Pressure Development of Korea

User Manual

MODEL : PCS-H100

Portable Hydraulic Pressure Calibrator

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1. General Introduction

1.1 Introduction

PCS-H100 is Portable pressure calibrator for Hydraulic pressure calibration up to 1000 bar with pressure generation and precise control. An independent pressure calibration system combining electrical signal measuring and loop power to quickly and easily calibrate for a large amount of on-site calibration.

Using lever type hand pump to generate up to 1000 bar and quickly and easily, and then use the built-in volume controller to precisely adjust the pressure with the secondary fine pressure control.

Full-graphic touchscreen display with intuitive menu selection makes it high visibility and operability.

Upper side of PCS-H100 can equipped quick connectors and adaptors for quick and easy to connect UUT.

1.2 Features

1) Lever type hand pump to generate and control up to 1000 bar
2) 0.02% F.S Accuracy
3) Electrical connection for Transmitter
   - Measure up to ±15 V, ±24 mA
   - Source up to 24 VDC
   - Loop Power
4) Pressure switch test, Help functions
5) Included carrying case
6) Available to apply pressure quick fittings (Optional)

1.3 Use

1) Portable pressure calibration
2) Simple calibration for common calibration lab
3) Calibrate pressure gauge for pressure measuring instruments retail business
4) Pressure generating and controlling for pressure test lab
5) Pressure calibration for laboratory
6) Hydraulic high pressure calibration
7) Easy & quick calibration for pressure transmitter, analog pressure gauge, digital pressure gauge, pressure switch test

1.4 Calibrator Interface

No.	Description	No.	Description
①	Test port	⑥	Oil Reserver
②	On / Off	⑦	Lever type hand pump
③	Full color touch screen display	⑧	Hand strap
④	Fine pressure adjustment	⑨	Electrical connections for measuring mA, V and detecting switch contacts.
⑤	Pressure range	⑩	Vent / release valve

1.5 General Specifications

Pressure range	0 to 1000 bar
Accuracy	± 0.02% F.S
Electrical measurement and source	±15 V.dc, ±24 mA.dc, Accuracy ±(0.01% of Reading + 1digit), Loop Power
Display	Full color touch screen LCD, 110 mm(4.3") diagonal, 480 x 272 pixels., Resolution 999999 (Available to select 4 to 6 digits.)
Power	Lithium-ion rechargeable battery, Charger 9V, 6A (5 hrs charge, 30 hrs battery life)
Workable Temperature Range	0 to 70 ℃ (5 to 75 °C with water)
Storage Temperature Range	-30 to 80 ℃ (5 to 75 °C with water)
Temperature Compensated Range	0 to 50 ℃ (5 to 50 °C with water)
Pressure units	Pa, hPa, kPa, MPa, bar, mbar, kg/cm^2, psi, mmH_20, cmH_20, inH_20, mmHg, inHg, mSW, fSW (mSW and fSW units are applied on a water temperature of 15°C with reference to U.S. Navy Dividing Manual, Revision 7, Table 2-10. Pressure Equivalent.)
Test Port	1/4 " BSPP Female
Weight	4.2 kg including batteries
Size	210 mm(W) x 360 mm(D) x 110 mm(H)
Oil Reserver Volume	100 ml
Media	Water or Mineral Oil

⚠ CAUTION

Please charge the battery of PCS-H100 properly before storing it.
Failure to do so may result in a complete battery drain.

1.6 Ordering Information

Model (PCS-H100_Range)	Description (Pressure Range)
200 bar	0 bar to 200 bar
350 bar	0 bar to 350 bar
700 bar	0 bar to 700 bar
1000 bar	0 bar to 1000 bar

1.7 Accessories

①	②	③	④
			

Item	Quantity
① Carrying case	1
② Rechargeable battery	1
③ Battery charger	1
④ Test lead set	4

1.8 Optional Items

①	②	③	④
			

Item	Description
① Hydraulic Quick-connection adaptor set	CA-H Series (1/4", 3/8", 1/2", 1/8" BSPT & BSPP, NPT)
② Flexible tubes	FTH Series(30 cm to 300 cm)
③ Traceable calibration report with data	KOLAS CALIBRATION CERTIFICATE
④ External Pressure Manifold	Calibrate 2ea of UUT at once with hand-tight quick-connection

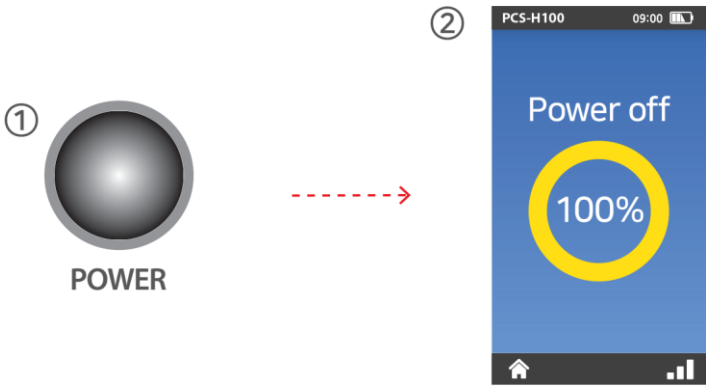
2. Main Menu

2.1 Power on / off

2.1.1 Power on

① Press and hold down Power button until ② screen shows.
It will changes ② screen to ③ screen.

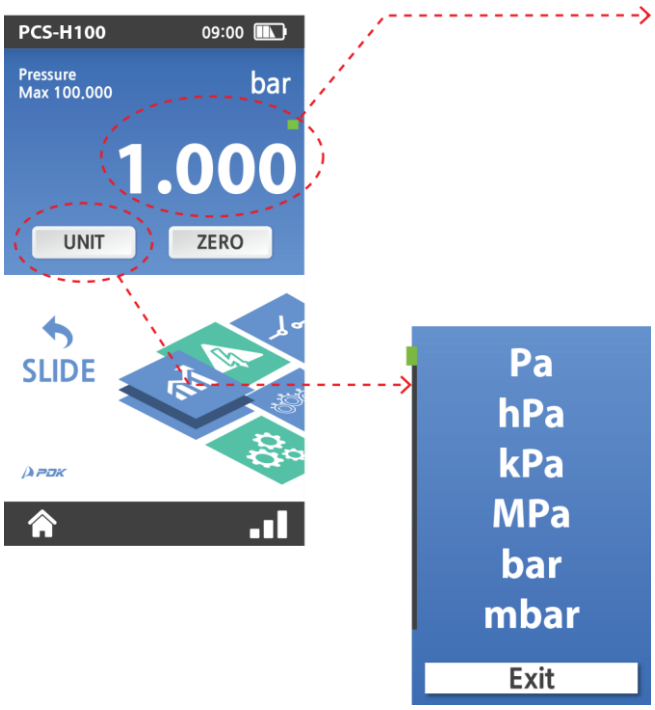
2.1.2 Power off



① Press and hold down Power button until in 0% to 100% on ② screen.

2.2 Unit / Resolution / Zero Cal.

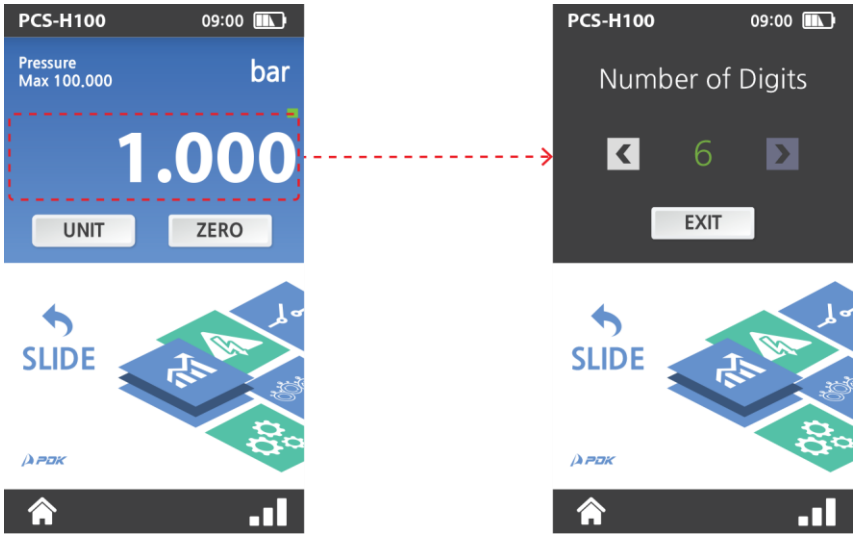
2.2.1 Unit



The current pressure value is displayed, and the full scale and the green bar increases proportionally. This is a function that prevents internal sensor damage due to overpressure.

Touch UNIT and scroll to change units Pa > hPa > kPa > MPa > bar > mbar > kg/cm^2 > psi > mmH_20 > mH_20 > inH_20 > mmHg > inHg.
(If user has high pressure range, smallest units will not be indicated. For example, when user has 100 bar unit, mmH_2O will not indicates because after converted the unit, 7 digits cannot indicate on display.)

2.2.2 Resolution



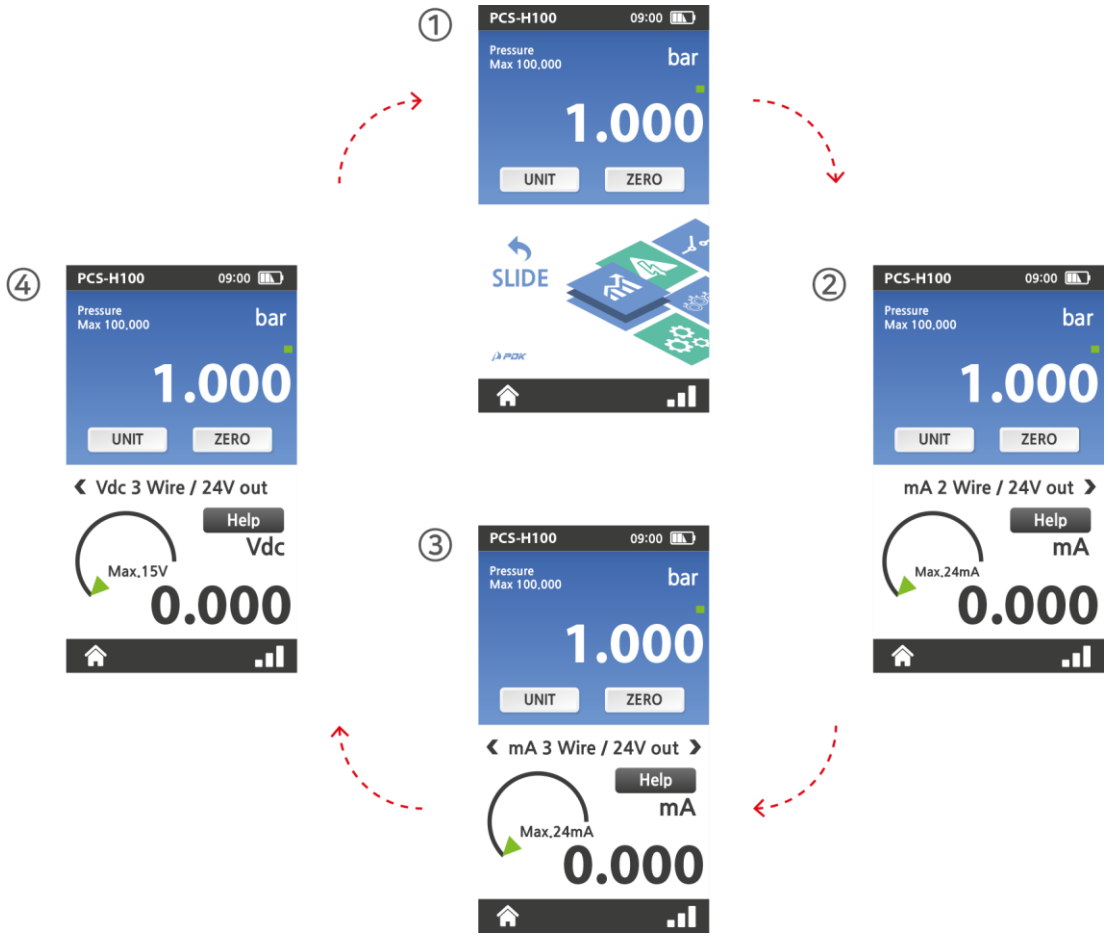
User can select to digit number 4, 5 or 6.
(Only in the units of pressure indicates in decimal point.)

2.2.3 Zero cal.

If pressure does not indicate zero when fully vented condition, touch ZERO to zeroing.
Zeroing function only works when 0 ± 5% F.S. range.

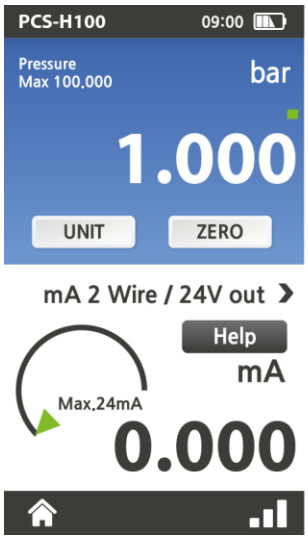
2.3 Slide

Touch and slide the screen to move page as below figure for Electrical Signal measurement.



2.4 mA 2wire , 24V out / mA 3wire , 24V out

2.4.1 mA 2wire , 24V out



Help

Touch Help to see the reference connection.

Exit

Touch Exit to change the screen back.

Loop Power, Measure up to ±24mA, Supply up to 24 VDC.

2.4.2 mA 3wire , 24V out

Help

Touch Help to see the reference connection.

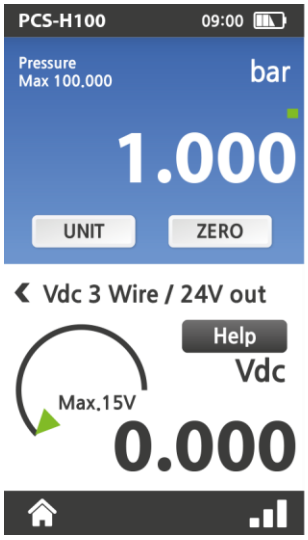
Exit

Touch Exit to change the screen back.

Measure up to ±24mA, Supply up to 24 VDC.

2.5 Vdc 3wire , 24V out / Screen switching

2.5.1 Vdc 3wire , 24V out



Help

Touch Help to see the reference connection.

Exit

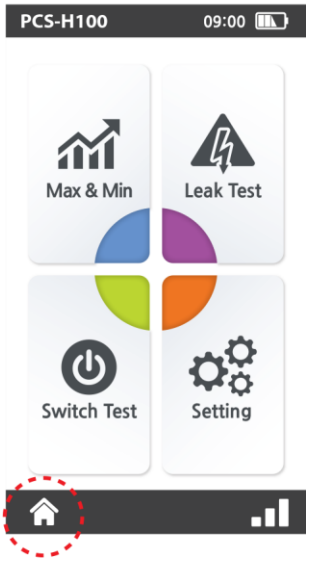
Touch Exit to change the screen back.

Measure up to ±15V, Supply up to 24 VDC.

2.5.2 Screen switching

Task Menu Setup

Return to Main Screen



3. TASK Menu

3.1 TASK menu

Touch to go to task set up menu.

Max / Min test, Leak test, Switch test and Setting can be selectable.

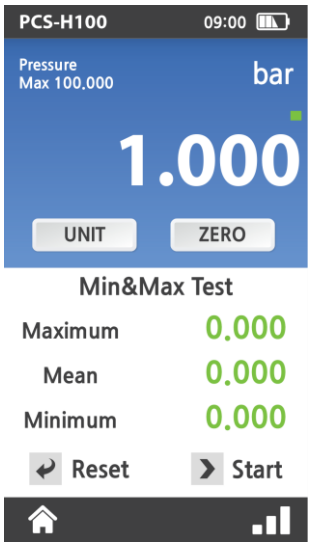
① Max/Min/Avg

② Leak Test

③ Switch Test

④ Setting

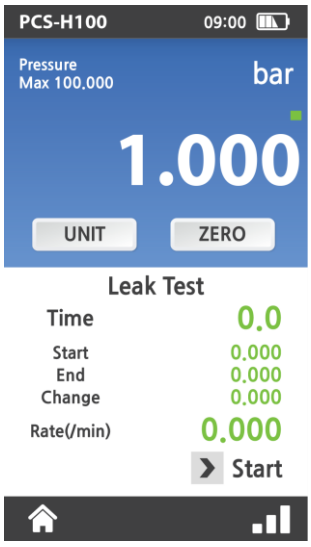
3.2 Max / Min / Avg



This function only can use in pressure measure mode.
Indicates pressure maximum, minimum and average (Mean).

1) Touch then select Max & Min
2) Touch Start to start measure
3) Touch Reset to reset the values

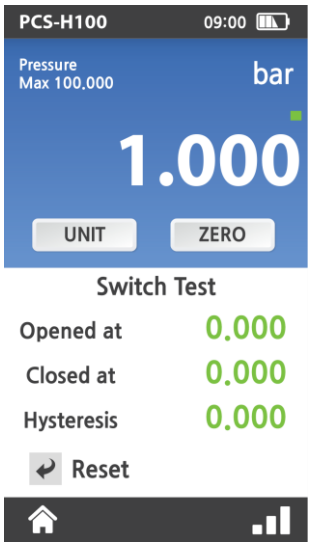
3.3 Leak Test



This function only can use in pressure measure mode.
The leak test function is provided as a means of checking and quantifying the leaks that may be present in the system.

1) Touch then select Leak Test
2) Touch Start to start and stop the leak test.

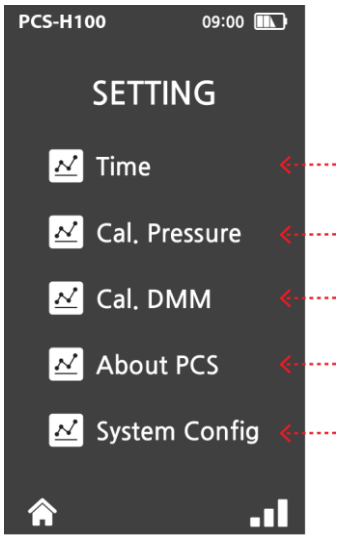
3.4 Switch Test



This function only can use in pressure measure mode.
Indicates opened and closed values when PCS sensed a change.
The pressure difference between the change-of-states (i.e. OPEN-CLOSE or CLOSE-OPEN) value shows in Hysteresis.

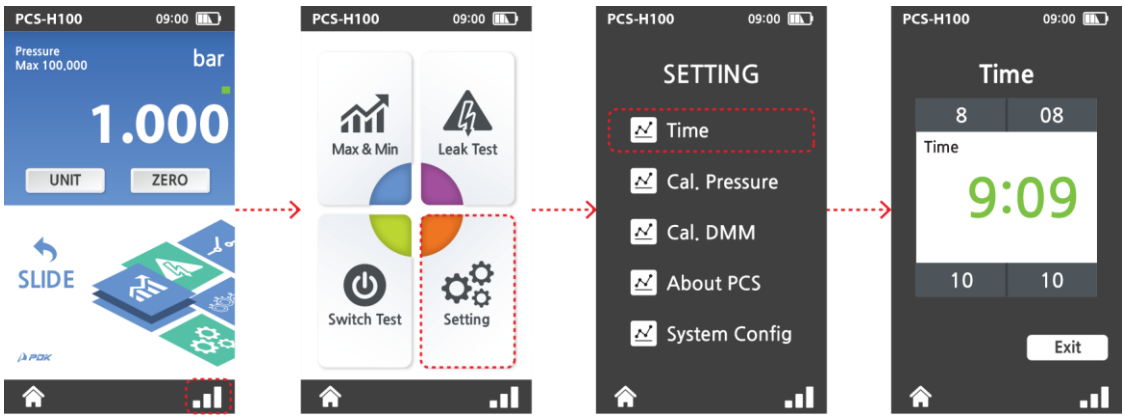
1) Touch then select Switch Test
2) Touch **Reset** to reset the values

3.5 Setting



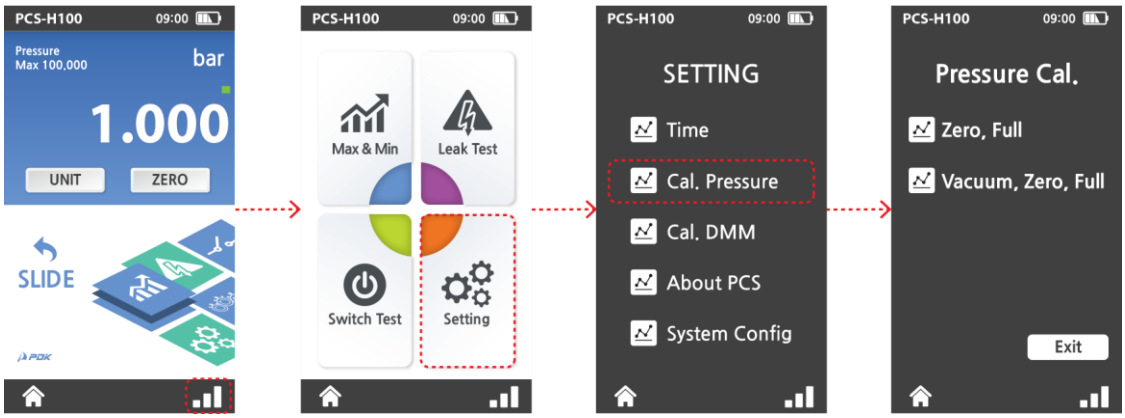
1) Time : Set time
2) Cal. Pressure : Pressure Calibration
3) Cal. DMM : DMM Calibration (Manufacture management mode)
4) About PCS : Current PCS information
5) System Config : System Configuration (Manufacture management mode)

3.5.1 Time



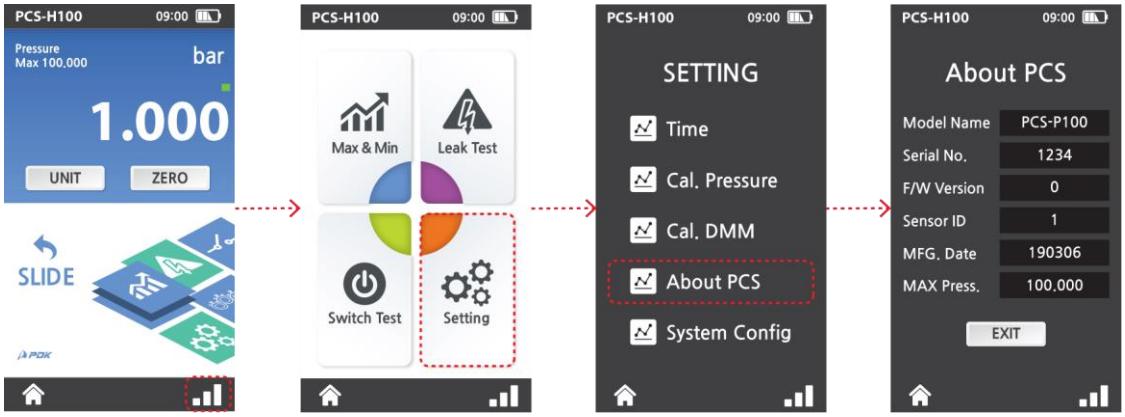
User can set time in Time page.

3.5.2 Cal.Pressure



User can calibrate the pressure values in Cal.Pressure page.

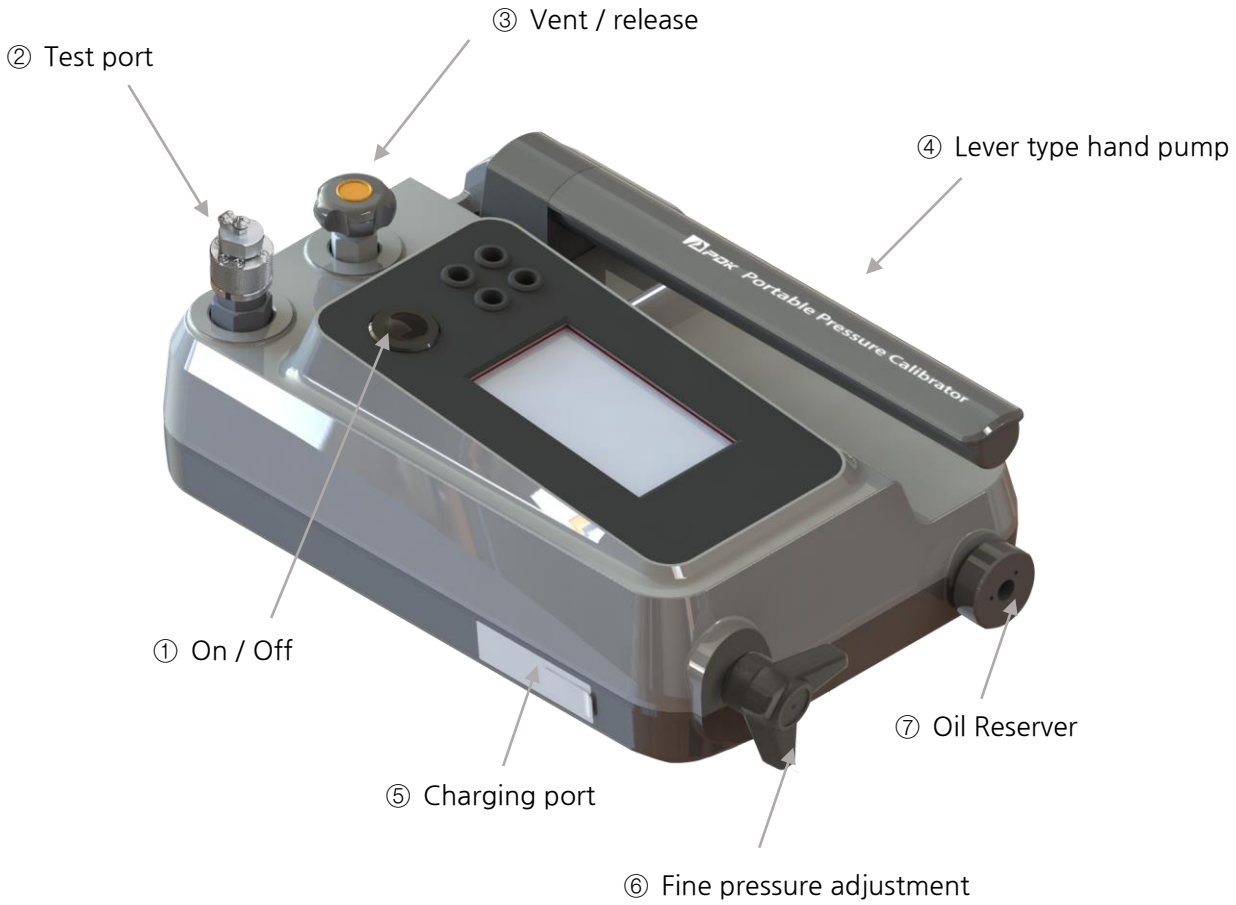
3.5.3 About PCS



User can see the current PCS information in About PCS page.

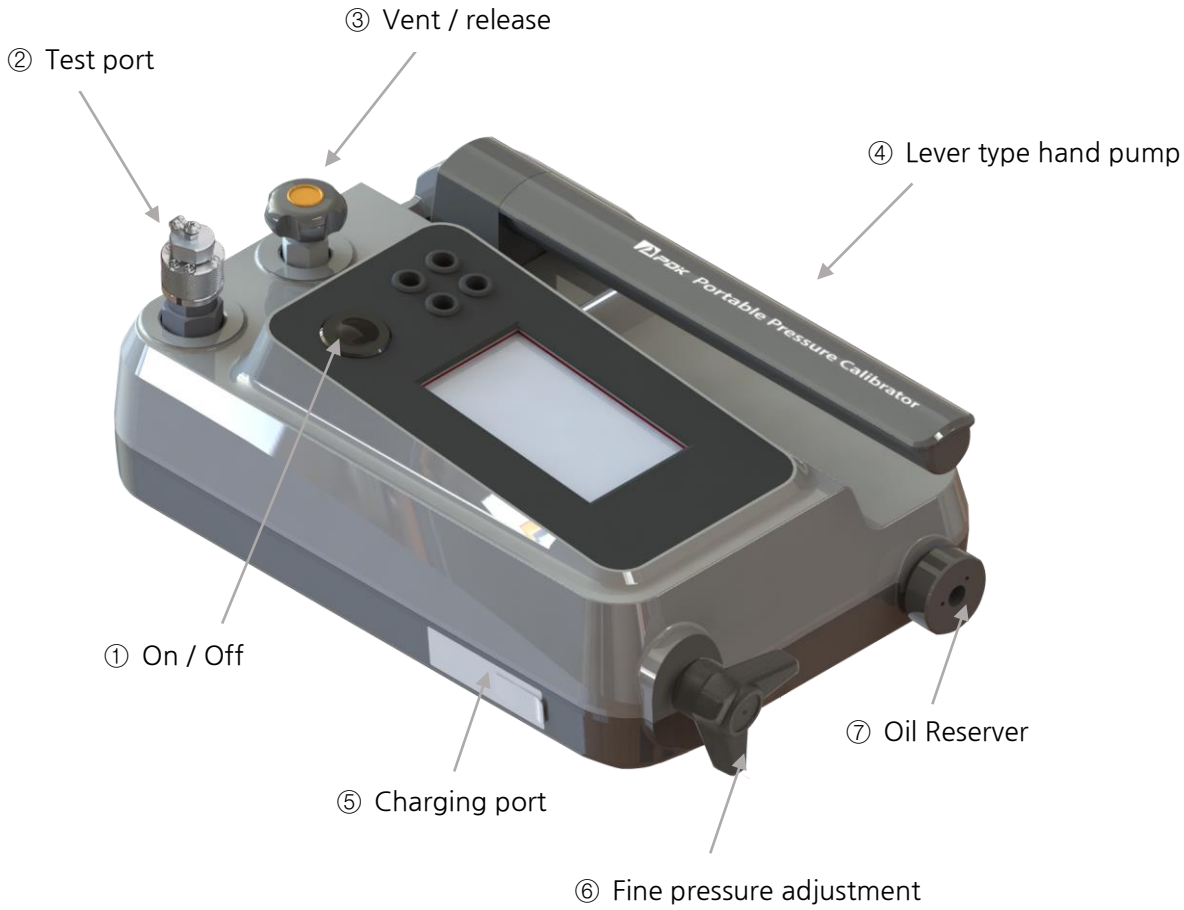
4. Operation

4.1 Basic Structure



No.	Description
①	On / Off
②	Test port
③	Vent / release
④	Lever type hand pump
⑤	Charging port
⑥	Fine pressure adjustment
⑦	Oil Reserver
⑧	Hand Strap Pin

4.2 Pressurize



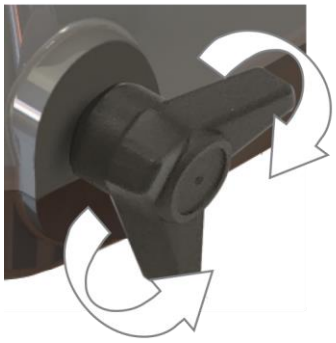
1) ② Connect the UUT to test port. (1/4 " BSPP)

2) ③ Turn Vent/Release valve to CW to close the Vent/Release valve.

Normal pressure generation

Low pressure generation

3) ④ Generate the target pressure with Hand pump Pressing the pump up once without volume will apply approximately 1.6 to 2.0 bar of pressure. Short stroke will generate small pressure.



4) ⑥ Using Fine adjust handle to control the target pressure.(CW to increase, CCW to decrease pressure)

5) After finished the test, Turn ③ Vent/Release valve to CCW to open the Vent/Release valve.

⚠ WARNING

1. PCS-H100 is hydraulic test and calibration purpose only.
2. Low pressure gauges can very easily be over pressured if not careful. Please take caution when applying pressures.
3. Store the PCS-H100 in a dry non-corrosive environment.
4. PDK is not responsible for problems or damage resulting from improper use or operation of the equipment.

4.3 Replace Reserver Oil

1) ① Remove the Vent/release valve.

2) ② Rotate the Fine pressure adjustment fully Clockwise.

3) Fully remove the ③ Oil Reserver Cap by unscrewing it (rotating counter-clockwise) and removing it completely.

4) Put the Oil Reserver below the instrument then tilt the instrument down and operate ④ Lever type hand pump until all the fluid has come out.

5) Fill the Oil Reserver with the recommended fluid until the marked line in ⑤Oil Reserver.

6) ③ Close the Oil Reserver Cap fully clockwise.

Designed Inner Oil Reserver

5. Troubleshooting

5.1 Introduction

PCS-H100 is a sophisticated pressure setting and measuring instrument with advanced on-board features and functions. Before assuming that unexpected behavior is caused by a system defect or breakdown, the operator should use this manual and other training facilities to become thoroughly familiar with PCS-H100 operation. This troubleshooting guide is intended as an aid in identifying the reason for PCS-H100 behavior and determining whether the behavior is due to normal operation or an internal or external problem.

If the failure cannot be fixed, please stop system operation immediately and contact the manufacturer or authorized agent.

5.2 Symptom, Possible cause and Solution

Symptom	Possible cause	Solution
Product does not turn on	Not plugged in	Verify Product is plugged in and power and battery are available.
	No battery	Charge the battery.
	Others	contact the manufacturer or authorized agent.
Unable to use touch screen	Transient program error	Cycle power
	Display panel failure	contact the manufacturer or authorized agent.

Symptom	Possible cause	Solution
While using measure mode, pressure is leaking	Test port leak	Verify Test port is leak tight.
	UUT leak	Verify UUT is leak tight.
	Internal leak	contact the manufacturer or authorized agent.
Poor pressure control	Pressure supply too low	Verify pressure supply.
	External leak	Verify Test port and UUT are leak tight.
	Internal leak	contact the manufacturer or authorized agent.
Test port and Adaptor damage	Test port damaged	contact the manufacturer or authorized agent.
	Adaptor damage	Replace the adaptor
Others	-	contact the manufacturer or authorized agent.

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