

695 Autosampler

Mains connection:

Mains voltage $U = 100, 120, 220, 240 \text{ V } (\pm 10\%)$

Mains frequency $f = 50 \dots 60 \text{ Hz}$

Power consumption $S = 100 \text{ VA}$

8.695.1003 Instructions for Use

Table of contents

	<u>Page</u>
1. Introduction	1
2. Parts and controls	2
3. Installation	4
3.1 Setting up the 695 Autosampler	4
3.1.1 Unpacking	4
3.1.2 Control	4
3.1.3 Setting up	4
3.1.4 Removing the transport safeguards	5
3.2 Mounting the accessories on the 695 Autosampler	5
3.2.1 Installing the positioning plate	5
3.2.2 Mounting the 6.1827.000 Transfer tubing	6
3.2.3 Mounting the 6.1827.010 Transfer tubing	7
3.2.4 Mounting the tubing for the liquid sensor	7
3.2.5 Mounting the guide wire	7
3.2.6 Connection of the storage bottle for the hydraulic solution ..	9
3.3 Installation of the 694.0020 VA Stand	10
3.3.1 Mounting the accessories for rinsing and siphoning off ..	10
3.3.2 Equipping the measuring head	12
3.3.3 Mounting the dust protection	15
3.3.4 Setting up the VA Stand	15
3.3.5 Inert gas connection	15
3.4 Connection of the rinsing and siphoning Dosinos	16
3.4.1 Mounting and connecting the siphoning Dosino	16
3.4.2 Mounting and connecting the rinsing Dosino	17
3.5 Electrical connections and mains connection	18
3.5.1 Electrical connections	18
3.5.2 Setting the address selector switches	19
3.5.3 Setting the mains voltage	19
3.5.4 Fuses	20
3.5.5 Mains cable and mains connection	20
3.5.6 Switching the instruments on/off	20

	<u>Page</u>
3.6 Adjusting the Autosampler	21
3.6.1 Checking the home position	21
3.6.2 Adjusting the home position	22
3.6.3 Adjusting the wash position	24
3.6.4 Adjusting the waste position	25
3.6.5 Adjusting the measurement position	27
3.7 Filling the tubing connections	29
3.7.1 Filling the storage bottle with hydraulic solution	29
3.7.2 Filling the storage container with rinsing solution	29
3.7.3 Filling the transfer tubing	29
3.7.4 Filling the connecting tubing with rinsing solution	30
4. Putting into operation	32
4.1 Preparations	32
4.1.1 Checking the hydraulic solution	32
4.1.2 Checking the rinsing solution	32
4.1.3 Checking the waste container	32
4.1.4 Checking the mercury collecting vessel	32
4.1.5 Lowering cover of the measuring head arm	32
4.2 Putting the 695 Autosampler and 694.0020 VA Stand into operation	33
4.2.1 Switching on the instruments	33
4.2.2 Checking for air bubbles	33
4.2.3 Checking the wash station	34
4.3 Racks	35
4.3.1 General information	35
4.3.2 6.2041.060 Sample rack for 80 samples	36
4.3.3 6.2041.080 Standard rack for 17 standards	37
4.3.4 6.2041.090 Standard rack for 10 standards	39
4.3.5 6.2041.070 Sample rack for 40 samples	40
4.3.6 6.2041.100 Holder for 2 UV racks, each holding 12 samples	41
4.3.7 6.2041.110 Holder for 2 UV racks, each holding 16 samples	42
4.3.8 User-defined racks	44
4.3.9 Backup copies of the rack data	46

5. Operation	47
5.1 Manual operation	47
5.2 Operation via dialogue pages	47
5.2.1 Program instructions	47
5.2.2 Entry of the standard addition, auxiliary and calibration solutions	50
5.2.3 Sample data table	51
5.2.4 Settings on the "MONITORING" page	52
5.3 Examples	53
5.3.1 Proportional standard addition	53
5.3.2 Standard addition with predilution of the sample	55
5.3.2 Calibration curve with predefined calibration solutions	57
5.3.3 Calibration curve with preparation of the calibration solutions	59
6. Safety, Errors, Maintenance, Diagnostic test	61
6.1 Electrical safety	61
6.2 Errors	61
6.3 Maintenance	62
6.3.1 Cleaning the transfer tubing	62
6.3.2 Changing the transfer tubing	65
6.3.3 Cleaning the air supply of the liquid sensor	67
6.4 Diagnostic tests	68
6.4.1 General information	68
6.4.2 Procedure	68
6.4.3 Preparing instrument for diagnostic tests	68
6.4.4 Performing initialisation	69
6.4.5 Checking liquid sensor	69
6.4.6 Checking program version	70
6.4.7 Checking movement of the transfer needle	70
6.4.8 Checking dispensing tips	70
6.4.9 Checking stopcock changeover	70
6.4.10 Checking rack recognition	71
6.4.11 Exiting diagnostic tests	71
7. Technical data	72

	<u>Page</u>
8. Scope of delivery, Options, Warranty	74
8.1 Scope of delivery	74
8.2 Additional accessories required	78
8.3 Options	78
8.4 Warranty	80
9. Index	81

List of figures

	<u>Page</u>
<u>Fig. 1:</u> Front view of 695 Autosampler	2
<u>Fig. 2:</u> Rear view of 695 Autosampler	3
<u>Fig. 3:</u> Setting up the 695 Autosampler	5
<u>Fig. 4:</u> Mounting the transfer tubing	6
<u>Fig. 5:</u> Scheme of the tubing connections	8
<u>Fig. 6:</u> Left side view of the 694.0020 VA Stand	11
<u>Fig. 7:</u> Measuring head arm	13
<u>Fig. 8:</u> Mounting the dust protection	14
<u>Fig. 9:</u> Electrical connections	19
<u>Fig. 10:</u> Setting the wash position	25
<u>Fig. 11:</u> Setting the waste position	26
<u>Fig. 12:</u> Setting the measurement position	27

1. Introduction

The **695 Autosampler** allows fully automatic processing of relatively large sample series for polarographic and voltammetric analyses. Control is effected entirely by the **693 VA Processor**, in addition the **694.0020 VA Stand** especially equipped for the 695 Autosampler as well as two **700 Dosinos** for rinsing the measuring vessel and siphoning off its contents are required.

The dispensing device of the 695 Autosampler for solution transfer operates in the μL to mL range and is distinguished by extremely high precision. Thanks to the surface sensor integrated in the transfer tip, its immersion depth during solution transfer can be optimally controlled and hence the danger of carryover kept to a minimum.

Different racks are available for samples, standards and electrolytes. Most sample racks can also be covered by a plastic film to protect samples against contamination by the ambient air. The samples can be processed in any order using different methods. The design of the analysis sequence of a method on the 693 VA Processor is completely flexible. Special program instructions for the 695 Autosampler allow the following actions:

- Solution transfer from the sample to the auxiliary vessel
- Addition of auxiliary solutions to the sample or auxiliary vessel
- Mixing of solutions in the sample or auxiliary vessel
- Solution transfer from the sample or auxiliary vessel to the measuring vessel
- Addition of auxiliary, standard addition or calibration solutions to the measuring vessel
- Rinsing and emptying of the measuring vessel
- Parallel sample preparation on the 695 Autosampler

These **8.695.1003 Instructions for use** provide a detailed description of the parts and controls, installation, putting into operation, troubleshooting, technical data and ordering designations of the 695 Autosampler. As the 695 Autosampler is operated exclusively via the 693 VA Processor, the Operation section is limited to a brief overview of the various possibilities and a few examples. For more detailed information on the operation, please refer to the **8.693.1053 Instructions for use**, in particular for a comprehensive description of all program instructions for the Autosampler. The **8.693.1033 Short operating guide**, which explains the most important functions, concepts and parameters in a condensed and easily surveyed form is an additional reference work suitable for daily use.

The following notation is used throughout these Instructions for use:

- "SAMPLES" Designation for dialogue page
- <Enter> Designation for key
- <Copy to> Designation for softkey
- "Mode" Designation for parameter
- Modifiable parameter
- xxxxxxxx Displayed parameter (not modifiable)

2. Parts and controls

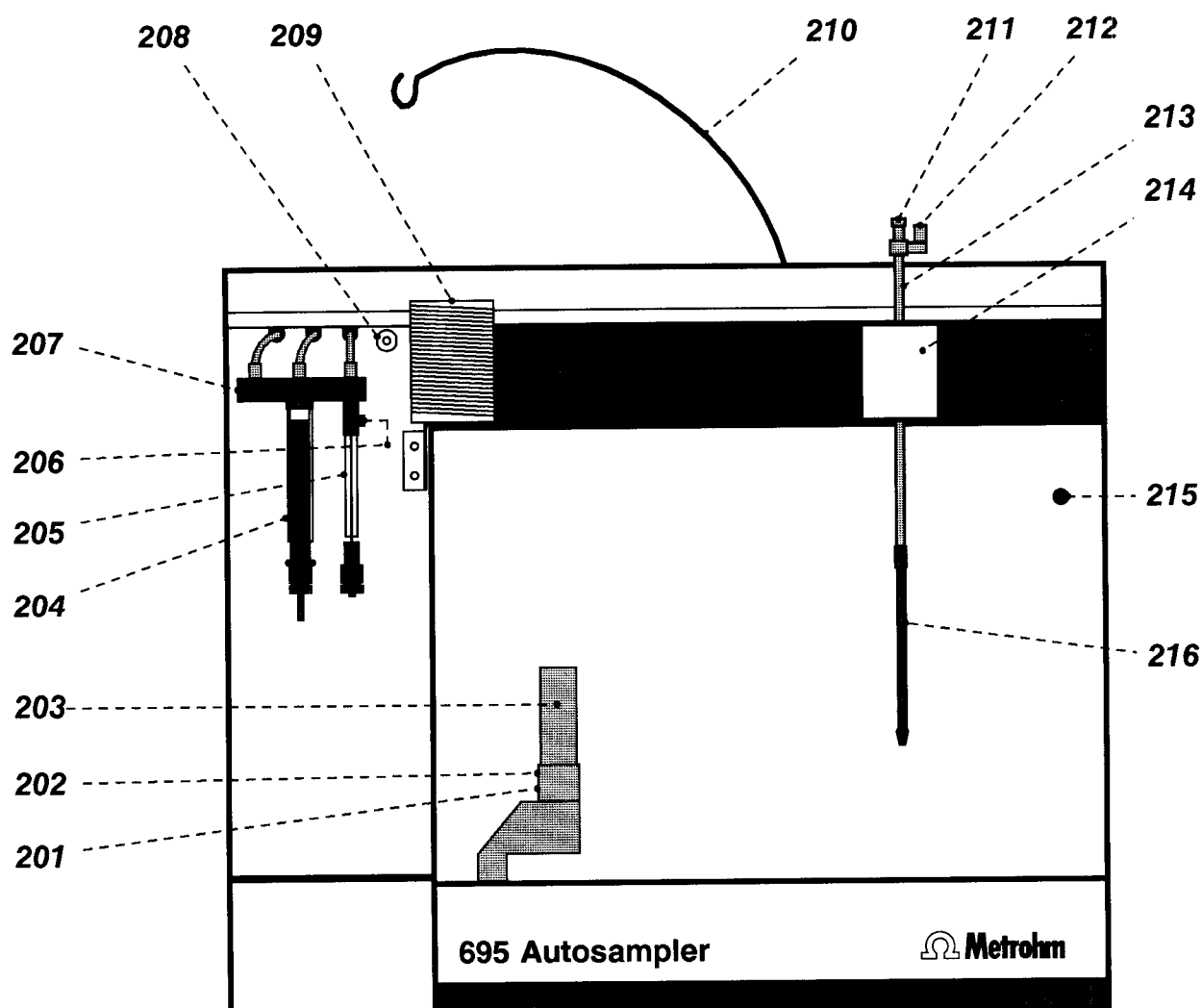


Fig. 1: Front view of 695 Autosampler

- | | | | |
|------------|--|------------|---|
| 201 | Connection for siphoning off the rinsing solution
Connection to siphoning Dosino | 209 | Transfer tubing holder
(6.2054.000) |
| 202 | Connection for supply of the rinsing solution
Connection to rinsing Dosino | 210 | Guide wire (6.2054.010) |
| 203 | Wash station | 211 | Connection for transfer tubing |
| 204 | Large dispensing tip (10 mL) | 212 | Connection for liquid sensor |
| 205 | Small dispensing tip (0.1 mL) | 213 | Gear rack
Holder for transfer needle |
| 206 | Connection for transfer tubing | 214 | Transfer arm |
| 207 | Connection for hydraulic solution | 215 | Mains power lamp
Lit up when instrument switched on |
| 208 | Connection for liquid sensor | 216 | Transfer needle (3.695.0280) |

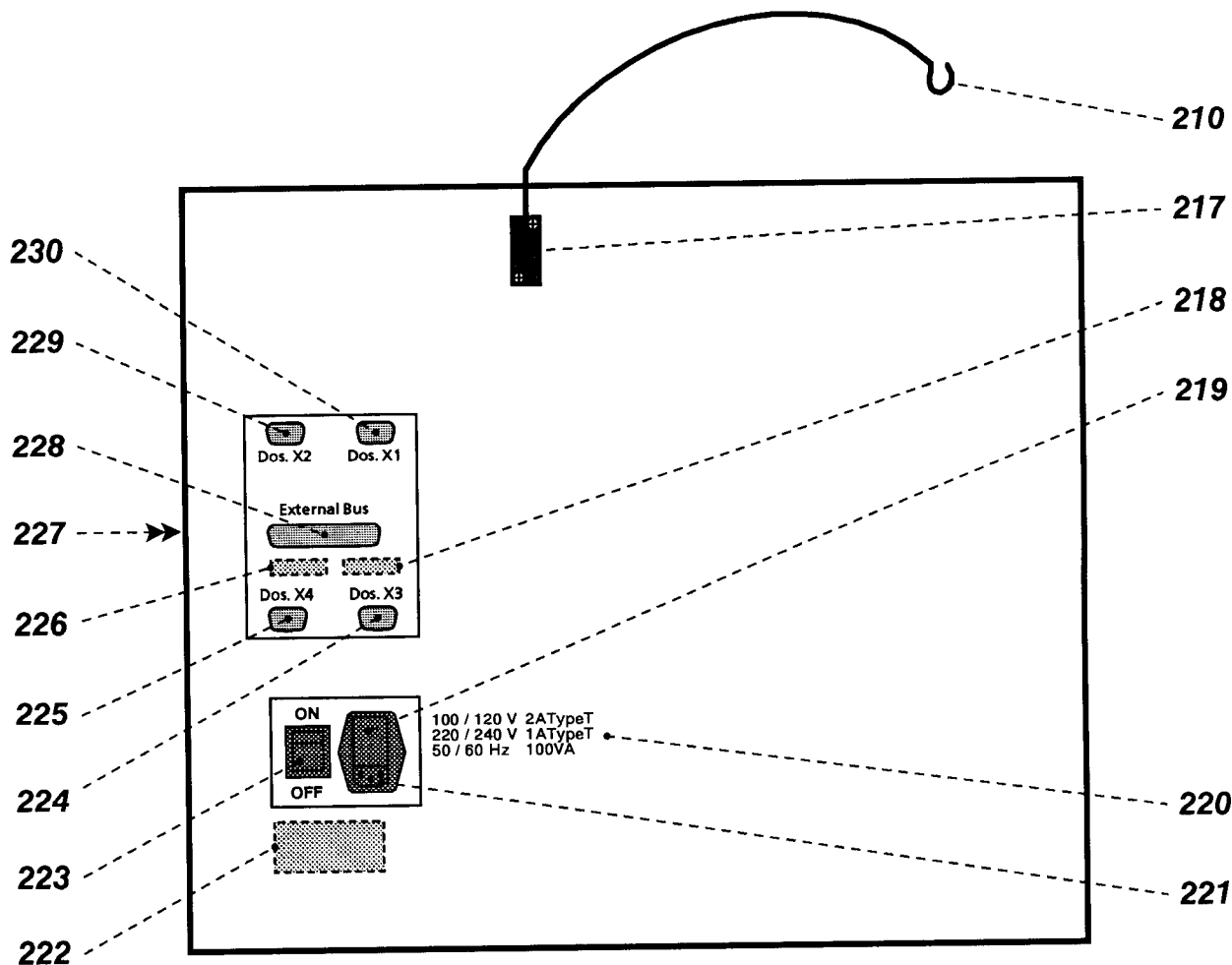


Fig. 2: Rear view of 695 Autosampler

- | | |
|--|--|
| <p>210 Guide wire (6.2054.000)</p> <p>217 Holder for guide wire</p> <p>218 Manufacturing number</p> <p>219 Cover for mains voltage selector and fuse holder
Setting of the mains voltage and changing the fuses, see sect. 3.5</p> <p>220 Fuse ratings</p> <p>221 Mains connection plug
Mains connection, see sect. 3.5</p> <p>222 Important information:
WARNING – Fire Hazard:
For continued protection replace only with the same type and rating of fuse !</p> <p>223 Mains switch (on/off)</p> | <p>224 Dos. X3
Connection for rinsing Dosino</p> <p>225 Dos. X4
Connection for siphoning Dosino</p> <p>226 Model number</p> <p>227 Address selector switch
Setting the address, see sect. 3.5.2</p> <p>228 External Bus (EBUS)
Connection to 694 VA Stand or 693 VA Processor</p> <p>229 Dos. X2
Connection not in use</p> <p>230 Dos. X1
Connection not in use</p> |
|--|--|

3. Installation

This section offers a full description of the installation of the 695 Autosampler and the 694.0020 VA Stand. Reliable operation of these instruments is assured only if you follow the instructions in this section exactly. Bold, underlined numbers in the text (e.g. **215**) refer to the parts and controls numbered in the illustrations.

3.1 Setting up the 695 Autosampler

3.1.1 Unpacking

The 695 Autosampler is supplied together with the separately packed accessories in special packages designed to ensure excellent protection. These contain shock-absorbing foam linings foamed to the individual shape. As only these special packagings guarantee indemnified transport of the instruments, it is essential you store them in a safe place.

To unpack the 695 Autosampler, proceed as follows (see Fig. 3):

1▶	Position box containing 695 Autosampler so that the arrow "This way up" points upwards.
2▶	Open box on the side with the printed instruction "Open this side".
3▶	Carefully pull out 695 Autosampler at positions A and B . Note: Never pull on transfer arm 214 as you could damage it!

3.1.2 Control

Immediately following delivery, check that the consignment is complete and undamaged (compare with delivery note and accessories list in section 8.1). In the case of transport damage, see directions in section 8.4 "Warranty".

3.1.3 Setting up

Place the 695 Autosampler on a laboratory bench in a position suitable for operation and which is free from vibrations, protected against corrosive atmospheres and contamination by chemicals.

The baseplate **231** (6.2622.010) is used for exact positioning of the 695 Autosampler and the 694 VA Stand. Proceed as follows:

1▶	Place baseplate 231 at the desired location resting on its rubber feet as shown in Fig. 3.
2▶	Position 695 Autosampler on baseplate 231 so that the 6 rubber feet are located in the large holes of the baseplate.

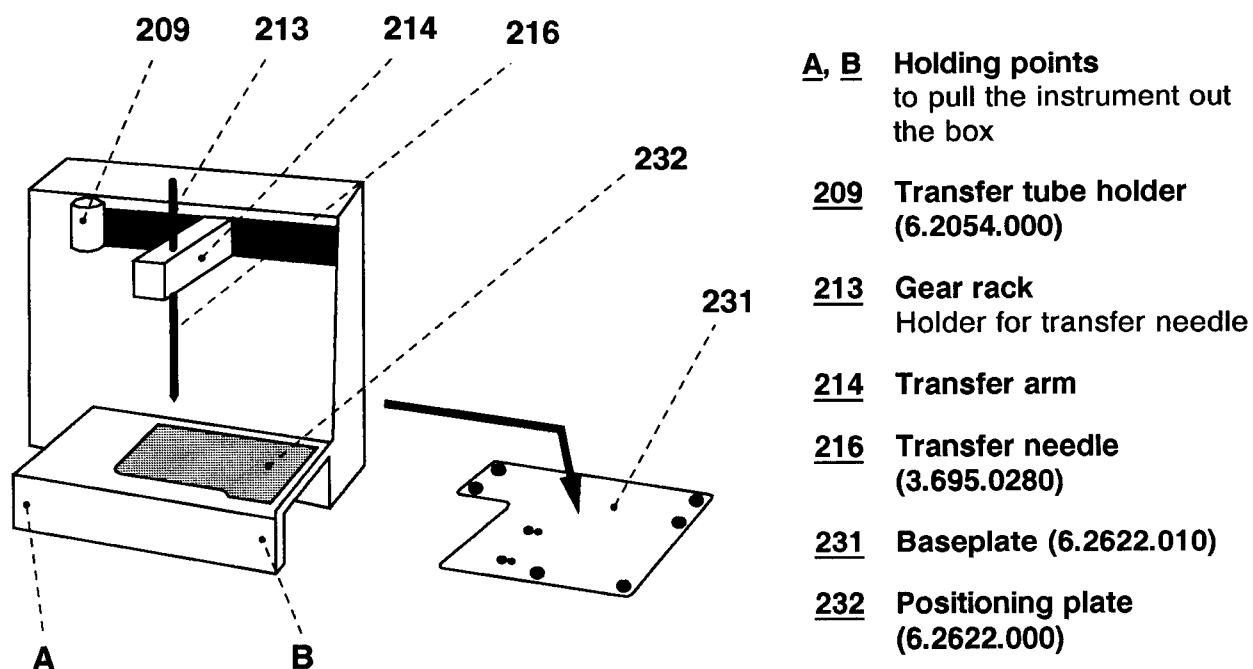


Fig. 3: Setting up the 695 Autosampler

3.1.4 Removing the transport safeguards

The following three transport safeguards must be removed:

1▶	Remove transport safeguard from tubing holder 209 : Cut plastic tie, remove plastic film and metal clip.
2▶	Remove transport safeguard at transfer arm 214 : Cut plastic tie, remove plastic film and foam plastic.
3▶	Remove transport safeguard at transfer needle 216 : Pull up gear rack 213 with screw-mounted transfer needle 216 by hand, cut plastic tie and remove.

3.2 Mounting the accessories on the 695 Autosampler

3.2.1 Installing the positioning plate

Place positioning plate **232** (6.2622.000) for mounting the sample and standard racks in the 4 bolts provided on the 695 Autosampler as shown in *Fig. 3*.

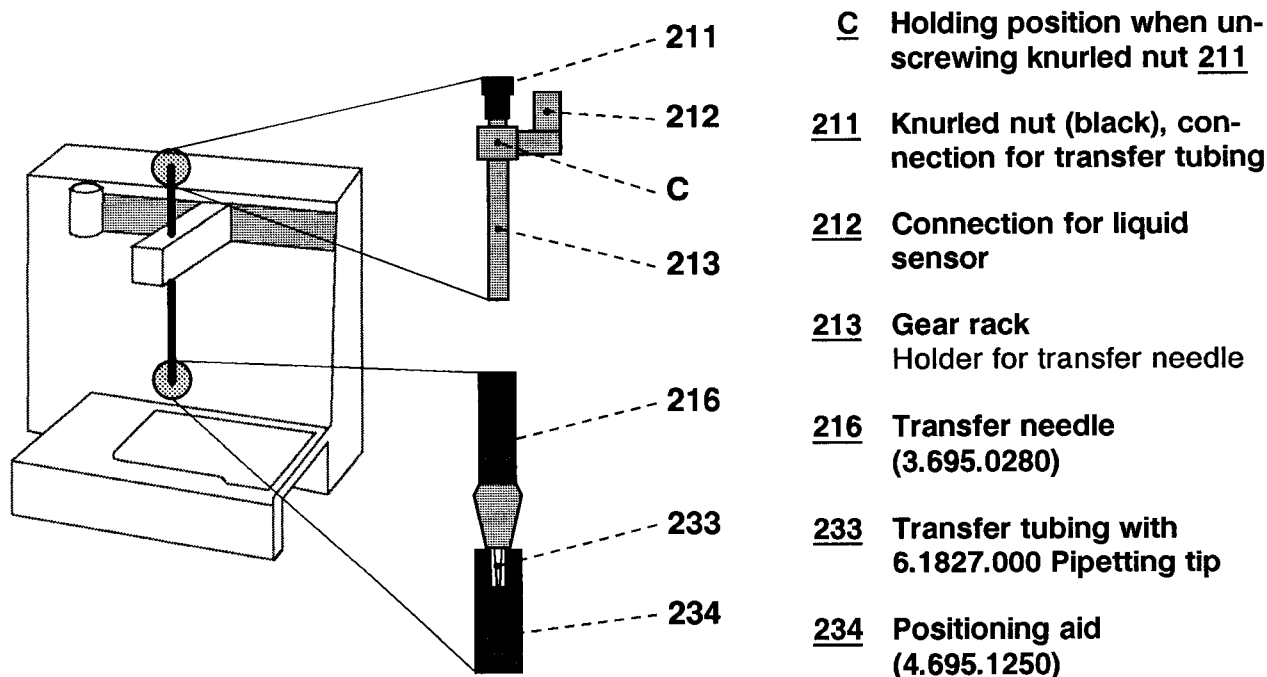


Fig. 4: Mounting the transfer tubing

3.2.2 Mounting the 6.1827.000 Transfer tubing

The transfer tubing **233** (6.1827.000) with the pipetting tip at one end must be inserted in transfer needle **216**. Proceed as follows (see *Fig. 4*):

1▶	Lower gear rack 213 with screw-mounted transfer needle 216 by hand as far as it will go.
2▶	Using one hand, hold gear rack 213 at holding position C and with your other hand unscrew black knurled nut 211 a few turns.
3▶	Carefully remove the protective tube from the pipetting tip of transfer tubing 233 . Note: <i>Never touch the pipetting tip!</i>
4▶	Push transfer tubing 233 through the opening of knurled nut 211 into transfer needle 216 until the pipetting tip is visible at the bottom opening of the transfer needle.
5▶	Hold positioning aid 234 (4.695.1250) enclosed with the transfer tubing from below against transfer needle 216 as shown in <i>Fig. 4</i> .
6▶	Carefully push transfer tubing 233 by hand further into transfer needle 216 until the pipetting tip is lined up with positioning aid 234 .
7▶	Remove positioning aid 234 . Using one hand hold gear rack 213 at holding position C and with your other hand retighten black knurled nut 211 .

3.2.3 Mounting the 6.1827.010 Transfer tubing

The 6.1827.010 Transfer tubing has two screw nipples of different lengths. It is mounted on the 695 Autosampler as follows (see Fig. 1 and Fig. 5):

1▶	Screw the end of the 6.1827.010 Transfer tubing with the shorter screw nipple to connection 206 of the small dispensing tip.
2▶	Using a screwdriver, unscrew the two retaining screws of the transfer tubing holder 209 .
3▶	Carefully wind 6.1827.010 Transfer tubing around tubing holder 209 starting at the bottom and fix by tightening the two retaining screws.
4▶	Screw the free end of the 6.1827.010 Transfer tubing with the longer screw nipple to a 6.1808.000 Connecting sleeve.
5▶	Screw the free end of the 6.1827.000 Transfer tubing installed in the transfer needle to the other end of the 6.1808.000 Connecting sleeve.

3.2.4 Mounting the tubing for the liquid sensor

The 6.1805.120 FEP tubing (length $L = 100$ cm) is used to connect the transfer needle to the liquid sensor built into the Autosampler. It is mounted on the 695 Autosampler as follows (see Fig. 1 and Fig. 4):

1▶	Lower gear rack 213 with screw-mounted transfer needle 216 by hand as far as it will go.
2▶	Using one hand, hold gear rack 213 at holding position C and with your other hand screw one end of the 6.1805.120 FEP tubing to connection 212 .
3▶	Screw the other end of the 6.1805.120 FEP tubing to connection 208 .

3.2.5 Mounting the guide wire

The 6.2054.010 Guide wire is used to hold the two tubing lengths 6.1827.000 and 6.1805.120. It is mounted on the 695 Autosampler as follows (see Fig. 2):

1▶	Insert guide wire 210 (6.2054.000) in holder 217 .
2▶	Lead 6.1827.000 Transfer tubing and 6.1805.120 FEP tubing through the front opening of guide wire 210 without kinking the tubing.

3.2.6 Connection of the storage bottle for the hydraulic solution

The hydraulic solution (acidified, ultrapure water) is needed for the pipetting of solutions on the 695 Autosampler. To assemble and connect the storage bottle to the 695 Autosampler, proceed as follows (see *Fig. 1* and *Fig. 5*):

1▶	Obtain a gas wash bottle of volume at least 2 L with screw thread GL45 (e.g. Schott, Riedel-de Haën, Fluka) or S40 (e.g. Merck). Clean the bottle thoroughly and rinse it with ultrapure water.
2▶	Depending on the screw thread of the storage bottle, screw 6.1602.100 Bottle attachment (GL45 thread) or 6.1602.110 Bottle attachment (S40 thread) onto the storage bottle.
3▶	Screw 6.1446.040 Threaded stopper into the M6 threaded opening of the 6.1602.1X0 Bottle attachment.
4▶	Insert 6.1819.070 Tube from above in the M8 threaded opening of the 6.1602.1X0 Bottle attachment as far as it will go.
5▶	Screw one end of the 6.1805.200 PTFE tubing connector (length $L = 50$ cm) into the M8 threaded opening of the 6.1602.1X0 Bottle attachment.
6▶	Insert the 6.1403.010 Absorption tube closed with the 6.2701.020 Cover into ground-glass joint SGJ 14/15 of the 6.1602.1X0 Bottle attachment and fasten with the red 6.2023.020 Joint clamp. The absorption tube can be filled with cotton wool to protect the hydraulic solution against dust.
7▶	Position storage bottle on the left of the 695 Autosampler and screw the other end of the 6.1805.200 PTFE tubing connection into connection <u>207</u> of the Autosampler (see <i>Fig. 1</i>).

Wait until you have adjusted the 695 Autosampler (see *sect. 3.6*) before filling the storage bottle with thoroughly degassed hydraulic solution (see *sect. 3.7*).

3.3 Installation of the 694.0020 VA Stand

For operation of the 695 Autosampler, the 694.0020 VA Stand is needed, which is distinguished from the 694.0010 VA Stand for single determinations only by the accessories. For installation of the 694.0020 VA Stand and its accessories (electrodes, stirrer), the information in the 693/694 Instructions for use basically applies. This section describes the installation of the additional accessories on the 694.0020 VA Stand and equipping of the measuring head.

3.3.1 Mounting the accessories for rinsing and siphoning off

For rinsing and siphoning off the analyte solution on the 694.0020 VA Stand, supply and discharge tubing lengths as well as a second gas wash bottle for the separation of mercury are needed. These accessories are mounted as follows (see Fig. 6 and Fig. 7):

1▶	Insert white sealing ring(A.254.0103, component of 6.2405.040) from below in PTFE sleeve <u>243</u> (4.647.0471).
2▶	Screw gas wash bottle <u>241</u> (6.2405.030) from below firmly into PTFE sleeve <u>243</u> .
3▶	Insert PTFE sleeve <u>243</u> with screw-mounted gas wash bottle <u>241</u> from below into the free opening of measuring head arm <u>39</u> and screw on tight using hex nut <u>244</u> (4.647.0480, component of 6.2405.040).
4▶	Cut PTFE tube <u>240</u> (6.1819.010, component of 6.2405.040) to a length of ca. 30 mm and insert from above in opening <u>245</u> of PTFE sleeve <u>243</u> facing measuring head <u>40</u> .
5▶	Cut PTFE tube <u>242</u> (6.1819.010, component of 6.2405.040) to a length of ca. 40 mm and insert from above in the remaining free opening <u>246</u> of PTFE sleeve <u>243</u> .
6▶	Cut PTFE tube <u>238</u> (6.1819.000, thin tube, component of 6.2405.040) to a length of ca. 30 mm and insert from above in opening <u>69</u> of measuring head <u>40</u> .
7▶	Cut the bottom end of PTFE tube <u>239</u> (6.1819.010, component of 6.2405.040) diagonally and insert from above in opening <u>68</u> of measuring head <u>40</u> . To ensure that the solution is siphoned off as completely as possible, the end of the tube must be located in the deepest part of the measuring vessel (left rear when viewed from front).
8▶	Screw FEP tubing <u>236</u> (6.1805.180, length $L = 16$ cm) into threaded opening <u>68</u> of measuring head <u>40</u> and into threaded opening <u>245</u> of PTFE sleeve <u>243</u> .
9▶	Screw FEP tubing <u>235</u> (6.1805.090, length $L = 31$ cm) into threaded opening <u>246</u> of PTFE sleeve <u>243</u> . Screw a 6.1808.000 Connecting sleeve to the other end and insert this in a slot of the tubing holder at the rear of the VA Stand.

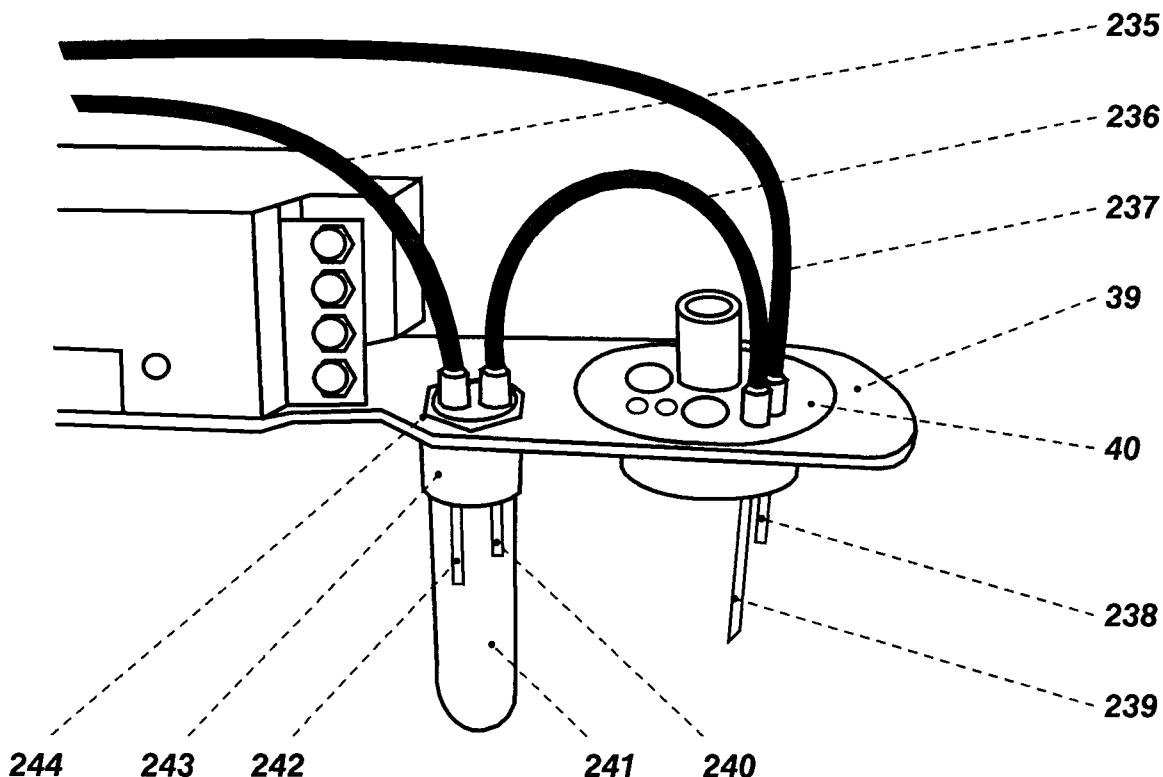


Fig. 6: Left side view of the 694.0020 VA Stand

- | | |
|---|---|
| 39 Measuring head arm
Carrier plate with permanently attached measuring head, raisable | 239 PTFE tube (6.1819.010)
For siphoning off the analyte or rinsing solution |
| 40 Measuring head
Measuring vessel upper half made of PTFE; with openings for electrodes, stirrer, gas and liquid supply lines | 240 PTFE tube (6.1819.010)
For supply of the rinsing solution to gas wash bottle 241 |
| 235 FEP tubing (6.1805.090)
For siphoning off the rinsing solution | 241 Gas wash bottle (6.2405.030)
For separating mercury from the rinsing solution |
| 236 FEP tubing (6.1805.180)
For transferring the rinsing solution to gas wash bottle 241 | 242 PTFE tube (6.1819.010)
For siphoning off the rinsing solution from gas wash bottle 241 |
| 237 FEP tubing (6.1805.100)
For supply of the rinsing solution | 243 PTFE sleeve (4.647.0471)
For fastening gas wash bottle 241 and FEP tubing 235 and 236 |
| 238 PTFE tube (6.1819.000)
For introduction of the rinsing solution | 244 Hex nut (4.647.0480) |

10▶	Screw FEP tubing 237 (6.1805.100, length $L = 40$ cm) into threaded opening 69 . Screw a 6.1808.000 Connecting sleeve to the other end and insert this in a slot of the tubing holder at the rear of the VA Stand.
------------	--

3.3.2 Equipping the measuring head

With the exception of the additional components for siphoning off and rinsing the measuring vessel already described in *sect. 3.3.1*, the openings and connections of measuring head **40** in the 694.0020 VA Stand are equipped in the same manner as for the 694.0010 VA Stand (see *Fig. 7*). In *sect. 2 (Fig. 5 and Fig. 6)* of the 693/694 Instructions for use, you will find the view of the fully equipped measuring head for operation with a multi-mode electrode, in *sect. 3.5 (Fig. 13)* that for operation with a rotating disk electrode.

When equipping the measuring head for the first time, it is best to proceed as follows:

1▶	<p>Preparations</p> <ul style="list-style-type: none"> ● Mount accessories for rinsing the measuring vessel and siphoning off its contents (see <i>sect. 3.3.1</i>). ● Prepare multi-mode electrode MME 37 (details, see <i>section 3.4 of the 693/694 Instructions for use</i>) or rotating disk electrode RDE (details, see <i>section 3.5 of the 693/694 Instructions for use</i>) for operation. ● Prepare reference electrode 42 (details, see <i>section 3.6 of the 693/694 Instructions for use</i>) for operation. ● Tilt back cover 24 of measuring head arm.
2▶	<p>Insert dummy stoppers</p> <ul style="list-style-type: none"> ● Screw dummy stopper 41 (6.1446.040) into opening 73. ● Insert 6.2730.030 Stopper into enclosed nipple 43 and push enclosed O-ring over the stopper. ● Screw nipple 43 with stopper into opening 75 by hand.
3▶	<p>Install stirrer or RDE</p> <p><i>in operation with MME:</i></p> <ul style="list-style-type: none"> ● Screw stirrer tip 61 to drive shaft 44 (see also <i>section 3.8 of the 693/694 Instructions for use</i>). ● Insert stirrer in opening 76 as far as it will go. ● Stretch drive belt 48 (6.1244.020) between drive wheel 51 and drive shaft 44 of the stirrer. <p><i>in operation with RDE (option):</i></p> <ul style="list-style-type: none"> ● Screw electrode tip 109 (6.1204.XXX) to drive shaft 110 (6.1246.000) (see also <i>section 3.5 of the 693/694 Instructions for use</i>). ● Insert RDE in opening 76 as far as it will go. ● Stretch drive belt 48 (6.1244.020) between drive wheel 51 and drive shaft 110 of the RDE. ● Attach electrode cable 36 (WE) to the RDE: push cable lug under the screw and then tighten screw firmly.

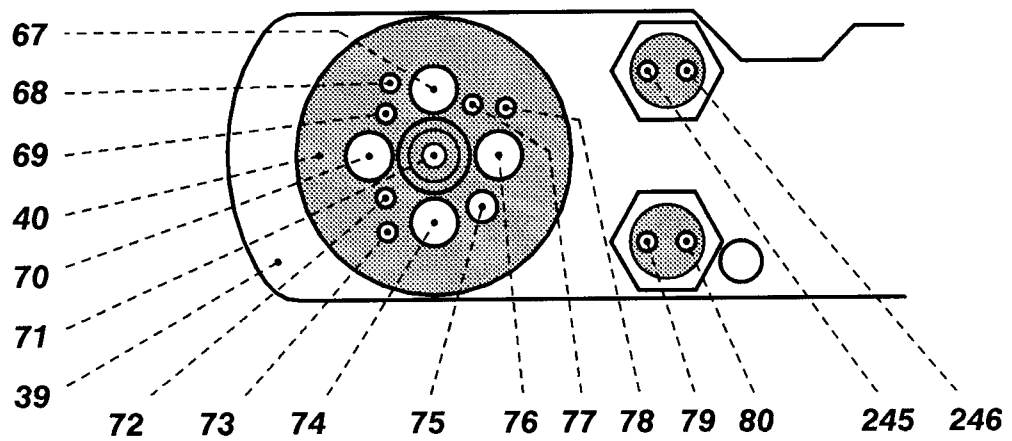


Fig. 7: Measuring head arm

- 39** Measuring head arm
- 40** Measuring head
- 67** Opening
for auxiliary electrode **58**
- 68** Threaded opening
for FEP tubing **236** (6.1805.180);
siphoning off the rinsing solution
- 69** Threaded opening
for FEP tubing **237** (6.1805.100);
addition of the rinsing solution
- 70** Pipetting opening
for the addition of solutions by the
transfer needle of the Autosampler
- 71** Opening
in operation with MME:
for multi-mode electrode **37**
(6.1246.020)
in operation with RDE:
for 6.2709.040 Stopper (option)
- 72** Threaded opening
for FEP tubing **38** (6.1805.180, al-
ready permanently attached); inert
gas supply to meas. vessel **28**
- 73** Threaded opening
for dummy stopper **41** (6.1446.040)
- 74** Opening
for reference electrode **42**
- 75** Threaded opening
for nipple **43** (6.2730.030) with
dummy stopper
- 76** Opening
in operation with MME:
for stirrer, comprising drive shaft
44 (6.1246.010) and stirrer tip **61**
(6.1204.090)
in operation with RDE:
for rotating disk electrode (op-
tion), comprising drive shaft **110**
(6.1246.000) and electrode tip
109 (6.1204.XXX)
- 77** Threaded opening
for FEP tubing **55** (6.1805.180, al-
ready permanently attached); inert
gas supply for tapping mechanism
- 78** Threaded opening
for FEP tubing **54** (6.1805.090, al-
ready permanently attached); inert
gas lead-off
- 79** Threaded opening
for FEP tubing **38** (6.1805.180, al-
ready permanently attached); inert
gas supply from gas wash bottle
27 to measuring vessel **28**
- 80** Threaded opening
for FEP tubing **52** (6.1805.040, al-
ready permanently attached); inert
gas supply to gas wash bottle **27**
- 245** Threaded opening
for FEP tubing **236** (6.1805.180);
supply of the rinsing solution to gas
wash bottle **241**
- 246** Threaded opening
for FEP tubing **235** (6.1805.090);
discharge of the rinsing solution
from gas wash bottle **241**

4▶	<p>Install reference electrode</p> <ul style="list-style-type: none"> ● Insert reference electrode 42 in opening 74. ● Attach electrode cable 47 (RE) to reference electrode 42: push cable lug under the screw and then tighten screw firmly. ● Turn reference electrode 42 so that the electrode cable 47 points to the rear and not to the side (in the latter position it may become kinked and damaged when cover 24 is closed).
5▶	<p>Install auxiliary electrode</p> <ul style="list-style-type: none"> ● Insert auxiliary electrode 58 (6.0343.000 Pt auxiliary electrode or GC auxiliary electrode, see <i>section 3.7</i>) in opening 67. ● Attach electrode cable 56 (AE) to auxiliary electrode 58: push cable lug under the screw and then tighten screw firmly. ● Turn auxiliary electrode 58 so that the electrode cable 56 points to the rear and not to the side (in the latter position it may become kinked and damaged when cover 24 is closed).
6▶	<p>Install MME or dummy stopper <i>in operation with MME:</i></p> <ul style="list-style-type: none"> ● Carefully insert multi-mode electrode 37 (6.1246.020) in opening 71 (the underside of the capillary must not touch the measuring head during insertion) and push in as far as it will go. ● Screw FEP tubing 50 (6.1805.180) for inert gas supply into connection 82 of the MME 37. ● Screw FEP tubing 57 (6.1805.180) for inert gas supply into connection 83 of the MME 37. ● Attach electrode cable 36 (WE) to screw connection 99 of the MME 37: push cable lug under the screw and then tighten screw firmly. <p><i>in operation with RDE (option):</i></p> <ul style="list-style-type: none"> ● Insert stopper 108 (6.2709.040, option) into opening 71 as far as it will go so that the two blind holes point to the rear of the stand. ● Screw FEP tubing 50 (6.1805.180) into upper hole of stopper 108. ● Screw FEP tubing 57 (6.1805.180) into lower hole of stopper 108.
7▶	<p>Install measuring vessel</p> <ul style="list-style-type: none"> ● Tilt back measuring head arm 39. ● Slide measuring vessel 28 into holder 26 from the front. ● Lower measuring head arm 39 and cover 24.

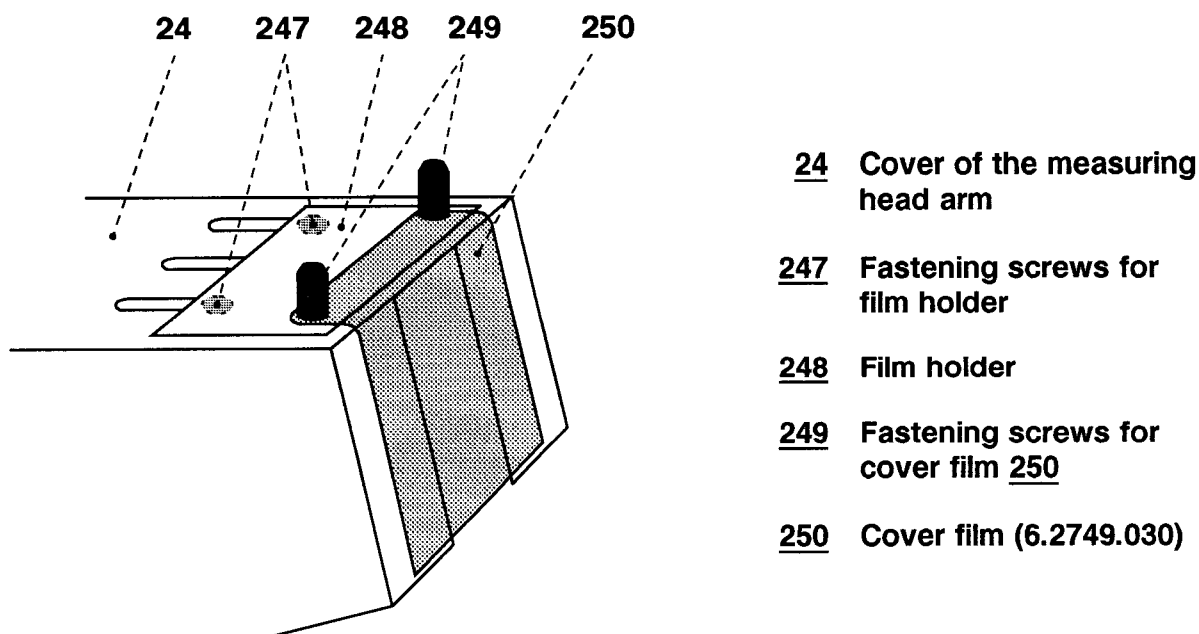


Fig. 8: Mounting the dust protection

3.3.3 Mounting the dust protection

To protect the measuring vessel against the ingress of dust through pipetting opening **70**, a transparent film is mounted on cover **24** of the measuring head arm. Proceed as follows (see *Fig. 8*):

1▶	Raise cover 24 of the measuring head arm fully.
2▶	Insert film holder 248 (component of 6.2041.170) from above on the three slots of cover 24 so that the two fastening screws 247 are positioned right at the front stop of the slot and then fasten to cover 24 with the enclosed washers and nuts.
3▶	Lower cover 24 of the measuring head arm.
4▶	Unscrew the two fastening screws 249 from film holder 248 .
5▶	Insert a single cover film 250 (6.2749.030) in film holder 248 and retighten the two fastening screws 249 on film holder 248 .

3.3.4 Setting up the VA Stand

The 694.0020 VA Stand is placed under the 695 Autosampler from the left. The two front rubber feet of the VA Stand must be positioned in the remaining two free holes of baseplate **231** (see *Fig. 3*).

3.3.5 Inert gas connection

For the inert gas connection of the 694.0020 VA Stand, see *sect. 3.3.3* of the 693/694 Instructions for use.

3.4 Connection of the rinsing and siphoning Dosinos

Operation of the 695 Autosampler requires not only the standard accessories, but also two 700 Dosinos for connection of the wash station and rinsing and emptying of the measuring vessel. In addition to the 2.695.0010 Autosampler, the following parts must therefore be ordered (see sect. 9.2):

- 2 × 2.700.0010 700 Dosino
- 2 × 6.1567.250 Dispensing unit with cylinder volume $V = 50$ mL
- 1 × 6.2739.000 Wrench for tightening the nipples

You will find further details on the 700 Dosino and the associated dispensing unit in the 700 Instructions for use.

3.4.1 Mounting and connecting the siphoning Dosino

In what follows, the 700 Dosino with mounted dispensing unit used for siphoning off the rinsing solution is referred to as the siphoning Dosino. It is mounted on a waste container and connected to the 695 Autosampler and 694.0020 VA Stand. Proceed as follows (see *Fig. 1* and *Fig. 5*):

1▶	<p>Mounting the siphoning Dosino</p> <ul style="list-style-type: none"> • Unscrew red filling connection from 6.1621.000 Container. • Screw 6.1618.050 Threaded adapter to container. • Screw 6.1829.020 Suction tubing (length $L = 50$ cm) to bottom of the 6.1567.250 Dispensing unit (see sect. 2.1 of the 700 Instructions for use). • Screw 6.1567.250 Dispensing unit to the 6.1618.050 Threaded adapter screwed to the container. • Mount 700 Dosino on 6.1567.250 Dispensing unit (procedure, see sect. 2.3 of the 700 Instructions for use).
2▶	<p>Setting up the waste container</p> <ul style="list-style-type: none"> • Set up container at the desired location next to the Autosampler on the left or on the floor (the max. possible distance is limited by the length 1.5 m of the connecting cable of the Dosino).
3▶	<p>Connection of the wash station</p> <ul style="list-style-type: none"> • Screw first 6.1805.120 FEP tubing (length $L = 1$ m) to connection 3 of the 6.1567.250 Dispensing unit. • Screw second 6.1805.120 FEP tubing (length $L = 1$ m) to bottom connection 201 of wash station 203. • Connect the two lengths of FEP tubing by screwing to a 6.1808.000 Connecting sleeve.
4▶	<p>Connection of the 694.0020 VA Stand</p> <ul style="list-style-type: none"> • Screw first 6.1805.120 FEP tubing (length $L = 1$ m) to connection 1 of the 6.1567.250 Dispensing unit. • Screw second 6.1805.120 FEP tubing (length $L = 1$ m) to the 6.1808.000 Coupling sleeve already screwed to FEP tubing 235. • Connect the two lengths of FEP tubing by screwing to a 6.1808.000 Connecting sleeve.

3.4.2 Mounting and connecting the rinsing Dosino

In what follows, the 700 Dosino with mounted dispensing unit used for delivery of the rinsing solution is referred to as the rinsing Dosino. It is mounted on a storage container and connected to the 695 Autosampler and 694.0020 VA Stand. Proceed as follows (see *Fig. 1* and *Fig. 5*):

1▶	Mounting the rinsing Dosino <ul style="list-style-type: none"> ● Unscrew red filling connection from 6.1621.000 Container. ● Screw 6.1618.050 Threaded adapter to container. ● Screw 6.1829.020 Suction tubing (length $L = 50$ cm) to bottom of the 6.1567.250 Dispensing unit (see <i>sect. 2.1</i> of the 700 Instructions for use). ● Screw 6.1567.250 Dispensing unit to the 6.1618.050 Threaded adapter screwed to the container. ● Mount 700 Dosino on 6.1567.250 Dispensing unit (procedure, see <i>sect. 2.3</i> of the 700 Instructions for use).
2▶	Setting up the storage container <ul style="list-style-type: none"> ● Set up container at the desired location next to the Auto-sampler on the left or on the floor (the max. possible distance is limited by the length 1.5 m of the connecting cable of the Dosino).
3▶	Connection of the wash station <ul style="list-style-type: none"> ● Screw first 6.1805.120 FEP tubing (length $L = 1$ m) to connection 3 of the 6.1567.250 Dispensing unit. ● Screw second 6.1805.120 FEP tubing (length $L = 1$ m) to top connection 202 of wash station 203. ● Connect the two lengths of FEP tubing by screwing to a 6.1808.000 Connecting sleeve.
4▶	Connection of the 694.0020 VA Stand <ul style="list-style-type: none"> ● Screw first 6.1805.120 FEP tubing (length $L = 1$ m) to connection 1 of the 6.1567.250 Dispensing unit. ● Screw second 6.1805.120 FEP tubing (length $L = 1$ m) to the 6.1808.000 Coupling sleeve already screwed to FEP tubing 237. ● Connect the two lengths of FEP tubing by screwing to a 6.1808.000 Connecting sleeve.

Wait until the 695 Autosampler has been adjusted (see *sect. 3.6*) before filling the storage container with rinsing solution (see *sect. 3.7*).

3.5 Electrical connections and mains connection

Note: If the 695 Autosampler is connected to the power supply, the instrument may not be opened or parts removed as there is a danger of contact with live components. Before the 695 Autosampler is opened to change components or for maintenance or repair work, the mains cable must thus always be disconnected from the mains connection plug **221** of the 695 Autosampler.

3.5.1 Electrical connections

Interconnect the 693 VA Processor, the 694.0020 VA Stand, the 695 Autosampler and the two 700 Dosinos as shown in Fig. 9 using the appropriate cables. Proceed as follows:

1▶	Switch off 693 VA Processor using mains switch 11 and the 695 Autosampler using mains switch 223 . Note: The instruments may be electrically connected only when the 693 VA Processor and the 695 Autosampler are switched off, otherwise electrical damage to the instruments could result.
2▶	Plug the end of the first 6.2135.000 EBUS cable with single connector into connection 22 "External Bus" of the 693 VA Processor and fasten to the instrument by turning the screws in the connector.
3▶	Plug the other end of the first EBUS cable with double connector into connection 33 "External Bus" of the 694.0020 VA Stand and fasten to the instrument by turning the screws in the connector.
4▶	Plug the end of the second 6.2135.000 EBUS cable with single connector into the cable connector of the first EBUS cable at the 694.0020 VA Stand and fasten by turning the screws in the connector.
5▶	Plug the other end of the second EBUS cable with double connector into connection 228 "External Bus" of the 695 Autosampler and fasten to the instrument by turning the screws in the connector.
6▶	Attach rinsing Dosino 700 using the cable connected to the instrument to socket 224 "Dos. X3" of the 695 Autosampler.
7▶	Attach siphoning Dosino 700 using the cable connected to the instrument to socket 225 "Dos. X4" of the 695 Autosampler.

Maximum three 694 VA Stands can be attached to the 693 VA Processor. A second, additional 694.0010 VA Stand for single operation is attached to the 695 Autosampler using a 6.2135.000 EBUS cable, a third 694.0010 VA Stand is connected to the second VA Stand.

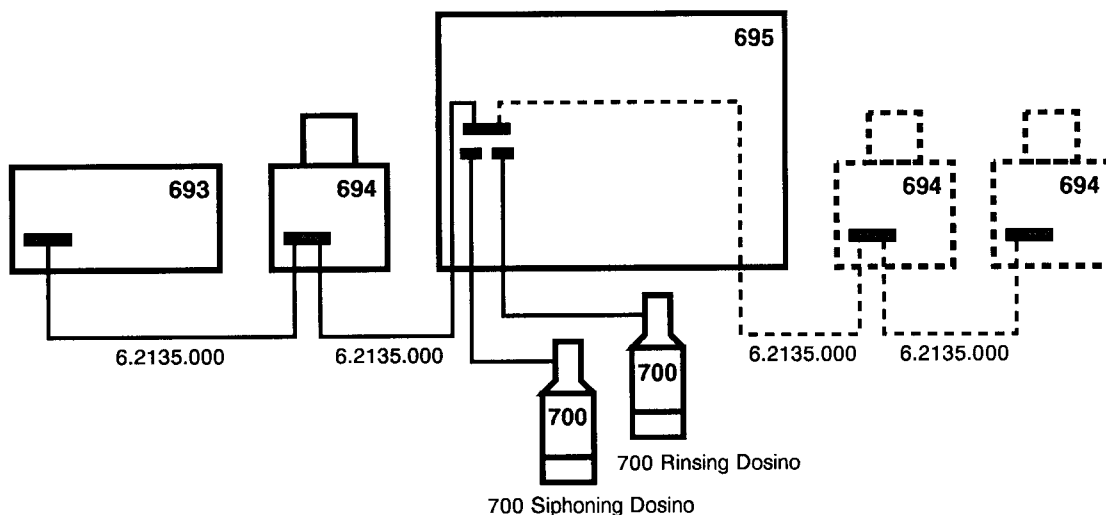


Fig. 9: Electrical connections

3.5.2 Setting the address selector switches

The 695 Autosampler and 694.0020 VA Stand can be properly controlled by the 693 VA Processor only when their EBUS addresses are set to "3". To reset the EBUS address, proceed as follows:

1▶	Using a screwdriver, set address selector switch 34 of the 694.0020 VA Stand to "3" (arrow must point to "3").
2▶	Using a screwdriver, set address selector switch 227 of the 695 Autosampler to "3" (arrow must point to "3").

3.5.3 Setting the mains voltage

Before switching on the 695 Autosampler for the first time, check whether the mains voltage set on the instrument (visible on cover **219**) matches the local mains voltage. If this is not the case, you must reset the mains voltage as follows:

1▶	Disconnect mains cable from mains connection socket 221 .																				
2▶	Using a screwdriver, press cover 219 forwards until it opens.																				
3▶	Remove voltage selector drum, turn to the desired position and reinsert in the holder. The following positions are possible: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th><i>Position</i></th> <th><i>Voltage range</i></th> <th><i>Nominal voltage</i></th> <th><i>Fuse</i></th> </tr> </thead> <tbody> <tr> <td>100Vac</td> <td>100 V ± 10%</td> <td>100 V, 110 V</td> <td>2 AT</td> </tr> <tr> <td>120Vac</td> <td>120 V ± 10%</td> <td>115 V, 117 V, 120 V</td> <td>2 AT</td> </tr> <tr> <td>220Vac</td> <td>220 V ± 10%</td> <td>220 V, 230 V</td> <td>1 AT</td> </tr> <tr> <td>240Vac</td> <td>240 V ± 10%</td> <td>240 V</td> <td>1 AT</td> </tr> </tbody> </table>	<i>Position</i>	<i>Voltage range</i>	<i>Nominal voltage</i>	<i>Fuse</i>	100Vac	100 V ± 10%	100 V, 110 V	2 AT	120Vac	120 V ± 10%	115 V, 117 V, 120 V	2 AT	220Vac	220 V ± 10%	220 V, 230 V	1 AT	240Vac	240 V ± 10%	240 V	1 AT
<i>Position</i>	<i>Voltage range</i>	<i>Nominal voltage</i>	<i>Fuse</i>																		
100Vac	100 V ± 10%	100 V, 110 V	2 AT																		
120Vac	120 V ± 10%	115 V, 117 V, 120 V	2 AT																		
220Vac	220 V ± 10%	220 V, 230 V	1 AT																		
240Vac	240 V ± 10%	240 V	1 AT																		
4▶	Check fuses (changing fuses, see sect. 3.5.4).																				
5▶	Press in cover 219 on all sides until it clicks into place.																				

3.5.4 Fuses

Two fuses of type 1 A slow-blow (for 220 ... 240 V: 1 A, slow-blow, Metrohm order No. U.600.0016) or 2 A slow-blow (for 100 ... 120 V, 2 A, slow-blow, Metrohm order No. U.600.0019) are built into the 695 Autosampler as standard. Ensure that the instrument is never operated with fuses of a different type, otherwise it represents a fire hazard! To change blown fuses, proceed as follows:

1▶	Disconnect mains cable from mains connection socket 221 .
2▶	Using a screwdriver, push cover 219 forwards until it opens.
3▶	Take out fuse holder, remove blown fuse and insert replacement fuse (for 220 ... 240 V: 1 A slow-blow; for 100 ... 120 V: 2 A slow-blow) in the holder.
4▶	Reinsert fuse holder in the instrument (the arrows printed on the holders must point in the same direction as the arrows printed on the inside of cover 219).
5▶	Press in cover 219 on all sides until it clicks into place.

3.5.5 Mains cable and mains connection

One of three mains cables is supplied with the instrument:

- 6.2122.020 with plug SEV 12 (Switzerland ...)
- 6.2122.040 with plug CEE(7), VII (Germany ...)
- 6.2122.070 with plug NEMA 5–15 (USA ...)

The cable is three-cored and fitted with a plug with an earthing pin. If a different plug has to be attached, the yellow/green lead (IEC standard) must be connected to the protective earth (protection class I).

Note: *Each break in the earthing inside or outside the instrument can make it a hazard.*

Plug the mains cable into mains connection plug **221** of the 695 Autosampler (see Fig. 2).

3.5.6 Switching the instruments on/off

The 695 Autosampler is switched on and off using mains switch **223**.

When the instrument is switched on, the mains pilot lamp **215** at the front of the instrument lights up.

Note: *Always switch on the 695 Autosampler before the 693 VA Processor or switch both instruments on at the same time.*

3.6 Adjusting the Autosampler

The deviation of the home position from the actual zero point as well as the x, y and z coordinates of all sample and standard racks relative to the home position are stored in the 695 Autosampler. In contrast, the coordinates for the wash, waste and measurement position must be adjusted by the user during installation and then stored in the 695 Autosampler.

Before you undertake any type of adjustment work on the 695 Autosampler, please note the following points:

- Remove all racks from the 695 Autosampler.
- On no account store the rack data shown on the "Rack definition" page with the softkey <Store to 695> on the 695 Autosampler until these data have been properly loaded and adjusted.
- Raise cover **24** of the measuring head arm **39** fully (this allows easier setting of the positions).

3.6.1 Checking the home position

The home position of the 695 Autosampler is defined by the values 0, 0, 0 and is taken as the reference position for the coordinates of all racks as well as the wash, waste and measurement position. The home position is marked by a small hole at the right rear of positioning plate **232**. The deviations of the home position from the actual zero point are determined in the factory and stored in the 695 Autosampler under the designation "Homepos.". These data should be checked before adjustment of the other positions. Proceed as follows:

1▶	Switch on 695 Autosampler with mains switch 223 .										
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.										
3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.										
4▶	Press the softkey <Rack param.>.										
5▶	Confirm parameter "Rack name" with <Enter>.										
6▶	Select the home position by pressing the softkey <Homepos.> for the parameter "Rack type".										
7▶	Press the <Esc> key.										
8▶	<p>Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the deviation of the home position from the actual zero point are loaded and displayed.</p> <p>Check whether the following conditions are met for the displayed data of the first line:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Rack pos.</th> <th style="text-align: left;">X-pos./mm</th> <th style="text-align: left;">Y-pos./mm</th> <th style="text-align: left;">Z-pos./mm</th> <th style="text-align: left;">Speed</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">01</td> <td style="text-align: left;">< 2.500</td> <td style="text-align: left;">< 2.500</td> <td style="text-align: left;">0.000</td> <td style="text-align: left;">fast</td> </tr> </tbody> </table> <p>If these conditions are met, continue with point 9▶.</p> <p>With "X-pos. > 2.5" or "Y-pos. > 2.5", the home position must be re-adjusted. Continue with sect. 3.6.2.</p>	Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	01	< 2.500	< 2.500	0.000	fast
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed							
01	< 2.500	< 2.500	0.000	fast							

9▶	Press the <Esc> key. The subpage "Switches" appears.
10▶	Press the softkey <Settings>. The subpage "Settings" appears.
11▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
12▶	Press the softkey <Move needle>. The selection of the possible positions appears on the softkey bar.
13▶	Press the softkey <Home position>. The transfer needle is moved to the home position.
14▶	Press the <Esc> key.
15▶	Press the softkey <Rack def>.
16▶	Press the softkey <Teach mode>. A switch is made to the teach mode in which the current coordinates are displayed in a window.
17▶	<p>Lower transfer needle to the stop by pressing and holding the softkey <Down> ($Z \approx 128.5$).</p> <p>Check whether the transfer needle is exactly over the opening marking the home position (diameter = 3 mm) located at the right rear of positioning plate 232:</p> <ul style="list-style-type: none"> - If the deviation from the centre of this opening is < ca. 1 mm, continue with point 18▶. - If the deviation from the centre of this opening is > ca. 1 mm, the home position must be readjusted. Press the <Esc> key and continue with <i>sect. 3.6.2</i>.
18▶	Press the <Esc> key. The transfer needle is raised.
19▶	Insert formatted data card in the 693 VA Processor (for details, see <i>sect. 3.6.2</i> of the 693/694 Instructions for use).
20▶	Press the softkey <Copy to Data Cd.>. The coordinates for the home position are stored as a backup copy under the name "Homepos.aut" on the data card.

3.6.2 Adjusting the home position

The home position of the 695 Autosampler is normally set correctly in the factory. A readjustment must be undertaken only if a check of the home position has shown that this is necessary (see *sect. 3.6.1*).

Note: *After every readjustment of the home position, the wash, waste and measurement positions must also be readjusted.*

The home position must be reset and stored as follows (if you have just checked the home position, you can start directly with point **4▶**):

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.
4▶	Press the softkey <Rack param.>.
5▶	Confirm parameter "Rack name" with <Enter>.
6▶	Select the home position by pressing the softkey <Homepos.> for the parameter "Rack type".
7▶	Press the <Esc> key.
8▶	Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the deviation of the home position from the actual zero point are loaded and displayed.
9▶	Press the softkey <Teach mode>. A switch is made to the teach mode in which the current coordinates are displayed in a window.
10▶	Move transfer needle to the right as far as it will go by pressing the cursor key <→> (for details on moving the position, see sect. 5.3.2 of the 693/694 Instructions for use).
11▶	Move transfer needle to the rear as far as it will go by pressing the cursor key <↑>.
12▶	Lower transfer needle as far as it will go by pressing and holding the softkey <Down>.
13▶	<p>Move transfer needle using the cursor keys to the home position \pm ca. 1 mm (for details on moving the position, see sect. 5.3.2 of the 693/694 Instructions for use):</p> <p>The correct position is reached when the pipetting tip is located vertically above the opening which marks the home position (diameter = 3 mm) at the right rear of positioning plate 232.</p> <p>For very exact positioning of the transfer needle, we recommend the following procedure:</p> <ul style="list-style-type: none"> - Using one hand, hold gear rack 213 at holding position C and with your other hand unscrew black knurled nut 211 fully (see Fig. 4). - Using one hand, hold gear rack 213 at holding position C and with your other hand take transfer tubing 233 completely out of transfer needle 216. - Shine a lamp or a laser rod from above through gear rack 213 and transfer needle 216 and set the home position exactly using the light cone. - Reinsert transfer tubing 233 in transfer needle 216 as described in sect. 3.2.2.

14▶	<p>Confirm home position by pressing the <Enter> key. The new coordinates entered for the home position are displayed on the subpage "Rack definition".</p> <p>Check whether the following conditions are met for the displayed data of the first line:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Rack pos.</th> <th style="text-align: left;">X-pos./mm</th> <th style="text-align: left;">Y-pos./mm</th> <th style="text-align: left;">Z-pos./mm</th> <th style="text-align: left;">Speed</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">01</td> <td style="text-align: left;">< 2.500</td> <td style="text-align: left;">< 2.500</td> <td style="text-align: left;">0.000</td> <td style="text-align: left;">fast</td> </tr> </tbody> </table> <ul style="list-style-type: none"> - If these conditions are met, continue with point 15▶. - With "X-pos. > 2.5" or "Y-pos. > 2.5", an internal readjustment of the 695 Autosampler is necessary, otherwise dependable start-up of all rack positions is no longer assured. Inform Metrohm service in such a case. - With "Z-pos. > 0" (this is the case following adjustment as described under point 13▶), reset the value to "0.000". - Set the parameter "Speed" to "fast". 	Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	01	< 2.500	< 2.500	0.000	fast
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed							
01	< 2.500	< 2.500	0.000	fast							
15▶	Press softkey <Store to 695>. The new data for the home position are stored in the 695 Autosampler.										
16▶	Insert formatted data card in the 693 VA Processor (for details, see sect. 3.6.2 of the 693/694 Instructions for use).										
17▶	Press the softkey <Copy to Data Cd.>. The new data for the home position are stored as a backup copy under the name "Homepos.aut" on the data card.										

3.6.3 Adjusting the wash position

The wash position is used to clean the transfer needle and pipetting tip at wash station **203** with rinsing solution. The correct position is shown in *Fig. 10*. This position must be set and stored as follows (if you have just checked the home position, you can start directly with point **4▶**).

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 .
3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.
4▶	Press the softkey <Rack param.>.
5▶	Confirm parameter "Rack name" with <Enter>.
6▶	Select the wash position by pressing the softkey <Washpos.> for the parameter "Rack type".
7▶	Press the <Esc> key.
8▶	Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the wash position are loaded and displayed.

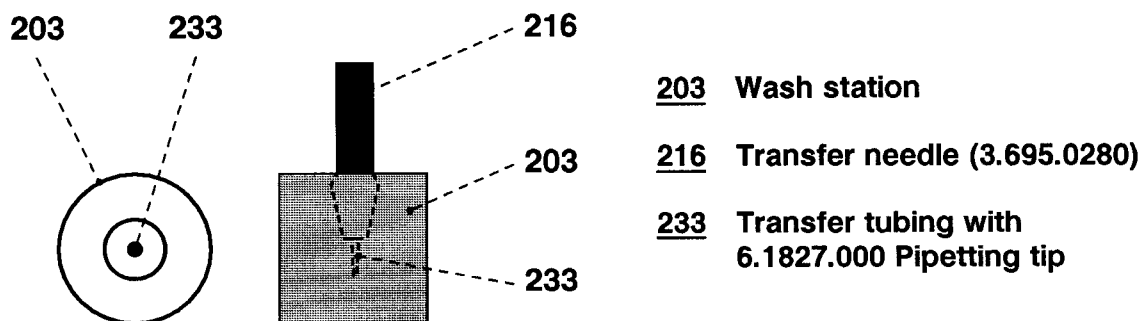


Fig. 10: Setting the wash position

9▶	Press the softkey <Teach mode>. A switch is made to the teach mode.
10▶	<p>Move transfer needle 216 with pipetting tip 233 using the cursor keys and the softkeys <Up> and <Down> to the correct wash position above wash station 203 as shown in <i>Fig. 10</i> (for details on moving the position, see <i>sect. 5.3.2</i> of the 693/694 Instructions for use).</p> <p>The current x, y and z coordinates are shown continuously in a window. The following data are approximate guide values for the correct wash position:</p> <p style="text-align: center;">X = 334 Y = 82 Z = 24</p> <p>The correct position is reached when the pipetting tip is located exactly in the middle of the wash station and the end of the beige tube of the transfer needle is flush with the upper edge of the outer tube of the wash station.</p>
11▶	Confirm wash position by pressing the <Enter> key. The new coordinates entered for the wash position are displayed on the subpage "Rack definition".
12▶	Set parameter "Speed" to "fast".
13▶	Press softkey <Store to 695>. The new data for the wash position are stored in the 695 Autosampler.
14▶	Insert formatted data card in the 693 VA Processor (for details, see <i>sect. 3.6.2</i> of the 693/694 Instructions for use).
15▶	Press the softkey <Copy to Data Cd.>. The new data for the wash position are stored as a backup copy under the name "Washpos.aut" on the data card.

3.6.4 Adjusting the waste position

The waste position is used to discharge solution through the pipetting tip to wash station **203**. The correct position is shown in *Fig. 11*. This position must be set and stored as follows (if you have just set the wash position, you can start directly with point **4▶**):

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 .

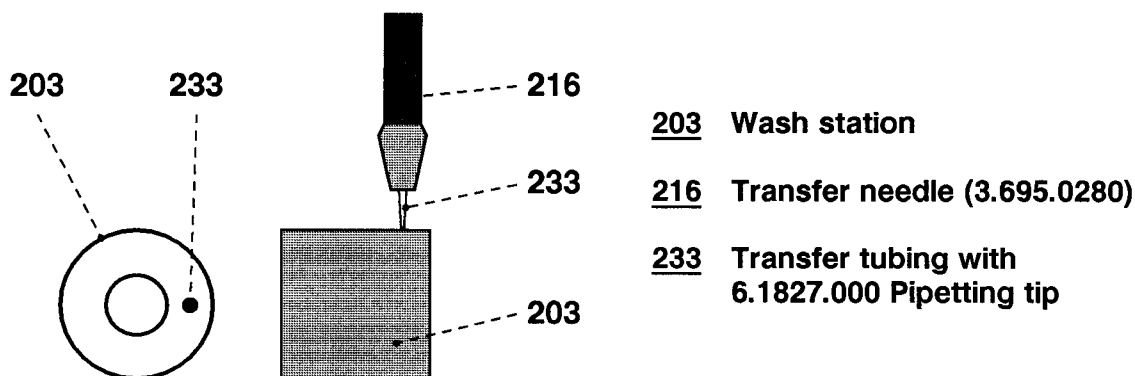


Fig. 11: Setting the waste position

3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.
4▶	Press the softkey <Rack param.>.
5▶	Confirm parameter "Rack name" with <Enter>.
6▶	Select the waste position by pressing the softkey <Waste pos.> for the parameter "Rack type".
7▶	Press the <Esc> key.
8▶	Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the waste position are loaded and displayed.
9▶	Press the softkey <Teach mode>. A switch is made to the teach mode.
10▶	<p>Move transfer needle <u>216</u> with pipetting tip <u>233</u> using the cursor keys and the softkeys <Up> and <Down> to the correct waste position above wash station <u>203</u> as shown in <i>Fig. 11</i> (for details on moving the position, see <i>sect. 5.3.2</i> of the 693/694 Instructions for use).</p> <p>The current x, y and z coordinates are shown continuously in a window. The following data are approximate guide values for the correct wash position:</p> <p style="text-align: center;">X = 326 Y = 82 Z = 5</p> <p>The correct position is reached when the pipetting tip is exactly in the middle between the outer and inner tube of the wash station and the pipetting tip is flush with the upper edge of the outer tube of the wash station.</p>
11▶	Confirm waste position by pressing the <Enter> key. The new coordinates entered for the waste position are displayed on the subpage "Rack definition".
12▶	Set parameter "Speed" to "fast".
13▶	Press softkey <Store to 695>. The new data for the waste position are stored in the 695 Autosampler.

14▶	Insert formatted data card in the 693 VA Processor (for details, see sect. 3.6.2 of the 693/694 Instructions for use).
15▶	Press the softkey <Copy to Data Cd.>. The new data for the waste position are stored as a backup copy under the name "Wastepos.aut" on the data card.

3.6.5 Adjusting the measurement position

The measurement position refers to the position at which solutions are discharged by the 695 Autosampler through transfer needle and pipetting tip into the measuring vessel on the 694 VA Stand. The correct position is shown in Fig. 12. This position must be set and stored using an empty measuring vessel as follows (if you have just set the waste position, you can start directly with point 4▶):

1▶	Switch on 695 Autosampler with mains switch <u>223</u> .
2▶	Switch on 693 VA Processor with mains switch <u>11</u> .
3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.
4▶	Press the softkey <Rack param.>.
5▶	Confirm parameter "Rack name" with <Enter> .
6▶	Select the measurement position by pressing the softkey <Measpos.> for the parameter "Rack type".
7▶	Press the <Esc> key.

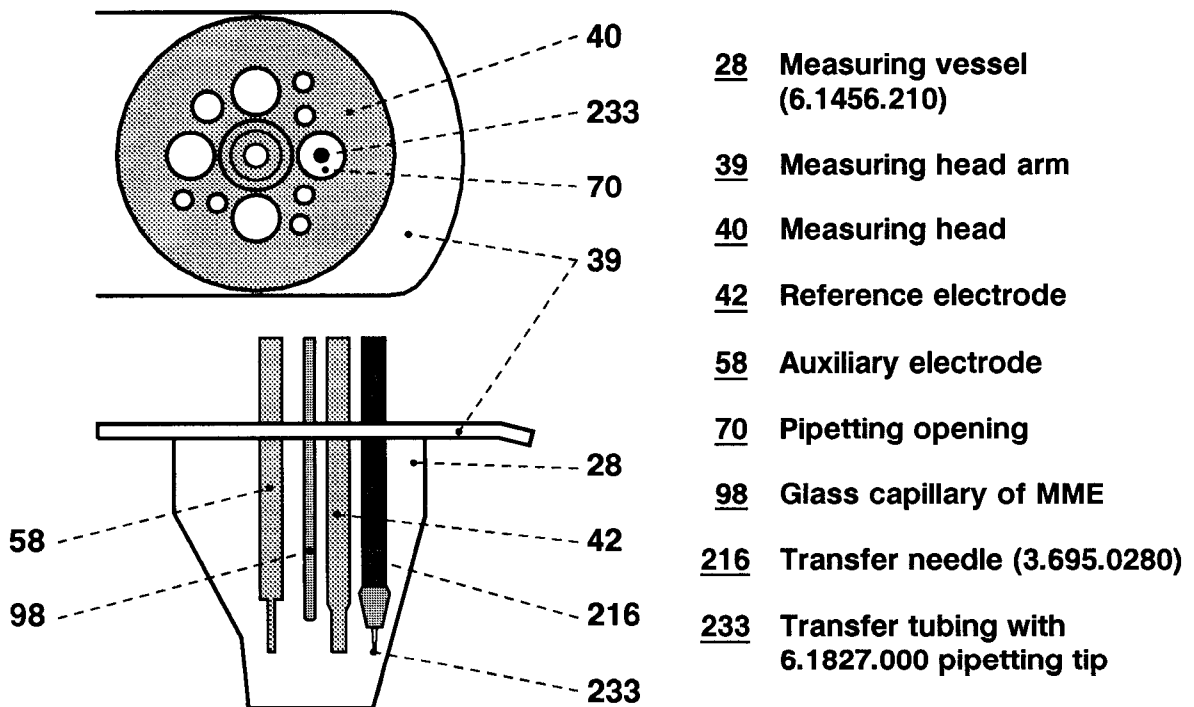


Fig. 12: Setting the measurement position

8▶	Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the measurement position are loaded and displayed.
9▶	Press the softkey <Teach mode>. A switch is made to the teach mode.
10▶	<p>Move transfer needle 216 with pipetting tip 233 using the cursor keys and the softkeys <Up> and <Down> to the correct measurement position at the 694 VA Stand as shown in <i>Fig. 12</i> (for details on moving the position, see <i>sect. 5.3.2</i> of the 693/694 Instructions for use).</p> <p>The current x, y and z coordinates are shown continuously in a window. The following data are approximate guide values for the correct measurement position:</p> <p style="text-align: center;">X = 312 Y = 153 Z = 113</p> <p>The correct position is reached when the pipetting tip is exactly in the middle of opening 70 of measuring head 40 and the end of the transfer needle is flush with the lower edges of auxiliary electrode 42 and reference electrode 58.</p> <p>Note: <i>The z coordinate of the measurement position defines the max. lowering of the pipetting tip. The actual position on solution transfer is located ca. 9 mm below the liquid level, which is detected automatically by the liquid sensor.</i></p>
11▶	Confirm measurement position by pressing the <Enter> key. The new coordinates entered for the measurement position are displayed on the subpage "Rack definition", at the same time the transfer needle is raised.
12▶	Set parameter "Speed" to "medium".
13▶	Press softkey <Store to 695>. The new data for the measurement position are stored in the 695 Autosampler.
14▶	Insert formatted data card in the 693 VA Processor (for details, see <i>sect. 3.6.2</i> of the 693/694 Instructions for use).
15▶	Press the softkey <Copy to Data Cd.>. The new data for the measurement position are stored as a backup copy under the name "Measpos.aut" on the data card.
16▶	Press the <Esc> key. The subpage "Switches" appears.
17▶	Press the softkey <Settings>. The subpage "Settings" appears.
18▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
19▶	Press the softkey <Move needle>. The selection of the possible positions appears on the softkey bar.
20▶	Press the softkey <Home position>. The transfer needle is moved to the position "Home".
21▶	Switch off 693 VA Processor and 695 Autosampler.

3.7 Filling the tubing connections

3.7.1 Filling the storage bottle with hydraulic solution

The hydraulic solution comprises acidified, ultrapure water and is needed for the pipetting of solutions on the 695 Autosampler. The already prepared storage bottle (see sect. 3.2.6) is filled with hydraulic solution as follows:

1▶	Unscrew 6.1602.1X0 Bottle attachment incl. accessories from the storage bottle, clean storage bottle thoroughly and rinse with ultrapure water.
2▶	Prepare hydraulic solution: <ul style="list-style-type: none"> – Add ultrapure water to the storage bottle. – Add 100 µL conc. HCl per 1 L ultrapure water. – If required, also add 1 ... 2 mL acetone (improved wetting) per 1 L hydraulic solution. – Degas solution thoroughly with stirring (min. ½ h with water pump vacuum).
3▶	Screw 6.1602.1X0 Bottle attachment incl. accessories onto storage bottle again.

3.7.2 Filling the storage container with rinsing solution

The rinsing solution comprises acidified, ultrapure water and is used for rinsing the measuring vessel as well as for the wash station on the 695 Autosampler. The already prepared storage container (see sect. 3.4.2) is filled with rinsing solution as follows:

1▶	Prepare rinsing solution: Add 100 µL conc. HCl per 1 L ultrapure water.
2▶	Using a funnel, add rinsing solution (max. 10 L) to the container through its small vent opening.

3.7.3 Filling the transfer tubing

After the storage bottle has been filled with hydraulic solution, the transfer tubing must be filled completely. Proceed as follows:

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Press the key <VA Stand> of the 693 VA Processor. The subpage "Switches" appears.

4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Prime tube>. The two dispensing tips are filled with hydraulic solution, the solution is then discharged via the transfer tubing into the wash station. This process is repeated three times.
7▶	Check for the presence of air bubbles: The two lengths of transfer tubing and the two dispensing tips may only contain air bubbles with a diameter < 0.1 mm. If larger air bubbles are present, continue with point 8▶.
8▶	Attempt to dislodge the air bubbles in the transfer tubing by tapping it gently and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, continue with point 9▶.
9▶	Unscrew the 6.1827.010 Transfer tubing from connection 206 of the small dispensing tip 205 . A large air bubble will be formed. Screw the transfer tubing back onto connection 206 and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, the hydraulic solution must be thoroughly degassed once more (see sect. 3.7.1) and the filling process started again.

3.7.4 Filling the connecting tubing with rinsing solution

After the storage container has been filled with rinsing solution, the lengths of connecting tubing from the rinsing Dosino to the 695 Autosampler and 694 VA Stand must be filled. Proceed as follows (if you have just filled the transfer tubing, you can start directly with point 6▶):

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Press the <VA Stand> key on the 693 VA Processor. The subpage "Switches" appears.
4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Rinse/Exchange>. The two 700 Dosinos are moved to the "exchange" position.

7▶	Press the softkey <Rinse/Exchange>. The two 700 Dosinos are moved back to the rinse position. The lengths of connecting tubing from the rinsing Dosino up to the wash station and up to the measuring vessel are filled with rinsing solution.
8▶	Check wash station 203 : the inner tube must be filled with rinsing solution, the outer must be empty. If this is not the case, check the tubing connections as shown in <i>Fig. 5</i> , tighten all nipples using the 6.2739.000 Wrench and repeat the filling process from point 6▶ onwards.
9▶	Check the rinsing process: Press the softkey <Rinse meas.v.>. If the measuring vessel is not rinsed and its contents siphoned off properly, check the tubing connections as shown in <i>Fig. 5</i> , tighten all nipples using the 6.2739.000 Wrench and repeat the filling process from point 6▶ onwards.

4. Putting into operation

*This section describes the procedure to be followed each time the 695 Autosampler and the associated 694.0020 VA Stand are put into operation. A requirement is that the instruments have been completely and correctly installed as described in sect. 3. Bold, underlined numbers in the text (e.g. **215**) refer to the parts numbered in the figures.*

4.1 Preparations

4.1.1 Checking the hydraulic solution

Before switching on the 695 Autosampler, check the liquid level in the storage bottle for hydraulic solution. If there is insufficient hydraulic solution, more must be added. Proceed as described in sect. 3.7.1.

4.1.2 Checking the rinsing solution

Before switching on the 695 Autosampler, check the liquid level in the storage container for the rinsing solution. If there is insufficient rinsing solution, more must be added. Proceed as described in sect. 3.7.2.

4.1.3 Checking the waste container

Before switching on the 695 Autosampler, check whether the waste container has sufficient free capacity to accommodate future rinsing solutions. If need be, empty the container.

4.1.4 Checking the mercury collecting vessel

Before switching on the 695 Autosampler, check whether the gas wash bottle **241** at the 694.0020 VA Stand has sufficient free capacity to hold future mercury wastes. If need be, the mercury collecting vessel must be emptied as follows:

1▶	Unscrew gas wash bottle <u>241</u> from PTFE sleeve <u>243</u> (see Fig. 6).
2▶	Dispose of mercury as described in sect. 7.2.3 of the 693/694 Instructions for use.
3▶	Screw empty gas wash bottle <u>241</u> back onto PTFE sleeve <u>243</u> .

4.1.5 Lowering cover of the measuring head arm

Cover **24** of measuring head arm **39** of the 694 VA Stand must be lowered before the 695 Autosampler is switched on.

4.2 Putting the 695 Autosampler and 694.0020 VA Stand into operation

4.2.1 Switching on the instruments

The 695 Autosampler is switched on with mains switch **223** (see Fig. 2), the 693 VA Processor and hence the attached 694.0020 VA Stand with mains switch **11** (see Fig. 2 in the 693/694 Instructions for use).

Note: Always switch on the 695 Autosampler before the 693 VA Processor or switch both instruments on at the same time.

After the 693 VA Processor has been switched on, the instruments are initialised. The following operations occur at the 695 Autosampler:

- Transfer needle is moved to the home position
- Rinsing and siphoning Dosinos are initialised
- Large dispensing tip is initialised and filled with hydraulic solution
- Hydraulic solution is discharged through the transfer needle at the waste position
- Transfer needle is washed in the wash position
- Transfer needle is moved to the waste position

This instrument initialisation should take place at least once a day, i.e. the instruments should be switched off and on once during the day even when in continuous operation.

On completion of the instrument initialisation, the dialogue page "MONITORING" appears.

Note: If errors appear during the instrument initialisation, the error window with the corresponding error message appears. You will find more detailed information regarding these error messages in sect. 7.3 of the 693/694 Instructions for use.

4.2.2 Checking for air bubbles

At the end of the instrument initialisation, check the supply line of the hydraulic solution for any air bubbles: In both lengths of transfer tubing and the two dispensing tips, only air bubbles with a diameter <0.1 mm should appear. If larger air bubbles are present, they must be removed as follows:

1▶	Thoroughly degas hydraulic solution as described in sect. 3.7.1.
2▶	Press the <VA Stand> key on the 693 VA Processor. The subpage "Switches" appears.
3▶	Press the softkey <Settings>. The subpage "Settings" appears.
4▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.

5▶	Press the softkey <Prime tube>. The two dispensing tips are filled with hydraulic solution, the solution is then discharged via the transfer tubing into the wash station. This process is repeated three times. If air bubbles are still present, continue with point 6▶.
6▶	Attempt to dislodge the air bubbles in the transfer tubing by tapping it gently and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, continue with point 7▶.
7▶	Unscrew the 6.1827.010 Transfer tubing from connection 206 of the small dispensing tip 205 . A large air bubble will be formed. Screw the transfer tubing back onto connection 206 and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, the transfer tubing must be cleaned (see sect. 6.3.1).

4.2.3 Checking the wash station

At the end of the instrument initialisation, check wash station **203**: the inner tube must be filled with rinsing solution, the outer must be empty. If this is not the case, the lengths of connecting tubing to the 700 Dosinos must be refilled with rinsing solution as follows:

1▶	Press the <VA Stand> key on the 693 VA Processor. The subpage "Switches" appears.
2▶	Press the softkey <Settings>. The subpage "Settings" appears.
3▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
4▶	Press the softkey <Rinse/Exchange>. The two 700 Dosinos are moved to the "exchange" position.
5▶	Press the softkey <Rinse/Exchange>. The two 700 Dosinos are moved back to the "rinse" position. The lengths of connecting tubing from the rinsing Dosino up to the wash station and up to the measuring vessel are filled with rinsing solution.
6▶	Check wash station 203 : the inner tube must be filled with rinsing solution, the outer must be empty. If this is not the case, check the tubing connections as shown in Fig. 5, tighten all nipples using the 6.2739.000 Wrench and repeat the filling process from point 4▶ onwards.
7▶	Check the rinsing process: Press the softkey <Rinse meas.v.>. If the measuring vessel is not rinsed and its contents siphoned off properly, check the tubing connections as shown in Fig. 5, tighten all nipples using the 6.2739.000 Wrench and repeat the filling process from point 4▶ onwards.

4.3 Racks

4.3.1 General information

The following two racks (for details, see *sect. 9.1*) are part of the standard accessories of the 695 Autosampler:

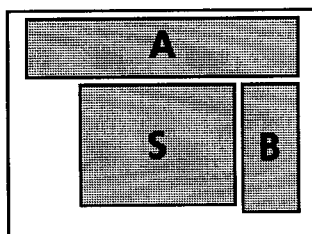
- 6.2041.060** Sample rack for 80 × 15 mL sample vessels
- 6.2041.080** Standard rack A for 16 × 50 mL PE bottles and 1 × 500 mL PE bottle

The following sample and standard racks are available from Metrohm as options (for details, see *sect. 9.3*):

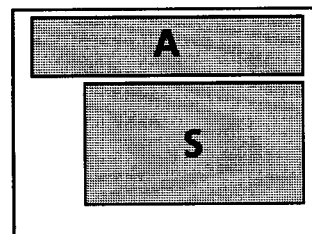
- 6.2041.070** Sample rack for 40 × 50 mL PE bottles
- 6.2041.090** Standard rack B for 10 × 50 mL PE bottles
- 6.2041.100** Holder for 2 UV racks, each with 12 × 12 mL sample tubes
- 6.2041.110** Holder for 2 UV racks, each with 16 × 5 mL sample tubes

There is also the possibility to use user-defined racks with any sample and standard vessels (see *sect. 4.3.8*).

The racks are inserted in the holes on positioning plate **232** (see *Fig. 3*) as follows:



- A = 6.2041.080
- B = 6.2041.090
- S = 6.2041.060
6.2041.100
6.2041.110



- A = 6.2041.080
- S = 6.2041.070

Using the built-in Hall sensors and the permanent magnets screwed onto the racks, the 695 Autosampler automatically recognises which of the racks available from Metrohm is mounted and shows the rack type on the dialogue page "VA STAND". The data of a rack type (max. sample volume, positions of the vessels, transfer rate) are stored in the 695 Autosampler on delivery. The data of each rack used should be copied to a data card to guard against loss (see *sect. 4.3.9*). The rack data are displayed on the subpage "VA STAND/Rack definition" by loading them from the 695 Autosampler into the 693 VA Processor where they can be changed if desired and again stored in the 695 Autosampler (see *sect. 4.3.8*).

Note: *Samples and calibration solutions can be positioned only on a sample rack S, all auxiliary solutions (buffers, standard solutions, etc.) must be located on an A or B rack.*

4.3.2 6.2041.060 Sample rack for 80 samples

The 6.2041.060 Sample rack can hold maximum 80 sample tubes and is used together with the following accessories:

6.2747.000 Sample vessel made of PP, volume $V=15$ mL

6.2041.120 Film holder for 6.2749.000 Cover film

6.2749.000 Cover film made of PE (dust protection, set of 20)

The 6.2041.060 Sample rack is prepared for use on the 695 Autosampler as follows (the cover with film holder and film is optional):

1▶	Unscrew blue screw caps from 6.2747.000 Sample tubes.
2▶	Insert 6.2747.000 Sample tubes in the desired positions 1...80 in the 6.2041.060 Sample rack.
3▶	Add sample solution to 6.2747.000 Sample tubes. Note: Add at least 1 mL more sample solution than removed from the sample vessel in the determination (for technical reasons, the vessel can not be emptied completely).
4▶	Place 6.2041.120 Film holder on the bench with the inscribed side downwards.
5▶	Insert 6.2749.000 Cover film from above in the 6 plastic protrusions of the 6.2041.120 Film holder and press down fully.
6▶	Mount film holder with film on the 6.2041.060 Sample rack such that the inscribed side faces upwards and the numbering matches that of the sample rack.
7▶	Mount sample rack in the corresponding slots on positioning plate 232 (see sect. 4.3.1).

The following data are stored in the 695 Autosampler as standard for the positions of the sample vessels on the 6.2041.060 Sample rack:

Rack name: 62041060		695 AUTOSAMPLER		Valid entries: 80	
Rack type: S05		Rack definition		V.sample max : 12 mL	
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	
01	253.000	82.500	124.983	medium	
02	233.000	82.500	124.983	medium	
03	213.000	82.500	124.983	medium	
04	193.000	82.500	124.983	medium	
05	173.000	82.500	124.983	medium	
06	153.000	82.500	124.983	medium	
07	133.000	82.500	124.983	medium	
08	113.000	82.500	124.983	medium	
09	93.000	82.500	124.983	medium	
10	73.000	82.500	124.983	medium	
11	253.000	102.500	124.983	medium	
12	233.000	102.500	124.983	medium	
13	213.000	102.500	124.983	medium	
14	193.000	102.500	124.983	medium	
15	173.000	102.500	124.983	medium	
16	153.000	102.500	124.983	medium	
17	133.000	102.500	124.983	medium	
18	113.000	102.500	124.983	medium	
19	93.000	102.500	124.983	medium	
20	73.000	102.500	124.983	medium	

Rack name: 62041060		695 AUTOSAMPLER		Valid entries: 80	
Rack type: S05		Rack definition		V.sample max : 12 mL	
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	
21	253.000	122.500	124.983	medium	
22	233.000	122.500	124.983	medium	
23	213.000	122.500	124.983	medium	
24	193.000	122.500	124.983	medium	
25	173.000	122.500	124.983	medium	
26	153.000	122.500	124.983	medium	
27	133.000	122.500	124.983	medium	
28	113.000	122.500	124.983	medium	
29	93.000	122.500	124.983	medium	
30	73.000	122.500	124.983	medium	
31	253.000	142.500	124.983	medium	
32	233.000	142.500	124.983	medium	
33	213.000	142.500	124.983	medium	
34	193.000	142.500	124.983	medium	
35	173.000	142.500	124.983	medium	
36	153.000	142.500	124.983	medium	
37	133.000	142.500	124.983	medium	
38	113.000	142.500	124.983	medium	
39	93.000	142.500	124.983	medium	
40	73.000	142.500	124.983	medium	
41	253.000	162.500	124.983	medium	
42	233.000	162.500	124.983	medium	
43	213.000	162.500	124.983	medium	
44	193.000	162.500	124.983	medium	
45	173.000	162.500	124.983	medium	
46	153.000	162.500	124.983	medium	
47	133.000	162.500	124.983	medium	
48	113.000	162.500	124.983	medium	
49	93.000	162.500	124.983	medium	
50	73.000	162.500	124.983	medium	
51	253.000	182.500	124.983	medium	
52	233.000	182.500	124.983	medium	
53	213.000	182.500	124.983	medium	
54	193.000	182.500	124.983	medium	
55	173.000	182.500	124.983	medium	
56	153.000	182.500	124.983	medium	
57	133.000	182.500	124.983	medium	
58	113.000	182.500	124.983	medium	
59	93.000	182.500	124.983	medium	
60	73.000	182.500	124.983	medium	
61	253.000	202.500	124.983	medium	
62	233.000	202.500	124.983	medium	
63	213.000	202.500	124.983	medium	
64	193.000	202.500	124.983	medium	
65	173.000	202.500	124.983	medium	
66	153.000	202.500	124.983	medium	
67	133.000	202.500	124.983	medium	
68	113.000	202.500	124.983	medium	
69	93.000	202.500	124.983	medium	
70	73.000	202.500	124.983	medium	
71	253.000	222.500	124.983	medium	
72	233.000	222.500	124.983	medium	
73	213.000	222.500	124.983	medium	
74	193.000	222.500	124.983	medium	
75	173.000	222.500	124.983	medium	
76	153.000	222.500	124.983	medium	
77	133.000	222.500	124.983	medium	
78	113.000	222.500	124.983	medium	
79	93.000	222.500	124.983	medium	
80	73.000	222.500	124.983	medium	

4.3.3 6.2041.080 Standard rack for 17 standards

The 6.2041.080 Standard rack can hold maximum 17 vessels for standard solutions and is used together with the following accessories:

- 6.1620.000 PE bottle, volume V= 50 mL
- 6.1620.010 PE bottle, volume V= 500 mL
- 6.2701.050 Screw cap with hole

The 6.2041.080 Standard rack is prepared for use on the 695 Autosampler as follows:

1▶	Unscrew white screw cap from the 6.1620.010 PE bottle and remove red seal.
2▶	Add desired standard solution (e.g. supporting electrolyte) to the 6.1620.010 PE bottle.
3▶	Screw 6.2701.050 Screw cap with hole onto the 6.1620.010 PE bottle.
4▶	Insert 6.1620.010 PE bottle in the bottle holder on the left side of the 6.2041.080 Standard rack.
5▶	Unscrew white screw caps from the 6.1620.000 PE bottles and remove red seals.
6▶	Add desired standard solutions to the 6.1620.000 PE bottles.
7▶	Screw 6.2701.050 Screw caps with hole onto the 6.1620.000 PE bottles.
8▶	Insert 6.1620.000 PE bottles in the desired positions 1...16 of the 6.2041.080 Standard rack.
9▶	Mount standard rack in the corresponding slots on positioning plate 232 (see sect. 4.3.1).

The following data are stored in the 695 Autosampler for the positions of the PE bottles on the 6.2041.080 Standard rack:

Rack name: 62041080	695 AUTOSAMPLER			Valid entries: 17
Rack type: A01	Rack definition			V.sample max : 50 mL
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed
01	240.500	8.500	97.570	medium
02	206.500	8.500	97.570	medium
03	172.500	8.500	97.570	medium
04	138.500	8.500	97.570	medium
05	104.500	8.500	97.570	medium
06	70.500	8.500	97.570	medium
07	36.500	8.500	97.570	medium
08	2.500	8.500	97.570	medium
09	240.500	42.500	97.570	medium
10	206.500	42.500	97.570	medium
11	172.500	42.500	97.570	medium
12	138.500	42.500	97.570	medium
13	104.500	42.500	97.570	medium
14	70.500	42.500	97.570	medium
15	36.500	42.500	97.570	medium
16	2.500	42.500	97.570	medium
17	300.000	28.500	128.500	medium

When not in use, the standard bottles can be closed in two different ways:

- Unscrew screw cap with hole and insert red seal.
- Fit standard ground glass stopper 10/19 to screw cap with hole.

4.3.4 6.2041.090 Standard rack for 10 standards

The 6.2041.090 Standard rack is available as an option and is used together with the following accessories to hold maximum 10 vessels for standard solutions:

6.1620.000 PE bottle, volume $V=50$ mL

6.2701.050 Screw cap with hole

The 6.2041.090 Standard rack is prepared for use on the 695 Autosampler as follows:

1▶	Unscrew white screw caps from the 6.1620.000 PE bottles and remove red seals.
2▶	Add desired standard solutions to the 6.1620.000 PE bottles.
3▶	Screw 6.2701.050 Screw caps with hole onto the 6.1620.000 PE bottles.
4▶	Insert 6.1620.000 PE bottles in the desired positions 1...10 of the 6.2041.090 Standard rack.
5▶	Mount standard rack in the corresponding slots on positioning plate <u>232</u> (see sect. 4.3.1).

The following data are stored in the 695 Autosampler for the positions of the PE bottles on the 6.2041.090 Standard rack:

Rack name: 62041090		695 AUTOSAMPLER		Valid entries: 10
Rack type: B01		Rack definition		V.sample max : 50 mL
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed
01	36.500	86.500	97.570	medium
02	2.500	86.500	97.570	medium
03	36.500	120.500	97.570	medium
04	2.500	120.500	97.570	medium
05	36.500	154.500	97.570	medium
06	2.500	154.500	97.570	medium
07	36.500	188.500	97.570	medium
08	2.500	188.500	97.570	medium
09	36.500	222.500	97.570	medium
10	2.500	222.500	97.570	medium

When not in use, the standard bottles can be closed in two different ways:

- Unscrew screw cap with hole and insert red seal.
- Fit standard ground glass stopper 10/19 to screw cap with hole.

4.3.5 6.2041.070 Sample rack for 40 samples

The 6.2041.070 Sample rack is available as an option and is used together with the following accessories to hold maximum 40 sample vessels:

- 6.1620.000 PE bottle**, volume $V=50$ mL
- 6.2701.050 Screw cap with hole**
- 6.2041.160 Film holder** for 6.2749.020 Cover film
- 6.2749.020 Cover film made of PE** (dust protection, set of 20)

The 6.2041.070 Sample rack is prepared for use on the 695 Autosampler as follows (the cover with film holder and film is optional):

1▶	Unscrew white screw caps from the 6.1620.000 PE bottles and remove red seals.
2▶	Add sample solution to 6.1620.000 PE bottles.
3▶	Screw 6.2701.050 Screw caps with hole onto the 6.1620.000 PE bottles (necessary only if work performed without film holder).
4▶	Insert 6.1620.000 PE bottles in the desired positions 1...40 of the 6.2041.070 Standard rack.
5▶	Place 6.2041.160 Film holder on the bench with the inscribed side downwards.
6▶	Insert 6.2749.020 Cover film from above in the 6 plastic protrusions of the 6.2041.160 Film holder and press down fully.
7▶	Mount film holder with film on the 6.2041.070 Sample rack such that the inscribed side faces upwards and the numbering matches that of the sample rack.
8▶	Mount sample rack in the corresponding slots on positioning plate 232 (see sect. 4.3.1).

The following data are stored in the 695 Autosampler as standard for the positions of the sample vessels on the 6.2041.070 Sample rack:

Rack name:	62041070	695 AUTOSAMPLER		Valid entries:	40
Rack type:	S10	Rack definition		V.sample max :	50 mL
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	
01	240.500	86.500	97.570	medium	
02	206.500	86.500	97.570	medium	
03	172.500	86.500	97.570	medium	
04	138.500	86.500	97.570	medium	
05	104.500	86.500	97.570	medium	
06	70.500	86.500	97.570	medium	
07	36.500	86.500	97.570	medium	
08	2.500	86.500	97.570	medium	
09	240.500	120.500	97.570	medium	
10	206.500	120.500	97.570	medium	
11	172.500	120.500	97.570	medium	
12	138.500	120.500	97.570	medium	
13	104.500	120.500	97.570	medium	
14	70.500	120.500	97.570	medium	
15	36.500	120.500	97.570	medium	
16	2.500	120.500	97.570	medium	
17	240.500	154.500	97.570	medium	
18	206.500	154.500	97.570	medium	
19	172.500	154.500	97.570	medium	
20	138.500	154.500	97.570	medium	

Rack name: 62041070		695 AUTOSAMPLER		Valid entries: 40
Rack type: S10		Rack definition		V.sample max : 50 mL
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed
21	104.500	154.500	97.570	medium
22	70.500	154.500	97.570	medium
23	36.500	154.500	97.570	medium
24	2.500	154.500	97.570	medium
25	240.500	188.500	97.570	medium
26	206.500	188.500	97.570	medium
27	172.500	188.500	97.570	medium
28	138.500	188.500	97.570	medium
29	104.500	188.500	97.570	medium
30	70.500	188.500	97.570	medium
31	36.500	188.500	97.570	medium
32	2.500	188.500	97.570	medium
33	240.500	222.500	97.570	medium
34	206.500	222.500	97.570	medium
35	172.500	222.500	97.570	medium
36	138.500	222.500	97.570	medium
37	104.500	222.500	97.570	medium
38	70.500	222.500	97.570	medium
39	36.500	222.500	97.570	medium
40	2.500	222.500	97.570	medium

4.3.6 6.2041.100 Holder for 2 UV racks, each holding 12 samples

The 6.2041.100 Holder is available as an option and is used together with the following accessories to accommodate 2 UV racks of the 705 UV Digester, each holding maximum 12 sample vessels:

- 6.2041.040** Sample tube holder for 12 × 6.2414.000 Sample tubes (accessory of 705 UV Digester)
- 6.2414.000** Sample tube made of quartz glass, volume $V = 12$ mL (accessory of 705 UV Digester)
- 6.2041.130** Film holder for 6.2749.010 Cover film
- 6.2749.010** Cover film made of PE (dust protection, set of 20)

The two 6.2041.040 UV racks are prepared for use on the 695 Autosampler as follows (the cover with film holder and film is optional):

1▶	Remove 6.2041.040 Sample tube holder with the digested samples from the wet part of the 705 UV Digester and allow to cool.
2▶	Remove black 6.1446.100 PTFE stoppers from the 6.2414.000 Sample tubes.
3▶	Mount 6.2041.040 Sample tube holder on the 6.2041.100 Holder. The sample tubes are raised.
4▶	Place 6.2041.130 Film holder on the bench with the inscribed side facing downwards and unscrew the three plastic knobs.
5▶	Insert 6.2749.010 Cover film from above in the 3 screws of the 6.2041.130 Film holder and fasten to the film holder by screwing on the 3 plastic knobs.

6▶	Mount film holder with film on the sample tubes such that the inscribed side faces upwards and the numbering matches that of the sample tube holder.
7▶	Repeat steps 1▶...6▶ for second sample tube holder.
8▶	Mount 6.2041.100 Holder with the two attached sample tube holders in the corresponding slots on positioning plate 232 (see sect. 4.3.1).

The following data are stored in the 695 Autosampler as standard for the positions of the sample vessels on the 6.2041.100 Holder:

Rack name: 62041103		695 AUTOSAMPLER		Valid entries: 24	
Rack type: S03		Rack definition		V.sample max : 12 mL	
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	
01	203.625	123.875	126.065	medium	
02	185.750	134.250	126.065	medium	
03	175.375	152.125	126.065	medium	
04	175.375	172.875	126.065	medium	
05	185.750	190.750	126.065	medium	
06	203.625	201.125	126.065	medium	
07	224.375	201.125	126.065	medium	
08	242.250	190.750	126.065	medium	
09	252.625	172.875	126.065	medium	
10	252.625	152.125	126.065	medium	
11	242.250	134.250	126.065	medium	
12	224.375	123.875	126.065	medium	
13	99.625	123.875	126.065	medium	
14	81.750	134.250	126.065	medium	
15	71.375	152.125	126.065	medium	
16	71.375	172.875	126.065	medium	
17	81.750	190.750	126.065	medium	
18	99.625	201.125	126.065	medium	
19	120.375	201.125	126.065	medium	
20	138.250	190.750	126.065	medium	
21	148.625	172.875	126.065	medium	
22	148.625	152.125	126.065	medium	
23	138.250	134.250	126.065	medium	
24	120.375	123.875	126.065	medium	

The 695 Autosampler automatically recognises whether 1 or 2 sample tube holders are mounted on the 6.2041.100 Holder. If only 1 sample tube holder is present on the left side, only positions 1...12 are available ("Rack type = S01"), if only 1 sample tube holder is present on the right side, only the positions 13...24 are available ("Rack type = S02").

4.3.7 6.2041.110 Holder for 2 UV racks, each holding 16 samples

The 6.2041.110 Holder is available as an option and is used together with the following accessories to accommodate 2 UV racks of the 705 UV Digester, each holding maximum 16 sample vessels:

- 6.2041.050** Sample tube holder for 16 × 6.2414.010 Sample tubes (optional accessory of 705 UV Digester)
- 6.2414.010** Sample tube made of quartz glass, volume $V=5$ mL (optional accessory of 705 UV Digester)

The two 6.2041.050 UV racks are prepared for use on the 695 Autosampler as follows:

1▶	Remove 6.2041.050 Sample tube holder with the digested samples from the wet part of the 705 UV Digester and allow to cool.
2▶	Remove black 6.1446.140 PTFE stoppers from the 6.2414.010 Sample tubes.
3▶	Mount 6.2041.050 Sample tube holder on the 6.2041.110 Holder. The sample tubes are raised.
4▶	Repeat steps 1▶...3▶ for second sample tube holder.
5▶	Mount 6.2041.110 Holder with the two attached sample tube holders in the corresponding slots on positioning plate <u>232</u> (see sect. 4.3.1).

The following data are stored in the 695 Autosampler as standard for the positions of the sample vessels on the 6.2041.110 Holder:

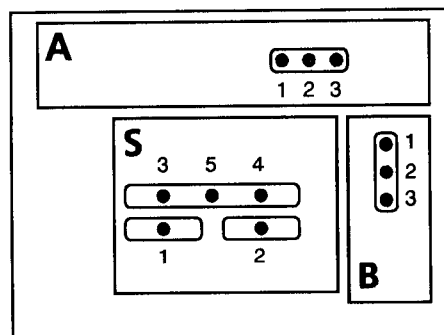
Rack name: 62041113		695 AUTOSAMPLER		Valid entries: 32	
Rack type: S12		Rack definition		V.sample max : 5 mL	
Rack pos.	X-pos./mm	Y-pos./mm	Z-pos./mm	Speed	
01	206.250	103.250	126.065	slow	
02	191.750	109.250	126.065	slow	
03	180.750	120.250	126.065	slow	
04	174.750	134.750	126.065	slow	
05	174.750	150.250	126.065	slow	
06	180.750	164.750	126.065	slow	
07	191.750	175.750	126.065	slow	
08	206.250	181.750	126.065	slow	
09	221.750	181.750	126.065	slow	
10	236.250	175.750	126.065	slow	
11	247.250	164.750	126.065	slow	
12	253.250	150.250	126.065	slow	
13	253.250	134.750	126.065	slow	
14	247.250	120.250	126.065	slow	
15	236.250	109.250	126.065	slow	
16	221.750	103.250	126.065	slow	
17	102.250	103.250	126.065	slow	
18	87.750	109.250	126.065	slow	
19	76.750	120.250	126.065	slow	
20	70.750	134.750	126.065	slow	
21	70.750	150.250	126.065	slow	
22	76.750	164.750	126.065	slow	
23	87.750	175.750	126.065	slow	
24	102.250	181.750	126.065	slow	
25	117.750	181.750	126.065	slow	
26	132.250	175.750	126.065	slow	
27	143.250	164.750	126.065	slow	
28	149.250	150.250	126.065	slow	
29	149.250	134.750	126.065	slow	
30	143.250	120.250	126.065	slow	
31	132.250	109.250	126.065	slow	
32	117.750	103.250	126.065	slow	

The 695 Autosampler automatically recognises whether 1 or 2 sample tube holders are mounted on the 6.2041.110 Holder. If only 1 sample tube holder is present on the left side, only positions 1...16 are available ("Rack type = S04"), if only 1 sample tube holder is present on the right side, only the positions 17...32 are available ("Rack type = S08").

4.3.8 User-defined racks

In addition to the racks available from Metrohm, racks defined by the user with any sample and standard vessels can also be installed on the 695 Autosampler. The following rules and limitations apply to the definition of user-specified racks:

- Each rack must be clearly coded with permanent magnets and hence assigned to a rack type. The permanent magnets must be fastened at the correct positions above the Hall sensors. You will find the arrangement and numbering of the Hall sensors in the adjacent diagram, the codings which are still free are shown in the Table below.



S1	S2	S3	S4	S5	Rack type	Use
					–	no rack
•					S01	6.2041.100
	•				S02	6.2041.100
•	•				S03	6.2041.100
		•			S04	6.2041.110
•		•			S05	6.2041.060
	•	•			S06	free
•	•	•			S07	free
			•		S08	6.2041.110
•			•		S09	free
	•		•		S10	6.2041.070
•	•		•		S11	free
		•	•		S12	6.2041.110
•		•	•		S13	free
	•	•	•		S14	free
•	•	•	•		S15	free

S1	S2	S3	S4	S5	Rack type	Use
				•	S16	free
•				•	S17	free
	•			•	S18	free
•	•			•	S19	free
		•		•	S20	free
•		•		•	S21	free
	•	•		•	S22	free
•	•	•		•	S23	free
			•	•	S24	free
•			•	•	S25	free
	•		•	•	S26	free
•	•		•	•	S27	free
		•	•	•	S28	free
•		•	•	•	S29	free
	•	•	•	•	S30	free
•	•	•	•	•	S31	free

A1	A2	A3	Rack type	Use
			–	no rack
•			A01	6.2041.080
	•		A02	free
•	•		A03	free
		•	A04	free
•		•	A05	free
	•	•	A06	free
•	•	•	A07	free

B1	B2	B3	Rack type	Use
			–	no rack
•			B01	6.2041.090
	•		B02	free
•	•		B03	free
		•	B04	free
•		•	B05	free
	•	•	B06	free
•	•	•	B07	free

- The simplest possibility to define new racks involves using the bottom part of racks available from Metrohm and providing these with a new layout. The coding then simply involves repositioning of the magnets already screwed to the underside of the rack.
- For completely new racks, additional permanent magnets can be ordered from Metrohm. The 4.695.640 (length 44 mm) and 4.695.650 (length 17 mm) Magnets are available.
- The vessels on user-defined racks must have an opening of at least 9 mm to allow immersion of the transfer needle.

- For the vessel type used on the rack, a maximum sample volume "v.sample max" must be entered that restricts the maximum amount of solution for the removal and addition.
- Starting from the "Home position" of the transfer needle (0, 0, 0), the positions of the vessels can be defined in the following range:
 - X 0...337.5 mm movement to the left
 - Y 0...225.0 mm movement to the front
 - Z 0...128.5 mm movement downwards

It is best to follow the below sequence for the definition of user-specific racks:

1▶	Code user-specific rack using permanent magnets.
2▶	Insert vessels in the rack.
3▶	Mount rack on the sample changer.
4▶	Press the <VA Stand> key on the 693 VA Processor. The desired rack type must be displayed for "Racks" in the column "Autosampler".
5▶	Press the three softkeys <Settings>, <Autosampler> and <Rack def> in succession. The subpage "Rack definition" appears.
6▶	Press the softkey <Rack param.>.
7▶	Under "Rack name", enter the rack name desired and confirm with <Enter>.
8▶	Under "Rack type", enter the rack type defined by the rack coding and which has just been displayed (e.g. "s06") and confirm with <Enter>.
9▶	Under "v.sample max", enter the maximum solution volume (e.g. "20 mL") determined by the vessel type and confirm with <Enter>.
10▶	Press the softkey <Teach mode>. A switch is made to the teach mode.
11▶	For every vessel, use either the cursor keys and the softkeys <Up> and <Down> or numeric entry to define the x, y and z positions for the solution transfer as well as the transfer rate (for details, see sect. 5.3.2 of the 693/694 Instructions for use).
12▶	Press the softkey <Store to 695> to store the inputted rack data in the 695 Autosampler.
13▶	Insert formatted data card in the 693 VA Processor.
14▶	Press the softkey <Copy to Data Cd.> to store a backup copy of the inputted rack data under the name "Rack name.aut" on the data card.

4.3.9 Backup copies of the rack data

The data of a rack type (max. sample volume, positions of the vessels, transfer rate) are stored in the 695 Autosampler. To fall back on the original data should these data be inadvertently overwritten, the original data should be copied to a data card to guard against loss. For each of the racks you use (including user-defined racks), proceed as follows:

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 .
3▶	Simultaneously press the <Shift> and <VA Stand> keys of the 693 VA Processor. The subpage "Rack definition" appears for setting the rack positions.
4▶	Press the softkey <Rack param.>.
5▶	Confirm parameter "Rack name" with <Enter>.
6▶	Enter the desired rack type (e.g. "s05") under "Rack type" and confirm with <Enter>.
7▶	Press the <Esc> key.
8▶	Press the softkey <Load from 695>. The data stored in the 695 Autosampler for the desired rack are loaded and displayed.
9▶	Insert formatted data card in the 693 VA Processor (for details, see sect. 3.6.2 of the 693/694 Instructions for use).
10▶	Press the softkey <Copy to Data Cd.>. The new data for the desired rack are stored as a backup copy on the data card under the name "Rack name.aut".

5. Operation

This section provides an overview of the operation of the 695 Autosampler and the 694.0020 VA Stand via the 693 VA Processor. For more detailed information, please consult the 693/694 Instructions for use.

5.1 Manual operation

Manual operation of the 695 Autosampler and the 694.0020 VA Stand is via the dialogue page "VA STAND" of the 693 VA Processor, which is described in detail in sect. 5.3.2 of the 693/694 Instructions for use.

5.2 Operation via dialogue pages

Operation of the 695 Autosampler and the 694.0020 VA Stand is via the 693 VA Processor with the aid of the parameters and program instructions defined on the dialogue pages and which are described in detail in sect. 5 of the 693/694 Instructions for use. As a complement to this, the following sections provide a brief overview of several important functions and settings for operation of the 695 Autosampler.

5.2.1 Program Instructions

The sequence of the sample determination is defined on the dialogue page "OP. SEQUENCE" using program instructions, the associated parameters and any adjustable line time (see sect. 5.6.1 of the 693/694 Instructions for use). The following Table provides a summary of the special instructions for the 695 Autosampler as well as several important directions for their use. For more detailed information on the individual instructions, please refer to the alphabetical list of instructions in sect. 5.7.3 of the 693/694 Instructions for use.

- **Addition of the sample**

<i>Instruction</i>	<i>Meaning</i>
SMPL>M	Add sample volume to measuring vessel (MEAS) The sample volume, defined by "s0" or "s0/s2" (undiluted samples) or "v.fraction" (diluted samples), is transferred from the sample vessel (FEED) to the measuring vessel (MEAS). This instruction is used when the sample should be transferred directly to the measuring vessel without further dilutions.
SMPL/F	Sample volume already in sample vessel (FEED) The sample volume, defined by "s0" or "s0/s2" (undiluted samples) or "v.fraction" (diluted samples), is already in the sample vessel (FEED). This instruction must be used when sample preparation steps should be performed in the sample or auxiliary vessel before transfer to the measuring vessel.

- **Dispensing of auxiliary solutions**

<i>Instruction</i>	<i>Meaning</i>
DOS>M	Dispense auxiliary solution into measuring vessel (MEAS)
DOS>A	Dispense auxiliary solution into auxiliary vessel (AUX)
DOS>F	Dispense auxiliary solution into sample vessel (FEED)
SDOS>M	Dispense auxiliary solution proportional to sample size "so" into measuring vessel (MEAS)
SDOS>A	Dispense auxiliary solution proportional to sample size "so" into auxiliary vessel (AUX)
SDOS>F	Dispense auxiliary solution proportional to sample size "so" into sample vessel (FEED)
PDOS>M	Dispense auxiliary solution proportional to measured evaluation value into measuring vessel (MEAS)

For the automatic addition of auxiliary solutions with the 695 Autosampler, with all DOS instructions a solution name "Soln.name" must be inputted which is also entered on the "SOLUTIONS" page and assigned to a particular position "Pos." on the standard racks (see also sect. 5.2.2).

- **Dispensing of standard addition solutions**

<i>Instruction</i>	<i>Meaning</i>
ADD>M	Dispense standard addition solution into measuring vessel (MEAS)
PADD>M	Dispense standard addition solution proportional to the measured evaluation value into measuring vessel (MEAS)

For the automatic addition of standard addition solutions with the 695 Autosampler, with the ADD instructions a solution name "Soln.name" must be inputted which is also entered on the "SOLUTIONS" page and assigned to a particular position "Pos." on the standard racks (see also sect. 5.2.2). The same solution name must also be entered on the "SUBSTANCES/Calibration" page.

- **Dispensing of calibration solutions (calibration curve and internal standard)**

<i>Instruction</i>	<i>Meaning</i>
CSOLN>M	Dispense calibration solution into measuring vessel (MEAS) This instruction is used when the calibration solution should be transferred directly into the measuring vessel.
CSOLN/F	Calibration solution already in sample vessel (FEED) This instruction is used when the calibration solution should be pretreated before transfer to the measuring vessel.

For the automatic addition of calibration solutions with the 695 Autosampler, these must be placed on a sample rack in sequence and entered on the "SAMPLES" page (see also sect. 5.2.2).

- **Dispensing of reference solution (internal standard)**

<i>Instruction</i>	<i>Meaning</i>
RADD>M	Dispense reference solution with internal standard into measuring vessel (MEAS)
RADD>F	Dispense reference solution with internal standard into sample vessel (FEED)

- **Instructions for 695 Autosampler**

<i>Instruction</i>	<i>Meaning</i>
A>M	Transfer solution from auxiliary vessel (AUX) to measuring vessel (MEAS)
F>M	Transfer solution from sample vessel (FEED) to measuring vessel (MEAS)
F>A	Transfer solution from sample vessel (FEED) to auxiliary vessel (AUX)
RINSE	<p>Rinse measuring vessel (MEAS) and reset volume bookkeeping to 0</p> <p>The rinsing volume "v.rinse" selected must be large enough to ensure that all drops and splashes of the analyte solution on electrodes and vessel wall are removed.</p> <p>If work is performed with "Auto.batch = on" (automatic series determination), it is mandatory to include the "RINSE" instruction in the program as the volume bookkeeping would otherwise not be reset.</p>
VMIX	<p>Mix solution in the specified rack position</p> <p>The solution is mixed by drawing in and discharging the mixing volume "v.mix".</p>
VWASH	<p>Additional rinsing of the transfer tubing after solution transfer to target vessel</p> <p>With this instruction, an additional wash volume "v.add" of hydraulic solution is discharged in the dispensing or transfer instruction which immediately follows and is taken into account in the volume bookkeeping.</p> <p>The "VWASH" instruction is primarily suitable for the transfer of highly concentrated and/or viscous solutions associated with a danger of carryover in the transfer tubing.</p>

- **Sample preparation**

<i>Instruction</i>	<i>Meaning</i>
(PREP	<p>Start of the block for parallel sample preparation</p> <p>This instruction opens a block for parallel sample preparation on the sample rack of the 695 Autosampler. This block can contain any number of instructions admissible for the sample preparation.</p>
PREP)	<p>End of the block for parallel sample preparation</p>
>PREP	<p>Call-up of the sample preparation block</p> <p>This instruction starts the instructions defined in the PREP block "(PREP ... PREP)" for parallel sample preparation. As soon as the program running for the current sample in the measuring vessel allows, these instructions are executed with the following sample on the sample rack of the 695 Autosampler.</p> <p>A PREP block should be so programmed and called up that its processing is at an end before a measurement operation is started with "MEAS" OR "SWEEP".</p>

5.2.2 Entry of the standard addition, auxiliary and calibration solutions

Standard addition and auxiliary solutions which should be added using the 695 Autosampler must be entered on the dialogue page "SOLUTIONS" (see sect. 5.3.4 of the 693/694 Instructions for use). The solutions already defined in a loaded method can be transferred automatically to the list of solutions using the softkey <Upd. from method>. For each of these solutions, its position on the standard rack A or B must be entered under "Pos.". Before the start of a method, ensure that all these solutions are entered on the dialogue page "SOLUTIONS" and that the correct solutions are installed in the correct positions.

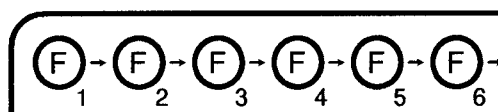
Calibration solutions which should be added with the 695 Autosampler must be placed in the sample rack in immediate succession. For each of these solutions, its position on the sample rack must be entered under "Pos." on the "SAMPLES" page. The number of calibration solutions is defined with the instruction "CAL)n". The associated mass concentrations "Mass conc." and the addition volume "Vol.Csoln" must be entered on the "SUBSTANCES/Calibration" page.

5.2.3 Sample data table

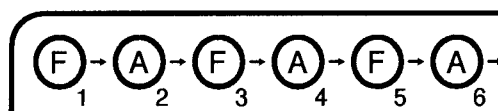
With the 695 Autosampler, work is usually performed with automatic transfer of the sample data from the sample data table entered on the "SAMPLES" page. The sample-specific data are transferred line by line to the sample data line on the "MONITORING" page and used for the next determination.

In the sample data table on the "SAMPLES" page (see *sect. 5.4.4* of the 693/694 Instructions for use), the position number on the sample rack can be entered for each sample under "Pos." The following rules hold for the position number:

- If work is performed without an auxiliary vessel (AUX), each position on the sample rack can be assigned to a sample (for example, max. 80 samples with the 6.2041.060 Sample rack).



- If work is performed with an auxiliary vessel (AUX), only every second position on the sample rack can be assigned to a sample (for example, max. 40 samples with the 6.2041.060 Sample rack).



- All instructions which concern the sample vessel (FEED) (e.g. "SMPL/F", "CSOLN/F", "F>M", "DOS>F", etc.) are referred to the vessel which is located at the rack position "Pos." defined by the position number.
- All instructions which concern the auxiliary vessel (AUX) (e.g. "F>A", "DOS>A", etc.) are referred to the vessel which immediately follows the sample vessel defined by the position number (rack position "Pos. + 1").
- For sample solutions, the order of the positions can be freely selected, one position can also be entered several times (e.g. for multiple sampling from the same sample vessel).
- With calibration solutions, all solutions must be entered in immediate succession, however the actual position number can be freely selected.
- With the UV sample racks, the position numbers on the sample holders are defined as follows:

6.2041.100 Sample rack:	Sample holder left	1...12
	Sample holder right	13...24
6.2041.110 Sample rack:	Sample holder left	1...16
	Sample holder right	17...32

- If no position numbers are entered, the samples and calibration solutions are processed in the order printed on the sample racks.

The entire sample data table can be stored on the data card or a PC under a freely selectable name and also reloaded from there.

5.2.4 Settings on the "MONITORING" page

Of the parameters available on the dialogue page "MONITORING" (see sect. 5.5.1 of the 693/694 Instructions for use), the following are important for operation with the 695 Autosampler:

Stand address	The stand address must be set to "3".
Auto.samples	For automatic transfer of the sample data from the "SAMPLES" page, this parameter must be set to "on". With "Auto.samples = off", the current data of the sample data line on the "MONITORING" page are used.
Auto.batch	For automatic series determinations, this parameter must be set to "on" and the desired number of samples entered. With "Auto.batch = off", only a single determination is performed.
Pos.	In the sample data line, data must be entered only if work is performed with "Auto.samples = off". In this case, the rules which apply to the position "Pos." are the same as those on the "SAMPLES" page (see sect. 5.2.3).
Sample table	This parameter displays the name of the sample data table from which the sample data of the determination loaded in the working storage have been transferred.

5.3 Examples

5.3.1 Proportional standard addition

The following example shows a cadmium determination with standard addition. Depending on the cadmium content, standard addition is performed with two different standard addition solutions. Only the most important method pages and the dialogue pages "SOLUTIONS", "SAMPLES" and "MONITORING" are listed.

Method CdCASE .mth		OPERATION SEQUENCE			
Title CASE programm with proportional addition					
	Instructions	t/s	Main parameters		Auxiliary parameters
1	SMPL>M		V.fraction	mL	V.total L
2	PURGE				
3	STIR	300.0	Rot.speed	2000 /min	
4	(ADD				
5	SEGMENT		Segm.name	CdASV	
6	(CASE		EV:Cd <= 0		Calc.f. A01
7	CASE		EV:Cd < 1e-9		Calc.f. A02
8	PADD>M		SoIn.name	Cd-Std1	Prop.coeff. 8
9	CASE		Prop.subst.	Cd	
10	PADD>M		EV:Cd >= 1e-9		Calc.f. A02
			SoIn.name	Cd-Std2	Prop.coeff. 0.05
			Prop.subst.	Cd	
11	CASE)				
12	EXIT		EV:Cd <= 0		
13	ADD)2				
14	RINSE		Cycles	2	V.rinse 40.000 mL
15	END				

The following is a brief explanation of the main program sequence:

- Line 1 Transfer of the sample from the sample vessel to the measuring vessel: 10 mL
- Line 2...3 Purging and stirring of the analysis solution for 5 min
- Line 4...13 Loop for double standard addition
- Line 5 Call up of the segment "CdASV" for cadmium determination
- Line 6...11 CASE block
- Line 6 No standard addition with "EV:Cd <= 0" (no evaluation available), alternative formula "A01" is activated
- Line 8 Proportional addition with standard solution "Cd-Std1" with "EV:Cd < 1e-9" (evaluation value < 1 nA), alternative formula "A02" is activated
- Line 10 Proportional addition with standard solution "Cd-Std2" with "EV:Cd >= 1e-9", (evaluation value ≥ 1 nA), alternative formula "A02" is activated
- Line 12 Exit of ADD loop with "EV:Cd <= 0"
- Line 14 Two rinsing operations of the measuring vessel with 40 mL rinsing solution
- Line 15 End of main program

Method: CdCASE		SUBSTANCES			
		Cd - Cd-ASV			
Calibration	93-11-12 09:39	Coefficients			
Technique	std.add.	Y.reg	4.371e-09		
Curve type	linear	Slope	0.002408		
		Nonlin.			
		Mean dev.	1.836e-10		
Additions					
SoIn.name	Cd-Std1	Cd-Std2			
Mass conc.	1 mg/L	100 mg/L	g/L	g/L	
Range min	g/L	g/L	g/L	g/L	
Range max	g/L	g/L	g/L	g/L	
M.conc./cm	g/L	g/L	g/L	g/L	

The two standard addition solutions "Cd-Std1" (1 mg/L Cd) and "Cd-Std2" (100 mg/L Cd) are defined on the dialogue page "SUBSTANCES/Calibration".

Method: CdCASE		CALCULATION max. 15 lines	
=====			
Quantity	Formula (R##, C##, A##)	Res.unit	Sig.dig.
rho(Cd)	A01 = MC:Cd	no res.	2
rho(Cd)	A02 = MC:Cd	#g/L	5

The two alternative formulae "A01" and "A02" are defined on the dialogue page "CALCULATION". If no result was found, the first formula is activated, whereas the second formula is used when a result is available.

Line: 1					SOLUTIONS max. 40	
=====						
SoIn.name	Pos.	Std.subst.	Mass conc.	Remark		
Cd-Std1	A01	Cd	1 mg/L	from: Cd		
Cd-Std2	A02	Cd	100 mg/L	from: Cd		

The two standard addition solutions are entered on the dialogue page "SOLUTIONS" and assigned to a position on the standard rack.

Name: TableA.smp		SAMPLES			Autoincrement: 1	
Line: 1		5 of 126			Balance input: off	
=====						
Pos.	Ident.1/S1	Ident.2/S2	Ident.3/S3	Method.call	Sample size/S0	
1	Sample 1			CdCASE.3D	10 mL	
2	Sample 2			CdCASE.3D	10 mL	
3	Sample 3			CdCASE.3D	10 mL	
4	Sample 4			CdCASE.3D	10 mL	
5	Sample 5			CdCASE.3D	10 mL	

5 samples are entered on the dialogue page "SAMPLES" which are assigned to positions 1...5 on the sample rack of the 695 Autosampler. The method "CdCASE" is called up automatically and runs at VA Stand "3" in the mode "D = determination". The parameter "Sample size/S0" defines the sample volume which is transferred from the sample vessel to the measuring vessel using the instruction "SMPL>M".

Method: CdCASE		MONITORING		* READY *	
Title : CASE programm with proportional addition					
=====					
Remark 1					
Remark 2					
Run mode	determination	Run	0		
User name		Stand address	3		
Auto.samples	on	5 of 126	Determination	.dtm	
Auto.batch	on	0 of 5	Modified	no	
Det.storage	on	95.4 % free	Sample table	-	

On the dialogue page "MONITORING", the automatic sample data transfer "Auto.samples" is switched on. The parameters "Auto.batch" for automatic series determination (the number of samples is set to 5) and "Det.storage" for automatic storage of the determinations are also switched on.

5.3.2 Standard addition with predilution of the sample

The following example shows a cadmium determination with standard addition for highly concentrated samples which are prediluted on the 695 Autosampler. Only the most important method pages and the dialogue pages "SOLUTIONS", "SAMPLES" and "MONITORING" are listed.

Method	CdPREP .mth	OPERATION SEQUENCE			
Title	Cd determination with sample predilution	-----			
	Instructions	t/s	Main parameters		Auxiliary parameters
1	(PREP				
2	SMPL/F		V.fraction	mL	V.total L
3	DOS>A		Soln.name	Water	V.add 4.950 mL
4	F>A		addition	FEED -> AUX	V.add 0.050 mL
5	VMIX		Cycles	2	V.mix 4.000 mL
			Rack pos.	SA	
6	PREP)				
7	DOS>M		Soln.name	Water	V.add 9.900 mL
8	A>M		addition	AUX -> MEAS	V.add 0.100 mL
9	>PREP				
10	PURGE				
11	STIR	480.0	Rot.speed	2000 /min	
12	(ADD				
13	PURGE				
14	STIR	20.0	Rot.speed	2000 /min	
15	OPURGE				
16	SEGMENT		Segm.name	CdASV	
17	ADD>M		Soln.name	Cd-Std	V.add 0.020 mL
18	ADD)2				
19	OMEAS				
20	RINSE		Cycles	1	V.rinse 20.000 mL
21	RINSE		Cycles	2	V.rinse 10.000 mL
22	END				

The main program runs as follows:

- Line 1...6 Sample preparation block with sample predilution
- Line 2 Sample is in the sample vessel
- Line 3 Addition of 4.95 mL hydraulic solution to the auxiliary vessel
- Line 4 Transfer of 0.05 mL sample from the sample to the auxiliary vessel
- Line 5 Two mixing operations of the diluted sample solution in the auxiliary vessel
- Line 7 Addition of 9.9 mL hydraulic solution to the measuring vessel
- Line 8 Transfer of 0.1 mL sample solution from the auxiliary to the measuring vessel
- Line 9 Call-up of the sample preparation block
- Line 10...11 Deaeration and stirring of the analyte solution for 8 min
- Line 12...18 Loop for double standard addition
- Line 13...14 Deaeration and stirring of the analyte solution for 20 s
- Line 15 Switching off of the deaeration
- Line 16 Call-up of the segment "CdASV" for the cadmium determination
- Line 17 Standard addition with the solution "Cd-Std"
- Line 19 Switching off of voltage and current measurement
- Line 20 Rinsing of the measuring vessel with 20 mL rinsing solution
- Line 21 Two rinsing operations of the measuring vessel with 10 mL rinsing solution
- Line 22 End of the main program

In the sample preparation block, the sample in the auxiliary vessel is prediluted 1:100. Part of this sample solution is then transferred to the measuring vessel and there again diluted 1:100. During the deaeration time, the PREP block for the next sample is started. By the time the stripping voltammetric cadmium determination of the first sample starts, the second sample has already been prediluted.

Method: CdPREP		SUBSTANCES Cd - Cd-ASV		
Calibration	93-11-12 09:39	Coefficients		
Technique	std.add.	Y.reg	4.371e-09	
Curve type	linear	Slope	0.002408	
		Nonlin.		
		Mean dev.	1.836e-10	

Additions				

Soln.name	Cd-Std			
Mass conc.	1 mg/L	g/L	g/L	g/L
Range min	g/L	g/L	g/L	g/L
Range max	g/L	g/L	g/L	g/L
M.conc./cm	g/L	g/L	g/L	g/L

The standard addition solution "Cd-Std" (1 mg/L Cd) is defined on the dialogue page "SUBSTANCES/Calibration".

SOLUTIONS max. 40				
Line: 1	-----			
Soln.name	Pos.	Std.subst.	Mass conc.	Remark
Cd-Std	A01	Cd	1 mg/L	from: Cd
Water	H	-		"DOS>A from: Op.Seq.

On the dialogue page "SOLUTIONS", the standard addition solution "Pb-Std" and water "Water" must be entered as dilution solution. The position "H" for water means that the hydraulic solution is used directly.

Name: TableB.smp		SAMPLES		Autoincrement: 1	
Line: 1		4 of 126		Balance input: off	

Pos.	Ident.1/S1	Ident.2/S2	Ident.3/S3	Method.call	Sample size/S0
1	Sample 1			CdPREP.3D	5 mL
3	Sample 2			CdPREP.3D	5 mL
5	Sample 3			CdPREP.3D	5 mL
7	Sample 4			CdPREP.3D	5 mL

4 samples are entered on the dialogue page "SAMPLES" and are assigned to positions 1, 3, 5 and 7 on the sample rack of the 695 Autosampler (each even position must hold an empty auxiliary vessel which is not entered in the sample data table). The method "CdPREP" is called up automatically and runs at VA Stand "3" in the mode "D = determination". The approximate sample volume is defined in the parameter "Sample size/S0".

Method: CdPREP		MONITORING		* READY *	
Title : Cd determination with sample predilution					

Remark 1					
Remark 2					
Run mode	determination			Run	0
User name				Stand address	3
Auto.samples	on	4 of 126		Determination	.dtm
Auto.batch	on	0 of 4			
Det.storage	on	95.4 % free		Modified	no
				Sample table	-

On the dialogue page "MONITORING", the automatic sample data transfer "Auto.samples" is switched on. The parameters "Auto.batch" for automatic series determination (the number of samples is set to 4) and "Det.storage" for automatic storage of the determinations are also switched on.

5.3.3 Calibration curve with predefined calibration solutions

The following example shows how the lead determination described in detail in *sect. 4.3* of the 693/694 Instructions for use can be performed with the 695 Auto-sampler. First, 4 calibration solutions are used to record a calibration curve, the samples are then measured and the lead content determined using the calibration curve. The method "CALCRV" can be adopted unchanged for operation with the 695 Autosampler, only the dialogue pages "SOLUTIONS", "SAMPLES" and "MONITORING" must be adapted.

Method		OPERATION SEQUENCE		
CALCRV .mth		Pb determination with calibration curve		
Title				

	Instructions	t/s	Main parameters	Auxiliary parameters
1	D SMPL>M		V.fraction mL	V.total L
2	C (CAL			
3	C CSOLN>M		addition into MEAS	
4	DOS>M		Soln.name Acetate	V.add 1.000 mL
5	PURGE			
6	STIR	180.0	Rot.speed 2000 /min	
7	OPURGE			
8	(REP			
9	STIR	5.0	Rot.speed 2000 /min	
10	SEGMENT		Segm.name DPASV	
11	REP)2			
12	RINSE		Cycles 2	V.rinse 40.000 mL
13	C CAL)3			
14	END			

The main program is described in detail in *sect. 4.3.3* of the 693/694 Instructions for use. For operation with the 695 Autosampler, only line "12" must be changed (delete marking "c", increase parameter "Cycles" and enter the rinsing volume "V.rinse").

Method: CALCRV		SUBSTANCES	
		Pb - DPASV	

Calibration	93-12-15 14:10	Coefficients	
Technique	cal.crv.	Y.offset	-8.183e-10
Curve type	linear	Slope	0.002712
Temperature	20.0 °C	Nonlin.	
		Mean dev.	1.113e-09
Range min	g/L	#	CSoln.name
Range max	g/L		Mass conc.
M.conc./cm	g/L	0	Pb-1 2.5 ug/L
		1	Pb-2 5 ug/L
		2	Pb-3 10 ug/L
		3	Pb-4 20 ug/L
		4	g/L
		5	g/L
		6	g/L
		7	g/L
		8	g/L
		9	g/L
V0.CSoln.	10.000 mL		

The dialogue page "SUBSTANCES/Calibration" contains the definition of the names and mass concentrations of the 4 calibration solutions. The parameter "V0.CSoln" is used to define how much of each calibration solution should be transferred from the sample vessel to the measuring vessel.

SOLUTIONS				
Line: 1	max. 40			
-----	-----			
Soln.name	Pos.	Std.subst.	Mass conc.	Remark
Acetate	A01	-		"DOS>M from: Op.Seq.

On the dialogue page "SOLUTIONS" the acetate buffer used as auxiliary solution must be entered and assigned to a position on the standard rack.

SAMPLES					
Name: TableC.smp	10 of 126				Autoincrement: 1
Line: 1					Balance input: off
-----	-----				
Pos.	Ident.1/S1	Ident.2/S2	Ident.3/S3	Method.call	Sample size/S0
1	Pb-1			CALCRV.3C	*
2	Pb-2			CALCRV.3C	*
3	Pb-3			CALCRV.3C	*
4	Pb-4			CALCRV.3C	*
5	Sample 1			CALCRV.3D	10 mL
6	Sample 2			CALCRV.3D	10 mL
7	Sample 3			CALCRV.3D	10 mL
8	Sample 4			CALCRV.3D	10 mL
9	Sample 5			CALCRV.3D	10 mL
10	Sample 6			CALCRV.3D	10 mL

On the dialogue page "SAMPLES", first the 4 calibration solutions are entered in sequence and assigned to positions 1...4 on the sample rack of the 695 Auto-sampler. The method "CALCRV" is called up automatically and runs at VA Stand "3" in the mode "C = calibration". Only an asterisk is entered in the parameter "Sample size/S0" as the transfer volume of the calibration solutions is defined by the parameter "V0.CSoln" on the "SUBSTANCES/Calibration" page.

Following the calibration solutions, 6 samples are entered which are assigned positions 5...10 on the sample rack of the 695 Autosampler. The method "CALCRV" is called up automatically and runs on VA Stand "3" in the mode "D = determination". The parameter "Sample size/S0" contains the definition of the sample volume that is transferred from the sample vessel to the measuring vessel with the instruction "SMPL>M".

Method: CALCRV				MONITORING		* READY *	
Title : Pb determination with calibration curve							

Remark 1							
Remark 2							
Run mode	determination			Run	0		
User name				Stand address	3		
Auto.samples	on	10 of 126		Determination	.dtm		
Auto.batch	on	0 of 10		Modified	no		
Det.storage	on	95.4 % free		Sample table	-		

On the dialogue page "MONITORING", the automatic sample data transfer "Auto.samples" is switched on. The parameters "Auto.batch" for automatic series determination (the number of samples is set to 10) and "Det.storage" for automatic storage of the determinations are also switched on.

5.3.4 Calibration curve with preparation of the calibration solutions

The calibration solutions needed for the calibration curves can be prepared automatically on the sample rack of the 695 Autosampler from a stock solution. The following example shows the procedure for the lead determination already described in sect. 5.3.2 with 4 calibration solutions and 6 samples.

For each calibration solution to be prepared, a separate method must be written. In the present case, 4 calibration solutions of concentration 2.5, 5, 10 and 20 µg/L (each ca. 11 mL) are prepared from the stock solution "Pb-Std" (1 mg/L Pb) using the following 4 methods:

Method DOSPb1 .mth		OPERATION SEQUENCE			
Title Preparation of Pb-1		-----			
	Instructions	t/s	Main parameters	Auxiliary parameters	
1	DOS>F		SoIn.name Water	V.add	11.172 mL
2	DOS>F		SoIn.name Pb-Std	V.add	0.028 mL
3	VMIX		Cycles 2	V.mix	10.000 mL
			Rack pos. SF		
4	END				

Method DOSPb2 .mth		OPERATION SEQUENCE			
Title Preparation of Pb-2		-----			
	Instructions	t/s	Main parameters	Auxiliary parameters	
1	DOS>F		SoIn.name Water	V.add	10.945 mL
2	DOS>F		SoIn.name Pb-Std	V.add	0.055 mL
3	VMIX		Cycles 2	V.mix	10.000 mL
			Rack pos. SF		
4	END				

Method DOSPb3 .mth		OPERATION SEQUENCE			
Title Preparation of Pb-3		-----			
	Instructions	t/s	Main parameters	Auxiliary parameters	
1	DOS>F		SoIn.name Water	V.add	10.890 mL
2	DOS>F		SoIn.name Pb-Std	V.add	0.110 mL
3	VMIX		Cycles 2	V.mix	10.000 mL
			Rack pos. SF		
4	END				

Method DOSPb4 .mth		OPERATION SEQUENCE			
Title Preparation of Pb-4		-----			
	Instructions	t/s	Main parameters	Auxiliary parameters	
1	DOS>F		SoIn.name Water	V.add	10.780 mL
2	DOS>F		SoIn.name Pb-Std	V.add	0.220 mL
3	VMIX		Cycles 2	V.mix	10.000 mL
			Rack pos. SF		
4	END				

The remaining sequence following the preparation of the calibration solutions is identical to the lead determination with the method "CALCRV" described in sect. 5.3.2. Only the dialogue pages "SOLUTIONS", "SAMPLES" and "MONITORING" must be adapted.

SOLUTIONS				
Line: 1				
max. 40				
=====				
Soln.name	Pos.	Std.subst.	Mass conc.	Remark
Acetate	A01	-		"DOS>M from: Op.Seq.
Pb-Std	A02	Pb	1 mg/L	"DOS>F from: Op.Seq.
Water	H	-		"DOS>F from: Op.Seq.

On the dialogue page "SOLUTIONS", in addition to the acetate buffer used as auxiliary solution the stock solution "Pb-Std" and water "Water" as dilution solution must be entered. The position "H" for water means that the hydraulic solution is used directly for water addition.

Name: TableD.smp					
Line: 1					
SAMPLES					
14 of 126					
Autoincrement: 1					
Balance input: off					
=====					
Pos.	Ident.1/S1	Ident.2/S2	Ident.3/S3	Method.call	Sample size/S0
1	Pb-1 prep.			DOSPb1.3D	*
2	Pb-2 prep.			DOSPb2.3D	*
3	Pb-3 prep.			DOSPb3.3D	*
4	Pb-4 prep.			DOSPb4.3D	*
1	Pb-1			CALCRV.3C	*
2	Pb-2			CALCRV.3C	*
3	Pb-3			CALCRV.3C	*
4	Pb-4			CALCRV.3C	*
5	Sample 1			CALCRV.3D	10 mL
6	Sample 2			CALCRV.3D	10 mL
7	Sample 3			CALCRV.3D	10 mL
8	Sample 4			CALCRV.3D	10 mL
9	Sample 5			CALCRV.3D	10 mL
10	Sample 6			CALCRV.3D	10 mL

On the dialogue page "SAMPLES", first the 4 empty sample vessels for the preparation of the calibration solutions are entered and assigned to positions 1...4 on the sample rack of the 695 Autosampler. For each sample vessel, the corresponding method "DOSPb#" is called up. Only an asterisk is entered in the parameter "Sample size/S0" as no sample volume is needed here.

Following this, the 4 freshly prepared calibration solutions are entered again in sequence and once more assigned to positions 1...4. The sequence for recording the calibration curve and the subsequent lead determination of the 6 samples assigned to positions 5...10 is identical to the example described in sect. 5.3.2.

Method: CALCRV				MONITORING		* READY *	
Title : Pb determination with calibration curve							
=====							
Remark 1							
Remark 2							
Run mode	determination			Run	0		
User name				Stand address	3		
Auto.samples	on	14 of 126		Determination	.dtm		
Auto.batch	on	0 of 14		Modified	no		
Det.storage	on	95.4 % free		Sample table	-		

On the dialogue page "MONITORING", the automatic sample data transfer "Auto.samples" is switched on. The parameters "Auto.batch" for automatic series determination (the number of samples is set to 14) and "Det.storage" for automatic storage of the determinations are also switched on.

6. Safety, Errors, Maintenance, Diagnostic test

6.1 Electrical safety

Electrical safety of the 693 VA Processor, the 694 VA Stand and the 695 Autosampler has been designed to comply with the regulations of IEC publication 1010-1 (protection class I). Attention should be paid to the following two points:

- *The **mains connection and the replacement of fuses** must be carried out in compliance with the directions in section 3.5.*
- *If the 695 Autosampler is attached to the power supply, it may not be opened nor parts of them removed, otherwise there is a danger of contact with live components. Before opening the 695 Autosampler to replace parts or carry out maintenance or repair work, the **mains cable must always be disconnected from the mains plug 221** of the 695 Autosampler.*

6.2 Errors

If any type of fault appears in operation of the 695 Autosampler, this is shown by appropriate **error messages** on the 693 VA Processor. You will find details of these error messages, their possible causes and how to rectify them in the alphabetical lists of error messages in sect. 7.3.2 of the 693/694 Instructions for use. The following Table shows you an excerpt from this list with the most important sample changer error messages.

Error message	Meaning/Causes	Rectification
SAMPLER - ERROR 1: Missing device	Connection to 694 VA Stand or 695 Autosampler broken: – Connecting cable not plugged in – Wrong address – Hardware fault at VA Stand	Check connection to 694 VA Stand or 695 Autosampler: – Plug in connecting cable – Restart 693 VA Processor – Perform diagnostic tests for VA Stand
SAMPLER - ERROR 3: Wrong reply from RS232	– Transfer tubing on 695 Autosampler blocked – Wrong response of RS232 interface of 695 Autosampler	– Clean transfer tubing (procedure, see sect. 6.3.1) – Inform Metrohm service
SAMPLER - ERROR 11: No rack detected	– No rack mounted on 695 Autosampler – No rack type defined for mounted rack	– Mount rack – Define rack type on the "VA STAND/Rack definition" page and store data on 695 Autosampler

Error message	Meaning/Causes	Rectification
SAMPLER - ERROR 14: Illegal position number	Inadmissible position number for mounted rack	Change position number "Pos." on the "SAMPLES" and "MONITORING" page
SAMPLER - ERROR 15: Illegal rack number	The specified rack type number is not admissible	Define rack type on the "VA STAND/Rack definition" page and store data on 695 Autosampler
SAMPLER - ERROR 16: Siphoning volume too low	<ul style="list-style-type: none"> - Sample vessel on 695 Autosampler contains too little solution for the desired transfer instruction - Air supply of liquid sensor blocked 	<ul style="list-style-type: none"> - Check sample vessel or decrease volume "V.add" - Clean air supply of liquid sensor (procedure, see sect. 6.3.2)
SAMPLER - ERROR 17: Incorrect air pump signal	<ul style="list-style-type: none"> - Air supply of liquid sensor blocked - Air pump for liquid sensor faulty 	<ul style="list-style-type: none"> - Clean air supply of liquid sensor (procedure, see sect. 6.3.2) - Inform Metrohm service
SAMPLER - ERROR 18: Illegal X/Y position	695 Autosampler not properly adjusted	Adjustment of the Autosampler as described in sect. 3.6
SAMPLER - ERROR 19: Illegal X or Y position	695 Autosampler not properly adjusted	Adjustment of the Autosampler as described in sect. 3.6

6.3 Maintenance

6.3.1 Cleaning the transfer tubing

The transfer tubing must be cleaned in the following cases:

- Visible soiling of the transfer tubing.
- Air bubbles adhere to the transfer tubing and can no longer be removed by the measures described in sect. 4.2.2 even with thorough degassing of the hydraulic solution.
- The air bubbles used to separate the solutions no longer remain constant, but are broken up.
- The transfer tubing is mechanically blocked, the solutions can no longer be siphoned off or discharged (in this case, the error message "SAMPLER - ERROR 3" appears, see sect. 6.2).

There are two different procedures for cleaning the transfer tubing. In less severe cases of soiling (above all of an inorganic nature), **cleaning with Javelle water** is recommended, for severe contamination, particularly by organic substances or those containing fat, a more thorough **cleaning with hexane** is advisable.

Cleaning with Javelle water

Soiled transfer tubing is cleaned with Javelle water (hypochlorite solution) as follows (if the instruments are already switched on, a start can be made with point 3▶):

Note: *The hydraulic solution must first be thoroughly degassed as described in sect. 3.7.1.*

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Press the key <VA Stand> of the 693 VA Processor. The subpage "Switches" appears.
4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Cond. tube>. The transfer needle is washed and then moved to a position in front of the VA Stand. The prompt "Put solution on cond. position" appears.
7▶	Place vessel containing sufficient Javelle water (min. 20 mL) under the transfer needle.
8▶	Press <Enter>. The transfer tubing is filled with ca. 8 mL cleaning solution. After a wait of 1 min, this solution is discharged at the waste position. The transfer needle is washed and moved back to the position in front of the VA Stand. The prompt "Put solution on cond. position" appears.
9▶	Place vessel with Javelle water under the transfer needle.
10▶	Press <Enter>. The transfer tubing is filled with ca. 8 mL cleaning solution. After a wait of 1 min., this solution is discharged at the waste position and the transfer tubing refilled with hydraulic solution.
11▶	Check for the presence of air bubbles: The two lengths of transfer tubing and the two dispensing tips may only contain air bubbles with a diameter <0.1 mm. If larger air bubbles are present, continue with point 12▶.
12▶	Attempt to dislodge the air bubbles in the transfer tubing by tapping it gently and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, continue with point 13▶.
13▶	Unscrew the 6.1827.010 Transfer tubing from connection 206 of the small dispensing tip 205 . A large air bubble will be formed. Screw the transfer tubing back onto connection 206 and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, the transfer tubing must be cleaned with hexane (see below).

Cleaning with hexane

Severely soiled transfer tubing is cleaned with hexane (or pentane or heptane) as follows (if the instruments are already switched on, a start can be made with point 3▶):

Note: *The hydraulic solution must first be thoroughly degassed as described in sect. 3.7.1.*

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Press the key <VA Stand> of the 693 VA Processor. The subpage "Switches" appears.
4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Move needle>. The selection of the possible positions appears on the softkey bar.
7▶	Press the softkey <Wipe position>. The transfer needle is moved to a position in front of the VA Stand.
8▶	Using one hand, hold gear rack 213 at holding position C and with your other hand unscrew black knurled nut 211 a few turns (see Fig. 4).
9▶	Pull transfer tubing 233 (6.1827.000) completely out of the transfer needle.
10▶	Unscrew 6.1827.010 Transfer tubing from connection 206 of small dispensing tip 205 .
11▶	Dry the two lengths of transfer tubing by blowing nitrogen through them for ca. 3 min.
12▶	Rinse the two lengths of transfer tubing with ca. 50 mL hexane, also clean the outside of the pipetting tip with hexane.
13▶	Dry the two lengths of transfer tubing by blowing nitrogen through them for ca. 3 min.
14▶	Push transfer tubing 233 through the opening of knurled nut 211 into transfer needle 216 until the pipetting tip is visible at the bottom opening of the transfer needle.
15▶	Hold positioning aid 234 (4.695.1250) enclosed with the transfer tubing from below against transfer needle 216 as shown in Fig. 4 (see sect. 3.2.1).
16▶	Carefully push transfer tubing 233 by hand further into transfer needle 216 until the pipetting tip is lined up with positioning aid 234 .

17▶	Remove positioning aid <u>234</u> . Using one hand hold gear rack <u>213</u> at holding position <u>C</u> and with your other hand retighten black knurled nut <u>211</u> .
18▶	Screw the end of the 6.1827.010 Transfer tubing with the shorter screw nipple to connection <u>206</u> of the small dispensing tip <u>205</u> .
19▶	Press the softkey <Prime tube>. The two dispensing tips are filled with hydraulic solution, the solution is then discharged via the transfer tubing into the wash station. This process is repeated three times.
20▶	Check for the presence of air bubbles: The two lengths of transfer tubing and the two dispensing tips may only contain air bubbles with a diameter < 0.1 mm. If larger air bubbles are present, continue with point <u>21▶</u> .
21▶	Attempt to dislodge the air bubbles in the transfer tubing by tapping it gently and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, continue with point <u>22▶</u> .
22▶	Unscrew the 6.1827.010 Transfer tubing from connection <u>206</u> of the small dispensing tip <u>205</u> . A large air bubble will be formed. Screw the transfer tubing back onto connection <u>206</u> and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, the transfer tubing must be changed as described in sect. 6.3.2.

6.3.2 Changing the transfer tubing

The transfer tubing must be changed when it can no longer be cleaned by the procedures described in sect. 6.3.1. In such a case, proceed as follows (if the instruments are already switched on, a start can be made with point 3▶):

Note: *The hydraulic solution must first be thoroughly degassed as described in sect. 3.7.1.*

1▶	Switch on 695 Autosampler with mains switch <u>223</u> .
2▶	Switch on 693 VA Processor with mains switch <u>11</u> and wait until the dialogue page "MONITORING" appears.
3▶	Press the key <VA Stand> of the 693 VA Processor. The subpage "Switches" appears.
4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Move needle>. The selection of the possible positions appears on the softkey bar.

7▶	Press the softkey <Wipe position>. The transfer needle is moved to a position in front of the VA Stand.
8▶	Using one hand, hold gear rack 213 at holding position C and with your other hand unscrew black knurled nut 211 a few turns (see <i>Fig. 4</i>).
9▶	Pull old transfer tubing 233 completely out of the transfer needle and unscrew from the 6.1808.000 Connecting sleeve.
10▶	Carefully remove the protective tube from the pipetting tip of the new transfer tubing 233 (6.1827.000). Note: <i>Never touch the pipetting tip!</i>
11▶	Push transfer tubing 233 through the opening of knurled nut 211 into transfer needle 216 until the pipetting tip is visible at the bottom opening of the transfer needle.
12▶	Hold positioning aid 234 (4.695.1250) enclosed with the transfer tubing from below against transfer needle 216 as shown in <i>Fig. 4</i> (see <i>sect. 3.2.1</i>).
13▶	Carefully push transfer tubing 233 by hand further into transfer needle 216 until the pipetting tip is lined up with positioning aid 234 .
14▶	Remove positioning aid 234 . Using one hand hold gear rack 213 at holding position C and with your other hand retighten black knurled nut 211 .
15▶	Screw the free end of the transfer tubing to the 6.1808.000 Connecting sleeve.
16▶	Press the softkey <Prime tube>. The two dispensing tips are filled with hydraulic solution, the solution is then discharged via the transfer tubing into the wash station. This process is repeated three times.
17▶	Check for the presence of air bubbles: The two lengths of transfer tubing and the two dispensing tips may only contain air bubbles with a diameter <math>< 0.1\text{ mm}</math>. If larger air bubbles are present, continue with point 18▶ .
18▶	Attempt to dislodge the air bubbles in the transfer tubing by tapping it gently and press the softkey <Prime tube>. The filling process is repeated. If air bubbles are still present, continue with point 19▶ .
19▶	Unscrew the 6.1827.010 Transfer tubing from connection 206 of the small dispensing tip 205 . A large air bubble will be formed. Screw the transfer tubing back onto connection 206 and press the softkey <Prime tube>. The filling process is repeated.

6.3.3 Cleaning the air supply of the liquid sensor

If the air supply in the transfer needle is blocked, solution can no longer be siphoned off or discharged and one of the two error messages "SAMPLER - ERROR 16" or "SAMPLER - ERROR 17" appears (see sect. 6.2). In such a case, the air supply must be cleaned as follows (if the instruments are switched on, a start can be made with point 3▶):

1▶	Switch on 695 Autosampler with mains switch 223 .
2▶	Switch on 693 VA Processor with mains switch 11 and wait until the dialogue page "MONITORING" appears.
3▶	Press the key <VA Stand> of the 693 VA Processor. The subpage "Switches" appears.
4▶	Press the softkey <Settings>. The subpage "Settings" appears.
5▶	Press the softkey <Autosampler>. The subpage for manual operation of the 695 Autosampler appears.
6▶	Press the softkey <Move needle>. The selection of the possible positions appears on the softkey bar.
7▶	Press the softkey <Wipe position>. The transfer needle is moved to a position in front of the VA Stand.
8▶	Using one hand, hold gear rack 213 at holding position C and with your other hand unscrew transfer needle 216 from gear rack 213 (see Fig. 4) and detach from the transfer tubing. Note: <i>The gear rack must not be moved in the z axis, otherwise the Autosampler must then be reinitialised!</i>
9▶	Thoroughly clean transfer needle 216 mechanically, rinse through with hexane and dry using nitrogen.
10▶	Using one hand, hold gear rack 213 at holding position C and with your other hand guide transfer needle 216 from below over the transfer tubing, raise and screw to gear rack 213 (see Fig. 4). Note: <i>The gear rack must not be moved in the z axis, otherwise the Autosampler must then be reinitialised!</i>
11▶	Press <Enter>. The transfer needle is moved to the waste position.

6.4 Diagnostic tests

6.4.1 General Information

The 695 Autosampler is a very precise and dependable measuring instrument. Thanks to its rugged construction, it is virtually impossible that its functions are adversely affected by external mechanical or electrical influences. Although the appearance of a fault in the instrument can not be excluded completely, it is much more likely that malfunctions are caused by incorrect operation, wrong handling, improper connections or by operation with third-party instruments.

In such a case it is advisable to localise the fault by the diagnostic tests, which are both quick and easy to perform. The customer need call Metrohm service only when the instrument actually develops a fault. In addition, he can use the numbering in the diagnostic program to provide the service engineer with much more detailed information. In the case of inquiries, always specify the serial number **218** (see *sect. 2*) and program number (see *sect. 6.4.6*) and any error display that appears.

The following notation is used throughout these Instructions for use:

- "SAMPLES" Designation for dialogue page
- <Enter> Designation for key
- <Copy to> Designation for softkey
- "Mode" Designation for parameter

6.4.2 Procedure

The diagnostic steps must be performed in sequence and compared with the reactions of the 695 Autosampler (indented). In the yes case, continue with the next instruction.

If the instrument does not show the expected reaction (no case), the diagnostic step in question must be repeated to exclude operating errors. However, repeated wrong reactions make it highly probable that a fault exists.

The individual diagnostic steps can not be repeated separately. To repeat a single diagnostic step, there is no alternative except to start the series of diagnostic tests again from the beginning.

6.4.3 Preparing instrument for diagnostic tests

The following test sequence presupposes that all instruments of the VA system have been electrically connected and configured according to the instructions (see *sect. 3.5*).

- 1▶ Switch on 695 Autosampler.
- 2▶ Switch on 693 VA Processor
(or switch on both instruments at the same time).
- 3▶ The instrument initialisation described in *sect. 4.2.1* runs.
- 4▶ Press the following keys and softkeys on the 693 VA Processor in succession:

<VA Processor>
<Diagn.>
<Measure stand>

6.4.4 Performing initialisation

1▶ <Autosampler>

The Autosampler moves to the home position ("Homepos.", see sect. 3.6.2), then to the waste position ("WastePos.", see sect. 3.6.4) and finally to the position at the front left.

The screen shows the message

```
MEAS.TASK MESSAGE
press <Esc> to test or
adjust the air pump
<Enter>: continue
```

6.4.5 Checking liquid sensor

1▶ <Esc>

The screen shows the message

```
WAIT
Air pump slow (adjust R16 -> (2.00+/-0.04)V=)
```

This message appears in the display for ca. 10 s and has no meaning for this test sequence

The screen then shows the message

```
MEAS.TASK MESSAGE
Actual level: dry
press <Esc> to test next level
<Enter>: continue
```

Should a message different to the above display appear, it is highly probable that the air supply of the liquid sensor is blocked (see sect. 6.3.3).

2▶ Fill a sample vessel with water and move under the transfer needle until the tip is immersed in the water to a depth of ca. 5 mm.

3▶ <Esc>

The screen shows the message

```
MEAS.TASK MESSAGE
Actual level: wet
press <Esc> to test next level
<Enter>: continue
```

4▶ Remove the sample vessel.

5▶ <Esc>

The screen shows the message

```
MEAS.TASK MESSAGE
Actual level: dry
press <Esc> to test next level
<Enter>: continue
```

6▶ <Enter>

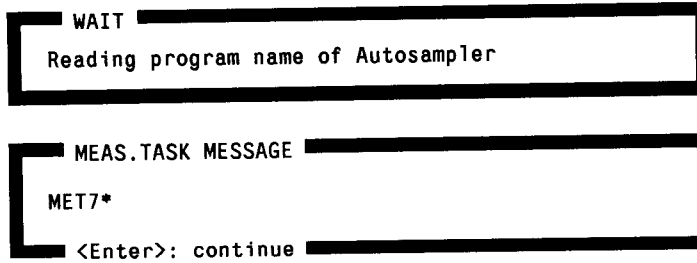
The screen shows the message

```
MEAS.TASK MESSAGE
press <Esc> to test or
adjust the air pump
<Enter>: continue
```

6.4.6 Checking program version

1▶ <Enter>

The screen shows the messages



6.4.7 Checking movement of the transfer needle

1▶ <Enter>

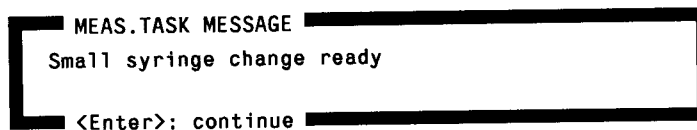
The transfer needle moves in the x direction to the position at the front right and then in the y direction to the home position ("Homepos.") and finally in the z direction ca. 1 cm downwards and then upwards.

Point 1▶ in sect. 6.4.8 is then performed directly.

6.4.8 Checking dispensing tips

1▶ The small dispensing tip moves downwards.

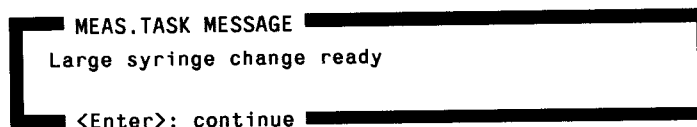
The screen shows the message



2▶ <Enter>

The small dispensing tip moves upwards and then the large dispensing tip moves downwards.

The screen shows the message



3▶ <Enter>

The large dispensing tip moves upwards again.

Point 1▶ in sect. 6.4.9 is then performed directly.

6.4.9 Checking stopcock changeover

1▶ The stopcock changeover is clearly audible for a short time.

6.4.10 Checking rack recognition

- 1▶ The screen shows the messages

```
MEAS.TASK MESSAGE
Actual racks: A?? B?? S??
press <Esc> to test next racks
<Enter>: continue
```

The rack types displayed by the 693 VA Processor must match the mounted racks (sect. 4.3.8 shows a Table with all codings). If additional racks are mounted at this point for checking, the <Esc> key must be pressed so that the VA Processor recognises the new coding and displays it.

6.4.11 Exiting diagnostic tests

- 1▶ <Enter>

The screen shows the messages

```
MEAS.TASK MESSAGE
press <Esc> for
simulation run mode
<Enter>: continue
```

- 2▶ <Enter>

If you have pressed the <Esc> key instead of the <Enter> key, the VA system has been set in a special mode. This special mode was created for the development of the VA system and has no meaning for the user. If this special mode is set, with immediate effect the Autosampler no longer executes transfer instructions although it receives such instructions from the VA Processor. For its part, the VA Processor continues to operate as though the transfer instruction has been correctly executed by the Autosampler. The special mode is cleared by switching the VA system off then on again.

- 3▶ <Esc>

The diagnostics window disappears and the dialogue page "VA PROCESSOR" reappears.

7. Technical data

- **Brief description**
x, y, z sample changer for automated determinations and convenient solution transfer with the 693 VA Processor and 694.0020 VA Stand
- **Control and evaluation**
By 693 VA Processor
- **Liquid dispensing**
 - Principle* Dispensing with two dispensing tips:
Large dispensing tip for transfer of 0.2 ... 20 mL
Small dispensing tip for transfer of 10 ... 200 µL
 - Accuracy* ± 1.0 %
- **Liquid sensor**
Surface sensor for automatic recognition of the liquid level, based on compressed air principle
- **Sample racks**
 - 6.2041.060 Sample rack for 80 × 6.2747.000 Sample tubes (15 mL)
 - 6.2041.070 Sample rack for 40 × 6.1620.000 Sample bottles (50 mL)
 - 6.2041.100 Sample rack for 2 × 6.2041.040 UV racks, each holding 12 × 6.2414.000 Sample tubes (12 mL)
 - 6.2041.110 Sample rack for 2 × 6.2041.050 UV racks, each holding 16 × 6.2414.010 Sample tubes (5 mL)
- **Sample cover**
Protective film for sample racks, fastening by film holder
- **Standard racks**
 - 6.2041.080 Standard rack A for 16 × 6.1620.000 PE bottles (50 mL) and 1 × 6.1620.010 PE bottle (500 mL)
 - 6.2041.090 Standard rack B for 10 × 6.1620.000 PE bottles (50 mL)
- **Disposal**
Solutions and mercury are trapped after use in separate vessels
- **Attachment of 700 Dosinos**
Attachment for 2 × 700 Dosinos with 6.1567.250 Dispensing unit for rinsing the measuring vessel and operation of the wash station

- **Ambient temperature**
 - Nom. operating range* 0... + 45 °C
 - Storage, transport* -25... + 60 °C

- **Mains connection**
 - Mains voltage* 100, 120, 220, 240 V ± 10 %
 - Mains frequency* 50...60 Hz
 - Power consumption* max. 100 VA
 - Fuse* for 100, 120 V: 2 AT
(slow-blow, 20 mm , Ø 5 mm)
 - for 220, 240 V: 1 AT
(slow-blow, 20 mm , Ø 5 mm)

- **Safety regulations**
 - Construction, testing* construction and testing in accordance with IEC 1010-1, protection class I, overvoltage categorie II
 - Warnings* These instructions for use contain information and warnings which must be observed by the user if safe operation of the instrument is to be assured.

- **Housing**
 - Material* Light alloy, multicoat stove enamel

- **Dimensions**
 - Width* 606 mm
 - Height* 518 mm (housing); ca.920 mm (total)
 - Depth* 515 mm

- **Weight (incl. accessories)** 39 kg

8. Scope of delivery, Options, Warranty

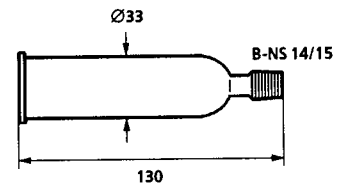
Note: Subject to changes! All dimensions given in mm.

8.1 Scope of delivery

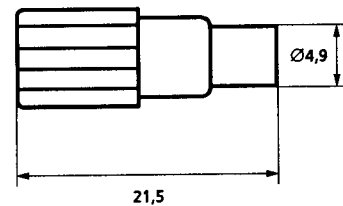
2.695.0010 695 Autosampler
Automatic x, y, z sample changer for 693 VA Processor and 694.0020 VA Stand

including the following accessories:

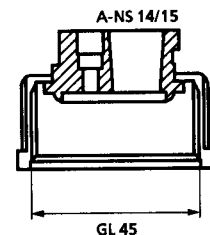
1 × **6.1403.010 Absorption tube**
incl. 6.2701.020 Cover
For the 6.1602.1X0 Bottle attachment



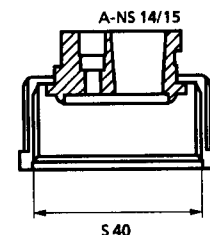
1 × **6.1446.040 Threaded stopper**
PVDF, with M6 thread
For the 6.1602.1X0 Bottle attachment mounted on the storage bottle (hydraulic solution)



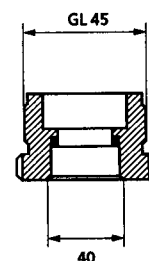
1 × **6.1602.100 GL45 Bottle attachment**
PFA/PP
For connection of storage bottles with GL45 thread



1 × **6.1602.110 S40 Bottle attachment**
PFA/PP
For connection of storage bottles with S40 thread



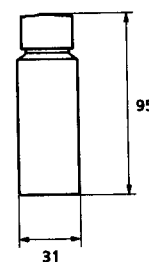
2 × **6.1618.050 Threaded adapter**
PFA/PP
For connection of 700 Dosinos to 6.1621.000 Container



16 × 6.1620.000 50 mL PE Bottle

For insertion in the 6.2041.080 Standard rack, 6.2041.090 Standard rack or 6.2041.070 Sample rack

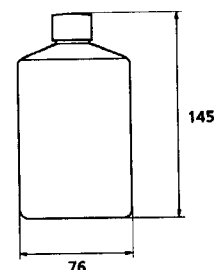
Volume $V = 50$ mL



1 × 6.1620.010 500 mL PE Bottle

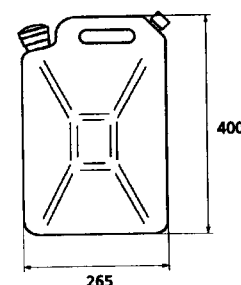
For insertion in the 6.2041.080 Standard rack

Volume $V = 500$ mL



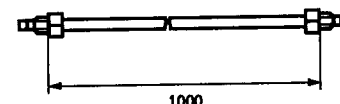
2 × 6.1621.000 Container PE

Volume $V = 10$ L



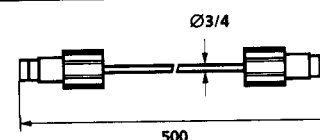
9 × 6.1805.120 FEP Tubing connection with two M6 threads

Length $L = 100$ cm



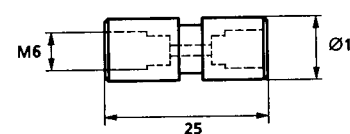
1 × 6.1805.200 PTFE Tubing connection with two M8 threads

Length $L = 50$ cm



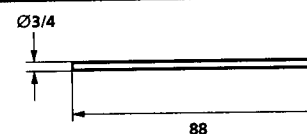
5 × 6.1808.000 Connecting sleeve ETFE, with two M6 threads

For connection of 2 lengths of tubing with M6 thread (e.g. 6.1805.120)



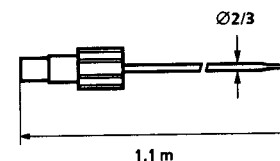
1 × 6.1819.070 Tube PTFE

Length $L = 32$ cm



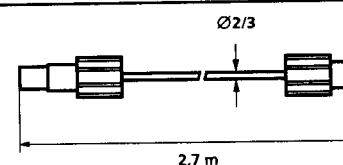
1 × 6.1827.000 Transfer tubing with pipetting tip FEP, incl. 4.695.1250 Positioning aid

Volume $V = 3.5$ mL

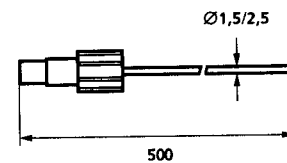


1 × 6.1827.010 Transfer tubing FEP, with 2 M6 threads

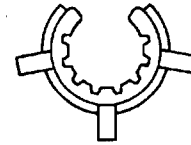
Volume $V = 8.5$ mL



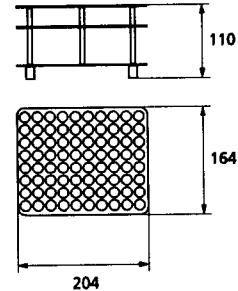
- 2 × **6.1829.020 Suction tube**
FEP, with M6 thread
Length $L = 50$ cm
For 700 Dosino



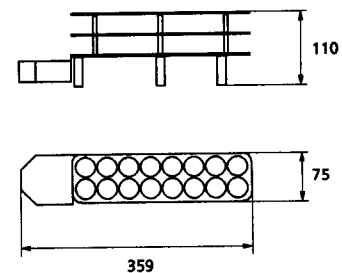
- 1 × **6.2023.020 Joint clamp**
POM, for SGJ 14/15



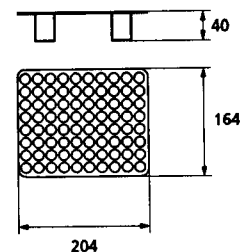
- 1 × **6.2041.060 Sample rack for 80 samples**
aluminium
To accommodate 80 6.2747.000
Sample tubes (15 mL)



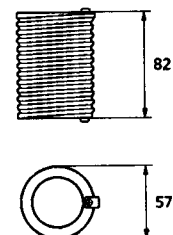
- 1 × **6.2041.080 Standard rack A**
aluminium
To accommodate 16 6.1620.000
PE bottles (50 mL) and 1
6.1620.010 PE bottle (500 mL)



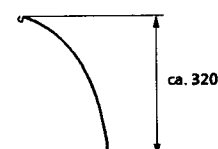
- 1 × **6.2041.120 Film holder for 6.2041.060**
Sample rack (80 samples)
aluminium
To accommodate 6.2749.000 PE
films on 6.2041.060 Sample rack



- 1 × **6.2054.000 Transfer tube holder**
For spiral mounting of the 6.1827.010
Transfer tubing

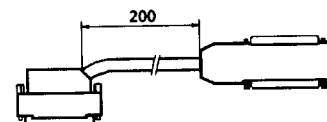


- 1 × **6.2054.010 Guide wire**
For holding the 6.1827.000 Trans-
fer tubing and the 6.1805.120 FEP
tubing

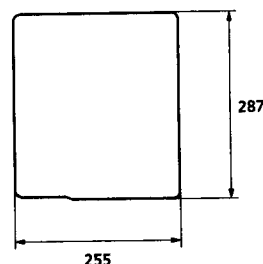


1 × 6.2122.0X0	Mains cable , according to customer's specifications:		
	<u>cable socket</u>	<u>cable plug</u>	
	type IEC 320/C 13	type SEV 12 (CH ...)	6.2122.020
	type IEC 320/C 13	type CEE (7), VII (D ...)	6.2122.040
	type CEE (22), V	type NEMA 5-15 (USA ...)	6.2122.070

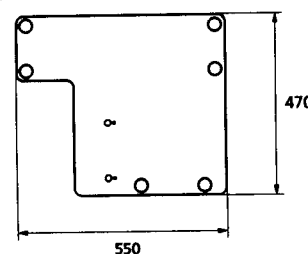
1 × 6.2135.000 **EBUS cable**
 Connecting cable 693 VA
 Processor – 695 Autosampler



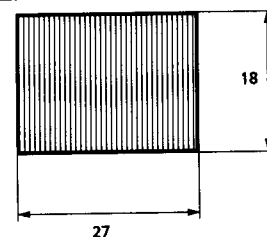
1 × 6.2622.000 **Positioning plate for racks**
 For positioning the sample and
 standard racks on the 695
 Autosampler



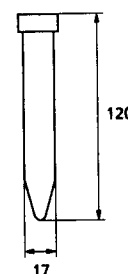
1 × 6.2622.010 **Baseplate for 694/695**
 For positioning the 695
 Autosampler and 694.0020 VA
 Stand



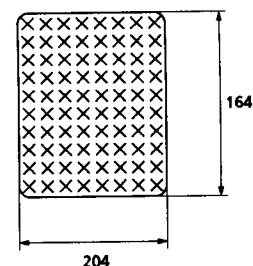
17 × 6.2701.050 **Screw cap with hole**
 For 6.1620.000 Standard bottles
 (50 mL)



4 × 6.2747.000 **15 mL Sample tube**
 PP, with blue screw cap, mL graduation
 and inscription field
 Set of 25



1 × 6.2749.000 **PE film**
 for covering 80 6.2747.000 Sam-
 ple tubes on 6.2041.060 Sample
 rack using 6.2041.120 Film holder
 Set of 20



1 × 8.695.1003 **Instructions for use**
 for 695 Autosampler (english)

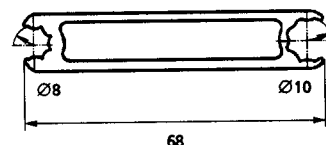
8.2 Additional accessories required

For operation of the 695 Autosampler, the following instruments and parts are needed in addition to the standard equipment (sect. 9.1):

2 × **2.700.0010 700 Dosino**
Dispenser for 693 VA Processor and 694 VA Stand
with integral connecting cable for connection to 695
Autosampler

2 × **6.1567.250 Dispensing unit with cylinder volume V = 50 mL**
for 700 Dosino

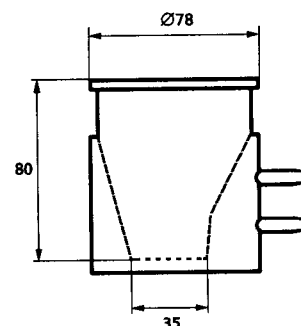
1 × **6.2739.000 Wrench**
for tightening plastic nipples of the
connecting tubing lengths



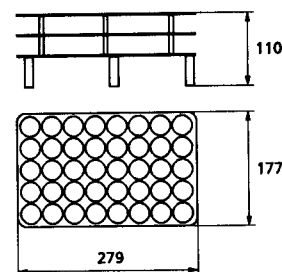
8.3 Options

In what follows, only the optional accessories available for the 695 Autosampler and the automatic 694.0020 VA Stand are listed. You will find additional options for the 694 VA Stand and the 693 VA Processor in sect. 9 of the 693/694 Instructions for use.

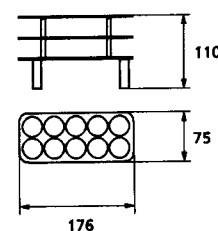
6.1457.210 Measuring vessel for operation with the 695 Autosampler
clear glass, with thermostatic jacket;
incl. 6.2036.000 holding ring
Volume: 10 ... 90 mL

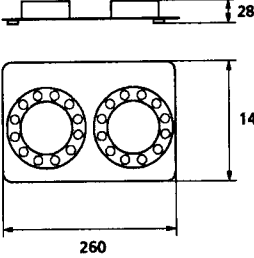
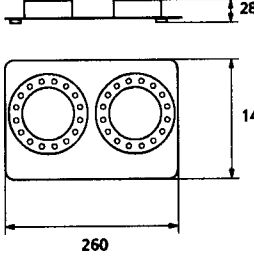
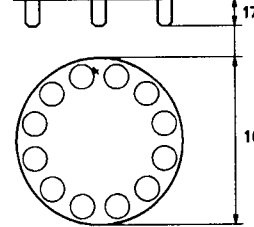
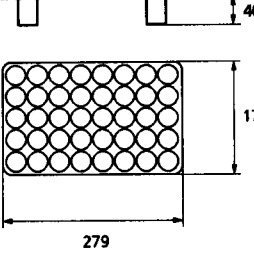
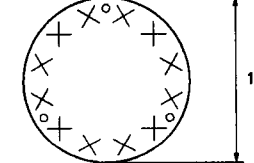
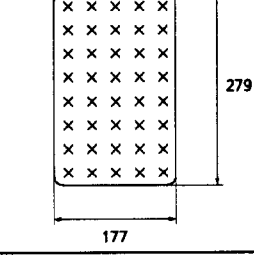
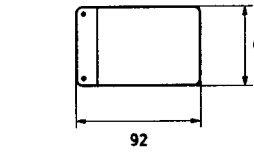


6.2041.070 Sample rack for 40 samples
aluminium
To accommodate 40 6.1620.000
Sample vessels (50 mL)



6.2041.090 Standard rack B
aluminium
To accommodate 10 6.1620.000 PE
bottles (50 mL)



6.2041.100	Holder for 6.2041.040 UV racks aluminium and PP	
	To accommodate 2 6.2041.040 Sample tube holders of the 705 UV Digester, each holding 12 6.2414.000 Sample tubes (12 mL)	
6.2041.110	Holder for 6.2041.050 UV racks aluminium and PP	
	To accommodate 2 6.2041.050 Sample tube holders of the 705 UV Digester, each holding 16 6.2414.010 Sample tubes (5 mL)	
6.2041.130	Film holder for 6.2041.040 UV rack aluminium	
	To accommodate 6.2749.010 PE films on the 6.2041.040 Sample tube holder of the 705 UV Digester for 12 6.2414.000 Sample tubes (12 mL)	
6.2041.160	Film holder for 6.2041.070 Sample rack (40 samples) aluminium	
	To accommodate 6.2749.020 PE films on 6.2041.070 Sample rack	
6.2749.010	PE Cover film	
	For 6.2041.130 Film holder to cover 12 6.2414.000 Sample tubes (12 mL) Set of 20	
6.2749.020	PE Cover film	
	For 6.2041.160 Film holder to cover 40 6.1620.000 Sample vessels (50 mL) Set of 20	
6.2749.030	PE Cover film	
	To cover the pipette opening of the 694.0020 VA Stand Set of 20	

8.4 Warranty

The warranty regarding our products is limited to rectification free of charge in our workshops of defects that can be proved to be due to material, design or manufacturing faults which appear within 12 months from the day of delivery. Transport costs are chargeable to the purchaser.

For day and night operation, the warranty is valid for 6 months.

Glass breakage in the case of electrodes or other glass 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 regard to the guarantee of accuracy, the technical specifications in the Instructions for Use are authoritative.

Concerning defects in material, construction or design as well as the absence of guaranteed features, the purchaser 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.

9. Index

A		
"A>M"	49,55	
Absorption tube 6.1403.010	9,74	
Accessories for rinsing and siphoning off	10	
"ADD>M"	48,55	
Addition of the sample	47	
Additional accessories	78	
Adjusting the Autosampler	21	
Adjusting the home position	22	
Adjusting the measurement position	27	
Adjusting the wash position	24	
Adjusting the waste position	25	
Address selector switch 227 Figure	3	
Settings	19	
Air bubbles ...	30,33–34,62–63,65–66	
Air supply	67,69	
Alternative formulae	54	
Ambient temperature	73	
Attachment of 700 Dosinos	72	
Auxiliary electrode 58 Figure	27	
Auxiliary solutions	50	
Auxiliary vessel	51,56	
B		
Backup copies of the rack data	46	
Baseplate 231 (6.2622.010) Figure	5	
Ordering designation	77	
Setting up the Autosampler	4	
Setting up the VA Stand	15	
Block for sample preparation	55	
Bottle attachment 6.1602.100	9,29,74	
Bottle attachment 6.1602.110	9,29,74	
Brief description	72	
C		
Cable plug	77	
Cable socket	77	
Cadmium determination	53,55	
Calibration curve	48,57,59	
Calibration solutions ...	50–51,57–59	
Changing the transfer tubing	65	
Check rack recognition	71	
Checking for air bubbles	33	
Checking liquid sensor	69	
Checking stopcock changeover	70	
Checking the home position	21	
Checking the hydraulic solution	32	
Checking the mercury collecting vessel	32	
Checking the rinsing solution	32	
Checking the wash station	34	
Checking the waste container	32	
Cleaning the air supply	67	
Cleaning the transfer tubing	62	
Cleaning with hexane	64	
Cleaning with Javelle water	63	
Coding	44	
Connecting sleeve 6.1808.000	7,10–11,16–17,75	
Connection 201 Connecting FEP tubing	16	
Figure	2	
Connection 202 Connecting FEP tubing	17	
Figure	2	
Connection 206 Figure	2	
Installing transfer tubing	7	
Connection 207 Connecting storage bottle	9	
Figure	2	
Connection 208 Figure	2	
Installing FEP tubing	7	
Connection 211 Figure	2,6	
Mounting the transfer tubing	6	
Connection 212 Figure	2,6	
Installing FEP tubing	7	
Connection 224 Connecting rinsing Dosino	18	
Figure	3	
Connection 225 Connecting siphoning Dosino	18	
Figure	3	
Connection 228 Connecting EBUS cable	18	
Figure	3	
Connection 229 Figure	3	
Connection 230 Figure	3	
Connection of storage bottle	9	
Connection of the rinsing and siphoning Dosinos	16	
Connection of the wash station ..	16–17	
Container 6.1621.000	16–17,75	
Cover 24 of measuring head arm Figure	15	
Lowering	32	
Mounting dust protection	15	
Cover 219 Changing fuses	20	
Figure	3	
Setting the mains voltage	19	
Cover 6.2701.020	9	
Cover film 250 (6.2749.030) Figure	15	
Mounting	15	
Ordering designation	79	
Cover film 6.2749.000	36,76–77	
Cover film 6.2749.010	41,79	
Cover film 6.2749.020	40,79	
"CSOLN/F"	48	
"CSOLN>M"	48,57	
D		
Data card	46,51	
Degassing	29,62	
Diagnostic tests	68	
Dimensions	73	
Dispensing of auxiliary solutions ...	48	
Dispensing of calibration solutions ..	48	
Dispensing of reference solution	49	
Dispensing of standard addition solutions	48	
Dispensing tip 204 Checking	70	
Figure	2	
Filling	30	
Technical data	72	
Dispensing tip 205 Checking	70	
Figure	2	
Filling	30	
Technical data	72	
Dispensing unit 6.1567.250	16–17,72,78	
Disposal	72	
"DOS>A"	48,55–56	
"DOS>F"	48,59–60	
"DOS>M"	48,55,57–58,60	
Dust protection	15,36	
Dosino 700	16–17,72,78	

E		G		J	
Earthing	20	Gas wash bottle 241 (6.2405.030)		Javelle water	63
EBUS address	19	Checking	32	Joint clamp 6.2023.020	9,76
EBUS cable 6.2135.000	18,77	Figure	11		
Electrical connections	18,19	Mounting	10		
Electrical safety	61	Gear rack 213		L	
Entry of solutions	50	Figure	2,5–6	Lead determination	57,59
Equipping the measuring head	12	GL45	74	Liquid dispensing	72
Error messages	61	Glass capillary 98		Liquid sensor	7,67,69,72
Errors	61,68	Figure	27	Lowering cover of the	
Examples	53	Guide wire 210 (6.2054.010)		measuring head arm	32
Exiting diagnostic test	71	Figure	2–3		
		Mounting	7		
		Ordering designation	76	M	
F		H		Mains cable	20,77
"F>A"	49,55	Hall sensors	35,44	Mains connection	20,73
"F>M"	49	Heptane	64	Mains connection plug 221	
Fastening screws 247		Hex nut 244		Connecting mains cable	20
Figure	15	Figure	11	Figure	3
Mounting	15	Mounting	10	Mains frequency	73
Fastening screws 249		Hexane	64,67	Mains power lamp 215	
Figure	15	Holder 217		Figure	2
Mounting	15	Figure	3	Function	20
FEP tubing 235 (6.1805.090)		Mounting guide wire	7	Mains switch 223	
Connecting Dosino	16	Holder 6.2041.100		Figure	3
Figure	11	for UV racks	35,41–42,44,51,72,79	Switching on	33
Mounting	10	Holder 6.2041.110		Switching on/off	20
FEP tubing 236 (6.1805.180)		for UV racks	35,42–44,51,72,79	Mains voltage	
Figure	11	Home position	21	Nominal voltage	19
Mounting	10	Housing	73	Setting	19
FEP tubing 237 (6.1805.100)		Hydraulic solution	9,29,32–33,63–65	Technical data	73
Connecting Dosino	17	Hypochlorite solution	63	Voltage range	19
Figure	11			Mains voltage selector	3
Mounting	11	I		Maintenance	62
FEP tubing 6.1805.120	7,16,75	Inert gas connection	15	Manual operation	47
Film holder 248		Information 222		Manufacturing number 218	
Figure	15	Figure	3	Figure	3
Mounting	15	Initialisation	33	Measurement position	27
Film holder 6.2041.120	36,76–77	Install auxiliary electrode	14	Measuring head 40	
Film holder 6.2041.130	41,79	Install measuring vessel	14	Equipping	12
Film holder 6.2041.160	40,79	Install MME	14	Figure	11,13,27
Filling the connecting tubing	30	Install reference electrode	14	Measuring head arm 39	
Filling the storage bottle	29	Install stirrer	12	Figure	11,13,27
Filling the storage container	29	Installation	4	Measuring vessel 28	
Filling the transfer tubing	29	Installation of the		Figure	27
Filling the tubing connections	29	694.0020 VA Stand	10	Measuring vessel 6.1457.210	78
Fuse holder	3,20	Installing the positioning plate	5	Mercury	72
Fuse ratings 220		Instructions for 695 Autosampler	49	Mercury wastes	32
Figure	3	Instrument initialisation	33,68	Model number 226	
Fuses	20,73	Internal standard	48–49	Figure	3
		Introduction	1	Mounting the 6.1827.000	
				Transfer tubing	6
				Mounting the 6.1827.010	
				Transfer tubing	7
				Mounting the accessories	5

