SPABOY MGPM Series

SPABOY MGPM Series Air Cylinder User Manual

Compact Guide Rod Three-Shaft Pneumatic Guided Cylinder

1. Introduction

This manual provides essential information for the safe and effective use of the SPABOY MGPM Series Air Cylinder. This series includes models such as the MGPM16x30 and MGPM12-, designed as compact, three-shaft pneumatic guided cylinders with integrated magnets. Please read this manual thoroughly before installation, operation, or maintenance to ensure proper function and safety.

2. Safety Information

Always adhere to the following safety guidelines to prevent injury or damage to the equipment:

- Ensure all pneumatic connections are secure and leak-free before applying pressure.
- Do not exceed the maximum operating pressure specified in the product specifications.
- Always depressurize the system before performing any maintenance or adjustments.
- Wear appropriate personal protective equipment (PPE), such as safety glasses, when working with pneumatic systems.
- Keep hands and other body parts clear of moving parts during operation.
- Install the cylinder in a stable and secure manner to prevent accidental movement or detachment.
- Consult a qualified professional if you are unsure about any installation or operation procedures.

3. Product Overview

The SPABOY MGPM Series Air Cylinder is a compact, guided pneumatic cylinder featuring three guide rods for enhanced stability and precision. It is equipped with an integrated magnet for position sensing. This design is ideal for applications requiring precise linear motion and resistance to side loads.

Components:

- **Cylinder Body:** Main housing containing the piston.
- **Piston Rod:** The extending and retracting shaft that performs work.
- **Guide Rods (x3):** Provide stability and prevent rotation of the piston rod.
- **End Plates:** Secure the cylinder assembly.
- **Air Ports:** Connections for compressed air supply.
- **Integrated Magnet:** Allows for non-contact position sensing using external magnetic switches.

Figure 3.1: Front view of an MGPM Series Air Cylinder, showing the main body, three guide rods, and mounting plate. This particular unit is labeled MGPM32-25.

Figure 3.2: Side view of an MGPM Series Air Cylinder, highlighting the compact design and air ports. This unit is labeled MGPM25x50.

Figure 3.3: Top-down view of an MGPM Series Air Cylinder, illustrating the three guide rods and the top mounting surface. This unit is labeled MGPM25-50.

Figure 3.4: View of an MGPM Series Air Cylinder showing the groove for mounting a magnetic position sensor (sensor cable visible).

4. Setup and Installation

Follow these steps for proper installation of your MGPM Series Air Cylinder:

1. **Mounting:** Securely mount the cylinder to a rigid, flat surface using appropriate fasteners through the designated mounting holes. Ensure the mounting surface can withstand the forces generated by the cylinder.
2. **Pneumatic Connections:** Connect the compressed air supply lines to the cylinder's air ports. Typically, one port extends the piston rod, and the other retracts it. Use appropriate fittings and ensure all connections are tight to prevent air leaks.
3. **Load Attachment:** Attach the load to the piston rod end. Ensure the load is aligned with the cylinder's axis of motion to prevent side loading, which can reduce cylinder lifespan and performance.
4. **Sensor Installation (Optional):** If using magnetic position sensors, slide them into the grooves on the cylinder body and secure them at the desired sensing positions. Connect the sensors to your control system according

to their specific instructions.

5. **Initial Pressure Application:** Slowly apply compressed air pressure to the cylinder, checking for any leaks or abnormal operation.

5. Operating Instructions

The MGPM Series Air Cylinder operates by converting compressed air energy into linear motion. Control is typically achieved through a directional control valve.

- **Air Supply:** Ensure a clean, dry, and regulated compressed air supply is connected to the cylinder. The recommended operating pressure range is detailed in the specifications section.
- **Directional Control:** Use a 4-way, 2-position or 5-way, 2-position directional control valve to direct air to either port, causing the piston rod to extend or retract.
- **Speed Control:** Flow control valves can be installed in the air lines to regulate the extension and retraction speed of the piston rod.
- **Position Sensing:** If magnetic sensors are installed, they will provide electrical signals indicating the piston's position (e.g., extended or retracted), which can be used by a PLC or control system.

6. Maintenance

Regular maintenance ensures optimal performance and extends the lifespan of your air cylinder.

- **Air Quality:** Ensure the compressed air supply is clean and dry. Contaminants and moisture can damage internal seals and components. Use air filters and dryers as necessary.
- **Lubrication:** The cylinder is typically pre-lubricated for life. If external lubrication is required for specific applications, use a non-detergent, light-viscosity oil compatible with pneumatic systems. Avoid over-lubrication.
- **Leak Checks:** Periodically check all pneumatic connections for leaks using a soapy water solution. Repair any leaks promptly.
- **Mounting Security:** Verify that the cylinder remains securely mounted and that all fasteners are tight.
- **Rod Condition:** Inspect the piston rod and guide rods for any signs of damage, scratches, or corrosion. Keep them clean.
- **Seal Replacement:** If air leakage occurs internally or externally from the rod seal, the cylinder may require seal replacement. This typically requires specialized tools and expertise.

7. Troubleshooting

Refer to the table below for common issues and their potential solutions:

Problem	Possible Cause	Solution
Cylinder does not move or moves slowly.	Insufficient air pressure; Air leaks; Clogged air lines/fittings; Excessive load; Valve malfunction.	Check air supply pressure; Inspect for leaks; Clear obstructions; Reduce load; Check directional control valve.
Cylinder extends/retracts erratically.	Fluctuating air pressure; Contaminated air; Worn seals.	Ensure stable air pressure; Install air filter/dryer; Consider seal replacement.
Air leakage from cylinder body or rod.	Damaged seals; Loose fittings.	Identify and replace damaged seals; Tighten all fittings.
Piston rod sticks or binds.	Misalignment of load; Bent rod; Lack of lubrication; Contamination.	Ensure proper load alignment; Inspect rod for damage; Check air quality; Clean cylinder.

8. Specifications

The following specifications apply to the SPABOY MGPM Series Air Cylinders. Specific dimensions and stroke lengths vary by model variant (e.g., MGPM12-, MGPM16-, MGPM20-, MGPM25-, MGPM32-).

- **Product Type:** Compact Guide Rod Three-Shaft Pneumatic Guided Air Cylinder with Magnet
- **Brand:** SPABOY
- **Typical Dimensions (MGPM12-10 variant):** Approximately 1.18 x 0.79 x 0.39 inches
- **Weight (MGPM12-10 variant):** Approximately 1.76 ounces
- **Operating Medium:** Filtered, non-lubricated or lubricated compressed air
- **Operating Pressure Range:** Consult specific model datasheet (typically 0.1 MPa to 1.0 MPa)
- **Operating Temperature Range:** Consult specific model datasheet
- **Piston Speed:** Consult specific model datasheet
- **Magnet:** Integrated for position sensing

Note: For precise specifications for your specific MGPM model (e.g., MGPM12-10, MGPM16x30), please refer to the product packaging or contact SPABOY customer support.

9. Warranty and Support

Specific warranty details for the SPABOY MGPM Series Air Cylinder are not provided in this document. For information regarding warranty coverage, technical support, or replacement parts, please contact the manufacturer, SPABOY, directly through their official channels or the retailer from whom the product was purchased.
It is recommended to keep your purchase receipt as proof of purchase for any warranty claims.