



Specification Sheet: Dovetail-Style Caster Interface

For Modular Transport Skates and Container-Based Mobility Systems

Overview

The dovetail-style caster interface is engineered for fast, secure, and repeatable attachment of transport skates to modular buildings, prefabricated skids, and container-based modular equipment. Designed for heavy-duty field use and streamlined reconfiguration, the interface enables tool-less installation and removal of casters while maintaining structural stability and load integrity during motion.

Mechanical Interface Design

The dovetail interface consists of a precisely machined male block on the caster unit that slides into a welded or bolted steel receiver plate integrated into the modular frame or container chassis. Once engaged, a spring-loaded locking pin or bolt secures the caster, preventing disengagement under lateral or vertical loads. The tapered wedge shape ensures self-centering alignment and load distribution.

Product Requirements

1. Load Capacity and Safety Factor

Each dovetail-equipped caster supports a dynamic load of **5,000 to 15,000 lb**, depending on wheel specifications, while full skate assemblies can handle **60,000 lb or more**. All components adhere to a **4:1 safety factor**, ensuring structural reliability and safety in demanding modular and container handling operations.

2. Materials and Construction

Caster rigs are fabricated from **CNC-machined or precision-cast steel**, treated with corrosion-resistant coatings. The dovetail interface block and housing are typically formed from **heat-treated alloy steel or ductile iron**, allowing for repeated high-load cycling without deformation.

3. Compatibility

The dovetail-style interface is engineered to accommodate both modular building frames and container-based transport systems. For modular applications, the receiver plate may be welded or bolted to I-beams, structural steel crossmembers, or subframes, allowing casters to be added during fabrication, rework, or final positioning. This allows customers to swap or reposition casters depending on facility flow or site needs.

For containerized systems, the dovetail interface can be mounted along the base frame or adapted into ISO-compatible brackets. This configuration enables container skids, portable utility systems, or telecom enclosures to become mobile on-demand—using shared caster pools or designated movement skates. Once in place, casters can be removed for reuse elsewhere, making it ideal for scalable fleets and dynamic deployment.

4. Installation and Operator Efficiency

The dovetail interface allows tool-free caster installation; operators simply slide the caster block into the receiver track and engage the locking mechanism, reducing downtime during reconfiguration or maintenance. This rapid interchangeability closely aligns with modular



production practices and supports shared-use environments notably adopted by leading manufacturers in modular and container-based applications.

5. Customization Options

To serve the diverse needs of modular and container-based industries, the dovetail caster interface supports extensive customization across multiple areas:

Dovetail Geometry & Entry Orientation

- Receiver widths can range from 4" to 10", with a standard of 6.5".
- Taper angles are configurable at 8°, 10°, or 15° per side.
- Entry orientations include front-facing, rear, dual-sided, or vertical drop-in engagement.

Locking Mechanisms

- Spring-loaded detent pins for fast tool-free locking
- Bolt-through designs for semi-permanent installations
- Twist-locks for high-vibration or mobile environments
- Optional visual lock indicators for verification

Mounting Flexibility

- Weld-on receivers for permanent steel frame applications
- Bolt-on brackets for modularity or retrofit situations
- Adapter plates for non-steel substrates such as wood, aluminum, or composite

Wheel and Rig Options

- Wheel sizes from 6" to 16" diameter
- Tread types include polyurethane, rubber, steel, spark-proof, or non-conductive
- Caster rigs available in swivel, rigid, dual-swivel, spring-loaded, or motorized

Material & Finish Choices

- Carbon steel (A36/4140) for strength
- Stainless steel (304/316) for marine or chemical environments
- Finishes include powder coat, e-coat, zinc, or galvanized coatings for corrosion resistance

Recommended Use Cases

- Moving modular buildings through assembly, staging, and final placement
- Enabling container-based systems (data centers, telecom, utilities) to become mobile
- Temporary transport of skid-mounted equipment across industrial sites
- Rapid deployment for military, aerospace, or emergency infrastructure platforms

Compliance and Documentation

Dovetail caster systems are manufactured in North America under ISO 9001 standards. Each interface undergoes Finite Element Analysis (FEA) to confirm safety margins against torsional, shear, and vertical loads. CAD models, dimensional drawings, and inspection reports are available upon request to support design integration and client validation.