

Casting rudder pintle & blade seat

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| Application: | Casting rudder pintle & blade seat |
| Place: | Curaçao, Dutch Antiller |
| Date: | August 2006 |
| Job and report done by: | Wencon technician |
| Wencon products used: | Cream, Release Agent, appl. tools |



1. & 2.

Heavy damages of pentles & cones. Here upper set of cones, before surface preparation.



3. & 4.

Here lower set of cones, also before sand-blasting.



5. & 6.

Cone surface after surface preparation – heavy corrosion.



7. After application and curing of Wencon Cream – cones are machined to original shape and size.



8. Female cone after surface preparation, ready to cast.



9. Wencon release agent applied, in order to disconnect after casting.



10. The pintle was suitable layer of Wencon Cream was applied on both the surface inside the rudder cone and on the pintle. After applying, pintle was inserted into the seat.



11. & 12.

Pintel dumped, access material to be removed before curing.



13. & 14.

The day after, the pintel was lifted from its seat, and access material was removed by grinding.



Choose the relevant surface preparation, according to the nature of the job. Seek advice from a Wencon Technician if needed.

Specification for surface preparation for Dry Applications

Defined as applications, where the Wencon product will be applied to a surface at a temperature minimum 3 degrees above dew point. Use the Wencon Products: Wencon Cream, Wencon Rapid, Wencon Coating, Wencon Ceramic Cream, Wencon Ceramic Coating, Wencon Hi-Temp, all requiring a dry surface.

1. Blast the machine part to SA 2 ½ using sharp-edged blasting media, to a roughness of min. 75 microns.
2. Leave the part for sweating out salts in a warm place for at least 12 hours or heat it up to 30 - 40 °C (86-104 °F) using gas torches.
3. Blast again to SA 2 ½ immediately prior to the application.
4. For parts containing lots of water and salt, it may be necessary to repeat 2. and 3. until the surface remains light grey for at least 2 hours after blasting.
5. Always use Wencon Cleaner prior to application.

Specification for surface preparation for Wet/Damp Applications

Defined as applications, where the Wencon product will be applied to a surface at a temperature less than 3 degrees above dew point. Use the products Wencon UW Putty, Wencon UW Cream and Wencon UW Coating for applications on wet or damp surfaces.

1. Water jet the entire surface with water and sand to a standard equal to SA 2½, as described above.

Specification for surface preparation for Emergency/Temporary Applications

Perago Treatment

Perago is a rubber disk with hard steel spikes mounted on the periphery. Perago can be mounted in a normal drilling machine, and gives a surface close to a blasted surface - clean and rough with sharp edges. Perago dishes can be ordered at Wencon and at all Wencon Distributors.

Grinding

Wheel grinding is often an acceptable surface preparation for emergency applications, where shot blasting is not possible. When grinding use a coarse stone or flap. Use the Wencon Cleaner before and after grinding. Grinding with sandpaper or emery cloth is only advisable when, for example, carrying out shaft-repair on a lathe. Often the grinding will not hit the dents.

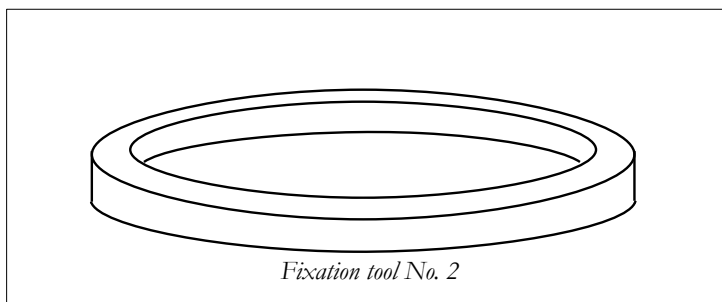
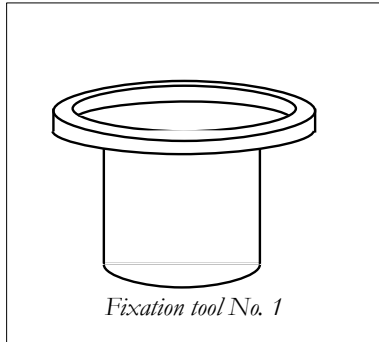
Needle Gunning

Needle gunning is a method that has almost been forgotten in recent years. Or should we say is mostly used for very rough cleaning or removal of rust. It is possible to do a very nice job using a needle gun, but it takes time and should be closely supervised. It is essential that the marks from the sharp needles cover the whole surface so that none of the original surface remains. It is recommendable to steam clean the surface before needle gunning.

Wire Brushing

Wire brushing can be a good way of removing scales, rust and old paint. However, you will need to grind the surfaces after the wirebrushing to make the surface as rough as possible.

Rudder stock cone application



Problem:

Corrosion and/or bimetallic corrosion attack on inner surface of rudder blade cone and/or rudder stock cone (with key and key way).

Solution:

Building up a new surface in the inside of the rudder blade cone.

Before anything else is done, it is important that two auxiliary tools are prepared. The tools shall make it possible to centrize the rudder stock and to keep the total length of the rudder stock/rudder blade.

Fixation tool No. 1.

The height is given from the space under the bottom of the stock. The diameter of the upper part is given from the diameter of the bottom part of the stock. After fabrication the tool is stick welded to the rudder.

Fixation tool No. 2.

The diameter of this ring is given from the diameter of the stock on the top side of the rudder. The ring shall be stick welded to the top

of the rudder.

These tools will assure that the WENCON material which is used for creating the new seat for the cone will be casted in an even thickness round the rudder stock.

Surface preparation.

The rudder blade cone should be shot blasted to SA 2,5.

Heat it up to a temperature of approx. 20°C (68°F)

Repeat the shot blasting

Take it back to the workshop and install it in an upright position.

If necessary, machine the rudder stock cone to remove corrosion.

Place the rudder blade cone.

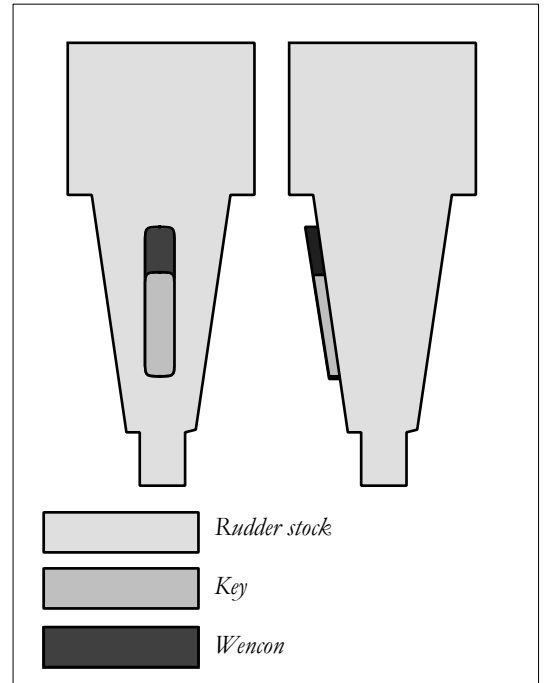
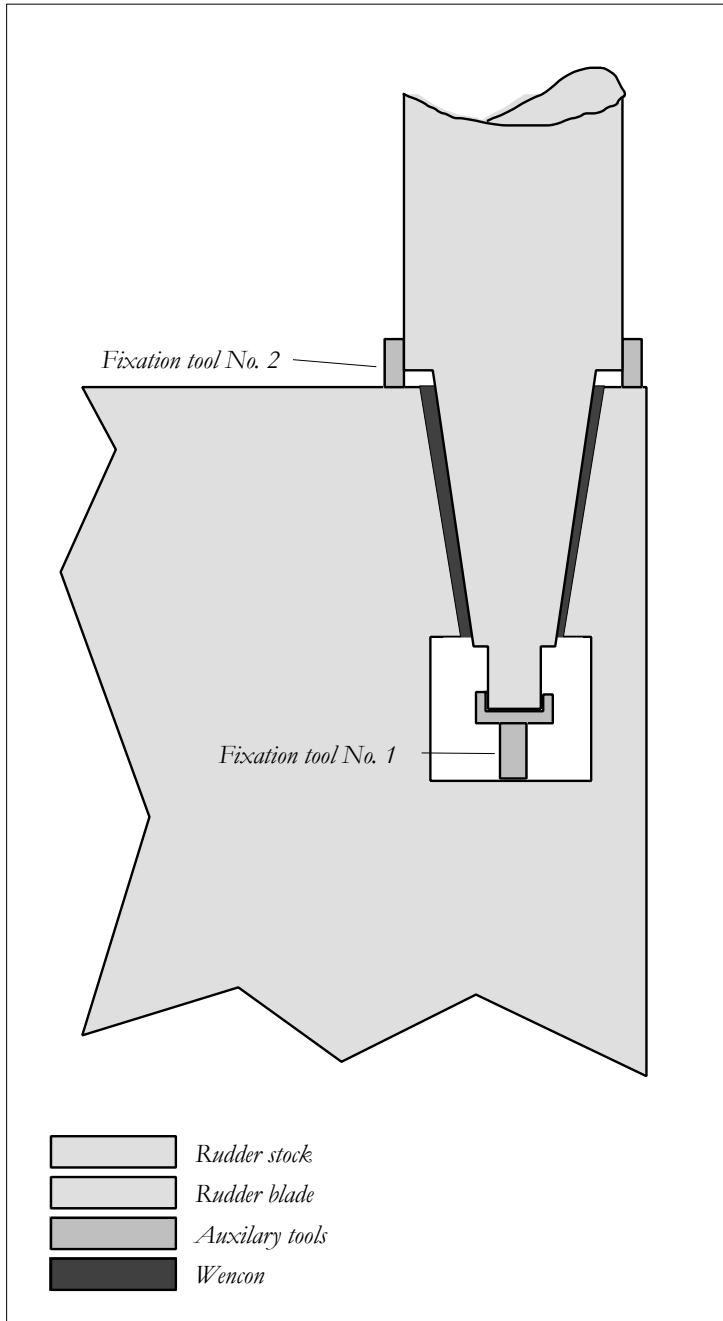
Apply a thin layer of Wencon Release Agent on the rudder stock cone. Leave it for drying in at least five minutes and remove excess Wencon Release Agent leaving only a thin film.

The application:

Mix a suitable amount of Wencon Cream and apply it to both the surface of the rudder blade cone and the rudder stock cone. Make sure that enough material is applied.

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Rudder stock cone application



continue from page 1

Be careful during the application to avoid air entrapment within the Wencon material.

After having applied the Wencon Cream, put the rudder stock into position, leaving excess Wencon material to be squeezed out from the gap.

To ensure the curing within a reasonable time (at winter), apply heat from e.g. two hot air blowers, blowing the hot air onto the rudder blade (not the rudder stock). Leave the application for curing approx. 8 hours.

Variations:

To ensure a proper cast in the key way, it is advisable to extend the key, at least when doing the application. A temporary extension of the key can be modelled using Wencon Putty as shown. Apply release agent on top of it before casting.