



Knuckle or Rail Boom— Which Is Right For You?

By W.B. King

There are so many projects that require specific equipment that the task of matching the correct piece of equipment with project specifications can be daunting. When it comes to moving or transferring precast concrete products the standard method is either to employ a knuckle boom or a rail boom also known as articulating booms and telescopic booms, respectively.

In order to determine which boom to choose when approaching a project it is best to call on the experts who can offer the respective Pros and Cons, as well as best practices and innovations.

“A good way to sum up the difference is that the big telescopic cranes have one purpose—placing payload—while the truck-mounted knuckle boom cranes have a dual purpose: transporting product and then placing it,” explained John Cheshire, account manager for the Iowa Mold Tool-

ing Co. Inc. “A customer would choose a knuckle boom rather than a telescopic crane primarily because he/she wants the ability to haul the product to the job with no interference from the stored boom,” he continued. “It’s the ability to pick up the load, deliver the load to the job site, and place it with no conflict due to boom storage.”

Knuckle Booms

According to Bill Del Zotto of the Wrenshall, MN—based Del Zotto Products, Inc., knuckle booms uses are applied in a variety of applications relating to the precast concrete industry. “There are many different sizes and weight capacities of knuckle booms. Also the fully extended length (reach) varies based on the application,” he said.

A common misconception relating to knuckle boom is the maximum rating of the unit, explained Del Zotto. “The maximum rating is only at very close proximity to the turn table pivot point,” he noted. “Therefore the unit must be very close to

the set down or excavation area. It is critical at time of purchasing a knuckle boom to decide where to mount,” he continued. “Whether it is behind the cab of the truck or on the back of truck bed but there are pros and cons for both locations.”

In general, Cheshire said that the most common use for articulating booms are building suppliers, wallboard companies, concrete block companies, railroad construction, and mining companies. And while knuckle booms are considerably more expensive to purchase than a rail boom [rated at the same maximum capacity], Del Zotto said it is always important to know the actual weight of the knuckle boom and truck to determine product load capacity [i.e. payload/tare weight].

Like all technologies, knuckle boom designs are always improving and evolving. For example, Del Zotto explained that there are electronic systems in place to not allow the operator to over load the knuckle boom. “The operator cannot reach out any further than the unit is rated for all automatically,” he said. Additionally, new advancements providing the option of a winch and cable to the knuckle boom allows for limited straight up and down line pull.

Pros:

- Can lift over obstacles such as fences.
- Can be used as an erection crane for small buildings and other similar projects.
- When unloading smaller items such as 48” precast manholes you can unload more product without moving the truck.
- When an articulating crane is stored, it’s folded up tightly in a figure four position, leaving plenty of bed space for payload.
- Much more versatile than a rail boom.

Cons:

- Operator must be very careful not to



Unit requires a set up area for wide outriggers. A large enough area is not always available. Therefore more preparation for setting product is required.

raise boom into obstacles such as power lines and trees.

- Operator must be qualified to read load charts to keep from overloading on the reach out of products.
- Unit requires a set up area for wide outriggers. A large enough area is not always available. Therefore more preparation for setting product is required.

Rail Booms

Rail booms are specifically designed to load and unload precast concrete products. Rail booms include outriggers mounted behind the rear wheels. And while the basic design has remained the same, in recent years capacities have increased from seven tons to ten tons. Del Zotto noted that newer models also include options such as wireless remote control.

“Due to the straight forward design of rail booms operators are fully aware of its capabilities,” Del Zotto continued. “Operators must understand that with a 12 foot boom behind the bed and picking product in the middle allows for good access to unloading or excavation areas.”

And since there are fewer moving parts on a rail boom compared to a knuckle boom, maintenance is minimized. “It is not uncommon for an owner of a rail boom to wear out two or three trucks before the rail boom,” Del Zotto continued. “They just get a new truck and mount the same rail boom on the new truck.”

Pros:

- Rail booms require very little set up time as outriggers are set close the truck.
- Maximum operating height never exceeds max unit height (13 feet 6 inches) in operating mode. Therefore, there is a much less chance of contacting obstacles such as power lines.
- Initial cost to purchase rail booms is much less than knuckle booms.
- Product is unloaded or loaded directly behind the truck. There is no swinging required to handle product—i.e small area is required to load or unload.



Rail booms are specifically designed to load and unload precast concrete products

Cons:

- Rail booms are not capable of erecting concrete products such as precast concrete walls.
- When loading small products you can only load the middle of the loading bed from the pivot point back.
- With the boom sticking out the back of the truck it sometimes conflicts with a load on a trailer when pulling a trailer.
- There is no unloading or loading off the side of the machine.

“The most common reason a customer wouldn’t choose a knuckle boom crane is that it doesn’t have the reach capability that telescopic cranes do, so they’re typically used on job sites where vertical reach isn’t a major concern,” said Cheshire. “Even though knuckle booms have a lot more reach than they used to—IMT knuckle booms cranes have a reach in excess of 100 feet—they still aren’t meant to work on jobsites that have great vertical reach needs.”

Knuckle & Rail Safety

Del Zotto explained that companies with both knuckle booms and rail booms normally allow all drivers to operate a rail boom while only selected drivers operate the knuckle booms.

Cheshire agreed. “Crane

safety and operator training are essential components of the in-service phase of purchasing a crane,” he continued. “Whether purchasing a knuckle boom or rail crane, the buyer should ask the crane seller what support they offer in these two critical areas.”

Even experienced crane operators can benefit from reviewing basic safety practices such as working around live power lines; proper setup of truck (deployment of outriggers, cones, safety tape, etc.); crane stability; load handling; load securing; and use of proper hand signals.

Cheshire said the selling agent should spend a minimum of eight hours (or more as needed) instructing and showing the operator how to use the crane and reviewing the crane operator’s manual. “The operator

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should then operate the crane, on the yard (under direct supervision of the trainer) until they have demonstrated a high level of competence and proficiency (adhering to safety and proper operation fundamentals)," he continued. "The trainer should have the

operator handle loads and simulate real working scenarios on the company's property before going out on a real job. The operator can practice setting up the truck, attaching hook or winch line to the load (via straps, chains, attachments etc.) and

simulating placement of the load."

There are also professional training companies that offer formal crane certification, inspections. Certain states and/or companies require their operators to be certified. This usually consists of (but is not limited to) a Department of Transportation, physical, written test, hands-on training and operator testing. When in doubt, Cheshire said: consult an approved crane certification company for requirements.



Product is unloaded or loaded directly behind the truck. Simple action: up, down, in, out, left and right.

About the Author

W.B. King is an award-winning journalist with over ten years experience writing for national and international business, technology, lifestyle, and healthcare publications. He has ghostwritten two feature length corporate history books, and operates www.newsletterinsights.com, an all encompassing business writing service specializing in e-newsletters. He lives outside New York City with his wife Rita, and their dog, Riley. He can be reached at: brad@newsletterinsights.com.

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