

WHITE PAPER

chariot™
simple • agile • productive

Energize your cleaning team...
step up to a Chariot.



WINDSOR®

a Castle Rock Industries company

PATENT PENDING



Introduction

The Chariot™ (patents pending), from Castle Rock Industries (CRI), is a new category of auto scrubber – the industry’s first “stand-up” auto scrubber. Chariot increases productivity, cleaning consistency and job quality by:

- Reducing operator fatigue over the course of a normal shift when compared to a walk-behind auto scrubber.
- Extending the time between drain and refills with the patented Aqua-Mizer™ system.
- Providing greater floor coverage through a combination of speed, accessibility, maneuverability and extended battery life.
- Offering higher maneuverability, especially in small, complex layouts typically found in retail, education and healthcare facilities.

The result is a totally new auto scrubber that is simple, agile and productive, that reduces cleaning times as much as 50%. The Chariot energizes your cleaning team to be more productive, with less fatigue, resulting in more motivated employees and less turnover.

An Evolutionary Design

As CRI began to design its next generation of auto scrubbers, we looked at the evolution of the industry and the feedback received from end-users. Over the years, walk-behind scrubbers have progressed in size and performance capabilities. The introduction of ride-ons offered a significant increase in productivity for the right applications. However, CRI research of customer wants and needs and current product designs identified a significant gap in the market—one that would combine the productivity of a ride-on with the flexibility of a walk-behind. Thus, the stand-up platform was conceived.

In creating the Chariot scrubber, Windsor benchmarked similar designs in other industries addressing similar customer needs and wants. Both the material handling and commercial lawn care industries found their customers asking for new solutions to an old process. When they launched their new designs they had a lot to teach about the benefits of stand-up equipment. The company also did extensive studies on cleaning industry requirements, using state-of-the-art research and development processes.

As the Chariot design progressed, CRI employed the expertise of an Ergonomic Specialist to ensure that the Chariot would address the largest percentile of potential users.

The end result was a whole new way of thinking about virtually every aspect of the cleaning process. Major changes include:

- Redesigned solution tanks, using a flexible reservoir technology system, for maximum capacity in a minimum space to reduce the overall product size.
- Intuitive steering controls, for greater control and flexibility for operator comfort and ease of use.
- An evolutionary “stand-up” platform that is comfortable and efficient, with pedal controls to enable the operator to maximize productivity.
- Unique swinging squeegee system for 100% water pick-up on turns.
- High-efficiency electrical components for optimal power usage to increase actual run time per battery charge.
- An easy-to-use battery exchange pack option that will allow the operator to replace a battery pack quickly to double the Chariot run time and increase productivity.

Proper ergonomics was one of the key concerns in designing the Chariot. CRI was able to take advantage of a rich database of design practices, including information that integrated US adult data. Tests were done to allow for a range of operators extending from females in the 5th percentile in size to males in the 95th percentile. For example, the height of the machine has been carefully calibrated to allow 95% of all males to pass through a standard 6’8” door frame without bending.

Greatly Enhanced Productivity

In the cleaning industry, labor typically accounts for 70 to 90% of floor care operating costs; therefore, the greatest benefit comes from those products that increase productivity and reduce labor hours to perform a task. With the introduction of the new Windsor Chariot scrubber, Castle Rock Industries offers a machine that surpasses the productivity of existing walk-behind auto scrubbers and, in many applications, ride-on auto scrubbers as well. The Chariot combines the speed of a ride-on, with the flexibility and responsiveness of a walk-behind in complex cleaning environments.

Chariot more than doubles the productivity of a walk-behind auto scrubber, and outperforms ride-ons by 35% (in certain situations) through the following benefits:

GREATER FLOOR COVERAGE The 24" Chariot auto scrubber provides far greater coverage in terms of square feet cleaned per shift than either walk-behinds or ride-ons (in certain applications), even those with larger cleaning decks. This is due to two factors: the speed of the Chariot (compared to walk-behinds) and the run time (compared to ride-ons).

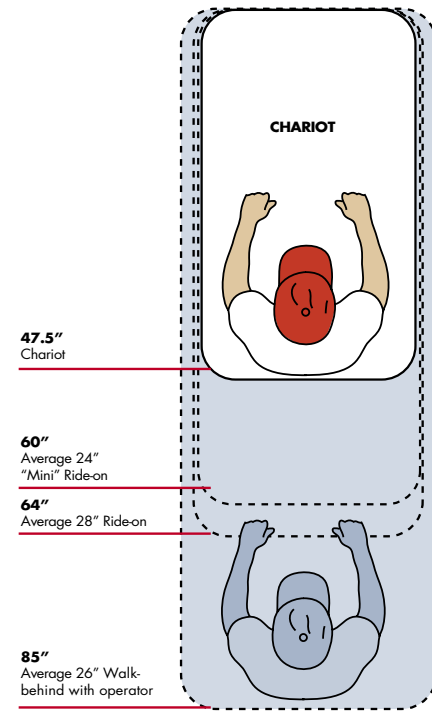
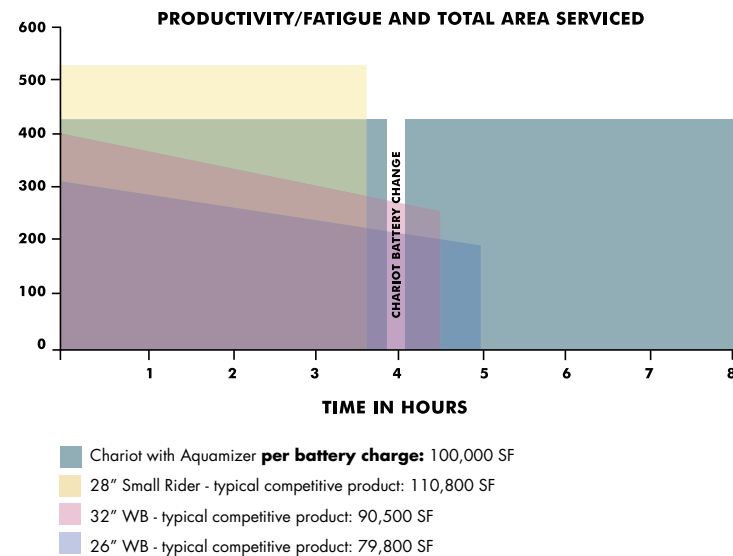
The area under each graph represents the square feet cleaned. Because Chariot operates at the speed and consistency of a ride-on, it clearly outperforms any size walk-behind scrubber. Where it surpasses the ride-ons is in the battery run time available. The Chariot employs a battery configuration and battery pack exchange system that allows operators to easily insert a new set of batteries during a shift, thus extending the runtime of the Chariot.

Coverage is even further enhanced when using CRI's patented Aqua-Mizer, a scrubbing feature that reduces chemical usage and dramatically increases the time between dumps and refills. Based on tests of Windsor's Saber Cutter walk-behind auto scrubber – where the Aqua-Mizer is also a standard feature – one major retail customer reduced the number of dumps and refills by up to 50% per shift.

Thus, while a riding scrubber with a larger cleaning deck may cover more area at the start of a shift, it typically can only run for about 3.5 hours before it needs to be recharged. The Chariot runs for up to 4 hours on a single charge, and when a new battery pack is inserted, this effectively doubles the runtime of the Chariot. When combined with the Aqua-Mizer system, the coverage is even greater.

REDUCED FATIGUE According to research conducted by a leading BSC, an operator's performance declines over the course of a day, due to the physical demands of walking behind and guiding the auto scrubber. By allowing the operator to ride on the auto scrubber, instead of walking behind it, Chariot reduces fatigue by up to 50% over the course of a typical eight-hour shift with a walk-behind.

Stand-up machines reduce fatigue when compared to ride-ons. This was proven in the lawn care industry, where operators of stand-up mowers were less tired due to the ease of getting on and off the machine to deal with obstacles and obstructions.



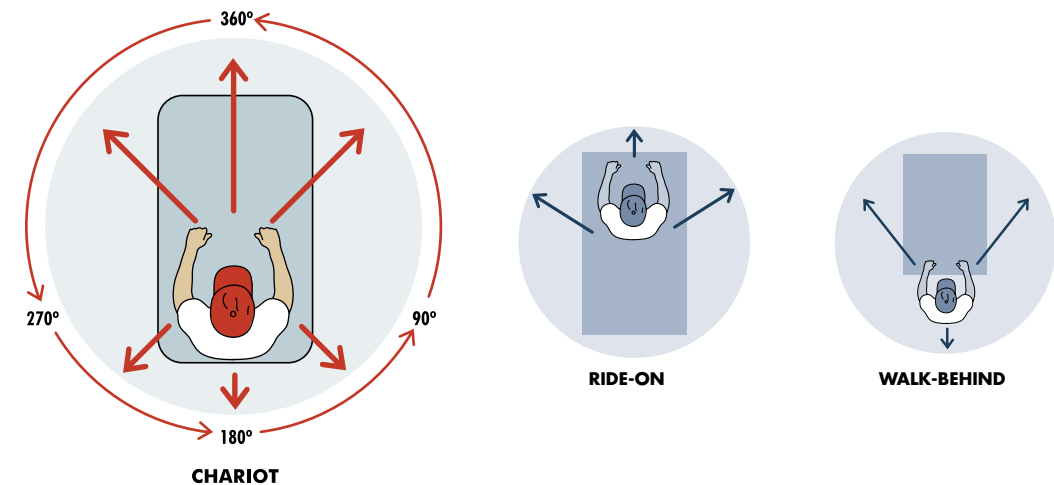
AGILITY The Chariot has the smallest footprint of any auto scrubber, as seen in the following illustration. This footprint, combined with the operator riding on the scrubber rather than standing behind it, gives the Chariot the industry's smallest turning radius. This ultra-tight turning radius allows Chariot to access areas in buildings that typical auto scrubbers cannot. One BSC that specializes in grocery stores noted that today they can only access about 70% of the floor space with a typical walk behind auto scrubber. The remaining 30% has to be cleaned with mop and bucket. With Chariot, they estimate that they will be able to access approximately 90% of the floor space.

This means Chariot will allow access to clean an additional 20%, greatly reducing the physical cleaning required.

INCREASED ENVIRONMENTAL ACCEPTANCE Chariot is designed for the human environment. One of the limitations of ride-ons has been their acceptance in cleaning environments that are open to the public, especially ones accessible 24 hours a day. This is especially true in hospitals and retail

operations where customers can be standing in narrow aisles or hallways when floor cleaning is being done. A ride-on scrubber, due to its overall size and profile, can be very intimidating, and can often be difficult to pass while work is being done. Chariot not only appears smaller and less intimidating, but allows greater control in these tight spaces. It is not disruptive to the environment, it is unintrusive and quiet in operation. It fits into the environment without disturbing the human element or interrupting the flow of work. This means Chariot will fit into many environments with a minimum of disruption.

FULL CIRCLE VISIBILITY When traveling at higher speeds, operator sightlines become a critical factor in terms of safety. CRI designed Chariot to have the best sightlines of any auto scrubber, giving the operator superior visibility of surrounding obstacles, confidence and comfort while operating. This makes Chariot safer to operate in any environment.



SAFE, EASY OPERATION Ergonomic specialists also provided guidance on the design and implementation of the overall control panel. It is intuitively organized and simple to use. The Chariot builds on the operating simplicity of Windsor's previous auto scrubbers, the Saber Cutter and Saber Glide. It has simple, robust controls and a familiar steering mechanism. Controls allow different speed settings for travel between locations, cleaning, and reverse. For safety purposes, the drive system disengages when the operator steps off the unit. Speed settings automatically reset after a designated time period, to ensure that the previous (or new) user is able to easily transition from one task to another.

IMPROVED OPERATOR MORALE & RETENTION Companies who employ personnel to clean floors every day can experience turnover rates of more than 100% per year. Because of the operator-focused design, ease of use, agility and decrease in fatigue, Chariot will improve operator morale. By providing your cleaning staff with this evolutionary, operator-focused new equipment, you will enhance their self-image, increasing job satisfaction and decreasing turnover.

EASE OF MAINTENANCE When it comes to overall productivity, one of the greatest enemies is downtime. Based on one study, CRI found that properly maintained floor care equipment can reduce the total cost of cleaning a grocery store by nearly \$4,000 a year. In this interest, the Chariot provides simple access to all service areas in the machine, allowing for quick and easy maintenance. This can mean significant savings in terms of machine availability, as well as a reduction in cleaning tasks – such as additional scrubs and recoats that can be required when operators have to use mops and buckets due to a broken scrubber.

Meeting The Needs of The Industry

Since Chariot represents an evolutionary new category, CRI interviewed end-users from all market segments to determine their requirements for the entire cleaning process. The table (right) shows a compilation of some top industry requirements. It identifies the top priority needs, how they are addressed by current walk-behind and ride-on machines, and how Chariot provides capabilities available from BOTH categories.

VALUE ADDED FEATURES AND FUNCTIONS			
Customer Needs	Ride-on	Chariot	Walk-Behind
Increase overall run time	-	+	-
Reduce labor hours per square feet of cleaning	+	+	-
Increased efficiency over walking	+	+	-
Improved operator dignity	+	+	-
Reduce employee turnover	+	+	-
Improve machine productivity rate	+	+	-
Maintain cleaning consistency	+	+	-
Reduce fatigue factor	+	+	-
Reduce miles walked	+	+	-
Increase ease of getting on and off the machine	-	+	+
Improve productivity in congested areas	-	+	-
Decrease size perception and fear	-	+	+
- Achieve small footprint	-	+	-
- Fits into small elevators or equipment closets	-	+	+
- Perception of machine size, especially in Healthcare	-	+	-
- Easy to negotiate in heavy pedestrian traffic	-	+	+

Industry Benchmarking

As noted, when CRI began developing the concept of a step-on auto scrubber, the company looked at what had happened in both material handling – with forklifts – and lawn care – with mowers. The parallels to the cleaning industry are obvious: both industries offered walk-behind and ride-on equipment that were well established in their respective markets. But, when the first stand-up machines were introduced, they became immediate successes.

The results in the lawn care industries were particularly dramatic. One landscaping company that purchased 60 stand-up mowers noted: "Our guys beg for them because they get the job done faster, and they are easy to handle." They found the stand-up mower to be the best all-around mower in the industry. "That mower makes cutting the lawn...fun."

The advantages discovered were greatly increased maneuverability, a smaller footprint that made them ideal for mowing in tight configurations, an ultra-tight turning radius, and increased operator comfort. Operators found a reduction in discomfort to their knees and lower back when operating the stand-up units versus the self-propelled walk-behind mowers. Productivity was increased, with jobs being completed 30 to 40% faster than walk-behinds, as expected. The surprise came when users also discovered a 10% to 15% reduction versus ride-ons on lawns with a fair amount of obstacles.

Conclusion

By creating the industry's first stand-up auto scrubber, Windsor has significantly increased floor cleaning productivity. Chariot is agile, simple and productive. It is ideally suited for complex building layouts with obstacles that are often found in retail stores, supermarkets, healthcare facilities and offers up to a 50% reduction in cleaning time. Chariot will significantly increase productivity and cleaning quality by reducing operator fatigue. Chariot will energize your cleaning team, increasing operator morale and minimizing turnover.

Why walk, when you can step up to a Chariot?



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