

Type 2053

Pneumatic actuator
Pneumatischer Antrieb
Entraînement pneumatique

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation



We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

© Bürkert Werke GmbH & Co. KG, 2020

Operating Instructions 2003/00_EU-ml_00815339 / Original DE

Pneumatic rotary actuator Type 2053

Contents:

| | | | |
|--|----|---|----|
| 1 THE OPERATING INSTRUCTIONS | 4 | 7.3 Pneumatic installation | 10 |
| 1.1 Symbols..... | 4 | 8 START-UP | 11 |
| 2 INTENDED USE | 5 | 8.1 Safety instructions | 11 |
| 2.1 Restrictions | 5 | 9 OPERATION AND FUNCTION | 11 |
| 2.2 Foreseeable misuse | 5 | 9.1 Safety instructions | 11 |
| 3 BASIC SAFETY INSTRUCTIONS | 6 | 9.2 Actuator operation | 11 |
| 4 GENERAL NOTES | 7 | 9.3 Functions..... | 11 |
| 4.1 Contact addresses..... | 7 | 10 MAINTENANCE, TROUBLESHOOTING | 12 |
| 4.2 Information on the Internet..... | 7 | 10.1 Safety instructions | 12 |
| 5 SYSTEM DESCRIPTION | 7 | 10.2 Maintenance work..... | 12 |
| 5.1 Intended area of application | 7 | 10.3 Faults | 12 |
| 5.2 General description..... | 7 | 11 SHUTDOWN | 13 |
| 6 TECHNICAL DATA | 8 | 11.1 Safety instructions | 13 |
| 6.1 Conformity with the following standards..... | 8 | 11.2 Disassembly of the pneumatic actuator..... | 13 |
| 6.2 Operating conditions | 8 | 12 ACCESSORIES | 14 |
| 6.3 General technical data..... | 8 | 14 STORAGE | 14 |
| 7 ASSEMBLY / INSTALLATION | 10 | 15 DISPOSAL | 14 |
| 7.1 Safety instructions | 10 | | |
| 7.2 Installation | 10 | | |

1 THE OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user and make these instructions available to every new owner of the device.

The operating instructions contain important safety information!

Failure to observe these instructions may result in hazardous situations.

- ▶ The operating instructions must be read and understood.

1.1 Symbols



DANGER!

Warns of an immediate danger!

- ▶ Failure to observe these instructions will result in death or serious injuries.



WARNING!

Warns of a potentially hazardous situation!

- ▶ Failure to observe these instructions may result in serious injuries or death.



CAUTION!

Warns of a potential danger!

- ▶ Failure to observe these instructions may result in moderate or minor injuries.

NOTE!

Warns of damage!

- ▶ Failure to observe these instructions may result in damage to the device or the system.



Indicates important additional information, tips and recommendations.



Refers to information in these operating instructions or in other documentation.

→ Designates a procedure which you must carry out.

2 INTENDED USE

Unauthorised use of the pneumatic actuator Type 2053 may be dangerous to people, nearby equipment and the environment.

- ▶ The pneumatic actuator Type 2053 has been designed to operate 90° swivel fittings such as ball valves or butterfly valves. It can be used both indoors and outdoors in compliance with the permissible operating conditions.
- ▶ The pneumatic actuator Type 2053 may be used only in conjunction with third-party devices and components recommended or approved by Bürkert.
- ▶ When using the device, observe the authorised data, operating conditions and deployment conditions specified in the contract documents and in the operating instructions. They are described in Chapter 6. *Technical data*.
- ▶ Prerequisites for safe and trouble-free operation are correct transport, correct storage and installation as well as careful operation and maintenance.
- ▶ Use the pneumatic actuator Type 2053 only as intended.

2.1 Restrictions

If required, observe existing restrictions when exporting the system/device.

2.2 Foreseeable misuse

The pneumatic actuator Type 2053 may not be operated with corrosive gases, water or hydraulic oil (for applications with these media, please contact your Bürkert sales department).

- Do not feed any aggressive, corrosive or explosive media into the media ports of the system.
- Do not feed any liquids into the media ports.

- Do not place the housing under mechanical stress (e.g. by placing objects on it or standing on it).
- Do not make any external alterations to the device housings. Do not paint housing parts or screws!

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take account of any:

- Eventualities and events which may occur during installation, operation and maintenance of the devices.
- Local safety regulations that are within the operator's scope of responsibility, including those relating to the installation personnel.



DANGER!

Danger from high pressure!

- ▶ Before loosening lines or valves, switch off the pressure and bleed the lines.



WARNING!

General hazardous situations.

To prevent injuries, observe the following:

- ▶ The system cannot be activated unintentionally.
- ▶ Installation and maintenance may be performed by authorised technicians only and with the appropriate tools.
- ▶ The process must be restarted in a defined or controlled manner after an interruption in the power supply or pneumatic supply.
- ▶ Device may be operated only when in perfect condition and in consideration of the operating instructions.
- ▶ The general rules of technology apply to application planning and operation of the device.



The pneumatic actuator Type 2053 has been developed with due consideration given to the accepted safety rules and is state-of-the-art. Nevertheless, dangerous situations may occur.

Non-observance of these operating instructions and the information contained therein and unauthorised tampering with the device will release us from any liability and also invalidate the warranty covering devices and accessories!

4 GENERAL NOTES

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Centre
Christian-Bürkert-Str. 13-17
D-74653 Ingelfingen
Phone + 49 (0) 7940 - 10 91 111
Fax + 49 (0) 7940 - 10 91 448
E-mail: info@burkert.com

International

The contact addresses can be found on the back pages of the printed operating instructions.

Also on the Internet at:

www.burkert.com

4.2 Information on the Internet

Operating instructions and data sheets for Type 2053 can be found on the Internet at:

www.buerkert.de → [Type 2053](#)

5 SYSTEM DESCRIPTION

5.1 Intended area of application

The pneumatic actuator Type 2053 has been designed to operate swivel fittings such as ball valves or butterfly valves.

5.2 General description

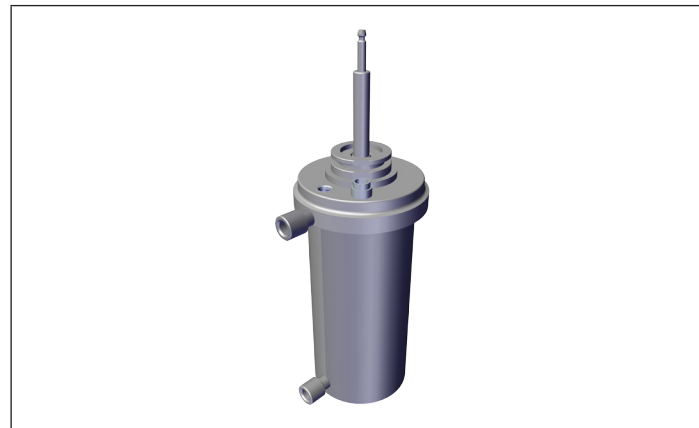


Image 1: Pneumatic actuator Type 2053

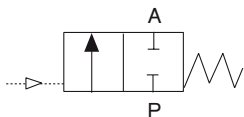
The pneumatic actuator Type 2053 consists of a single or double-acting pneumatic actuator with internal coupling to a turn element and a universal mechanical interface according to ISO 5211. During the linear movement of the piston under the pressure of the pilot air or the force

of the return springs, the actuator shaft is rotated through 90° by the coupling. This rotary movement can be used to operate corresponding actuators such as ball valves or butterfly valves.

5.2.1 Operation principle

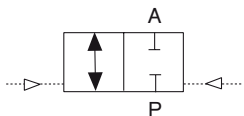
Control function A

Single-acting actuator, return by spring force, operation, e.g., with a pilot valve.



Control function I

Double-acting actuator, operation, e.g., with a pilot valve.



6 TECHNICAL DATA

6.1 Conformity with the following standards

CE mark compliant with EN 1127-1, EN 13463-1

6.2 Operating conditions



The operating temperature depends on the valve being operated.

Operating temperature: -10...+60 °C

6.3 General technical data

6.3.1 Mechanical data

For mechanical data, see data sheet Type 2053:

www.buerkert.de → [Type 2053](#)

6.3.2 Pneumatic data

Ports: depending on the actuator size (see data sheet)
 Tightening torques: depending on the actuator size (see data sheet)

| Variant | Operating pressure [MPa/bar] |
|------------------------|------------------------------|
| Single-acting, size P0 | 0.48...0.80 / 4.8...8.0 |
| Single-acting, size P1 | 0.48...0.80 / 4.8...8.0 |
| Single-acting, size P2 | 0.48...0.80 / 4.8...8.0 |
| Double-acting, size P0 | 0.30...0.80 / 3.0...8.0 |
| Double-acting, size P1 | 0.30...0.80 / 3.0...8.0 |
| Double-acting, size P2 | 0.30...0.80 / 3.0...8.0 |

Tab. 1: Operating pressure

| Variant | Air consumption [l/stroke] |
|------------------------|----------------------------|
| Single-acting, size P0 | 0.8...1.2 |
| Single-acting, size P1 | 1.2...2.0 |
| Single-acting, size P2 | 3.0...5.0 |
| Double-acting, size P0 | 0.5...1.2 |
| Double-acting, size P1 | 0.8...2.0 |
| Double-acting, size P2 | 1.9...5.0 |

Tab. 2: Air consumption

| Requirement | Quality class | Standard |
|---------------|---------------|-------------------------|
| Solid content | 6 | According to ISO 8573-1 |
| Water content | 4 | According to ISO 8573-1 |
| Oil content | 3 | According to ISO 8573-1 |

Tab. 3: Requirements on the pilot air medium

6.3.3 Dimensions

For dimensions, see data sheet Type 2053:

www.buerkert.de → [Type 2053](#)

7 ASSEMBLY / INSTALLATION

7.1 Safety instructions



DANGER!

Risk of injury due to high pressure in the system!

- ▶ Before loosening lines or valves, switch off the pressure and bleed the lines.



WARNING!

Risk of injury due to improper installation!

- ▶ Installation may only be carried out by authorised technicians using appropriate tools!

Risk of injury due to unintentional activation of the system and uncontrolled restart!

- ▶ Secure the system against unintentional activation.
- ▶ Following installation, ensure a controlled restart.

7.2 Installation



For installation, observe the operating instructions of the respective valve.

7.3 Pneumatic installation

The actuators can be installed in any position.

Prior to installation:

- Make sure mechanical connection of the actuator to the valve is performed properly to avoid friction.
- Only use cleaned, dry and oil-free compressed air.
- Connect lines for the pilot air to the ports provided on the actuator.
- Cut the lines for the pilot air at right angles using a hose cutter to ensure that the push-in connectors fit perfectly.

8 START-UP

8.1 Safety instructions



WARNING!

Risk of injury from discharge of pressure!

Poorly connected pilot air lines may become loose under pressure.

- ▶ Make sure that the line connections of the pilot air are connected firmly to the corresponding ports of the actuator.

Risk of injury due to improper operation!

Improper operation may result in injuries as well as damage to the device and the area around it.

- ▶ Before start-up, ensure that the operating personnel are aware of and have completely understood the contents of the operating instructions.
- ▶ The safety instructions and the intended use must be observed.
- ▶ Only adequately trained personnel may start up the system/ device.

9 OPERATION AND FUNCTION

9.1 Safety instructions



WARNING!

Risk of injury through improper operation!

Improper operation may result in injuries as well as damage to the device and its surroundings.

- ▶ The operating personnel must know and understand the contents of the operating instructions.
- ▶ The safety instructions and the intended use must be observed.
- ▶ Only adequately trained personnel may operate the system/ device.

9.2 Actuator operation

The pneumatic actuator is operated by means of compressed air (up to 8 bar), depending on the function. This can be supplied directly or via attached pilot valves at the corresponding actuator ports.

9.3 Functions

For operation principles, see "[5 System description](#)".

10 MAINTENANCE, TROUBLESHOOTING

10.1 Safety instructions



DANGER!

Risk of injury due to high pressure in the system!

- ▶ Before loosening lines or valves, switch off the pressure and bleed the lines.



WARNING!

Risk of injury due to improper work on the actuator!

- ▶ Work on the actuator may only be carried out by authorised technicians using appropriate tools!

Risk of injury due to unintentional activation of the system and uncontrolled restart!

- ▶ Secure the system against unintentional activation.
- ▶ Following work on the actuator, ensure a controlled restart.

10.2 Maintenance work

The pneumatic actuator is maintenance free.



If you have any questions, please contact your Bürkert sales department.

10.3 Faults

| Fault | Possible cause | Remedy |
|--------------------------------|---|-------------------------------|
| Air leakage at the ports | Lines are not cut at right angles | Cut the lines at right angles |
| | Push-in connector defective | Replace the push-in connector |
| | O-ring missing at the push-in connector | Install an O-ring |
| | Maximum permitted operating pressure exceeded | Reduce the operating pressure |
| Air leakage at the piston seal | Piston seal worn | Replace the actuator |

| Fault | Possible cause | Remedy |
|---|--|--|
| Valve cannot be opened or closed | Air pressure too low | Increase the air pressure |
| | Foreign particles between turn element (such as ball or valve disc) and seal | Disassemble the valve and remove the foreign particles |
| | Square of valve twisted | Replace the valve |
| | Piston seal worn | Replace the actuator |
| Valve does not remain in the desired position | Air pressure too low | Increase the air pressure |
| | Air leakage at the actuator and/or lines | Take appropriate measures depending on the air leakage |
| Actuator detaches from the valve | Special screws become detached | Tighten screws to 3 Nm |

11 SHUTDOWN

11.1 Safety instructions



WARNING!

Risk of injury due to improper disassembly!

- ▶ Disassembly may only be carried out by authorised technicians using appropriate tools!

11.2 Disassembly of the pneumatic actuator



For disassembly, observe the operating instructions of the respective valve.

12 ACCESSORIES



CAUTION!

Risk of injury and/or damage due to incorrect parts!

Incorrect and unsuitable accessories may cause injuries and damage to the device and the area around it.

- ▶ Only use original Bürkert accessories.

For accessories, see data sheet Type 2053:

www.buerkert.de → [Type 2053](#)

13 PACKAGING, TRANSPORT

NOTE!

Transport damage!

Inadequately protected devices may be damaged during transport.

- Protect the device against moisture and dirt in shock-resistant packaging during transport.
- Avoid exceeding or dropping below the permitted storage temperature.

14 STORAGE

NOTE!

Incorrect storage may damage the device.

- Store the device in a dry and dust-free location!

15 DISPOSAL

→ Dispose of the device and the packaging in an environmentally friendly manner.

NOTE!

Damage to the environment caused by device parts contaminated with media.

- ▶ Observe applicable disposal and environmental regulations.



Note:

Observe national waste disposal regulations.

www.burkert.com