

Operating Manual
Class III Approved Scales
Electronic Chair Scales

ADE



M400020
Series

M400020-210322-Rev007-UM-e



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Introduction



This symbol means: "Consult operating instructions". To achieve accurate results, read the instructions for use carefully before use and follow all instructions provided therein. Keep the instructions for use for future reference.

Your ADE electronic chair-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.

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 accessory equipment.

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 M400020-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.

Electronic Chair Scales	
Series: M400020	
Configuration of the basic version	1 display device 1 seat anthracite 2 arm- and footrests swiveling 2 standard fixed wheels 2 steering wheels with brake system
Reference number	Description of supplementary equipment to the standard version
M400020-01	Additional 2 steering wheels with brakes

[table 1]



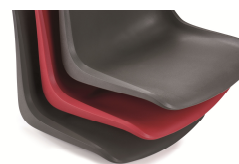
M400020

[picture 1]



M400020-01

[picture 2]



Seat cours:
 - anthracite
 - light gray
 - red

Assembly and set up

The ADE chair scale is already been delivered in a fully assembled condition. Please insure that your scale is being placed vibration free at a dry place.

Alignment of the scale

- 1) Place the chair scale on a plain, dry and level surface before the weighing of patients.
- 3) The air bubble in the spirit level should 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 wheels after the patient has been seated onto the chair scale.

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.

After checking same connect the mains cable to the indicator and to a socket.

Note: 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.

In case the scale is being used with batteries only and the display indicates – **Lo**, the battery should be recharged with the ADE mains adapter. After the first charging period the battery need 12-16 hours. The battery should be charged while the scale is switched off. Upon completion of the charging period switch the scale on again to check the battery status. In case **Lo**- still appears on the display inform your service partner.

Replacing the rechargeable batteries

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



- 1) Open the battery compartment.
- 2) Remove the battery cable and the corresponding connector carefully from the housing. Disconnect the battery pack. Connect the wires/plug (red to red, black to black) with the new battery pack and insert same into the housing.
- 3) Close the battery compartment.



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 used.

- New batteries or batteries that have been stored for long periods require a longer charging period.
- Charge the batteries at room temperature.
- Store the batteries empty (uncharged) in a cool, dark and dry place.
- Never expose the batteries to temperatures below -10°C (14°F) or above 45°C (113°F).
- Over the course of time, batteries lose their charging capacity and require a recharging period. If the battery performance drops considerably, then it is time to replace the battery.
- New batteries are supplied only in partial charged condition. Some batteries only achieve their full capacity after several complete charge and discharge cycles.
- When disposing of disused batteries, observe the valid legal and municipal regulations.



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..



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.

Type approval

The scales are approved with EC type approval No. **T7336 Revision 2**

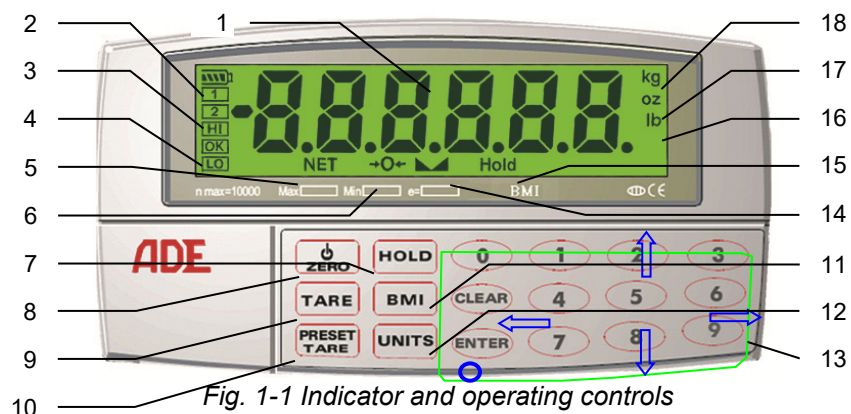
Using the scales for legal metrological applications

The scales are used in medical facilities for diagnostic and medicinal purposes as long as they are calibrated. The scales must be recalibrated according to legal conditions and regulations.

Display

Description

The ADE-display (MAK) is a digital precision display unit for medical use in hospitals by doctors and specialists of all medical fields.



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←	LCD on - the weight is within ¼ of a calibrated value from the zero point. LCD off - the weight is outside ¼ of a calibrated value from the zero point.
7	Hold – button	Activates the hold function.
8	On/off, zero – button	Switch the scale on and off or re-sets 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 and to enter as next step the height. Press again to return to weight 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. - <u>Navigation functions:</u> Key 6 menu direction to the RIGHT Key 4 menu direction to the LEFT Key 8 menu direction DOWN Key 2 menu direction UP The blue symbols under the keys (up, down, left, and right) describe the key functions in configuration and setting modes. These keys are used to navigate through the menus, to select numerical values and to increase or lower the values.
	<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, meaning the weight is stable and no movement is on the platform. This is a mandatory precondition for functions such as resetting, printing and taring). If the LCD is not displayed: The scale is not in a the standstill mode
15	"Hold"	If displayed is the hold function is activated
16	"lb"	If displayed is the weight is displayed in pounds
17	"oz"	If displayed is the weight is displayed in ounces
18	"kg"	If displayed is the weight is displayed in kilograms
	"g"	If displayed is the weight is displayed in grams

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. Portable and mobile HF-communication systems may influence electronic medical devices.

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.

- Before commissioning, ascertain whether the mains voltage and power type stated on the type plate 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.
- Only use approved accessories and peripheral equipment.
- Only operate the unit under permitted ambient conditions.
- Remove the mains plug before cleaning the unit.

- Do not operate the unit in hazardous or unstable conditions.
- Do not submerge the unit in water or other liquids.
- All actions/operations described in this operating manual may only be carried out by trained and by ADE authorised professional personnel.
- Using accessories that do not meet the safety requirements of this unit can lead to a reduction in the safety level of the entire system.
- Set up the unit as far away as possible from equipment that generates electromagnetic or other interference.
- Only ADE power adapters are allowed to use to avoid any risk of fire and electric shock.
- Clean with a dry cloth; do not use any sharp cleaning materials.

Hazard-free 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.

Inform your service partner in such cases for your own safety.

Connecting additional devices

Connection of printer, PC or remote-display will be done with 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 mains adapter connection, serial port connection and connection to the weighing cell are located on the back of the ADE indicator housing. The set-up switch to start configuration mode is recessed 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 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.

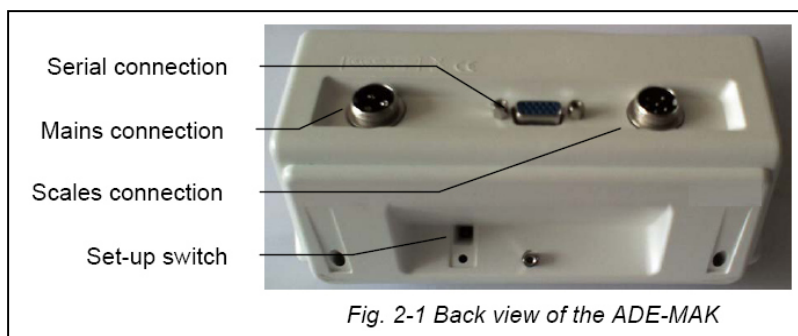


Fig. 2-1 Back view of the ADE-MAK

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!

Settings

The following functions are available in setting mode:

- Select the serial interface,
- Set date, time and consecutive printout numbers.
- Set print format.
- Set switching points.
- Test functions

The setting mode is not designed for the input of 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.

Menu structure of setting mode:

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

Positioning of patient

Please ensure for security reasons that all brakes at the wheels are being locked. Move the armrest and footrest in an upright position before the patient is being moved onto the scale. Fold down the armrest and footrest and place the feet of the patient upon the footrest.

After finishing the weighing procedure please make sure, that arm- and foodrest are being moved again into the upright position before patient stand up again.




Armrest and footrest are not to be used as helping device for getting up from the chair!

They are to be understood as supporting device for arms and legs only in order to allow an accurate weighing procedure!

Weighing

Press the ON key for at least 3 seconds to turn the scales on. An automatic function test is carried out after being switched on. This test is completed 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 pressing 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 reset.

Tare function

The TARE key (9) is used when the patient is being weighed with other items (e.g. clothing, shoes or other items) which should be ignored by the scale. To do this, 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). The weight of the previously weighed and saved items is ignored when the patients' weight is displayed. Enter the tare button again to get back to the normal weighing mode and remove any load from the platform.

Entering manually tare - values:

Enter the appropriate tare value just by using the key pad under normal weighing mode. If the tare value has been entered correctly, the value will be stored. Press 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 again to leave this mode.



The manual tare value must be >0, the maximum value is limited by the weighing range.

Preset tara

Press and hold the PRESET TARE key (10) [approx. 3 sec.], **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. Enter the tare button again to leave this mode.

Restore the 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 number is entered within five seconds, the unit will turn back to weighing mode. After entering the number, the ADE-MAK accesses the preset tare value, shows it for five seconds on the display and then changes to net mode. The accessed tare value is accepted at the same time. Enter the tare button again to leave this mode.

Displaying the gross weight, net weight and tare value:

Press the "0" key to change between displays for tare, gross weight (NET status indicator (5) off) and net weight (NET status indicator (5) on). If a tare value is saved, the net weight shown corresponds to the gross weight minus the tare value. If there is no tare value saved, the display remains in gross mode. The tare value flashes briefly, then after a second the display changes to gross mode.

Hold function

Use the HOLD key to hold the display if there are weight fluctuations which e.g. are caused by patient movements on the scales. You could also use this function if you like to hold the results at the display after the weight/load has been removed from the scale.

To do this, the scales must be at standstill, e.g. the standstill status indicator  (14) is on (depending on the setting it is not always necessary for the scales to be at standstill). The **Hold** status indicator (15) is on.

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  (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

Please disconnect the unit from the operating voltage before cleaning. Do not use any aggressive cleaning materials for cleaning; only use a damp cloth or conventional disinfectant.



Make sure that no liquids penetrate the unit!

Error messages

Error message	Description	Problem solution
888888	Overload display	Weight exceeds max. capacity of the scales.
888888	Overflow indicator (negative)	Negative weight indicated – weight too low to be displayed (<=99999).
888888	Overflow indicator (positive)	Positive weight indicated – weight too high to be displayed (>=999999).
AD LOW A88888	A/D above negative range	Check if the scales are correctly assembled or if they are damaged.
AD HI A88888	A/D above positive range	Check if the scales are correctly assembled or if they are damaged.
EE SUM EE8888	Parameter or calibration error	Recalibrate – please contact your supplier or service partner:
EE WR EE8888	EEPROM indicates an error	Please contact your supplier or service partner.
PM SUM P88888	Internal program indicates a check error	Please contact your supplier or service partner.
HOFSET H88888	Switch on – above zero	Please remove the weight from the scales and restart.
LOFSET L88888	Switch on – below zero	Check scales for damage and inform your service partner:
UOFSET U88888	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

A two-year warranty from date of delivery applies to defects attributable to poor materials or workmanship. All movable parts, e.g. batteries, cables, power units, etc. are excluded. This warranty does not cover any normal, external appearance of use and wear or any damage occurring as a result of an accident or misuse. Any warranty or damage compensation claims presuppose the use of original ADE accessories and replacement parts. The warranty does not cover units that have been opened by unauthorised persons. The legally regulated rights of the customer are in no way affected by this agreement. The supplier who sold the scales is in charge of complaints, customer service and replacement parts.

Recalibration

Have the calibration carried out by an authorised company or authorised person according to national legislative regulations. The CE symbol shows the notified body (0122) and the year of initial calibration. Recalibration must be carried out

- if the calibration mark has been damaged
- after calibrated scales have been successfully 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-charger, 2W off-charger

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, 9600, 4800, 2400, 1200 bps
Both Ports	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, center 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 2014/30/EC
 - Low Voltage Directive 2014/35/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, March 2021

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