

**User manual**  
**Electrical hydraulic comparator**  
**HS318**



## 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 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

 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 water gauges.

#### ⑥ Store the item with pressure

 If this equipment will be in idle for a long time, please provide a little pressure and tighten the plugs. 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	HS318	•	Model.
Product	Electrical hydraulic comparator	•	Product name.
Range	(0~600)bar	•	Pressure range.
No.	140122031	•	Serial number.
Date	2014.1	•	Date of manufacture.

**Claim**

**Safety**

<b>1.Summary</b>	<b>1</b>
<b>2.Technical Specification</b>	<b>1</b>
<b>3.Components</b>	<b>1</b>
<b>4.Operation</b>	<b>2</b>
<b>5.Troubleshooting</b>	<b>3</b>
<b>6.Maintenance</b>	<b>4</b>
<b>7.Support</b>	<b>5</b>

## 1. Summary

HS318 Electrical hydraulic comparator adopts Gas-liquid push principle, the extra air sources give active power to pre-pressure for the whole calibrating system, perfectly instead of the heavy and complex hand work operation.

This instrument is easy to operate and very rapidly generate the required testing pressure, providing precise pressure control, only needs less than 5s to stabilize the pressure. Following the points above mentioned, Its main feature is in saving both effort and time, which is very suitable to do heavy & repeat calibration work in industries of oil & gas, metallurgy, power etc.

### Functions

HS318 is an ideal solution in the laboratory for calibrating pressure transmitters, pressure gauges, pressure switches & other industrial pressure instruments.

### Characteristics

- Steady servo control
- Labor saving, simple operation
- Fast stability less than 5s
- Non-leaking, convenient clean
- With pre-pressurizing function
- Only 1-2 mins realize the full scale calibration

## 2. Technical Specification

Model: HS318 Electrical hydraulic comparator

Pressure range: (0~600)bar

Media: 25# transformer oil

Stability speed: Within 5s each point

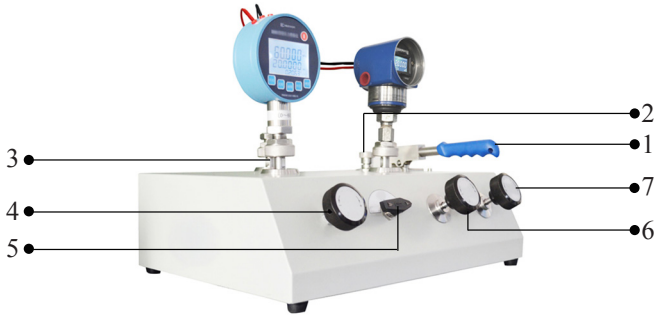
Output: M20×1.5 (3pcs Female)

Package: Specialized cartons and foam wrap

Dimension: 500mm×350mm×135mm

Net weight: 16kg

### 3. Components



#### ① Hand pump

Turn the hand pump up and down repeatedly to generate pressure. Hand pump will realize prepressing function.

#### ② Oil filling

Inject oil into oil cup, there are buoys inside (Remark the height of the oil).

#### ③ Output

There are three outputs. One is designed for standard gauge, the others for gauge under test.

#### ④ Pressurize valve

Pressurize system quickly for instrument after prepressing, turn it clockwise to increase pressure "+", turn it anti-clockwise to decrease pressure "-".

#### ⑤ Switching

"Booster, Stop, Release" 3 selectable positions.

#### ⑥ F-adjust valve

To realize the fine adjustment of pressure value (Turning in clockwise to increase pressure "°").

#### ⑦ Shut-off valve

Have to close before pressure generation (clockwise). Open it to release the pressure (anti-clockwise).

## 4. Operation

### 4.1. Operation preparation

- A** Open the air compressor and provide pressure until it close automatically( we had adjusted demand pressure value before shipping)The store pressure is about 10bar,the supply pressure system is more than 7bar,the air compressor start automatically.
- B** The air compressor must keep in a normal working and output pressure value is more than 7 bar, or it affects the sensitivity of the pressurize valve.  
(If clients have the air sources more than 7bar,you may not order it)

### 4.2. Calibration steps below

Take pressure gauge 600bar as example.

- A** Put HS318 on level position, unscrew the oil filling ② .Then turn pressurize valve ④ anti-clockwise until can't rotate any more( do it lightly ).Rotate switching ⑤ to "Release" position and set F-adjust valve ⑥ to the mid position .
- B** Remove the plugs of the output, install the standard and gauge under test.Close shut-off valve ⑦ clockwise.Record the zero data.
- C** Provide pressure 20bar by turning hand pump ① up and down and stop prepressing. Rotate switching ⑤ to "Booster" position.
- D** Then turn the pressurize valve ④ clockwise very slowly to calibrate points you needed. Use the F-adjust valve ⑥ to get exact value.Record the data.

**i** Remarks :you need to rotate the pressurize valve ④ very slowly ,at the first beginning, the pressure values will not change obviously, that means high pressure system is balancing the system resistance.It is normal state.

Above from A to D is the positive stroke calibration.

- E** When you do the loop calibration, you need to rotate the pressurize valve ④ anti-clockwise very slowly(together with F-adjust valve ⑥ ),and calibrate the points you needed.Record the data.
- F** At last,rotate switching ⑤ to "Release" position and open the shut-off valve ⑦ anti-clockwise,the system pressure value is zero.

#### **i** Remark:

1. Don't install the gauges with corrosive or other impurity, or it has an effect on lifespan and functions.
2. If there are lots of gauges to be calibrated, pay attention to amount of oil and add more in time.
3. The air compressor must keep in a normal working condition. The output pressure should be more than 7 bar, or it affects the sensitivity of the pressurize valve.

#### 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. Please don't mix with other liquid.
4. Please check the oil cup, whether it has enough oil. (The oil position should be at least 2/3 of the whole oil cup).

## 5. Troubleshooting

There may be some faults of HS318 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 faces
The hand pump can't generate pressure	No enough medium is in oil cup	Add working media
	The gauge under test has huge capacity or there is leakage	Change gauges under test
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 gauge. Check the standard gauge and device separately	Replace standard gauge or gauge under test
	There is insufficient pressure of air compressor	Adjust the output pressure (about 7bar)
Maximum pressure is not attained	Prepressing is not enough	Increase prepressing times
	There is insufficient pressure of air compressor	Adjust the output pressure (about 7bar)



## 6. Maintenance

6.1.If this equipment will be in idle for a long time, please rotate switching to“Release” position, put on the plugs and close Shut-off valve. Provide a little pressure by running the hand pump,then tighten the Oil filling.

6.2.If HS318 needs to take a long distance transport, please put on all plugs. It is necessary to pack with specialized cartons and foam wrap.

6.3.The air compressor should release all pressure with transport and long-term storage.

6.4. Replace working media regularly.

## 7. 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(0-600/700)bar

HS710/HS710A(0-600/700)bar

HS706(0-1600/2500)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**

---

HUAXIN INSTRUMENT(BEIJING)CO.,LTD

Add:No.11,Chuangxin road,Changping,Beijing,102200,China.

E-mail:sales-huaxin@comeonhs.com/Web:<http://www.sino-instruments.com>

Tel:+86-10-62392087/Fax:+86-10-62345183