

Gluing Guide

QCS Oval & Quick Cuff



General Information

SI TECH has an extensive background and history in the development and design of premium drysuit components that dates back to the early 1960's. This manual is designed as a basic guide for the successful installation of our core drysuit components to a drysuit.

Our experienced staff, through a series of pictures and notes, will guide you through basic step by step installation procedures.

It is of greatest importance that you have fully understood each step in this brochure before you start modifying your drysuit as it is a life supporting part of your equipment.

Warnings and recommendations

A professional work area is necessary when making modifications and repairs to drysuits. As well, you will need access to a variety of tools and chemical agents. You must have a basic knowledge on how to use these tools and you must familiarize yourself with MSDS and TDS sheets for any chemicals, glues and compounds you are using. One should be familiar with the first aid procedures for accidental contact with any chemicals used.

The individual is responsible when making modifications or alterations to a drysuit. SI TECH AB will not take any responsibility in accidents or injuries that may occur when it comes to handling of tools and chemical agents connected to drysuit modifications.



Preparations

Proper preparations are the key for good results.

- A work area with **adequate ventilation** is priority one!
- Ensure that all necessary tools are in place.
- Be sure that you are using proper chemical agents for cleaning, preparations and the gluing process.
- Ensure that all surfaces to be treated are clean.

Tool List

Listed below you will find all the items needed when carrying out the operations explained in our examples.

- Emery cloth or sandpaper
- Solvent
- Glue and hardener
- Tape–measure
- A pair of scissors
- Roller
- Heat gun
- Tape





Always test the strength of the attachment and the seal integrity before leaving surface!

Important measures

Depending on the fabric, design and size of your sleeves, installation might differ slightly. Follow the glue manufacturers instructions and drysuit manufacturer instructions according to specifications of actual fabrics and adhesives. Read the instructions carefully and take your time when measuring the diameter of the sleeves so that optimal fit is reached when attaching the components with adhesive. If the diameter of the sleeves seem to differ significantly from the rings, please contact you drysuit dealer.

Specific for QCS Oval

The PU-Ring of the QCS Oval must be glued to the inside of the sleeve.

This is important information when measuring the arm sleeve diameter of the drysuit. If this measure differs significantly from the diameter of the PU-Ring, we recommend you to contact your drysuit dealer.



Specific for Quick Cuff

Depending on the sleeve circumference the Wrist Ring can be glued to either the outside or inside of the sleeve. If no surface matches your sleeve you may have to consider removing or inserting a wedge into the suit sleeve.



- X** Gluing and attachment area when having a medium circumference sleeve.
- Y** Gluing and attachment area when having a small circumference sleeve.
- Z** Gluing and attachment area when having a large circumference sleeve.

Recommendations by SI TECH

This booklet is intended as a guide covering the procedures used when attaching the Wrist Rings of the Quick Cuff system and the PU-Rings of the QCS Oval system. Some illustrations are targeted for a specific system but most procedures are still the same. **Please read the complete booklet undependable of what system you plan to work with. This will give you necessary information for a good result.**



The ability to make accurate measurements and markings cannot be understated. Ensure that you have all necessary tools for measuring and marking on hand. You do not want to compromise the integrity of your suit by making and fixing mistakes - "measure twice - cut once".

Preparations before gluing

Measure and adjust the sleeve length wearing the suit and your normal underwear garment. The installation may make the sleeve longer.

When attached to the sleeve, the outer end of the Wrist-/PU-Ring should not exceed the wrist when stretching the arms forward.

As most sleeves are tapering, ensure that the sleeve circumference matches the ring before length adjustment.

(If the sleeve is too short, use a suit material extension.)



Clean all surfaces

Ensure all surfaces are free from adhesive residues, debris and dirt. This is paramount for the glue to do the job. No matter the adhesive, tools or technique if not cleaned properly, the job will be sub-standard. Roughen the surface with fine emery cloth or sandpaper. Inhouse we use either a table grinder or emery cloth for roughing surfaces.



Attachment of PU-Rings

The first thing you need to do is to remove the current seal or cuff. This procedure totally depends on the fabric and design of the suit, the type of glue used and how old the mount is. If you do not know of how to do this we strongly recommend you to contact the drysuit dealer or manufacturer. If the PU-Ring dont match your sleeve you may have to consider removing or inserting a wedge into the suit sleeve. **When the seal/cuff is removed you need to clean and prepare the attachment area before next step.**

The PU-Ring of the QCS Oval System have been used in a majority of the pages for illustrative purposes. The last section of this booklet however will guide you through some specific details in regards to the Quick Cuff System.

When you have measured where to install the rings you need to make a **"dry installation"** in order to find the perfect spot for optimal mount and best effect for the adhesive.



1. Folding the ring will ease the mounting process. 2. Raise the ring and place it with its flange approx. 8-10 mm from the edge of the drysuit arm. 3. Stretch the ring so that it connects to the suit 360°.

This procedure will differ when working on the inside of Quick Cuff Wrist Ring.

Summary

- Before taking any action with a suit, you must ensure that you have made proper measures and markings in regards to the positioning of each component to be attached.
- Ensure that you have clean and roughened surfaces.

General gluing recommendations

The following instructions are based on use of a heat activated PU-glue that will help you to avoid mismatches as you can match the two surfaces when dry. We do however recommend you to talk to your drysuit dealer and/or the drysuit manufacturer in terms of what glue they recommend for the job.

Polyurethane (PU) based glue is recommended for the attachment of Wrist-/PU-Rings to the suit. Glue mixed with hardener has a limited pot life. Do not mix too much each time.

Wash all surfaces to be glued (with acetone or toluene unless otherwise is stated by the glue manufacturer), prior to applying the first coat of glue. The PU-material in Wrist Ring will be more receptive to the glue if swollen with solvent or pre-heated with a hot airgun (60-80 degrees C/140-180 F).

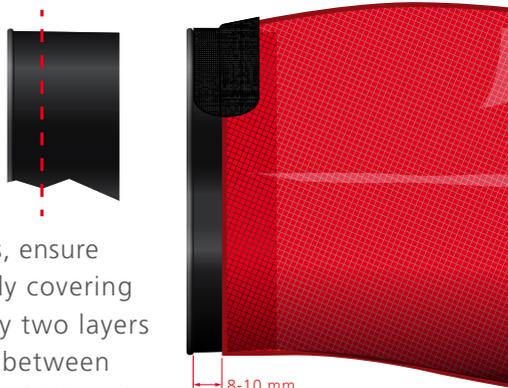


Important information about glue and gluing

To achieve the best bonding and saturation of all materials, including natural rubber, the first (and possibly second) coat of PU-glue must be thinned. PU-glue can normally be thinned with acetone or toluene (follow the glue manufacturers recommendations). Thinning the glue will ensure saturation into the material or fabric to be glued. Apply 2-3 thin coats of glue and let dry in between each layer (mixed with hardener if recommended by the glue manufacturer) on all surfaces, make sure that all seams are well covered.

On neoprene suits; cut the edge perpendicular and apply glue on exposed neoprene and the perpendicular surface of the PU-Ring.

At this stage, you should only apply adhesive on the surface behind the red dotted line. Leave approximately 8-10 mm of unglued surface.



When applying adhesive to the rings, ensure that the adhesive flows out properly covering the full surface. Remember to apply two layers of adhesive and let dry completely between each layer. **If the adhesive feels too thick and does not flow out properly, we recommend diluting the glue with a little bit of acetone or other diluent recommended by the manufacturer.**



To facilitate the gluing process you might need to fold back the arms of your drysuit for easier access. This action will help in the application of the adhesive in the prescribed area to match the glued surface on the rings. Remember to apply two layers of adhesive and let dry completely between each layer. After the second layer of adhesive has dried you need to invert the arm back to its normal position.



When the second coat of adhesive has dried, it is time to apply the rings to the drysuit. When you have fitted each ring to its actual position you will need to melt the glue by using the heat gun. You must be very careful when using the heat gun. If the fabric of the suit and/or component gets overheated you might damage it.



Start by heating the inside of the ring. Move the nozzle of the heat gun constantly, as displayed by the red arrows, to prevent the ring and suit from overheating. The next step is to heat the outside of the drysuit in order to get a smooth and constant melting point of the adhesive.



When the adhesive has melted and the ring is in place you need to squeeze away all air-pockets in order to get maximum grip between the components. Use a roller or similar tool to put equal force over the actual surface. Roll back and forth until you have covered the complete surface 360°. When this is done we recommend you to wait about 10 minutes before starting the next step.

Summary

- Apply 2-3 thin layers of glue and let dry completely between each layer.
- Thin the adhesive to achieve optimum bonding and saturation properties.
- Be careful when using the heatgun, you can easily damage your drysuit by the intense heat delivered by the heatgun.
- Squeeze away all air pockets in order to get maximum grip.

Attaching tape

The last step of this project is to reinforce the seams with tape to seal the edge. Attach the pre-glued, heat activated PU-tape which is supplied with the QCS Oval/Quick Cuff set. The tape will strengthen the bonded joints and give the attachment a nice visual appearance. It is of our recommendation that a pre-glued tape is used for best result.



Pre-cut the tape for a rounded edge.

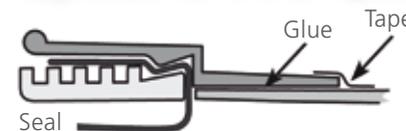
Apply two layers of glue on the surface of the ring and the suit (let dry thoroughly in between).

To activate; heat the tape and glue on sleeve and ring, 5 cm (2") at a time and stretch the tape gently when applying. When the tape is finally attached you will need to end the attachment with an overlap of approximately 1-2 cm (rounded edges). Use a roller to squeeze out all air bubbles.

Summary

- Pre-cut the tape for a rounded edge.
- Apply two layers of glue on the surface of the ring.
- When the tape is finally attached you will need to end the attachment with an overlap of approximately 1-2 cm.

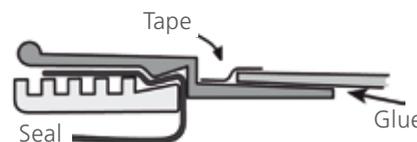
Specific Info Quick Cuff



Small circumference sleeve:

Apply glue on the inside of the Wrist Ring as well as on the suit. Place the Wrist Ring on the outside of the sleeve.

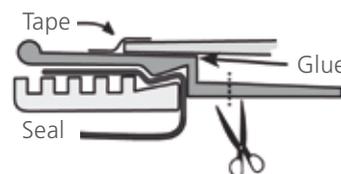
Tape the junction between the rear edge of the Wrist Ring and the sleeve. (If possible, turn the Wrist Ring inside out and seal with tape on the inside of the suit.)



Medium circumference sleeve:

Apply glue on the outside of the Wrist Ring as well as on the suit. Place the Wrist Ring on the inside of the sleeve.

Apply tape as illustration shows. The distance between the edge of the sleeve and the flange of the Wrist Ring should be approximately 5 mm (1/4") for the tape to reach desired grip area.



Large circumference sleeve:

Apply glue on the outside of the widest part of the Wrist Ring. Cut away the narrow part of the Wrist Ring. (Leaving 5 mm (1/4") will be helpful when

detaching the Stiff Ring.) Buff the outside thoroughly. Wash with solvent. Allow 5 mm (1/4") for the tape to overlap. The final step in this procedure is to cut away residual parts of the Wrist Ring to enhance comfort and performance.

This illustration shows the Wrist Ring before and after the residue (yellow area) has been removed. The upper ring shows the final result. Ensure yourself that all sharp edges are removed after this operation.



Procedures with neoprene suits

The diameter of the drysuit sleeves is paramount for what procedure to be used. The procedure for a wide sleeve is explained in illustration 1, and the procedure for a narrow sleeve in illustration 2.



Explanation to illustration 1. Cut the edge perpendicular and apply glue on exposed neoprene and the perpendicular surface of the Wrist Ring. Be extra careful to even out all sharp edges in joints and seams on the suit with sand paper (not with glue). If you use a heat activated glue; insert the Wrist Ring into the sleeve when the last layer of glue is dry. Place the glued surfaces together. Heat activate the glue, apply pressure and let dry. Reinforce the seams with tape to seal the edge. Apply pressure to all glued surfaces and allow to dry.

Explanation to illustration 2. Chamfer the sleeve edge (45 degrees), apply glue on the exposed neoprene and fold the chamfered edge to make the neoprene seal against the Wrist Ring.

General Summary

- The PU-Ring of the QCS Oval System have been used in a majority of the pages for illustrative purposes. There are however minor differences in the mounting procedures between QCS Oval and Quick Cuff.
- Read all sections of this manual to fully understand the different procedures and techniques applied.
- Follow the glue manufacturers instructions and drysuit manufacturer instructions according to specifications of actual fabrics and adhesives.

These are recommendations only
Gluing instructions in these booklet are recommendations only. Follow the glue manufacturers instructions and drysuit manufacturer instructions according to specifications of actual fabrics and adhesives.

Important information

Always test the strength of the attachment and the seal integrity before diving.

*Our products have
been trusted by divers
for more than 40 years*

SI TECH is a Swedish company focusing on manufacturing and marketing of components for protective suits such as; drysuits, rescue suits and garments designed for diverse hostile environments. SI TECH is rooted in the diving industry which is still the company's core market. The company was founded in 1971 by the diving pioneer Stig Insulán.

Core products

Modular Quick Change Solutions, Drysuit Valves, Drysuit seals, Dry Glove Systems, Gas Inflation Systems and special components for military purposes

Inhouse capabilities

Development and production is made in-house at our facilities in Brastad, Sweden. Inhouse competencies include: CAD construction, Injection Molding, CNC Machining, EMD Machining, Assembly, Sales and Marketing, Logistics and Administration. Our team of engineers, sales and marketing personell have close co-operation with the distributors and end-users of our products.

Core Market Areas



