

THE ANTIQUE & CLASSIC BOAT SOCIETY

# RUDDER



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AQUA PLANING

# CLASSICAL REGLOSS: Restoration of a 1961 Power Cat 18DC

BY BRIAN LAWSON, HUDSON RIVER CHAPTER

*As interest in classic fiberglass boats grow, I thought it would be a good time to chronicle the restoration of one of these fine boats. The issues, repairs, and materials I will deal with will be common to many fiberglass projects. I'll cover this in two parts. First, surveying a project boat, deconstruction and handling, repair materials and use. Next time I'll discuss repairs, reconstruction, finishes and finishing.*

I've been searching for a classic fiberglass cruiser for some time and this past summer finally found one; a 1961 Power Cat 18DC. This is one of about six known to exist based on the website devoted exclusively to Power Cat Boats, [www.powercatboat.com](http://www.powercatboat.com). I learned from the owner that this was a California boat that was damaged in a storm in the mid-

1960s. Somehow it made its way to a marina in Rochester, New York, where the owner's father purchased it 40 years ago. Nothing was ever done with it, and finally, after his father passed away, he wanted it off the property.

The first challenge I faced was finding a trailer. The Power Cat 18DC is a true catamaran hull. You can't haul it on a conventional trailer. You need a special one set up for a cat. But the 18DC is a huge cat. It's about 16 1/2' long, a full 8' wide at the gunwales and 6' wide at the outer edges of the sponsons. Also, while I am able to get the boat in my garage bays, it will not fit through my shop doors (92"). Luckily, a nearby friend is restoring a Power Cat 14T runabout and had JUST finished building a trailer for it that I borrowed for its maiden run. With the aid of two 4x4s, I was able to carry the 18DC without motors on the 14T trailer, raising it high enough to just clear the fenders.

The boat was covered in moss, and the inside was very dirty from years of outside storage. But luckily, it had remained bow up with the drain plugs out so, even filled with leaves and debris, it drained thoroughly after rain and snowmelt. The first order of business was to clean it so it could be inspected. Inside the boat was the upper windshield for the boat, broken badly. I washed down the interior of the boat with a scrub brush and water, and was amazed at how the original finish, white background with black and yellow splatter paint, looked. It is near perfect; not even any wear on the floor. I also discovered that the forward bulkhead panel with two access ports to forward storage was in good condition. I also found was a connecting bar for twin engines, plus a nice Ride Guide steering wheel in good condition.

Next I tackled the outside. Moss hates bleach. First, I sprayed the sides with Tilex® (2.5% sodium hypochlorite, or half strength bleach), letting it sit for a few minutes, and then hit it with a scrub brush and plenty of water. Washing the transom and the starboard side reminded me of the glass repairs that lay ahead. This boat had MANY up and down deep scratches in the gelcoat where it rose and fell during the storm. There were several holes in the side, and the transom



on the starboard side was broken open about two-thirds of the way up from the bottom. The port side on the other hand, was nearly perfect. The yellow top looked the worst, but after a bleach treatment, the beautiful butter yellow color of the gelcoat, generally in good condition, was revealed. Washing down the starboard side of the top showed me how much

damage had occurred to this area, too. The gunwale was severely damaged, and a poor attempt at repairs had to be dealt with. The end of the starboard fin was missing the last six inches, but the port fin was fine.

Many fiberglass boats use wood as a core material. Often, plywood is used but balsa is also common. The Power Cat 18DC uses plywood. The core material is only on top of the tunnel and in the bottom of the two sponsons running surface. It is flat and easy to replace if need be. Luckily, this core is perfect.

The transom I knew had to be replaced because of the split at the starboard corner. In addition, though not rotten, the 1 1/2" thick plywood core was very wet and portions were getting soft, so it had to go. Because most fiberglass boats are built in two pieces—the hull and a top—in order to replace a transom core usually the boat needs to be split in two. This is pretty much like taking the cover off a Tupperware® container. The top is built to fit over the hull and is fastened with staples, screws, rivets, bolts, and/or fiberglass. Rub rail is installed over the joint to hide it.

Power Cat Boats tried building fiberglass fuel tanks for a short period of time. Danny Ledger, son of Ray Ledger, the founder of Power Cat Boats, told me that they had so many problems they stopped making them. Especially today with 10% ethanol fuel, the fiberglass tanks would not hold up. Unfortunately the 18DC had them, and they still had fuel, and probably water, and oil in them. They absolutely reeked. Some people suggested I de-fuel them, then cut them open and insert standard fuel tanks. I chose to remove them from the boat for several reasons, mainly because I have to install a new transom. They had to come out to give me access to the transom from inside the boat so I could free it from the top to split the boat. I also didn't think I could successfully eliminate the smell, nor did I want to lose all that space under the splash well. I used a Japanese pull saw to carefully cut the fiberglass cloth that held the tanks in place and removed them from the boat.



Moss never sleeps...the Power Cat is looking pretty funky after years of neglect during outside storage. View of the shattered transom and missing starboard fin. Molded fiberglass fuel tanks under the splash well—the water pump installed through the floor. After a thorough cleaning, the inside, amazingly, was in near-to-perfect condition. Shot of the manufacturer's plate.

With the fuel tanks out, the boat cleaned, the survey completed and the work list generated, it was time to start deconstructing the boat. The top overlaps the hull by about an inch and a half and is attached using rivets. A rub rail of polished aluminum is installed using T-bolts inserted in a channel molded in its back side. When built, the joint between the top and hull is completely hidden. I began by removing the rub rail T-bolts on the inside of the boat—actually they were all severely corroded and most of them just snapped when I put a wrench on them. With the rub rail off, I drilled out and removed all the rivets. Around the front of the boat on the inside a strip of fiberglass tape had been installed, probably to keep water out when under way. I sharpened the side of a strong scraper and from the outside of the boat inserted this between the hull-deck joint. Using a hammer, I drove the scraper around the front of the boat to cut the fiberglass tape, a total distance of about 16 ft.



Finally, and this is the hard part of top removal, the splash well had to be broken free from the transom. There is no easy way to do this as these boats weren't originally built with the idea that 40 to 50 years hence anyone would be interested in restoring them. For the 18DC I found it easiest to cut off the fiberglass on the top of the transom as this then gave me good access to the plywood resin joint. It takes brute force, saws, and wedges, and more to break an 8-foot-long, 6-inch-wide, fiberglass resin joint. But once broken, the top was free of the bottom.

The next step was to lift the top off. Instantly you go from 128 square feet of space to twice that. You need to plan ahead where you're going to land the hull and top, and you especially need to plan to properly support the top since without the hull the top has little rigidity. I built a 2x4 frame, 8' wide by 12' long on a flat bed trailer. This provided mobility once the top was off. I placed the boat and the trailer in our garage, and then used a pair of come-alongs and lifting straps to remove the top from the hull. One strap was inserted through the side windows, and the second was inserted through the fuel fill holes. I used the come-alongs to lift the top straight up, keeping it even. Then I pulled the hull and trailer out of the garage leaving the top suspended. I backed the flatbed trailer into the garage and the top was lowered onto the frame. I took the top to the shop driveway and placed it on a work rack with the 2x4 frame. Then I brought the hull into the shop and off-loaded it onto the ground. Using a steel wire suspended 15' overhead together with come-alongs I lifted the hull and it rolled over, and placed it on a work rack. Sounds easy, but is not for the faint hearted.

With the hull upside down and the top properly supported I was ready to begin fiberglass repairs. There are two basic repair materials used: liquid resin with a base material for structural strength, and filler with various additives. These two basic repair materials have many choices within them. The first is fiberglass resin or epoxy resin. I use fiberglass resin for most repairs. It is quite a bit cheaper than epoxy resin and bonds well. Also, it is what these boats were built with originally. There are also many structural base materials and weights to choose from. Weight is actually the heaviness of a square foot of the material; the heavier the weight the more strength, and the more resin it will take to saturate and fill the material.

For strong repairs like transom installations I use what is called MAT. MAT is randomly arrayed long fiber strands, so when set up it is strong in any direction. Woven cloth, also available in different weights, is used for finishing work and is typically the very first layer under a boat's gelcoat. You'll see this material used on many kit boats, kayaks, and canoes. When laid on properly the cloth is invisible in the resin. And finally there is woven roving. This is woven material, but a much heavier material than cloth, again available in different weights. Roving is used to provide structural strength and rigidity to a project, and then finished with MAT and lighter cloth. There are other specially materials like carbon fiber, Kevlar, and Dynel that I won't go into.

The collage photo shows some of the products one I use in fiberglass repair projects. Next time I'll chronicle fiberglass repairs and finishing of the boat. 

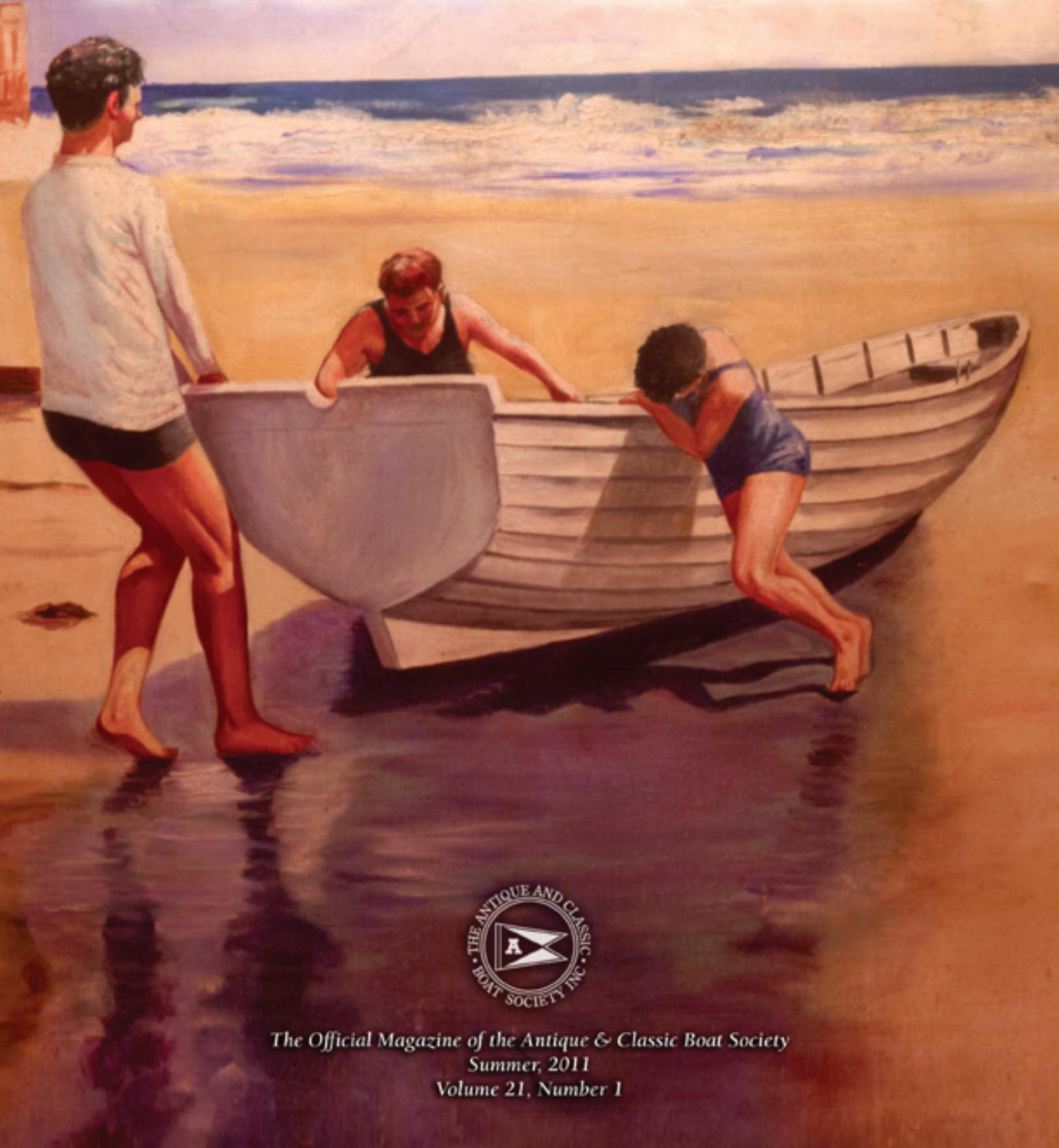


Starboard transom corner; note the transom's core is showing. Popping off the top—just like Tupperware®. Instantly you double the necessary floor space. You need to plan ahead. This boat has a true catamaran hull...and it's huge! Note the come-alongs attached to aerial steel wire. Below: a collage of fiberglass repair materials.



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## RESTORATION OF A 1961 POWER CAT 18DC: PART 2

BY BRIAN LAWSON, HUDSON RIVER CHAPTER

*The first of this two-part article on classic fiberglass boat restoration appeared in the summer 2009 edition of Rudder. It covered surveying a project boat, deconstruction and handling, and repair materials and their use. The second half covers repairs, reconstruction, finishes, and finishing. I hope you'll be as pleased as I was with how this project turned out.*

The Power Cat 18DC is a 17-foot-long and 8-foot-wide, tunnel-hull day cruiser with a small cuddy cabin. Part One of this article ended with the boat split in two and the hull rolled over and supported to begin work, while the top was placed on a work rack to support it and work on. The boat was severely damaged in a storm in the 1960s. Major issues when I got the boat (free) included damage to the starboard gunwale, the starboard transom corner was split open the full height exposing the plywood core, there were holes, gashes and scratches on much of the starboard side where the boat rode up and down on a dock, and because the transom core had been exposed to water, rot had started in the core. My plan was to do the repairs to the exterior of the hull first, and then roll the hull back over to replace the transom core. The majority of the top repair was done with the top off the boat.



The first job I tackled was to repair the split transom corner. I began by grinding back the gelcoat and fiberglass on the transom and the starboard side to give me a large area to add new structural material and feather the repair to the good fiberglass. I used two layers of heavy MAT cloth saturated with polyester resin. The first MAT down covered the crack and went about halfway over the ground area. The second piece covered the entire first piece and all of the ground area. Care was taken to match the molded shape as closely as possible. The MAT was then sanded level and the entire repair area was covered with Kitty Hair—long strand fiberglass mixed with polyester resin. When hard, the Kitty Hair was sanded smooth. Next I transferred the lines on the port side hull to the starboard side to determine where I was heavy and light in filler. Using various fiberglass fillers I built up areas that needed it and sanded off material where there was too much until I had the starboard measurements



as close as possible to the port. Finish filler was then applied to the entire area and sanded smooth.

Holes in the side of the boat were patched first on the inside using small pieces of MAT or cloth and resin to serve as a backing. The repair was then completed from the outside using MAT or cloth for holes and then various fillers to fill and fair. Gouges if deep were repaired first with Kitty Hair and then finish filler, sanding and fairing to the gelcoat. Nicks and minor scratches were filled with finish filler and sanded. Sounds simple, but these repairs took many, many hours to get right. And if you don't get it right, the paint job looks awful.

The hull was washed well with soap and water. With the hose running water over the hull I did a hand-over-hand inspection to feel for high and low spots. Running water helps show problem areas and there is nothing like the skin of the hand to help you find places you need to continue to work on. These areas were gone over again and filled and sanded as needed to get the hull as fair as possible.

At this point the hull was ready for exterior finish. Options abound here. When originally built the outer finish was 0.030"-0.035" white gelcoat. Some fiberglass restorers would shoot new gelcoat on the hull at this point, and then spend many hours wet sanding and buffing. I don't spray finishes because my shop is not set up for it. I can lay down paint and have it look nearly as good as sprayed gelcoat. Although technically more original, spraying a new gelcoat layer I find no different than applying a layer of paint whether sprayed or painted. They are all new finishes not original to the boat,





and therefore for ACBS judging I would call it a restoration, not an original hull. To be original I feel the original gelcoat must be the outermost finish. I have found Interlux VC Performance Epoxy to be the wonder paint for white hulls. Performance Epoxy is a two-part epoxy paint that is incredibly hard. The paint can take season after season in the water. When wet sanded and buffed out it looks as good as gelcoat. I painted the hull with four coats of Interlux VC Performance Epoxy, then wet sanded it.

The hull was lifted using an aerial steel wire strung between my shop and a large tree and pulled tight with a come along. From the steel wire I connected two come alongs rigged in an X to transom rings. A motor hoist was connected to the bow eye to let the bow rotate as the hull rolled. The hull was lifted, upside down, straight up about five feet off the ground. Then one of the come alongs was let off slowly, lowering one side of the transom and rotating the boat in the air as the transom corner dropped. The key is to get the boat vertical (literally) with one side close to the ground, the other pointed to the sky, and then slowly let it settle over its center of gravity as the hull starts to go right side up. Then you again use the come alongs, no longer in an X, but now straight up and down to lower the boat onto a trailer. It sounds easy, but this is a huge job. One person can safely perform this if rigged correctly. Recognize there is no rigidity to the hull at the gunwale without the top on it; you cannot put weight on side of the boat as it could easily be damaged. It needs to roll in air. I rolled the boat this way twice during the restoration. As I said in Part one, this is not for the faint hearted.

With the boat upright on a flatbed trailer it was time to replace the transom core. The hard work, separating the top from the bottom, was described in Part One. For most fiberglass boats the

top has to come off the boat to replace the transom core. This was the main reason I split the boat in two. The old transom core, 1 1/2" thick plywood, was removed using a chisel to cut the fiberglass MAT on the inside corners of the transom and the MAT on the bottom of the transom. With these cut I started to separate the outer fiberglass skin from the wood core using chisels and saws, forcing these tools into the space between the plywood and the outer fiberglass skin. It takes some time but eventually working with these tools you can break the bond or cut the material, and you can start to move the wood core and eventually break it free. The plywood I pulled out of the Power Cat was actually not bad, definitely wet, so it needed to be replaced for another fifty-year run.

With the old wood out, the inner skin was cleaned by thoroughly grinding and sanding to remove all wood and glass residue. Next I built a new transom core by sandwiching two pieces of 3/4" plywood together with MAT resin and lots of screws. With the old transom out in one piece I was able to use it to pattern the new core, which I cut, and then fitted to its new home. MAT was cut to fit the inner transom skin, wetted out well with resin and the mating side of the new core was wetted with resin. The new core was then clamped in place with the MAT between it and the fiberglass skin. I also used





a number of screws driven through the outer skin into the core to ensure the skin, MAT and core became like one. You don't want air gaps in this bond as it provides a way for water to wick up. Once the resin hardened, the screws were removed and the holes were filled and sanded smooth. Inside, several strips of MAT with resin were installed from the new core to the sides of the boat and from the floor of the boat up the core to strengthen the bond and make it watertight. Finally an oak cross brace was installed across the transom about 8" from the top of the transom. This provides additional support to carry the twin engines the boat is designed for. I used a piece of 1"x8" oak 8' long. This was glassed into each side of the boat and then screwed and glassed to another piece of oak screwed to the core. The cross brace sits just under the bottom of the splash well and is hidden from view once the top is put back on.

Repairs to the top of the boat were progressing. All hardware had been stripped from it and all the old holes were backed where necessary and filled with filler and sanded. The starboard fin, completely smashed and missing from the boat was rebuilt. I used a piece of flexible Teflon cutting board from the kitchen (thanks to my wife!) to make the form for installing new MAT and cloth on the end of the fin to rebuild it and tie it to the rest of the boat. The cutting board is very flexible but sturdy and was able to take the correct curve coming out the back of the remaining fin. I then laid down MAT



and resin on the cutting board, having ground down the adjacent good glass to give it a place to bite. When hard, the mold was removed as resin won't stick to it. More MAT, Kitty Hair, and finally filler was used to build up the fin and shape it. The starboard gunwale repair that had been done previously was largely removed. The entire area was ground down and then rebuilt with MAT and resin, followed again by Kitty Hair and filler as needed.

With the transom in and top repairs done it was time to put the top back on the hull. The hull was pulled out of the garage, the trailer with the top on it was backed in, and the top was lifted up with come alongs. The bottom was then backed in under the top, which was lowered onto the hull. Fitting was straight forward as the joint is a "shoe box" joint; the top fits over the bottom. Once in place I drilled 3/8" holes all around the joint and using an air powered rivet gun riveted the top to the bottom. The top's splash well was fiberglassed to the transom using MAT and resin. Next a fiberglass tape seam was run around the interior joint of the boat to add more rigidity and a water tight seal. Finally, I glassed in the top of the transom to eliminate any source of water infiltration to the new core.

With the top on the boat the gelcoat was sanded well, mostly by hand because of the rounded molds and many deck ridges. This took many hours but is an essential part of getting a good paint job. Several areas on the deck had to be rebuilt where it appears an object



had been dropped damaging or chipping the raised deck molding. Repairs to these patterned areas are very easy to do. Once sanded well, mix filler and press it firmly into the bad spot, allowing excess material around it. When nearly hard, chisels, files, or what ever tool fits in the area can be used to remove excess material and recreate the original pattern. Then a light sanding is done over the repaired area.

With the top well sanded, any areas needing repair fixed, and a thorough cleaning, it was time to paint. I used the process I described in the *Rudder* article "Paint it Black" (fall 2008) to perform the top's paint job. Again, there are many topside finish options but I love Interlux Brightside paint; both how it lays down, and the incredibly shiny finish when done. What I don't like are the colors available from Interlux. They are not classic colors, but that can be fixed. I mixed two parts Interlux Brightside white to one part Interlux Brightside yellow to produce a buttery yellow to match the original gelcoat. I have custom mixed Brightsides many times to get colors I want in a restoration. Three coats of the butter yellow were applied. There are many hours of preparation work and cleaning before ever laying a brush to a boat. For every hour spent painting, I would estimate 75 to 100 hours were spent in repairs and sanding.

With the top painted the next task was to reinstall the rub rail. I was fortunate that for some reason there was a brand new piece of the original rail in the boat when I got it. I was able to straighten the piece around the bow and use good sections of that, and then use whole twelve-foot sections on each side. Another good section was bent around the bow, and then two four-foot filler pieces completed the distance of nearly thirty-nine feet around the boat from transom corner to corner. I wet sanded all the rub rail pieces with varying grit Emery paper to remove scratches and polish it. The rail takes special T bolts (available from Rockler) installed in a channel on the back side to attach to the boat. A nylon stop nut with 1 1/2" washer as a backing plate was used to pull the rail in tight. It took nearly 100 T bolts to go fully around the boat.



The original cabin wind screens, badly marked and scratched, were brought back for a second life using a couple different grades of Turtle compounding rub. Once cleaned up, the old gasket was washed in soap and water and the windscreens were reinstalled. Again, about eighty small bolts hold the windscreens to the cabin window frames. One remaining item to build is the top wind screen for the upper cabin. This is a very long (twelve foot) one-piece windscreen.

A pair of 1962 Evinrude Lark IV 40 hp engines had been gone through during the fall and winter. All new electrics were installed, fuel hoses were replaced, the carburetors were rebuilt and the lower units were opened, inspected, a couple gears were replaced in one and then resealed. They were then painted and set on the boat. The two motors sit a full 50" apart in order to get the long shafts over the respective sponson centers. Original Evinrude wiring harnesses were installed for each motor. The original RideGuide wheel and cable were able to be used. The steering column was taken apart and the corrosion build up was sanded with Emery paper to remove it, and then a light coating of grease was applied to the column. Conversion of this old Mercury steering system to OMC motors was straight forward. Dual controls were installed as well as lights and a NOS Airguide engine synchronizer. Seating was purchased from Garelick and is close to the original. Seats mount to the coaming and are supported by an H stand.

The final item needed was a good trailer for over the road transport. After a lot of research I purchased a Shoreland'r 1750 pontoon trailer. The pontoon bunks are infinitely adjustable on this trailer. I centered the bunks at 50" and lifted the 18DC off its old trailer and set it down on the Shoreland'r. It worked nicely. The boat and trailer are well balanced and tow smoothly.

With nearly two years of work into the 1961 Power Cat 18DC the boat was launched in the St. Lawrence River for the first time in July. This is one of six of this model Power Cats known to still be in existence. The boat turns fifty in 2011, has never looked better, is rebuilt stronger than when new, and is ready for another fifty-year run. 

