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775 Dosimat

Instructions for Use

8.775.1013

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Content

Explanation of symbols:

< > means "key", e.g. <GO> means key "GO"

`DOS.....0.000 ml` means "display"

1 Overview

Front view of instrument:

1 Exchange unit
Choose the volume of the Exchange unit in such a way that a volume between 10...100% of the nominal volume is expelled.

2 Display
The 16 digit display shows all important information:

`DOS 3.456 ml`	Mode (DOS = dosing) and dosed volume. Dosimat is in stand-by position
`DOS ↑ 3.456 ml`	The piston is moving upwards.
`DOS ↓ 3.456 ml`	The piston is moving downwards.
`DOS → 3.456 ml`	The cock is turned to the right.
`DOS ← 3.456 ml`	The cock is turned to the left.

The display of the status ↑ resp.↓ are specially important for very slow dosings where movements of the piston cannot be clearly identified.

3 Operating keys at the Dosimat

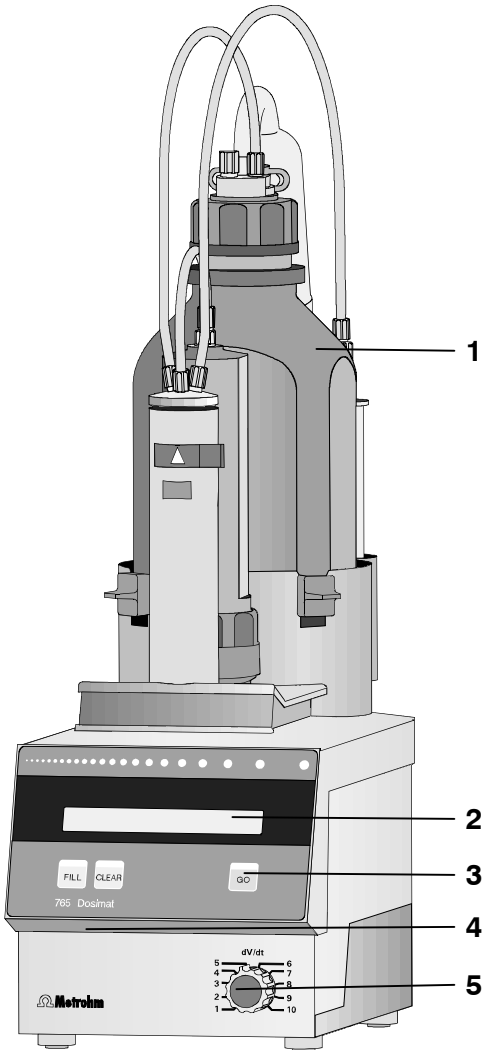
<FILL> Filling of the dosing cylinder.

<CLEAR> Resetting of the volume display to 0.

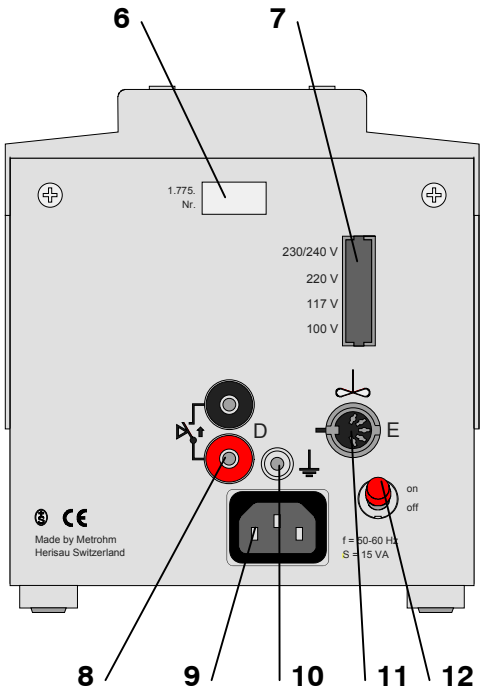
<GO> Dosing goes on as long as <GO> is pressed.

4 Setting of display contrast

5 Analogue setting of dosing rate
Position 1 = lowest rate
Position 10 = highest rate



Rear view of instrument:



6 Identification plate
Indication of model, series and serial number.

7 Indication of power voltage
Make sure the current has been adapted correctly before Dosimat is switched on.

8 Connection for external dosing contact
E.g. 6.2107.000 push button cable.

9 Power connection
In power supply systems, in which strong HF interferences (transients) are superimposed on the power voltage, the 775 Dosimat should be connected via an additional power line filter, e.g. METROHM 615 model.
The main cables supplied with the instrument are three-core and equipped with a plug with an earthing pin. If a different plug has to be fitted, the yellow/green lead must be connected to the protective earth. Each break in the earthing inside or outside the instrument can make it a hazard.
When the instrument is opened or if parts of it are removed, certain components may be live if the instrument is connected to the power line. The power cable must therefore always be unplugged when certain adjustments are made or parts replaced.

10 Earthing socket
The 775 Dosimat must be grounded correctly and effectively, if necessary through the separate earthing socket.

11 Connection for stirrer
In general a Magnetic Stirrer (forms a complete titrating stand). Other stirrers may be connected as well, e.g. a METROHM Rod Stirrer. Supply voltage output: +9 V DC ($I \leq 200$ mA).

12 Power switch
Switching on and off Dosimat.

2 Error messages, troubleshooting

2.1 Special messages and error messages

`error 1`	Check sum error in PROM. Remedy: Call Metrohm-Service.
`error 2`	RAM-check: Error in on-chip-RAM. Remedy: Call Metrohm-Service.
`error 3`	RAM-check: Error in off-chip-RAM. Remedy: Call Metrohm-Service.
`error 4`	RAM-check: Error in on- and off-Chip-RAM. Remedy: Call Metrohm-Service.
`error 5`	Check sum error in off-chip-RAM. Remedy: RAM has to be re-initialized: Switch Dosimat off. Press <FILL> during switching it on again. Display shows "RAM init.". Press <GO>. Display shows "RAM init. passed". <CLEAR> leads to basic program.
`no exch. unit!`	Exchange unit is not (properly) mounted. Exit: Mount Exchange unit properly.

2.2 Diagnosis

2.2.1 General

The 775 Dosimat is a very precise and dependable feeding instrument. Thanks to its rugged construction, it is highly unlikely that external mechanical or electrical influences will have any adverse effect on its functions.

Although a fault in the instrument can not be excluded with certainty, the possibility is greater that malfunctions are caused by wrong operation or handling, through improper connections and the operation with third-party devices.

Whatever the case, it is always advisable to localise the fault with the diagnostic tests, which can be performed quickly and simply. The customer need call Metrohm service only when the instrument really has a fault. Further, he can use the results of the specific diagnostic function to provide the service engineer with much more precise information.

In the case of inquiries, always quote the serial number on model plate (see page 3) and if applicable the error message.

Procedure

The diagnostic menu listed in section 2.2.2 shows all components for which detailed instructions (diagnostic steps) are available for checking the functionality.

In the case of a possible malfunction, we advise you to perform either the corresponding diagnostic step or all diagnostic steps as a routine check on the instrument.

The reactions of the Dosimat to the instructions must be compared with the descriptions in the diagnostic step. If the Dosimat do not show the expected reaction ("No" case), the appropriate diagnostic step must be repeated to exclude operating errors. However, it is highly probable that repeated wrong reactions indicate a malfunction.

Equipment required:

3.496.0070	Dummy-exchange unit (or exchange units if possible with different cylinder volumes).
6.2107.000	Push-button cable or ordinary test lead with 4 mm banana plugs
-.---.----	Stop watch or watch with second hand.

2.2.2 Summary

2.2.3 RAM-test

1. Power off.

2. Remove exchange unit.

3. Disconnect all cables at rear, except mains cable.

4. Power on and simultaneously press key <CLEAR> and keep pressed until

```
RAM test
```

5. <GO>

The processor now checks the RAM of the Dosimat, without affecting the content. The exclamation (!) appears when the test is positive. The test can be continued at will. If no fault is found, the following appears:

```
RAM test  !
```
(exclamation mark is flashing)

6. The test is broken off with <CLEAR> (Depress the key only until the dotted pattern appears)

```
no exch. unit!
```

2.2.4 Diagnosis of spindle zero and cock changeover

1. Power off.

2. Insert exchange unit.

3. Power on.

Dosimat fills.

4. Remove exchange unit.

5. To check the spindle zero.

The spindle must be 0.2 - 0.6 mm below the edge of the mounting plate (see Fig. 1).

The link piece of the cock coupling must be parallel to the side walls of the Dosimat (see Fig. 2).

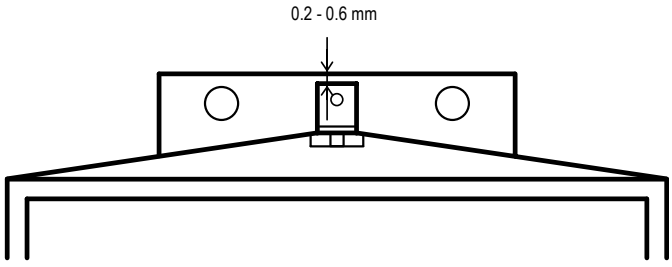


Fig. 1

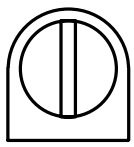


Fig. 2

2.2.5 Diagnosis of spindle drive

1. Insert exchange unit and put the burette tip into a collecting receptacle.

2. Connect push-button cable 6.2107.000 (if available).

3. Knob 'dV/dt' fully to the right.

4. Press feed button 6.2107.000 (if not available, <GO>) all the time until the piston rod reaches the top position and simultaneously measure the time from start to stop.

The running time of the spindle is 18 ... 22 s.

General rules:

- *Dosimat fills automatically.*
- *Spindle and cock must move in regular speed (observe sound!)*
- *In the filling position the cock coupling must turn the lever of the exchange unit blamelessly to the left stop (almost without play and without jamming).*

5. Repeat point 4. and now measure the filling time until the spindle stops at the lower end.

The running time (filling time) of the spindle is 18 ... 22 s.

6. Knob 'dV/dt' fully to the left.

7. <CLEAR>

```
DOS    0.000 ml
```

8. Press feed button 6.2107.000 (if not available, <GO>) all the time and simultaneously measure the time, until, depending on the exchange unit, the volume in the table below is reached.

1 ml:	*0.02*	*ml*
5 ml:	*0.1*	*ml*
10 ml:	*0.2*	*ml*
20 ml:	*0.4*	*ml*
50 ml:	*1*	*ml*

The time must be 14 ... 24 s.

9. <FILL>

```
DOS    0.000 ml
```

2.3 RAM-initialisation

In rare cases, it is possible that major interference signals such as line spikes and lightning can have an adverse influence on the contents of the data memory. If the contents of the data memory are undefined, this is indicated after “power on“ with ‘error 5'. The keyboard is then blocked, no entering is possible until the RAM is initialised again.

1. Disconnect all cables at rear, except mains cable.
2. Power off and wait 5 s.
3. Power on and simultaneously press key <FILL> and keep pressed until

   ```
   RAM init.
   ```

4. <GO>

   ```
   RAM init. passed
   ```

5. <CLEAR>

   ```
   DOS    0.000 ml
   ```

   Dosimat fills.

   The RAM-initialisation overwrites the data present in the User-Memory with the standard data.

2.4 Releasing a locked spindle with inserted Exchange Unit

The burette drive may very occasionally jam at the top or bottom end of the cylinder. If jamming occurs at the top or when the drive is out of function, the Exchange Unit can no longer removed. In this case, it is necessary to proceed as follows:

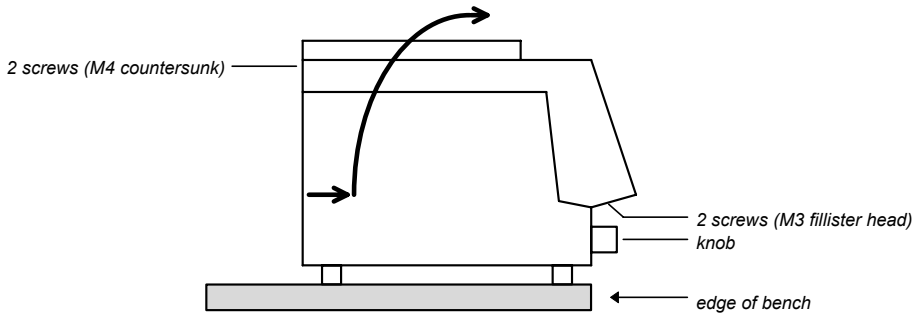


Fig. 3

1. Disconnect instrument from power supply!
2. Remove control knob.
3. Place instrument over edge of bench to allow the M3 screws to be removed.
4. Remove M4 screws.
5. Lift off top part of instrument together with Exchange Unit in the manner shown by the arrow.

The electronic circuits are now accessible!
On no account touch these!

6. Remove spindle from mechanical stop by turning the large gear wheel. (In case that the motor is inoperative, position spindle by hand to zero position.)

3 Appendix

3.1 Technical specifications

Exchange units 1, 5, 10, 20, 50 mL burette cylinder volumes, preferably with flat cock for automatic cock changeover

Resolution 10'000 pulses per 100% of burette volume

Exactitude Metrohm dosimats and exchange units meet the requirements of ISO/EN/DIN Standard 8655-3 "Piston-operated volumetric apparatus – Part 3: Piston burets" and DIN Standard 12 650.

Limits according to ISO/EN/DIN 8655-3

Cylinder volume	Max. permissible system. error		Max. permissible random error	
1 mL	± 0.6%	± 6 µL	± 0.1%	± 1 µL
5 mL	± 0.3%	± 15 µL	± 0.1%	± 5 µL
10 mL	± 0.3%	± 20 µL	± 0.07%	± 7 µL
20 mL	± 0.2%	± 40 µL	± 0.07%	± 14 µL
50 mL	± 0.2%	± 100 µL	± 0.05%	± 25 µL

Metrohm agencies throughout the world offer you the possibility of checking the accuracy of your exchange units and Dosimats locally and also of certifying them. If the dosing cylinder and/or piston of an exchange unit are replaced then we recommend that an accuracy check is carried out.

Dispensing time for 100% of burette cylinder volume
20 s ... app. 17 min

Display LCD, 16 characters
Size of characters: 4.84 x 8.01 mm

Material
Cabinet Polybutylene terephthalate (PBTP)
Key cover Polycarbonate (PC)

Ambient temperature
Nominal functional range +5... +40°C
Storage, transport - 40... +60°C

Safety specifications Designed and tested in accordance to IEC-Publication 1010, safety class I. This manual contains some information and warnings which have to be followed by the user to ensure safe operation and to retain apparatus in safe condition.

Power supply

Voltage	100, 117, 220, 230/240 V ± 10% (adjustable)
Frequency	50... 60 Hz
Consumption	15 VA
Fuse	Thermal fuse (100°C)

Dimensions

Dosimat with Exchange unit

Width	150 mm
Height	450 mm
Depth	275 mm

Weight

Dosimat	app. 2,9 kg

3.2 Warranty and certificates

3.2.1 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 embedding 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.

3.2.2 Certificate of Conformity and System Validation

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

Name of commodity:	775 Dosimat
System software:	Stored in ROMs
Name of manufacturer:	Metrohm Ltd., Herisau, Switzerland

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

Electromagnetic compatibility: Emission

EN50081-1/92, EN55022/class B, EN55011/class B	Generic emission

Electromagnetic compatibility: Immunity

EN50082-1/92	Immunity
IEC1000-4-2/95 (level 4), NAMUR/93	Static discharge
IEC801-3, ENV50140/93+ENV50204/93 (level 2)	Radiated rf electromag.field immunity
IEC801-4, IEC1000-4-4/95 (level 3)	El.fast transient requirements
IEC801-5, IEC1000-4-5/95 (level 2/3)	"Surges" immunity
NAMUR/93 Paragr. 3.2.2., IEC1000-4-11/94	Voltage dips, short interruptions

Security specifications

IEC1010 class1, EN61010 class1, UL3101-1, EN60947:IP31

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

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

Herisau, May 14, 1998

Dr. J. Frank	Ch. Buchmann
Development Manager	Production and Quality Assurance Manager

Ionenanalytik • Analyse des ions • Ion analysis • Análisis iónico
775 Dosimat

CE

EU- Declaration of Conformity

The company Metrohm AG, Herisau, Switzerland, certifies herewith, that the following instrument:

775 Dosimat

meets the CE mark requirements of EU Directives 89/336/EWG and 73/23/EWG.

Source of specifications:

EN 50081-1	Electromagnetic compatibility, basic specification Emitted Interference
EN 50082-1	Electromagnetic compatibility, basic specification Interference Immunity
EN 61010	Safety requirements for electrical laboratory measurement and control equipment

Description of apparatus:

Dispensing unit for titrating and dosing tasks.

Herisau, May 20, 1998

Dr. J. Frank	Ch. Buchmann
Development Manager	Production and Quality Assurance Manager

3.3 Scope of delivery and ordering designations

Dosimat 775 .....2.775.0010
including the following accessories:

1 Push button cable 6.2107.000
1 Key for Exchange units..... 6.2739.010
1 Exchange Unit with 20 mL glass cylinder 6.3026.220
1 Power cable with cable socket, type CEE(22), V
Cable plug to customer's specifications
type SEV 12 (Schweiz...)..... 6.2122.020
type CEE(7), VII (Deutschland...)..... 6.2122.040
type NEMA/ASA (USA...) 6.2122.070
1 Instructions for Use for Dosimat 775..... 8.775.1013

Options

Accessories to separate order and on payment of extra charge:

806 Exchange Unit 6.3026.xxx
Buret unit for Metrohm Dosimats, Titrinos, Titrandos; with glass cylinder, PCTFE/PTFE flat cock and built-in data chip

806 Exchange Unit with 1 mL glass cylinder..... 6.3026.110
806 Exchange Unit with 5 mL glass cylinder..... 6.3026.150
806 Exchange Unit with 10 mL glass cylinder..... 6.3026.210
806 Exchange Unit with 20 mL glass cylinder..... 6.3026.220
806 Exchange Unit with 50 mL glass cylinder..... 6.3026.250
Ceramic flat cock..... 6.1542.010

Stirrer and working equipment

728 Magnetic stirrer..... 2.728.0040
Magnetic stirring bars, length
12 mm..... 6.1903.010
16 mm..... 6.1903.020
25 mm..... 6.1903.030
802 Rod stirrer 2.802.0010

Electrode holder 6.2021.020

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Keys are marked with < >, **display texts** are in bold characters.