NB 2452

NORTHERN DIVER

COMMERCIAL SUITS & EQUIPMENT

ANTI-EXPOSURE TRANSIT SUIT MANUAL

NORTHERN DIVER TRANSIT SUIT MANUAL

Thank you for your purchase. We're sure you'll love your new Northern Diver transit suit. Please take the time to read this manual, and retain it for future reference.

This manual provides you with easy access to the key features and functions of our transit suits, along with recommendations on how best to service and care for your suit. Should you wish to know more about Northern Diver suits and equipment, please visit our website **www.ndiver-commercial.com.**

This manual is published in accordance to the requirements of **EN 14225-2.2005**. The products described in this manual are manufactured to the specifications prescribed by Northern Diver. This suit is fully SOLAS approved.

NB 2452

MANUAL CONTENTS

We are happy to answer any questions you may have. We are located in Appley Bridge, Lancashire, UK - only 5 mins from the M6 motorway (J27). Manchester & Liverpool international airports are only 40 mins away. Wigan North Western rail station is 2 hours &
3 mins from London Euston. We are more than happy to collect clients and return them after their visit.

Northern Diver International Ltd. East Quarry, Appley Lane North, Appley Bridge, Wigan, Lancashire, WN6 9AE, UK

Introduction

We would recommend that instruction should be given to potential wearers of these suit systems during normal site induction when the equipment is issued.

As these are specialist garments it is imperative that the fundamental parts of the suit and its construction are included in the induction process. The care of water seals and waterproof zips must be highlighted during induction so that the wearer understands the function of the suit and the correct method of donning and removal of the garment.

This will ensure the suit is worn correctly and that the correct use will increase the working life of the suit and the seals.

WARNING

ALL USERS MUST UNDERGO TRAINING AND FAMILIARISATION WITH A CERTIFIED INSTRUCTOR BEFORE USING THIS PRODUCT. PLEASE NOTE THAT THIS SUIT CONTAINS NO INHERENT BUOYANCY AND IS DESIGNED TO BE USED AT ALL TIMES WITH A SOLAS APPROVED LIFE JACKET

The following are important safety guidelines every user should adopt:
Follow a complete offshore survival course with a certified instructor and from an officially recognized approved training agency.

Become familiar with all your equipment before use.

Inspect the zip and seals for damage before each use.

Perform regular preventative maintenance on the suit, zip and seals.

Only allow qualified individuals to perform service on the suit.

Understand your personal limitations. Do not exceed them.

Key Specifications

Tri-laminate
Tri-laminate suits are constructed from a three-layer fabric (hence the name tri-laminate) consisting of a middle waterproof barrier of butyl rubber sandwiched between a tough nylon exterior and special polyester blend interior. The suit is sewn together with a purpose-modified sewing machine that provides a stitch that stretches. Then the inside surface of the seam is treated with a special heat reactive polymer, and sealed with a waterproof tape applied with a computer-controlled hot air welding machine. This provides an extremely dry and reliable seam. The tri-laminate suit operates on a slightly different principle than the neoprene, as the tri-laminate material has neither inherent buoyancy nor thermal protection. This style, known as a “membrane” suit, simply provides a waterproof shell under which the user can wear the correct choice of undergarments to suit the prevailing weather conditions.

Suit Zip

Your suit will be fitted with a YKK® Aquaseal® dry zip. The zip teeth must be kept clean and lubricated to operate properly for long product life.

Your suit zip is situated diagonal on the front section of the torso (front entry). You must place one finger directly in front of the slider as it is closed, helping to guide the undergarment or foreign objects away from the zip teeth. Also make sure that you fully tuck in the interior zip flap before closing the zip.

Always pull the slider slowly and in the direction it is travelling (never pull it at an angle). Ensure that there is no hair or clothing caught in the zip and that the zip has been fully opened before you put on your suit. Failure to open completely may result in the zip being damaged.

The zip must be fully opened before you remove your suit. Clean the zip with fresh clean water. If the zip is particularly dirty, a toothbrush can be used. If using a toothbrush, do so gently. Mild soapy water can be used for heavy soiling. Close the zip when you hang / store the suit. Do not fold, bend or apply pressure to the zip (other than the small amount of pressure required to open and close it).

WARNING

CLOTHING OR FOREIGN OBJECTS CAUGHT BETWEEN THE ZIP TEETH WILL CAUSE THEM TO SEPARATE, DESTROYING THE WATERPROOF INTEGRITY OF THE ZIP. THIS DAMAGE IS PERMANENT AND IS NOT REPAIRABLE. YOU MUST EXERCISE CARE WHEN CLOSING/OPENING THE ZIP.

YKK® Aquaseal® suit zip

Before using the suit, apply a suitable lubricant on the areas on the zip stop that the slider comes in contact with. Our Zip Wax must ***not*** be used with this zip, nor should any other wax-based lubricant. McNett Ziptech™ or Molykote® 33 have been tested by YKK® and are the lubricants that YKK® recommends. Slowly open and close the zip a few times. This will lubricate all the necessary zip components.

Neoprene neck & wrist seals

Neoprene seals can become more supple with use. If you find they are unpleasantly tight, the seals can be stretched simply by plugging the wrist and neck seals with objects of a suitable size and leaving for 12 to 24 hours.

Storage & maintenance
Store the suit so the seals are dry, cool (below 25°C) and out of direct sunlight. If the seals have been exposed to cold temperatures, they will become stiff and lose their flexibility. This condition is not permanent and can be resolved by a brief immersion in warm water. Before storing the suit for any length of time, dust the seals inside and out with pure talc (available to buy separately) as a preservative. Do not use perfumed cosmetic talc, as it contains oils, which can damage. Do not use oils or lotion on the seals. Avoid contact with copper.

Fitting Of A Suit

- First remove your watch as it could tear wrist seals.
- You should be able to reach both hands over your head, and be able to squat on your knees without restriction, while wearing the drysuit and the heaviest undergarments you intend to wear.
- The suit should not be tight in the crotch, or too long.

To ensure a good fit:
- Wear the bulkiest undergarment you are likely to wear under the suit.
- Make sure the suit is not restrictive in any area.
- Make sure you can raise both hands above your head, touch your toes, and squat to your knees without restriction.
- Make sure the crotch (with braces properly adjusted) is not more than 10cm (10 inches) below your crotch.

Donning the suit
First remove your watch as it could tear wrist seals, lay the suit out flat and do a quick overall inspection to ensure it is in good order.

Lubricate the neoprene seals using Northern Diver Drysuit Seal Lubricant (supplied in the maintenance kit).

Lubricate the zip a suitable lubricant for YKK® Aquaseal® drysuit zips.

Remove all jewellery – sharp edges can destroy the seals.

Fold the torso of the suit inside out over the legs to about waist level, so the braces are exposed.

Make sure the braces are correctly attached, and are not tangled or twisted.

Sit down if possible and insert foot first into the suit, making sure you do not tangle foot in braces.

Grasp suit material at calf level and gently ease foot into sock. Pull up on leg.

Repeat with other leg.

Grasp torso and ease suit up so that the crotch of the suit is correctly positioned.

Raise braces over shoulders and adjust so they support the weight of the suit.

When present, fold the outer cuffs back away from the seals.

Insert first arm all the way, taking care with the seal when pushing hand through.

Repeat with second arm. Try to make sure the inside zip flap is not curled under during this process. Make sure that if the drysuit undergarment is equipped with thump loops, they are fully retracted, and not caught between the seal and your wrist. This will cause a leak.

Pull up on the zip to close. Excessive force should not be required if the zip is correctly maintained. Position of the zip and neck seal closure can be adjusted to suit the prevailing conditions.

Removing the drysuit
To take off the suit, undo the neck seal if closed and pull down the zip completely.

Slide the suit down off the shoulders and grip the outer cuff protector. DO NOT pull on the neoprene cuff seal.

WARNING

PULLING ON THE CUFF SEAL COULD SPLIT AND DAMAGE THE NEOPRENE. TAKE EXTRA CARE WHEN REMOVING ARMS FROM THE SUIT.

Pull on the outer cuff protector as instructed on the suit. This will cause the neoprene cuff seal to reverse allowing it to pass easily over the hand without causing any damage.

Slide the braces over the shoulders, pull the top of the suit down to the waist then ease over the hips. Sit down and pull each leg out of the suit.

Applications for Use

Our tri-laminate suits are made of the finest materials and to extremely high standards of workmanship. However, they must be used within reasonable limits.

WARNING - DO NOT:
- Use the suit without a SOLAS life jacket

Pre-use suit checks
Before ***EVERY*** dive, make sure the suit is in good condition by checking the following:

- No visible damage to materials or accessories anywhere on the suit.
- Check smooth-skin neoprene seals for small tears or holes.

Inspect waterproof zip for excess wear, any damage and for sufficient lubrication.

Post-use suit checks
After ***EVERY*** dive, complete all the pre-dive checks listed above, and inspect suit for any possible new damage. Repair any damage immediately, or take the suit to Northern Diver for repair.

When you have finished using the suit for the day, thoroughly rinse the outside of the drysuit with fresh clean water to remove any dirt, sand or salt. Any stubborn stains can be removed by rubbing the area gently with soapy water. Clean seals with fresh water. Occasionally rinse the inside, which can be treated with a proprietary deodoriser.

Inspection intervals
In addition to the checks listed above to be performed before every use, the suit should be inspected and serviced on an annual basis.

Risk Assessment

Hyper/hypothermia
Suits are often used in extreme temperature conditions, where there may be combinations of cold surface conditions and cold water, or hot surface conditions and cold water. It is important to know your own personal thermal safe range, to avoid over heating, or becoming chilled. While a drysuit and warm undergarment have excellent thermal protection, they do have limits and your safe and enjoyable time on the water is variable based on water temperature and condition, workload, and your own body type. Hypothermia is the cooling of the body core to unsafe levels. Hyperthermia is the overheating of the body core to unsafe levels. Hyperthermia in drysuit use is most often experienced during prolonged exposure in hot weather, or during periods of excessive workload in warm, shallow water.

WARNING

Learn your own limitations and learn to recognise discomfort as a danger signal. Avoid Hyperthermia & Hypothermia as both can be harmful or fatal. Monitor your work rate during all activities to avoid excessive air consumption, fatigue, over heating and other symptoms.

Thermal protection rating of immersion suits

Due to the construction methods and materials used in all membrane immersion suits a low level of thermal insulation will be achieved unless used in conjunction with suitable warm under and intermediate clothing. To this end the international standard for testing Constant Wear suits requires the manufacturer to specify the components of the suit system including any underclothing and additional items.

The primary propose of the protection achieved from a dry seal suit such as the transit suit is to protect against cold shock. This is when the body is suddenly immersed in cold water. The secondary purpose is to give a level of thermal protection when worn with the appropriate under clothing. According to many studies the highest contributing factor to drowning is cold shock.

There have been studies as far back as 1922. The Merchant Shipping Advisory Committee on life saving appliances and more recent study conducted by the RLNI. All these studies have come to the conclusion that protection from cold water touching the skin in the early stages of immersion is one of the leading factors that increases the survival of the casualty.

The four stages where death can occur as a result of sudden cold-water immersion have been recognized by the scientific community since before World War II.

These are:
Cold Shock—kills in 3–5 minutes.
Swimming Failure—kills in 5–30 minutes.
Hypothermia—kills after 30 minutes.
Post-Rescue Collapse—kills during or hours after rescue.

As the planned recovery time is 15 minutes or less for most of the Wind Farm development sites it is this period that is most important. The first two stages of immersion—cold shock and swimming failure—kill more than half the people who drown. If a dry seal suit is worn in conjunction with a suitable life jacket such as the Falcon 275 the first 2 risks (Cold Shock & Swimming Failure) to the casualty can be reduced to a manageable point in respect of site risk assessments.

It's especially important to protect the casualty from first stages of drowning. To do that effectively, keeping the casualty dry is vital. Suits that offer thermal protection without the dry seal capability do not protect the user from cold water shock. In the wind farm and offshore transfer context where fast recovery is anticipated the flooding suit type does not protects the user from the most influential effects on the casualty's condition which is cold shock.

WARNING

Users should be aware that heat exhaustion may result from wearing undergarments which give thermal insulation too high for the prevailing weather conditions and/or the task being carried out.

Northern Diver advise that the following table is used when deciding which undergarment is most suitable for the prevailing conditions. This assumes exposure to the stated water temperature for a period of 2 hours, against a procedural requirement of 12 minutes exposure when immersed.

Water Temperature	Recommended Undergarment
2°C	Thermicore undersuit
5°C	Recommended clothing listed above
10°C	Thermalskin undersuit

Note: The user of the suit is responsible for ensuring they are comfortable in the prevailing weather conditions. Sea state, wind-chill and the users physique can all have an effect on how suitable the undergarments are for the working conditions and the above table is intended as a guide only.

Correct maintenance
A suit is a complex piece of equipment designed to keep a user comfortable in extreme conditions. Treat it with respect, maintain it correctly, and inspect it for wear and damage BEFORE & AFTER each use. Failure to take these precautions may be hazardous.

Allergies
A small percentage of people are known to experience allergic reaction to neoprene. Although this is less of a problem with suits worn in conjunction with an undersuit to separate the suit from his or her body, some exposure can still result. Be sure to determine you are free from neoprene allergy before purchasing any neoprene product.

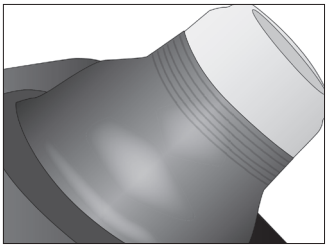
Troubleshooting

NOTE: A properly functioning drysuit is a closed environment and a certain amount of condensation on the inside of the suit is natural. Users exerting a lot of energy or spending time above water on a warm day with the suit closed will notice this more.

Zip leaks
Slider not closed all the way – have your buddy check for full closure.
Zip has failed – inspect for split in closed teeth.
Zip material failed – can either be punctured or damaged by abrasion.
Foreign material caught in teeth – dirt, sand, debris, or the drysuit undergarment is frequently the trouble.
The zip is old, worn out, or damaged in some other way – have it replaced.
Improper or inadequate lubrication of the zip.

Seal leaks
Seals leak for two reasons, damage or interference.
Check the seals for holes or tears caused by sharp objects, wear and tear, or chemical damage.
Check that there are no foreign objects such as hair and sections of undergarment.
Check they do not have folds that can create leaking channels, especially around the tendons in wrists.

Damage to suit fabric
The suit fabric may leak due to wear, abrasion, puncture or tearing.
Avoid sharp and abrasive objects.
Users exposed to corrosive chemicals must take extra care cleansing and rinsing the suit after each exposure. Some chemicals can degrade or de-laminate the suit materials to the point of failure.



Leak testing your suit
Your drysuit can be tested for leaks by plugging the wrist and neck seals with objects of suitable size, closing the zip and using the low-pressure inflation hose to inflate the suit. Wrap an elastic band around the seal to help the plug stay in place under pressure.

WARNING

DO NOT use GLASS objects to plug the neck or wrist seals. Occasionally, the internal pressure will blow the plug out of the seal. Glass can shatter, causing injury.

Once the suit is inflated, submerge it a section at a time in the bathtub, and inspect for leaks. Small bubbles will appear if a leak is present. Alternately, lay the inflated suit down outside, and slowly pour warm soapy water over the suspected areas. The soap solution will blow small bubbles, or create fine foam over the leak. Once the leaks are located, mark the area, rinse and dry the suit thoroughly, and repair the leak or book your suit in for a professional repair service at Northern Diver.

Repairing a Leak

Ensure the drysuit is completely dry. Wear protective gloves, such as latex gloves. Mark the puncture on the outside of the drysuit, and use this mark to mark the same area on the inside of the drysuit. Clean the puncture area by rubbing with sandpaper, and remove any loose particles. Apply 3 layers of Suit Seal (supplied in the maintenance kit), allowing 15 minutes' drying time between each application.

Note: Rub the first coat of Suit Seal in thoroughly until it soaks into the material – ensure the Suit Seal isn't just 'floating' on the material's surface, as this will make the repair less effective.

Apply 3 layers of Suit Seal to a repairs patch (supplied in the maintenance kit), again allowing 15 minutes' drying time between each application. Place repairs patch on the damaged area of the drysuit and use a roller to push out any air bubbles and ensure the patch and suit are firmly bonded together.

Allow 3 hours for the Suit Seal to dry, once dry test your suit again to ensure the leak has been repaired.

If you prefer, Northern Diver can provide this service.

With over 25 years' experience, our repairs and alterations department has your drysuit in safe hands. When suits come in for repair they are inspected, tested, worked upon and tested again before they return to the customer.

Custom options are also available on Northern Diver suits if you wish to add different elements to what you have purchased. We can change neck, wrists, socks, and boots to suit your requirements or add pockets, reflective panels and Kevlar® reinforcement on high wear areas. Please call or visit **www.ndiver-commercial.com** for more details.

Other Important Information

1. Follow all instructions.
2. Improper use or misuse of a drysuit can result in exposure to thermal hazards and rapid body overheating or cooling, which could result in stroke, seizure, hypothermia and death.
3. This manual is **NOT** a substitute for proper qualified instruction and is **NOT** supplied as such. This manual is supplied as a guideline for drysuit maintenance only.
4. Working in conditions that contain chemical, biological or nuclear contaminants is extremely hazardous and should **NOT** be attempted without being specially trained and equipped. In most cases, the Northern Diver drysuit you have purchased has **NOT** been adapted for use in polluted or abnormal conditions and is therefore **NOT** covered under warranty. Some suits that we manufacture are suitable for these conditions, but prior to use you **MUST** seek advice from us to ensure the drysuit will fully protect you.

Maintenance, Repair & Modification

It is not within the scope of this manual to provide complete and detailed repair instructions for all the situations that may be found. Basic maintenance for the suit, the materials and individual components such as zip, seals, and valves, etc., may be found under those individual headings.

Cleaning, disinfection & decontamination

After each use:
Rinse outside of suit with clean fresh water.
Wipe seals clean with clean fresh water.
Rinse valves with clean fresh water.
Hang suit up to dry.

If the suit got wet inside:
Clean inside with clean fresh water, or a disinfectant solution to prevent bacterial development.

Degreasing
If the suit is exposed to oil or grease, clean with a mild grease cutting detergent and a soft brush. Rinse with clean fresh water.

DO NOT ALLOW OIL OR GREASE RESIDUE TO REMAIN ON SUIT FOR ANY LENGTH OF TIME – IT MAY DEGRADE THE MATERIAL.

Storage & Transport
Once the suit is thoroughly clean and dry with the zip lubricated, store in a cool dry place out of the sun. Many suits have been damaged by rodents nesting in them when in storage, take care to store the suit away from areas accessible to them. Suits are best stored on the Northern Diver Multi Purpose Hanger that hangs the suit upside down by the feet with the zip closed. Additional advice may be found in specific sections above. Transport the suit in the storage bag / changing mat provided. Try to clean excessive dirt and sand from the suit before placing it in the bag.

Safe Disposal

If you need to destroy the drysuit please make sure to follow local regulations and prescriptions. Suits have an expected shelf life of 10 years.

Additional Information & Suit Components


SERIAL NUMBER

NORTHERN DIVER

MILITARY, COMMERCIAL, RESCUE & OPEN WATER DRYSUITS

CE BS EN ISO 14225-2:2005 DRYSUIT

HAND WASH ONLY | DO NOT IRON | DO NOT BLEACH | DO NOT DRY CLEAN | DO NOT TUMBLE DRY

CLEAN & DRY AFTER USE. STORE ON A HANGER IN A WELL VENTILATED PLACE OUT OF DIRECT SUNLIGHT. STORE WITH THE ZIP CLOSED.

Prior to use ensure you have read & understood the instructions for use.
The suit is only to be used by an individual who has had specific training in its use OR who is under the supervision of any industry recognised training instructor for use.
Suit to be used in conjunction with appropriate lifejacket or buoyancy aid.
IMPORTANT: Always be aware of the possibility of any materials used in the construction of the suit which may cause an allergic reaction in some individuals.
Designed & developed in the UK.

MANUFACTURE DATE

NB 2452

REPAIR NUMBER	SERVICE STATION	DATE

Northern Diver International Ltd
East Quarry, Appley Lane North, Appley Bridge, Lancashire, WN6 9AE, UK
+ 44 (0) 1257 25 44 44 | info@ndiver.com | www.ndiver.com

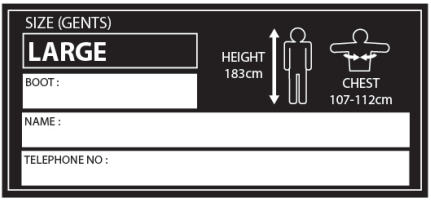
PRODUCT TYPE : DRYSUIT

MATERIAL: Upper body: 210D breathable fabric (70% nylon+10% pu+20% tricot), Lower body: Aquatex fabric (90% nylon, 10% rubber).

Suit inner labels
The suits primary internal label, located on the internal zip flap, is marked with the measurements that the drysuit has been designed to fit (see below example).

The secondary internal label is located on the back panel of the drysuit, clearly visible when the zip is opened.

This label gives more information on the suit and includes washing instructions, manufacture date and repairs/service log (your label may differ slightly).



Your suit details
Please note your drysuit details for future reference.

Suit serial number
Date of purchase
Colour(s)
Suit type
Suit Size
Sock size
Notes

Neoprene hood (supplied with selected suits)
All hoods combine vent technology with the added comfort of super-stretch neoprene. The vent system allows trapped air to escape from the inside of the hood, increasing comfort and ensuring a perfect fit throughout the duration of the dive. Hoods are manufactured from various thickness's dependant on the suit you purchase. All are produced with super-stretch neoprene, increasing flexibility and comfort and including our unique Ti-Ax® heat reflective technology, for superior thermal properties. Hoods are suitable for use with a range of Northern Diver suits.

Maintenance kit (supplied with the suit)
You will receive a variation of the maintenance products listed below depending on the type of drysuit you have purchased and the zip it is fitted with.

Drysuit Seal Lubricant - This specifically designed water based seal lubricant will extend the life of your drysuit's neoprene seals and ease getting in and out of your drysuit. Supplied in a handy ergonomic 200ml tube, an essential item in every diver's kit box.

Suit Seal - Used for repairs to holes and tears in suits and for use when sealing the Northern Diver Dry Glove Ring System to neoprene cuffs. Supplied in 21g tube.

Repair items - Each maintenance kit will be supplied with a rubber and/or cell neoprene length of tape for use when repairing damaged internal seams. Circular neoprene repair patches are also included for use on the interior of your drysuit when it has a puncture or tear.

Drysuit Storage Bag/Changing Mat (supplied with selected suits)

Manufactured from ultra durable fabric that unzips and opens up for use as a changing mat and has a water resistant lining.

Supplied with colours/artwork to match the relevant drysuit.

Packaging
All Northern Diver packaging is supplied from sustainable sources wherever possible.

Drysuit & undersuit boxes have been redesigned to be more robust and take up as little space as possible. Where viable all packaging is recyclable.

Northern Diver is leading the way with BSEN ISO 14001 Environmental Management Systems status.

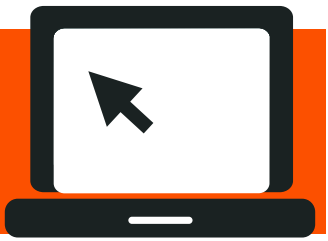
12 Month Guarantee
If you experience a fault within the guarantee period you can have the drysuit collected or call in with your suit.

We aim to have the problems resolved within a week of booking in the suit.

Check out our full product range online.

View our full range of commercial / offshore suits and equipment at :

www.ndiver-commercial.com



Suit Accessories (available to buy separately)

Visit www.ndiver-commercial.com

Apollo Bio-Seals
Heralded by DIVER magazine as “truly keeping the water out”.

Some divers may experience a trickle of water down their seals now and again, usually as a result of a channel caused by a tendon. Hopefully not for much longer. Apollo has launched this innovative product to combat water ingress, which works excellently. The seals simply slide over your neck and wrists, and form an effective bond with your drysuit seal, whether you use neoprene or latex seals. The Cosmo-gel that the seals are made from is super soft and super stretchy (1300% - 1500% stretch). As you could deduce, they are very comfortable and mould to your skin brilliantly. On top of this, durability isn’t compromised. This product is latex free.

LED Flexi-Light sticks
High intensity LED that projects light through a flexible silicone stick. The Flexi-Light has a simple press-to-operate button under the coloured marker, which activates flashing, constant and off modes. Light sticks are re-usable and versatile. Mode 1: Flash, 36h burn time, mode 2: Constant, 20h burn time.

Internal Braces
Come in handy post-dive, if you wish to roll down the top half of your drysuit, without removing your suit completely.

Custom.
Tailoring & Repairs

Custom options are available on drysuit's for those who want to add different elements to what is fitted to the suit.

We can change neck, wrists, socks, and boots to suit your requirements or add pockets, reflective panels and Kevlar® reinforcement in high wear areas.

Our full list of custom tailored options can be found on our website or call us to discuss your requirements.

Custom tailoring options are dependant on the type of suit you have purchased. Check the availability of tailoring options on specific suits with us.

Need an instant repair?
A fast track service is available. Contact us on the telephone number below for more information.

Repairs Department : +44 (0) 1257 25 69 37
Opening Times : Mon - Fri 8.30am to 5.00pm

Neil Tordoff
- Military & Commercial Sales Director

Northern Diver Undersuits
Undersuits provide crucial thermal protection when diving, trapping air and maintaining body heat during the dive and also between dives. Modern undersuits can range from simple fleece type garments to advanced suits with anti-compression panels or even built-in heating.

Your thermal requirements will depend on water temperature, your suit type and how much you feel the cold. Water transfers heat from the body up to 25 times faster than air which means a diver will quickly start to feel the cold without protection. The colder the water, the quicker the onset and the greater the need for undersuits and base layers.

Suits have their own thermal properties; some are much better than others. neoprene suits are much warmer and require thinner undersuits, but membrane suits provide very little thermal protection and therefore require thicker or even layered undersuits.

Too much insulation can lead to dangerous overheating. Too little insulation can lead to the effects of hypothermia and death. Always ensure that body extremities are also well insulated-wear suitable gloves, hood/hat and socks or boots.

Undersuits are available in a wide range of styles, thickness grades and materials, with our own spanning from the thinnest Thermalskin up to the much thicker and more thermally insulating Metalux® Arctic. Keep in mind that you can use different combinations of undersuits and base layers to find the thermal protection that works for you.

If you're unsure on what thermal protection to wear, feel free to call us for expert advice on **+44 (0) 1257 25 44 44**. You can email if you prefer – **info@ndiver.com**. Or if you are nearby, feel free to visit us.

Guides for which Northern Diver undersuits to wear with each drysuit can be found online or in the **Northern Diver drysuit catalogue** available in store or downloadable online.

www.ndiver.com

THERMALUX

A high tech fleece/Lycra® mix for superb insulation and flexibility. Thermalux® undersuits offer a lightweight solution to keeping warm.

The microfibre and fleece layers retain body heat, without excessive bulk.

Flexible panels in the lower back, shoulders, cuffs and feet give exceptional freedom of movement, without sacrificing warmth.

Ergonomically designed foot stirrups ensure the garment stays in position during use, keeping material movement to a minimum and avoiding uncomfortable creasing between the outer garment and your skin.

- Breathable microfibre outer shell
- Super absorbent micro fleece inner lining
- Ultra lightweight and quick-drying
- Bacteria and fungus resistant
- Elasticated Lycra® panels
- Thermalskin cuffs
- Thermalskin foot stirrups
- Pockets on the hips
- Two way YKK® Aquaseal® zip

Northern Diver specialises in layer system undergarments for all conditions.

Visit www.ndiver.com to view our full range of thermal garments.

METALUX ARCTIC

METALUX TEMPERATE

Metalux® is one of the most lightweight, high-performance insulating materials available.

It is designed to reflect thermal radiation and reduce air movement, even when wet or compressed.

It retains its thermal integrity throughout the life of the garment, which is hard-wearing and machine washable.

- Lightweight
- Fleece-lined
- Quick-drying design
- Bacteria and fungus resistant
- Pockets on hips
- Elastic foot stirrups
- Two way YKK® Aquaseal® zip

The Thermicore 3-piece undersuit provides fantastic thermal protection, above or below the surface.

This undersuit is available to buy in 2 thicknesses. The **Thermicore** and the thicker version the **Thermicore Sub Zero.**

Each 3-piece system is comprised of a top, bottoms and socks. Each garment fits closely to the body to maximise its thermal performance and ensure that you remain comfortable when diving.

Thermicore and **Thermicore Sub Zero** features:

- Durable outer shell
- 1 layer super-soft fleece interior lining
- Seams are flatlock stitched
- Super-soft fleece comfort collar
- Integrated foot stirrups
- Elasticated adjustable waistband
- Elastic thumb stirrups
- Red or silver stitch detailed finish (Red stitch available whilst stocks last)
- Abrasion resistant overprinting (Available on selected styles and sizes)
- Low profile sock seams
- Supplied with drawstring carry bag

It's well-known that when diving, some feel the cold much more than others. Depending on the depth that you go to and the time of year in which you are diving, temperature also fluctuates. With this in mind, we have developed the Thermicore Sub Zero, a thicker version of the Thermicore.

Thermicore Sub Zero additional features:

- Additional zipped arm pocket
- An additional super-soft fleece interior lining, making the undersuit thicker and perfect for more extreme conditions

Please note various styles of these undersuits are available. Contact us for up to date stock information.


For protection to the core, dive Thermicore.

THERMICORE

THERMICORE SUB ZERO

User notes

Use this space for any extra information you need to keep.

Find Us Online.

View our extensive product range

www.ndiver-commercial.com

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