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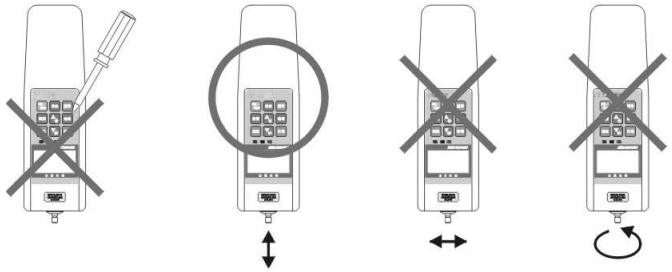
# OPERATION MANUAL

## Model ISF-DF2~DF500
## DIGITAL PUSH/PULL FORCE GAUGE

INSIZE

## 1. Safety Precaution

1. In break down or shear test, wear protective mask to protect you from scattering pieces.
2. Do not use the damaged or warped clamps. Or this kind of clamps may be off or broken, leading the tested object fall on your foot.
3 .When error appears on the screen, the load has exceeded 110% of the capacity.



5. Do not load bending or twisting force on sensor.
6. Do not apply excessive load. Or the device will be damaged.
7. Do not use damaged or warped tips or hooks.
8. Do not use this gauge near water, oil or other liquids. Please store it in a dry and clean place.
9. Use after inserting the AC charger into the socket. Any loose fitting may cause electric shock or fire.
10. Do not use the voltage exceeding the capacity, otherwise the electric shock or fire may happen.

## 2. Functions

ISF-DF series digital push pull force gauge, with compact size and high accuracy, is easy to operate and handy to carry. It can be used not only for measuring tension/compression force but also for various testing purposes such as switch test, insertion/withdrawing test and fracture test. Furthermore, it can also be matched with test stands and clamps for multipurpose measurement.





## 3. Technical Specification

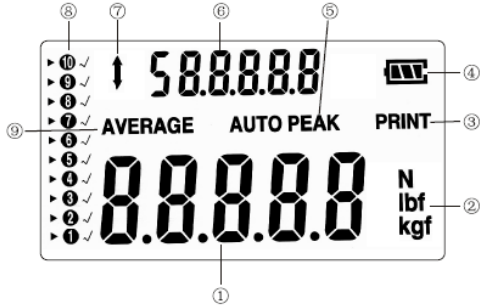
| Model | | ISF-DF2 | ISF-DF5 | ISF-DF10 | ISF DF20 | ISF-DF50 | ISF-DF100 | ISF-DF200 | ISF-DF500 |
|---|---|---|---|---|---|---|---|---|---|
| Max.load | N | 2 | 5 | 10 | 20 | 50 | 100 | 200 | 500 |
| Resolution | N | 0.001 | 0.001 | 0.005 | 0.01 | 0.01 | 0.05 | 0.1 | 0.1 |
| Sensor | | internal | | | | | | | |
| Accuracy | | ± 0.5 % | | | | | | | |
| Dimension | | 228x66x36 (mm) | | | | | | | |

## 4. Characteristic

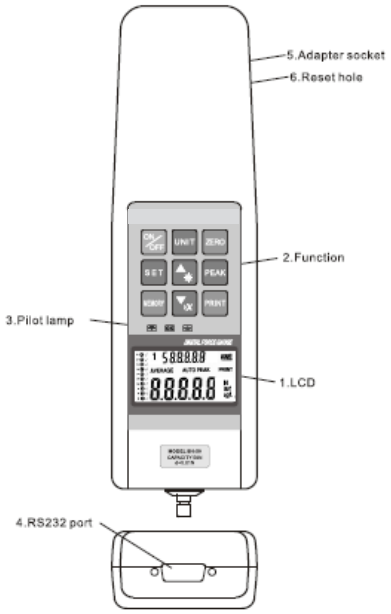
- High accuracy and high resolution
- Peak holding and auto-releasing
- Upper and lower limit setting
- Force direction indication
- Blue background light
- Memorizing and calculating the average
- LCD screen direction turning
- Automatic power off
- Units conversion
- RS232 output

## 5. Description of Parts and Function

1. The LCD display window



The meaning of symbols:
1. Displaying the measured value; in setting mode, it is the set value.
2. Units of push pull force gauge. Three units" N" “bf” “kgf” are optional.
3. Printing all the reserved data.
4. Indication of power content.
5. ”PEAK” means it is in the state of peak holding;
"AUTO PEAK", means it is in the state of auto-releasing.
6. Auto calculating the average and the indication symbol in setting mode.
7. Symbol of force direction “↑”means tensile test and ”↓” means compressive test.
8. Memorizing the test value
The force gauge can memorize 10 tested value. There are 10 grids on the LCD and each of them memorizes one tested value. ”►” means the showing value and ”√”means the tested value has been saved.








## 2. The function of buttons


ON/OFF On/Off button

ZERO Zero button

UNIT Unit
Three units are optional and convert automatically

PEAK Switch of peak mode, peak holding, semi-peak holding and track.Track mode is default when the gauge is on.

PRINT A. When RS-232C is set at “print”, pressing this button prints the ten data and analysis report.
B. When RS-232C is set at “PC”, pressing this button and the”print" will transfer the ten data to computer.

MEMORY Memory
Memorize the tested value and calculate the average of memorized data.

SET Setting
A. Pressing ”SET" button the first time, "HIDT" will appear on the LCD and the upper limit is set. Pressing ”⊡⊡” changes the value. Pressing "SET" button the second time, ”LODT” shows on the LCD and the lower limit is set.
B. Pressing ”SET" button the third time, “LE.SET” shows on the LCD and the data showed is the min memorized value. Pressing “⊡⊡”changes the (In the test, the data which is less than the min. memorized value will not be memorized.)
C. Pressing "SET” the forth time, the ”P.OFF” will show on the LCD and the time of auto power off appear on the display.

D. Pressing ”SET” the fifth time, the ”A.PE” will display on the LCD and the time of auto clean peak appear on the display.
E. Pressing ”SET” the sixth time, the screen will show ”RS232” and data frame will show ”PC” or "print" . Pressing ”⊡⊡” changes the mode, "PC” means outputting the data to computer with RS-232C output; ”Print" means transferring the data to printer. Pressing ”SET" button the seventh time saves the memorized data.

Add or background light switch
A. In memory mode, press it one time, symbol will forward one case.
B. In setting mode, press it one time, the value will increase one.
C. In the average mode, it is the switch of the background illumination.

Reduce or delete
A. In memory mode, press this button one time, symbol will backward one case.
B. In setting mode, press this button one time, the value will decrease one.
C. In the average mode, press this button one time, all of memory data will be deleted.

3 .The Pilot lamp of upper and lower limit

Pilot lamp of upper limited alarm

Pilot lamp of normal

Pilot lamp of lower limited alarm

4. Communicating port

RS-232C series port output the value data to PC or printer.

5. Power connecter

Suitable power adaptor with 12V DC, 300mA.

6. Reset hole

When the gauge is strongly disturbed or pressing “zero” button can’t set zero, use a small stick to press the hole to reset the gauge when the gauge is restarting .





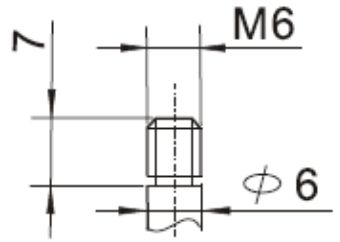
## 6. Preparation

1. Check the power supply

When the power is on, check the battery. If the Ni-Hi batteries power is low, ⊏ appears on the screen. Please charge battery by connecting AC adapter. Charge the battery as following steps: Connect the AC adapter with the gauge first and then connect the adapter to power supply. After the charging started, “▮▮▮“is displayed.
Charge time: 4 hours. Measurement during charging is possible battery can be charged when the power is on or off.

2. Installing measuring tips

Please choose the best tip and fix it on the measuring shaft.
Do not screw the measuring tip too forcibly, or the sensor would be damaged.




## 7. Testing

1. Turning on the power

Press ”OFF/ON" button to make the power on.
When the measuring tip loads the object with not over 5% of the load capacity, the gauge has the automatic cleaning zero function; on the contrary, when the object is over 5% of the load capacity, error may happen so please use light tips.

2. Set zero

Pressing ”ZERO” sets the zero after the reading the stable. The range of zero cleaning is less than ±5% of the capacity.

3. Test mode choosing

The force gauge provides three kinds of test modes: track mode, peak holding mode and auto-releasing of peak. The track mode is default when the gauge is turned on and there is no “PEAK” on the screen. After pressing “PEAK”, the screen will show “PEAK” and it is in peak-holding mode and the value showed on the gauge is the max value the shaft can bear. Pressing “AUTO PEAK” and the auto-releasing of peals will be delayed.

4. Unit selection

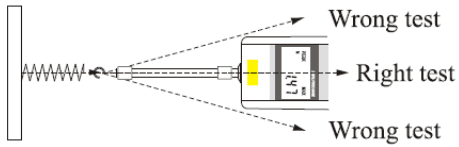
Pressing “UNIT” converts the units: N, kgf and lbf.

5. Setting

Setting upper and lower limits, min captured peak value, auto power off time and RS-232C output connection.

6. Test

Please hold the gauge or fix it on a suitable test stand. Keep the gauge and the measured object in a line, otherwise the value will not be correct.




7. After testing

After the test is finished, turn off the power and take off the measuring tip, then clean and put all the parts and accessories of the gauge into the case.

## 8. After Measurement

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



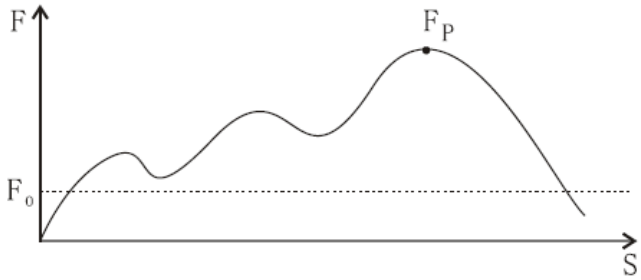


Test Stand

This gauge can be fixed with various test stand (ISF-LR, etc.)as multipurpose test stand for measurement of tension/compression force, insertion/withdraw test, and fracture test, etc.

About memory and peak capture line

If you need to use the memory function, Please set the Peak capture line “F”.In the test, the gauge will remember the Peak value, which is above "F". The value is absolute value. When the force is over than F0, the memory function start to memory the max value in the test; the force is less than again, one time of test is F0 completed. If the peak value is lower that "F" in one test, the peak value is not memorized.




When peak value is saved, the saved case will show “ √ ”,and the ” ▸ ” will be up to lower location. The gauge can memorize 10 values. If the value is more than 10 values, the new value cover original one.

Print

1. When RS-232C output is set at "Print", the print will flicker when “Print” is pressed and ten groups of data and analysis report will be printed. Please refer to Fig.1.

2. When RS-232C output is set at PC, the Print will flicker and when "Print" is pressed, ten groups of data will be transmitted to computer. Specific method of connecting apparatus and computer is in the following:

A. Connect the push pull force gauge to PC with RS-232 cable.
B. Turn on the gauge and make it on the working state, then set RS-232C to the state of output to PC.
C. Find software in CD.
D. Single click the tool on menu column parameter optional dialogue column, then set the parameter (Fig.2). Choose the port: COM1 or COM2 which correspond to the port line.
E. Data can be received by pressing ”print” on the gauge. Refer to Fig.3.
F. Save the tested data.

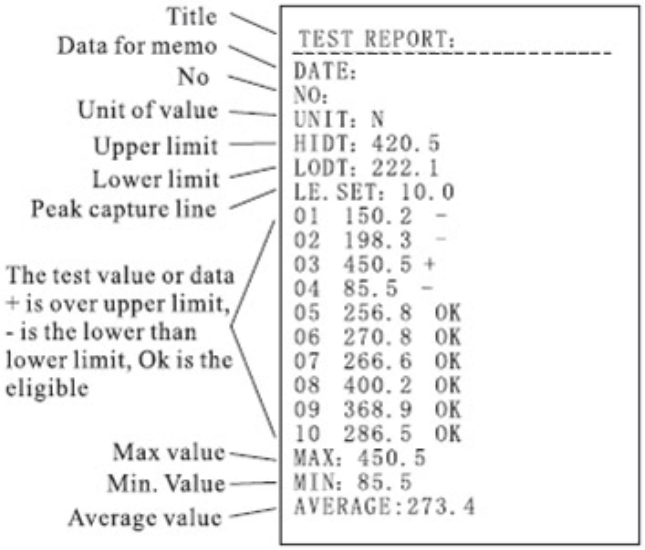



Fig.1





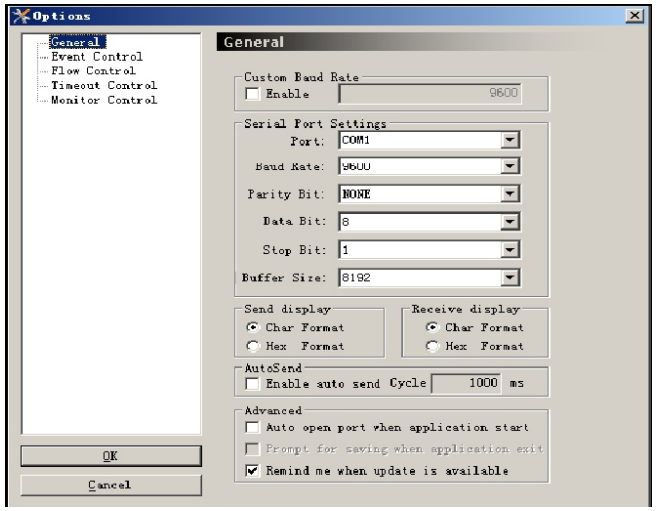



Fig.2

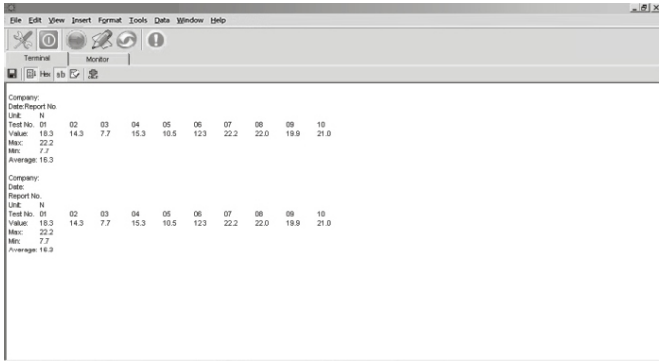


Fig.3

## 9. Maintain

1. Clean dirt and dust from gauge with soft cloth. After dipping cloth in the neutral detergent water and squeeze out water, and clean dirt with the cloth.

Do not use volatile chemical liquid to clean the gauge, such as benzene, thinner, alcohol, etc.

2. Handle carefully during use and carry.

3. Never disassemble, repair, and remodel the gauge yourself. Should you perform any if do as these, that may cause malfunction of the gauge.

4. If malfunction, please contact original sale department or out company.