



## **Welding metal fuel tanks**

Fuel tanks must be designed, constructed and tested to prevent the risk of ignition of leaking fuel or explosion of leaking vapours. The most common failure found in fuel tanks is the failure of the weld joints of the tank.

Welding procedures for fuel tanks must comply with the applicable Australian Standard for the material used for fabrication.

Manufacturers of fuel tanks for use in commercial vessels must be approved by NSW Maritime. Manufacturers that are not approved should contact NSW Maritime on 9563 8777 prior to starting tank construction.

### **Design requirements**

The design of fuel tanks is to meet the requirements of the National Standard for Commercial Vessels Part C-Design and Construction, Section 5 Engineering. Approval of the tank design by NSW Maritime is required before commencement of construction.

### **Welding requirements**

NSW Maritime requires that fuel tanks must be double continuous (DC) welded on all the boundary joints of the tank.

As it is not possible to achieve this with smaller free standing tanks, the closing plate or the lid installed on the tank top must be single continuous (SC) welded (see Figure 1 for an example).

Internal baffle plates should be suitably flanged (or rider bar attached), and the top lid slotted to facilitate welding of the top plate to the baffle flange.

Plate edges must be cleaned of all contaminants and oxides just prior to welding. Only non-ferrous grinding or cutting wheels should be used for the aluminium plate preparation.

### **Declaration by manufacturer**

On completion of the tank, manufacturers must send a declaration detailing construction and the welding process to:

Vessel Survey, NSW Maritime, Locked Bag 5100, Camperdown NSW 1450 or

Fax it to 9563 8788

Click on the links below to print a declaration:

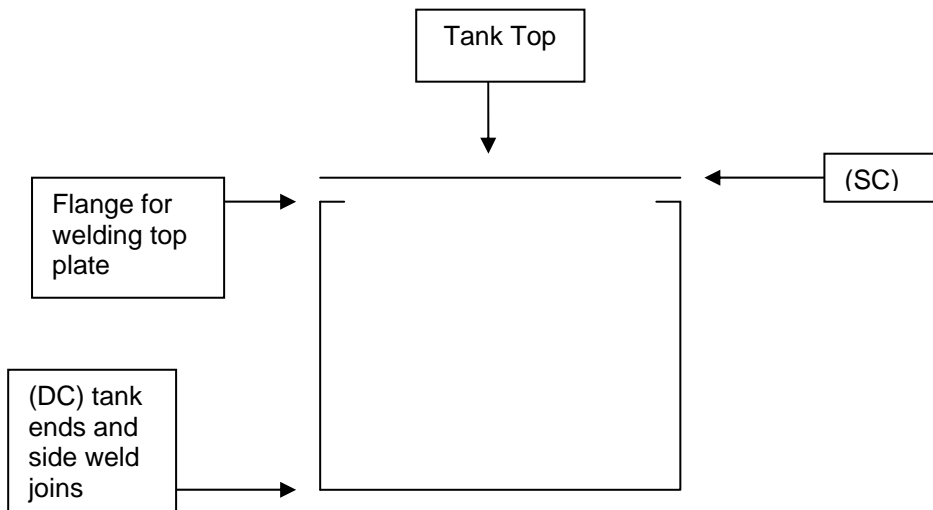
[Declaration for approved aluminium fuel tank manufacturers](#)

[Declaration for approved mild steel fuel tank manufacturers](#)

[Declaration for approved stainless steel fuel tank manufacturers](#)

Copies of the documented weld procedures and the welder qualifications must be retained by the tank manufacturer for seven years.


**Figure 1: Tank Cross Section**



### **Qualification of welders**

Australian Standards require the completion of the weld and the attainment of welder qualifications to be supervised by an independent Welding Inspector.

As full compliance with the requirement to employ an independent Welding Inspector may be



financially prohibitive for some fuel tank builders, NSW Maritime will accept supervision by a Welding Supervisor in place of a Welding Inspector. The Welding Supervisor may be an employee of the manufacturer but must meet the requirements for Welding Supervisors as set out in the Australian Standard applicable to the material being used for fabrication.

### **Relevant Australian Standards**

Australian Standard 1665:2004, *Welding of Aluminium Structures*

Australian Standard 1554.1:2004, *Welding of Steel Structures*

Australian Standard 1554.6:1994, *Welding of Stainless Steel for Structural Purposes*

Australian Standard 4132.2:1993, *Boat and Ship Design and Construction, Part 2: Aluminium Construction*

Australian Standard 1796-2001, *Certification of Welders and Welding Supervisors*

### **Further information**

For further information call NSW Maritime's Commercial Vessels Division on 9563 8771.