

Module number: C 01 f

Last update: 16.07.14

Credits: ... points

Author: A. Parker

Introduction

Description of the subject

For metal construction and possibly repairs various steel plates have to be shaped before being assembled. That is what this skill is about. First we will look at the equipment and machinery that the craftsmen use for this and in the second part we will explain the successive operations for doing this on the basis of an example.



Required knowledge/skills

- understand the safety implications
- understand the final three dimensional to be formed
- ability to measure where folds are to be made
- ability to achieve final shape measuring against a pattern

Infrastructure requirements

- clean and clear working environment
- workshop with suitable equipment

Objectives

At the end of this module, the trainee can:

- handle plates safely
- operate folding machine safely
- fold plate to achieve required three dimensional shape
- work to required tolerances

Sources and additional learning material

<http://www.boat-building.org/learn-skills/index.php/en/metal/folding-steel-plate/#sthash.h9jm6fNF.dpuf>

Required tools, machines and material



Angle Grinder



Hydraulic Press



Rod

More information?

Contact the Medway Queen Preservation Society: info@medwayqueen.co.uk

KNOWLEDGE

Terms	Definition - Description - Explanation	Visual aids
Rods	Easy to bend round iron sheets and rods. These are used to make a template that reflects the ultimate shape of the repair.	

SKILLS

Step 1: Determine the end result that is needed

Content	Key points
<p>This example is based on a repair. A ship has had a collision and part of the skin needs to be replaced. These are the successive steps that the shipbuilders takes to form the correct curvature in the steel?</p> <p>The photographs show the side of a ship where a steel plate has to be replaced. The plate shall have to be curved in order for it to be fixed to the frames</p>	

Visual aids



Step 2: Forming Steel rods

Content	Key points	Visual aids
<p>The easy to bend steel rods are bent into the shape of the ship's skin. The frames can be used for shaping the rods. Once they have been bent, the rods are welded together, thus creating the shape that the skin plate shall have to adopt. A template has therefore been made</p>	<p>The rods must be treated carefully so that the shape isn't lost.</p>	

Step 3:

Content	Key points	Visual aids
<p>If the steel plate only needs to be folded in one direction then a folding machine is used. In the example chosen, the steel plate also has to be given a spherical shape. This requires a more specialised hydraulic press</p>		

Step 4: Folding lines are made using chalk

Content	Key points	Visual aids
	<p>Chalk is used as it is not affected by heat if local heating is required to assist the bending.</p>	

Step 5: Pressing

Content	Key points
<p>The steel plate is positioned under the press and after a number of presses on the positions marked with the chalk the work piece is compared with the template.</p>	<p>Small steps are better than applying too much pressure and deforming the plate too much.</p> <p>Help may be required to handle larger plates – (see picture)</p>
Visual aids	
	

Step 6: : End result	
Content	Key points
	Some fairing can be done to the plate when it is offered up to the frames but the closer the plate is to the final shape required the better.
Visual aids	

