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Instruction Manual Motorised Test Stand

SAUTER TVM-N

Version 1.7
11/2016
GB



PROFESSIONAL MEASURING

TVM-N-BA-e-1617



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Instruction Manual Motorized Test Stand

Thank you for purchasing the SAUTER TVM-N series test stand. We hope you are pleased with your high quality equipment and with its big functional range. With correct use, it will give you many years of accurate and reliable service. If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number or ask your SAUTER distributor for additional information or just visit our website at www.sauter.eu

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1 Introduction

TVM-N test stand can measure tension and compression forces very exactly and it is easy to operate. There can be mounted several force gauges from SAUTER to the test stand. It is a motorized test stand which provides you a possibility to move up and down with a constant speed, to make your measuring more accurate and repeatable. SAUTER offers many kinds of accessories optionally, to give you a versatile possibility of application for your measurement system. Please contact us directly or ask your reseller for more information. We also recommend to visit our website www.sauter.eu

2 Scope of delivery

- SAUTER TVM-N
- Power cable
- Instruction manual

3 Weight and Dimensions

Proper weight: 58 kg

Dimensions in standard version (TVM 5000N230N): LxBxH: 400x256x1015mm

Packing: stable wooden box

4 Checking before use

After having received the equipment, please check that no physical damage has occurred to the packaging material, to the wooden box or the test stand itself. If any damage is apparently, please contact SAUTER Company immediately.

5 Operation Overview

TVM-N Series Test Stand can be specially applied with nearly all of the SAUTER series Force Gauge for tension and compression tests. It possesses presetting speed, a wide application range, advantage of non-polar speed adjustment, manual or automatic operation, suitable for application in fields of rubber & plastics, textile, construction, complex material, wires & cables, automobile accessories, engine and scientific research, etc. It can be connected to a computer, when applied with SAUTER series force gauge, the test stand can be controlled, moving it up or down by our software AFH. Most of the SAUTER series force gauges also can preset the force stop, when the force has arrived the preset one, the test stand will auto-stop.

- Choose the right test stand depend on your request (see Chapter 6). Please do not test over maximum load of the test stand or the mounted force gauge.

Adapt the force gauge you are going to use to the max. force or just be very carefully in adjusting the travelling distance (the force gauge might be damaged irrevocably!)

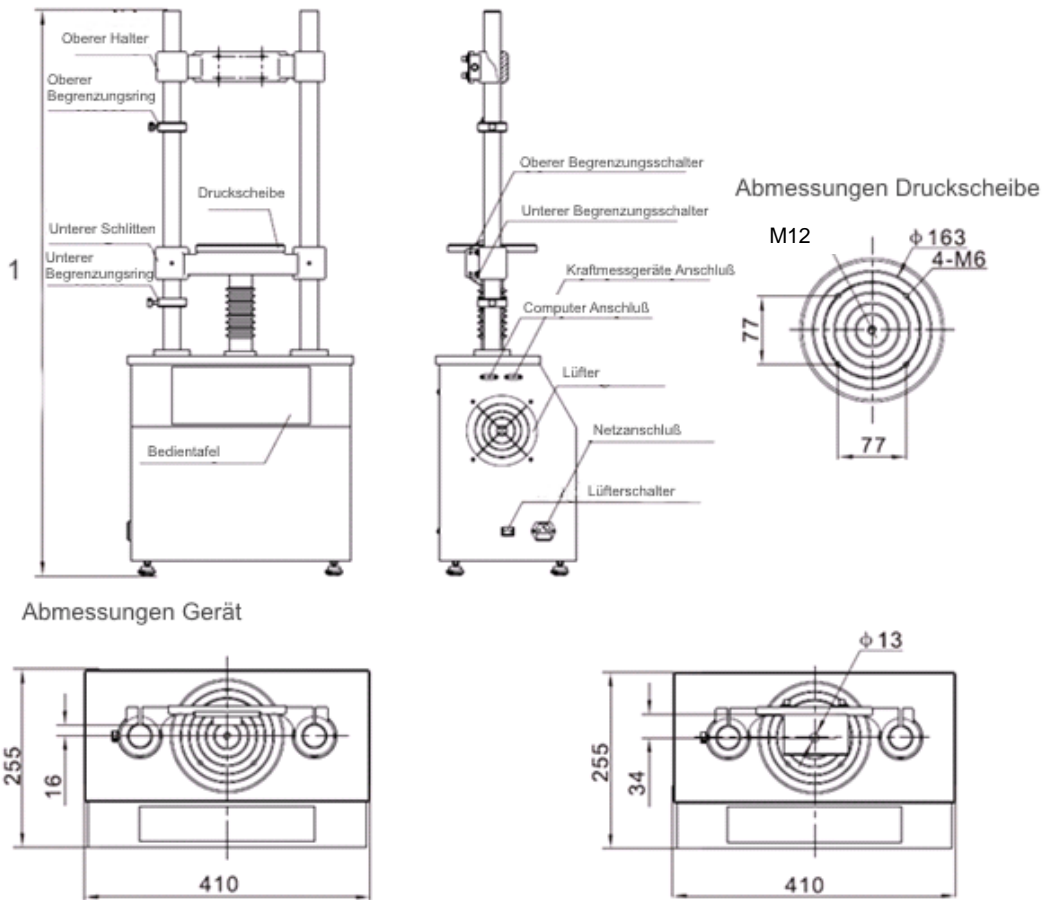
- Please do not open, to repair or to modify the equipment. This is not allowed, because you could damage the test stand. Please contact SAUTER GmbH.
- The equipment is not suitable for use in humid surroundings.
Please avoid water or any liquids entering the housing, this could damage the mechanical drive.
- Please do not use any sharp-edged tools to operate the buttons of the control panel.
- Use the limit function with the limiting rings to control the travelling distance. An exact adjustment with the help of the limiting rings can avoid damaged of the test stand and the force gauge applied.
- Add a little bit of lubricating grease to the columns of the test stand after a long time of work
- Turn off the equipment when you won't use it in short time, pull out the power plug when you do not use it for a longer period of time. Do not expose the equipment to humidity and dust.

6 Specifications

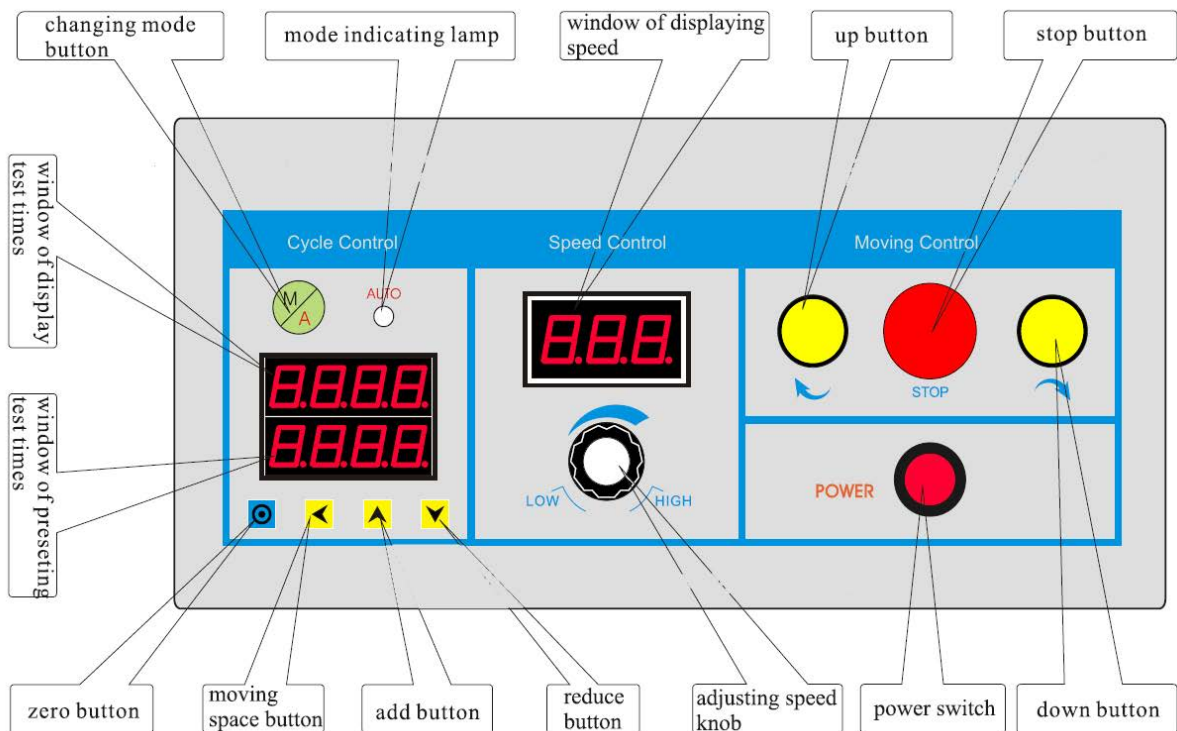
| Model | Maximum force | Speed range mm/min | Ø columns mm | Inner distance of columns mm | Column length mm |
|----------------|---------------|--------------------|--------------|------------------------------|------------------|
| TVM 5000N230N | 5.000 N | 10 -230 | 32 | 218 | 635 |
| TVM 5000N230NL | 5.000 N | 10-230 | 32 | 218 | 1135 |
| TVM 10KN120N | 10.000 N | 30 -120 | 32 | 218 | 1135 |
| TVM 20KN120N | 20.000 N | 30-120 | 35 | 215 | 1135 |
| TVM 30KN70N | 30.000 N | 5 -70 | 35 | 215 | 1135 |

Max. travel distance (Y): 214 mm (secured by electronical end switches)
 Speed precision: 3% of max.
 Power supply: 220 V; 50/60 Hz
 Operating temperature: from 10°C to 30 °C

7 Overview



8 Control panel



Power key: controls the whole machine's power, on and off.

Up button: the button lights up when moving up and extinguishes when the movement stops.

Down button: the button lights up when moving down and extinguishes when the movement stops

Stop button: stops movement.

Speed adjusting knob: adjusts the moving speed. Displays the percentage of the speed (is not displaying the actual speed)

Speed display window: displays the set moving speed at the present time.

Mode shift: shift test mode, shift during the test mode A (cycle) and M (manual).

Mode indicating lamp: light on means test mode A (cycle); light off means test mode M (manual), default is M (manual).

Time's window preset: displays cycle test times setting at the present, the range is 1- 1000 times.

Moving space button: character position of moving test times window.

Add button: increases the number in the times window preset, increase "1" when pressing the key one time.

Reduce button: minus the number in the times window preset, minus "1" when pressing the key once.

Test times window: displays the run times before ("1" time when touching Upper limit validly).

Zero button: setting the preset and running times to zero (only valid at test times window).

The movement of the test stand is determined by the lower and upper limiting ring. These limiting rings have to be preset before starting each new test.

9 Operation example

9.1 Examination before test:

- Cabling; turn on the power, the display automatically takes examination and simultaneously flickers 5 times, which is normal;
- First test the movement without test object, therefore use the limit switches manually to test its functions. Check the sound of the test stand in operation, if there is no abnormal sound to hear, everything is o.k.
- Manual test: The machine is defaulted to Manual Mode (M), in "Mode" state M the mode indicating lamp extinguishes, in the state of Manual test mode (M).The lamp starts shining, if being pressed continuously and the test stand starts moving up or down to test. If the upper or lower limit ring is touched during the test, the machine stops.
- Testing the automatic movement. Activate the Manual / Auto Mode push button, the Auto Mode indicator is flashes. Adjust the cycles (try to avoid the adjustment of "1") and start a test with the UP and DOWN buttons. After having finished the cycles, the test stand stands still and you will hear an alarm sound three times, so the test is finished.
- Single Automatic Test: Press "Changing Mode button" and pilot lamp of

“AUTO” is on. A (Auto cycle) mode test is working. Press the UP or DOWN button, the lamp is on and the machine works to test. If “Changing Mode button” is pressed again, “AUTO” is off and you enter Manual test mode. Now the equipment keeps the original moving direction. If during the test the upper or lower limit ring is touched, the test stand stops working and the test is finished.

9.2 Speed adjustment

Speed can be adjusted infinitely up to the max. possible speed before or during the test. This is displayed at the “Speed display window” if you adjust the speed with the “Adjusting Speed knob” The adjusted speed can be read on the display.

9.3 How to pre-set Cycles

It is possible to preset the number of cycles at the test stand. The pre-set value is shown in the sector below. It can be pre-set by the “add button” and “reduce button” as well as “moving space button”. In the upper sector the number of the run cycles is displayed. It is possible to backspace (clean to zero) the display with the help of “zero button”. Besides, single cycle times are better controlled within 2 hours, which aims to protect the machine and use it properly.

9.4 RS 232 Interface

This Test Stand is connected to the outside equipment by the RS-232 interface. The test stand is connected to the computer by RS-232, installing the SAUTER software (optional available, AFH-FAST/FD) from the CD to control movements up and down, to adjust the number of cycles directly at the PC and also the stop function of the test stand. By means of our software you can evaluate all data in relation to force, time or displacement

Connecting the port of the test stand to a SAUTER force gauge, the test stand can be piloted and there is the possibility of an overload protection; due to a parameter stop at the gauge; it can also record the force value curve.

Due to the inertia of the machine, the force value displayed on the force gauge will show overload when the test stops automatically. The value of the overload changes from the rigidity of the testing material. You can choose an appropriate low testing speed, or reduce the stop value accordingly.

9.5 Limit Function

In M (Manual) test mode, the movement will be stopped after the limit switches are achieved.

In A (Automatic) test mode, the movement stops for about 3-5 seconds, reaching the limit switches and then starts again to move in opposite direction.

To guarantee an unobstructed working flow for the tests, please take care that the limit switches are positioned as exactly as possible, not to destroy the test equipment or the test object at a too long/short travel distance.

10 Warning

If force measurements are carried out incorrectly, this can lead to serious injuries of persons and objects. Therefore force measurements are only allowed to be carried out by trained and experienced staff!

Please avoid that forces are impacting from the test stand on the force gauge, which are exceeding the max. force of the measuring instrument or which do not impact directly from the test stand to the instrument.

11 Assembling instruction to a complete measurement system with internal and external force measuring cell

Unpack the test stand and check it for damages

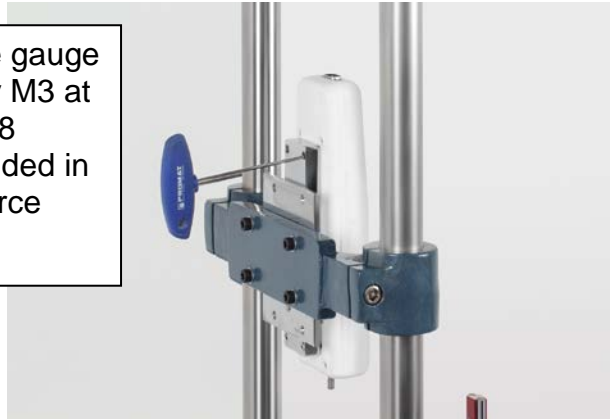
Mount the adjusting feet and insert the plug of power supply



Mounting a force gauge with INTERNAL sensor by means of an adaptor plate



Tighten the force gauge with an Allen key M3 at all 4 screws M3x8 (screws are included in delivery of the force gauges)



Force gauge with internal force cell mounting, finished:

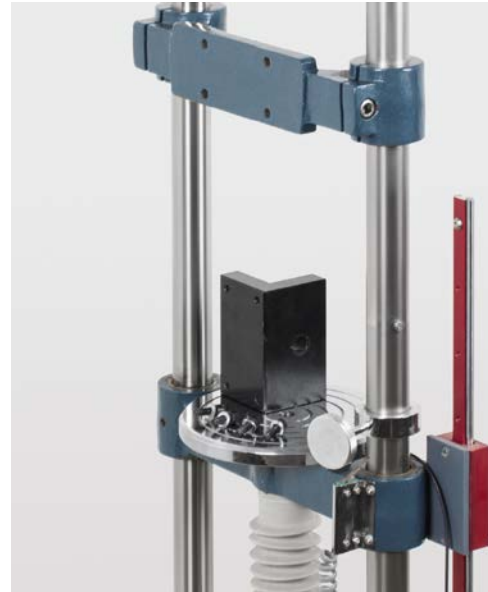


Mounting of force gauges with EXTERNAL force measuring cell, starting from FH 1KN

Removal of the existing adaptor plate for force gauges with internal force measuring cell with an Allen key M6



Fitting bracket AFM
41 with Allen screws
M6 x 35



Fixing the fitting bracket AFM
41 with M6x35 Allen screws
steadily with an Allen key



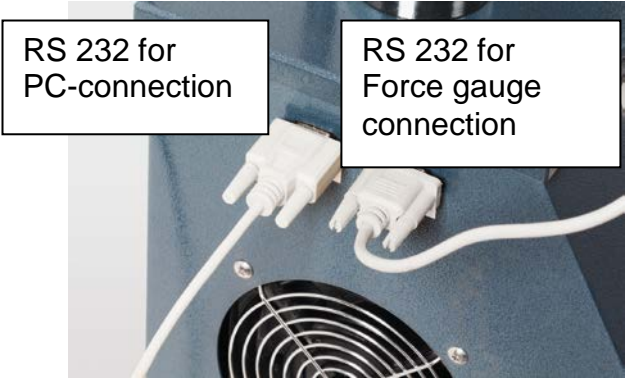
The external force measuring cell has to be mounted at the fitting bracket AFM 41 with an M12x40 screw (at TVM 5KN and 10KN) and with a M12x80 screw (at TVM20KN and TVM 30KN), included in delivery.



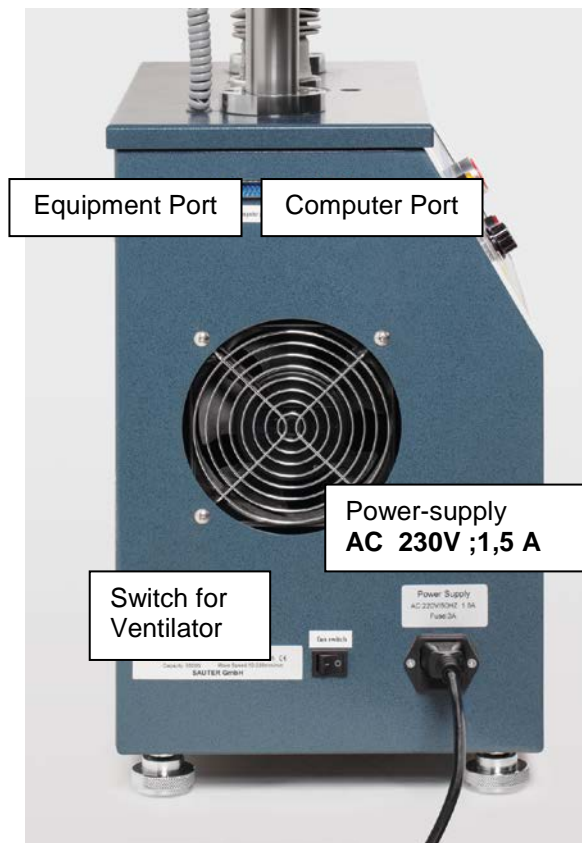
The external force measurement cell has to be connected with the display unit



The FH force gauge mounted on the test stand now has to be connected by means of the RS232 cable with the test stand to the Equipment-Port.



Cabling connections at TVM-N



Test stand cabling with connection to a Computer

with FH-A01 and AFH 14

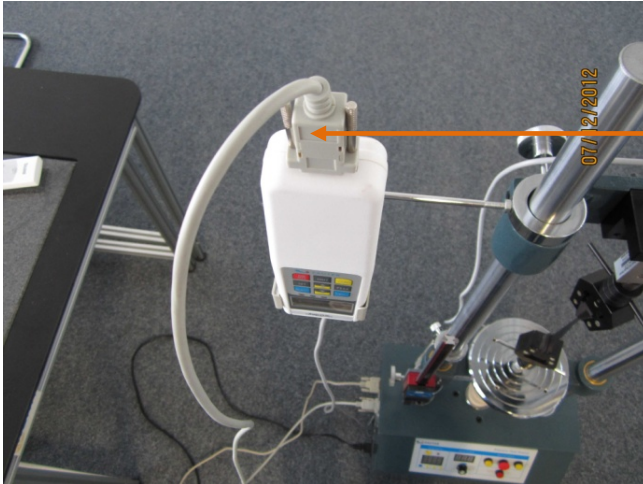


with FH-01 and AFH 12



12 Cabling of TVM-N with a SAUTER force gauge and a length measuring device

Here shown in an example with an FH. This is similar with all other compatible instruments of our SAUTER FL series.



View from above
FH with FH-A01 cable. A plug has to be inserted into the socket of the FH, the other one into the equipment port of TVM-N



The plug of the external force gauge measuring cell has to be plugged into the socket of the FH force gauge.



The connections of TVM-N:

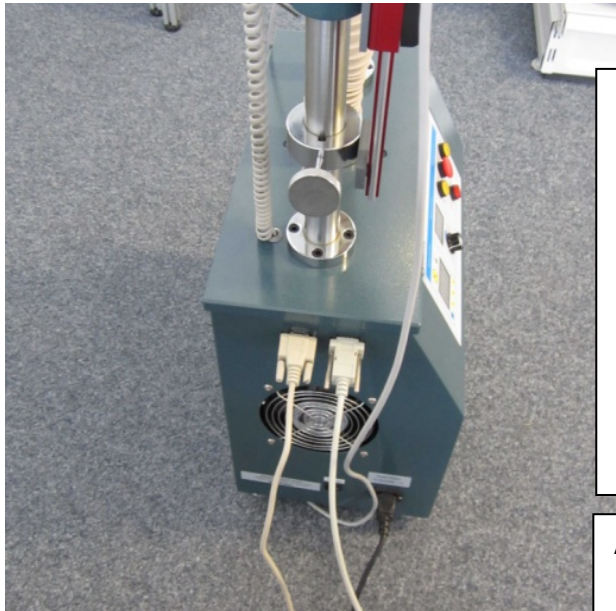
The cable of FH has to be plugged into the right socket

The connection cable to PC has to be plugged into the left socket (e.g. AFH 12)



Cabling of the length measuring device:

Insert the plug into the socket of the length measurement device and connect the other end to a PC (this depends on the length measurement device ordered)



If everything is connected, switch on the PC and all other instruments and start software.

Be sure that the chosen COM-port of your system has been identified and please compare it with the specified software accesses. If required, they have to be changed into the right one.

AFH 12 – USB-RS Converter

