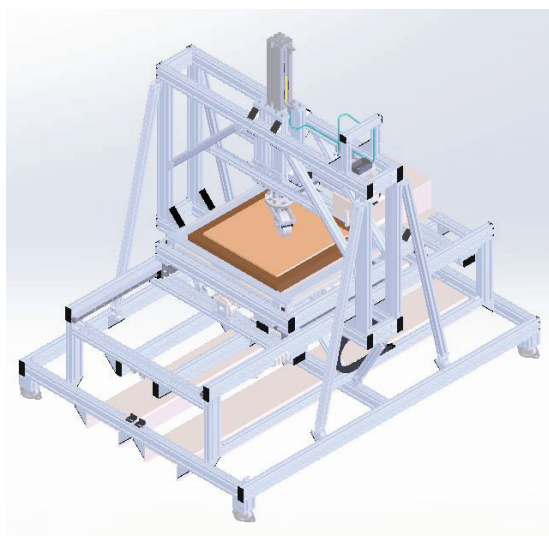


Humboldt Mfg. Co.
875 Tollgate Road
Elgin, IL 60123, USA
Toll Free: 1.800.544.7220



Operating instructions

1.0266 Wheel Abrasion Machine (RWA)



without enclosure



with enclosure

Importance of the operating instructions

Please read the operating instructions completely and familiarize yourself with them before putting the testing machine into operation.

Inhaltsverzeichnis

Pages

1. Basic information	3
1.1 Labeling.....	3
1.2 Intended use	3
1.3 Improper use	4
1.4 Warranty.....	5
1.5 Safety instructions.....	5
1.5.1 General information	5
1.5.2 Obligation of the operator	6
1.5.3 Safety devices	7
1.5.4 Regular testing.....	7
1.5.5 Information on the CE mark.....	7
1.6 Reception, transportation	8
1.6.1 Reception	8
1.6.2 Transportation.....	8
1.7 Scope of delivery.....	9
1.8 Electrical connections.....	10
2. Machine properties.....	11
2.1 Description, structure	11
2.2 Technical data	12
2.3 Noise emission values.....	13
3. Commissioning	14
3.1 Calibration	14
3.1.1 Sample height.....	14
3.1.2 Force (force display)	15
3.1.3 Center position sample table	16
3.1.4 Speed of the axles	17
4. Operation	17
4.1 Operating the control unit	17
4.2 Main control menu.....	19
4.3 Preparation.....	19
4.4 Wheel change (standard change)	21
4.5 Settings	22
4.6 Run test.....	23
4.7 Interruptions	25
4.8 End of test	25
4.9 Manual operation	26
4.10 Selection of the free test.....	27
4.11 Brightness	28
4.12 Suction	28
5. Service menu.....	29
6. Recurring operating steps	30
7. Maintenance and cleaning	30
8. Troubleshooting.....	32
9. Set out of operation	33
10. Customer service	34
10.1 Date of issue of the operating instructions.....	34
10.2 Copyright.....	34
10.3 Spare parts supply - Address	34

Attachments:

Declaration of Conformity

1. Basic information

1.1 Labeling

Labeling of the manufacturer:	see 1st page of the operating instructions
Machine labeling:	Refer to the rating plate on the machine, which shows the full characteristics and electrical features.

1.2 Intended use

This description contains the necessary information for the intended use of the products described therein. It is intended for technically qualified personnel. The operator must precisely define the area of responsibility of his personnel.

Qualified personnel are persons who, due to their training, experience and instruction as well as their knowledge of relevant standards, regulations, accident prevention regulations and operating conditions, have been authorized by the person responsible for the safety of the machine to carry out the required activities and are able to recognize and avoid possible dangers (definition of qualified personnel).

The requirements and limit values specified in these operating instructions and the safety instructions given must be strictly observed. Any use beyond this is considered improper use. If special working methods or conditions are required, the manufacturer's advice and approval must be obtained.

The testing machine is used exclusively to determine the wear resistance according to EN13892-5 and EN13892-7 against rolling stress of molded mortar bodies made of cementitious screed, synthetic resin screed or other screeds suitable for wear layers under loaded wheels.

Speeds, cycles and travel paths can be changed within the technical capabilities of the testing machine (free tests).

Attention 	The instructions given in these operating instructions only apply to the correct use of the machine. In order to carry out the test correctly, the user must observe the specific standards for the test.
--	---

These operating instructions contain safety instructions that must be followed to avoid the risk of death, injury, damage to the equipment or improper servicing. They have the following meaning:

Attention 	This warning indicates dangers that can lead to material damage.
Danger 	This warning indicates dangers that can lead to serious injury or death.
Note 	This symbol provides practical information on handling.

1.3 Improper use

Unsuitable samples.
For example, tests in which the sample is destroyed.
Tests with forces above 2000N.

1.4 Warranty

In principle, our **General Terms and Conditions** apply.

The manufacturer guarantees that these operating instructions have been prepared in accordance with the technical and functional parameters of the product supplied. The manufacturer reserves the right to add supplementary information to these operating instructions.

The manufacturer grants the statutory warranty.
Wearing parts are excluded from this guarantee.

The manufacturer only guarantees fault-free operation if the specifications in these operating instructions are observed and the product is used as intended.

The manufacturer is not liable for damage resulting from improper use of the product or failure to observe the specifications and rules of conduct in these operating instructions.

Warranty claims against the manufacturer are excluded if the product is modified in design or function without the written consent of the manufacturer.

Infringements may be prosecuted under criminal law.

1.5 Safety instructions

1.5.1 General information

Precise information on all safety instructions and warnings contained in these operating instructions and their correct technical implementation are a prerequisite for the safe installation, commissioning, safe operation and maintenance of TESTING products. It is therefore essential that all measures are carried out by qualified personnel. All persons involved in project planning, installation and operation must be familiar with the safety concepts and be qualified in this respect.

For reasons of clarity, the operating instructions cannot provide all the details for handling in all conceivable applications. Nor can all conceivable types of installation, design, operation and maintenance be taken into account.

Qualification of the operating personnel

Only trained specialist personnel may start up and operate the testing machine.

The following requirements also apply:

- You are physically and mentally fit.
- They have been trained to operate the testing machine independently.
- They have been instructed in the proper use of the machine.
- You are familiar with the necessary safety devices.
- They are authorized to put devices, machines and systems into operation independently in accordance with the standards of safety technology.
- They are authorized by the employer to work independently with the testing machine.

1.5.2 Obligation of the operator

The person operating the machine must ensure that they do not endanger themselves or others. Only persons who have been instructed in the operation of the machine may operate it independently.

If operational safety is impaired by defects or damage to the machine, it must be taken out of operation immediately and only used again after all sources of danger have been eliminated.

Check that the information on the rating plate corresponds to your mains voltage. Only connect to alternating current.

Only use the machine for the purpose described here; improper use will invalidate the warranty.

If the machine or the connecting cable is damaged, pull out the mains plug immediately.

The machine has been built in accordance with the state of the art and recognized technical regulations. Nevertheless, its use may pose a risk to the life and limb of the user or third parties or cause damage to the machine's technical parts or other material assets.

Die Maschine ist nur zu benutzen

- for the intended use
- and in perfect condition in terms of safety.

Any faults that may impair safety must be rectified immediately. The machine must not be used until the damage or defects have been rectified.

Manipulations and modifications to the machine (electrical, mechanical changes, etc.) that have not been approved in writing by the manufacturer are not permitted and the manufacturer will not accept any claims for damages.

Ensure that no dangerous situations arise during work. Switch off the machine immediately if it is not working properly and notify the manufacturer or the dealer's authorized service personnel immediately.

1.5.3 Safety devices

Safety devices are all protective devices or parts that eliminate or reduce the risk of accidents for the operators without the operators themselves having to intervene. The hazardous area is the space inside the testing machine where the operator can be injured.

The machine is monitored by safety-related functions and stops automatically when the emergency stop is activated or one of the doors is opened.

There are sensors on the pneumatic cylinder for height detection, which stop the testing machine, for example, in the event of overrunning, breakage, excessive wear or damage to the test specimen.

The machine is electrically equipped with a 32A circuit breaker.

The air pressure is monitored by a pressure switch.

There is therefore a risk of danger to the operator in some procedures. However, the risk can be eliminated if the procedures described in this manual are followed carefully and suitable protective measures are taken.

The manufacturer accepts no liability for personal injury or damage to property resulting from failure to follow the instructions and use protective devices.

In the event of incorrect operation, misuse or operation by untrained personnel, there is a risk to the health of the operator and to the machine or other property.

1.5.4 Regular testing

The machine must be inspected at regular intervals to ensure that it is safe to use. There are national regulations that must be complied with.

1.5.5 Information on the CE mark

TESTING Bluhm & Feuerherdt test devices bear the CE mark.

The CE marking confirms the conformity of the product with the EC directives to be taken into account for the product and compliance with the “essential requirements” specified therein, the specified generally relevant level of protection. The conformity assessment procedure was carried out in accordance with the applicable EC directives.

1.6 Reception, transportation

1.6.1 Reception

Check the delivered consignment for visible external condition. If the condition is in order, the consignment can be accepted by the carrier (parcel service or forwarding agent).

If there are no complaints or transport damage, the completeness of the consignment must be checked on the basis of the delivery bill.

If transport damage only becomes apparent after the goods have been accepted, a protocol with an exact report on the extent of the damage must be drawn up immediately. Send us the report immediately by E-Mail. Absolutely no changes may be made to the delivered consignment.

On the basis of this report, we should be able to assess whether the damage

- by the delivery of spare parts or
- by sending a specialist fitter or only
- by returning the machine.

1.6.2 Transportation

The machine can be moved to its destination by means of a pallet truck or other suitable ground conveyors, which must be able to reach under the frame.

Slinging with ropes or similar lifting gear is only permitted if it is ensured that no lateral forces are exerted on the packaging and thus possibly also on parts of the machine.

The weight is approx. 800 kg.

Attention 	Protect the machine from environmental influences. Water and humidity can oxidize and damage them.
--	---

Make sure that the machine has not obviously been damaged during transportation. If in doubt, do not connect the machine and contact your seller.

The machine may only be operated in dry indoor areas!

Roller tester
1.0266



1.7 Scope of delivery

Testing machine with enclosure.
Connection cable for the power supply.
Separate plug and coupling.
Air pressure connection on the machine.
Suction ring without vacuum cleaner.
Operating instructions with pneumatic diagram
Electrical circuit diagram.

1.8 Electrical connections

Danger 	The electrical connections must be carried out by specialists. The connection terminal (yellow - green) must be connected to an earthing system in accordance with the standards before any other connections are made. Before connecting, please check your electrical connections with regard to frequency, power supply, etc. The socket outlet must have a safety device against overcurrent in accordance with the machine voltage and standards. The technical characteristics of the safety device must comply with the standards applicable in the country in which the machine is installed.
Attention 	The manufacturer accepts no liability for any damage resulting from failure to observe the above information.

Electrical tolerances:

Actual voltage: 10 % of the rated voltage

Frequency: 1 % of the nominal frequency continuously; 2 % of the nominal frequency briefly

The power supply must not be interrupted for longer than 3 ms or set to zero. No more than 1 second may elapse between two interruptions.

The interruptions must not exceed 20 % of the voltage peak for more than one cycle. No more than 1 second may elapse between two interruptions.

The manufacturer accepts no liability for personal injury or damage to property resulting from failure to follow the above instructions.

Supply and signal lines must be installed in such a way that interference signals (such as inductive or capacitive interference) do not impair the function of devices and machines.

2. Machine properties

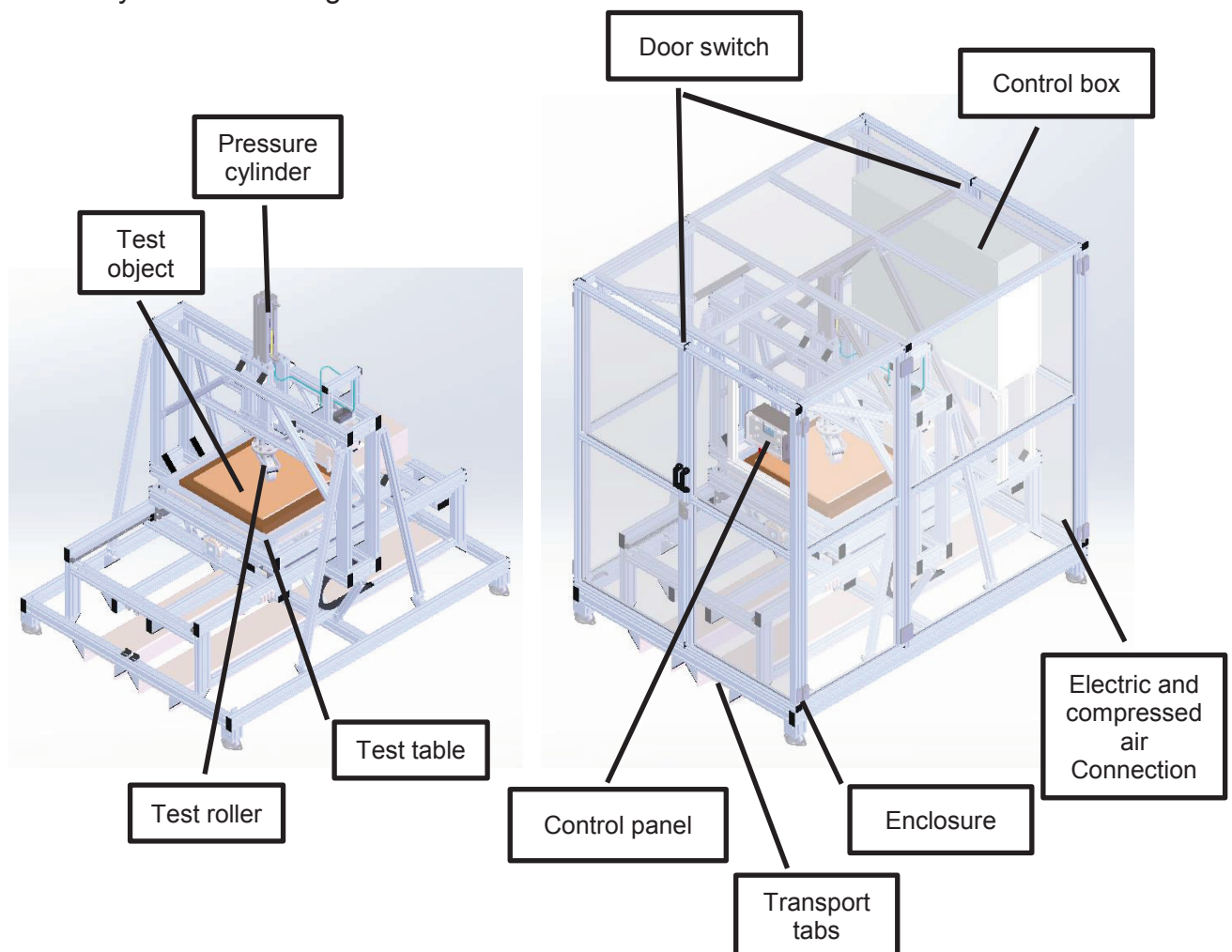
2.1 Description, structure

The testing machine construction was mainly made from aluminum system profiles. It can be divided into two groups, the test unit (roller tester) and the enclosure. The enclosure has two doors that allow easy access to the test unit.

The test specimen, a concrete slab covered with screed, is repeatedly subjected to a load from a heavily loaded roller. The test specimen is fixed to the test table. The roller moves in two directions at different frequencies. The movement generates normal and shear loads on the specimen.

The machine is controlled by a Siemens PLC with Siemens panel.

The machine is monitored by safety-relevant functions and stops automatically when the emergency stop is activated, when one of the doors is opened or if the test specimen is excessively worn or damaged.



2.2 Technical data

Width/depth/height:	1520 x 2000 x 1995 mm
Weight: approx.	800 kg
Electrical connection:	400/230 VAC / 50 Hz
Power consumption:	max. 6000 W
Working height:	765 mm above the floor

Attention 	Connection without RCD! (Frequency inverter in the testing machine!) Only 1-phase connection with 32A! System fuse protection with 25A Connection cable between 6 and 10mm²
--	--

Test cycles:

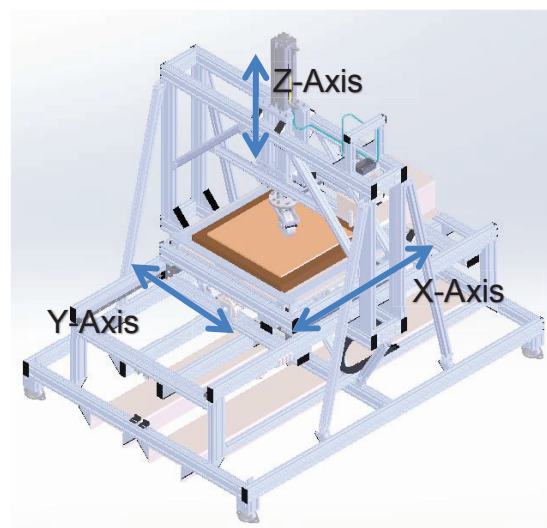
For a test in accordance with EN13892-5, the frequency and the stroke are:

For the X-axis	7 strokes/min	1stroke=2*(390±2) mm.
For the Y-axis	1.72 strokes/min	1stroke=2*(260±2) mm.

For a test in accordance with EN13892-7, the frequency and the stroke are:

For the X-axis	23.6 strokes/min	1stroke=2*(210±2) mm.
For the Y-axis	5.8 strokes/min	1stroke=2*(150±2) mm.

For a free test within the parameters of EN13892-5 and -7



Attention 	The samples must be large enough so that the wheel can travel the prescribed distance and does not leave the sample during the test! The machine stops in this case! It may happen that the wheel is pushed, resulting in a longer travel distance.
--	--

2.3 Noise emission values

The specified noise levels are not necessarily safe levels for the operator. The level to which the operator is exposed is also influenced by other factors, such as exposure time, environment, other equipment installed nearby, etc.

The exposure levels can be used to assess the damage that can be caused by the noise.

Sound pressure level equivalent A at the workplace	65 - 71 dB(A)
Standards for the above information	EN ISO 3746

Continuous use of the machine together with other loud devices 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, it is recommended to wear protective equipment such as hearing protection (headphones). If the operator is exposed to a daily noise level of more than 90 dB(A), the wearing of protective equipment is mandatory. Further information can be found in the guidelines/standards applicable to the country in which the machine is installed.

The machine belongs to the category of work equipment whose noise emission generally does not reach a rating level of 90 dB(A) (according to DIN 45 635).

The noise caused by the machine depends on various factors, e.g. product, installation site, etc.

It is therefore impossible to specify a generally valid sound pressure level.

3. Commissioning

The machine may only be operated in dry indoor areas!

Set up and align the machine on a stable, level and vibration-free surface. To guarantee proper function, it is necessary to align the machine horizontally in the XY plane. The installation feet can be used for this purpose.

The installation must be carried out by a specialist.

The following limit values apply:

Permissible temperature: from + 5 °C to + 40 °C

Permissible humidity: from 30 % to 75 %

Max. Altitude: 1,000 m above sea level

Minimum floor load 1000 kg/m²

The operator's main working position is in front of the machine.

The machine must be positioned so that it is also free on both sides so that maintenance work can be carried out easily.

3.1 Calibration

The machine has been tested and calibrated by the manufacturer. The measuring equipment used is checked by state institutes at regular intervals.

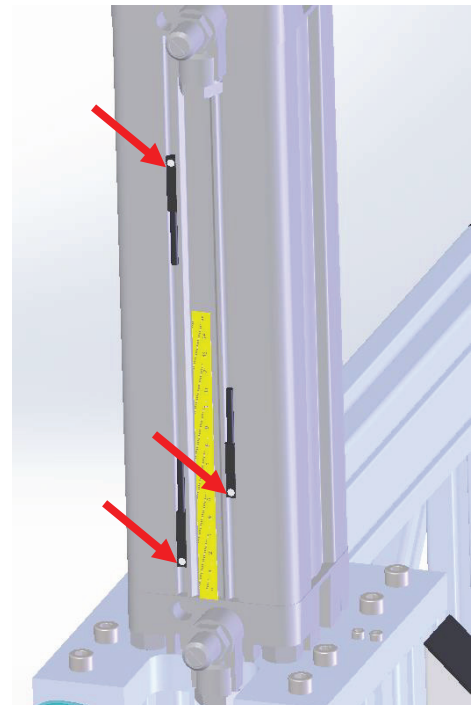
3.1.1 Sample height

The upper limit switch does not need to be changed. Depending on the standard used, a large or small wheel (different height, different weight) is used.

A limit switch is available for each of the two standards, which triggers if the specimen is destroyed or excessively worn.

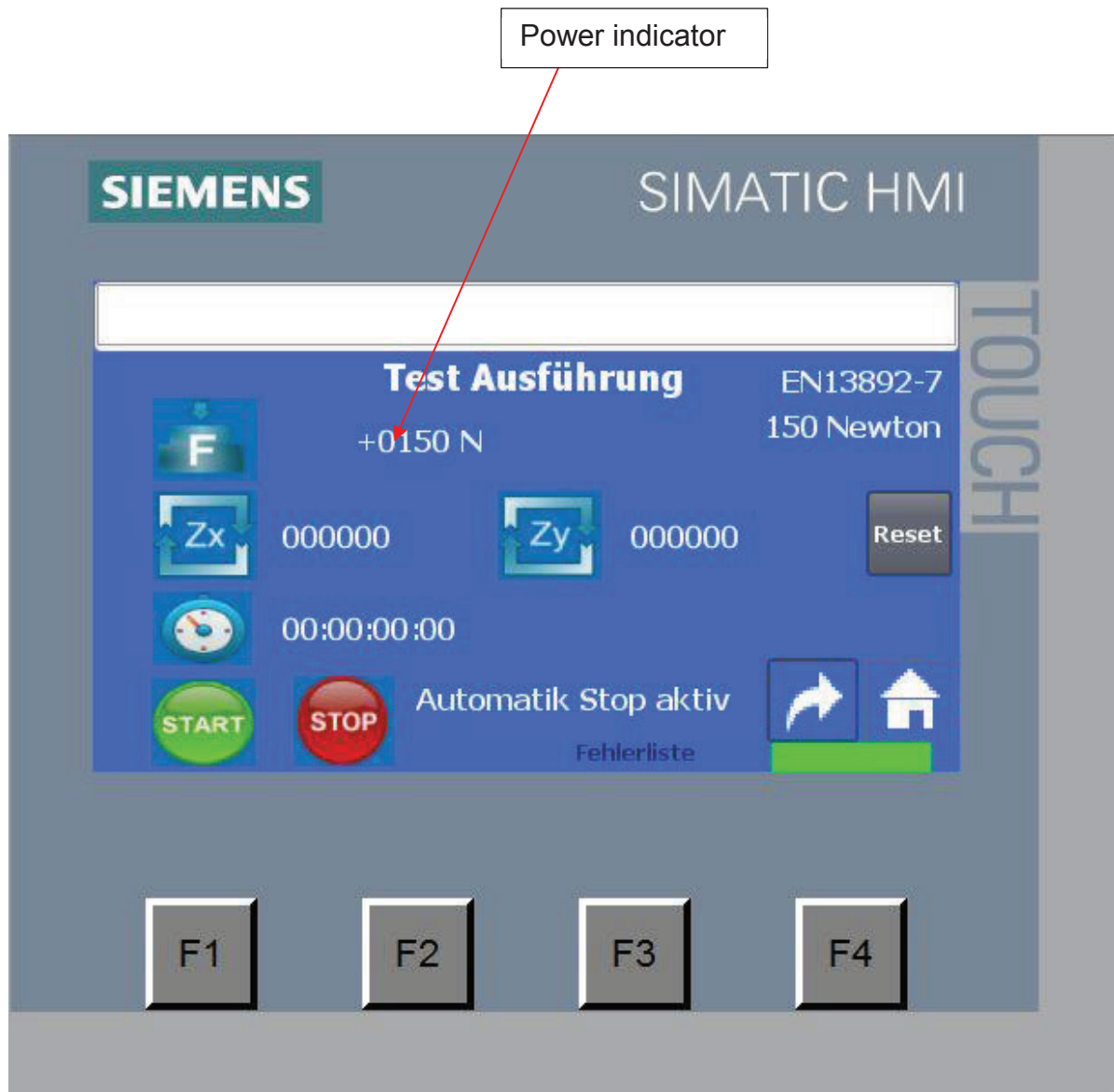
The two limit switches must be set according to the respective sample height (standard and wheel size). Manual operation (chapter 4.8) can be used for this purpose. With manual operation, the respective wheel is first placed on the sample and then next to the sample on the sample support plate. When it is placed on the carrier plate, the corresponding limit switch must be triggered.

If it does not trigger, the limit switch must be moved accordingly.



3.1.2 Force (force display)

The force is measured at the factory with a reference load cell under the respective wheel and adjusted accordingly in the respective display (standard or wheel). Testing Service can calibrate the force display via the service menu.

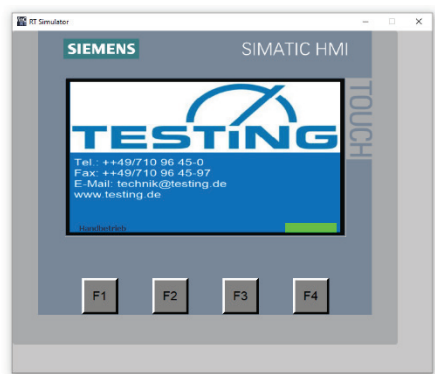
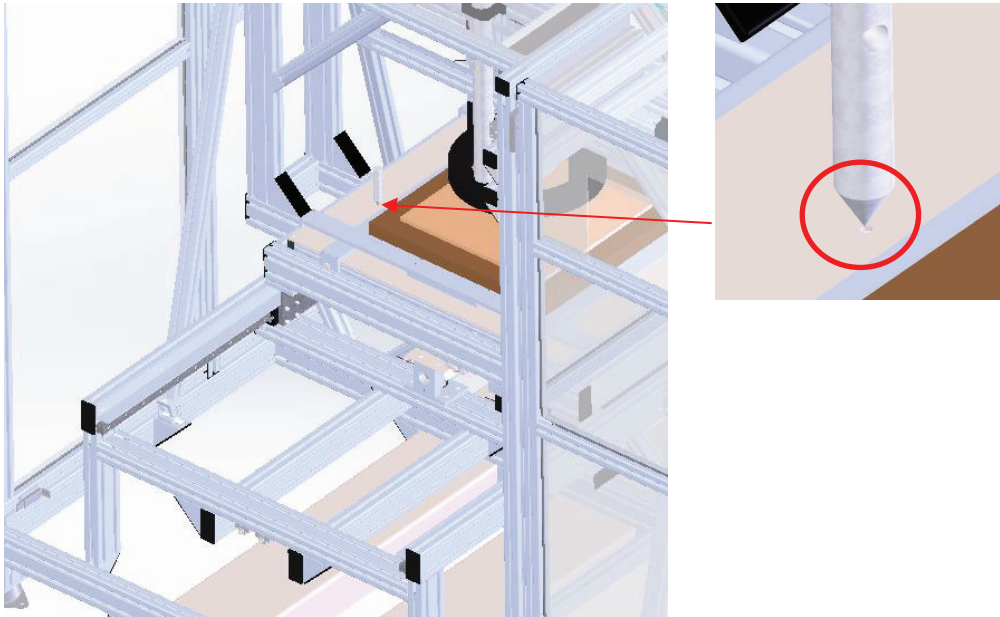


Note 	Only the force set at the start of the test is displayed. A tolerance value is monitored in the background; if this is exceeded or not reached, the machine stops.
---	---

3.1.3 Center position sample table

The sample table is already set to the correct position at the factory.

The center position of the sample table can be checked with the help of the plumb bob inserted. If the position is not correct, it can be corrected via the “Teach center position” menu item in the Settings menu.



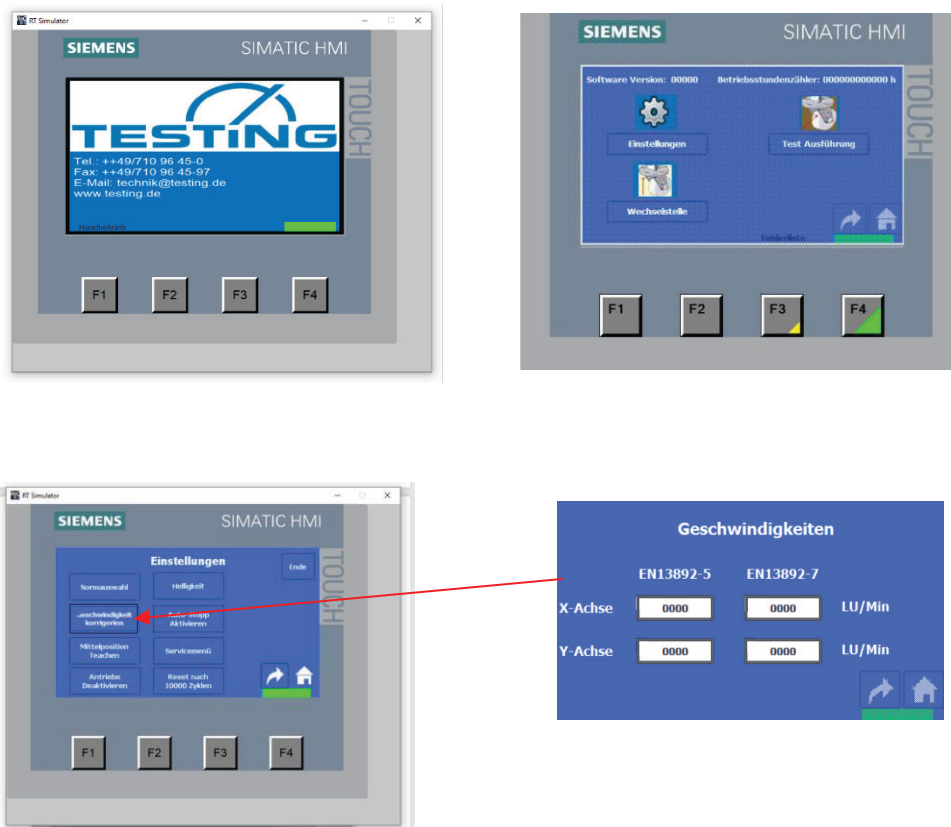
If automatic mode is not activated, the center position can be set here.
The position is adopted when saving.

Default values: Transfers the old values of the ideal position to the system

3.1.4 Speed of the axes

The speeds of the axes are preset at the factory and do not normally need to be changed.

However, if they do need to be changed, the speeds can be adjusted via the Settings - Speeds menu to adjust the speeds.



The speeds can be set separately for each standard and axis.

They are entered in "LU/min" (load revolutions per minute).

To determine the correct speed value, the deviation of the number of cycles must be determined as a percentage.

This percentage value is then used to change the respective speed value of the axis concerned.

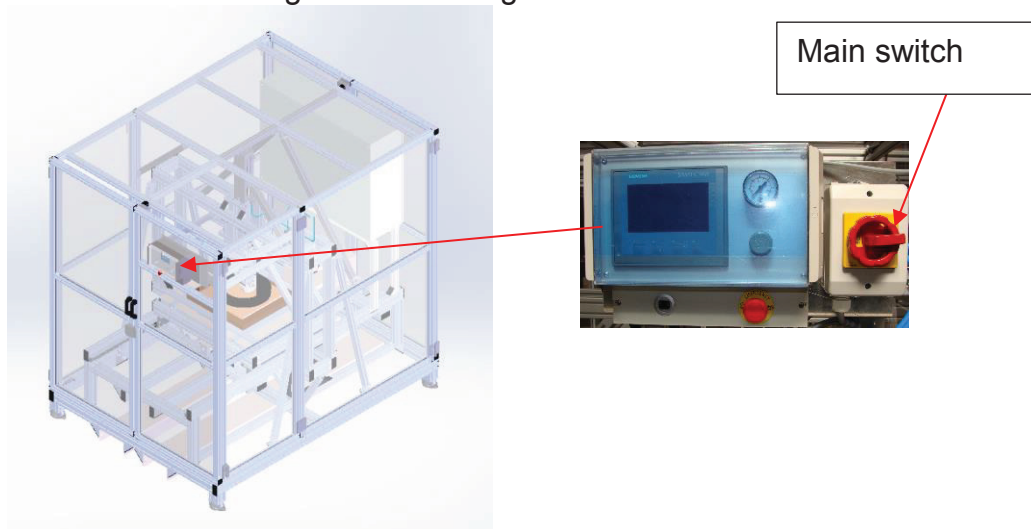
If the number of cycles of an axis deviates by 5%, for example, the speed value of this axis must also be changed by 5%.

4. Operation

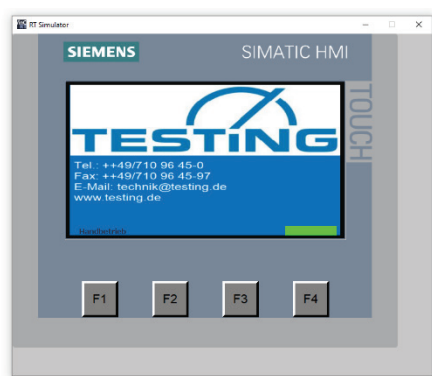
4.1 Operating the control unit

Roller tester 1.0266

Switch on the testing machine using the main switch.



Start image:



Button „F4“: Press the button to acknowledge the error status
Green - no error
Yellow Flashing red - Error

Button „F1“: Switches to the manual mode system

Touch screen function: to the main screen of the system operation

General:
House: Back to the main screen
Arrow: to the previous window selection

4.2 Main control menu



Settings: System settings

Control option for the platform

Exchange point: Enables the test specimen to be changed on the door

Test execution: moves the platform under the Z-axis

4.3 Preparation

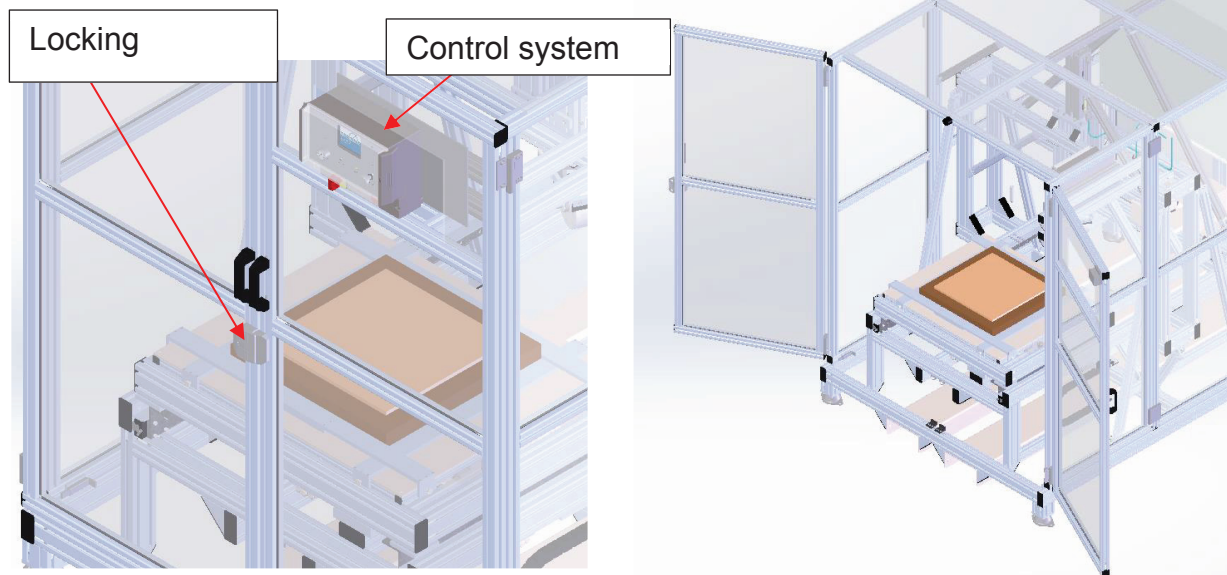
Check whether the correct wheel for the desired standard is fitted.

Press F4 if a red bar is flashing.

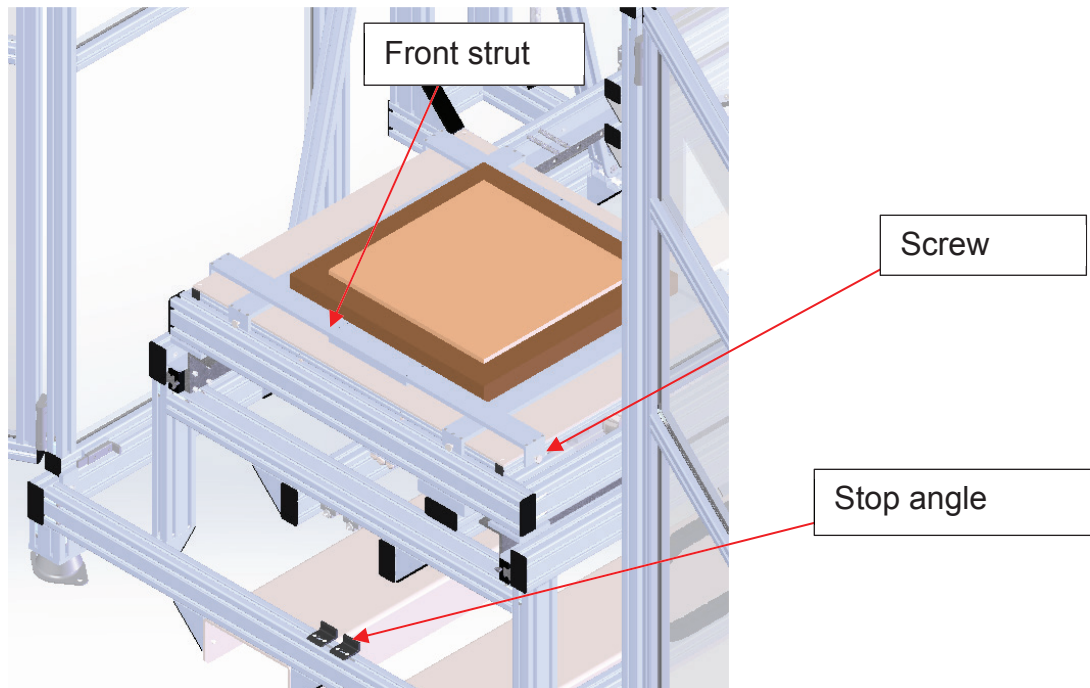
Approach the change point to place a sample in the machine.

To open the doors, hold the right-hand door closed, lift the lock and open the left-hand door first.

Attention 	Fold away the control unit after opening the doors! (Risk of injury!)
--	--



To change or insert the sample, unscrew the screws of the front and one side strut. Then remove the two struts.
The other two struts can remain in the machine if the sample dimensions are the same.
Remove the old sample, if present.



Insert the new sample and fix it with the struts (tighten the screws!).

Attention 	The sample must be exactly centered on the sample table, otherwise the wheel may move off the sample during the test and the test will stop automatically. If necessary, set the lower limit switch to the desired standard according to the sample height. (Manual operation [chapter 4.8] can be used for this with the doors closed).
--	---

Note 	The wheel can also be changed in this position (chapter 4.4).
---	--

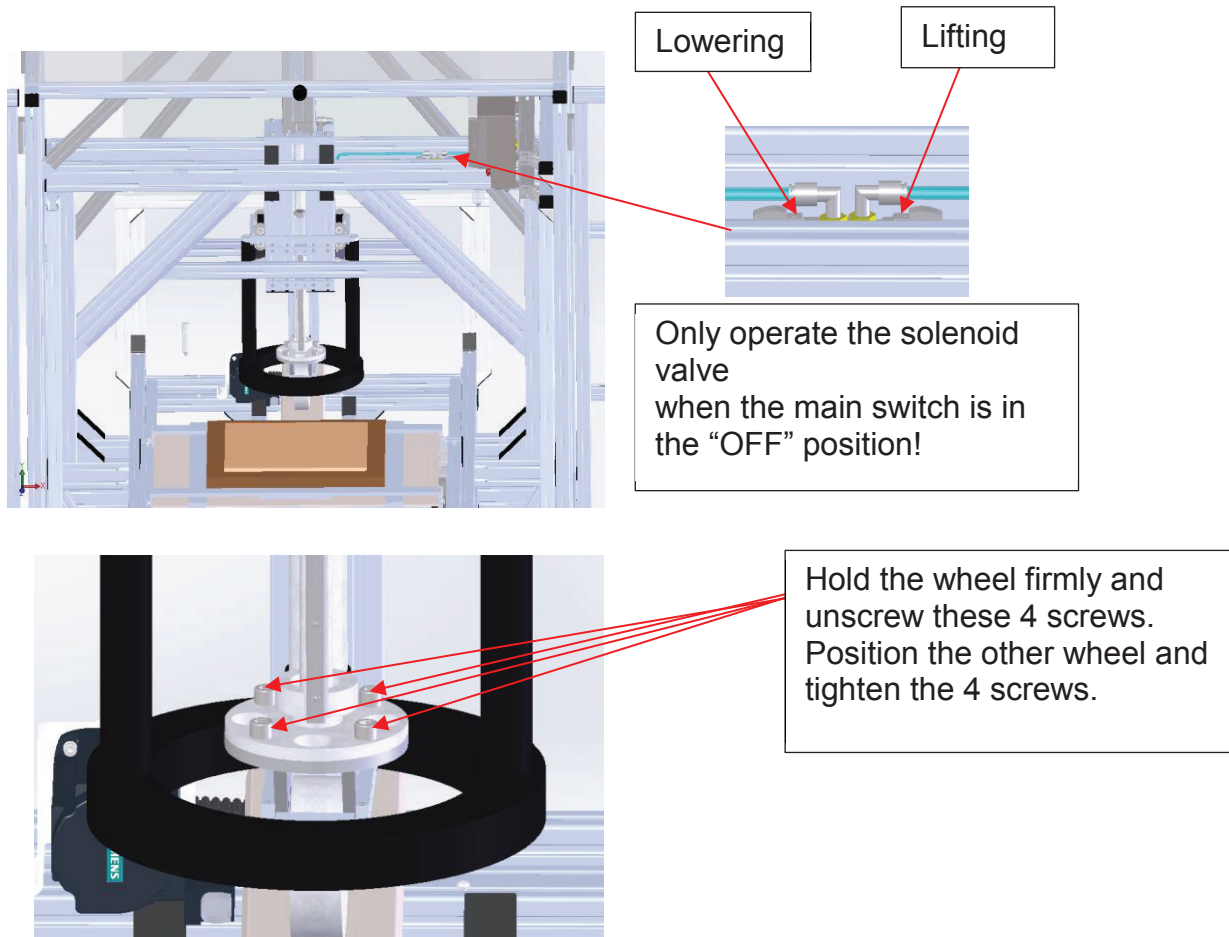
Close the doors.

Attention 	The doors must rest on the stop brackets, so that they remain firmly closed.
--	---

Exit the changeover point.

4.4 Wheel change (standard change)

To change the wheel, the sample table must be in the change position.
Lower the wheel manually using the solenoid valve.
(Manual operation can also be used [chapter 4.8])



Lift the wheel again.

Attention 	The large wheel is heavy (approx.: 6 kg), if the wheel is only held by the roller, the fork of the wheel can fold down after unscrewing the screws. Risk of injury!
Attention 	Note the height of the suction ring! It must always be ensured that the suction ring is above the sample. To prevent the ring from rubbing on the sample or the sample from moving against the ring. This can destroy the ring! (Chapter 4.11)

4.5 Settings



Auto Stop: causes the system to move to the output point at the set number of cycles when selected

Drives

Deactivate: Gives the option of setting the drives to idle mode

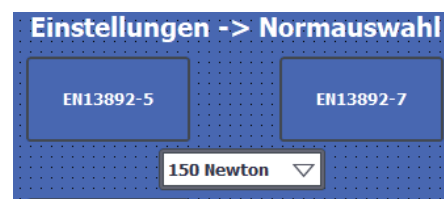
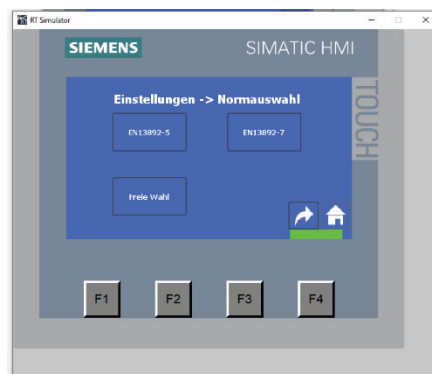
Reset after

10000 cycles: If activated, the number of cycles and the time are only zeroed when the maximum number of cycles is reached

End:

closes the user interface and allows access to the panel's operating system

Selection of the standard:



This is where the standard is selected:

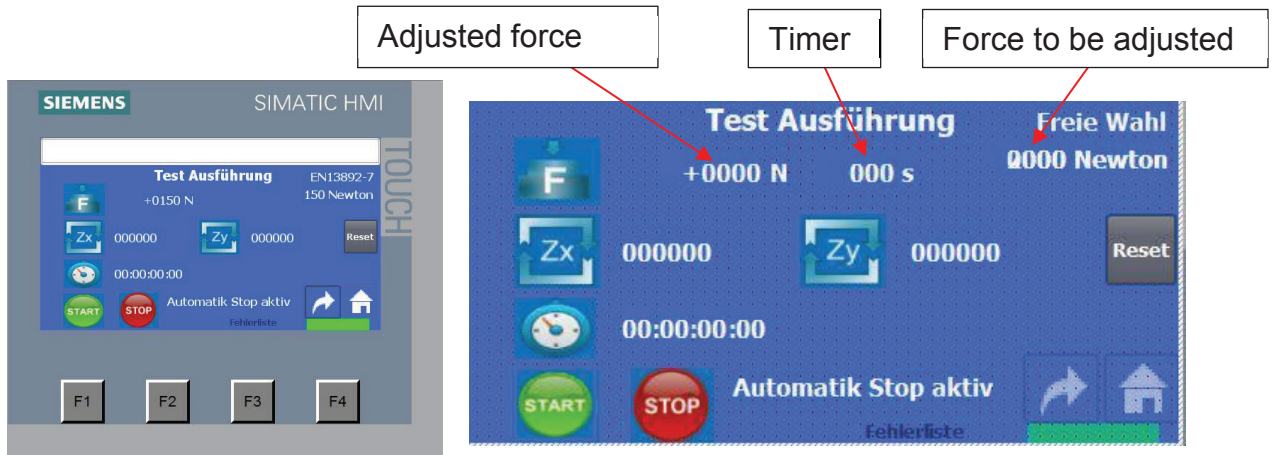
'DIN EN 13892-5' works with a wheel distance of 45 mm

'DIN EN 13892-7' works with a wheel distance of 19 mm and opens a Newton selection register (150 to 550N)

'Free choice' allows you to enter your own test parameters (chapter 4.9).

4.6 Run test

First select the standard and, if applicable, the force (4.3.1)



Starts the test (the force must then still be set)
If the force is set correctly, a timer runs until the start to ensure that the pressure is set stably.



Stop the test

Reset:

Zeros the count of the number of cycles and the time indicates the applied force

N:

F3:

Large display of a possible error list



The window provides information on which errors are currently present.

e.g.:

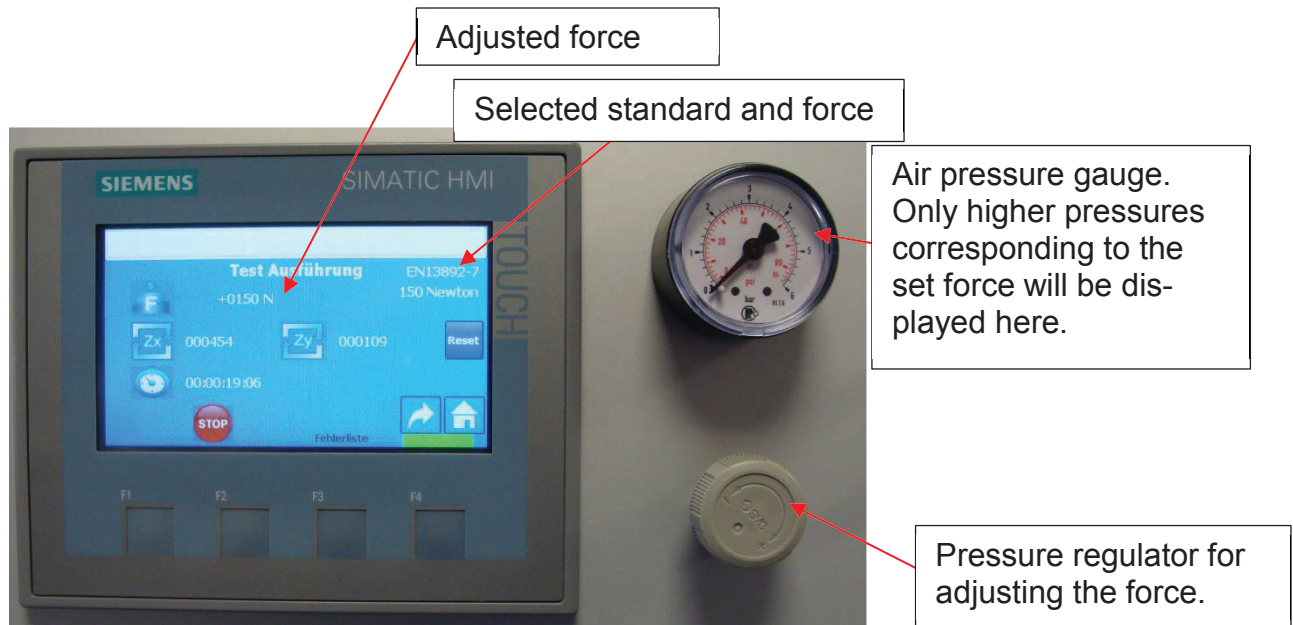
“X-axis switch-on lock is active” means that the axis has no release for movement, e.g. due to an open door

“Z-axis lower end position switch triggered” the Z-axis has reached the lower end position switch

Press the start button.

The sample table moves to the center and the wheel is lowered.

Now you have to set the force according to the selected standard.



The force is carefully (slowly) adjusted from the low value to the high value.

Please note that the value is still lagging (the force increases after the pressure regulator is no longer moved).

As soon as the preset force is reached and remains stable, the test starts automatically

Rotations of the pressure regulator from force to force

From 150N to 250N	Approx: 90°
From 250N to 350N	Approx: 115°
From 350N to 450N	Approx: 140°
From 450N to 550N	Approx: 165°

Attention 	The force may only be set from bottom to top, otherwise incorrect values may be displayed. Only adjust the force very slowly and gradually, the regulator works very finely and runs after.
Note 	The force display is not measured continuously during the test procedure, only the force set at the start of the test is displayed.
Danger 	Be aware that incorrect entries can lead to a malfunction, machine failure, major material damage or danger to operating personnel.

4.7 Interruptions

The test is interrupted if the emergency stop is actuated, the door is opened or the lower limit switches of the pneumatic cylinder respond.

Once the cause of the stop has been rectified, the test can be continued via the.



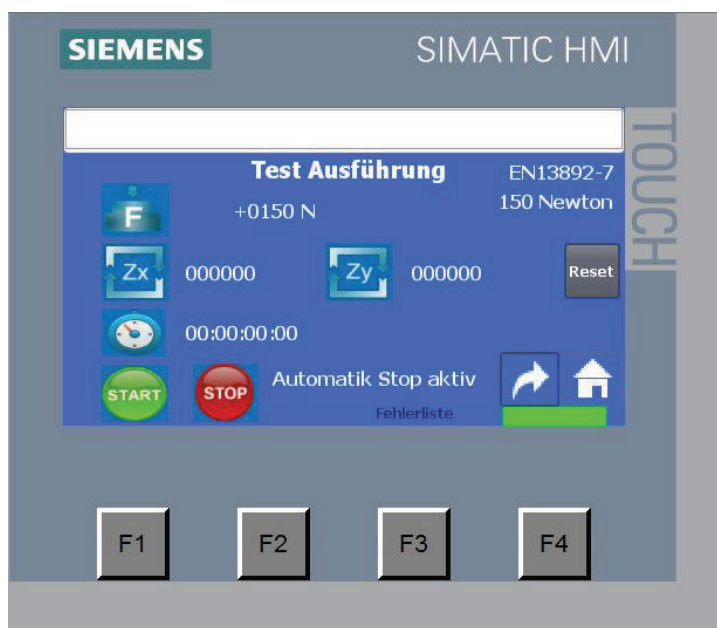
Button to continue the test

4.8 End of test

Once the test is complete, the testing machine stops automatically if the auto-stop is activated in the Settings menu. The sample table moves automatically to the change position.

The number of cycles performed for each axis and the time required are shown on the display.

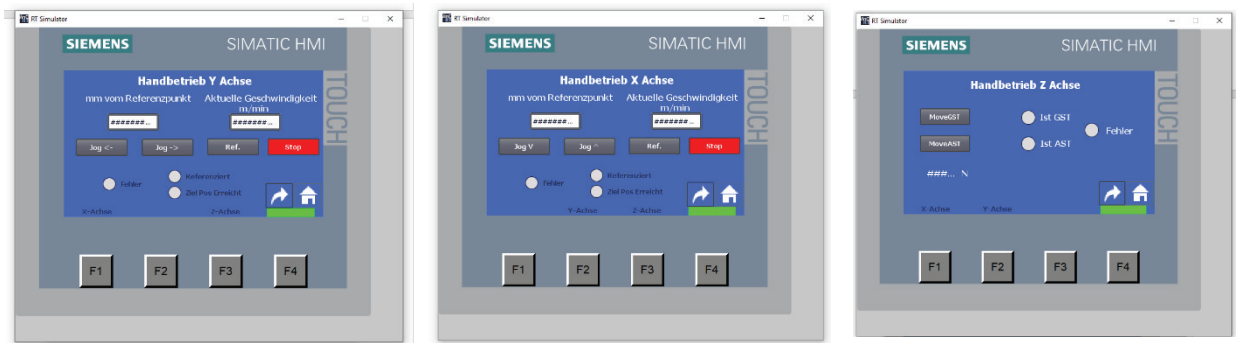
Note 	If the number of executed cycles is not correct, the speed of the individual axes can be corrected via the Settings - Speeds menu (chapter 3.1.4).
---	---



4.9 Manual operation

In manual mode, all axes can be moved manually.

Either for maintenance purposes, changing the wheel, adjusting the limit switches of the Z-axis (depending on the sample height) or other purposes.



Error: Axle has an error
Referenced: Axis is referenced. (necessary after system start).



ends the automatic functions

Target Pos reached: Information on whether the last drive-move instruction reached its destination

X-Axis: switches to the manual mode window of the X-axis

Y-Axis: switches to the manual mode window of the Y-axis

Z Axis: switches to the manual mode window of the Z-axis



Information about the distance to the reference point of the system setting



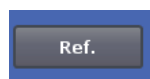
Info about the speed

MoveGst: lets the Z axis move up
MoveAst: lets the Z axis move down

N: Indicates the current force of the cylinder

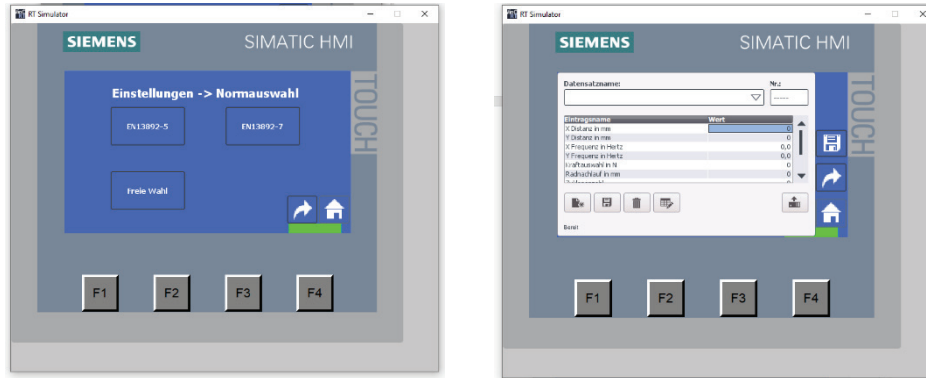


lets the sample table move in the direction of the arrow with an unfolded panel

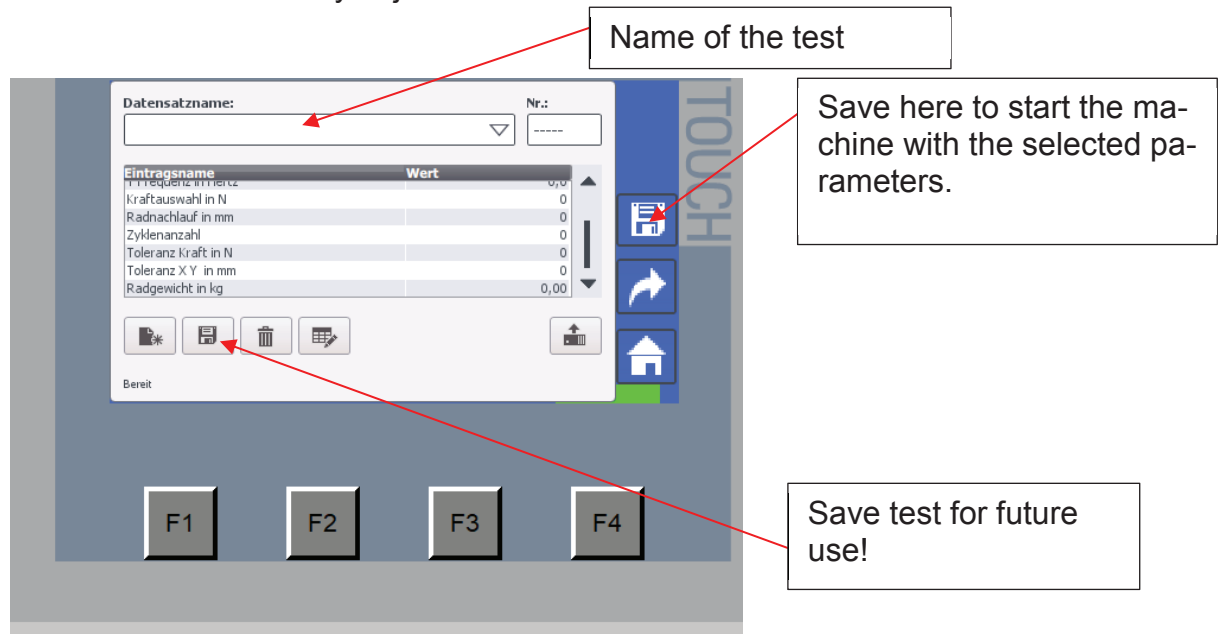


starts a new referencing of the drives

4.10 Selection of the free test



Free selection means freely adjustable values



Distance: the total travel, half of which is from the center position in each direction, without wheel caster.

Wheel weight, is now force offset. (Offset [weight] of the wheel).

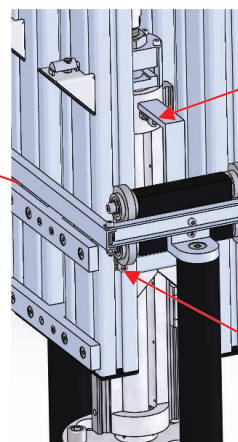
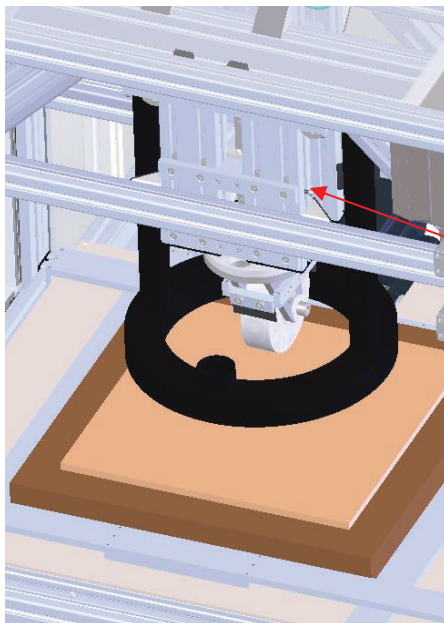
4.11 Brightness



Here you can enter the brightness in percent, which can be changed using + and -
It is saved with the save symbol

4.12 Suction

The testing machine is equipped with a suction ring in order to be able to suck off any
to be able to suck off any sample abrasion.



Driving angle for lifting
the suction ring

Lower stop on
on both sides!
**It must be set
separately for each wheel!**

The ring can either always be positioned at a certain height above the sample
(lower stop) or always be raised when the wheel is lifted.

A tube Ø45mm with a length of 650mm can be connected to the ring, to which a vacuum
cleaner is then connected.

Attention



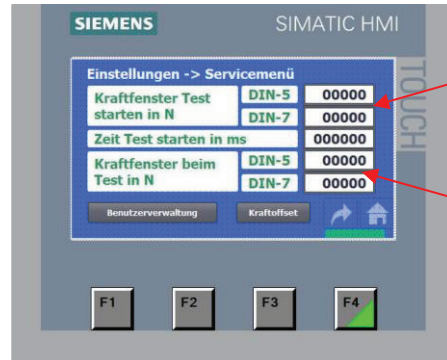
The hose of the vacuum cleaner must not protrude into the ring!
The wheel must not touch the hose of the vacuum cleaner!
It must always be ensured that the suction ring is positioned above
the sample. To prevent the ring from rubbing against the sample or
the sample from hitting the ring. This can lead to the destruction of the
ring!

5. Service menu

Only for the service of the company TESTING

Login Name: ***

Password: ***



Standard Tolerance for setting the force per standard. (Observe the standard specification!)

Background monitoring of the set force depending on the standard. (The tolerance should be greater than that of the standard in order to compensate for measurement peaks during the test)

Possibility to change the starting tolerances for DIN EN 13892-5 and 7, as well as the force application.

Time test:

The current time delay is shown here

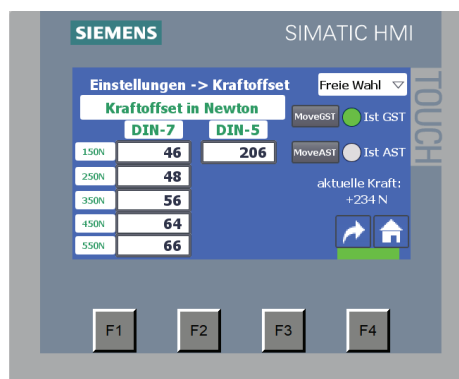
User

Administration:

opens the user administration window



Force offset: Enter a correction factor for the displayed force depending on the wheel weight, standard and set force (determined by the manufacturer).



6. Recurring operating steps

Changing the test specimen

7. Maintenance and cleaning

These operating instructions do not constitute instructions for extensive maintenance or repair work. Such work must be carried out by TESTING Service or recognized specialist personnel.

Depending on the frequency of use or ambient conditions, external cleaning of the machine may be necessary:

The following procedure is to be followed:

1. switch off the MAIN SWITCH
2. disconnect the machine from the power supply
3. remove any loose dust with a brush or by vacuuming. If necessary, the outside of the machine can be cleaned with a damp cloth

	Any cleaning with pressurized, sprayed or splashed water, as well as the introduction of water through dripping sponges or similar unsuitable aids, will lead to permanent damage to mechanical and/or electrical or electronic components of the machine.
	Before carrying out maintenance work, secure the machine against unintentional restarting by switching it off and disconnecting it from the mains. Only start maintenance work after the machine has come to a complete standstill.

All maintenance work involving parts of the machine and the electrical system must be carried out by specialists (trained personnel)!

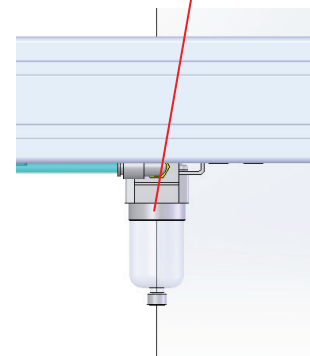
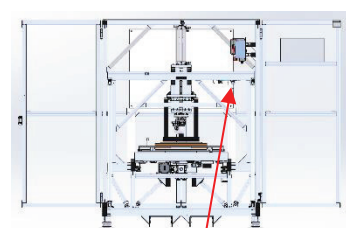
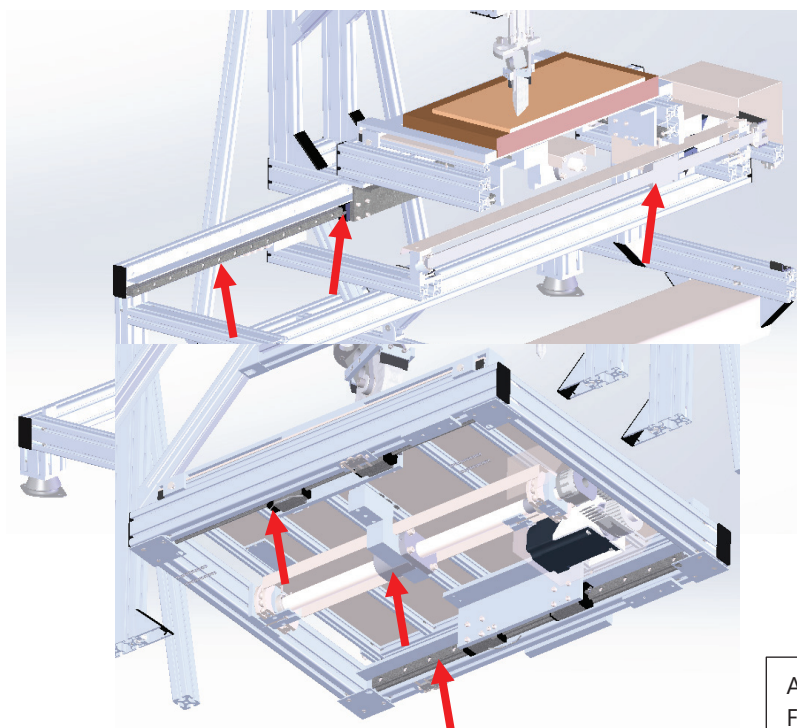
Inspection

The machine must be inspected for occupational safety at regular intervals. There are national regulations that must be complied with, e.g. the UVV.

	Regularly checking that the machine is working properly provides important information about its operating status
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Maintenance schedule

Note 	The time intervals specified here are guide values for normal operation. For extreme operation, e.g. continuous operation, halve the maintenance intervals.				
Activity	per- ma- nent	Before / after tes- ter	7 Days	6 Month	2 Yaer
Checking the screws on the drives			The first 4 weeks	x	
Condition of the electrical connections			X	X	
Visual inspection of all compo- nents for damage			X	X	
Drive, guide rails and drive spin- dles Drive spindles Check / lubricate				X	
Filter element of the air filter replace.					x
Free movement of the test table, the roller		X			
Noises	X				
Functionality of the control system			X		
Faultless connections (valves, filters, hose lines)			X		



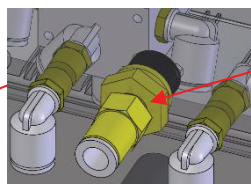
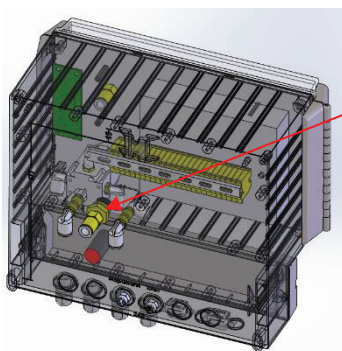
Air filter: (SMC) AF20-F02B-A
Filter element: (SMC) AF20P-060S

8. Troubleshooting

Attention 	All maintenance, testing, inspection and repair work on machine parts or the electrical system must be carried out by specialists.
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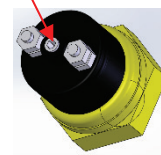
Some easy-to-solve problems that can occur during work are dealt with in this chapter.

INTERRUPTION	CAUSE	REMEDY
Test area is not centered	Center position adjusted	Realign or positio-nize
Platform cannot be moved	Mechanical defect	Consult the manufacturer
	Error on the display (flash- ing yellow and red)	Acknowledge the error on the software display.
	Doors not closed properly (door switch).	Close doors properly, check door switch.
	There is no compressed air	Check compressed air.
No role load	Compressed air regulator defective or not adjusted	
The test does not start	No test standard selected	Set the standard and, if neces- sary, the force.
	Roller load does not com- ply with the standard spec- ification	Adjust the compressed air regu- lator.
Error message: Z-axis pressureless	There is no pressure at the pressure switch or the switching threshold is set incorrectly.	Check the air pressure connec- tion or reset the switching threshold of the pressure switch



Pressure switch

Adjusting screw



9. Decommissioning

If the machine is taken out of operation for a longer period of time, it must be disconnected from the mains.

Carry out all maintenance work.

Cover the machine to protect it from dust.

The product and the packaging material are made from recyclable materials. The separate, environmentally friendly disposal of leftover materials promotes the recycling of reusable materials.

This product complies with Directive 2012/19/EC of the European Parliament and of the Council on waste electrical and electronic equipment. The product is marked with the following symbol:



You can obtain disposal instructions from the city or municipal administration.

10. Customer service

Great care has been taken to ensure the accuracy of these operating instructions. However, no guarantee can be given that it is free of errors or that the information will continue to apply in the event of technical changes.

10.1 Date of issue of the operating instructions

1.1 Edition
August 2019

10.2 Copyright

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Violations may be prosecuted under criminal law.

