PG-03 GAS BOOSTER DESCRIPTION
USER MANUAL

HEAD
This is where the gases are compressed. The head is equipped with a built-in heat sink designed to dissipate heat generated during compression.

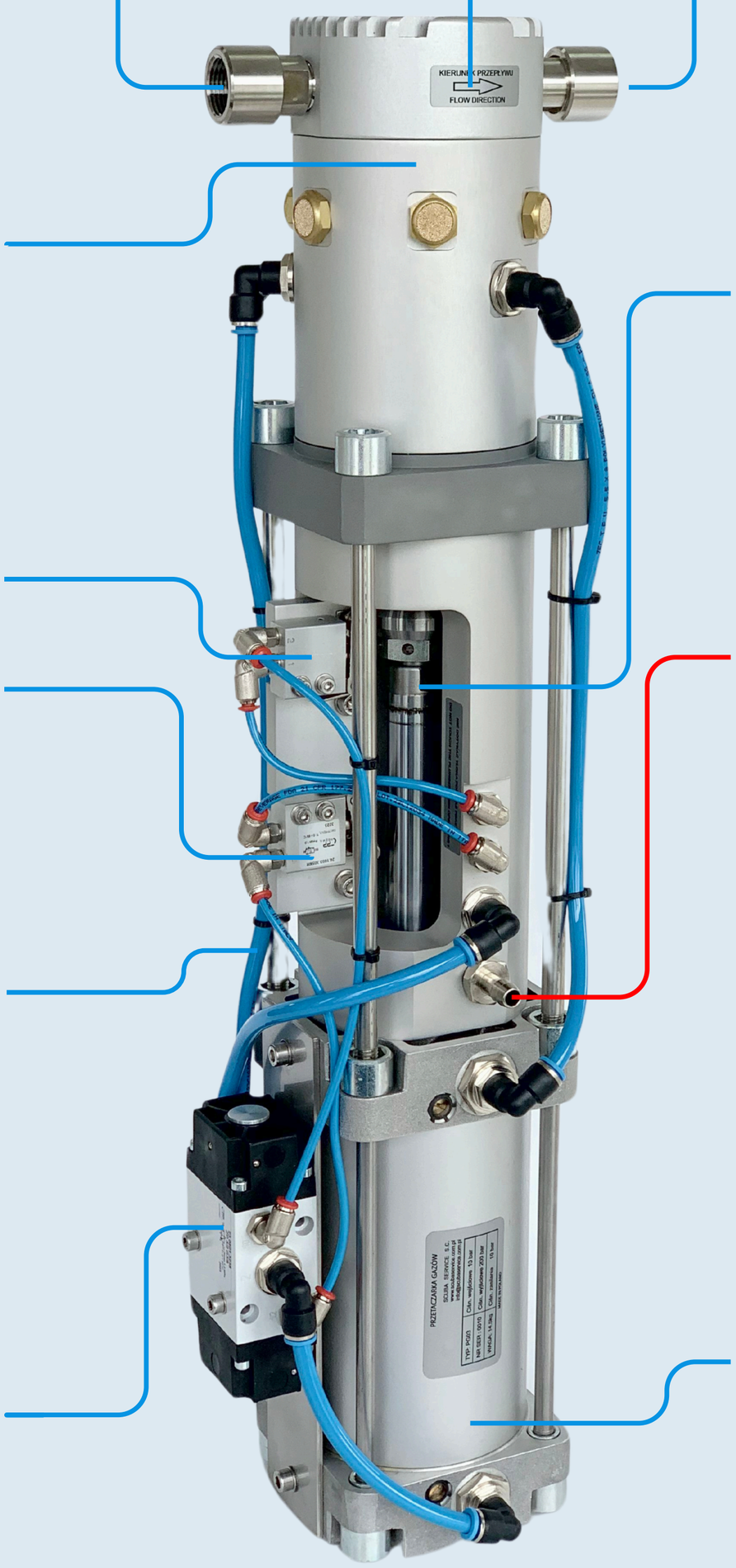
INLET VALVE
The check valve features a seat sealed with a zirconium oxide ball. It is marked with a preceding arrow indicating the direction of flow.

COOLER
The air used to drive the booster is also utilized to cool the cylinder.

CONTROL VALVES
Change the direction of piston movement. Easy for the user to adjust.

LOW-PRESSURE HOSES
All blue hoses are used for the flow of air that drives the actuator.

DISTRIBUTOR
Controls the airflow in the drive system and is responsible for the operation of the booster.



FLOW DIRECTION
Indicates the direction of the transferred gas flow and defines the inlet and outlet valves.

OUTLET VALVE
The check valve has a seat sealed with a zirconium oxide ball. It is marked with an arrow indicating the direction of flow.

PISTON ROD
Hardened piston made of high-grade steel, resistant to all weather conditions.

DRIVE CONNECTION
This connection is intended exclusively for compressed air to drive the actuator – MARKED: AIR ONLY.

NAMEPLATE
Specifies the key technical parameters of the device — its "identity card" and the source of essential operational information.

ACTUATOR
A highly durable actuator capable of continuous operation.

1. GENERAL INFORMATION

1.1 Information on the manual

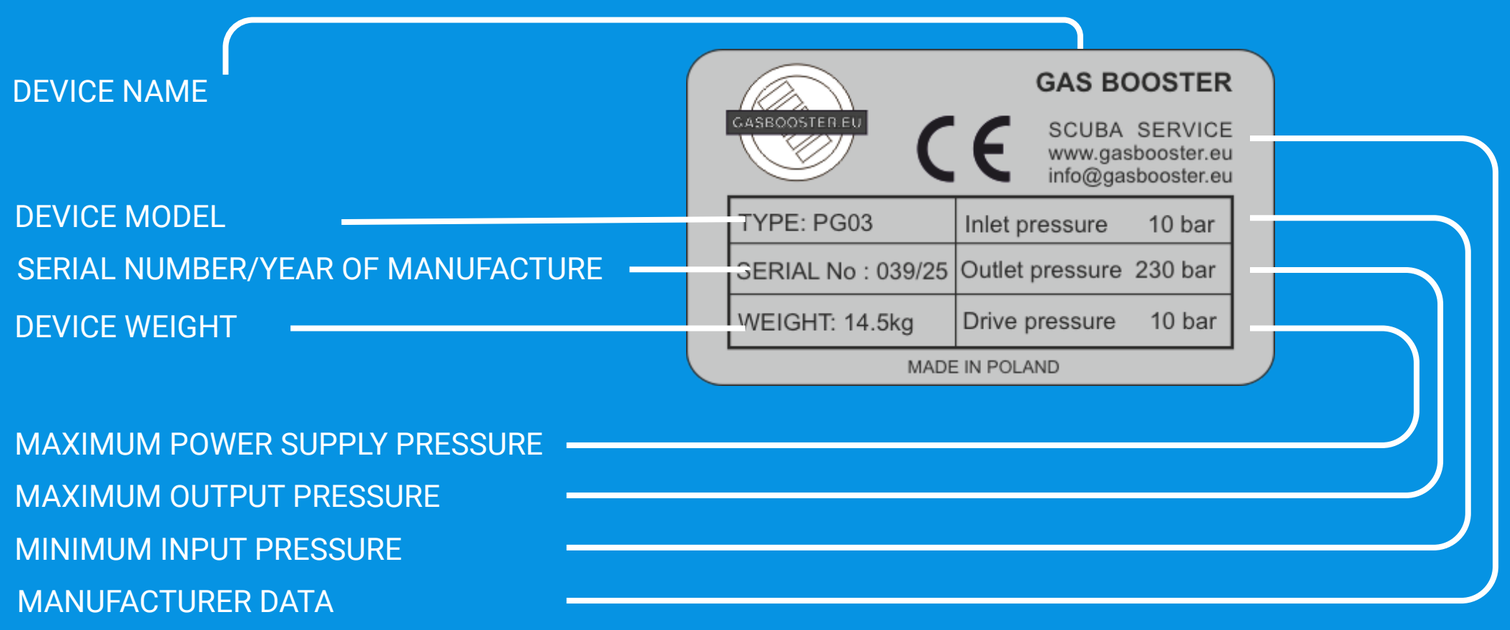
This manual contains the necessary information on the proper installation, commissioning, operation and maintenance of the PG-03 gas booster. Before starting work, you should carefully read the entire documentation. The manual should be kept near the device and be easily accessible to authorized personnel.

1.2 Product code

The device is designated by the product code: PG-03
PG03 - device model

1.3 Nameplate

The nameplate is located on the cylinder of the shuttle actuator.
It contains, among other things:



Note: The drive air connection is marked with the label “AIR ONLY” - connecting any other gas may result in damage to the device and void the warranty.

1.4 ABBREVIATION AND MEANING

ABBREVIATION	MEANING
PPE	Personal Protective Equipment
CE	European Conformity
PED	Pressure Equipment Directive (2014/68/EU)
ATEX	Explosive Atmospheres Directive
ID	Identification Number

1.5 Personnel Qualifications

Operating the PG-03 booster does not require specialized training in handling pressure equipment, provided that the tasks do not include filling pressure vessels.
According to applicable legal regulations (including the Regulation of the Minister of Economy of December 28, 2019, on occupational safety and health at energy devices and the regulations of the Office of Technical Inspection (UDT)), a person performing the filling of pressure vessels must have appropriate qualifications.
The device operator should be trained in its safe use and be familiar with this manual.
This translation accurately conveys the original Polish content and aligns with standard practices for technical manuals. It is important to ensure that all personnel operating the PG-03 booster are adequately trained and comply with relevant legal requirements.

2. SAFETY MEASURES

2.1 Personal Protective Equipment (PPE)
When operating the device, the user must wear appropriate personal protective equipment:
- Safety goggles
- Gloves resistant to contact with technical gases
- Hearing protection (the device may generate noise levels exceeding 80 dB)
- In certain cases – antistatic clothing

2.2 Labels and Markings
The device is equipped with permanent warning and information labels. Particularly important are:
- Nameplate with technical specifications
- “AIR ONLY” sticker near the drive port – prohibits the use of any medium other than clean air
- Arrows indicating gas flow direction
- Warning – Do not touch the piston while the device is operating

It is strictly forbidden to remove or cover any labels. If any label is damaged, it must be replaced immediately.

2.3: Work and Hazard Zone
Note: The PG-03 device does not contain any electrical or electronic components and is not an independent source of ignition. It may only be used in rooms that meet the following conditions:
- Well-ventilated (either naturally or mechanically)
- Free from explosion hazard zones (EX)
- Free from mixtures of flammable gases or vapors in concentrations that could form an explosive atmosphere
- Only clean, certified technical gases are used (e.g., oxygen, helium, argon)

The classification of the room as an EX zone or as free from explosion hazards is the responsibility of the end user and should be determined in accordance with local regulations and based on a risk assessment.

2.4 Hidden Hazards
- The use of improperly purified technical gases (e.g., containing rust) may lead to the blockage of check valves and dangerous leaks.
- Pressurized components may heat up or cool down – posing a risk of burns or frostbite.
- In the event of a sudden cutoff of drive air, the device may stop while still under pressure.
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2.5 Residual Risks
2.5.1 Start / Stop
The device may restart automatically when the air supply is restored. Before performing any maintenance work, the following steps must be taken:
- Cut off the supply of air and process gas
- Depressurize the system
- Secure the device against unintentional startup

2.5.2 Noise
The device generates noise levels exceeding 80 dB – hearing protection must be used, and exposure time should be limited.

2.5.3 Gas-Related Hazards
· Do not use unstable, oxidizing, or explosive gases.
· Only clean, filtered technical gases from trusted suppliers should be used during operation.
· No medium other than compressed air may be connected to the drive section.
· Process gas lines must be equipped with a venting option.

3. DEVICE DESCRIPTION

3.1 Construction and Operating Principle

The PG-03 is a pneumatic gas pressure booster that operates based on a piston driven by compressed air. During operation, low-pressure drive air acts on a large-area piston, compressing the gas in a smaller working chamber, which results in increased output pressure.

The construction includes:

- A drive chamber with an air piston
- A high-pressure cylinder with a working piston
- A high-pressure head with integrated check valves
- Inlet and outlet check valves, which also serve as gas inlet and outlet ports, according to the indicated gas flow direction.

3.2 Intended Use

The PG-03 device is designed to boost the pressure of technical gases (e.g., oxygen, helium, argon) for industrial and diving applications.

The PG-03 is not intended for compressing explosive or toxic gases.

3.3 Foreseeable Misuse

The device must not be used:

- For compressing flammable or explosive gases containing liquids
- For filling breathing air without appropriate filtration
- With gases containing solid contaminants (e.g., dust, rust)

3.4 Misuse

It is strictly forbidden to:

- Disassemble the device while under pressure
- Use pressures exceeding the allowable limits
- Modify the construction without the manufacturer's approval

3.5 Connection Ports

MARKINGS:

PROCESS GAS INLET
Connection to the source cylinder
Located on the left side of the arrow, following the direction of gas flow

PROCESS GAS OUTLET
Connection to the destination cylinder
Located on the right side of the arrow, following the direction of gas flow

AIR ONLY
Compressed air supply port

Max. 10 bar;
clean, dry air only

3.6 Technical Data

3.6.1 Operating Conditions

Ambient temperature range: -5°C to 40°C
Relative humidity: up to 70% (non-condensing)
Operation in a clean, dust-free environment.

3.6.2 Process Gas

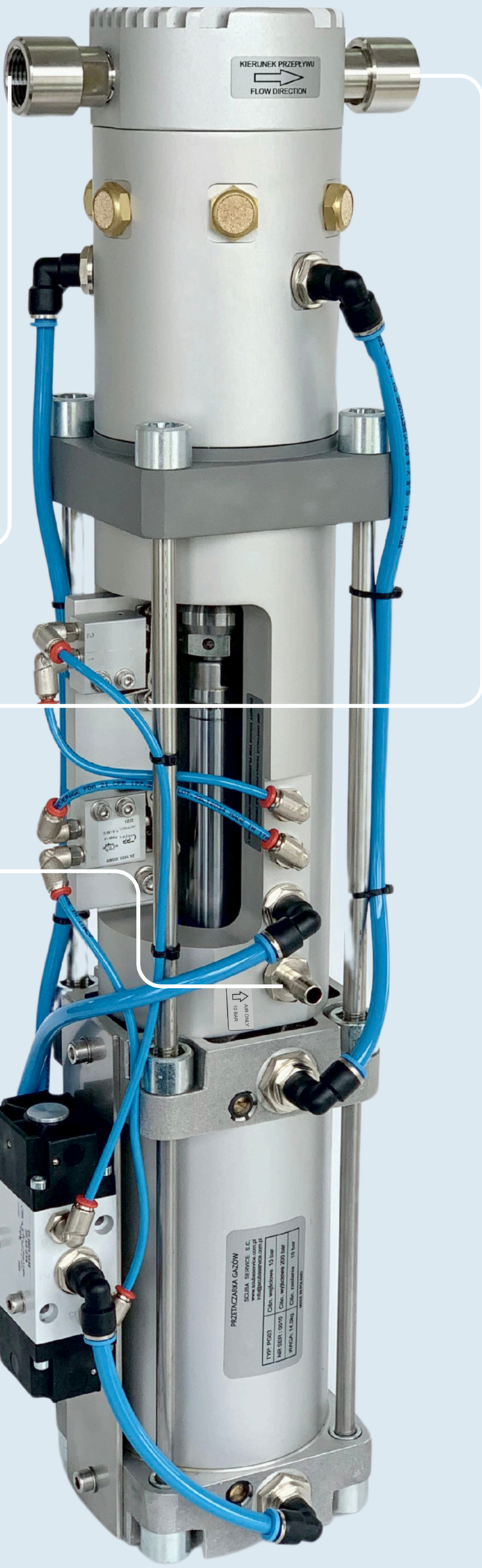
The device is suitable for use with the following gases: oxygen, helium, argon, air.
The device is fully compatible with both medical and technical oxygen – all contact surfaces are degreased and sealing elements are compatible.
Only gases from verified suppliers should be used; cylinders must not contain rust particles or other contaminants.
Dimensions and Weight
Length: 66 cm
Width: 16 cm
Height: 16 cm
Weight: 14.5 kg
Dimensions and weight may vary depending on configuration and version.

3.6.3 Operating Parameters

Maximum process gas inlet pressure: 230 bar
Minimum process gas inlet pressure: 10 bar
Maximum output pressure: 230 bar
Drive air pressure: 8–10 bar
Cycle frequency: depends on system pressure and resistance (average 30–35 cycles/min)

3.6.4 Service Life

Expected service life: 20 years under proper use
Recommended seal replacement: every 5 years
Check valves inspection: every 5 years or if any malfunction is observed



4. TRANSPORT, PACKAGING AND STORAGE

4.1 Dimensions and Weight
Length: 66 cm
Width: 16 cm
Height: 16 cm
Weight: 14.5 kg
Dimensions and weight may vary depending on the configuration, model version, and additional accessories.

4.2 Scope of Delivery
- PG-03 gas booster
- User manual (available online – via email sent to the recipient and on the website www.gasbooster.eu
- Nameplate attached to the device

4.3 Packaging
The device is packed in a durable cardboard box secured with protective film, ensuring resistance to mechanical damage and moisture during transport.
The box is dimensioned to fit the device precisely and internally designed to provide stability during shipment.
Air pillows are used to fill empty spaces inside the package.

4.4 Storage Conditions
The device should be stored in rooms meeting the following conditions:
- Temperature: from -5°C to +40°C
- Relative humidity: max. 70%, non-condensing
- No direct sunlight
- No mechanical vibrations
- No exposure to chemicals or aggressive vapors

In case of long-term storage (> 6 months):
- Check the condition of the packaging every 3 months
- Run the device through several cycles every 6 months (using 8–10 bar compressed air)
- Replace seals every 5 years, even if the device has not been in use

5. INSTALLATION

5.1 Prerequisites
The device should be installed in a dry, clean, and well-ventilated room.
Installation near heat sources or open flames is strictly prohibited.
The device must be easily accessible from all sides for maintenance purposes.
All connection ports must be clearly identifiable and compatible with the user's gas system.

5.2 Device Mounting
The device should be installed either vertically or horizontally on a stable and level surface.
It is recommended to secure the device to the base using M8 bolts (minimum grade 8.8) – 2 mounting holes with M8 threads are provided in the actuator body.
Do not install the device in closed housings without ventilation.
Ensure that a safety valve is installed in the high-pressure system at the installation site.

5.3 Connecting Hoses

5.3.1 Drive Air
Connect the compressed air hose to the port marked "AIR ONLY."
Maximum pressure: 10 bar
The air must be dry and oil-free (cleanliness class per ISO 8573-1, class 2.4.2 or better).

5.3.2 Process Gas
- Inlet port (as indicated by the gas flow direction) – connect to the source gas cylinder
- Outlet port (as indicated by the gas flow direction) – connect to the destination tank or cylinder
- All connections must be made using pressure-rated, certified hoses.
- Hoses must be equipped with venting systems.

5.4 Start-Up

5.4.1 Initial Conditions
- Check all connections for leaks
- Ensure that all gas lines are clear and correctly connected
- Make sure the source cylinder valve is closed
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5.4.2 Start-Up Procedure
1. Open the valve of the destination tank or cylinder
2. Then gently open the valve of the source cylinder – allow the pressures to equalize
3. Slowly open the drive air valve ("AIR ONLY"); pressure must not exceed 10 bar
4. The device will begin cycling and increase pressure in the destination tank

After operation is complete, shut off the valves in the following order:
First, close the drive air valve, then the process gas valve.

6. OPERATION

6.1 Operating Conditions

- The booster must be fully secured and stable.
- All connections must be leak-tight.
- The device must only be operated by trained personnel.
- The room must be well ventilated and free from ignition sources.
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6.2 Normal Operation

- Ensure that the process gas is connected to the appropriate ports according to the marked flow direction, and that valves on the cylinders are open and unobstructed.
- Ensure that venting valves in the system are unobstructed.
- Set the correct drive air pressure (8–10 bar).
- The device will start automatically and will cycle to compress gas until the desired pressure is reached.

6.3 Irregular Operation

In the event of any of the following symptoms, stop the device immediately and inspect the installation:

- Irregular operation (stopping, rapid cycling)
- Loud mechanical noises or uncontrolled gas/air leakage from the low-pressure drive section
- Vibrations or overheating of components
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6.4 Signs of Wear

- Decreased compression performance
- Gas leakage at inlet and outlet ports marked with the gas flow direction
- Constant leakage of air from the low-pressure air lines (between actuator and valve block)
- The device does not reach the expected final pressure

In such cases, seal replacement and check valve inspection are recommended.

6.5 Shutting Down the Device

1. Close the drive air supply (AIR ONLY port).
2. Close the process gas supply and the destination cylinder valve.
3. Depressurize the system via the bleed valve.
4. Wait until the device comes to a complete stop and cools down.

The device should be stored disconnected from all media.

7. MAINTENANCE AND INSPECTIONS

7.1 Maintenance Schedule

Task	Frequency
Leak check	- Every 3 months
External cleaning.	- Every 6 months
Seal replacement.	- Every 5 years
Check valve inspection	- Every 5 years
Fastener inspection.	- Every 12 months

7.2 Maintenance Procedures

7.2.1 Leak Check

- Inspect all connections while the device is operating.
- Use detection foam or a leak detector (e.g., digital manometer installed in the system).
- If any leaks are found – stop the device immediately and correct the issue.
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7.2.2 Device Cleaning

- Clean the device with a soft, dry cloth.
- Do not use solvents or chemically aggressive agents.
- For oxygen service devices – follow oxygen-clean standards during cleaning**.**
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7.2.3 Seal Replacement

- All seals must be replaced every 5 years or in case of any detected leakage.
- Use only original seal kits.
- It is recommended that this procedure be performed by trained service personnel.
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7.2.4 Fastener Inspection

- Check the tightness of all screws and fittings.
- If retightening is needed, consult the authorized service beforehand.
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7.3 Spare Parts

Original spare parts such as:

- Seal kits
- Check valves
- ...are available at www.gasbooster.eu and should be ordered directly from the manufacturer or through an authorized service provider.
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7.4 Service Tools

For maintenance and inspections, it is recommended to use:

- A basic workshop tool set
- Leak detector (e.g., digital pressure gauge installed in the gas transfer system at inlet and outlet).

7.5 Customer Support

If you have any questions or require service assistance, please contact the manufacturer or your local representative.
More information is available at www.gasbooster.eu.

8. TROUBLESHOOTING

1. Device does not start
Possible causes:
- No drive air supply or air pressure is too low
- No process gas supply
- Blocked check valve

Recommended actions:
- Check the drive air connection and ensure pressure is within the correct range
- Open the cylinder valve or verify gas supply port connections
- Inspect the check valves; clean or replace them as needed.

2. Device operates irregularly or too fast
Possible causes:
- Drive air pressure is too high
- Drive air pressure is too low
- Malfunctioning pressure regulator supplying the actuator

Recommended actions:
- Reduce pressure to the recommended range of 8–10 bar
- Replace the regulator with a functioning one

3. Device stops and does not increase pressure
Possible causes:
- Damaged high-pressure seal
- Contamination in the gas system
- Leaking check valve

Recommended actions:
- Replace the seals
- Inspect filtration and gas purity from the source
- Repair or replace the check valve.

4. Device does not reach working pressure
Possible causes:
- Process gas pressure in the source cylinder is too low
- Blocked flow or leak in the outlet valve (port)

Recommended actions:
- Check the inlet pressure
- Inspect the outlet line and valve condition for tightness and obstruction

If the issue persists, please contact the manufacturer.

9. DISPOSAL AND DECOMMISSIONING

9.1 Prerequisites

- Ensure that the device is disconnected from all media (gas and air)
- Release all pressure from the system
- The device must be in a safe, non-pressurized state

9.2 Disassembly

1. Close all gas and air valves
2. Vent any remaining gas and air from the system
3. Disconnect the inlet and outlet hoses
4. Unscrew the mounting elements and safely remove the device

9.3 Disposal

- The device is made of recyclable materials (aluminum, stainless steel, polymers)
- Worn parts and components containing lubricants must be treated as hazardous waste
- Disposal must be carried out in accordance with local environmental protection regulations
- In case of doubt, contact your local industrial waste collection facility.

It is recommended that final disposal be performed by the manufacturer or an authorized service provider.

10. WARRANTY

10.1 Warranty Coverage
This warranty applies to PG-03 gas boosters sold by Scuba Service s.c.
Scuba Service s.c. provides a 5-year manufacturer's warranty covering all material and production defects of the PG-03 device.

10.2 Manufacturer's Responsibility
Scuba Service s.c. commits to:
– Repairing the defective product under the terms of this warranty
– Replacing the product with a new one if repair is not possible
– Refunding the purchase cost if neither repair nor replacement can be carried out

10.3 Warranty Limitations
The warranty does not cover:
– Damage resulting from improper and/or unauthorized repairs or modifications
– Mechanical damage such as scratches, dents, or other surface defects
– Damage caused by improper use, maintenance, or storage of the product
– Malfunctions resulting from lack of periodic servicing, especially when operating the device with air or other gases at pressures exceeding 10 bar
– Installation errors or use inconsistent with the written instructions and guidelines provided by Scuba Service s.c.

10.4 Disclaimer of Liability
Scuba Service s.c. is not liable for any damage resulting from actions beyond its control, except for defects caused by assembly errors or inherent flaws in the product or its components.
Additionally, the manufacturer bears no responsibility for improper gas filling if performed in violation of applicable laws and safety regulations.

10.5 Other Products
Products offered by Scuba Service s.c. other than PG-03 gas boosters are covered by the warranties provided by their respective manufacturers.

10.6 Warranty Claims
Claims must be submitted directly to the manufacturer along with proof of purchase and a description of the issue:
Scuba Service s.c.
ul. Stoczniowców 9, 03-982 Warsaw, Poland
Phone: +48 662 007 430
Email: info@gasbooster.eu
or via the website: www.gasbooster.eu

10.7 Final Provisions
This warranty does not exclude, limit, or suspend any consumer rights provided by applicable national or EU consumer protection laws.