

# **User manual**

## **Electrical Hydraulic Comparator**

### **HS318L**



## 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	HS318L	Model.
Product	Electrical Hydraulic Comparator.	Product name.
Range	(0~600)bar	Pressure range.
No.	1401120008	Serial number.
Date	2014.01	Date of manufacture.

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## 1. Summary

HS318L 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. Servo control pressure and dynamic equilibrium design that make the pressure values very exact and stability. Pressure regulator adjusts the exact pressure value with the min adjust resolution 0.01bar. Very save labor, only a finger can pressurize to full scale. 5pcs pressure output interface with stainless steel material. That can calibrate four pressure gauges once time. The quick coupling is easy to install pressure instrument without using the wrenches. 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.

### Functions

HS318L is suitable for large quantities and repetitive calibrating work. It is widely used in the industries of power, chemical, petrol, metallurgy, metering, etc.

### Characteristics

- Transparent oil cup, that easy to check the work media
- Easy to operate and rapidly generate the required pressure by only a finger
- 5pcs output interface make the calibration more efficient

## 2. Technical Specification

Pressure: (0~600)bar

Media: 25<sup>#</sup> transformer oil

Output: M20×1.5 (5pcs Female)

Dimension: 730mm×350mm×250mm

Net weight: 26.5kg

## 3. Components



### ① Hand pump

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

### ② Ventilation nut

Inject oil into oil cup, fill or replace oil by turning it anti-clockwise.

### ③ Oil cup

The container is used for the work medium, it can be taken off to clean.

### ④ Output

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

### ⑤ Pressure regulator

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

### ⑥ Switching

"Zero, Stop, Booster" 3 selectable positions.

### ⑦ Shut-off valve 1

It is used for corresponding output. Close it in clockwise direction, that will cut off the connection between this output and system.

### ⑧ Shut-off valve 2

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

### ⑨ Plug

Tighten it up when not in use

## 4. Operation

### 4.1. Operation preparation

**A** Open the air compressor and provide pressure until it closes automatically. (we had adjusted the demand pressure value before shipping) The store pressure is about 10bar, the supply pressure system is more than 7bar, the air compressor starts 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 HS318L on level position, unscrew the ventilation nut ②. Then turn pressure

regulator ⑤ anti-clockwise until can't rotate any more(do it lightly).Rotate switching ⑥ to "Zero" position.

**B** Remove the plugs of the output, install the standard and gauge under test.Close shut-off valve 2 ⑧ clockwise.Record the zero data.

**C** Make sure shut-off valve1 ⑦ are open.Open air compressor. Provide pressure 20bar by turning hand pump ① up and down and stop prepressing.Rotate switching ⑥ to "Booster" position.

**D** Then turn the pressure regulator ⑤ clockwise very slowly to calibrate points you needed.Record the data.

### **i** Remarks:

- 1.You need to rotate the pressure regulator ⑤ 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.
- 2.Above from A to D is the positive stroke calibration.

**E** When you do the loop calibration, you need to rotate the pressure regulator ⑤ anti-clockwise very slowly,and calibrate the points you needed.Record the data.

**F** At last,rotate switching ⑥ to "Zero"position and open the shut-off valve 2 ⑧ 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.The air compressor must keep in a normal working condition.The 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 HS318L 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 couldn'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 output pressure (about 7bar)

6. Maintenance

6.1.If this equipment will be in idle for a long time,please put on the plugs and use dust sheets.It could prevent dust entering into system.

6.2.If HS318L needs to take a long distance transport,please put on all



plugs. It is necessary to pack with plywood case.

6.3. The air compressor should release all pressure during 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**

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