



UMBILICAL CLEANING PROCEDURE

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OUTLINE

This general work instruction outlines the requirements which Dive Lab uses for all Life Support Hoses.

After cleaning and drying, it is important that the hose ends will be capped or double bagged to avoid contamination. This procedure is intended for use on both new, and previously in service umbilicals.

TOOLS AND MATERIALS REQUIRED



Figure 1 Tools Required

- ✓ Approved detergent – Simple Green, Joy, Dawn, Palmolive, Non-Ionic Detergent (N.I.D.)
- ✓ Re-circulating Pump Assembly made of non-corrosive materials and attachment Manifold Assembly with attachment fittings as shown in Figure 2
- ✓ Wash Tank (plastic trash can)
- ✓ Rinse Tank (plastic trash can)
- ✓ 9/16" open-end wrench
- ✓ 5/8" open-end wrench
- ✓ Small nylon (tooth brush)
- ✓ Plastic Bagging Material (if no plugs are available)



Figure 2 Manifold Assembly with Attachment Fittings

1. Ensure that the dedicated wash and rinse tanks are clean (you may use a new/clean 30 gal. garbage container or a large bucket) and inspect tools and support equipment for contamination.
2. Assemble all necessary components, listed in required materials.
3. Mix a solution of Detergent and water (1 oz. of simple green or other detergent listed above, per



Figure 3 Attach Hoses and Mix Solution

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5 gallons of water) in the plastic cleaning tank designated for re-circulation cleaning and attach the hoses to be cleaned to the pump assembly.

4. With the pump running, carefully brush the exposed umbilical fittings and threads. Allow circulation in the detergent for a minimum of 20 minutes.
5. Transfer the pump assembly to the rinse container and allow to rinse for a minimum of 10 minutes until all traces of suds disappear. To facilitate this Dive Lab sets up a continuous flow of fresh water into the rise container.
6. Take a sample of water from the hose being rinsed. Simply use a clean clear water bottle, then perform a shake test.
7. Fill the bottle about half way, and shake vigorously for 2-3 seconds, then wait 5-6 seconds, to make sure no suds are present. This is to verify discharge water is clear of detergent. If necessary, continue to rinse and perform the rinse test, until discharge is free of suds.



Figure 4 Soap Present - Keep Rinsing



Figure 5 No Traces of Detergent Continue to Next Step

8. Remove the umbilical from the cleaning manifold pump assembly and visually inspect both ends, and fittings for signs of contamination. Re-clean as necessary.

9. Dry using nitrogen or divers breathing grade air at a pressure not to exceed 25 psi. Flow for a minimum of 15 minutes, check for moisture using a mirror or dry concrete. Re-dry as necessary.



Figure 6 Moisture and Discoloration Present



Figure 7 No Sign of Moisture or Discoloration

10. Upon completion of drying - cap or bag each end.



Figure 8 Cap or Double Bag Hose Ends

11. Document the cleaning and drying on applicable form.