

## CONTINUATION

Dear User,

We're indebted for your patronage to purchase SP Series Diagram Force Gauge. Before using the instrument, please carefully read the manual to use it rightly. Please keep the manual and the warranty well to give you help when you can't learn it or there is something wrong with it.

Data of the manual is described equally upon the latest product, because of improvement or other change, description of manual may differ from practical situationslightly. Our company will reserve the right of correcting at any moment, it is difficult to notify the corrected place one by one.

制造商：温州山度仪器有限公司

**MANUFACTURER: WENZHOU SUNDOO INSTRUMENTS CO.,LTD**

地址：温州高新技术产业园区10区E幢

Add: Building E, No.10 High-tech Industrial Zone Wenzhou China

Zip: 325013

Tel: +86 577 88609905 Fax:+86 577 88390155

Http://www.sundoo.com E-mail:export@sundoo.com

Ver:5.00 Con:20151208

SP Series  
User Manual

图 显 示 推 拉 力 计  
**DIAGRAM FORCE GAUGE**



传感器外置



温州山度仪器有限公司  
WENZHOU SUNDOO INSTRUMENTS CO., LTD



Thank you very much for purchasing SP series diagram force gauge.  
The force gauge is compact and convenient for compression and tension measurement applications. High accuracy and high resolution/ 240\*320 TFT colorful screen/ force curve display on screen/upper and lower limit setting and judgment/ buzzer alarm inside/ 3 groups curve storage/four units (N/kgf/lbf/ozf) option/ peak hold/automatic peak zero/ shutdown design without any operation/ USB output. Before using the instrument, please read the manual carefully for all functions application and accurate measurement value.

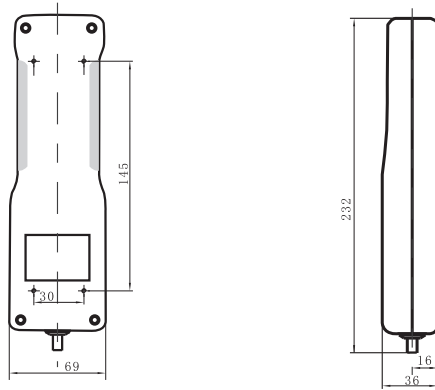
# Contents

Parameters.....	2
Dimensions.....	3
Test stands.....	4
Caution and warning.....	5
Function.....	6
Features.....	6
Work environment.....	6
Part names and functions.....	7
Configuration needed for software installation.....	16
Software installation and use .....	16
Rechargeable Battery.....	27
Maintenance.....	27
Packing List.....	28

## Parameters

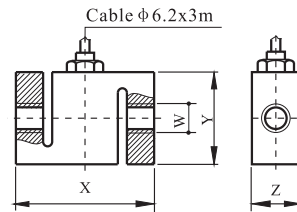
Model	SP-1K	SP-2K	SP-5K	SP-10K	SP-20K	SP-50K	SP-100K	SP-200K	SP-500K	SP-1000K	SP-2000K
Capacity	1000N	2000N	5000N	10KN	20KN	50KN	100KN	200KN	500KN	1000KN	2000KN
Force Resolution	0.5N	1N	1N	0.005KN	0.01KN	0.01KN	0.05KN	0.1KN	0.1KN	0.5KN	1KN
Pressure Resolution	0.001Gpa		0.01Gpa		0.1Gpa		1Gpa		10Gpa		
Test Range	10%~100% FS										
Accuracy	Within ±0.5%					Within ±1%					
Unit	N, kgf, lbf, ozf		kN, rf, klbf, kozf								
Screen	240×320 Pixel TFT 65535 Color										
Sensor Type	S Type Sensor Outside					Cycle Type Sensor Outside					
Power	Adaptor:DC 12V/400mA; Battery inside:Ni-MH 7.2V 1200mAH										
Use Time	Continuous use for about 6 hours										
Standby Time	About 3 months										
Battery Life	≥ 300 times										

Dimensions

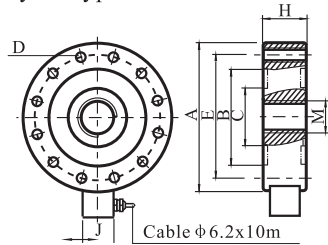


S Type Sensor

Model	Z	X	Y	W
SP-1K~2K	19	76.2	50.8	M12X1.75
SP-5K~20K	28.2			
SP-50K	25.4	108	76.2	M18X1.5
SP-100K	50.8	178	125	M30X2



Cycle Type Sensor



Model	A	B	C	D	E	H	J	M
SP-200K	φ 155	φ 100	φ 60	12-φ 11	φ 130	45	32	M36x2
SP-500K	φ 205	φ 120	φ 80	16-φ 13	φ 165	64	32	M42x2
SP-1000K	φ 280	φ 175	φ 125	16-φ 17	φ 228	90	48	M70x3
SP-2000K	φ 296	φ 216	φ 140	16-φ 22	φ 256	120	48	M90x3

Note: Above unit is mm except the mentioned.

- 2、 Handle carefully when using and carrying.
- 3、 Don't disassemble, repair and remodel the gauge by yourself.
- 4、 Please contact our company if there is any problem or fault.

Packing List

Number	Parts name	Quantity
1	Main body	1
2	Sensor	1
3	Test attachment	5
4	Power adaptor	1
5	USB cable	1
6	M3×8 suew	4+1
7	CD	1
8	Manual	1
9	Factory inspection report	1
10	Qaulification card	1

The corresponding operation in data saved region:

“Open graph” open drew pointing record of pointed test data.


“Re-drew graph” the same purpose as “Open graph”, to re-draw the current drew pointing.

“View data” view the value of drew pointing. Double press one value in text list box, to position the value line about the special value at the coordinate. Double press “Call out” button to save the test data by other types texts. “Printtest graph” the same purpose as “Print graph” in the function bar, to carry out to print test report.

“Delete test report” to delete the pointed test data from current data base file. act with caution.

When there are much test data in drew pointing record, to view the other drew pointing records, as the limited screen area and the layout of software interface, you can move the mouse on X-axis or Y-axis in drew pointing region, after the mouse changed to a hand, hold on the mouse to move left, right, up or down. Beside, you can view the drew pointing record by enlarging or shortening the coordinate, but it may distortion.

### Rechargeable Battery

During using the gauge, if the mark “” flicker, it means that the battery is very low and need to be charged. Please use matched “ DC 12V/400mA” charger. With smart charging technology, it will stop charging automatically after charging fully. Practically protect the battery durability.

Cautious:

- 1、Frequent and long-playing charging will shorten battery life.
- 2、Please charge when the battery only has a grid or less a grid power to avoid not to charge fully because of very low power.
- 3、Charge the battery fully at least once three months.

### Maintenance

- 1、Please clean the gauge with soft cloth. Put dry cloth in the water with detergent and clean the gauge after drying it. Don't use volatile chemicals, such as volatile oil, thinner, alcohol.

### Test stands



SJX-5KV



SPV-200K

Note: The test stands and clamps need to purchase additionally.

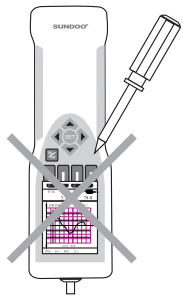
**Caution and warning**



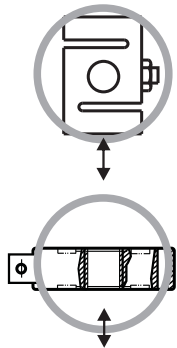
**Caution** Wrong operation may damage the equipment or even cause serious accident. There are important precautions and operation methods listed in the manual, so please read it carefully before using the equipment and store it carefully after using. If shock load is tested, please choose proper capacity which is double than the needed load. Effective test range is 10%--100%FS.



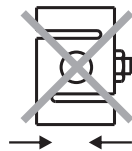
- 1、 Please wear protective mask and gloves to avoid to be hit by scattering pieces during break test.
- 2、 Do not use damaged or warped clamps.
- 3、 Don't overload the gauge. When the "ERROR" appears on screen, it means that the load cell already exceeds rated capacity and immediately reduce the load.
- 4、 Do not use nails and pointed tools to press the buttons (Picture 1).
- 5、 The instrument is used for pull and push measurement (Picture 2). Don't test like Picture 3 and Picture 4.



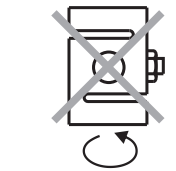
Picture 1



Picture 2



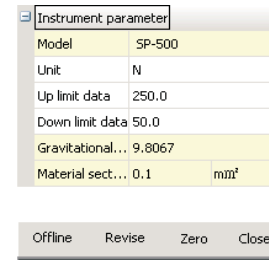
Picture 3



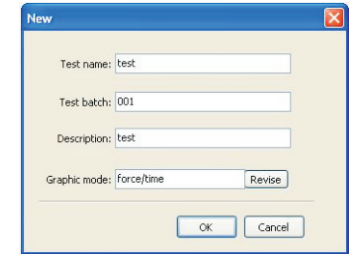
Picture 4

- 6、 Do not operate the equipment near water, oil or other liquids. Keep the equipment in dry, cool and stable place.
- 7、 Don't use other adaptors for charging, or it may cause circuit fault and fire.
- 8、 Please use the gauge under inserting adaptor plug into socket fully. Loose plug may cause short circuit to lead electric shock and fire.

then press "confirm" button to finish. At the same time, "New test" is changed to "Delete test" button, "Start testing" button is changed to operation status. Showing as follows is to set a force/time graph mode spring test. (Picture 33)



Picture 32

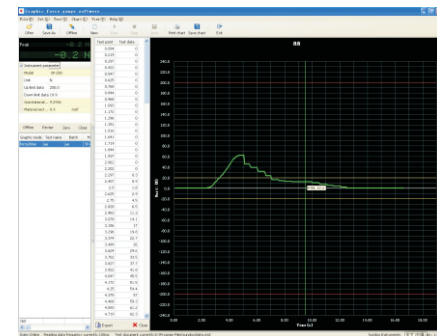


Picture 33

After confirming the information, press "Start testing" button in function bar or in test menu of menu bar to carry out drew pointing record. Press "Delete test" button to delete current testing and information. When finish testing, press "Stop testing" button to stop the record of current drew pointing, press "Save test" button to save the test information and the data of the drew pointing to the data saved region, or press "Delete test" button to desert the data and the information.

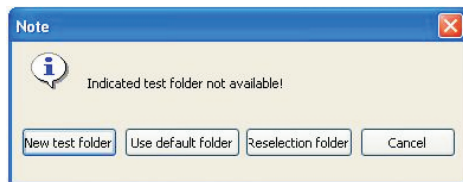
D. Save the data

You can view the test data information in data saved region. Double press the test stand colleagues to open the drew pointing of the test data and analysis the change trend. Showing as follows. (Picture 34)



(Picture 34)





Picture 31

Now you can choose the corresponding step:

- 1) Press “New test base” button to new data base file by writing the test title.
- 2) Press “Use default base” button to use data.rmd type data base file immediately.
- 3) Press “Re-choose base” button to open the past data base file by choosing the file route.
- 4) Press “Exit” button to exit software.

#### B. Amend the parameter

Amend the sensor parameter in sensor parameter region of software by in-line the SP diagram force gauge with the software. The parameter available to amend including: unit, the upper limited value and the lower limited value est. When in need of amending the sensor parameter, press “Amend parameter” button in sensor parameter region, the purpose of “Amend parameter” will be changed to “apply amending”. After amending, you can press “apply amending” button to save the amending result only. The sensor parameter will be changed also.

The other buttons detailed as following:

Press “Off-line” button to off-line the sensor with the software.

Press “Zero out” button to zero the force value in sensor.

Press “Shut down” button to off the sensor immediately, the same as the power button in sensor.

#### C. Start testing

After in-line, press “new test”, in-put the detailed “test title”, “test bath”, “description” est. information. Press “Amend” button to choose the graph mode,

- 9、 Don't use the other power except adaptor rated voltage, or it may cause electric shock and fire.
- 10、 Don't use pull out and insert plug with wet hands, or it may cause electric shock.

### Function

SP diagram force gauge is new generation for compression and tension measurement. Small size, low weight, easy to carry, multifunctional, high accuracy, force curve display on screen.

Combined with test stands and clamps, it could perform as a small testing machine for different applications.

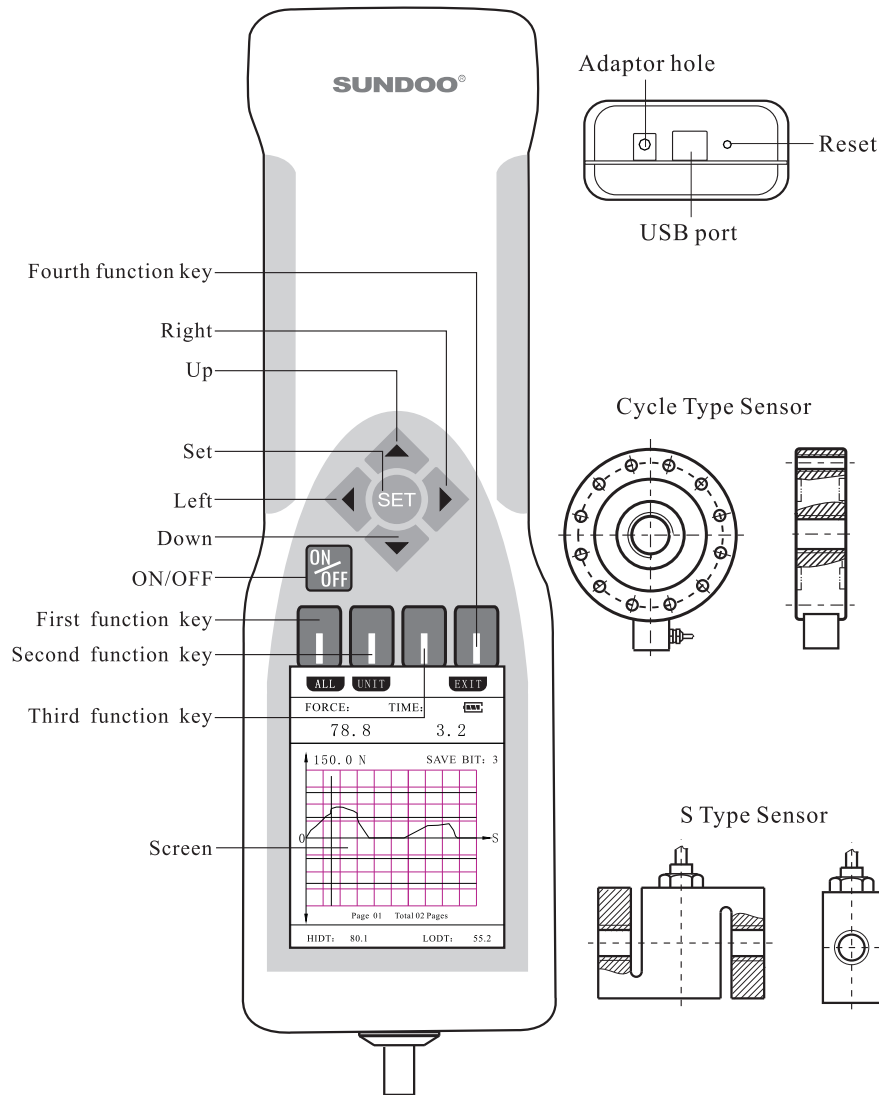
### Features

- 1、 240\*320 pixel, 65535 color TFT screen.
- 2、 Peak/real-time value/force curve display on screen at the same time, monitor and track testing procedure.
- 3、 Upper and lower limit setting and judgment, buzzer alarm inside.
- 4、 Turnover display.
- 5、 3 groups curve storage.
- 6、 70 peaks and real-time values storage.
- 7、 Four units option : N/kgf/lbf/ozf.
- 8、 Peak hold, automatic peak zero.
- 9、 Material strength measurement by inputting area.
- 10、 Shutdown design without any operation.
- 11、 Connect to special stand, automatically stop after reaching to pre-set force.
- 12、 USB output, multiple test mode options after connecting to computer, infinite data storage/ transmitting, curve details view, user-defined test report.

### Work environment

- 1、 Work temperature:20°C ±10°C ;
- 2、 Relative humidity:35%RH~65%RH;
- 3、 No shock and corrosivity materials around.

Part names and functions



Picture 5

B.Function bar order

Function bar order including the following comments:

- :Open the original saved data base.
- :Save current test result by pointed title.
- :Online/off-line with sensor.
- :New graph mode.
- :Start curve pointing.
- :Stop curve pointing.
- :Save current curve pointing data.
- :Print pointed test result by pointed form.
- :Save the current curve pointing form as Photoshop file.
- :Exit software.

Function bar buttons operated purpose is the same as menu bar buttons, to provide simple and convenient operated process.

C.Graph function bar

Graph function bar including the following comments:

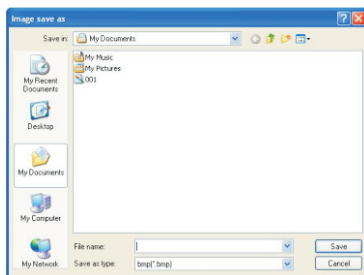
- :Display the whole drew pointing data on the drew pointing region of screen.
- :Enlarge the space of X-axis.
- :Shorten the space of X-axis.
- :Enlarge the space of Y-axis.
- :Shorten the space of Y-axis.

6、 On-line operation

A.Make on-line

Firstly you should connect sensor with computer by USB cable, then press “in-line” button to make in-line. At this moment the true test value screen will show the true test value, the peak value est. The sensor will display the set parameter at the same time.

When open the software, it will call out last time saved data base file. If there is some route mistake with it, it will warn you to choose next step in prompt box.(Pictnre 31)



Picture 30

The software can save curve pointing form as bmp, jpg est. Photoshop file types for convenient to analysis and exchange.

- ②Graph print: Print pointed test result by pointed form.
- ③Turn over: Turn over the upper and lower value of X-axis.
- ④Display the whole: To display the whole curve pointing data on curve pointing region.
- ⑤E.nlarge X-axis: To enlarge the space of X-axis.
- ⑥Shorten X-axis: To shorten the space of X-axis.
- ⑦Enlarge Y-axis: To enlarge the space of Y-axis.
- ⑧Shorten Y-axis: To shorten the space of Y-axis.
- ⑨Display value line: Display value tracking line in curve pointing region.

#### 5) View menu

View menu including the following commends:








- ①Function bar: display/hide function bar.
- ②Graph function bar: display/hide graph function bar.
- ③Statue bar: display/hide statue bar.

#### 6) Help menu

Help menu including the following commends:

- ①Company homepage: to open company homepage.
- ②Animation help: play the software operation process by flash
- ③Help: provide the illustrate of usage help.
- ④About: display the version number of the software.

## 1、 Fast operating guide


Button	Description
 ON/OFF	ON/OFF
 SET	Setting the instrument parameter
 Up Button	Under the setting interface, used to select the parameter required to modify. Under the curve detail interface, used to view last page curve. Under data view interface,used to adjust current storage place.
 Down Button	Under the setting interface, used to select the parameter required to modify. Under the curve detail interface, used to view next page curve. Under data view interface, used to adjust current storage place.
 Left Button	Under the setting interface, move cursor left to select the parameter required to modify. Under curve detail interface, move cursor left to check the point data on curve. Under storage interface,move cursor left to select the storage place. Under curve view interface, move cursor left to select the needed curve to view. Under data view interface,used to adjust current storage place quickly.
 Right Button	Under the setting interface, move cursor right to select the parameter required to modify. Under curve detail interface, move cursor right to check the point data on curve. Under storage interface, move cursor right to select the storage place. Under curve view interface , move cursor right to select the needed curve to view. Under data view interface,used to adjust current storage place quickly.
	Depend on displayed description under the function button.
USB Port	Connect with test stands or with PC by software(Stand connection cable need to purchase additionally).
Adaptor Hole	Connect with adaptor DC 12V 400mA.
Reset Hole	To restart once suffer strong jamming.

## 2. Function introduction in details

### 1) Connect sensor cable

Make the notch on the sensor cable connector lining up to the notch on the instrument socket. Then push in the connector. When disassemble, take the moueable outside csble, pull out the connector.


### 2) Turn on the power

Turn on : Press “

Turn off: while the power is turn on, press “ON/OFF” can turn power off, or auto turn off according to the setting the power off time if there is no testing.

### 3) Equipe connetor: choose correct connetor accessories or clamps and equip it on pole.Attention do not use strong force to screw it , otherwise , it will damage the sensor.

### 4) Parameter setting interface

Press “

Picture 6

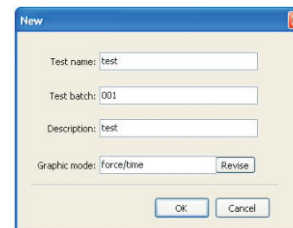
For supporting USB different version agreement, the software can set the speed rate with the sensor. As a general rule, user should better set 100ms frequency to get best connected speed rate and curve purpose.

### 3) Test menu

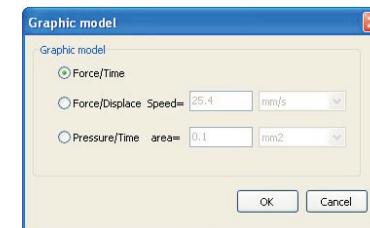
Test menu can be gone on under connected statue. After new graph mode, the other test menu can be gone on. They constraint each other.Test menu including the following commends:

#### ① New set test: new set graph mode.(Picture 28)

New set test contains test title, test batch, describe, current graph mode est. The software provides three graph modes: value/time, value/shift, and pressure/time. Speed units contain inch/s, mm/s, cm/s, m/s. sectional area units contain square millimeter, square centimeter, square meter. To get more sectional area value, the corresponding sensor parameter will be changed. (Picture 29)



Picture 28



Picture 29

#### ② Start testing: Start curve pointing.

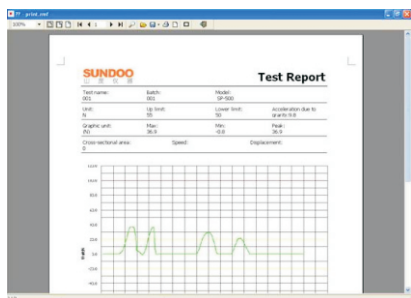
#### ③ Stop testing: Stop curve pointing.

#### ④ Save test result: Save current curve pointing data.

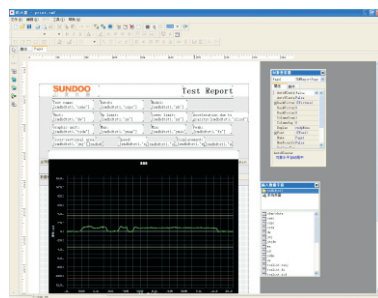
### 4) Graph menu

Graph menu including the following commends:

#### ① Graph save: save current curve pointing form as Photoshop file.



Picture 24



Picture 25

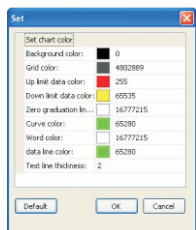
The configured print form editor in this software can go on simple type setting and amending display details. As a general rule, user can only amend the descriptive content in the test report.

- ⑦ Associate files: associate rmd type data base file.
- ⑧ Exit system: exit system.

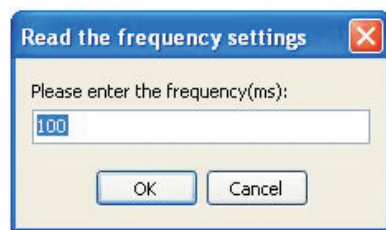
2) Set menu

Set menu including the following commends:

- ① Graph setting: set the form property in drew pointing region.(Picture 26)  
Graph setting including graph color setting and test curve thickness setting. For the software defaults the form property, User could choose or amend in corresponding form immediately by press “confirm” button with the need to change. Press “default value” button to recover initial status.
- ② Test frequency setting: set the connect speed rate between software and sensor.(Picture 27)



Picture 26

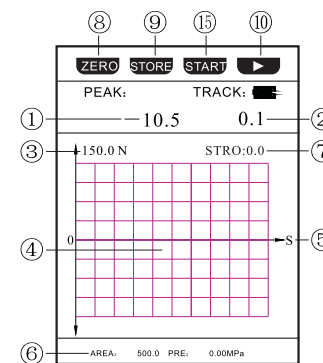


Picture 27

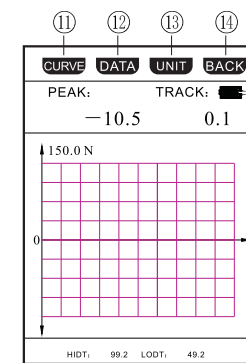
- ① Upper limit: measured value is over the upper limit, buzzer alarms continually.
- ② Lower limit: measured value is below the lower limit, buzzer alarms once.
- ③ Machine stop: when test stand is connected with matched gauges, it will stop when value on gauge is greater than stop value of test stand.
- ④ Acceleration: set the gravity acceleration matches the condition, range: 9.70 00~9.8999.
- ⑤ Peak hold time: 1-99s, 0 means not releasing peak.
- ⑥ Drawpoint: the interval of curve drawpoint, (0.1~0.5 second set).
- ⑦ Power off time: setting 1-99 minutes. 0 means not power off automatically.
- ⑧ Whether turnover display.
- ⑨ Whether test material pressure.
- ⑩ Material sectional area.

Note: move “▲▼◀▶” to the matching option, then modify the parameter by “+□”, when you finish the modification, press “exit” return to the initial interface.

5) Initial interface



Picture 7

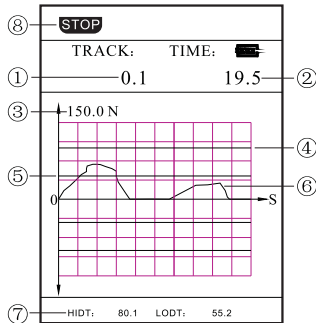


Picture 8

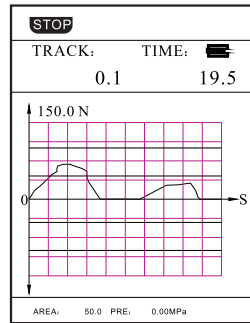
- ① Peak.
- ② Tracking value.
- ③ Grade value: while curve is drawpointing, test value exceeds grade value, it will switch to next grade.
- ④ Region of curve display.
- ⑤ Curve drawpointing x-coordinate unit: second.

- ⑥ Upper or lower limit, sectional area or pressure indication.  
The parameter of testing material pressure is “yes”, then display sectional area and pressure ( Picture 7 ).  
The parameter of testing material intensity is “no” , then display upper and lower limit( Picture 8 ).
- ⑦ Data: peak and tracking value storage place.  
Typeface is white, means has storage data.  
Typeface is not white, means has no storage data.
- ⑧ Zero: clean the peak and tracking value.
- ⑨ Store: press the button to save current peak and tracking value to relevant data place, if the data place has storage value and replace the value.
- ⑩ ▶ : the first function button, press it will switch ZERO/STORE/START  
▶ to CURVE /DATA/UNIT/BACK button.
- ⑪ Curve: pressing it for curve view interface.
- ⑫ Data: pressing it for data view interface.
- ⑬ Unit: pressing it to change unit among N/kgf/lbf/ozf.
- ⑭ Back: the second function button, press it will switch CURVE/DATA/UNIT / BACK button to ZERO /STORE/START/▶ .
- ⑮ Start: press it enter testing interface for curve draw-dot.

6) Measuring curve draw-dot interface



Picture 9

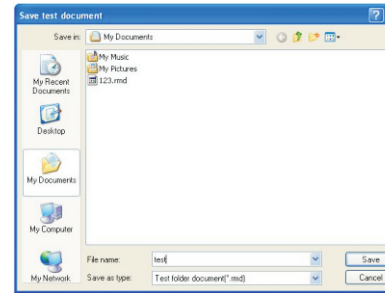


Picture 10

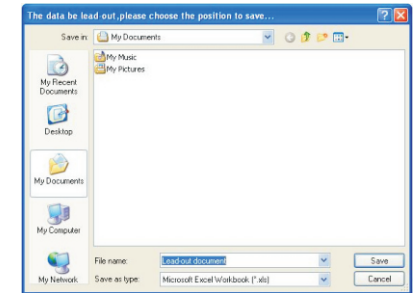
- ① Current measuring value.
- ② Current measuring time, unit is second.

This function is used to exchange and display the data base file between users. One data base file contains different test results, and can be opened in computers with this configured software by other transmission mediums.

- ③ Save test base: save current test result under pointed file title.(Picture 22)  
Put current one or more test results into pointed data file title. Generally used for data base backing up.
- ④ Derive test data: derive the data of pointed test result to other text files.  
Check the specific test value of one test result in data base file by “derive test data”. This function supports xls, csv, htm, ref, txt est. text types of deriving.(Picture 23)



Picture 22



Picture 23

- ⑤ Print test report: print pointed test result by pointed form.(Picture 24)  
Test report contains the details of data saved region, current test curve and other related data. If without the details of data saved region, the details of display frame in test report is zero also. Under this window, press “save report form” button to save the current test report as rmp text. Press “open report form” button to open original saved report form.
- ⑥ Define print form: user define the display purpose.(Picture 25)

⑦Region of data saving

After operating graphic modes, the saved data will be displayed on this region. The saved data including: graphic mode, test title, test batch, mode, test time, unit, upper or lower limit, acceleration of gravity, detail, graphic unit, the max value, the minimum value, peak value, sectional area and unit, sectional area speed unit, move and move unit est. Some detail value will not be displayed with different graphic modes. Only with specific modes.

⑧Statue bar

Displaying the information of connecting statue, frequency of data getting, route of data base file, program version est.

5.Function module introduce

A. Menu commend

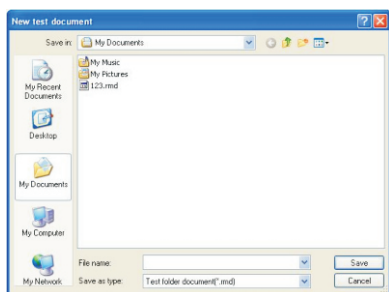
1) File menu

File menu including the following commends:

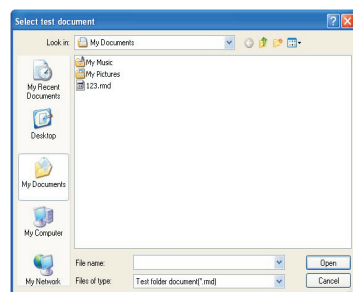
①New a test base: create a new data base.(picture 20).

it will stop when value on gauge is greater than stop value of test stand. Software default data base is the data base file titled “data.rmd” under the root list of installing route. With connected testing, you should better appoint the title of new data base to convenient for future management.

②Open the test base: open the saved test base(picture 21).



Picture 20



Picture 21

③Grade value: when test value exceeds grade value, it will switch to next grade.

④Upper limit line (red): when upper limit value exceeds grade value, the upper limit line will not show.

⑤Lower limit line (yellow): when lower limit value exceeds grade value, the lower limit line will not show.

⑥Test curve: the changed curve of force value during the test process.

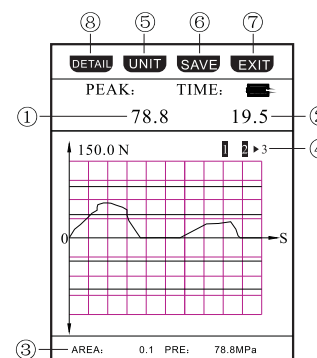
⑦Upper and lower limit, sectional area, and intensity indication

When the pressure parameter of tested material is "Yes", it will indicate sectional area and pressure value (Picture 10).

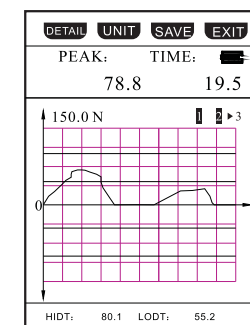
When the pressure parameter of tested material is “No”, it will indicate upper and lower limit value (Picture 9).

⑧Stop: stop testing and go into storage interface(Picture 11).

7) Storage interface



Picture 11



Picture 12

①Peak: max. value during testing.

②Time: total time during testing, unit: second.

③Upper and lower limit/sectional area、 pressure.

Material pressure parameter is “ Yes”, display sectional area and intensity (Picture 11).

Material pressure parameter is “ No”, display upper and lower limit (Picture 12).

④Save grid

When the font color becomes white, it indicates that test curve is saved. When the font color doesn't become white, it indicates that no test curve is saved “▶” means the current save grid.

⑤Unit Button

Press this button to convert four units (N, Kgf, lbf, ozf).

⑥Save Button

Press this button, it will save the current test curve into the save grid the sign “▶” points at, and make “▶” switch to next grid.

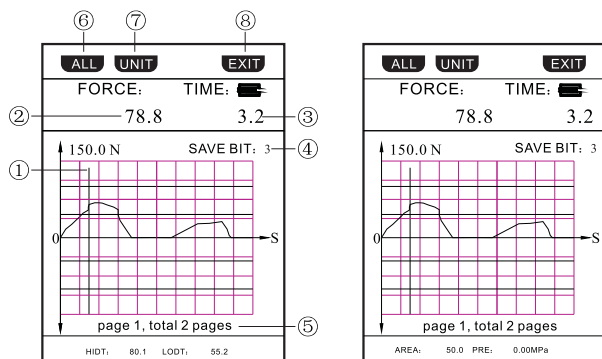
⑦Exit Button

Press this button, it will come to the work interface.

⑧Detail Button

Press this button, it will come to interface to view the curve details(Picture13).

8) Curve detail interface



Picture 13

Picture 14

①Cursor line: point at the view point of current curve, move the cursor line by pressing “◀▶” button.

②Force: value of curve spot that the cursor line points at.

③Time: time of curve spot that the cursor line points at, unit:second.

④Save bit

When save bit is 0, it means current view is the result curve just now tested. When save bit is1, 2 or 3, it means current view is the measuring curve of corresponding grid.



⑨Click the logo of SP to start the testing software.

⑩Ready Backstage operation...

Picture 19

2.Connect force gauge with computer by USB cable

3.Open force gauge, and make it work

4.software interface introduce(Picture 19)

The interface including 8 parts according the whole module

①Startup Menu Bar

All the function menu of software

②Function Bar

Include the buttons of data base operating, connect operating, drew point operating, data save operating and exiting.

③Diagram Function Bar

Enlarge or shorten coordinate data in drew point part.

④Real testing data display region

This part will display the current peak value and testing value by connecting computer only.

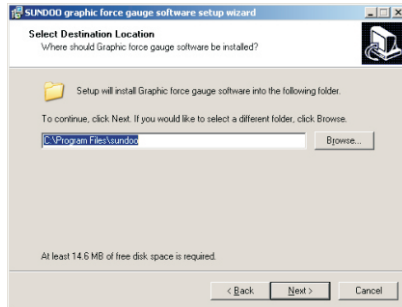
⑤Gauge parameter region

By connecting computer, the gauge parameter will be displayed on this part, such as model/unit/upper limit/lower limit/gravity acceleration/item sectional area and speed and so on. Speed displayed under “value/displace”

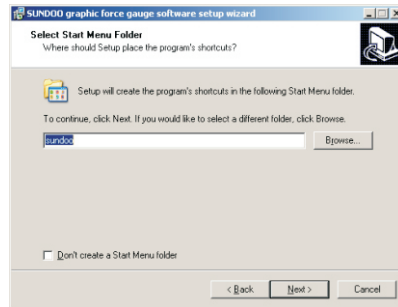
⑥Region of curve drew pointing

Adapted with SP diagram force gauge, to know the variation trend of force value immediately. And the corresponding unit of coordinate will be converted automatically by choose different graphic modes.

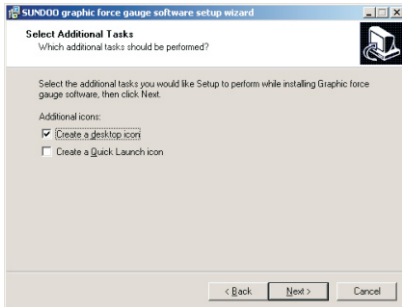




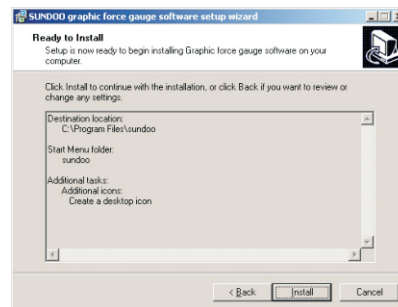
③ Assemble route and click next step



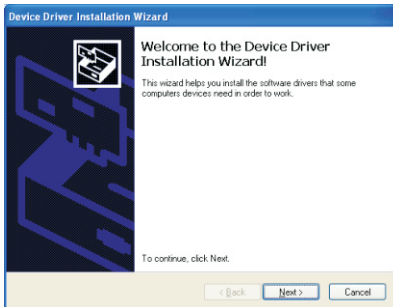
④ Click next step



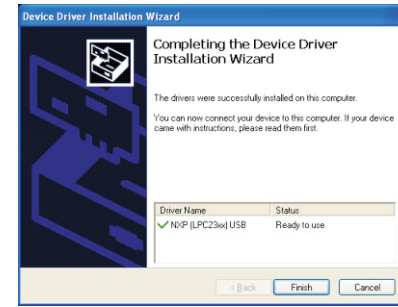
⑤ Choose to create desktop icon and click next step



⑥ Choose to assemble



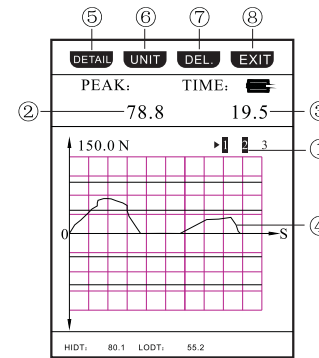
⑦ Click next step



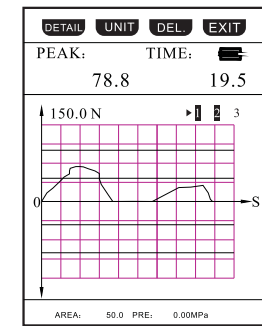
⑧ (If step out warning note of not passing Microsoft certificate, please click assemble also) click "finish" button, finish process and assembling USB driver

- ⑤ Curve located screen indication: it indicates the total pages of screen of current curve, and the locate screen of current view. press “▲▼” to flat screen flip.
- ⑥ All button  
When save bit is “0”, press this button to come back to save interface(Picture 11).  
When save bit is “1”, “2”, or “3”, press this button to come back to the curve view interface(Picture 15).
- ⑦ Unit Button: choose 4 units, N, kgf, lbf, ozf, and convert automatically.
- ⑧ Exit Button: press “Exit” key to come back to test interface.

### 9) View curve interface



Picture 15



Picture 16

Press view under the initial interface to come into the view curve interface.  
If no curve button, it could switch by “▶” button.

- ① Save bit  
When the font color becomes white, it indicates that test curve is saved.  
When the font color doesn't become white, it indicates that no test curve is saved.  
“▶” points to the current save grid.
- ② Peak: the max force of current saved test curve.
- ③ Time: the total time of current saved test curve, unit:second.
- ④ Test curve: the saved test curve.
- ⑤ Detail button: pressing this button to come into interface to view the detail curve.
- ⑥ Unit button: choose four units(N, Kgf, lbf,ozf) and convert automatically.

⑦Delete Button: pressing this button to delet the curve in current save grid and the font color doesn't become white.

⑧Exit Button: pressing this button to back to the initial interface.

10)Data view interface

⑤	DEL	UNIT	EXIT	⑥
	Data(N)			④
	Peak:	Track:		
①	0、	2348	0.0	
	1、	5.5	1.1	
	2、	9.1	7.3	③
	3、	11.2	2.0	
	4、	18.2	3.1	
	5、	19.9	1.5	
	6、	19.9	2.3	
	7、	21.1	3.2	
	8、	21.3	1.2	②
	9、	21.4	7.2	

Picture 17

①Storage test value

Every grid put one peak and tracking value, every page has 10 grids, total is 7 pages, total 70 grids, put 70 peak and tracking value.

▶:Means current storage grid

Adjust the current storage grid by “▲▼” and view data.

Quickly adjust the current storage grid by “◀▶” and view data

②Peak of storage

③Tracking value of storage

④Current storage value unit:

Change the unit by pressing unit button

⑤Delete button:

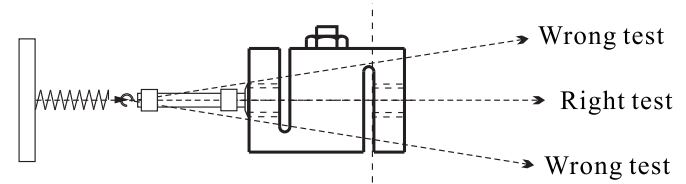
press once delete current storage peak and tracking data.

press all the time will delete current 10 peak and tracking data.

⑥Exit button: press once will back to initial interface

11) Testing

Please fix the gauge on the suitable test stand for easy force measuring. Keep the gauge and the measured sample in a line when testing, otherwise the value will be error.



Picture 18

Turn off the power after your measurement. Then clean and put all the parts and accessories in the case for next time to use.

### Configuration needed for software installation

With USB connecting PC, memory, transmission, tracking, testing curve data unlimitedly by configured software. The configuration need as follows:

1.Hardware condition

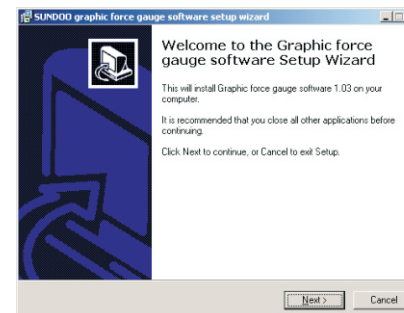
- ①CPU: celeron 1G or over.
- ②Memory:256MB or over.
- ③Hardware disc available capacity: over 300MB.
- ④Driver:CD-ROM or DVD-ROM.

2.Software condition

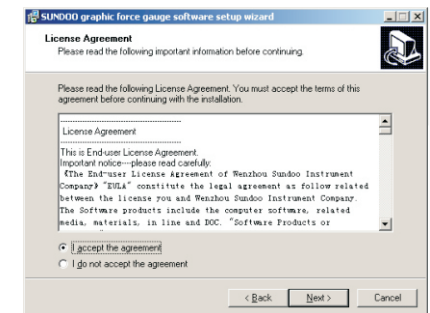
- ①Operation system:window XP (32bits).

### Software installation and use

1.Put the configured disc into computer driver, to assemble software and USB driver(step :driver\English\measuring software\SP\setup.exe).



①Click next step



②Choose “I agree” and click next step