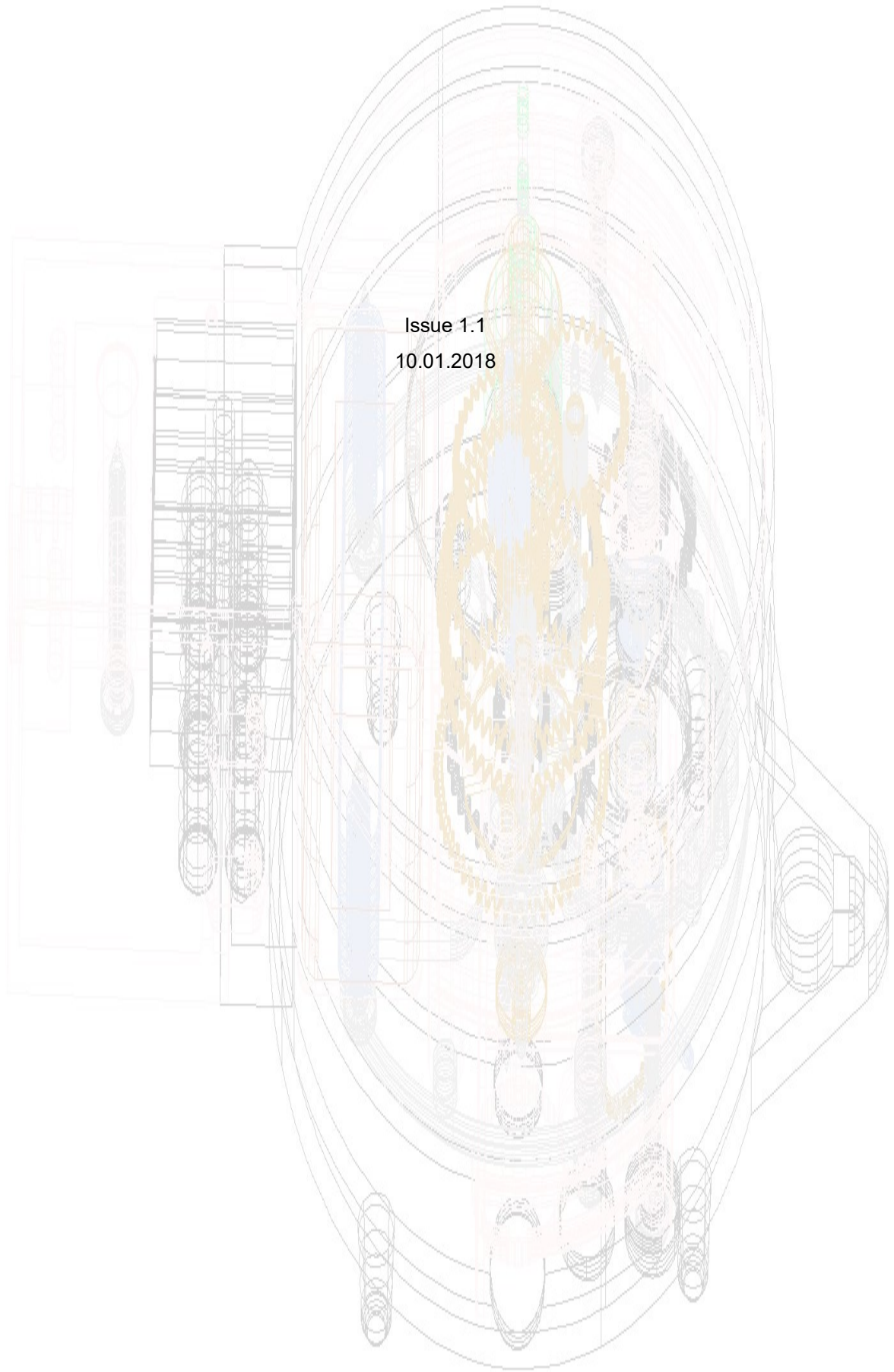


A detailed technical drawing of a watch movement, showing the intricate gear train, escapement, and other mechanical components. The drawing is rendered in a wireframe style, with some parts highlighted in yellow and blue. The movement is shown from a perspective view, highlighting its complex internal structure.

SCM®

CLOCK MOVEMENT 03

USER MANUAL



Issue 1.1

10.01.2018

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1. INTRODUCTION



SCM movements type 03 are precise electromechanical devices for continuous time measuring. Clock movement is driven by the alternating voltage of 50 Hz, which together with the precision of the gear trains allow to achieve a high long-term stability of the measurement. Due to its compact dimensions, high rotary torque and the mechanical design mostly, the SCM movement can be used in harsh environment, where electronic clocks do not provide a stable measurement. The flexibility of the movement design allows to develop variety of clocks and can meet the various needs of customers.



Note:

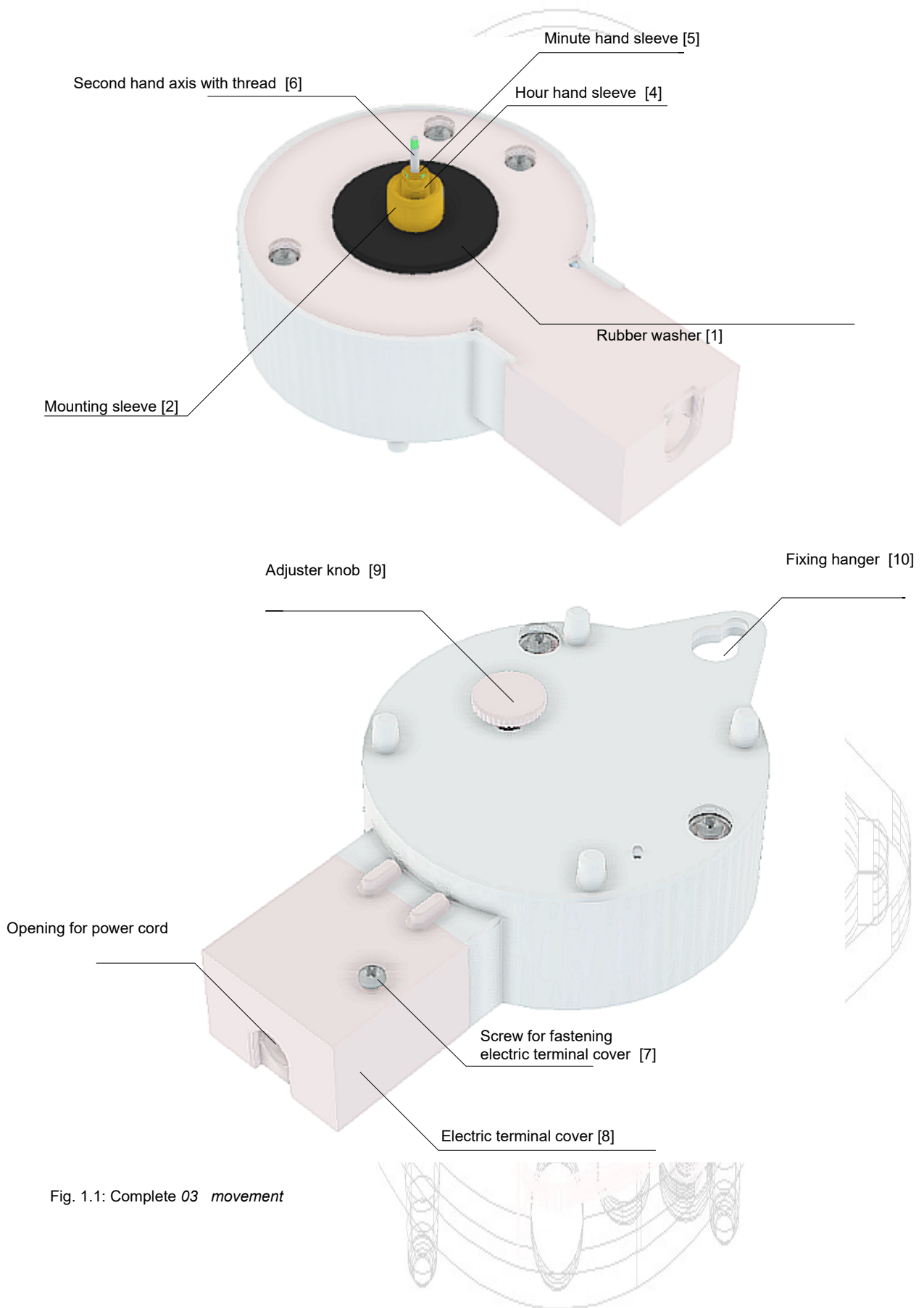
Compliance with this manual guarantees the safety of installation, use and trouble-free operation.

Technical data:

- power supply ~230V-240V, 50Hz
- power consumption 3W
- torque for minute hand – ca. 20 mNm
- operating temperature -5 °C ... +55 °C (23 °F – 131 °F) *
- humidity 30-65%
- horizontal/vertical operation
- weight 114 g (0.251 lbs) / without hands
- protection class IP30 **
- IEC protection class I

* - temp. +120 °C (248 °F) for special performance only

** - IP30 maintained if power cord in outer sheath is used and adjuster knob mounted firmly



2. 03 MOVEMENT VERSION

Movement type	Model	adjustment	a	b	c	d
for outside clocks with big hands	03b 04	sideway	22	26	35,5	-
heat-resistant movements up to 120 °C	03b KA Sauna	rear	4,5	6	8	14,5
	03b ELA	rear	22	26	30	34
	03b ELA-s	sideway	22	26	30	34
	03b LA/MA	rear	8,5	14	18,5	22,5
	03b LA/MA-s	sideway	8,5	14	18,5	22,5
	03b LA	rear	12	14	18,5	22,5
other	03b LA-s	sideway	12	14	18,5	22,5
	03b KA	rear	4,5	6	8	14,5
	03b KA-s	sideway	4,5	6	8	14,5
	03b MA	rear	8,5	11	12,5	19
	03b MA-s	sideway	8,5	11	12,5	19
	03b MA/KA	rear	4,5	11	12,5	19
03b MA/KA-s	sideway	4,5	11	12,5	19	

Tab. 2.1: Dimensions of 03 movements broken down by models

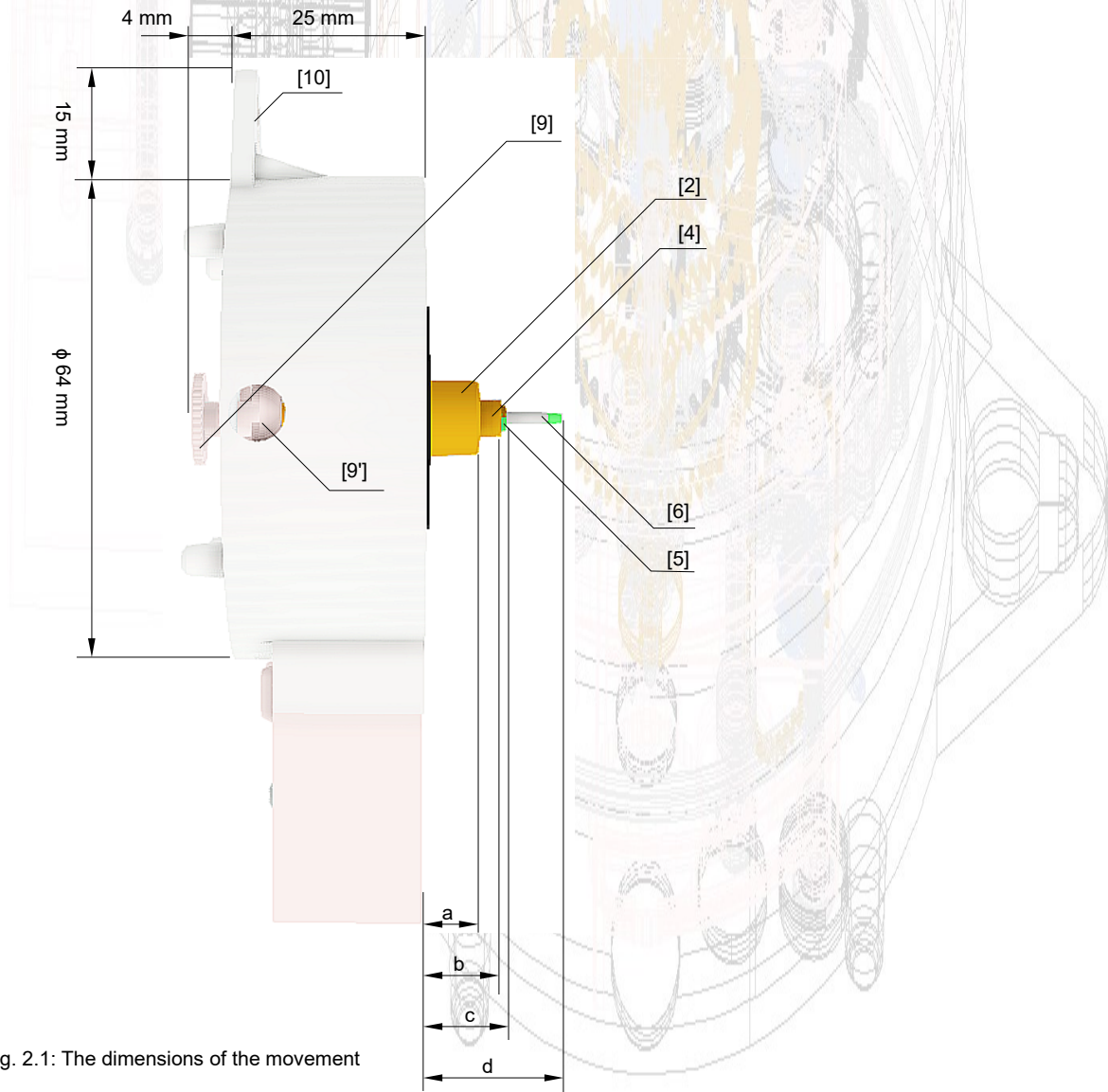


Fig. 2.1: The dimensions of the movement

3. INSTALLATION



Due to the various possibilities for assembling the sequence of individual operations may be different. The installation process should be performed with high caution at every point in a way that ensures the best working conditions for the movement as well as to minimize the risk of damaging it.



The hands after fixing cannot be turned and pushed, because there is a risk of damaging the gears or the thread of the seconds hand.

Assembly of the movement in the clock casing

- 3.1. Place the washer [1] 1.0x30 mm on the mounting sleeve of the movement [2].
- 3.2. Pass the mounting sleeve [2] of the movement through an opening in the clock face / clock housing and mount device in a vertical position with a nut M10x0.75 [3].
- 3.3. Place the hour hand onto the hour hand sleeve [4] in twelve o'clock position [12:00]. Next place the minute hand onto the minute hand sleeve [5] in twelve o'clock position [12:00]. Fix the hands by mounting the nut DIN 439 MS BM 3,5.



Note :
Parallel placement of hour hand and minute hand is important to avoid an indication error resulting from improper installation.

- 3.4. Place the second hand onto the second hand axis [6] in any position and tighten by hand to the first drag.

The casing of the movement has a plastic hanger [10] for optional use by the clock manufacturer .



Fig. 3.1: Hangers for vertical fixing

Assembly of the power cord



The power cord is not provided together with clock movement type 03 . It should be selected on one's own design , matching its parameters to the used housing, taking into account the possible environmental exposure.

3.5. Unscrew the tapping screw 2,2x6,5 [7] cross DIN 7981 / A2 and remove the terminal cover [8]

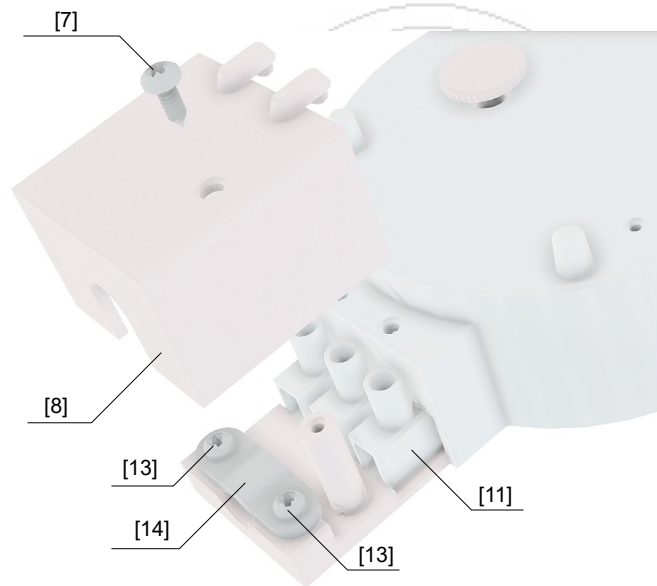


Fig. 3.2: Disassembly of the terminal cover

3.6. Install the three-wire power cord in the terminal block connector [11].

Insert the wires of the cord at least to a depth of 2.5 mm behind a grub screw. Connect according to the markings indicated on the casing:

- phase wire (L) - the electric work cable during normal operation at the phase voltage, the color of the insulation braun/red
- neutral wire (N), the color of the insulation light blue/navy blue
- protecting wire \oplus (PE) , two- colored insulation – yellow - green

3.7. Install cable strain relief [14] using two tapping screws 2.2x9.5 [13] (DIN 7981 / A2) .

3.8. Reinstall the terminal cover [8],

Power cord
3x 0.5 mm² (20 AWG) min
3x 2.5 mm² (13 AWG) max

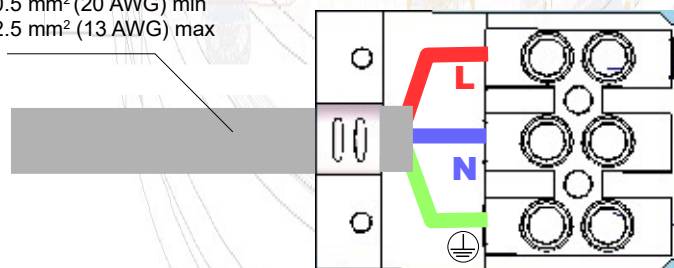


Fig. 3.3. Assembly of the power cord into the block connector [11]



Note:

It is recommended to connect or replace the power cord by a service technician or a qualified person.



Use only the cable with outer jacket for providing the first class protection!

4. TURNING ON AND TURNING OFF

4.1. The hands are set in the required position by knob adjuster located, depending on the version, on the side wall [9] or on the rear wall [9b].

Note:



The knob for setting the time in the movement with side wall setting can be extended before mounting in the clock housing by the extension rod attachable with cotter pin.

4.2. Set the actual time manually with the knob adjuster [9] or the extension rod [9b] until the hands are set in the right position. The direction of hands rotation is optional.

4.3. Make sure that the time set is correct, because the time indication will be subject to an initial setting error for all the time of continuous operation of the movement.

4.4. The movement starts immediately after the power is turned on!

Note:



Any interruption of the power supply will stop the movement. It restarts immediately after power supply is back. When you restart the movement the indicated time should be corrected manually by the knob adjuster.

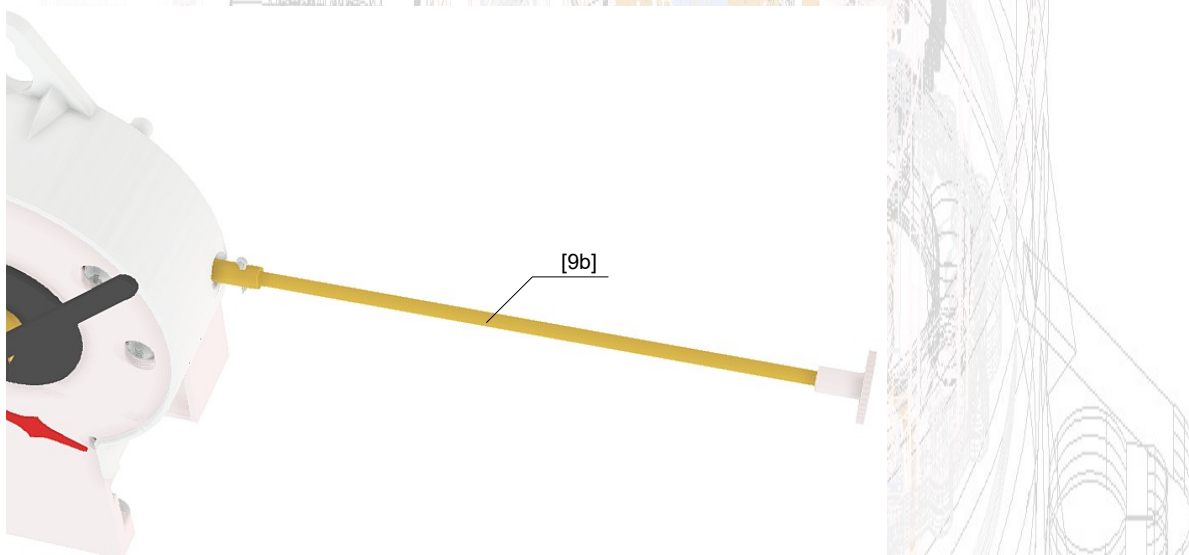


Fig. 4.1: Movement 03 with side time setting and extension rod

5. SERVICE MAINTENANCE



The manufacturer does not expect the service of movements by the user. It is not recommended to carry out repair action and maintenance which require disassembly of movement components by a user himself. It shall cause loss of warranty!

Improper repair work and installation can reduce safety of use !

Faulty device must be properly secured against damage during transport and sent to the headquarters of A.C.E Produkcja Elektroniki Użytkowej sp. z o.o., 78-200 Białogard, ul. ks. Cz. Berki 6. The device must be accompanied by a description of the problem and contact details, and also the date of expected return of the repaired movement. The cost of repairs will be determined after the analysis of faults. In the case of warranty repair a document confirming the delivery date should be attached.

6. WARRANTY

The warranty period is 1 year from the date of delivery of the goods to the customer. The warranty covers defects in materials and assembly. The products which subject to warranty are repaired free of charge or replaced with new ones. If a defective product is replaced with a new one or major repairs made, the warranty period shall be extended by one year from the date of delivery to the customer replaced or repaired product.



Warranty does not cover defects caused by improper use and chemical or mechanical damage resulting from the non-observance of this document.

7. ABNORMALITIES OF WORK AND THEIR CAUSES

<i>Problem</i>	<i>Cause</i>
Movement does not run	Improper cable connection Grub screw in the block terminal screwed to the conductor insulation No power supply
The movement cannot be adjusted despite of turning the adjuster knob	Adjuster knob too loose Missing cotter pin for attaching extension rod
The movement moves back	A failure of return mechanism
Wrong time indication	Power supply interruptions Too high operating temperature Too heavy hands Uncertain cable connection or faulty cable
After connecting the movement the installation safeguard disconnects power supply	Improperly connected wires
The casing deforms	Too high work temperature
Noisy movement	The movement improperly assembled / tightened

Tab. 7.1: Table of failures and their causes

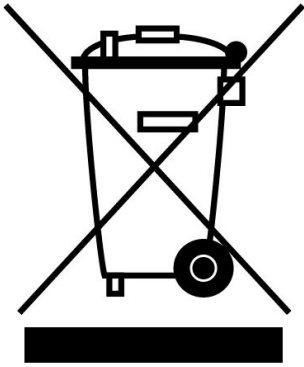
8. ACCESSORIES AND SPARE PARTS (OPTIONAL)

- *adjusting rod 50 mm /80 mm/100mm/200mm/300mm/400mm*

Other lengths available on request

- *adjusting knob* (art. no. 320-4-001)
- *cable clamp screw* (art. no.2122295)
- *cable clamp* (art.no.026-3)
- *minute hand bush Ø 4,5mm (04 ver. only)* (art.no.543)
- *hour hand bush (04 ver. only)* (art. no. 369)
- *screw M2,5x3mm DIN551 A1 (04 ver. only)*
- *hour hand bush* (art.no. 449)
- *second hand bush Ø 10mm with M1.4 thread* (art. no. 008)

9. RECYCLING



It can not be disposed of with household waste. Regulations regarding the disposal of waste existing in the country (eg. waste disposal through municipal services or by distributor) should be observed.

Recycling of materials helps to reduce the consumption of raw materials and protects the environment.

Fig. 5.1

Thank you for using our products!

SCM Team