

# User manual

## Hydraulic Comparator

### HS710



## Claim

- The operating instructions are parts of the products and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- The manufacturer's liability is void in the case of any damage caused by using the product contrary to its intended use, non-compliance with these operating instructions, assignment of insufficiently qualified skilled personnel or unauthorized modifications to the instrument.
- HUAXIN reserve the rights to change the contents or form of these operating instructions at any time without prior notice having been given.

## Safety information

### Symbol



.....warns you against actions that can cause injury to people or damage to the instrument.



.....points out useful tips, recommendations and information for efficient and trouble-free operation.

### Warning

In order to protect your products, your own and others safety, please read this manual carefully before your operation, otherwise it may cause trouble. Huaxin is not liable for any safety problems or damages caused by misuse or incorrect operation.

#### ① Operate by professional



The system must only be operated by trained and authorised personnel who know the manual and can work according to them.

#### ② Use the product only as specified



Any operation not included in the following instructions or outside the specifications must not be attempted.

#### ③ Please use non-damage goods



Don't use and disable the Product if it is damaged.

④ No Disassembling



Disassembling may cause physical injury or equipment damage. Only qualified technicians are allowed to fix the equipment. Please call our service staff for repair instruction and guidance if there would be anything wrong.

⑤ Don't calibrate water pressure gauge



Only provide pressure for oil gauge. If you use the item to calibrate water pressure gauges, maybe water will enter into it and that couldn't generate pressure anymore. Meanwhile that may pollute the gauges under test.

⑥ Store the item with pressure



If this equipment will be in idle for a long time, please shut off the relieve valve and provide a little pressure. In order to avoid the air enter into the item inside, that will affect the system stability when you use it next time.

**Labelling**

Huxin Instrument(Beijing)Co.,LTD		Manufacturer
Model	HS710	Model
Product	Hydraulic comparator	Product name
Range	(0-700)bar	Pressure range
No.	140865011	Serial number
Date	2014.08	Date of manufacture

**Claim**

**Safety**

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## 1. Summary

HS710 Hydraulic comparator adopts advanced stainless steel, with bench-top structure and designed to generate pressure range up to 700bar. The sliding block structure for screw pump design makes the high pressure operation more easy and save labor, and saves operation space without screw outside. The special F-adjust valve adjusts the exact pressure value and calibrate 250kpa pressure instruments. The detachable oil cup is easy to clean and maintenance, checking work medium timely from outside. 3pcs outputs with quick coupling makes it calibrated pressure instruments together. The widely calibrates pressure instrument in the laboratory.

### Functions

HS710 provides pressure measurement for calibrating pressure (differential pressure) transmitter, precision pressure gauge, general pressure gauge and other pressure instruments. It can be extensively used in power, chemical, petrol, metallurgy, metering, military industry, etc.

### Characteristics

- Adopts advanced stainless steel, bench-top structure
- Detachable oil cup is easy to clean and maintenance
- Fast connection, quick pressurizing and easy operation
- It is used for calibrating all kinds of oil gauges

## 2. Technical Specification

Model: HS710 Hydraulic comparator

Generated pressure range: (0~600)bar, (0~700)bar

Working media: 25# transformer oil

Adjust resolution: 0.001bar (0.1kPa)

Material: Body: Stainless Steel/Aluminium Seals: Buna-N

Output interface connection: M20×1.5 Female

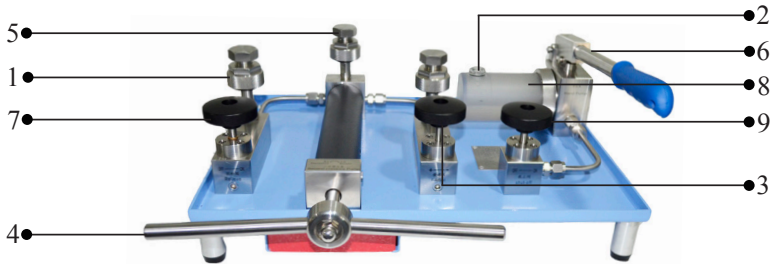
Output quantity: Three

Package: Specialized cartons and foam wrap

Dimensions: 430L×330W×170H(mm)

Weight: 14.9kg

### 3. Components



#### ① Output

There are three outputs. It could calibrate two gauges once time.

#### ② Ventilation nut

Unscrew the nut before use; tighten it up during storage and transport.

#### ③ F-adjust valve

To realize the fine adjustment of pressure value. (clockwise to increase pressure)

#### ④ Lead Screw

Increase pressure by turning the lead screw clockwise, decrease pressure by turning the lead screw anti-clockwise.

#### ⑤ Plugs

Tighten it up when not in use, it could prevent oil-leaking by blocking the output.

#### ⑥ Hand pump

Generate pressure by running the handle up and down repeatedly, to realize pre-pressure.

#### ⑦ Relieve valve

Have to close before pressure generation (clockwise). Slowly open it to relieve the pressure (anti-clockwise).

#### ⑧ Oil cup

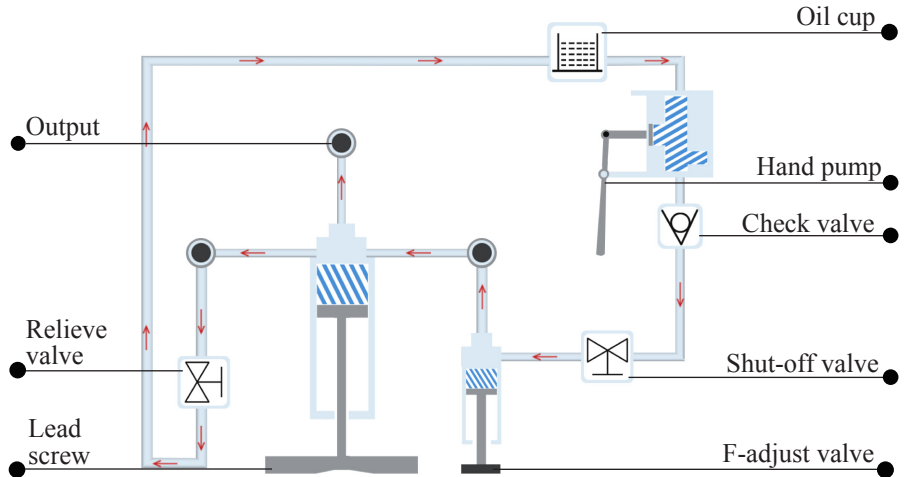
The container is used for the work medium, it can be taken off anti-clockwise from the hand pump.

#### ⑨ Shut-off valve

Cut off the connection between hand pump & lead screw. Disconnect by turning it clockwise, open up by turning it anti-clockwise.

## 4. Working principle

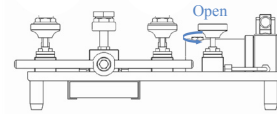
HS710 is composed of hand pump, lead screw, F-adjust valve, relieve valve, shut-off valve, oil cup and outputs, etc. The pressure gauge can be installed quickly, and easy to prepressurize by running hand pump up and down, then compress the work medium by turning lead screw clockwise (anti-clockwise), that could realize the pressure increasing (decreasing) secondary. Fine adjust the F-adjust valve to reach desired point more accurately.



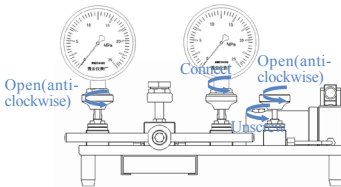
## 5. Operation

**A** Take pressure gauge 250bar(25Mpa) as example. (The standard points:0bar 50bar 100bar 150bar 200bar 250bar)

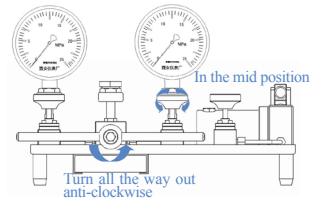
Please fill the work medium (25<sup>#</sup> transformer oil) from vent before calibration .The oil position should be at least 2/3 of the whole oil cup. Open the ventilation nut as the PIC below.



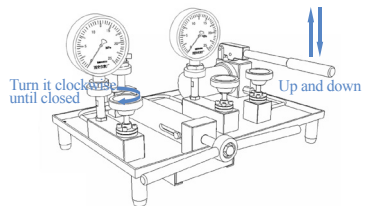
**B** Put HS710 on the level. Turn the relieve valve and shut-off valve anti-clockwise to open them, unscrew ventilation nut.Remove the plug of the outputs, connect the standard gauge and the gauge under test to outputs.



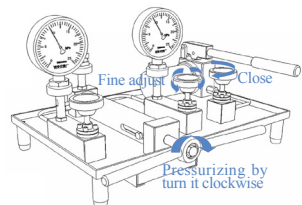
**C** Set F-adjust valve to the mid position,and for lead screw,turn all the way out.



**D** Record 0bar record ,and close the relieve valve: Providing pressure 20bar by turning hand pump up and down and stop pre-  
pressure.

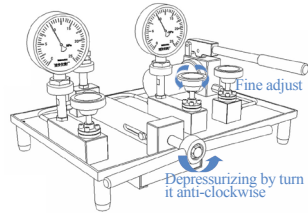


**E** Close shut-off valve clockwise. Rotate the Lead screw clockwise and adjust the F-adjust valve to get exact values .Pressure rising & stabilize to 50bar,100bar,150bar,200bar,250bar in turn, meanwhile,record the data.

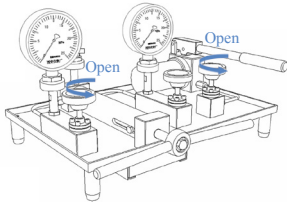




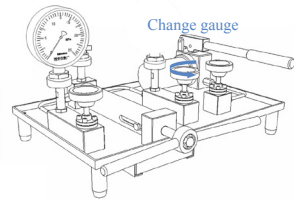
**F** Loop process: Decrease pressure by turning lead screw anti-clockwise (or together with relieve valve), and adjust the F-adjust valve to get exact values. Record the data when the pressure stabilize on 200bar, 150bar, 100bar, 50bar and so on.



**G** Finish the loop process and open the relieve valve to release the pressure. Then open the shut-off valve.



**H** Change gauge under test and calibrate next one.



**i Remark:**

1. Hold the lead screw, turn in and out to complete fine adjustment.
2. Run the hand pump up-down slowly & slightly, to pre-pressurize (15~20) bar.
3. Please put on the plugs after all the tests have been finished.
4. Above pictures are just for reference.

**NOTES:**

1. There must be no pressure in the system when removing pressure gauge .
2. Replace the O-rings regularly.
3. The working media is oil. Pls don't mix with other liquid.

**6. Troubleshooting**

There may be some faults of HS710 mentioned below after long term use, the maintainer can analyse and eliminate problems by these methods. Make sure to release all pressure of system. It is forbidden to disassemble and repair the product with pressure.

Faults	Cause	Solution
Oil leakage	The O-ring seal is loose or damaged	Replace the O-ring
	There is large damage on the sealing faces of gauge under test	Check the sealing
Hand pump couldn't generate pressure	No enough medium in oil cup	Add medium
	The internal O-ring is damaged	Replace the O-ring
	The gauge under test has huge capacity	Increase prepressing times
The pressure is instability,the standard gauge depressurized quickly	Check the instrument to make sure there is no leakage of oil.Otherwise the O-ring is damaged or there is connection loosening	Replace O-ring,or reassemble
	Pressurize without gauge under test.if the instrument doesn't leak pressure,this indicates gauge under test has problem. Otherwise there is problem with device or standard module.Check the module and device separately	Replace standard gauge or gauge under test

## 7. Maintenance

7.1.If this equipment will be in idle for a long time, please turn the lead screw clockwise till it could not move anymore,shut off the relieve valve and put on the plugs.Provide a little pressure by running the hand pump 2-3 times,then tighten the ventilation nut.

7.2.If HS710 needs to take a long distance transport,please put on all plugs to prevent leakage of oil.It is necessary to pack with specialized cartons and foam wrap.

7.3.Replace working medium regularly.

7.4.The working medium is 25<sup>#</sup> transformer oil or any oil that can be used for calibrating gauges.

## 8. Support

The product specifications and other information contained in this manual are subject to change without notice.if you have any questions,please call our services hotline:400 611 3558 or Tel:+86-10-62392087

## **HUAXIN Products series**

### **Digital Pressure Gauge**

HX601/HS108

### **Intelligent Pressure Calibrator**

HS602

### **Pressure Comparator**

HS700(-0.5-0.5)bar

HS701(-0.95-6)bar

HS702(-0.95-16/25)bar

HS703(-0.95-40/60)bar

HS720(0-140)bar

HS704(0-160/250)bar

HS705/HS705A(0-700)bar

HS710/HS710A(0-600/700)bar

HS706(0-1600)bar

### **Electrical Pressure Comparator**

HS318L(0-600)bar 5pcs output

HS316L(0-25)bar 5pcs output

HS317L(0-60)bar 5pcs output

HS315(-0.95-0)bar 2pcs output

HS316(0-25)bar 3pcs output

HS318(0-600)bar 3pcs output

### **Automatic Pressure Calibrator**

HS620(-0.1-1)bar, (-0.95-25)bar

### **Sphygomanometer Calibrator**

ME01 & ME02

### **Temperature Calibrator**

HS212 & HS213

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