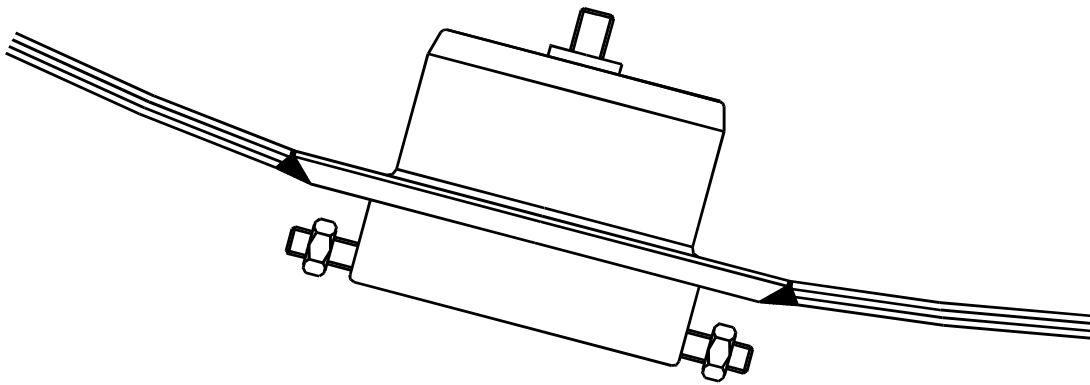


# STERIMIXER<sup>®</sup>

## Welding Guide

### Welding the weld plates into position



**This user manual shall be read carefully before unpacking weld plate!**

Customer	
Order No:	
Roplan	
Order No:	
Weld plate	Diameter
60/75	Ø60
85/100-140	Ø90
120/150-190	Ø149
120H/220	Ø150
210/275	Ø280

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## Table of Contents

1. About the welding guide
2. General
3. Position and orientation of Weld Plate
4. Distance between welds
5. Distance from outer edge
6. Optimum alignment of Sterimixer<sup>®</sup> impeller axis
7. Making and Preparation of Hole in Dished End
8. Tack welding the weld plate (TIG)
9. Final Welding
10. After welding
11. Sterimixer<sup>®</sup> location general guide line

Roplan AB reserves the right to alter instructions and/or specifications without prior notice.

**NOTE!** For bespoke designs to customer specifications, the supplied Sterimixer<sup>®</sup> can differ from the descriptions within this user manual.

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## 1. About the welding Guide

The welding procedure described in this guide has been used for welding the weld plates into Steridose vessels. The guidelines refer only to the technical aspects of welding operations. Do note that welding currents, time frames etc are approximate and may vary in practice.

**NOTE!** Ensure that the vessel is compliant with relevant standards for pressure vessels.

The most common fault occurring for the weld plate, is deformation introduced when welding the weld plate into the dished end of the vessel. To minimise the risk of faults occurring after delivery from Roplan AB, it is therefore essential that the welding guide is thoroughly studied and that only properly trained, experienced and qualified personnel are employed in the welding operations.

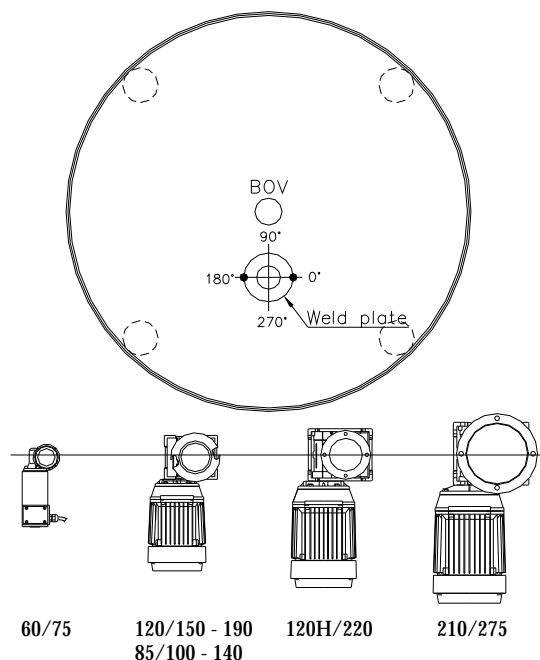
## 2. General

A weld plate may be welded into the lower dished end, before or after the dished end is welded to the jacket. For purely practical reasons, it is usually easier to weld the weld plate to the dished end before the jacket and the dished end are welded together. All other welding on the lower dished end must however be completed before making a hole for the weld plate.

### 2. Positioning and orientation of Weld Plate

Information for design and orientation of Weld Plate

- The normal position for the drive unit is 270° as shown in figure.
- The lock nuts on the weld plate shall then be positioned in direction 0° - 180° as shown in figure.



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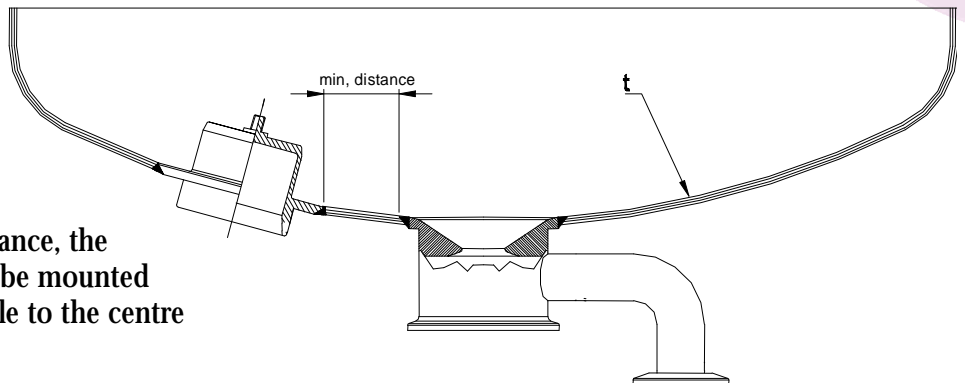
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- For drive unit 120H/220 and 210/275 there are four lock nuts. For these drive units the position has to be  $0^\circ - 180^\circ$  and  $90^\circ - 270^\circ$ .
- If the drive unit will have another direction, the weld plate has to be positioned in accordance to that direction.

**NOTE!** For best performance, the weld plate has to be mounted as close as possible to the centre of the tank.

#### 4. Distance between welds

Ensure the distance in between the weld-in components are in accordance to relevant pressure vessel regulation.



**NOTE!** For best performance, the weld plate has to be mounted as close as possible to the centre of the tank.

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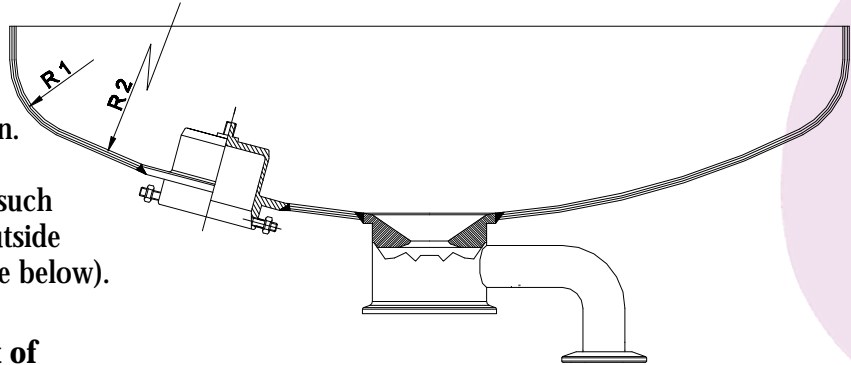
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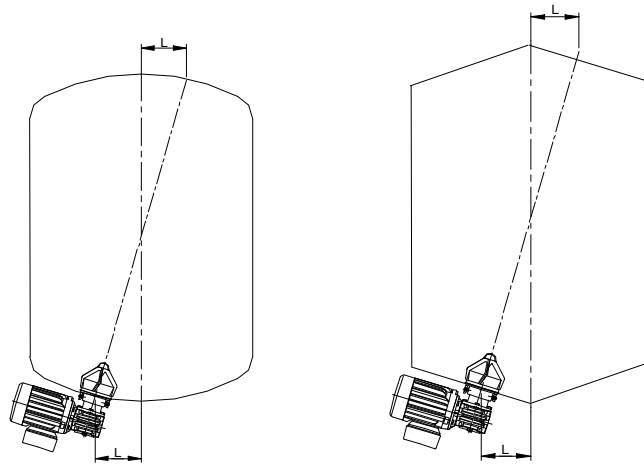
## 5. Distance from outer edge

Ensure that the weld plate is positioned in accordance to relevant pressure vessel regulation. Normally, these specify that the weld plate shall be positioned in such way that no part of it's weld is outside the large radius R2 (refer to figure below).



## 6. Optimum alignment of Sterimixer<sup>®</sup> impeller axis

The weld plate should be positioned in the lower dished end allowing the impeller axis to be aligned as close as possible to a diagonal through the centre of the vessel. This ensures maximum mixing effect and minimum risk of creating a vortex and subsequently the intake of air into the product. For best mixing result the dimension L shall be equal at the top and bottom.



**NOTE!** For best performance, the weld plate has to be mounted as close as possible to the centre of the tank.

Bottom dished end

Bottom conical end

As a guide the following formula can be used, for location of Weld Plate.	Vessel Diameter	
	Ø	L
	<1000 mm	Ø *0,5 * 0,5
>1000 mm	Ø *0,5 *0,3 - 0,5	

Limitation described under 4.1.3.2 will overrule any conflicts in these calculations.

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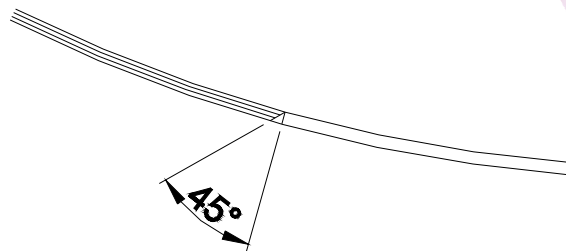
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## 7. Making and Preparation of Hole in the Dished End

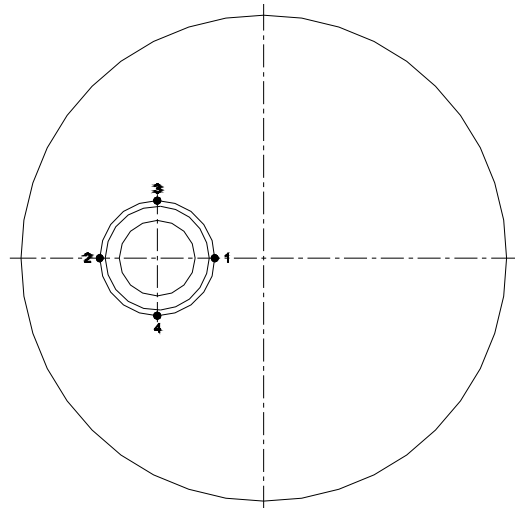
1. Mark the hole diameter on the outside of the lower dished end. Refer to table for proper hole diameter.
2. Cut a hole with appropriate equipment along the mark on the dished end.
3. Prepare a suitable weld gap between the dished end and the weld plate by grinding the edge of the cut hole. This weld groove should be kept as small as possible. The weld plate can be used as a template.
4. Prepare the hole for welding by grinding a 45° angle, sloping outwards (see figure). A straight edge about 1 to 2 mm should be left towards the inside of the vessel.

Weld plate	Diameter	Hole diameter
60/75	Ø60	Diameter of the weld plate +1 mm (maximum) for the weld joint.
85/100-140	Ø90	
120/150-190	Ø149	
120H/220	Ø150	
210/275	Ø280	



## 8. Tack welding the weld plate (TIG)

1. The weld plate shall not have the bearing unit or any screws fitted during welding operation.
2. Position the weld plate in the hole of the dished end, ensuring it is properly orientated in the correct position (refer to 4.1.3.1).
3. Tack weld the weld plate at two points on the inside, (1 and 2 in the figure) using a correct filler (filler material depends upon the material in the dished end and weld plate).
4. Check how the weld plate is fitted. It shall be flush with the inside of the lower dished end.
5. Tack weld the weld plate at two more points from the inside (3 and 4 in the figure).



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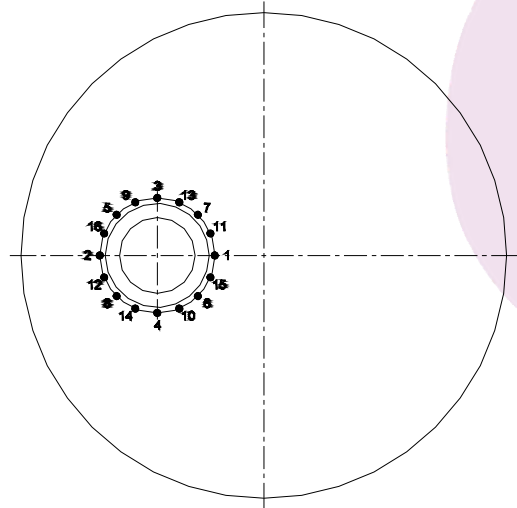
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6. Turn over the dished end and place it on a flat bench. Seal it between the bench and dished end with the aid of tape or similar. Fill the dished end with argon gas. It will normally take about 3 or 4 minutes to replace the air with the inert argon gas.
7. Tack weld the weld plate from the outside. The sequence 5-16 as shown in the figure shall be followed (diagonal welding).

**NOTE!** Use as little heat as possible and weld in small steps with low current. Allow the dished end and the weld plate to cool slowly on completion of each step of welding. No cooling medium other than air shall be used.



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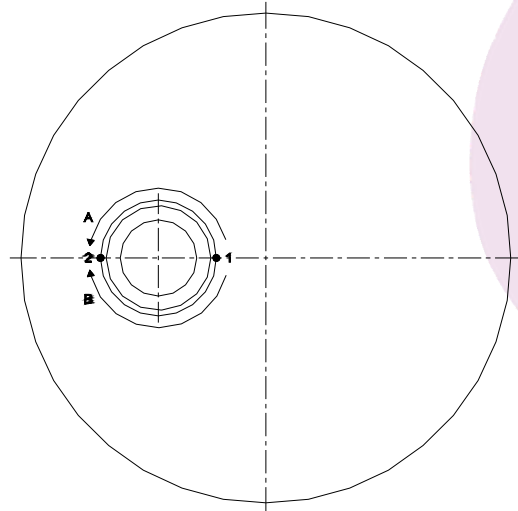
## 9. Final Welding

The final welding shall start closest to the centre of the dished end. The filler material should be the same as used previously.

Weld continuously from point 1 to point 2 alternating in between path A and B (refer to figure) until the weld groove is filled.

The dished end should be inverted again and welded from the inside to even out the weld joint.

**NOTE!** Use as little heat as possible and weld in small steps with low current. Allow the dished end and the weld plate to cool slowly on completion of each step of welding. No cooling medium other than air shall be used.



## 10. After Welding

1. Allow the dished end and the weld plate to cool slowly on completion of welding. No cooling medium other than air shall be used.
2. Grind and polish the inside and outside of the weld to the required finish.
3. Re-assemble the screws for the bayonet connection. Tighten and secure the screws to the weld plate with appropriate thread locking, e.g. Loctite 243.
4. Fit the bearing unit to the weld plate. Tighten the bearing unit with a torque as per the table.
5. Fit the impeller on the bearing unit and turn a few revolutions by hand to ensure adequate clearance to the weld plate and the vessel. If interference is present, necessary corrections have to be performed.
6. Fit the drive unit to the vessel as per instructions (refer to section 4.4) to ensure adequate clearance to the weld plate and the vessel. If interference is present, necessary corrections have to be performed.

Weld plate / Bearing unit	Max torque
60/75	6 Nm
85/100-140	
120/150-190	20 Nm
120H/220	
210/275	

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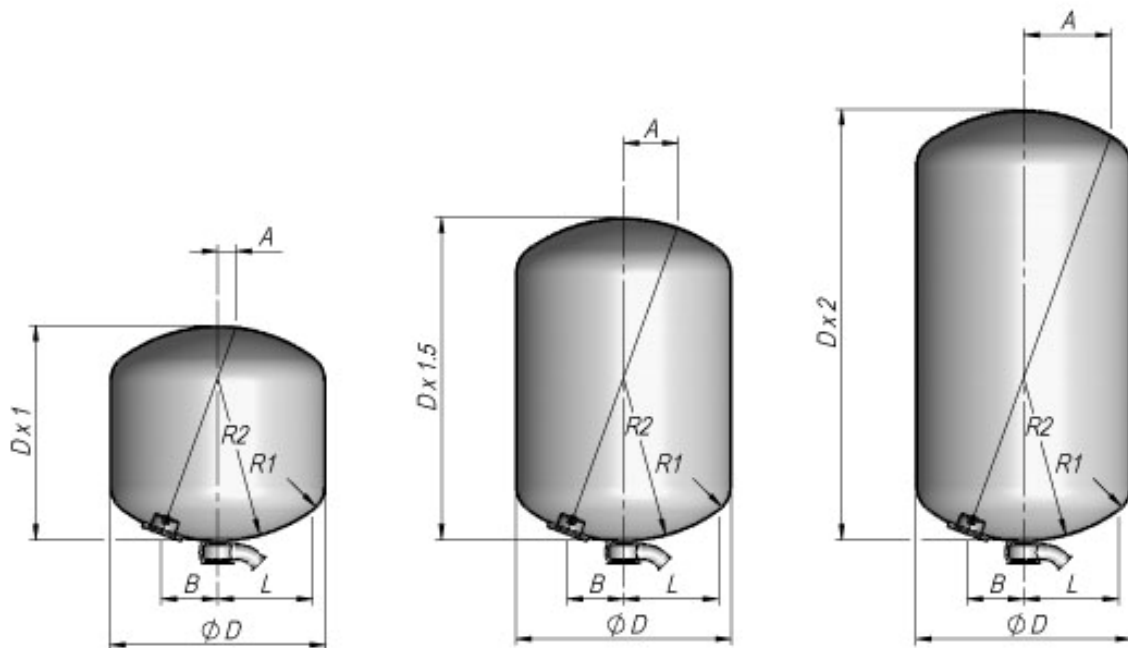
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## 11. Sterimixer<sup>®</sup> location general guide line



Sterimixer<sup>®</sup> is a registered trademark.

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