

Dry Suit Diving

Why Dry Suits?

- Safety—Shunting from extremities, expel fluids, reduce volume, nitrogen trapping
- Warmth In Water, between dives and upon exit
- Breath easier and air last longer
- Physiological changes reduced
- Less expensive than wet suits

Types of Dry Suits

Closed cell Neoprene—Wet suit material

- Great Stretch, Very Buoyant
- Requires significant weight, compresses at depth, glued seams can separate, cells break down
- Repair with neoprene cement, life of 300 dives

Crushed Neoprene—Wet suit material, but compressed

- Coated with Nylon for strength, Maintains stretch, No cell breakdown
- Glued & Stitched seams breakdown and leak
- Complete drying required before repair, Life of 5 years

Fabric Material—Nylon

- Ballistic nylon with waterproof backing, little stretch, comfortable latex seals
- More air space, more weight required, welded seams require factory repair
- Factory Repair required, 5 year Life

Vulcanized Rubber

- Inflatable Boat Material—synthetic and natural rubber combination (all natural rubber balloons), Bonded with heat and pressure—eliminates seams except at wrist and neck, good stretch for close fit.
- Repair like an inter-tube, 10-15 year life expectancy.

Dry Suit Features

- Attached Boots—most reliable is molded into the suit—offers protection and warmth.
- Knee pads—protects suit and diver, for center search pattern or photography
- Attached Hoods—Latex, Required for very cold water, Must wear liner, Thin face leakage
- Waterproof Zippers—Large, Rugged, Various locations, (buddy closes)

Sizing:

- Most manufacturers have 4-5 sizes. Due to stretch they fit 90% of divers
- Length is the key to a good fit. Tight in crotch-too small, hangs down 4" in crotch too large
- Vulcanized rubber suit should fit somewhat loosely, Neoprene more tightly, Fabric more loose
- Neck seals and wrist seals can be trimmed to fit—should not be worn loose
- Test dive several times, initial leaks are normal due to improper donning

Dry Suit Valves

Inflator Valves—works like BC inflator, push button to add air

- Low pressure hose, check length before use
- Older regulators may not have enough ports—add "T" valve

Exhaust Valves

- **Manual** — requires upright position and pushing to release
- **Manual Power** — uses inflator hose to pump air from suit, works in any position
- **Automatic** — pressure release valve, adjustable, upright position required, no diver action required
- The Inflator and Exhaust Valves should always be free and clear of other equipment, BC, Straps, Harnesses

Undergarments

Dry suits keep you dry; undergarments keep you warm. Undergarments need to keep you warm when compressed or wet, produce very little lint, be easy to clean and inexpensive.

- **Passive Insulation** — Body heat is trapped in a layer of air inside the undergarment
- Adjust for warmer or colder water

Fabrics:

- **Synthetic Pyle** — Wooly Bears—Good insulator, but compresses quickly
- **Thinsulate** — Does not compress, may lose insulating capacity if cleaned incorrectly
- **Open Cell Foam** — Efficient Insulator, Good under pressure, No Lint, Good when damp (not good with flooded suit)
- Polypropylene wicking materials may be worn under garments for extra protection
- One piece, may include booties, low collar, bands to keep legs and arms from creeping, pockets, and fit similar to drysuit

Accessories

- **Hood** — Nearly half of the body heat can be lost through the head, no beard, thin face may leak, seal beneath chin, hair under hood, nose breathers may inflate hood
- **Boots** — Should be attached, with hard sole,
- **Gloves** — change with temperature, Dry with colder water—use with virgin wool under-gloves, wet with warm. Cuffs and rings required for attached dry gloves.
- **Relief Zipper (Men Only)** — Greatly appreciated—use only out of water.
- **Pockets** — convenient
- **Neck Ring** — allow seal to be pulled off your neck when out of the water
- **Weights** — Spread out weight, Ankle Weights restricts air movement, Add minimal weight to BC if designed to handle, remaining weight in belt. Weight Harness is not recommended.
- Fins to accommodate larger boots
- Low-pressure hoses must fit the regulator, and not be kink in route to Inflator valve.

Techniques

Before your first dive

- Check fit of suit, undergarment and seals
- Set up hoses

At dive site

- Set up dive equipment and lay out gear—keep warm
- Remove all Jewelry and Watches

Donning Suit

- Step into undergarment and hood
- Step into Drysuit and pull to chest
- Exercise wrist seals and slide in arms
- Exercise neck seal and pull overhead—without liner
- Burp air from neck seal by squatting down
- Have buddy clear undergarment from zipper and close zipper in three short pulls with the final being a firm locking pull. Diver has arms at shoulder height and bent forward.
- Fold the neck seal down, don dry hood liner, pull up hood tucking in hair.
- Don weights
- Don suit like a jacket to avoid damage, Connect Inflator Hose
- Check that weights are clear for ditching

In the water

- Check to see that weight is sufficient to sink
- Add just enough weight to keep suit from squeezing
- Compensate for buoyancy with BC, not Drysuit
- Be aware of heat/feet position for dumping excess air upon ascent
- Ascend in upright position, elbow up and bent, with BC deflator in other hand, and depth gauge where you can see.

Buoyancy Problems

- **Flooding** — Inflate BC and get out
- **Air in suit** - get exhaust valve high, bend elbow and press valve if necessary
- **Drifting upward** — kick down, invert, dump air and ascend slowly
- **Lost Weight Belt** — feet up, kick down to belt, or kick down to dump air

Dry Suit Exercises

- Descend without adding air to feel squeeze.
- Hover by adjusting neutral buoyancy
- While neutrally buoyant, use inflate and exhaust valves
- Simulate stuck inflator valve by holding in and disconnect
- Practice using BC rather than Suit for neutral buoyancy
- Stop at 10 feet for safety stop
- Practice over-inflation, rising, kicking down and dumping
- Practice spread eagle position for emergency ascent

Maintenance

- Rinse Dry suits in fresh water if used in salt or tainted water
- Be extremely careful with the suit when the zipper is closed, it can break
- Periodically wash latex seals with mild soap and warm water—to remove body oils
- Treat zippers with paraffin wax after every use—close zipper, wax, open zipper
- Periodically clean zipper inside and out with soft tooth brush and warm soapy water
- Dry and dust neck and wrist seals with pure talc after every use
- Periodically flush dry suit valves with clean water
- Roll suit from feet, fold over arms, store in bag with zipper open—suit must be completely dry
- Undergarments must be cleaned when dirty or displaying odor

Repairs

- **Equipment** - Scissors, roller, can for mixing glue, 2 liter bottle, rags, blow dryer, sand paper, talc, brushes, dry suit cement
- **Find the leak** - Close the zipper, plug openings with 2 liter bottle and rubber band, and inflate suit. Look or listen for leak, or wipe on soapy water
- **On site repair** - Clean area, buff with sand paper, place glue on suit and allow to set, place glue on patch and apply to suit, roll into place and allow to dry.