



# User Manual

**MODEL : PCS-GA**

Portable Gas Pressure Amplifier / Controller

**PDK Co., Ltd.**

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# 1. Introduction

## 1.1 Product Overview

The PCS series is a portable pressure (gas/oil) generator and controller, designed to independently supply and regulate pressure for pneumatic and hydraulic calibration and testing. It can generate pressures from vacuum (PCS-PC only) up to 100 MPa (70 MPa for gas) with high precision.

It is suitable for both field and laboratory use, replacing conventional regulators. Designed with user practicality in mind, it allows for easy and efficient manual pressure control without the need for automation.

It can be used as a standard pressure controller in dead-weight tester or piston gauge systems, or combined with digital pressure gauges for calibration systems.

All PCS models use a two-stage pressure control method:

- First stage: Internal regulator (PCS-PC, PCS-GA) or priming pump (PCS-HC)
- Second stage: Manual screw-type volume controller

## 1.2 Specifications

Gas Source	Nitrogen or compressed gas
Max Compression Pressure (Ratio)	70 MPa ( 10 000 psi) , 10:1
Operating Pressure Range	0 kPa to 70 MPa ( 10 000 psi)
Control Accuracy	0.1 kPa (depends on user proficiency)
Dimensions	W 510mm × D 430mm × H 240mm
Volume Controller	Manual screw-handle type
Pressure Port	Quick Connector Body - 2 port
Weight	Approx. 30kg

## 1.3 Equipment Appearance



Fig1. Front Panel

### 1.3.1 Front Panel

Includes all necessary controls for pressure adjustment and settings.

### 1.3.2 Dimensions



Fig 2. Front Panel

- Dimensions [ W: 51 cm , D: 43 cm , H: 24cm ]

### 1.3.3 System Diagram

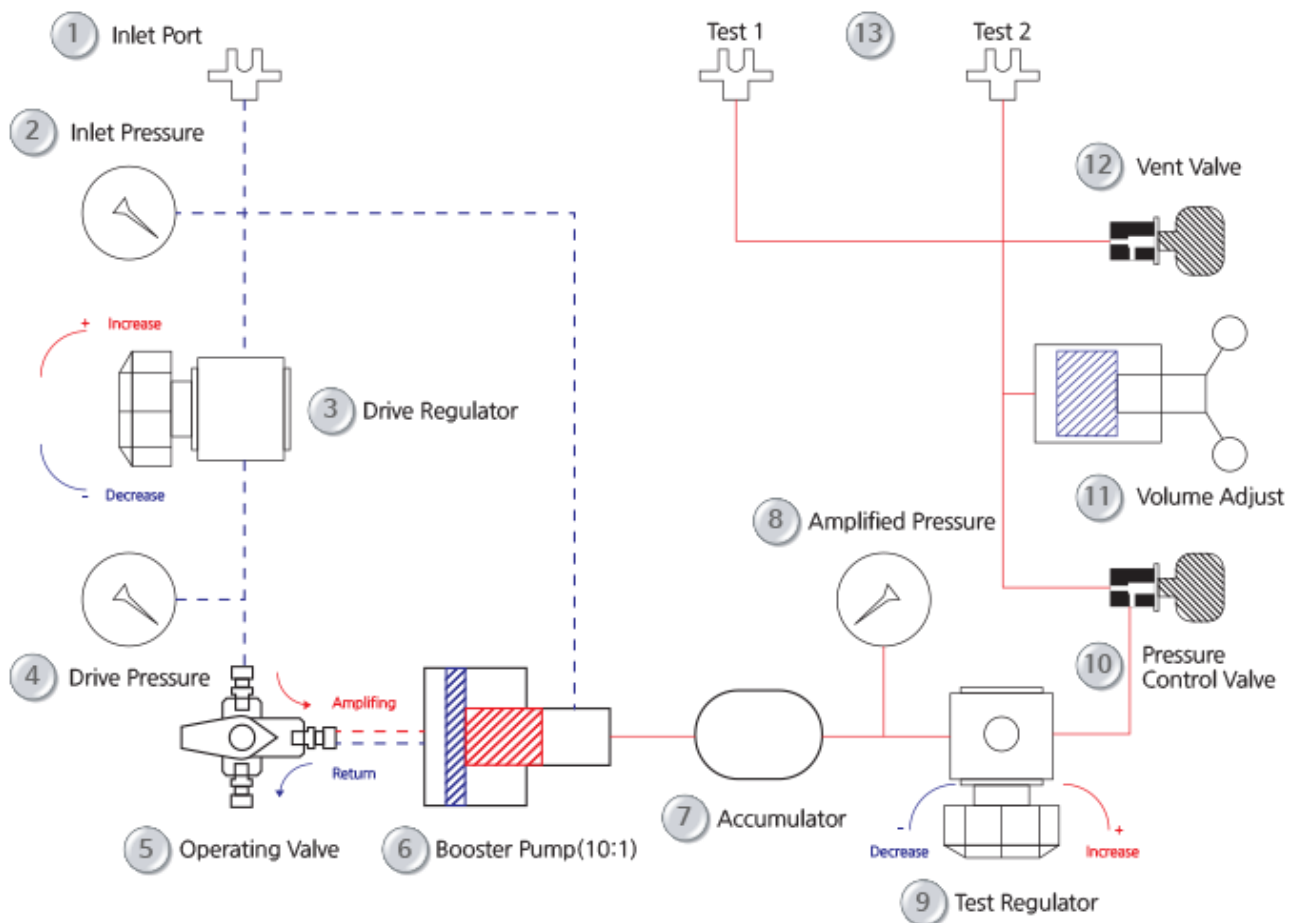


Fig 3. System Diagram

No.	Component	No.	Component
①	In-let Port	⑧	Amplifier Pressure(Gauge)
②	In-let Pressure(Gauge)	⑨	Test Regulator
③	Drive Regulator	⑩	Pressure Control Valve
④	Drive Pressure(Gauge)	⑪	Volume Controller
⑤	Operating Valve	⑫	Vent Valve
⑥	Booster Pump(10:1)	⑬	Test Port 1,2
⑦	Accumulator(Gas tank)		

## 2. Installation

### 2.1 Inspection before Installation

#### 2.1.1 Packaging

Delivered in a hard case, packed in a cardboard box with accessories.

#### 2.1.2 Inspection

Check for damage and verify all listed components:

Item	Quantity
User Manual	1 ea
<b>Inter-Connection KIT</b>	
Tube for Source (OD : 1/4), 150cm	1 ea
Stem(For Female adaptor)	2ea
Female adaptor: 1/2 " ,3/8 " ,1/4 " PF, NPT,PT 1/8 " NPT,PT	1ea each (Total 11ea)

### 2.2 Initial Setup

#### Minimum Requirements for Operating PCS-GA

PCS-GA is capable of generating high-pressure gas (up to 70 MPa) on-site. Unlike conventional gas amplifiers that use compressor pressure, PCS-GA uses the pressure from a nitrogen cylinder directly as the drive pressure, resulting in higher gas consumption.

However, it is ideal for temporary field experiments due to its portability.

The built-in booster pump (10:1 ratio) amplifies the drive pressure by 10 times. Ensure the nitrogen cylinder is filled to at least 120% of the required maximum pressure. Always check the cylinder pressure before use.

## 2.3 Operation

### 2.3.1 Charging the Internal Accumulator

**Before operation, ensure:**

- Vent Valve (⑫) is open
- Pressure Control Valve (⑩) is closed
- Drive Regulator (③) and Test Regulator (⑨) are fully turned counterclockwise

**Steps:**

- Connect the nitrogen source to Inlet Port (①) and open the cylinder's main valve. Check pressure via Inlet Pressure Gauge (②).
- Set the desired Drive Pressure using Drive Regulator (③). Final pressure = Drive Pressure × 10.
- Use Operating Valve (⑤) to charge Accumulator (⑦) and Amplifier Pressure (⑧) to approx. 110% of target pressure.

### 2.3.2 Pressure Measurement (Test)

Assuming the standard gauge and DUT are connected to Test Ports (⑬):

- Ensure Vent Valve (⑫) is open
- Test Regulator (⑨) is fully counterclockwise

**Steps:**

1. Open Pressure Control Valve (⑩) and close Vent Valve (⑫)
2. Turn Test Regulator (⑨) clockwise to approach target pressure ( $\pm 5\%$ )
3. Close Pressure Control Valve (⑩) and fine-tune using Volume Controller (⑪)
4. Repeat steps for each test point
5. To release pressure to zero, turn Test Regulator (⑨) fully counterclockwise and open Vent Valve (⑫)



## 3. Storage & Maintenance

### 3.1 Storage

- After use, open the Vent Valve, close the case lid, and store the unit lying flat with the lid facing up.

## 4. Customer Support & Contact Information

PDK Co., Ltd. Service Centers		
Location	Address	Contact
PDK HQ	10-6 Expo-ro 339beon-gil, Yuseong-gu, Daejeon, Korea	Tel. 042-862-6880 Fax. 042-862-6881 E-mail. <a href="mailto:pdk@pdk.co.kr">pdk@pdk.co.kr</a>
Gwangmyeong Branch	G Tower A609, Soha-ro 190, Gwangmyeong, Gyeonggi-do, Korea	Tel. 02-815-7950 Fax. 02-815-7951 E-mail. <a href="mailto:pdk@pdk.co.kr">pdk@pdk.co.kr</a>