High Dynamic Load Capacity Polyurethane Wheels

Title	High Dynamic Load Capacity Polyurethane Wheels
Thumb	
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Description

In the modern landscape of 24/7 automated production and high-speed logistics, a wheel’s performance is no longer measured just by how much weight it can hold while stationary. The true challenge lies in Dynamic Load Capacity—the ability to maintain structural integrity and performance while moving at high speeds under heavy pressure.

Our High Dynamic Load Capacity Polyurethane Wheels are precision-engineered to bridge the gap between heavy-duty requirements and high-speed efficiency, ensuring your AGVs, stacker cranes, and sorting systems run without interruption.

Understanding the Science of Dynamic Load

Unlike static load, Dynamic Load involves constant deformation and recovery of the polyurethane material as it rolls. This process creates internal molecular friction, leading to Heat Build-up.

A wheel with High Dynamic Capacity is designed to manage this energy through:

1. Low Hysteresis Loss: Minimizing the energy converted into heat during each rotation.

2. Superior Rebound Resilience: Ensuring the wheel quickly returns to its original shape, reducing rolling resistance and energy consumption.

3. Thermal Stability: Specialized formulations that prevent the polyurethane from softening or de-bonding at elevated operating temperatures.

Premium Material Systems: NDI, PPDI, and MDI

The secret to high dynamic performance lies in the chemical backbone of the elastomer. We offer customized raw material systems to match your specific duty cycles:

1. NDI Polyurethane (Ultra-High Performance): Offering the lowest heat build-up and highest dynamic fatigue life. Ideal for heavy-duty stacker cranes in New Energy Vehicle (NEV) battery plants and high-speed rollercoasters.

2. PPDI Systems: Excellent for high-temperature environments and high-frequency cycling where standard materials fail.

3. High-Rebound MDI/TDI: A versatile, cost-effective solution for medium-to-high dynamic applications like E-commerce sorting robots and AGVs.

Key Technical Advantages

1. 24/7 Operational Reliability: Engineered for high-frequency workflows, reducing the risk of flat-spotting and unexpected downtime.

2. Energy Efficiency: Low rolling resistance reduces motor strain, extending the battery life of mobile robots by up to 15-20%.

3. Vibration Damping: Superior shock absorption protects sensitive onboard LiDAR sensors and electronic components from floor vibrations.

4. High Bonding Strength: Advanced chemical bonding ensures the polyurethane tread remains permanently fused to the steel or aluminum hub, even under extreme centrifugal forces.

Technical Specifications Overview

To assist in your engineering selection, here are the typical performance ranges for our high-dynamic series:

Model	Diameter (mm)	Width T (mm)	Width B (mm)	Load Capacity (kg)
PH-230	230	90	158	1260
PH-250	250	80	165	1850
PH-267	267	127	165	2650

Model	Diameter (mm)	Width T (mm)	Width B (mm)	Load Capacity (kg)
PH-280	280	135	145	2200
PH-315	315	145	180	3200

Industrial Applications

Our high dynamic capacity wheels are the trusted choice for critical infrastructure:

Automated Warehousing: Drive and load wheels for AS/RS stacker cranes.

Automobile Production: Heavy-load WBS (White Body Storage) transfer systems.

Logistics Sorting: High-speed cross-belt sorters and parcel handling robots.

Semiconductor Manufacturing: Vibration-free OHT (Overhead Hoist Transport) systems.

Conclusion: Elevate Your System's Performance

Investing in High Dynamic Load Capacity Wheels is an investment in the longevity and efficiency of your automation. By reducing heat-related failures and energy loss, these wheels provide a significantly lower Total Cost of Ownership (TCO) for modern industrial facilities. Contact our engineering team today!