

Redefining Material Handling Strategies:

The Drive toward Value-Added but Safe Activities

Ford, GM and Chrysler have established material handling guidelines in the past, however the business practices around material handling have changed and the standards needed to be reviewed so they align with new practices, including Cart / Dolly Design, Kitting, and Central Material Area (CMA) Small Lot material delivery. Effective, safe, material handling strategies can be a competitive advantage to companies as a result of robust business cases and will improve health and safety for Material Handling Operators.

The USCAR ETF reviewed all their current ergonomic / system guidelines from Ford, GM and Chrysler that addressed Cart / Dolly Design, Kitting Design and Weight, and Small Lot usage. Existing guidelines were then evaluated for any gaps based on known 'high hurts,' changing business practices and combined activities and a literature review was conducted to address any identified gaps. The team developed two material handling standards by aligning existing guidelines from Ford, GM, Chrysler and external literature. These two guidelines are also being published into SAE Standards: Ergonomic Guidelines for Cart and Dollies and Ergonomic Guidelines for Small Lot Delivery Operations. Additional information about these two guidelines is below:



Ergonomic Guidelines for Cart and Dollies

- Alignment between Ford, GM and Chrysler in providing ergonomic guidelines related to push / pull forces, measurement methods and techniques
- Defines the assessment methods and physical requirements associated with the manual handling of carts and dollies, specific to material handling systems.
- Defines initial and sustained push / pull force limits specific to carts and dollies
- Data collection worksheet developed
- Potential solutions to reduce push / pull forces, as well as cart / dolly design recommendations

Ergonomic Guidelines for Small Lot Delivery Operations

- Comprehensive document that provides a detailed methodology to design and assess ergonomic acceptability related to manual material handling tasks, the guidelines are consistent or derived from the NIOSH 1991 Lift equation
- This comprehensive guideline addresses the following: Material locations (height, reach), Load (container) weight and size, Equipment (racks, tow tractors, trailers) design and configuration, Handling frequency (number of items handled per unit time or route), Activity and element composition and times.
- Internal review and comparison of GM, Chrysler and Ford ergonomic guidelines related to Small Lot
- Design guidelines provided to assist in optimizing small lot weight in relative to vertical height. These guidelines are derived from the NIOSH 1991 Lift equation
- Provides guidelines related to hand clearance and recommended hand coupling while loading / unloading containers
- Definition of recommended aisle way width to enable tow tractor and trailer adequate spacing for delivery of small lot containers
- Includes description of Safe and Proper Material Handling Techniques
- Includes method to conduct ergonomic analysis of Marketplace Route

