

TECHNICAL REFERENCE · PRINT & KEEP

How AI and Automation Are Changing Mobility

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

Quick answer. AGVs and AMRs require precision kingpinless casters with wheel concentricity held to 0.010 inch TIR or better (commodity casters run 0.030 to 0.060 inch), stable rolling resistance across load and temperature, low-vibration polyurethane-on-forged-core wheels, and a swivel section with no runtime play. Commodity casters on AGV retrofits cause navigation drift and missed charger docks.

The AGV/AMR caster spec in one paragraph

Requirement	Commodity caster	AGV/AMR caster
Wheel concentricity (TIR)	0.030"–0.060"	≤ 0.010"
Swivel-section play	0.025"–0.080"	≤ 0.005"
Rolling resistance variance (load sweep)	±20%	±5%
Vibration emission (1–200 Hz)	High	Low (specified spectrum)
Wheel material	Rubber, TPR, cast iron	Poly-on-forged-core, 92–95A
Bearing tolerance	ABEC-1	ABEC-3 or precision needle

Rolling resistance stability

Factor	Commodity variation	AGV-spec variation
Load sweep (light to max)	±20%	±5%
Temperature sweep (40°F–120°F)	±15%	±4%
New vs broken-in	±25%	±6%
Wet vs dry floor	±30%	±8% (with proper wheel material)



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