

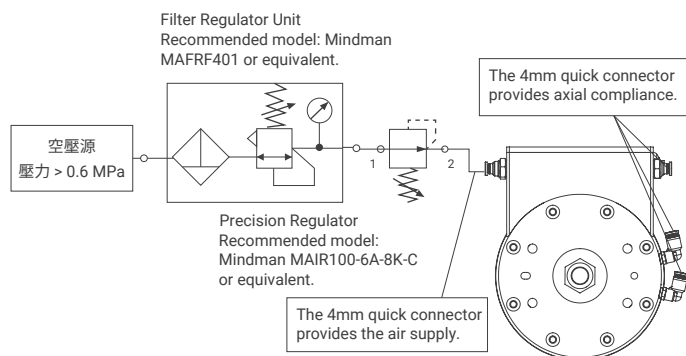


Maintenance

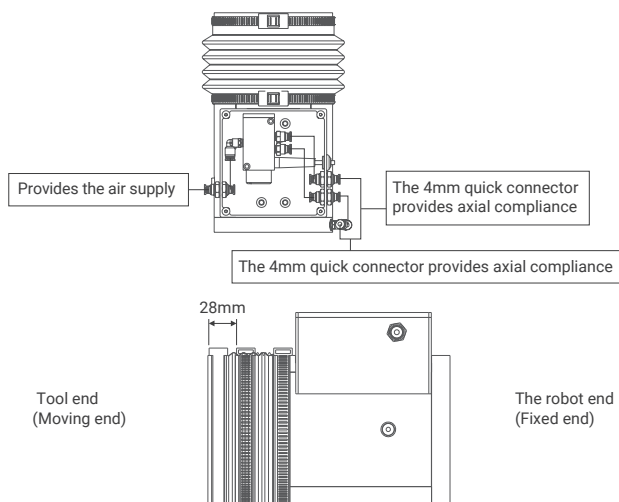
- Daily:** Check whether the grinding tool is damaged or wore, replace it immediately when it has invalid. Check air conditions and make sure the filter cup is not full of water, drain it in time. Check the lubricating oil drip rate is normal.
- Weekly:** Ensure the spindle operates smoothly without weird noises. Make sure compliant tool movements work smoothly, and the spindle is able to return to the CENTER POINT. Shake the spindle gently by hand at the CENTER POINT, and the mechanical gap should be less than 0.5mm. The spindle should be able to reach both forward and backward LIMIT POSITION. If any defect is discovered, please contact your supplier.

Before Use

- Prepare a suitable air source as shown in the illustration below. For LCZA300, please refer to the dimensions chart. The axial compliance air supply uses a 4mm pneumatic tube.



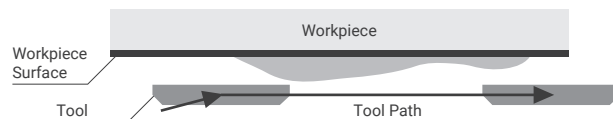
- Check the center point (*1) of the compliance module. Apply 0.2 MPa air pressure while the module is stationary. Verify the air supply connectors: one extends the LCZA300, the other retracts it. Confirm the correct direction before use. Ensure the compliance module returns to the center point, as shown in the illustration below. If it does not return to the center point or is misaligned, contact your supplier.



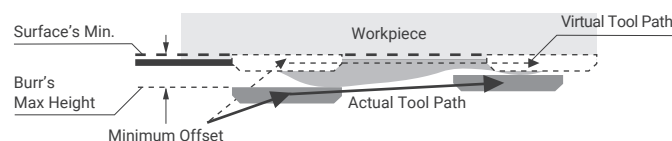
- Install the compliance module on the robot arm or a fixed position using the screw holes and positioning pin holes on the fixed end flange (*2).
- Install your grinding tool on the moving end flange using the screw holes. You will need to design a suitable fixture based on the shape of the tool (*2).
- If the compliance module is mounted horizontally, use the air supply connector in the extending direction to provide compliance. If mounted vertically downward (with the grinding tool below), use the air supply connector in the extending direction, where the resultant force on the workpiece will be the weight of the grinding tool plus the compliance force. Use the air supply connector in the retracting direction, and the resultant force will be the weight of the grinding tool minus the compliance force. You can alternate between the two to achieve a broader range of resultant forces. The situation for vertical upward mounting (grinding tool above) is the opposite of the above.
- This compliance module includes an active constant pressure control system, which can be used with an industrial weighing terminal for high-precision readings and offers various control applications.

Path Teaching Guidelines

- Keep the compliance tool fully extended, then teach the robot path so that the grinding tool just touches the area of the workpiece that needs to be ground without interference (*3).



- Add an offset (virtual cutting depth) to the path taught in the previous step. The purpose of setting this offset is to prevent the grinding tool from losing contact with the workpiece and to ensure stable contact. The key to setting the offset is to imagine the virtual path of the grinding tool as the compliance module extends to its maximum, ensuring it can absorb all dimensional errors, including the depth that needs to be ground. However, avoid setting the offset too large to prevent excessive grinding at the initial contact point or collisions with the compliance stroke limit.



- If the grinding amount is too large to complete in one pass, the same path can be repeated multiple times.
- If the robot's path is curved, more waypoints are needed compared to a straight path, and the compliance module direction should be adjusted to align with the normal direction of the workpiece surface for optimal grinding results.
- When the tool contacts the workpiece, only axial forward and backward movements should be performed.

Cautions

- This product is exclusively designed for robot deburring work, DO NOT use it for other purposes.
- For your safety, DO NOT approach the robot when it is in automatic operation mode.
- Tips and burrs could cause injuries, be cautious when working with them.
- Tips and compliant tools could be damaged by collision. Always check the robot paths before setting it to automatic operation mode.
- Compliant tools could be damaged by severe bouncing of the tips on the workpiece. Always perform checks before setting it to automatic operation mode.
- The air supplied to the precision regulator and compliant force should NOT be lubricated, otherwise, the compliant tools will be damaged.
- The noise from the deburring operation could damage your hearing, always wear ear protection during work.
- The file should only contact the workpiece from its side. Any contact in a direction other than the compliant direction, including the tip or the non-compliant side, will result in damage to the mechanism and is not covered under warranty.

Appendix

Compliant Stroke	(mm)	Unidirectional 28mm
Compliant Force	(N)	40~100
Compliant Pressure	(MPa)	0.2~0.5 (2~5bar)
Air Supply	(MPa)	≥0.6 (6bar)
Air Consumption	(LPM)	Compliance Force: Negligible Pneumatic Spindle: N/A
Lubricant	(drops/min)	1-2 (Only for pneumatic spindle)
Pneumatic Spindle Speed	(rpm)	N/A
Collet Size	(mm)	N/A
Ambient Temperature	(°C)	+5~35
Ambient Humidity	(%)	<95
Weight	(kg)	3.7
Function	(kg)	Active Constant Pressure Control System

*1. The CENTER POINT may not align exactly with the designed position. A tolerance or gap smaller than 0.5mm is normal.

*2. Please contact your supplier to obtain the 3D and 2D drawings of the compliant tool, or download them from our website.

*3. The robot can either hold the workpiece or the tool, depending on system integration requirements.