

SY 310 Series Underwater lights and Cameras

MECHANICAL INSTALLATION OF A WELD-IN FLANGE

Please read ALL the following pages before attempting installation to ensure complete understanding of what is required

BEFORE YOU START

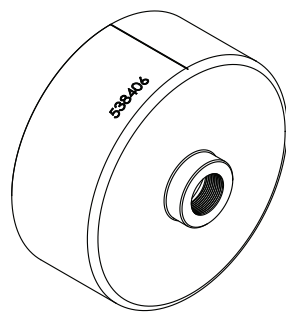
This document describes the recommended method for installing the weld-in flanges of Lumishore SY 310 series lights and cameras in order to provide a water tight seal between the flange and the hull. The weld placement, and recommended practices are described below.

CAUTION

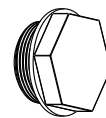
- During Welding Care is to be exercised to avoid excessive heat build-up which could cause distortion. Regular checks should be made during and after welding to ensure the flange has not distorted, and that all components fit in with ease.
- EXERCISE EXTREME PRECISION WHEN CUTTING THE HOLE IN THE VESSEL. The hole should be cut with an even gap of 2mm around the flange.
- Locate the flange centrally to the hole before welding. If the flange is off centre the larger gaps will cause excess heat build up and could cause distortion.

Note: The welding practice described below is the recommended practice, however it is the yards responsibility to ensure that all welding and underwater light arrangements are compliant to practices as required by the appropriate classification society and rules. In some circumstances, as required by appropriate classification society and rules, it may be necessary to install a coffer dam to contain the light / flange assembly.

Parts Supplied



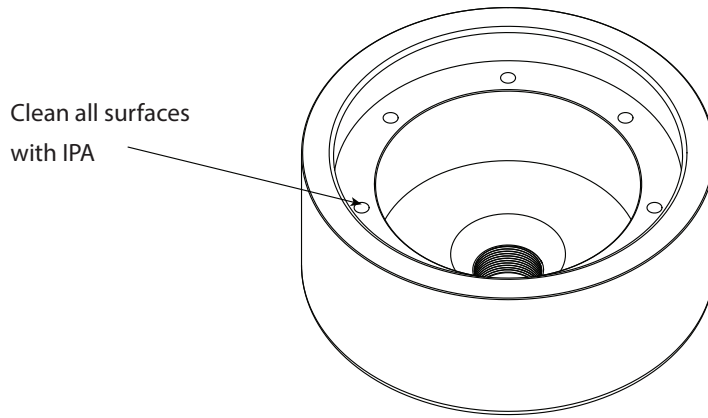
Flange



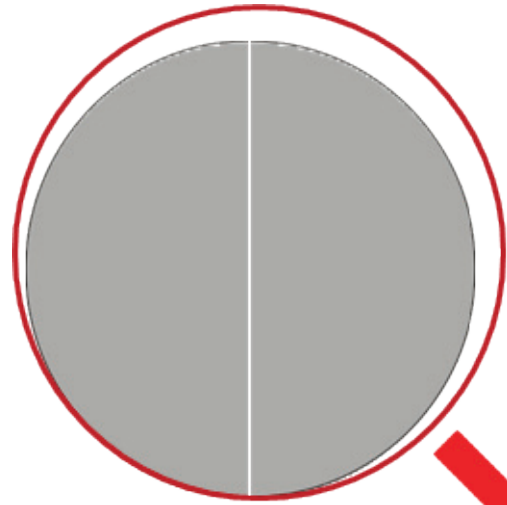
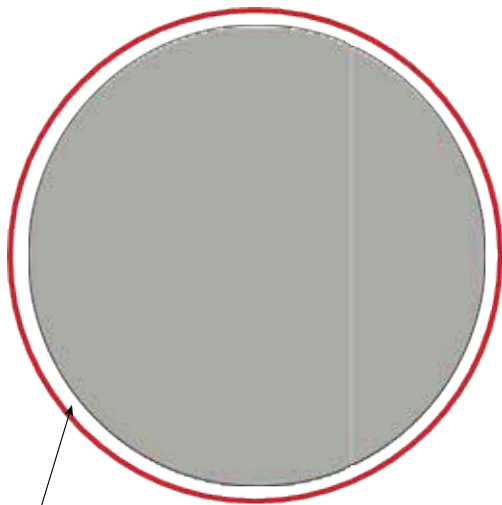
Flange Plug with
sealing ring

FLANGE PREPARATION

Using IPA thoroughly clean the surfaces of the flange. Ensure that there is no damage, dust, grease or dirt particles that could cause an issue during welding.



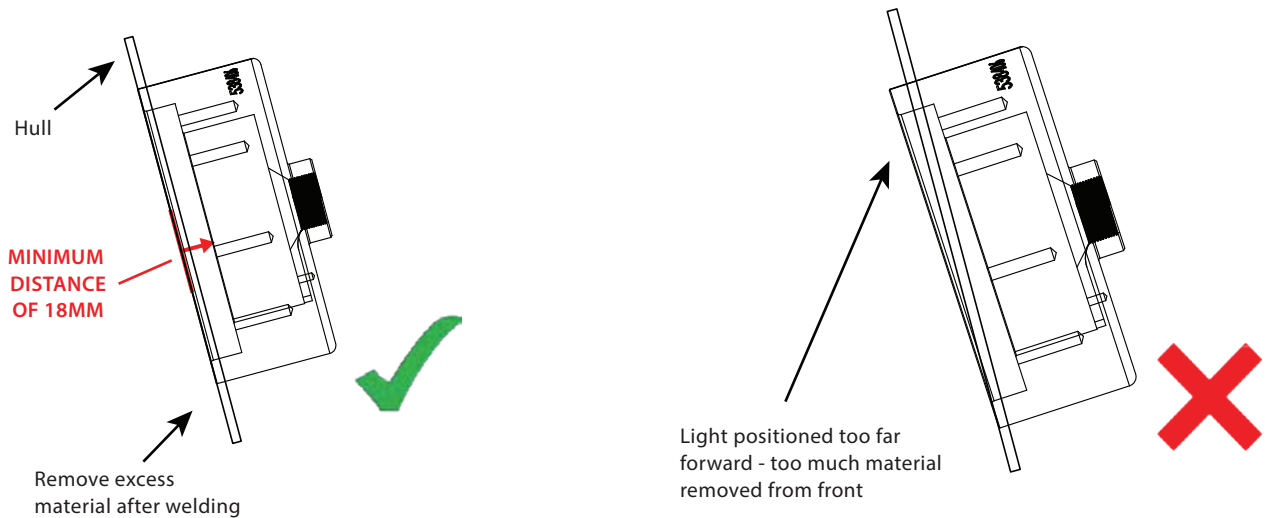
Place the flange in the centre of the cut out - Maintain a constant 2mm gap around the flange diameter



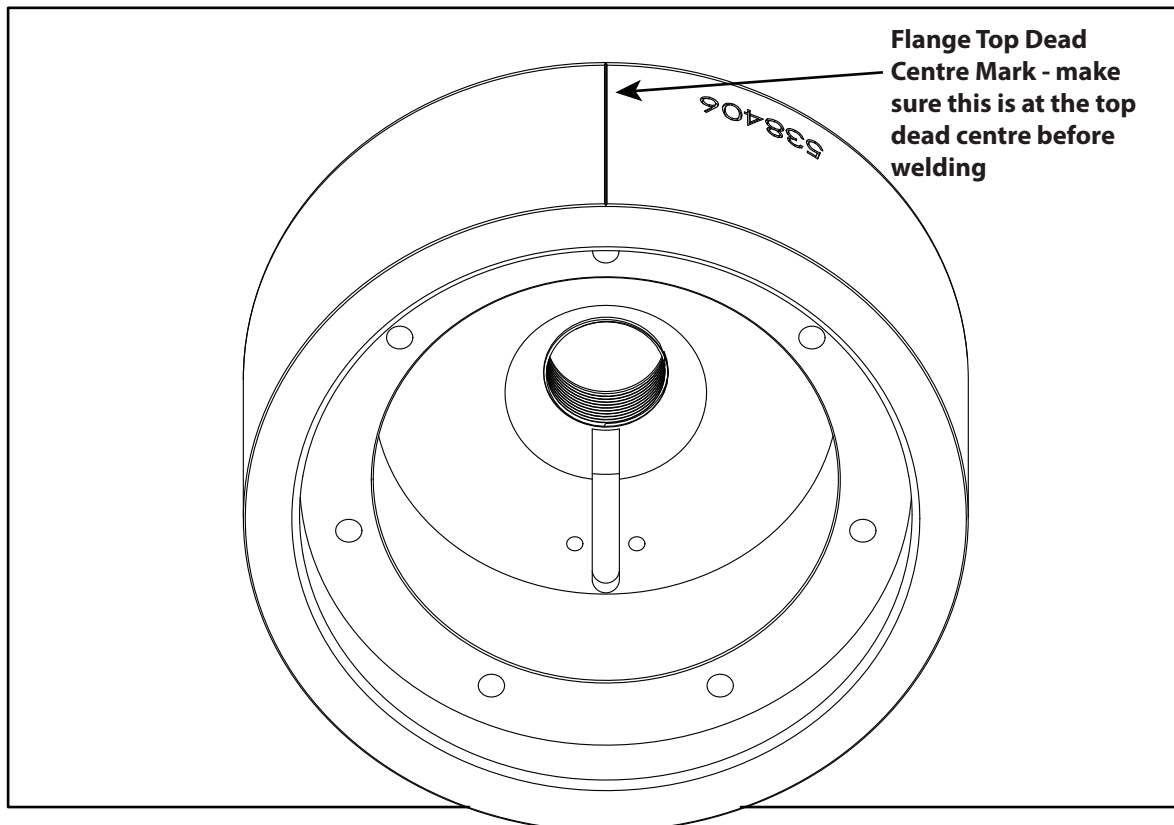
Constant 2 mm gap between the hole and the flange

Positioning The Flange

Do not position the flange too far forward as this will result in too much material being removed from the front of the flange when the excess weld is removed. When installed, the light should be flush with the hull surface.



MAKE SURE THAT THE FLANGE IS PLACED WITH THE TOP DEAD CENTRE MARK IN THE TOP DEAD CENTRE BEFORE WELDING. FAILURE TO DO THIS WILL CAUSE THE LIGHT BEAM ANGLE TO BE INCORRECTLY ALIGNED



TOOLS

- Hole cutting and edge preparation tool (e.g. Hole saw, router, Plasma cutter or other appropriate shipbuilding method.)
- Drill (if necessary).
- Welding equipment.
- Welding consumables (classification society approved and appropriate for this installation)
- Stainless Steel Wire brush.
- Cleaning chemicals and solvents.

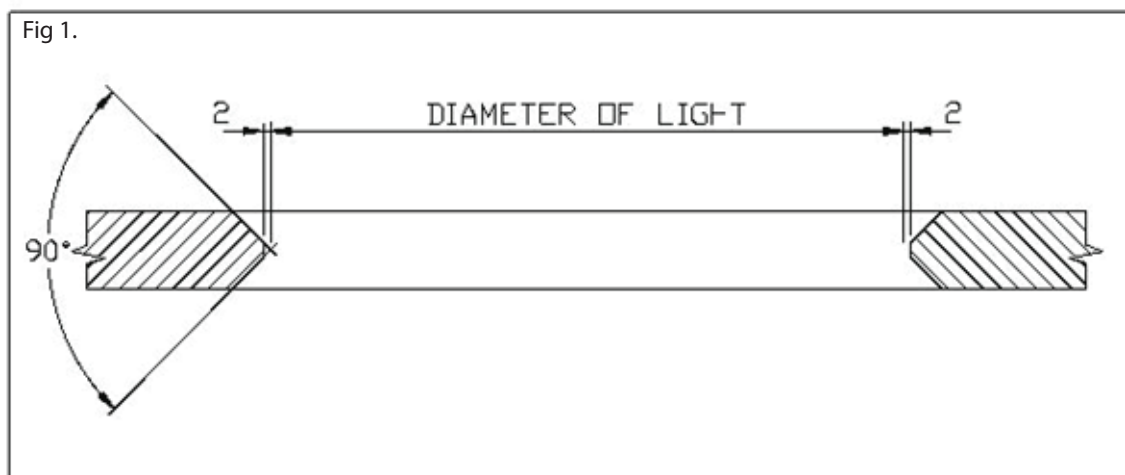
PREPARATION

The position of the underwater lights requires careful consideration prior to installation. The designer needs to ensure that the position of the lights give the desired effect and level of illumination within the practical limitations described here.

It is recommended that the light is installed at least 250mm below the vessels light waterline. This is to minimise the effect of 'wave slap' upon the fitting, and lessen the likelihood of mechanical damage due to impacts with flotsam or moorings. The inner hull space around the light needs to be checked to ensure that there is adequate clearance for both the light fitting itself and to permit good access for installation and inspection. Cabling and other services need to be secured to prevent inadvertent damage during installation.

PROCEDURE

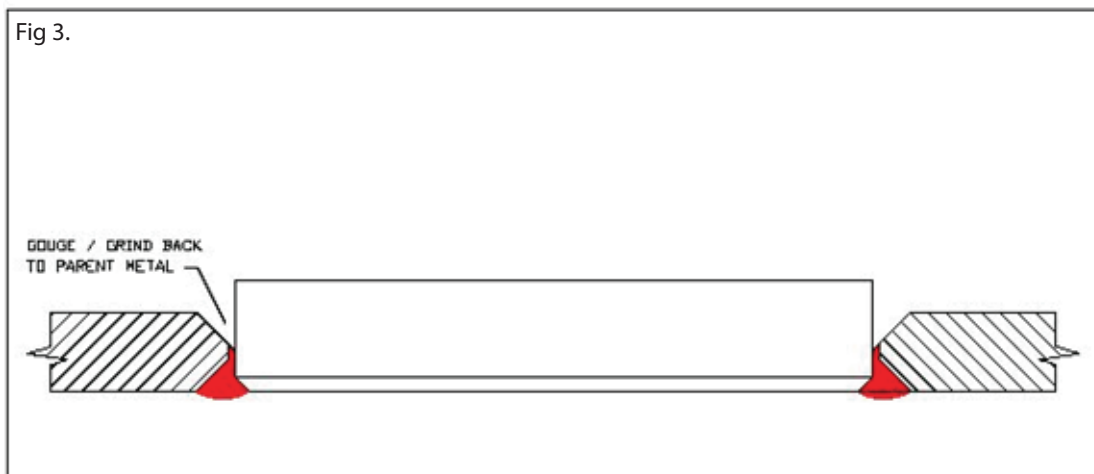
- 1) Mark centre of hole to be cut out. (Drill if required).
- 2) Cut hole (method to be decided by shipyard according to class society rules) to the diameter of the light fitting flange + 4mm (i.e. so that there will be a 2mm gap between the flange and the plating on either side).
- 3) Prepare edges of hole according to Fig. 1.



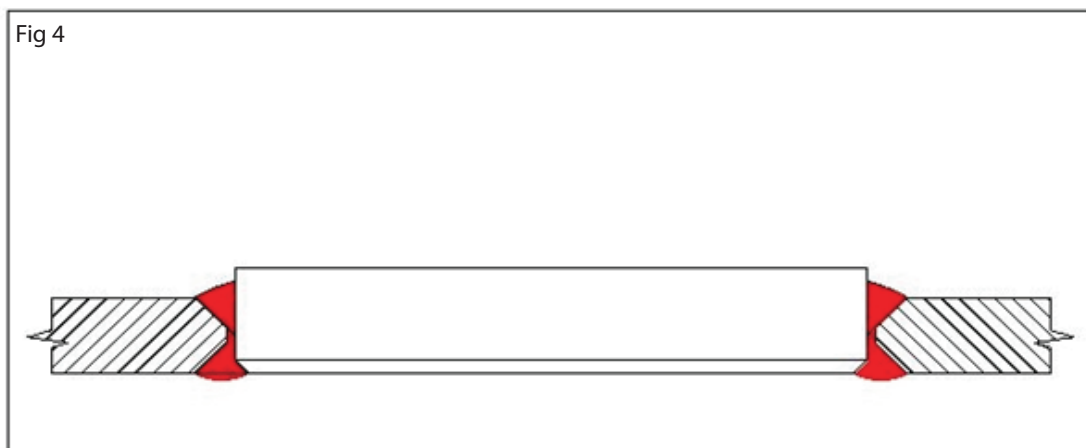
- 4) Degrease welding surfaces on the flange and the hole using an appropriate cleaning chemical. Wear gloves to prevent body oils reaching the surface.
- 5) Brush surfaces using an abrasive brush.
- 6) Preheat surfaces if required (refer to appropriate classification society rules).
- 7) Secure light fitting flange in position (tack weld or other means). **MAKE SURE THE FLANGE TOP DEAD CENTRE MARK IS IN THE TOP DEAD CENTRE POSITION BEFORE WELDING.**
- 8) Weld outer seam according to Fig. 2. Care is to be exercised to avoid excessive heat build- up which could cause distortion.



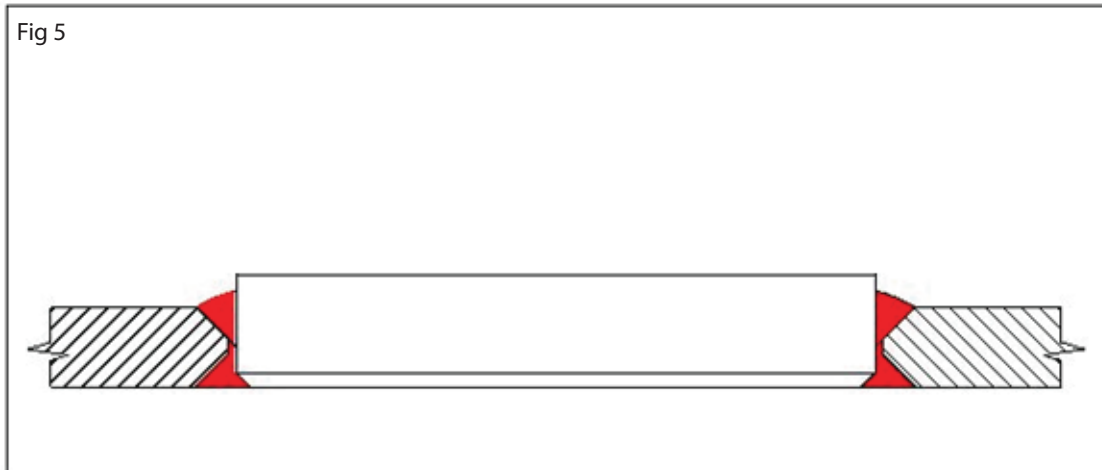
- 9) Gouge or grind back the reverse side of the weld to remove spatter, deposits etc. (Fig 3)..



- 10) Repeat step 8 for inner sealing weld. (Fig 4).

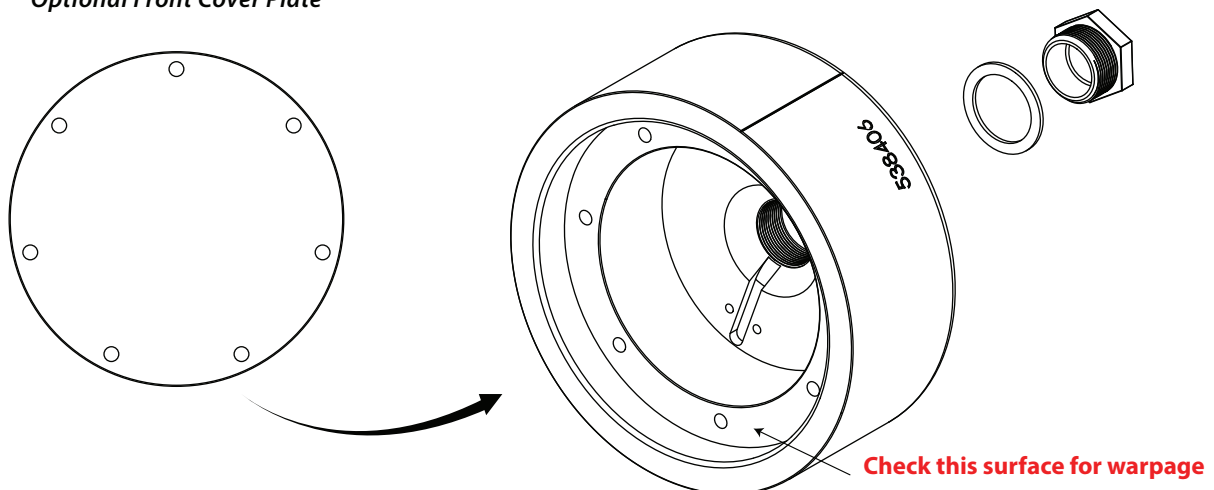


- 11) When cool, the outer weld is to be ground flush with the surrounding hull surface (Fig 5).



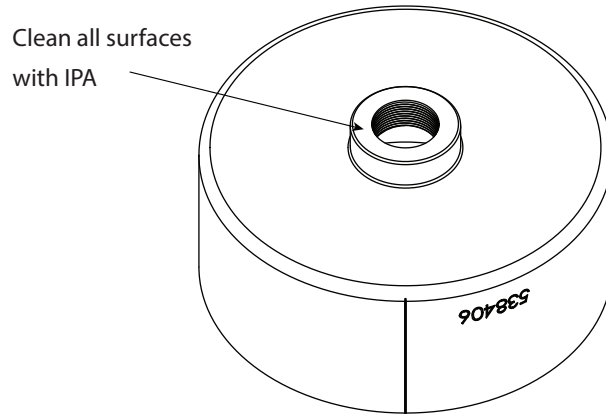
- 12) Visually inspect weld for porosity, voids etc. (class surveyor may require supplementary examination also).
- 13) Perform the following checks on the flange to ensure there has been no damage or warping:
- Check there is no warping or damage to the inside lip of the flange
 - Visually inspect the inside of the flange for any weld spatter, or damage
- 14) Fit the blanking plug to the rear of the flange. If the optional front cover plate has been purchased fit using the bolts included.

Optional Front Cover Plate

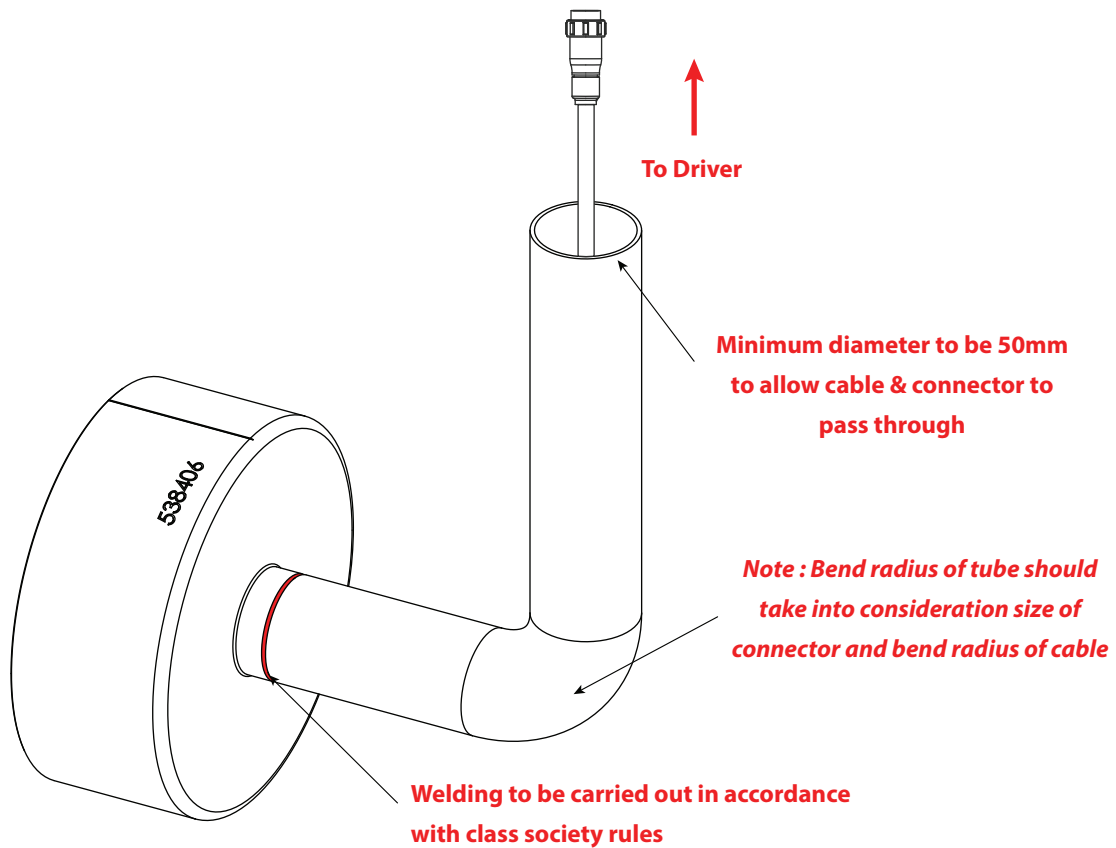


NOTE: Keep the front cover plate fitted until it is time to install the light module.

- 15) When ready to install pipework for cable routing remove blanking plug from rear of flange and clean all surfaces with IPA

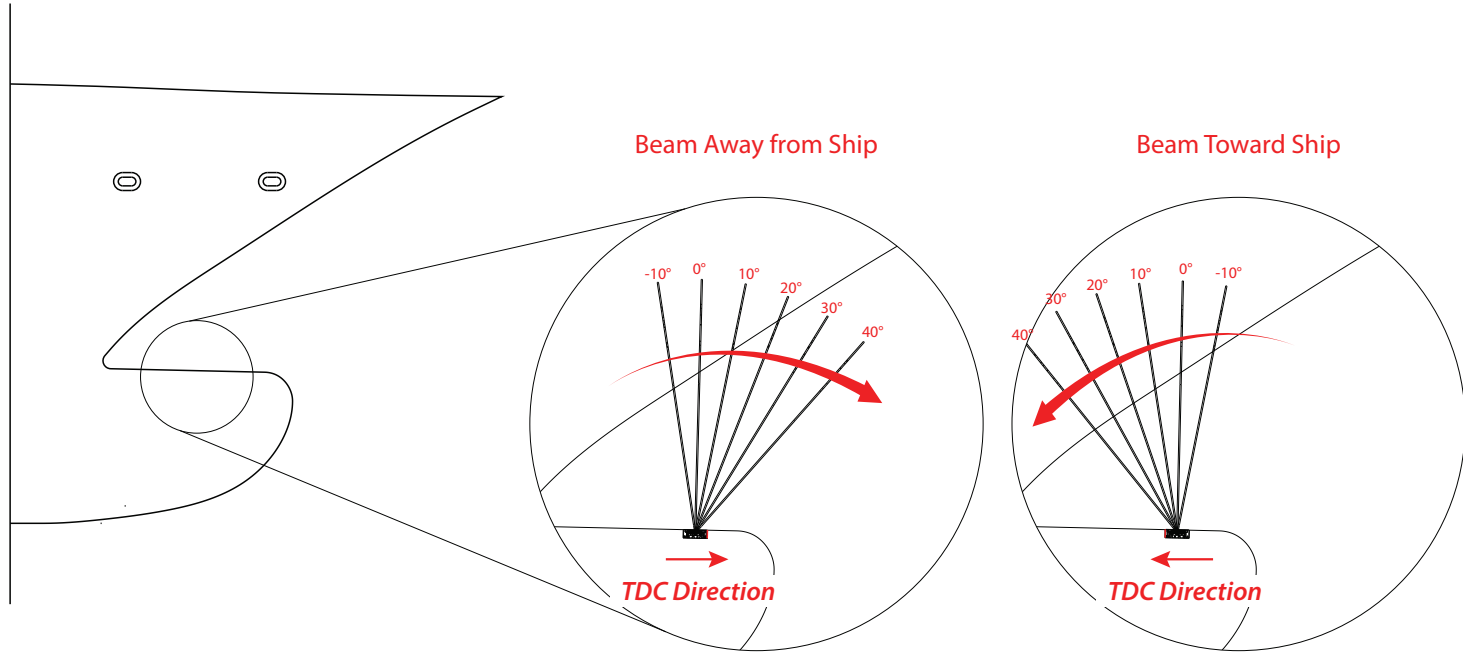


- 16) Pipework is installed by welding directly to the rear of the flange. **Note : Fitting of pipework should be carried out in accordance with class society rules.**



BULBOUS BOW INSTALLATION

When fitting lights into the bulbous bow it is important to note the direction in which the beam will point. Flange orientation and heatbase angle are two factors that will determine this direction, please follow the instructions below to properly install lights into the bulbous bow.



Examples above show the direction of the TDC of the flange in relation to the beam direction depending on the desired lighting effect.

Another factor to consider when installing in the bulbous bow is the curvature of the top surface. The example below highlights the correct way to install the flanges where the surface is not flat.

