

Operating manual

STENTOR FT

V2.0



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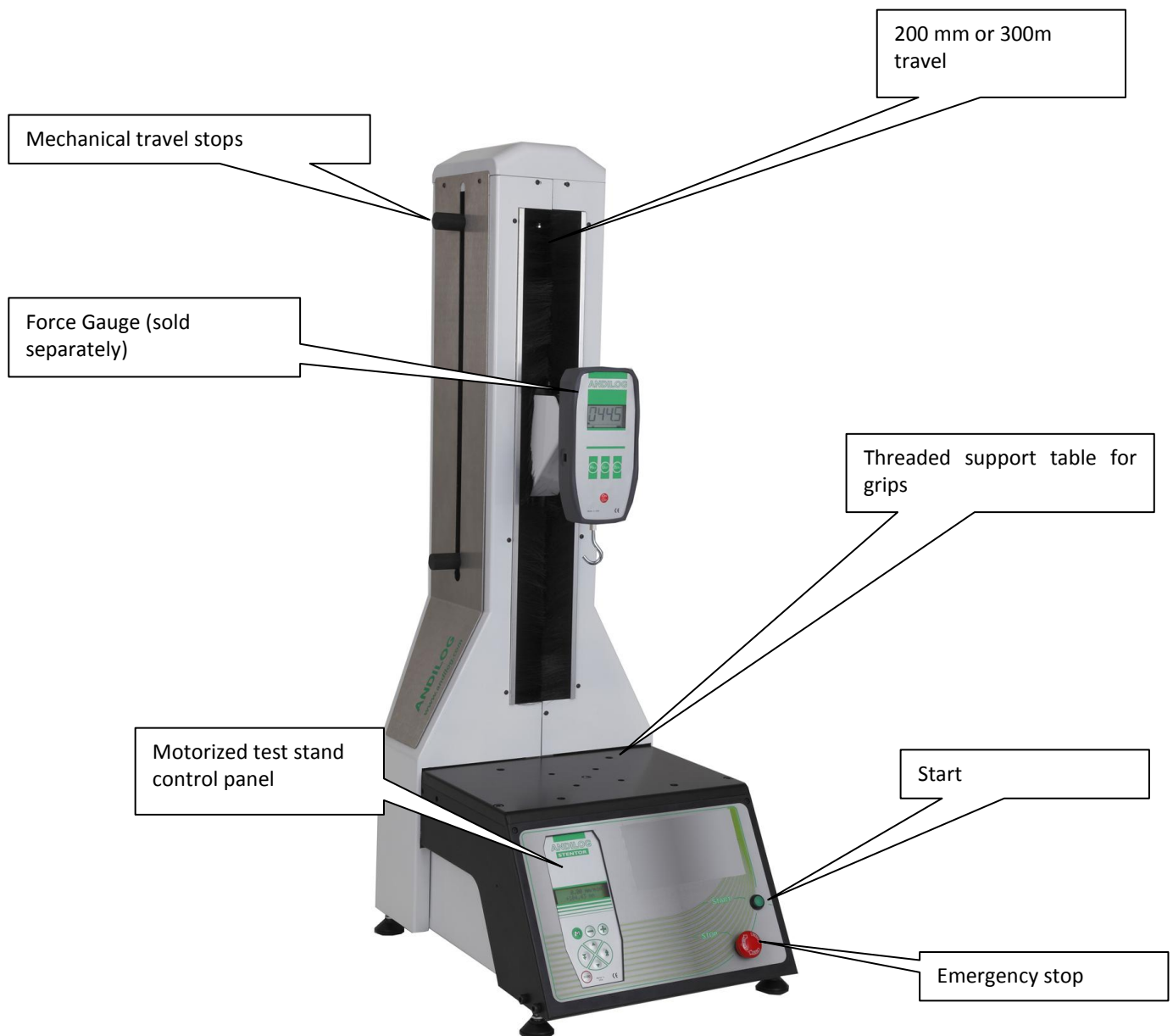
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I. Introduction

1. Presentation

Thank you for choosing the motorized test stand STENTOR FT to perform your force tests. This test system is the result of 20 years experience in force and torque testing measurement.

Using the advanced graphical display, the STENTOR FT is easy to use and has a friendly user interface. This operating manual will guide you during your first tests. At the end of the operating manual, you will find advanced testing examples.



II. Setup

NOTE: Before using the STENTOR FT, please check that the test stand has not been damaged during shipping. If you have any questions, please contact ANDILOG TECHNOLOGIES to check that you have all the information to perform your tests.

1. Opening

The motorized test stand STENTOR FT includes: (standard setup without accessories and options)

- One force Gauge support plate
- One power cable

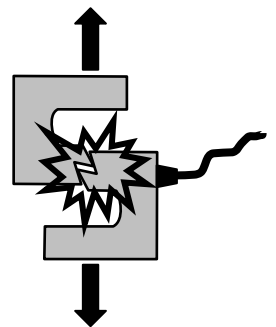
2. Recommendations before use

a. Load Cell

Never connect accessories (hook, plate ...) directly to the sensor rod. Use the extension rod delivered with your instrument.

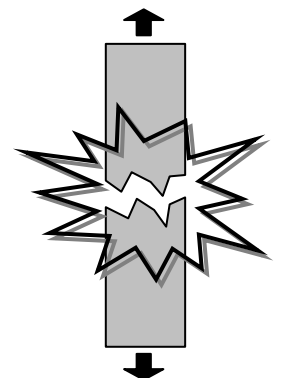
In spite of its mechanical protection, sensory overload can damage the instrument. The instrument stops if the capacity has been exceeded 10 times. You have to return it to ANDILOG TECHNOLOGIES for checking.

It is important that measured values are under 90% of the sensor capacity. Used the sensor constantly above 90% of its capacity may cause premature wear of this one. Also when the sensor is used on a motorized test stand, it is necessary to setup a stop limit when the force is closed to the maximum capacity. This limit must take into account the fact that at high speed, large frame doesn't stop immediately and the risk of damaging the sensor is high due to the inertia of the motor.



b. During the tests

Most of the tests done with ANDILOG Technologies instruments are destructive test. Dangers associates with this type of tests require that the users are experienced and trained. Due to the nature and use of the equipment sold by ANDILOG Technologies, acceptance by the purchaser of technology products Andilog constitutes acceptance of risks and damages that may result from the use of devices Andilog.



c. Conditions

- Working Temperature : 0 to 35° C
- Stock Temperature: -20 to 45° C
- Humidity: 5 % to 95 %,
- Altitude: 3 000 m

d. Warranty

Subject to the provisions and conditions hereof, ANDILOG technologies warrants to the buyer that, without charge, ANDILOG TECHNOLOGIES will repair or replace, at its option, all new equipment sold to Buyer when used and maintained in the course of normal operations and conditions, if Buyer finds defects in workmanship and materials during a period of one (1) year from the date of shipment.

A. The conditions hereof are:

1. ANDILOG Technologies has been notified in writing by the Buyer of the defect prior to the termination of the warranty period.
2. The goods are shipped to ANDILOG Technologies with prior approval.

CAUTION

ALL WARRANTY WORK IS DONE AT THE FACTORY. YOU WILL NEED TO SAVE THE SHIPPING CONTAINER SHOULD YOUR TESTER NEED TO BE RETURNED TO THE FACTORY. THE USE OF AN IMPROPER SHIPPING CONTAINER USUALLY RESULTS IN DAMAGE TO THE TESTER AND ADDITIONAL CHARGES.

3. All shipping costs have been paid by the Buyer.
 4. The goods have been used and maintained under normal operating conditions.
- B. Repair or replacement shall be the Buyer's sole and exclusive remedy in the event of ANDILOG Technologies' breach of this warranty.
- C. This express warranty is in lieu of all other warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular intended purpose, with the exception of the implied warranty of title.
- D. The purpose of the equipment manufactured by ANDILOG technologies is destructive testing, and the inherent danger associated with such testing requires the equipment to be used only by experienced operators. Due to the nature and use of the equipment, Buyer's acceptance of the ANDILOG Technologies equipment constitutes Buyer's assumption of all risk and liability arising out of or resulting from the use of ANDILOG technologies equipment.
- E. In no event will ANDILOG Technologies be liable for damages, lost revenue, lost wages, lost savings or any other incidental or consequential damage arising from the purchase, use or inability to use said product, even if ANDILOG Technologies has been advised of the possibility of such damages.

ANDILOG TECHNOLOGIES WILL IN NO EVENT BE LIABLE FOR ANY INJURY OR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS EQUIPMENT.

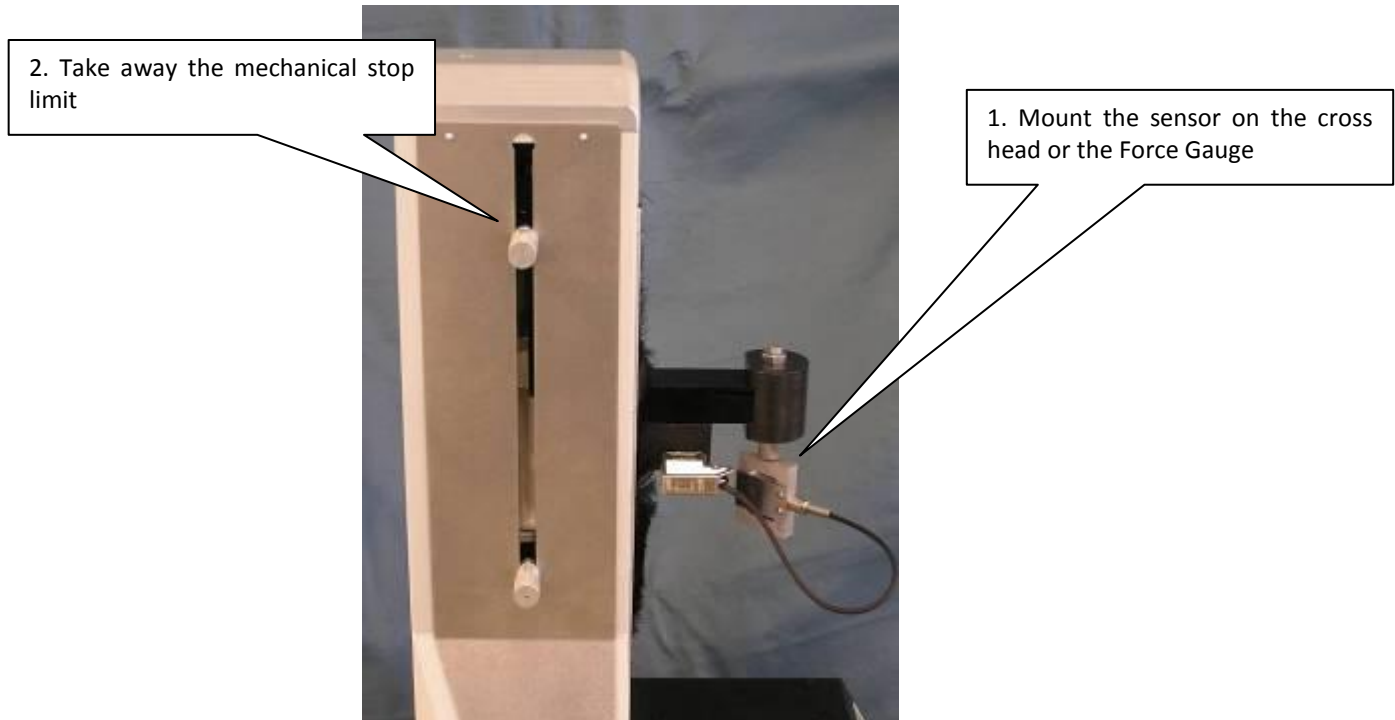
Accuracy is guaranteed at time of shipment to be as advertised or quoted.

If products are damaged in shipment, notify shipping company and ANDILOG technologies immediately.

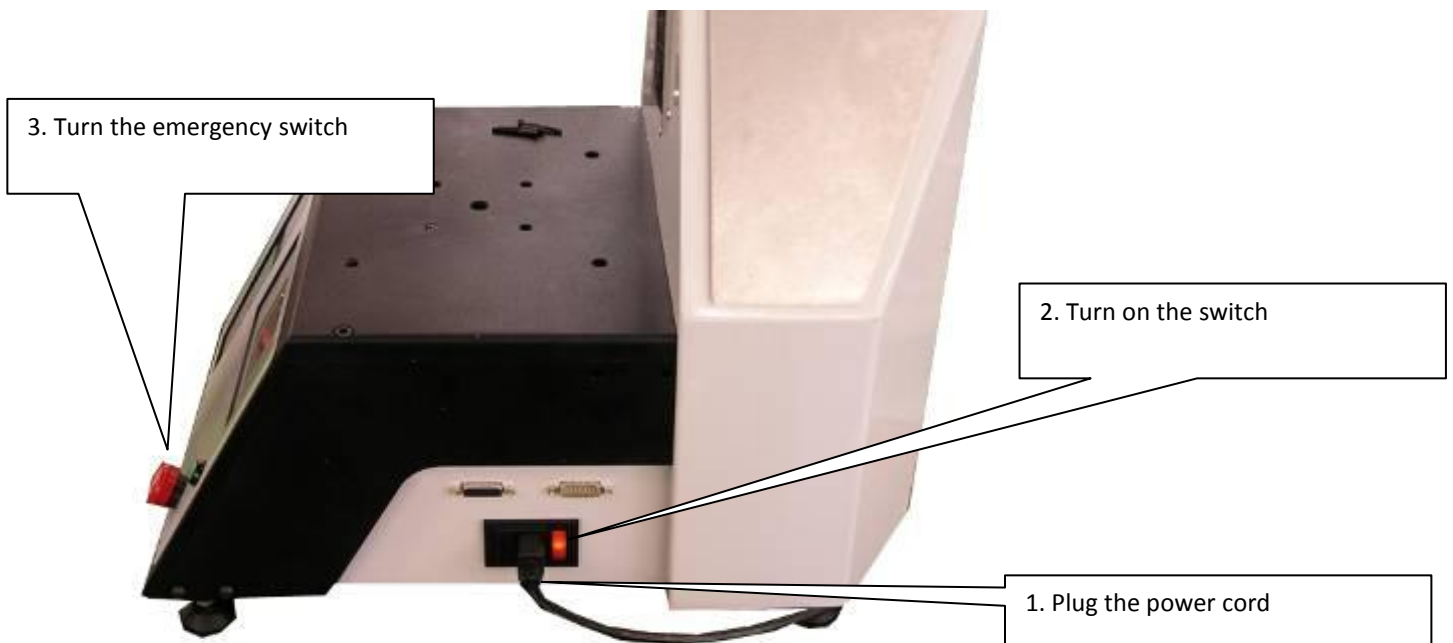
Warranty void for damage due to accident, misuse or abuse.

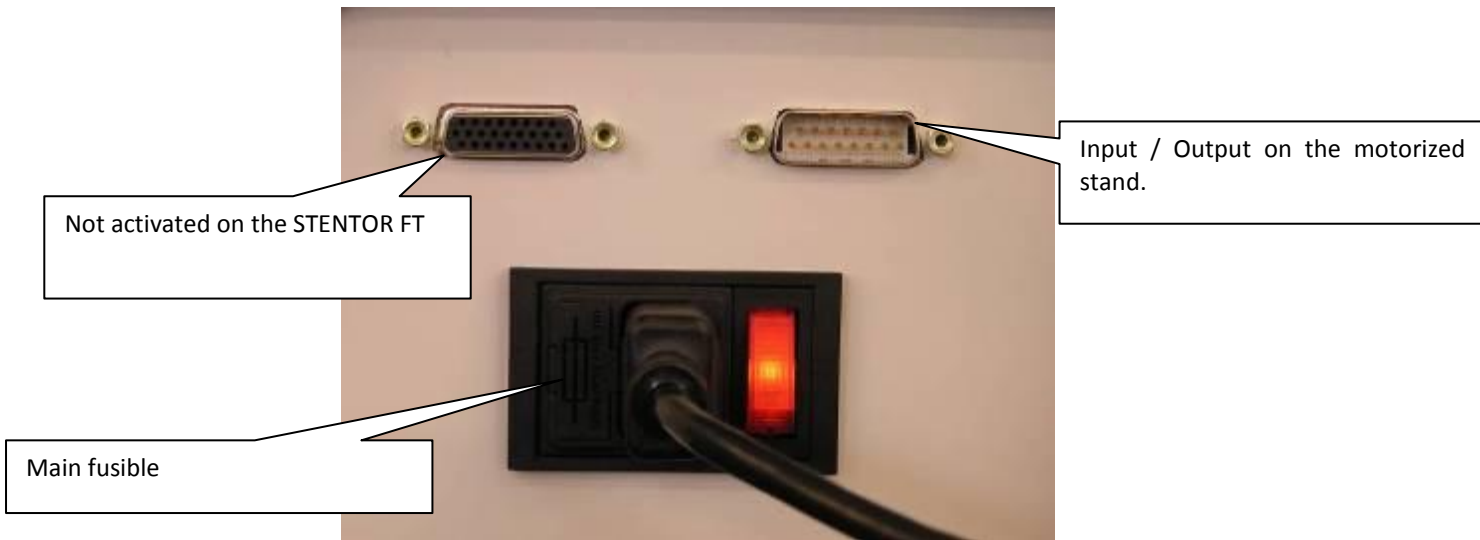
3. Starting your System

a. Mount the sensor



b. Switch on





III. Displacement of the STENTOR FT

The displacement of the test stand is done through the command DRIVEPACK, shown below.



1. Remote control

The keys of remote control have different features depending of the run mode of the Stentor. There are two run modes described below:

- STANDARD
- SETUP

a. Running in STANDARD Mode

KEY #	NAME	DESCRIPTION
0	Screen	Gives information regarding the status of the Stentor. Shows displacement value, speed value, test in process, error messages, etc
1	MENU	Access to the SETUP Mode
2	+ Button	No function
3	- Button	No function
4	Up Button	Start up travel at the preselected speed setting
5	Down Button	Start down travel at the preselected speed setting
6	Up high speed button	Start up travel at 350mm/min
7	Down high speed button	Start down travel at 350mm/min
8	Reset	Reset the travel value if the motor is stopped

IF THE MOTOR IS RUNNING, PRESS ANY KEY TO STOP THE TEST STAND

b. Running in SETUP Mode

KEY #	NAME	DESCRIPTION
1	MENU Button	Access to STANDARD Mode and save data
2	+ Button	Go to the next parameter
3	- Button	Go back to the previous parameter
4	Up Button	Increase parameter value by 1 unit
5	Down Button	Decrease parameter value by 1 unit
6	Up high speed Button	Increase parameter value by 100 unit
7	Down high speed Button	Decrease parameter value by 100 unit
8	Reset	No function

NOTE: When the motor is stopped, you can reset the displacement value to zero by pressing the Reset key. This makes the displacement origin relative.

c. Emergency Stop

The Stentor test stand has a power emergency stop switch on the right top of the cover. This emergency stop turns off all power to the test stand. To restart the Stentor, you must unlock this switch by rotating it clockwise.

Note: If you stop the Stentor with the emergency stop during a test, it is possible that the displacement value was not saved correctly. You must check this value when you turn on the Stentor after an emergency stop.







If the motor is off when you use the emergency stop to turn off your equipment, the displacement value is saved correctly.

2. Travel Settings

The DRIVEPACK allows you to configure the up and down speed of the test stand. The up and down speed can be managed separately. For each direction you can setup the following parameters:

- Speed
- Travel limit
- Action after reaching travel limit
- Action after reaching mechanical limit
- Time of travel
- Action after reaching the time of travel
- Cycles

To navigate in the menu and to go through one parameter to another, you have to use the following process:





- To access to the main Menu, press the button .
- To navigate from on menu to another, press the button + and -
- To exit from the Menu and save the configuration, press the button .
- To change parameters value (increase or decrease value) press the buttons , , , .

a. Architecture menu

- Speed - Up
- Speed - Down
- Mechanical sensor limit - Up
- Mechanical sensor limit - Down
- Travel Position limit – Up
- Stop specification (fast or precise)
- Travel Position limit – Down
- Stop specification (fast or precise)
- Time Stop - Up
- Time Stop - Down
- Pause time - Up
- Pause time - Down
- Cycles
- Foot Pedal Action
- Input 1
- Input 2
- Units
- Language

The menu is dynamic; it means that if a limit is inactive, then its menu is not displayed in the DRIVEPACK.

b. Speed Configuration

The first two menus are to setup the up and down speeds. These two speeds can be managed separately. Use the  &  keys to increase or decrease the value by 0.05mm/min and the  &  keys to increase and decrease the speed by 5 mm/min.

Note: You can set the speed between 10 à 300mm/min. When the test is running and specially for compression tests, a high speed configuration can enable the security system of the sensor (security system based on the maximum capacity).

c. Limits stop

A limit stop is a fixed point on the column where the crosshead is going to stop during travel. The “top limit stop” is the limit stop linked to the up travel and the “bottom limit stop”, is the limit stop linked to down travel.

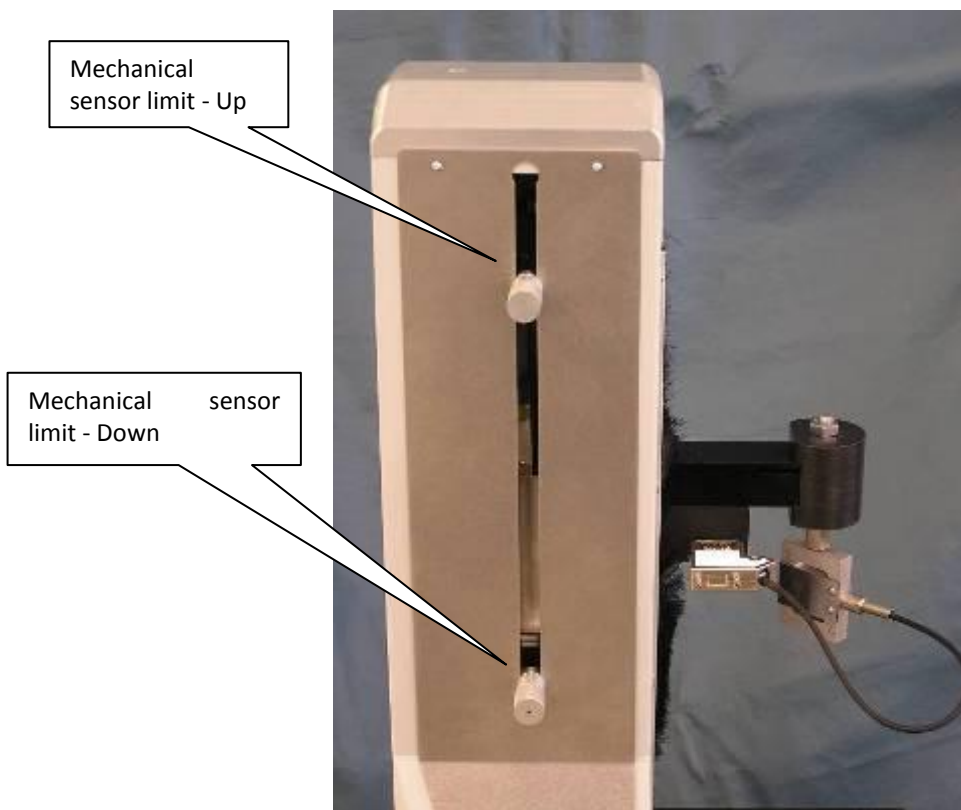
If several limit stops are activated, the first limit stop the crosshead meets will stop the tester. This means that all the other limit stops in the same direction will be ignored.



There are 3 different limits stop on the DRIVEPACK: Mechanical sensor, travel position and time. For each ones you can select 4 actions:

- Inactive : the test stand doesn't take this limit into account
- Stop : The test stand stop when it reaches this limit
- Inverter : the test stand stop and moves in the opposite direction at the preselected speed
- Delayed Inverter : the test stand stops and moves in the opposite direction at the pre-defined speed after a time defined in the menu “Pause”



You can configure multiples limits for the same test. It is highly recommended to use the mechanical sensor limits as security limits stop to avoid sensor or sample destruction. Therefore the travel limits and time limits are usually used to end the test.


Mechanical limits: There are two mechanical sensor limits on the side of the test stand as shown on the picture below. There are usually used as security. It is highly recommended to have them always active.









You can configure those limits separately in the menu « sensor  » and « sensor  ».

Note: When those limits are active, they are also active in high speed displacement.



Travel Position limits: The position limits are defined by displacement in millimeters. These limits can be active or not. The displacement value and the actions are available in the menus “Pos. stop  ” for the up travel and in “Pos. stop  ” for the down travel.





Note: The value for this displacement is relative to the 0 position of the frame and this relative position can be tare at any time using the key  . The up travel is positive and the down travel is negative.

For example, if you put the following parameters:



- Speed  150 mm/min
- Speed  50 mm/min
- Pos Stop  STOP
- Pos stop  60mm
- Pos Stop  Inverter
- Pos Stop  -30mm
- All other limits aren't active

Now, if you go back to the STANDARD mode, there are two possibilities:



- Push on the  key to tare the displacement of the test stand and then the  key:
 The Stentor is going to move down 30mm at 50mm/min. Then stop and move up 90 mm (30mm + 60mm) at 150 mm/min and then stop

- If you DON'T push the  key, if the position value on your Stentor is for example +10mm and then you push the  key: The Stentor is going to move down of 40mm (+10 – (-30)) at 50mm/min then stop and move up 90 mm (30mm + 60mm) at 150 mm/min and then stop
- Push on the  key to tare the displacement and then the  key: The Stentor is going to move up 60mm at 150mm/min and then stop.

Note: The up and down travel position limit stops DON'T work if the Stentor is in high speed mode

Time Stop: The time stops are defined by a time of travel in seconds. These limits can be active or not. The time and the actions are available in the menus "Time stop  " for the up travel and in "Time stop  " for the down travel. The principles of configuration are the same as the Travel Position limits.



Note: The up and down Time stops DON'T work if the Stentor is in high speed mode

Pause: If at least one of the limits defined previously is configured with the action « DELAYED INVERTER » then the menu "Pause  » and « Pause  » are available. Those menus define the time the Stentor is going to stop when it reaches one of the stop limits before moving in the opposite direction.


Cycle: If at least 2 stop limits are set on "inverter" or "delayed inverter", then the menu "cycle" is available. Define the number of cycles (between 1 and 255) the Stentor is going to perform when it reaches up and down limit stops configured in "Inverter" or "Delayed Inv".

3. Start a Test

You can start the displacement of the test stand using two different ways:

- Pushing the key  and  to go down or up.
- A long press on the Green button on the front of the Stentor will also start the displacement of the Stentor. This green button can be configure according to your needs please see the following indications.

Green button configuration (in Front). To configure the action of the button selects the menu "Foot Pedal Action" in the Drivepack, multiples choices are possible:

- Inactive : No action
- Start Pos : The test stand moves up
- Start Neg : The test stand moves down
- Stop : Stop the test stand when the button is pushed
- ZERO :Put the position of the Stentor to 0 (equal to the key )

When the test is started, the DRIVEPACK displays:

- Speed of travel
- Travel direction
- Relative position in real time of the test stand

Example:



↑	100.0 mm/min
+	12.00 mm

In this example, the test stand is moving up at 100mm/min and its position is +12 mm.

To stop the STENTOR, press any key on the DRIVEPACK.


Note: If the Stentor reaches any limit stop during tits travel, it will execute the defined setup (for example Inverter or Stop).

4. High Speed Travel



It is possible to move the crosshead of the test stand at the high speed manually by using the key  and  to go up or down as required. The STENTOR starts to move in the selected direction at the high speed value (350mm/min) and will continue to move as long as you press the key.

Note: In high speed travel, only the Mechanical limit sensors are actives. The others limits are not actives. This mode must not be used to run tests.

5. Reset the position

To set the position of the STENTOR to 0.00mm, press the key  when the motor is stopped.

6. Units

The menu allows you to chose the speed and displacement units. Use the key  and  to change from mm/min to in/min.

7. Change the language

The last menu allows you to change the language of the DRIVEPACK. You can choose between:


- French
- English
- German
- Spain

8. TOR Input of the Drivepack

The Drivepack has two TTL inputs. They are connected through the 15 pins connectors on the side of the test stand, and allow you to connect the tester to an extern device in order to program actions. (See appendix for pin numbers details). By example you can program the tester to stop when it reaches a load value or detect a sets point.

These two inputs are connected to the Output 1 and Output 2 of your Centor Touch Dual display (setup a stop action of your test stand on break detection by example using inputs from the Drivepack and output from the Centor Touch).

Here are the available actions:

- Inactive : No action
- Start Pos : The test stand starts moving up
- Start Neg : The test stand starts moving down
- Stop : Stop the test stand when he is moving
- ZERO : Tare the displacement value of the test stand (equal to the key )
- Inverter: The test stand start moving n the opposite direction
- Delay inverter: The test stand start moving n the opposite direction after a pause time (define the time in the pause menu).

Waiting time: for each “delay inverter” settings an extra menu is available to adjust a waiting time, in seconds, until the test stand re-starts on the opposite direction.

IV. Annexes

1. Security housing

If your test stand is equipped security housing with a door, opening the door stops the test stand and disables the remote control. To use the setup mode, you have to close the door. When you close the door the stand will not re-start the test from the door open point. You must re-start your test from the beginning.

2. Error message

If the Stentor detects too much current for any reason, the stand is going to stop and you will have the following message:

Dist+ 0.00 mm SECURITY CURRENT
--

You have to turn off the test stand and turn on again to reset this protection.

Internal travel limit

The Stentor has internal travel limits to stop the test stand before it reaches the end of the power screw. These travel limits cut the power supply of the motor in the direction of the actual travel. You can move the test stand manually in the opposite direction.

Note: After this kind of stop, the value of the displacement could be modified. You have to check this value before doing another test.

Transmission error

If the remote control cannot communicate with the test stand (for example if the cable is broken), the two systems launch a reset process and switch to a security mode to stop the motor. You have to restart the test stand but your equipment probably needs maintenance.

! SECURITY! ERROR CODE # 6

Security stop

If the system detects that a command is not properly completed, the display shows:

! SECURITY! Door / Overl / Pos

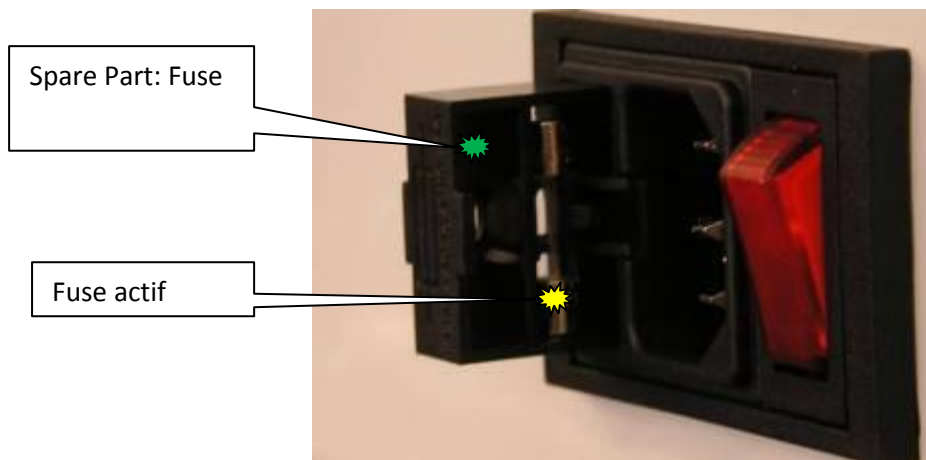
In this case you have to check the following:

- If you have security doors, please check that all the doors are closed
- If there is an overload on the motor, remove this overload
- If the stand is in a travel limit position, move the stand in the opposite direction

Fuses

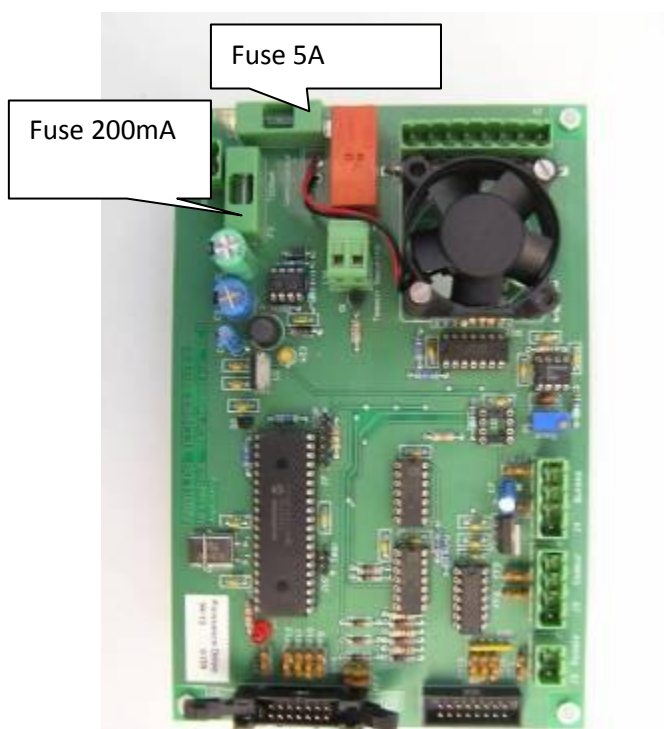
If you cannot turn on the STENTOR FT, the reason may be that one of the 3 protection fuses is broken.

The first fuse is located on the right side of the STENTOR FT close to the plug and main power red button. This is a 5A fuse, dimensions 5x20mm.



The STENTOR FT has two fuses inside the test stand. If you need to change one of these fuses, unplug the STENTOR FT. Unscrew the two screws on the front panel and open the front panel of the STENTOR FT. The 2 fuses are located on the Drivepack electronic board:

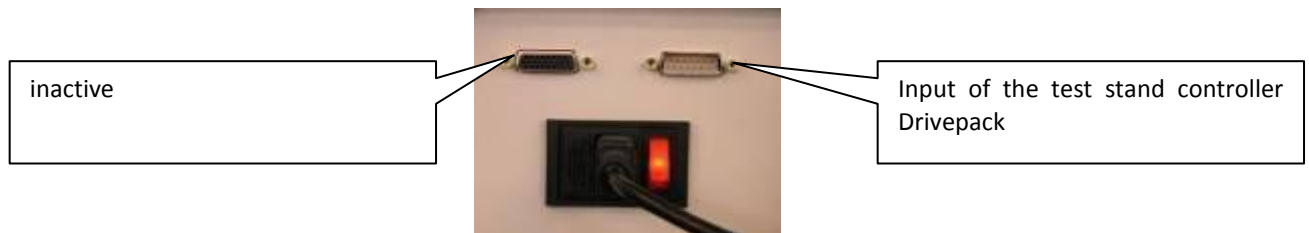
- One fuse of 5A, dimensions 5X20 mm
- One fuse of 200 mA, dimensions 5X20 mm



3. Connections

The STENTOR FT has 2 connectors on the right side. The 15 pins connector is connected to the Drivepack and the 26 pins connector is inactive.

Note that the pedal inputs of the Drivepack and Centor Touch Dual are connected together to the green button on the front panel of the STENTOR FT. The output 1 and 2 of the Centor Touch Dual are connected to the input 1 and 2 of the Drivepack.

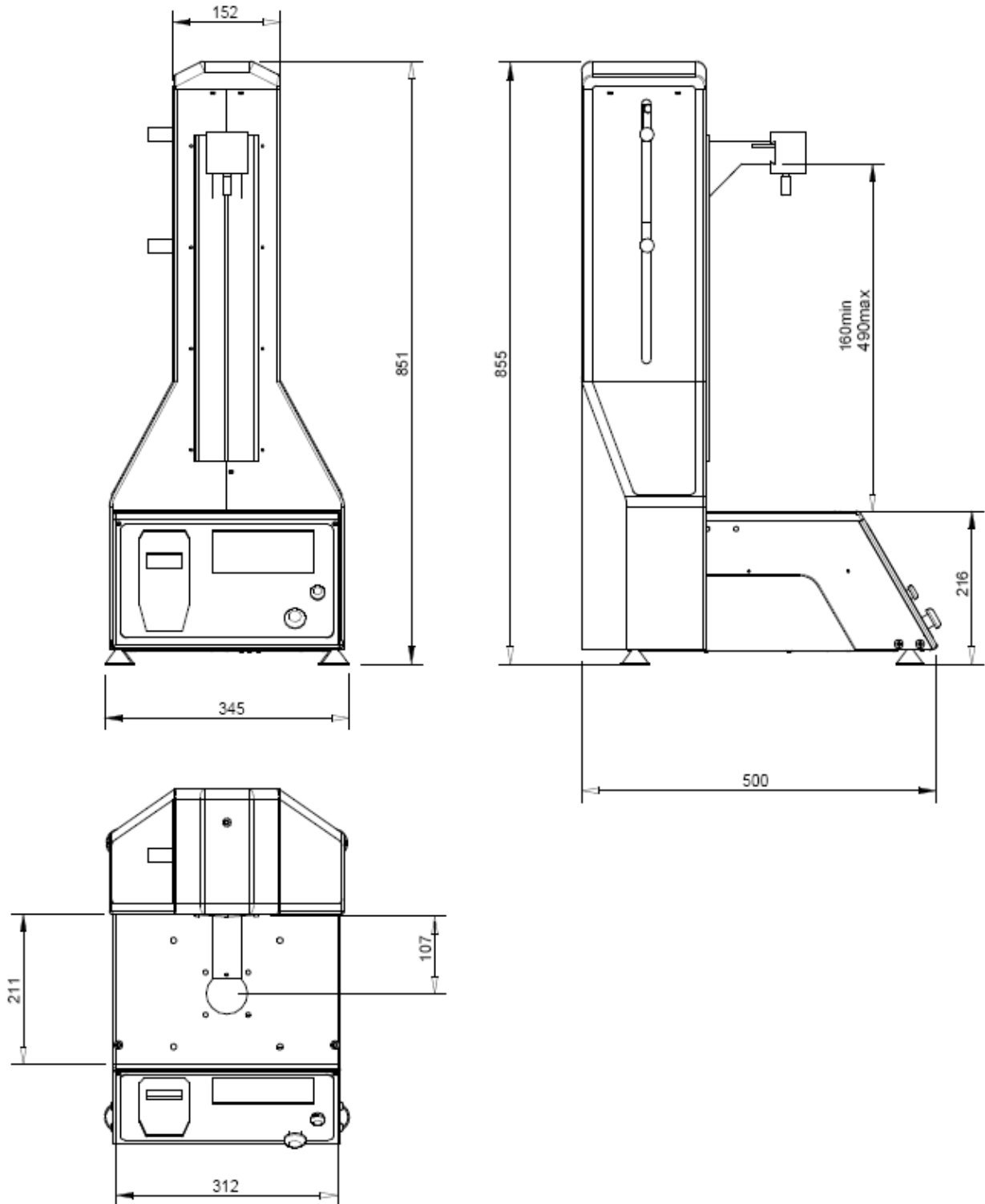


Connector detail 15 points connected to the Drivepack

1	Ground
2	Input for security door
3	Input 1
9	Ground
10	Input 2

4. Dimensions

a. STENTOR FT 1000



b. STENTOR FT 2500

