## *CONTESSA 32 CLASS ASSOCIATION TECHNICAL PAPER*

# *RUDDER REMOVAL*

## DOCUMENT INFORMATION

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## OVERVIEW

On occasion it necessary to remove the rudder to complete some repairs to your Contessa 32. Common repairs that will require rudder removal include replacement of the rudder bushes, heel-plate bearing and working on the engine stern gear such as propeller, prop shaft and sterntube bearing.

While only a sadist would enjoy taking a chisel or angle grinder to the hull of their boat it is a necessary evil at times and, if this guide is followed, is easily returned to normal. Having done it once or twice the removal process can be completed in 30 min and should hold no great concern for the owner.

This technical paper contains the thoughts and procedure followed by a number of owners. For details of the general arrangement of the rudder, skeg, skeg-cap and rudder bearings see the Jeremy Rogers sketch that can be downloaded from the Co32 Technical library. **It is strongly recommended you view this before removing your rudder.**

## REMOVAL PROCESS

Identify the heel plate, it is close to the bottom of the skeg. You will see the heel plate runs into the Skeg at an angle of approximately 90° to the leading edge of the rudder. Using a marker pen draw a cutting line onto the skeg (both sides) that is approximately in the middle of the Heel plate.

Depending on what tools you have available you have three choices: Wood chisel, Hacksaw or Angle Grinder. Using a wood chisel cut away a 1" wide band of GRP along the line you are drawn. A hacksaw can be used to achieve the same result by cutting along the line until you hit the metal of the encapsulated Heel plate.

Using an small angle grinder is the easiest option as this allows you to cut along the line although this does produce a lot of dust so mask and goggles are recommended. The angle grinder is also useful for cleaning up the edges and grinding back the GRP each side of the cut to allow a good bonding surface when re-fitting. Which ever method you use the result should look a little like the picture below.

With cuts into the skeg that go down to the heel plate is should now be easy to dislodge the skeg cap with a decent sideways tap of a rubber or wooden mallet. With the skeg cap removed it is now a good idea to clean up the bottom of the skeg and the top of the cap, easily done with an angle grinder.

While most skeg caps are made from solid laminate some have a foam core and it is not uncommon for water to have soaked into this foam. At this stage you may wish to drill an exploratory hole down into the skeg cap from the top to identify if this is the case. If your skeg cap is wet inside drill a number of holes from the top and then leave on a radiator for a few weeks to dry out. Once dry the holes can be filled and faired using a mixture of Epoxy and microballons.

Removal of the cap reveals the heel plate and the four machine screws which retain it on the skeg. Jeremy Rogers advises that the threads are simply tapped into the GRP - Be sure to check the condition of the threads having removed the heel plate. These machine screws are either 5/16" Whitworth or 8mm.

Before proceeding to the next step support the weight of the rudder either on blocks of wood from the ground or in a rope sling from each side of the cockpit.

With the weight of the rudder supported climb aboard and using a socket wrench or box spanner undo the bolt in the top of the rudder stock.

The rudder stock has an female taper onto the rudder shaft and it often needs a bit of persuasion before the two parts separate. In the picture below you will see a copper mallet and a motorcycle tyre lever. Apply weight to the lever and belt the side of the block hard with the mallet. Don't use a normal hammer unless you're partial to a planished finish, a soft mallet probably won't touch it; copper is just right! You may need to mount an attack from both sides to free it.

Make sure that you find (and store safely) the Woodruff key. Be sure to put it back later, along with the bolt, unless you like exciting steering.

NOTE It will be seen on the General Arrangement drawing that Jeremy Rogers suggests, having placed a block of wood under the rudder, using a punch to drive the rudder stock down to free the tiller block.

Picture of Rudder Stock showing Keyway

Finally, the Rudder can be lowered to the ground, this can be achieved single handed but the rudder is heavy and a second pair of hands is strongly recommended.

From below, the skeg should look like the following picture.

## REFITTING THE RUDDER

As Mr Haynes is fond of writing..."Refitting is the reverse of removal".

Before refitting apply some waterproof grease to the top and bottom of the rudder shaft to allow the bearings some lubrication. Next slide the rudder back up into position and hold in place while the Heel plate is screwed back into position. Refit the woodruff key and rudder stock having applied a little grease to the taper allowing easy removal next time, tighten down the bolt as firmly as possible.

**IMPORTANT – When refitting the rudder stock remember the woodruff key!**

To refit the skeg cap Jeremy Rogers recommends using Isopon P38 with a rich mix of hardener to hold the cap in place, it cures while you wait. Isopon P38 is a thick Polyester and glass based filler that is available from car repair shops such as Halfords.

Mix up the Isopon P38 with the hardener until it is a uniform colour and then apply the gloop to the top of the cap. Make sure that the cap is lined up well with the skeg and hold in place with tape while the Isopon cures.

Next it is necessary to apply more filler to build up any gaps, an epoxy based filler is best and in the picture below a mixture of epoxy and microballons has been used.

Jeremy Rogers suggests that a layer of glass tape is applied to the join for additional strength. If you plan to do this you will need to ensure that the area surrounding the join is a little recessed to allow for this additional thickness.

Applying some glass tape is a simple matter of painting on some resin, apply the glass mat and then applying further resin as necessary to ensure the glass is fully saturated. Final filling and faring is then required to return the skeg to it's original profile.

## SUPPLIERS AND ADDITIONAL INFORMATION

Although this article is largely devoted to the removal of the rudder it is more than likely that removal has been necessitated by a need to renew the bearings or to allow work to take place on the sterngear. Jeremy Rogers Yachts are able to provide the spares below.

NEW RUDDER STOCK BEARINGS (TOP & BOTTOM)

New Cutlass bearing (two sizes available)

New Skeg Cap

New Heel Plate

If you would like any additional information about how to proceed with upgrades or repairs to your Contessa 32 an excellent forum is available on the Association website where you can post questions and draw on the collective knowledge of many owners.

Contessa 32 owners are in the very lucky position to be able to contact the original and current manufacturer of Contessa yachts, the team at Jeremy Rogers Yachts are extremely helpful and will offer free advice to owners as well as historical information about your particular Contessa. Jeremy Rogers Yachts can provide a range of spare parts and will carry out repairs both small and large, their contact details can be found on the Jeremy Rogers website

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