

MANUAL



**Portable Pneumatic
PRESSURE CALIBRATOR
PPC-P / PPC-P+**

BRIEF PROFILE



An ISO 9001-2015 certified Instrumentation company (since 1972) serving Industries in India & Worldwide thro' the Manufacture & Supply of World-Class Calibration Instruments & Systems like Temperature, Pressure & Signal Calibrators, Black Body Calibration Sources, Pneumatic & Hydraulic Hand Pumps, Dead Weight & Comparison Testers, Calibration Test Benches, etc.

Dear User,

Thank you for selecting Nagman's Pneumatic Pressure Calibrator and becoming a proud owner of this Calibration Instrument.

We have strived hard to ensure the accuracy of the contents of this manual. We would appreciate any suggestions/feedback to correct any errors noticed and to improve the quality of contents of this Manual

Specifications are subject to change owing to continuous development and we reserve rights to effect Changes / Modifications to this Manual.

Read the Instructions before starting to use the Product.

Wishing you for a long association with us.

For any service related issues, please contact service@nagman.com

VERSION CONTROL

| Version No. | Updated on | Updated by |
|--------------------|-------------------|-------------------|
| V 1.1 | 11-05-2022 | Nagman |

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1. INTRODUCTION

NAGMAN's Portable Pressure Calibrator (Pneumatic) Model : PPC P / PPC-P+ is simple, easy to use, compact, lightweight and portable.

The available pressure range is -0.85 bar Vacuum to 20 bar.

The PPC-P / PPC-P+ Calibrators are designed for fast and traceable calibration of variety of pressure measuring instruments and are supplied ready for use.

It is important to choose the right media for your calibration task, so please make sure before calibration of an object that the pump media is compatible with the object.

2. SPECIFICATION

| ENVIRONMENT | |
|---------------------------|---------------|
| Operating temperature | 15 – 50°C |
| Storage Temperature Range | 10 – 60°C |
| Humidity Range | 40 to 75 % RH |

| PRESSURE | |
|--------------------------|---------------------------------|
| Range | -0.85 to 2 / 7 / 10 / 20 bar |
| Accuracy | ±0.05% / ± 0.025% of Full Scale |
| Temperature Compensation | 0 to 50°C (Automatic) |
| Over pressure alarm | 120% of FS. |

| READ OUT SPECIFICATIONS | |
|--------------------------------|---|
| Pressure units (as per range) | Mpa, Atm, bar, kg/cm ² , mH ₂ O, Psi, inHg, ftH ₂ O, kpa , inH ₂ O, mmHg, mbar, CmH ₂ O. |
| Display | Graphic Display |
| Resolution | Minimum 5 Digits. |

INPUT SPECIFICATIONS

| SWITCH TEST INPUT | |
|--------------------------|--------------------|
| Pressure Switch Test | 5 VDC (Approx.) |
| Impedance | Less than 50 ohms. |

| mA INPUT | |
|-----------------|--|
|-----------------|--|

| | |
|---------------------|---|
| Range | 0 to 50 mA (Active loop) & 0 to 25mA (Passive loop) |
| Accuracy | ±0.05% of Full Scale |
| Resolution | 0.001 mA |
| VOLTS INPUT | |
| Range | 0 to 30 VDC |
| Accuracy | ±0.05 % of Full Scale |
| Resolution | 0.001 V |
| POWER SUPPLY | |
| | Rechargeable battery NI-MH – 7.2 volts |
| | The NI-MH rechargeable batteries last for long time operation and do not need maintenance. |
| | If the battery voltage drops below 6.5 volts, the display shows the message “LOW BATTERY”. Recharge requires at this point. |

3. STANDARD DELIVERY & OPTIONAL ACCESSORIES

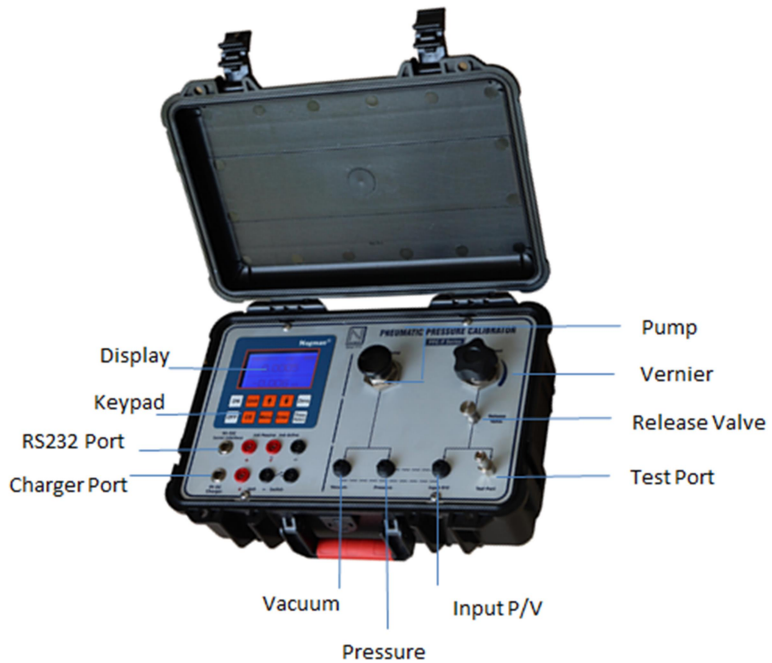
Standard Delivery

- Digital Pressure Calibrator
- Hoses with End Fitting
- Test Leads & Seals Kit
- External Charger
- Computer Interface
- Instruction Manual
- Set of Adaptors:
 - BSP
 - 1/8" BSP(F) X 1/4" BSP (M)
 - 1/2" BSP(F) X 1/4" BSP (M)
 - 3/8" BSP(F) X 1/4" BSP (M)
 - NPT
 - 1/8" NPT(F) X 1/4" BSP (M)
 - 1/4" NPT(F) X 1/4" BSP (M)
 - 1/2" NPT(F) X 1/4" BSP (M)
 - 3/8" NPT(F) X 1/4" BSP (M)

Optional Accessories

- Calibration Certificates are issued in Accordance with our Scope as granted by NABL per ISO/IEC 17025:2017 Standards
- "Calpress" Calibration Software with Cable

4. PARTS IDENTIFICATION



ON/OFF :

- a. Switch ON or OFF the PPC-P-20 by activating the soft key <On> or <Off>.
- b. The following message will be shown in the display:

| |
|-----------------------|
| NAGMAN INSTRUMENTS |
|-----------------------|

| |
|------------------------------------|
| PORTABLE PRESSURE CALIBRATOR |
|------------------------------------|

| |
|---|
| MODEL : PPC -0.85 - 20 BAR FS ERROR : 0.05% |
|---|

- c. The self-calibrating message indicates an internal hardware test.

| |
|-----------|
| 0.000 psi |
| 0.000 mA |

- d. After 3 seconds the display will change to readout for Pressure and transmitter input.



The pressure unit and transmitter input would be the last used before the PPC-P-20 was switched off earlier

2. ZERO

- a. Press the ZERO soft key for automatic zero adjustment. The Zero adjustment also includes an internal hardware calibration.
- b. After 3 seconds the following message will be shown in the display



3. UNIT/ENTER

- a. There are 15 standard pressure units in PPC-P-20. The following table Shows the order of the units displayed.

| S.No. | Unit | Display Readout |
|-------|----------------------------------|--------------------------------------|
| 1 | Bar | 1.0000 bar 0.000mA |
| 2 | Pounds Per Square Inch | 14.504Psi 0.000mA |
| 3 | kilo gram per square centi meter | 1.0197 Kg/cm ² 0.000mA |
| 4 | Kilo Pascal | 100 kPa 0.000mA |
| 5 | Mega Pascal | 0.1 Mpa 0.000mA |

| S.No. | Unit | Display Readout |
|-------|-----------------------|--------------------------------------|
| 6 | Millimeter of Mercury | 750.06mmHg 0.000mA |
| 7 | Atmosphere | 0.98692 Atm 0.000mA |
| 8 | Meter of water | 10.197 mH ₂ O 0.000mA |
| 9 | Inches of Mercury | 29.53 inHg 0.000mA |
| 10 | Inches of water | 401.46 inH ₂ O 0.000mA |
| 11 | Feet of water | 33.455 ftH ₂ O 0.000mA |
| 12 | Milli bar | 1000mbar 0.000mA |
| 13 | Centimeter of water | 1019.7 cmH ₂ O 0.000mA |
| 14 | Millimeter of water | 10197 mmH ₂ O 0.000mA |
| 15 | pascal | 100000 Pa 0.000mA |

- b. To get the particular unit Press <UNIT> and < > and < > soft key in the keypad until the particular unit shown in the display and Press <Enter> Key.
- c. The selected unit will remain in the memory instrument even though power is switched OFF.

4. MENU

a. In Menu option there are 6 functions.

They are

1. mA
2. Volt
3. Mean peak ON
4. Mean peak OFF
5. Switch Test
6. Exit

b. Select any of the above function by pressing <MENU> <↓> <↑> and <Enter> soft key.

mA/Volt

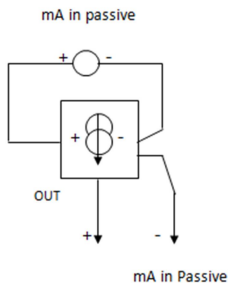
a. PPC-P-20 can measure the input signal from current or voltage transmitter and generates 24v DC to power the transmitters

b. Range for the Current Transmitter is 4 to 20mA

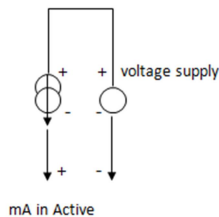
c. Range for the Voltage Transmitter is 0 to 30v.

Connection for Transmitter

3 wire current transmitter



2 wire current transmitter



Mean Peak ON/OFF

- On pressing the key, Display shows the minimum and maximum pressure measured during the pressure measurement.

E.g.

| |
|--------------|
| bar |
| Max : 0.2461 |
| Min : 0.2460 |

Switch test

- a. When the switch test terminals are NC(Normally Closed), display shows the pressure value at which the Terminals closed.

| |
|----------------|
| Bar |
| 1.3645 |
| Open : |
| Close : 1.3645 |

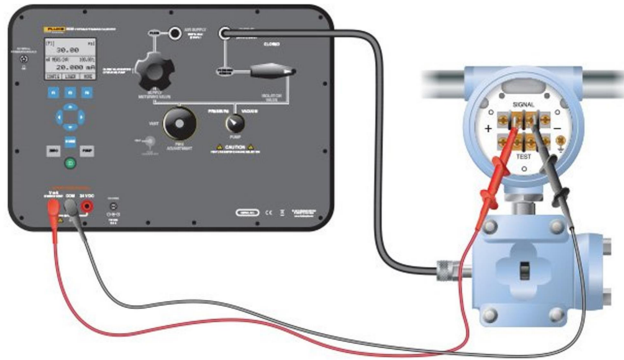
- b. When the switch test terminals are NO(normally Open), display shows the pressure value at which the Terminals opened.

| |
|----------------|
| Bar |
| 0.2461 |
| Open : 0.2461 |
| Close : 1.3645 |

Battery Charging





Before use of the calibrator for first time, charge the battery for 8 hours by connecting the external battery charger to the instrument.

5. CONNECTION DIAGRAM



6. SAFETY INSTRUCTIONS

Symbols Used

| S. No. | Symbol | Description |
|--------|---|--|
| 1. |  | Read the user manual before operating the instrument. |
| 2. |  | Warning- conditions that may pose hazards to the user. |
| 3. |  | Caution-conditions that may damage the instrument. |
| 4. |  | Special Information |



- Do not connect voltages above 30V to the input terminals.
- Do not attach test instrument to a high-pressure source. Follow these instructions carefully to avoid damage to tester and/or personal injuries.
- Do not use spanners on Quick fit adapters (finger tight all the way down is all that is required).

- Events that may compromise the safe use of the instrument and result in considerable personal or material damage
- Do not connect Unit Tester Test with Potential above 30V to the input terminals.



- Don't press the arrow keys to change the units while measuring mean peak value. If you need to change the units go to UNIT option and then select.
- Before switching off the calibrator, release the applied pressure. Switch off the calibrator using the On/Off key. Turning off the calibrator during the calibration process will not damage either the instrument or the pump.
- The instrument under test must always be removed from the calibrator after use. There is risk that the instrument may become damage when we apply the pressure.
- Event that may compromise the safe use of the instrument and result in slight personal or material damage.



- Read this manual carefully before use in order to avoid personal injuries and/or damage to the equipment and to obtain maximum value of your calibration system.
- If the pressure is below 1% of the range, and the ZERO function cannot be activated, Please contact us.

7. OPERATING INSTRUCTION

The Pressure source for the PPC-P -20 is built-in hand held vacuum and Pressure pump with a Vernier adjustment.

- Attach gauge or vacuum device to the Test port using ¼" BSP hose fitting connected to the Test port.
- Switch the indicator ON.

PRESSURE CALIBRATION

- Open the release valve in anticlockwise direction.
- Short input (p/v) terminal with the pressure terminal using hose.
- Turn vernier valve in anti-clockwise direction and maintain it in semi-open position.
- Set the indicator to zero by pressing <Zero> soft Key.
- Hand Tight release valve of the pump in clockwise direction.
- Pump the movable handle until 80% of the pressure is generated.
- Turn Vernier (fine adjustment) counter clockwise to decrease pressure and clockwise to increase pressure of item being tested. Turn Vernier slowly for precise incremental pressure control.
- Upon completion of testing, open the Release valve in anti- clockwise to release the Pressure to zero and remove the test device from the hose end.

VACUUM CALIBRATION

- Turn vernier valve fully in anticlockwise direction.
- Short input (p/v) terminal with the vacuum terminal using hose.
- Set the indicator to zero by pressing <Zero> soft key.
- Hand Tight release valve of the pump in clockwise direction.
- Pump the movable handle until 80% of the vacuum is generated.
- Turn Vernier (fine adjustment) counter clockwise to increase vacuum and clockwise to decrease vacuum of item being tested. Turn Vernier slowly for precise incremental vacuum control.
- Upon completion of testing, open the Release valve in anti- clockwise to release the Vacuum to zero and remove the test device from the hose end.

STORING

- Before switch off the calibrator release the pressure applied. Switch off the calibrator using <ON> and <OFF> key.
- Turning off the calibrator during the calibration process will not damage either the instrument or the pump.
- The instrument under test must always be removed from the calibrator after use.

TRANSPORTING

- Remove the push fit legris with hose and swivel adapter from the instrument if the calibrator is to be transported.

8. TROUBLESHOOTING / MAINTENANCE

PPC pressure calibrators are manufactured for rugged field use and will normally cause no problems for user.

When you operate with High pressure the sensitivity of the system is high with regard to temperature movements.

You are advised to return the calibrator to our company or an accredited laboratory at least once a year for calibration.

Adjusting and calibrating the instrument

You are advised to return the calibrator to Nagman, Chennai - INDIA or to an accredited laboratory at least once a year for calibration.

Returning the calibrator for Service

When returning the calibrator to the manufacturer for service, please provide complete information about the problems faced for clear analysis of the problem. The calibrator should be returned in the original packing.

Nagman's liability ceases if :

- Parts are replaced / repaired using spare parts which are not identical to those recommended by the manufacturer.

Nagman's liability is restricted to errors that originated from the factory.

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