

# PC Pneumatic Fitting Quick Connectors Instruction Manual

## 1. Product Overview

PC Pneumatic Fitting Quick Connectors are professional pneumatic connection components, designed for rapid assembly and disassembly of pneumatic pipelines in industrial systems. These connectors feature a one-click quick-connect structure, which allows for efficient connection between pneumatic hoses, pipes, and equipment (such as air compressors, cylinders, solenoid valves, and air tools) without the need for tools. They effectively ensure airtightness and stable air flow, reduce installation and maintenance time, and improve the efficiency of pneumatic system operation.

PC Pneumatic Quick Connectors are available in a variety of specifications, including different interface sizes (such as 1/8", 1/4", 3/8", 1/2"), connection types (straight, elbow, tee, reducer), and compatible hose diameters, to meet the diverse connection needs of different pneumatic systems. The products are made of high-quality corrosion-resistant materials, with excellent pressure resistance, wear resistance, and aging resistance, suitable for various industrial environments such as automated production lines, mechanical processing, packaging machinery, and pneumatic transmission systems.

Key Specifications (PC Pneumatic Fitting Quick Connectors):

- Product Type: PC Series Pneumatic Fitting Quick Connectors
- Interface Size: 1/8", 1/4", 3/8", 1/2" (G thread / NPT thread, optional; compatible with standard pneumatic pipelines)
- Compatible Hose Diameter: 4mm, 6mm, 8mm, 10mm, 12mm, 16mm (matching corresponding interface sizes)
- Working Pressure Range: 0.1-1.0MPa (stable operation within this range)
- Guaranteed Pressure Resistance: 1.5MPa (no leakage or damage under pressure test)
- Working Temperature Range: -20°C-80°C (no condensation; avoid freezing or high-temperature environment)
- Relative Humidity: 10%-95% (no condensation)
- Material: Body - Brass / Stainless Steel 304 (corrosion-resistant, pressure-resistant); Seal Ring - Nitrile Rubber (NBR) / Fluorine Rubber (FKM) (oil-resistant, high-temperature resistant, airtight); Locking Sleeve - Engineering Plastic (high strength, wear-resistant)

- **Working Principle:** The PC quick connector consists of a socket and a plug (or hose fitting). When connecting, insert the plug/hose into the socket until a "click" sound is heard, indicating that the internal locking mechanism is engaged and the connection is firm. The built-in sealing ring ensures airtightness. When disassembling, press the locking sleeve on the socket, and pull out the plug/hose smoothly; the internal one-way valve (optional) will automatically close to prevent air leakage from the pipeline, protecting the pneumatic system and reducing energy loss.
- **Sealing Performance:** Air tightness test passed; no air leakage under rated working pressure (pressure drop  $\leq 0.01\text{MPa/h}$ )
- **Service Life:**  $\geq 10,000$  times of plugging and unplugging (under standard working conditions); Body  $\geq 5$  years; Seal Ring  $\geq 1$  year
- **Applicable Medium:** Compressed air (free of corrosive gases, flammable gases, high-viscosity liquids, and solid impurities with particle size  $> 5\mu\text{m}$ )
- **Connection Types:** Straight, Elbow ( $90^\circ$ ), Tee, Reducer (optional, to meet different pipeline layout needs)

## 2. Compliance Information

### 2.1 Compliance Standards

- **Quality and Performance Standards:** The PC Pneumatic Fitting Quick Connectors strictly comply with international standards such as ISO 6150B (Pneumatic fluid power - Quick-action couplings), ISO 9001 (Quality Management System), and DIN 2353 (Tube fittings for pneumatic systems). They also meet national standards such as GB/T 14081-2019 (Pneumatic quick-action couplings) and GB/T 19001-2016 (Quality Management System Requirements), ensuring that the products' pressure resistance, airtightness, plugging/unplugging performance, and dimensional accuracy meet industrial application requirements. All products have passed strict performance tests, including pressure-bearing test, air tightness test, plugging/unplugging fatigue test, high and low temperature resistance test, and corrosion resistance test, ensuring stable and reliable performance in long-term use.
- **Environmental Compliance:** The products adopt environmentally friendly materials and green production processes, fully complying with EU RoHS 2.0 and REACH environmental protection standards, and China GB 26572—2025 environmental protection standards. The raw materials (brass, stainless steel, engineering plastic, seal ring) do not contain harmful substances such as lead, mercury, cadmium, and hexavalent chromium. Waste products and worn accessories (such as seal rings) can be recycled or disposed of in accordance with environmental protection requirements, without causing pollution to the environment. The production process strictly follows environmental protection laws and regulations, reducing energy consumption and waste emissions.

## 2.2 Safety Compliance Reminder

PC Pneumatic Fitting Quick Connectors are key connection components of pneumatic systems, and their installation, use, and maintenance directly affect the safety, stability, and efficiency of the entire pneumatic system. Improper operation may lead to air leakage, pressure instability, connector disengagement, or even damage to downstream equipment and personal injury. Before use, it is necessary to confirm that the product's model, interface size, compatible hose diameter, and working pressure range are consistent with the pneumatic system and application scenario, and that the product complies with the safety regulations and environmental requirements of the place of use. It is strictly prohibited to use the product beyond the rated parameters or in scenarios that do not meet the environmental requirements. Operators and maintenance personnel must receive professional training, be familiar with this manual and safety operating procedures, and master correct installation, disassembly, and maintenance methods.

## 3. Usage Instructions

### 3.1 Installation Preparation

- **Installation Environment Confirmation:** Installation shall be carried out in a clean, dry, and well-ventilated environment, away from open flames, high-temperature heat sources (exceeding 90°C), strong magnetic fields, and corrosive substances (such as concentrated acid, concentrated alkali, and strong oxidants). The normal operating temperature range of the product is -20°C-80°C, and the relative humidity is 10%-95% (no condensation). Avoid installing in extremely humid (relative humidity > 95%, condensing), dusty, or oil-rich environments; if such environments are unavoidable, take corresponding protective measures (such as dust cover, anti-corrosion coating). The installation position shall be stable and flat, avoiding severe vibration (vibration amplitude not exceeding 0.3mm) which may cause connector loosening or disengagement. Ensure there is enough space around the connector to facilitate installation, disassembly, and maintenance.
- **Installation Tools and Accessories:** No special tools are required for installation and disassembly (one-click quick connect/disconnect). Prepare supporting accessories such as pneumatic hoses, pipe clamps, and sealants (if needed). The pneumatic hose shall be of qualified quality, with diameter matching the connector's compatible hose size, and pressure resistance  $\geq 1.5\text{MPa}$ . Before installation, check the hose for damage, aging, or blockage; replace it if necessary. Clean the connector, hose, and pipeline interface with a clean dry cloth to remove dust, oil stains, and impurities, avoiding affecting airtightness or damaging the internal sealing ring. Check the connector's locking mechanism and sealing ring for damage, aging, or deformation; replace unqualified parts in time.
- **Product Matching Check:** Before installation, confirm that the connector's interface size matches the pipeline and equipment interface (e.g., 1/4" connector

matches 1/4" pipeline). Confirm that the compatible hose diameter matches the hose to be connected (e.g., 6mm hose matches connector with compatible diameter 6mm). Confirm that the connector's working pressure range (0.1-1.0MPa) is consistent with the pneumatic system's working pressure. For connectors with one-way valves, confirm that the direction of the one-way valve is consistent with the air flow direction of the system. Confirm that the connection type (straight, elbow, tee) meets the pipeline layout requirements.

## 3.2 Installation Steps

1. **System Preparation:** Before installing the connector, turn off the air compressor, close the isolation valve of the pipeline, and release the residual air pressure in the pipeline to ensure that the installation is carried out under zero pressure conditions. Flush the pipeline with clean air for 3-5 minutes to remove internal dust, rust, and other impurities, avoiding damage to the connector's internal components and sealing ring.
2. **Hose Connection (for hose fittings):** Cut the pneumatic hose vertically (ensure the cut is flat, no burrs) to the required length. Insert the hose into the connector's hose interface until it cannot be inserted further (ensure the hose is inserted to the bottom of the interface). Pull the hose gently to confirm that it is firmly locked (no loosening). For large-diameter hoses ( $\geq 12\text{mm}$ ), use a pipe clamp to reinforce the connection between the hose and the connector, ensuring no air leakage.
3. **Pipeline/Equipment Connection (for socket-plug connectors):** Align the plug (connected to the hose or equipment) with the socket (connected to the pipeline or other equipment). Insert the plug into the socket smoothly until a clear "click" sound is heard, indicating that the locking mechanism is engaged and the connection is firm. Check the connection gap between the socket and plug; there should be no obvious gap, and the plug should not be pulled out easily. For connectors with one-way valves, confirm that the air flow direction is consistent with the one-way valve's direction (marked on the connector body).
4. **Pre-installation Inspection:** After installation, manually check the firmness of the connection: gently pull the hose, socket, and plug to ensure no loosening. Apply a small amount of soapy water to the connection interface, turn on the air compressor slightly (adjust the pressure to 0.2-0.3MPa), and check for air leakage (no bubbles generated). If air leakage is found, reinsert the hose/plug or replace the sealing ring.
5. **Post-installation Test:** Turn on the air compressor, adjust the system pressure to the rated working pressure (0.1-1.0MPa), and run the system for 10-15 minutes. Observe the working state of the connector: check for air leakage, loosening, or abnormal noise; confirm that the air flow is stable. If any abnormality is found, stop the system immediately, turn off the air pressure, and conduct inspection and troubleshooting (such as re-connecting, replacing the sealing ring, or replacing the connector).

## 3.3 Operation and Maintenance

1. **Normal Operation:** During normal operation, regularly check the working state of the connector: observe whether there is air leakage at the connection interface (use soapy water to detect if necessary); check the firmness of the hose and connector (no loosening or falling off); check the locking mechanism for flexibility (no jamming). Avoid pulling the hose violently or colliding with the connector, which may cause damage to the locking mechanism or hose. Ensure that the system pressure does not exceed the connector's rated working pressure (1.0MPa) to avoid connector damage or air leakage. For connectors used in dusty environments, regularly clean the surface to avoid dust entering the locking mechanism.
2. **Routine Maintenance:** Regularly clean the connector (once a week). Wipe the connector body, interface, and locking mechanism with a clean dry cloth to remove dust, oil stains, and impurities; avoid using water or organic solvents to clean the connector, especially the sealing ring, to prevent corrosion or aging. Check the sealing ring regularly (once a month); if the sealing ring is aging, cracked, deformed, or damaged, replace it with a matching qualified sealing ring (same material and size) to ensure airtightness. Check the locking mechanism regularly (once a month); if there is jamming or inflexibility, apply a small amount of ISO VG32 lubricating oil to the locking part to ensure smooth operation. For connectors with one-way valves, check the valve's opening and closing performance regularly (once a month); if the valve is stuck or leaks, disassemble and clean it, or replace the valve core.
3. **Disassembly and Storage:** When disassembling the connector, first turn off the air compressor, close the isolation valve, and release the residual pressure in the pipeline. Press the locking sleeve on the socket firmly, and pull out the plug/hose smoothly (do not pull violently to avoid damaging the locking mechanism or hose). After disassembly, install dust-proof covers on the connector's interface to prevent dust and impurities from entering. When shutting down the system for a long time (more than 1 month), disassemble the connectors that are not in use, clean them thoroughly, apply a thin layer of anti-rust oil to the metal parts, and store them in a dry, clean, and well-ventilated warehouse. Store the connectors vertically or horizontally, avoid stacking heavy objects on them to prevent deformation. Before reinstalling, check the connector's condition (locking mechanism, sealing ring) and confirm that there is no damage or aging before use.

## **4. Usage Restrictions**

### **4.1 Specification Parameter Restrictions**

- **Working Pressure Restriction:** The product's working pressure range is 0.1-1.0MPa, and the guaranteed pressure resistance is 1.5MPa. It is strictly prohibited to use the product beyond the working pressure range or exceed the guaranteed pressure resistance; otherwise, it will cause the connector body to deform, the locking mechanism to fail, the sealing ring to be damaged, or air leakage to occur, leading to equipment failure or safety hazards. Use a pressure limiting valve in the pneumatic system to stabilize the working pressure, avoiding pressure fluctuations

that exceed the rated range. It is strictly prohibited to use the product under negative pressure, which will cause air leakage and damage to the one-way valve (if equipped).

- **Temperature Restriction:** The normal operating temperature range of the product is -20°C-80°C (no condensation). It is strictly prohibited to use the product in environments beyond this temperature range. High temperature (exceeding 80°C) will accelerate the aging of the sealing ring and engineering plastic parts, reduce the airtightness and strength of the connector, and even cause the sealing ring to melt or the locking mechanism to fail; low temperature (below -20°C) will make the metal material brittle and the plastic parts hard, increasing the risk of connector fracture or locking mechanism jamming. For high-temperature or low-temperature scenarios, take corresponding protective measures (such as heat insulation, anti-freezing) or select special models designed for extreme temperatures.
- **Medium Restriction:** The working medium of the product is specified as clean compressed air (free of corrosive gases, flammable gases, high-viscosity liquids, and solid impurities with particle size > 5µm). It is strictly prohibited to use other fluids (such as water, oil, corrosive liquids, or flammable and explosive gases) as the working medium; otherwise, it will cause corrosion of the metal body, damage to the sealing ring, blockage of the one-way valve (if equipped), and may cause safety hazards (such as fire, explosion). Do not use the product in environments where the compressed air contains a large amount of oil mist or impurities; otherwise, the sealing ring will be damaged quickly, the airtightness will be reduced, and the service life of the product will be shortened.
- **Model and Specification Restriction:** Each connector is matched with a specific interface size and compatible hose diameter; it is strictly prohibited to use the connector with hoses or pipelines of mismatched sizes (e.g., using a 1/4" connector with a 3/8" pipeline, or a connector compatible with 6mm hose with an 8mm hose); otherwise, it will cause air leakage, unstable connection, or connector disengagement. Do not use the connector for non-pneumatic connection purposes; the connection type (straight, elbow, tee) shall match the pipeline layout, and it is strictly prohibited to use an elbow connector in a position that requires straight connection, which may cause pipeline stress and connector damage.

## 4.2 Usage Scenario Restrictions

- It is strictly prohibited to use the product in flammable, explosive, or highly corrosive environments (such as places with flammable gas, concentrated acid, concentrated alkali, etc.) without effective protective measures; if it is really necessary to use the product in such environments, select anti-corrosion, explosion-proof models (such as stainless steel 316 connectors) and take corresponding protective measures (such as anti-corrosion coating, isolation protection), and use it only after passing relevant safety tests. Avoid using the product in scenarios where the compressed air contains flammable, explosive, or toxic substances, which may cause safety accidents (such as fire, explosion, or poisoning) in case of leakage.

- It is strictly prohibited to use the product in severe vibration environments (vibration amplitude exceeding 0.3mm) for a long time; otherwise, it will cause loosening of the connection, damage to the locking mechanism and sealing ring, air leakage, or connector disengagement. For vibration-prone scenarios, install shock-absorbing brackets to reduce the impact of vibration on the connector, and check the connection firmness regularly (once a day).
- It is strictly prohibited to disassemble, modify, or alter the product without authorization. Any unauthorized modification (such as cutting the connector body, changing the locking mechanism, or replacing internal components with unqualified products) will invalidate the product compliance certification, damage the internal structure, and lead to air leakage, connector disengagement, or safety risks. Do not replace the sealing ring, locking sleeve, or one-way valve with non-matching or unqualified products, as it will affect the product's performance, safety, and service life.
- It is strictly prohibited to use damaged, aged, or unqualified products (such as connectors with cracked body, damaged locking mechanism, aging sealing ring, air leakage, or one-way valve failure); otherwise, it will cause unstable operation of the pneumatic system, damage to downstream equipment, and may cause safety hazards. If the product is seriously damaged or fails to meet the use requirements, it shall be replaced in time. For connectors that have reached the service life ( $\geq 10,000$  plugging/unplugging times), they shall be scrapped in accordance with relevant regulations, and shall not be reused or refurbished.
- It is strictly prohibited to use mismatched accessories (such as hoses of incorrect diameter, unqualified sealants, or non-matching pipe clamps) with the product; otherwise, it will affect the airtightness and connection firmness of the product, leading to air leakage, connector disengagement, or component damage. Accessories must be replaced with qualified products of the same specification and material. The pneumatic hose must be pressure-resistant (withstand pressure  $\geq 1.5\text{MPa}$ ) and compatible with the connector's compatible hose diameter.
- It is strictly prohibited to operate, install, or disassemble the product without professional training; operators must be familiar with this manual and safety operating procedures, master correct installation, disassembly, and maintenance methods, and wear protective equipment (such as gloves, safety glasses) during operation. Do not touch the connection interface or locking mechanism during system operation to avoid personal injury caused by high-pressure air leakage. Before maintenance or disassembly, must turn off the air compressor, close the isolation valve, and release the residual pressure in the pipeline to avoid safety hazards. Do not pull the hose violently to disassemble the connector, as it may damage the locking mechanism or hose.