

ACT

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Hello Dolly!



Official domestic
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the SC&RA

Boom dollies offer unique
solutions for transporting
high capacity cranes

SHOW GUIDE
SC&RA Specialized
Transportation
Symposium
p66

D. Ann Shiffler talked to some of the pioneers in the manufacture of boom dollies, which make transporting cranes easier, safer and more economical.



Hello Dolly!

Boom dollies are critical components in the fleets of companies that own and transport larger capacity cranes. While boom dollies make crane transport easier and more economical, they are also highly specialized pieces of equipment. There still is no “one size fits all” boom dolly, although product standardization is moving forward.

To understand the evolution of boom dollies it’s important to know their history. Tony Niese, owner of Nelson Manufacturing, said the first boom dolly was built by Nelson in 1962 for a P&H crane. Later that decade Nelson built load transfer axles, another precursor to today’s boom dolly, for transporting conventional lattice boom cranes on a truck chassis.

“We built the first ones in the early 1960s and it was a rare thing at the time,” Niese said. “There weren’t a lot out there until the early 1970s when we started building them for Grove truck cranes.”

Nelson would work with Grove on the specs for the dolly and then when it was built, the Nelson team would put the dolly on a truck and send a couple of workers to the Grove facility to weld the connecting lugs onto the Grove booms.

“We’d run the unit over the scales and that’s how they decided where to put the connecting lugs,” he said.

In time Nelson started making boom dollies for more crane manufacturers, and the concept became a viable solution for moving higher capacity truck cranes and eventually the more sophisticated and heavier all terrain cranes.

While Nelson manufactures a wide range of trailers for the transportation industry, the boom dolly segment is a niche business that is growing.

“The goal is to move a crane over the road,” Niese said. “The boom dolly allows you to spread the weight and get the wheel base longer to meet state requirements for weights and axles.”

Custom challenges

The most challenging issue for boom dolly manufacturers is that every crane has a different type of hook up to the dolly, and every state has its own rules for what they will allow when driving a heavy crane.

“Some states have the same rules for trucks and trailers and some have a completely different set of rules for cranes,” said Niese. “For instance in Pennsylvania, you only need a two-axle dolly but you can’t transport counterweight. In Texas you may need a three-axle dolly but you can throw on a few slabs of counterweight. In California, you will most likely need wide-spread axle spacing with a self-steer rear axle.”

Boom dolly manufacturers have tried to standardize components but they are still difficult to mass produce.

“If you have a five-axle AT carrier, which is very common to require a dolly, the number of variants is unbelievable depending on the make of the crane,” said Niese. “Tadano, Liebherr, Grove, Terex and Link Belt, all these cranes require completely different attachments and connectors.”

Like most boom dolly manufacturers, Nelson builds them for all brands of cranes.

“Our engineering groups work with all the crane manufacturers very well and get excellent cooperation,” he said.

Boom dollies are produced directly for the crane manufacturers, and they also are produced for individual crane owners.

A Link-Belt HTC-3140 is rigged for transport using a Greenfield two-axle boom dolly.





A new Grove GMK-5250L using a Nelson tri-axle dolly was sold through Grove dealer Anderson Machinery and the end user is Dalton Crane.



Sims Crane transports its Tadano ATF180G-5 using a three-axle Nelson boom dolly.

“A lot of times you will have a crane used in Texas and then it gets sold to someone in Iowa,” Niese said. “Then they will need a new or different style dolly. This happens a lot when people trade or move cranes around. A crane owner may have a boom dolly in their yard and we will work with them to get new components so that it will work with a different crane in the yard.”

Nelson boom dollies are always custom designed to fit the specific make and model of the crane. Model variations include axle configurations and tower designs. Nelson builds four types of boom dolly models: tandems, tri-axle, widespread and multi-axle. All their boom dollies come with manual locking pins, steel tread plate fenders, spring suspension, steel wheels and radial tires. Options include air operated locking pins, aluminum tread plate fenders, air-ride suspensions, aluminum wheels and custom color finishes. Nelson also designs boom dollies that can carry crane counterweights.

New solutions

Another prominent boom dolly producer is TransWorld Manufacturing, a legacy company from Jake’s Crane, Rigging & Transport International. Jake’s was the first crane company in Las Vegas, NV and was founded in 1946 by Jake Dieleman.

“Because of our proximity to California and their strict bridge and weight laws, Jake’s designed and built street legal dollies, special heavy haul trailers and

cranes to mobilize quickly and efficiently to jobsites throughout the region,” said Crystal Dieleman, granddaughter of Jake Dieleman and now owner of TransWorld Manufacturing. “In the late 1980s Jake’s pioneered a super heavy transport system known as ‘JXS’ with 13 patented features and capable of hauling up to 250 tons.”

To accomplish this 13 to 21 axle modular system, it was necessary to employ a hydrogas suspension, which at the time was not legal in California.

“We worked closely with Caltrans and after extensive testing conducted by a U.C. Berkeley PhD, including an earthquake simulator as well as open road testing, the hydrogas suspension was accepted in California,” Dieleman said.

The JXS Heavy Haul system won a SC&RA Job of the Year award in 1990 for its innovation in hauling.

“Later in the 1990s we introduced the articulating boom dolly to the market,” said Dieleman. “In the 2000s we patented the use of a steer axle on articulating boom dollies because we realized that the extra maneuverability greatly reduces tire wear, improves turning radius and mitigates unwanted stresses to the crane boom during transport. Currently we are focused on creating options for our customers to back up their crane dolly combination at variable angles.”

She explained that most articulating dollies on the road today can only back up straight. TransWorld recently received a patent on a remote-control steering system and patent-pending status on the “Limiter Strap” to reduce the risk of jack-knifing the dolly when reversing.

“We have produced many unique, custom boom dollies for special applications and have successfully worked with manufacturers and crane rental houses to make legal over 50 different cranes throughout North America,” said Dieleman. “Our product line was created by a crane owner, for crane owners. Our dolly designs are based on creating the ideal configuration for your crane in the region where the machine is expected to work. We are continuously evolving our product line so our customers can work safer, smarter and more efficiently.

TransWorld offers a complete line of boom dollies to ensure cranes are legal in as many regions as possible.

“Our business grew out of a necessity for legalizing heavy loads in multiple regions,” said Dieleman. “That has become our specialty over the years. We are highly adept at designing and manufacturing prototype and unique-application dollies and we offer a variety of ways to enhance your boom dolly, from a mounted spreader bar, to back-up cameras, to light-weight fabricated frames.

TransWorld dolly towers pivot fore and aft to reduce the forces traveling through the crane boom during travel.

“Based upon our in-depth research on suspension options, we offer air-ride suspension as standard, though we will install leaf springs on request. For those interested in protecting their investment with the smoothest ride, a hydrogas suspension is available on request,” she said.

Dieleman said her company will be announcing a new boom dolly system in the near future.



The first boom dolly produced by HMR Supplies was for its sister crane company CR Holland in the mid-2000s. Since that time, HMR created a product line that includes two-axle, three-axle, and four-axle boom dollies.

>34

Sheer necessity

Greenfield Products started designing and manufacturing boom dollies in 2007 out of sheer necessity by several crane dealers in North America, according to Gustavo Anzolo.

The boom dolly market was hurting due to long lead times and a very limited supplier base," Anzolo said. "Greenfield has always been a very diverse manufacturer, and at the time we were already designing and producing our own heavy-duty trailers for the U.S. port industry. The crane boom dolly was seen as a good fit to our family of products."

Anzolo said the economic downturn in 2008 delayed the development and improvement of Greenfield's boom dolly line, but it also allowed them to strengthen its product design.

"By treating each new unit produced with the utmost importance, we found ourselves rapidly becoming a reliable source for the product," he said. "In the short time since then, we have acquired a wealth of knowledge from working with various crane manufacturers and the crane models offered in North America, and can offer solutions that meet our customers' needs, DOT regulations and our own high standards of safety and dependability."

The Greenfield Products boom dolly family includes two-axle Model B2 and C2; three-axle Model C3 and D3; and four-axle Model D 4.

The two-axle Model B2 and C3 are typically used with truck-mounted booms and all terrain cranes with capacities between 100 to 200 tons.

Greenfield's 3-axle Model C3 and D3 are the most common boom dolly configuration. Three axles provide the



A Liebherr LTM 1300-6.2 meets requirements for transport using this three-axle Greenfield dolly.

customer with a GVWR of 67,500 pounds and the versatility to haul additional crane components on top of the boom dolly.

Greenfield's four-axle Model D4 is used in states that recognize a quad axle group and allows a permit limits of up to 72,000 pounds. Tire wear is an issue due to the axle spacing between the first and last axle of this unit. A self-steer axle is often on the rear axle position to minimize tire wear, and this also reduces the turning forces going into the crane boom.

Several states have stronger regulations than others where the use of a wide-spread dolly is required, Anzolo said. The state of California requires axle groups to be properly spaced in order to obtain maximum axle load permits. When the spacing between two axles of the first group are within 18 feet of the closest axle of the adjacent groups, California will recognize this situation as "close coupling."

Natural fit

HMR Supplies has made a name for itself by engineering and manufacturing equipment for the heavy haul industry, according to Norma Hertzter. The first Holland Dollie was built in 1981, and since that time HMR Supplies has continued to engineer and develop products that offer standard and custom solutions for heavy transport and onsite moving. Currently, HMR manufactures everything from crane tag axles to dual lane transporters.

The first boom dolly produced by HMR was for its sister crane company in the mid-2000s. Since that time, HMR has found the boom dolly to be a natural fit for a standard product, Hertzter said. HMR Supplies offers two-, three- and four-axle boom dollies.

"HMR has leveraged their experience and design expertise from heavy hauling and off-road transportation into boom dollies for the crane industry," Hertzter said. "HMR will match the requirements of any crane make and model."

HMR provides aluminum options for fenders, wheels and hubs to create an eye-catching dolly and reduce weight, she said. Drum, disc or antilock brakes are all available.

"HMR will equip the dolly with storage boxes, outrigger pad, ladder, cribbing, and spreader bar storage at the customer's request," said Hertzter. "All dolly models are available with single, split or tilting tower options. Three axle dollies are available with an optional lift axle. In addition, either three or four axle dollies are available with caster axles. Counterweight storage on the dolly is always available as an option. HMR works with the customer to create a dolly for their needs."



TransWorld's dolly towers pivot fore and aft to reduce the forces travelling through the crane boom during travel.