

1. Heave to with the boat and try to avoid forward movement. Wear your safety harness.
2. Disconnect MONITOR pendulum lines from the tiller or wheel adapter and lock the pendulum in the middle by taking the lines to a cleat.
3. Place the wedge between the pendulum and the strutguard. Secure the wedge by attaching it to the strutguard with clevis pins. Use safety lines.
4. Remove the servo paddle assembly by removing the cotter ring and the hinge pin. Store the servo assembly.
5. Attach MRUD assembly to MONITOR. This can be done in different ways and it should have been practiced at the dock. One way is to hold the paddle upside down with the help of the attached lines when you put the special tapered hinge pin through the hole in the hinge block. The pin is attached to the hinge with a safety line. When the pin is in place the cotter ring is used to keep the hinge pin in place. Another method to attach MRUD is to let it float behind the MONITOR while the hinge pin is put in place. Use at least one spectra line as a safety line. We have also seen a boson chair being used to secure the person doing the work safely. Consider using preventer lines to stop side swing.
6. Next step is to secure the upper spectra lines which are attached to the eye bolts. The lines have a bowline with a tail close to the rudder blade. The lines should go around the corner of the strutguard where it is welded to the leg of the frame. The line should then go down to the bowline and then up to the strutguard again. By running the line back and forth you have now a very simple and practical "block and tackle" purchase system. The upper spectra lines will stretch very little and you have an easy system to make the lines tight. Do the same thing with the opposite upper line.

If possible, wait for good weather and plan all procedures in advance. The lower lines should be lead to a cleat or a winch on deck. You have now secured the pendulum with the wedge and the spectra lines are supporting the rudder the same way your mast is

supported with uppers and lowers-only this "mast" is upside down. Check for chaffing in the spectra lines after use and add or replace lines as necessary.

Do not over tighten the support lines. Experiment with the tension. If the lines are too tight, you will have problems turning the MRUD.

Your MONITOR now has a very rigid and strong spade rudder ready to steer your boat. Of course you need to balance your boat carefully and possibly reduce sails somewhat. Compared to your boat's rudder you may feel that the MRUD is too small to control your boat. However, we have purposely kept it this way (will not break, easy to store, easier to install, etc.). With a normal boat there are very small corrections with the rudder unless you carry too much sail or have ignored balancing the sail plan. The large size of the boat's main rudder is necessary for maneuverability which is needed when you dock the boat or are on a race course. With MRUD in the open ocean and a course to steer you can make slow corrections. At your destination you can anchor or get help for the last few miles if you feel that you cannot maneuver in tight corners.

You can now steer by three different methods.

1 *By hand:* Grab the counterweight and move it. You are now steering by hand. You can rig up lines to the counterweight and steer from any position on the boat.

2 *With Light Air MONITOR airvane:* Your MONITOR will now work as an auxiliary rudder self-steering windvane. The spectra tension lines provide some friction. You might find that the performance improves if you ease the spectra lines just a little bit if conditions permit.

3 *With a small autopilot:* A small tiller pilot can be rigged up to the counter weight. The tiller pilot will steer a magnetic compass course.

Manufactured and sold factory direct by

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MRUD

MONITOR EMERGENCY RUDDER

In the 1994-95 BOC (Single-handed Around the World Race) seven out of eleven boats had MONITOR windvanes. In the 1998-99 Around Alone (same race, different sponsor) the five boats that used windvanes all used the MONITOR windvane. Again, no other windvane was used in the race.

The MONITOR'S servo-pendulum system had once again been proven the best self steering principle.

Since the BOC 1986-87 there has not been a single auxiliary rudder self steering system in the race.

It was our goal to make an emergency rudder that would work for the BOC and Around Alone boats. It is now being tested in real conditions for 2000 NM on such a boat. That should satisfy the requirements for normal cruising boats.

In Heavy Weather Sailing by Adlard Coles

The author remarks, "Breakages of rudders are almost as common as breakages of masts."

MONITOR, THE SELF STEERING SOLUTION

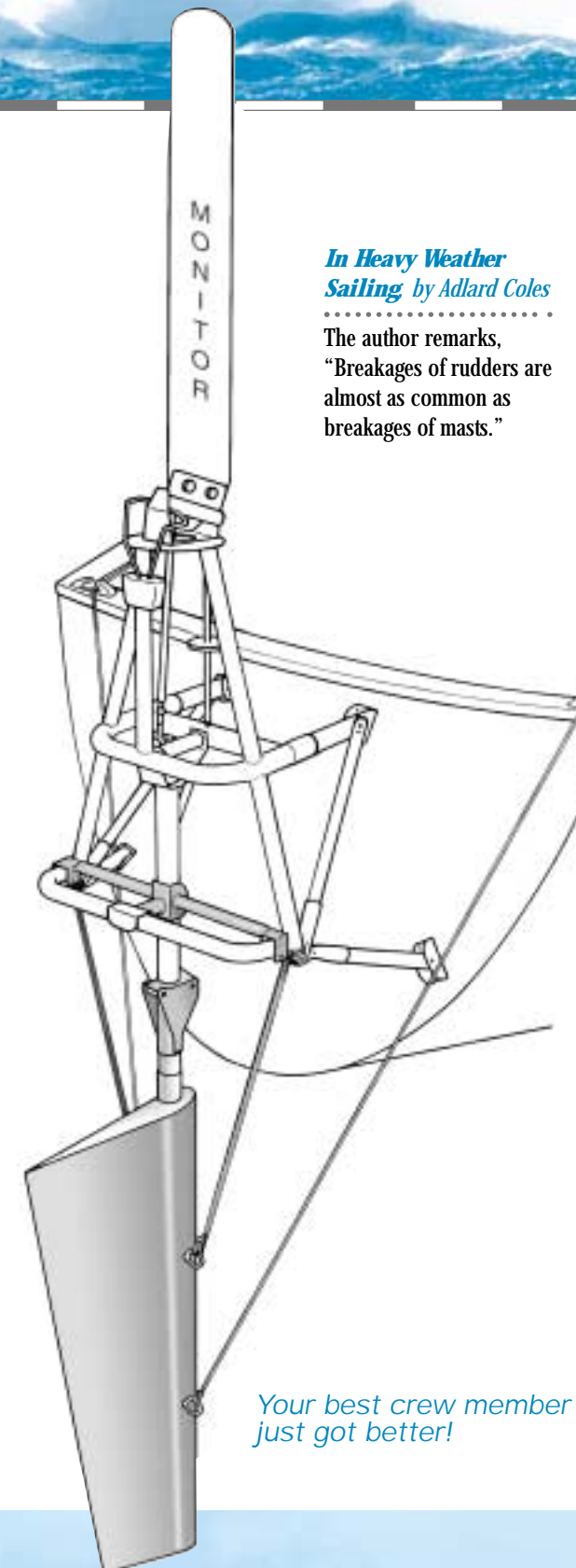
There are many different systems of windvane self-steering. Trim tab, auxiliary rudder and servo pendulum systems are just a few. The development of the servo-pendulum principle represented a breakthrough in windvane self-steering. As the boat moves faster with stronger winds, the power of the servo oar increases and this gives ample power to turn the boat's own large rudder. The MONITOR steering system is powerful and has positive yaw dampening which makes it possible to steer straight in difficult downwind conditions. The more it blows, the better the MONITOR likes it. Consensus of opinion is that the servo-pendulum principle is the best method of self steering for most boats.

MRUD, THE EMERGENCY RUDDER

Our challenge was to be able to convert the MONITOR aboard a 50 foot BOC boat, in the roaring forties, into a true emergency rudder. We knew that the strength required for survival in these conditions would guarantee a more than adequate back up system for cruisers having the misfortune to lose their boat's rudder. MRUD has been designed to meet the following criteria:

- Strong and dependable
- Reasonably easy to install at sea
- Easy to store on board
- Affordable

MRUD offers a unique solution to a serious problem.



Your best crew member just got better!

The MONITOR has survived the toughest oceans in the world, sailed through seas and weather which would qualify as a cruiser's nightmare and kept on steering.

The BOC and Around Alone are unparalleled as a test of equipment. These boats not only round Cape Horn, they stay in the Southern Ocean lower latitudes for several months of brutal weather and towering seas.

MRUD was developed with these conditions in mind.



Finally a solution to the nightmare of losing your boat's main rudder.

Many attempts have been made to make individual emergency rudders. The majority require very expensive custom engineering and manufacturing.

Excessive weight and size make these custom rudders difficult to store and install at sea, and, even so most have questionable performance and reliability.

The beauty of the MONITOR MRUD system is that it uses the regular MONITOR servo pendulum system which is converted to an emergency rudder. The standard MONITOR mounting system is extremely strong because it has four stainless steel mounting tubes that are spread apart to distribute the load over a larger area. If the mounting tubes are long, diagonal tubes are added for additional strength.

Half the emergency rudder problem is the method of attachment. With the MONITOR in place the attachment system is already there! The MONITOR mounting system is strong enough to support a large, rigid rudder.

The challenge is to make an emergency rudder that can handle side loads, which occur in rough weather. The new stainless steel wedge supports the MONITOR pendulum shaft from side to forward loads that occur in broaches as well as from water rushing by. The MRUD also has two sets of eyebolts on the rudder blade itself. Low stretch spectra support lines are attached to the eyebolts and lead to suitable attachment points on the MONITOR frame and boat. They often lead to winches with temporary blocks.

The MONITOR MRUD is highly efficient because it has a high lift NACA profile and because it is located behind the boat. The size of the emergency rudder can therefore be smaller making it more practical to store and to mount, yet still large enough to steer a 50 foot boat.

The MONITOR principle works on the boat's own rudder rather than using an auxiliary rudder/trintab system like our own *auto-helm* windvane. Such systems can be used as emergency rudders, but they are not in general the best principle for normal self steering.

If the main reason for buying an auxiliary rudder windvane is to have an emergency rudder you should look into other options. It would almost be like sailing around with your life raft inflated- just in case the boat would sink.

If a boat experiences weather that is bad enough to break the boat's main rudder those conditions are probably bad enough to do severe damage to an auxiliary rudder type of self steering. The damaged main rudder can also damage the auxiliary rudder. The servo pendulum gear does not have this problem. It has the ability to move to the side, out of the way, and it has an easily replaced safety tube in case of an overload situation.

We prefer to use the best principle for normal self steering, (servo pendulum) and in the unlikely situation that the boat's own rudder is broken, the strong, stainless steel MRUD can be mounted at sea and steer the boat to safety. You can steer by hand by moving the counterweight from left to right, by using the regular MONITOR airvane or by hooking up a small inexpensive autopilot to the MONITOR counterweight.

A pin with a cotter ring holds the servo paddle which is removed and replaced by the much larger emergency rudder assembly. The stainless steel rudder is foam filled for strength and flotation. The hinge has a special tapered hinge pin to make it easier to mount at sea. The pendulum is locked and supported by a stainless steel wedge between the pendulum and the strutguard. Spectra lines add extra support for front and side loads, just the way a mast is stayed.

The MRUD is similar to your life raft. We hope that you never have to use it, but if you do it will be the most important piece of gear on board.

Can you afford to be without it?

A boat without a rudder is a serious matter and these instructions are intended to make sure that your MRUD is understood and used properly in the event of rudder failure on your boat.

We strongly recommend that you fit MRUD to your MONITOR before you leave on your next long cruise and even use it on a short test sail. Should the installation become necessary, you may be in rough seas. If you practice putting MRUD on in port, it will be much easier to repeat the installation later at sea.

Your MRUD assembly contains:

- Complete hinge assembly
- Safety tube and spare
- Special tapered hinge pin
- Stainless steel "wedge" with bolts
- Upper Spectra support lines
- Lower Spectra support lines
- Foam filled Stainless steel Emergency Rudder
- Bolts for clamp tubes
- Storage bag with attachments for hoisting

When you transform the MONITOR to a much larger, rigged emergency rudder the loads are greatly increased and you should make sure that your MONITOR is mounted as follows:

• Backing Plates

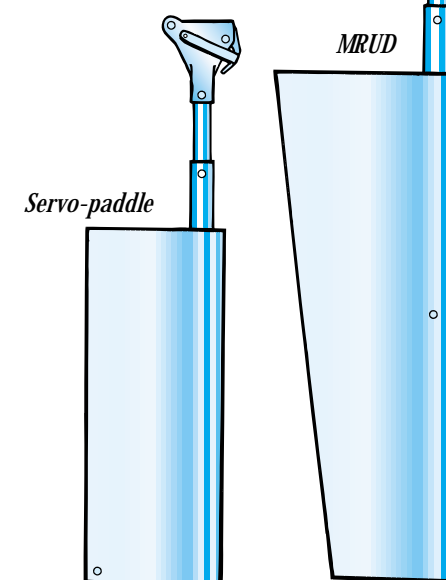
The MONITOR mounting brackets do not normally need backing plates. If your boat is a light weight core construction you might need them. If in doubt consult the factory.

• Strutguard

Since 1991 all MONITOR units built have strutguards. This protective "bumper" goes behind the pendulum and connects the legs of the main frame with each other. It also makes the main frame a lot stronger. Older MONITORS did not have the strutguard but it can be retrofitted. With the use of MRUD the MONITOR has to have a strutguard because this is where the stainless wedge that holds and supports the pendulum is placed.

• Test the fit of the wedge

Place the stainless steel wedge between the strutguard and the pendulum. The horizontal distance have some variation and after the wedge is in place the telescoping tubes have to be drilled and bolted to fit each individual MONITOR. Use the starter hole, drill and through bolt with the supplied bolts. You might have to "massage" the wedge a little to make it fit easily. We suggest that you secure all the pieces with safety lines when working over water.



• Through bolt Clamp Tubes*

The lower mounting tubes are attached to the frame with clamp tubes that are attached to the bottom of the frame legs. To be absolutely sure that the tubes cannot escape from the clamp tube both fittings should be through bolted with small stainless steel bolts (included).

*Not applicable after serial # 56870298.

• Diagonals

The MONITOR frame is attached to the hull in four places. With longer mounting tubes we sometimes add some side diagonal tubes which make the installation tremendously strong. With the use of MRUD some installations should add diagonals. Consult the MONITOR factory for advice.

Around Alone - Leg 2 en route towards New Zealand

Leg 1 is over, South Carolina arrived in Cape Town without a rudder, and what will be documented is that the 2,300 miles are, without a doubt, the most difficult and demanding 2,300 miles I have ever sailed - or ever want to sail.

It was a far more difficult proposition than my 2,500 mile jury rig sail in the Southern Ocean around Cape Horn to the Falkland Islands after my dimasting in the 1994-95 BOC race.

MRUD was a very significant part of my emergency rudder system, and without it - I think it would have been difficult for me to make it into Cape Town as quickly as I did.

I can only strongly recommend that all MONITOR users going offshore take the MRUD system as their emergency steering system. It will, without any doubt, get them into port should the ultimate mishap of a broken rudder occur. I would strongly recommend they try it out beforehand.

The MONITOR has served me well during Leg 1 as it always has during two BOC's on Cornwall.

Thanks, Best Regards
Robin Davie