



# GETTING A LIFT

KEEP THESE CONSIDERATIONS IN MIND  
WHEN PLANNING YOUR NEXT HAUL OUT.

BY ROGER MARSHALL

**A**NYBODY INTERESTED IN YACHTING will remember the headlines, “Ten million dollar yacht capsizes on launching.” In May 2014, the expedition yacht *Baden* capsized when, according to the NTSB report, a cradle broke while the vessel was being launched. (The yacht’s stability calculations were also incorrect.) Just a few years earlier, the yacht *Cangarda* almost capsized during launching and, when railway launches were commonplace, reports of ships capsizing on launching occurred more often. One of the most memorable was that of the 141-meter (463 foot) Italian ocean liner *SS Principessa Jolanda* in 1907.

But railway launching capsizes are not the only cause of disaster. If you check the Internet, you may find numerous examples of launching disasters; however, if you look carefully, you find there are two types, railway and yachts slipping out of crane slings or other crane-related problems.

Launching down a railway requires several specialized calculations for each step of the launch with the biggest problems created for long, slim vessels. *Cangarda* was just such a yacht, a restored Edwardian-era long, narrow craft. Most problems occur when the vessel is launched stern first and is supported at the bow by the slipway while the stern is supported in the water. The middle is relatively unsupported, but the middle of the vessel is where the heaviest items (engines, tanks, generators, etc.) are usually located. In addition, the waterplane area (which is a contributor to the vessel’s stability) is dramatically slimmed down, cutting critical stability, and, in the case of *SS Principessa Jolanda*, turning it negative. All these problems tend to make railways the worst option when it comes to launching.



### The Yards Weigh In

So which method is best? Jimmy Correia, hoist supervisor at Newport Shipyard, says, “When it comes to lifting a yacht out of the water, our 500-ton Travelift is a hundred times better than the railway that we used to have. With the railway, we had to make sure the yacht was settled on the blocks, then add side-blocking as we gradually hauled the boat up the railway. That meant lots of starting and stopping and wasted time.”

During our discussion, we were standing next to the Travelift, and we barely reached the height of a wheel. “You have to be careful when lifting any boat,” Correia continued. “Sailboats have to have straps under the keel and to have the ends supported. Powerboats have to be inspected carefully because the zincs may cut into the straps or the zincs themselves might punch through the strap. Chines often cut the rubber on the straps, so we need to see a docking plan and have a diver check the hull against the plan. We’ve found some items are not positioned where the plan shows.”

Charlie Ross, production director at Pendennis, had launched boats all three ways. “There’s no doubt a slipway or railway is the least preferred and least comfortable both for the vessel’s global hull loading and the least control for the operator or yard,” he says. “With dockings and hoist haul outs (especially inside our non-tidal wet basin), we eliminate a major variable by being able to control the water level at all times. Both dry dockings and Travelift haul outs are straightforward activities; each has its merits for different vessel types,” he adds. “Larger motor yachts (LOA 60 meters and up) lend themselves to being dry docked and, conversely, the hull shape of sailing yachts lends itself to being hauled using our travel hoist. That’s

not to say that we have undertaken some fairly involved dockings on large, fin-keel sailing yachts in the past, but the dock preparation is significant.”

In Spain, Àlvar Trabazos, operations manager at MB’92 in Barcelona, agrees that the railway is the most difficult for hauling large yachts and prefers the Travelift. He suggests that yacht coatings are too delicate and too expensive to rework to risk damaging them on a railway if a Travelift is available. “We use fiber plates to cover projections that might cut into the straps of the Travelift,” he says. “They help spread the load instead of localizing it.”

JB Turner at Front Street Shipyard in Maine suggests that the hull shape plays a large part in whether to use a railway or a Travelift. “A flat bottom boat, for example a windjammer schooner, is easy on a railway and easy on the hull,” he says. “Sailboats with big keels take a tremendous amount of time on a railway for the setup and, if not exact, can apply a lot of pressure on the hull where it may not be appropriate. A dry dock is also pretty safe on the hull, as long as the blocking is done properly. That is the nice thing about the Travelift — the slings take up small differences and spread the load across the hull instead of point loading.”

Tom Krigger, VP and general manager at Bradford Marine in Fort Lauderdale, says Bradford provides a diver to check the hull bottom and the blocking plan as the yacht settles. “A vessel should not have a list when it is hauled, but we can adjust the trim of the floating dock to accommodate a vessel with excessive trim,” Krigger says. “By adjusting the dock trim, we maintain a distributed load over the hull when the vessel settles onto the blocks.” At Bradford Marine, “Providing good information on the hauling condition is essential, and we put a lot of effort into getting it correct,” Krigger says. “In some cases, we have contacted the builder to check on modifications to docking plans if the work dictates reconfiguring the blocking.”

### Hogging and Sagging

You may not realize it, but your boat sits differently in the water than it does on land. In the water, the sea supports the vessel over its entire hull area. In engineering terms, this is known as a uniformly distributed load. But even then, the ends of the hull are less buoyant and may sag fractionally lower than the more buoyant middle of the vessel. This is known as hogging, and a wooden frigate built in 1814 that I once lived aboard hogged 20 inches over its 150-foot length. We only found this out when the ship was hauled and the blocks had to be raised in the middle to accommodate the hogging.

In most cases, the yacht’s structural design is such that hogging is minimal and when the vessel is hauled out, the ends come back to their normal level as the yacht sits on its blocks. But when the yacht is lifted from the water on a Travelift, different loads are imposed on the hull. Most of these loads are around the middle of the vessel where, if the



Courtesy of Bradford Marine



Courtesy of Front Street Shipyard



Courtesy of Pendennis Shipyard

correct number of slings is used, hogging is no worse than when the vessel was in the water. Similarly, dry-docking allows the hull blocking to be set up to allow for slight changes in hull shape as the vessel emerges from the water.

“We feel that a Travelift may be the hardest on the vessel because the straps stabilize the sides with varying amounts of compression while it is being moved,” Krigger says. “Also, the locations and distance between the straps may increase local loading on the keel. We feel that other methods distribute the weight better over more keel blocks.” But, he adds, “All this is dependent on the geometry of the hull and the size and strap arrangement on the Travelift.”

### The Engineer's Contribution

So as an engineer, what should you be doing to make your haul out as comfortable as possible? There are several steps to getting ready for a haul out that the yacht's captain or chief engineer needs to complete before the process can commence. At Pendennis, Ross works with the yacht's crew to ensure everything goes smoothly. “We always ask for docking plans up front,” he says. “We also require the arrival displacement and tank condition report from the captain or chief engineer prior to haul or docking.”

Turner of Front Street Shipyard agrees with Ross on those points, and adds, “The most important thing for us is to get the real weight of the boat. Quite often the captain is off on his estimate of the weight. This is especially true on older boats,” says Turner. “On any yacht over eighty feet [24 meters] LOA, we request a docking plan and if the yacht has stabilizers, we have a diver standing by to ensure the slings do not foul any appendages.”

Trabazos at MB '92 also requires the docking plan, plus a stability booklet and photographs of prior haul outs. Krigger adds, “We like to see a docking plan, weight calculations, information on the yacht's current loading condition, and photos of any previous haul outs, if available.”

Lifting a yacht with a Travelift can be a tense moment. First, the slings must be precisely located to ensure that they do not snag on anything. It's not unheard of for slings to have been placed under the props, under the shafts, over transducers, over thrusters and to have snagged on stabilizers, bilge keels, and other appendages. For this reason, it's essential to have drawings of the yacht displaying where every appendage is located. Ideally, there also should be a discreet warning plaque at each problematic location around the hull. The most common location for these warning plates is under the edge of the handrail, but occasionally they are painted onto the hull.

To ensure the slings and blocks are correctly located, “We use divers the majority of the time to confirm strop positions and to ensure there are no clashes between hull projections and strops/blocks,” says Ross. “In the case of docking, the diver is used to ensure the keelson to keel block striking position is accurate.”

### Travelift, Syncrolift, or Dry Dock?

How do you select the lifting system? In most cases, as Krigger points out, geography is the main factor when making the decision about what method to use. “If the yacht is in waters where the nearest haul-out location uses a Travelift, the yacht is likely to be hauled that way. However, the type of work to be done, the ability of the yard to perform the desired work when the yacht is onshore, special blocking arrangements, and space availability in the yard, all enter into the equation,” he says.

“In our experience, the captains of the larger yachts prefer dry docking rather than the travel hoist due to the more favorable support provided by keel blocks along the hull,” Ross says. “A travel hoist has a finite number of strops and hoist length relative to the vessel's overall length. However, a travel hoist pick-up also gives easier access to coat patches where blocks are sited.”



Courtesy of MB '92

MB '92's syncrolift system

Tom Glass, vice president at Roscioli Yachting Center, likes to use their marine elevator for any wooden vessel. “When we haul any of the old Trumpys or Mathis yachts, I like to use the elevator. We can block the yacht every few feet instead of having slings holding it. That way there is no strain on the hull and no compression on the hull sides from the lifting slings,” he says. “We have a new Italian-built boat lift that is capable of moving yachts up to one hundred fifty-five feet. All the wheels articulate so we can move sideways or fore and aft.”

Krigger believes that their floating dry dock is the easiest on the hull because they can trim the dock to exactly match the trim of the vessel, which avoids high point load situations should the bow or stern touch the blocks first. He points out that a Travelift allows the operator to avoid point loads by adjusting the vessel's trim as the yacht is being docked. “As the yacht is being lifted, the Travelift straps or the blocking placed by the divers gives the vessel the necessary stability to keep the vessel upright,” Krigger says.

At Front Street, they use a 500-ton Travelift, but Turner says, “Dry docks can handle more load and are especially useful if the yacht has specific design points that must not be touched with slings.”

At MB '92, Jaume Passola, dry dock manager, suggests that yacht engineers consider the shiplift. “We find it to be quite speedy, just a touch slower than the Travelift, but we feel it puts a lot less strain on the hull and removes any chance of slings slipping or putting slings in the wrong place.”

Dry-docking and a Syncrolift impose their own restrictions. The dock or the lift needs to be prepared before the vessel can be brought in. This means that a hull drawing is required so that the blocks can be arranged prior to the dock being flooded or the Syncrolift being lowered. Once the blocks are underwater, the vessel needs to be positioned very precisely and a diver sent down to check that the keel is landing exactly where it should be on the blocks. Before the water level can be lowered in the dock or the Syncrolift raised, chocks need to be situated to hold the boat exactly upright. On larger craft, they are often floated into position and then arranged against the dock walls and the hull side at the turn of the bilge or higher.

For a yacht, a high location can pose a problem in that hammering in wedges to hold the chocks can mar the topsides. For this reason, most chocks are located where they bear on the bottom paint rather than the topsides.

But once the vessel is positioned upright and the dry dock is pumped free of water or the Syncrolift raised, all manner of work can be easily accomplished on a horizontal surface. Work under the hull usually means lights have to be installed to illuminate the darkness and any work being done may require repositioning the blocks. All this takes time, so in general, dry-docking takes longer than other forms of lifting out.

### Re-launching

When the out-of-the-water work is done, the topsides are beautiful, and the bottom pristine, it's time to put the yacht back into its element. How can the bottom paint be protected against abrasion when the yacht is to be refloated?

In a dry-docking situation, the dock is simply flooded by opening the sluices, or the Syncrolift is lowered into the water until the vessel floats off the blocks. A Travelift requires that the bottom paint be protected as the yacht's weight moves onto the slings. In most cases, the yard puts plastic over the Travelift straps to ensure that they don't mark up the bottom paint. Some yards put a layer of foam between the slings and the plastic, but foam has been known to stick to the hull.

As pointed out at the beginning, launching can be as precarious as hauling out, yet the boat seems to find its way to water much easier than leaving it. **DW**