Biegler

Blood and Infusion Warmer

Manufacture, Assembly and Test Documentation

BW 585

PCB Version BW 585 V1.6

Software V 1.2

Contents

1. Technical Data

Technical Data - BW 585

Model	BW 585	
Voltage	230 VAC / 110 VAC	
Frequency	50 Hz	
Power consumption	300 W	
Preheating time	max. 60 sec	
Operating temp.	37 - 41°C	
Safety cut-off	three-fold	
Moisture resistance	IPX4	
Protection class	I	
Protection grade	B	
Dimensions	140 x 190 x 230 mm	
Weight	2,0 kg	
Fuses	230VAC	1,6A slow (primary)
		0,315A slow (secondary)
	110 VAC	3,15A slow (primary)
		0,315A slow (secondary)

2. Notes for the User

Manufacturer's Responsibility

Biegler or the Company's authorised dealers shall only be responsible for the equipment's safety, reliability and performance if:

- the operating instructions are adhered to during use
- the electrical installations in the room where the equipment is used meet the statutory technical requirements
- modifications, repairs or adjustments are or were carried out solely by Biegler or authorised personnel
- only original Biegler spare parts are used for repairs (also applies to power supply cable).

If the buzzer or red warning light comes on, remove the infusion or transfusion tube from the heating element and disconnect the connection tube to the patient immediately .

WARRANTY

Biegler Medizinelektronik guarantees this device against material and manufacturing defects for a period of **twelve months** from the date of purchase. The warranty also covers spare parts and workmanship. All claims must be accompanied by an invoice or proof of purchase and submitted within the warranty period. The warranty does not apply if the device has suffered damage, been tampered with, misused or not maintained in accordance with the operating instructions.

3. Safety Cut-off

42°C (Software)

- switch on the warmer
- preheat the device to 41°C and wait for the temperature to stabilize
- remove the mains plug
- hold down the ↑ control and reconnect the mains power plug
- push the On/Standby switch (BW heats up to a target temperature of 42,5°C)
- once it has cooled down, the equipment is ready for restart again
- Observe the temperature indicator carefully; the high temperature alarm should be triggered at a temperature of 42°C. For reasons of safety, short beeping sounds are given at intervals of a second in this operational mode and the Led ON indicators flash alternately

42,5°C (Hardware)

- switch on the warmer
- preheat the device to 41°C and wait for the temperature to stabilize
- press the “e” key on the computer. Now the device is in the service-mode (the LED`s ON and STANDBY flash alternately)
- the device now heats up to a target temperature of 42,5°C
- wait for the temperature to stabilize
- turn the spindle-trimmer P5 slowly clockwise, until the alarm-buzzer gets active
- now the BW 585 slowly cools down

Now check the safety cut-off again !

45°C (thermal time delay)

- if there is a problem with the first and the second safety cut-off, the heating circuit is opened by a thermal time delay
- once it has cooled down, the safety cut-off of the soft- and hardware must be tested
- if these tests have a positive result, the equipment is ready for operation again
- this safety cut-off sequence could also be activated, if the blood-warmer is placed too near a heating source or is exposed to direct sun-radiation

3. Safety Cut-off

37°C (low temperature alarm)

- The low temperature alarm could only be activated 60 seconds after switch on the warmer. If the temperature of the heat-exchanger drops below 36,5°C, the low temperature alarm will be activeted , the first LED of the temperature control will flash and an intermittent audio alarm will sound. The heating circuit will not shut off .If the temperature increases to 37°C, the both alarms will stop

Difference-alarm

- if the difference of the values of the two temperature channels is >1,5°C, the electronic cut-off triggered by the software activates both alarms, it is shown on the display and the heating circuit shuts off.

  The 3. LED for channel 1 and the 4.LED for channel 2.

IMPORTANT: if there is any fault in the safety cut-off circuits, the blood-warmer must be checked by a local authorized service organisation !

4. Temperature Adjustment

1) Preparing to set the temperature

- Start the test program on the computer
- Plug the PC – BW 585 connecting cable into the test socket with the flat side facing outwards
- Connect the blood warmer to the power supply
- Now the BW is in stand-by mode (the stand-by LED is illuminated and the operating state displayed on the monitor)
- Turn trimmer P5 to the left as far as it will go
- Press the “T” key on the computer to start the test-mode

2) Setting the controller and monitoring

- Switch on the blood warmer (press ON - the green LED indicates ON)
- Trimmers P3 – control (“t reg” on the monitor) and P6 – monitoring (“UW” on the monitor) have to be set to the same values.
- Adjust P3 and P6 until the temperature on the heat exchanger is 38.5 °C and the reading for “t reg” and “UW” is 38.5
- The temperature displayed on the device must also be 38.5°C.

3) Checking the settings at maximum temperature (41°C)

- Press ↑ to set the temperature to 41°C in stand-by mode
- After heating up briefly, the temperature on the heat exchanger should be 41 ±0.3°C. The readings for t reg and UW should both be 41 ±0.1°C.
- The temperature displayed on the device must also be 41°C

IMPORTANT: if the difference is outside the tolerance, repeat the adjustment procedure from Section 2

4) Setting the safety cut-off at 42,5°C (Hardware)

- Switch on the blood warmer and preset it to 41°C
- Wait for the BW to heat up (approx. 1 minute)
- Press the “e” key on the computer
  The blood warmer is now in set mode which is indicated by the two LEDs flashing (stand-by and ON).The device will now heat up to 42.5°C.
  Wait for the temperature to stabilise (approx. 1 minute)
- Turn trimmer P5 **slowly** to the right until the alarm buzzer is activated
- Let the blood warmer cool down
- Heat up the device again (start by pressing “e”) and check the safety cut-off setting again

5) Checking the safety cut-off at 42°C (Software)

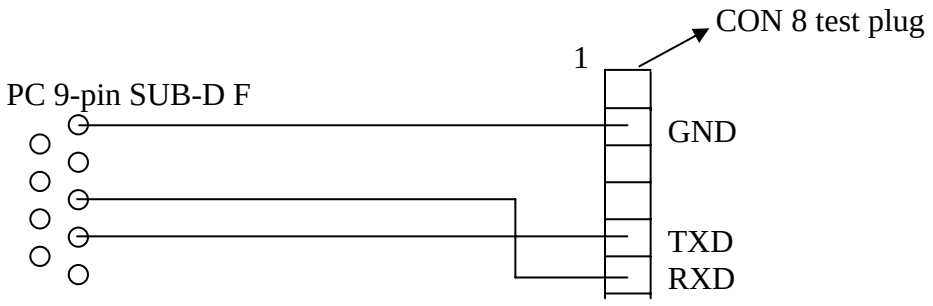
- switch on the warmer
- preheat the device to 41°C and wait for the temperature to stabilize
- remove the mains plug
- hold down the ↑ control and reconnect the mains power plug
- push the On/Standby switch (the device now heats up to a target temperature of 42,5 °C)
- once it has cooled down, the equipment is ready for restart again
- Observe the temperature indicator carefully; the high temperature alarm should be triggered at a temperature of 42°C. For reasons of safety, short beeping sounds are given at intervals of a second in this operational mode and the Led ON indicators flash alternately

Service interface

The BW 585 is equipped with a service interface. The serial interface supplies a range of data which can prove very useful when calibrating and troubleshooting. The BW 585 can be connected direct to a PC or terminal with a suitable cable (see below) and the data displayed using a standard terminal program (Hyper Terminal).

Data format:
19,200, n, 8, 1

PC power lead



Hyper terminal settings:
19,200, 8, n, 1

NOTE: all input in “LOWER CASE”

4. Temperature Adjustment

Input

Orders:	“s”	Standby
	“r”	Run
	“t”	Test mode (alarm off)
	“e”	Set mode (42.5°C, internal alarm not activated)
	“n”	Normal mode

Readings displayed

Protocol:	“t soll”	Set temperature
	“t reg”	Sensor 1 control temperature
	“UW”	Sensor 2 monitoring temperature
	“t mean”	Mean temperature
	“S/I”	Difference between set and actual
	“max Dif”	Difference between Sensor 1 and Sensor 2
	“P%”	Heating power in % (Maximum: 280 W)
	“err”	Error counter
	“t”	Time window for undertemperature alarm
	“s”	Heating rate

Error codes:

The BW585 differentiates between various errors and display them on the bar graph

■□□□□□□□□□	Low temperature alarm (1st LED flashes)
□■□□□□□□□■	Temperature difference between Sens1 and Sens2>1,5 °C
□□■□□□□□□■	Sens1>42°C
□□□■□□□□□■	Sens2>42°C

5. Assembly and Dismantling

1. Work procedure

1. Check that the ring has no burrs or stains.
2. Screw four M4 x 5 mm threaded pins into the rear face of the ring. Ensure that the pins are screwed in far enough to be flush with the ring face and secure them with Loctite 222
3. Apply a small drop of Wacker A07 translucent silicone to the O-ring groove on the front of the ring at 30-40mm intervals
4. Starting from the locking element, insert the O-ring cord right round the groove, cut to length, check that it is properly in place, press in firmly and leave to harden.
5. Remove any grease from the inside of the ring using alcohol.
6. Remove the backing from the strip heater.
7. Insert the strip heater from the back of the ring and apply, working counterclockwise, bearing in mind the next step (8).
8. Centre the round bimetallic plate cut-out in the strip heater between the two notches for the retaining spring in the aluminium ring and ensure that there is no gap between the strip heater and the collar at the front of the ring.
9. Press the strip heater firmly onto the ring using a roller (note: there should be no air pockets between the heater and the ring)
10. Seal the strip heater joint with General Electric RTV 116 Q RED DE 003 silicone in the shape of an H.
11. Clean out the sensor bores on the ring collar (using 2.1mm dia. drill) and blow out.
12. Screw the sensor pcb, with conductor side facing outwards, from the inside onto the collar using a M2,5 x 4 mm cheese head screw, 2,6mm dia. toothed lock washer and short earthing wire.
13. Cover the sensor connections of the two temperature sensors with 0.6 x 12.5 mm dia. sleeving.
14. Apply a thin coat of thermo-lubricant to the sensor housing and insert the housing as far as it will go into the two cleaned bores beside the sensor pcb. IMPORTANT: the sleevings must also be touching the sensor housing- adjust, if necessary. The sensor connection poles can be reversed (the temperature sensor is a resistance sensor).
15. Bend the connections down to the sensor pcb, hold in place with a suitable tool and solder.
16. Glue the application needle onto the Luer cone of the 2 ml syringe with cyanoacrylate adhesive. Fill the syringe half full with Wacker A07 translucent silicone.
17. Insert the needle into the sensor hole up to sensor housing and fill the bore, starting from the bottom.Silicone should ooze out between the sleeving and the sensor connection.
18. Seal the soldered connections on the sensor pcb with the same silicone.
19. Glue the red plastic part into the sensor bore cutout using cyanoacrylate adhesive and press flat.
20. Remove the bimetallic plate mounting flange.
21. Insert the bimetallic plate on the underside of the retaining spring. NOTE:ensure that the retaining spring is in the position shown in the drawing!
22. Glue tapered washer in position facing bimetallic plate connections using Loctite LT 480.
23. Press retaining spring into locator on ring. Retaining spring must be fully lodged in the two notches.
24. Ensure curved contour of tapered washer is seated properly in the ring radius by turning bimetallic plate.
25. Once aligned, glue the bimetallic plate in place with Loctite LT480 between washer and ring.

26. Screw earthing wire with 3.0 mm dia. ring eye to inside of collar at back of ring and at the same height as the sealed strip heater joint using M2.5 x 4 mm cheese head screw and 2.6 mm dia. toothed lock washer.

27. Contact assignment of 8-pin socket housing, starting with marking1

- Marking 1 red — Strip heater — 230V: 1 x red — 110V: 2 x
- No.2 white — Strip heater — 230V: 1 x red — 110V: 1 x
- No.3 — Not assigned
- No.4 — Bimetallic plate
- No.5 — Bimetallic plate
- No.6 — 1 st. outer wire - sensor pcb (+)
- No.7 — Middle wire - sensor pcb (earth)
- No.8 — 2 nd. Outer wire - sensor pcb (+)

2. Pre-head work procedure

- Check visually that the pre-head is free of burrs, defects in finish and soiling
- Screw two M5x25 grub screws into the inserts
- Screw the studs onto the M5x25 grub screws in the pre-head. Remove the insulating cover and tighten the studs with a tool
- Replace the previously removed insulating covers
- Push the earthing jumper onto the studs
- Bend the display LEDs on the board to the front, connect the keypad PCB to the main PCB, push from the LED side into the back of the pre-head and attach to the pre-head with 2 special screws
- Ensure that the earthing jumper is parallel to the PCB that has been pushed forward as far as it will go
- The distances between the LEDs have to be the same
- The LEDs have to be flush with the bottom of the film at a distance of +0/-0.2 mm
- Attach the earthing jumper to the stud with an M3x6 cheese head screw and lock with capillary 222
- Attach the main PCB to the grounding bar with an M3x6 cheese head screw
- Check the front film visually
- Remove the protective film and apply to the front of the pre-head
- Screw the pre-assembled grounding cable to the earthing jumper with an M4x6 cheese head screw + toothed lock washer (insert toothed lock washer between screw head and eye)
- Apply the grounding sticker the earthing jumper besithe grounding cable

3. Rear panel work procedure

- Screw an M4x30 headless setscrew into the bore bottom left in the clip as an earthing screw
- Place the plate on the clip and screw together as described below
- Screw M4x12 with washer into the two bores on the top
- Insert an M4x10 countersunk head screw into the lower bore
- Lock the earthing setscrew with a nut and washer
- Fix the terminal in place with a 2.9x16 countersunk head Parker screw
- Apply the earthing stickers to the right and left of the lower connection on the terminal
- Thread the mains cable with cord grip in from the rear, bolt with the nut and lock with Loctite 406
- Connect the three leads to the block terminal as follows:

Blue lead	centre
Brown lead	top
Yellow/green lead	bottom

- Screw the l=65mm grounding cable onto the second side of the lower connection and thread the other end including the toothed lock washer onto the earthing screw
- Thread the l=75mm grounding cable including the toothed lock washer onto the earthing screw and screw the other end together with the mains filter onto the rear panel as follows:

  Mains filter / toothed lock washer / cable / toothed lock washer / nut $\rightarrow$ fix in place with a M4x20 headless setscrew.

4. Final assembly work procedure

- Ring: pull the cable connectors (except grounding cable) out at the side of the O-ring. Insert the pre-head from this side and plug into the 8-pin connector
- Thread the pre-head and ring grounding cables through the neck and attach to the earthing screw on the rear panel with toothed lock washers
- Connect the mains filter cable to the board
- Assemble all four parts (pre-head, ring, neck and rear panel). Make sure that the locking pin is in the correct position in the ring with reference to the pre-head and the milling on the neck is facing the rear panel
- Ensure that the leads are laid correctly so that once the device has been assembled no leads can get caught between the two assembly bars and the rear panel
- Secure the assembled parts with two M4x16 cheese head screws and two 4.2 mm washers in the back of the rear panel

Inspection Instructions

BW 585

Blood Warmer

BW 585 Inspection

The person carrying out inspection of the equipment must be familiar with all the steps described in these instructions.

The instructions are intended as a reference for completing the BW 585 inspection records.
BIEGLER will notify customers of any amendments.
All supplements must be added to the reference documentation.

1. CONTINUOUS TEST

1.1 General

- Start-up at 38,5 °C
- After approx. 15 min. measure the temperature at the heat exchanger
- After 24 h measure the temperature again

During this test the initial and final values must be within the tolerance range and the measurements must be taken under the same ambient conditions.

The final temperature may deviate from the initial value by ±0.5°C.

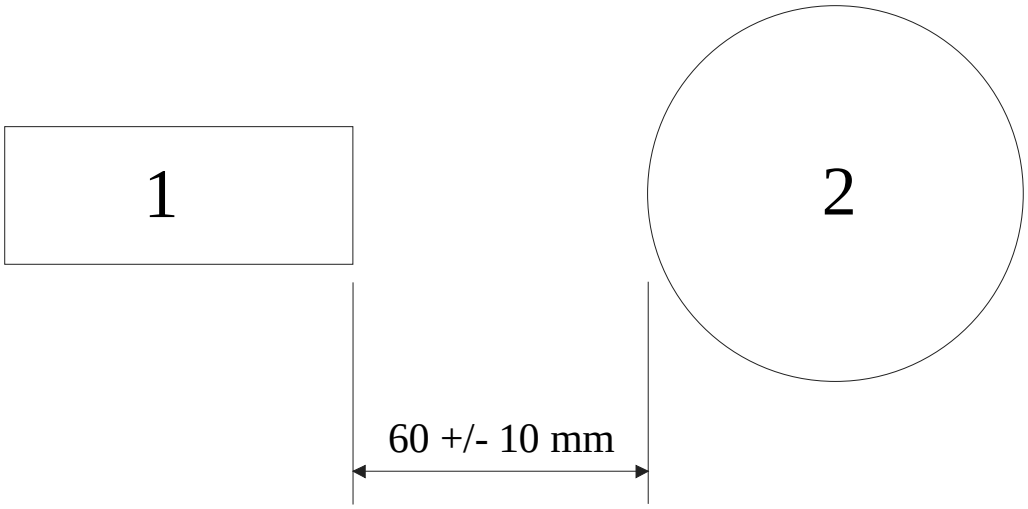


Fig. 1.1.1Measurement set-up

1 IR thermometer
2 Heat exchanger (BW ring)

Measuring instrument used:	TESTO infrared thermometer QUICKTEMP 860-T2 Accuracy: ±1%of reading or ±1°C Emission: 0,98

2.READY FOR USE

2.1 General

- Start-up at 41 °C
- Time how long it takes for the operating temperature of 40,5°C to be reached

The initial temperature should be the same as the ambient temperature.
The time taken must be less than 60 sec.

For arrangement of heat exchanger and measuring instrument, see Fig.1.1.1

3.OPERATING TEMPERATURE CHECK

3.1 General

The following checks must not be performed until the equipment has heated up (control circuits in steady state).
The preliminary election of the temperature is 41 °C.

The heat exchanger temperature should be 41 ±0.5°C with the display reading 41°C.

For arrangement of heat exchanger and measuring instrument, see Fig.1.1.1

4.THERMAL PROTECTION CHECK - ELECTRONIC CUT-OFF

4.1 General

- switch on the warmer
- preheat the device to 41°C and wait for the temperature to stabilize
- remove the mains plug
- hold down the ↑ control and reconnect the mains power plug
- push the On/Standby switch (the device now heats up to a target temperature of 42,5 °C)
- once it has cooled down, the equipment is ready for restart again
- Observe the temperature indicator carefully; the high temperature alarm should be triggered at a temperature of 42°C. For reasons of safety, short beeping sounds are given at intervals of a second in this operational mode and the Led ON indicators flash alternately

For arrangement of heat exchanger and measuring instrument, see Fig.1.1.1

5.HIGH VOLTAGE TEST

5.1 General

Apply test voltage of 1.5 kV ~ to the heat exchanger for 1 min. The test must be performed on the BW 585 after operating temperature has been reached and with the equipment still in operation (see Fig.5.1.1)

There must not be any flashovers or breakdowns during the test (slight corona discharge can be disregarded).

Apply approx. 500 V to start with, then increase the voltage to the maximum value of 1.5 kV within 10 s (t = 1 minute).
Finally reduce the voltage to the initial value.

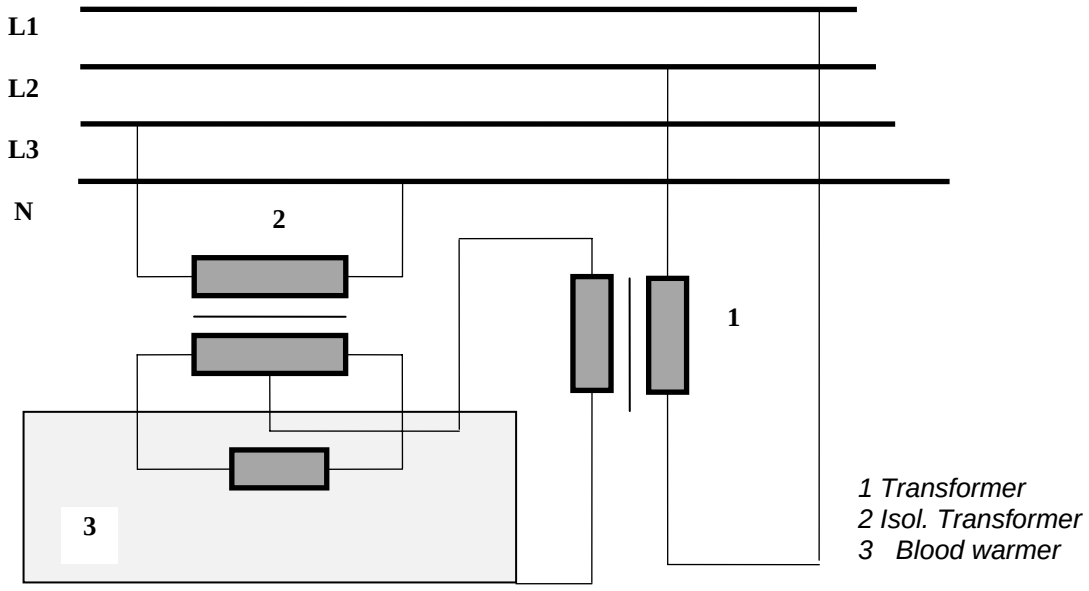


Fig.: 5.1.1: Measuring circuit

6. ELECTRICAL SAFETY

6.1. General

These tests must be carried out at operating temperature.
(CAUTION: mains voltage)

Perform the tests with Electrical Safety Tester GERB GM-100 and test program BLUTW 1. The report is stored in the computer.

7. FUSE-LINKS

7.1 General

Check the fuse-links, especially during maintenance work. With this equipment,

primary:	BW 585 / 230V	1,6A slow
	BW 585 / 110V	3,15A slow
secondary:	BW 585 / 230V / 110V	0,315A slow

can be used.

8. MECHANICAL CONDITION

8.1 General

The mechanical condition of the equipment (POWER CABLE) must allow further safe usage.

9. SOILING

9.1 General

Ensure that there is no dirt on the equipment that could affect safety and check for any visible damage. Scratches or cracks that can be seen from a distance of approx. 40 cm must be recorded, the equipment switched off and withdrawn from service.

10. LABELLING

10.1 General

Check that the nameplate and all labelling (earthing, power supply...) is legible and in good condition.

INITIAL / MAINTENANCE INSPECTION

SERIAL No.: ..... DATE: .....

230V □ 110V □ PCB No.:.....

The tester must be familiar with the instructions before carrying out these tests !

TEST	TARGET VALUE / FUNCTION	ASSESMENT	
		O.K	n. O.K.
1. Continuous test	Initial value:.....°C Final value:.....°C		
2. Ready for use (at room temperature)	Actual value:.....s		
3. Operating temp.	Actual value:.....°C		
4. Overtemperature cut-off	Target: < 42,5 °C		
5. High voltage	Target: 1,5 kV / 1 min		
6. Electrical safety			
7. Fuse-links			
8. Mech. conditions			
9. Soiling			
10. Labelling			

Tester:	

BW 585

Safety checks

INTERVAL: every 12 months

The following checks must be performed on this equipment at least every 12 months by persons who are capable of carrying out such safety checks as a result of their training, knowledge and practical experience .

Test	**Target value/function**	**Assessment**		**Tester**
		OK	**not OK**	
PE conductor resistance	< 0.3 Ω			
Back-up device leakage current	< 0.75 mA			
Back up device leakage current	first measured value	..... mA		
The fuse-links must meet the manufacturer's specifications (rated current, cut-off characteristics).				
The labelling relating to safety must be clearly visible on the equipment.				
The mechanical condition must allow further safe usage of the equipment.				
Soiling of the equipment must not affect safety.				

The performance checks listed in the operating instructions must also be carried out.

The leakage current must not be greater than 1.5 times the first measured value and at the same time not greater than the above limit.

If the equipment is not serviceable or safe to operate, it must be repaired or the User must be informed of the potential hazard.

This is to certify that the above tests have been duly carried out and the recorded data is correct.

Comments:

Engineer

(Date, signature)

User

(Date, signature)

GERB Elektronik GmbH

Page 1 BLUTW1 Test Specifications Electrical Safety

Test Item Description

GERB024 Power measurement
Effective power required by equipment is measured.
Measurement time is limited and time-out is displayed.
Maximum power 3.5 kVA.
Ensure that BW385/BW385L is in warmup phase for test.

Unit:	Watt	Target:	0.00	Limit: <	0.00	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	Watt	Target:	0.00	Limit: <	0.00	Abs. tol.	0.00	Rel. tol.	0.00

GERB003 Insulation resistance power supply/PE
Insulation test voltage 500 V= over 5 MOhm applied to both
phases of equipment. Resistance between phases and
PE conductor is measured.
Equipment is in operating state (warm up first).

Unit:	MOhm	Target:	0.00	Limit: >	2.00	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	MOhm	Target:	0.00	Limit: >	2.00	Abs. tol.	0.00	Rel. tol.	0.00

GERB005 PE conductor resistance
Insulation test voltage 6V max. 25A on test probe connection.
Hold test probe on heater ring.
Test time is limited.
Time-out displayed on screen.

Unit:	Ohm	Target:	0.00	Limit: <	0.30	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	Ohm	Target:	0.00	Limit: <	0.30	Abs. tol.	0.00	Rel. tol.	0.00

GERB005 PE conductor resistance
Insulation test voltage 6V max. 25A on test probe connection.
Hold test probe on clip. Test time is limited.
Time-out displayed on screen.

Unit:	Ohm	Target:	0.00	Limit: <	0.30	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	Ohm	Target:	0.00	Limit: <	0.30	Abs. tol.	0.00	Rel. tol.	0.00

GERB006 Earth leakage current NC
Earth leakage current measured under operating conditions.
Ensure that there is no other ground connector between GM100
safety tester and equipment.
No test probe required.
Equipment in operating state (warm up first).

Unit:	uA	Target:	0.00	Limit: <	500.00	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	uA	Target:	0.00	Limit: <	500.00	Abs. tol.	0.00	Rel. tol.	0.00

GERB009 Housing leakage current SFC/PE open
Hold test probe on clip.
Ensure that there is no other ground connection to equipment.
No test probe required.
Equipment is in operating state (warm up first).

Unit:	uA	Target:	0.00	Limit: <	500.00	Abs. tol.	0.00	Rel. tol.	0.00
Unit:	uA	Target:	0.00	Limit: <	500.00	Abs. tol.	0.00	Rel. tol.	0.00

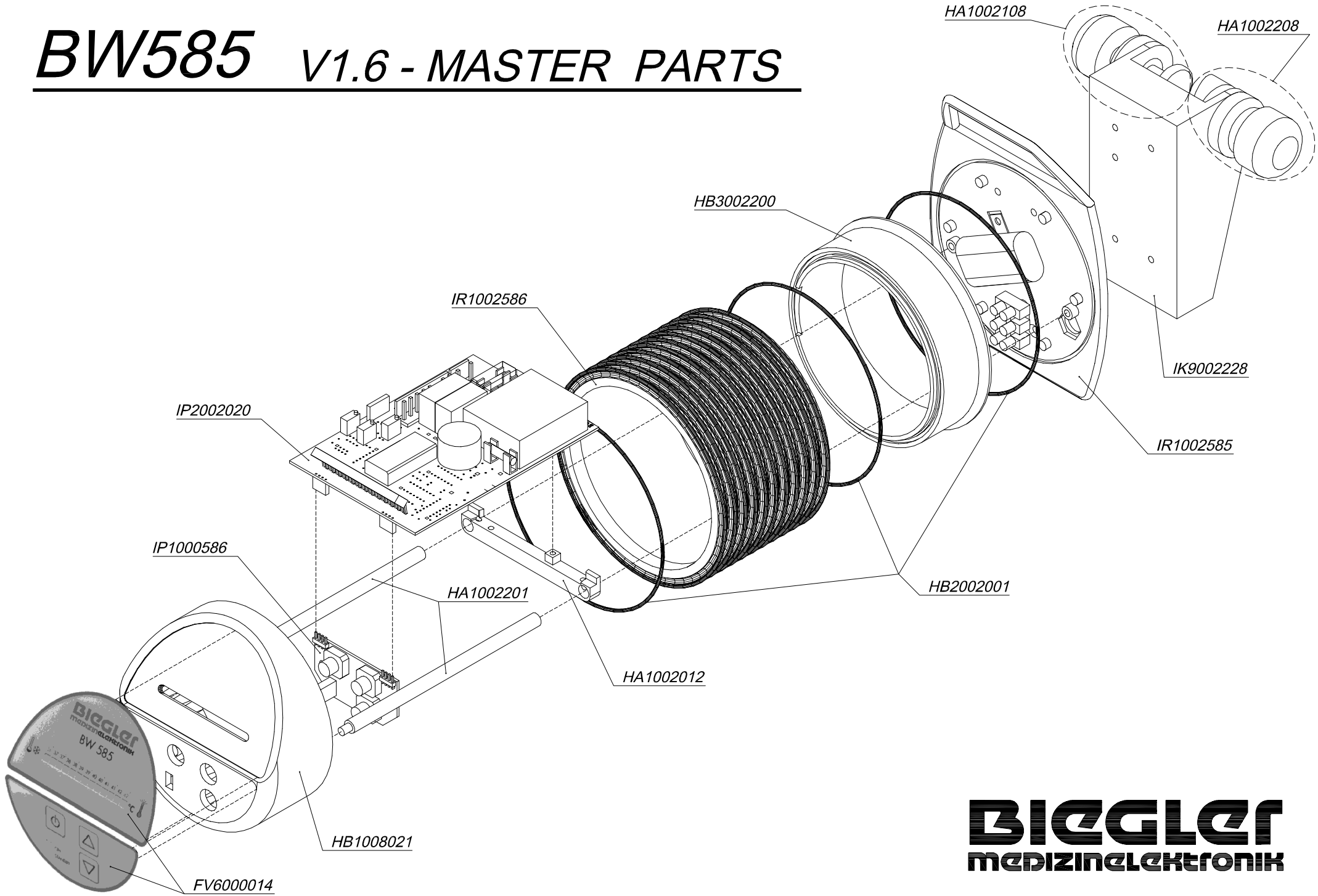
Test Item	Description
GERB019	Equivalent leakage current according to figure 9 (VDE 0751) Supply voltage is connected as insulation test voltage to mains connection of equipment. Current flowing from housing to earth is measured. Equivalent leakage current must not be greater than 1.5 times first measured value and no greater than limit value of 0.75 mA. Equipment is in operating state (warm up first). Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00 Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00
GERB020	Equivalent equipment leakage current in PE conductor to VDE 751 Internally generated insulation test voltage equivalent to supply voltage is applied to equipment mains connections. Current flowing from PE conductor to earth is measured. Equipment is in operating state (warm up first). Equivalent equipment leakage current must not be greater than 1.5 times first measured value and no greater than limit value of 0.75 mA. Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00 Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00
GERB021	Equivalent equipment leakage current to VDE 751 Internally generated insulation test voltage equivalent to supply voltage is applied to equipment mains connections. Current flowing from housing to earth is measured. Equipment is in operating state (warm up first). Hold GM tester probe on clip of equipment under test. Equivalent equipment leakage current must not be greater than 1.5 times first measured value and no greater than limit value of 0.75 mA. Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00 Unit: uA Target: 0.00 Limit: < 750.00 Abs. tol. 0.00 Rel. tol. 0.00
GERB001	Supply voltage test Effective supply voltage is measured. Unit: Volt Target: 220.00 Limit: > 200.00 Abs. tol. 0.00 Rel. tol. 0.00 Unit: Volt Target: 220.00 Limit: > 200.00 Abs. tol. 0.00 Rel. tol. 0.00

MASTER PARTS / SPARE PARTS

BW 585 V 1.6

Description	Part No.
Set of foils BW 585	FV 6000014
Head piece	HB 1008021
Roods, 2 pcs. needed	HA 1002201
Ground bracket	HA 1002012
PCB Keyboard V1	IP 1000586
PCB Main complete V 1.6	IP 2002020
Heat exchanger BW 585 complete with sensor BW 585 and heating band	IR 1002586
Silicon cord 1,10 meter	HB 2002001
Plastic collar	HB 3002200
Rear panel complete	IR 1002585
Clamp complete with twist knob left and right	IK 9002228
Twist knob - right	HA 1002208
Twist knob - left	HA 1002108
Power cord with strain relief	KN 1002001

BW585 V1.6 - MASTER PARTS



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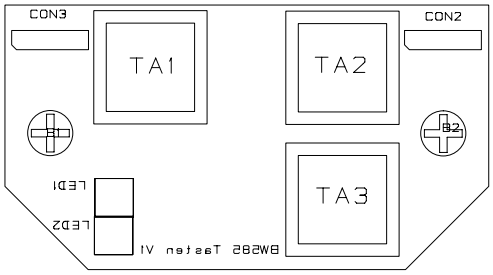
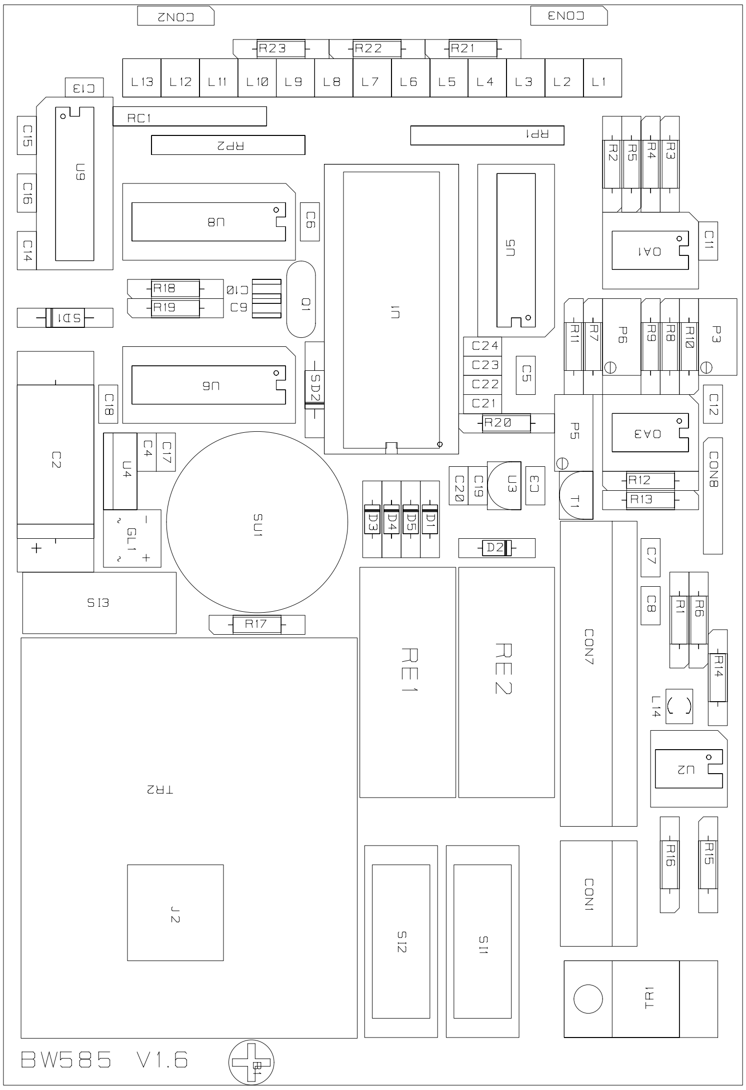


BW 585		
	Tastenprint	
	Datum: 26.04.01	Name: F.NETAUSCHEK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R22
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C13
RC1
RP2
RP1
C15
U9
C16
C14
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R2
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R4
R3
OA1
C11
R18
R19
C10
C9
Q1
SD1
R11
R7
P6
R9
R8
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C24
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C22
C21
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U6
SD2
C18
C12
R20
P5
OA3
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U4
C4
C17
SU1
CON8
C20
C19
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T1
R12
R13
D3
D4
D5
D1
GL1
D2
C7
C8
SI3
R1
R6
R17
RE1
RE2
CON7
R14
L14
U2
TR2
J2
R16
R15
SI2
SI1
CON1
TR1
BW585 V1.6