

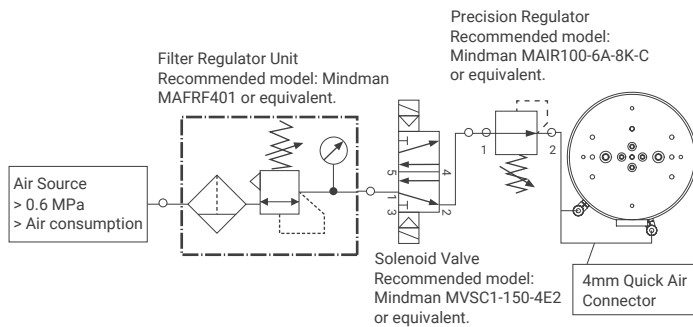


Maintenance

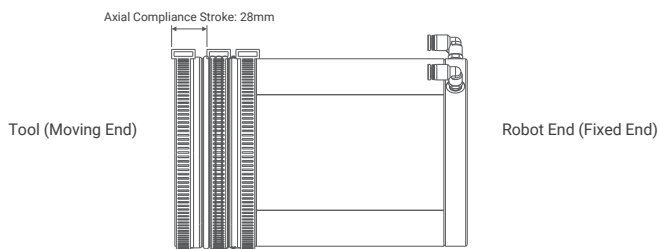
- Daily:** Check whether the grinding tool is damaged or wore, replace it immediately when it has invalid. Check air conditions and make sure the filter cup is not full of water, drain it in time. Check the lubricating oil drip rate is normal.
- Weekly:** Ensure the spindle operates smoothly without 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 diagram below. For LCZ300, refer to the appearance dimension diagram for details. The axial compliance air source uses a 4 mm pneumatic tube.



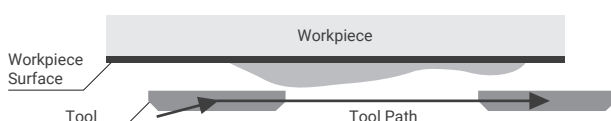
- Check the Center Point of the Compliance Module (*1). While the system is stationary, apply 0.2 MPa (2 bar) of air pressure to the compliance air inlet. Identify the direction of movement corresponding to each 4mm quick connector: one will extend the LCZ300, and the other will retract it. Confirm the correct direction prior to operation. Ensure the compliance module returns to its mechanical center point, as illustrated below. If the module does not return to center or fails to align with the designated reference position, discontinue use and contact your supplier for assistance.



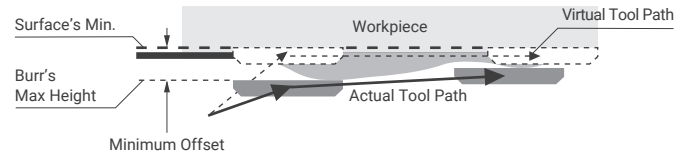
- Mount the compliance module to the robot or a fixed position using the bolt holes and dowel pin holes on the fixed-end flange (*2).
- Attach your grinding tool to the tool-side flange using the bolt holes provided. A custom fixture may be required depending on the shape of your tool (*2).
- For vertical downward installations (with the grinding tool facing downward), also use the extension-side air port. In this case, the resulting contact force on the workpiece equals the weight of the tool plus the compliance force. If you use the retraction-side air port, the resulting contact force becomes the tool's weight minus the compliance force. Alternating between both ports allows a wider range of total force. For vertical upward installations (with the grinding tool facing upward), the effects are reversed.

Path Teaching Guidelines

- Set the compliance tool to its fully extended state. Teach a path where the grinding tool makes precise contact with the workpiece and moves along the areas that need to be ground (*3). Ensure the tool stays in contact without causing interference.



- Add an offset (virtual cutting depth) to the path taught in the previous step. The purpose of setting the offset is to prevent the tool from losing contact with the workpiece and to provide a stable contact force (compliance force). The key to setting the offset is to imagine the virtual path of the grinding tool when the compliance module is fully extended. This path should absorb all dimensional errors, including the depth that needs to be ground. However, avoid setting the offset too high to prevent over-grinding at the starting contact point or hitting the compliance stroke limit.



- If the grinding depth is too large to be completed in a single pass, repeat the same path multiple times.
- For curved paths of the robot arm, more path points are required compared to straight paths. Additionally, adjust the compliance module's orientation to align with the normal direction of the workpiece surface for optimal grinding results.
- When the tool contacts the workpiece, axial forward and backward movements are allowed.

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

Model	LCZ300	
Compliant Stroke	(mm)	Unidirectional 28mm
Compliant Force	(N)	40~100
Compliant Pressure	(MPa)	0.2~0.5 (2~5bar)
Air Source	(MPa)	≥0.6(6bar)
Air Consumption	(LPM)	Compliance Force: Negligible
		Pneumatic Spindle: N/A
Lubricant	(drops/min)	1-2(only for spindle)
Pneumatic Spindle Speed	(rpm)	N/A
Collet Size	(mm)	N/A
Ambient Temperature	(°C)	+5~35
Ambient Humidity	(%)	<95
Weight	(kg)	2.6

*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.