

Viper 640 Sportboat Buyer's Guide

Interested in a Viper 640? This guide is intended to help sort through the various Viper options you may be considering – whether new or used.

Vipers 640s have been made by two builders and an informal Mark I through Mark IV lingo has evolved when talking about the four distinct evolutions to date. The differences are largely cosmetic or functional and reflect a modest and thoughtful updating and improvement of the boat over time. They do not include any changes to the hull shape. On the water, any version of the boat can and does win races.

First, the high level aspects of a Viper that are relevant to any one-design class: hull, mast, sails and foils.

Hull – In 2011, the Class Technical Committee conducted a very high resolution digital scan of the Mark I and then-current Mark III hull shapes, primarily to create a digital record of the hull and foil shapes for safekeeping. A detailed analysis of the two hulls showed and confirmed that there no material difference between the two versions, particularly where the hull is in the water while sailing. The current Mark IV molds were created from the Mark III plug and are identical.

Mast - The mast, a key variable in some classes, has not changed since the introduction of the carbon mast in 2007. All Viper mast section tubes have been made by the same carbon composite vendor so bend characteristics are very uniform and mast failures are rare. The carbon rig is a significant improvement over the initial aluminum rig and is an essential upgrade if you happen to uncover an early boat that does not have one.

Sails - As with any racing sailboat, fresh sails can make a difference. Viper Class rules strictly limit sail purchases to one set per year and include a relatively robust minimum fabric weight in the main and jib. This helps to manage the cost of ownership and maintain a level playing field – an attractive feature of the Viper to many. In the first year of ownership of a new boat you can acquire a second set of sails. With a used boat, the new owner has more options, including keeping the used sails that came with the boat or starting over. At the end of the day, you can have only one main, jib and spinnaker each from a given year. Details are in the Class rules. Sail designs and construction have evolved incrementally and the current designs from the many Class-approved sailmakers are easy to tune and very close in performance.

Foils – As a lifting keel sportboat, there is some wear and tear that occurs when raising and lowering the keel. In the fall of 2012 the Class adopted an official shape for the keel foil to guide the refinishing and refairing of older keels. New keels are now made to this shape. There are some minor inconsistencies in all the original keels through the Mark III boats and fairing the official class shape is not required, but if any fairing is done, it must be faired to this shape within a fairly narrow tolerance band, as per the Class rules and a keel foil template that can be purchased inexpensively from the Class. Mark I boats must have the keel bulb upgrade installed to be class legal. All actively raced boats have done this, though there might be a “barn” boat or two still out there that has not. Rudders have a very consistent shape.

This guide will review the different Viper versions and things to look for and be aware of when considering buying a boat. Any Viper that may have been neglected over time can be made front-of-the-fleet competitive – with some effort and funds. A helpful feature of the Class rules is a provision that allows older boats to be upgraded to include current features. The new style rudder tower and forward footblocks in the cockpit are good examples. Otherwise, strict one-design limitations exist on changes as in most classes

The Viper 640 Class Rules are available to all on the Class website and are an easy read. Please be check them before making any changes to your new ride to make sure your great idea is legit. Questions will be gladly answered by anyone on the Class Technical Committee. See www.viper640.org

All estimated costs below assume approximate costs as of the date of publication to acquire the replacement parts, and may include a rough time estimate, but do not include the cost of any professional repair or installation. If a prospective owner or an owner looking to sell would like suggestions for a “market” price for a particular boat, please contact a member of the Executive or Technical Committees for a recommendation. There are of course many factors that impact price: the condition of the boat and sails, what equipment is included, what modifications have been made or need to be done, etc.

Mark I (through hull 60)

Vintage 1996-1998, the first Vipers were built by Performance Boats of Bristol, RI. AKA “Bennett boats”, for Brian Bennett, the designer and initial builder. Unfortunately, Performance Boats went out of business in 1998 and the molds were sold off in the liquidation. Some of the very last hulls ended up in Europe and have 600 designations. Hulls are made of epoxy/foam/glass, hand laid and vacuum bagged construction.

Things to look for:

- Gelcoat adhesion issues. These boats used the same tie coat product between the epoxy hull and polyester gelcoat as the early Mumm 30s and Farr 40s and gelcoat separation can occur. Repair cost varies based on the extent of gelcoat adhesion issues, if any.
- The original small rudder towers can sometimes fail. Updates to the Mark III and later version are available and many Mark Is have done this upgrade. Estimated cost to upgrade: \$300, time commitment: 4-6hours.
- Keel bulb upgrade. Required to race one-design. Nearly all Mark Is have done this. If not, the estimated cost to upgrade is \$100, time commitment: 10-15 hours.
- Leaky keelboxes. Keelbox rebuilds may be needed if the boat has been grounded hard. Repair cost varies depending on how hard the boat was run aground, if at all.
- Leaky transom seams and hull/deck separation. Easy to fix. Time commitment: 2-3 hours.
- Sunken mast step. Plywood under may need to be removed and rebuilt with an inspection port or hatch installed in the cockpit floor to access this area. Time commitment: 4-6 hours.
- Prices on Mark Is vary significantly depending on how well the boat has been cared for and its condition. Because the boats are older, it is not uncommon to see more wear and cosmetic issues on these boats. On the low end of the range are boats that have not had all upgrades done, have older sails and need a fair amount of TLC. That said, there are Mark Is that have been very well cared for over the years that are fully tricked out and in great condition.
- Common updates/replacements
 - Remove bow roller and replace with curved bar for chute launcher. Many Mark Is have done this. Estimated cost: \$200. Time commitment: 4-6 hours.

- Upgrade GNAV to ball bearing car and track. Purchase between 8:1 and 16:1 allowed. Recommend that the original Proctor/Selden boom be reinforced with the allowed sleeve or pravte to handle the increased loads. Estimated cost: \$400. Time commitment: 2-3 hours.
- Add footblocks to cockpit floor for forward crew. Estimated cost: \$250. Time commitment: 2 hours.
- Keel refinishing and/or refairing

Mark II (hulls 70-101) Built 2007-2009 by Rondar Raceboats in the UK starting in 2007 out of the original Performance Boats molds, which ended up in Europe and were unused for years. Vinylester/foam/glass construction, hand laid & vacuum bagged. Same small rudder tower, with large, black delrin keel guides are the give aways, switched to larger bulb and carbon rig as standard, changed spinnaker chute roller to more effective curved bar.

- An early batch of Mark IIs came out of the molds heavy and were warrantied and resold by the manufacturer with full disclosure, though there are owners who have these who have raced them well.

Mark III (hulls 102-179). Built 2009-2011 -Rondar UK built in the first set of molds they constructed. MKII changes, plus larger bombproof rudder tower, mini "sugar scoop" transom for more secure & robust hull/deck joint, sacrificial keel cassette/guide to prevent or minimize hull damage in the event of grounding at speed. Minor changes to some molded parts to ease production/de-molding. Some Mark IIIs have had a number of keel cassette repairs made when the "sacrificial" keel cassette/guide breaks loose. Boats that have had more robust work to strengthen this area should command a premium.

- Mark IIIs are largely of consistent quality and tend to sell in a narrow price band. Main factor tends to be how many accessories the boat comes with and how good the sails are.

Mark IV (hulls 180-present. Built 2012-present. MKIV-Rondar UK and Rondar US built in a second set of molds. All of the MKIII changes, plus larger cockpit lockers with hatches on flat flanges so the hatches seal, more robust keel cassette and new keel mold for more fair keels to Class spec shape (from #192), less aggressive non-skid on the seat tanks. US built are resin infused. US and UK molds built from same plug. Starting at hull 219 in early 2014, delrin keel wedges have been installed on the sides of the keel, eliminating the top cassette and providing more simple and secure way to secure the keel in the boat. This setup is not retrofitable and does not provide any speed advantage, but may prove to be more durable over time.

- Not many Mark IVs have changed hands outside of sales by Rondar for either new boats or lightly used demo boats.

Over the production run, there have been tweaks to enhance the durability and ease of use of the Viper. Nothing that is speed altering however. Old Vipers are every bit as fast as new ones, they just have old boat maintenance issues that you would expect. Things like cosmetics, some issues with the polyester gelcoat adhesion to the epoxy laminate, tired non-skid, worn hardware and running rigging, leaks and so on.

Common Repairs / Upgrades on Many Used Vipers:

- **Sails:** Almost all used boats will come with sails that have been used in a fair number of races. New Viper sails retail for \$4000-5000 depending on the manufacturer. Some manufacturers offer discounts for bulk orders or during less popular times of year, such as early fall, where you could get 5-20% off a sail order depending on the manufacturer. Spinnakers are always the

most expensive sail on a Viper and get a fair amount of wear and tear from being hoisted and doused through the kite launcher, gybing around the jib and headstay, and through improper storage in some situations where they are left in the kite sock wet and sometimes salty depending on the venue.

- Used sails are occasionally available for purchase second hand, but the used sail market has been small in recent years, with used spinnakers being very difficult to source since many teams will want to keep an old kite around for windy practice days. The price of used sails will vary significantly, with an extremely good used set that only has a few days on it going for \$2000-2500 and sets with a full season or more going for less than \$1000 or up to \$1500 depending on condition.
- **Mast:** New masts come with a clearcoat finish that wears off over time with UV exposure. If the mast looks chalky or dull, a fresh application of clearcoat may be needed to protect the carbon fiber. A brushed-on two-part finish like Interlux Perfection clear varnish works well. Also, spreader angle or sweep can vary. Check this key dimension and adjust to the value recommended by your sailmaker for the design of their sails. Replace spreaders if attachment is loose or sloppy and drill new holes very carefully.
- **Standing Rigging:** Many teams have upgraded to lower shrouds with adjustable open-body turnbuckles. The manufacturer does not currently supply the boat with these, so some boats have "fast pins", which are harder, not as precise, and not as safe to adjust on the water.
- **Mast Blocks:** Rondar boats come with a line-based system to control the mast at the partners and influence mast bend. Most teams have shifted to using mast blocks for more solid and repeatable tuning and control.
- **Running Rigging:** Update to favorite lines. Note that there are minimum diameters and tapering is not allowed in current class rules.
 - Increase gnaw purchase to the 16:1 maximum allowed by class rules for easier adjustment of a key control
 - Move Cunningham cleating from the mast to a dual side mounted system for the forward crew. 4:1 purchase is sufficient.
 - There are 4 different mainsheet configurations available that are fairly easy to switch between. Choose what fits your sailing style.
- **Keel lower cassette retrofits** on some of the Mark III and Mark IV hulls. If the keel moves at all while sailing this needs to be addressed.
- **If a keel was refaired** after Sept, 2012 it needs to meet the official class shape. Check the shape against the class template if a fairing job is part of the value of a used boat
- **Hull covers** for transport and storage
- **Trailer maintenance.** Most Rondar boats come with European spec trailers with metric bearings, hubs, rims and tires that are hard to find locally. Plan ahead and don't be that team that ignores trailer maintenance.