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Why Swivel Casters Wobble (Flutter): Causes, Fixes &

One-page quick reference · Full engineering guide + live tools at the QR codes below

Quick answer. Swivel caster wobble, shimmy, and flutter are three distinct failures. Wobble is axial play at the wheel bearing, shimmy is rotational play in the swivel raceway, and flutter is a high-frequency resonance triggered by speed. Diagnose which component has play before ordering parts; fixes range from bearing replacement to a precision raceway or reduced travel speed.

Three Distinct Failure Modes

Mode	Where It Happens	Root Cause	Typical Trigger
Wobble	Wheel bearing	Axial play or worn axle	Constant at any speed
Shimmy	Swivel raceway	Raceway axial play (bolt stretch or brinelling)	Gets worse under load
Flutter	Swivel assembly	Speed-matched resonance with rolling noise	Appears above a threshold speed

Flutter: Speed-Triggered Resonance

Flutter Type	Onset Speed	Root Cause	Fix
Low-speed flutter	~1.5-2.5 mph	Large swivel radius + soft wheel	Smaller swivel radius or harder wheel
Medium flutter	~2.5-4 mph	Resonance with rolling noise	Damper or precision bearing
High-speed flutter	Above 4 mph	Swivel lock missing or failed	Add swivel lock on trailing casters
AGV flutter	Any speed, constant	Raceway axial play > 0.002"	Precision raceway, Grade 10-16 balls
Floor-induced flutter	Specific speeds only	Floor roughness frequency matches caster natural	Change wheel diameter or hardness



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