WEJOIN SLIDING GATE OPERATOR

QUICK GUIDE: EXTERNAL DRIVE PINION GEAR REPLACEMENT (WJKMP202)

Technical Field SOP | Drive Pinion Replacement, Gear Backlash & Clearance Calibration

1. Drive Pinion Gear Specifications

Parameter	Pinion Gear Specification	Operational Relevance
Compatible Models	WJKMP202	Standard fit for 1000kg & 1800kg operators
Gear Module (M)	M = 4	Matches standard industrial M4 gear racks
Number of Teeth (Z)	Z = 15	Provides 23:1 reduction ratio output drive
Output Travel Speed	11.0 m/min @ 50Hz / 13.2 m/min @ 60Hz	Determines linear movement rate of gate
Fastening / Locking Type	Central Shaft Screw / Retaining Snap Ring	Secures pinion on transmission output shaft
Required Backlash Gap	1.0 mm - 2.0 mm clearance	Prevents shaft weight overload and premature wear

2. Pre-Replacement Safety & Mechanical Setup

1. Power Shutdown: Turn off main AC electrical breaker to prevent unintended motor activation while working around the pinion gear.

2. Manual Release Engagement: Insert the clutch key into the front panel cylinder and turn 90° clockwise. Pull out the release arm 90° to put the operator in idling mode.

3. Gate Mechanical Clearance: Manually slide the gate away from the motor pinion gear zone to create working space.

4. Tool Requirements: Hex key set (Allen wrench), retaining ring pliers (Circlip pliers), flathead screwdriver, grease/anti-seize compound.

3. Step-by-Step Pinion Gear Replacement SOP

Replacement Stage	Detailed Technical Instructions
Step 1: Disengage Drive & Expose Pinion Assembly	• Unlock manual clutch mechanism (turn key 90° clockwise and pull lever 90° out). • Ensure the motor drive shaft rotates freely by hand. • Clean surrounding dirt, old grease, and debris from the external drive pinion and shaft assembly.
Step 2: Removal of Fastener & Damaged Pinion	• Remove the outer central retaining screw / snap ring (Circlip) from the center of the gearbox output shaft. • Slide the worn or damaged drive pinion gear (M4, Z15) off the keyed output shaft. • Inspect the shaft keyway, key stock, and oil seal for damage or excessive wear.
Step 3: Installation of Replacement Pinion (M=4, Z=15)	• Apply a thin layer of grease or anti-seize compound to the transmission output shaft. • Align the new drive pinion keyway with the shaft key and slide the pinion fully onto the shaft. • Reinstall and tighten the central retaining screw or snap ring to lock the pinion laterally in place.
Step 4: Pinion-to-Rack Backlash & Height Calibration	• Slide the gate back over the motor drive pinion gear. • Verify teeth engagement between pinion gear and metal gear rack.

	• MANDATORY ADJUSTMENT: Maintain a vertical gap of 1.0mm to 2.0mm between pinion teeth top and rack root. The weight of the gate MUST NOT rest on the pinion gear. • Loosen foundation mounting bolts and turn leveling screws to adjust motor body height if necessary.
Step 5: Travel Limit Stopper & Smooth Movement Verification	• Push gate manually along full travel path (open to close). • Verify smooth meshing with no binding, jumping, or abnormal noise. • Ensure travel limit stoppers mounted on rack engage spring limit switch correctly at both open and close ends.
Step 6: Clutch Re-engagement & Operational Testing	• Close the manual release handle and turn clutch key 90° counter-clockwise to lock operator back to automatic mode. • Restore main AC electrical power. • Run full electrical OPEN / CLOSE cycle via remote control. Check for smooth drive performance and proper limit switch shut-off.

4. Pinion & Gear Rack Troubleshooting Matrix

Symptom	Probable Cause	Corrective Action
Grinding sound or gear jumping teeth	No backlash gap; gear rack pressing directly onto pinion	Raise rack or lower motor base to achieve 1-2mm clearance.
Motor turns but gate slips / doesn't move	Manual clutch released OR shaft key missing	Engage manual release clutch lever; check if keyway key is installed.
Premature tooth wear on pinion gear	Misalignment between gear rack sections or lack of clearance	Re-align gear rack sections to ensure smooth join lines.
Gate stops abruptly mid-travel	Debris jammed in pinion teeth or rack binding	Clean rack teeth and pinion drive; check rail alignment.