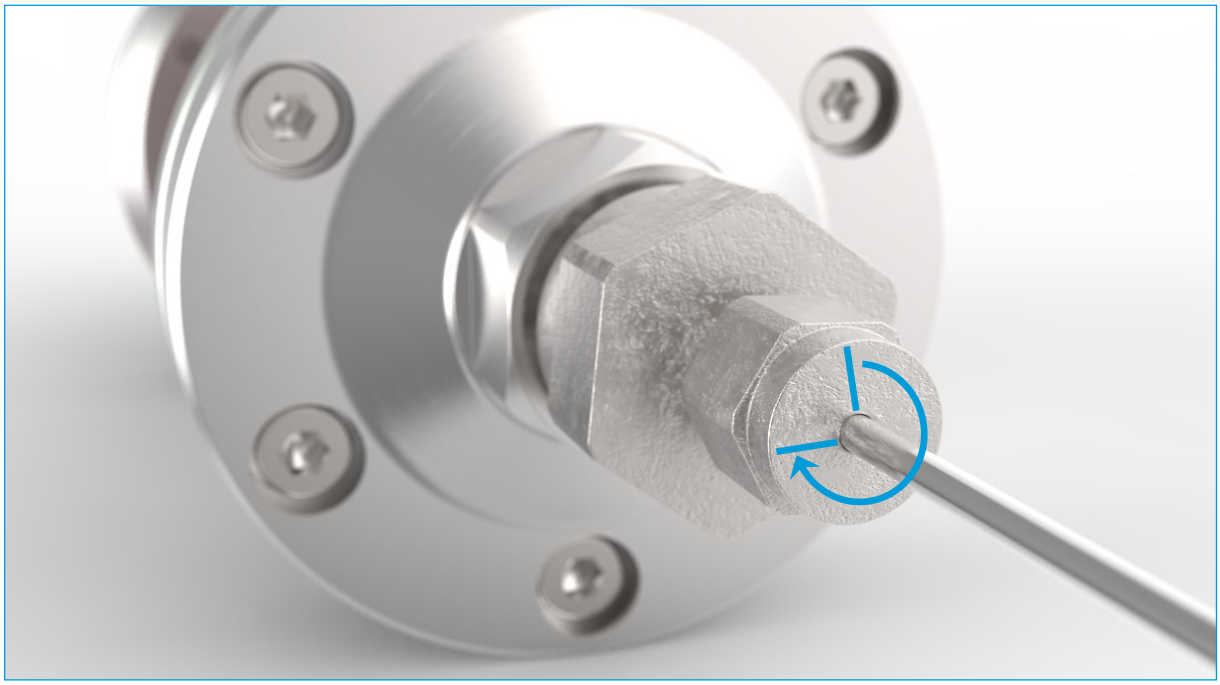


5.3.1 First-Time-Tube-Installation

(1) Fully insert the tube into the fitting and against the shoulder; rotate the cap nut finger-tight.

(2) Mark the cap nut at the 12 o'clock position.

(3) Tighten the cap nut three-quarters turn to with an open-end wrench.



HINT. The following wrench sizes are required to operate the cap nut:

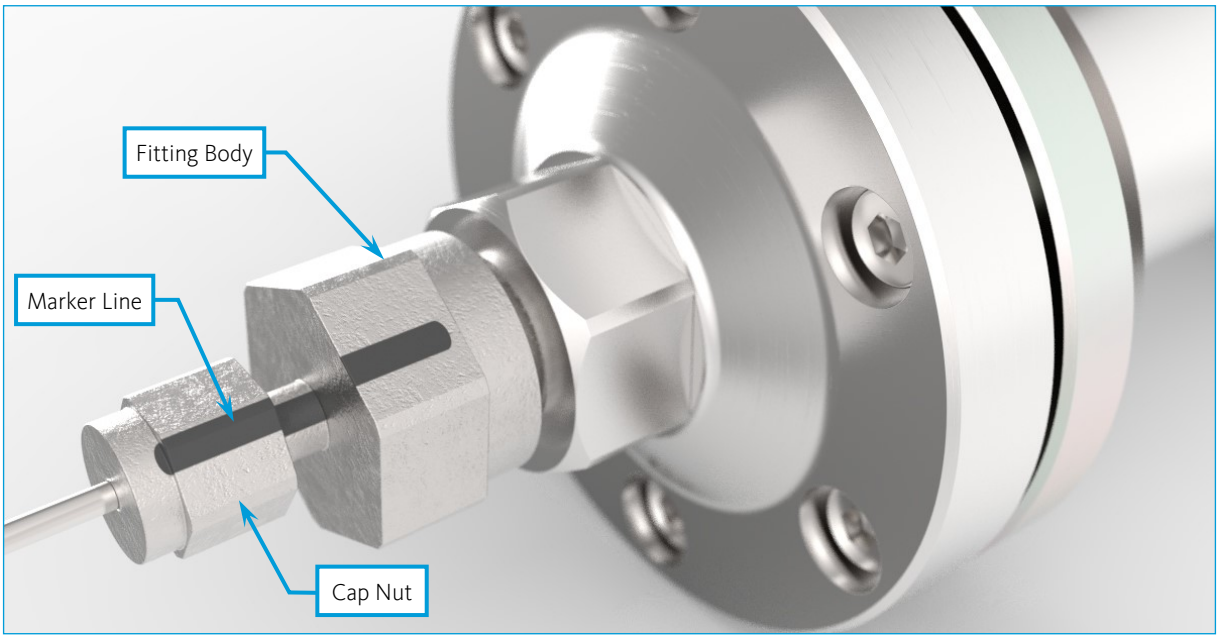
- 5/16" for compression fittings for 1/16" tubes
- 7/16" for compression fittings for 1/8" tubes
- 12 mm for compression fittings for 2, 3 and 4 mm tubes

CAUTION. Only use fittings and capillaries specified for the anticipated pressure levels. After connecting, check the tightness of all fluidic connections on a regular basis.

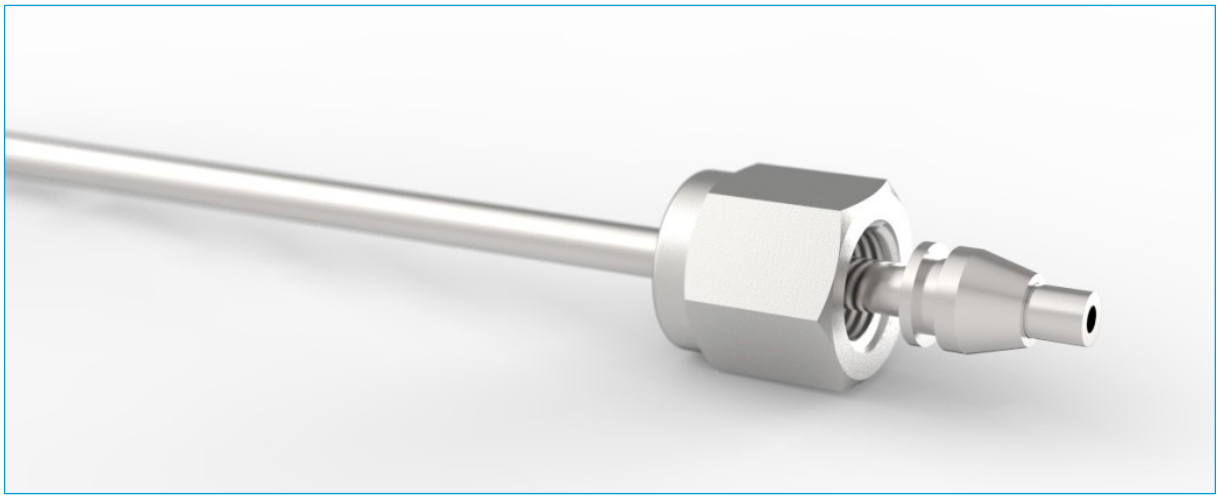
5.3.2 Tube Disassembly

CAUTION. Release pressure from the system before loosening the fittings.

(1) Before disassembly, draw a marker line across the nut and the fitting body. In this way you create a reference for retightening the cap nut to exactly the same position it was in before.



(2) Pull out the tube. The cap nut and the ferrules remain on the tube.



5.3.3 Tube Reassembly

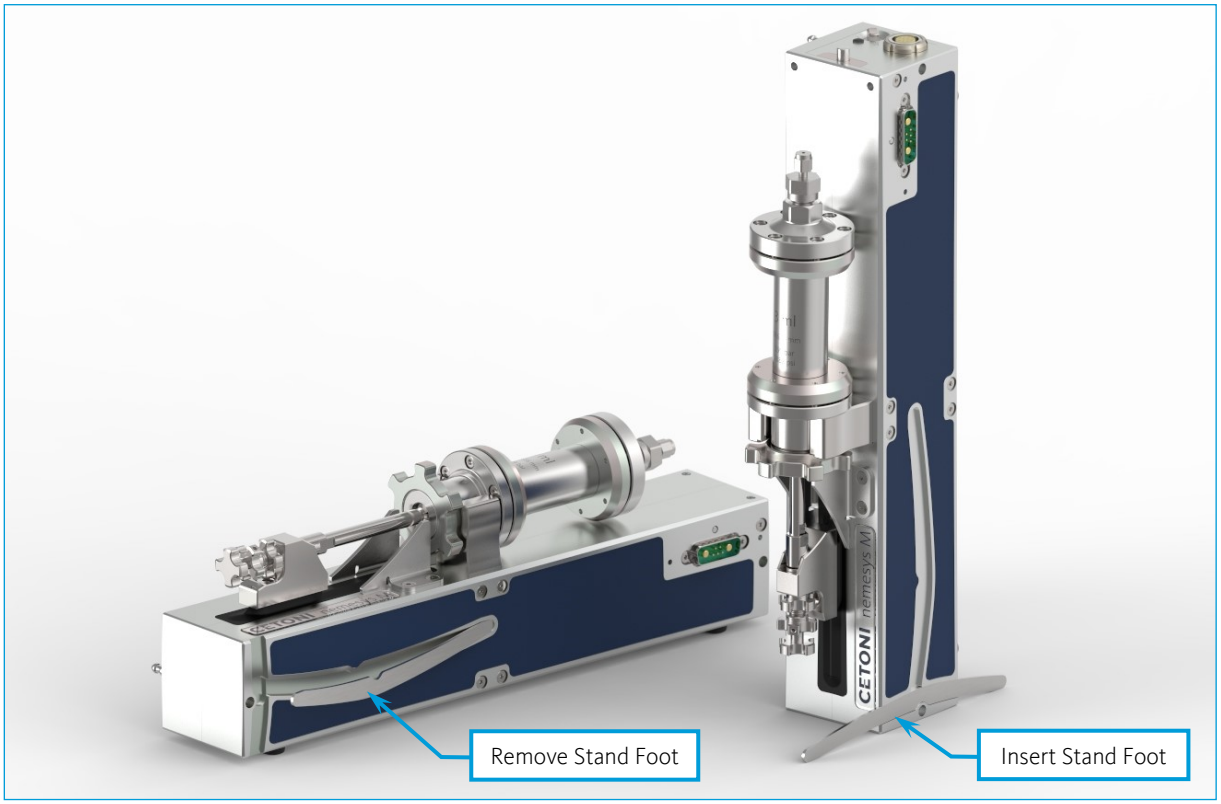
(1) To reassemble, insert the tube with preassembled ferrules into the fitting body until the front ferrule seats against the fitting body.

(2) Rotate the cap nut with an open-end wrench to the previously pulled-up position as indicated by the marks you made before; at this point you will feel a significant increase in resistance.

(3) Retighten the nut slightly.

5.4 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 M 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°.



IMPORTANT. For permanent upright operation of larger systems, we recommend using the optional system clamp.

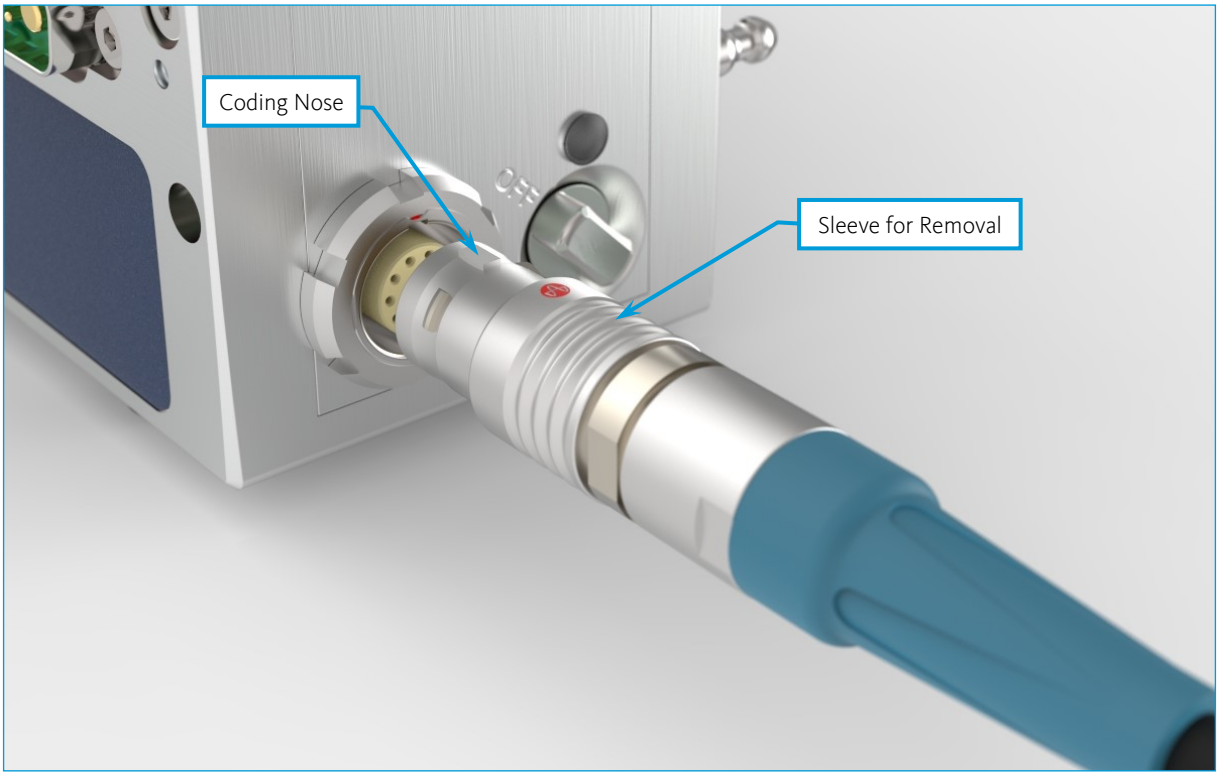
5.5 Accessory Port

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!

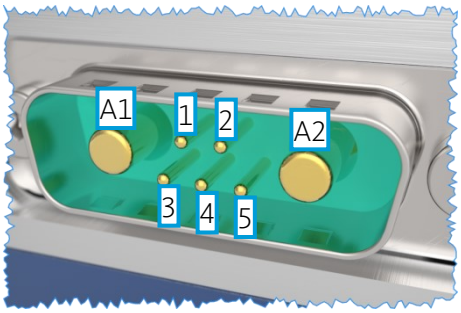
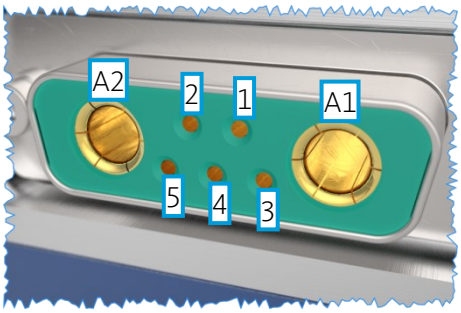
The accessory port allows the integration of accessories such as valves and pressure sensors. To do this, plug the cable connector of the accessory component into the socket of the CETONI Nemesys M until it engages. Make sure that the plug can only be inserted when the coding nose is pointing upwards.

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



5.6 RS-232 Connection

5.6.1 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

5.6.2 OEM RS232 Cable Set

5.6.2.1 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.

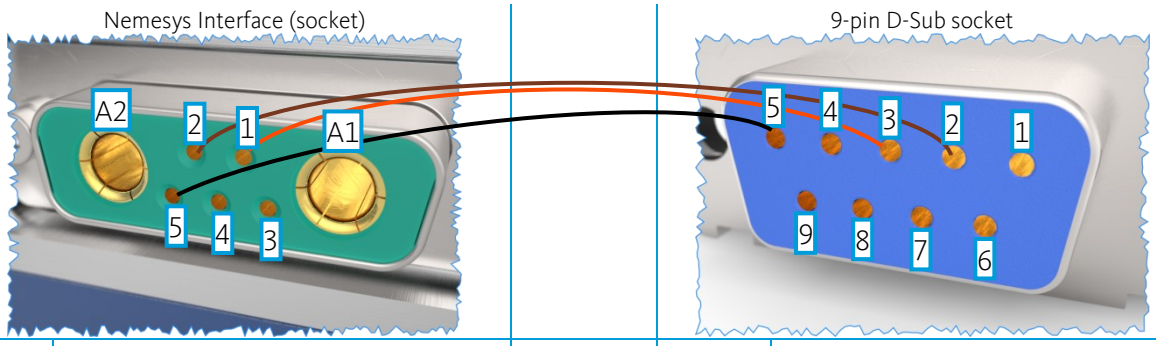
5.6.2.2 COMMUNICATION SETTINGS

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

5.6.2.3 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		

5.7 Overload shut-off

The CETONI Nemesys M has a nominal thrust force of 1000 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 1000 N is exceeded by 30%, 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.

The pressures listed in section 4.6 are the pressures theoretically achievable at the nominal thrust. In reality, however, there are various influencing factors which cause a higher thrust force to be required in order to achieve the pressures listed:

- The seals in the syringe generate friction, which increases with rising pressure.
- O-rings with back-up rings generally cause somewhat more friction than sliding rings.
- The dosed medium has a great influence on the friction of the syringe seal.
- Small cross-sections in the connection material cause a higher pressure drop from the syringe to the application at high flow rates and viscosities.

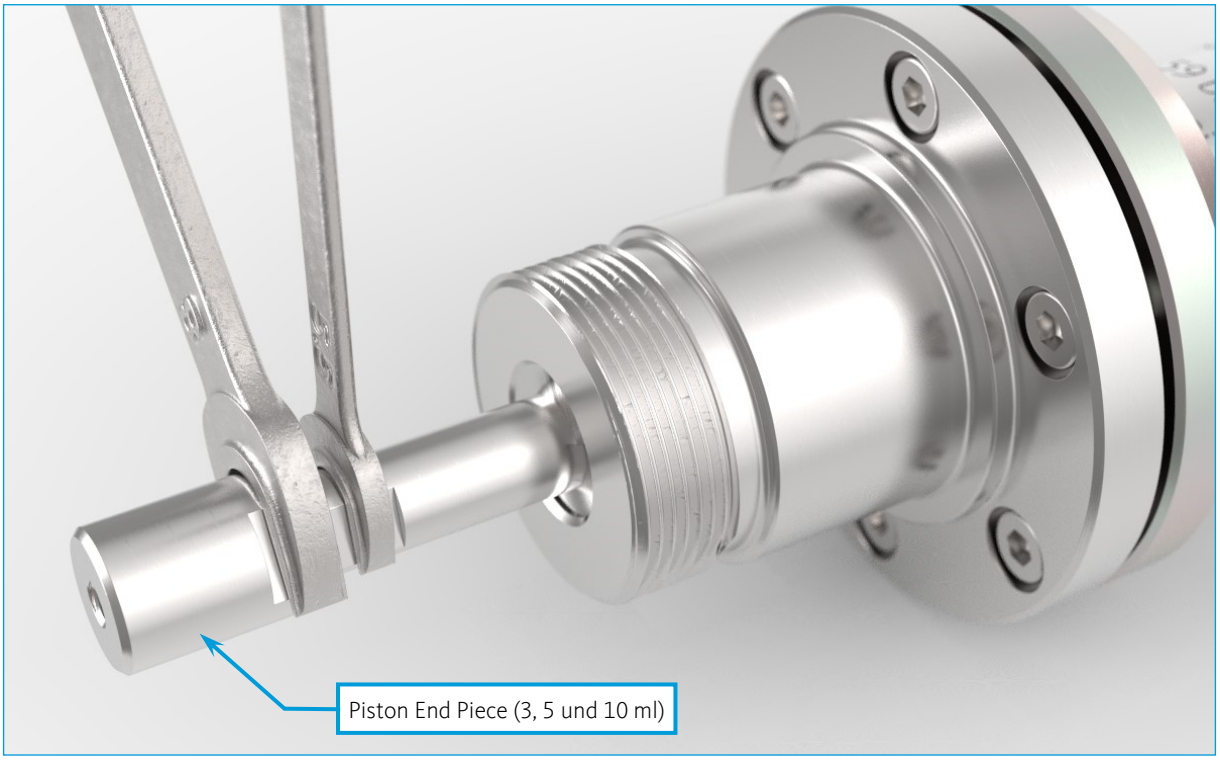
Since the overload shut-off only becomes active when the nominal thrust is exceeded by 30 %, the specified pressures can also be realized in practice in the vast majority of applications. Should the overload shut-off nevertheless become active frequently in your application, it is advisable to use a smaller syringe if possible.

5.8 Syringe Maintenance

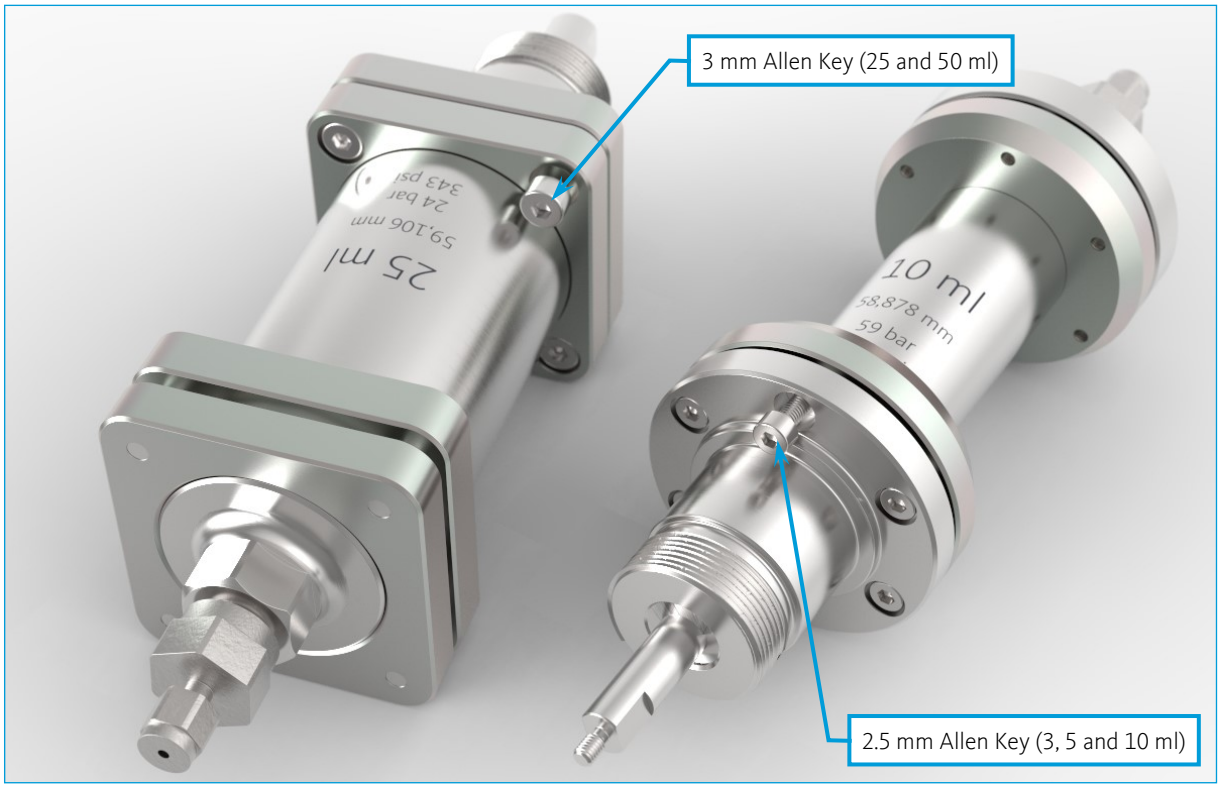
The syringes consist of the syringe cylinder, the front cap with the fluidic connection, the rear cap for mounting on the device and the piston. Disassembly and assembly are described below.

5.8.1 Piston Removal/Installation

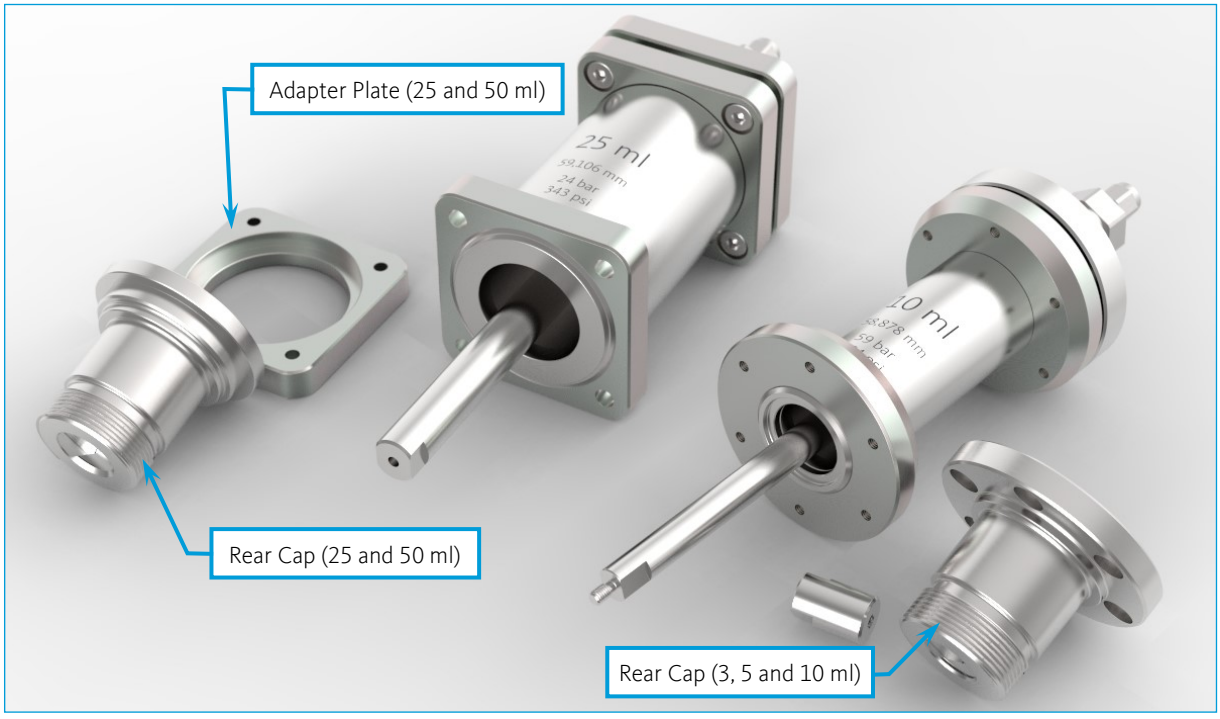
To remove the piston, the rear cap must be removed. For this purpose, the piston end piece of the 3-, 5- and 10-ml syringes must first be removed. Use a 5.5 mm and an 8 mm open-end wrench for this to be done.



Afterwards remove the six fixing screws of the rear cap of the 3-, 5- and 10-ml syringes using a 2.5 mm Allen key. For the 25- and 50-ml syringes, remove the four fixing screws with a 3 mm Allen key.



Then pull the rear cap, and for the 25- and 50-ml syringes also the adapter plate, off the piston rod.



Now the piston can easily be pulled out of the cylinder. Try to keep the piston and cylinder in alignment as much as possible to prevent them from canting. This also applies for reassembly.

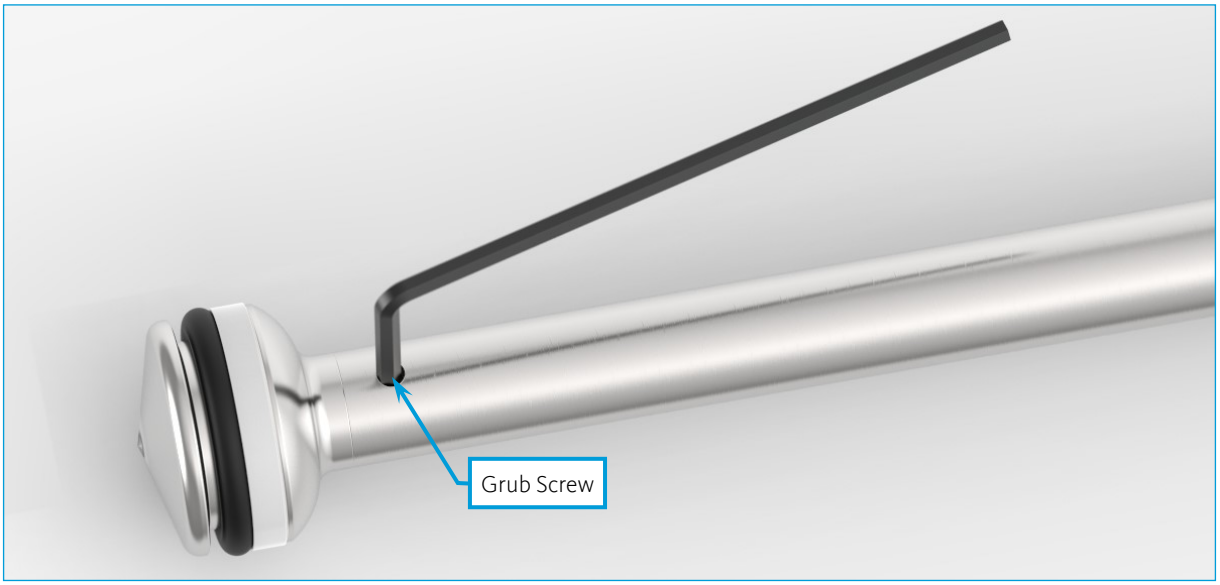
HINT. In order to be able to grip the piston better, screw the piston end piece back on and, if necessary, insert a knurled screw.

After you have inserted the piston back into the cylinder, slide the rear cap back on. Screw in the screws crosswise, finger tight, and always make sure that the rear cap lies flat against the cylinder. Finally, tighten the screws crosswise and hand tight again.

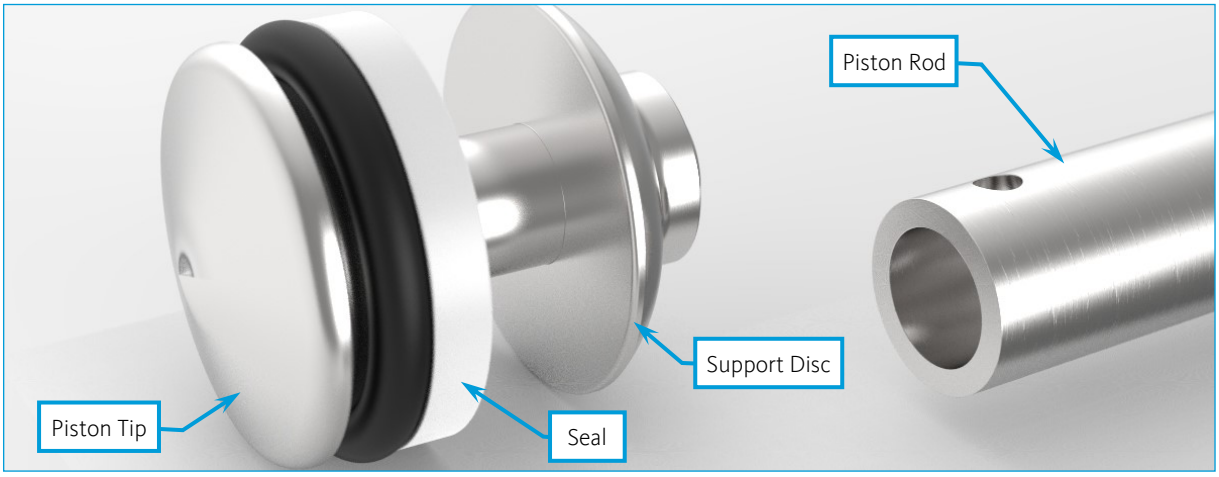
ATTENTION. Mount the screws crosswise and always make sure that the cap lies flat against the cylinder.

5.8.2 Piston (Dis)Assembly

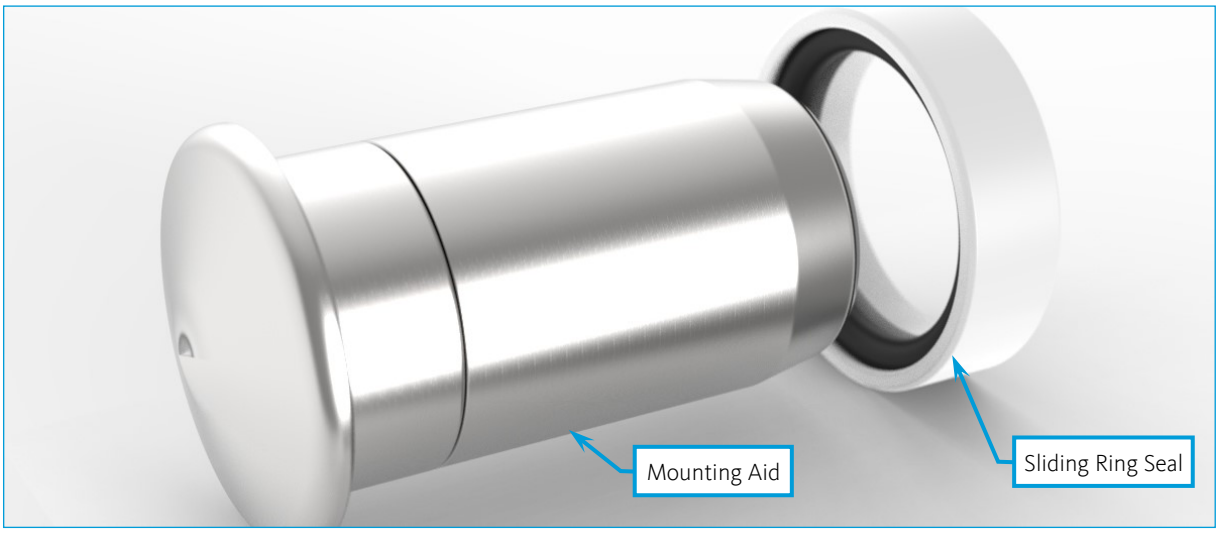
To disassemble the piston, unscrew the grub screw located on the side of the piston by about two and a half to three turns. Use a 1.3 mm Allen key for the 3-, 5- and 10-ml syringes and a 1.5 mm Allen key for the 25- and 50-ml syringes.



Now you can pull the piston tip out of the piston rod and remove the support disc and the seal.



Use the supplied mounting aid to mount the seals. When assembling an O-ring seal with backup ring, slide the O-ring on first followed by the backup ring with the concave side facing the O-ring. When assembling a sliding ring seal, first insert the O-ring into the sliding ring and mount the unit with the open side facing the forward. The dimensions of the required O-rings can be found in section 4.7.

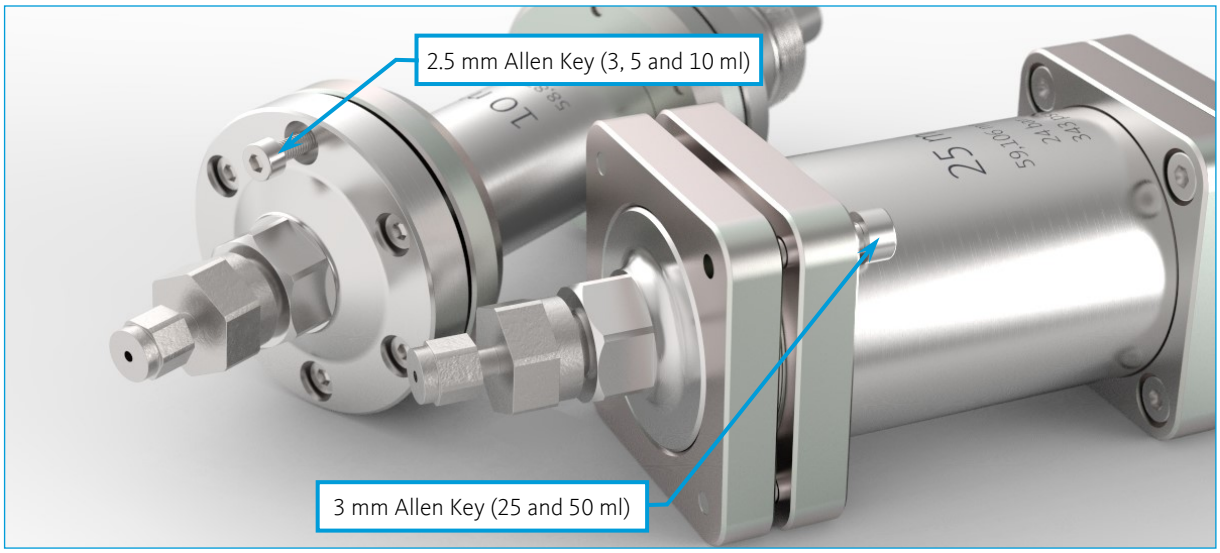


After the seal is mounted on the piston tip, remove the mounting aid, slide the support disc on and insert the unit into the piston rod. Finally, screw the grub screw back in completely. In case the internal hexagon is worn out after several changes, 2 replacement set screws are included with the syringe.

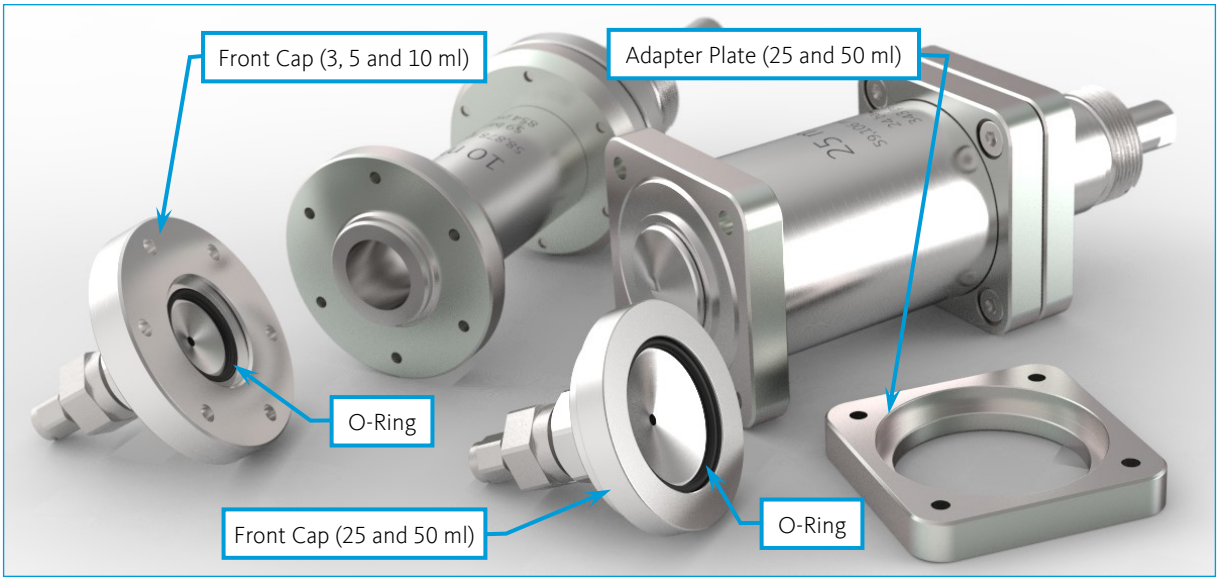
IMPORTANT. When used for the first time, sliding rings require a few syringe strokes until they achieve their full sealing effect. This can also be done manually and with an empty syringe. Please also take this into account after a seal change.

5.8.3 Front Cap Removal/Installation

For the 3-, 5- and 10-ml syringes, remove the six front cap fixing screws using a 2.5 mm Allen key. For the 25- and 50-ml syringes, remove the four fixing screws with a 3 mm Allen wrench.



Now you can remove the front cap, and for the 25- and 50-ml syringes also the adapter plate, and replace the O-ring if necessary. The dimensions of the required O-rings can be found in section 4.7. As described in section 5.8.1, make sure that the cap is lying flat on the cylinder and tighten the screws crosswise, first finger tight and then hand-tight.

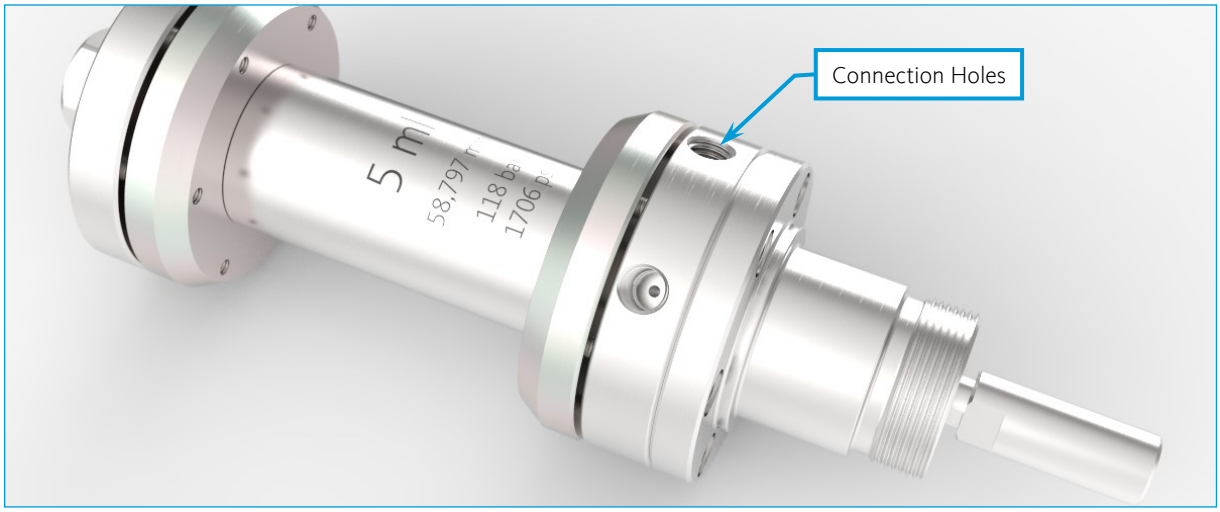


ATTENTION. Do not push the piston out of the cylinder on the front side, as this may damage the seal.

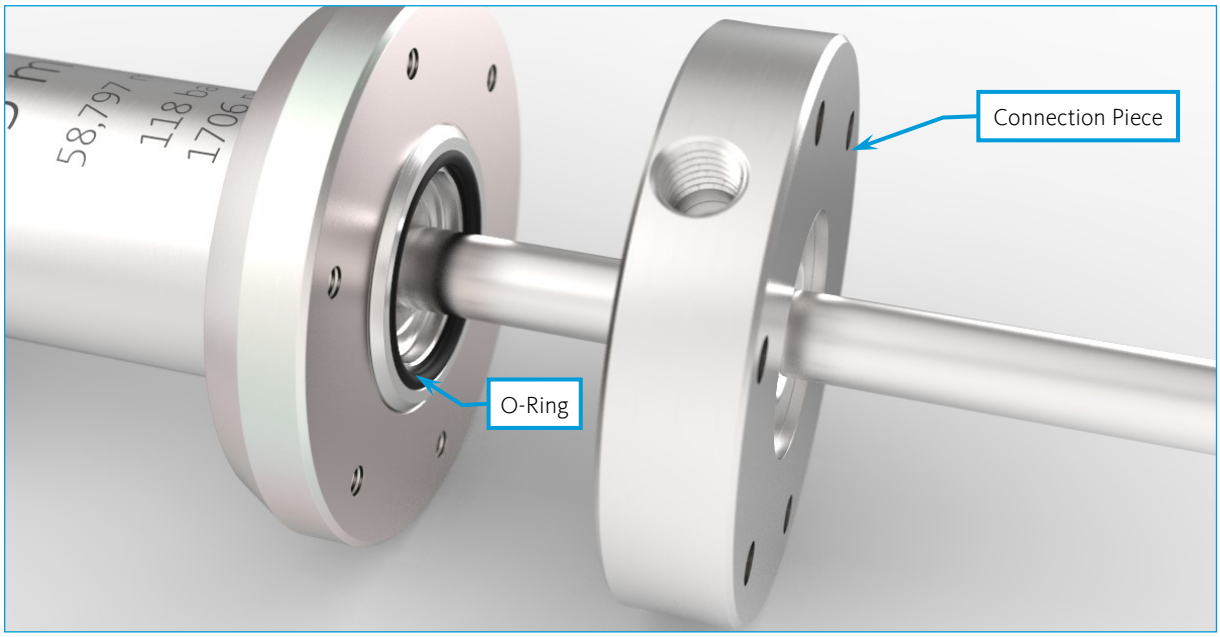
5.8.4 Mounting the seal wash set

The seal wash set enables the piston to be back flushed, which allows to remove media residues that could pass the piston seal. This is useful, for example, if media crystallizes out on the cylinder wall and thus damages the seal the next time it passes over, or if media forms dangerous gases.

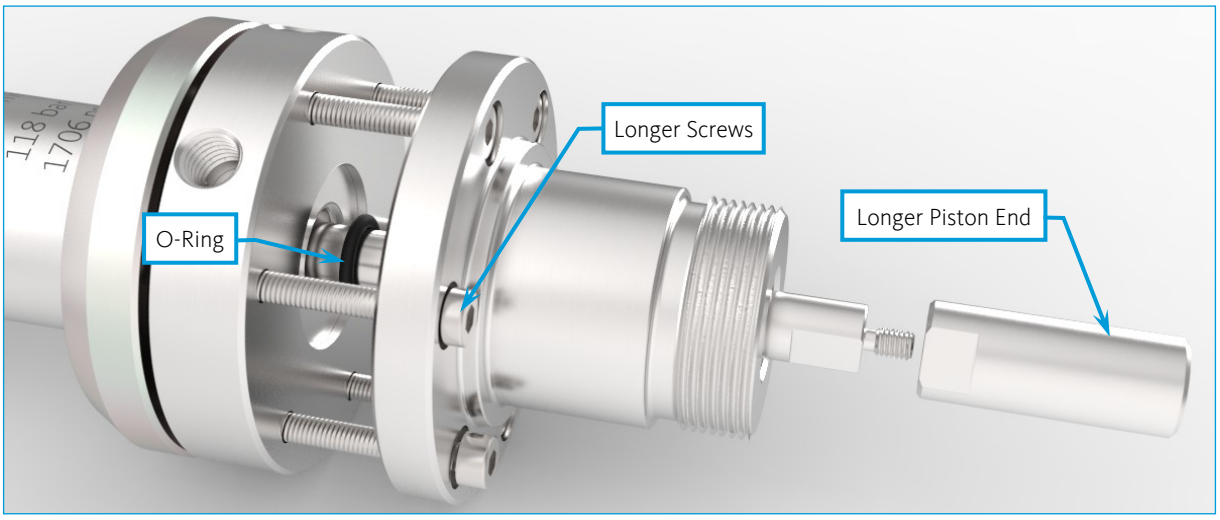
The seal wash set has two connection holes with 1/4"-18 UNF thread, into which you can screw standard HPLC fittings in order to pass a flushing liquid or gas.



To install the seal wash set, first remove the rear cap as described in section 5.8.1 and, for the 3, 5 and 10 ml syringes, the end of the piston as well. Then insert the O-ring into the cylinder (for dimensions, see section 4.7) and push the connection piece on until it rests against the cylinder.



Now slide the smaller O-ring and then the rear cap onto the piston rod and fasten everything with the longer screws included in the seal wash set. As described in section 5.8.1, make sure that the seal wash set is lying flat on the cylinder and tighten the screws crosswise, first finger tight and then hand-tight. Finally, fit the longer piston end that also comes with the seal wash set.



5.8.5 Maintenance and Care

The syringes are wear parts. The piston seal rubs on the cylinder, whereby the seal wears out. The same applies to a lesser extent for the cylinder. The amount of wear and abrasion depends on many factors, such as pressure, flow rate and the utilized medium.

Excessive wear of the seals can lead to leaks. Therefore, check the condition of the seals at regular intervals. If your application is sensitive to abrasion, we recommend the installation of filters.

A lubrication of the O-rings for example with silicone grease increases their service life considerably and should be made if your application allows.

Replacement seals can be obtained from CETONI GmbH. However, O-rings from other suppliers may also be used, provided they meet the specifications in section 4.7.

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 M 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.