Diving
Suits & Garments
NORTHERN DIVER DRY SUITS

**DIVEMASTER**, the popular choice for quality and style

Divemaster sets the standard by which other sports dry suits are judged. From the same family as our Reefmaster suit, it offers you a little extra in terms of specification and options. Its specially formulated 4mm hyper-compressed neoprene means real diving flexibility. So, when worn in tandem with any of the Northern Diver under suits, you can use your Divemaster in a wider range of waters. It has the outer durability provided by the heavy-duty pique nylon lining, whilst in your suit, the Ti-Ax Thermacote heat reflector ensures you remain warm in the most testing conditions. Available as a perfect fitting made-to-measure suit or in 11 men’s and 9 ladies’ standard sizes for those eager to make an instant splash, it incorporates a host of premium features as standard. For custom fit on stock sized suit see information on standard size chart (size chart available on request).

**Specifications:**
- heavy-duty zipper that won’t let you down
- Neo-vulcanised hard-soled boots that are very durable
- A tool pouch with a knife attached
- It comes complete with standard and torch pockets
- Radar/light reflective tape gives extra peace of mind
- Features a Northern Diver blowgun inflation system or push button swivel inflation system with hose and adjustable exhaust valve

Please ask for other available Northern Diver dry suits like CNX, CORTEX, ORIGIN 800, VORTEX, etc.
By constantly improving existing technology whilst developing new fabrics, Northern Diver continues to lead the field and this latest offering builds on the tradition of Northern Diver quality, design and performance.

- Built from Ultra-Durable Cordura.
- Rubber Taped, Sealed for Life Seams.
- Neo-Warm-Neck as Standard with Separate Neoprene Hood.
- Optional Unique Attached Hood System.
- Neo-Warm-Cuffs which integrate with our Easy-Fit Dryglove System.
- Unique Cut Ensures Optimum Fit & Comfort.
- Internal Braces.
- Equipment Pocket.
- Swivel Inflation Valve
- Adjustable Exhaust Valve.
- Complete with Drysuit Bag, Manual & Maintenance

Colour Options:
- Yellow/Silver/Black.
- Blue/Silver/Black.

Available in:
- 11 Gent’s Sizes.
- 9 Ladies’ Sizes.
- Custom Tailored Option.
Flectalon is a lightweight, high performance insulating material designed to reduce air movement and reflect thermal radiation.

Flectalon retains its insulative qualities when wet or compressed and the quilt construction retains thermal integrity throughout the life of the garment.

- Regular insulators breakdown after frequent washing.
- Flectalon outlasts all hollow-fibre undersuit insulators.
- Reflects Body Heat Back to the Diver.
- 100 % Breathable. Insulates Totally.
- Ultra Lightweight. Quick-Drying.
- Bacteria & Fungus Resistant.
- Fleece Lined.
- Ultimately Durable
- Available in 100, 200 & 300 grams thickness
- 11 different gent’s sizes
- 9 different ladies’ sizes
- Custom tailored option

Hotmax Socks are made from wicking fleece which means that your feet remain warm and comfortable. Moisture is always present inside any diving drysuit, often produced by the diver’s own body. The Hotmax wicks this moisture away from the skin to provide the ultimate in foot comfort. Hotmax Socks are double-sided flat-lock stitched which means that there are no raised seams to cause discomfort. They also have a special heel protector and are cut to fit perfectly.

XS (36-37), S (38-39), M (41-42), L (43-44) & XL (45-46).
BARE TRILAMINAAT ATR HD

- Three-ply butyl coated polyester upper and a durable Cordura-like/Polyester lower.
- Self-donning heavy duty BDM front zipper with protective zipper cover.
- Durable 3mm neoprene comfort-fit neck seal.
- HD Bi-thickness conical latex wrist seals with talc bag.
- Radar and light reflective patches for added safety.
- K-Padz wear resistant Kevlar kneepads for durability.
- Lower leg anti-inflation gaiters with flex panels and zippers.
- Optional Cuff-rings for Dry Glove System or replacing latex wrist seals in the field.
- Delivered with HD 7mm neoprene, vulcanized BARE boot.
- Optional compression-resistant Soft Boot used with the rugged lace-up Trek Boots Delivered in a storage and carrying bag with owner's manual.
- Stock valve placement is center chest and left upper arm; installed DSV 3600 swivel inflator valve and DSV adjustable low-profile exhaust valve included.

<table>
<thead>
<tr>
<th>SIZE</th>
<th>XS</th>
<th>S</th>
<th>MS</th>
<th>M</th>
<th>MLS</th>
<th>ML</th>
<th>LS</th>
<th>L</th>
<th>XL</th>
<th>2XL</th>
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<td>175-195</td>
<td>180-200</td>
<td>185-205</td>
<td>200-225</td>
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<td>5’5”-5’8”</td>
<td>5’9”-6’</td>
<td>5’7”-5’10”</td>
<td>5’10”-6’1”</td>
<td>5’9”-6’</td>
<td>6’-6’3”</td>
<td>6’1”-6’4”</td>
<td>6’2”-6’5”</td>
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<td>BBK</td>
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Technical Diving Equipment

HEAVY DUTY DIVER BOOTS

VIKING Welter diving boot
Tough rubber safety boot with steel toe cap, nailguard and integrated weights, 10x500 gr. To be used on top of your suit for swimming inspections also. Now improved with Kevlar®!

The MK1 and MK2 Heavy Duty Workboots improve diver-safety and extend the working life of all types of diving suit, even in the roughest conditions, by protecting the lower extremities from sharp and abrasive materials, and from impacts. Wearing the boots with optional lead insoles ensures a more secure foothold for the diver, and also reduces the risk of a feet-first ascent.

The specification set for these boots is uncompromisingly high. By insisting on superior quality materials and workmanship, We are able to assure that the boots will prove to be exceptionally resistant to wear, even on work sites which subject them to exacting demands.

The boots are generously proportioned to fit divers with feet up to British size 11 (continental 46). Full allowance is made for the diving dress sizing. Specifically designed to counter the rigours of commercial diving, the diver is assured of a far higher degree of protection than can be expected from Wellington boots and other footwear inappropriately adapted for diving.

Optional Lead Insoles
These soles are available in 3 Kg each.
A Quantum Improvement in Diving Safety:

- Biological Pollution
- Nuclear Diving
- Chemical Recoveries

Background
The need to utilise diving equipment to help isolate the diver from a range of possible in-water contaminants has long been recognised. Drysuits with hoods have been used with full face masks with varying degrees of success for a number of years. Free-flow diving helmets attached directly to drysuits have been another alternative, and surface demand diving helmets (similarly mated to a drysuit) and fitted with double-valved exhaust ports were also an option. However, these systems all have basic flaw; they exhaust directly into the surrounding water. In doing this they expose an obvious route for water ingress, as each time an exhaust valve opens, water (or water droplets) frequently enter the helmet. Anyone questioning this simply has to survey the average full-face mask or helmet at the end of a dive to witness a significant amount of water that is not simply sweat and condensation. Very few helmet divers ever really experience a 'dry dive'.

Most divers experience a level of leakage into the diving mask or helmet which is normally regarded as acceptable in clean water. The water dump valve at the bottom of standard masks is for just this occurrence. However standard exhaust valves, ill-fitting neckdams and poor neck clamp arrangements will permit water leakage into the helmet or mask.

Levels of Contamination
At what point is water regarded as contaminated? Although no definition exists of the levels of the majority of contaminants that cause health problems in diving, it is obvious that diving in certain areas requires protection e.g.

- Sewage plants and outfalls
- Chemical spills into waterways
- Nuclear cooling ponds
- Chemical drum recovery
Protection

Respiratory Protection
Respiratory inhalation is the most rapid route for any contaminant or substance to enter the blood stream. Water droplets and water vapour can form within the diving helmet from any leaked water. Operation of the de-mist valve and turbulence of the gas mixture from within the helmet through operation of the breathing valve all contribute to creation of droplets. Even more straightforward is ingestion of water through swallowing.

The primary contamination protection should be protection of the gas quality.

Skin Protection
The second obvious method of contamination is into the bloodstream via the skin. Adequate protection from water contact to the skin is available by use of drysuits - obviously wetsuits are not suitable. However, there are a number of considerations even in the use of drysuits:

1. Suit material compatibility with the contaminant as certain chemicals will react with some suit materials.
2. Latex cuffs and neckseals may have similar compatibility problems to "1".
3. Suit inflation and in particular exhaust valves are regular sources of water leakage into the suit.
4. Hand protection should be considered with the use of chemical compatible dry gloves.

The 'Dirty Harry' closed circuit diving system is designed to provide a safe and efficient surface supplied system which minimises the risk of contact between the diver and the water in which he is diving.

The basic method of achieving this is by providing a closed circuit breathing system whereby the divers exhausted gas is returned to the surface and exhausted to the atmosphere rather than exhausting into the water.

The helmet is attached directly to the drysuit. The proven Ultrajewel 601/17c Reclaim Helmet is used in conjunction with a Diver Panel, Exhaust Control Panel and the 'Dirty Harry' Drysuit which is available in various materials.
Major Components & Function

Ultrajewel 601 Helmet Assembly
The Ultrajewel 601 17c Reclaim Helmet consists principally of the Ultraflow 601 Demand regulator and Ultrajewel 601 Exhaust Reclaim Regulator fitted to a Superlite 17c Helmet.

The Ultrajewel 601 Helmet is suitable for diving depths up to 450msw (and conforms to the HSE/NPD Work of Breathing requirements) and is designed to provide fully closed-circuit demand and exhaust functions which minimise the risk of water from the diving environment entering the diver's helmet.

The Ultrajewel 17c helmet has the patented Ultrajewel 601 exhaust regulator. It is so simple it has only two moving parts and this two stage valve provides diver security.

The Ultraflow balanced 2nd stage regulator overcomes pressure fluctuations in the supply system allowing the valve to provide adequate breathing gas under all conditions.

Typically, the pressure losses experienced in many dive panels and umbilicals often lead to a regulator not conforming with the HSE/NPD Guidelines for Breathing Resistance.

The Ultraflow regulator permits a wide range of pressures to reach the helmet (between 5-20 bar) and still performs within the Guidelines.

The helmet neck ring is bonded to the 'Dirty Harry' suit to prevent potential water ingress at the neckseal.

Umbilical
The 'Dirty Harry' umbilical PP070 is constructed from the following components:

1. 1/2” RH-08 Return Line/ Reclaim Hose.
2. 3/8” DH-06 Air Supply Hose.
3. 1/4” DH-04 Pneumofathometer Hose.
4. 4 Core Communications Cable.

The cross sectional diagram of the umbilical is shown to the right.
A benefit of the Ultraflow regulator's ability to accept supply pressures up to 20 Bar is that this enables a small (1/4\"") hose to be used, if required, rather than the normal 3/8\", hence reducing the umbilical size. Whereas the system is normally run on conventional hoses, we can offer (to special order) this specially designed small diameter umbilical for use by dive teams who have space and size limitations. With a diameter of only 32mm (1.25\") and containing gas supply and return hoses, pneumo and comms, this umbilical is still smaller than many conventional open circuit systems.

**Suits**

Dry suits made in three different materials are available to help overcome material compatibility problems that may occur in some chemical situations. The suit materials are:

1. Polyurethane
2. Butyl Trilaminate
3. Natural Rubber.

A chemical compatibility chart relating to the material types should be used to enable correct selection. Unless otherwise specified the suit supplied as the standard product is the polyurethane suit. This material has the advantage that it is easily cleaned and resistant to most hydrocarbons (common in harbours and many dive sites).

An inflation valve is fitted to compensate for squeeze. Two exhaust valves are fitted to relieve suit overpressure. One is fitted on the left upper arm. This would normally be used and adjusted.

As this is a common point of water ingress, a special incorporated pocket just behind the valve to accept super-absorbent material pads has been mounted. The second valve is fitted centre lower chest, in case of failure of the first valve.

Gloves are available in a variety of materials and finger styles. The standard gloves supplied are 5-finger thick latex gloves with cotton liners. Additional thermal protection may be required depending upon conditions. The gloves are retained by a cuff-ring/ 'O'-ring combination (see manual).

**Note:** The drysuit cuff seal effectively seals off the glove in case of puncture of the glove material. However the gloves need to be pressure compensated to avoid squeeze. This normally occurs through leakage from the wrist seal into the glove but the user may wish to use a small diameter flexible tube to permit pressure compensation. Correct procedures are also required to ensure that the glove does not dislodge during ascent (see manual).
Exhaust Control Panel
The exhaust control panel provides suction to the exhaust valve on the Ultrajewel 601 helmet. This ensures that the divers exhaled air is ducted away from the diver to the surface. At depths where the hydrostatic pressure is insufficient to vent the helmet unaided to the surface the vacuum assist is essential.

The exhaust control panel is required to be used from the divers entry to the water at depths of approximately 6-10 metres depending on umbilical length. The panel is required to be used at these depths both on ascent and descent.

The panel is constructed of stainless steel and other low corrosion components and is furnished with all necessary filtration, controls and gauges.
The System

Each two diver system consists of:
1. Two drysuits (one for each diver) - the suit material needs to be specified by the customer as does the sizes required.
2. Two Ultrajewel 17c Reclaim Helmets.
3. Two Umbilicals (Length to be specified), but normally 75m.
4. One exhaust control panel.

Adequate breathing quality diver gas and gas to drive the exhaust panel is required.

Test Data for 'Dirty Harry'

Trial Depth: 60 metres
Breathing Gas: Air

Even at the extreme density of air at 60msw (equivalent to Heliox at 400msw) the helmet still performs exceptionally well.

The graph shows breathing performance of 'Dirty Harry' at breathing rates from 15lt/min to 90lt/min RMV. The work of breathing (measured in joules/litres) is compared to the dotted line denoting the maximum W.o.B. permissible within the HSE/NPD Guidelines for Manned Underwater Breathing Systems.

* Important - Safety Notice

We do not accept responsibility or liability for incorrect use of this equipment. Diving in polluted / contaminated waters is extremely dangerous. It is essential that the contractor, user and diving team fully understand the type and level of contamination to be encountered in and around the dive site. It is essential that appropriately qualified professionals assess the suitability of the equipment to be used. The compatibility of the components and materials of the Dirty Harry system, and of course other equipment to be used, must be verified by appropriate persons.
Modular suit comprising a 5.5 mm or 7mm one-piece, an over vest (7mm) with or without hood and a separate hood. All in Ultrastrech Neoprene.

**ONE PIECE SUIT:**
- 5.5 or 7mm one pieces suit without hood, back “Glock” closure.
- Double seals on wrists and ankles, composed with a 2.5 mm ultra-strech “glideskin” and a 3.5mm (5.5 mm one piece suit) or 4.5 mm (7 mm one piece suit) with a zip closure.
- Ultra-soft 5mm neoprene flex panels at the arms.
- Watershield : internal 2.5mm under veste, limits water entry.
- New V Lycra collar for more comfort, internal “glidesin” prevent water entries.
- “Grooved Skin” neoprene collar.

**OVER VEST:**
- 5.5 mm Shorty without hood or 7mm shorty with attached hood.
- Ultra-soft 3mm neoprene crotch comfort panel Separate 5.5 hood: With smooth bib and face seal and comfort panel on the neck.
HOT WATER SUITS

Features

• Hyperbaric Neoprene Suits will retain their original sizing longer in spite of the conditions.

• Manifold 30lt/minute/approx 6gpm

• Kneepads

• ‘Easy Adjust’ cuffs and ankles

• Hot-line water take-off

• Harness attachment points

• Tool Pockets

• Glove and Boot attachment points

• Name badge

Sizes Available:
XXLT, LT, MT, S, L, XLT, M, ML, XL

Hotwatersuit consisting of:
• Hotwatersuit
• Hotwater undersuit
• Hotwater suits boots
• Hotwater suits gloves
An easy don rescue suit, ideal for quick response rescue swimming situations and fast boat work.

Features:

- Nylon acrylic Kneepads with Neoprene padding
- PU seat reinforcement
- Neoprene glide skin neck & cuff seals for added comfort, warmth and durability
- Internal braces
- A fitted pocket on the right thigh
- Thermic neoprene boots provided as standard
- Front bib entry system that allows easy self-donning and does not hinder movement
- Reflective taping around the cuffs

S, M, LM, L, XL, XXL and Made to Measure

Yellow and black