

## Lean Principles | In-Plant Trailer Design



## Hamilton Caster Helps Engine Manufacturer Get Lean

*Lean manufacturing* has become more than just a buzzword. Lean companies like Hamilton Caster are more efficient. But Hamilton doesn't just practice lean, it helps its customers on their journeys, too.

## Custom Trailers Help Major Engine Manufacturer Improve Efficiency

When a global engine manufacturer needed unique carts to deliver parts to an assembly line, a local distributor recommended Hamilton.

To design the optimal trailer, Hamilton engineers studied the manufacturer's process:

- Engine parts are placed on the trailer in the proper sequence for eventual use in assembly of different models.
- Once loaded in a warehouse, the trailers are hauled to an assembly line in a separate facility and then delivered via power towing to specified points on the line.
- Operators manually maneuver the loaded carts into position and access the 48 parts while mating the part to the assembly on the line.

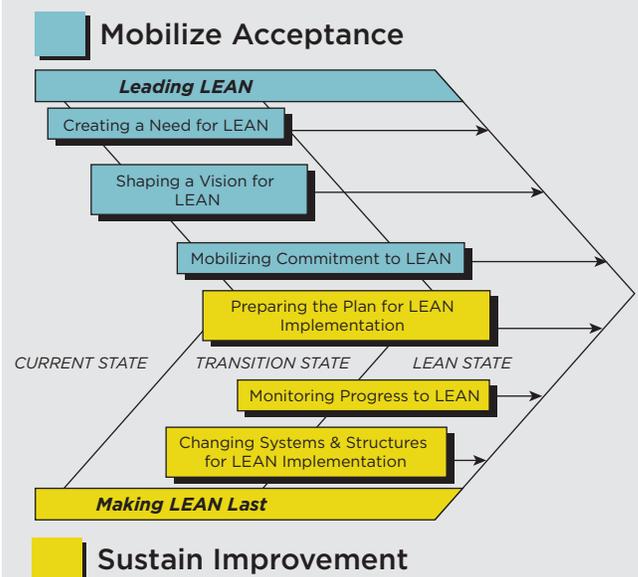
The customer, distributor and Hamilton engineers designed a custom cart that satisfied all the assembly line needs.

## Creating an Optimal Trailer

Hamilton began with 12-inch diameter wheels with Poly-Soft tread and precision ball bearings for easy rolling of the 2,000-pound capacity carts. Smaller wheels would have increased the force required to move the loaded carts. Additionally, since they are more resilient than industry standard poly, poly-soft tread requires only about half of the force to move, it's quieter, and repels small particles that typically become embedded in standard poly wheels.

### In a Nutshell

Lean Manufacturing means removing unnecessary steps, motions, processes, and waste in the production process. By eliminating the unessential, delivery and production times decrease while product values increase. Imagine the opposite of a Rube Goldberg machine.



Hamilton designed a special bearing for the fifth wheel assemblies to aid the manual steering required to finesse the carts into place.

Hamilton also devised a simple and easily actuated brake pedal to enable operators lock the carts into position. Throughout this project, you'll notice that simplicity is valuable in lean design.



*Hamilton Caster's actuated brake pedal.*

## Rotating Carousels

Sequential loading ensures the operator has the right part at the right time. Parts must be in the acceptable reach “zone” for a multiple operators, with nothing too high or too low. Rotating carousels spin easily for part access without moving the cart and an available lock prevents rotation during transit. Shelves slope slightly downward, away from the opening, to prevent parts from spilling out when the cart is moving. Each space is lined with ultra-high-molecular-weight (UHMW) material to protect part finish. Drainage at the center of each carousel prevents any pooling when the carts are washed.



*Hamilton Caster's carousels spin easily for part access without moving the cart.*

## Just As Durable

Keeping weight down is important when moving carts manually. So, Hamilton crafted the carousels from aluminum and eliminated unnecessary material from the cart. This reduced the weight while preserving the structural strength.

## Versatility is Key for Quick Adjustments on Factory Floor.

The carts feature towing tongues on the front and pintle hitches on the rear. Towing tongues face frictional wear and tear. That's why Hamilton carts feature forged steel loops, providing years of dependable use. As many as six carts may be connected at a time into a “train” and four-wheel steering enables the entire train to track in the same pathway around turns, minimizing aisle width requirements. For safety, tongues are stowed in the vertical position, held in place with rubber stops, and hinged to prevent inadvertent drops.

Tie rod guards span the distance between front and rear wheels along each side to protect the exposed tie rod from damage by forklifts when lifting the carts from the side.

The top section, with the carrousel, can be completely removed from the base. These two assemblies are held together with only four bolts, so detaching the top is easy. This affords the engine manufacturer to apply all-new superstructures to existing carts should their needs change.

Carousel shelves adjust and permit the manufacturer to adapt them to change in the size and shape of parts. Plus the design allows a carousel to be easily replaced if it is damaged.

## Still Lean and Mean

Manufacturing successfully in a lean environment includes:

- Improving workflow
- Minimizing walking and other wasted motions
- Presenting parts to workers in the best way
- Addressing ergonomic issues
- Structuring the work to minimize the likelihood of errors

These custom Hamilton carts play a key role in the lean assembly operation, addressing these issues and helping the engine manufacturer get more bang for its buck.

Hamilton Caster can customize solutions for your company on its journey to more efficient processes.

## About Hamilton's Custom-Engineered Capabilities

For more than 100 years, American manufacturer Hamilton Caster has handled the pressure of material handling's heaviest and most complex jobs. We build ultra-durable casters and trailers to thrive under years of use, no matter the application. Best of all, Hamilton products boost warehouse efficiency, increase productivity and reduce overhead costs.

And for unconventional applications, Hamilton specializes in custom-engineered casters and trailers to haul just about anything. Learn more at [cartsandtrailers.com](http://cartsandtrailers.com).



*Hamilton team improves an existing process by breaking down each step.*



*Modeling helps an improvement team produce plant layout and thereby reduces waste.*

# Call Hamilton for a Free Consultation

Have questions about an existing application, or a design in the works? Looking to improve efficiency and minimize waste. Give us a call and let's talk.

## **Hamilton Caster**

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