ON-DECK COMFORT

Providing deck shelter for the crew while sailing and at anchor is a complex equation. You have to trade off aesthetics, function, center of gravity, windage, walk space, and a host of other factors in an ever-changing environment.

Obviously it's vitally important to have protection under inclement weather conditions. This means staying warm and dry through spray, and the odd breaking wave, and wind chill. It's equally important to be able to get out of the sun in the tropics, yet still have a good wind flow to offset the heat. Deck shelter must be strong enough to stand up to a substantial gale and the occasional solid slap of a wavetop that finds its way aboard.

It's nice if there's room to sleep in the cockpit shelter, too. This means a covered seat area of at least 5 feet (1.5 m). Of course, this isn't always practical, but at least two crewmembers should be able to sit comfortably out of the elements on the same side.

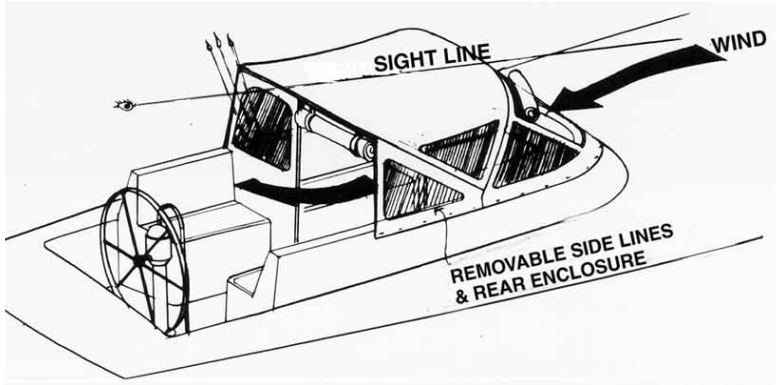
One of the things that made this new dodger on *Intermezzo II* so successful was the maximized clear area. Alex Pachos, who built this beautiful dodger, used just 2 inches (50.8 mm) of material at the window seams. We had protection but didn't feel claustrophobic.

DODGERS

A well-designed dodger can offer dryness and security even in the most miserable conditions. That dry, warm enclosure will yield more benefits than almost any other investment aboard.

You need to think about a number of design factors. First is a conflict between aesthetics and function. Within limits, a larger dodger will do a better job of keeping you dry and warm. Onboard, looking out at the spray or rain, it will be beautiful. But from a dock or the dinghy, a large, effective dodger can be less than attractive.

A major consideration must be handholds when heeled. On large dodgers there will be a fair distance from the back bows to the companionway. In most cases the cockpit coamings will be too far to leeward for good support when working your way forward, so you'll need to have a stiff vertical support at the end of the dodger against which to brace yourself. We use a heavy aft-rope tiedown to lean on when heeled. It's wise to consider support when stepping from the deck onto your seats and then into the cockpit well. Here the back support bow of the dodger, providing it's sturdily made, will do nicely.



The essence of the optimium dodger: Lots of window area, front-opening window for ventilation, removable side curtains (a length of which allows you to curl up on the cockpit seat and stay dry), back windows to seal the forward cockpit area (and low enough so you can see over it when standing at the helm).

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Size

The actual size of your dodger will depend upon the size of your yacht and cockpit and on how you resolve the aesthetics/function conflict. When we purchased our first *Intermezzo*, her dodger was worn out. It was so big and ugly that we made plans to have a small, good-looking unit made that would protect the companionway hatch only. It didn't take but a couple of cold weekends, and the ugly dodger began to look a lot better.

Dodger size is very much a function of how you are going to use it. If you're living aboard you will want at least enough cockpit cover so that two people can sit together. Protection from spray, rain, and sun are equally important.

The top left photo shows *Intermezzo*'s dodger: big, ugly, and very comfortable. The top right photo is a very short dodger on one of our early Deerfoot designs: okay for one person to a side, but look what happens with a crowd. The photo directly above is of the 72-foot (22m) *Locura*. Her dodger was five feet long.

At bottom left is my dad's dodger on *Deerfoot*. Any time you have to deal with a bridgedeck the dodger geometry becomes difficult, due to the ergonomics of bending down as you try and get to the companion-way.

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Most boats will allow space for a dodger that provides for two people to sit side by side. That means the aft end of the frame must be at least 34 inches (863.6 mm) from the front of the cockpit. Fifty inches (1.3 m) is a lot better. When we were getting *Intermezzo II* ready to take to California from our base in Florida, we extended our dodger 2 feet (0.6 m), making it 6 feet (1.8 m) in length. This completely protected the cockpit area and allowed enough space to sleep on the seats, while fully protected.

The height of the dodger should be such that the helmsman can see over, and peek under it. We've found that 61 inches (1.5 m) off the cockpit sole is a good height for visibility yet isn't too tight on headroom.

Windows

We like to have windows made as large as possible, with minimum-size tapes. Two are much better than one as they allow better air-flow control (you have a better chance of keeping rain or spray out while still getting some air flow).

Windows should be made of the best-quality material, with the best optical properties. There are a number of varieties and thicknesses. Front windows should be 0.04-inch (1mm), while side curtains and aft windows can be thinner.

A big decision is which way to open windows — up or down. If you open them so they are held up by straps, then you have the straps hanging down plus the bulk of the rolled window in your field of view. Also, you must roll the windows. On the other hand, if they open down, straps and window bulk are below the field of view and you have the option of just laying the window down.

Sometimes opening a window down interferes with sail controls. But in most cases, this can be dealt with by rolling the window away.

The shorter the dodger in length, the lower it can be and still provide for access to the companionway steps.

These three dodgers are quite small, barely enough space for one person per side.

The advantage that these offer is lower height for better visibility from the helm, less windage, and less area for waves to impact.

They are obviously a lot better-looking, too. This would have been my choice before I started cruising. However, after living with a medium-sized dodger we ended up going as large as possible and ignored the ugliness!

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Here's a large dodger on a small boat that actually looks good (top photo).

These removable back curtains (right photo) allowed us to totally enclose the cockpit area on *Intermezzo II* when it was cold or damp out. The improvement in comfort (and morale) from this minor addition was phenomenal! We've found that it's better to use the lightest clear plastic (20 mil) for back windows, as it's easier to store, even though it isn't quite as clear as the heavier grades.

Sometimes a square-faced dodger gives better protection. Note the shade/rain awning extension back to the boom gallows.

(Above) The height of the dodger should be such that the helmsman can see over and peek under it. We've found that 57 to 61 inches (1,300 mm to 1,550 mm) off the cockpit sole is a good height for visibility, yet isn't too tight on headroom.

To minimize leakage through the window zippers, an extra flap of fabric has been sewn to fit *over* the zipper to protect it from direct spray (above).

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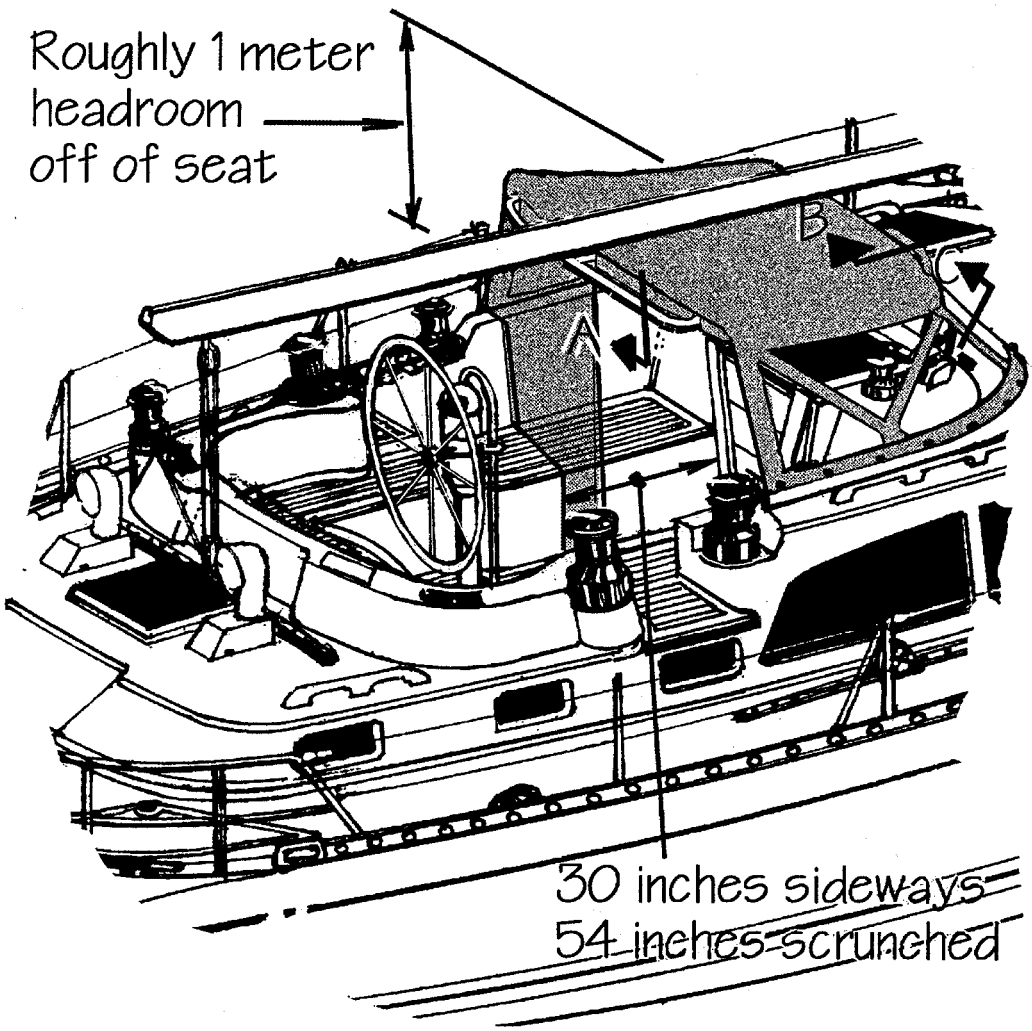

Creating a good cruising dodger is very much a detail-oriented process. Don't be surprised if it takes two or three trips back to the canvas company or sailmaker before you have the details just right.

The first design issue to deal with is the length of cockpit to be covered. As shown here, 30 inches (762 mm) is a minimum. Much better is 54 inches (1,371 mm). This allows you to sit totally covered to leeward with your legs up on the seat.

The dodger should be as low as possible. But 39 inches (1 m) above the seat bottom is required for headroom when you are seated. If you have difficulty getting into or out of the companionway, you may want to raise the height or shorten the length of the dodger. Both of these will make the companionway easier to negotiate.

The three drawings on the next page illustrate some details to discuss with your vendor. A grab rail should be added to the back dodger bow, or the dodger should be cut out where it wraps around the bow in several places to make is possible to close your hand around the rail. This gives you a stronger grip than if you were pinching a rail covered in fabric between your fingers.

Detail B is a section through a sewn handhold. These should be run parellel with the dodger bows and sewn on so that the handhold load is transferred by the stitching to the dodger bow rather than having the cloth carry this load by itself. Sewing a piece of hose or strips of window material into the handhold will keep it standing up where it's easy to grab.

The final detail is of the window zipper cover (also shown in a photo on the preceding page). This is a sewn flap that overhangs the zipper. The flap serves to deflect water from hitting the zipper directly. This reduces drips in the front of the dodger and, if executed properly, makes the front window zippers almost watertight.

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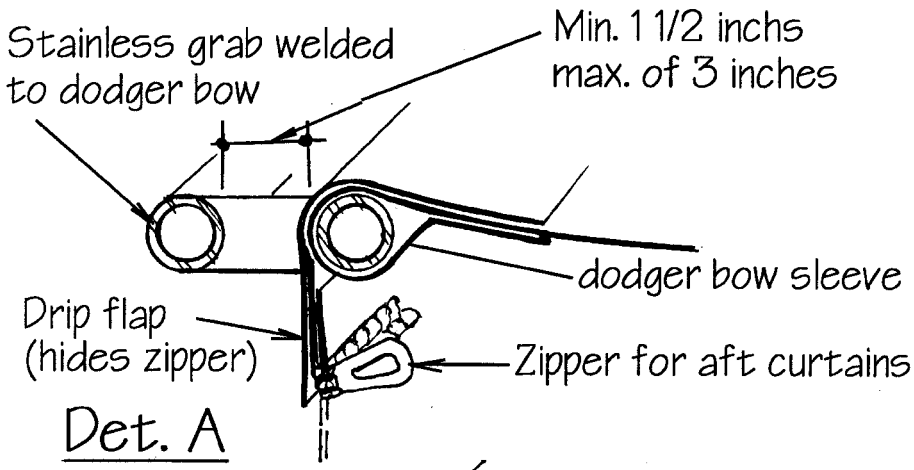
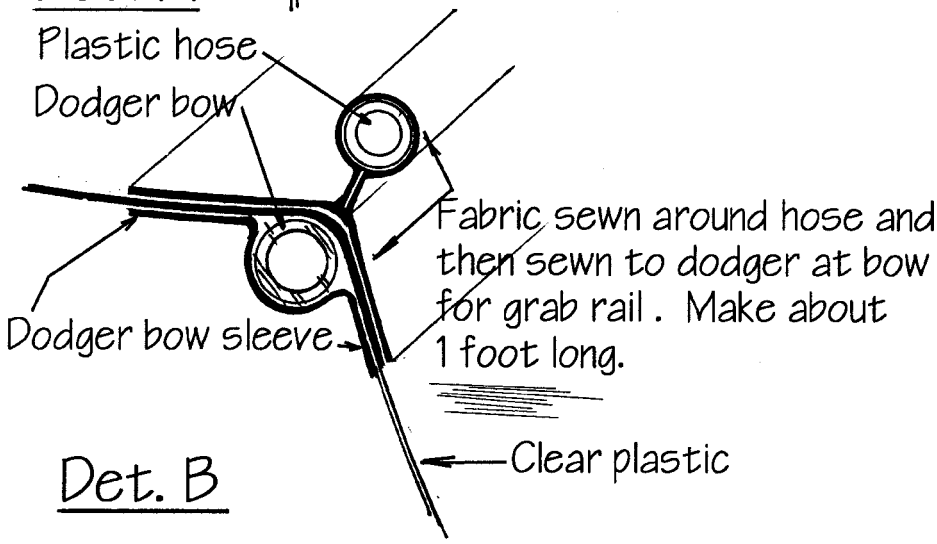
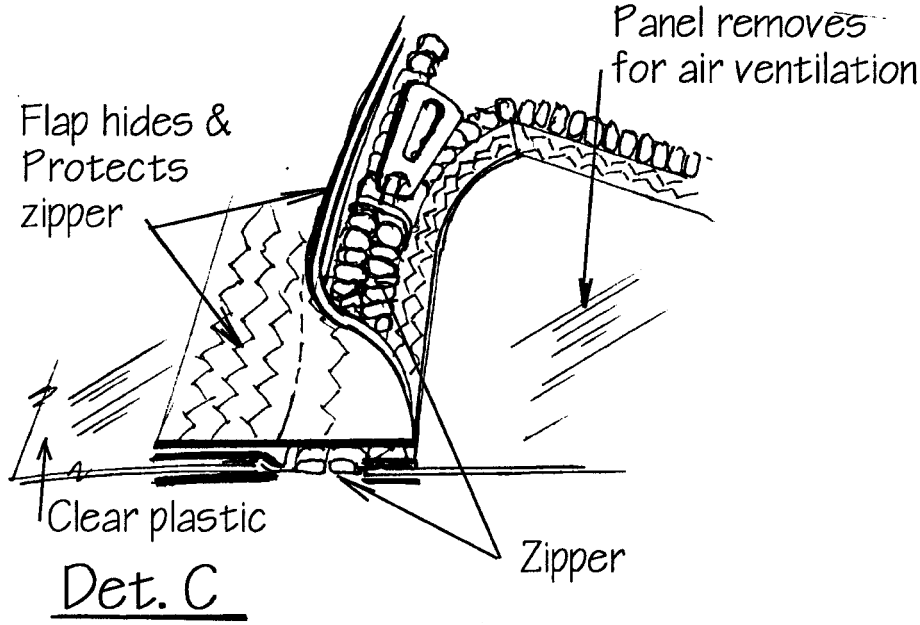


Det. A



Det. B



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The Back Porch

As the latitude increases so does the desire for a larger dodger. Some form of frame will be required at the aft end for support (unless a boom gallows is handy). Two design issues stand out. First, careful consideration needs to be given to getting into and out of the cockpit, both in port and at sea. Second, you will want an efficient way to open the sides and perhaps back for ventilation on the odd high-latitude day when the sun is shining and the air is warm.

The connection between side curtains and top becomes more critical as rainfall increases. In an ideal design, the side curtain will attach up under the top so that the edge of the top overlaps the zipper or snap joint, providing a rain and spray shield.

Window Design

One of the factors that weighs heavily on appearance, function, and the ability to fold down is window design. In the last few years great strides have been made in the longevity and optical clarity of the plastics available for windows. It's usually best to design in as much window as pos-

Two different back-porch designs. The Peterson 44 (above) covers the entire cockpit area, giving protection to the aft-cabin cockpit entrance.

The owners of this aft-cockpit yacht (below) have taken their enclosure almost to the transom. They have a back door as well as side access.

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sible. This aids visibility and reduces visual awareness of the structure, aiding aesthetics. If you sail in cold weather, make sure you don't have to fold windows where they will crease, as they have a tendency to craze or crack at low temperatures.

Windows are made from a highly polished, clear, flexible vinyl, so clear that the optical properties, when new, are close to those of glass. On a new dodger made for *Intermezzo II*, the clarity of the 40-mil-thick material was astounding. Even on a rainy day we had good visibility to con *Intermezzo II* from the inside. The clear vinyl is available in 20- 30- and 40-mil thicknesses. The 40-mil has the best optics but is difficult to fold. Twenty is more flexible but not as easy to see out of.

This enclosure has an aft support and continues on past the boom gallows. The side curtains attach inside the top so rain will shed over the intersection. The opening aft window is a must when the sun comes out.

Compare the visibility from these two designs. The boat in the upper photo has plastic area maximized, with small tapes on the seams. The lower shot shows a lot more canvas; it will be longer lived but more claustrophobic.

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Most cruisers will want front-opening windows. We like to have a window each side of center; the leeward one can be opened in inclement weather, both in nice conditions.

Pram Hoods

With offset companionways, large bridgedecks, and hatches in general, pram hoods are often the best choice for protecting the hatch area. The design objective here is to allow the hatch to be opened in wind or spray without getting water below. A major consideration should be ease of getting below. Incorporating handrails either just inside or outside the hood will give the crew something to hang onto when dropping below. Hoods should be designed so they can be lowered, leaving enough clearance to open the hatch.

Two different approaches to pram hoods. The top photo is on a Mason 44. The offset companionway, well forward from the cockpit, is not a particularly safe seagoing layout (it is vulnerable to flooding in a port-tack knockdown). It is also difficult to devise shelter for the crew in the cockpit.

The lower right photo shows a pram hood with substantial handrails. You can sit behind this hood with your feet dangling below and have partial protection for your body.

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Fabric

Deciding upon the fabric involves more trade-offs. Vinly laminates with polyester fabric cores are quite strong and stable. But the vinyls, even though they have mildew inhibitors added, are still subject to mildew. Acrylic fabrics will last longer and mildew less but aren't as watertight. Dark colors help repel mildew by keeping the fabric warm, but aren't practical if you spend much time in hot weather. We prefer the vinyl-covered nylon for our type of sailing.

Hardware

Since the dodger will be most welcome in heavy offshore sailing, the hardware and tubing should be as strong as possible. One-inch, medium-wall stainless with metal connectors works well.

The bow arrangement must be laid out so the dodger will fold down neatly, clearing the boom or other obstructions in the process. The excess material of the dodger when folded will have to be tied clear of the companionway. If you go for a really long dodger, it may be necessary to move the boom off center for the folding procedure.

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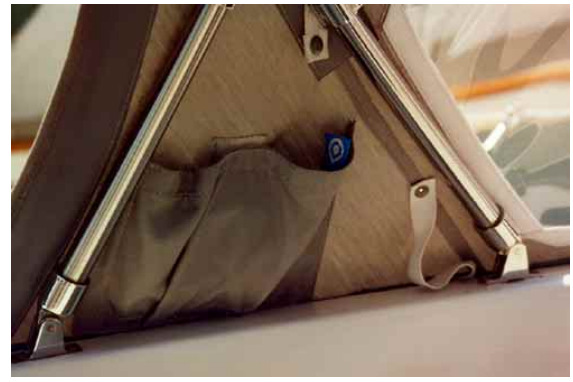

Sometimes sewing a few pockets into the side of the dodger can generate handy storage for winch handles, binoculars, sunglasses, and rope tails.

Support struts like the one above need to be adjustable so you can keep the dodger fabric stretched tight. Be sure to lubricate all of the fasteners before they freeze up!

This is a smaller, heavily reinforced pram hood with handrails just outside for support when dropping down the companionway.

This is an ideal set up for watch keeping. You can sit with your legs below, with most of your body protected from wind and spray. Note the compass just forward so the crew can keep an eye on the course.

Construction Details

There are several construction details that need decisions. The first is how to attach the bulk of the dodger to your coaming. A bolt rope, if you can fit it, is relatively watertight and will provide continuous support. Studs or turn-buttons can be used, but they leak more and aren't nearly as strong as track. You'll want to have a flap over the zippers anywhere that opening windows occur (to protect them from rain and spray). If these are properly executed, all but the heaviest downpours will be kept at bay. Only the strongest, top-quality zippers should be used. These can attach the fabric to the metal frame as well. You'll want to allow for straps to hold your windows open when they're rolled up. Decide on the means of keeping the dodger tight. Straps, line, or rigid adjustable pipe supports can be used to pull the aft bow down (which tightens the top fabric). We've done well over the years with a simple line attachment that's easy to really snug down tight. If your dodger needs seamed fabric, have it electronically welded. This is stronger than stitching and resists the tendency of stitching work to leak in old age.

Side windows and a back curtain can add enormously to the enjoyment of your cockpit. In fact, properly executed, a fully enclosed dodger can give almost the same level of protection as a pilothouse. These curtains offer the flexibility of maximum airflow on nice days and added protection when it's unpleasant outside. They can be attached with zippers or snaps, the former being the most watertight. The windows and curtain should attach to the inside edge of the dodger so that rain water and spray run over the joint stays outside. The importance of the comfort brought by side windows and aft curtains cannot be overemphasized. If you're a tropical sailor it will be hard to realize how cozy you can get (or how miserable!) on an early spring or late fall day in the high latitudes. It took several trips in the fall to the northeastern United States to convince us — now we're definitely converts.

These stainless handrails, worked into the aft-dodger bow, solve several problems. First, they provide secure handholds; second, instead of having a grimy back-edge to the dodger from all those handprints (a never-ending problem), the stainless stays shiny clean. Finally, handrails are marvelous places to hang extra sail stops. Note the strip of fabric (bottom photo) for attachment to a back window.This will act as a drip strip.

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Maintenance

To keep the dodger looking good, wash it frequently, especially if you're docked in a polluted area. A solution of fresh water, mild soap, and bleach — 1/4 cup per gallon — will clean dirt and mildew. Proper maintenance of the clear-vinyl windows is another requirement. Extreme caution must be taken not to use anything that will scratch or mar the soft finish. Fresh water and a soft, clean rag or chamois are best. Some of the dodger builders we know recommend Lemon Pledge furniture polish for keeping the windows polished and for reducing the static attraction of dirt. But the vinyl manufacturers shy away from recommendations other than fresh water. They cite lack of long-term data on yellowing or related problems from polishes. We've seen dodger windows in Southern Florida look good after two or three years of proper care. Zippers should be siliconed regularly and used at least monthly. If you wait an entire season to work a zipper, it may be frozen.

Walking by a dodger on a narrow deck, especially to leeward, is always difficult. Adding a handrail helps. However, this handrail is too far outboard. When you hold onto it, your arm has to stretch before you gain any leverage, and by then you are leaning out beyond the lifelines. It is better to have the handrail about 18 inches (457 mm) inboard of the dodger edge.

You can accomplish a similar detail with sewn webbing. This has the advantage of allowing the dodger to be folded down. However, it is not as secure. If you take this approach, the dodger should be reinforced where the webbing is sewn and some hose or vinyl sewn into the webbing to make it stand up.

An interesting sun/rain shade extension (lower photo). This approach makes some sense. However, you give up the ability to fold down the dodger.

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If you're heading offshore, the dodger bows and attachment hardware should be heavily made. With reasonably strong gear a dodger will take solid water in stride and keep on working. The dodger bow-attachment point ends up taking a lot of load, so be sure it's beefy.This one is a simple weldment made up from 3/16-inch (4.8mm) stainless plate.

You probably will need to have control lines come aft through the dodger. Ideally these will first go through some form of a guide, perhaps a UHMW-plastic fairlead and then a small slit in the dodger. The slit must have a chafe strip and localized reinforcement.

Be sure to add chafe patches for winch drums.

Hollow-webbing handholds, with a piece of flexible PVC hose inserted, are sewn down to act as a handrail. These are located where the dodger bows fall, so that there's a connection between bow structure and webbed handhold. Note how far inboard these are located.

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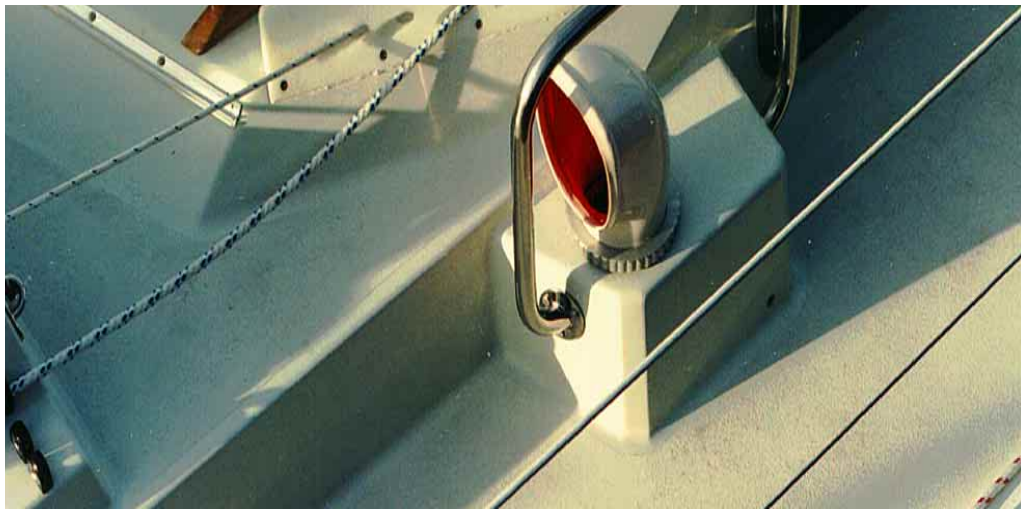

Bringing control lines aft through the dodger face can be a problem with water on deck. We used a piece of 1/2-inch (12mm) UHMW plastic as a guide for the control lines on the Sundeer 56. The dodger then attaches to the UHMW, giving a reasonable amount of protection from water coming down the deck. Note how the control lines run outboard of the teak drip-guard. This ensures that any water that makes it past the UHMW runs aft onto the cockpit sole and not onto the cushions. With the aft curtain in place the inside of the dodger becomes warm, dry, and cozy.

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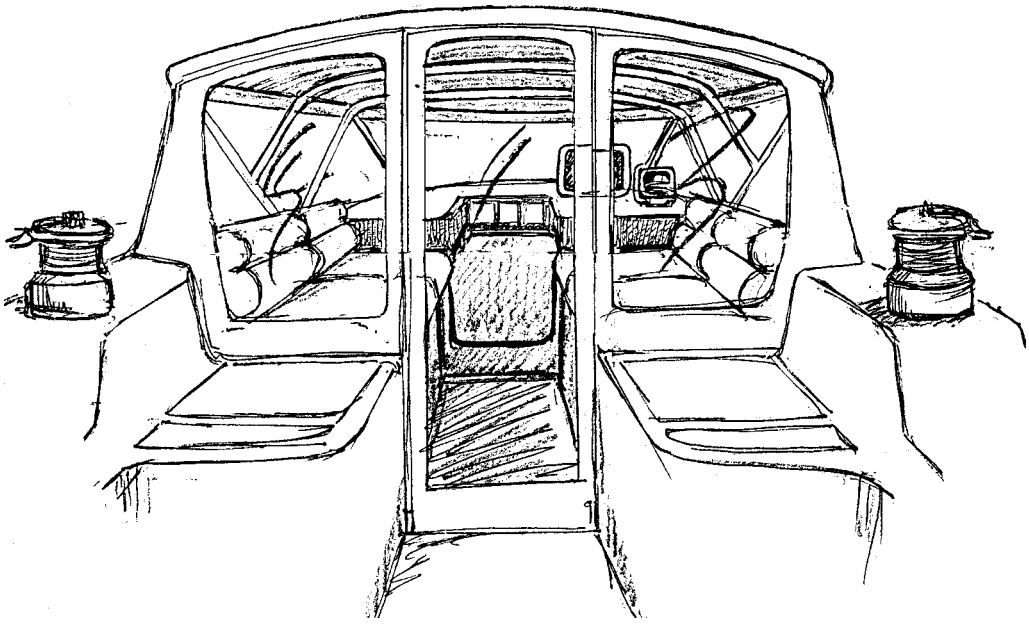
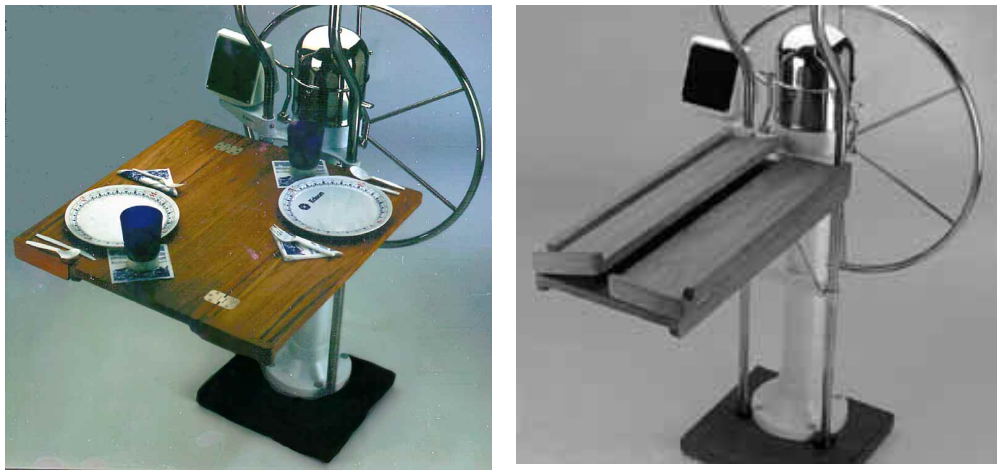


An ideal layout for the cockpit and dodger. There's enough room outside the dodger to sit one person on each side. Inside the dodger there's enough covered space for you to sit—54 inches (1.37 m)— with knees up, facing aft, and stay warm and dry. All of this can be accomplished in 6.5 feet (2 m) of seat length.

COCKPIT TABLES

This is a very controversial subject in our family. Linda really likes a cockpit table for eating and general entertaining on deck. On the other hand, I think they are a waste of space, money, and weight. They take up all sorts of room, require maintenance if made of teak, are in the way so that it is tough to move around in the cockpit, and are useless at sea. On the other hand, if you don't mind the claustrophobia they can cause, they can be a nice touch when at anchor.

The biggest issue is storage. Ideally, the table will store on the binnacle, folded down. If this is the case, it is sure to get a lot more use than if it is stored beneath a pile of lines and sails in the cockpit locker. At a minimum it should be wide enough for condiments, snacks, and a few drinks. If there are folding eves, the table can be enlarged for meals.



Two views of a standard Edson cockpit table. With folding eves and stowage on the binnacle, the design meets the basic criteria for a functional cockpit table. (Edson photo)

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Intermezzo (top left) had weather cloths all the way around the cockpit. In addition, she carried extra cloths to protect her companionway hatch (in lieu of a dodger or pram hood — a really dumb idea). She also had a "utility" weather cloth that could be moved around to protect the main-saloon hatch or forward hatch (middle left). A great idea to improve visibility (bottom left) is using clear vinyl in the weather cloths, although you do lose privacy.

On *Intermezzo* we had one removable weather cloth (top photo.)

WEATHER CLOTHS

Weather cloths can substantially reduce the tendency for the errant wavetop to find openings in the unfortunate sailor's foul-weather gear.

The first question is placement. If you're planning to sail without the side curtains of a dodger, set up the weather cloths far enough forward to protect the cockpit while going to windward. They should also extend far enough aft to cover the broad-reaching quadrant.

Weather cloths can also be useful in protecting the main-saloon hatch from light spray. We've always carried one extra unallocated cloth to be moved around as required for this purpose.

If it takes a really good pop, the weather cloth should give way before the stanchions are bent. Lacing the top to the lifelines and attaching sides and bottom with Velcro will help in this regard.

Weather cloths provide more privacy in port but also block out the view. In a small cockpit this can lead to a bit of claustrophobia. Clear vinyl, as is used in the dodger windows, can be worked into the weather cloths to open up the vistas.

Using dodger window material for weather cloths opens up the cockpit area.

If side decks are narrow and weather cloths are close at hand, it may make sense to have pockets sewn in for holding binoculars, man-overboard gear, sheets, or a deck knife.

COCKPIT CUSHIONS

Cockpit cushions can make a substantial contribution to your onboard lifestyle but can also be a big pain in the rear (literally and figuratively).

The first question to be answered is how wet they're going to get. If

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the cushions are only partially sheltered, they'll have to be made from nonabsorbent materials. Even if under cover they may see a lot of service with wet foul-weather gear.

There are two schools of thought in the covers. The first is to make them as close to watertight as possible. With this approach a vinyl-based fabric is used, and the stitching is sealed after final fitting. If moisture gets into the zippers or Velcro closures, the cover is removed and the inside foam allowed to dry. We've seen open-cell foam sealed in plastic inside the cushions, but this makes for a noisy seat and one that's somewhat less than the ultimate in comfort.

A variation on the above theme is to make the top cushion-fabric watertight and the bottom porous, so the foam can air out. If the underside of your cockpit seats stay dry, this approach is worth considering.

Sometimes folding chairs are just the ticket for lounging on deck (above).

Sue Moesly made these vinyl cockpit-locker covers to keep water from finding its way below during their circumnavigation on the 38-foot (11.7m) *Svea*.

Cushion Support

Several closed-cell foams that prevent water problems are on the market now. They tend to be very stiff, however. They're somewhat better than sitting on a hard seat, and they do offer a bit of insulation. If you're inclined to go this direction, check the various brands for comfort, as there's a difference in density and feel.

The last approach, which makes the best sense to us, is to use specially treated Dacron stuffing with an open-weave fabric. This is how most of the outdoor lawn furniture is treated. The Dacron stuffing doesn't remain soggy as the open-cell foams do, and they can be washed to remove accumulated salt. The open-weave fabrics are attractive, and allow lots of air circulation. It's even possible occasionally to find pre-made cushions that will fit your cockpit for very modest prices.

While you're thinking about seat bottom cushions, give some thought to back cushions. One approach is to incorporate them into the aesthetic design of the seat bottom, perhaps making them parts of the bottom cushions. The other way is to use small, easily moved cushions that can be used in other parts of the boat.

Seat back cushions should be somewhat softer than the bottom and need not be as moisture-repellant.

Regardless of which material you choose, the cushions will need some method of attachment to keep them in place when the boat heels. The seat back cushions must be easily removable in order to maintain access to storage in the coamings. For bottoms, one of the best ways is to use a bit of boltrope track to hold things in place. Seat backs will do nicely with ties.

Try to allow an inch or two of cushion overhang on the seat bottom. This will serve to pad your legs when bracing against the cockpit well while heeled and makes a soft foot brace when sitting to windward.

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AWNINGS

As cruising takes you closer to the sun, awnings become one of the most important kinds of gear aboard. Properly designed and constructed, they'll keep you cool when it's hot, and dry when it rains, while allowing for the collection of copious amounts of fresh water.

The problem comes in defining what is the *right* configuration for your own situation. Where you cruise, expected weather conditions, rig, and even deck insulation have an influence on design.

With so many variables, it isn't surprising that it takes most cruisers two or three tries before they find the perfect awning solution.

Defining Needs

Whether you're planning to make awnings yourself or using a cover/sailmaker, the first step is to define the size of the awnings. Since ease of setting and removing, along with storage, are important criteria, size has a big impact.

With an uninsulated fiberglass or timber deck, more coverage is necessary. If the fiberglass deck has a core that provides insulation, you can get away with less awning area. Your style of cruising has to be considered as well. If the boat is going to sit for long periods in hot, windless areas, a larger awning becomes more important. If you cruise in the tropics in winter and temperate regions in summer, with a fair amount of moving between anchorages, a smaller awning that just covers the cockpit and major hatches will work best. (The awning should keep sun *and* rain off the crew and out of the boat.)

There are three basic elements for which awnings need to be designed. Tropical heat (above), tropical rain (below right), and cold rain (below left).

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Design Criteria

As you consider various potential awnings, think about how they will be set and removed. Ease of use is a critical factor. If the awning is easy to set, then you'll remove it (as you should) before moving the boat. Otherwise, there's the temptation to leave the awning up, since it's a pain to remove and replace it.

Moving your boat with the awning set leaves you dependent on the engine. If the engine fails at a critical point, your sail cover is on, and the awning is rigged, it is going to take some time to get under sail. If there's a reef 100 yards (91.5 m) to leeward...well, its better to be ready to sail if the need arises. The other situation arises when you're fast asleep in your birthday suit. A squall with lots of wind and rain bears down off the mountains, the awning starts to flap like mad, and you need to get it down in a hurry.

Attachment Points

At the same time, think about attachment points. With a single-stick rig, there are several basic approaches. The awning will start at the mainmast, run over the boom, and attach in the forward corners to the cap shrouds and aft lower shrouds.

At the aft end, the backstay will be used on the centerline with a batten to keep the back corners

A somewhat-less-aggressive design, making use of main and mizzen shrouds for attachment. This awning will stand more breeze before needing to be furled.

Sometimes a simple tarp and a couple of pieces of PVC pipe will do wonders (and you can't beat the price). However, this awning will need to come down very early in a squall.

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supported. If the cockpit is somewhat forward and there are running backstays, the runners will frequently provide excellent end support (and when the backstay is used, runners can give good mid-support).

A split rig will run the awning between the main and mizzen mast — an ideal situation.

Earl Shenk's beautiful John Alden-designed *Eleuthera* is a veteran of the South Pacific. When we first met them in the late '70s they were both on their eight or ninth visit to Polynesia. Well, 12 years later, when we met up again in Tahiti, both Earl and *Eleuthera* (now joined by his lovely Tahitian wife and new baby) were still enjoying the tropics. At anchor, *Eleuthera* is almost totally covered with awnings. The deep sideflaps protect her from afternoon sun. There's also a small side awning, which looks like a weather cloth, to keep sun off the pilothouse windows.

A large tropical awning like this, supported in the middle with a halyard and at each end with a pipe batten gives you lots of coverage. However, in a squall it is going to be difficult to strike and will probably take two people at least ten minutes to set. Using webbing as the attachment point distributes the point loading into the edge better than a pressed grommet would.

The large-diameter PVC-pipe batten provides stiffness and a good surface to roll the awning against.

The cockpit awning on this Sundeer 64 is quite simple to rig. It is held forward by main backstays and mast, along the lifelines, and then finally to an aft batten which takes the end load. The bridgedeck awning is carried on the mizzen headstays and main backstay and can be left flying when sailing.

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Side Curtains

You should also consider side curtains. Formed by a vertical flap on the awning side, these help reduce light when the sun is low on the horizon. While they add a level of complexity, flaps are nice for really hot areas, and they help to stabilize the edge of the awning in a breeze.

Most flaps are 18 inches (457.2 mm) to 24 inches (609.6 mm) in height.

Flaps can be attached with zippers to make them easily removable. Or, they may be permanently sewn on. In either case, you will want permanently attached ties to hold them up in a furled position, roughly 30 inches (762 mm) on center.

The size of side curtains is always a trade-off. The longer they are, the less you can see and the more space they take. But then they do a better job when the sun is low.

Side curtains need ties every 2 feet (600mm) or so. If the ties are in the form of pieces of webbing that are sewn to the awning edge, they are easy to use and don't get lost.

When you are tied up to a dock behind a large condominium in Florida, your awnings are really put to the test. Lots of heat without breeze means you want as much shading as possible.

The awnings on this Sundeer 64 reflect these necessities. The side curtains come all the way down to the lifelines to maximize protection. To maximize flexibility, the side curtains have been segmented into short panels, each with its own set of "cringles" for reefing (to tie the panel up to the awning edge).

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Foredeck Awnings

Foredeck awnings are best designed so that you can walk around them. Keep them low by securing them at the mainmast, anchor windlass, and side deck fittings or lifelines. Because they are smaller and close to the deck, they can be made lighter, with less reinforcing.

The forward end of the awning should be as low as possible to prevent rain splatter on the deck from finding its way below. The forward edge should overlap any foredeck hatch by at least a foot (.3m), preferably more.

A dinghy makes a very efficient foredeck awning. It provides shelter, and when angled as shown here, acts as a scoop at the same time. Under moderate spray conditions, with the dink lashed down, the foredeck hatch can be cracked for some air.

Ideally, the foredeck awning should also be usable as a rain catcher. Here the center has been pulled down and a hose led to the water tank below.

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This foredeck awning (right photo) has good overhang on all edges to keep rain from bouncing off the deck and into the hatch.

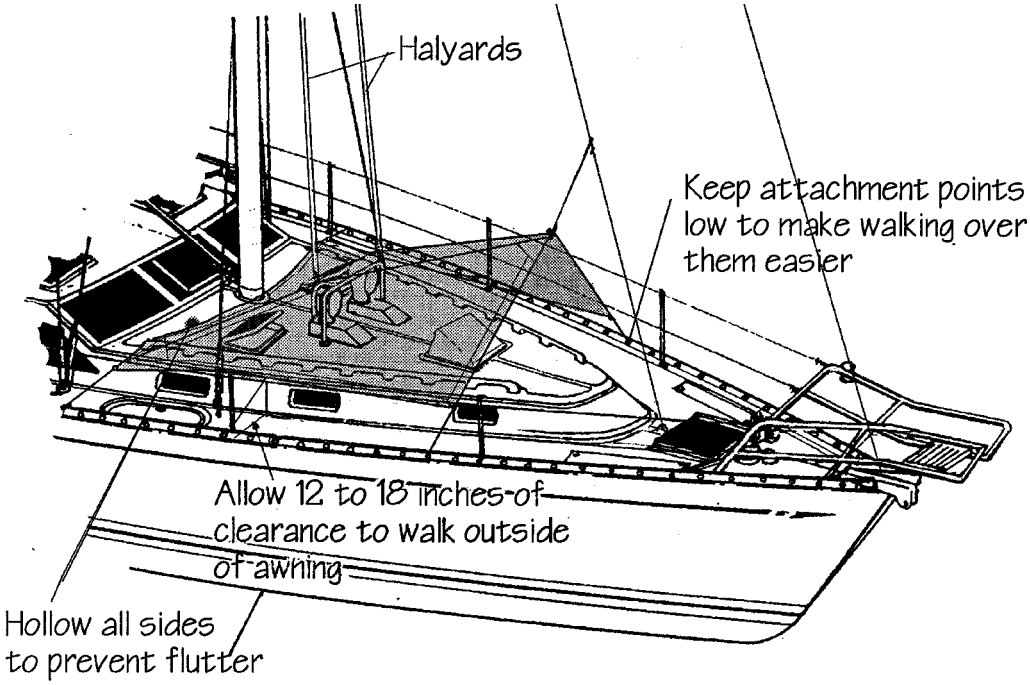
There are two problems, however. First, it will be tough to walk under or over the line to the headstay. Second, if the aft end were tied off at deck level it would act as a scoop, forcing more air into the hatch.

The illustration below shows the basic principles we've been discussing. For one thing, there is room to move around the awning on each side. With a trunk cabin you'll be tied to the handrails, which makes life simple. In a flush-deck situation, the lifeline stanchion bases are used.

Next, you need substantial overhang of the hatch edges to prevent rain from bouncing on the deck and through open hatches. Notice in the drawing how there are a couple of small hatches at the aft end opened forward. The forward hatch is opened aft, with its storm cover in place. This keeps the hatch dry in strong rains.

Finally, and perhaps most important, notice how the lower end of the awning is down on the deck, while the forward end is raised. This acts as a large wind scoop and the air so entrained will be forced down the open hatches. There will be far more breeze this way than if the back end of the awning were open and the breeze allowed to escape.

This process will even pressurize the aft-facing hatch, so that there is a strong breeze flowing through it.



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Sailing Awnings

At some point you'll need more than a dodger or pilothouse for sun protection. This is where the sailing awning comes in. A tougher concept to execute, this awning must clear rigging and booms and stand up to at least 25 knots of wind. Of course, it doesn't have to be nearly as large as in-port awnings.

With a single backstay and aft cockpit, a heavy pole can be tied to the backstay and balanced on the ends by tie lines to the pushpit. At the forward end you will need some vertical poles. We've had good luck with 1 1/4-inch-diameter x 0.083-inch-wall (31.8mm x 2.1mm) stainless steel tubing for the vertical support members with an athwartship batten placed between for support.

A clever dodger extension here with a frame attached to the dodger aft bow for forward support.The aft end of the awning has its own permanent bow for support.

Another approach is to use a tubular frame with a bimini top. This is usually the only approach that will work for amidships cockpits.

On *Intermezzo* we made up something that fit under the mizzen boom and then attached to the backstay. It had a full-length aluminum batten at the aft end, which we had to disconnect every time we tacked or jibed. We also had a smaller section of awning forward of the mizzen mast.

When we worked out the deck layout for *Intermezzo II* we welded in awning-pole sockets at the head of the cockpit coamings. An awning stretched from these vertical poles back to the split backstay (which went to each corner of the stern) and to the radar mast. There was a full-deck-width aluminum batten at the forward end between the poles. We then rigged "headstays" on each vertical pole to keep them from bending back. These were tied to a handrail forward on each side. Every 3 feet (0.9 m) down the side of the awning there was a tie to the top lifeline. When all this was snugged down we could sail upwind in a fresh breeze with the awning in place.

On *Sundeer*, with a mizzen mast to help, the sailing awning was rigged between the side shrouds of the mizzen and its headstay, with an aluminum-pole batten at the leading edge.

Another approach is to zip or lace an awning section onto the aft end of the cockpit dodger. This is simple to execute and will stand lots of wind, but it makes getting into and out of the cockpit a bother and limits headroom.

We've found that even in Alaska our cockpit awnings seem to be set. If the sun is out we want UV protection, and if it's raining, well, I hate to get my head wet!

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Two more views (left and below) of *Sundeer*'s sailing awning. A 1-inch-diameter (25mm) aluminum batten is tied to the mizzen headstays (with a forward guy so the headstay does not deflect aft). It is then tied on center to the mizzen mast and in the aft corners to mizzen side shrouds. The center of the awning is held up with a short guy to the mizzen radar platform.

This removable stainless arch hardware is rugged enough so that the sailing awning will fly in the strongest breezes.

A small bimini frame makes for an ideal sailing awning. When taking this approach, be sure to look at where the frame stows when folded down and what it interferes with (or just clears) in the stowed position.

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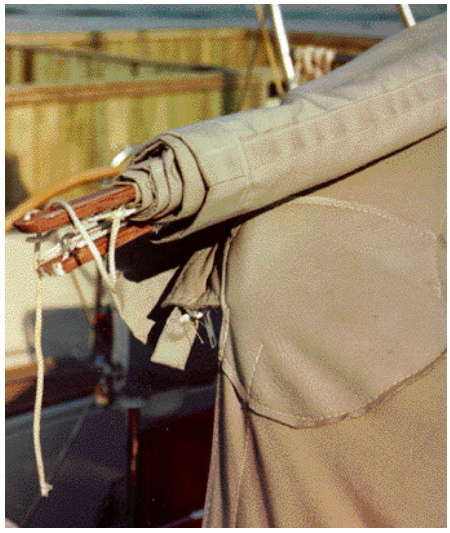
The bimini-style sailing awning aft of the dodger (top photo) allows you to look up at the sails if you step forward.

That's the weakness when the sailing awning is just added onto the aft end of the dodger.There is no way to see sail trim except by sticking your head out past the edge. On the other hand, a dodger extension (middle and bottom photos) is very easy to execute and when you furl the awning there's no frame to worry about.



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Note the short section of awning rolled below the main awning. When this section is unfurled, it covers the end of the cockpit (and helmsman if someone is steering). The forward awning is then rolled back from the mainmast and furled against the backstay.

Note in this dodger-extension photo how the aft batten is secured down to the pushpit, as well as to the standing backstay. In a strong breeze you would want to have some guys from the awning edge down to the top lifeline as well.

The long coamings on the Sundeer 64 are designed to provide protection to deck hatches and a good landing spot for awnings. These awnings can be left in place at sea, increasing the range of weather in which deck hatches can be left open.

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Do It Yourself or Professional?

Whether you should build your own awning or use a professional is very much a question of cost. With a conventional home-style sewing machine and heavy-duty needles, a grommet tool, a free weekend (or two), and a moderate-size living room you can make your own. On the other hand, an *experienced* awning builder will work in a lot of nice details that you might miss.

Fabric Choices

There are two approaches to fabric. The first is using an acrylic-fiber-based material such as Acrylan or Sunbrella. Acrylics are quite strong, resist sun damage well, and breathe slightly in order to resist forming mildew on their undersides. Most acrylics have a silicone-based water-proofing applied to improve drip resistance. This wears off with time, which is what causes the fabric to drip when you rub against it. You can, however, recoat with a silicone based material. Scotchguard and Rain Check are examples; some folks even use Thompsons Waterseal, made for concrete, as a second choice.

Acrylic fabrics are available in different weights. At the light end of the scale you have 7-ounce (per square yard) materials that are fine for occasional use. For more constant use, 9-ounce works better, while 12-ounce is used for full covers and/or sailing awnings which must withstand more wind force.

An alternative fabric is available in the form of a PVC-coated nylon scrim such as Weblon. These are extremely tough (used for truck tarps), *waterproof*, and 20 to 30 percent less money than acrylics.

But the lack of breathability creates a mildew problem (cleanable with bleach and water), and these fabrics can crack in colder climates.

Old sails, especially those made from softer cruising cloth, will do the trick at little or no cost. Dacron, however, has several drawbacks. It doesn't last that well in the sun, although you can get a season or two from most old sails if they're not too far gone. Also, the stiffer the fabric, the noisier it will be.

For cruising in the tropics, light colors, preferably white, are best, as they *reflect* back most of the heat. A dark blue awning will be 10 degrees hotter.

Thread

Your awning is only as strong as its weakest link, usually the stitching. A *long-strand polyester* thread should be used for best results, with a size between #12 and #16. If you want the ultimate in thread consider the Goretex M-1000, which is guaranteed to outlast your fabric. The cost, however, is 10 to 15 times that of long-strand polyester.

Stitching

There are several ways to go about stitching. Some professionals use a double-needle machine that provides two rows of parallel stitches. This is quick and saves money. The problem is that both rows of stitching are exposed to the sun. When they are about to quit on you in a gust of wind, there will be no warning.

"Weather stitching," a better approach, is suggested by John Brimberry of Anacapa Canvas in Ventura, California. "You take two pieces of cloth, place them back to back, and sew the first row of stitching in 1/2 inch (12.7 mm) from the edge. The fabric is then spread out and a second row (top stitch) is put through the folded section of cloth and its mate. This exposes just one row of thread to the sun. When it rots, you still have a second protected row of stitching."

This allows time to check for problems and to resew the awning before disaster strikes.

Reinforcement Points

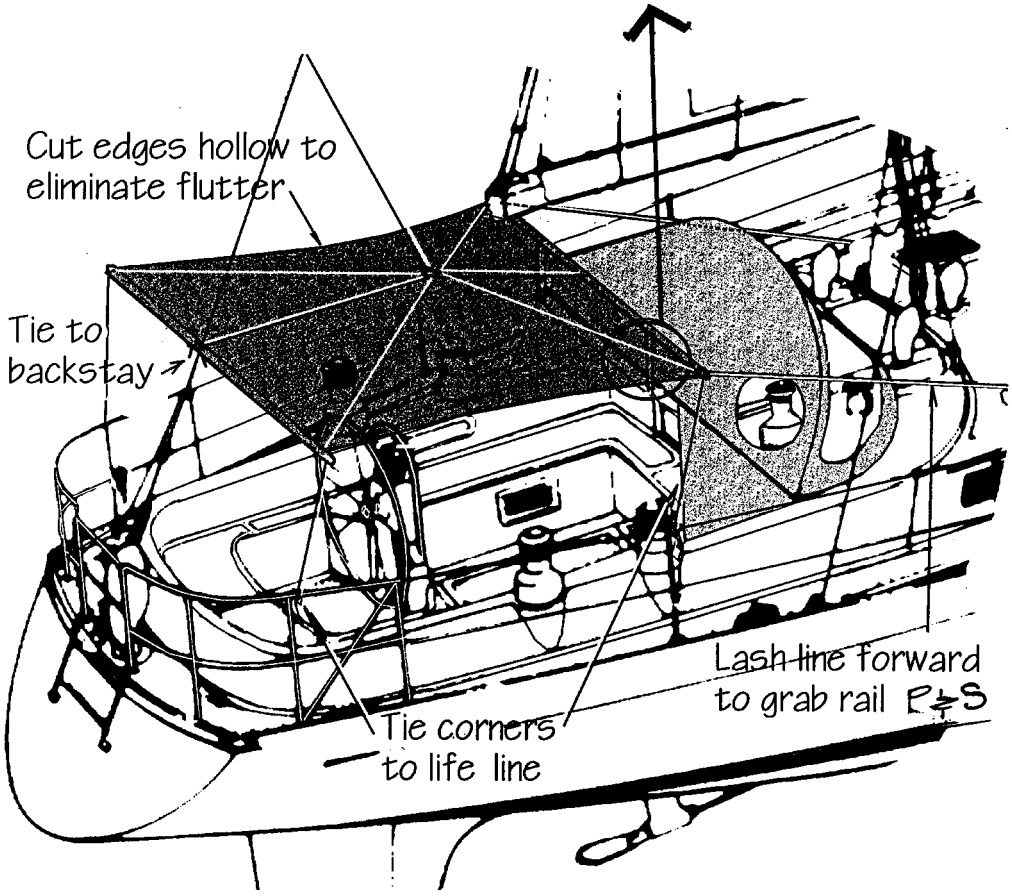
Each attachment point should be reinforced. At major connections on the front and back of the awning it's best have three or four extra layers of cloth to spread the load. The largest should be 6 inches in diameter (from the grommet center) with succeeding patches stepped in an inch apiece.

Grommets should be installed in from the edge about one-and-a-half times grommet diameter.

To keep the edges of the awning under control in windy conditions, put grommets into the edges every 5 to 6 feet (1.5 m to 1.8 m)(these need only a single reinforcing patch).

The strains along the center and outer edges will be considerable. Rather than carry this load directly in the cloth it is better to use a piece of light line run in the hem. A quarter-inch or 5/16-inch (6.4mm or 7.9mm) works well.

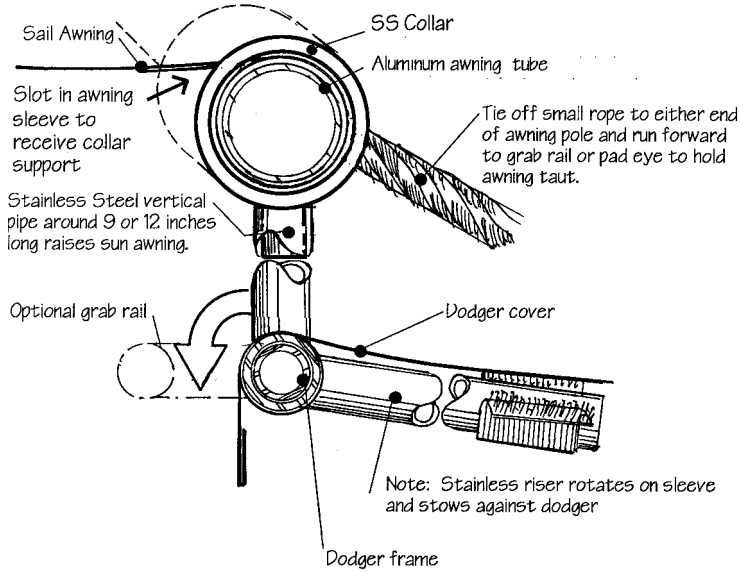
To keep edges from flapping, they should be hollowed, the same way as the leech of a jib. In a 20-foot (6.1m) length, 3 to 4 inches (76.2 mm to 101.6 mm) of hollow works well.



A simple yet effective way to rig a sailing awning over the cockpit is to start with the aft dodger bows for a support point. A couple of vertical pipes are clamped to the aft dodger support (the clamping hardware is readily available). An aluminum or fiberglass pipe batten is then supported by these two vertical struts. The batten forms the leading edge of the sailing awning. A strap is run from the top of the support forward to a handrail or padeye to provide support so that the awning does not rotate the vertical struts aft.

The aft end of the sailing awning is supported by another pipe batten, this one tied to the front of the backstay. The aft corners of the awning are tied to the pushpit rail. If the awning is much over 5 feet (1.54 m) in length, intermediate tie-downs to the lifeline will be required.

The center of the awning is lifted up, tent style, by a topping lift which runs through a block that has been seized onto the backstay. When you want to catch rain, ease the topping lift and pull the awning down to the binnacle to make the rainwater puddle. A hose is led from the low point of the awning to your tanks.



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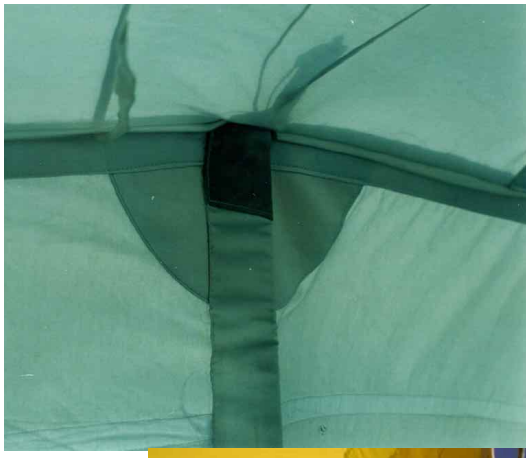

These two photos show several layers of reinforcement to distribute load into the awning fabric. The patches above are just a little on the small size.

Any time the awning has to go around a stay, allow lots of clearance for fabric stretch and the awning to move around under load. If watertightness is an issue, a tapered "sock" with a velcro closure can be incorporated around the stay. A zipper with a covering flap is best at keeping rain at bay for horizontal joints. However, if leakage is not an issue we prefer to use snaps.

Awning Battens

By adding athwartships battens, the awning can be stabilized in squally winds and maintain a nice shape. But battens add a layer of complexity to the awning and make it more difficult to stow unless there is space to roll awning and battens together and stow it along the rail or sidedeck.

Battens must be strong and closely spaced. Today, best use can be made from 3/4-inch-diameter (19.1mm) fiberglass stock (the same as is used in full-batten sails) for all but the smallest awnings. Aluminum, timber, and even heavy-walled PVC pipe will work in a pinch. If the battens are placed at each seam, the seam itself can act as a batten pocket.

If this seems a bit extreme, visualize your boat in a lovely Marquesan anchorage. Light winds on the nose suddenly turn into a 35-knot squall on the *beam*. That beam wind is trying to break those battens, and it will if they're not stout!

Zippers

It may be necessary to have a zipper or two to fit around the topping lift or other rigging. These should be of the heaviest gauge available and placed where they won't drip in rainy weather on an open hatch or seated person. To reduce dripping, sew a flap *over* the zipper.

Chafe Patches

Anywhere the awning touches, such as the end of the boom, at a gallows, or at the mainmast, there will be lots of chafe. Use generous chafe patches. Nylon-reinforced PVC works, as do Mylar and leather.

Rigging

The most complex part of *tuning* an awning installation is getting the rigging right. Done correctly, two people should be able to set or remove an awning in a matter of minutes (after a little practice). To tie our awnings in place we use 3/16-inch (4.8mm) Dacron braid. It seats well on rigging and provides adequate strength. Half-hitches, with a bow are easiest to untie in a hurry (if it gets really windy!).

The awning must set so that there are no low spots to collect water. With battens, a slight tilt to one side or the other will do the trick. Otherwise, the center should be crowned. Sometimes attaching the main halyard is all you need.

When battens are used, the awning will rest on the main boom or be supported by a series of bridles held aloft by the main halyard.

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Four different approaches to rigging. The first three will be reasonable easy to set (and furl).

However, the bottom photo shows a very complex awning that will be time-consuming to work with and prone to rigging fouls. With a mizzen mast this main awning would be much more effective if the battens were done away with and the edges supported by a line run between mizzen and main cap shrouds. The lifting bridle, attached to the main/mizzen halyards could also be simplified substantially.

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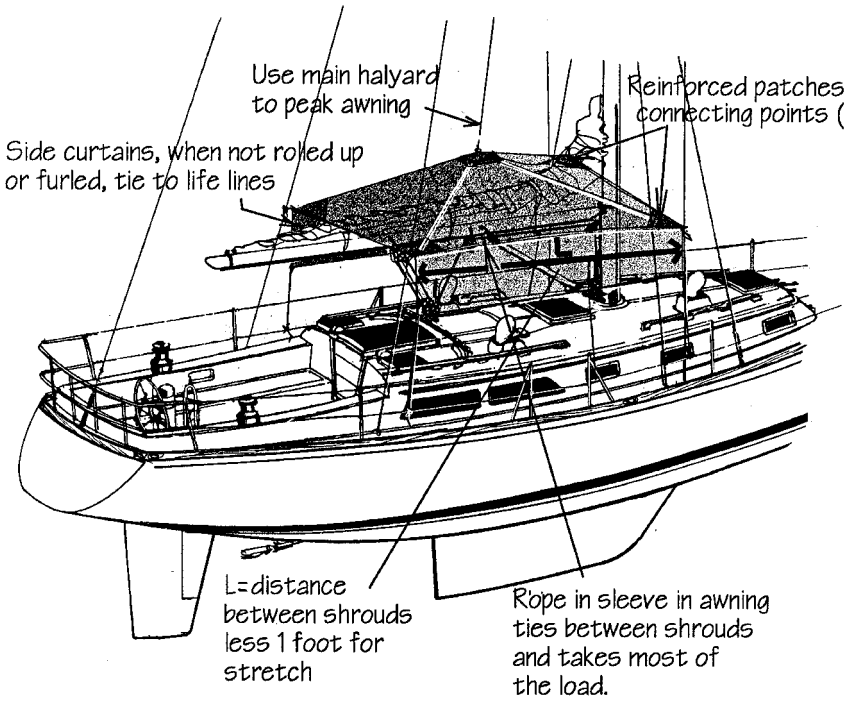

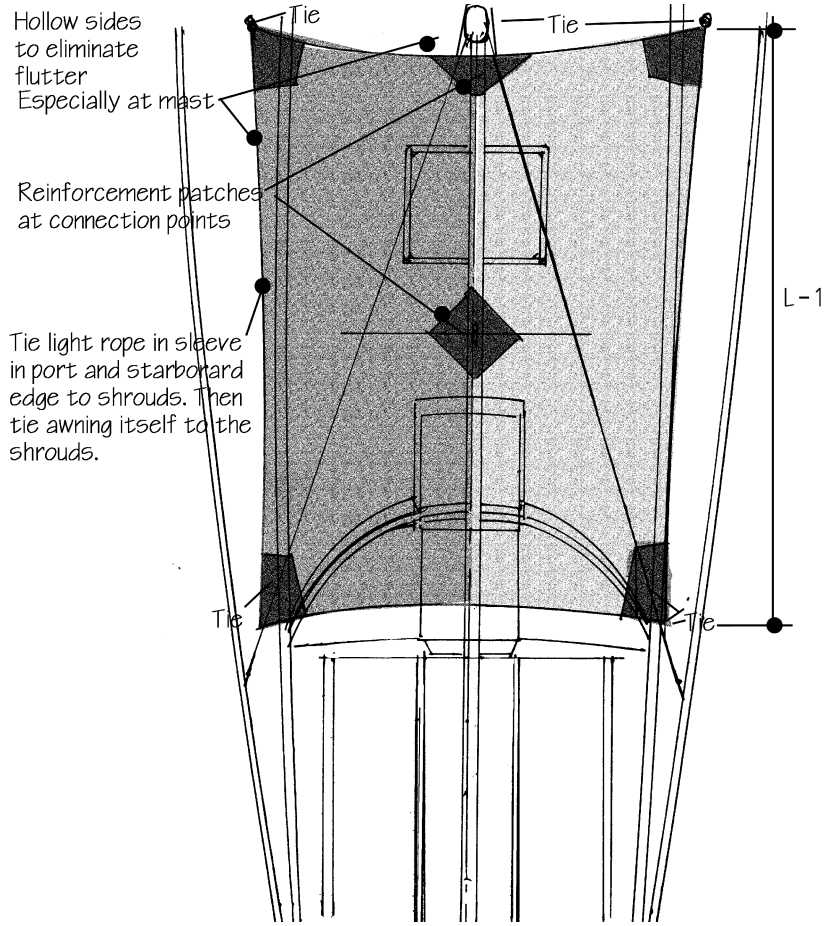

The following four drawings illustrate the basic points we've been discussing in the preceding section.

When the time comes to make a new awning, or modify an existing one, these may be of help with your awning maker.

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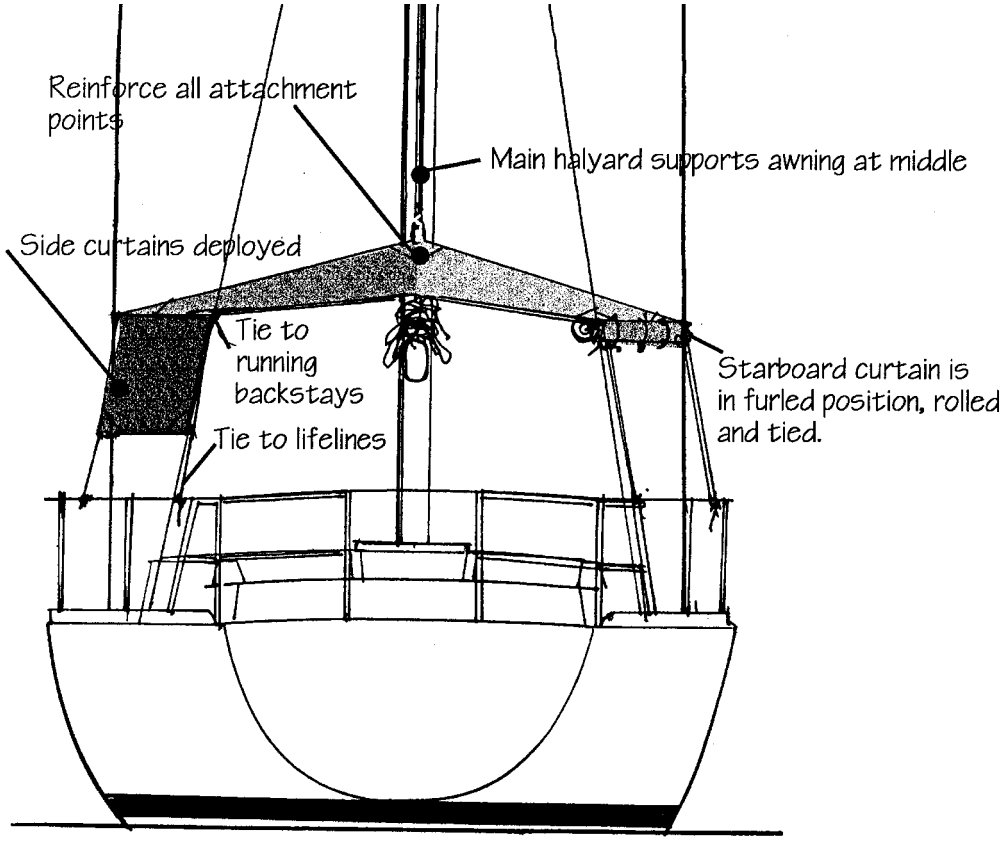
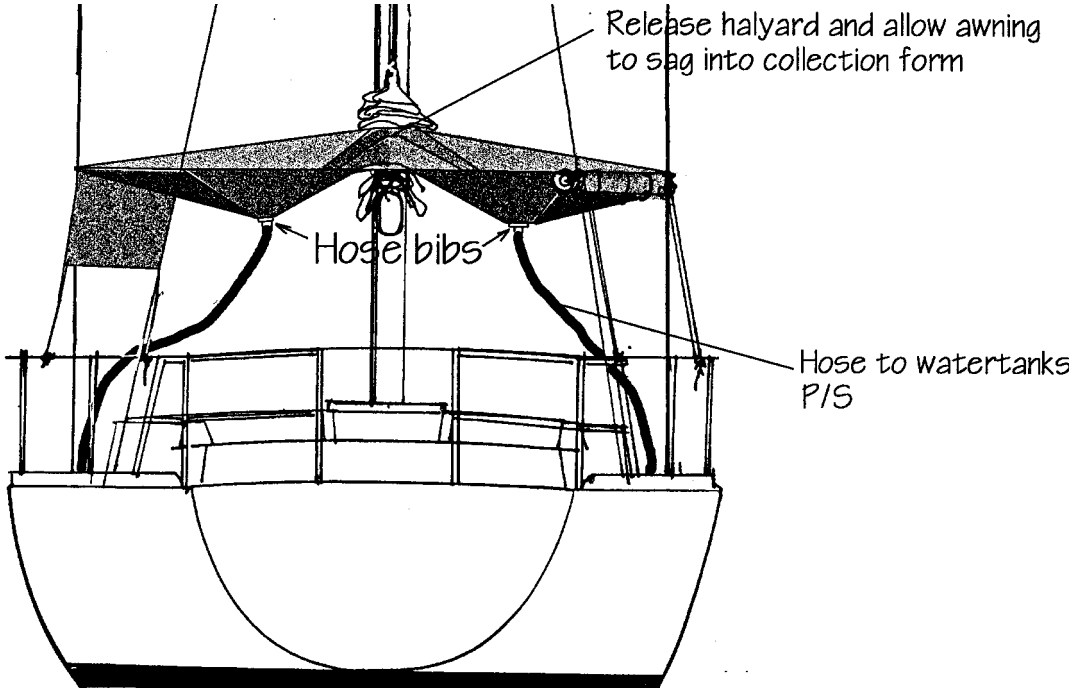


Two stern views of our ideal awning. In the top drawing the awning is rigged for shade, with the center lifted by the main halyard so as not to trap water. This also gives maximum headroom. In the bottom sketch the halyard has been eased, and the awning rests on the main boom. The two hoses are then pulled down to form catchments on each side of the boom.



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Catching Rain

Properly set up in the tropics, a moderately-sized awning will keep the freshwater tanks full even if you take long freshwater showers and rinses every time you come back from a swim.

The key is to get the rain water to collect in one or two spots where it can be easily drained to the tank.

If there are battens in the awning, some form of an edge or shade curtain with a gutter is required. With the awning tilted toward the gutter, the rain runs across the boat, into the gutter, and then to the end of the gutter where a hose is attached. Keeping the gutter open is sometimes a problem. Dropping in a few beer or soda cans will solve this.

Non-battened awnings are somewhat easier to deal with. A single low spot (or two, if the awning is over the main boom) is developed by pulling down on the hose attachment.

The simplest way to tie in a hose is with a nylon through-hull fitting. Simply sew on a couple of reinforcing patches, then cut a hole for the through-hull fitting, clamp the through-hull halves, and then attach a hose. A piece of light line tied to the fitting will serve to pull the awning down.

Because the runoff can be substantial, large fittings and hose should be used. For awnings of 100 square feet (9.3-square-meters), a 1-inch-inside-diameter (25.4mm) hose will work. One hundred fifty square feet (13.9-square-meters) would be better with 1.5-inch (38.1mm), and much beyond this in area should use a 2-inch (50.8mm) hose.

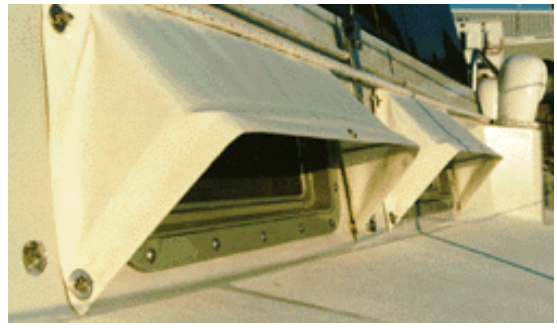
Getting cruising awnings right takes time and patience. Expect to make two or three trips to the shop floor for tuning. And play with the rigging the first half-dozen times you set the awning. Gradually, the ultimate combination will come into sight.

Special Awnings

In some parts of the world, as you're working through coral, it's necessary to spend long periods of time standing watch: you may be aloft for hours at a time. Special awnings, if attachment points are available, should be made for these conditions. If something suitable can't be worked out, carry an umbrella.

There are all sorts of ways to get water from the awning to the tanks. The simplest is usually a nylon through-hull fitting or hose fitting clamped against several extra layers of enforcing. A cone can be sewn up as in the other two photos, but this is quite a bit more work. Regardless of which system you employ, some means of pulling or adjusting a low spot in the awning will be required.

Using polypropylene or nylon-mesh screen as a partial sun shade (top photo) has several advantages. It blocks some sunlight, but allows you to see out. It lets in some air flow. And finally, it is very light and easy to store.



We frequently fit small shades like this over opening ports to keep rain and light spray from getting below.

Whenever possible, we try to design long coamings that form a base to attach low awnings to and act as spray shields for the hatches they shelter. Awnings like this help keep rain and spray from finding its way below when we are at sea. An awning like this can be left up until you start to see solid water on deck.

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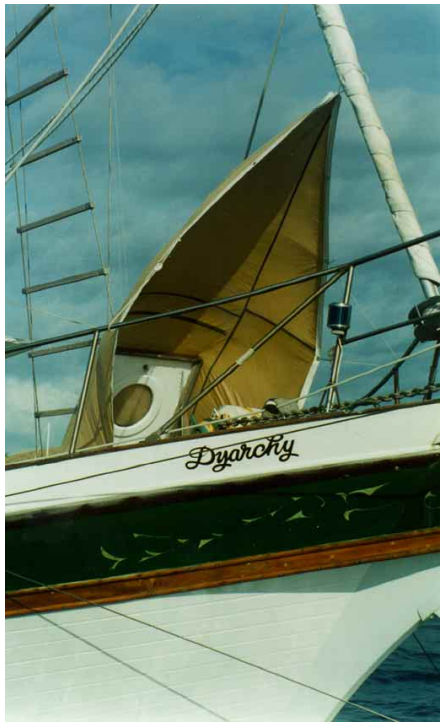
WIND SCOOPS

Wind scoops can be a wonderful air-conducting aid when it is hot out and the breeze is light.

Design-wise, there are a series of features that are desirable. The scoop needs to be designed so that it is versatile in how it is rigged. Ideally, it will be usable facing forward, aft, or to the side (for use when tied to a dock).

Battens or careful rigging are necessary to keep it quiet when there is a moderate breeze blowing (nothing is so annoying at night as the luffing of a scoop over your head, unless it is sweltering in a hot, sticky bunk because of insufficient air flow).

Give some thought to keeping rain at bay. Finally, you will want to be able to rig and furl the scoop quickly.



Three conventional wind scoops. The scoop (above and left) will be quietest, as it is stabilized with battens.

In the bottom photo a small awning protects the scoop and hatch from rain.

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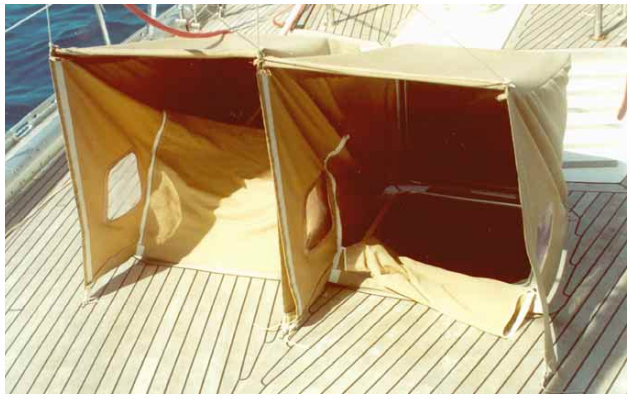
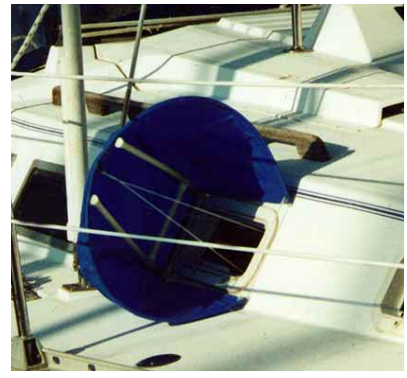


Look at these reversed pram hoods (left and above). A simple batten arrangement at the edges keeps the fronts open and the cloth tight. A cloth "baffle" prevents water from bouncing off the deck and into the open hatch behind.

A nicely made scoop (above) stretched tight to reduce luffing noise. Note how the hatch is opened aft. This will still allow copious amounts of wind below but will reduce rain's ability to get to the interior.



A clever wind scoop-design based on tent technology (left). Available from Professional Packaging in Muskogee, Oklahoma, these scoops are light, tight-fitting, and should do an excellent job of getting air below. If an awning is placed over the scoop, rain won't be a problem either. (Professional Packaging photos)

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MISCELLANEOUS CANVAS WORK

One of the nice things about canvas work is that it is so easy to execute. Whether you have your local cover-maker do the work or throw it together on board with your own machine, there are all sorts of ways of making life aboard more pleasant.

Where do you stow your harness, flashlights and other watch safety gear? How about a nice canvas catch-all, which can be rolled away when you are in port?

Closing off the companionway is much easier with a canvas door than with washboards. In the tropics the plastic can be replaced with netting to allow some air flow and keep the bugs at bay.

Some form of protection on rigging screws is desirable in that it protects sails and sheets from chafe. However, you want a system that breathes and that is easy to remove for periodic inspection of the toggles, pins, and screw threads. Canvas boots fit the bill nicely. They can be attached with Velcro or zippers.

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Dealing with halyard and sheet tails is always a problem. Here are several approaches using canvas bags.

Are you tired of fighting with the front end of your mainsail cover? Try a zipper instead — much quicker, and in a strong breeze it will keep the cover from vibrating.

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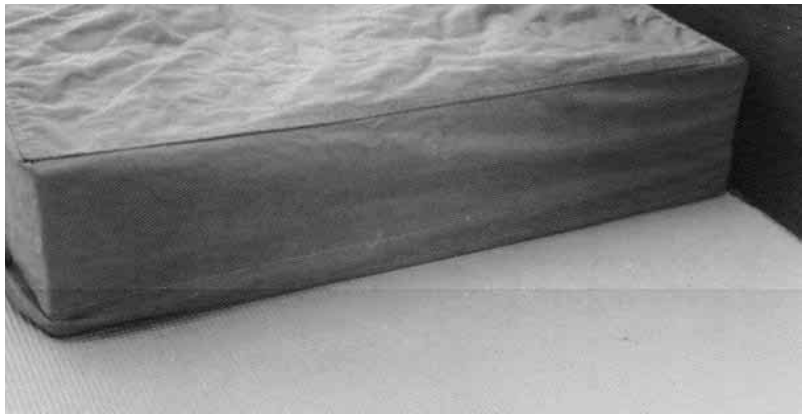
STORM COVERS

Storm covers are an integral part of your offshore preparation. These covers protect the hatch edges from direct spray and waves and will keep a marginal hatch watertight into much heavier conditions than might otherwise be the case. The ingredients are a tight-fitting cover and a substantial means of attachment.



Intermezzo had timber/plastic-composite hatches that were prone to leaking around their gaskets and in the corners. These tight-fitting covers fastened to glove buttons screwed into the teak hatch coamings.

On modern yachts, awning track is frequently used for attachment. You do have to be careful with the sharp corners, however, so that they don't catch your feet or sails. Note how the corner is rounded off in the photo to the left.

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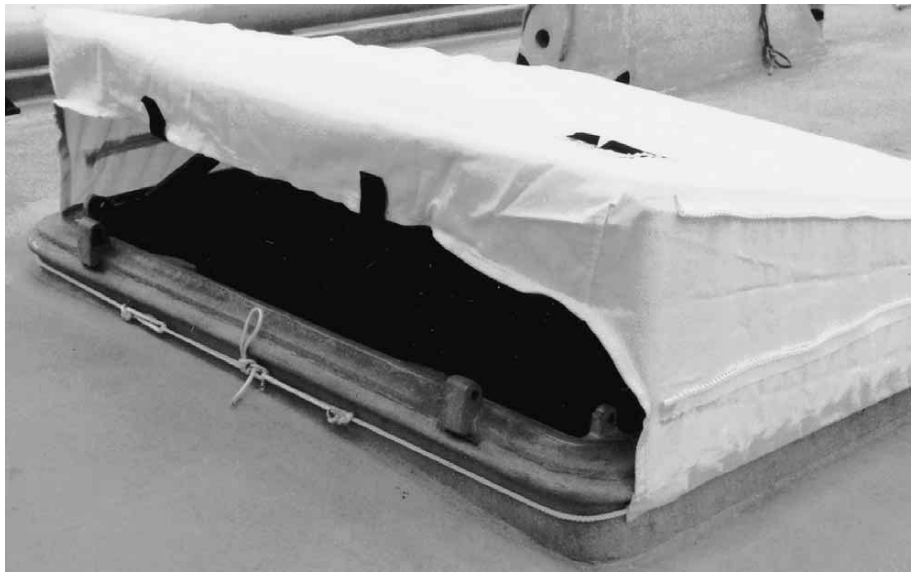
We first saw this type of storm cover on Kelly Archer's *Mistral*. We had these versions made for *Sundeer* and have used them on all of our boats since. They offer the advantages of a storm cover and spray protector for a cracked hatch in moderate conditions. When it is raining really hard, we find that leaving the cover on under the awnings helps keep the interior dry.



Having shown you all sorts of sophisticated canvas work, we wanted to close with a very simple awning. You can frequently get by with something as simple as a $10 reinforced-nylon tarp from the hardware store. The price is right; they can generally be made to do the job; they are waterproof; and they do not mildew. What more could you ask for?

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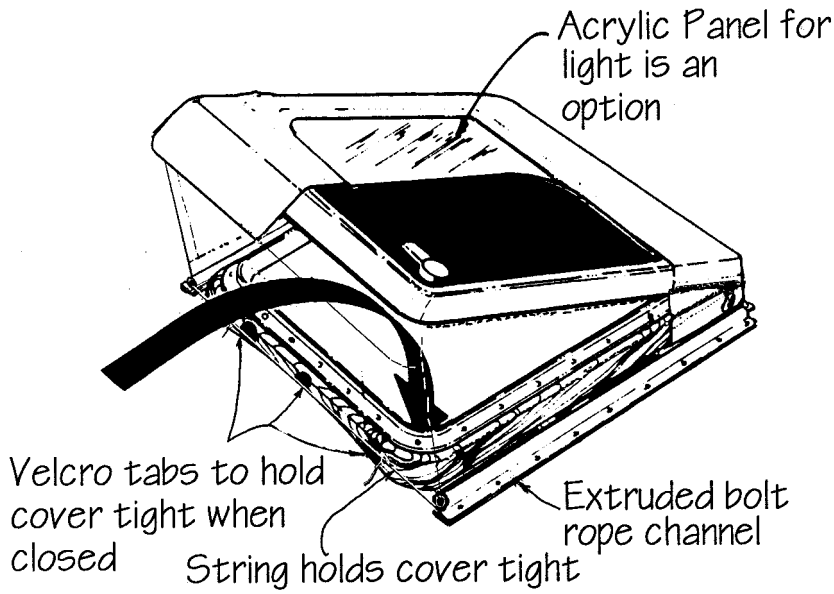
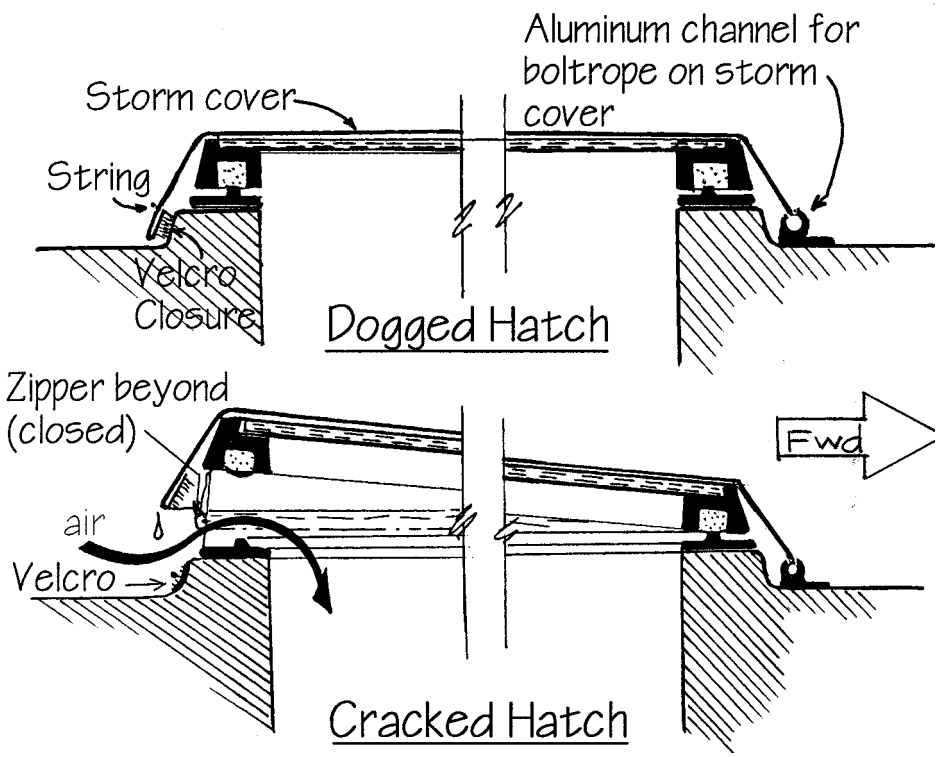


Adjustable storm covers are quite easy to fabricate as long as the cover-maker has a good sketch from which to work. They typically cost between $65 and $100.

There are several key factors. The first is the attachment., whichmust be secure- Odds are you'll have waves breaking across the deck while these are in use.

The side "curtains" are for use when you want to crack the hatch, but don't want to chance waves slapping the topsides and getting below.

Specify heavy-duty zippers for the curtain closures.



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