

Operating Manual



Electronic Wheelchair and Multipurpose Scales






**Series
M500020**

M500020-160420-Rev007-UM-e

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Introduction

Your ADE electronic scale is a quality, sturdy and durable product manufactured under the high standards and regulations for calibrated class III scales in accordance with national regulation in Germany. The scale is designed and manufactured for the daily practice in hospitals, doctors' surgeries and in-patient nursing facilities. The scale is used to evaluate the weight of patients sitting in a wheelchair, able to walk on their own or by using any kind of walking aid or lying on an emergency litter.

ADE instruction manuals have been prepared to provide the user with all the necessary knowledge about the safe use of ADE scales and their related accessories.

For further questions about how to use the products or about this or other service manuals, feel free to contact your local ADE representative or visit our web page at www.ade-hamburg.de

This operation instruction applies to the following models of electronic scales of the M500020-series with the different adaptations (see table 1). In order to achieve the best possible results kindly read and follow the operation manual in all respects.

Multipurpose and wheelchair scales		
Article number and size of platform in mm:	M500020	800 x 800
	M500020-A	1000 x 800
	M500020-B	1200 x 800
	M500020-C	1400 x 800
	M500020-D	800 x 800
	M500020-E	1000 x 1000
Configuration of the basic version M500020:	1 platform 1 ramp 1 spirit level 1 mains adapter 1 indicator (display)	
Reference number	Description of supplementary equipment to the standard version	
M500020-01	2 x Side boundaries	without wheels and hand grip
M500020-02	1 foldable column	
M500020-03	1 foldable hand rail	
M500020-04	2 x side boundaries and a folding column	without wheels and hand grip
M500020-A-01	large platform plus two side boundaries	without wheels and hand grip
M500020-A-02	large platform plus foldable column	
M500020-B-01	large platform plus foldable column	
M500020-C-01	large platform plus foldable column	
M500020-D	handrails on three sides	optional with wheels

[table 1]

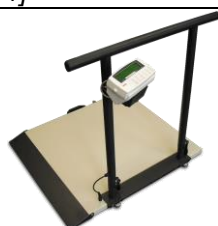


M500020
M500020-A
M500020-B
M500020-C



M500020-01
M500020-A-01

[picture 1]

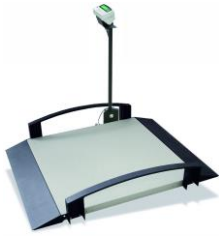


M500020-03
M500020-E-01



M500020-02
M500020-A-02
M500020-B-01
M500020-C-01

[picture 2]



M500020-04



M500020-D

[picture 3]

Equipment supplied

All wheel chair scales and multipurpose scales are being delivered in an already assembled condition with handrails, side boundaries or columns. The equipment supplied includes:

- 1) One indicator including the correspondent set of screws
- 2) Two guard plates for attachment of the indicator. Model numbers: M500020-03; M500020-E-01; M500020-02; M500020-A-02; M500020-B-01; M500020-C-01; M500020-04 and M500020-D
- 3) One wall mounting device and one cable extension for model numbers: M500020; M500020-A; M500020-B; M500020-C; M500020-01 and M500020-A-01
- 4) One mains adapter
- 5) Operation manual including declaration of conformity

Assembly and set up

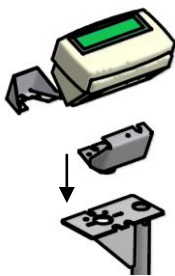
The indicator/ display of your ADE scale is able to be mounted on walls, on sockets, handrails or on stand-on devices for the table depending on the model you have selected.

Please insure that your scale is being placed vibration free at a dry place. Please take the parts out of the packaging and follow the instruction for assembly.

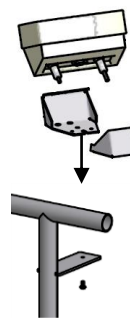
Attachment of the indicator

The following mounting instructions are valid for all models. The Wheelchair and multipurpose scales of ADE are coming in an already assembled condition. The only part which needs to be attached is the indicator. The indicator is being placed on top of a column, on the supporting plate at the handrail or to be used with the wall mounting device.

- 1) Place the indicator together with the two guard plates on top of the column or the handrail
- 2) Fix them with the corresponding screws



[picture 4] Attachment of the indicator onto the foldable column of the M500020-02



[picture 5] Attachment of the indicator onto the handrail of the M500020-03 and/or the M500020-D

Alignment of the scale

- 1) Place the scale on a plain, dry and level surface
- 2) Undo the locknuts of the four feet of the scale and unscrew them until they got contact to the surface
- 3) The air bubble in the spirit level must be right in the centre of the circle
- 4) Please ensure that the scale has no other contact to the floor than by the four feet
- 4) For all scales with a foldable column or a foldable Handrail:

(M500020-03; M500020-E-01; M500020-02; M500020-A-02; M500020-B-01; M500020-C-01; and M500020-04)

- a) Release the handle (pic 4a) at the bottom of the column or the handrail.
- b) Upright the column or the handrail.
- c) Finally re-tighten the handle (pic 4b) at the bottom of the column or the handrail again.



Please ensure that the foldable handrail and column of the scale is fixed and stable in order to avoid any unexpected moving of same. After transport or movement of the scale follow step 1 to 4 again.

Power supply

Power is supplied either by the rechargeable battery in the display unit or by the mains power via the supplied power unit. The imprinted voltage value at the mains adapter must match the local mains voltage. Connect the mains cable to the indicator and to a socket.

The wall socket must be located near to the unit and be easily accessible. Please use only the mains adapter supplied by ADE. The mains adapter is charging the battery pack at the same time.

When the battery is being charged for the first time a sufficient charging period of approx. 24 hours is necessary to achieve a full battery load.

If the unit is in battery mode and the display indicates – **Lo**, the battery needed to be recharged with the mains adapter. For a full battery load a charging period of 12-16 hours is required with the scale being switched off. If –**Lo** still appears at the display inform your service partner.

Replacing rechargeable batteries

The battery compartment is located on the front of the unit.



- 1) Open the battery compartment.
- 2) Remove the battery cables carefully from the housing, connect the wires (red to red, black to black) and insert the battery into the housing.
- 3) Close the battery compartment again.



Only use original rechargeable batteries and charger units from ADE. The warranty does not cover any damage caused by using other types of batteries or charger units.

Tips for handling the batteries

The life of a battery depends essentially on the load, frequency of use, temperatures, settings and the accessories being used.

- New batteries or batteries that have been stored for long periods require a longer charging period.
- Charge the batteries at room temperature.
- Never expose the batteries to temperatures below -10°C (14°F) or above 45°C (113°F).
- Rechargeable batteries lose their charging capacity over the time and require a longer charging period the older they are. If the battery performance drops considerably, then it is time to replace the battery.
- New batteries are supplied in partial charged condition. Batteries achieve their full capacity after several complete charge and discharge cycles.
- Do not throw old rechargeable batteries into the domestic waste. Ensure that the valid legal and municipal regulations of your country are being followed.
- Never dispose of batteries in fire as they can leak or explode

Quality features

ADE products correspond to the applicable EC Directives and European standards to manufacture and distribute world-wide medical devices as per the latest technical standards ensuring a long life time and continuous reliability.



This symbol stands for compliance of the European Directive covering medical devices and declares the conformity as per the Medical Device Law..



The ISO Certificate confirms the compliance of the DIN EN ISO 9001 norm and the corresponding high standards for Research & Development, Production, Distribution and Service. A copy of our ISO Certificate is available on request.



Approved scales classes III respecting the standards of the European guideline covering approved scales are carrying this sign.



Scales carrying this symbol are approved and accredited within the European Community and fulfils first class demands for calibrated scales.



Products carrying this symbol meet the requirements as per:

- The valid EC Directive for non automatic scales in the latest version.

Display

Description

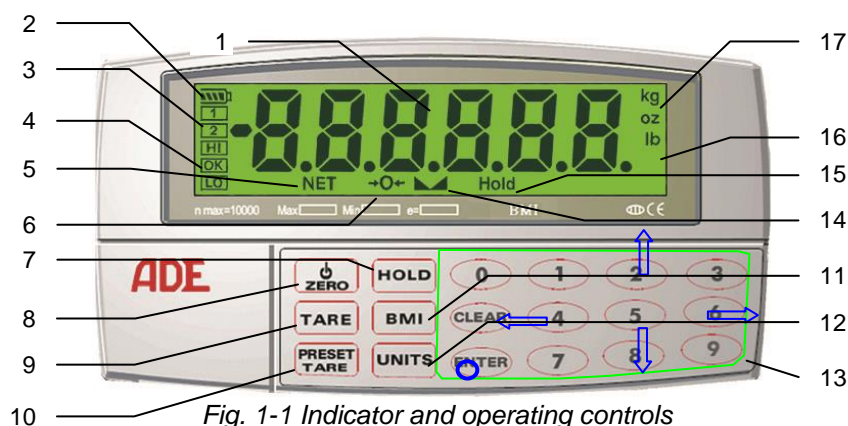


Fig. 1-1 Indicator and operating controls

No.	Name	Description
1	Display	LCD display for weight, mode, settings and configuration information.
2	Battery charge level	Status indicator for the current battery charge level.
3	Switching points 1 & 2	In program mode: Status indicator for switching points 1 & 2.
4	BMI status indicator (HI, OK, LO)	Status indicator of the automatic BMI (Body Mass Index) evaluation.
5	Net status indicator	LCD on - net weight is being displayed. LCD off – gross weight is being displayed.
6	Status indicator →0←	The scale is at zero level.
7	Hold – button	Activates the hold function.
8	On/off, zero – button	On and off switch and re-set of the display.
9	Tare- button	Activate/ deactivate the tare function.
10	Preset tare – button	Press briefly to access the tare function. Press for a long period to enter and save the tare value.
11	BMI – Button	Enter to proceed with BMI mode.
12	Units – Button	Switch button between primary and secondary units. Not available for CE approved class III scales
13	Number pad	Figures 0-9, Clear, Enter and Navigation functions: Key 6 menu direction to the right; Key 4 menu direction to the left; Key 8 menu direction down; Key 2 menu direction up. For better understanding see Pic. 1.1 the blue arrows. Used to navigate through menus, to select numerical values and to increase or lower the value.
	<u>Special function:</u> "0" key "Enter" key	In weight mode, you can change between gross and net weight using figure "0" (if any weight have been tared off). Function in weight mode: "Print" if printer has been connected.
14	Standstill status indicator (14) ▲▲:	The scale is at a standstill. The weight is stable with no movement. This is mandatory for functions like reset, print and tare.
15	"Hold"	If displayed is the hold function is activated
17	"kg"	If displayed is the weight is displayed in kilograms
	"g"	If displayed is the weight is displayed in grams

Connecting additional devices

Printer, PC or remote-display could be connected by the RS-232 interface. For connection of additional devices kindly ask your local representative or authorized ADE dealer for further instructions.

Housing and connections

The connections to mains adapter, serial port and to the load cells are located at the back of the ADE display. The set-up switch to start the configuration mode is underneath the housing. It is protected by a cover plate and secured by a screw (not shown in Fig. 2-1).



Do not use the set-up button as otherwise the calibration will be lost. This procedure is only allowed to be done by authorized service personnel appointed by ADE (GmbH & Co.). Any unauthorized manipulations made to the configuration mode will affect the warranty agreement.

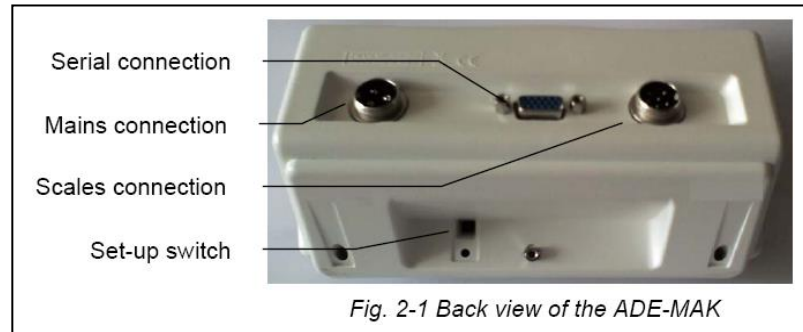


Fig. 2-1 Back view of the ADE-MAK

Safety

Safety instructions

The ADE-display unit (MAK) corresponds to the latest state of the art technology and complies with standard regulations and directives. Kindly follow the safety instructions in this operating manual, the country-specific installation standards as well as the applicable safety conditions and accident prevention regulations in all aspects. Electronic medical devices are restricted to special safety regulations in respect of their electromagnetic compatibility. For positioning and operation follow the instructions of this Operating Manual.

- Modell M500020-D: The pre-installed seat is only allowed to be used by persons up to 100kgs.
- Portable and mobile HF-communication systems may influence electronic medical devices.
- The mains voltage and power type stated on the type plate should match the mains voltage and power type at the place of use.
- Make sure that the mains cable does not pose any potential trip hazard.
- Do not operate the unit in hazardous or unstable conditions.
- Do not submerge the unit in water or other liquids.
- Set up the unit as far away as possible from equipment that generates electromagnetic or other interference.
- Only use original rechargeable batteries and power adapters from ADE. The Warranty does not cover any damage caused by using other types of batteries or charger units.

A safe operation is no longer guaranteed:

- If the power unit exhibits visible damage.
- If the power unit is no longer working.
- After longer periods of storage in damp rooms.

In these cases inform your service partner.

Settings

The following functions are available in setting mode:

- Configuration of the serial interface
- Set up of date, time and consecutive printout numbers
- Set up of print format
- Set up of switching points
- Test functions

The setting mode is not made for metrological parameters. Access the function menu by pressing the CLEAR (13) key until TIME appears on the display. Use the key pad (13) to navigate within the menus, to select numerical values and to increase or lower the values. Press the ENTER key to save the values entered and to return to the super ordinate menu level.

Menus structure of setting mode:

After entering the clear button following options are available and appear on the screen when moving with the navigation buttons:

FILTER	SERIAL	PROGR	PFORMAT	SETPTS	TEST	TIME	DATE	VERS
--------	--------	-------	---------	--------	------	------	------	------

Setting date and time

- Enter the CLEAR key for approx. 4 sec; **FILTER** appears on the display.
- Press key "6" six times and **TIME** appears on the display.
- Press ENTER key and **SHOW** appears on the display.
- Press key "6" one time and **HOUR** appears on the display.
- Press ENTER key and set the hours using the arrow keys "↑2", "←4", "6→" and "8↓".
- Press the ENTER key and set the minutes and seconds.
- Go back by pressing key "2"; **TIME** appears on the display.
- Press key "6" one time and **DATE** appears on the display like the time entry.
- Press key "2" two times and **EXIT Y** appears on the display.
- Confirm with ENTER and date & time are set.

Operation

Modes of operation

• Weighing mode

The "weighing mode" is of course the standard mode of your scale. After initial configuration and sealing (by attaching a calibration sticker to the back of the unit), the ADE-scale can only be operated in this mode.

• Setting mode

Date, time and consecutive numbers for print commands are being set in this mode. To start setting mode, hold the GROSS/NET key pressed until TIME appears on the display.

• Configuration mode (set-up mode)

The values for different parameters including the calibration could be set in the configuration mode. This function is reserved for authorized service personnel only.

• Test mode



There are different diagnostic functions for the ADE-MAK in test mode. This is reserved for service personnel only.



Manipulations to test and configuration modes can revoke the calibration status and will result in loss of warranty!

Weighing

Press the ON key for at least 3 seconds to turn the scales on. An automatic function test will be conducted afterwards. The test is done when the display shows zero. The scale is now ready for the weighing procedure.

Resetting the scales back to zero: Wait until the standstill status indicator  (14) appears. By entering the ZERO key (8), measuring inaccuracies after switching on the scale are being compensated. The zero key restarts the scale. The status indicator (6)  appears when the scale is being resetted.



The model M500020-D is being supplied with a seat. The seat is designed to take a weight upto 100kg. Take care that the patient, who uses this seat is weighing not more than max. 100kgs..

Tare function

The TARE key (9) is used when the patient is being weighed with other items (e.g. wheelchairs, clothing, shoes or other items) which should be ignored by the scale. To do this, weigh these items first. Weigh these

items first. After the weight is displayed, press the TARE key (9) to reset the display back to zero. The display changes to net mode (NET status indicator (5) is on) and shows zero.

Entering manually tare - values:

The user is able to insert manually the gross weight, which is for example mentioned at the identification plate of the wheelchair. Enter the appropriate tare value just by using the key pad under normal weighing mode. The value will be stored after use of the ENTER key (or TARE). The ADE-display is now ready for weighing and changes to net mode [NET status indicator (5) is on]. Enter the tare button to leave this mode.

Preset tara

Press and hold the PRESET TARE key (10) for approx. 3 seconds. **PRO PT X** appears on the display. Select the memory location 1-10. Now enter the TARE VALUE which you would like to be ignored by the scale and confirm same with ENTER. The value is displayed as a negative figure and will be deducted when a load is being placed on the scale. Enter the on/off, zero – button (8) to leave this mode.

Restore the preset Preset tara value:


Press the PRESET TARE key (10). "Pt x" appears on the display. Enter a number from 0-9 (memory location for the tare value). If no new number will be inserted to change the already displayed value within five seconds, the unit will turn back to weighing mode and displays the last stored value as negative figure as above. Enter the on/off, zero – button (8) to leave this mode.

Displaying the gross weight, net weight and tare value:

Press the "0" key to change between the net weight (gross weight minus the tared value) and the gross weight.

Hold function

The determined weight could be continued being displayed even when the load has already been removed. That enables taking care of the patient first before reading the results.

To use the hold function the scale must be at standstill. The standstill status indicator  (14) is on and **Hold** appears at the digital display. Deactivate the HOLD function by pressing the key again.

Determining the Body Mass Index (BMI)

The BMI figure is a index which displays the ratio between height and weight.

$$\text{BMI} = \frac{\text{body weight}}{(\text{height})^2}$$

To determine this value you need the height of the person. Best way to get the height is of course to use an ADE height measuring rod; model MZ10023.

Start the scale and weigh the person. Then press the BMI key (11) to start BMI mode. The last value entered appears on the display. Use the numerical key pad to enter a new value for the height (in cm) or retain the value which is already displayed.

Confirm the value entered with the ENTER key or delete same by using the CLEAR key. After the entry has been confirmed by the ENTER key, the BMI value will be calculated using the weight on the scales. The display changes between weight value and BMI value "b xx.x" (every two seconds) for a period of 3 minutes. Press the BMI key (11) to cancel before this time has expired.

Evaluating Body Mass Index

BMI evaluation according to WHO			
BMI	<	16	Severely underweight
	16	- 17	Moderately underweight
	17	- 18.5	Slightly underweight
<hr/>			
BMI	18.5	- 25	Normal weight
<hr/>			
BMI	25	- 30	Overweight
	30	- 35	Obese Class I
	35	- 40	Obese Class II
		> 40	Obese Class III

Print out a record

The scales must be at standstill, e.g. standstill status display $\blacktriangle\blacktriangle$ (14) appears at the screen.

Press the ENTER key (13) to send the data to the serial interface.

Note: Printing is not possible if the net weight is 0. The print function only produces one print-out. A reset is required to print out another copy.

Care, servicing and recalibration

Cleaning

Remove the mains plug before cleaning the unit. Do not use any aggressive cleaning materials for cleaning; only use a damp cloth or conventional disinfectant. Ensure that no liquids or any fluid gets into the scale.

Error messages

Error message	Description	Problem solution
	Overload display	Weight exceeds max. capacity of the scales.
	Overflow indicator (negative)	Negative weight indicated – weight too low to be displayed (<=999999).
	Overflow indicator (positive)	Positive weight indicated – weight too high to be displayed (>=999999).
AD LOW 	A/D above negative range	Check if the scales are correctly assembled or if they are damaged.
AD HI 	A/D above positive range	Check if the scales are correctly assembled or if they are damaged.
EE SUM 	Parameter or calibration error	Recalibrate – please contact your supplier or service partner:
EE WR 	EEPROM indicates an error	Please contact your supplier or service partner.
PM SUM 	Internal program indicates a check error	Please contact your supplier or service partner.
HOFSET 	Switch on – above zero	Please remove the weight from the scales and restart.
LOFSET 	Switch on – below zero	Check scales for damage and inform your service partner:
UOFSET 	Irregular	Do not touch the scales after they have been switched on.

Waste disposal



Used electrical equipment and batteries do not belong in the domestic waste. Please dispose of defective or used equipment and batteries according to legal regulations of your specific country!



Please make sure that only discharged batteries or batteries with insulated "poles" are disposed of as otherwise they may short-circuit!

Storage and transport conditions

Keep all packaging in case you need to return the item, in order to avoid any potential transport damage.

Disconnect all connected cables before dispatch. This is how you can avoid unnecessary damage.

Warranty

ADE will repair or replace this product within a period of 2 years from date of delivery applying to defects occurred due to poor material or workmanship (presentation of invoice is necessary). All moveable parts – batteries, cables, mains units, rechargeable batteries etc. – are excluded. Warranty does not include natural wear, damages caused by incorrect or negligent handling, overuse or unsuitable or improper storage. The cost of transport will be borne by the customer should the equipment be located anywhere other than the customer's premises. In the event of transport damage, claims under warranty can be accepted subject to using the complete original packaging and the equipment secured the way it was packed and secured originally. All the packaging should therefore be retained.

Any warranty claim will be rejected if the equipment is opened by persons not authorized expressly by ADE to do so.

Customers abroad are kindly requested to contact their local dealer for any warranty claim, customer service and spare parts.

Recalibration

Calibration to be done only by an authorised company or authorised person in accordance with national legislative regulations. The CE symbol shows the authorised site and the year of initial calibration. The scale must be recalibrated if:

- the calibration mark has been damaged
- after calibrated scales have been repaired
- or after expiry of a period for recalibration as stipulated by national, legal regulations.
-

Technical specifications

Power supply

Mains Adapter:

Mains voltage	115 or 230VAC
Frequency	50 or 60HZ
Power Consumption	11W in-charge, 2W off-charge

Main power circuit

Input Voltage	5.0VDC
Max. Current (in-charger)	1000mA

Battery Requirement:

Rechargeable Lithium Ion Cylindrical (18650x2) Cell 3.7V 4000mAH

Battery Operation:

Charger	7~10 Hours
Saving (350ohm, Backlight-ON 30Sec, Shutdown 5Min)	200Hours

Serial Communications

EDP Port	Full duplex RS-232 38400,19200,9600, 4800, 2400, 1200 bps
Printer Port	Output-only RS-232 or active 20 mA current loop,

Both Ports 9600, 4800, 2400, 1200 bps
7 or 8 data bits; even, odd, or no parity

Operator Interface

Display 6-digit LCD display. 7-segment, 0.815 in (21.2 mm) digits
LCD annunciator net, centre of zero, standstill, kg/lb/g/oz/ units,
Battery, Set points, Hold, HI/OK/LO
Keyboard 24-key flat membrane panel

Environmental

Operating Temperature -10 to +40°C (legal);
Storage Temperature -25 to +70°C
Humidity 0–95% relative humidity
Altitude 2000 m (6500 ft) maximum

Housing

Dimensions 18.6 cm x 9.5 cm x 10 cm
Weight 0.4 kg (without battery)
Material ABS plastic, white

Conformity declaration



Declaration of conformity by the manufacturer

This product has been manufactured in accordance with the harmonised European standards. They conform to the regulations of the EC-directives listed below:

- NAWI Directive 2014/31/EC
 - Medical Devices Directive 93/42/EEC
 - EMC Directive 2014/35/EC regarding electromagnetic compatibility
 - Low Voltage Directive 2014/30/EC
 - RoHS Directive 2011/65/EC
- in the currently valid versions.




This declaration loses its validity if modifications are made to the scale without our approval.

Hamburg, April 2016

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