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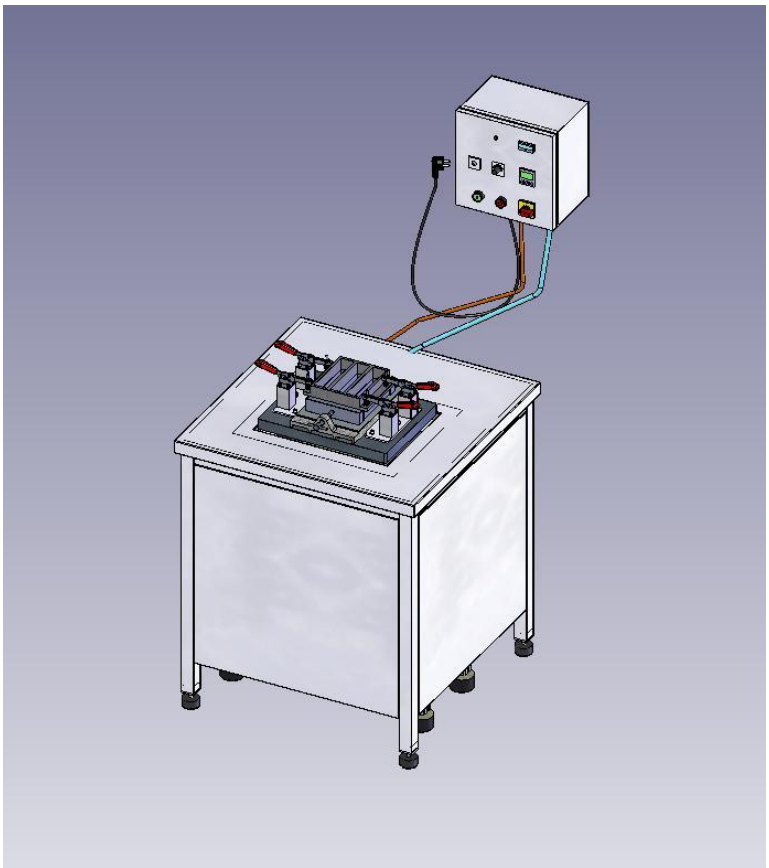
Operating Manual

Vibrating Table
In accordance with EN 196



Importance of this Operating Manual:
The operator must understand the functions and positions of all control and operating systems before putting the machine into operation.

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Enclosures:

- European Union Declaration of Conformity
- Circuit diagram
- Recort of testing

1. Basic instructions

Type designation: Vibrating Table 1.0220.01S
The ratings, parameters, and electrical characteristics are indicated on the rating plate attached to the machine.

1.1 Purpose for which this system was designed

This Vibrating Table is designed only for the compaction of fresh concrete for cement test prisms in moulds, and in accordance with the standards and EN 196 T1. The sealing clamp has been prepared for moulds (40 x 40 x 160mm). The vibration time is set on a timer switch. When the set time runs out, the timer will switch off the Vibrating Table. You can set the amplitude of the vibrations up to 1mm, on an infinitely variable basis.

The user must by all means observe the requirements, the limit values, and the safety instructions as given in this Operating Manual.
This Vibrating Table is intended for operation only in dry rooms.
Any use of this Vibrating Table that is not in conformity with the operating instructions and requirements. If the user needs to operate this Vibrating Table in a special manner, or under special conditions, then he must first obtain the advice and approval from the Manufacturer.

1.2 Purposes for which this system may not be used

This Vibrating Table may not be used for the following purposes or in conjunction with the following actions:

- Compaction of any materials other than those stated in Section 1.1 above
- Over-filling of the moulds
- The use of any other moulds except for those which is constructed for
- Setting up and/or operating the table under ambient conditions that do not conform to the conditions set forth in Section 1.1 above.

1.3 Safety instructions

1.3.1 Responsibility of the user / operator

This Operating Manual contains the information required for the operation of the products described in this Manual, in accordance with the uses for which these products are intended. This Operating Manual is intended to be used only by technically qualified staff. Such staff are defined as those persons who – as a result of their training; their experience; the instructions which they have received; as well as their knowledge of the relevant standards, regulations, accident-prevention regulations, and conditions of product operation in

the company – have been authorized by the person responsible for the safety of the company facilities to carry out the activities and actions required for operation of the products described below, and who can recognize and prevent any possible dangers arising from such operation (this definition of technically qualified staff has been provided in IEC 364).

The person using or operating this system is responsible for ensuring that he/she does not endanger himself/herself, or any other persons. Only those persons may operate this system who have received sufficient instruction in its proper operation.

If deficiencies or damages to the Vibrating Table endanger its operating safety, the user must immediately take it out of operation and may put it back into operation only after such deficiencies or damages have been corrected.

1.3.2 Dangers in work with the Vibrating Table

This system has been designed and constructed in accordance with the state of the engineering art and in conformity with recognized, good engineering practice. During its use, however, it is possible for dangers to arise for the life and safety of the user, or for third parties, and for damage to occur to its electrical components, to its mechanical parts, and to other objects of property.

This Vibrating Table may be used only:

- For the purposes for which it was designed
- In fully satisfactory condition from the standpoint of technical safety.

If any malfunctions arise which impair the safety of operation, the user must immediately correct them.

Instructions concerning dangers
The following instructions are intended to protect the personal safety of the operating personnel, the safety of the Vibrating Table described here, as well as any other equipment connected to this Vibrating Table.

Danger!	**Dangerous high voltage** Failure to observe the instructions below, or to take the necessary caution with high voltage can result in damage to property, injury of personnel, or death.

Be sure to switch off the power supply for any of the following kinds of work:
- Setting up and assembling the Vibrating Table
- Moving or disassembling the Vibrating Table
- Changing fuses
- Modifying the setup of the Vibrating Table
- In all cases, observe the relevant safety and accident-prevention regulations

- Before placing the Vibrating Table into operation, check to make sure that the local mains power ratings are suitable to operate the Vibrating Table: the ratings of the Vibrating Table must match the local power ratings.
- The electrical connections must be sufficiently covered.
- After assembling and setting up the Vibrating Table, check to make sure that the protective connections are properly functioning.

1.3.3 Safety features

The Vibrating Table is equipped with the following safety systems:

- A semiconductor fuse is installed in the control box. This fuse protects the internal electrical components from direct short circuits at the output of the Vibrating Table.
- Before the Vibrating Table leaves the manufacturing plant, the insulation behaviour is checked to ensure sufficient dielectric strength of the vibration magnets.
- The class of enclosure protection of the control box is IP 54.
- The control terminals are separated (isolated) from the power supply voltage.

1.4 Guarantee

Our **General Terms of Sales and Delivery** apply in all cases.

The Manufacturer guarantees that this Operating Manual has been prepared in conformity with the technical and functional parameters of the water tank as delivered. The Manufacturer reserves the right to add supplementary information to this Operating Manual as required.

The guarantee provided by the Manufacturer is the legal guarantee. This guarantee does not cover wear-and-tear parts.

The Manufacturer guarantees trouble-free operation only if the User observes the instructions in this Operating Manual, and only if the User employs the water tank for the purpose for which it is intended.

The Manufacturer shall not be liable for damages that may occur if the water tank is used for purposes for which it is not intended, or if the User does not observe the instructions and rules for operation as set forth in this Operating Manual.

No claims for damages may be lodged against the Manufacturer if the water tank is modified in its structural or constructional characteristics without the prior written consent of the Manufacturer, or if its functional characteristics are modified without such consent.

1.5 Acceptance of delivery from a freight carrier; transport; placing into position

1.5.1 Receiving the system from a freight carrier

When the system arrives from the forwarding agent, make an external inspection. If there are no visible damages or other shortcomings, accept the consignment from the freight forwarder (the package service or a haulage agent).

If there are no transport damages or other shortcomings, use the bill of delivery to check to make sure that the delivery is complete.

If you believe that transport damage may have taken place when you receive the equipment, or if you discover after you have accepted the delivery that damage has occurred, immediately make a report of this damage, with an exact description of the nature and the extent of the damage. Send this report to us immediately by fax. Important: Be sure not to make any changes or other alterations to the system as it has been delivered.

When we receive this report, we shall decide whether we can solve the difficulty by one of the following steps:

- Delivery to you of spare parts
- Sending a specialist fitter or mechanic to your company
- Asking for return of the system to us for replacement or repair.

1.5.2 Transport

The Vibrating Table is delivered in suitable woodboard packing, standing on a pallet. Use a fork-lift truck to move it, or another suitable ground conveyor system which reaches under the pallet and/or under the Vibrating Table.

2. Proterties

2.1 Description of the Vibrating Table

The enclosure of the Vibrating Table consists of sheet stainless steel. The tabletop made of stainless steel is also part of the standard scope of supply.

The control system is installed in an external metal housing. The vibrations are produced by the periodic, reciprocal motion of a spring-mass system. In general, the frequency is in a fixed ratio to the frequency of the applied voltage. A magnetic field produced by the exciter coil initiates the vibration action. An electromagnetic vibrator with a frequency of 3000 vibrations per minute drives the system. A controller enables infinitely variable adjustment of the amplitude range between 0.4 and 1.0 mm. The vibratory plate executes single-axis, vertical vibration.

One of the components of the Vibrating Table is a sealing clamp with a fast-action clamping system. This clamping system fastens the moulds, so that the mould is securely held in the centre of the working surface. The maximum vibrating mass, including the empty mould clamped in place, is 35kg±1,5.

2.2 Description of the mechanical system

Vibration magnets are electromagnetic devices that undergo periodic movement when they are excited by AC voltage. The magnet system here is completely embedded, and enables optimal application for drives with vibration systems. Vibration magnets operate practically without wear in an electromagnetic vibrator, and they produce little noise.

2.3 Description of the electrical system

The performance control is made by electronics in the control box. The optimal frequency gets manual or in the rule mode automatically for the vibrating table investigated and created new jobs. The vibrating table works with an acceleration sensor fastened at the sponsor on the resonant frequency in the regulator mode. The adjustment of the promoting performance is carried out via the height of the output voltage.

2.4 Technical data

Dimensions	approx. 750 mm x 750 mm x 850 mm
Weight	approx. 120 kg
Table plate	400 x 300 mm; stainless; grinding finish, 860 mm over ground
Power requirements	230 V / 50 Hz
Power consumption	100-250 W / 0,5-1A
Amplitude range	0.4 mm – 1.0 mm; with infinitely variable setting; infinitely variable display of setting; digital display
Vibration frequency	3000 vibrations / min. (at 50 Hz mains frequency)
Drive system	Electromagnetic vibrator
Type of vibration	sine wave
Timer switch	setting possible to ±1s; digital display

The noise levels given below are not necessarily safe levels for the Operator. The noise level to which the Operator is exposed will depend on other factors: for example, the exposure time, the surroundings, other equipment installed in the vicinity, etc.

The exposure level data given below allow evaluation of the damages that can occur by the noise produced by this machine.

Sound pressure level equivalent (A) at the workplace	55 dB(A)
Standards that apply to the data given above	EN ISO 3746

The continuous operation of the machine together with other loud equipment can cause a high exposure level. If the Operator is exposed to a noise level of more than 85 dB(A) on a daily basis, the wearing of protective devices such as noise-protection headphones is recommended. If the Operator is exposed to a noise level of more than 90 dB(A) on a daily basis, the wearing of protective devices such as noise-protection headphones is mandatory. For further information on noise protection, please consult the guidelines, directives, and standards of the country in which the machine is installed.

2.5 Scope of delivery

Quantity	Items included in scope of delivery
1 ea.	Vibrating Table with control box (also see information here under the section “Technical Data”)
1 ea.	Power cable, 2.00 metres long, for power connection (230V)
2 ea.	Connection leads from the control box to the Vibrating Table
1 pair	Clamps with fast-action clamping system

3. Placing into operation

3.1 Place of operation

Important: The Vibrating Table may be operated only in dry rooms.
Please observe the following limit values for ambient operating conditions:

Ambient temperature:	as per EN 196	+5°C - +40°C
Relative humidity:	as per EN 196	Max. 75%

3.2 Preparation for operation

Set up the Vibrating Table on a solid, sturdy floor that cannot vibrate. Use a fork-lift truck to lift it up from the pallet, or another suitable ground conveyor system which reaches under the Vibrating Table.
Use the adjustable feet to level the Vibrating Table, so that the working surface of vibrating plate does not deviate more than 1mm from the horizontal.
Check the position from the vibrating plate to the outer table plate if necessary lift up the outside cover to meet them correctly. The vibrating plate should be in its position a little bit higher as the around table surface.

The most convenient place to install the control box is on a wall.

3.3 Power connections

Power connection
Connect first the orange cable then and the transparent cable with a metal spiral from the bottom to the proper terminals of the control box. Next, connect the power cable to the electrical mains supply.

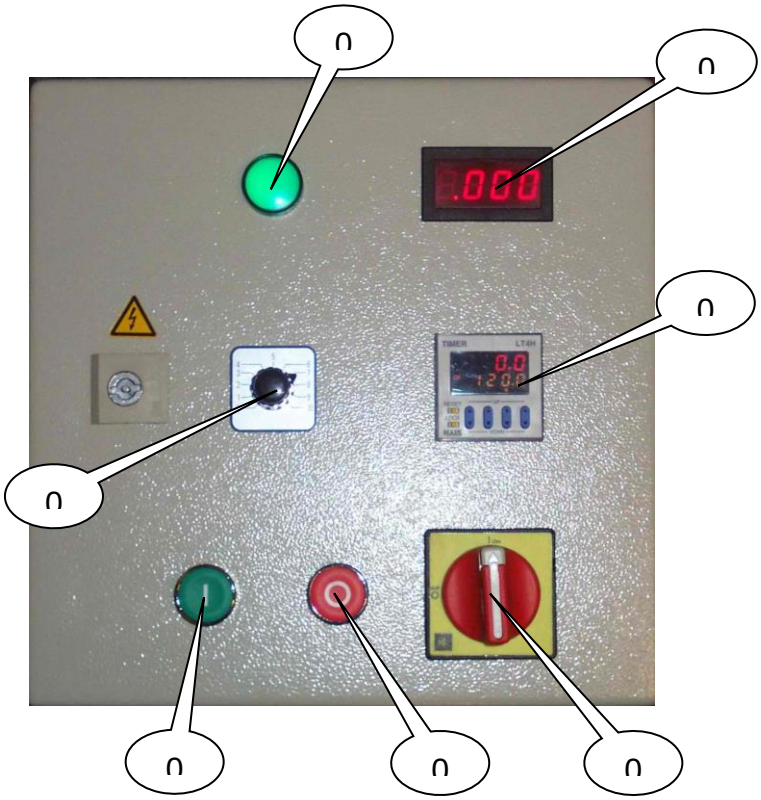
For reasons of safety, make sure that a separate fuse system (with ratings of 230V, 50Hz, 16A) is used to protect the Vibrating Table. The Vibrating Table is delivered with a power cable, approx. 2metres long, with a plug that has two poles and an earthing pin.

The voltage regulator of the unit box compensates for continuous or transient deviations from the specified voltage ratings: within a range of ±10% of the specified ratings. If the fluctuations in voltage are more than ±10%, special measures will be required to ensure that the mains voltage remains constant. In such a case, please get in touch with our after-sales staff before you operate the equipment.

The Vibrating Table is now ready for operation.

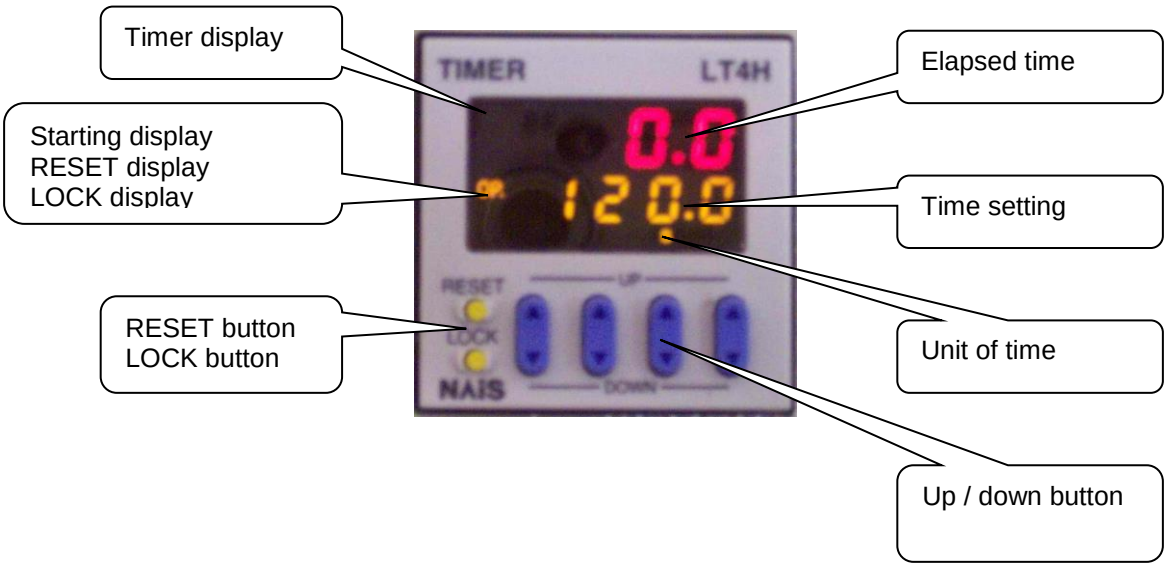
4. Operation

4.1 Setting the amplitude range of the vibration



1. fasten the empty mould securely in place by means of the fast-action clamps.
2. Use the main system switch (06) to turn on the Vibrating Table. The control lamp (07) will now light up.
3. Start the Vibrating Table with the green START switch (03).
4. Use the controller (01) to set the amplitude range to the desired value (for example, to 0.75 mm). Use the amplitude display (02) to check your setting.
5. You can use the STOP button (04) to shut off the vibration.

4.2 Making settings for the compaction process



1. First set the time relay (05) on the main setting ring to the desired value (for example, 120 seconds). This setting made on the time relay will be the vibration time that will run.
2. Use the START button (03) to switch on the Vibrating Table.
3. Use a spoon to fill the compartments of the mould. Be sure to begin filling the moulds no later than 15 seconds after switching on the vibrator. Now wait for 15 seconds, while allowing the vibrator to continue to run. Then, within the next 15 seconds, fill in the second layer, also beginning from the right side and moving toward the left. Fill the moulds slightly above the top edge.
4. After a total of 120 $\pm$ 1 s, the vibrator will automatically switch itself off.
5. Next, lift the mould from the Vibrating Table, being as careful as possible not to shake or jar (jolt) the moulds. Then immediately strike off the surplus mortar above the moulds with a steel straightedge. To do this, hold the straightedge almost vertically while striking off, and slowly draw it across the moulds, once in the horizontal direction (from left to right, or from right to left), and once in a vertical direction (from top to bottom, or from bottom to top). Use a horizontal, sawing motion (with the straightedge held firmly against the top of the moulds) to strike off the surplus concrete. The next step is to hold the same straightedge flat, and smooth off the concrete surface of the test samples.

Up / down button	Increases or decreases the desired (setpoint) vibration time, with increase/decrease of one digit at a time.
RESET button	Sets the actual value to the setpoint (desired) value, and also resets the outputs
LOCK button	Locks and unlocks the ENTER function, in order to prevent unintentional entry of values
Unit of time	Hour / minute / second: setting takes place by a DIP switch

4.3 Checking and adjustment

Before being put into actual operation, it is necessary to adjust the Vibrating Table. Proceed as follows:

1. Switch on the power switch.
2. Set the electronic timer switch to 120s (the setting by the factory).
3. Press the START button (03). The green control lamp will now show.
4. During matching of the Vibrating Table at the factory, the setting potentiometer has been adjusted such that amplitude-range display will show the value 0.75mm. If the display does not show this value, turn the setting potentiometer and observe the display at the same time. Adjust the setting potentiometer so that the value of 0.75mm appears on the display.

4.4 How to conduct a test

Please follow the following sequence to conduct a test:

1. The vibrating plate has been equipped with a fast-action clamping system. First shove the mould into its proper position between the guide jaws. Then use the clamping levers to clamp the mould securely in place.
2. Adjust the clamping levers to match the height of the mould, plus the edge of the filling funnel. If there are any slight differences in height, the rubber elements on the clamping levers will compensate for these differences.
3. Press the mains power switch (06).
4. Set the time to the desired vibration period (as a rule, 120s) on the time relay (05).
5. Press the START button (03).
6. Fill the mortar in two layers as described above and be sure to observe all the instructions given in EN 196, Part 1.
7. After the time as selected has run out, the Vibrating Table will automatically switch itself off.
8. Remove the mould and continue work with it as described EN 196, Part 1.

Important:	The operator must not leave the Vibrating Table while it is in operation.

4.5 Shutting down the Vibrating Table

To shut down the Vibrating Table, proceed as follows:

- Turn the main switch (06) to the O (OFF) position.
- Disconnect the Vibrating Table from the power supply.
- Cover the Vibrating Table with a dust cover.
- Make sure the Vibrating Table is stored in a dry place.

5. Troubleshooting

Trouble	Cause	Correction
The Vibrating Table does not function.	The main switch (06) is not turned on.	Turn on the main switch (06).
	The time setting is not correct.	Use the time relay to make the correct time setting.
	The electronics system is defective.	Get in touch with the manufacturer.
The system does not maintain the amplitude range as set; or, the amplitude range deviates greatly from the value as set; or the amplitude range is obviously incorrect.		
	Vibration elements are defective.	Replace the vibration elements.
	The table plate is loose.	Tighten the table plate.
The system makes loud, knocking noises.	Parts are loose.	Tighten the parts.
The system does not observe the required time.	The setting on the time relay is not correct.	Correct the setting on the time relay.

For additional troubleshooting instructions, and more details on how to correct trouble, please see the circuit diagram enclosed with this Operating Manual.

DANGER	Only properly qualified specialist staff may perform work on electrical systems.
	In case of malfunction, or if covers must be removed from interior equipment, first be sure to disconnect the sysem from the power supply.

6. Cleaning and maintenance

Special maintenance or service of the Vibrating Table is not necessary. If the Vibrating Table is being operated under dusty conditions, we recommend cleaning the table and its structural elements with a moist (not wet) cloth or sponge from time to time.

Warning!

If you attempt to clean the Vibrating Table by using pressurized water, water spray, or spray water that results in puddles, or if you apply water by dripping sponges, or if you use other unsuitable means of cleaning, this will result in permanent damage to the mechanical and/or electrical or electronics components of the Vibrating Table.

Before performing and service, maintenance, or cleaning work, be sure to disconnect the Vibrating Table from the power supply before beginning work. Only properly qualified electricians may open the electrical switchbox.

7. After-sales service and spare parts

A great deal of care has been taken to ensure that this Operating Manual is correct. We cannot, however, guarantee that it is without mistakes or errors, or that all information contained herein will continue to remain valid in the event of technical changes.

7.1 Date of issue of this Operating Manual

Edition no. 3
Date of issue: Jan of 2014

7.2 Copyright

7.3 Contact for help and spare parts

If you have any technical questions, or if you require spare parts, please get directly in touch with the following address:

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EC Declaration of Conformity in accordance with the Machinery Directive 2006/42/EC Appendix II 1.A

The authorised representative established in the community,

Mr. Feuerherdt

hereby declares that the following product

Manufacturer:	TESTING Bluhm & Feuerherdt GmbH Motzener Str. 26b 12277 Berlin
Product designation:	Vibrating Table
Serial number:	continuous
Serial/Type designation:	1.0220.01S

complies with all of the relevant provisions of the above named guidelines as well as the additional applied guidelines (following) - including any of the amendments thereto which are in force at the time of the declaration.

The following additional EU Directives have been applied:

Low Voltage Directive 2006/95/EC

The following harmonised standards have been applied:

EN 60204-1	The Safety of Machines - Electrical Equipment of Machines - Part 1: General Requirements
EN ISO 12100	The Safety of Machines - Basic Concepts, General Principles for Design: Basic Terminology, Methodology (ISO 12100-1:2013)

The name and address of the person who has been authorised to compile the technical documentation:
Mr. Metge

Location: Berlin
Date: 28/02/2014

(Signature)
Managing Director

(Signature)
Technician

Circuit diagram