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# 717 Sample Changer

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Instructions for use

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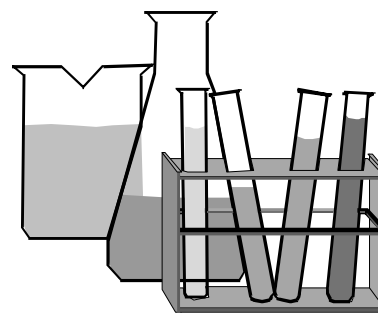
8.717.1003

98.03 sn

# Table of Contents

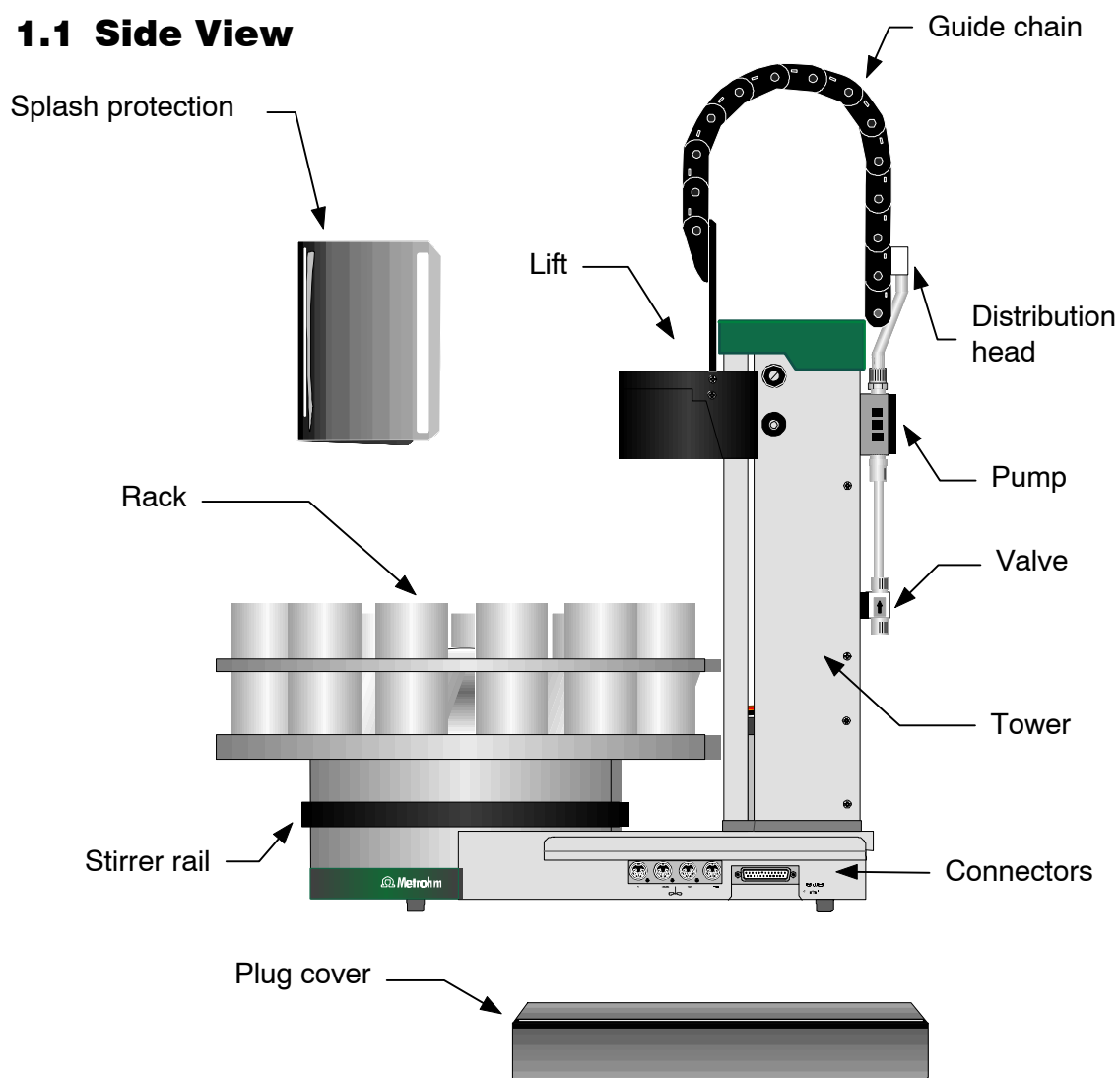
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	Page
<b>1 OVERVIEW</b>	<b>1</b>
1.1 Side View	1
1.2 Rear View	2
1.3 Sensors	3
1.4 The Sample Changer Models	4
<b>2 INSTALLATION</b>	<b>5</b>
2.1 Setting up the Instrument	5
2.2 Safety Considerations	6
2.3 Arranging the Accessories	7
2.3.1 Setting up the Rinsing Equipment	7
2.3.2 Tubing Fixation	8
2.3.3 Magnetic Stirrers	8
2.3.4 Sample Racks	9
2.3.5 Mounting and Setting up the Titration Heads	10
2.4 Remote Connections	11
2.5 External Bus Connections	13
<b>3 SAMPLE RACKS</b>	<b>14</b>
<b>4 SWING HEAD</b>	<b>16</b>
4.1 Prerequisites	16
4.2 Installing the Swing Head	16
4.3 Accessories for the Titration Head	18
<b>5 APPENDIX</b>	<b>20</b>
5.1 Technical Specifications	20
5.1.1 717 Sample Changer	20
5.1.2 759 Swing Head	22
5.2 Servicing and Maintenance	23
5.2.1 Servicing	23
5.2.2 Maintenance / Attendance	23
5.3 Warranty and Conformity	24
5.3.1 Warranty	24
5.3.2 Certificate of Conformity and System Validation for the 717 Sample Changer	25
5.3.3 Certificate of Conformity and System Validation for the 759 Swing Head	27
5.4 Accessories	29
5.5 Index	34



# 1 Overview

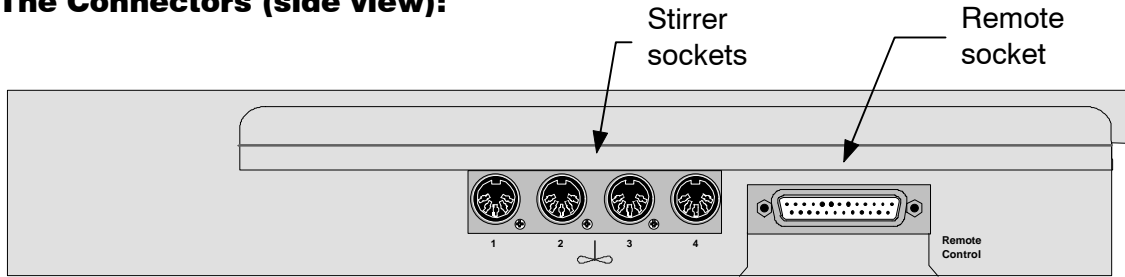
## 1.1 Side View



### Safety note:

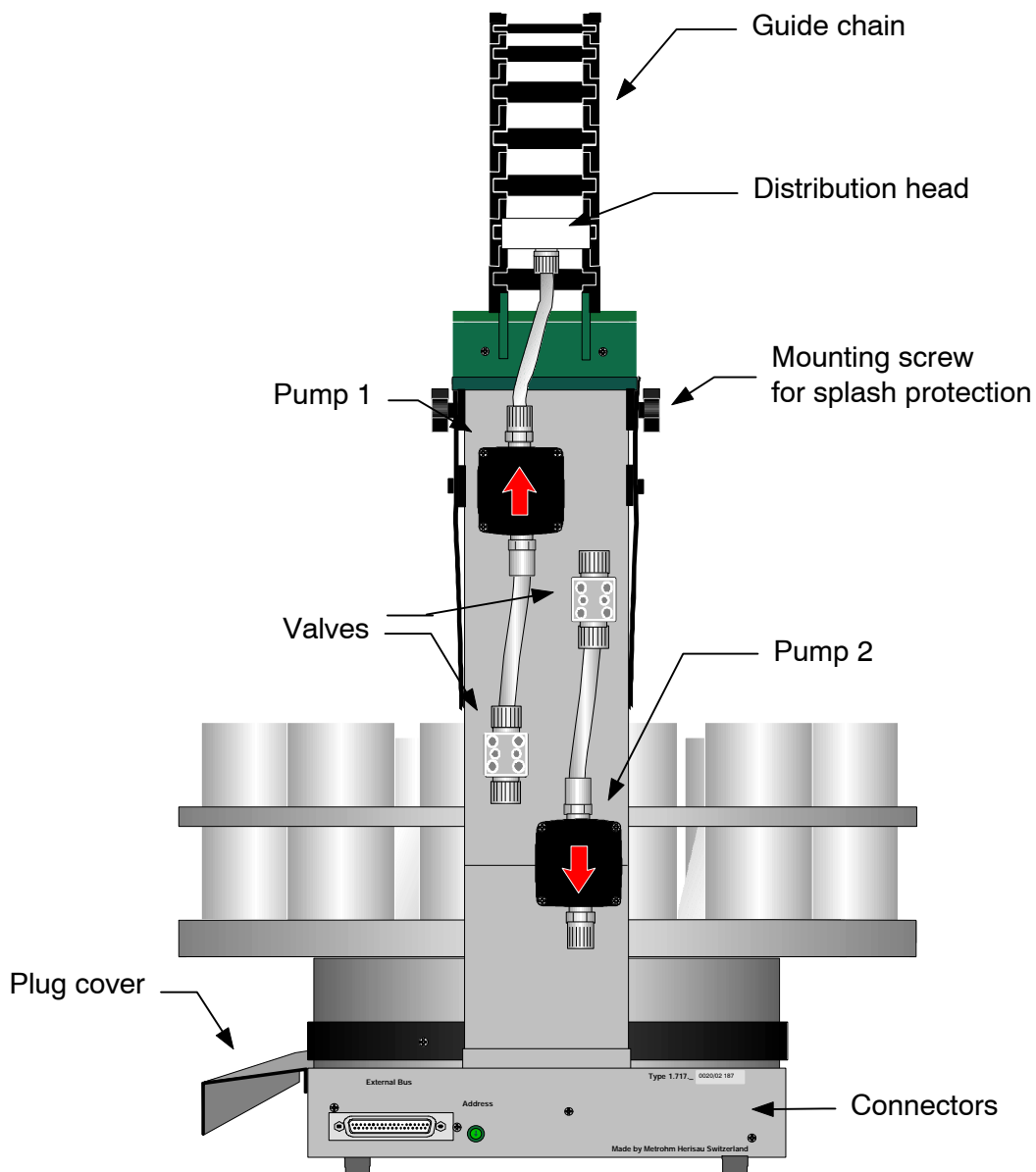
Do not operate the 717 Sample Changer without splash protection and plug cover being mounted. The plug cover prevents any contamination of the connectors, caused by spilled solvents or chemicals.

**The Connectors (side view):**



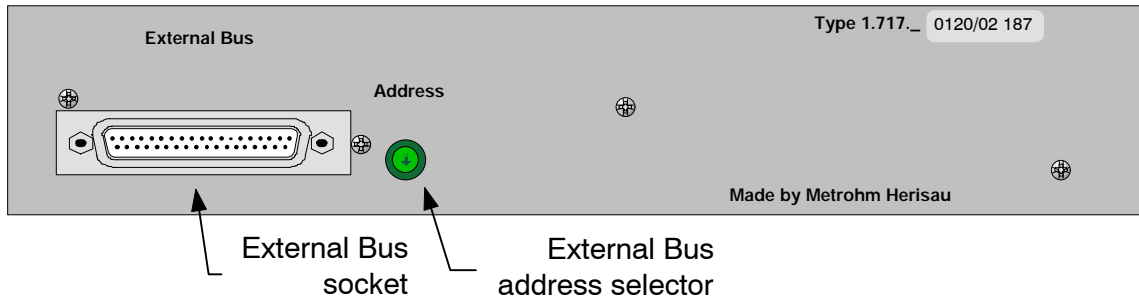
The remote socket serves the connection of Metrohm- or other measuring instruments that communicate via a serial cable.

**1.2 Rear View**



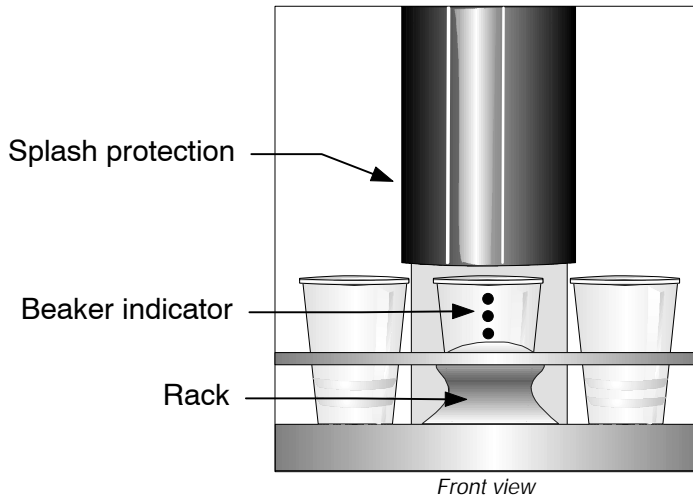
**The Connectors (rear):**

Manufacturing number



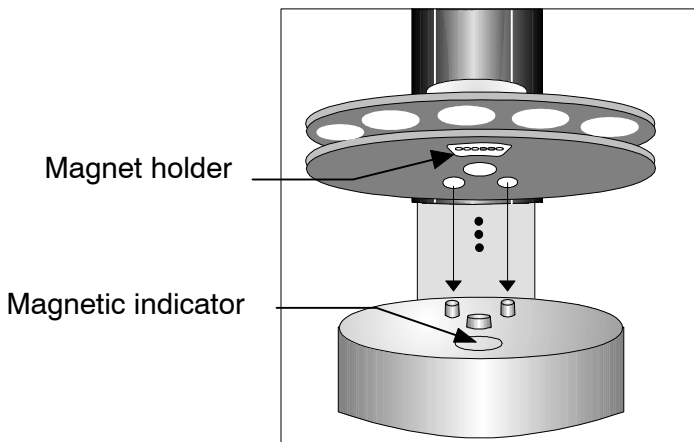
**1.3 Sensors**

**Beaker test**



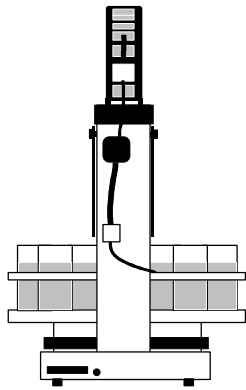
Each tower of the 717 Sample Changer is equipped with a beaker indicator to detect the presence of a beaker in front of the particular tower. This infrared sensor detects many different materials, if any object is placed in correct position.

**Magnetic rack code indicator**

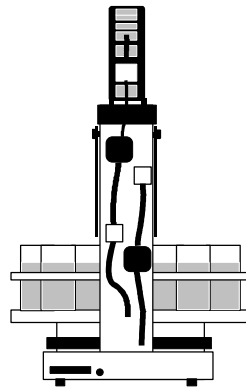


The magnetic sensor to detect the individual rack codes is mounted below the sample changer's turntable. The 717 Sample Changer should be initialized right after every rack change, because the magnetic binary code of the racks can only be read, if the rack is in initial position and therefore the magnet holder is in accurate position right above the rack code indicator.

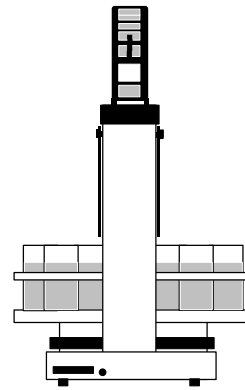
## 1.4 The Sample Changer Models



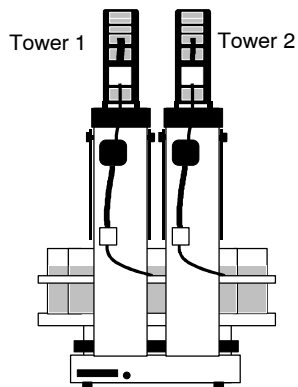
Model 2.717.0010  
1 tower, 1 pump  
2 stirrer connections



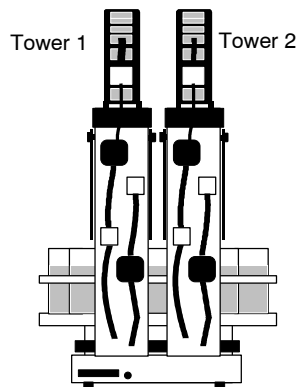
Model 2.717.0020  
1 tower, 2 pumps  
2 stirrer connections



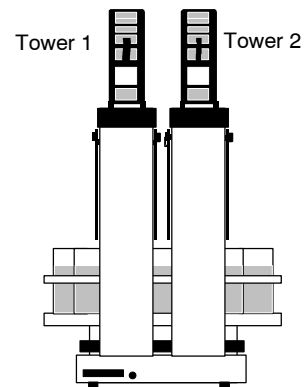
Model 2.717.0030  
1 tower, no pumps  
2 stirrer connections



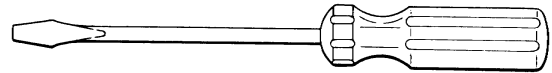
Model 2.717.0110  
2 towers, 2 pumps  
4 stirrer connections



Model 2.717.0120  
2 towers, 4 pumps  
4 stirrer connections



Model 2.717.0130  
2 towers, no pumps  
4 stirrer connections



## 2 Installation

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### 2.1 Setting up the Instrument

#### **Packaging**

The 717 Sample Changer is supplied with the accessories in separate special packages designed to ensure maximum protection. These contain shock-absorbing foam linings. As only these special packages guarantee damage-free transport of the instrument, it is essential you store them in a safe place.

#### **Control**

Immediately following delivery, check that the consignment is complete and undamaged (compare with delivery note and accessories list, page 29ff). In case of damage, see "Warranty", page 24.

#### **Setting up**

The 717 Sample Changer is a rugged instrument and may be used in rough environments such as laboratories and manufacturing plants. It must not be exposed to a corrosive atmosphere. If the sample changer is operated in a rough environment, regular maintenance is strongly recommended.

## 2.2 Safety Considerations

If failure or malfunctioning occurs during operation of the 717 Sample Changer, the Metrohm Service Department should be consulted.

If opening the instrument is unavoidable, the following safety precautions are to be strictly adhered to:



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**Before opening the instrument disconnect it from all electrical sources. Make sure that all main cables have been disconnected.**

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Only in exceptional cases should the instrument be opened while it is switched on. Because parts that conduct current are exposed in this case, this should only be undertaken by an expert who is acquainted with the associated dangers.

Electronic components are sensitive to static electricity and can be destroyed by discharge. Before touching any components inside the instrument, both the person and his tools should be grounded by grasping a grounded object (for example: a metallic part of the casing of the instrument or a radiator) in order to eliminate any static electricity.

When peripheral instruments are connected to the 717 Sample Changer, the sample changer and the instruments to be connected have to be switched off, otherwise all instruments could suffer damage.

If it becomes apparent that the instrument can no longer be operated safely, it must be put out of operation.

## 2.3 Arranging the Accessories

### 2.3.1 Setting up the Rinsing Equipment

To mount the PTFE tubings to the pump inlets or outlets enlarge it carefully using a screwdriver, a pen or another appropriate tool. A piece of sand paper facilitates grasping of the tubing.

The arrangement of the tubing depends on the rinsing equipment.

#### **Rotating nozzle**

Using a changer model with one pump per tower only, the rotating nozzle (6.2740.000) is recommended for rinsing. The Teflon tubing is then directly connected to the rinsing pump (pump 1). The distribution head may be dismantled in this case.

Place the rotating nozzle vertically in the titration head with the aid of a SGJ14/12 mm sleeve.

#### **Spray nozzles**

When using a changer model with two pumps per tower, spray nozzles (6.2740.020) may be used in combination with an aspiration tip M8 (6.1543.170). Insert the spray nozzles into the sloped borings of the titration head. Use Teflon tubings to connect them to the distribution head. Each of the four outlets of the distribution head must be plugged. Plug unused outlets with an M6 thread stopper (6.1446.040) to avoid splashing of liquid during rinsing.

Fix the tubings in the guide chain. Chain links may be removed if necessary (see below).

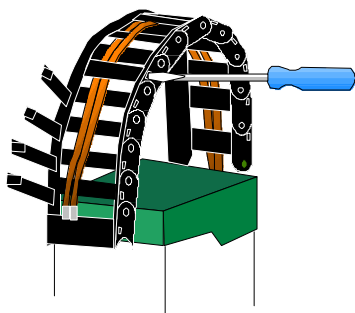
Insert the aspiration tip vertically into a boring (SGJ9) of the Macro Titration head. The Micro Titration head offers also a vertical boring for the placement of the aspiration tip. Connect the tip with the Teflon 4/6 tubing (6.1805.510) and a screw connector 4/6 mm (6.1820.030) to pump 2 (valve marked with '↓'). During the rinsing procedure, first the sample is sucked off then the electrode is rinsed in the empty vessel.

The pump heads of the diaphragm pump, the fittings and the coupling rings are made of PVDF. PVDF is resistant to many chemicals. Acetone, acetic anhydride or dimethylformamide (DMF) should **not** be used. The diaphragm, and the inner parts of the valves consist of PTFE and are resistant to most chemicals.

If your samples contain solids (e.g. silver chloride) or sticking substances, you should use the 772 Peristaltic Pump Unit in combination with the 731 Relay Box instead of the diaphragm pump integrated into the changer.

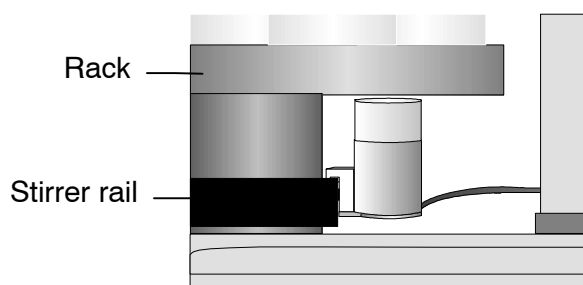
The PE canisters (6.1621.000) are suitable for aqueous solutions.

### 2.3.2 Tubing Fixation



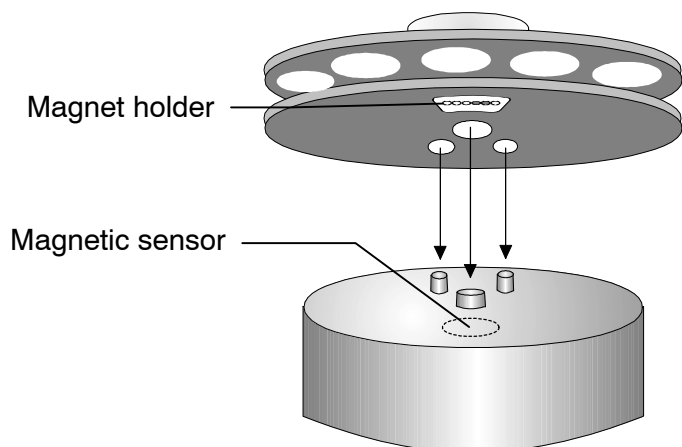
In order to fix the tubing in the guide chain any chain link may be opened with a screw driver or another appropriate tool.

### 2.3.3 Magnetic Stirrers



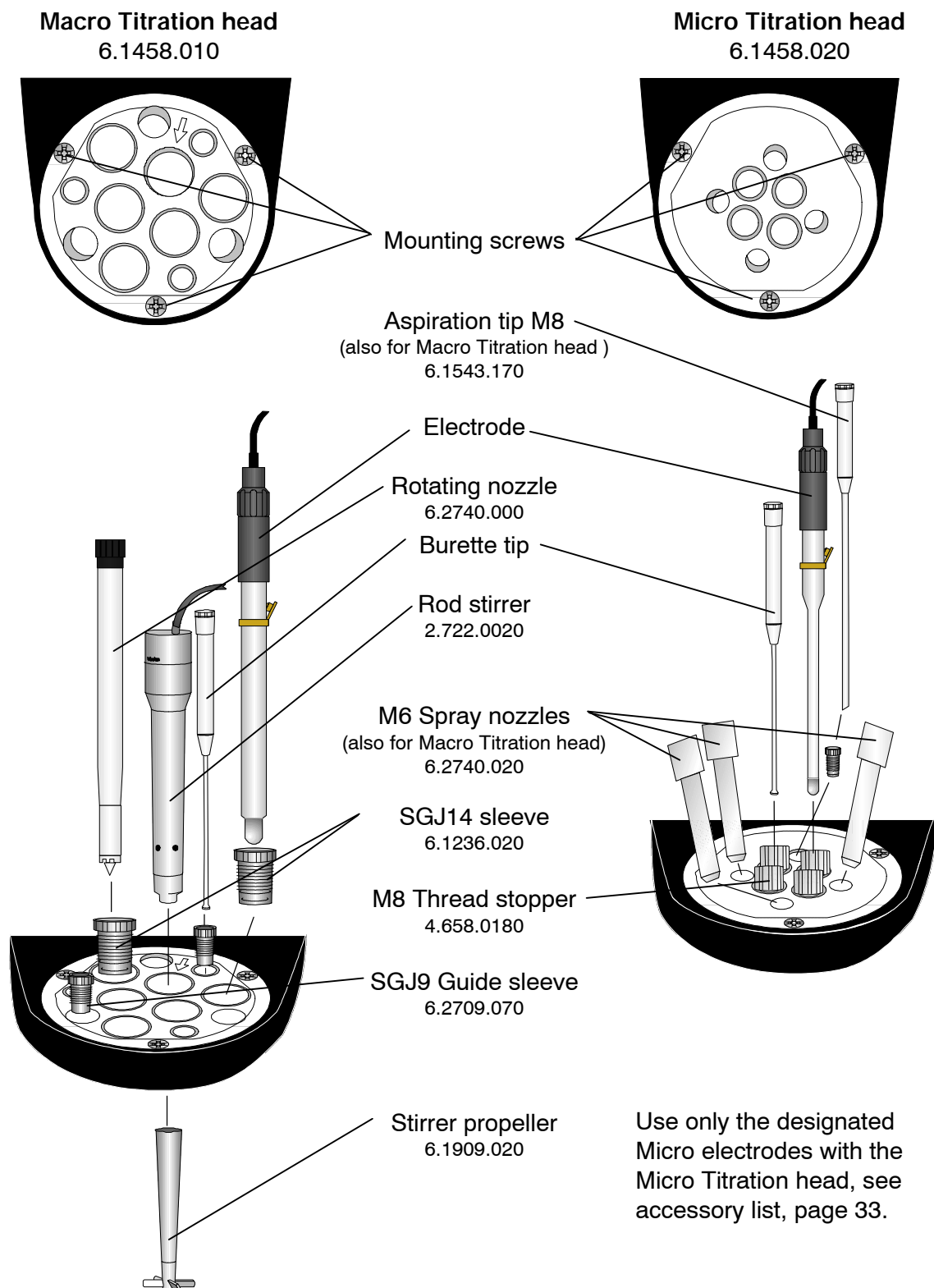
Magnetic stirrers 2.741.0010 may be placed in any position on the stirrer rail beneath the rack.

### 2.3.4 Sample Racks



After placing the rack on the turntable, the sample changer must be initialized to enable the safe reading of the magnetic rack code. This can only be done if rack position 1 is directed to tower 1.

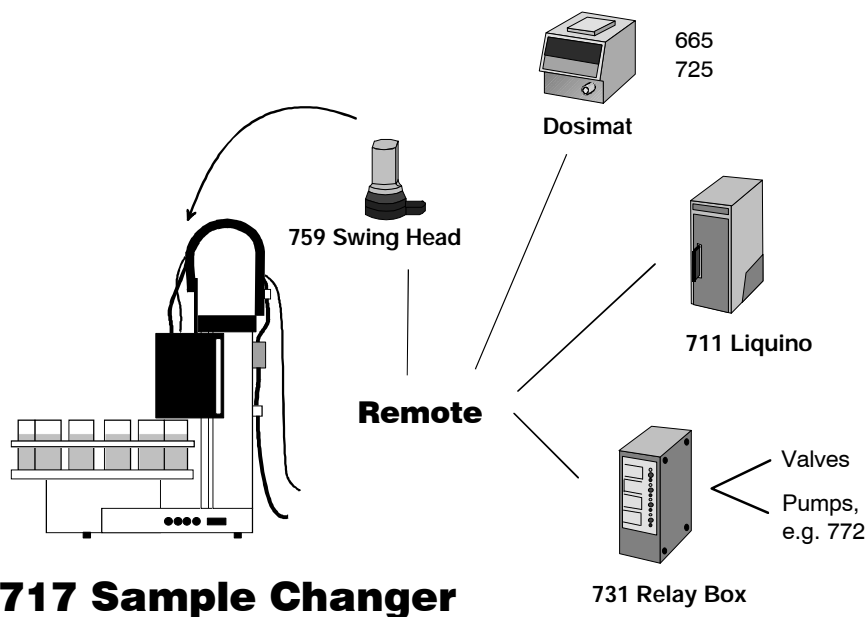
### 2.3.5 Mounting and Setting up the Titration Heads



#### Note on Macro Titration head

The arrow sign marks the slightly sloped SGJ boring, which enables to center a rod stirrer or an electrode in a narrow titration vessel.

## 2.4 Remote Connections

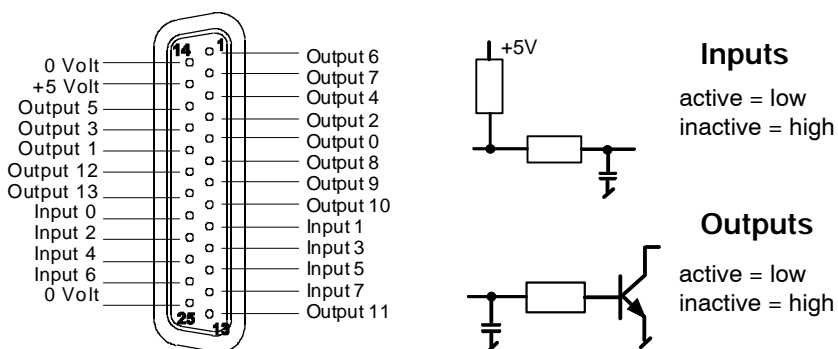


Connecting peripheral instruments to the 717 Sample Changer requires Metrohm cables. Otherwise a safe data transmission may not be guaranteed.

All instruments have to be switched off, before they are connected. Otherwise the instruments could suffer from damage.

14 lines (Output 0–13) are available for the emission of signals. For receiving signals 8 lines are provided (Input 0–7).

Pin assignment of the Remote socket:



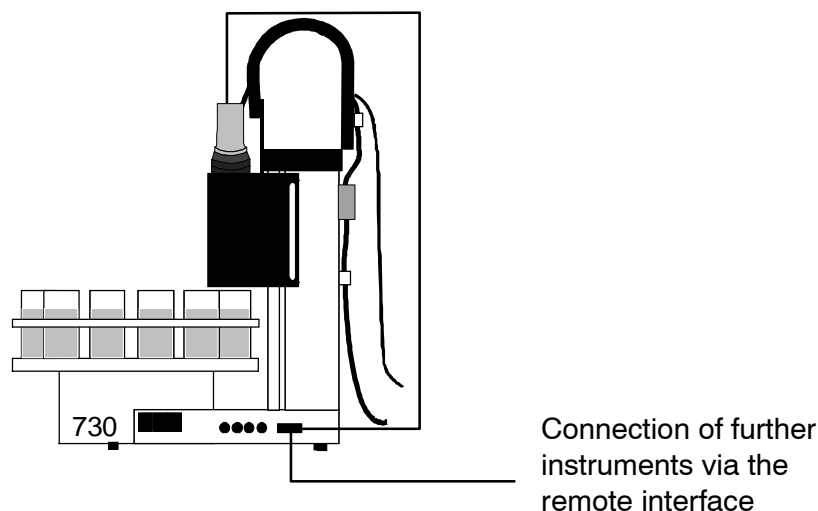
The +5 V supply line may be charged with 20 mA maximally.

The required cables are listed in the following table. Details about the control commands are given in the Instructions for use of the corresponding instrument.

Instrument	Cable
665/725 Dosimat	6.2139.000
711 Liquino	6.2141.020
731 Relay Box	6.2125.100

### 717 Sample Changer with 759 Swing Head

In order to increase the number of samples, the 759 Swing Head with a titration head (2.759.0020) or a transfer head (2.759.0010) can be installed in place of a normal titration head. In this way the titration head can be moved very accurately to the individual vessels located in several rows on the sample rack. You will find a more detailed description in the chapter "Swing Head", page 16.

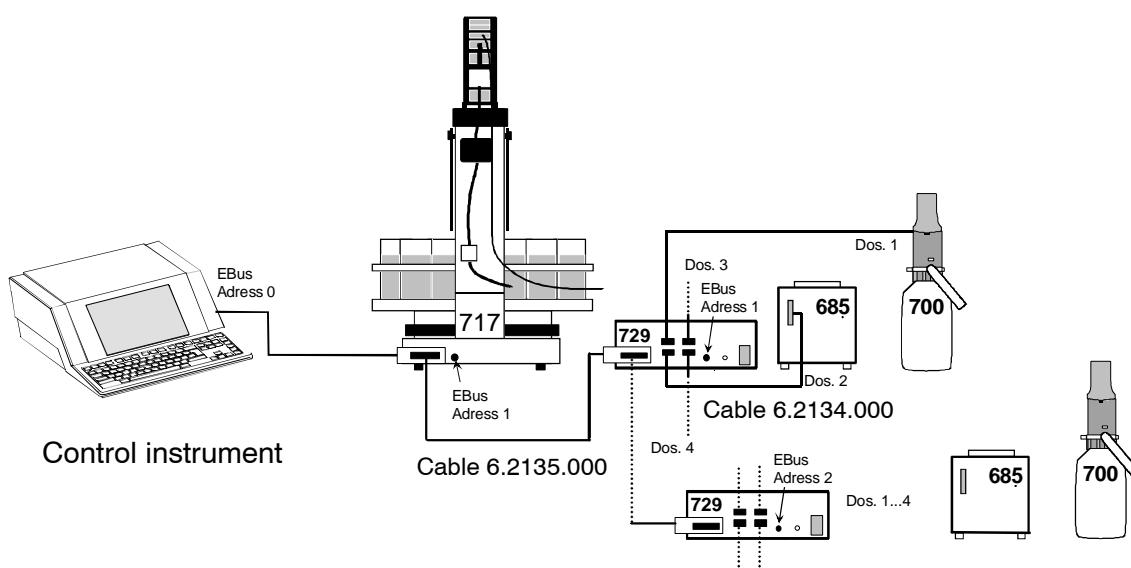


The 759 Swing Head is connected via the remote interface with a special cable. Using the remote cables for the sample changer, additional instruments can be connected to the remote socket, while four lines (Input 7 and Output 11–13) are occupied by the swing head. These four lines are ignored when the swing head is switched on in the configuration, they are not continued in the plug.

### 2.4.1 External Bus Connections

Via the "External Bus" the 717 Sample Changer is operated by a control instrument, e.g. the 726 Titroprocessor. Four dosing instruments (Dosimat 685 or Dosino 700) may be connected to the "External Bus" interface using a 729 Dosimat Interface. Up to two Dosimat Interfaces may be connected in line (daisy chaining) and be assembled with dosing instruments. Each interface must be addressed correctly.

Before the instruments are connected, all devices have to be switched off.



Devices such as sample changers which consume a lot of current should be connected in the first position of the EBus chain behind the control instrument.

Addresses:

	"External Bus"- Address	Dosing Unit
Control instrument	0	Dos. 1 ... Dos. 4
1. 717 Sample Changer	1	
2. 717 Sample Changer	2	
1. Interface	1	Dos. 1 ... Dos. 4
2. Interface	2	Dos. 1 ... Dos. 4

The corresponding EBus address can be set with a screwdriver on the EBus address selector that is located on the rear panel of the device (see p. 3).

## 3 Sample Racks

A sample rack is a sort of turntable for the positioning of beakers which are to be placed on the 717 Sample Changer. Because for titration, various sizes of beakers are common or required, many kinds of racks can be used and are easily interchangeable. The rack offers space for various numbers of samples depending on the diameter of the beakers. Metrohm delivers the following pre-defined types of standard racks:

Type	Number of beakers	Type of beaker	Predef. Code	Order Number
M12-0	12 *)	250 mL Metrohm glass beaker	000001	6.2041.310
M12-0	12 *)	150 mL glass beaker or 200 mL disposable beaker (Euro)	100000	6.2041.360
M14-0	14	200 mL disposable beaker (Euro)	000011	6.2041.370
M14-0	14	8 oz disposable beaker PP (US)	000101	6.2041.380
M16-0	16	150 mL glass beaker	000010	6.2041.320
M16-0	16	120 mL disposable beaker (US)	100001	6.2041.390
M24-0	24 *)	75 mL Metrohm glass beaker	001000	6.2041.340
M48-1	48	75 mL Metrohm glass beaker	010000	6.2041.350
M128-2	126 2	15 mL test tubes 250 mL Metrohm glass beaker	001010	6.2041.400

\*) Parallel titration at two towers possible.

If desired, other user-defined racks can be delivered. Irregular arrangements of beaker positions are also possible.

Every single rack can be identified by a unique magnetic code. Rod magnets which are attached to the bottom of the rack can be combined to form a 6-place binary code. The sample changer can then automatically recognize the mounted rack. This is possible when the rack is positioned with the first rack position in front of tower 1. When changing a rack, the sample changer should first be reset to the normal position. This way the save recognition of a rack and therefore the correct beaker positioning is made possible. An internal position table containing the unambiguous definition of the turning angles and beaker positions is assigned to each rack type.

This position table is stored in the control device.

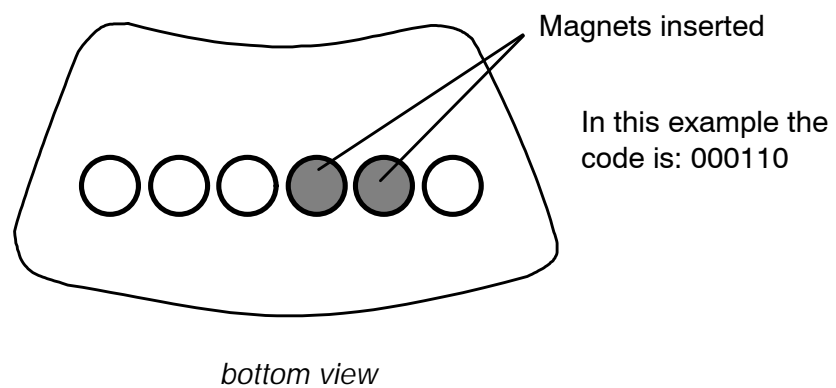
The standard racks provided by Metrohm are already equipped with a predefined magnetic code for every rack type. If several racks of the same type are used, the magnet rods can be arranged differently so that a unique identification of a sample rack is possible, if this is desired.

Format of a magnetic code (example):

000001 i.e. only one magnet is inserted, bit 0

000101 i.e. two magnets are inserted, bit 0 and 2

63 different combinations are possible. The code 000000 stands for "no code defined".



## 4 Swing Head

To ensure that the individual vessels are approached with precision even when using multiple-row sample racks, a 759 Swing Head can be installed instead of the normal titration head. The swing head is fitted with either a titration head (2.759.0020) or a transfer head (2.759.0010) for pipetting the sample from the sample vessel into a bigger titrating vessel.

### 4.1 Prerequisites

The 759 Swing Head can be used in combination with the following racks:

	Sample rack	759 model	Number of towers
Titration	48 x 75 mL for direct titration Article No. 6.2041.350	Article No. 2.759.0020	1, 2
Pipetting	126 x 15 mL and 2 x 150 mL for pipetting Article No. 6.2041.400	Article No. 2.759.0010	2

If the two-row sample rack with 48 beakers is used on the 2-tower model for direct titration, sample beakers cannot be approached with tower 2. If the rack is used for transferring samples from 126 test tubes into two central measuring/rinsing vessels (special beakers), all the positions can be approached with tower 1, whereas tower 2 can only approach the two special beakers. The swing head cannot be used in combination with other standard rack types.

### 4.2 Installing the Swing Head

The best procedure for installing the swing head is described below. The swing head will normally be installed by our service personnel.



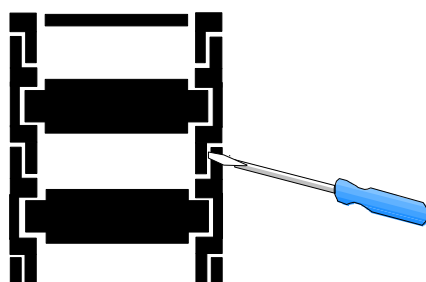
If a 2-tower sample changer is used, the swing head must always be connected to **tower 1** (see page 4)!

With 2-tower sample changers, tower 1 is first moved into a central lift position and tower 2 is moved into the rest position.

**Turn off all mains power switches.**

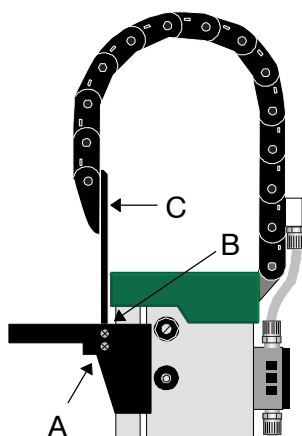
Install the new titration head (6.1462.020) or transfer head (6.1462.010) on the underside of the swing head.

**Disengage the guide chain**



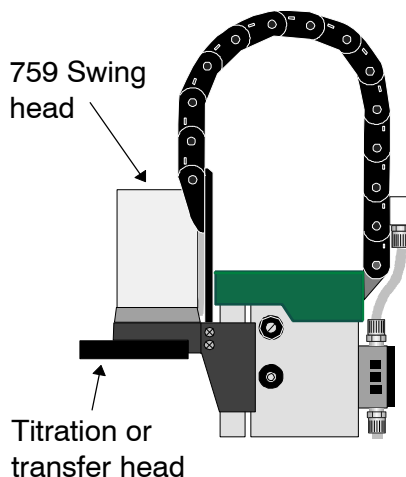
Use a screwdriver to open the guide chain in-between two links to facilitate the process of disassembling the titration head and installing the swing head.

**Connect the swing head to Tower 1**



Loosen screws A on both sides and remove the titration head together with the mounting plate and the lowest link. Use an angled screwdriver for recessed-head screws for 2-tower sample changers. Then loosen screws B and C and connect the new mounting plate for the swing head (6.2058.000) to the bottom link (screws C).

Before fixing the swing head to tower 1, rotate screws A a few times in the appropriate holes to cut a thread into the plastic.



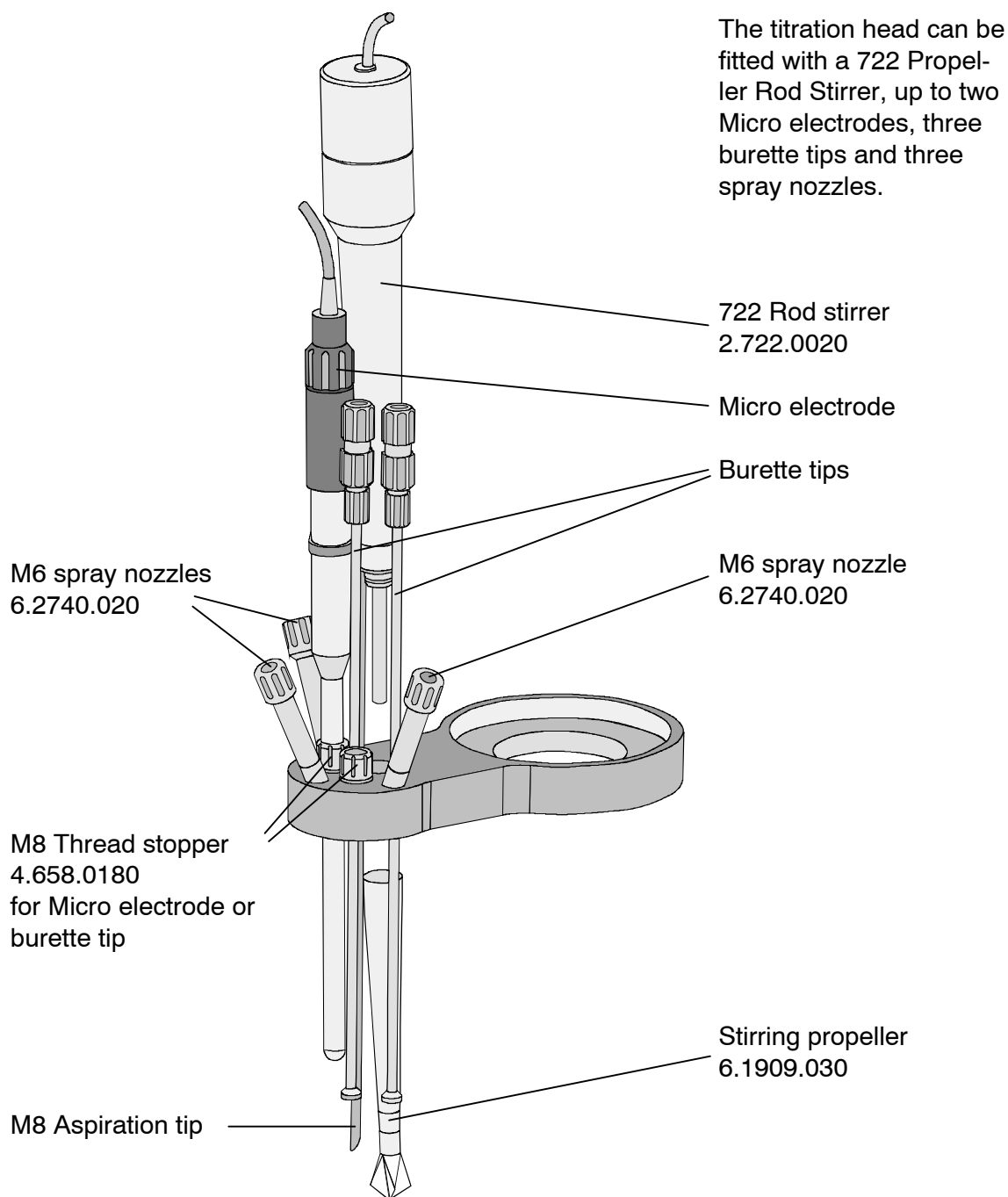
The swing head can now be installed on the mounting plate (screws B). Ensure that the lead runs in the guide chain. After screwing the swing head and mounting plate into place on the tower, the bottom link is re-engaged

The splash protection supplied with the pipetting swing head (2.759.0010) is connected to tower 2. The splash shield supplied with the titration swing head (2.759.0020) is connected to tower 1 when used with the 2-tower model.

The 759 swing head can now be connected to the remote socket of the sample changer (see page 12).

The configuration of the sample changer is carried out in the control instrument.

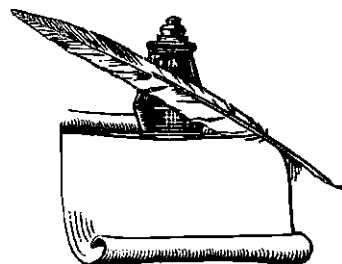
### 4.3 Accessories for the Titration Head



### **Aligning the titration/transfer head**

The swing head executes a shift movement as it approaches the sample vessels. It can adopt any of four fixed positions, depending on which row is targeted, or whether the lift is in the shift position. The titration or transfer head should be aligned in order to guarantee that the individual positions are approached with precision.

Place the sample rack that you wish to use on the sample changer and insert a few sample vessels. Approach one sample position. Slightly loosen the three screws securing the titration head to the underside of the swing head and align the titration head so that electrodes, stirrer, burette tip and tubes are centered in the sample vessel. Retighten the screws. Proceed in exactly the same way for the transfer head.




## 5 Appendix


### 5.1 Technical Specifications

#### 5.1.1 717 Sample Changer

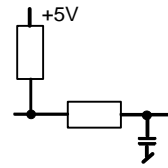
Dimensions	Height: 0.72 m, Width: 0.28 m, Depth: 0.48 m
Weight	15.5 kg (without accessories, 2-tower model) 10.0 kg (without accessories, 1-tower model)
Material	Sample Changer case: metal case, multiple enameling
Lift path	235 mm
Lift	Load: approx. 10 N Stroke speed: adjustable, 3 – 25 mm/s
Turntable	Turning speed: adjustable, 3 – 20 angular degrees/s
Stirrer	Stirring speed: adjustable to 15 levels - Magnet stirrer 180/s – 2600/s - Rod stirrer 180/s – 3000/s
Pump with Valve	Conveying capacity (manometric lift 2m): 0.33 L/min

**Remote Interface** Programmable parallel interface for controlling external instruments

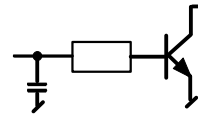
Input:   $t_p > 20 \text{ ms}$

Output:   $t_p > 200 \text{ ms}$

$V_{CE0} = 40 \text{ V}$   
 $I_C = 20 \text{ mA}$



active = low  
 inactive = high



active = low  
 inactive = high

+5 V: Maximum charge = 20 mA

**Temperatures** Nominal functional range 5 – 40 °C

Transport and storage: –40 – +70°C

**Distribution voltage** Connection to the External Bus of a Metrohm control device, e.g. 726 Titroprocessor, ...

All data are typical values with the exception of those specially marked.

**Safety Specifications**

Constructed and tested according to IEC 1010 / EN 61010 / UL 3101-1, Safety Class III  
 Degree of protection IP 22

The instruction manual contains information and warnings which the user should follow to guarantee the safe operation of the instrument.

**Electromagnetic Compatibility (EMC)**

**Emitted Interference:** The instrument complies with the basic specifications EN 50081-1/2 1992, EN 55011 (class B), EN 55022 (class B), and NAMUR.

**Interference immunity:** The basic specifications EN 50082-1 1997, and IEC 801-2 to IEC 801-4 are adhered to.

### 5.1.2 759 Swing Head

<b>Dimensions</b>	Height: 0.14 m, Width: 0.10 m, Depth: 0.09 m	
<b>Weight</b>	0.63 kg	
<b>Material</b>	Swing Head case:	Polybuteneterephthalate (PBTP) with metallic fiber
	Titration Head:	Polypropylene
<b>Rotation</b>	4 fix positions	
<b>Temperatures</b>	Nominal functional range 5 – 40 °C	
	Transport and storage –40 – +70 °C	
<b>Distribution voltage</b>	5 V DC, drawing of current 500 mA connection to the remote socket of the Metrohm Sample Changers, e.g. model 717, 730, 760, ...	

All data are typical values.

#### Safety Specifications

Constructed and tested according to IEC 1010 / EN 61010 /  
UL 3101-1, Safety Class III  
Degree of protection IP 43

#### Electromagnetic Compatibility (EMC)

Emitted Interference: The instrument complies with the basic specifications  
EN 50081-1/2 1992, EN 55011 (class B), EN 55022  
(class B), and NAMUR.

Interference immunity: The basic specifications EN 50082-1 1997, and IEC 801-2 to  
IEC 801-6 are adhered to.

## 5.2 Servicing and Maintenance

### 5.2.1 Servicing

The maintenance of the 717 Sample Changer should include a yearly service check carried out by a specialist from Metrohm. If caustic or corrosive chemicals are frequently used, shorter time intervals between service checks can be necessary. The Metrohm Service Department can offer technical advice regarding servicing and maintenance of all Metrohm instruments at any time.

### 5.2.2 Maintenance / Attendance

Not only do highly sensitive measuring instruments require proper care, a sample changer also requires this. Serious contaminations can lead to functional disorders and a shortened life-span of the rugged mechanics and electronics of the sample changer.

Heavy soiling of the titration heads can influence the results of measurements. Regular cleaning of exposed parts can prevent this for the most part.

Chemical or solvent spills should be cleaned up immediately. The connectors (in particular the power supply) should be protected from contamination. The sample changer should never be operated without the covering foreseen for this purpose.

If corrosive media has entered the inside of the instrument, the power plug has to be disconnected immediately to avoid massive damage to the instruments electronic components. In case of such damage, the Metrohm service personnel should be notified. The instrument should not be opened by untrained personnel.

## 5.3 Warranty and Conformity

### 5.3.1 Warranty

The warranty on our products is limited to defects that are traceable to material, construction or manufacturing error which occur within 12 months from the day of delivery. In this case, the defects will be rectified in our workshops free of charge. Transport costs are to be paid by the customer.

For day and night operation, the warranty is limited to 6 months.

Glass breakage in the case of electrodes or other parts is not covered by the warranty. Checks which are not a result of material or manufacturing faults are also charged during the warranty period. For parts of outside manufacture insofar as these constitute an appreciable part of our instrument, the warranty stipulations of the manufacturer in question apply.

With the regard to the guarantee of accuracy, the technical specifications in the instruction manual are authoritative.

Concerning defects in material, construction or design as well as the absence of guaranteed features, the orderer has no rights or claims except those mentioned above.

If damage of the packaging is evident on receipt of a consignment or if the goods show signs of transport damage after unpacking, the carrier must be informed immediately and a written damage report demanded. Lack of an official damage report releases Metrohm from any liability to pay compensation.

If any instruments and parts have to be returned, the original packaging should be used if at all possible. This applies above all to instruments, electrodes, burette cylinders and PTFE pistons. Before embedment in wood shavings or similar material, the parts must be packed in a dustproof package (for instruments, use of a plastic bag is imperative). If open assemblies are enclosed in the scope of delivery that are sensitive to electromagnetic voltages (e.g. data interfaces etc.) these must be returned in the associated original protective packaging (e.g. conductive protective bag). (Exception: assemblies with built-in voltage source belong in a non-conductive protective packaging). For damage which arises as a result of non-compliance with these instructions, no warranty responsibility whatsoever will be accepted by Metrohm.

### 5.3.2 Certificate of Conformity and System Validation for the 717 Sample Changer

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:	717 Sample Changer
Name of manufacturer:	Metrohm Ltd., Herisau, Switzerland
Principal technical information:	Connection to the External Bus of a Metrohm control device

---

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

*Electromagnetic compatibility*

IEC 801-2 / level 3, IEC 801-3 / level 2, IEC 801-4 / level 3,  
EN 55011 / class B, EN 55022 / class B, EN 50081-1/2 1992,  
EN 50082-1 1997

*Security specifications*

IEC 1010, EN 61010, UL 3101-1

It has also been certified by the Swiss Electronical Association (SEV), which is member of the International Certification Body (CB / IEC).

The technical specifications are documented in the instruction manual.

The system software, stored in Read Only Memories (ROMs) has been validated in connection with standard operating procedures in respect to functionality and performance. The features of the system software are documented in the instruction manual.

---

Metrohm Ltd. is holder of the SQS certificate of the quality system ISO 9001 for quality assurance in design/development, production, installation and servicing.

---

Herisau, March 5, 1998



Dr. J. Frank  
Development Manager

Ch. Buchmann  
Production and  
Quality Assurance Manager



### 5.3.3 Certificate of Conformity and System Validation for the 759 Swing Head

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:	759 Swing Head
Name of manufacturer:	Metrohm Ltd., Herisau, Switzerland
Principal technical information:	Distribution voltage: 5 V DC Drawing of Currency: 500 mA

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

*Electromagnetic compatibility*

IEC 801-2 / level 4, IEC 801-3 / level 2, IEC 801-4 / level 3,  
IEC 801-5 / level 3, IEC 801-6 / level 2, EN 55011 / class B,  
EN 55022 / class B, EN 50081-1/2 1992, EN 50082-1 1997

*Security specifications*

IEC 1010, EN61010, UL 3101-1

The technical specifications are documented in the instruction manual.

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Metrohm Ltd. is holder of the SQS certificate of the quality system ISO 9001 for quality assurance in design/development, production, installation and servicing.

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Herisau, Oct. 23, 1997



Dr. J. Frank  
Development Manager

Ch. Buchmann  
Production and  
Quality Assurance Manager



## 5.4 Accessories

### Sample Changer with 1 Tower and 1 Pump 2.717.0010

includes the following accessories:

	Pieces	
SGJ14 sleeve	2	6.1236.020
SGJ14 plastic stopper	5	6.1446.000
SGJ9 stopper	3	6.1446.010
M6 thread stopper		6.1446.040
PE canister 10 liter		6.1621.000
FEP tubing connector M6 80		6.1805.110
PTFE tubing 4 meter 4/6		6.1812.000
Guiding shaft		6.1823.000
Connector for canister		6.1828.000
Fixing clip 10x		6.2053.000
Bushing	3	6.2709.070
Rotating nozzle		6.2740.000
Splash protection		6.2751.010
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

### Sample Changer with 1 Tower and 2 Pumps 2.717.0020

includes the following accessories:

	Pieces	
SGJ14 sleeve	2	6.1236.020
SGJ14 plastic stopper	5	6.1446.000
SGJ9 stopper	3	6.1446.010
M6 thread stopper		6.1446.040
SGJ14 stopper 6,4 mm		6.1446.160
M8 aspiration tip		6.1543.170
PE canister 10 liter	2	6.1621.000
FEP tubing connector M6 80		6.1805.110
FEP tubing connector M6 48		6.1805.420
PTFE tubing connector M8 60		6.1805.510
PTFE tubing 4 meter 4/6	2	6.1812.000
M8 screw connector 4/6 mm / M8		6.1820.030
Connector for canister	2	6.1828.000
Clip for burette tip		6.2042.020
Fixing clip 10x		6.2053.000
Bushing	3	6.2709.070
M6 spray nozzle	3	6.2740.020
Splash protection		6.2751.010
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

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**Sample Changer with 1 Tower without Pumps** **2.717.0030**


---

includes the following accessories:

	Pieces	
SGJ14 sleeve	2	6.1236.020
FEP tubing connector M6 80		6.1805.110
Bushing	3	6.2709.070
Splash protection		6.2751.010
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

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**Sample Changer with 2 Towers and 2 Pumps** **2.717.0110**


---

includes following accessories

	Pieces	
SGJ14 sleeve	4	6.1236.020
SGJ14 plastic stopper	10	6.1446.000
SGJ9 stopper	6	6.1446.010
M6 thread stopper	2	6.1446.040
PE canister 10 liter	2	6.1621.000
FEP tubing connector M6 80	2	6.1805.110
PTFE tubing 4 meter 4/6	2	6.1812.000
Guiding shaft	2	6.1823.000
Connector for canister	2	6.1828.000
Fixing clip 10x	2	6.2053.000
Bushing	6	6.2709.070
Rotating nozzle	2	6.2740.000
Splash protection		6.2751.020
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

---

**Sample Changer with 2 Towers and 4 Pumps** **2.717.0120**


---

includes the following accessories:

	Pieces	
SGJ14 sleeve	4	6.1236.020
SGJ14 plastic stopper	10	6.1446.000
SGJ9 stopper	6	6.1446.010
M6 thread stopper	2	6.1446.040
SGJ14 stopper 6,4 mm	2	6.1446.160
M8 aspiration tip	2	6.1543.170
PE canister 10 liter	4	6.1621.000
FEP tubing connector M6 80	2	6.1805.110
FEP tubing connector M6 48	6	6.1805.420
PTFE tubing connector M8 60	2	6.1805.510
PTFE tubing 4 meter 4/6	4	6.1812.000
M8 screw connector 4/6 mm / M8	2	6.1820.030
Connector for canister	4	6.1828.000

Clip for burette tip	2	6.2042.020
Fixing clip 10x	2	6.2053.000
Bushing	6	6.2709.070
M6 Spray nozzle	6	6.2740.020
Splash protection		6.2751.020
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

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**Sample Changer with 2 Towers without Pumps 2.717.0130**

includes the following accessories:

	Pieces	
SGJ14 sleeve	4	6.1236.020
FEP tubing connector M6 80	2	6.1805.110
Bushing	6	6.2709.070
Splash protection		6.2751.010
Plug cover		6.2752.010
External Bus cable DB 37-pol		6.2135.000
Instructions for Use for 717 Sample Changer		8.717.1003

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**Options**

Accessories to separate order at additional charge:

**722 Rod stirrer for the sample changer**

Rod stirrer	2.722.0020
Stirrer propeller PP (104 mm)	6.1909.020

**741 Magnetic stirrer**

Magnetic stirrer	2.741.0010
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Macro Titration head (6x NS14, 3x NS9)	6.1458.010
Micro Titration head (4x M10)	6.1458.020

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**759 Swing Head with Transfer Head 2.759.0010**

includes the following accessories:

Transfer head	6.1462.010
Pipetting tube 10 mL (length 3.8 m, inner diameter 2.0 mm)	6.1562.100
Guiding shaft for pipetting tube	6.1823.010
Holding plate for the swing head	6.2058.000
Splash protection for tower 2	6.2751.010

<b>759 Swing Head with Titration Head</b>		<b>2.759.0020</b>
includes the following accessories:		
	Pieces	
Titration head		6.1462.020
Stirrer propeller PP (104 mm) for 75 mL vessels		6.1909.030
Clip for burette tip	2	6.2042.030
Holding plate for the swing head		6.2058.000
Splash protection for swing head		6.2751.030

### Sample racks and beakers

<b>Rack 12x 250 mL M12-0 *)</b>	<b>6.2041.310</b>
Metrohm glass beaker 250 mL	6.1432.320
Metrohm PP beaker 200 mL	6.1453.220
Metrohm PP beaker 250 mL	6.1453.250
<b>Rack 12x 150 mL M12-0 *)</b>	<b>6.2041.360</b>
for standard glass beaker 150 mL (narrow) or disposable beaker (Euro) PP 200 mL (1000 pcs.)	6.1459.310
<b>Rack 14x 200 mL M14-0</b>	<b>6.2041.370</b>
for disposable beaker (Euro) PP 200 mL	6.1459.310
<b>Rack 14x 8 oz M14-0</b>	<b>6.2041.380</b>
for disposable beaker (US) PP 8 oz	
<b>Rack 16x 150 mL M16-0</b>	<b>6.2041.320</b>
for standard glass beaker (narrow)	
<b>Rack 16x 120 mL M16-0</b>	<b>6.2041.390</b>
for disposable beaker (US) 120 mL	
<b>Rack 24x 75 mL M24-0 *)</b>	<b>6.2041.340</b>
(with Micro titration head only)	
Metrohm glass beaker 75 mL	6.1432.210

\*) Parallel processing at 2 towers possible

For operation with the 759 Swing Head:

<b>Rack 48x 75 mL M48-1</b>	<b>6.2041.350</b>
for direct titration	
Metrohm glass beaker 75 mL	6.1432.210
<b>Rack 126 x 15 mL and 2 x 250 mL M128-2</b>	<b>6.2041.400</b>
for pipetting	
for test tubes 15 mL and	
Metrohm glass beaker 250 mL	6.1432.320
Metrohm PP beaker 200 mL	6.1453.220
Metrohm PP beaker 250 mL	6.1453.250

## Electrodes for Sample Changer

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It is recommended to use Longlife-Electrodes (LL) or titrodes (without polished glass surface) with the SGJ sleeve SGJ14/12mm 6.1236.040 made of silicon caout-chouc for titrations with the Macro Titration head.

The following special micro electrodes can be used with the Micro Titration head and the 759 Swing Head for direct titration.

Comb. micro-pH-electrode (LL)	16 cm	6.0234.110
Micro reference electrode Ag/AgCl	16 cm	6.0736.110
Micro glass electrode	16 cm	6.0134.110
Micro-Ag titrode	16 cm	6.0433.110
Micro-Pt titrode	16 cm	6.0434.110
Micro-Au titrode	16 cm	6.0435.110
Pt 1000 temperature sensor	16 cm	6.1110.110

## Dosing Instruments

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<b>685 Dosimat</b>		<b>2.685.0010</b>
Exchange Unit with ceramic stopcock	1 mL	6.3013.113
	5 mL	6.3013.153
	10 mL	6.3013.213
	20 mL	6.3013.223
	50 mL	6.3013.253
Exchange Unit with PTFE stopcock	1 mL	6.3014.113
	5 mL	6.3014.153
	10 mL	6.3014.213
	20 mL	6.3014.223
	50 mL	6.3014.253
<b>700 Dosino</b>		<b>2.700.0010</b>
Dosing unit for Dosino	2 mL	6.3030.120
	5 mL	6.3030.150
	10 mL	6.3030.210
	20 mL	6.3030.220
	50 mL	6.3030.250
<b>729 Dosimat Interface</b>		<b>2.729.0010</b>

## 5.5 Index

### A

Accessories ..... 7, 29  
 Address ..... 3, 13  
 Aligning ..... 19  
 Appendix ..... 20  
 Aspiration tip ..... 10, 18  
 Attendance ..... 23

### B

Beaker ..... 14, 32  
   indicator ..... 3  
   test ..... 3  
 Burette tip ..... 10, 18

### C

Cables ..... 11, 12  
 CE ..... 26, 28  
 Certificate ..... 25, 27  
 Chemical resistance ..... 8  
 Code ..... 3, 14  
 Conformity ..... 25, 27  
 Connections ..... 7, 11, 12, 13, 17  
 Connectors ..... 1, 2, 3  
 Control ..... 5

### D

Diaphragm pump ..... 8  
 Distribution head ..... 1, 2  
 Dosimat ..... 13, 33  
 Dosimat Interface ..... 13, 33  
 Dosing instruments ..... 13, 33  
 Dosino ..... 13, 33

### E

Electrodes ..... 10, 33  
 Electromagnetic compatibility ....  
   ..... 21, 22  
 Emitted interference ..... 21, 22  
 EU Declaration of Conformity ....  
   ..... 26, 28  
 External Bus  
   address ..... 3, 13  
   connections ..... 13  
   socket ..... 3

### F

Failure ..... 6

### G

Guide chain ..... 1, 2, 7, 8, 17

### I

Infrared sensor ..... 3  
 Initialize ..... 3  
 Input ..... 11  
 Installation ..... 5, 16  
 Interference immunity ..... 21, 22  
 ISO 9001 ..... 25, 27

### L

Lift ..... 1  
 Lines ..... 11

### M

Magnet holder ..... 9  
 Magnetic  
   code ..... 3, 9, 14, 15  
   rack code indicator ..... 3  
   sensor ..... 3, 9  
   stirrer ..... 8, 31  
 Maintenance ..... 23  
 Manufacturing number ..... 3  
 Micro electrodes ..... 10, 18, 33  
 Models ..... 4, 16, 29  
 Mounting ..... 7, 8, 10, 17

### O

Options ..... 31  
 Output ..... 11  
 Overview ..... 1

### P

Packaging ..... 5  
 Peripheral instruments 6, 11, 12  
 Pin assignment ..... 11  
 Pipetting ..... 16, 31  
 Plug cover ..... 1, 2  
 Position table ..... 14  
 Pump ..... 1, 2, 4, 7  
 Pump head ..... 8

### R

Rack ..... 1, 3, 8, 9, 14, 16, 32  
   code ..... 3  
   recognition ..... 3, 9, 14  
 Rear view ..... 2, 3  
 Remote connections ..... 11  
 Remote Interface ..... 2, 11, 14  
 Rinsing equipment ..... 7  
 Rod magnets ..... 14  
 Rod stirrer ..... 10, 18, 31  
 Rotating nozzle ..... 7, 10

### S

Safety considerations ..... 1, 6  
 Safety specifications ..... 21, 22  
 Sample  
   rack ..... 1, 3, 8, 9, 14, 16, 32  
   vessel ..... 14, 16, 32  
 Sensors ..... 3  
 Servicing ..... 23  
 Setting up ..... 5, 7, 10, 18  
 Side view ..... 1, 2  
 Signals ..... 11  
 Special beaker ..... 16  
 Splash protection ..... 1, 2  
 Spray nozzles ..... 7, 8, 18  
 Stirrer  
   connections ..... 2, 4  
   propeller ..... 10, 18  
   rail ..... 1, 8  
 Swing Head .....  
   ..... 12, 16, 22, 27, 31, 32  
   installation ..... 16  
 System validation ..... 25, 27

### T

Technical Specifications ... 20, 22  
 Titration head .....  
   ..... 7, 10, 16, 18, 19, 31, 32  
   vessel ..... 16  
 Titroprocessor ..... 13  
 Tower ..... 1, 4  
 Transfer head ..... 16, 19, 31  
 Tubing ..... 7, 8  
 Turntable ..... 14

### V

Valve ..... 1, 2

### W

Warranty ..... 24