

Instruction Manual

THERMO SHAKER SH26

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1 General Information

Unpack the instrument carefully and check to see that it is not damaged. It is important that any damage incurred in transport be reported at the time of unpacking. Notify your supplier and the carrier or forwarding agent immediately in case of such damage.

Important Notice:

Please read this instruction manual carefully before operating the instrument. Should you have any additional questions, after reading these instructions, concerning the setting up, operation or warranty terms, please contact either your distributor or the manufacturer at the following address:

Ingenieurbüro CAT
M. Zipperer GmbH
Etzenbach 16

Tel. : 0 76 36 / 78 03 - 0
Fax : 0 76 36 / 78 03 - 45
Email info@cat-ing.de

D-79219 Staufen, Germany



1.1 Safety Instructions:

This instruction sheet does not purport to address all of the safety problems which might result from the use of this instrument, chemicals, reagents, apparatus or equipment employed in any specific test or protocols. It is the responsibility of the user to consult their authorised safety advisors and establish appropriate health and safety practices and then determine the application of regulatory limitations prior to use.

Extreme caution should be exercised when handling corrosive, fuming, toxic and volatile or any other potentially hazardous substances.

1. Read the Operating Instructions thoroughly from cover to cover before beginning operation. Points of particular importance or safeguards, to be observed, should be highlighted or marked for quick reference.
2. Make sure that the voltage printed on the back of the unit corresponds to the voltage on your mains.
3. This Instruction Manual should be readily available to the operator and associated personnel and be kept near the instrument, if possible.
4. Only employ this instrument for the purpose intended by the manufacturer and particularly within the resistance limits of the instrument. If in doubt, contact your supplier or the manufacturer's factory representative at the phone number shown above.
5. Always use the instrument in such a manner that neither the operator, nor any other person is endangered. Avoid splashes; use protective clothing, gloves and eye protection.
6. Do not operate this instrument in environmentally unsafe areas and particularly in potentially explosive atmospheres.
7. Only use the manufacturer's authorised spare parts and accessories. Original manufacturers parts comply with strict tolerances and are produced to ensure reliability and extended service.

8. In case of breakdown, do not attempt any type of repair. There are no parts inside the instrument that should be serviced by the user. Repairs by the user may result in loss of warranty.
9. The unit may only be used on grounded mains supplies.

1.2 Unpacking the instrument

Unpack the outer carton containing your instrument. If the carton exhibits any punctures, crushed side walls, chemical stains, water marks or other physical evidence that the contents may have been damaged, notify your supplier and the carrier of the problem and ask for specific instructions.

If there is no visible damage to the carton's exterior, open it in the normal manner. Please check that it contains the following:

- 1 Thermo-Shaker SH26
- 1 Instruction Manual
- 1 Plastic Cover

Important Note:

Assuming that the shaker has not been damaged and that all the above parts were identified, you can proceed with setting up the instrument after reading the instruction manual.

This instrument has been designed with special materials and can be used for many tasks during daily laboratory use. For materials which may come into contact with the system: See "Technical Data".



Attention:

The user must determine for himself the suitability of the instrument for the desired purpose. Should there be any doubts always consult the distributor or manufacturer.

1.3 Setting up the instrument

- Make sure that the thermo-shaker is operated according to the conditions described in the section entitled Technical Data.
- Make sure that the voltage printed on the rear panel corresponds to the voltage from your mains power supply.

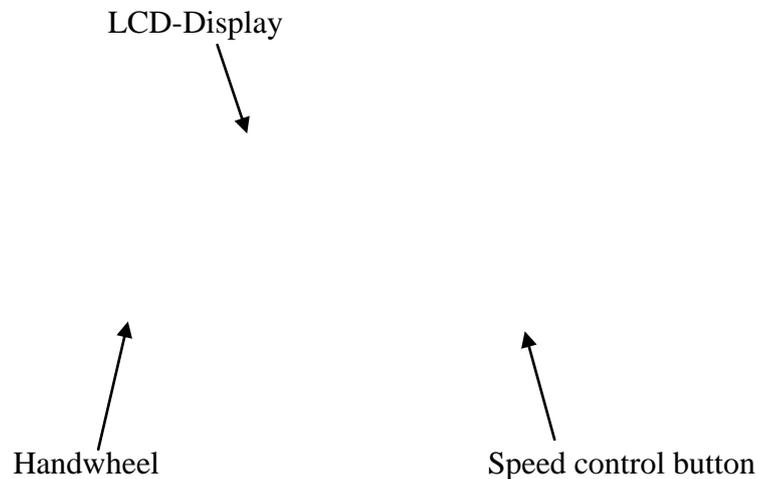


Attention:

The unit is not to be used in potentially hazardous atmospheres or explosion dangerous areas.

2 The Front Panel Control

The innovative keypad makes data entry easy and incorporates a 2-line alpha numeric LCD-display which shows all relevant data. The entry and changing of settings is made via the encoder wheel, in connection with the function keys and certain hot-keys.



(Front panel of SH26)

2.1 Description of the front panel functions

LCD display	The LCD display shows all relevant system data
Power ON/OFF	Press this key to turn the unit on or off.
Motor ON/OFF	Press this key to activate/deactivate shaking
Display RPM	Press this key to show the real speed of the motor on the display (opto-electronical speed control and speed sensing)
Plate ON/OFF	Press this key to switch the heating ON/OFF
Plate Temp.	Setting temperature via the handwheel
Safety Temp.	Setting the safety temperature via the handwheel. The safety temperature readout is shown on the first line of the display.
Timer	If required, pressing this key initiates the timer function which will shut down the SH26. The timer is calibrated to show – days: hours: minutes.
Heater	This LED is enlightened when the heating element is supplied with power
Hot !	This LED is enlightened when the hotplate exceeds 60°C/95°C
EDIT ARROW →:	This appears in the display when data input is required .It stays on for three seconds, to allow the operator to set the values via the encoder wheel. Should the arrow disappear during data entry, just press the key again. This function is for the following keys:

3 Shaking

- Set speed at the speed control button
- Press motor on/off at the control panel to start the shaking function
(→ green control LED is enlightened)

4 Heating

- Power on/off Press this key to start the SH26
- Plate temp. Press this key and enter the desired temperature via the handwheel
- Plate on/off Press this key to start the heating function
(→ green control LED is enlightened)
- Motor on/off Press this key to start the shaking function

5 Timer

The timer function can be activated by pressing the timer key. The edit arrow appears in the display line and the time can be changed in increments of one minute with the encoder wheel. If the time is set to zero the timer function is disabled. If, for example, a time of ten minutes is selected, the unit will shut down after 10 minutes.

This function is available for both shaking and heated shaking operation

Example: Unit to shut down after 1 day 2 hours and 15 minutes

- press “**Timer**” and turn the encoder wheel to set the desired shut down time to 1:2:15 (dd:hh:mm, days:hours:minutes)

minimum shut off time: 1 Minute

Maximum shut off time: 99 days: 23 hours: 59 minutes

6 Error Messages

The SH26 shaker has been especially designed to be set up to operate completely unsupervised. Therefore it has an on-board self diagnostic program that detects possible failures and, should one occur the SH26 shuts itself down. To enable the user to prevent the problem from re-occurring the SH26 will display any of the following error messages as it is switched on again. Please read carefully the following table of error messages.

Error message:	Reason for shut down
hotplate failure	the hotplate temperature has exceeded 60/95 °C the hotplate temperature sensor is broken or damaged
Plate > safety	the measured plate temperature was higher than the safety temperature
Timer expired	the timer has expired (timer key) (→ no error, for user information only)
Triac failure	the triacs for hotplate heating are damaged
Plate sensor fail	The hotplate temperature sensor is broken or damaged

7 Maintenance

The outer casting is mostly 304 grade stainless steel together with anodised aluminium and a chemically resistant splash-proof membrane key pad. Therefore the unit can be easily cleaned with warm water and any appropriate liquid laboratory detergent.

In case of malfunction do not attempt to repair the unit. There are no user-serviceable parts in this instrument.

The CAT SH26 should only be opened and repaired by authorised service personnel. Any work on the electronics in the unit should only be carried out by knowledgeable, trained personnel. Any attempt by the user to repair the unit will immediately render the guarantee null and void. Please contact your local distributor in the event of a problem.

8 Guarantee

The manufacturer agrees to either repair, or replace at the manufacturer's discretion, any defects in materials and workmanship which develop within 24 months of the delivery of this product to the original user. In the event of replacement, the replacement unit will be guaranteed for the remainder of the original twenty-four (24) months period or ninety (90) days, whichever is longer.

If this product should require service, contact your local distributor or manufacturer for necessary instructions.

This guarantee will not apply if the defect or malfunction was caused by accident, neglect, unreasonable use or fitness for a particular purpose, which extend beyond the description and period set forth herein.

The manufacturer's sole obligation under this guarantee is limited to the repair or replacement of a defective product and the manufacturer shall not, in any event, be liable for any incidental or consequential damages of any kind, resulting from use or possession of this product.

Attention: The user has to determine, if the instrument is suitable for his specific application. If there are any further queries, contact your local dealer or the manufacturer direct.

9 Technical Data

Typ SH26	
Voltage	110/230 Volt; 50/60 Hz (see rating plate at the back of the unit)
Display	back-lit LC-Display, 2 x 16 digits
Motor Speed range	-Capacitor motor, 40 Watts -steplessly adjustable, 60 – 1100 rpm -microprocessor controlled -soft start of motor
Temperature Control	-microprocessor controlled (fuzzy logic) -self test of all relevant safety functions when switching on the unit -programmable hotplate temperature -programmable safety temperature
Multi step safety system	detects and protects against the following hazardous situations -hotplate failure -probe failure(disconnection of Pt.100 probe) -triac failure
switch-off time delay	programmable switch-off time delay of stirring function, should the hotplate shut down, to allow the liquid to cool down more quickly
Temperature Sensor	Platinum temperature sensor (Pt-100)
Temperature accuracy	0.25°C
Temperature deviation with Pt-100 in operation	± 0.1°C
Ambient	5 – 40°C
Humidity	80% relative humidity
Safety Class according DIN 40050	IP42
Overall dimension	210 x 145 x 105 mm
Weight	2.6 kg
9.1.1.1.1 Shaking Platform	
Hotplate	anodized aluminum
Dimension of hotplate	275 x 190 mm
Heating Power	85 Watts