

OxyDisc® Assembly Guide

Overview

This manual provides guidelines for sealing Track-etched membranes effectively and safely. Heat sealing or ultrasonic welding is suitable for thermoplastic membranes and applications requiring high-temperature resistance. Both assembly methods provide a strong and reliable seal between our membranes and our customer's products without the risk of any bypass of liquids or air.

Preparing the Track-Etched Membrane

- Always wear appropriate personal protective equipment (PPE), including gloves and safety glasses, when handling membranes and sealing materials.
- Work in a well-ventilated area to avoid exposure to fumes or vapors from sealing agents.
- Ensure that the Track Etched Membrane is free from any visible defects or damage.
- If needed, cut the membrane to the desired size using scissors or a scalpel. Handle the membrane with clean forceps to avoid contamination.
- Clean the sealing surface of the membrane using lint-free wipes dampened with isopropyl alcohol or a suitable cleaning agent. Allow the membrane to dry completely before sealing.
- The membrane pores must not be clogged by impurities. All tools and equipment parts that may come into direct contact with the membrane surface must be clean and free of grease. The membrane surface should not be touched with bare hands. If surfactants or detergent-containing substances are used to clean the sealing system, all areas that may come into direct contact with the membrane must be residue-free.

Heat Sealing

- In heat sealing, a heated stamp is used to apply heat directly under pressure to the welding pieces for a specific period.
- The melting temperature of the plastic material to which the microporous membrane is being welded should be like or slightly lower than that of the membrane.
- The geometric shape of the membrane section should be as simple as possible, preferably round.
- It is important for the weld seam to be wide enough, with widths of 0.0625 to 0.125 inches recommended. Insufficient welding areas result in a “bulging” membrane section.
- Applying a non-adhesive high-temperature coating to the welding stamp prevents the membrane from sticking.
- Transparency in the welding area usually indicates a tight seal.
- The optimal combination of time, temperature, and pressure can only be determined experimentally. Larger section sizes and weld seams require higher pressures.
- In most cases, heat sealing is the preferred welding method for microporous membranes.



Heat welded TEM membrane with non-woven support mounted to POM based housing material.

Ultrasonic Welding

The Ultrasonic welding is a sealing process based on heat, pressure, and temperature. In ultrasonic welding, mechanical motion (vibrations) with high frequency is used to generate heat. The greater the vibration, the “hotter” the material becomes.

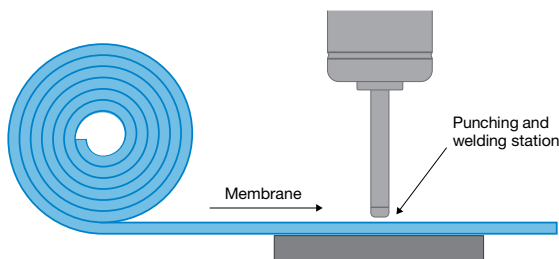
General guidelines:

- It is important to minimize excessive ultrasonic vibrations as much as possible to maintain pore integrity. Improper use of the ultrasonic method can damage the pore structure of the microporous membranes.
- High frequency and low amplitude are preferred (40 kHz).
- Long welding times and secondary ultrasonic welding cycles should be avoided.
- The weld joint should be made with an “energy conductor” rather than a wide, flat surface.
- Protect the parts to be welded in a way that dampens the vibrations throughout the welding piece.
- Multiple remote zone welds can damage the membranes.
- For heat-sealed membranes, an ultrasonic housing seal is recommended.





Ultrasonic welded TEM membrane with non-woven support mounted to PP based housing material.

Ultrasonic Welding Assembly Recommendations:

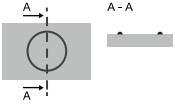





Sonotrode

Recommended	To avoid
Flat sonotrode: 	Structured sonotrode: 

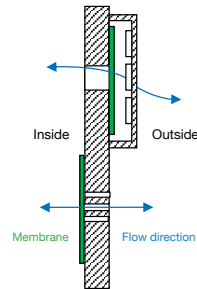
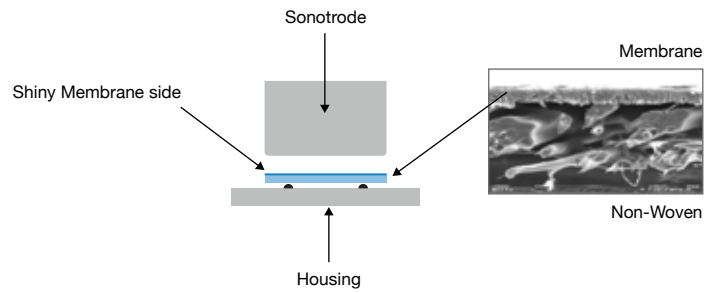
Ultrasonic Welding Assembly Recommendations (cont.):

Energy director design

Recommended	To avoid
Design with an energy director: 	Flat surface: 
Round shape: 	Peak shape: 

Welding direction onto membrane

Standard welding direction for RoTrac® Track-Etched Membrane

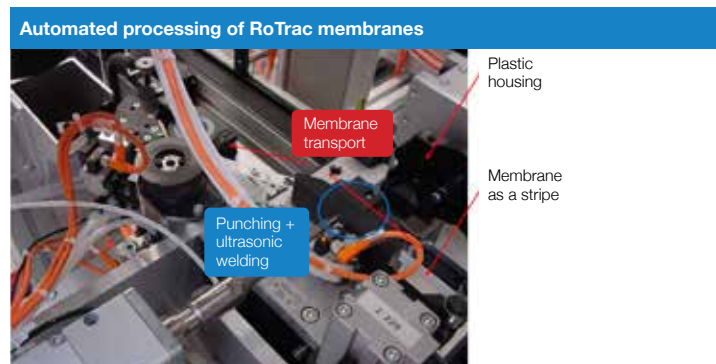
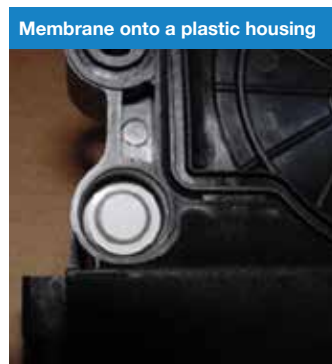


Installation Recommendation

For optimal performance and to prevent the accumulation of water or other contaminants, it is recommended to attach the adhesive pad to a vertical surface of the component. This orientation helps to minimize the contact area where water or debris can accumulate.

Portfolio examples

Below are some examples from our portfolio showcasing applications using ultrasonic welding. Due to confidentiality agreements, we are unable to provide specific customer information and can only present a limited selection of applications.



Sealing Compatibility Guide

	PC	POM	PBT	PE	PET	PA	PP	PVC	Silicone	PS	TPE	EVA	Natural	Synthetic	Metal	Glass
Adhesive Sealing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ultrasonic welding	•	•	•	•	•	•	•	•	•	•	•	•	–	–	–	–
Heated dies	•	•	•	•	•	•	•	•	•	•	•	•	–	–	–	–
Mechanical fit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Insert molding	•	•	•	•	•	•	•	•	•	•	•	•	–	–	–	–