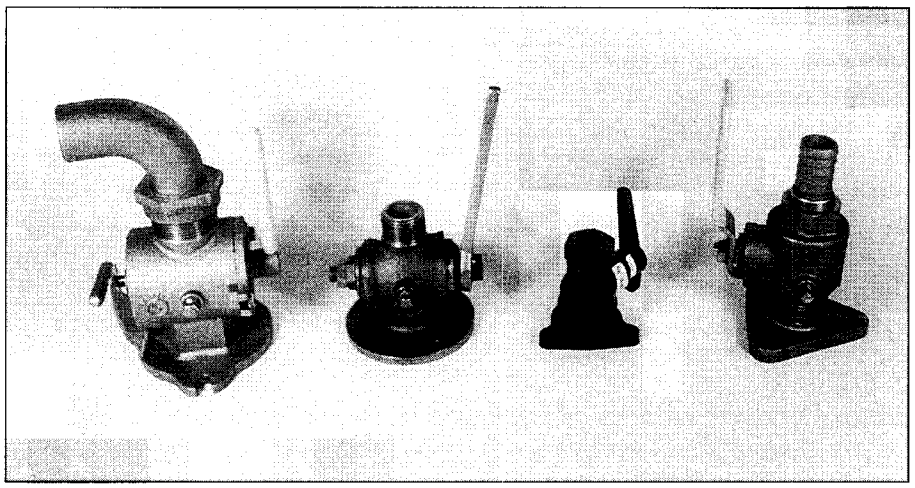
Conbraco and Groco Best Values in Seacocks

An examination of six manufacturers' models, including bronze and plastic bodies, ball and barrel valves, plus two innovative flush-plug types



Above: *(left to right) The 1-1/2" Groco SV-1500 with Buna-N-rubber barrel valve; 1" Wilcox-Crittenden 1565 traditional barrel-valve seacock, which is expensive; a 3/4" Forespar RC ball valve made of Marelon, which we use at or above the waterline; and a 1" Conbraco ball valve, which due to its low cost is a Best Buy.*

One of the last chores before spring launching is the lubrication of seacocks. Several years ago, the first season after buying our former C&C 33 test boat, we thought it was almost ready for launch...until we checked the seven seacocks. Only three could be turned. The others were frozen.

We sprayed WD-40 on all of the moving parts and over a period of days carefully cajoled them with short taps from the hammer. The effort was unsuccessful. When at last one handle suddenly spun free, we thought we'd made progress, but as it turned out, the handle had broken.

Then began the unpleasant task of removing five of the seacocks. Four were frozen and one moved with great difficulty. These were all bronze gate valves, but with straight lever handles, not the garden faucet knurled knobs that are a dead give-away to this type. The through-hulls were frozen to the seacock bodies, so each had to be cut away with a hacksaw—not an easy job when working in the confined spaces of an under-galley cabinet.

On examination of the one seacock that operated with difficulty, we found that even though the handle throw moved through about 90 degrees, it stopped with the gate valve partially open. What a surprise it would have been to remove the hose, thinking the valve was closed!

Different Types

We've used most of the major types of valves on other boats, but came across a few new brands while searching for replacements. The essential decisions come down to bronze bodies versus plastic, and barrel-type valves versus ball. The most traditional are the barrel-type Wilcox-Crittenden (W-C) valves, stoutly cast in bronze. W-C now also makes a ball-valve seacock, as does Conbraco and Groco. Forespar, which several years ago bought the New Zealand-made RC line of Marelon® valves, in the past year has developed its own line of Marelon plumbing fittings, which includes a modular seacock that can be fitted with a variety of tailpieces to accept, for example, two hoses instead of the usual one. Groco also has been busy, adding to its bronze ball valve seacocks the "Safety Sea Cock," which incorporates a side plug that can be used to attach a second hose for winterizing and, in an emergency, to pump the bilge. Lastly, Scot and Nicro Marine make flush-plug seacocks, the ultimate in reducing hull turbulence. We did not look at Spartan, Simpson-Lawrence (Blake) or Buck Algonquin seacocks because we could not find them in any catalog or chandlery.

All of the seacocks we installed or examined have mounting flanges. These are not a requirement of the American Boat & Yacht Council, but are recommended by many surveyors. In 1988 the Council adopted the requirement that seacocks be able to "...withstand a 500 pound static force applied for 30 seconds to the inboard end of its connecting fitting..." Though many builders use flangeless-valves, we think that flanges, especially when mechanically fastened to the hull, sig-

nificantly strengthen the installation. Theoretically, the flanges should be through-bolted to the backing plate and hull, though in practice it seems seldom done. The idea is to keep the valve from unthreading itself from the through-hull, however unlikely that may be. Screwing the base into the backing plate is an alternative.

And while we're talking about installation, it is sometimes necessary to shorten the through-hull so that the seacock sits firmly on the backing block or hull; allowing the body to sit an inch above the hull makes it much more vulnerable to damage.

Lastly, to minimize the number of through-hulls, consider fabricating a sea chest, which is a box (fiberglass, etc.) that collects the discharge of several sources, and in turn is drained by a single, large-volume seacock.

All valves discussed below are 1-1/2", the usual size for toilet discharge, but overly large for engine and saltwater intakes.

Conbraco

These bronze ball valves have been around for many years; our 1975 Tartan has several, which still turn, though not as easily as when new. They are marked "Apollo, Consolidated Brass Co.," which has since been shortened to Conbraco. Ours had carbon steel handles, which rusted, so we ordered and installed new handles made of stainless steel.

The body is cast bronze and the ball valve is chromed bronze, turning in a glass-reinforced Teflon seat. Chrome has excellent resistance to corrosion, as long as it's properly applied so that it doesn't peel. Like most ball valves, the body can be disassembled, but it's not easy, especially in situ.

We installed a 1-1/2" model in our C&C, and after three seasons' use it still turns without undue effort, though to maintain a watertight seal, ball valves do not turn as easily as barrel-type valves.

The Teflon seat is advertised as requiring no periodic maintenance, though we still think occasional lubing with a waterproof grease to be a good idea. The flange is triangular, with three holes drilled, one in each point. The lever is vinyl-covered stainless steel with a 90-degree stop. The body is not as bulky as some of the others. One drain is provided.

Bottom Line: Assuming a quality job of chrome plating the bronze valve, we think this is a good seacock, fairly priced between $60 and $70 discount.

Forespar

We looked at two Forespar seacocks, the familiar RC seacock with flange, and Forespar's modular valve developed as part of it's new integrated plumbing system, mentioned in our last report, August 15, 1992.

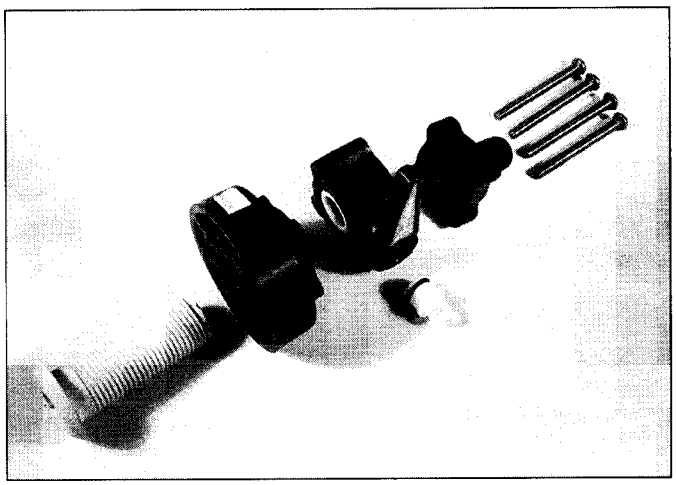
RC Seacock. Manufactured from DuPont's Marelon®, which is glass-reinforced Zytel®, These seacocks are incredibly strong if engineered correctly. The 1-1/2" seacock is quite large at 8" tall with a 6" diameter base. This is larger than an equivalent one of bronze; mounting in small spaces could be difficult. Weight, however, is less, if that's a concern. On many boats, we see these seacocks installed without the flanged bases, which we think is a lousy way to save a few bucks.

Few products have divided the opinions of Practical Sailor readers more than "plastic" seacocks. We hear from those who love them (and the price), and others who wouldn't leave the dock with them. Among builders, we note that such outstanding yards as Hinckley recommends the Forespar/RC seacocks to all its customers, while others remain wary.

We've used Marelon seacocks before and never experienced a problem. They are favored by some steel and aluminum boat owners because they eliminate the problem of corrosion due to dissimilar metals.

Our chief concern about these seacocks is the arm connecting the handle to the ball valve. Several readers have sent us seacocks in which the arm broke. This happened when a) the ball was stuck (one theory is that because Marelon, like all plastics, is slightly hydroscopic, it absorbs water and swells), and forcing the handle applied too much torque to the connecting arm, or b) something was jammed in the ball opening, preventing it from closing. Broken arms seems to be less of a problem with the larger sizes, which have correspondingly thicker arms. Other readers have noted that slightly loosening the top cap of the valve body relieves pressure on the ball and therefore the handle arm.

Marelon seacocks, like every other brand, must be lubricated occasionally. A smudge of Teflon grease applied to the ball and worked in by throwing the handle back and forth is all that's required. These seacocks can be opened for inspection, but like most ball valves, it's not easy—they're sort of like closed gel-cell batteries—and despite company claims to the contrary, we think periodic lubrication is important. To lubricate, you must at least remove the hose and force the grease down onto the ball, or pour in vegetable oil; but just removing the



***Left:** Forespar's new line of Marelon valves represents some clever design features, including easy disassembly, various tail-pieces, and a plug that fits into the through-hull.*

hose is often difficult. And if you have to cut the hose to lubricate the seacock, there's a good chance you'll give up.

The flanged seacocks are available in 1/2", 3/4" and 1-1/2" sizes. The 1-1/2" model sells for about $60 at discount, making it the least expensive of the models evaluated in this report.

Forespar Sea-valve. Flexibility of installation and easy maintenance are major selling points of Forespar's recently introduced line of "Sea-valves." They were designed to exceed the standards of Underwriters Laboratories (UL), as well as the American Boat & Yacht Council (ABYC), and American Bureau of Shipping (ABS).

Like the RC seacocks, Forespar says the Sea-valve assembly (through-hull, valve body, and tailpiece, the latter with either barb or female pipe thread end) will withstand a 500-pound static load applied to the tip of the hose barb, 5,000 shock impacts of 10 Gs, remain operable after repeated cycles of prolonged exposure to temperatures of 140°F to -22°F, not be damaged by freezing, pass intense abrasion and corrosion tests, and so on. Part of its strength is derived from a large-diameter "king-nut," into which a through-hull fitting, having a specially shaped buttress thread, is screwed. (The unit can't be mated with a through-hull having standard pipe threads.) We have never tried to burn or freeze Marelon, but we have whacked it hard with a hammer, and never hurt it.

The modular unit can be assembled in dozens of ways, so it's adaptable to a wide variety of space limitations and requirements. The valve body and tailpiece is fastened to the king-nut with four stainless steel bolts on a square pattern, and that in itself gives a choice of four handle positions and four tailpiece positions—16 possible combinations. Then there is a choice of end tailpiece or side tailpiece, or both, choice of straight or elbow barb, and choice of hose barb or female thread. Where space is restricted, it's an installer's dream.

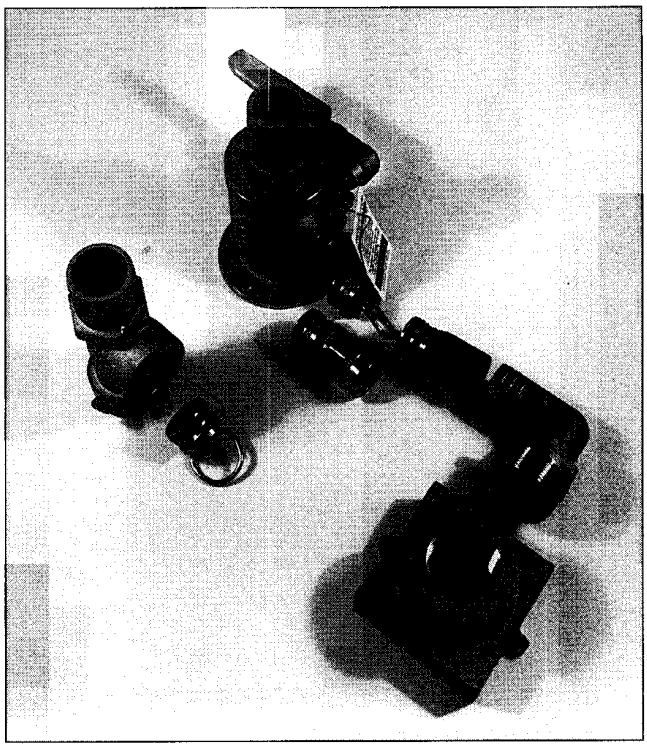
The folder that comes with each unit says that "lubrication is not required... [Just] open and close [the valves] two or three times on an occasional basis... If fouling is high and the valves are usually kept in the closed position, it may be necessary to operate the valves every couple of months to free the valve ball from growth. In the low growth/routinely open situation, once every six months may be adequate." But again, we think periodic lubrication is helpful, and disassembly of this valve is easy.

To make valve overhaul possible while the boat is in the water, a plug fitted with an O-ring is stored in the base of the valve's handle. The plug is sized to fit in the through-hull opening by a diver, and when in place, you can remove the valve body from the king-nut by simply loosening the four attachment bolts, without water entering the boat.

Units are available in through-hull sizes from 1/2" to 2". List price of a 1-1/2" Sea-valve is $96; we expect that you could special order it through a mail-order house or chandlery for about a 20-percent discount.

Bottom Line: We think Marelon seacocks are acceptable for the right application, on the right boat. Where weight or the presence of dissimilar metals is a concern, the Forespar/RC seacocks make sense. But the apparent weakness of the Marelon connecting arm still gives us pause. On a fiberglass cruising boat, where weight isn't a big concern, we prefer to stick with bronze for below-the-water installations, despite the possibility of insidious corrosion (the telltale pink dezincification; we'd monitor bronze fittings especially carefully if we lived at a dock with shorepower).

For above-the-water installations, however, we like the Forespar seacocks for their light weight and low price. And for inside plumbing, the versatility of the new line of Sea-valves has much to recommend them.

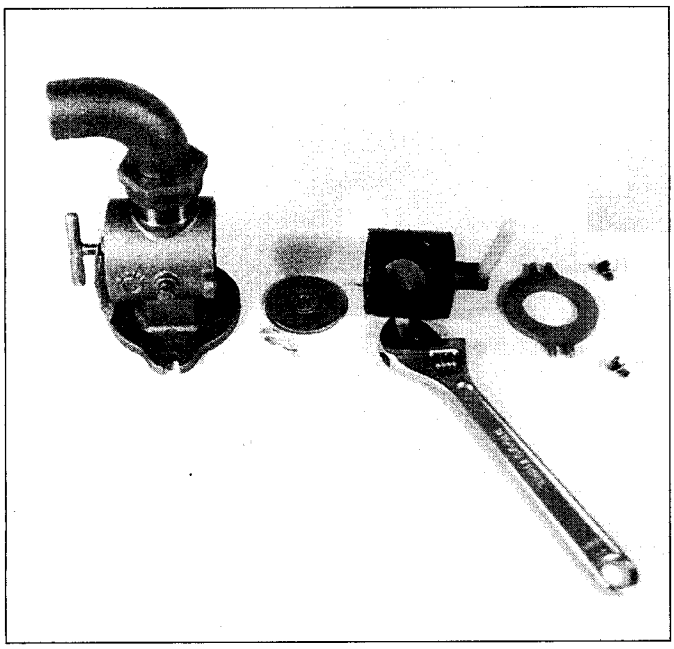


***Right:** Groco's Safety Seacock, top center, has a removable plug that can be attached to an optional garden hose (next to it) for flushing. Another plug can be pre-plumbed to a bilge strainer (lower right) for use as an emergency bilge pump. At left is a fitting that converts any brand seacock to a Safety Seacock. We'd use one on the engine intake.*

Groco

We examined two types of Groco seacocks: the SV-series with a "Buna-N-Rubber" barrel valve, and the SBV series called a Safety Ball Valve. Groco also makes a standard ball-valve called the BV-series with a 316 stainless steel ball and drain plug. The 1-1/2" model sells for $123 list, about $101 discount.

SV Series. This is an unusual design in that the barrel-type valve is made of Buna-N-Rubber instead of bronze. A thumb screw at one end of



Left: Groco's SV series uses a Buna-N rubber valve (above the wrench) that expands to form a tight seal with the body. Price, performance, and ease of maintenance make it one of our top choices.

the body pushes a round bronze plate against the rubber valve, forcing it to slightly expand and make a watertight seal. In several seasons of use on the C&C, it worked very well. In springtime, it never fought us when we wanted to remove it for lubrication. For that reason alone, we came to admire it. The valve is accessed by removing two bolts and the frontal end plate.

The flange has two mounting ears at either end. The handle is stainless steel with a vinyl coating. One drain plug is provided.

SBV Safety Series. Like Forespar, Groco hasn't been sitting still, content to peddle old wares. The SBV seacock looks like a standard BV Series ball valve except that there is a quick-release plug on one side of the body, which can only be removed when the handle is closed. Then insert the bronze Service Adapter with two O-rings ($30 list), to which you can attach a garden hose for winterizing with antifreeze, engine flushing, or a hose with strainer for pumping the bilge in an emergency (the latter two assuming you use this seacock on the engine's seawater intake). The adapter, with two dogs, locks with a quarter turn. The concept, according to Groco, is to add functionality to the seacock. "The additional bilge pumping capacity just might keep you afloat until help arrives, or until you can safely return to port or to shallow water." The Bilge Strainer and Adapter Kit costs about $67 for the 1-1/2" seacock.

Available for use with hose and pipe, the SBV Series certainly is innovative. But it's not cheap, at $172 list for the 1-1/2" model, about $136 discount, roughly twice the price of the Groco SV rubber-valve model and Conbraco ball valve.

Groco also makes a Converter kit that screws into the top of any brand of seacock, giving it the advantages of the side plug. Price is about $61 discount for the 1-1/2" model.

Bottom Line: All of the Groco valves are well made of bronze; the ball models seat in Teflon. The 316 stainless steel ball differs from the Conbraco's chrome-plated bronze valve, but we're not sure one will outlast the other. The standard BV series is expensive for a regular bronze ball valve, so we'd pass on it in favor of the Conbraco. The Buna-N-Rubber SV Series is the easiest seacock to disassemble we've ever used. The price is fair. We recommend it.

The SBV Series represents some clever thinking, but we wouldn't buy one just for winterizing convenience as we always pump antifreeze through the entire freshwater system anyway. It's utility as a bilge pump, coupled to a small diesel, is probably more limited than Groco's literature would have you believe. Still, one more pump in an emergency could be invaluable. For use in flushing the engine, the Service Adapter is a terrific idea. So, while we don't think we'd equip an entire boat with the SBV Series, we would buy one for the engine intake.

Nicro 'Shakewell'

A former Tartan engineer told us that when our 44 was built in 1975, flush through-hulls weren't available, so the company glassed in copper pipe, screwing on Conbraco ball valve seacocks to the inside end. Now, of course, flush through-hulls are commonplace. But the opening still creates some turbulence. The Shakewell plastic valve minimizes that with a piston that closes the intake flush with the body; in effect, the Shakewell is a through-hull and seacock in one. A lever on top of the piston locks the plunger up or down by means of expanding a rubber collar inside the tube. It's color coded green and red to let you know whether it's secure. A second cap, without a hole for the piston, comes with each seacock. The company says no lubrication is necessary, but the one we examined felt like it could benefit from some grease.

The Shakewell 3/4", 1", and 1-1/2" models are identical except for the size of the hose barb, which is included. It's made of DuPont's Delrin 100, a tough material commonly used for ball bearings in marine hardware. List prices are $146 for all sizes, and we expect you could get 20 percent off.

According to Nicro literature, the Shakewell is used by Carrol Marine and Bill Lee Yachts, among others. It would seem that these unusual seacocks are best used by builders at the time of construction, but we see no real reason why one couldn't remove an old seacock and replace it with a Shakewell, assuming he performed a good job of glassing it in. Polyester resin is used, according to the literature, but epoxy would seem superior for retrofitting; no screws or bolts are required. Outside diameter of the through-hull is 2". If your opening is

more or less than 2", it is possible to either fill the existing hole and redrill, or drill the hole larger by using a temporary backing plate for the pilot bit, but we're not sure we'd go to those lengths.

Bottom Line: Properly installed, the Shakewell makes a nifty seacock, reducing turbulence to a bare minimum. And, if periodically operated, as would be necessary to use the seacock for its intended purpose of draining, say, the sink, it is also self-cleaning. The price, however, is high for the materials involved. Unless you're a serious racer, we doubt this is the best choice for retrofitting.

Scot Flush Plug Seacock

Another no-turbulence seacock, Scot's Model F flush-plug unit, has been available for some years direct from the manufacturer, but has never enjoyed big-volume sales, due mainly to the triple whammy of limited distribution, lack of promotion, and relatively high price. Like the Shakewell, the design features a piston-like plug inside a cylindrical valve body. The plug is attached to a rod which protrudes through the top end of the valve, with a handle on its end. You pull the handle to open the valve, and push it to close. When closed, the through-hull completely disappears, leaving a smooth and virtually seamless underwater surface.

The design, which is only available with a 1-1/2" opening, features positive locking in both open and closed positions, reams out any barnacles in the inlet port whenever the valve is closed, comes in either bronze or aluminum, and is priced at $160 for either material. The company makes several other interesting models of seacocks, including a Low-Profile, and a Sea Chest with three hose barbs, which we especially like.

Bottom Line: The Scot Flush Plug Seacock is expensive, but if you want the ultimate in low-turbulence through-hull fittings, this, and the Shakewell, are your only choices. The bronze model weighs 5.5 lbs., the aluminum 1.8 lbs., compared to the Shakewell at 15 ounces. We like this seacock, but again, unless we were racers, the high cost would probably scare us off.

Wilcox-Crittenden

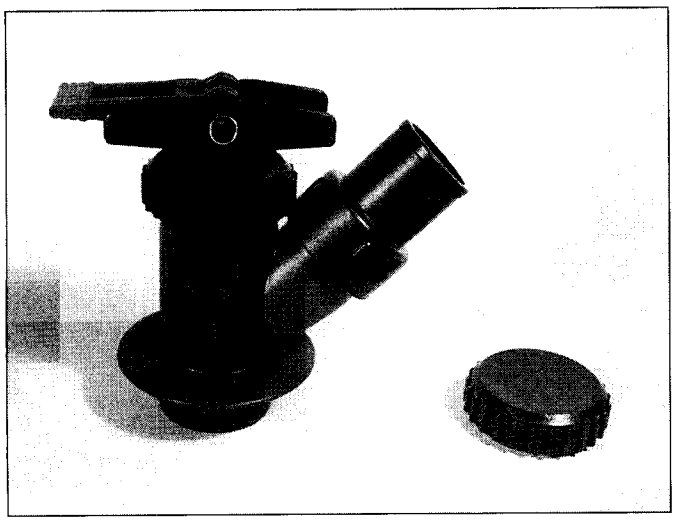
This old-line firm (1847) has a long-standing reputation for making solid marine hardware. Unfortunately, they've lost much of their market due, we suspect, to high prices. W-C makes five varieties of bronze seacocks, four of which have barrel valves and differ only by the tailpiece (straight or elbow), flange (round or oval with fastener slots), and handle (long handle or short key requiring a screwdriver or other tool to operate). The fifth, the 1575 has, like the Conbraco, a chrome-plated ball valve.

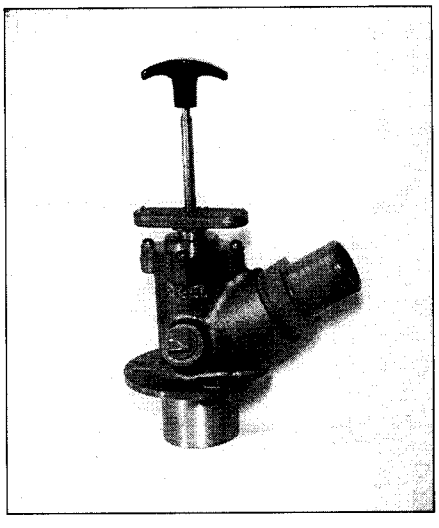
1575 Ball Valve Seacox. The seacock we looked at was bought by our Editor-At-Large Nick Nicholson for use on the 40-footer he's building. It was never installed, however, because some time, somehow, between purchasing it and drilling the through-hull, the valve seized. We locked it in a vice and tried, without success, to unscrew the top cap using a pipe wrench. This confirmed our belief that ball valves, despite the promise of disassembly, may as well be considered closed systems.

1507, 1511, 1561, 1565 Seacox. These husky, all-bronze valves are the old standards, long favored by traditionalists. The valve is a tapered plug or barrel with a hole through the middle. The handle turns more than 90 degrees, so you must experiment to find where full closed and open positions are—open is straight up and 90 degrees is closed. Still, it would be nice if a stop were cast into the body, but then these castings are probably 50 years old, and the company probably figures what's the point of inventing a better mousetrap when the old one works just fine?

We ordered two, one from BOAT/U.S. and one from Defender Industries. Both operated with difficulty, despite their being greased at the factory. We took apart both to photograph. When we reassembled the 1" valve, the barrel wouldn't go far

Below left: *Nicro's Shakewell valve, made of Delrin, must be glassed to the hull. It's plug can be depressed (as shown) to seal the through-hull and minimize turbulence. It will not drain in this configuration, of course.* ***Below right:*** *The Scot Flush Plug Sea Cock #85 works like the Shakewell, but is made of bronze or aluminum.*





Specs: 1-1/2" Seacocks

Make	Model	List Price/ Discount	Valve Type	Material	Body
Conbraco	#78-116-01F	$96/$67	Ball	Chromed bronze. Teflon seat	Bronze
Forespar	#904011	$74.90/$60	Ball	Marelon. Teflon seat	Marelon
Forespar	#932146	$96/$77	Ball	Marelon	Marelon
Groco	BV-1500	$123/$101	Ball	SS. Teflon seat.	Bronze
Groco	SBV-1500	$172/$136	Ball	SS. Teflon seat	Bronze
Groco	SV-1500	$91/$74	Barrel	Buna-N rubber	Bronze
Nicro	#NF 93013	$146/n.a.	Plunger	Delrin 100	Delrin 100
Scot	#85	$160	Plunger	Bronze	Bronze
Scot	#356T6	$160	Ball	Aluminum	Aluminum
Wilcox-Crittenden	1561	$152/$120	Barrel	Bronze	Bronze
Wilcox-Crittenden	1565	$141/n.a.	Barrel	Bronze	Bronze
Wilcox-Crittenden	1575	$72/n.a.	Ball	Chromed bronze. Teflon seat	Bronze

enough into the tapered body for the lock ring to grasp the flat spot on the threaded shaft. So we decided to knock it out and relube. We put the lock nut on the end of the threaded shaft and rapped it with a hammer. Oops. The 1/2" shaft split like a ripe watermelon. Clearly we hadn't hit it perfectly straight on, but it wasn't that hard of a hit.

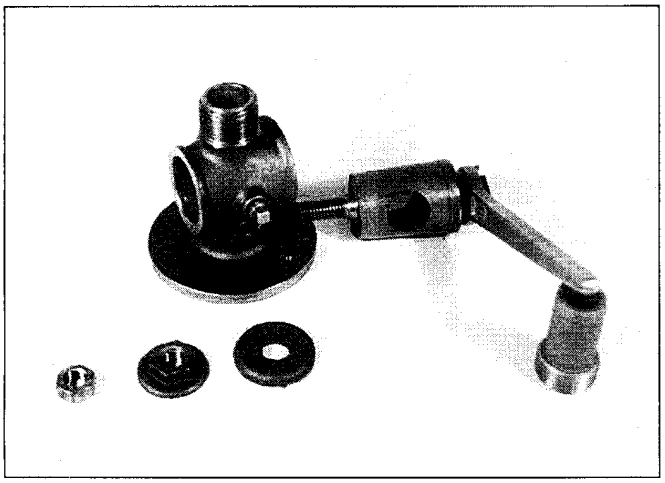
A nice feature of the W-C valves are twin drain plugs, one on either side of the body, so that it may be mounted with the handle left or right and still drain. In practice, we've found the drain plugs to stick after a few years, and rather than force them, simply open the valve during winter lay-up.

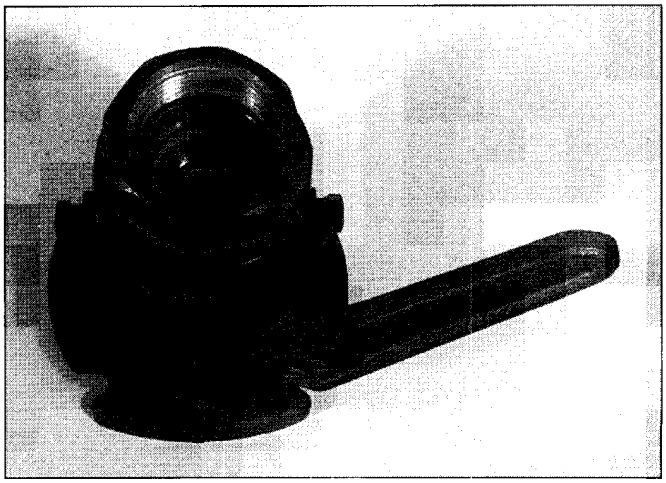
The flange of the 1565 isn't drilled or tapped for mounting hardware. The company's literature touts the ability to drill your own holes wherever you like as an advantage, but how many choices are there? Two to four predrilled holes would save your drill bits and give enough mounting options.

Perhaps the major disadvantage of the W-C Seacox is that grease is required for a watertight fit. Without annual maintenance, they begin to leak. This is understandable, but for the live-aboard, it's hard to justify hauling the boat just to lube the seacocks. We installed zerc fittings on the W-C seacocks on our old Pearson, and this worked satisfactorily for a few years. But eventually dirt and crud plugged the nipple and the fitting amalgamated itself with the valve body.

On the C&C, the W-C valves were still turning stiffly at the end of the first season. A wooden mallet knocks out the plug for maintenance, which is more important with this seacock than any other we've used.

Bottom Line: We like the old Wilcox-Crittenden barrel-type seacocks, but the design is now antiquated. And they are expensive; the 1-1/2" 1565





Below left: *The traditional Wilcox-Crittenden barrel valve Seacox is easy to disassemble, but requires regular maintenance and is expensive.* ***Below right:*** *This bronze ball valve from Wilcox-Crittenden mysteriously seized before installation. Efforts to free the top cap of the body were unsuccessful.*

Comments
Operates smoothly. Low maintenance. 90° stop.
Connecting arm a weak link. Bulky. Non-corrosive. Inexpensive.
Modular system for new plumbing. Plug to seal through-hull.
More expensive than other bronze ball valves.
New "safety" design has plug for winterizing and pumping bilge.
Compression screw seals valve. Easy to disassemble.
Rod-operated plug makes opening flush for reduced turbulence.
Rod-operated plug makes opening flush for reduced turbulence.
Same as Scot #85, but for aluminum boats.
Key handle. Old standby that is antiquated. Expensive.
Essentially same as 1561 except for handle and flange.
Typical ball valve design.

(our choice, with round flange and full handle) discounts to $140. While we cannot recommend against buying them, we feel there are better valves available for less money.

Conclusions

- Ball valves provide better seals than bronze barrel valves (W-C).
- For repair/maintenance, ball valves cannot be taken apart as easily as barrel valves.
- Ball valves require less maintenance than barrel valves, but in our opinion seasonal lubrication is advisable.
- Bronze and Marelon both are strong materials, but Marelon must be thicker than bronze to achieve acceptable strengths. This is possible in the body, but the arm connecting the lever continues to be a concern for us, despite statements from Forespar that such failures are rare.
- The Conbraco ball valves are simple and fairly priced. The company's main business is industrial valves; we've seen them used in heating plumbing pipes. Flanged marine valves were a spin-off.
- Forespar's Marelon seacocks eliminate fear of corrosion, are lightweight and inexpensive. We use them at and above the waterline, but prefer bronze below.
- Groco's Buna-N-Rubber valve is the easiest to disassemble and service of the seacocks tested. We think it's a Best Buy. We'd use a Groco Safety Sea Cock on the engine intake.
- The Nicro Shakewell and Scot Flush Plug seacocks virtually eliminate turbulence, but at a price. Use them if you're a racer looking for every advantage.
- The Wilcox-Crittenden is like an old Model A, simple, and infinitely serviceable, but unlike Ford's breakthrough invention, terribly expensive. At twice the price of the perfectly serviceable Groco SV-1500 with Buna-N-Rubber barrel valve and Conbraco ball valve, we don't think it's a good value.

As a final note, we found that prices varied widely. Our local chandler wanted list price for the Wilcox-Crittendens, and you will find that the major mail-order houses are unable to discount them much. The Marelon seacocks varied up to $15 in price (BOAT/U.S. was the least expensive of those catalogs we checked). Defender had the best prices on Wilcox-Crittenden and West Marine Products was a few dollars cheaper for the Groco seacocks. Shop for price before you buy. ■

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