

# Catalina Pull-Out

FOR YOUR CATALINA THAT'S BEEN FACTORY APPROVED



## Catalina 470



**C470 Association  
Technical Editor**  
Jim Wohleber  
P.O. Box 157  
Friendship, MD 20758  
(207) 332-3233  
Jetjockey6@aol.com  
Beckoning, #76

### The Digital Deadline

February 19, 2009 is the date on which all USA broadcast TV stations are required by the FCC to cease analog broadcasting (with some very specific and minor exceptions) and adopt the new digital format. As most of you know that will require either a converter box if an Owner chooses to keep an analog TV on board or requires the purchase of new TV's which can process the digital signals internally. This requirement does not apply to those with cable or satellite TV. Away from the dock, unless one has a satellite dish, broadcast TV must be dealt with. The antenna at the top of the mast does not require changing if one purchases an HD-capable TV. What kind of HDTV to buy and with what features is a decision best left to the

individual Owner. Attaching the new televisions to the chart plotters, stereo/iPod systems, radar outputs, laptop-driven spare/backup navigation systems, mast-head cameras, etc. is all eminently do-able and, again, the Owner's choice. Where and how to mount a 26", 24lb flat-screen TV so that it is usable, viewable from the greatest number of angles, can be moved out of the way when underway in seas and is securely mounted to the hull is the object of this dissertation and photos.

*Beckoning...* (Hull #76) had the original standard 13" TV/VHS still in place in November of 2008 when technology mandated replacement. As with most live-aboard's/cruisers, the potential for acquiring more storage space by converting the space used by the 13" TV into a cabinet was not to be ignored! However, *Beckoning...* has acquired 3 pieces of art during her lifetime and they occupy all the available bulkhead space where one might consider mounting a flat-screen TV. One piece, due to the copious (perhaps excessive...!) use of industrial grade Velcro may never leave

its current residence. *Beckoning...* also has the built-in, fixed seats on the starboard side of the salon. These seats make into a quarter-berth with lee-cloth when underway in seas and the number of crew warrants. Between these seats is a small table which is used as the primary dining area for two if the cockpit is not available due to cold weather. The current TV cabling from the antenna and the stern inlet is also found on the starboard side.

It was thought that, even as thin as some flat-screen models might be, that several hazards would exist if a new HDTV was permanently mounted inboard of the small table mentioned above. In heavy seas or under high angles of heel, things do fly about the cabin and the new screens do not tolerate impact very well. More importantly, the potential for a crewmember to grab onto the corners, or impale themselves on a square corner of the TV, is unacceptable risk. Catalina, like most builders, has done a nice job of not providing sharp corners down below where injuries would be generated. How then, given the above parameters, could a screen of maximum size (the biggest one possible in the allotted space was considered mandatory....!), with maximum

## Catalina// MAINSHEET

MAGAZINE SUPPLEMENT

February 2009 • Vol. 27 • No. 1

### Publisher/Editor

Jim Holder  
830 Willow Lake  
Evans, GA  
Phone (706) 651-0587  
Fax (706) 651-0533  
cv.jholder@mainsheet.net

### Associate Editor

Carol VandenBerg

### Technical Editor

Gery Douglas  
Designer & Engineer  
Catalina Yachts  
(818) 884-7700  
gerard@catalinayachts.com

Catalina Mainsheet is published quarterly by Eagle Ltd., 830 Willow Lake, Evans, GA 30809  
Phone (706) 651-0587 & Fax (706) 651-0533 • cv.jholder@mainsheet.net.

For advertising information, contact Jim Holder, Eagle Ltd. For subscription information see page 56.

Technical articles are the opinion of the authors and not necessarily the advice of Catalina Yachts.

Catalina Mainsheet or the National Associations.

### Direct questions and comments to your class technical editor.

#### Catalina 470

Jim Wohleber  
Jetjockey@aol.com

#### Catalina 42

Garry Willis  
garrywillis@gmail.com

#### Catalina 400

Brian Mistrot  
bmistrot@verizon.net

#### Catalina 380/387/390

Warren Elliott  
warrenell@msn.com  
Steve Riddle (assistant  
technical editor)

#### Catalina 38

Tom Troncalli  
Ttroncalli@earthlink.net

#### Catalina 36

MK I Hulls  
Glen Jewell  
jewells@bellsouth.net

#### Catalina 36

MK II Hulls  
Tom Senator  
tsenator@cisco.com

#### Catalina 350

Tim Ryan  
tr3c@comcast.net

#### Catalina 34

Mike Vaccaro  
vacntess@mcchsi.com

#### Catalina 320

Karl Miefenhausen  
C320@suddenlink.net

#### Catalina 310

Bob James  
bob@advancedreading.com

#### Catalina 30/309

Max Munger  
techtalk@catalina30.com

#### Catalina 28

Garry Hebert  
chezbear28@yahoo.com

#### Catalina 27

John Ebell  
JEbell2694@msn.com

#### Catalina 270

Phil Agur  
pjagur@sbcbglobal.net

#### Catalina 26

Art Harden  
artstree@aol.com

#### Catalina 25

John Gisonde  
peregine85@gmail.com

#### Catalina 250

Randy Kolb  
kolbrp@hotmail.com

#### Capri 25

Chris McKillip  
sirstopher@yahoo.com

#### Catalina 18

Erik Van Renselaar  
esvanr@firedept.net

#### Coronado 15

Paul Vance  
drpaulvance@comcast.net

#### Capri 14.2

Ed Jones  
ed@capri14.org



viewing angles from the salon, galley and forward berth be installed?

The new HDTV's have a universal mounting bracket included with the TV along with, (most of them) the ability to attach the rear of the TV directly to a swivel or permanent mount. It was deemed necessary to find a mounting bracket which would allow the TV, when underway, to be swung up and under the headliner outboard and above the small table between the fixed starboard seats while still allowing it to be swung down and to the vertical position when needed for use. This mount had to have the capability to mechanically "freeze" the TV in place both when in use and when stored up and outboard. The Premier AM200 was exactly what was required. The only question was... how to mount a 4lb mount to a 24lb TV and then attach the entire assembly to the boat with enough strength to tolerate the environment in which a cruising boat of this category and class might find herself? The answer...

The first photo shows the answer to the mounting question. Keeping in mind that the TV, when stowed up and away, would still be subject to gravity trying to pull it down and, when the TV/mount was extended for use that the moment-arm of the 24-lb TV could still generate some significant momentum, so whatever the mounting bracket was attached to would require some serious fortification! The headliner was obviously not stout enough for the load. The combination of a simple aluminum backing plate installed inside the headliner would also fail to provide the required strength. Attaching the backing-plate fortified headliner to the inside of the hull seemed a reasonable solution. But how??

tral colored, non-shrinking, drillable, water-resistant material of exceptional bonding ability. Another alternative was Evercoat FIB 100868 which contained fiberglass strands for even more strength. Formula 27 was deemed adequate for the job, a bit less expensive and, as luck would have it, worked just fine!!

The 3/8" thick, 5" wide and 20" long aluminum backing plate was quickly laid into 1/2" of Formula 27 and clamped down into the epoxy. Formula 27 has a stated working time of only 5-6 minutes and that number is correct! After the backing plate was secure the only remaining issue was attaching the plate/headliner assembly to the inside of the hull. The C470 has a removable strip in the headliner which allows access to the Genoa track thru-bolts. This strip was removed prior to the above work commencing. CAUTION: If you do this job, remove this strip gently. It has a very fine caulking around it for appearances and a razor knife will aid in separating the strip from the caulk...but if you deviate even the slightest from keeping the blade in the caulk, you will cut the fabric which wraps the strip.

The inside of the hull accessible from the salon is directly under the walk-deck. In this location the hull is an inch thick so there is more than enough strength to hold the above-mentioned assembly. Here, the hull/headliner gap tapers down towards the outside of the hull. I used a wooden thru-hull plug to gauge the taper and surprisingly, it fit perfectly!! By slightly flattening off opposite sides of the bung I had just what I needed to bridge the headliner/hull gap. I wrapped the bung in heavy fiberglass cloth, smothered it with Formula 27, put it in place, then used a wooden dowel to

push the entire assembly up against the inside of the hull. Two of these bungs plus two other short pieces of dowel installed in the same manner and I was ready to let it dry. While I cleaned up the salon the epoxy dried. Two hours after the bungs were installed the acid test was accomplished...I did a chin-up while holding the headliner/backing plate assembly. It held nicely! After that, the only thing left to do was to install the primary mounting plate and hang the TV.

The next photos show the end result. The TV will, when not in use, rotate up



and out of the way of crewmembers (see photo) and will, when in use, be viewable from the forward stateroom, the salon, galley and navigation station as required.

The final photo shows the TV extended into position for normal use. Total cost of materials for the installation was about \$50 plus the mount and the HDTV. Total time to do the work was about 4 hours including the 2 hour drying time for the last step. If you start this project on Sunday morning you can be drinking a beer, feeling very good about yourself and watching the Dallas Cowboys cheerleaders on your new HDTV that afternoon!!



Better living thru chemistry!!!! The epoxies adhesives/fillers available today are exceptionally strong, easy to use, widely available and provide solutions to problems that before would have required more structure and the investment of more construction time and effort. My search for an epoxy led me to Formula 27, a fast-drying, neu-