Welding Instructions Aluminium

**WELDING METHOD**
Gas metal arc welding (GM AW)
Gas tungsten arc welding (GT AW)

**WELDERS’ QUALIFICATION**
Welders to be qualified according to AWS D1.1 latest edition /EN ISO 9606-2:2004

**CONSUMABLE**
GMAW SFA /AWS A5.10 ER 5183
GTAW SFA /AWS A5.10 ER 5183
Consumable to be handled and treated according to manufacturer’s recommendation.

**PREPARATION AND FIT UP**
The prepared joint and surrounding areas shall be clean and free from moisture, oil, grease, loose or thick scale, oxides etc., or any protective coating except weldable primers.

Maximum allowed root gap for fillet welds is recommended 1 mm, max 1.5 mm (see fig 1).

**PREHEAT AND INTERPASS TEMPERATURE**
Combined thickness
T1 + T2
<25 mm 10°C, 50°F
>25 mm -50 mm/ 50°C, 122°F

**IMPORTANT!**
To avoid deformation of the frame it is recommended to follow these welding instructions.

FIG 1: Maximum allowable root gap for fillet joint

FIG 2: Build-up of fillet joint.

Thickess Combined (THC) = t₁ + t₂
If root gap is too wide the deck plate or bulkhead may be built-up with weld to achieve a proper gap.
(see fig. 2)


**WELDING SEQUENCE**

Welding to be performed according to fig 3 and 4. Weld pass 3 is not to be started until welds 1 and 2 are completed.

**FIG 3:** welding sequence (example shows a two-pass fillet weld)

Tack weld each /75 mm for less deformation of the frame

**FIG 4:** Welding sequence

1.1 Root weld 1.2 Fillet weld
2.1 Root weld 2.2 Fillet weld
3 Seal weld 4 Seal weld

**WELD SIZE**

Fillet weld size (throat thickness) is to be $0.5 \times$ plate thickness of the bulkhead or deck plate (THD). However fillet weld size is not to be greater than $0.7 \times$ frame plate thickness (THF). See fig 5.

Thus: $0.5 \times \text{THD} \leq \alpha \leq 0.7 \times \text{THF}$

**FIG 5:** Fillet weld size

$\alpha$ = fillet size (throat thickness).

THD = Thickness Deck plate.

THF = Thickness Frame plate.

**NOTE!**

Multi-pass welding is required if $\alpha \geq 5$ mm.