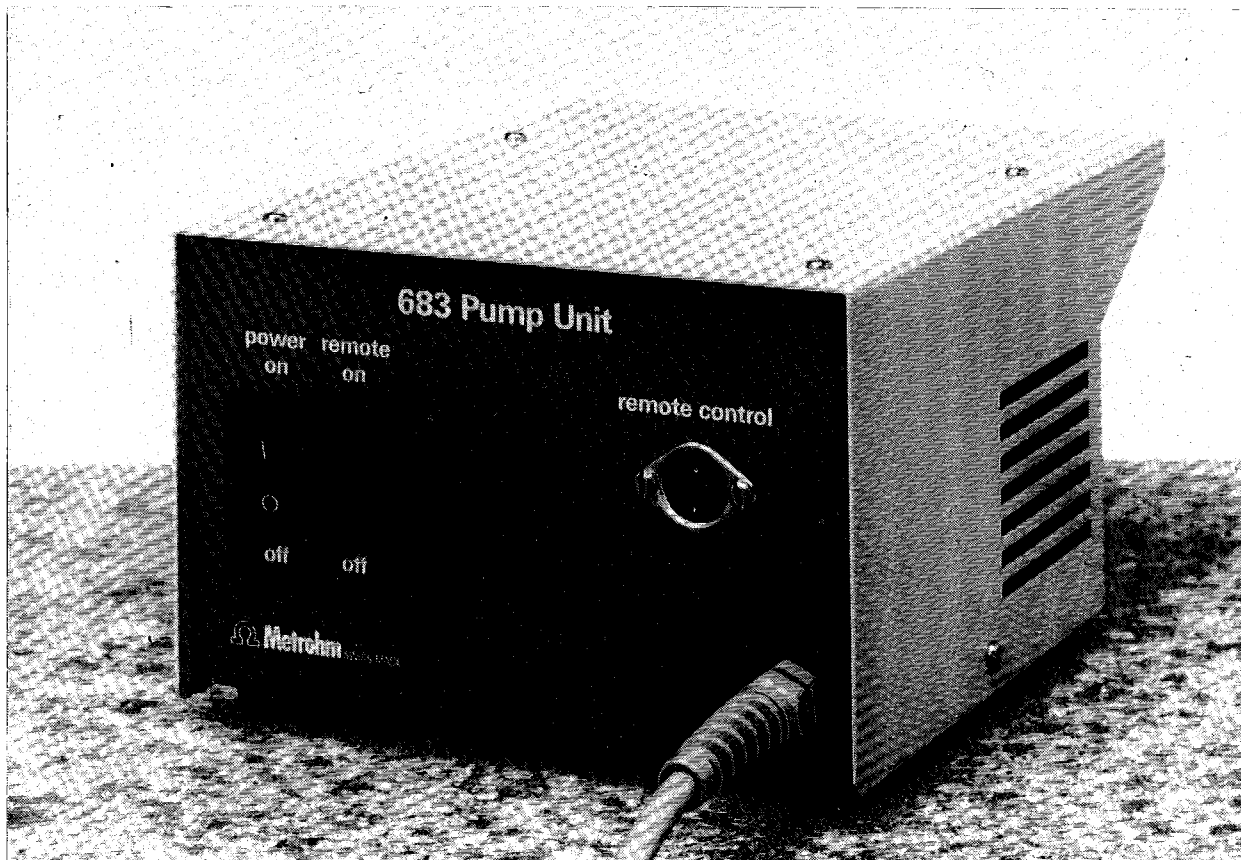
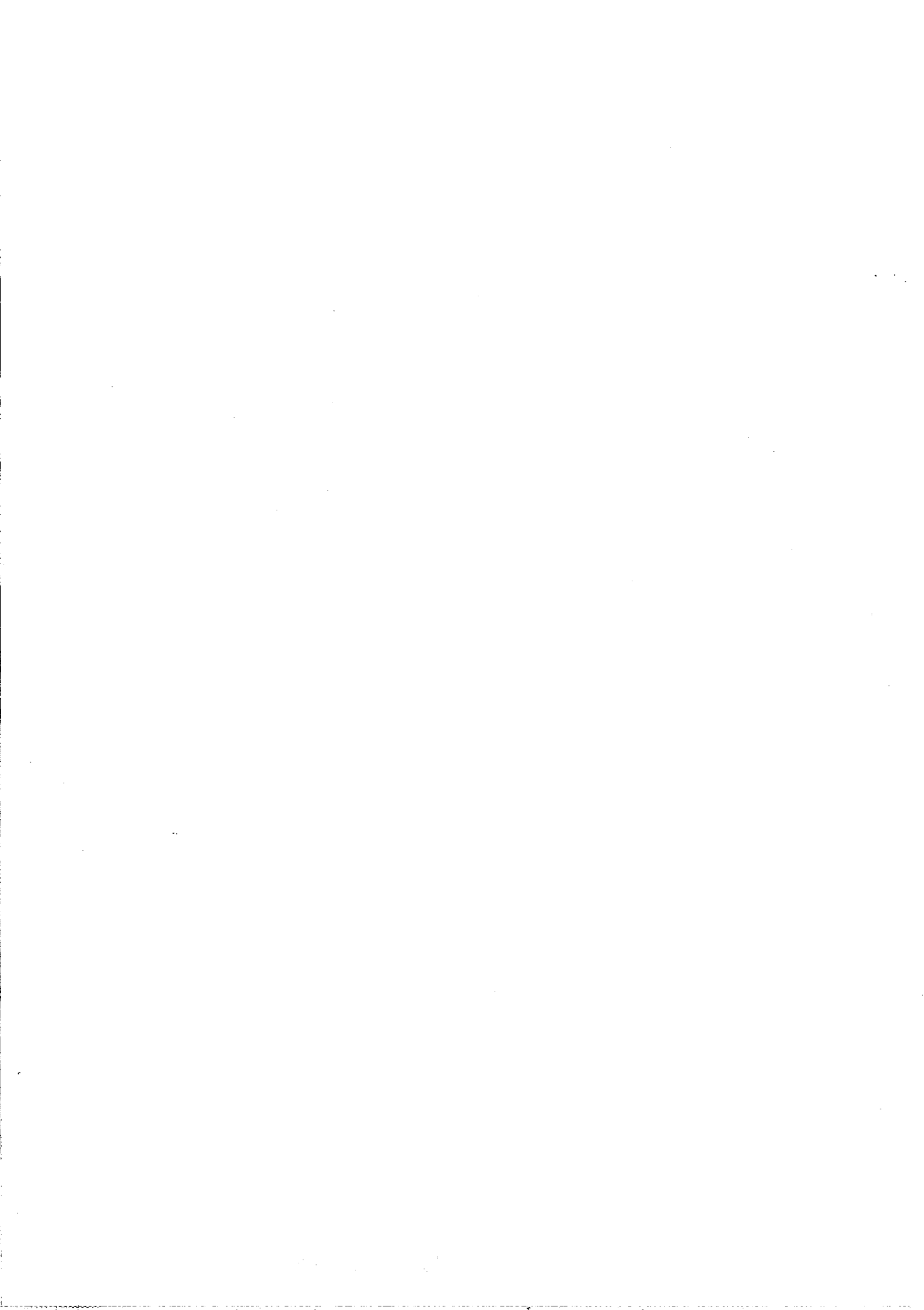


683 Pump Unit

Series 14+





683 Pump Unit

Series 14 ...

Membrane pump for the addition and aspiration of solutions

Mains connection:

	Mains voltage	Mains frequency	Power consumption
2.683.0024 version	220 V (\pm 10%)	50 ... 60 Hz	127 VA
2.683.0025 version	100 ... 117 V (\pm 10%)	50 ... 60 Hz	127 VA
2.683.0026 version	240 V (\pm 10%)	50 ... 60 Hz	127 VA

8.683.1003 Instructions for Use



8.683.1003 Instruciones for Use

683 Pump Unit

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683 Pump Unit

Instructions for Use

1. Control Elements

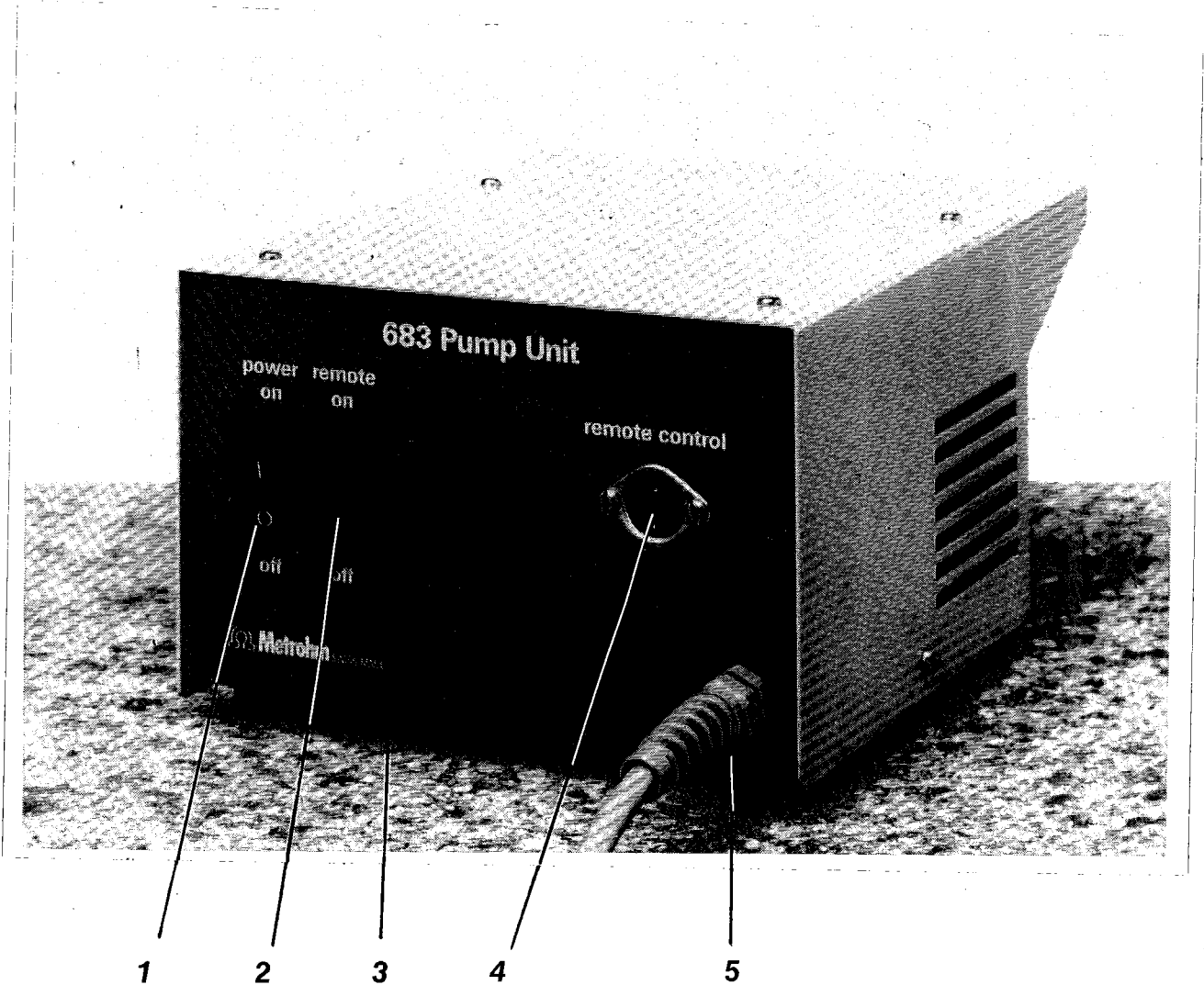


Fig. 1: Front View of 683 Pump Unit

- 1 Mains switch I: On 0: Off
- 2 Button for switching on/off the remote control
- 3 Control lamp (illuminated when Pump Unit is working)
- 4 Connector for remote control (24 V AC or 5 V DC)
- 5 Mains cable with mains plug socket
(connector for 677 Drive Unit or 6.2122.0XX mains cable)

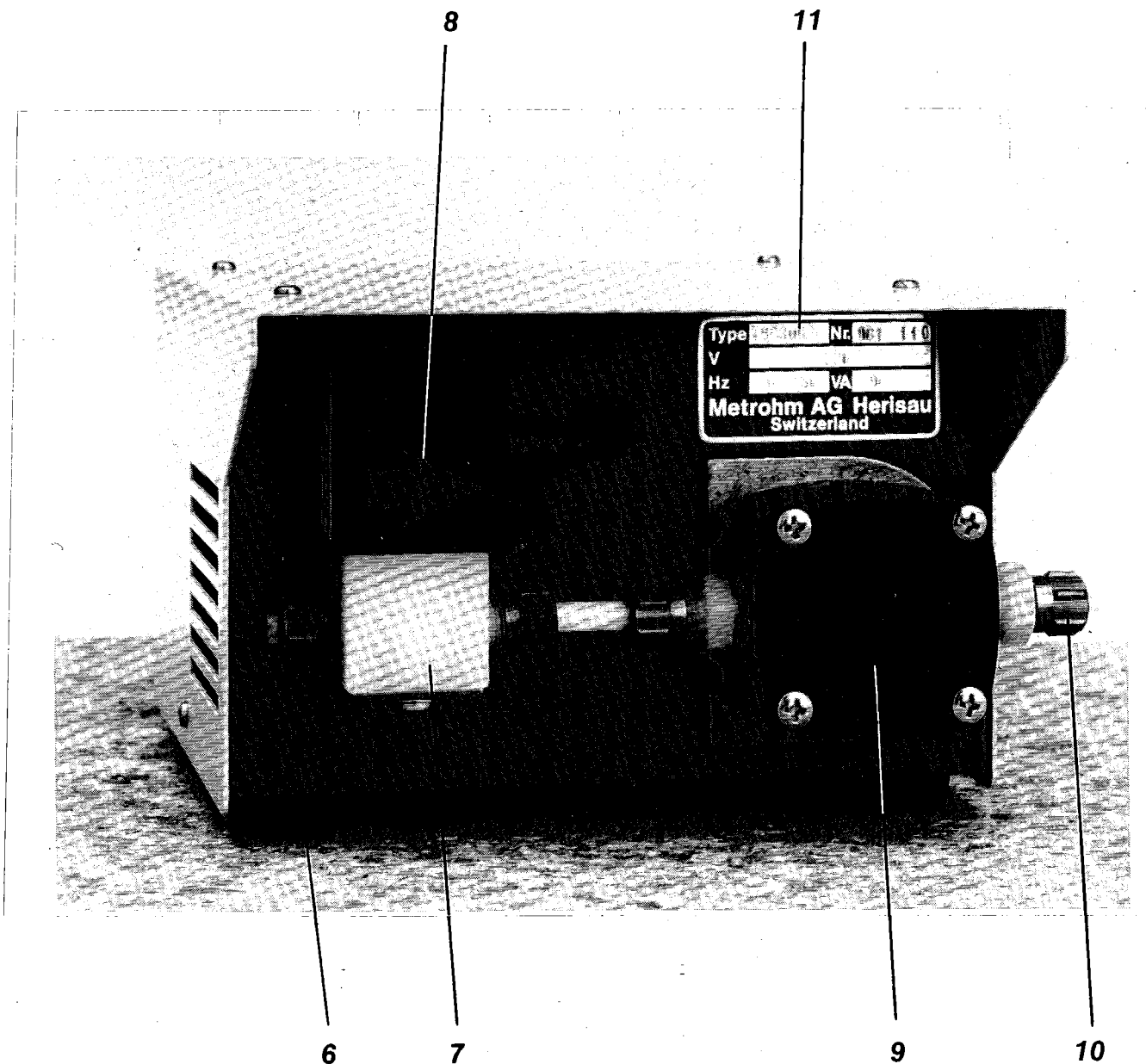


Fig. 2: Rear view of 683 Pump Unit

- 6** Connector for 6.1812.000 tubing
- 7** Solenoid valve (back-run safety device)
- 8** Flow direction
- 9** Pump head
- 10** Connector for 6.1812.000 tubing
- 11** Model plate with details of type, serial and appliance number, mains voltage and power consumption

2. Installation

2.1. Setting up of the instrument

The 683 Pump Unit is supplied together with the separately packed accessories in a special package designed to afford maximum protection. These contain shock-absorbent foam liners foamed to the individual shape and wrapped in blue plastic. The instrument itself is packed in an evacuated, dustproof polyethylene bag. It is advisable to keep the special packaging since it alone ensures that the instrument suffers no damage if it has to be returned.

Immediately after receipt of the shipment, visually inspect the 683 Pump Unit and its accessories to ensure all items have been received and none has sustained physical damage (compare with delivery note and accessories list in *chapter 5*). If transport damage has occurred, see instructions in *chapter 6 "Warranty"*.

The 683 Pump Unit should be set up in the laboratory at a location suitable for operation, free from vibration and protected from any corrosive atmosphere and contamination by chemicals.

2.2. Tubing connections

Fig. 3 shows the connection possibilities at the connection nipples (6) and (10) of the 683 Pump Unit.

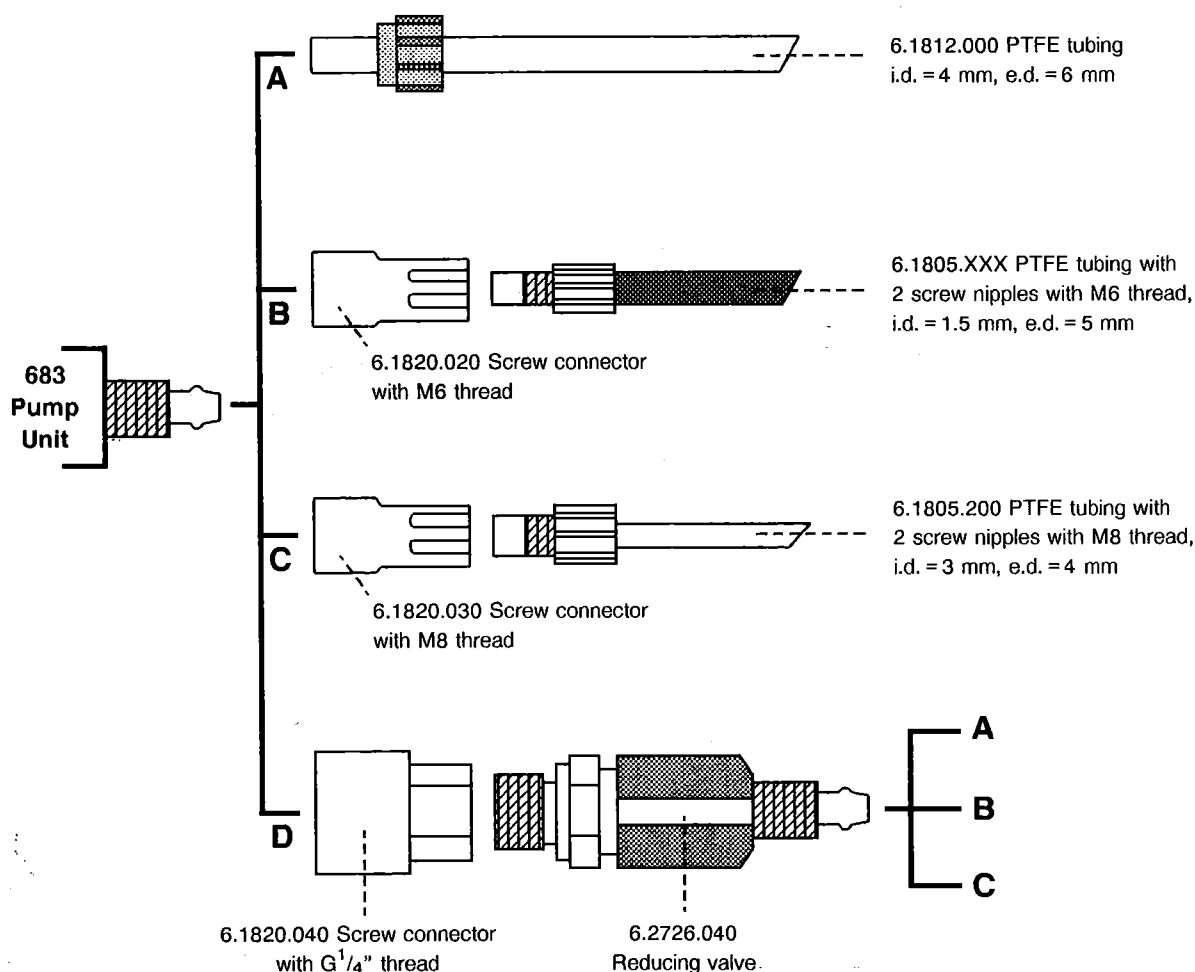


Fig. 3: Connection possibilities at the 683 Pump Unit

You may connect:

- A 6.1812.000 PTFE tubing**
(i.d. = 4 mm, e.d. = 6 mm)
This tubing is part of the standard accessories and can be cut to the desired length. To fix the tubing on the connection nipples of the 683 Pump Unit, proceed as follows: First pull the blue union nut over the end of the tubing to be fixed. Widen the tubing with the aid of a pencil (or a similar device), hold the tubing with a piece of fine abrasive paper and push it over the connection nipple (6) or (10) respectively. Tighten the union nut firmly by hand (do not use any tools!).
- B 6.1805.XXX PTFE tubing**
(i.d. = 1.5 mm, e.d. = 5 mm)
via 6.1820.020 screw connector with M6 thread
- C 6.1805.200 PTFE tubing**
(i.d. = 3 mm, e.d. = 4 mm)
via 6.1820.030 screw connector with M8 thread
- D 6.2726.040 Reducing valve**
via 6.1820.040 screw connector with G^{1/4}" thread
This valve, available as an option, can be used for regulating the pump capacity. It is screwed on the connection nipple (10) at the pump outlet side with the aid of the 6.1820.040 screw connector.

Fig. 4 and Fig. 5 show the most important tubing connections for the aspiration or the addition of solutions in combination with the 673/674 Sample Changer, the 675 VA Sample Changer and the various titration vessels, possible with Metrohm accessories.

2.3. Mains connection

The 683 Pump Unit is operated with mains voltage:

Version	Mains voltage	Mains frequency
2.683.0024	220 V	50 ... 60 Hz
2.683.0025	100 ... 117 V	50 ... 60 Hz
2.683.0026	240 V	50 ... 60 Hz

For mains connection, the 683 Pump Unit is connected with the 677 Drive Unit or with one of the following mains cables (options):

6.2122.020	with SEV type 12 plug (Switzerland ...)
6.2122.040	with CEE(7), VII plug (Federal Republic of Germany ...)
6.2122.070	with NEMA/ASA plug (USA ...)

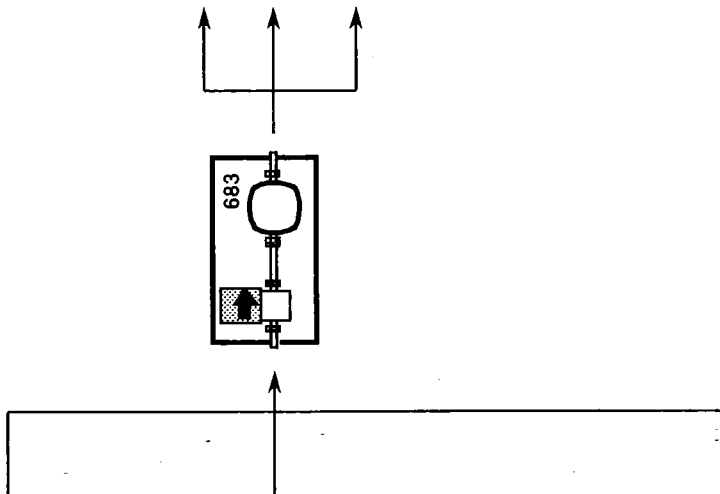
These cables are three-cored and fitted with plugs having an earthing pin. If another type of plug has to be fitted, the yellow-green lead (IEC standard) must be connected to a protective earth.

The 683 Pump Unit is switched on using mains switch (1) at the front: 1: ON 0: OFF
Pump operation is indicated by illumination of the control lamp (3).

The 683 Pump Unit is protected against overheating by a reversible thermo fuse. When the temperature is too high ($T > 106\text{ }^{\circ}\text{C}$), the pump is switched off automatically. It can only be restarted after about 30 minutes, when the temperature has decreased considerably.

Aspiration

Connection	Accessories	Tubing
673/674 Sample Changer big opening 6.1414.010 Titration vessel lid	6.2705.010 Guide sleeve 6.2705.000 Guide sleeve	A
673/674 Sample Changer big opening 673/674 Sample Changer small opening 6.1414.010 Titration vessel lid 6.1414.030 and 6.1414.050 titration vessel lids 675 VA Sample Changer connection (64)	6.1543.070 Draw-off tube + 6.1446.050 Ball stopper 6.1543.070 Draw-off tube + 6.2709.070 Ball stopper 6.1543.070 Draw-off tube + 6.1446.030 Ball stopper 6.1543.070 Draw-off tube + 6.2730.030 Stopper -	B
673/674 Sample Changer big opening 673/674 Sample Changer small opening 6.1414.010 Titration vessel lid 6.1414.030 and 6.1414.050 Titration vessel lids	6.1543.110 Transfer tip with 6.1819.030 Tubing (adapted) + 6.1446.050 Ball stopper 6.1543.110 Transfer tip with 6.1819.030 Tubing (adapted) + 6.2709.070 Guide sleeve 6.1543.110 Transfer tip with 6.1819.030 Tubing (adapted) + 6.1446.030 Ball stopper 6.1543.110 Transfer tip with 6.1819.030 Tubing (adapted) + 6.2730.030 Stopper	C



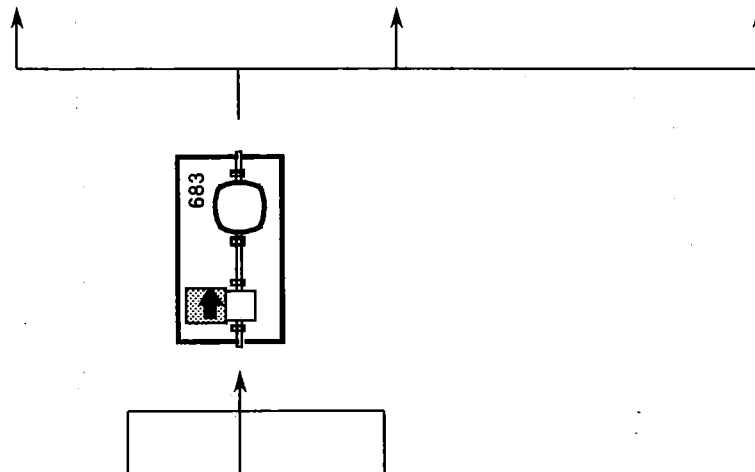
Tubing	Accessories	Connection
A	-	Waste tin
B	6.1602.100 Siphon + 6.1819.020 Tubing	6.1608.023 Waste bottle
C	6.1602.100 Siphon + 6.1819.030 Tubing	6.1608.023 Waste bottle

- A** 6.1812.000 PTFE tubing
- B** 6.1805.XXX PTFE tubing +
6.1820.020 Screw connector with M6 thread
- C** 6.1805.200 PTFE tubing +
6.1820.030 Screw connector with M8 thread

Fig. 4: Tubing connections for aspiration of solutions

Addition

Connection	Accessories	Tubing
Solvent tin	-	A
6.1608.023 Brown glass bottle Merck reagent bottle	6.1602.100 Siphon + 6.1819.020 Tubing 6.1602.110 Siphon + 6.1819.020 Tubing	B
6.1608.023 Brown glass bottle Merck reagent bottle	6.1602.100 Siphon + 6.1819.030 Tubing 6.1602.110 Siphon + 6.1819.030 Tubing	C



- A** 6.1812.000 PTFE tubing
- B** 6.1805.XXX PTFE tubing +
6.1820.020 Screw connector with M6 thread
- C** 6.1805.200 PTFE tubing +
6.1820.030 Screw connector with M8 thread

Tubing	Accessories	Connection
A	-	673/674 Sample Changer connection (10) (rinsing via titration head)
	6.1823.000 Guide shaft + 6.2740.000 Rotor pipe + 6.1236.030 Ground sleeve	673/674 Sample Changer big opening (rinsing via rotor pipe)
	6.2705.010 Guide sleeve	673/674 Sample Changer big opening
	6.2705.000 Guide sleeve	6.1414.010 Titration vessel lid
	6.1543.XXX Burette tip + 6.1446.050 Ball stopper	673/674 Sample Changer big opening
B	6.1543.XXX Burette tip + 6.2709.070 Guide sleeve	673/674 Sample Changer small opening
	6.1543.XXX Burette tip + 6.1446.030 Ball stopper	6.1414.010 Titration vessel lid
	6.1543.XXX Burette tip + 6.2730.030 Stopper	6.1414.030 and 6.1414.050 Titration vessel lids
	-	675 VA Sample Changer connection (65)
C	6.1543.110 Transfer tip + 6.1446.050 Ball stopper	673/674 Sample Changer big opening
	6.1543.110 Transfer tip + 6.2709.070 Guide sleeve	673/674 Sample Changer small opening
	6.1543.110 Transfer tip + 6.1446.030 Ball stopper	6.1414.010 Titration vessel lid
	6.1543.110 Transfer tip + 6.2730.030 Stopper	6.1414.030 and 6.1414.050 Titration vessel lids
	-	675 VA Sample Changer connection (65)

Fig. 5: Tubing connections for addition of solutions

2.4. Electrical connections

Single operation

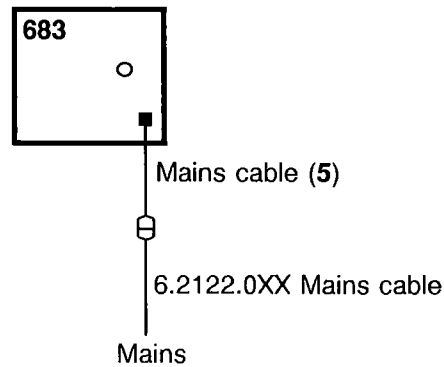
Mains connection:

with mains cable (5) and
6.2122.0XX mains cable

Adjustments: power on/off
remote off

Switching on/off:

With mains switch (1) of the 683 Pump Unit



Operation with 670 Titroprocessor or 646 VA Processor via 677 Drive Unit

Mains connection:

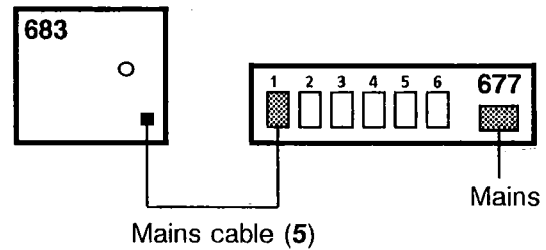
with mains cable (5) at 677 Drive Unit

Adjustments: power on
remote off

Switching on/off:

with 670 Titroprocessor:
via 677.0020 Drive Unit
(see 8.670.1021 Instructions for Use)

with 646 VA Processor:
via 677.0010 Drive Unit
(see 646,647,675 /d Instructions for Use)



Operation with 664/657 Control Unit

Mains connection:

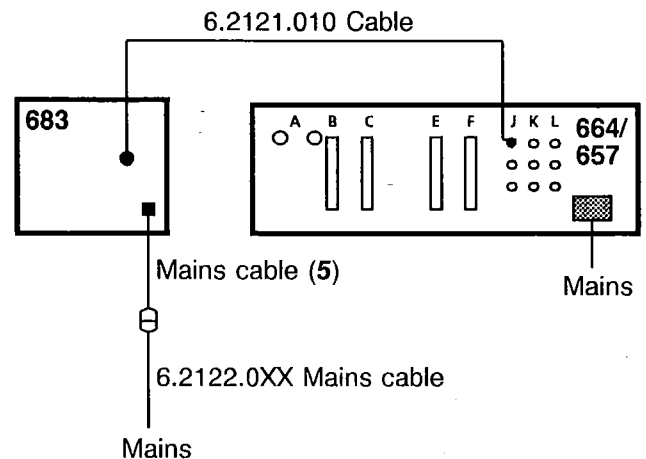
with mains cable (5) and
6.2122.0XX mains cable

Connection to Control Unit:
with 6.2121.010 cable

Adjustments: power on
remote on

Switching on/off:

via 664/657 Control Unit (24 V AC)
(see 8.664.1011 Instructions for Use)



Operation with instruments with 5 V DC output (e.g. 682/686 Titroprocessor, 614 Impulsomat)

Mains connection:

with mains cable (5) and 6.2122.0XX mains cable

Connection to instrument with 5 V DC output:
Connection acc. to illustration in Chapter 4

Adjustments: power on
remote on

Switching on/off:

See instructions for use of the instrument
with 5 V DC output

3. Operation

3.1. Aspiration of solutions

- Install the tubing connections acc. to *Chapter 2*.
- Check liquid level in waste container.
- Normal operation:
Switch on the 683 Pump Unit with mains button (1).
The control lamp (3) is illuminated when the pump is working.
Switch off the pump when the desired liquid volume has been siphoned off.
- Remote control:
Connect the 683 Pump Unit to the controlling instrument acc. to *Chapter 2*.
Switch on remote control with button (2).
Switch on the 683 Pump Unit with mains button (1).
The control lamp (3) is illuminated when the pump is working.

Warning: *The waste container should be emptied periodically.
The solution to be siphoned should not contain any solids.
Otherwise the Pump Unit may be damaged!*

3.2. Addition of solutions

- Install the tubing connections acc. to *Chapter 2*
(install 6.2726.040 Reducing valve if the pump capacity has to be reduced).
- Check liquid level in liquid supply container.
- Normal operation:
Switch on the 683 Pump Unit with mains button (1).
The control lamp (3) is illuminated when the pump is working.
Switch off the pump when the desired liquid volume has been added.
- Remote control:
Connect the 683 Pump Unit to the controlling instrument acc. to *Chapter 2*.
Switch on remote control with button (2).
Switch on the 683 Pump Unit with mains button (1).
The control lamp (3) is illuminated when the pump is working.

Warning: *The solution to be added should not contain any solids.
Otherwise the Pump Unit may be damaged!*

4. Technical Specifications

Pump capacity at 25 °C

Ø Siphoning tubing	Ø Dispensing tubing	Siphoning height	Pump capacity
4 mm	4 mm	1 m	≥ 550 mL/min
4 mm	1.5 mm	1 m	≥ 150 mL/min

Ambient temperature

Operation	+5 ... +40 °C
Storage, transport	-40 ... +70 °C

Mains connection

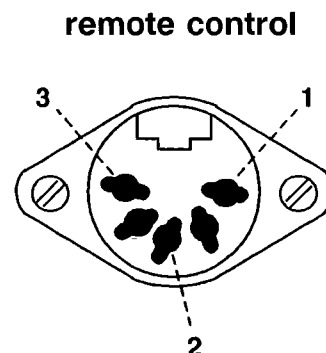
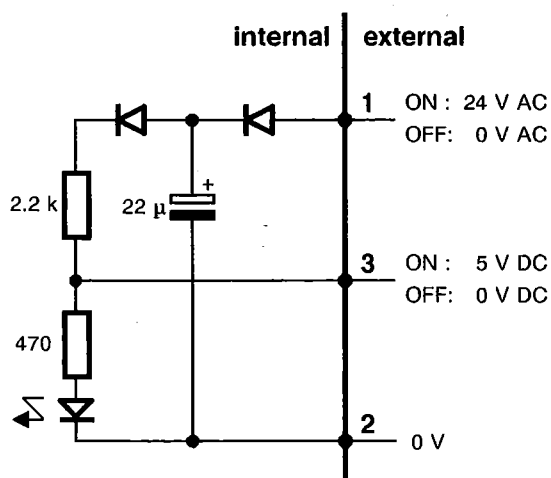
Version	Mains voltage	Mains frequency
2.683.0024	220 V	50 ... 60 Hz
2.683.0025	100 ... 117 V	50 ... 60 Hz
2.683.0026	240 V	50 ... 60 Hz

Power consumption

127 VA

Remote control

24 V AC or 5 V DC



Safety specifications

according to IEC 348

Casing

light metal, stove-enamelled

Dimensions

Width	160 mm
Height	110 mm
Depth	200 mm

Weight (incl. standard accessories)

2.8 kg

5. Scope of Delivery and Ordering Designations

5.1. 683 Pump Unit

683 Pump Unit (220 V) **2.683.0024**

including the following accessories:

1 × PTFE tubing, i.d. = 4 mm, e.d. = 6 mm, length $L = 4$ m	6.1812.000
1 × Screw connector for connection of tubing 4/6 mm – M6 thread	6.1820.020
1 × Instructions for Use	8.683.1003

683 Pump Unit (110 V) **2.683.0025**

Accessories as version 2.683.0024

683 Pump Unit (240 V) **2.683.0026**

Accessories as version 2.683.0024

5.2. Options

Additionally available to customer's order on payment of extra charge:

SGJ sleeve for holding of the 6.2740.000 Rotor pipe	6.1236.030
Ball stopper for movable holding of burette tips in the 6.1414.010 titration vessel	6.1446.030
Ball stopper for movable holding of burette tips in the titration head of the 673/674 Sample Changer	6.1446.050
Burette tip with micro valve	6.1543.050
Burette tip, i.d. = 0.86 mm	6.1543.060
Draw-off tube with M6 thread, i.d. = 1.5 mm	6.1543.070
PTFE transport tip with M8 thread	6.1543.110
Siphon for GL45 thread	6.1602.100
Siphon for Merck reagent bottles with S40 thread	6.1602.110
Brown glass bottle with GL45 screw thread, volume $V = 1$ L	6.1608.023

PTFE tubing with 2 M6 threaded nipples, protected against light and buckling, i.d. = 1.5 mm, e.d. = 5 mm	6.1805.XXX
XXX = 030: length L = 150 cm	XXX = 110: length L = 80 cm
060: length L = 60 cm	120: length L = 100 cm
100: length L = 40 cm	130: length L = 120 cm
PTFE tubing with M8 threaded nipples, i.d. = 3 mm, e.d. = 4 mm, length L = 50 cm	6.1805.200
Adaptor, M6 external thread / M8 internal thread	6.1808.040
PTFE tubing, i.d. = 1.5 mm, e.d. = 2.5 mm, length L = 25 cm	6.1819.020
PTFE tubing, i.d. = 3 mm, e.d. = 4 mm, length L = 25 cm	6.1819.030
Screw connector for connection of tubing 4/6 mm – M8 thread	6.1820.030
Screw connector for connection of tubing 4/6 mm – G 1/4" thread	6.1820.040
Guide shaft for 6.2740.000 Rotor pipe	6.1823.000
Connection cable 683 Pump Unit – 664/657 Control Unit for remote control	6.2121.010
Mains cable cable socket type CEE (22), V cable plug to customer's specifications: type SEV 12 (Switzerland ...)	6.2122.020
type CEE (7), VII (Federal Republic of Germany ...)	6.2122.040
type NEMA/ASA (USA ...)	6.2122.070
Guide sleeve for 6.1812.000 PTFE tubing (for 6.1414.010 titration vessel lid)	6.2705.000
Guide sleeve for 6.1812.000 PTFE tubing (for 673/674 Sample Changer)	6.2705.010
Guide sleeve for holding of burette tips in the titration head of the 673/674 Sample Changer	6.2709.070
Reducing valve of PVDF for the regulation of the pump capacity is screwed on the connector (10) of the 683 Pump Unit together with 6.1820.040 screw connector	6.2726.040
Guide sleeve incl. O-ring and stopper for holding of burette tips in the 6.1414.030 and 6.1414.050 titration vessels	6.2730.030
Rotor pipe	6.2740.000

Subject to modifications!

6. 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 orderer.

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 orderer has no rights or claims except those mentioned above.

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

If any instruments and parts have to be returned, the original packaging should be used if at all possible. This applies above all to instruments, electrodes, burette cylinders and PTFE pistons. Before embedment in wood shavings or similar material, the parts must be packed in a dustproof package (for equipment, use of a plastic bag is imperative). METROHM disclaims any warranty responsibility for damage arising from the failure to observe these directions.



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683 Pump

Rules for the guarantee of the reliability in operation and a long life span of the diaphragm pump 683 for liquids

In order to ensure a long life span, the following rules must be observed.

- The pump must be protected against splash water and water jet, as well as against excessive dust and a corrosive atmosphere.
- Pump, tubing flanges, tubing connectors and tubings must indicate sufficient stability opposite the liquid which can be promoted. The pump head consists of PVDF. PVDF is resistant to many chemicals. **Acetone, acetic anhydride or dimethylformamide (DMF)** may **not** be used. The diaphragm and the inner parts of the valves consist of PTFE and are resistant to almost all chemicals.
In the case of doubt inform on the basis of a chemical resistance list for plastics, as it is published by many plastic manufacturers.
- The pump is suitable only for particle-free solutions. Do not pump solutions, which contain solids (e.g. silver chloride) or sticking substances.
- After corrosive media were pumped, the pump must be rinsed well with a neutral liquid (e.g. distilled water).
- If, nevertheless, the function of the pump is impaired, contact the Metrohm Service Department.

For damage, which results from non-compliance with these rules, no warranty responsibility whatsoever will be accepted by Metrohm.

Ionenanalytik • Analyse des ions • Ion analysis • Análisis iónico

683 Pump Unit



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EC Declaration of Conformity

The METROHM AG company, Herisau, Switzerland hereby certifies, that the instrument:

683 Pump Unit

meets the requirements of EC Directives 89/336/EWG and 73/23/EWG.

Source of the specifications:

EN 61010 Safety requirements for electrical laboratory measurement
and control equipment

Description of the instrument:

Pump/valve unit for siphoning samples and rinsing measuring vessels

Herisau, December 4, 1995

Dr. J. Frank

Development Manager

Ch. Buchmann

Production and
Quality Assurance Manager