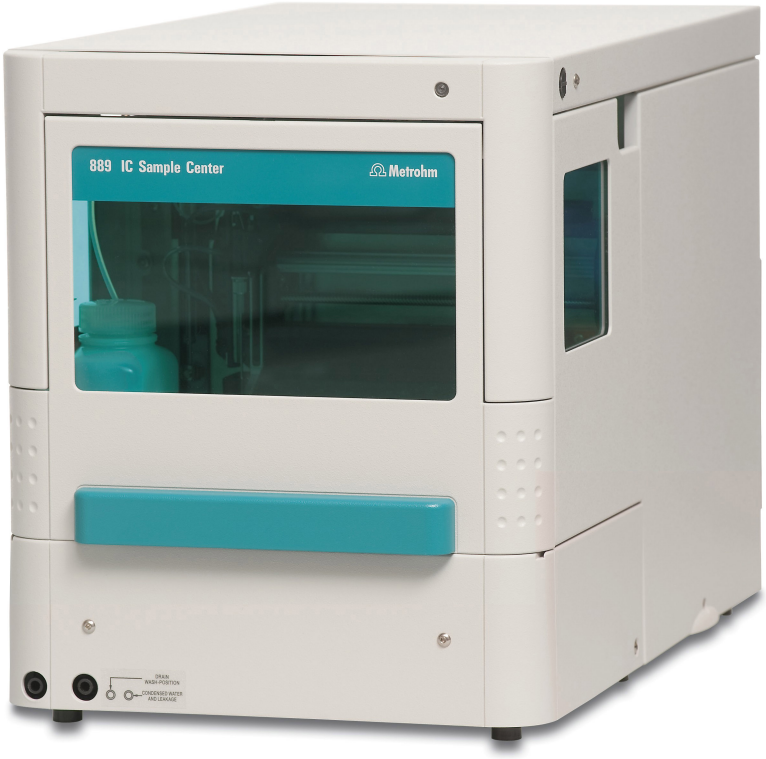
889 IC Sample Center



Manual

8.889.8001EN

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Although all the information given in this documentation has been checked with great care, errors cannot be entirely excluded. Should you notice any mistakes please send us your comments using the address given above.

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1 Introduction

1.1 Instrument description

The 889 IC Sample Center is a robust Autosampler for high sample throughput, optimized for the challenges of the modern analytic laboratory. Its greatest advantages are speed and small sample volumes.

Special features:

- Control of syringes with high resolution. This enables very high precision during injections.
- The control per PC software makes operation readily comprehensible. A context-sensitive online Help function is available for every window and every dialog.
- As a means of enhancing safety, no needle movements are carried out when the door is open.
- The optional sample cooling guarantees consistent results.

Standard micro titer plates (high or low form) or sample racks can be used. The same plates or racks must be present in the left-hand and right-hand loading drawer.

1.1.1 Model versions

2.889.0010 889 IC Sample Center

With:

- 15 µL injection needle
- 500 µL syringe
- 1000 µL buffer loop
- 100 µL sample loop

2.889.0020 889 IC Sample Center Cool

With:

- 15 µL injection needle
- 500 µL syringe
- 1000 µL buffer loop
- 100 µL sample loop
- Accessories for cooling the samples

1.1.2 Instrument components

The 889 IC Sample Center has the following components:

- **2 sample racks**
  Each for 48 vials.
- **Needle arm**
  With air needle and drives for horizontal and vertical positioning.
- **Injection valve**
  With six connectors and two switching positions (LOAD and INJECT)
- **Syringe module**
  For aspirating and transferring the samples.
- **Cooling module (optional)**
  For cooling the samples.
- **USB connector**
  For the connection to a PC.
- **I/O interface**
  For output of an inject marker signal.

1.1.3 Intended use

The 889 IC Sample Center is designed for usage as an automation system in analytical laboratories.

This instrument is suitable for processing chemicals and flammable samples. The usage of the 889 IC Sample Center therefore requires that the user has basic knowledge and experience in the handling of toxic and caustic substances. Knowledge with respect to the application of the fire prevention measures prescribed for laboratories is also mandatory.

1.2 About the documentation

Caution

Please read through this documentation carefully before putting the instrument into operation. The documentation contains information and warnings which the user must follow in order to ensure safe operation of the instrument.

1.2.1 Symbols and conventions

The following symbols and styles are used in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the instrument part in the figure.

1	**Instruction step** Carry out these steps in the sequence shown.
	**Warning** This symbol draws attention to a possible life hazard or risk of injury.
	**Warning** This symbol draws attention to a possible hazard due to electrical current.
	**Warning** This symbol draws attention to a possible hazard due to heat or hot instrument parts.
	**Warning** This symbol draws attention to a possible biological hazard.
	**Caution** This symbol draws attention to a possible damage of instruments or instrument parts.
	**Note** This symbol marks additional information and tips.

1.3 Safety instructions

1.3.1 General notes on safety

Warning

This instrument may only be operated in accordance with the specifications in this documentation.

This instrument has left the factory in a flawless state in terms of technical safety. To maintain this state and ensure non-hazardous operation of the instrument, the following instructions must be observed carefully.

1.3.2 Electrical safety

The electrical safety when working with the instrument is ensured as part of the international standard IEC 61010.

Warning

Only personnel qualified by Metrohm are authorized to carry out service work on electronic components.

Warning

Never open the housing of the instrument. The instrument could be damaged by this. There is also a risk of serious injury if live components are touched.

There are no parts inside the housing which can be serviced or replaced by the user.

Mains voltage

Warning

An incorrect mains voltage can damage the instrument.

Only operate this instrument with a mains voltage specified for it (see rear panel of the instrument).

Mains cable

Warning

Replace or repair defective or frayed insulation of the mains cable.

Protection against electrostatic charges

Warning

Electronic components are sensitive to electrostatic charges and can be destroyed by discharges.

Always pull the mains cable out of the mains connection socket before connecting or disconnecting electrical appliances on the rear panel of the instrument.

Fuses

Warning

Replaced burned fuses only with new fuses of the same size and the same type, as specified next to the fuse holder or in the accessories list in this manual.

1.3.3 Tubing and capillary connections

Caution

Leaks in tubing and capillary connections are a safety risk. Tighten all connections well by hand. Avoid applying excessive force to tubing connections. Damaged tubing ends lead to leakage. Appropriate tools can be used to loosen connections.

Check the connections regularly for leakage. If the instrument is used mainly in unattended operation, then weekly inspections are mandatory.

1.3.4 Personnel safety

Warning

Wear protective goggles and working clothes suitable for laboratory work while operating the 889 IC Sample Center. It is also advisable to wear gloves when caustic liquids are used or in situations where glass vessels could break.

Warning

Personnel are not permitted to reach into the working area of the instrument while operations are running!

A **considerable risk of injury** exists for the user.

Warning

In the event of a possible jamming of a drive, the mains plug must be pulled out of the socket immediately. Do not attempt to free jammed sample vessels or other parts while the instrument is switched on. Blockages can only be cleared when the instrument is in a voltage-free status; this action generally involves a **considerable risk of injury**.

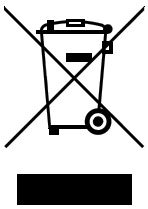
1.3.5 Flammable solvents and chemicals

Warning

All relevant safety measures are to be observed when working with flammable solvents and chemicals.

- Set up the instrument in a well-ventilated location.
- Keep all sources of flame far from the workplace.
- Clean up spilled liquids and solids immediately.
- Follow the safety instructions of the chemical manufacturer.
- Dispose of solvents and chemicals according to good professional practice.

1.3.6 Recycling and disposal



This product is covered by European Directive 2002/96/EC, WEEE – Waste from Electrical and Electronic Equipment.

The correct disposal of your old equipment will help to prevent negative effects on the environment and public health.

More details about the disposal of your old equipment can be obtained from your local authorities, from waste disposal companies or from your local dealer.

2 Overview of the instrument

2.1 Front and rear

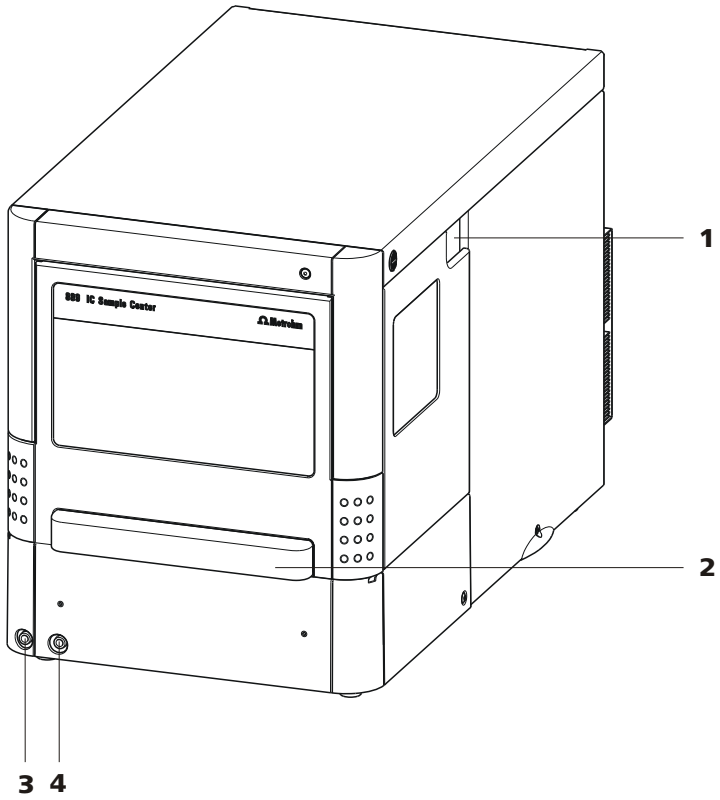


Figure 1 889 IC Sample Center - front

1 **Tubing guide** For capillaries and tubings.	**2** **Door to the sample chamber** With handle.
3 **Connector for the outlet tubing**	**4** **Connector for the condensation and leakage tubing**

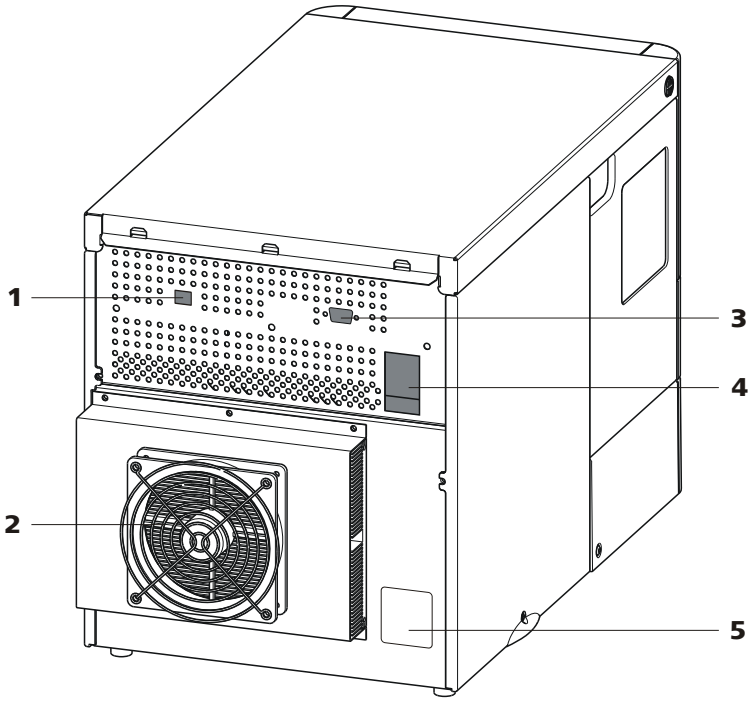


Figure 2 889 IC Sample Center - rear

1	**USB connector** For the connection to a PC.
2	**Fan** For the cooling unit. Do not cover!
3	**I/O connector** For output of an *inject marker* signal.
4	**Mains connection socket** With mains switch and fuse holder.
5	**Type plate** Contains specifications concerning mains voltage and serial number.

2.2 Opening the device

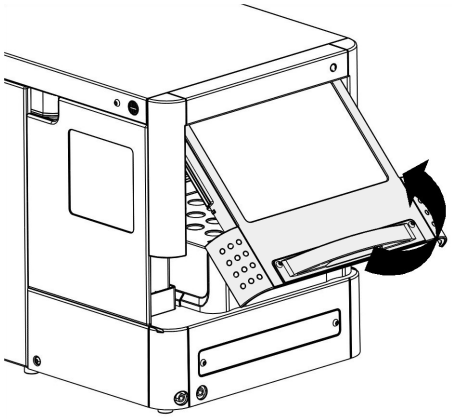
Warning

Mobile parts are to be found in the interior of the 889 IC Sample Center. Reaching into the interior during operation puts personnel at a serious risk of injury. Open the door only if the device is in idle mode. Due to safety considerations, no needle movements are carried out by the device when the door is open.

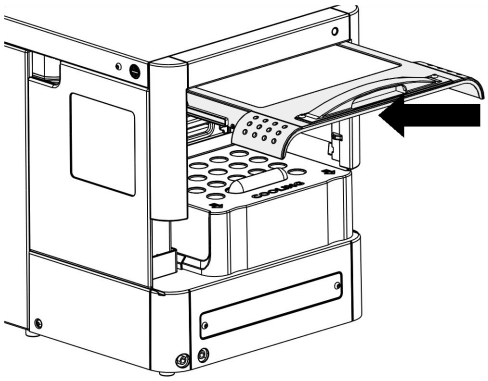
Opening the door

Proceed as follows:

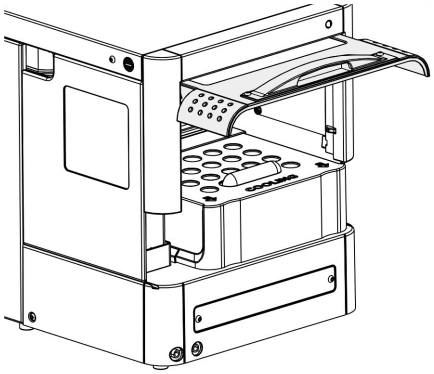
1 Grip the door handle:



2 Carefully pull out the door and press it upwards until it is in a horizontal position.



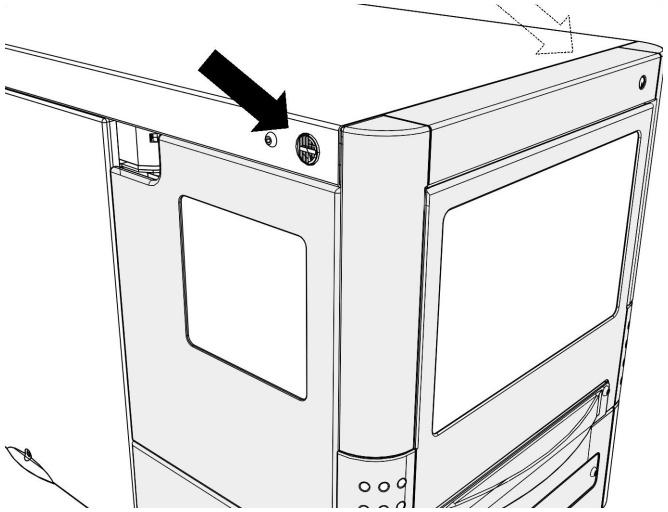
3 Slide the door into the housing.



Removing the covering

You can remove the covering on the housing in order to make the interior more readily accessible:

1 Press the two black buttons on the sides of the housing (above) simultaneously.



2 Carefully pull out the covering towards the front.

2.3 Interior view

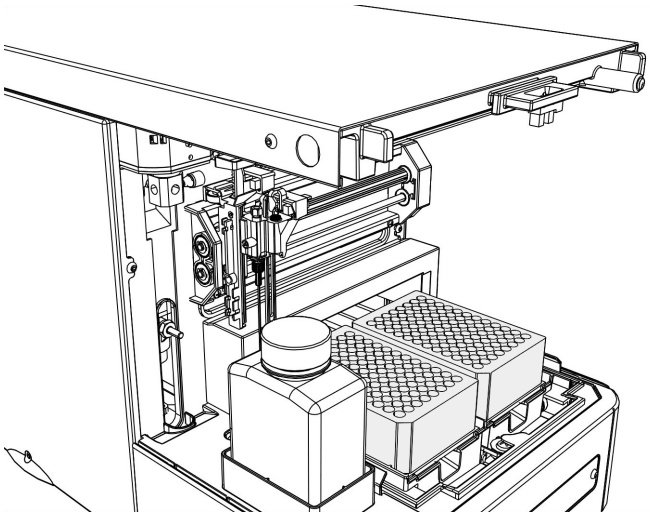


Figure 3 Interior view without covering

2.4 Interior

The following parts are to be found in the interior of the 889 IC Sample Center:

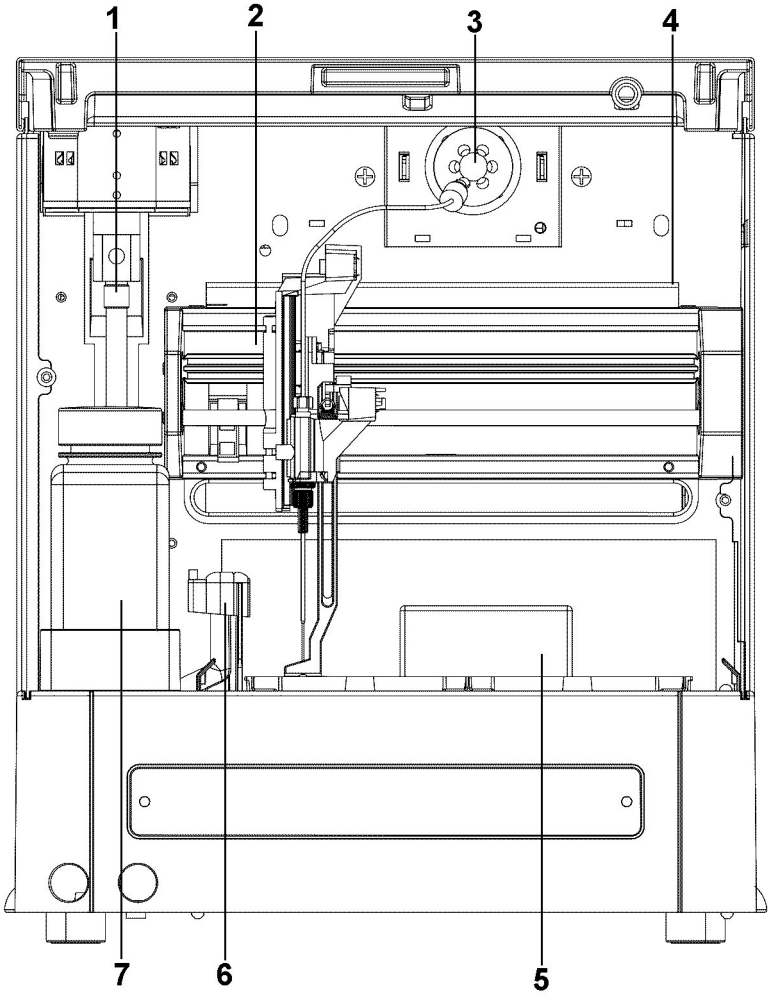


Figure 4 Interior with sampling device

1	**Syringe**	**2**	**Needle arm**
3	**Injection valve**	**4**	**Sample drip pan**
5	**Sample chamber**	**6**	**Needle washing position**
7	**Washing bottle**		

2.5 Cooling option

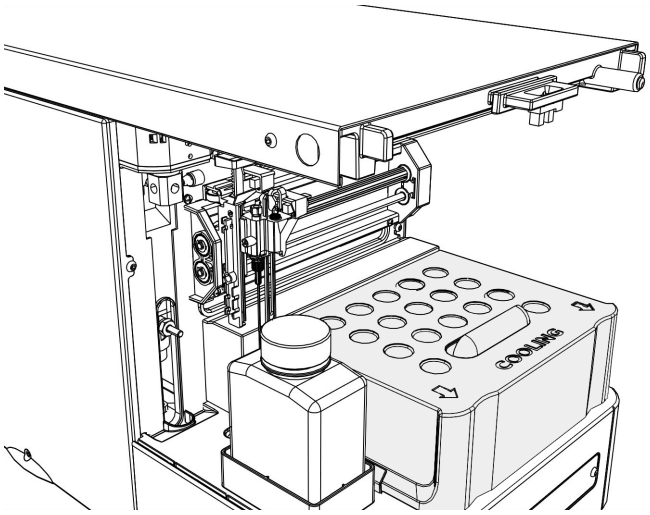


Figure 5 Interior with installed cooling option.

If the cooling option is installed, pull the covering of the cooling option off towards the front. Now you can place the sample racks or micro titer plates.

3 Installation

3.1 Setting up the instrument

3.1.1 Packaging

The instrument is supplied in highly protective special packaging together with the separately packed accessories. Keep this packaging, as only this ensures safe transportation of the instrument.

3.1.2 Checks

Immediately after receipt, check whether the shipment has arrived complete and without damage by comparing it with the delivery note.

3.1.3 Location

The instrument has been developed for operation indoors and may not be used in explosive environments.

Place the instrument in a location of the laboratory suitable for operation and free of vibrations, if possible protected from corrosive atmospheres and contamination by chemicals.

The instrument should be protected against excessive temperature fluctuations and direct sunlight.

3.1.4 Removing the device from the packaging

Grip the device at the positions marked with arrows and lift it out of the packaging.

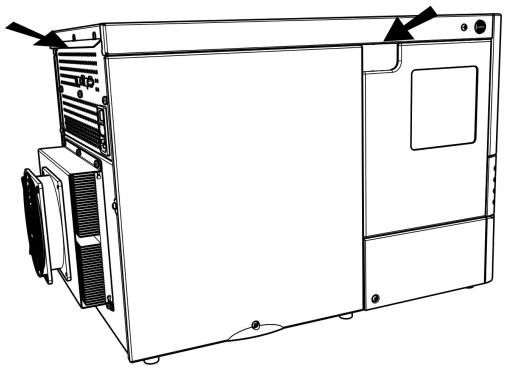


Figure 6 Unpacking the 889 IC Sample Center

Grip the device underneath with both hands when you are transporting it. Always hold the device in an upright position.

Before you switch on the 889 IC Sample Center, allow the device to stand for at least one hour in order to adapt to the room temperature.

Warning

Take care to ensure that the ventilation openings on the rear side of the device are not covered. Note that blocked ventilation openings could have an influence on the performance of the device, in particular on its cooling output.

Objects placed on the device could also impair the cooling output.

Objects can be placed at the sides of the 889 IC Sample Center. If an object is placed on only one side, then a minimum clearance of 5 cm must be maintained. In the case of more than one sides, a minimum clearance of 10 cm applies.

3.2 Connecting a computer

The 889 IC Sample Center requires a USB connection to a computer in order to be able to be controlled by a PC software. When a 6.2151.020 cable USB A - USB B is used, the instrument can be connected directly, either to a USB socket on a computer, to a connected USB hub or to a different Metrohm control instrument.

Cable connection and driver installation

A driver installation is required in order to ensure that the 889 IC Sample Center is recognized by the PC software. To accomplish this, you must comply with the procedures specified. The following steps are necessary:

1 Installing software

- Insert the **MagIC Net™** PC software installation CD and carry out the installation program directions.
- Exit the program if you have started it after the installation.

2 Establishing cable connections

- Check whether the fuse and the supply voltage which are specified on the rear side of the device also match the prevailing circumstances.
- Connect the 889 IC Sample Center to the mains supply.
- Connect the instrument to a USB connector (Type A) of your computer (see manual of your computer). The **6.2151.020 cable USB A - USB B** is used for this purpose. The USB connector of the 889 IC Sample Center is located on the rear of the instrument.

3 Switch on the instrument using the mains switch on the rear of the instrument.

For Windows 2000: the instrument is recognized and the driver is installed automatically.

For Windows XP: the instrument is recognized and the installation assistant for the driver is started automatically. Select the option "Install software automatically" and click on **[Next]**. Exit the assistant with **[Finish]**.

For Windows Vista: the instrument is recognized and the installation assistant for the driver is started automatically. Select the option "Find and install driver software". Agree to all of the requests that follow. The installation assistant will be exited automatically.

Registering and configuring the instrument in the PC software

The instrument must be registered in the configuration of MagIC Net™ . Once that has been done, you can then configure it according to your requirements. Proceed as follows:

1 **Setting up the instrument**

- Start MagIC Net™ .
  The instrument is recognized automatically. The configuration dialog for the instrument is displayed.
- Make configuration settings for the instrument.

More detailed information concerning the configuration of the instrument can be found in the documentation of MagIC Net™ .

3.3 Connecting pump and column

The 889 IC Sample Center is supplied with the necessary mounted hose and capillary connections. Connect the high pressure pump and the separation columns to the still unoccupied ports 1 and 6 on the injection valve with one suitable PEEK capillary each (6.1831.010). Observe the following illustration.

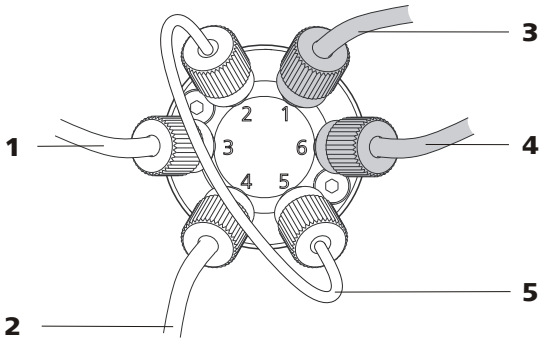


Figure 7 Connecting pump and column

1	**Connection to the syringe module** Port 3 of the injection valve.
2	**Connection to the needle** Port 4 of the injection valve.
3	**Connection to the high pressure pump** Port 1 of the injection valve.
4	**Connection to the separation column** Port 6 of the injection valve.
5	**Sample loop** Port 2 and 5 of the injection valve.

3.4 Tubing

The 889 IC Sample Center is equipped with the following standard tubing:

Tubing/Capillary	Material/Dimensions
Standard sample needle and capillary (15 µL)	SS (inert-coated): 97 mm x 0.8 mm OD x 0.25 mm ID ETFE (Tefzel): 200 mm x 1/16" OD x 0.25 mm ID
Buffer tubing from the high pressure valve to the syringe valve (1000 µL)	ETFE (Tefzel): 1275 mm x 1/16" OD x 1.0 mm ID
Tubing from the syringe valve to the washing bottle	PTFE: 400 mm x 1/18" OD x 1.6 mm ID
Tubing from the syringe valve to the outlet tubing	PTFE: 400 mm x 1/8" OD x 1.6 mm ID

Observe the following when mounting new tubing or capillaries:

- Do not tighten the connectors excessively. This could block the flow path.
- Make sure that you always use tubing volumes which are suitable for the other components in the flow path.

3.4.1 Tubing guide

In order to prevent the rinsing tubing from hindering the horizontal movement of the needle unit, use the tubing guide in the collection pan under the injection valve:

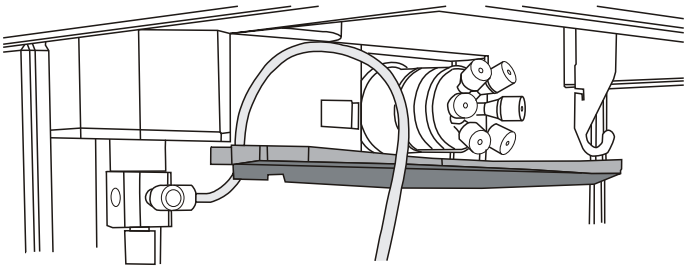


Figure 8 Guiding the rinsing tubing

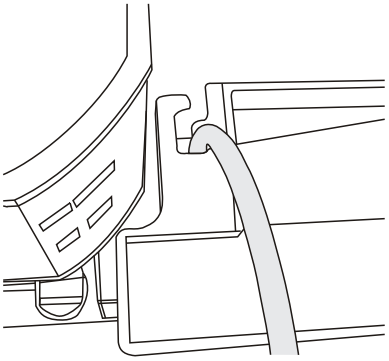


Figure 9 Tubing guide from above

3.5 Outlet tubings

Set up the following tubing connections for the disposal of waste fluids:

General waste

Connect one outlet tubing (included in the scope of delivery) on the left-hand tubing connector on the front of the 889 IC Sample Center. Guide the other end into a waste container underneath the 889 IC Sample Center.

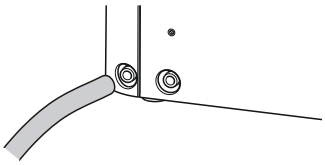


Figure 10 Mounting the outlet tubing

All of the liquid which is conveyed to the washing position will be channeled through this outlet. Sample liquid which was not injected will also be disposed of through this outlet.

Condensation and leakage outlet

All leakage liquid and condensation water (from the cooling module) will be channeled through the right-hand tubing connector. If the cooling option is used, it is advisable to connect this connector with a waste container underneath the 889 IC Sample Center.

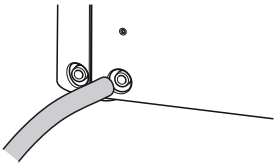


Figure 11 Mounting the leakage tubing

3.6 Rinsing the syringe

The syringe must be rinsed bubble-free prior to the start-up of the 889 IC Sample Center.

Fill the washing bottle with isopropanol.

Warning

Do not use any saline or buffer solutions. Crystals could block or damage the entire system.

Proceed as follows:

1. Immerse the end of the tubing for the washing bottle into the vessel.
2. Open the manual control in MagIC Net™.
3. Select **889 IC Sample Center** in the device selection (all devices).
4. On the tab **General**, carry out the function **Washing**.

   The syringe, the needle and the tubing are rinsed thoroughly.
5. If needed, carry out the function a second time until the syringe no longer contains any bubbles and the tubing is filled.
6. Repeat the washing procedure with ultra pure water or possibly with eluent.

4 Functioning

4.1 Injection modes

Three different injection modes can be utilized:

- **Full loop injection**: for full precision
- **Partial loopfill injection**: for full flexibility
- **Pickup injection**: for smallest loss of sample

The sample loop injection with pressure-assisted sample aspiration = PASA™ can be used with all three injection modes. This is a tried and tested concept which combines high accuracy with simplicity and reliability.

- No movement of the sample needle
- Reduced risk of bubbles in the sample intake
- No wearing or contamination of the injection port

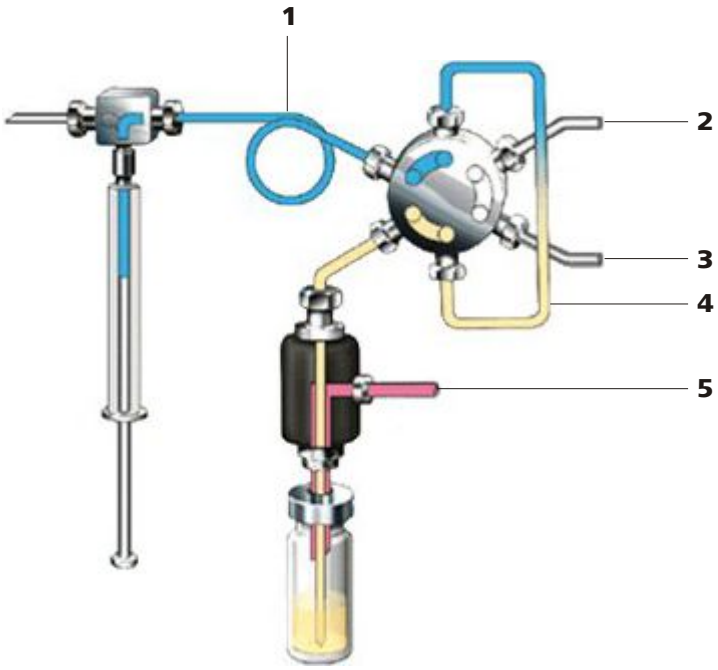


Figure 12 PASA ™ injection concept

1	**Buffer loop**	**2**	**High pressure pump**
3	**Separation column**	**4**	**Sample loop**
5	**Compressed air**		

The syringe aspirates the sample out of the sample vessel and into the sample loop. The buffer loop between the syringe and the injection valve

prevents the contamination of the syringe. Washing solution is required in order to:

- remove the sample from the buffer loop and the sample needle.
- rinse the buffer loop and the sample needle.

4.2 Syringe and buffer loop

The following range of sample volumes can be covered with the various injection modes using the 500 µL syringe, in combination with the standard buffer loop (1000 µL) and the standard sample loop (100 µL):

- Full loop: 100 µL
- Partial loopfill: 1…50 µL
- Pickup: 1…27 µL

The maximum injection volume is calculated in accordance with the following formulas:

- Full loop: injection volume = sample loop volume
- Partial loopfill: max. injection volume = 0.5 × sample loop volume
- Pickup: max. injection volume = (sample loop volume – 3 × needle volume) / 2

The full loop injection yields the maximum possible reproducibility < 0.3%, but not the maximum accuracy, because the loop volume is specified as being with an accuracy of ±10%. The minimum sample loss is 230 µL (2 × (sample loop overfilling + rinsing volume) for one 15 µL needle).

The partial loopfill injection yields a maximum accuracy and reproducibility better than 0.5% relative standard deviation (RSD) for injection volumes > 10 µL. The minimum sample loss (rinsing volume is equal to 30 µL. 30 µL is the recommended minimum rinsing volume. Smaller rinsing volumes can be programmed, but reproducibility will be reduced as a result.

The pickup injection offers maximum accuracy (the same as with partial loopfill) and no loss of sample, but somewhat lower reproducibility, namely a relative standard deviation (RSD) better than 1% for injection volumes > 10 µL.

4.3 Full loop injection

The sample loop is filled completely (quantitatively) with sample. This type of injection results in excellent reproducibility.

1 Initial situation

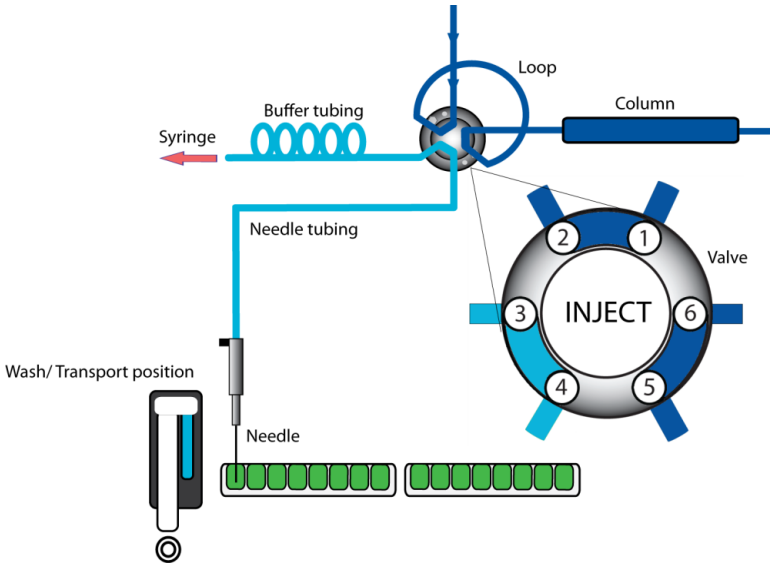
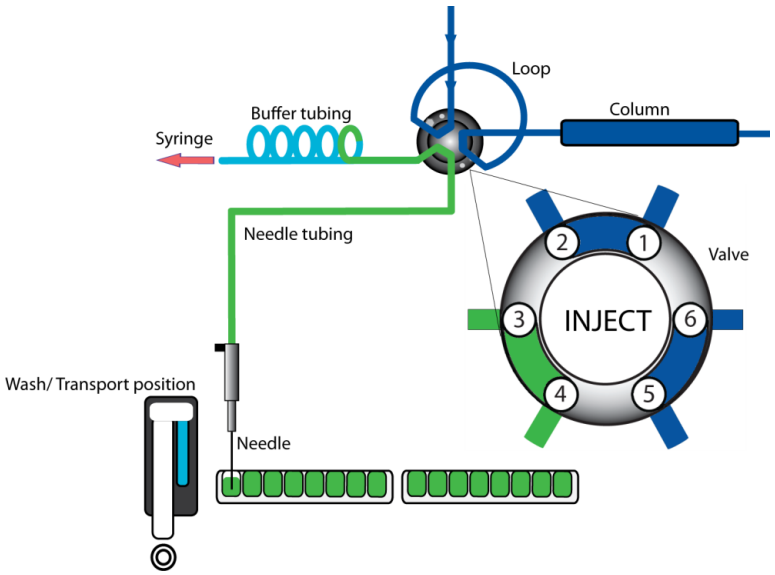


Figure 13 Full loop injection

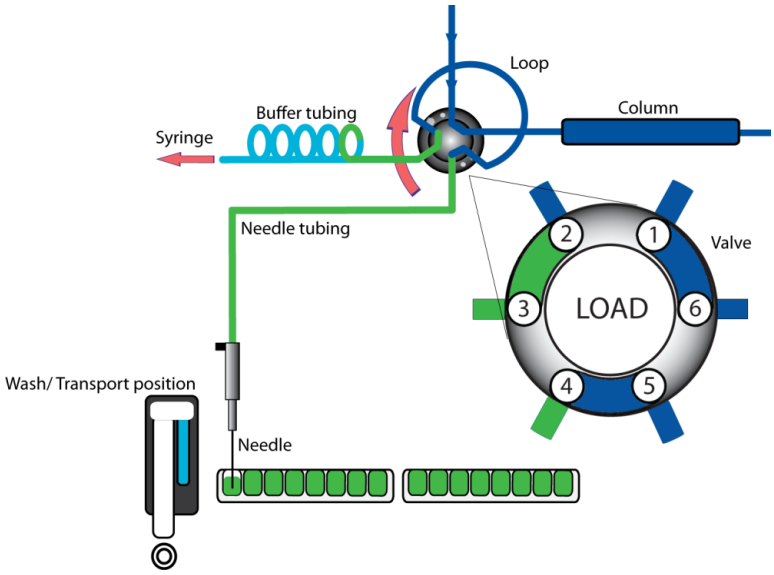
The injection valve is in **INJECT** position. The sample needle penetrates the vial with the air needle. An overpressure channeled in through the air needle ensures that no air or steam bubbles form during the aspiration of the sample.

2 Rinsing the aspirating line



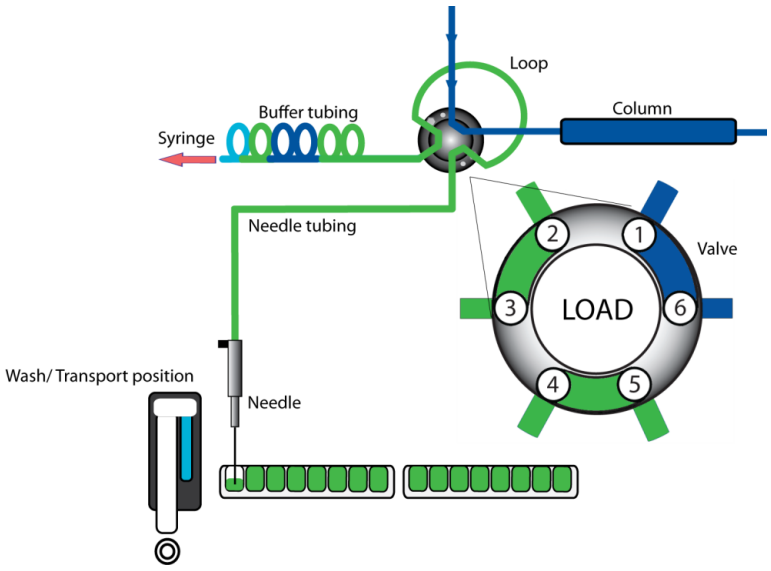
The syringe aspirates a rinsing volume of sample solution out of the sample vial and fills the sample line with sample. The rinsing liquid is expelled.

3 Switching the injection valve to LOAD



The injection valve is switched over to the **LOAD** position. This causes an homogenous sample plug to be present at the inlet to the sample loop.

4 Filling the sample loop

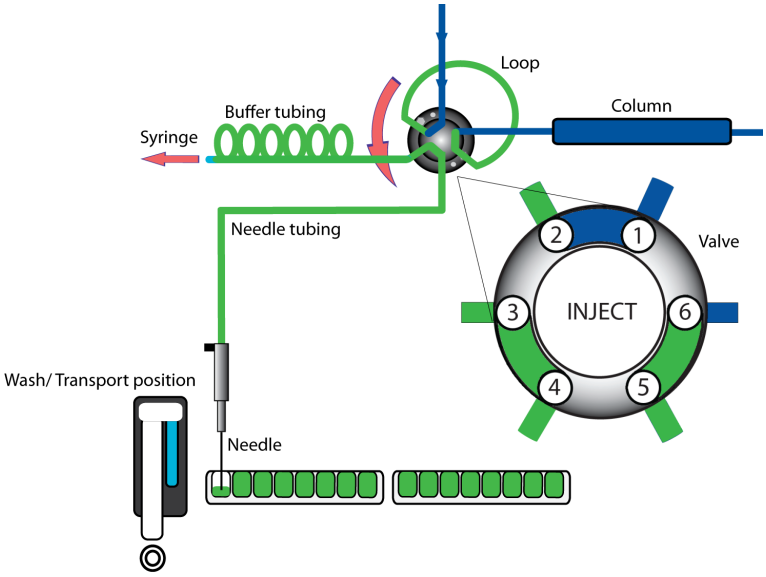


The sample loop is quantitatively filled by a multiple of the loop volume being pumped through the loop.

- 3 × loop volume with sample loops ≤ 100 µL

- 2 × loop volume with sample loops 100...500 µL
- 1.5 × loop volume with sample loops ≥ 500 µL

5 Switching the injection valve to INJECT



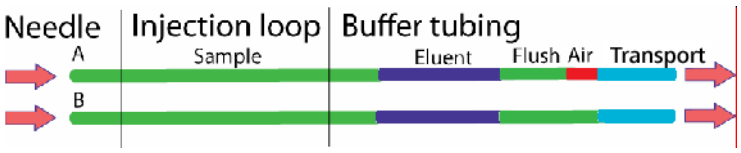
The injection valve switches to the **INJECT** position. The sample loop is now part of the flow path of the eluent; the sample is transported to the separation column. The determination is started.

A washing cycle is performed after each injection.

Air segment with the full loop injection

A 5 µL air segment can be used in order to reduce the necessary volume of sample solution. The air segment must be located at the head of the rinsing volume and will not be injected.

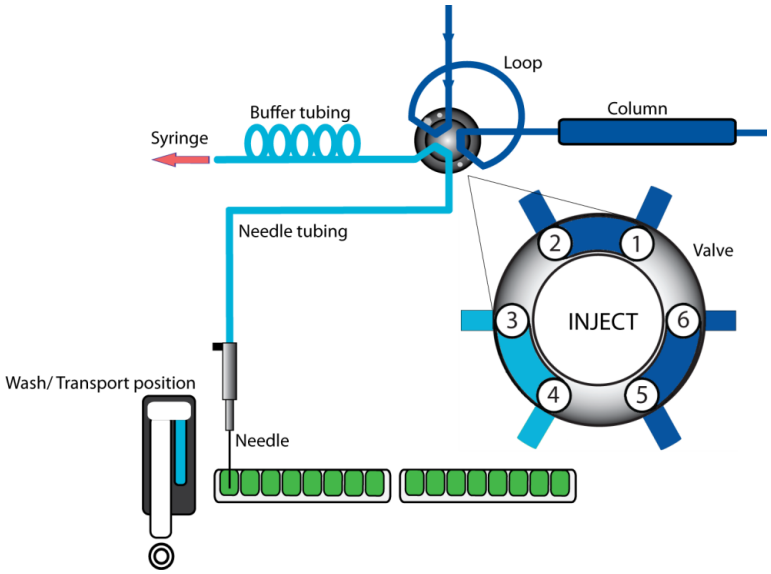
In the case of a standard needle, the rinsing volume with air segment must be at least 30 µL for one injection, and at least 35 µL for injections without air segments. In the case of high-viscosity samples, larger rinsing volumes must be programmed and the speed of the syringe stroke must be reduced in order to improve reproducibility.



4.4 Partial loopfill injection

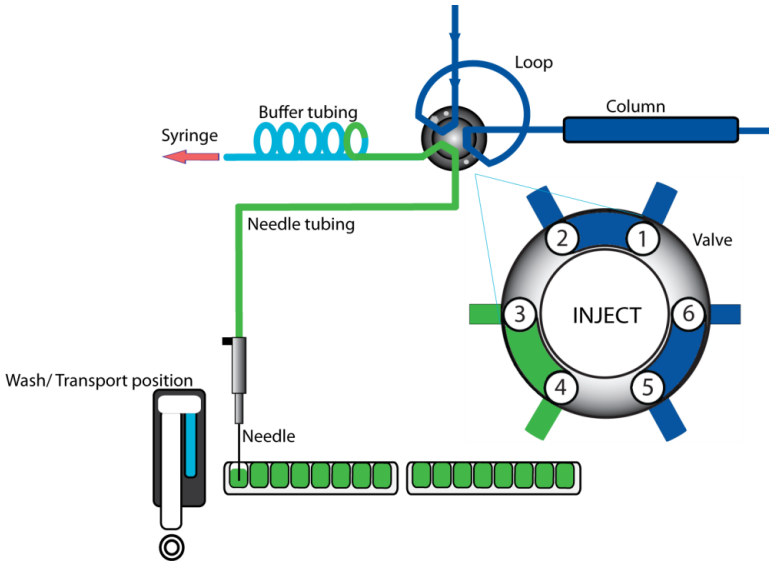
The switchover sequence for the partial loopfill injection is as follows:

1 Initial situation



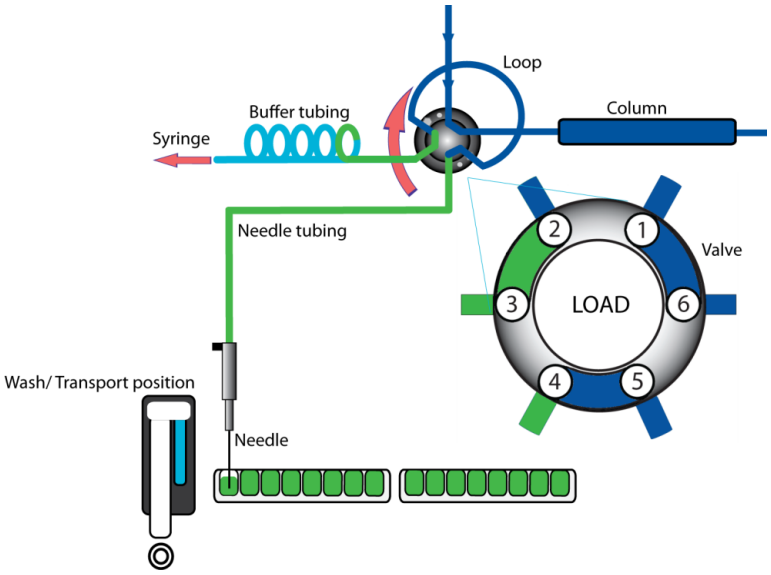
The injection valve is in **INJECT** position. The sample needle penetrates the vial with the air needle. An overpressure channeled in through the air needle ensures that no air or steam bubbles form during the aspiration of the sample.

2 Rinsing the aspirating line



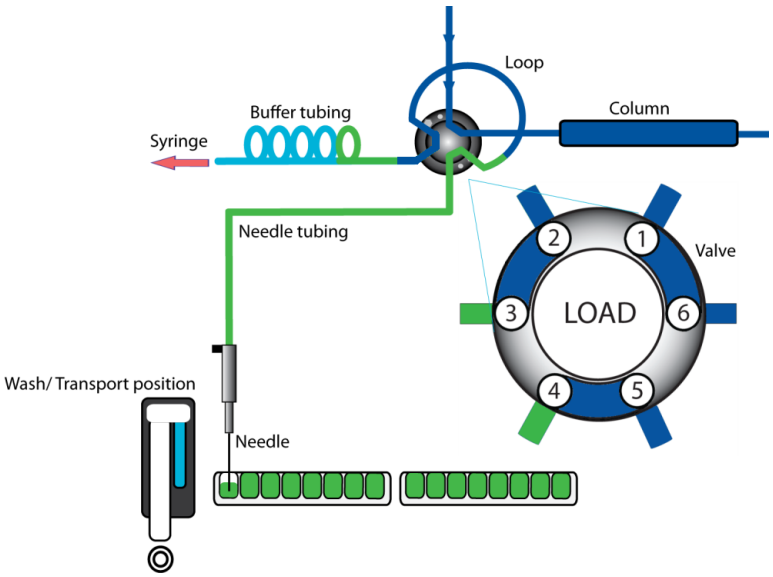
The syringe aspirates a rinsing volume of sample solution out of the sample vial and fills the sample line with sample. The rinsing liquid is expelled.

3 Switching the injection valve to LOAD



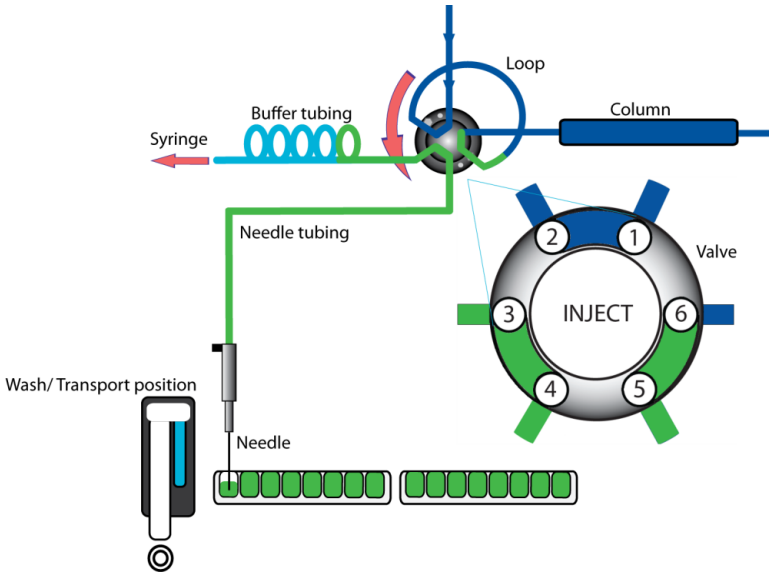
The injection valve is switched over to the **LOAD** position. This causes an homogenous sample plug to be present at the inlet to the sample loop.

4 Filling the sample loop partially



The programmed injection volume is now aspirated into the sample loop.

5 **Switching the injection valve to INJECT**

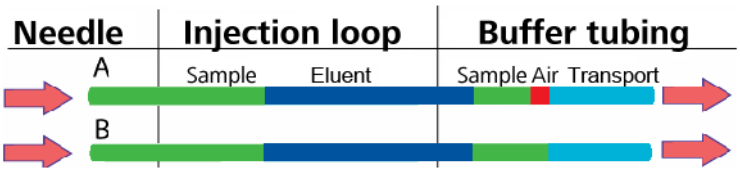


The injection valve switches to the **INJECT** position. The sample loop is now part of the flow path of the eluent; the sample is transported to the separation column. The determination is started.

Air segment with the partial loopfill injection

An air segment can be used in order to reduce the necessary volume of sample solution. The air segment must be located at the head of the rinsing volume and will not be injected.

In the case of a standard needle, the rinsing volume with air segment must be at least 30 µL for one injection, and at least 35 µL for injections without air segments. In the case of high-viscosity samples, larger rinsing volumes must be programmed and the rate of the syringe stroke must be reduced in order to improve reproducibility.

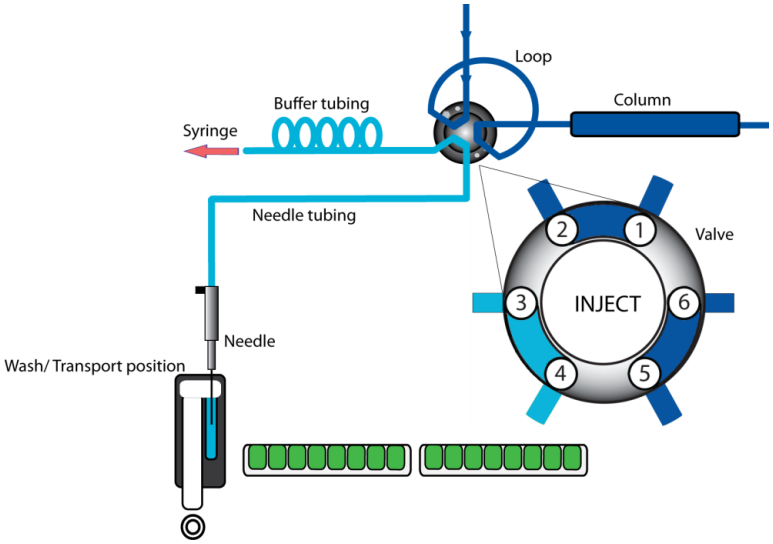


4.5 Pickup injection

The switchover sequence for the pickup injection is as follows:

Initial situation

1



The injection valve is in **INJECT** position. The sample needle is in washing position.

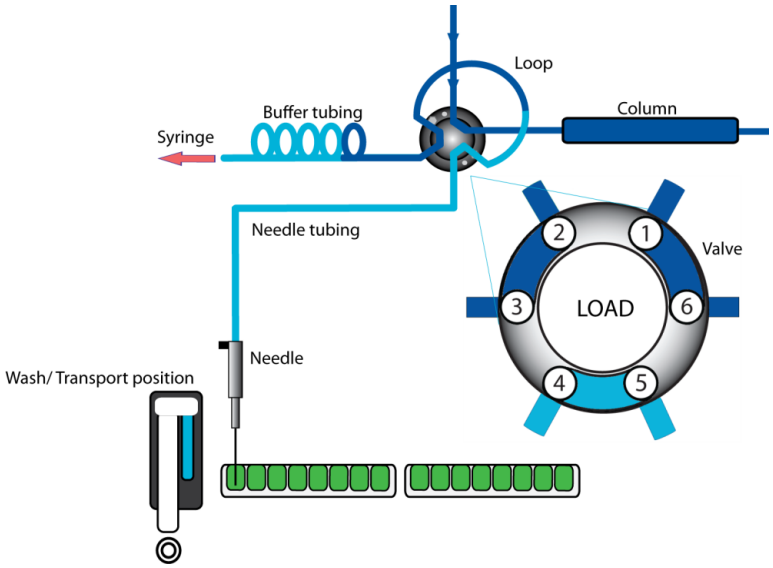
2 Rinsing the washing reservoir

The washing reservoir is filled several times (the number of times can be programmed) with the syringe volume. This takes place after a washing sequence or after the buffer tubing has been emptied. The injection valve remains in INJECT position. Note that the transport solution must be compatible with the eluent.

3 Filling the aspirating line with transport solution

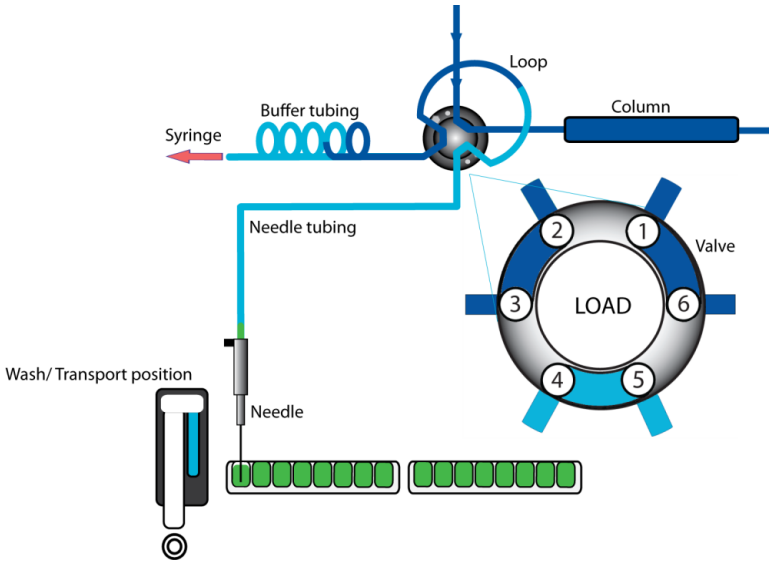
For the first injection, the syringe aspirates a segment of transport solution in order to fill the sample line with transport solution.

4 Switching the injection valve to LOAD



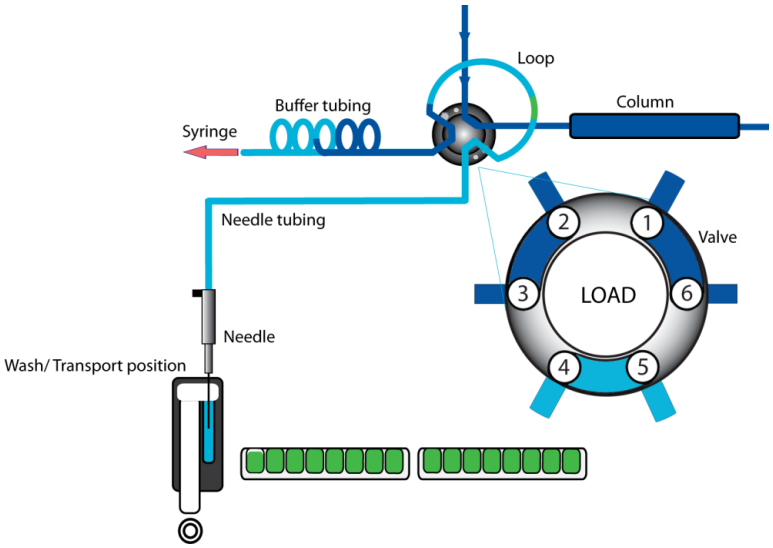
The needles switches from the washing position to the sample vial.
The injection valve switches to the **LOAD** position.

5 Aspirating sample



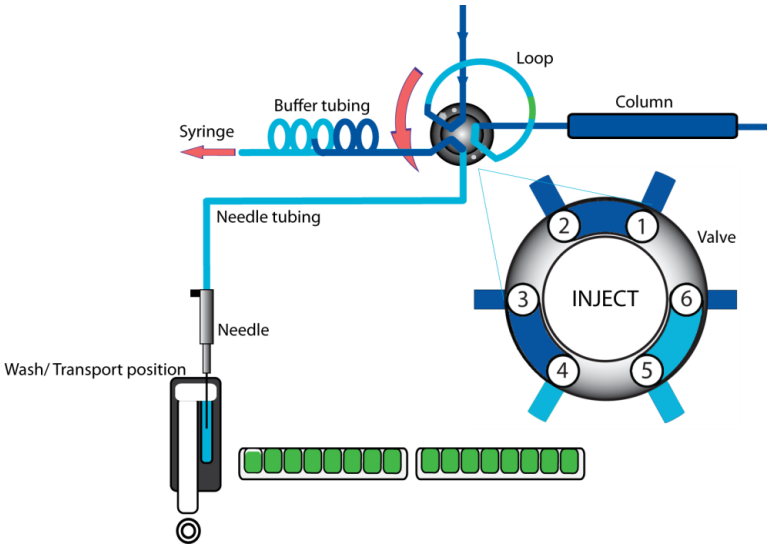
The programmed injection volume is aspirated from the sample vial.

6 Transporting sample into the sample loop



The sample needle moves back to the washing position. A second segment of transport solution is aspirated. The sample is transported quantitatively into the sample loop.

7 Switching the injection valve to INJECT



The injection valve switches to the **INJECT** position. The sample loop is now part of the flow path of the eluent; the sample is transported to the separation column. The determination is started.

This sequence is repeated for each injection.

Air segment in the pickup injection

If an air segment was programmed, this will appear at the beginning of the first segment of the transport solution and at the beginning of each sample segment.

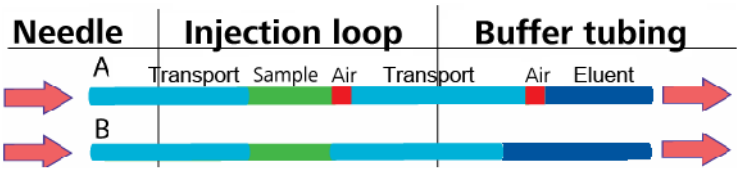
The following is to be observed for this injection technique:

Note

The air segment at the beginning of the sample segment is injected onto the separation column.

Note

No overpressure is permitted to be applied in the sample vessel, because the air segment would expand during the change from sample position to transport position. This could lead to a considerable error with respect to the injection volume of the sample.



5 Handling and maintenance

5.1 General

The 889 IC Sample Center requires appropriate care. Excess contamination of the instrument may result in functional disruptions and a reduction in the service life of the sturdy mechanics and electronics of the instrument.

Severe contamination can also have an influence on the measured results. Regular cleaning of exposed parts can prevent this to a large extent.

Spilled chemicals and solvents must be removed immediately. In particular, the mains plug should be protected from contamination.

Note

It is not necessary to disconnect the device from the electricity source for care and maintenance work. This means that it is possible to continue to operate the device with the control software. Use **Manual operation** in MagIC Net™ to check the functioning of the individual device components.

5.2 Care

The following applies for all care and maintenance work:

1. Open the door of the 889 IC Sample Center.
2. If the cooling option is installed, remove the covering of the cooling option by pulling it towards the front.
3. Press the two buttons on the sides of the device simultaneously.
4. Remove the covering by pulling towards the front.

5.2.1 Cleaning in general

Generally speaking, the 889 IC Sample Center requires little upkeep. Clean the outside of the housing with a soft cloth and a mild cleaning fluid. Other parts which require regular care include:

- **Valve drip pan**. A special drip pan is fitted underneath the injection valve. Clean this with a soft cloth and a mild cleaning fluid.

- **Sample rack**. If sample has been spilled on the sample rack, clean this with a soft cloth and a mild cleaning fluid.
- **Drainage lines**. Rinse the drainage tubing regularly in order to prevent blockage and to ensure the drainage of liquids and condensation water.

5.3 Maintenance and service

5.3.1 Sample loop

The 889 IC Sample Center is equipped as standard with a 100 µL sample loop. Other sample loops can be mounted. Please note however that the correct combination of syringe and buffer loop is required in order to achieve good results.

Observe the following when mounting a sample loop:

- Mount the sample loop at Port 2 and Port 5 of the injection valve.
- Adjust the configuration settings in the control software for the changed sample loop volume.

Note

The maximum injection volume is calculated in accordance with the following formulas:

Full loop: Injection volume = Loop volume

Partial loopfill: max. injection volume = 0.5 × loop volume

µL Pickup: max. injection volume = (loop volume – 3 × needle volume) / 2

5.3.2 Replacing the sample needle

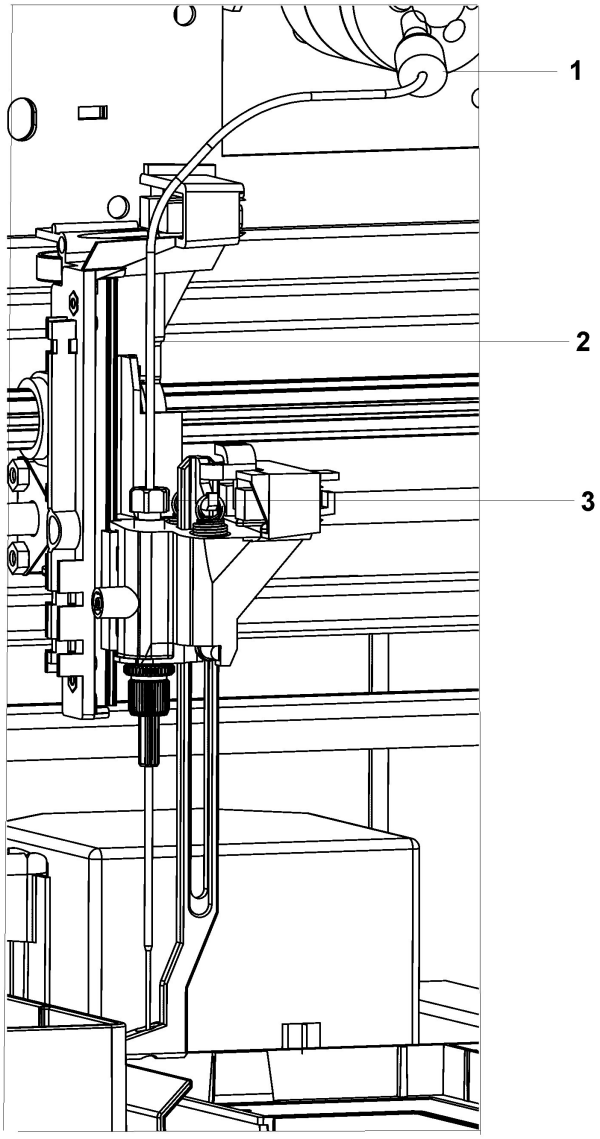


Figure 14 Replacing the sample needle

Replace the sample needle as follows:

1. Open the **Manual control** in MagIC Net™ .
2. Under device selection, **889 IC Sample Center**, select the tab **Needle**. Under Position/Input, select **Exchange** position and click on **[Start]**.

   Now a message window is displayed.
3. Remove the sample rack and click on **[OK]**.

The needle moves into the exchange position.

4 Open the door of the 889 IC Sample Center.

5 If working with the cooling option, remove the covering of the cooling option by pulling it towards the front.

6 Press the two buttons on the sides of the device simultaneously.

7 Remove the covering by pulling towards the front.

8 Loosen the nut **3** of the capillary connection.

9 Undo the tubing connection at Port 4 on the injection valve.

10 Remove the sample needle by pulling it upward and out of its seat.

11 Load a new sample needle. Ensure while doing so that the seal surrounds the needle.

12 Tighten the sample needle with the connection nut.

13 Mount the other end of the capillary connection to port 4 of the injection valve. Do not screw too tightly. This may block the tubing connection.

14 Put the device covering back into position.

15 If working with the cooling option, replace the covering of the cooling option.

16 Close the door of the 889 IC Sample Center.

17 Select the **General** tab in the manual control and start the **Reset device** function.

The sample needle moves back to the starting position.

Note

If you are using the sample racks with 12 or 48 vials, then you must adjust the setting of the needle height to > 2 mm. This will prevent the needle from touching the bottom of the vial.

18 Perform a rinsing procedure in order to clean the new needle. Start the **Wash** function. To interrupt the rinsing procedure, click on **Stop**.

19 **Note**

The needle settings may need to be adjusted.

In MagIC Net™, open the configuration settings of the **889 IC Sample Center** and select the **Needle** tab.

Perform the necessary setting.

5.3.3 Replacing the air needle

Replace the air needle as follows:

1 Replace the sample needle, *(see Chapter 5.3.2, page 33)*.

2 Undo the fastening nut (made of chrome) for the air needle.

3 Undo the fastening nut (made of chrome) for the adjusting screw.

4 Remove the air needle.

5 Tighten the height adjustment nut on the fixing nut (made of chrome). The thread of the height adjustment nut must match the lower part of the fixing nut. The O-ring must be properly seated in the fixing nut.

6 Insert the air needle.

7 Mount the sample needle.

8 Select the correct needle height for the new needle in the manual operation feature of MagIC Net™ on the **Needle** tab.

Note

If you are using the sample racks with 12 or 48 vials, then you must adjust the setting of the needle height to > 2 mm. This will prevent the needle from touching the bottom of the vial.

9 Perform a rinsing procedure in order to clean the new needle. On the **General** tab, under **Wash**, click on **Start**. To interrupt the rinsing procedure, click on **Stop**.

5.3.4 Replacing the fuses

The fuses installed in the 889 IC Sample Center are of the type

2 × 2.5 A

Warning

The device must be disconnected from the electricity source before the fuses are replaced.

Make sure that the fuses to be installed correspond to the correct type and the correct power load.

The fuses are located in the fuse holder at the rear of the device.

Note

Contact a service technician in the event of repeated problems with the fuses.

5.4 Quality Management and validation with Metrohm

Quality Management

Metrohm offers you comprehensive support in implementing quality management measures for instruments and software. Further information on this can be found in the brochure **«Quality Management with Metrohm»** available from your local Metrohm agent.

Validation

Please contact your local Metrohm agent for support in validating instruments and software. Here you can also obtain validation documentation to provide help for carrying out the **Installation Qualification** (IQ) and the **Operational Qualification** (OQ). IQ and OQ are also offered as a service by the Metrohm agents. In addition, various application bulletins are also available on the subject, which also contain **Standard Operating Procedures** (SOP) for testing analytical measuring instruments for reproducibility and correctness.

Maintenance

Electronic and mechanical functional groups in Metrohm instruments can and should be checked as part of regular maintenance by specialist personnel from Metrohm. Please ask your local Metrohm agent regarding the precise terms and conditions involved in concluding a corresponding maintenance agreement.

Note

You can find information on the subjects of quality management, validation and maintenance as well as an overview of the documents currently available at *www.metrohm.com/com/* under **Support**.

6 Troubleshooting

The 889 IC Sample Center is controlled by the MagIC Net™ PC software. If a problem occurs which is directly related to the 889 IC Sample Center, then an error number will be identified in a message window. The significance of the error numbers is listed in the following chapter.

6.1 Error list

6.1.1 Rack unit

Problem	Cause	Remedy
Error 294	*The Home sensor of the rack holder has not been activated.*	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 295	*The current position of the rack holder deviates more than 2 mm from the Home position.*	1. Switch off sample changer. 2. Slide the rack holder carefully back and forth and remove possible obstacles. 3. If possible, slide the rack holder backwards right to the stop. 4. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 296	*The Home sensor has not been deactivated.*	▪ If in one of the following steps the rack holder has to be moved: first switch off the sample changer. ▪ Ensure that the transport safeguard (foam material) has been removed from the sample chamber. ▪ Remove other possible obstacles in the area of the rack holder. If the error occurs again, please call the Metrohm Service.

Problem	Cause	Remedy
Error 297	*The Home sensor of the rack holder has unexpectedly been activated.*	Call the Metrohm Service.
Error 298	*The rack is located in an undefined position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.

6.1.2 Needle unit

Problem	Cause	Remedy
Error 303	*The needle is located in an undefined horizontal position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 304	*The Home sensor for the horizontal movement of the needle has not been activated.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 306	*The Home sensor for the horizontal movement of the needle has not been deactivated.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 307	*The Home sensor for the horizontal movement of the needle has unexpectedly been activated.*	Call the Metrohm Service.
Error 308	*In order to reach the horizontal Home position of the needle, the expected number of steps has not been carried out.*	1. Check whether the horizontal movement of the needle is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 312	*The needle is located in an undefined vertical position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer.

Problem	Cause	Remedy
		If the error occurs again, please call the Metrohm Service.
Error 313	*The Home sensor for the vertical movement of the needle has not been activated.*	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 315	*The Home sensor for the vertical movement of the needle has not been deactivated.*	1. Check whether the vertical movement of the needle unit is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 316	*The Home sensor for the vertical movement of the needle has been unexpectedly activated.*	Call the Metrohm Service.
Error 317	*When moving the needle unit vertically the needle deflector has not recognized a rack, nor a wash or waste position.*	If the error has occurred during moving to a rack position: ensure that there is a rack with vials or a micro titer plate on the rack holder. If the error occurs again, please call the Metrohm Service.
Error 318	*When moving the needle unit vertically the needle deflector is blocked.*	1. Check whether the movement of the needle deflector is obstructed. 2. If possible, remove possible obstacles. If the error occurs again, please call the Metrohm Service.
Error 319	*The sample needle arm is located in an undefined vertical position.*	Call the Metrohm Service.

6.1.3 Syringe unit

Problem	Cause	Remedy
Error 324	*The syringe valve has not reached the required port.*	Call the Metrohm Service.
Error 330	*The Home sensor of the syringe has not been activated.*	1. Check whether the flow path is kinked or blocked in on one or more places. 2. If possible, free the flow path of blockages.

Problem	Cause	Remedy
		If the error occurs again, please call the Metrohm Service.
Error 331	*The Home sensor of the syringe has unexpectedly been activated.*	Call the Metrohm Service.
Error 332	*The required load volume of the syringe is too high.*	The permitted load volume is limited by the maximum syringe volume. The load volume currently possible depends additionally on the current position of the syringe plunger. ▪ Ensure that the required load volume of the syringe is lower or the same as the maximum syringe volume. ▪ Check whether the required load volume can be reached from the current position of the syringe piston. ▪ Before loading the syringe eject enough volume first or enter a lower load volume.
Error 333	*The required unload volume of the syringe is too high.*	The permitted unload volume is limited by the maximum syringe volume. The unload volume currently possible depends additionally on the current position of the syringe plunger. ▪ Ensure that the required unload volume of the syringe is lower or the same as the maximum syringe volume. ▪ Check whether the required unload volume is possible assuming the current position of the syringe piston. ▪ Before unloading the syringe aspirate enough volume first or enter a lower unload volume.
Error 334	*The syringe plunger is located in an undefined position.*	Carry out the function **[Reset device]** in the Manual Control of the sample changer. If the error occurs again, please call the Metrohm Service.
Error 335	*The spindle of the syringe cannot be rotated correctly.*	1. Check whether the flow path is kinked or blocked in on one or more places. 2. If possible, free the flow path of blockages. If the error occurs again, please call the Metrohm Service.

6.1.4 Injection valve unit

Problem	Cause	Remedy
Error 340	*The injection valve has not reached the required port.*	Call the Metrohm Service.
Error 341	*The consumption warning limit of the injection valve has been reached.*	Call the Metrohm Service.
Error 342	*The sensor of the injection valve has provided an unexpected value.*	Call the Metrohm Service.

6.1.5 Cooling unit

Problem	Cause	Remedy
Error 347	*When switching on the cooling a temperature of over 48 °C has been measured.*	Have a look at the technical specifications in the device manual of the sample changer and ensure that the range of the operating temperature has not been exceeded.

6.1.6 Electronics

Problem	Cause	Remedy
Error 280, 282, 283, 284	*An electronic error has occurred in the EEPROM.*	1. Switch off sample changer. 2. Wait a few seconds. 3. Switch on sample changer. If the error occurs again, please call the Metrohm Service.
Error 290	*When initializing the sample changer at least one critical malfunction has been found. No injections can be carried out.*	1. Exit MagIC Net. 2. Switch off sample changer. 3. Ensure that the cable between the sample changer and the PC is connected correctly. 4. Switch on sample changer. 5. Start MagIC Net. If the error occurs again, please call the Metrohm Service.

6.2 Analytical problems

Analytical problems such as poor reproducibility and carry-over can occur in any chromatography system. The cause is usually difficult to find. First of all, you should attempt to determine whether the problem is caused by the Autosampler or another component of the system.

Please take into consideration the fact that analytical problems can also be caused by external influences such as temperature or light-sensitive sample. Make sure that the application was able to be performed previously without problems and that no changes have been made to the system.

Some causes and possible solutions for analytical problems are listed below. Contact your service point for additional help.

6.2.1 Autosampler

Problem	Cause	Remedy
The reproducibility does not correspond to the specifications.	*There is air in the flow path.*	Carry out a standard washing procedure (in MagIC Net™ under **Manual control**).
	The syringe is leaking.	▪ If the leakage occurs on the upper end of the syringe, check the correct assembly of the syringe. ▪ If the leakage occurs on the lower end of the syringe, replace the piston tip or the entire syringe.
	The syringe valve is leaking.	Check the valve or replace it.
	The rotor seal is worn out.	Replace the seal and check the stator.
	There is a dead volume in the tubing connections.	Reinstall the connections with new pressure screws.
	There is air in the syringe.	Rinse the syringe *(see Chapter 3.6, page 18)*.
A peak which is too high occurs with a blank.	*The sample properties and the hardware do not correspond.*	Check the hardware: ▪ Needle — Carry out the standard washing procedure (in order to rinse the needle on the in- and the outside). ▪ Valve — Replace rotor by another type. ▪ Capillary connections — Replace capillary between Autosampler and column or use another washing solution.

Problem	Cause	Remedy
	The blank is contaminated.	▪ Use a new blank. ▪ Do not fill the sample vessel completely in order to avoid contamination of the air needle.
	The cause is not clear.	Examine the problem more closely by varying the washing solution.
There is no injection.	*The flow path is blocked.*	1. Loosen the needle from the valve. 2. Carry out a standard washing procedure. 3. If washing solution is flowing out of the injection port, check the needle. If no washing solution is flowing out of the injection port, remove the buffer tubing from the valve. 4. Carry out a standard washing procedure. 5. If washing solution is flowing out of the open end, check the rotor seal. If not, then check the entire flow path to determine whether the connections have been tightened too firmly. If the problem persists, undo the buffer tubing from the syringe valve. 6. Carry out a standard washing procedure. 7. If washing solution is flowing out of the syringe valve, check the buffer tubing. If not, check the syringe valve.
	The injection valve is leaking.	1. Remove the needle connection and the buffer tubing. 2. Connect the injection port 1 to a high pressure pump. 3. Seal port 6. 4. Start the pump with a low flow rate. 5. Check port 3 and 4 for leakage. 6. If the ports 3 and 4 are leaking, check the rotor sealing. If not, manually test the valve again.

Warning

Observe the maximum pressure of 350 bar in order to avoid any valve leakage.

7 Appendix

7.1 Samples and sample vials

Note the following points:

- The following types of racks or micro titer plates are supported:
  - 12 samples
  - 48 samples
  - 96 samples (low form, low)
  - 96 samples (high form, high)
  - 384 samples (low form, low)
- Fill the standard vials with a pipette in order to ensure that any air bubbles that may appear can escape during filling.
- Do not fill sample vessels up to the edge. Doing so would cause the sample liquid to be pressed into the air needle. This could cause a cross-contamination of the samples and a contamination of the needle.
- It is important that the sealing caps and septa be air-tight in order to prevent the formation of air bubbles and the evaporation of volatile samples.
  We recommend the following types of seals:
  - For standard micro titer plates (low) sealing tape
  - For deep well plates (high): pierceable sealing mats (pre-slit or made of silicone) or sealing tape
  - For vials: thin standard septa; no vials with hard caps which are not designed for being punctured by an injection needle.
- If you use unsealed vials or micro titer plates, the precision of the injection will not be in accordance with the specifications.

7.2 I/O interface

Caution

The manufacturer assumes no liability for damage which is either directly or indirectly caused by connections between the 889 IC Sample Center and devices which do not meet the relevant safety standards.

7.2.1 Properties of the I/O interface

When the injection valve switches from **LOAD** to **INJECT**, an **Inject Marker** signal (Contact closure) will be generated at the output lines of the I/O interface for 0.1…2.0 s.

- $V_{max} = 28\ V_{DC}/V_{AC}$
- $I_{max} = 0.25\ A$

7.2.2 Pin assignment of the remote interface

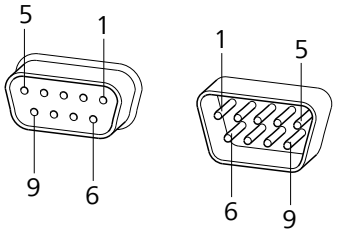
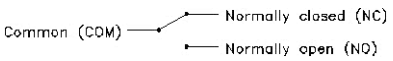


Figure 15 Pin assignment of I/O socket and plug

Table 1 Inputs and outputs of the I/O interface

Pin No.	Assigment
1	Output - Common (COM)
2	Output - Normally open (NO)
3	Input 1 (TTL)
4	Input 2 (TTL)
5	GND
6	Output - Normally close (NC)
7	+5 volts
8	GND
9	GND



8 Technical specifications

8.1 General

Noise pressure level	L_{eq} < 70 dB
Safety and EMC compatibility	According to CE guidelines, CSA (UL) certified
Altitude	up to 2000 m above sea level.
Maximum weight load	65 kg
Viscosity range	0.1…5 cP

8.2 Sampling

Sample capacity	2 micro titer plates according to the SBS standard, with 96 cavities (high/low shape) and 384 cavities (low shape), 48 vial- or 12 vial-racks.
Vial/plate dimensions (including cover)	Maximum plate/vial height: 47 mm (including septum or cap)
Sample loop volume	1…5000 µL programmable, 10 mL sample loop optional
Dispensing syringe	500 µL standard
Vial recognition	Sensor for missing vials
Headspace pressure	Built-in compressor, only for vials with septum
Switching time of the injection valve	electrical < 100 ms
Needle puncture accuracy	± 0.6 mm
Washing solution	Integrated container for the washing solution
Moistened materials in the flow path	PTFE, TEFZEL, PEEK
Injection cycle time	< 60 s, in all injection modes for 1 injection≤ 100 µL including 300 µL wash cycle

8.3 Analytical characteristics

Injection modes	Full-Loop, Partial Loopfill, Pickup mode, PASA™ (pressure-assisted sample aspiration)
Reproducibility	Relative standard deviation ≤ 0.3% for the Full-Loop injection. Relative standard deviation ≤ 0.5% for the Partial Loopfill injection, injection volume > 10 µL. Relative standard deviation ≤ 1.0% for the Pickup injection, injection volume > 10 µL.
Memory effect	< 0.05 % with programmable needle rinsing

8.4 Programming

Injection modes	Full-Loop, Partial Loopfill, Pickup Mode
Injection volume	1…5000 µL (with 1 µL increment), depending on the system settings.
Max. injection volume	▪ Full Loop = Sample loop volume ▪ Partial Loopfill = 0.5 x Sample loop volume ▪ Pickup = (Sample loop volume - 3 x Needle volume)/2

8.5 Interfaces

Output signal	1 programmable relay outlet as injection mark
Data interface	USB connector, type B (for the connection to a PC)

8.6 Options (pre-installed)

Cooling for the sample rack	Built-in Peltier element Range: 4 °C to 3 °C below ambient temperature Air temperature in the sample vessel: 4 °C ±2 °C (at the temperature sensor) (Temperature at 80% relative humidity and ambient temperature of 25°C)

8.7 Mains connection

Voltage	100…240 V ±10 %
Frequency	50 / 60 Hz
Power consumption	200 VA
Fuse	2.5 ATH

8.8 Safety specifications

Design and testing	According to EN/IEC 61010-1, UL 61010-1, CAN/CSA-C22.2 No. 61010-1, protection class **I**.
Safety instructions	This document contains safety instructions which have to be followed by the user in order to ensure safe operation of the instrument.

8.9 Electromagnetic compatibility (EMC)

Emission

Standards fulfilled:

- EN/IEC 61326-1
- EN/IEC 61000-6-3
- FCC 47 CFR Part 15
- EN/IEC 61000-3-2
- EN/IEC 61000-3-3

Immunity

Standards fulfilled:

- EN/IEC 61326-1
- EN/IEC 61000-6-2
- EN/IEC 61000-4-2
- EN/IEC 61000-4-3
- EN/IEC 61000-4-4
- EN/IEC 61000-4-5
- EN/IEC 61000-4-6
- EN/IEC 61000-4-8
- EN/IEC 61000-4-11

8.10 Ambient temperature

Nominal function range	+10…+40 °C
Humidity	20…80 % relative humidity
Storage	-25…+60 °C

8.11 Dimensions

Width	300 mm
Height	360 mm
Depth	
1.889.0010	510 mm
1.889.0020	575 mm
Weight	
1.889.0010	19 kg
1.889.0020	21 kg
Material of housing	
Cover	Steel
Base	Steel
Side panels	PC/ABS (UL 94 V0)
Front	PC/ABS (UL 94 V0)
Panes	PMMA

9 Conformity and warranty

9.1 Declaration of Conformity

This is to certify the conformity to the standard specifications for electrical appliances and accessories, as well as to the standard specifications for security and to system validation issued by the manufacturing company.

Name of commodity

889 IC Sample Center

Autosampler for usage in ion chromatography systems.

This instrument has been built and has undergone final type testing according to the standards:

Electromagnetic compatibility

Emission:	EN/IEC 61326-1: 2006, EN/IEC 61000-6-3: 2006, EN 55011: 2007, FCC 47 CFR Part 15, EN/IEC 61000-3-2: 2006, EN/IEC 61000-3-3: 2005
Immunity:	EN/IEC 61326-1: 2006, EN/IEC 61000-6-2: 2005, EN/IEC 61000-4-2: 2001, EN/IEC 61000-4-3: 2006, EN/IEC 61000-4-4: 2004, EN/IEC 61000-4-5: 2001, EN/IEC 61000-4-6: 2001, EN/IEC 61000-4-8: 2001, EN/IEC 61000-4-11: 2004

Safety specifications

EN/IEC 61010-1: 2001, UL 61010-1: 2004, CAN/CSA-C22.2 No. 61010-1: 2004, protection class I

CE

This instrument meets the requirements of the CE mark as contained in the EU directives 2006/95/EC (LVD), 2004/108/EC (EMC). It fulfils the following specifications:

EN 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements
EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use

Manufacturer

Metrohm Ltd., CH-9101 Herisau/Switzerland

Metrohm Ltd. is holder of the SQS certificate ISO 9001:2000 Quality management system for development, production and sales of instruments and accessories for ion analysis.

Herisau, 10 Mai, 2009

D. Strohm

Vice President, Head of R&D

A. Dellenbach

Head of Quality Management

9.2 Warranty (guarantee)

Metrohm guarantees that the deliveries and services it provides are free from material, design or manufacturing errors. The warranty period is 36 months from the day of delivery; for day and night operation it is 18 months. The warranty remains valid on condition that the service is provided by an authorized Metrohm service organization.

Glass breakage is excluded from the warranty for electrodes and other glassware. The warranty for the accuracy corresponds to the technical specifications given in this manual. For components from third parties that make up a considerable part of our instrument, the manufacturer's warranty provisions apply. Warranty claims cannot be pursued if the Customer has not complied with the obligations to make payment on time.

During the warranty period Metrohm undertakes, at its own choice, to either repair at its own premises, free of charge, any instruments that can be shown to be faulty or to replace them. Transport costs are to the Customer's account.

Faults arising from circumstances that are not the responsibility of Metrohm, such as improper storage or improper use, etc. are expressly excluded from the warranty.

9.3 Quality Management Principles

Metrohm Ltd. holds the ISO 9001:2000 Certificate, registration number 10872-02, issued by SQS (Swiss Association for Quality and Management Systems). Internal and external audits are carried out periodically to assure that the standards defined by Metrohm's QM Manual are maintained.

The steps involved in the design, manufacture and servicing of instruments are fully documented and the resulting reports are archived for ten years. The development of software for PCs and instruments is also duly documented and the documents and source codes are archived. Both remain the possession of Metrohm. A non-disclosure agreement may be asked to be provided by those requiring access to them.

The implementation of the ISO 9001:2000 quality management system is described in Metrohm's QM Manual, which comprises detailed instructions on the following fields of activity:

Instrument development

The organization of the instrument design, its planning and the intermediate controls are fully documented and traceable. Laboratory testing accompanies all phases of instrument development.

Software development

Software development occurs in terms of the software life cycle. Tests are performed to detect programming errors and to assess the program's functionality in a laboratory environment.

Components

All components used in the Metrohm instruments have to satisfy the quality standards that are defined and implemented for our products. Suppliers of components are audited by Metrohm as the need arises.

Manufacture

The measures put into practice in the production of our instruments guarantee a constant quality standard. Production planning and manufacturing procedures, maintenance of production means and testing of components, intermediate and finished products are prescribed.

Customer support and service

Customer support involves all phases of instrument acquisition and use by the customer, i.e. consulting to define the adequate equipment for the analytical problem at hand, delivery of the equipment, user manuals, training, after-sales service and processing of customer complaints. The Metrohm service organization is equipped to support customers in implementing standards such as GLP, GMP, ISO 900X, in performing Opera-

tional Qualification and Performance Verification of the system components or in carrying out the System Validation for the quantitative determination of a substance in a given matrix.

10 Accessories

Note

Subject to change without notice.

10.1 Scope of delivery 2.889.0010

Qty.	Order no.	Description
1	1.889.0010	**IC Sample Center**
1	6.1608.110	**Wash bottle 250 mL to IC Sample Center** Bottle for washing solution in the IC Sample Center.
1	6.1807.010	**Y-connector for tubing 6-9 mm i.d.** Connector for waste tubing 
2	6.1816.070	**Silicon tubing 8 mm i.d. /1 m** For the Sample Center 
1	6.1831.010	**PEEK capillary 0.25 mm i.d. / 3 m** For all IC components. Material: PEEK Outer diameter (inches): 1/16 Inner diameter (mm): 0.25 Length (m): 3 

Qty.	Order no.	Description
2	6.2041.200	**Sample rack 48 x 11 mm to IC Sample Center** Sample rack for the IC Sample Center with 48 sample positions. For sample vials 6.2743.1xx
1	6.2151.020	**Cable USB A - USB B 1.8 m** USB connecting cable Length (m): 1.8
1	6.2743.107	**PP Vials 0.7 mL to 889, 100 pcs** 100 sample vials.
1	6.2743.127	**Septum to 6.2743.1XX Si/PTFE 100 pcs** 100 pieces
1	6.2744.010	**Pressure screw 5x** With UNF 10/32 connection. For the connection of PEEK capillaries Material: PEEK Length (mm): 26
1	6.2816.200	**Air needle 80 mm, black** To IC Sample Center
1	6.2122.0x0	**Mains cable with C13 line socket IEC-60320-C13** Cable plug according to customer requirements. Switzerland: Type SEV 12 6.2122.020 Germany, …: Type CEE(7), VII 6.2122.040 USA, …: Type NEMA/ASA 6.2122.070
2	U.600.0020	**Microfuse**
1	8.889.8001EN	**Manual 889 IC Sample Center**

10.2 Scope of delivery 2.889.0020

Qty.	Order no.	Description
1	1.889.0010	**IC Sample Center**
1	6.1608.110	**Wash bottle 250 mL to IC Sample Center** Bottle for washing solution in the IC Sample Center.
1	6.1807.010	**Y-connector for tubing 6-9 mm i.d.** Connector for waste tubing 
2	6.1816.070	**Silicon tubing 8 mm i.d. /1 m** For the Sample Center 
1	6.1831.010	**PEEK capillary 0.25 mm i.d. / 3 m** For all IC components. Material: PEEK Outer diameter (inches): 1/16 Inner diameter (mm): 0.25 Length (m): 3
2	6.2041.200	**Sample rack 48 x 11 mm to IC Sample Center** Sample rack for the IC Sample Center with 48 sample positions. For sample vials 6.2743.1xx
1	6.2151.020	**Cable USB A - USB B 1.8 m** USB connecting cable Length (m): 1.8 
1	6.2743.107	**PP Vials 0.7 mL to 889, 100 pcs**

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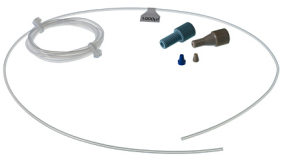
2	U.600.0020	**Microfuse**
1	8.889.8001EN	**Manual 889 IC Sample Center**

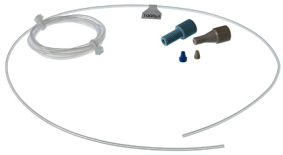
10.3 Optional accessories 2.889.0010

Qty.	Order no.	Description
1	6.1562.170	**Tefzel transfer tubing 1000 µL** To IC Sample Center
1	6.1829.060	**PTFE capillary with connector / 1/8 in. / 1/16 in.** To IC Sample Center
1	6.2743.100	**PP Vials 0.7 mL to IC Sample Center** 1000 sample vials.
1	6.2743.110	**PP Vials 0.3 mL to IC Sample Center**



Qty.	Order no.	Description
	1000 sample vials.	
1	**6.2743.117**	**PP Vials 0.3 mL to IC Sample Center**
	100 sample vials.	
1	**6.2743.120**	**Septum to 6.2743.1XX Si/PTFE**
	1000 pieces	
1	**6.2816.210**	**Needle with capillary, 15 µL**
	To IC Sample Center	

10.4 Optional accessories 2.889.0020

Qty.	Order no.	Description
1	**6.1562.170**	**Tefzel transfer tubing 1000 µL** 
	To IC Sample Center	
1	**6.1829.060**	**PTFE capillary with connector / 1/8 in. / 1/16 in.**
	To IC Sample Center	
1	**6.2743.100**	**PP Vials 0.7 mL to IC Sample Center**
	1000 sample vials.	
1	**6.2743.110**	**PP Vials 0.3 mL to IC Sample Center**
	1000 sample vials.	
1	**6.2743.117**	**PP Vials 0.3 mL to IC Sample Center**
	100 sample vials.	
1	**6.2743.120**	**Septum to 6.2743.1XX Si/PTFE**
	1000 pieces	
1	**6.2816.210**	**Needle with capillary, 15 µL**
	To IC Sample Center	

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