



Sauter GmbH

Ziegelei 1
D-72336 Balingen
e-mail: info@kern-sohn.com

Phone : +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.sauter.eu

Instruction manual motorized test bench with stepper motor

SAUTER TVO-S/THM-S

Version 2.1
11/2021
GB



PROFESSIONAL MEASURING

TVO-S-THM-S-BA-e-2121



SAUTER TVO-S/THM-S

V. 2.1 11/2021

Instruction manual motorized test bench with stepper motor

Congratulations on purchasing the SAUTER TVO or the THM test bench with stepper motor. We hope you enjoy your quality measuring system with its wide range of functions and high reproducibility. If operated correctly, this high-quality product will give you many years of use.

For questions, wishes or suggestions we are always at your disposal.

Table of contents:

1	Introduction	3
2	Scope of delivery	3
3	Weight and dimensions	3
4	Check before use	4
5	Possible applications	4
6	Control panel	6
7	Application	7
7.1	Check before starting the measurement / test	7
7.2	Speed setting	7
7.3	Presetable cycles	7
7.4	RS 232 connection	7
7.5	Limit switch.....	7
8	General safety instructions	8

1 Introduction

The TVO-S and THM-S test bench series has a stepper motor. With this motor an exact positioning as well as a uniform movement can be realized. A further advantage of this technology is that the full force is available from zero even at low speeds. Stopping is also carried out very precisely and without overtravel.

All Sauter force gauges up to 2 KN, depending on the test bench, can be adapted to the TVO-S series. All force gauges up to 500N fitted the THM-S.

SAUTER offers optional software and accessories to give you the greatest possible flexibility in configuring your measuring system. Please contact SAUTER for further information.

2 Scope of delivery

- SAUTER TVO-S/THM-S
- Power cord
- Operating instructions
- Accessories (depending on model)

3 Weight and dimensions

Test bench	TVO 500N500S	TVO 1000N500S	TVO 2000N500S	THM 500N500S
Dimension (LxWxH)	570x428x236 mm	980x405x265 mm	1185x465x300 mm	695x300x235 mm
Weight	25 kg	31 kg	52 kg	48 kg
Packaging	stable wooden box			

4 Check before use

After receipt of the test bench, it should be checked in advance whether no transport damage has occurred, whether the outer packaging, the metal housing, other parts or even the test bench itself have been damaged. If any damage is evident, please notify SAUTER GmbH immediately.

5 Possible applications

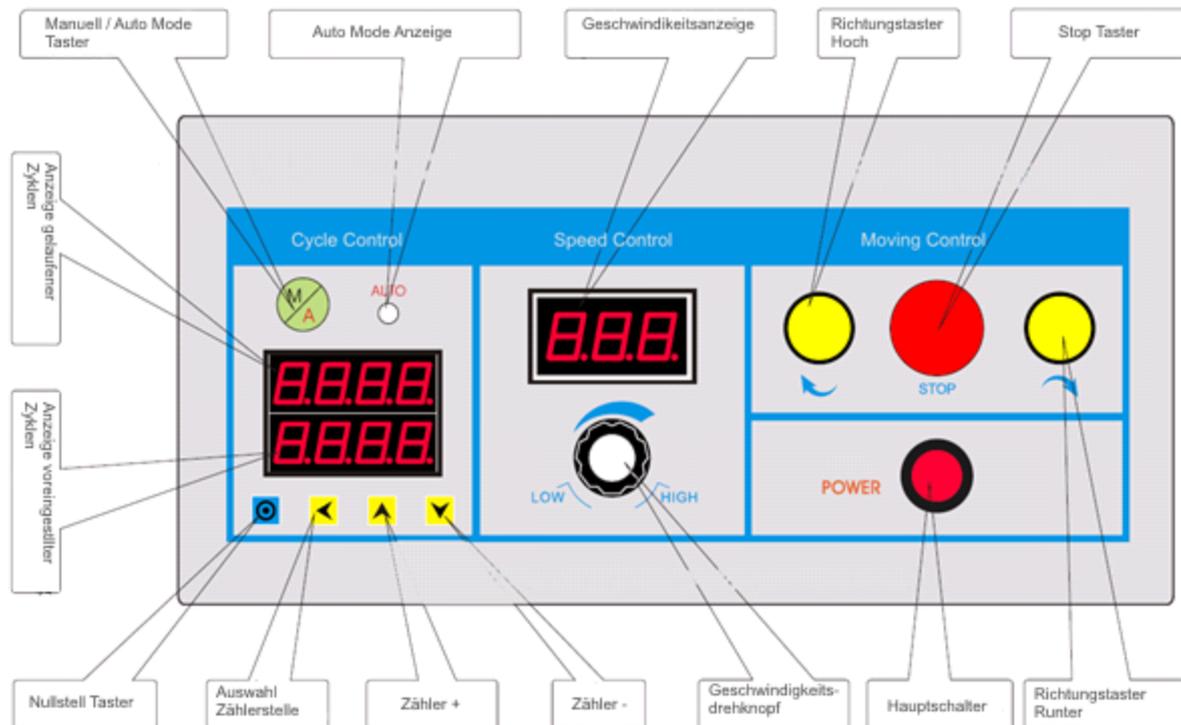
The TVO or THM test stand is designed to accommodate most SAUTER force measuring devices without any great difficulty. It has a wide range of applications and can be operated manually. It can also perform individual functions independently. These are, for example, infinitely variable speed adjustment, automatic horizontal movement (THM) and vertical movement (TVO) with preset repetition (up to 1000 cycles). It can be used for material testing in the metal, plastics and textile industries. It can also be operated with SAUTER software (AFH), from where it can be conveniently controlled by PC. This software is also able to document force, time and distance. Operation with safety STOP is only possible with an FH force gauge, because here the setting options can be used, for example to protect the test stand from overload with the STOP value.

- Choose the right test stand with regard to the maximum force you require. Adjust the force gauge used to the maximum force or take special care when setting the travel distance. (Possible destruction of the force gauge)
- Under no circumstances should you attempt to open, repair or modify the unit. Contact SAUTER GmbH.
- The test bench is not suitable for operation in a humid environment. Avoid penetration of moisture into the housing under all circumstances.
- Do not use sharp objects to operate the buttons.
- Use the limiting rings on the test bench to check the travel. Precise adjustment of the travel using the limiting rings prevents damage to the test stand and the force gauge used.
- From time to time, moisten the rods with a lubricating oil.

Turn off the unit and unplug the power cord if you are not going to use it for a long time.

Test bench	TVO500N 500S	TVO1000N 500S	TVO2000N5 00S	THM500N 500S
Maximum force	500 N	1000 N	2000 N	500 N
Speed range	1-500 mm/min	1-500 mm/min	1-500 mm/min	1-500 mm/min
Speed accuracy	1% of max.			
Maximum travel distance	270mm	500mm	700mm	245mm
Maximum number of cycles	1000			
Nominal voltage	220V 50/60Hz			
Backup	3A			
Operating temperature	20±10°C			
Storage and transport temp.	-27°C up to 70°C			
Relative air humidity	15 % up to 80			

6 Control panel



Function	Declaration
Main switch:	Switching the test bench on / off
Direction switch OPEN:	Lower slide moves upwards (as long as is pressed)
Direction button AB:	Lower slide moves downwards (as long as is pressed)
Stop button:	In Auto Mode the movement is stopped
Speed control knob:	Regulation of the lifting speed
Manual / Auto Mode:	Choice between manual or automatic movement
Display of preset cycles:	With the help of the counters ▲, counters ▼ and selection of counter position ◀ a number can be preset, how many cycles are to be run
Display of driven cycles:	The number of cycles completed is displayed here
Reset button:	Zeroing of the driven cycles ⏪

The movement of the test bench is defined by the lower and upper limiting ring. These limiting rings must be adjusted for each test.

7 Application

7.1 Check before starting the measurement / test

- Wiring, switching on Display flashes 5 times
- Test the movement without the test piece, manually actuating the limit switches to test their function.
- Test of the automatic movement. Press the Manual/Auto Mode button, Auto Mode indicator lights up. Set cycles (avoid setting "1"), start test run with Up or Down button. At the end of the cycles, the test bench stops and emits an alarm tone 3 times, test finished.

7.2 Speed setting

The speed can be adjusted continuously up to the maximum. The set speed can be read off the display.

7.3 Presetable cycles

A number of cycles can be preset on the test bench. The preset value is displayed in the lower area. It can be set  with the keys Counter , Counter  and Select counter position. The "run" number is displayed in the upper area. The counter can be  reset with the Zero key.

7.4 RS 232 connection

The test stand has two 9-pin connectors to connect a force gauge and one connector for communication with the PC. The test stand can be operated with SAUTER AFH software. This allows the motion control and number of cycles to be set directly on the PC. The software can be used to evaluate the data in terms of force-time or force-displacement. At the force gauge connection, the test stand can be controlled with an FH Series force gauge to prevent overload (using the Stop parameter on the FH Series force gauge).

7.5 Limit switch

In manual mode, movement stops when the limit switches are reached. In Automatic mode, movement stops at the Perimeter Switch for about 5 seconds and then continues in the opposite direction. In order to ensure that the test/examinations run smoothly, you should ensure that you align the boundary rings very precisely so that the test object or test equipment is not destroyed if the path is too long/short.

8 General safety instructions

WARNING

Risk of injury due to overridden functions of the protective devices!

Overloaded functions of the protective devices can lead to severe injuries lead.

- Never override the functions of the protective devices, either yourself or by third parties.
- Never test with protective devices disabled.
- Never tamper with protective devices.
- Comply with all safety instructions.

WARNING

Risk of injury from falling parts!

Falling parts can cause serious injuries.

- Only use suitable and technically flawless lifting gear.
- Use lifting equipment with sufficient lifting capacity.
- Carefully fasten individual parts and larger assemblies with lifting gear.
- Secure individual parts and larger assemblies with lifting gear.
- Make sure that there is no danger from the hoist.
- Lift individual parts and larger assemblies slowly.

WARNING

Risk of injury from rotating components!

The drive can start automatically. Rotating components such as spindles on the drive of the crosshead or the extensometer can catch long hair, loose clothing as well as sleeves or jewelry. This can lead to serious injuries.

- Work only in clothing with tight-fitting sleeves.
- Wearing jewelry while working on the test system is prohibited.
- Use hairnet if necessary.
- Wear suitable protective equipment

WARNING



Risk of injury when handling in the test room!

When handling in the test room during the operation of the test system, there are Risk of injury. Your hands and arms can be pinched and crushed.

- Never handle in the test room while the test system is running.
- Never handle anything in the test room during a test.

WARNING



Danger of tipping due to use of heavy specimens!

In the case of heavy specimens that are inserted off-center, as well as due to improper Behavior can tip the test system.

- Ensure that the test system is securely positioned.
- Never use the test system as a climbing aid.

WARNING



Risk of injury from electric shock!

There is a risk of injury when cleaning the electrical system with wet cloths. by electric shock.

- Turn off the power supply with the main switch.
- Unplug the power cord.
- Do not use wet cleaning cloths.
- Always use only dry or moistened cloths.

CAUTION

Risk of injury!

There is a risk of injury when working on/with the test system.

- Comply with the applicable and binding national regulations on the accident prevention.

Comply with the recognized technical rules for safety and professional work.

Comply with the regulations on health and safety at work.

Provision of work equipment and its use.

- Observe company regulations such as supervision and reporting requirements.
- Read the operating instructions completely.
- Read the operating instructions and data sheets of external components all the way through.
- Observe all safety instructions in the operating instructions.
- Observe all safety signs attached to the test system.
- Always wear appropriate safety equipment.

NOTE

Work on the test system may only be carried out by specialists qualified for this work. be carried out.

NOTE

Only one operator may work on the test system at a time.

- During operation, the operator's workplace is located in front of the