

TECHNICAL RESCUE ARB CLIMBER WILDERNESS SAR ACCESS & RESCUE

BUYERS GUIDES

Water Rescue

Comprehensive free MARKET GUIDE to all of the key and less well-known products with specifications.

Updated with new data and products monthly.



SONAR EMILY

- Easy Operation based Humminbird SONAR
- Real-time imagery for search and recovery missions
- Light weight (17 kg)
- Line of Sight technology
- GPS Accurate Mapping
- Navigation Lights for Night Missions
- Side scan, downward imaging and bathymetry
- SD cards for recording and post-processing
- Autonomy through easy waypoint entry
- SARHAWK Post Mission Processing Software

SWIFT WATER RESCUE EMILY

- Line of sight technology
- Battery powered, jet boat
- Fast and durable, 40 km/h
- Navigation Lights for Night Missions
- Easy to deploy off riverbanks, piers, bridges
- Self-righting technology for strong currents



For UK: info@emilyrobotuk.co.uk
For US: info@hydronalix.com

BUYERS GUIDES

Water Rescue Equipment



OTHER EQUIPMENT FOR WATER RESCUERS.....

Ropes, descenders & carabiners are in **Rope Equipment**

Helmets, headtorches, med-packs, spine-care & stretchers are in **PPE & CasEvac**

'Black' tactical and theatre/film rope, hardware & access items are in **'Black' Equipment**

Larger cases, area lighting, tripods & high directional are in **USAR/Extrication**

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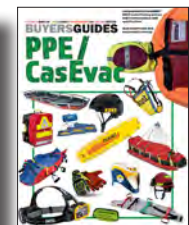
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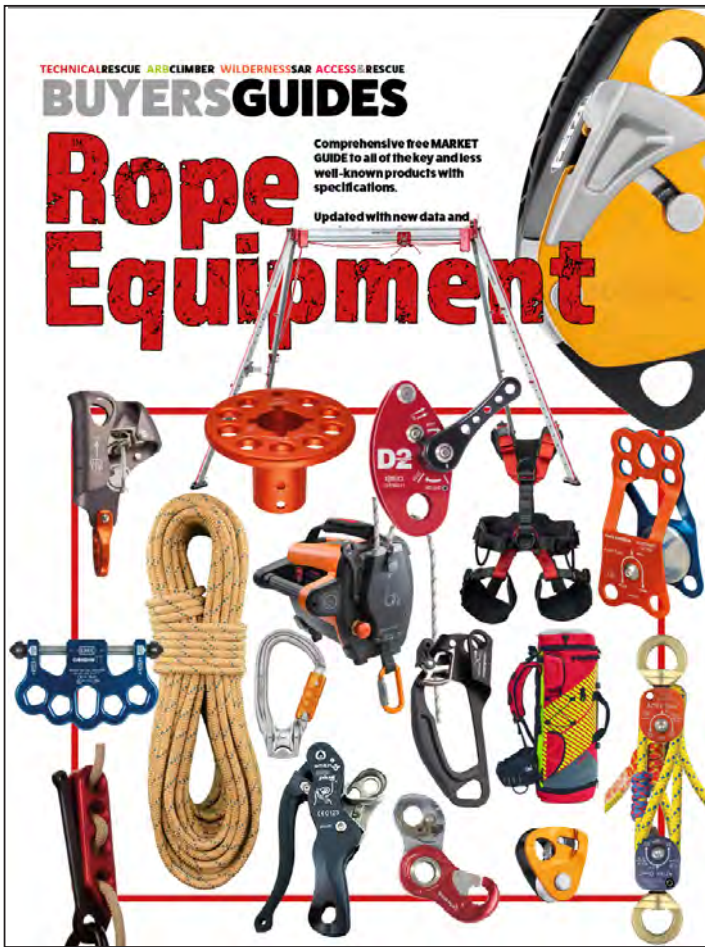
Welcome to our **BUYERS GUIDES**. These are free to all as a page-turning pdf or you can download a regular PDF by clicking on the cloud icon. Many of these GUIDES originally appeared in our print magazines so have been updated and will continue to be updated every month. The same link that you used this time can be used anytime to see the latest version. New Guides and those appearing in forthcoming magazines will also be incorporated into the relevant **BUYERS GUIDES** building into an amazingly comprehensive guide to the best products on the market.

The tabulated data in our GUIDES is non-subjective although the comprehensive introductions do have subjective comment and pick out key and interesting products.

MANUFACTURERS can contact us at any time to update the information on a product(s).
admin@rescuemagazines.com.

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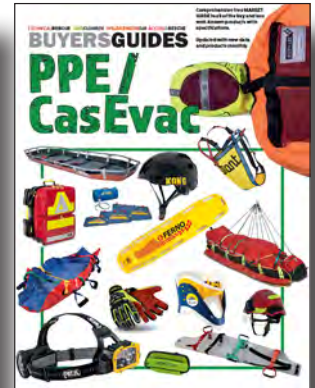
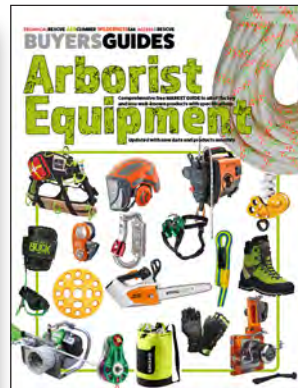
- Chest Harnesses
- Swivel Pulleys
- Specialist Rope

WATER RESCUE pt2

In December 2023 we will add the following product groups to this BUYERS GUIDE:

- Hovercraft
- Air Boats
- RWCs (JetBikes)
- Inflatable Rescue Boats

Check out our other BUYERS GUIDES



KEY TO TABLES:

Across all of our BUYERS GUIDE tables, some of the data entries are quite complex in appearance and you do need to refer to the individual keys to fully understand the information in the tables. Note that in the print magazine we have tended to round down lbf (pounds force) from KiloNewtons as a straight 2.2lb:1kg conversion but these GUIDES use the actual lbf to KN conversion which is a little higher at almost 225lbf:1kN

Cyan blue is always a variant of the main model shown. data relating specifically to that version will be highlighted in cyan blue or any squares or circles may be outlined in cyan blue ■■■●●● the cyan blue outline is admittedly difficult to spot on the green square or circle.

□□□○○○ An outline square or circle of any colour = an OPTION, not part of, or present, in the data shown

●● a solid circle indicates that the usage or feature indicated is OK but not ideal. It may be a usage that is not intended but it can function in that role like a descender being used as an ascender

🇺🇸🇹🇼 The main flags shown are the origin of the company listed but there may be a smaller inset flag like this Taiwan flag, indicating that the country of manufacture is different.

£\$€ Prices shown in burnt orange are currency conversions only. They do not reflect the additional import costs like shipping, import duty and local taxes so are a very rough guide only

Page corners are colour coded to common groups of equipment eg. Watercraft are in blue, rope is in lime green. Rope related equipment is in red. tools, knives and hand-tools are in orange Technology/drones/UAVs is in berry and safety/PPE is in green.

Water Rescue & Water Safety RESCUEDOG PFD



Above: Alp Design's Delphinus harness and in action on an Italian Swim-Rescue Newfoundland. top : Alp Design's Turtle
Middle: Julius K9's 3in1

Unlike our previous Guide to Rope Rescue/Access Dog Harnesses the majority of companies making Dog PFDs are not from the rescue sector. Some are specialist marine-safety companies like **Baltic** and **Crewsaver** and some are specialist dog-harness companies like **Ray Allen Mfg**, **Julian K9**, **Non-Stop** and **Ruffwear**. The exception to this is Italian Caving and rescue specialist **ALP Design**, now part of **Kong** (the climbing company not the dog-ball manufacturer although they too have a basic pet dog flotation harness that we haven't included). Their two models are both specialist swim-vests with lift capability. Aside from 4 models suitable for swim-rescue, the rest are Pet Flotation Devices, an acronym we've made up and not to be confused with human Personal Flotation Devices. These are technically NOT life jackets which have an inflatable element to orientate the wearer head-up if unconscious. PFDs are for rescue dogs unexpectedly working around water and also for in-water swim-training like the Norwegian Non-Stop harness pictured on the right. Buoyancy doubles as thermal protection for ground work in colder climates but is otherwise a cumbersome prospect for a non-water dog. Perhaps the most versatile is **Ray Allen's Modular LLC** which is a webbing and mesh 'shell' into which you can mount or swap a flotation jacket, cooling pads and stab/bullet protection and/or kevlar belly shield against sharp terrain. The **Julius K9 3in1** is also a

versatile option because it allows float pads to be inserted into or removed from a neoprene jacket. The newest addition to this genre is the *UnderDog* (below) which comes from a source you might have thought already had such products - **MUSTANG SURVIVAL**. This is one of the best names in professional water safety and having used their gear professionally for decades we we have a high degree of confidence in their products.



Most rescue dogs would wear a life jacket in exactly the same circumstances as their handler - as a precaution against falling into water - perhaps when searching around water or over water in a boat in the case of cadaver dogs but there are some dedicated water rescue dogs whose job it is to enter the water, swim to a struggling human and provide a tow back to safety or perhaps assist a human rescuer. These would use dedicated float harnesses with the **ALP Design** models the only options to have strategically located side handles for a victim or rescuer to hold onto. All other floatation vests in this GUIDE are intended solely for the safety of the dog should it fall into water. Unlike a smaller rescue dog with a 'personal' floatation harness, direct contact or tow-rescue dogs like the Newfoundland in the title picture are large, powerful dogs that can resist being 'swamped' by a panicking in-water casualty. In the title picture a tow strap is attached to the top eye which a struggling swimmer can grab to deploy and then be assisted back to shore or the boat. In-water rescue dogs require a degree of self reliance on the part of the casualty to perform a 'rescue'. Think of them more as an in-water version of a sight-assistance dog.

It is a little surprising that only the **ALP Design's 278/Turtle** and the **Ray Allan Modular LLC** have rear leg straps or the option to add them because they provide much greater security in terms of harness retention. As with the hoist-capable harnesses discussed in the previous issue, there can be a danger that the dog can pull backwards out of all other harnesses in this GUIDE

perhaps when scared, exhausted and someone is trying to pull them to safety or when connected to a tether and unwilling to be pulled wherever you intend them to go. Admittedly, this may be a peripheral concern and some like the **Julius K9** and **NRS** models would argue that their body wrap design with additional tensioning should negate this but it really depends on whether the dog has been secured into the harness because it is *definitely* entering the water or *just in case* it might fall into water. In the case of the latter the harness may be fitted less firmly to allow for comfort and fur/undercoat that is much bulkier when dry than it is when wet. Once the dog has entered the water the fur inevitably reduces in volume and the harness may be looser than the optimum fit. The **Delphinus** harness has two quick securing Velcro straps (with reflective strips) that mean the dog is at least partially secure within seconds even if the two buckle straps fail to be secured before the dog is swamped. These also mean the harness can be more quickly tightened should winching or lifting be required though it is the buckled straps that provide the true lift/hoist capability.

Much simpler in design, and representative of many of the harnesses in this GUIDE is the **NRS CFD** Harness. Effectively a one piece harness that can be slipped over the dog's head and secured around the chest/neck and under the belly which

RESCUE DOG PFDs

needs plenty of padding because a wet dog sees a huge increase in weight which the padding and lift handle needs to be able to cope with. The eye on the top is for a tether NOT for lifting. Remember that such harnesses also function well in providing thermal insulation on dry land in colder months. Even though companies like **NRS**, **Crewsaver** and **Baltic** are professional water-safety companies, theirs and some of the brands not associated with military or law enforcement are intended more for pet animals than they are for professional rescue dogs although **Baltic's** most extensive range of dog

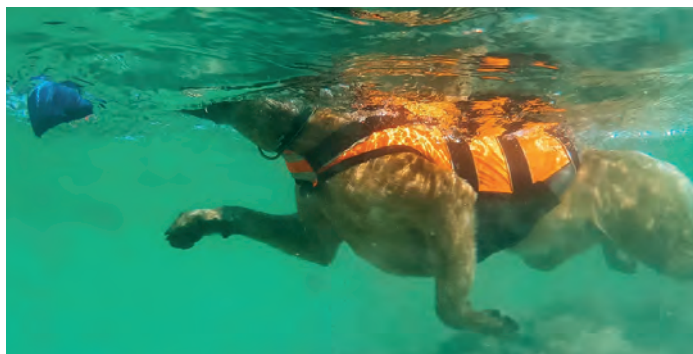


NRS CFD harness



Julius K9's 3in1

PFDs includes one listed as suitable for rescue - the **Special**. Nevertheless, the principle for providing buoyancy and therefore safety for the dog when in water remains the same



and quality of production with these and the specialist dog companies **Julius K9** and **Ruffwear** provide peace of mind for the handler. There are a considerable number of 'dog lifejackets' available online through Amazon and Ali Baba etc. and some of these may well be OK but, as with all

equipment used in the professional rescue sector, if you are not familiar with the manufacturer and unsure of its track record, don't risk it. Expect to pay hundreds for the professional brands while renown pet brands may cost upwards £\$€40. Anything less than this and you will need to check stitching, design and components to satisfy yourself that it will perform its task of keeping your dog safe - it's fair to say that it is rarely worth basing a safety equipment purchase on the lowest price.

Sewn attachments for D-Ring, web eye and handles are very prone to degradation due to water and UV and in particular salt water. They need to be well cleaned after each use and you need to specifically inspect the stitching and integrity of the webbing itself - sometimes this may not be easy if other fabric components are covering it, which, of course, can also be a good thing if it's providing some protection to the stitching. Look for strong bar tacking which are three or four relatively thick parallel lines of stitching or a robust box stitch which is a square with an X stitched to each corner. Salt water corrosion will also be an issue to look out for with metal components, again, ensure that the harness is washed down with fresh water and properly dried after each use. Store in a well ventilated area to avoid mould.

IN THE FOLLOWING TABLES.....

A circle ●● in the 'USE' columns indicates that the feature is OK for that purpose but not ideal.

COST: a rough guide only - includes local taxes. Varies with exchange rates, extra taxes etc. We usually round up to the nearest Pound\$/US Dollar\$/Euro€. Larger sizes often cost more. **£\$€ in orange is a currency conversion** figure NOT an accurate import price with taxes etc which is shown in black.

SIZES: Given as generic sizing **S, M, L** etc. which varies wildly between models. Colour-coded to the weight/girth to read more easily but some are universally adjustable. We have tried to include the weight of dog to give an accurate idea for the flotation required but many only provide measurements.

USES: All of these harnesses can be used to provide a degree of flotation in water but one or two may only provide this as a consequence of using foam padding for comfort or thermal protection in which case they will have a diamond in the **BUOYANCY** column.

SWIM-RESCUE refers to the ability of the harness to assist not only the dog in staying afloat but also in assisting either a rescuer or a casualty while in the water. Usually this will be via extra handles on the body of the harness for a person to grab onto and is only present in the two ALP Design models.

SUSPENSION means the harness is capable of being hoisted or

lowered vertically. This is usually via a bridle to spread the dog's weight evenly front-to back for hoisting into a helicopter, on or off a ship or up/down a cliff or wall. A single robust top eye does NOT constitute hoist-capable even if it will easily take the dog's weight because it is not even close to being safe - the dog may slip out and/or suffer compression of the thorax or neck. In our previous GUIDE **GROUND** referred to long-duration search, patrol and/or tracking and manoeuvring over boulders etc. requiring freedom of movement and no heavy panels that might rub against legs. In this GUIDE it refers only to the ability to add a lead or tether and use the harness on dry land



for a period of time. The ALP Design specialist water rescue harnesses for instance, is shown with a diamond rather than full square because they can have a lead attached but the dog would not be comfortable for long distances on land.

MATERIALS: The main fabric of the body panel containing the foam is shown in **black**. Webbing type is shown in **green** and the hard fittings (buckles & D rings) are shown in **burnt orange**.

WEIGHT/GIRTH of DOG: is the weight of dog that is intended to use the harness. Body mass is a more accurate indication for flotation requirements but girth measurement provides more accurate fitting. **BUOYANCY** provided by the harness is only given by a few manufacturers. It is NOT the same as the weight of dog it will support - a 27kg dog would only need 3 or 4kg of buoyancy to support its weight because the water is supporting much of the load. There is a huge difference between the quality of components in a pet-

images NOT to scale		MODEL	COMPANY	ORIGIN	COST inc tax/VAT	SUSPENSION	USES GROUND	SWIM RESCUE	MATERIALS: 'JACKET' WEBBING INTEGRAL 'HARDWARE'
		TURTLE 278	ALP DESIGN		£190 \$265 €220	■	■	■	Cordura Polyester 7x double-D buckles 1x D-ring
		Delphinus	ALP DESIGN		£220 \$300 €250	■	■	■	Cordura 2x Velcro straps Polyester 7x double-D buckles 1x Ring +4x Sml Rings
		Maja (Cat Harness)	BALTIC		£28 \$38 €34	-	■	■	Cellu cushion float Polyester 3x plastic fast clips 1 metal D ring
		Mascot	BALTIC		£25-33 \$32-43 €29-39	-	■	■	Cellu cushion float Polyester 3x plastic fast clips 1x metal D-ring

NOTES: N/A = info Not Available/not given **COST:** Approx & includes local tax/VAT \$ in orange =currency conversion only-NOT imported price

shop dog harness and a professional dog's lift harness. Unusually for us, this GUIDE contains non-rescue professional designs that are mostly NOT intended for hoisting so the Minimum Breaking Strength/Load - **MBS** (in **burnt orange**) is only provided by one or two. We list the precise weights and sizes in metric with the imperial figures rounded up or down because it's a less precise measurement anyway! We dispensed with the **COMFORT / PADDING** column used in the previous GUIDE to *Hoist-Capable Harnesses* because ALL of these are padded to some degree.

INTEGRAL/ADD-ON FLOTATION most of these harnesses have integrated flotation indicated by a black square but some can have extra flotation pads added to a neoprene jacket like the JuliusK9 3in1 or to a webbing frame like the Ray Allen Modular LLC. This allows quite a bit of flexibility and is indicated by an orange square ■. Those with minimal buoyancy are indicated by a black circle ●.

SECURE: The straps and attachment points which secure the dog in the PFD and you to the dog!

GIRTH/BELLY: a strap that can be adjusted for length on the underside of the dog. The **girth** strap is behind the front legs and the **belly** strap is further back towards the rear legs. For most of these float harnesses the buckles are plastic push-fit (Fastex,Nexus or DuraFlex) but some like the NRS use a plastic ladderlock where you simply pull the web tail to tighten and some, like ALP DESIGN ave alloy double D buckles because they are designed for hoisting as well as swimming.

LENGTH: refers to adjustment for length from front to back and is usually a buckle on the top at the shoulders or on the back near the back legs. Only one or two of these harnesses have that capability.

NECK: indicates that the front or breast strap that encircles the neck can be adjusted for size.

We have omitted the Front eye/Handle column that we had in the last GUIDE to Dog Harnesses because none of these PFDs has that feature but it is an option on the K9 Storm harness.

TOP EYE. TOP HANDLE: Mostly a metal ring or D-ring but can be a reinforced sewn eye. Sewn eyes are indicated by an asterisk and details in the NOTES column. In professional models the top eye(s) may constitute part of a lift/hoist capability indicated in the **SUSPENSION** column. Otherwise assume that all of these are simply lead/tether eyes. The handle, will always be capable of lifting the full weight of the dog but this is simply for assisting out of the water or over an obstacle NOT for hoisting off the ground.

ACCESSORIES:

POUCH. VELCRO. LIGHT ATTACH: A pouch or pocket which can be for accesories like lift straps or dog supplies or the harness itself when not in use. **VELCRO** refers to strips of loop velcro onto which you can add badges, reflection, panniers etc. a key feature of 'tactical' harnesses. **LIGHT ATTACH** refers to elastic or Velcro-secured straps intended to hold a chemical light stick, strobe or torch/flashlight.

HI-VIZ REFLECTIVE MOLLE: **HI-VIZ** is a High visibility colour option like yellow or red. **REFLECTIVE** refers to smaller panels or badges or piping rather than the entire jacket. Often an optional badge and easily applied to harnesses with Velcro. **MOLLE** or **PALS** is military-style attachment webbing.

Any item that is an option is shown as an outline square □□□

COLOUR: Primary colour of Jacket or panel or webbing if it's a web-only harness. Secondary or web colours are shown in the square's outline frame.

SIZE	WEIGHT of PFD	WEIGHT of DOG	GIRTH of DOG (&/or LENGTH of VEST)	SECURE					COLOURS	NOTES	WWW.
				GIRTH / BELLY	NECK / LENGTH	TOP EYE(S) TOP HANDLE(S)	POUCH VELCRO LIGHT ATTACH	HI-VIZ MOLLE REFLECTIVE			
S/M L	1.2kg/2.6lb 1.5kg/3.3lb	25-40kg/55-88lb 45-65kg/18-143lb	55cm/22" 65cm/25.6"	■ ■	■ ■	1 4*	■ ■	■ ■	■ ■	Full flotation swim harness. *2 handles on flanks	alpdesign.it
S M L	800g/2lb 1kg/2.2lb 1.3kg/2.9lb	20-25kg/44-55lb 25-40kg/55-88lb >40kg/>88lb	- -	■ ■	■ ■	1 6*	■ ■	■ ■	■ ■	Full flotation swim harness with zipped pouch. *2 handles on flanks. 2x rings on each side are options.	alpdesign.it
S M L	178g/6oz 200g/7oz 220g/8oz	0-3kg/0-6.6lb 3-7kg/6.6-15.4lb 7-10kg/15.4-22lb	- -	■ ■	■ ■	1 1	■ ■	■ ■	■	Specifically designed for cats but could suit small dogs or animals?	Baltic.se
XS S M L XL	170g/6oz 208g/7.3oz 248g/8.7oz 412g/14.5oz 470g/16.7oz	0-3kg/0-6.6lb 3-8kg/6.6-17.6lb 8-15kg/17.6-33lb 15-40kg/33-88lb >40kg/>88lb	- - -	■ ■	■ ■	1 1	- -	■ ■	■ ■ ■ ■		Baltic.se

USES: ◆ = OK BUT NOT IDEAL USES & FEATURES: ■ = Option

images <u>NOT</u> to scale		MODEL	COMPANY	ORIGIN	COST inc tax / VAT	SUSPENSION C	SES	GROUND	SWIM RESCUE	MATERIALS: 'JACKET' WEBBING INTEGRAL 'HARDWARE'
		Pluto	BALTIC		£20-28 \$24-38 €24-34	-	■			Cellu cushion float Polyester 3x plastic fast clips
		Special	BALTIC		£65 \$105 €96	-	●			Cellu cushion float Polyester 3x plastic fast clips 2x metal D-rings 2x plastic D-rings
		Zorro	BALTIC		£39 \$47 €43	-	-	■		Cellu cushion float Polyester Top Zipper 1 ladderlock buckle 1 plastic D-ring
		Petfloat	CREWSAVER		£58 \$76 €68	-	■	■		3x plastic fast clips 1x plastic D-ring
 		Dog Flotation Device, Micro DFD	EZYDOG		£37-73 \$49-96 (£29) (\$38)	-	■	■		Polyester/Neoprene Nylon 3x plastic fast clips 1x St. steel D-ring 1x nylon D-ring
		X2 Boost	EZYDOG		£49-73 \$65-96 €57-85	-	■	■		1680D Nylon/ Neoprene Nylon 3x plastic fast clips 1x alloy D-ring
		Multifunctional/ IDC 3in1 Dog Vest	JULIUS-K9		£82-120 \$120-164 €110-150	●	■	■		Neoprene Nylon 2x plastic fast clips 3x metal D-rings
		SAR Std/ Aerial Insertion Std	K9 STORM		£2179* \$2699* €2520*	■	■	■		Ballistic Nylon & Kevlar Mil-Spec Nylon 3x alloy fast clips 2x plastic fast clips

NOTES: N/A = info Not Available/not given COST: Approx & includes local tax/VAT \$ in orange =currency conversion only-NOT imported price

SIZE	WEIGHT of PFD	WEIGHT of DOG	GIRTH of DOG (&/or LENGTH of VEST)	SECURE					COLOURS	NOTES	WWW.
				GIRTH / BELLY	NECK / LENGTH	TOP EYE(S) TOP HANDLE(S)	POUCH-VELCRO LIGHT ATTACH	HI-VIZ MOLLE REFLECTIVE			
XS S M L XL XXL	133g/4.7oz 133g/4.7oz 175g/6oz 308g/11oz 347g/12oz 407g/14oz	0-3kg/0-6.6lb 3-8kg/6.6-17.6lb 8-15kg/17.6-33lb 15-40kg/33-88lb >40kg/>88lb	- - - - -	■ ■	■ ■	1 1	■ ■	■ ■	■ ■	Baltic.se	
S M L XL XXL	292g/10.3oz 434g/15.3oz 730g/25.7oz 800g/28.2oz 858g/30.2oz	0-8kg/0-17.6lb 8-15kg/17.6-33lb 15-40kg/33-88lb >40kg/>88lb >40+kg/>88+lb	- - - - -	■ ■	■ ■	2 1	■ ■	■ ■	■ ■	2 side-mounted d-rings can take side handholds Baltic.se	
XS S M L	133g/4.7oz 133g/4.7oz 133g/4.7oz 133g/4.7oz	2-5kg/4.4-11lb 5-10kg/11-22lb 10-25kg/22-55lb >25kg/>55lb	- - - -	■ ■	-	0 1	■ ■	■ ■	■ ■	Zips along the top. Weights of harness provided by Baltic must mean that increased air volume alone is the difference in the size of dog supported. Baltic.se	
XS S M L XL	300g/10.6oz 375g/13.2oz 450g/15.6oz 525g/18.5oz 600g/21.1oz	-	24-30cm/9-12" 28-35cm/12-14" 35-45cm/14-18" 45-55cm/18-22" 55-65cm/22-26"	■ ■	■ ■	1 1	■ ■	■ ■	■ ■	crewsaver.com	
(XS) XS S M L XL	(214g/7.5oz) 317g/11.2oz 389g/13.7oz 508g/18oz 593g/21oz 670g/23.6oz	(<7kg/<15.4lb) 7-11kg/15-24lb 9-20kg/20-44lb 18-27kg/40-60lb 27-41kg/60-90lb >41kg/>90lb	(25-34 30-50cm/10-13 12-20") 25-33 48-81cm/10-13 19-32" 33-41 53-89cm/13-16 21-35" 38-50 64-99cm/15-20 25-39" 43-61 69-112cm/17-24 27-44" 51-66 76-122cm/20-26 30-48"	■ ■	■ ■	1 1	■ ■	■ ■	■ ■	Micro DFD is a variant for small dogs/animals ezydog.co.uk	
XS S M L XL	300g/10.6oz 350g/12.3oz 400g/14.1oz 450g/15.9oz 500g/17.6oz	7-11kg/15-24lb 9-20kg/20-44lb 18-27kg/40-60lb 27-41kg/60-90lb >41kg/>90lb	30-45 45-55cm/12-18 18-22" 35-50 56-65cm/14-20 22-26" 40-55 66-75cm/16-22 26-29" 45-60 76-85cm/18-24 30-33" 50-65 86-105cm/20-26 35-41"	■ ■	■ ■	2* 1	■ ■	■ ■	■ ■	* one is a sewn web eye ezydog.co.uk	
S M L XL	g lb	15-25kg/33-55lb 24-40kg/53-88lb 40-60kg/88-132lb	40 44-64cm/16 17-25" 46 55-72cm/18 22-28" 51 65-82cm/20 26-32" 57 75-92cm/22 29-36"	■ ■	■ ■	2 1	■ ■	■ ■	■ ■	Flotation panels can be removed *reflective seams julius-k9.com	
Custom*	average 907g/2lb	Custom*	Custom*	■ ■	■ ■	1 3	■ ■	■ ■	■ ■	3 versions , Aerial Insertion, SWAT & SAR. All have #2 ballistic protection & buoyancy. *Customised for dog's wt, size & breed. *+3xMulti-Camo colours k9storm.com	
										expansion row	

USES: ◆ = OK BUT NOT IDEAL USES & FEATURES: ■ = Option

images <u>NOT</u> to scale		MODEL	COMPANY	ORIGIN	COST inc tax/ VAT	SUSPENSION C GROUND	SES SWIM RESCUE	MATERIALS: 'JACKET' WEBBING INTEGRAL 'HARDWARE'
		Underdog	MUSTANG SURVIVAL		£56 \$70 €65	●	■	Cordura & Mesh covered foam Nylon 3x plastic fast clips
		Safe Life Jacket 2.0	NON-STOP DOGWEAR		£87-100 \$98-118 €88-107	●	■	PU-coated 210D Polyester Oxford/ 8mm TPE C/\$1800 padding, Nylon 2x plastic fast clips* 3x metal D-rings
		CFD Dog Life jacket	NRS		£49 \$60 €56	-	■	420D Rip-Stop Nylon Nylon 2x plastic fast clips 1x plastic ladderlock 1x metal D-ring
		Modular LLC with Flotation	RAY ALLEN MANUFACTURING		£176* \$210 €96	-	●	Ballistic Nylon Nylon 2 GT Cobra buckles, 1 Roll Bar buckle, 2x Fastex, 6x G-Hooks, 1x metal D-ring
		Dog Buoyancy Aid	RED		£65-90 \$85-120 €76-105	-	●	Cordura 3x plastic fast clips 1x metal D-ring
		Pet Buoyancy Aid	RIBER		£23 \$30 €26	-	■	3x plastic fast clips 1x Ladderlock buckle 2x metal D-rings
		FloatCoat	RUFFWEAR		£95 \$80 €82	-	●	1000D Cordura PE 'Nylike' 4x 3-bar buckles 1x double-D buckle 4x length adjusters
		Auxilium	SPÜR HUNDE SCHULE		£51-61 \$64-77 €58-70	-	■	300D Cordura Nylon 3x plastic fast clips 1 metal D-ring
		K9 AquaFloat	WEST COAST HYDRATHERAPY		£60-70 \$79-92 €70-81	-	●	3x plastic fast clips 3x Length Adjusters

NOTES: N/A = info Not Available/not given COST: Approx & includes local tax/VAT \$ in orange =currency conversion only-NOT imported price

SIZE	WEIGHT of PFD	WEIGHT of DOG	GIRTH of DOG (&/or LENGTH of VEST)	SECURE					COLOURS	NOTES	WWW.
				GIRTH / BELLY	NECK / LENGTH	TOP EYE(S) TOP HANDLE(S)	POUCH / VELCRO LIGHT ATTACH	HI-VIZ MOLLE REFLECTIVE			
XS S M L XL	-	0.9-5.4kg/2-12lb 5.4-11kg/12-24lb 11-27kg/24-60lb 27-41kg/60-90lb 41-54kg/90-120lb	31-46cm/12-18" 46-61cm/18-24" 61-76cm/24-30" 69-91cm/27-36" 84-112cm/33-44"	■	■*	1	■	■	■ ■	*Light attach by virtue of the buckle adjustment web-ends velcro down	mustangsurvival.com
XS S M L XL XXL	169g/6oz 192g/6.8oz 312g/11oz 473g/17oz 619g/22oz 688g/24oz	1.5-7kg/3.3-15.4lb 2.5-10kg/5.5-22lb 5-20kg/11-44.1lb 10-30kg/22-66lb 15-40kg/33-88.2lb 20-50kg/44-110lb	20cm/8" 25cm/10" 30cm/12" 36cm/14" 42cm/17" 51cm/20"	■	■	1	■	■	■	2 side-mounted d-rings can take side handholds * Duraflex new lifejacket due later in 2022	nonstopdogwear.com
XS S M L XL	181g/6.4oz 233g/8.2oz 320g/11.3oz 374g/13.2oz 428g/15.1oz	<5kg/<12lb 6-11kg/13-24lb 11-27kg/25-59lb 27-36kg/60-79lb >36kg/>80lb	35-53cm/14-21" 51-66cm/20-26" 64-79cm/25-31" 76-91cm/30-36" 89-104cm/35-41"	■	■	1	-	■	■ ■	Bouyancy= 1.2kg/2.7lb 1.5kg/3.4 lb 2.2kg/4.9lb 2.9kg/6.4lb 3.6kg/7.9lb	nrs.com
Uni	408g/0.9lb +flotation panels	all	68-80cm/26-31.5" + extension strap for larger dogs	■	■	2	■	■	■ ■ +	Flotation panels can be removed *price for modular harness + add-on 100N flotation	rayallen.com
XS S M L XL	-	-	33-48cm/13-19" 46-64cm/18-25" 61-81cm/24-32" 76-94cm/30-37" 89-114cm/35-45	■	■	1	■	■	■ ■ ■	2 dorsal + 1 running each side from shoulder to chest (black strap that leads to fast clip buckle)	red-equipment.co.uk
S M L	-	-	33-55cm/13-22" 40-70cm/21-27" 46-76cm/18-30"	■	■	2	■	■	■		riberproducts.com
XXS XS S M L XL	.2kg/0.4lb .25kg/0.55lb .34kg/0.75lb .43kg/0.95lb .5kg/1.1lb .6kg/1.35lb	-	33-43cm/13-17" 43-56cm/17-22" 56-69cm/22-27" 69-81cm/27-32" 81-91cm/32-36" 91-107cm/36-42"	■	■	2*	■	■	■ ■	*1 eye is a webbing eye	ruffwear.com
S M L XL	0.4kg/0.88lb	-	40-60cm/21-24" 60-80cm/24-32" 80-100cm/32-39" 100-140cm/39-55"	■	■	1	■	■	■	100N of buoyancy	spuerhundeschule.de
XS S M L XL XXL XXXL	3.9kg/8.7lb	-	51-61cm/20-24" 54-63cm/21-25" 57-67cm/22-26" 65-80cm/26-31" 73-93cm/29-37" 87-104cm/34-41" 87-107cm/34-42"	■	■	3*	■	■	■ ■	*all are webbing eyes	westcoasthydrotherapy.co.uk
											expansion row

USES: ◆ = OK BUT NOT IDEAL USES & FEATURES: ■ = Option

YOU DON'T HAVE TIME TO

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mustangsurvival.com



SURFACE DRYSUITS

INTRODUCTION

This Guide is focused on rescue drysuits that are suitable for use out of and in-water but distinct from purely dive suits which will be a separate Guide. There are some dive suits included here that are used for surface rescue and there are some dedicated ice rescue suits that would be too bulky and hot for general surface rescue work so they have separate category rows in our tables. It's quite difficult to get consensus on the true history of drysuit development because there was much experimentation in the 30's and 40's and hard to know when a suit truly kept the body dry. Everyone over the age of 30 will be familiar with the term 'frogman' which was combat diving largely developed by a specialist Italian Navy team and subsequently taken up with gusto by British Commandos during WWII. Their 'Top-Secret' suits were primarily membrane rubber as distinct from thicker neoprene so in this respect they were certainly on their way to being drysuits. Sometime during the 40s and 50s suits evolved to provide a dry body and the ability to use thermal layering - so-called baggy suits rather than skin-tight wet suits. In the absence of the NASA invented dryzips original drysuits were rubber and had to be stretched over the head (in the case of an early Pirelli model) via an enlarged opening which was subsequently made watertight with a hood drape or a metal ring for a hood or the suit was accessed via an 'umbilical' tube that was then rolled up to create a watertight seal (in the case of a British Seibe Gorman model). Companies like Viking in Norway who were working on drysuits at the request of the Norwegian Navy and Poseidon in Sweden were producing viable drysuits in the 50's but it wasn't until the space race caused the development of an airtight zip for space suits that divers' drysuits truly evolved into the versatile, multi-agency tool that it is today. Some of the companies involved haven't changed much in the past few decades except that they now have several dozen competitors. This is mostly due to sports demands but there are also a lot of commercial dive suits and military models available. **We have only included companies actively producing RESCUE-oriented models.** So we haven't included otherwise worthwhile models from folk like *Gul, Holis, Kokotat, O'Three, Stohlquist, Seatec* in Australia or the aptly named '*Waterproof*' in Sweden. Even the companies we have included may have many more models that are worth a look. Often these only differ from a 'rescue' model by dint of high vis colours and some reflective tape but for the purposes of this GUIDE they will have been shown to be fit for the purpose of rescue.

Of those not in our Guide, *Bell Avon* still exist as part of *Zodiac* inflatable boats, *Solent* still make wetsuits and associated products and *Nokia* presumably branched out big time into more lucrative areas.



Wearing a DUI USCG drysuit a rescue swimmer deploys from a MH-65C Dolphin rescue helicopter U.S. Coast Guard photo by Petty Officer 2nd Class Levi Read

Main Image: U.S. Coast Guard Ice Rescue training photo by Petty Officer 2nd Class Lauren Jorgensen
Inset Left: MFC-International Drysuit.
Inset right: Mustang Survival's Sentinel D624

You can see from early development that there was a time when drysuits were just for divers or at least for underwater use. Water rescue, as the traditional domain of beach lifeguards, helicopter PJs or rescue boat crews, meant wet suits. They're called 'wet' because the user relies on a layer of water warmed from being sandwiched between spongy neoprene and the skin, to maintain a functioning body temperature. The suit prevents heat being stripped from naked skin by cold water or cold air but also relies on a degree of self-heating through activity to work efficiently. Once the user becomes inactive or the water becomes more frigid this principle doesn't work so well and this is where drysuits capable of being used over thermal layers excel in rescue work.

In the past few decades drysuits have become more like the ultimate in waterproof overalls than a dive suit and in fact many aren't now even suitable or capable of being used under water or even for swimming and are simply a means of protecting the rescuer against the elements while on or near water and for simple wading in floods. They should keep you mostly dry should you fall in and then egress immediately but are not intended for in-water use. NB: Our row in the **USES** section of the tables headed **IMMERSION** indicates that the suit will keep you dry if you fall in or are completing an in-water task- **it does NOT mean immersion in the sense of long term in-water survival.** Equally a full dive suit is not generally the



less possibility of snagging. Their water resistance capabilities and strength of outer fabric are often much higher than for a surface or disposable suit. Cordura or heavy gauge nylon are now as common as more traditional Butyl, rubber and neoprene though they are most often used as part of a layered fabric - Bi or Tri-Laminates. The other specialised drysuit that requires exemplary in-water performance is the pararescue or rescue swimmer suit. Used primarily by helicopter crews it may or may not have fire-retardant qualities but it is going to be amongst the best drysuits available because the PJ or winchman role can be unforgiving and would soon highlight any shortcomings in drysuit performance. Boat suits are not necessarily designed for regular in-water use but tend to have a tougher outer fabric like Cordura simply because it is regularly knocking against hard and rough surfaces; they're more of a working suit.

KEY to TABLES

COST

basic model. As always, expect lower cost for multiple purchases or reduced specifications. Prices INCLUDE VAT or local taxes. £\$€ in Orange are a CURRENCY CONVERSION ONLY and do not

include import tax, shipping etc.

ORIGIN: Not necessarily where the suit is made. It refers to the company's country of origin and even this may be misleading if the company is a subsidiary. For instance Mustang Survival would normally be listed as Canadian but is now owned by US group, Safariland.

FEMALE VERSION: With apologies for the stereotypical pink but it stands out well in the tables! All membrane suits are going to be far more forgiving of shape than a skin-tight neoprene suit so female sized versions aren't necessarily vital for all facets of rescue work. Nevertheless, some manufacturers do offer an off-the-peg female fit with appropriate relief zip (if fitted) while the rest should at least be looking at an option for the 51% of the population that need a properly fitting suit as well!

MATERIALS: Traditionally drysuits have fallen into two types of construction, **MEMBRANE** which is baggy and **NEOPRENE** which is a tighter fit. Most rescue suits are 'membrane suits' and utilise a wide range of materials. Simple nylon or Cordura which can be lightweight, inexpensive and used in temporary use or 'disposable' suits. Or it can be thicker and tougher and a more durable option. Either way it is non-breathable. In combination with other materials or multiple layers, nylon becomes a far more durable suit though still not breathable which is the domain of GoreTex or similar specialist materials. Breathable suits are particularly suited to surface or out-of-water use when overheating could be an issue. Some that are quoted as breathable may only be breathable on the top section. The vast majority of drysuits in this list are Bi or Tri-Laminate where two or three materials are sandwiched together. Often this will be Nylon, Butyl or to a lesser extent neoprene and a more complex material like Goretex with a comfortable liner or facing material which aids in wicking moisture away from the body. Goretex may also be used in

best thing to wear as a surface rescue suit. Aside from being more expensive it may be too restrictive with tighter seals and features like inflation and exhaust (purge) valves that just get in the way. 'Surface' suits are now a specialised and commonplace item in their own right. Rescuers are able to don them quickly at a water rescue incident and are provided with a good degree of thermal protection as well as counter-contamination. At their most bulky are the dedicated ice rescue suits like the Stearns DriFlex, Imperial IR1500 and Mustang Ice Commander with insulating neoprene and integral hoods and gloves. But many other suits are substantial enough to be used for ice rescue providing they have enough room for insulating layers. At the other end of the spectrum, some drysuits are relatively thin waterproof nylon for short term use only, some are even disposable - small and light enough to be stored in a response bag or in the vehicle. An interesting long-duration variation on lightweight is the Survitec/Multifabs 601 a long duration drysuit light enough and comfortable enough to be worn all day beneath regular rescue clothing which opens up a number of possibilities for use of specialist rescue clothing and equipment when exposed to the risk of cold-water immersion.

For swiftwater and flood rescuers something more substantial is called for because fast moving water requires more efficient seals and drysuits should have clean lines so that there is


conjunction with Nomex for fire retardancy in drysuits used in aviation. High tenacity Nylon and Cordura tend to offer the best protection from wear while Butyl, Neoprene and similar rubber compounds offer good insulation as well as a better degree of wear resistance than *GoreTex* and breathable materials alone. More complex suits, usually intended for diving, may incorporate a special inner suit to provide better fit, comfort and warmth than the outer alone. This is donned as a single, integrated drysuit for example Whites Fusion as distinct from the more usual separate drysuit and undersuit. This article is large enough as it is so we haven't been able to go into too much detail on the individual materials but it's worth you doing some extra research in this regard once you've narrowed down your selection.

REINFORCED AREAS: As distinct from 'Padded Areas' this refers to the addition of extra layers or a more robust material in areas of high wear. Mostly this is in the contact areas of the knees, elbows and seat (buttocks) but may also be on the shoulders and around the waist where the rescuer's suit is in contact with load-bearing harness straps and scuba, SCBA or CABA tanks.

PADDED AREAS: Usually applies to the knees where thickened 'comfort' padding is used in addition to reinforcement to alleviate wear and abrasion. Padded areas provide comfort on hard, sharp and angular surfaces as well as resistance to penetration. They will often have drainage built in so that the suit doesn't retain excess water on land or when hoisted out of water. Some provide external pads that can be inserted into knee and/or elbow auto-draining pouches.

ENTRY: Once waterproof zips were invented, dive suits followed the space suit initiative with a horizontal zip across the shoulders. This kept a vital component away from any frontal assault but it wasn't long before those less concerned with underwater zip integrity looked at easier and quicker ways to don a drysuit. A front zip was found to be easiest with most being diagonal but there are also shoulder to shoulder (yoke) and 'J' configurations as well as a full spiral such as on the Multifabs 106.

SIZE ADJUST: Usually just a fabric extension of the outer material at the wrist, ankle and/or neck and often intended to be seal protection but with velcro they enable you to tighten the material. This lessens your profile and makes the seals more efficient while allowing you to slacken off for comfort when out of water. Necks and ankles may also be adjusted by zip or elasticated cord and toggles.

SEALS: what used to be rubber is now more often than not latex but can also be silicone which tends to be more expensive or it may be neoprene which many find more comfortable. Either way, with tight rubber-like seals at the neck, wrist and ankle water is prevented from entering the suit. In many cases there will be an integral hood protecting the head and sealing on the face. There will also be either waterproof seals at the ankle or integral socks, booties or boots. Booties shown as  in our tables, are usually a cross between a flexible sock and the sole of a boot. Socks or an ankle seal enables the wearer to use any suitable boot they wish. Swiftwater rescuers in particular like to have a more tactile boot to provide better traction and mobility on rocks and as can be seen from our title shot, studded boots are much better on ice than standard sole boots.

Where integrated boots are offered they tend to be tough and steel toe capped and/or rubber wellingtons particularly for boat suits. Drysuits with dive capability and especially in contaminated water may have fixed rings at the wrist to enable connection of gloves to keep the hands dry.

At the neck things have changed in recent years with an adjustable neck seal option providing very improved levels of comfort for the surface rescuer and rescue swimmers. The great Jim Segerstrom used a Mustang suit with this feature for swiftwater rescue and swore by it. I too have this excellent drysuit but keep miscalculating how tight to draw in the neck to withstand immersion. If your face is not red, it isn't tight enough!

POCKETS Most suits can have pockets custom-fitted but standard fittings vary. Generally speaking swiftwater oriented suits will not have pockets as standard because they may be a snag hazard. In aviation suits there may be low profile pockets on the top of the thighs and for more general purpose rescue and USAR there may be bellows style cargo pockets. Some have shoulder pockets with pen holders and some have D-rings or even lanyards which enable you to secure items on a length of cord or elastic so that they can be used but safely retained. Lash Tabs also known as Matrix Base Plates offer a means of attaching pockets or accessories using webbing.

REFLECTIVE: Counter to the interests of tactical operators but reflective tape is a feature of most rescue drysuits, usually on the wrists and/or arms but may also be in the form of piping which is less obvious until a light is shone near it

BRACES/SUSPENDERS: Are mounted internally and help to improve fit so that the legs don't sag in relation to the torso -especially useful for shorter individuals wearing a standard fit suit. Also used to keep up the legs when the top part of the suit is unhinged when on a break (away from the water).

ADJUSTABLE WAIST: to lessen that Pooh Bear look and give a firmer fit around the waist. Negated to some extent by those wearing a PFD. Some suits have a telescoping torso which allows good height adjustment.

RELIEF ZIP: If you are used to a wet suit don't forget that you've switched to a drysuit or there could be some unsavoury sealed in liquids and odours. A relief zip is a great feature if you're likely to be in a suit for long periods without the option to disrobe for a latrine break. Our table indicates the male option but some offer a zipped drop-down seat option for females. Dive oriented companies also offer a urine valve .

PURGE/INFLATE VALVE: A necessity for dive suits along with an inflation port so the presence of a valve usually discerns dive from the surface suits BUT air purge is a great feature on any drysuit even if you don't dive because it allows rapid release of pent up air without having to perform the neck-pull-squat while inflate allows a big increase in buoyancy.

COLOURS: We've listed combination colours with a forward slash/. Similar proportion colours begin with a capital letter and minority colours with a lower case letter. Most, though not all, suits have some element of black and this is often from the waist down while the top half is in a higher visibility colour like red, yellow or orange. Obviously, most tactical-oriented suits stick to all black or dark blue and lack reflective tape which is counter-productive when trying to avoid snipers or sentries!

UPDATING to NEW LAYOUT



MANUFACTURER	AQUATEK	AQUATEK	AQUATEK	COLLINS NET	COLLINS NET	COLLINS NET	COLLINS NET	
MODEL VARIANT	X480R	X350R	S200R	First Responder	Rescue	Technical Rescue	Patrol	
ORIGIN								
COST	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	
USES	SURFACE IMMERSION	■	NO	■	■	NO	■	
	SWIFTWATER FLOOD	■						
	CONTAMINANTS DIVE							
	BOAT CREW AVIATION							
	ICE/EXTREME COLD TACTICAL							
	SIZES							
	to fit HEIGHT CHEST							
	MATERIALS	TOP /BREATHABLE	00	00	00	00	00	00
		LEGS/ BREATHABLE	00	00	00	00	00	00
		REINFORCEMENT AREAS	00	00	00	00	00	00
SEALS NECK/WRIST SOCKS BOOTS SEALS		00			00			
FEATURES	FEMALE FIT OPTION				■			
	ZIP ENTRY							
	INTEGRAL SIZE ADJ							
	POCKETS							
	REFLECTIVE SOLAS							
	INTERNAL BRACES							
	ELASTIC ADJUST WAIST							
	RELIEF ZIP FEMALE							
	PURGE INFLATE VALVE	--	--	--	--	--	--	
	STORAGE BAG							
OTHER COLOURS			■ ■ ■	■ ■ ■ ■ ■				
NOTES								
WEBSITE www. .com	aquatekdrysuits.co.uk	aquatekdrysuits.co.uk	aquatekdrysuits.co.uk	collinsnet.co.uk	collinsnet.co.uk	collinsnet.co.uk	collinsnet.co.uk	

NOTES: COST: Approx, INCLUDES local tax/VAT USES/ FEATURES: ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ □ = Option



NET	CREWSAVER (SURVITEC)	DUI	DUI	DUI	FIRST WATCH	HAMMOND DRYSUITS	HAMMOND DRYSUITS	HAMMOND DRYSUITS
	Atacama Pro	--	--	--	Ice Rescue RS10021005-HV-U	--	--	--
	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$780 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00
	■			■				
	●							
	■							
	-							
	■							
	-				■			
	-							
	-							
	S,M,L,XL,XXL 168-198cm 5'6"-6'6" 86-122cm 34-48cm				5'-6'4" 4'6"-5'8"			
	TriLaminate ■ Cordura PU Knees/Seat	00 00 00 00	00 00 00 00	00 00 00 00	00 00 00 Knee/Elbow	00 00 00 00	00 00 00 00	00 00 00 00
	Neoprene □ ■							
	Front Diag				Front Vertical			
	Wrists							
	1 leg				2x Ice Awl			
	■				■			
	■							
	■							
	-							
	-					--	--	--
	■				■			
				■				
	Integral wellingtons have steel toe and mid-shank							
.uk	crewsaver	dui-online	dui-online	dui-online	firstwatchgear	hammond-drysuits.co.uk	hammond-drysuits.co.uk	hammond-drysuits.co.uk

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

UPDATING to NEW LAYOUT



MANUFACTURER		HANSEN PROTECTION	HANSEN PROTECTION	HANSEN PROTECTION	HANSEN PROTECTION	HANSEN PROTECTION	HIKO	ICE RESCUE SYSTEM	
MODEL VARIANT		SeaRescue Tactical	SeaRescue II	SeaRescue III	SeaSwim MSAD III	SeaRescue Neoprene	Safety	Hybrid	
ORIGIN									
COST							£00 \$00 €00	£00 \$890 €00	
USES	SURFACE IMMERSION				■			■	
	SWIFTWATER FLOOD				■	■		●	
	CONTAMINANTS							■	
	DIVE				●			-	
	BOAT CREW							■	
	AVIATION							-	
	ICE/EXTREME COLD					■		■	
	TACTICAL							-	
	SIZES						XS,S,M,L,XL,XXL		S,M-L,XL
	to fit HEIGHT								
CHEST									
MATERIALS	TOP /BREATHABLE	00	00	00	00	5mm Neoprene	00	200D Nylon	
	LEGS/ BREATHABLE	00	00	00	00	5mm Neoprene	00	Cordura	
	REINFORCEMENT AREAS	00	00	00	00	PU	00	1000D Nylon	
	SEALS NECK/WRIST	00	00	00	00	Neoprene	00	Thigh/Seat/Valve	
SOCKS BOOTS SEALS				/	Neoprene 		Neoprene/L		
FEMALE FIT OPTION							-		
FEATURES	ZIP ENTRY	Front Diagonal	Front Diagonal	Front Diagonal	Front Diagonal	Front Diagonal	Front Diagonal	Front Diagonal	
	INTEGRAL SIZE ADJ							-	
	POCKETS						Chest,pen,radio	Ice Awl	
	REFLECTIVE SOLAS					■		■	
	INTERNAL BRACES							■	
	ELASTIC ADJUST WAIST							-	
	RELIEF ZIP FEMALE							-	
	PURGE INFLATE VALVE	--		--	--	■	--	--	
	STORAGE BAG							-	
	OTHER COLOURS								
NOTES	Survitech Company	Survitech Company		Adjustable Neck	Detachable hood & gloves		Sizes termed Universal Large and O size. Also Custom size. WT: 16lb		
WEBSITE www. .com	hansenprotection.no	hansenprotection.no	hansenprotection.no	hansenprotection.no	hansenprotection.no		icerescuesystem.com		















NOTES: COST: Approx, INCLUDES local tax/VAT USES/ FEATURES: ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL = Option



	IMPERIAL	MFC INTERNATIONAL	MUSTANG SURVIVAL	MUSTANG SURVIVAL	MUSTANG SURVIVAL	MUSTANG SURVIVAL	MUSTANG SURVIVAL
	Ice Rescuer	--	Ice Commander	Sentinel	Sentinel	Sentinel Rescue Swimmer	Sentinel Light Boat Crew
	IR1500		IC9001	MSD576	MSD624	MSD660	MSD636
	£00 \$1300 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00
	■	■	■				
	●	●					
	■	■					
	-	-					
	■	■					
	-	-	■				
	-	-					
	S,M,L,XL,XXL 168-198cm 5'6"-6'6" 86-122cm 34-48cm	S,M,L,XL,XXL 168-198cm 5'6"-6'6" 86-122cm 34-48cm					
	TriLaminate ■ Cordura PU Knees/Seat	TriLaminate ■ Cordura PU Knees/Seat	00 00 00 00	00 00 00 00	00 00 00 00	00 00 00 00	00 00 00 00
	Neoprene □ ■	Neoprene □ ■					
	Front Diagonal	Front Diagonal					
	Wrists	Wrists					
	1 leg	1 leg					
	■Wrists	■Wrists					
	■	■					
	■	■					
	-	-					
	--	--	--	--	--	--	--
	■	■					
	Survitech Company	Integral wellingtons have steel toe and mid-shank				Available as Aviation or Naval versions	MSD637=Rear Drop Relief Panel
		mfc-international	pro.mustangsuvival	pro.mustangsuvival	pro.mustangsuvival	pro.mustangsuvival	pro.mustangsuvival

N/A = info Not Available/not given **INFLATION TIME:** Hand Pump/ Compressed Air **VALVES** PRV=Pressure Relief Valve

UPDATING to NEW LAYOUT

Images NOT to Scale								
MANUFACTURER	MUSTANG SURVIVAL	MUSTANG SURVIVAL	MUSTANG SURVIVAL	NDIVER RESCUE	NDIVER RESCUE	NDIVER RESCUE	NDIVER RESCUE	
MODEL VARIANT	Sentinel TacOps MSD674	Sentinel Light SpecOps MSD676	Sentinel Aviation MSD697	Responder MOD2	Storm Force	Arctic Survivor	FEM	
ORIGIN								
COST	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£360 \$00 €00	£725 \$00 €00	£675 \$00 €00	£Custom \$00 €00	
USES	SURFACE IMMERSION	■			■			
	SWIFTWATER FLOOD							
	CONTAMINANTS DIVE							
	BOAT CREW AVIATION							
	ICE/EXTREME COLD							
	TACTICAL							
	SIZES to fit HEIGHT CHEST							
MATERIALS	TOP /BREATHABLE	00	00	00	00	00	00	
	LEGS/ BREATHABLE	00	00	00	00	00	00	
	REINFORCEMENT AREAS	00	00	00	00	00	00	
	SEALS NECK/WRIST SOCKS BOOTS SEALS							
FEATURES	FEMALE FIT OPTION							
	ZIP ENTRY							
	INTEGRAL SIZE ADJ							
	POCKETS							
	REFLECTIVE SOLAS							
	INTERNAL BRACES							
	ELASTIC ADJUST WAIST							
PURGE INFLATE VALVE	--	--	--	--	--	--		
STORAGE BAG								
OTHER COLOURS	■			■				
NOTES								
WEBSITE www. .com	pro.mustangsurvival	pro.mustangsurvival	pro.mustangsurvival	ndiver-rescue	ndiver-rescue	ndiver-rescue	ndiver-rescue	

NOTES: COST: Approx, INCLUDES local tax/VAT USES/ FEATURES: ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ □ ■ = Option

UPDATING to NEW LAYOUT



MANUFACTURER	OS SYSTEMS	OS SYSTEMS	OS SYSTEMS	OS SYSTEMS	OS SYSTEMS	RUBBERMAN	SEASKIN
MODEL VARIANT	DSRTFE	SPLB SROB	SPLB SRBEC	SPLB SRO	SPLB SREC	SRT RESCUE 3	
ORIGIN							
COST	£650 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£650 \$00 €00	£00 \$00 €00
USES	SURFACE						
	IMMERSION	■			■		
	SWIFTWATER						
	FLOOD						
	CONTAMINANTS						
	DIVE						
	BOAT CREW						
	AVIATION						
	ICE/EXTREME COLD						
	TACTICAL						
SIZES							
to fit HEIGHT							
CHEST							
MATERIALS	TOP /BREATHABLE	00	00	00	00	00	00
	LEGS/ BREATHABLE	00	00	00	00	00	00
	REINFORCEMENT	00	00	00	00	00	00
	AREAS	00	00	00	00	00	Knees
SEALS NECK/WRIST							
SOCKS BOOTS SEALS							
FEMALE FIT OPTION							
FEATURES	ZIP ENTRY						
	INTEGRAL SIZE ADJ						
	POCKETS						
	REFLECTIVE SOLAS						
	INTERNAL BRACES						
	ELASTICADJUSTWAIST						
	RELIEF ZIP FEMALE						
	PURGEINFLATEVALVE			--	--	--	--
STORAGE BAG							
OTHER COLOURS	■			■			
NOTES							
WEBSITE www. .com	osystems.com	osystems.com	osystems.com	osystems.com	osystems.com		






















NOTES: COST: Approx, INCLUDES local tax/VAT USES/ FEATURES: ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ □ = Option



	STEARNS	STEARNS	SURVITEC	SURVITEC	SURVITEC	TYPHOON	WRSi
							Leven Aggressor MDS2
	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00
				■			■
							■
					■		■
							M,M+,L,L+,XL, XL+,XXL
				TriLaminate GTX TriLaminate GTX 00 00	00 00 00 00	00 00 00 00	NylonTriLaminate ■ NylonTriLaminate ■ Knees
							Latex ■
							Front YKK
							2
							■
							■
	--	--	--	--	--	--	--
				■		■	

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

UPDATING to NEW LAYOUT

Images NOT to scale.	MODEL		MODEL	COMPANY	ORIGIN	COST	SURFACE	IMMERSION	SMR	DIVE	BOAT	AVIATION	ICE/COLD	TACTICAL	COLOURS	MATERIALS
			SRT RESCUE3	RUBBERMAN		£390-550	◆	◆	◆		◆		◆	◆	Black, Red, Black/yellow Black/orange	Trilaminate, Nylon/Butyl
	Cyclone			SAFEQUIP		£480	◆	◆	◆		◆			◆	Yellow/Black Red/Black Black	TriLaminate
			Fire Rescue/ Surface Rescue	SAFEQUIP		£555	◆	◆	◆		◆		◆	◆	Yellow/Black Red/Black Black	Nylon Trilaminate
	Responder			SAFEQUIP		£240	◆	◆			◆				Red/black	PU Coated Nylon
			Rescue 1915	SEATEC		n/a	◆	◆	◆						Red/Yellow, Black	TriLaminate
	Delta Surface			SEASKIN		£409	◆				◆				Black/red, Black/blue, Black, Red, Blue,	TriLaminate Polyester-Butyl
			DriFlex Cold Water Rescue	STEARNS		\$890	◆	◆					◆		Orange	PU Coated Nylon + insulation



Sizes	Reinforced Areas	Padded Areas	Entry	Size Adjust	Seals/Socks/Boots	Seals	Pockets	Entry Zip	REFLECTIVE	BREATHABLE	VERSION	BRACES	ADJ WAIST	RELIEF ZIP	AIR PURGE	NOTES	www.
n/a	Knees, Seat	◇	Front Diag uRear	◇	Seals, Socks, Boots	N-Latex W-Latex A-Latex ◇Neoprene	◇	n/a	◆			◆	◆	◇			rubberman.co.uk
M,L,M, XL,XXL	Knees, Seat	-	Front Diag		Socks	N- Neoprene W-Latex	-	n/a	◆	◆		◆				Breathable Top, Elasticated back panel	safequip.co.uk
K1,K2, S,M,M, short,XLshort,X XLshort, XL,XXXXL	Knees, Seat	-	Front Diag	Ankles	Socks	H-Latex W-Latex	1 x Leg	n/a	◆			◆	◆			Heavy Duty suit Ankle Gaiter	safequip.co.uk
M,L,M, XL,XXL, XXXL	Knees, Seat	-	Rear	Elasticated Ankle	Socks	N-Latex W-Latex		BDM	◆			◆				Storage Bag	safequip.co.uk
n/a	Knees	-	Front Diag	Ankles	Socks	N-Latex W-Latex	No	YKK						◆			4seatec.com
-custom	Knees	-	Front Diag	No	Boots	N-Latex W-Latex	No	#8 BDM	◆			◆	◆			Storage bag, All custom options	seaskin.co.uk
universal*	Knees	-	Front Vertical	Wrists, Ankles	Seals	N-Latex W-Latex A-Latex	No	n/a	◆						◆	*Sizing: 110-330 lbs. (49-149kg) max ht 6 ft. 3" (1.9m)	steamstofotation.com

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Images NOT to scale.

	MODEL	MODEL	COMPANY	ORIGIN	COST	SURFACE	IMMERSION	SWR	DIVE	BOAT	AMATION	ICE/COLD	TACTICAL	COLOURS	MATERIALS
			Rapid Rescue	STEARNS		\$650	◆	◆	◆	◆		◆		Red/black	Breathable fabric & Cordura
	Rapid Rescue Extreme			STEARNS		\$450	◆	◆		◆		◆		Black/yellow	Breathable fabric & Cordura
			FRIS	SURVITEC (MULTIFABS)		n/a	◆	◆		◆		◆	◆	Silver	TriLaminate with fleece lining
	OTS 600/601			SURVITEC (MULTIFABS)		n/a	◆	◆	◆				◆	Black	GoreTex Nomex
			First Responder	SURVITEC (MULTIFABS)		n/a	◆	◆	◆				◆	Orange	Flame retardant
	SAR Winchman 450			TYPHOON		n/a	◆	◆						Red	Nylon
			Heavy Duty Rescue	TYPHOON		£485	◆	◆		◆				Yellow/Black Red/Black	HD Nylon TriLaminate
	Heavy Duty			TYPHOON		£710		◆	◆					Orange/Black	Polyester TriLaminate
			Patrolman	TYPHOON		£635	◆	◆	◆					Yellow/Black, Red/Black Blue/Black	Trilaminate & Nylon
	Rescue & Response			TYPHOON		£525	◆	◆		◆			◆	Black	Trilaminate
			WOSS	TYPHOON		£535	◆	◆		◆				Yellow/Black	TriLaminate
			Boat Crew (MBCS)	USIA		\$1000	◆	◆		◆				Orange/black Camo, Green, Navy, Grey, Stone, Teal	400D Nylon Superfabric
			Maritime Assault (MASS)	USIA		\$1000	◆	◆	◆					Camo, Grey, Orange, Teal Navy, Stone, Green, Olive	400D Nylon Superfabric
	Swiftwater Rescue			USIA		\$600	◆	◆	◆					*Black, Grey Orange, Red, Blue, Purple, Ylw, White	200D Nylon
			VIKING HAZTECH	VIKING (ANSELL)		\$2390	◆	◆	◆					Red/black	Polyurethane coated Nylon

NOTES: @ = optional feature () = Similar model COST Full retail price, rounded up, generally inc. tax for the specific model shown, small size and basic version - custom versions will be more expensive USES: SWR = Swiftwater

Sizes	Reinforced Areas	Padded Areas	Entry	Size Adjust	Seals/Socks/Boots	Seals	Pockets	Entry Zip	REFLECTIVE	BREATHABLE	VERSION ♀	BRACES	ADJ WAIST	RELIEF ZIP	AIR PURGE	NOTES	www.
S, M, L, XL, XXL	Knees, Elbow	-	Front Diag	Neck	Socks	N-Latex W-Latex	No	n/a	◆	◆		◆		◆	◆	Neoprene collar seals	steamslotation.com
S, M, L, XL, XXL	Knees, Elbow	-	Front Diag	Neck	Seals	N-Latex W-Latex A-Latex	No	n/a		◆		◆				Neoprene collar seals	steamslotation.com
14 sizes custom	n/a	-	n/a	n/a	Socks	N-Latex W-Latex	-	n/a		◆						Designed to be worn BENEATH work clothing	multifabs-survival.co.uk
14 sizes custom	n/a	-	Rear	n/a	Socks	N-Latex W-Latex	◇5 x Leg 1 x Arm	n/a		◆				◆		Fire retardent	multifabs-survival.co.uk
14 sizes custom	Knees, Seat, Elbows	Knees, Elbows	Front Diag	Wrists	Socks	N-Latex W-Latex	◇5 x Leg 1 x Arm	n/a	◆	◆				◆		Also SAR Air Crew 460	multifabs-survival.co.uk
S, M, L, XL	-	-	Front Vertical	-	Socks	H-Latex W-Latex	-	n/a	◆						◆	Lightweight suit intended for 20 hrs use, Integral Hood, Storage Bag	typhoon-int.co.uk
S, S, SM, M, B, LM, L, LB, XL, XL, custom	Knees, Seat	Knees	Front Diag	-	Socks	N-Neoprene W-Latex	-	n/a	◆			◆	◆				typhoon-int.co.uk
S, S, SM, M, B, LM, L, LB, XL, XL, custom	Knees, Elbows, Seat	-	Front Diag uRear	-	Socks uBoots	N-Neoprene W-Neoprene	-	n/a	◆			◆	◆			Neoprene=Glideskin	typhoon-int.co.uk
S, M, LM, XL, XXL custom	Knees, Seat	Knees	Front Bib	-	Socks uBoots	N-Neoprene W-Neoprene	1 x Leg 1xRadio	n/a	◆	◆		◆	◆				typhoon-int.co.uk
S, S, SM, M, B, LM, L, LB, XL, XL, custom	Knees, Seat	-	Front Diag	-	Socks or Boots	N-Latex W-Latex	1x Leg	n/a		◆		◆	◆				typhoon-int.co.uk
S, S, SM, M, B, LM, L, LB, XL, XL, custom	Knees,	-	Front Diag	-	Boots or Socks	N-Latex W-Latex	1 x Leg	n/a	◆	◇		◆	◆				typhoon-int.co.uk
XS, XS, S, M, L, XL, XL, XXXL custom	Knees, Seat	uKevlar knees	Front Diag	Wrists, Ankles	Seals, Socks, Booties	N-Latex W-Latex	2 x Leg	n/a	◆	◆	◆		◆	◇		Detachable storm collar, hood & face shield. uDrop seat, uUrine valve	usia.com
XS, XS, S, M, L, XL, XL, XXXL custom		Knees	Front Diag	Collar, Wrists, Ankles	Seals, Socks, Booties, Boots	N-Latex W-Latex	5	n/a		◆			◆	◆			usia.com
XS, XS, S, M, L, XL, XL, XXXL custom	Knees, Thighs, Seat, Wrists	uKevlar knees	Front diag uRear		Seals, Socks, Booties, Boots	N-Latex W-Latex ◇Silicone	◇	n/a	◇					◇		uHood, *colours for top and/or bottom	usia.com
XS, XS, S, M, L, XL, XL, XXXL custom	Shoulders Elbows	Knees	Rear	Wrists ◇Rings	Boots	◇H-Latex N-Latex W-Latex	◇	Med Duty				◆			◆	Warm weather Contaminated water dive/recovery suit Carry Bag, EN Certified	protective.ansell.com

Rescue and in-water swimming. IMMERSION = Can withstand a dunk from falling in. NOT long term immersion. TACTICAL = military and law enforcement SEALS: H=Hood, N = Neck, W = Wrist/cuffs, A= Ankle

INFLATABLE PONTOONS & PATHS

images not to scale

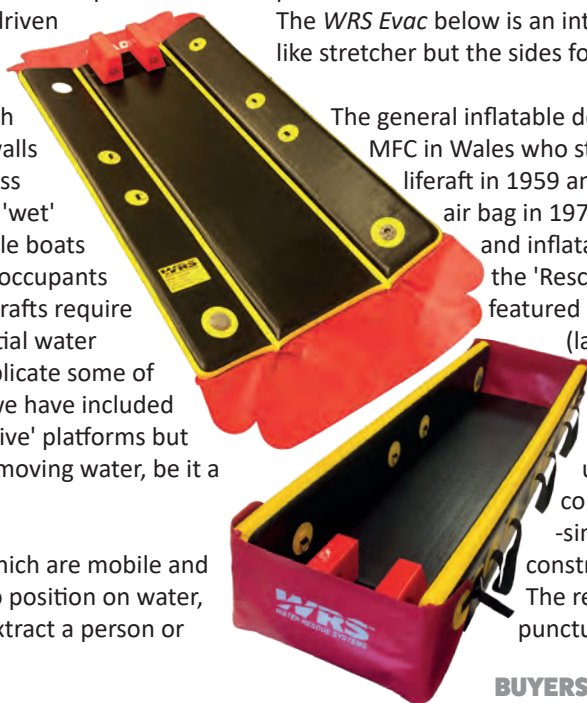


This GUIDE to inflatable platforms could be divided into what we will call 'passive' and 'dynamic' products.

The next guide is 'dynamic' inflatables which are open-backed sleds designed to be powered or paddle driven through water or they can be pushed, towed or 'punted' over ice/mud/sand in order to reach a person in difficulties. Such craft have an inflatable gunwale or side-walls and an open back that allows easier ingress into or egress out of the water. These are 'wet' craft and not to be confused with inflatable boats and rafts which are designed to keep the occupants dry-ish. Inflatable sleds and open backed-rafts require the occupants to be fully kitted for potential water entry. Sleds and even tow-boards can duplicate some of the work of the paths in this GUIDE and we have included some flat sleds that function well as 'passive' platforms but they are primarily intended for rescue in moving water, be it a broad flood or complex swiftwater.

This GUIDE concerns passive platforms which are mobile and can be pushed, pulled or leapfrogged into position on water, ice, mud or sand in order to access and extract a person or

animal in difficulties. Other than one or two that have a raised 'lip' these platforms are flat mats which can be walkways across water and unstable surfaces and/or work platforms from which to perform the rescue. Some of these models are not the same flat surface on the bottom as they are on the top - some have a catamaran style base. We haven't included inflatable stretchers unless they are flat top and can be used as an impromptu work platform or access method over water and unstable surfaces. The *WRS Evac* below is an interesting oddity because it's a box-like stretcher but the sides fold down to create a flat platform.



The general inflatable design we see now, originated with MFC in Wales who started in rescue with lifejackets and liferaft in 1959 and went on to invent the pneumatic air bag in 1971. The technology for both airbags and inflatable platforms is quite similar so the 'Rescue Path' was born in the 80's. This featured a very tough rubber and neoprene (later Hyperlon) outer fabric, reinforced internally with a fabric mesh and held flat, rather than ballooning into a ball, by judicious use of retaining string or cords connecting the top to the bottom -similar to mattress springs, this construction they called 'drop-stitch'. The result is a very tough, virtually puncture-proof (but we'll call it puncture-

resistant) mat a few inches thick that can be transported in a back-pack-sized package and inflated in minutes on-scene using compressed air or in dozens of minutes using a hand or foot pump. Having the option of both is most useful to ensure that you are not wholly reliant on a properly charged compressed air cylinder that hasn't been quietly leaking air all the way to the incident.

One amazing feature of this class of rescue products is that manufacturing hasn't strayed much outside of the UK and there don't appear to be any made in North America, certainly not that we have found as a bona-fide rescue product. *MFC* are still the granddaddy of inflatables though they have some younger competitors to contend with these days so the UK still produces most models of inflatable platforms - from the original *MFC* to *WRS (Water Rescue Systems)* and *SIT Ltd (Specialist Inflatable Technology)* and latterly *Northern Diver* as well as the other Brit, *Checkmate Flexible Engineering* (making the *IC.Brinkle models*) *WRS* have actually now relocated to Belgium as *WRS International*. We then saw *Savatech* in Slovakia (although they are now hard to find and may have been discontinued under *Trelleborg*) and *VETTER* in Germany expanding into inflatable paths because they, like *MFC*, were already producing pneumatic air bags. In fact *VETTER* took things a step further and are the only commercial rescue producer of high-fall air bags - giant inflatables that can save a person falling from height. Another company in Slovakia that we weren't familiar with is *Nexis* which has a single 5.1m/11' path in a fetching white with red trim and is almost certainly rebadged from a *Duletai* product. We saw a lot of Chinese inflatable platforms while researching this GUIDE but only *Duletai* with their *Durainflate* series seemed to be aimed at the professional market and indeed imported into Europe and the US by a number of reputable companies. We always hesitate to include Chinese products in our GUIDES, not because they are poor products - we always say that the Chinese can produce to whatever quality they are asked including the very best, but because so many products are counterfeit copies. We can't say that of *Duletai* because their range is unlike the others. They have incorporated a double air chamber where a smaller safety chamber of 30-50% of total air capacity is surrounded and protected by the main chamber. Should the main chamber



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develop a serious leak you still have a useful degree of floatation. We can't say for sure that this makes them fit for purpose having not used them but the design, materials and spec look promising, they even quote a DIN-compliant figure for tenacity and cohesion strength of the fabric and laminate bonding of the top surface and the sidewall of, respectively: 2600x5000 (+/-150) Newtons per 5cm, 150x150 (+/-10) Newtons per 5cm & 3000x3000 (+/-200) Newtons per 5cm, 100x100 (+/-10) Newtons per 5cm. We haven't seen these kinds of figures quoted by others so *Duletai* are obviously keen to be transparent assuming the figures are accurate.

It's interesting to note that some designs have tried to address one problem that can occur with a broad, flat surface in contact with wet mud and sand - suction. It can be difficult to lift and move these mats so a number of designs have a catamaran-style base mentioned earlier and shown in this *Checkmate* model that lifts the mat clear of the surface to negate that suction. Being much higher they also afford a little more protection in water but of course that height can make loading on board the platform more difficult than mats that are only a few inches high. *WRS* took a different approach and have incorporated a forced curve to their mats (shown here in the original colourway) such that it lays flat when there is weight on it but is curved to sit only on its longer outer edges when empty- genius!



HYPALON VS PVC *Hypalon* is a *DuPont* tradename though, like *Hoover*, it seems to have become a more generic term for the tougher, more UV, abrasion and chemical-resistant material of the two. Consequently, it's heavier, more expensive and with less colour options. *Hypalon* is also more resilient in extreme cold and heat but as a rough guide both materials can operate in temperatures from around -25 to +60°C (-13 to 140°F) but should be stored in cool dark places around 15 degrees give or take 10 degrees either way and obviously never in direct sunlight or adjacent any solvents or chemicals. These things are basically modified lifting air-bags with a drop-stitch construction where a thread, cord or fabric ties the upper and lower surfaces together to stop then path becoming a balloon.

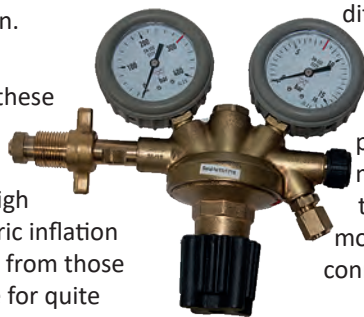
FEATURES of INFLATABLE PATHS All of these rescue-oriented models are inflated by BA style compressed air cylinders which suits fire services nicely. Most can also be inflated by high capacity hand or foot pumps or even an electric inflation pump - preferably something that is a step up from those cigarette lighter lilo inflators or you'll be there for quite some time. Compressed Air (CABA) inflation is the preferred option for speed because it inflates in seconds to a few minutes rather than several minutes. Most companies can provide the most compatible pressure reducer and hoses for your services air cylinders. Over-pressure is not an issue since they all have

a safety valve that will purge air. Pressures need to be high to provide the rigid surface capable of taking around 100kg/220lb per square metre of path. In some cases there is a separate 'dump' or purge valves for rapid deflation often doubling as the safety valve. A speedy deflation can also be achieved by using a suction pump on the inflation point. Once inflated, these things are rock-hard and tough as old boots but they don't have a limitless capacity for being squashed - under high load they will deflect and maybe crease in water but on a harder, more resistant surface like mud or sand they would either rupture or, in most cases the safety or over-pressure valve would save the day and expel air rather than rupture a seam.

Typical load capacities are around 100kg per square metre give or take several kg so with most paths being about a metre wide you can gauge their capacity by the length - a 3m path will take 3 or 4 people or one horse, a 10 metre might take a dozen people or a small herd of sheep but good luck keeping any live and frisky animal on-board. For animal rescue, platforms can be useful for physically hauling and sliding an animal out of mud or water but they tend to be used more for the human rescuers to carry out a rescue around a trapped animal (or human) - frequently in mud, sometimes sand where the platform either allows easy access and deployment of air lances to free a mud-entrapment or can be used as a base for a lifting tripod being careful NOT to exceed the per square metre or foot load rating.

'LOAD-BEARING' EYES

Virtually all designs have towing or connection eyes, either as metal rings or webbing eyes on the ends or close to the ends on the top. These can be used to connect paths together and create much larger working areas or to tow the paths into position/ back from a rescue; the UK Coastguard Mud Rescue Teams have provision for a powered winch to drag their rescue sled back to dry land after a rescue but this principle can extend to paths that have strong enough towing eyes. Such attachment points can also be used as tether points for holding position in flowing water but NONE are intended as vertical lift eyes for hoisting with weight on the platform. Only the inflatable stretchers are properly equipped for hoisting as noted in the NOTES section of one or two in this list. Some models have different sizes of D-rings and while there are no figures given it is likely that the smaller D-Rings are intended to have less load applied - these are often around the circumference or side walls with the perimeter cord running through so load is shared more equally between them that the larger towing/ tethering eyes. One or two, like the *Checkmate* models have connection hooks on one wne and connecting eyes at the opposite end.



HANDLES

There are carry handles on most models, these are intended for transport and positioning NOT for lifting stretcher style though that is possible with one or two of the paths with a

high 'freeboard', the *SIT* models for example are nearly double the height of the *Vetter* paths. Some handles are bespoke, ergonomic grips while others may simply be the perimeter cord with a smaller gap between anchor points.

PERIMETER CORD

There is cord or webbing running around the top surface or all the way around the sides of most paths. This tends to be on the rectangular models which are long and thin rather than the smaller square models. Cord is fastened to the top surface or the sidewalls of the path at intervals and can be used to aid positioning of the path, for in-water casualties that won't fit on top to hold onto or to fasten equipment or throwbags etc. anywhere along the path's length and ensure you don't lose anything during the rescue mêlée. On longer models this can add a kilo to the weight as it tends to be 7 to 10 mm in diameter for easier grasping.



MFC's Animal Rescue Path seems to be the original Rescue Path that we used to deploy for just about everything from mud and ice to quicksand and even trench rescue but is now re-purposed as an animal rescue platform. It's still a great and probably more cost-effective, general option for mud/ice/sand rescue but with less frills and a slicker surface. In the image below, the sheer scale of effort required to rescue a cow from mud can be seen, plus the necessity for a slick surface in sliding the cow out. Here it's all hands to the pump in Hampshire, UK as the Animal Rescue Team, Water Rescue Team, local fire crew, farmer and vet all get involved. The slick surface, as distinct from the now more common tactile surface, enables rescuers to drag the animal out and is made easier in dry weather with liberal application of a bucket of water.



NON-SLIP TOP SURFACE

A slick rubber surface might be good for sliding animals on but it is something of a liability for anyone stood on it or trying to walk across it so most have some form of extra grip - this can be a textured or dimpled surface across its entirety like EVA foam or it may be a series of ribs. Most use a tactile surface like this *NDiver* model (right) which is noticeably matt and grippy in appearance but some have a surface that is not immediately distinct from a non-textured surface yet still flat and grippy. There are times when a tactile surface is more of hindrance than a help - trying to slide a trapped animal onto the platform for instance and when it comes to cleaning/decontamination but on the whole - greater traction is more useful to rescuers.

INFLATABLE PONTOONS & PATHS

IN THE FOLLOWING TABLES.....

Any use, feature, accessory or component that is inherent in the product is shown as a solid coloured square ■■■■ If it's an option it is shown as an outline square □□□□

A circle ● in the 'USE' columns indicates that this feature is only partially present and/or is OK for that purpose but not ideal.

ORIGIN: The 'manufacturer's country, not necessarily the country of manufacture indicated by an inset flag.

COST: a rough guide only - includes local taxes/VAT. Varies with exchange rates, extra taxes etc. Like our other GUIDE in this issue, hardly anyone is prepared to give a price, WRS, Northern Diver and IC Brindle have no problem passing on prices so you can get a rough idea from these of the cost of similar sized paths from other manufacturers. We usually round up to the nearest Pound\$/US Dollar\$/Euro€. We have started to quote a US\$ figure in orange which is simply a currency conversion to give an idea of price, it is not the selling price in the US which may have import duties etc to add.

LOAD CAPACITY: Most companies will quote a maximum figure which is much lower than its true capabilities - the Animal path in the picture above for instance is quoted as having a max load of 200kg but that cow looks a little heavier than that! If you work on 100kg per square feet or 67.2 pounds per square foot.

DIMENSIONS: Length by width by depth/height from ground. The stored dimensions may be the bag rather than the rolled or folded platform but close enough.

AIR CAPACITY: The volume of air needed to fill the path to working pressure. This doesn't necessarily correlate to the dimensions (which are external measurements) and vary with different thicknesses of material, resistance, internal components etc.

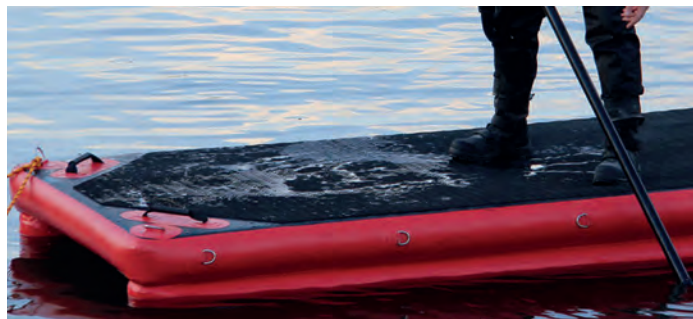
MAX WORKING PRESSURE: the pressure at which the path is pumped up and workable, exceeding of which will purge via the safety valve.

INFLATION TIME: Mostly via compressed air which is two or three times quicker than an electric pump which, in turn may be twice as fast as hand or foot inflation. All of these times are approximate and depend on the temperature and how well the path has been unpacked/unrolled. One or two of the figures given here seem mightily optimistic.

TOW/CONNECT EYES: metal D-rings and/or web straps and sometime hooks. This can be tricky because some components can easily do the job of both but generally speaking the connecting eyes can be weaker than towing eyes but neither is designed to hold a loaded path in suspension.

SAFETY/DUMP VALVE: The safety valve or purge valve allows excess air to vent as a result of over-inflation or an excessive compressive load. Dump valve refers to the ability to empty air quickly or even to actively suck air out with a pump.

COLOUR: Primary colour of shell/frame with an outline secondary colour to indicate trim colour.



IMAGES NOT TO SCALE	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x Wx H/D PACKED
	2m Rescue Walkway	CHECKMATE FLEXIBLE ENGINEERING		N/A	24kg 52.8lb	200kg 440lb >100kg >67.2lb	200 x 140 x 25cm 78.7 x 55 x 10" 170 x 50 x 30cm 67 x 19.7 x 13.7"
	5m Rescue Walkway	CHECKMATE FLEXIBLE ENGINEERING		N/A	36kg 61.6lb	500kg 1100lb >100kg >67.2lb	500 x 140 x 25cm 197 x 55 x 10" 170 x 50 x 35cm 67 x 19.7 x 13.7"
	10m Rescue Walkway	CHECKMATE FLEXIBLE ENGINEERING		N/A	46kg 101.2lb	1000kg 2200lb >100kg >67.2lb	1000 x 140 x 25cm 254 x 55 x 10" 170 x 50 x 40cm 67 x 19.7 x 15.7"
	2m Rescue Walkway 520017	DULETAI		N/A	14kg 30.8lb	800kg 1760lb	200x137x20cm 78.7 x 53.9 x 8" 82x35x45cm 32.2 x 13.7 x 17.7"
	5m Rescue Walkway 520018	DULETAI		N/A	27kg 59.4lb	800kg 1760lb	500 x137x20cm 197 x 53.9 x 8" <115 x 35 x 45cm <45.2 x 13.8 x 17.7"
	10m Rescue Walkway 520019	DULETAI		N/A	55kg 121lb	1300kg 2860lb	1000x137x20cm 254 x 53.9 x 8" 115 x 35 x 45cm 45.2 x 13.8 x 17.7"
	15m Rescue Walkway 520020	DULETAI		N/A	90kg 198lb	3000kg 6600lb	1500x137x20cm 590 x 53.9 x 8" 180x100x85cm 70.8 x 40 x 33.4"
	2m Fast Path	IC BRINDLE		£1620 \$1688	23kg 50.6lb	250kg 550lb	200x130x30cm 78.7 x 51 x 12" 170 x 50 x 30cm 67 x 19.7 x 13.7"
	5m Fast Path	IC BRINDLE		£2736 \$3358	35g 77lb	625kg 1375lb	500x130x30cm 197 x 51 x 12" 170 x 50 x 35cm 67 x 19.7 x 13.7"
	10m Fast Path	IC BRINDLE		£4776 \$5865	45kg 99lb	1250kg 2750lb	1000x130x30cm 393 x 51 x 12" 170 x 50 x 40cm 67 x 19.7 x 15.7"
	2m Airtrack Rescue Path WR0011 WRW0011/01	MFC INTERNATIONAL		\$2600	12kg 26.4lb	200kg 440lb	200x137x25cm 82x48x24cm
	3m Airtrack Rescue Path WR0012 WRW0012/01	MFC INTERNATIONAL		N/A	17kg 37.4lb	300kg 660lb	300x137x25cm 87x48x28cm
	4m Airtrack Rescue Path WR0013 WRW0013/01	MFC INTERNATIONAL		N/A	22kg 48.4lb	400kg 880lb	400x137x25cm 87x48x32cm

NOTES: COST: Approx, INCLUDES local tax/VAT £\$€ are currency conversions only exc. tax, duty & shipping USES/ FEATURES: ● = PARTIAL FEATURE

AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	UPPER SURFACE GRIP	INFLATION CHAMBERS	REGULATOR / HOSE	HANDLES / GRAB CORD	TOW / CONNECT EYES	SAFETY / DUMP VALVE	MANUAL/POWER PUMP	REPAIR KIT / POCKETS	REFLECTIVE	CARRY BAG/VALISE	COLOUR OPTIONS	NOTES	WWW.
*840 L 29.7cuft	0.55 BAR 8 PSI	Neoprene coated nylon	■	3	□	■	10 4	■			■	■	■	* approximate figures	checkmateflex.com
*1700 L 60cuft	0.55 BAR 8 PSI	Neoprene coated nylon	■	3	□	■	10 4	■			■	■	■	* approximate figures	checkmateflex.com
*3500 L 123.6cuft	0.55 BAR 8 PSI	Neoprene coated nylon	■	3	□	■	10 4	■			■	■	■	* approximate figures	checkmateflex.com
800 L 28.25cuft 40 sec	0.5 BAR 7.3 Psi	PVC coated Polyester. EVA foam upper	■	2	-	■	20 0	-	□	□	■	■	□		durainflate.com
1600 L 56.5cuft 1min	0.5 BAR 7.3 Psi	PVC coated Polyester. EVA foam upper	■	2	-	■	20 0	-	□	□	■	■	□		durainflate.com
3200 L 113cuft 4mins	0.5 BAR 7.3 Psi	PVC coated Polyester. EVA foam upper	■	2	-	■	24 6 0	-	□	□	■	■	□		durainflate.com
5570 L 196.7cuft 6mins	0.5 BAR 7.3 Psi	PVC coated Polyester. EVA foam upper	■	2	-	■	30 10 0	-	□	□	■	■	□		durainflate.com
*840 L 29.7cuft	0.55 BAR 8 PSI	PVC	■	3	□	■	0	■	□	□	□	□	■	* approximate figures	icbrindle.com
*1700 L 60cuft	0.55 BAR 8 PSI	PVC	■	3	□	■	0	■	□	□	□	□	■	* approximate figures	icbrindle.com
*3500 L 123.6cuft	0.55 BAR 8 PSI	PVC	■	3	□	■	0	■	□	□	□	□	■	* approximate figures	icbrindle.com
640 L 22.6cuft 1min	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	□	■	8 4	-	□	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com
960 L 33.9 L	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	□	■	8 4	-	□	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com
1280 L 45.2cuft 3mins	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	□	■	8 4	-	□	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com


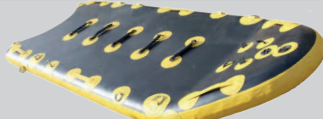



■ and/or OK BUT NOT IDEAL □ = Option N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air

	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x Wx H/D PACKED
	5m Airtrack-Rescue Path WR0014 WRW0014/01	MFC INTERNATIONAL		£000 \$4900 €000	28kg 61.6lb	500kg 1100lb	500x137x25cm 197 x 54 x 9.8" 87 x 48 x 35cm 34.2 x 19 x 13.8"
	10m Airtrack Rescue Path WR0015 WRW0015/01	MFC INTERNATIONAL		N/A	55kg 121lb	1000kg 2200lb	1000 x 137 x 25cm 394 x 54 x 9.8" 89 x 73 x 50cm 35 x 28.7 x 19.7"
	15m Airtrack Rescue Path WR0016 WRW0016/01	MFC INTERNATIONAL		N/A		2000kg 4400 lb	1500 x 137 x 25cm 590 x 54 x 9.8"
	5m Animal Rescue Path WR0195 WRW0195	MFC INTERNATIONAL		N/A	15.5kg 34.1 lb	600kg 1320 lb 200kg	500 x 134 x 6.7cm 197 x 53 x 2.6" 66 x 34 x 25cm 26 x 13.4 x 9.8"
	10m Animal Rescue Path WR0197 WRW0197	MFC INTERNATIONAL		N/A	40kg 88 lb	1200kg 2640 lb	1000 x134 x 6.7cm 39.4 x 5.3 x 2.6" 70 x 45 x 30cm 27.6 x 17.7 x 12"
	Inflatable Stretcher WR0196 WRW0196	MFC INTERNATIONAL		N/A	7kg 15.4 lb 6kg 13.2 lb	150kg 330 lb	204 x 66 x 6.7cm 80.3 x 26 x 2.6" 35 x 35 x 18cm 13.8 x 13.8 x 7"
	RPH Lifeline	NIXUS		N/A	28.5kg 62.7lb	800kg 1760lb	510 x 137 x 16cm 200 x 54 x 6.3" <115 x 35 x 45cm <45.2 x 13.8 x 17.7"
	1m Air Track	NORTHERN DIVER		£177 \$218 €000	5kg 11lb	60kg 132lb	100 x 100 x 8cm 39 x 39 x 3.15" 110 x 35 x 10cm 43.3 x 35 x 4cm
	2m Air Track	NORTHERN DIVER		£369 \$453 €000	10.5kg 23.1lb	120kg 264lb	200 x 100 x 8cm 39 x 3.15" 110 x 35 x 15cm 43.3 x 13.8 x 6"
	5m Air Track	NORTHERN DIVER		£1310 \$1608 €0000	35.5kg 78.1lb	420kg 924lb	500 x 100 x 8cm 19.7 x 39 x 3.15" 140 x 35 x 30cm 55 x 13.8 x 12"
	8m Air Track	NORTHERN DIVER		£1662 \$2041 €0000	46kg 101.2lb	672kg 1478lb	800 x100 x 8cm 315 x 39 x 3.15" 140 x 35 x 35cm 55 x 13.8 x 13.8"
	10m Air Track	NORTHERN DIVER		£1916 \$2352 €0000	41kg 90.2lb	840kg 1848lb	1000x100 x 8cm 394 x 39 x 3.15" 140 x 35 x 38cm 55 x 13.8 x 13.8"
	2m Walkway	NORTHERN DIVER		£956 \$1174 €0000	300kg 660lb	250kg 550lb	200 x120 x 30cm 79 x 47.2 x 12" <140 x 50 x 35cm <55 x 19.7 x 13.8"

NOTES: COST: Approx, INCLUDES local tax/VAT £\$€ are currency conversions only exc.tax, duty& shipping USES/ FEATURES: ● = PARTIAL FEATURE

AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	TOP SURFACE GRIP	INFLATION CHAMBERS	REGULATOR / HOSE	HANDLES / GRAB CORD	TOW / CONNECT EYES	SAFETY / DUMP VALVE	MANUAL/POWER PUMP	REPAIR KIT / POCKETS	REFLECTIVE	CARRY BAG/VALISE	COLOUR OPTIONS	NOTES	WWW.
1600 L 56.5cuft 3-4mins	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	■	0	8 4	■	■	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com
3200 L 113cuft 6-7mins	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	■	0	12 4	■	■	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com
4800 L 169cuft 8-10mins	0.7 BAR 10 Psi	Hypalon Neoprene/TPU	■	3	■	0	16 4	■	■	2	■	■	■	comes with throwline with rubber quoit	mfc-international.com
455 L 16cuft 30sec	0.2 BAR 3 Psi	Hypalon Neoprene/TPU	NO	1	■	6	0	■	■	-	NO	■	■	Hypalon version in Yellow/Black, TPU version in Orange/black	mfc-international.com
910 L 32.1cuft 2mins	0.2 BAR 3 Psi	Hypalon Neoprene/TPU	NO	1	■	6	0	■	■	-	NO	■	■	Hypalon version in Yellow/Black, TPU version in Orange/black	mfc-international.com
100 L 3.5cuft 30secs	0.2 BAR 3 Psi	Hypalon Neoprene/TPU	NO	1	■	NO 6	0	■	■	-	NO	■	■		mfc-international.com
1600 L 56.5cuft 2min	0.5 BAR 7.3 Psi	PVC coated Polyester. EVA foam upper	■	2	-	0	20 0	■	■	■	■	■	■		nixus2protect.com
80 L 2.8cuft 23secs	0.7 BAR 10 Psi	DWF/PVC	■	1	■	2	■	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
160 L 5.6cuft 54secs	0.7 BAR 10 Psi	DWF/PVC	■	1	■	2	■	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
560 L 19.8cuft 3.1mins	0.7 BAR 10 Psi	DWF/PVC	■	1	■	4	4 ■	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
896 L 31.6cuft 5mins	0.7 BAR 10 Psi	DWF/PVC	■	1	■	4	4 ■	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
1120 L 39.6cuft 6.2mins	0.7 BAR 10 Psi	DWF/PVC	■	1	■	4	4 ■	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
360 L 12.7cuft 2mins*	0.7 BAR 10 Psi	DWF/PVC	■	3	■	4	4 12	■	■	■	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com

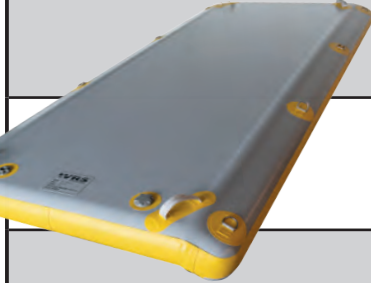





E and/or OK BUT NOT IDEAL ■ ■ ■ = Option N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air

IMAGES NOT TO SCALE	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x Wx H/D PACKED
	3m Walkway	NORTHERN DIVER		£1318 \$1618 €0000	35kg 77lb	450kg 990lb	300 x 120 x 30cm 118x 47.2 x 12" <140 x 50 x 35cm <55 x 19.7 x 13.8"
	5m Walkway	NORTHERN DIVER		£2084 \$2559 €0000	42kg 92.4lb	750kg 1650lb	500 x 120 x 30cm 197 x 47.2 x 12" 140 x 50 x 35cm <55 x 19.7 x 13.8"
	10m Walkway	NORTHERN DIVER		£3873 \$4755 €0000	85kg 187lb	1500kg 3300lb	1000 x120 x30cm 394 x 47.2 x 12" 140 x 60 x 40cm
	RR2	NORTHERN DIVER		£970 \$1191 €0000	23.7kg 52.1lb	300kg 660lb	300 x 100 x 15cm 118 x 39 x 4" 0 x 0 x 0cm
	5m Rescue Walkway ATP5	SAVATECH (TRELLEBORG)		N/A	34kg 74.8lb	1000kg 2200lb 200kg 440lb	500 x 165 x 15cm 197 x 65 x 6" n/a
	10m Rescue Walkway ATP10	SAVATECH (TRELLEBORG)		N/A	66kg 145.2lb	2000kg 2205lb 200kg 440lb	1000 x 165 x 15cm 394 x 65 x 6" n/a
	15m Rescue Walkway ATP15	SAVATECH (TRELLEBORG)		N/A	100kg 220lb	3000kg 4409lb 200kg 440lb	1500 x 165 x 15cm 590 x 65 x 6" n/a
	ResQ Path 3000 SIT38050	SIT Ltd		N/A	15kg 33lb	350kg 770lb	300 x 145 x 15cm 118 x 57 x 4" 70 x 40 x 40cm 27.5 x 15.7 x 15.7"
	ResQ Path 5000 SIT38050	SIT Ltd		£0000 \$6397 €6074	25kg 55lb	650kg 1430lb	500 x 145 x 15cm 197 x 57 x 4" 70 x 44 x 40cm 27.5 x 17.3 x 15.7"
	ResQ Path 10000 SIT38050	SIT Ltd		£0000 \$8718 €8278	45kg 99lb	1200kg 2640lb	1000 x 145 x 15cm 394 x 57 x 4" 70 x 70 x 70cm 27.5 x 27.5 x 27.5"
	6m Walkway 1530008502	VETTER		N/A	25kg 77.2lb	800kg 1760 lb 95kg 2255 lb	600 x 140 x 10cm 236 x55 x 4" 165 x 35 x 25cm 65 x 14 x 10"
	10m Walkway 1530008602	VETTER		N/A	57.5kg 126.8lb	1330kg 2926 lb 95kg 2255 lb	1000 x 140 x 10cm 394 x 55 x 4" 165 x 45 x 30cm 65 x 14 x 10"
	15m Walkway 1530008702	VETTER		N/A	81.5kg 179.7lb	1995kg 4390 lb 95kg 2255 lb	1500 x 140 x 10cm 590 x 55 x 4" 165 x 60 x 45cm 65 x 14 x 10"

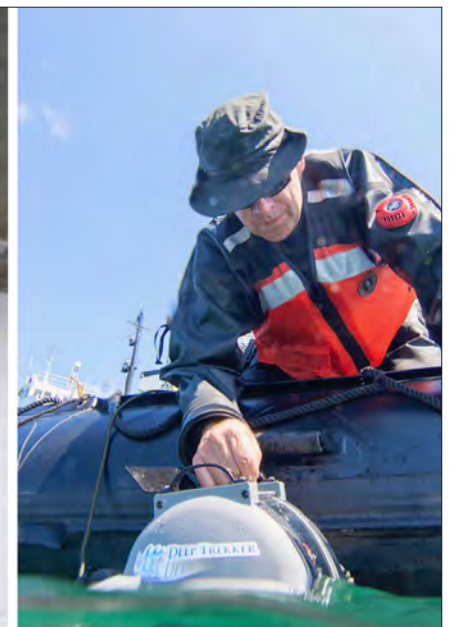
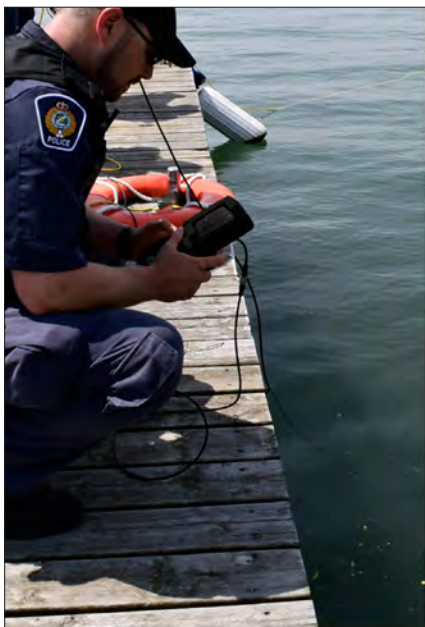
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AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	TOP SURFACE GRIP	INFLATION CHAMBERS	REGULATOR / HOSE	HANDLES / GRAB CORD	TOW / CONNECT EYES	SAFETY / DUMP VALVE	MANUAL/POWER PUMP	REPAIR KIT / POCKETS	REFLECTIVE	CARRY BAG/VALISE	COLOUR OPTIONS	NOTES	WWW.
540 L 19cuft 3mins*	0.7 BAR 10 Psi	DWF/PVC	■	3	□	■	4	12	■	□	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
900 L 31.8cuft 5mins*	0.7 BAR 10 Psi	DWF/PVC	■	3	□	■	4	12	■	□	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
1800 L 63.6cuft 10mins*	0.7 BAR 10 Psi	DWF/PVC	■	3	□	■	4	12	■	□	■	■	■	*Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
310 L 11cuft <1min	0.7 BAR 10 Psi	DWF/PVC	■	1	□	■	5	14	■	□	■	■	■	Primarily a sled so comes with twin-blade paddle	ndiver-rescue.com
1860 L 66cuft 1min	0.5 BAR 7.3 Psi	Hypalon	■	1	□	■	14	0	■	□	■	■	■	May be discontinued *Perimeter cord provides the carrying handles	trelleborgslovenija.com
3720 L 131cuft 1.4min	0.5 BAR 7.3 Psi	Hypalon	■	1	□	■	24	0	■	□	■	■	■	May be discontinued *Perimeter cord provides the carrying handles	trelleborgslovenija.com
5570 L 197cuft 10+min	0.5 BAR 7.3 Psi	Hypalon	■	1	□	■	34	0	■	□	■	■	■	May be discontinued *Perimeter cord provides the carrying handles	trelleborgslovenija.com
650 L 23cuft 1min	0.5 BAR 7.25 psi	Hypalon	■	1	□	■	4*	4*	■	□	■	■	■	Updated range will not now include the original 2m version. *All fitments subject to change due to series redesign/update	sitltd.co.uk
1080 L 38.1cuft 2mins	0.5 BAR 7.25 psi	Hypalon	■	1	□	■	4*	4*	■	□	■	■	■	*All fitments subject to change due to series redesign/update Also branded as SAFEQUIP	sitltd.co.uk
2160 L 76.3cuft 4mins	0.5 BAR 7.25 psi	Hypalon	■	1	□	■	4*	4*	■	□	■	■	■	*All fitments subject to change due to series redesign/update Also branded as SAFEQUIP	sitltd.co.uk
1321 L 47cuft 2.9mins	0.5 BAR 7.25 psi	PVC	■*	1	□	■	6	4	■	□	■	■	■	* Grip provides by strips at intervals along the top	vetter.de
2196 L 78cuft 4.9mins	0.5 BAR 7.25 psi	PVC	■*	1	□	■	8	4	■	□	■	■	■	* Grip provides by strips at intervals along the top	vetter.de
3360 L 119cuft 7.4mins	0.5 BAR 7.25 psi	PVC	■*	1	□	■	10	4	■	□	■	■	■	* Grip provides by strips at intervals along the top	vetter.de


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IMAGES NOT TO SCALE	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x Wx H/D PACKED
	2m Rescue Pathway	WRS INTERNATIONAL		\$2667 €2667	7.4kg 16.3lb	220kg 484lb	200 x 100 x 15cm 79 x 39 x 6"
	3m Rescue Pathway	WRS INTERNATIONAL		\$3046 €2682	13.3kg 29.3lb	390kg 858lb	300 x 140 x 15cm 118 x 55 x 6"
	5m Rescue Pathway	WRS INTERNATIONAL		\$3696 €3253	23kg 50.6lb	650kg 1430lb	500 x 140 x 15cm 197 x 55 x 6"
	Evac Sled	WRS INTERNATIONAL		\$2073 €2682	8.5kg 18.7lb	160kg 352lb	300 x 140 x 15cm 118 x 55 x 6"

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **£/\$** are currency conversions only exc.tax, duty& shipping **USES/FEATURES:** ● = PARTIAL FEATURE

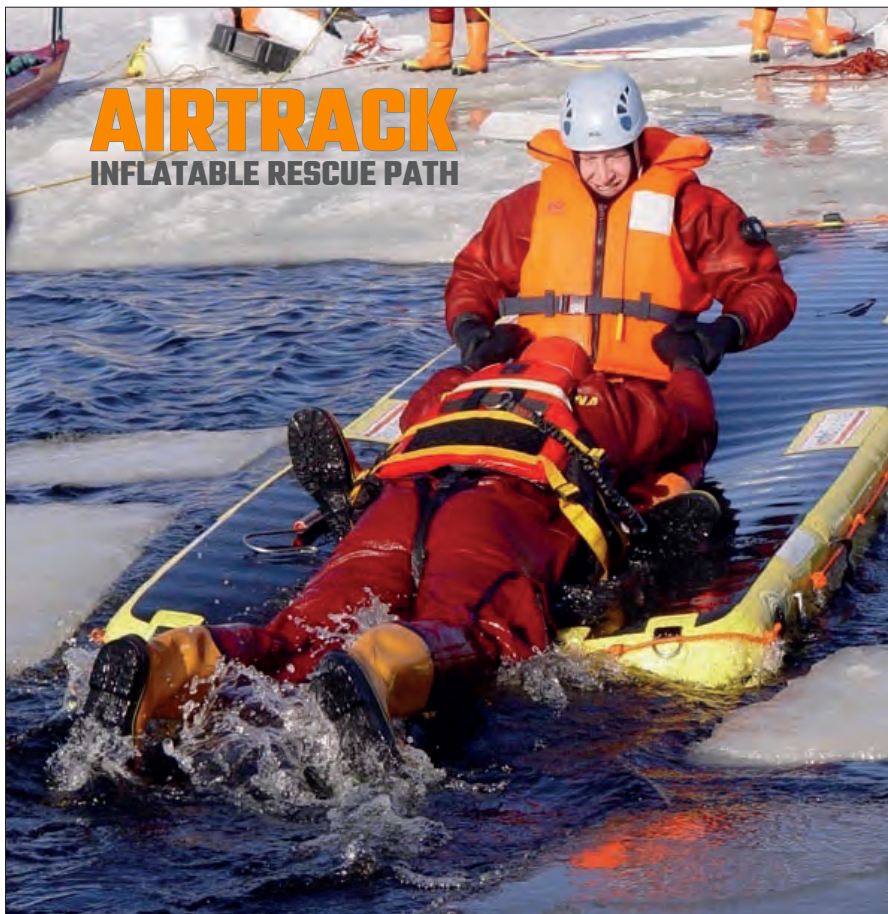


Rapid response underwater search & recovery ROVs

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AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	TOP SURFACE GRIP	INFLATION CHAMBERS	REGULATOR / HOSE	HANDLES / GRAB CORD	TOW / CONNECT EYES	SAFETY / DUMP VALVE	MANUAL/POWER PUMP	REPAIR KIT / POCKETS	REFLECTIVE	CARRY BAG/VALISE	COLOUR OPTIONS	NOTES	WWW.
450 L 15.9cuft <1min	0.7 BAR 11 psi	PVC	NO	1	<input type="checkbox"/> NO	<input type="checkbox"/> NO	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		wrsinternational.com
650 L 23cuft 1-2mins	0.7 BAR 11 psi	TPU	NO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 8	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		wrsinternational.com
1000 L 32.5cuft >2mins	0.7 BAR 11 psi	TPU	NO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 12	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		wrsinternational.com
350 L 12.4cuft 1min	0.7 BAR 11 psi	TPU	NO	1	<input type="checkbox"/>	<input checked="" type="checkbox"/> 6	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/> -	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Folds flat to create a platform for easy loading	wrsinternational.com

E and/or OK BUT NOT IDEAL = Option N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air



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INFLATABLE OPEN-ENDED SLEDS & WATERCRAFT

Oceanid RDC. Invented in 1996 in Washington State in response to a request for a specialist ice-rescue craft, the Oceanid RDC has lately spawned many copies. This image shows the optional transom for mounting an outboard which a number of larger sleds/rafts also offer.



This GUIDE covers the more 'dynamic' rescue sleds, and open-transom rafts. Some of these are described as 'sleds' some as 'rafts' but in all cases they will have an open ended stern or water-entry opening in the case of the *Oceanid RDC* style rafts. These can be powered though that generally requires some modification like the *RDC* above since the stern is open on all the models in this GUIDE. More often they are paddled as with the *MFC Sled* on the left or pushed/towed/'punted' over water, ice, mud or sand in order to reach a person in difficulties. Such craft have inflatable sponsons or side-walls and an open back that allows easier ingress into or egress out of the water. These are 'wet' craft and not to be confused with inflatable boats or rafts which are designed to keep the occupants dry-ish. Inflatable sleds and open backed-rafts require the occupants to be fully kitted for potential water entry. Materials were discussed in part 1 and these sleds/rafts are the same materials and construction - incredibly robust welded PVC/TPU or glued Hypalon, often as a Double Wall Fabric (DWF) and drop stitched on the most robust part of these craft, the floor/hull. Given the abuse these things get from ice, gravel, flooded wire fences and brick walls etc. some have extra reinforcing strip along the underside of sponsons like the *NRS* craft. Failing that, all craft come with a repair kit. As with most things in life, you get what you pay for, so consider the materials, construction warranty and pedigree of the manufacturer and craft before committing to a purchase.



MFC Rescue Sled RS3

The point of the open stern of these sleds is to enable easy loading of a rescuer and/or a casualty and human kick-power if necessary so there is some duplication of the work of the paths we featured in the last GUIDE especially in the larger sizes which are more appropriate for flood evacuation than they are swiftwater. However, unlike flat platforms, sleds have a degree of occupant protection from their sponsons and are designed to be used in fast moving flood water, broad slow-moving flood water and /or complex swiftwater and most can negotiate quite narrow channels. This style of craft may sit between the passive platforms and inflatable boats but it actually evolved last and as a consequence

of adding a protective sponson like a RIB collar to an inflatable base and in most cases, raising the bow profile slightly. In its simplest form, you can see that this *CheckRaft* has a 3-sided sponson ratcheted to the deck of the same platform we listed in last issue's GUIDE. Indeed a market leader that rarely gets a mention outside of the manufacturers boardrooms is *Henshaw Inflatables*, which is yet another UK pioneer that, since the 70's had been making rib collars/sponsons rather than entire boats. *Henshaw* either supply their collars or assist in conjoining the two products but you won't see an entire *Henshaw* boat or craft. They are however, now part of the *Wing Group*, *Bill Wing's* inflatable raft company and they certainly DO make water craft.

images in this article
not to scale

www.rescuemagazines.com



ABOVE: The IRB-style WRS Mega Sled

The two original and distinctly different boat designs in this Guide evolved on opposite sides of the Atlantic - *MFC* in Wales evolved their open-stern Sleds from their inflatable paths while Kris Walker at *Oceanid* in Washington State modified the classic whitewater raft to create the narrow, double-ended *RDC* much lauded by our old mate, the late, great, co-founder of *Rescue3* and water rescue oracle Jim Segerstrom. Having been unopposed in the market for at least 15 of its 25 year history, the *RDC* is now copied by most of the major players in inflatables - high praise indeed although Chinese company Yushan Yijia using the trade name *EJIA* have some nerve in not only copying and calling their own model an *RDC* they even use *Oceanid's* traditional sunburst advert template and other manufacturer's photos implying it's their product! We haven't included *EJIA* craft but their range is represented by some companies here and as always, Chinese, Taiwanese and Vietnamese manufacture can be as good as any, they just need to cut out the blatant copying. *RDC*-Style craft are on p48/49.

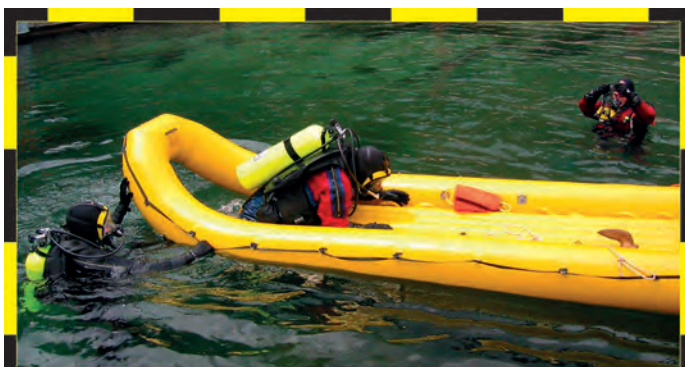
The red *WRS* model above demonstrates the most obvious hybrid between a platform and an inflatable rescue boat with sponsons/gunwales that are much larger than the *MFC sleds* and with a bow tapered like a boat - contrast this with *CheckRaft's* and *Sit Ltd's ResQRaft's* rather less hydrodynamic square 'bow' and you can tell which craft is designed for faster flowing water and which are flat-water evacuation craft. Because the sponsons are quite sizeable on all these craft the inner working space is severely restricted in comparison to the uncluttered surface of a platform so the 51"/120cm width of a *2Tinga RIT* for instance equates to only 20"/51cm of working deck width.

The narrower beam sleds like the pioneering *MFC Rescue Sled* and the *WRS X-Sled* opposite



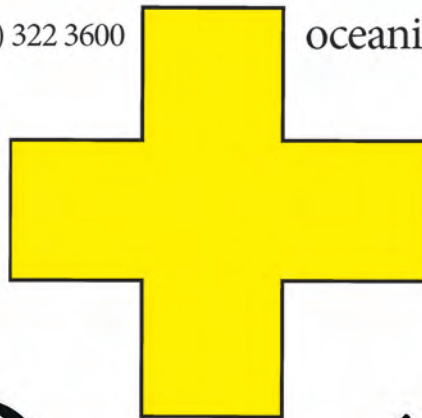
not only work well in fast moving rivers they are excellent in flooded urban streets and alleyways.

The last style of craft to note is the *Tip-Board* (overleaf) which we have included in the *RDC*-style craft table because it can be tipped to approach the casualty as all *RDC*-style craft can and especially for ice rescue. The *TipBoard* could be said to be a true water 'sled' because it has hybridised a flat platform with an *IRB* sponsons which are sharply angled at the stern to create what, on snow, would be sled/akja push handles or, if driving a



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WATER RESCUE CRAFT





dog sled team, handles with which to hang on for dear life. During the rescue of an incapacitated or severely weakened in-water victim, the stern can be tipped backward over the head and shoulders to facilitate easier loading while the rescuer has handy foot recesses from which to perform the lift. As the casualty comes out of the water the rescuer can simply 'fall' back into the craft with the levelling of the craft acting like a lever to assist with the lift or in this case, on ice or mud, a colleague can assist by levering down the bow to help pull the casualty inboard. We see a lot of these rescue design concepts by technical students in particular but they don't often seem

to reach it to market so it's good to that Dutch safety company Honor have taken this on. Of course in this case, the casualty extraction process is very similar to the Oceanid RDC albeit that the bow is not often fully tipped during loading. Most sled loading is like a seal or penguin getting onto an ice flow only without their degree of momentum. The casualty can assist by swim-kicking at the same time as the rescue hauls them on-board as can be seen in the 2Tinga pic right.



The shallow rake we see on sleds helps deal with waves but the higher rake we see on craft like the RDC, the ASR155 on the left and the Tip-Board above can also allow the craft to negotiate fast flowing water without having tons of water washing over the bow but that's obviously not the case with the open bow beneath the raked bow of the RDC designed to allow water through and rescuers to position over an in-water casualty or to slip more easily into the water direct from the floor of craft. The rake also allows the craft to be pushed up against obstacles and in the image below the face of a low-head dam/weir can be searched for an entrapment and the open bow decreases the pressure trying to force the craft away as it instead washes over the craft's floor.

High-rake craft will also 'bend' a little at the change of angle to provide an extra few inches of proximity to the target and in the absence of a hole with which to funnel an in-water casualty, the



raked solid bow is less inclined to smash an in-water casualty in the head as the two approach each other, possibly closing at speed in a high flow.

VALVES

All of these craft inflate through a valve which may only allow air flow inwards (inlet check valve) so you don't lose air pressure should the valve cap not be in place or the pump/cylinder hose come off during inflation. We have differentiated four types in our tables: Safety or Pressure Relief Valves, 1-Way, 2-Way and Dump valves but for this GUIDE they are mostly 2-Way and PR Valves. Safety or Pressure Relief Valves like the Leaffield A6 refers to its ability to purge air should you OVER-inflate (Northern Diver 2-Way and PR Valves shown in the image above). This can be



the case particularly with compressed air cylinders so the safety valve will allow air to force its way out of the valve rather than bursting the seams of the craft. A 2-way valve allows inflation and deflation - as in the valve on the left in the image above. Some, like the Leaffield A/B/C7 and Halkey-Roberts valve, have a cap and then an interior sleeve that you rotate a quarter or half turn to alternate between inflate and deflate while others have a second screw-off collar beneath a non-return inflation section. When unscrewed, this allows air to exit freely. Deflation needs to be fast so that the craft can be rolled and stowed or moved ASAP ready for the next task so these 2-way valves are



doubling as Dump or rapid air expulsion valves which tend not to be present on most sleds, boats and rafts. True dump valves, in the diving sense, can of course be a push button affair but this is obviously not the case for inflatable craft where they are regular screw-top release if they are present at all. Bear in mind that most craft have more than one chamber so deflation can be a more time consuming process than inflation. Craft like the Polar75, 2Tinga and Wing Ice Skiff have one-way baffles between chambers that means a single inflation point inflates all chambers. Many craft have both sets of



INFLATABLE OPEN-ENDED SLEDS/WATERCRAFT



valves sometimes next to each as with the *TIPBoard* and *WRS* and sometimes separate as with the *MFC Sleds* and *2Tinga Craft* where the inflate-deflate valves are located on the ends of each sponson

and on the floor. Most valves are designed to use manual pumps and BA cylinders, but some, and especially the dump valves are large enough to use a powered blower or even a vacuum cleaner in reverse. Professional battery blowers are an excellent idea because they have numerous other uses including cleaning/drying the craft. They are also unlikely to inflate beyond the pressure limit of the seams because they will struggle to push against over-pressure resistance. Basic dump valves can be used for large-bore pipe/hose inflation but air will escape while you try to screw the cap back on. *2Tinga's* accessory pack shown above, includes a repair kit but also a pressure valve so that you can check the air pressure of your craft exactly and a very useful trigger-gun adapter for a BA line, This goes over the inflation valve and provides very precise start-stop during inflation rather than the more imprecise screwing/unscrewing of a cylinder valve.

LOAD CAPACITIES

Typical load capacities are the same as flat platforms at around 100kg/220lb per square metre on water (more on ice/mud) so for craft about a metre wide you can again gauge their capacity by the length - a 3m sled will take approximately 3 or 4 people. Bear in mind that some have a deeper floor; 6" drop thread instead of 4" and this provides greater capacity per floor area.

'LOAD-BEARING' EYES

Virtually all designs have connection rings that vary in size and strength of attachment depending on their purpose. One or two, like the *TipBoard*, have high strength LIFTING eyes (shown in green in our tables) that enable the entire sled with casualty to be lifted vertically. In some cases handles rather than rings can serve the same purposes. Most craft have medium-size/strength eyes that can be used for towing or positioning of the craft (shown as an orange number) and most have ancillary eyes that are intended for smaller loads such as connecting two craft or attaching equipment. The tow-strength eyes can also be used as tether points for holding position in flowing water.

HANDLES

There are carry handles on all of these models (shown in orange in our tables), these are intended for transport and positioning while the craft is empty rather

than for lifting stretcher style though that is possible with one or two of these sleds like the *Oceanid RDC* and we have indicated this in the NOTES. Unlike the simpler platforms, all of these sleds have bespoke handles as distinct from perimeter cord doubling as a handle. Some handles are flat tape, some have solid tubes of ergonomic rubber-like material. Inboard handles (shown in black in our tables) on the floor are to assist in getting on board or for human outboard propulsion as with the *MFC Sled* on the left.

GRAB/PERIMETER CORD

Common on rafts but not so much on the sleds is a cord or webbing that runs around the sponson or, in the case of *SIT's ResQRaft*, down the length of the floor. Cord or webbing is fastened at intervals to provide a something to grab or attach equipment to during the rescue mêlée. On longer models this can add a kg or more to the weight as it tends to be 7 to 10 mm in diameter for better grip and is heavier when wet.

FLIP TAB/HANDLE

This is a tab of webbing or a handle on the underside of the craft to enable it to be more easily righted should it capsize. This tends to be on the broader craft where the sponsons would be out of reach of rescuers in the water but this slimmer RR4 Sled by Northern Diver also has one.

We removed the 'Tactile surface' column that we had for platforms, not because the sled versions don't have tactile surfaces but because we wanted to expand upon the valves for this GUIDE and sleds tend not to be walked on in the same way as a platform although rescuers still may need to stand up to pull a casualty on-board. Sleds tend to be paddled Canadian-style, knelt down. The tactile surface of most flat platforms provides grip when standing up and to lessen the chance of people and things sliding off the top. Sleds are more of a mixture because, while standing and pulling requires better traction it tends to be by wedging your feet against the sponson than by traction so some have slick surfaces to make it easier to slide a casualty onto the craft.

It is important to reference the key on the next page in order to fully understand the categories and symbols used in the following tables.



The *WRS X-Sled* (right) was the first to introduce a 'stacked' bow where the rake of the sponsons sit above the solid floor providing enhanced protection from water over the bow while increasing protection of the hull in this vulnerable area. *WRS* are among two or three to have increased deck height from 4 to 6" but they also managed to decrease weight over similar models by 'fusing' rather than gluing the layers.




KEY to ALL INFLATABLE CRAFT TABLES.....

Any use, feature, accessory or component that is **inherent** in the product is shown as a **solid coloured square** ■■■■

If it's an **OPTION** it is shown as an **outline square** □□□□

A circle ● in the 'USE' columns indicates that this feature is only partially present and/or is OK for that purpose but not ideal.

ORIGIN: The 'manufacturer's country, not necessarily the country of manufacture, If we know it's made in a different country there will be a smaller inset flag eg. these three for Vietnam, South Africa and Taiwan

COST: a rough guide only - **includes**  local taxes, VAT, varies with exchange rates, extra taxes etc. Unlike our other GUIDE in this issue, most companies here have given a rough price but in the current economic climate (2022) with so many factors affecting product costs, these prices may be subject to quite radical changes. We usually round up to the nearest Pound£/US Dollar\$/Euro€. We have started to quote a US\$ figure in orange which is simply a currency conversion to give an idea of price, it is not the selling price in the US which may have import duties etc. to add.

LOAD CAPACITY: Often quoted as a person load where 4 persons is roughly 750lb but a quite imprecise way to describe load. Most companies will quote a maximum figure which is much lower than its true capabilities especially if used on mud or ice. If you work on 100kg per square metre or 67.2 pounds per square foot you won't tax any of these models. *[Note that some don't give a load capacity or indeed air capacity or inflation time citing differences in user expertise, pumps etc. Since even a vague figure would be a useful guide to readers we have included some approximate Volume figures for comparative purposes in italics].*

DIMENSIONS: Length by internal width by external width by depth/height from ground. but this does not include the kick of an angled bow or stern. Height is often the width of sponson tube as many floors are suspended rather than having the tube sat on top. The stored dimensions may be size of the bag rather than the rolled or folded sled but it's close enough.

AIR CAPACITY: The volume of air needed to fill the path to working pressure. This doesn't necessarily correlate to the dimensions (which are external measurements) and vary with different thicknesses of material, resistance, internal components and in particular, temperature. *Figures in italics are our own approximation and could be out by a few hundred Liters.*

MAX WORKING PRESSURE: the pressure at which the path is pumped up and workable, exceeding of which will purge via the safety valve or burst the seams! The base tends to be a higher pressure (avge 5-10psi) compared to the tubes at 2-4psi.

INFLATION TIME: The quickest time is via **compressed air** and where chambers are linked so can inflate from one valve. **CA** is 2-3 times quicker than **electric pump** which may be twice as fast as **hand/foot inflation**. All times are approximate and depend on the temp and how well the path has been packed/unrolled. Times in *italics* are our own estimate based on volume

MATERIALS: Mostly trade names which are variants of treated polyester, PVC and/or Polyurethane in a range of construction layering. Imperial figures showing oz is per square foot eg. 44 and 66oz materials.

CHAMBERS: The total number of separate inflation chambers

including the floor. If the floor is NOT inflatable this will be indicated in the NOTES.

THWARTS or BOLSTERS are tubular seats, supports or partitions separately inflated and not included in the number of chambers figure above. Note that thwarts can increase the outside width of a raft by a few inches as it pushes out from the inside.

GRAB/LIFT HANDLES: **LIFT** Handles shown in **Orange** are on the sponsons and for lifting/shifting as well as holding onto. **GRAB** Handles are in-board and are to self-assisted boarding or for in-water swim propulsion.

FLIP TAB/HANDLE GRAB CORD/WEB **FLIP** tab or cord to help with righting a capsized craft. **GRAB CORD** is perimeter webbing or more commonly cord or lengths of cord for holding on to or attaching equipment and may be pre-installed or self-tied.

HD-TOW/LT DUTY EYES: metal D-rings and/or web straps and sometime hooks. **LT DUTY** eyes are D-Rings we described in previous GUIDES as 'Link; eyes which are used to clip in gear, connect rafts together or for threading grab lines etc. but some are easily strong enough for control lines and maybe towing but generally the **LIGHT (LT) DUTY** or connecting eyes are weaker than **TOWing** eyes. **HEAVY DUTY-TOW** eyes can be used for towing, positioning in high-flows and lifting the **EMPTY** craft if positioned appropriately. For any live-load lifting, these are best used with a sling passing through the side-mounted rings and beneath the hull of the raft but this would be a rare event because of the risk of buckling if not sufficiently supported along the hull/floor. Double check the manufacturer's definition of 'lift' when referring to rings and handles; most actually mean lifting an **EMPTY** craft into water, for instance off a dock, before starting the rescue.

PRESSURE RELIEF VALVE: (PRV) This safety, pressure relief or auto-purge valve allows excess air to vent as a result of over-inflation or an excessive compressive load. You may have initially inflated the craft to its limit and then have a temperature or load increase that could rupture the seams if air could not escape

1-WAY CHECK /2-WAY: A one way inlet valve that doesn't allow air to escape. A **2-way** valve is a joint inflation-deflation valve like the Leafield C7 and D7 valves. Usually requiring a twist or unscrewing of a top section to switch between inflation and deflation. A 'wrench' is often required (and supplied) in preference to being able to open by hand.

ACC = ACCESSORIES

CARRY BAG: All of these come with a carry or storage bag but one or two like the WRS can have an enhanced 'pro' bag.

PADDLES - self explanatory!

WARRANTY: Not really an accessory! Shown as manufacturer's warranty but fabric warranty may be separate and approx 5yrs. Shown in **YEARS** and usually subject to conditions. Some raft suppliers have shorter warranty for commercial users as distinct from recreational users. This is aimed at commercial rafting using rafts day in day out and shouldn't really apply to rescue - worth asking for a retail warranty.


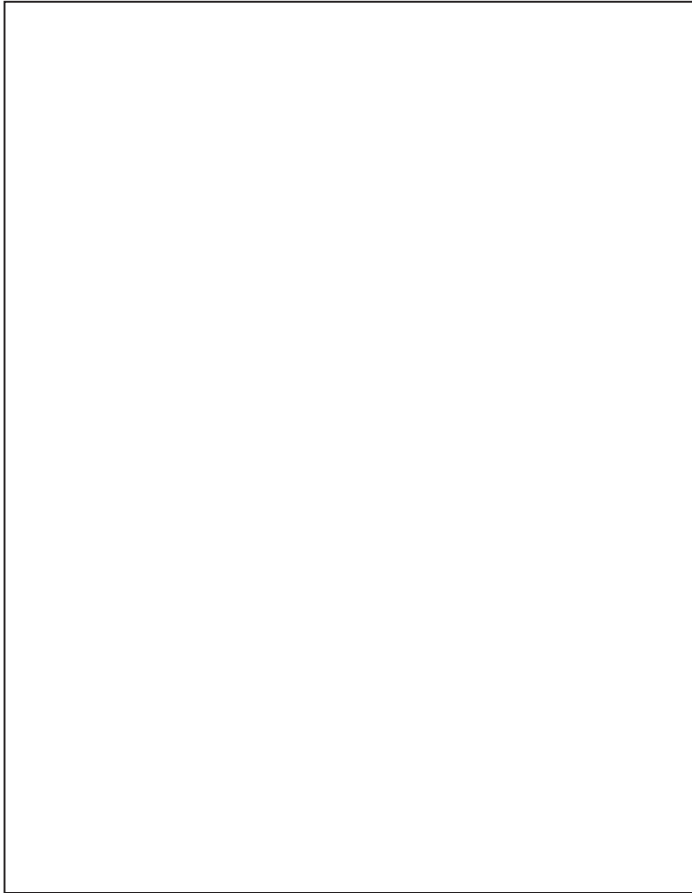
SELF BAILING: any water that enters the raft will drain away through holes or gaps in the floor or between the floor and the tubes/sponsons.

VIZ =VISUAL ATTRIBUTES

CUSTOM: Customised Team/Service/Dept decals or printing

REFLECTIVE: As standard ■, or as an option □

COLOUR: Primary colour of shell/frame with an outline secondary colour to indicate trim colour.



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Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	RIT Craft	2-TINGA		\$3600	27.3kg 60lb	682kg 1500lb	370 x 51/120 x 48cm 144 x 20/48 x 19" 46 x 36 x 56cm 18 x 14 x 22"
	Craft-Boat Conversion	CHECKMATE FLEXIBLE ENGINEERING		N/A	28kg 61.6lb	500kg 1100lb >100kg >67.2lb	500 x 106/140 x 25cm 197 x 55 x 10" 90 x 42/50 x 35cm 35.4 x 19.7 x 13.7"
	Rescue Sled RS3 WRW0001/01	MFC INTERNATIONAL		>£1350 >£999 >\$1755 >\$1300	15/17kg 33/ 37.4lb	240kg 528lb	216 x 70/117 x 40cm 101 x 28/46 x 16" 88 x 35 x 30cm 36 x 14 x 12"
	Rescue Sled RS5 WRW0002/01	MFC INTERNATIONAL		>£1699 >£1100 >\$2210 >\$1430	17.5/ 19.5kg 38.6/ 43lb	400kg 882lb	331 x 70/117 x 40cm 130 x 28/46 x 16" 88 x 48 x 32cm 35 x 14 x 12"
	Rescue Sled RS6 WRW0169/01	MFC INTERNATIONAL		>£1900 >£1300 >\$2470 >\$1690	18.5/ 20.5kg 38.6/ 45.1lb	480kg 1056lb	397 x 70/117 x 40cm 156 x 28/46 x 16" 88 x 48 x 35cm 35 x 14 x 14"
	Rescue Sled RS10 WRW0003/01	MFC INTERNATIONAL		>£3800 >\$2500 >\$5000 >\$3250	31/ 35kg 38.6/ 68.2lb	800kg 1764lb	400x120/190x56cm 158 x 47/75 x 22" 88 x 55 x 35cm 35 x 22 x 14"
	Rescue Sled RS15 WRW0005/01	MFC INTERNATIONAL		>£4200 >£2900 >\$5500 >\$3780	45/ 50kg 99/ 110lb	1200kg 2646lb	500 x 160/231 x 77cm 197 x 63/91 x 30" 88 x 70 x 52cm 35 x 28 x 21"
	RR3	NORTHERN DIVER		£1069 £1489 £1691	22kg 48.4lb	650kg 1430lb	300 x 70/116 x 30cm 118 x 28/46 x 12" 90 x 40 x 30cm 35.4 x 15.8 x 12"
	RR4	NORTHERN DIVER		£1096 £1765 £1885	31kg 68.2lb	750kg 1650lb	360 x 70/116 x 38cm 142 x 28/46 x 15" 95 x 50 x 50cm 37.4 x 19.7 x 19.7"
	RR Max Raft	NORTHERN DIVER		£1836 €2326	37kg 81.4lb	1000kg 2200lb	300 x 130/200 x 38cm 118 x 51/79 x 15" 130 x 60 x 40cm 51 x 23.6 x 15.8"

NOTES: COST: Approx, INCLUDES local tax/VAT USES/ FEATURES: ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ = Option

INFLATABLE OPEN-ENDED SLEDS/WATERCRAFT

AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	INFLATION			LOADING		VALVES		ACC		VIZ		NOTES	WWW.
			INFLATION CHAMBERS	REGULATOR / HOSE	MANUAL/POWERPUMP	GRAB/LIFT HANDLES	FLIP TAB / GRAB CORD	TOW/HD-LIFT/LINK EYES	SAFETY PRV / DUMP	1-WAY / 2-WAY	CARRY BAG / PADDLES	REPAIR KIT/ WARRANTY	REFLECTIVE/ CUSTOM		
1132 L 40cuft 1-3mins	0.2 BAR 3 PSI	PVC. drop-stitch deck	3	■ ■	- ■	8 0	■ -	2 4 3	- -	■ -	■ ■	10 ■	■ ■	Note 2Tinga have a flat platform called a RIT-Sled but is not a 'sled' as defined in this article	2tinga.ca
1700 L 60cuft 3-4mins	0.55 BAR 8 PSI	Neoprene coated nylon. drop-thread deck	3	□ □	□ □	0 0	- -	6 4	- ■	■ -	□ ■	N/A ■	■ ■	* 6 of these eyes are for joining to another raft or platform NOT towing	checkmateflex.com
530 L 18.7cuft 2-3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	2	■ □	□ □	5 6	■ -	8 4	- ■	■ -	2 ■	2 ■	□ ■	comes with throwline with rubber quoit. Leafield Valves. Optional rear bolster and storage pockets	mfc-international.com
670 L 23.7cuft 3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	2	■ □	□ □	5 6	■ ■	8 4	- ■	■ -	2 ■	2 ■	□ ■	comes with throwline with rubber quoit. Leafield Valves. Optional rear bolster and storage pockets	mfc-international.com
710 L 25cuft 3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	2	■ □	□ □	5 6	■ ■	8 4	- ■	■ -	2 ■	2 ■	□ ■	comes with throwline with rubber quoit. Leafield Valves. Optional rear bolster and storage pockets	mfc-international.com
2000 L 70.6cuft 3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	5	■ □	□ □	5 12	■ ■	8 4	- ■	■ -	2 ■	2 ■	□ ■	comes with throwline with rubber quoit. Leafield Valves. Optional rear bolster and storage pockets	mfc-international.com
3800 L 134.2cuft 3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	5	■ □	□ □	5 16	■ ■	8 4	- ■	■ -	2 ■	2 ■	□ ■	comes with throwline with rubber quoit. Leafield Valves. Optional rear bolster and storage pockets	mfc-international.com
approx 630 L 22.2cuft 1-3mins*	0.35 & 0.7 BAR 5 & 10 Psi	1.2mmPVC or Orca Hypalon drop-stitch deck	3	□ □	□ ■	4 6	- ■	4 7	- ■	■ -	■ ■	2 ■	□ ■	*Power pump to Hand Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
approx 800 L 28.3cuft 1-3-4mins*	0.35 & 0.7 BAR 5 & 10 Psi	1.2mmPVC or Orca Hypalon drop-stitch deck	3	□ □	□ ■	4 9	- -	4 15	- ■	■ -	■ ■	2 ■	□ ■	* Power pump to Hand Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com
1550 L 54.7cuft 1.5-5min	0.35 & 0.7 BAR 5 & 10 Psi	1.2mm PVC drop-thread deck	4	□ □	□ ■	5 4	■ ■	13 ?	- ■	■ -	■ ■	1 ■	□ ■	*Power pump to Hand Inflation time calculated at 50 pump strokes per minute	ndiver-rescue.com

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve


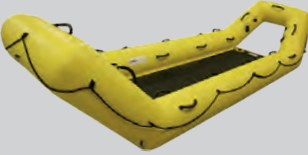







Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	X-Sled 115	NRS		\$2495	30.5kg 67lb	480kg 1056lb	366 x 71 / 122 x 36cm 144 x 28 / 48 x 14" 85 x 35 x 30cm 33.5 x 13.8 x 12"
	Ionic Extreme Sled	SAFEQUIP		£1700 \$2380 €2040	23.8kg 52.4lb	650kg 1430lb	300 x 70 / 120 x 35cm 118 x 27.6 / 47 x 14" 90 x 30 x 30cm 35.4 x 12 x 12"
	Ionic Titan Sled SAF38070	SAFEQUIP		£2160 \$3025 €2590	25kg 55lb	500kg 1100lb	370* x 70 / 120 x 35cm 146 x 27.6 / 47 x 14" 95 x 30 x 30cm 37.4 x 12 x 12"
	Ionic Xcel X-Raft	SAFEQUIP		£3600 \$5040 €4320	42kg 92.4lb	1000kg 2200lb	320 x 144 / 220 x 38cm 126 x 57 / 87 x 15" 100 x 70 x 45cm 39 x 27.6 x 18"
	ResQSLED 3 ResQSLED5 ResQSLED10	SIT Ltd		N/A	23.8kg 52.4lb	650kg 1430lb	300 x 70 / 120 x 35cm 118 x 27.6 / 47 x 14" 90 x 30 x 30cm 35.4 x 12 x 12"
	ResQRAFT10 ResQRAFT15	SIT Ltd		N/A	42kg 92.4lb	1000kg 2200lb	320 x 120 / 220 x 38cm 126 x 47 / 87 x 15" 80 x 60 x 40cm 31.5 x 23.6 x 15.75"
	Mega Sled	WRS INTERNATIONAL	 	£ \$2667 €2667	7.4kg 16.3lb	220kg 484lb	200 x 100 x 35cm 79 x 39 x 14" 120 x 60 x 35cm 47 x 23.6 x 14"
	X Sled	WRS INTERNATIONAL	 	£2147 \$2300 €2553	20kg 44lb	350-580kg 770-1276lb	355 x 122 x 24cm 118 x 55 x 6" 100 x 50 x 40cm 39.4 x 19.7 x 15.75"

NOTES: **COST:** Approx, INCLUDES local tax/VAT **USES/ FEATURES:** ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL = Option

INFLATABLE OPEN-ENDED SLEDS/WATERCRAFT

AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	INFLATION		LOADING		VALVES		ACC	VIZ	COLOUR OPTIONS	NOTES	WWW.	
			INFLATION CHAMBERS	REGULATOR / HOSE	MANUAL/POWERPUMP	GRAB/LIFT HANDLES	FLIP TAB / GRAB CORD	TOW//HD-LIFT/LINK EYES	SAFETY PRV / DUMP	1-WAY / 2-WAY				CARRY BAG/ PADDLES
710 L 25 cuft <2mins	0.3 & 0.7 BAR 4 & 10 Psi	PVC drop-stitch deck	3	<input type="checkbox"/>	<input type="checkbox"/>	-	-	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	Design being changed. Armoured underside to sponsons. Leaffield valves. * Height does not include 20" rise of the angled bow	nrs.com
860 L 30.4cuft <1min	0.2 & 0.4BAR 3 & 6 psi	'Orca' Hypalon 6" drop-thread deck	3	<input type="checkbox"/>	<input type="checkbox"/>	7	4	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	<input type="checkbox"/>	Leaffield valves. Height does not include angled bow	safequip.co.uk
920 L 34.5cuft <2mins	0.2 & 0.4BAR 3 & 6 psi	'Orca' Hypalon 6" drop-thread deck	3	<input type="checkbox"/>	<input type="checkbox"/>	10	4	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	<input type="checkbox"/>	* length inc 45cm/18" deck extension. Leaffield valves. Height does not include angled bow	safequip.co.uk
1550 L 54.7cuft <2mins	0.2 & 0.4BAR 3 & 6 psi	'Orca' Hypalon 6" drop-thread deck	5	<input type="checkbox"/>	<input type="checkbox"/>	8	2	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	<input type="checkbox"/>	Leaffield valves. 6" Deck. * D-Ring under deck can provide flip tab	safequip.co.uk
860 L 30.4cuft <1min	0.2 & 0.4BAR 3 & 6 psi	'Orca' Hypalon Neoprene-coated 6" drop-thread deck	3	<input type="checkbox"/>	<input type="checkbox"/>	7	4	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	Leaffield valves	sitltd.co.uk
1550 L 54.7cuft >2mins	0.2 & 0.4BAR 3 & 6 psi	'Orca' Hypalon 6" drop-thread deck	5	<input type="checkbox"/>	<input type="checkbox"/>	8	2	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	Leaffield valves. * D-Ring under deck can provide flip tab. Inboard stowage loops	sitltd.co.uk
450 L 15.9cuft <1min	0.3 & 0.6BAR 3.6 & 9 psi	PVC. 6" drop-stitch deck	3	<input type="checkbox"/>	-	2	11	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	?	<input type="checkbox"/>	Leaffield valves. Flap at stern can be lifted to form a 'transom' style water barrier. 8x Velcro loop stow points	wrsinternational.com
700 L 24.7cuft >2mins	0.25 & 0.6BAR 3.6 & 9 psi	PVC. 6" drop-stitch deck	3	<input type="checkbox"/>	-	0	-	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	?	<input type="checkbox"/>	* Height does not include 54cm/21" rise of the angled bow. Leaffield valves. EVA floor friction pads	wrsinternational.com
													expansion row	
													expansion row	

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/Square Metre lb/Square Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	Rescue Tip Board	HONOR-SAFETY		N/A	22kg 48.4lb	500kg 1100lb	270 x 50/130x70cm 106 x 20/57 x 15.7" 90 x 50 x 40cm 35.4 x 19.7 x 15.7"
	RSW Rescue Sled WRO244	MFC INTERNATIONAL		£2500 \$3250	31.5kg 69.3lb	850kg 1870lb	500 x 75/120 x 45cm 197 x 30/47 x 17.7" 80 x 40 x 35cm 31.5 x 15.7 x 14"
	Polar 75	NAUTIC&ART (CHARGEK inc)		\$7800	32kg 70.4lb	1045kg 2299lb	440x58/130x36cm 173x23/51x14" 152 x 152 x 152cm 60 x 60 x 60"
	RR5	NORTHERN DIVER		£1621 \$3000	42kg 92.6lb	850kg 1873lb	470 x 70/140 x 35cm 105 x 28/55 x 13.8" 110 x 60 x 40cm 43x24x15.7"
	ASR 155	NRS		\$2995	39.5kg 87lb	850kg 1873lb	470 x 64/125 x 30cm 185 x25/49 x 12*" 122 x 78 x 33cm 48 x31x 13"
	RDC Rapid Deployment Craft	OCEANID		\$4900	22.7kg 50lb	>909kg >2000lb	468x56/122x30cm 184 x 22/48 x 12" 91.2 x 61 x 30cm 36 x 24 x 12"
	Ionic Explorer Sled	SAFEQUIP		£2250 \$3150 €2700	22kg 48.4lb	>500kg >1100lb	460x82/142x30cm 181x32/56x12" 80x40x25cm 31.5x16x10"
	ResQsled Endurance SIT38042	SIT Ltd		N/A	20kg 44lb	>500kg >1100lb	460x82/142x30cm 181x32/56x12" 80x40x25cm 31.5x16x10"
	SKF-ICE	WING INFLATABLES		\$10000	27.3kg 60lb	909kg 2000lb	472x61/122x30cm 186x24/48x12*" 81 x 38 x 41cm 32x15x16"

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **USES/ FEATURES:** ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ = Option

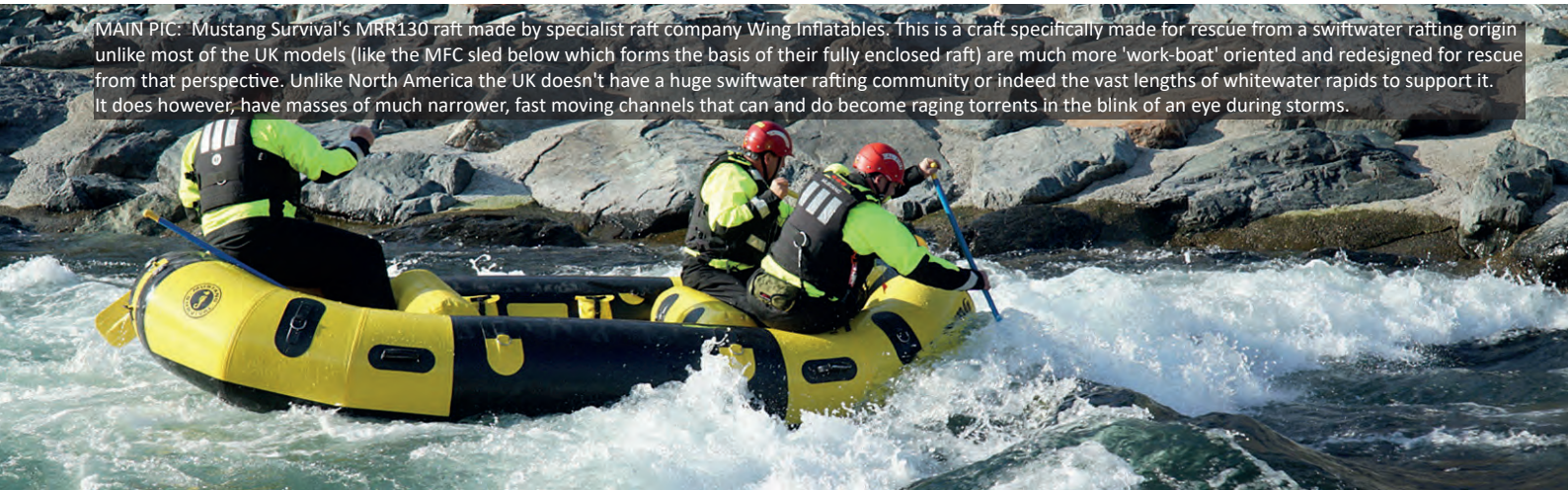
INFLATABLE OPEN-ENDED RDC-STYLE RAFTS

AIR CAPACITY INFLATION TIME	MAX WORKING PRESSURE	MATERIALS:	INFLATION		LOADING		VALVES		ACC		VIZ		NOTES	WWW.
			INFLATION CHAMBERS	REGULATOR / HOSE	MANUAL/POWERPUMP	GRAB/LIFT HANDLES	FLIP TAB / GRAB CORD	TOW/HD-LIFT/LINK EYES	SAFETY PRV / DUMP	1-WAY / 2-WAY	CARRY BAG / PADDLES	REPAIR KIT / WARRANTY		
570 L 20cuft 15-30sec	N/A	N/A drop-stitch deck	?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	11 0	<input checked="" type="checkbox"/>	4 -	-	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Can be purchased with an electric SeaBob hand-held waterjet * with BA cylinder	honor-safety.com
2000 L 70.6cuft 3mins	0.2 & 0.4 BAR 3.25 & 6 Psi	Hypalon TPU drop-thread deck	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10 8	<input checked="" type="checkbox"/>	8 -	-	2	2	<input type="checkbox"/>	comes with throwline with rubber quoit. Leaffield Valves	mfc-international.com
1100 L 40cuft 20sec*	0.24 & 0.8BAR 3.5 & 12 Psi	40oz Hypalon. drop-thread deck	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6 14	<input checked="" type="checkbox"/>	- 4 6	-	<input checked="" type="checkbox"/>	5	<input type="checkbox"/>	opening=81x46cm *Single inflation point. Height does not include 73° rake	nacorp.ca
1000 L 35cuft 1- 3-4mins*	0.35 & 0.7 BAR 5 & 10 Psi	DWF/PVC drop-stitch deck	3	<input type="checkbox"/>	<input type="checkbox"/>	6 12	<input checked="" type="checkbox"/>	- -	-	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	*Power pump to Hand Inflation time calculated at 50 pump strokes per minute. *Custom colours	ndiver-rescue.com
960 L 34cuft 1-2mins	0.3 & 0.7 BAR 4 & 10 Psi	PVC drop-stitch deck	5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	16 4 6	-	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>	* Height does not include 24" rise of the angled bow and stern. Armoured underside to sponsons. Can be hoisted under load. Leaffield valves	nrs.com
1133 L 40cuft <1min	0.2 BAR 3 Psi	35 oz. PU/PVC coated Polyester (Dacron). Drop-thread deck	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0* 18	<input checked="" type="checkbox"/>	26 4 -	-	<input checked="" type="checkbox"/>	12	<input type="checkbox"/>	Halkey Roberts & Incept PR Valves. Can be suspended/ hoisted while loaded. *Perimeter cord 'handles' load= >2500lb/1136kg access hole = 22x40"	oceanid.com
860 L 30cuft >1min	0.2 & 0.6BAR 3 & 9 psi	'Orca' Hypalon 6" drop-thread deck	3	<input type="checkbox"/>	<input type="checkbox"/>	12 8	<input checked="" type="checkbox"/>	14 -	-	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	Leaffield valves	safequip.co.uk
860 L 30cuft >1min	0.2 & 0.6BAR 3 & 9 psi	'Orca' Hypalon. 6" drop-thread deck	3	<input type="checkbox"/>	<input type="checkbox"/>	12 8	<input checked="" type="checkbox"/>	14 -	-	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	Leaffield valves	sitltd.co.uk
950 L 33.5cuft >1min	0.3 BAR 4.5 psi	33oz polyester scrim Polyurethane. drop-thread deck	5	<input type="checkbox"/>	<input type="checkbox"/>	0 2*	<input checked="" type="checkbox"/>	- -	-	<input type="checkbox"/>	5	<input type="checkbox"/>	Price includes Motor transom. *rise of bow/ stern =30". Chambers linked to Inflate as 1 *Grab cord rigged to act as lift and shift handles. Custom colours	inflatable-solutions.com

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

Inflatable NON-POWERED RAFTS

MAIN PIC: Mustang Survival's MRR130 raft made by specialist raft company Wing Inflatables. This is a craft specifically made for rescue from a swiftwater rafting origin unlike most of the UK models (like the MFC sled below which forms the basis of their fully enclosed raft) are much more 'work-boat' oriented and redesigned for rescue from that perspective. Unlike North America the UK doesn't have a huge swiftwater rafting community or indeed the vast lengths of whitewater rapids to support it. It does however, have masses of much narrower, fast moving channels that can and do become raging torrents in the blink of an eye during storms.



After covering the open-backed/stern sleds and rafts in TECHNICAL RESCUE#82 we've switched to WSAR for this one because non-powered rafts evolved with wilderness teams working true swiftwater on their patch. 'Evolved' is not the correct word because the craft in use are very close to the recreational models aside from reinforcements and extra handles and rings and it's more accurate to say that the open-ended sleds (as exemplified by the MFC model in the picture on the right) and Oceanid-style rafts (as shown in the ad far right) evolved out of these 'puffier' swiftwater-style rafts. While the majority of rescue agencies have moved towards the sled and Oceanid styles, there is still a big place for conventional rafts in a rescue inventory either because there are swiftwater risks in or near your response area or because they are used for casualty rescue and evacuation in the event of flooding. This is because rafts, with larger sponsons completely surrounding the deck, provide better protection for the raft occupants. We have only listed models that are marketed to or used by rescue agencies and that do not have an inherent ability to mount an outboard because those will be included in our GUIDE to Powered IRBs.

However, those GUIDES will not include rafts and catarafts that can be retrofitted with a frame capable of mounting an engine - there would be just too many to mention. Back to the sponsons on swiftwater rafts and while they provide greater protection than open ended craft, they won't necessarily keep everyone bone-dry because many, especially if they have an I-beam

RAFT VS SMALL OPEN-STERN SLED/RAFT

- Both Self bail,
- Raft has more stability so better for bigger water,
- Raft with larger tubes is more forgiving so less training to keep upright.
- Raft has larger carrying capacity,
- Sled is lighter to carry in,
- Sled easier to self rescue after capsiz,
- Sled easier to load victim from water into boat,
- Sled can be paddled solo so less rescuers at risk.

RAFT VS LARGER OPEN-STERN RAFT

- Raft heavier than equivalent open-stern version,
- Rafts offer more rear protection from falling out so more suitable for bigger or higher risk water where you don't want people falling out at all!
- Both offer good stability (raft would be slightly more stable due to added weight, but marginal)
- Open-Stern better for wading wide spread floods and getting on & off the boat
- Raft are generally self-bailing so contaminated water will enter the raft through the floor. (This is a Flood Rescue Consideration)
- Open Stern Raft offers easier water victim access
- Open-Stern easier to climb into after capsiz.



MFC Rescue Sled RS3 (small)

rather than drop-thread or drop-stitch floor, are self baling which means that water can enter and drain through gaps around the union between the floor and the sponsons. **Any craft in this GUIDE not shown as self-bailing are better suited to slow moving flood or still water rather than swift or rough water.** Indeed, Safequip in the UK actually call theirs an 'urban' evacuation raft indicating its true design purpose and while 'urban' is perhaps too limiting for some of the non-self-bailing models, particularly from UK companies, they are certainly designed for a different role to the North American models that can be dealing with epic whitewater conditions as well as general flooding.

One of the differences between true swiftwater and broader

Images in this article
not to scale

www.rescuemagazines.com

remit rescue is that hardcore whitewater rafts tend to have the softer and deeper I-beam inflatable floor but rescue tends more towards a drop-thread floor because it is generally tougher, thinner and more stable to work on bearing in mind that such craft tend to be used more in flood than whitewater.

These rafts are the same materials and construction as the platforms and sleds covered in TECHNICAL RESCUE GUIDES to INFLATABLE CRAFT ie. - incredibly robust welded PVC/TPU or Hypalon, often as a Double Wall Fabric (DWF) and drop stitched on the most robust part of these craft, the floor/hull. Welded is more resilient than glued seams and all inflatables have pressure differentials due to heat increases that can test the seams if over-inflated and overloaded. Some, like WRS and Rocky Mountain Rafts offer drop-stitch or I-beam floors. Given the abuse these things get from ice, gravel, flooded wire fences and brick walls etc. some have extra reinforcing strips along the underside of sponsons like the NRS craft. Failing that, most craft come with a repair kit. As with most things in life, you get what you pay for, so consider the materials, construction warranty and pedigree of the manufacturer and craft before committing to a purchase.

The Mustang/Wing MRR130 model above demonstrates the most obvious difference between a conventional 'whitewater' style raft and the open-ended sleds/rafts covered in TR82 like the yellow MFC sled- the sponsons extend all the way around the craft and because they are quite large the inner working space is more restricted in comparison to the uncluttered surface of a platform or narrow-sponson sled. It's clear that the specialist rescue rafts like the South African ARK range that have been developed from whitewater rafts rather than actually being a whitewater raft with extras, are much narrower. Most of the sleds designed to be used in fast moving water (as well as flooded urban streets and alleyways) were also narrow beamed and it seems that this profile suits many rescue agencies since the ARK range for instance has been designed in conjunction with the Queensland Fire Service in Australia.

The shallow rake we see on sleds helps deal with waves but the higher rake we see on fully enclosed -size rafts like the NRS raft below, allows the craft to negotiate fast flowing water without having tons of water washing over the bow. The rake also allows the craft to be pushed up against obstacles such as mid-stream boulders and low-head dam/weir faces which can be more easily searched or a stranded taken on board because high-rake craft 'bend' a little at the change of angle to provide an extra few inches of proximity to the target. In the absence of an opening in the bow (as per the Oceanid-style craft) with which to funnel an in-water casualty, the raked, solid bow is

less inclined to smash an in-water casualty in the head as the two approach each other, possibly closing at speed in a



Hull of an NRS Raft

WRS[®]
INTERNATIONAL

High Volume Bow and Rocker - With a raised bow height the X-Sled is able to handle tethers in swift water whilst reducing the risk of the bow diving when loaded. The increased volume maintains stability when occupied by a casualty or rescuer.

WRS[®]
INTERNATIONAL

Water Rescue X-Sled
The original and best since 2014, designed in the UK.

www.wrsinternational.com

A CHECKLIST to BUYING AN APPROPRIATE RAFT

by Mike Croslin

In discussing boat handling in the rescue environment, the rescuer must first examine the types of boats to be utilized in river rescues and should closely examine the maneuvers those boats can perform in contrast to the total number of river rescue methods for which all river rescue boats are capable of.

Consider all of the pointers below in order to arrive at the most economically feasible and the most efficient type of rescue craft for your specific locality, type and number of incidents and ability to attain and maintain training for your craft in your conditions. It has been observed that manufacturers across the world have, in the past, marketed various kinds of craft as the "ultimate ** answer for river rescue. River teams and individuals should be cautious when considering such claims and perhaps consult other teams that may have similar conditions in their response area.

Generally there are 3 boats teams may have in their cache:

- River Rescue Boats, inflatable.
- IRB style with transom motorized
- Cataraft IRB with transom. Motorized

Motor-capable IRBs are the workhorse of flood and disaster response, flood evacuations, wide flooding areas with no road access, can ascend against the current to approach from downstream, bridge abutments, rocks, trees, can function in waves, strong currents and obstacles with expert training. Can be Zodiac/Avon style or cataracts. Full spectrum, rigid-hull rescue boats are too heavy to surf in choppy, stout currents and have limited capability in class3 and above or inside tree lines at flood stage. Crews must train for motor failure and must carry paddles to R2. Registered swiftwater teams generally have one or two IRBs or motorized cataracts/oar combos in cache in the USA and operators require extensive training annually to stay competent and build experience. Such craft are not useful in remote canyons or rocky, shallow rivers and have significant risk of engine failure, or swamping in big volume or steep gradient rivers. Excellent for wide, flood plain deployment and up to class 3. Again, a great flood evacuation workhorse.

Non-motorized, human powered inflatables

1. The self-bailing "basket" boats. A new variation on the commercial recreational market that have lashed in inflatable floors allowing immediate draining of water and enhanced performance downriver in up to class 5. Medium weight, 100-150lbs or more. Tube size varies depending upon CFS navigating, a Grand Canyon NPS boat will have larger tubes than a Yosemite cataract based on size of waves, hydraulics etc. A USFS river patrol ranger would on the Tuolumne would run

a SOTAR downriver or a Wing as a choice based on support for operations and loads carrying duty, but they are not the best in rescue mode that may require surfing under technical rope control,

2. Framed cataract oar powered or a frameless cataract R2 paddle. If you choose to train and expand boat operators skillsets beyond your local watersheds in the standard R2 paddle format, the frameless cataracts that have immediate rapid floor flush meet the essential high performance criteria in terms of weight, portability, speed, side stability, to both perform as a rescue boat with R2 as a chase boat, or pickoff boat launched with experienced R2 paddlers that are capable of broaching, crossing powerful stout channels to pull victims into a soft protected compartment and exit downriver safely. Some teams use framed cataracts of various sizes, if they have the talent base to row. Many do and this is important on many technical rivers and they make excellent platforms, but they have frames and large oars, which prevent dynamic pickoffs safely and can be traumatic if flipped onto inexperienced passengers or victims...only an issue if experience is lacking.. So for lightness and speed of deployment and downriver chase boat and pickoff capability and maneuverability, the frameless cataracts are superior for rescue crews training in paddle power only...which is faster performance in these excellent maneuvering and forgiving boats.

Because most teams lack the training to safely use a motorized or non-motorized inflatable at the scene of a significant flood or swiftwater event with rescuers on board it is essential that rope based control systems be learned and practiced with the best performing inflatable under shore control with ropes. If its an evac off a car roof in a flooded creek with slight gradient, and the channel has trees and wood galore within range of a short unexpected swim, this is a major event, for even the most experienced operators. These technical rope based systems we use are capable of placing a boat precisely where it is needed safely, with or without rescuers on board, and if you choose to use rescuers, whomever goes is a function of experience and strong swimmer status, not paper/scissors/rock. The rescuer on the boat is in charge of the controllers. He can feel the boat, and guide it better, and I hope at this point we can collectively agree that if he was trained well he or she would choose the lightest, most stable, self bailing platform to control from shore AND to navigate to safety should it be necessary. By my logic and experience this is the most important purchase decision a top tier team will make. It HAS to be the lightest but toughest, boat that is best across all formats of control and is fast under R-2 paddle for chase function safety as well, and in boat pickoff, broaching, grabbing victims into a central closed, self bailing compartment with instant drainage mesh, or lashed inflatable flooring..These criteria will insure best protection for rescuers and if delivering an empty evacuation boat in high risk flows, the best chance of bringing those trapped to safety. My best advice is to use a high performing design that is light, frameless and selfbailing with a reputation for running class 4-5, then add handles and attachments to carry or hold onto into the

interior, including foot braces. Make team members study R2 paddle techniques and practice regularly even if its just in a swimming pool, this alone is the minimal standard for R2 rescuers being sent, they must be drown-proofed and capable of navigating the boat to safety on their own. If a boat can be placed precisely and victims are capable of putting on a PFD, and exiting onto a stable platform, they should be allowed to do so, especially if competent control of the boat in an emergency exit is in question.

COMPARISONS AND CONTRASTS

Once the river rescue team has discovered all of the various types of boats capable of performing river rescues, they then have to make some comparisons between the ability of these boats to perform in their local environment. The river rescue team first has to analyze and determine which kind of boat will be suitable for their particular situation. They must ask themselves the following questions:

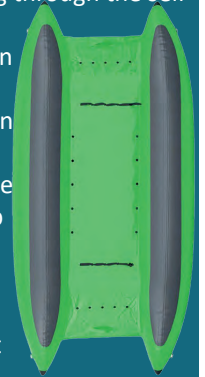
1. Are you working in a flat river or waves, currents and rapids?
2. Is your river averaging fairly deep water or shallow areas?
3. Is your river wide or narrow?
4. What is the immediate access to the river.
5. Are there numerous boat launches or are you going to be forced to put their boat into the water through brush, walls, fences and other obstacles?
6. Are there a number of in-water hazards such as strainers, low head dams/weirs, class 3 or above rapids in your response area?
7. What is the ease or difficulty of operation of the type of rescue craft that you are choosing and how well can you train and maintain training of personnel?
8. What is the potential for flipping, broaching, or otherwise turning the boat over within the rescue environment?
9. What types of rescues are usually undertaken on your stretch of river?
10. Will the boat be used for other purposes besides rescue, aka dive platform, body recoveries?
11. Will the boat be suitable for deployment to other areas?
12. What is the available budget?
13. Which of the following rescue maneuvers will the boat be capable of:
 - Pick up rescuers in current
 - Pick up victims entrapped on top of rocks, houses, vehicles, caught in class 3 flood-stage water or higher
 - Effectively maneuver downstream to broach onto an object in order to pick up victims
 - Light enough to suspended on a rope rescue system in the middle of the river
 - Move upstream through class 3 water or better
 - Make effective crossing in current
 - Carry several victims, extremely stable

Mitch Sasser says...

A recent successful rescue from a mid-stream vehicle using a non-powered raft by the Santa Barbara Fire Dept with inflatable raft highlighted the need to ensure your craft is properly inflated, in the rush to deploy to a casualty in difficulties it is all too easy to cut corners leaving you open to swamping and buckling if the casualty numbers or conditions change during the rescue.

Self Bailers are the design to go with BUT...for whitewater and fast flowing/rough water, the self bailing should be via holes all they way around the floor. Some designs only have drain holes punched through the floor material along both sides with the floor being glued to the outer tubes in these designs. I prefer a floor that is laced in and provides drainage 360 degrees around the boat. Without this you risk sudden weight change when taking on water flushing through the self bailing system and without drainage in the bow and/or stern the water accumulation can cause overloading, snapping control lines or ripping lines out of rescuers grip. Having drain holes around the entire raft also helps in self rescue if a flip occurs. Naturally, the larger the tube diameter the more difficult it is to climb on top and right the raft again.

Those who have experience with flips and recovery will note the hand hold and grab options that a laced-in floor provides even at the bow and stern for the rescuer to quickly get up on top of the upside down boat. Some teams may be using pre-rigged flip lines to avoid having to climb up on top of the craft for correcting it. In summary, if the floor and tubes/sponsons are properly inflated with weight properly distributed and with full circumference self bailers, the boats will plane better. My choice in fast-moving water is a cataraft first option, then raft as a second option.



high flow. Also notice that the larger-diameter tubes/sponsons on the whitewater-style rafts mean that the deck may be suspended clear of the water as it is in most catarafts which improves speed and manoeuvrability.

VALVES

All of these craft inflate through a valve which may only allow air flow inwards (inlet check valve) so you don't lose air pressure should the valve cap not be in place or the pump/cylinder hose come off during inflation. We have differentiated three types in our tables: Safety or Pressure Relief Valves, 1-Way, 2-Way and Dump valves but for this GUIDE they are mostly 2-Way and Pressure relief valves. **Pressure Relief Valves** refers to its ability to purge air should you OVER-inflate. This can be the case particularly with compressed air cylinders so the safety valve will allow air to force its way out of the valve rather than bursting the seams of the craft. A **2-way** valve allows inflation and deflation. Some, like the *Leaffield A/B/C* and now *D7* (pic below) and *Halkey-Roberts* valve, have a cap and then an interior sleeve that you rotate a quarter or half





turn to alternate between inflate and deflate while others have a second screw-off collar beneath a non-return inflation section. When unscrewed, this allows air to exit freely. Deflation needs to be fast so that the craft can be rolled and stowed or moved ASAP ready for the next task so these 2-way valves are doubling as Dump or rapid air expulsion valves which tend not to be present on most sleds, boats and rafts. True dump valves, in the diving sense, can of course be a push button affair but this is obviously not the case for inflatable craft where they are regular screw-top release if they are present at all. Bear in mind that most craft have more than one chamber so deflation can be a more time consuming process than inflation. Some rafts have one-way baffles between chambers that means a single inflation point inflates all chambers which is much faster to inflate and deflate than inflating/deflating chambers one after the other - this is more the case with specialist rescue craft than it is with purist swiftwater rafts. Many craft have both sets of valves sometimes next to each other as with the *WRS* and sometimes separated as with *MFC* and *ARK* Craft where the inflate-deflate valves are located on the ends of each sponson and on the floor. Most valves are designed to use manual pumps and BA cylinders, but some are large enough to use a powered blower or even a vacuum cleaner in reverse. Professional battery blowers are an excellent idea because they have numerous other uses including cleaning/drying the craft. They are also unlikely to inflate beyond the pressure limit of the seams because they will struggle to push against over-pressure resistance. Basic dump valves can use large-bore pipe/hose inflation but air will escape while you try to screw the cap back on.

THWARTS/BOLSTERS/SEATS

The narrower raft can be paddled Canadian-style, knelt down but conventional, wider models are paddled from each side,

usually while sitting on one of the soft, inflatable thwarts or bolsters that act as seats as well as increasing buoyancy.

In some models, these are detachable and can be used as makeshift in-water buoyancy aids in the event of a person-overboard situation. The 'fatter' tubes on rafts enable paddlers/rescuers to wedge feet into the deck-union to gain purchase and help in maintaining balance and integrity within the raft.

At least one craft, the Wing Inflatable at the top of this page has augmented the inflatable floor chamber with an additional 'flat' chamber for kneeling, this not only reinforces the deck it enhances comfort when paddling for long periods. Two of the craft in this GUIDE, the *ARK Croc-Rescue* (above) and the German *RTB1*



have flat seating. The *Ark* has a vinyl strip which can also act as a forward restraint when leant against during kneeled paddling while the *RTB1* has wooden seats indicating tasking aimed at flood evacuation in slow-moving water rather than swiftwater or waves.

FOOT CUPS

A useful feature of some whitewater rafts that crosses over well into



rescue rafts is the incorporation of low profile foot restrain cups attached to the deck. These are a flap of material that will sit flat when not in use or with a person/kit sat on them. In some cases these might double as paddle stowage but the more overt models like the *NRS* above are large enough to insert a good

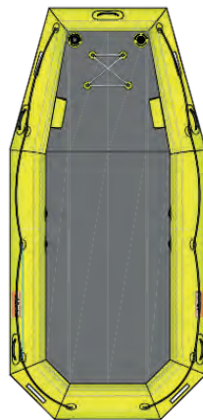


portion of booted foot and help keep you in the boat in rough water as well as providing purchase from which to gain more paddling power going forwards and more reach when leaning back to help steering in strong current. Some thwarts also allow feet to be wedged beneath for extra purchase in rough water/waves.

NON-STANDARD DESIGNS

Another design much favoured in the North America is the cataraft, a twin sponson hull, invariably 'pointed' at the ends and joined by a two or three transverse sponsons that, in a standard raft would be separately inflated thwarts or bolsters. Our own swiftwater rescue co-editor Mitch Sasser swears by them because of their manoevrability, speed and stability but they offer far less floor space so clearly not so much use in flood evacuations and very much a tool for the specialists. Nevertheless, in the right hands these are a potent swiftwater rescue craft. There aren't as many in this GUIDE as you might expect because many are equipped with a rigid transom to take a motor and will therefore be in the separate Powered Craft GUIDES. *Rapid Approach Rescue's* cataraft (above) can also be retrofitted for a motor with an aluminium frame costing around \$275 and is one of only two in this particular GUIDE but there are a number of comparable craft that would suit rescue agencies that are not currently used or marketed as such. This *RAR* model incorporates a reinforced ramp on one end to ease hauling casualties on board - in this case up to 4 plus two rescuers.

MFC's RSBER (right) is typical of some rescue-specific models that have been born out of rescue and not rafting. Theirs is basically the same as their sled (and platform) but with sponsons all around that are narrower than their swiftwater counterparts. They are not self-bailing and are intended for evacuation and searching on relatively flat water and slower moving flood water. Such craft are perfectly capable in faster moving water but without self bailing water coming in adds to the weight and discomfort so is best avoided. You can also see two inside pouches for throw cord or strobe etc and a tied-down panel to safely stow equipment or extra PPE. Some raft have internal paddle stowage points.



Finally a word about the *Mustang MRR130* model in the title picture which has been custom built by Wing Inflatables so you know it will be good. It's a dedicated rescue craft with enhanced features like ultra high visibility and more D-rings than you could possibly find uses for but it's one of only a handful that offers this range of rescue specificity in a raft design. **IMPORTANT: REFER to KEY to TABLES on page 64**

Side Scan Sonar

The ideal tool to locate drowning victims and missing evidence



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Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/sq Metre lb/Sq Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	Croc Rescue CRR 375	ARK		£592 \$706 €662	23kg 50.6lb	170kg 375lb	375x33/105x36cm 148 x 13/41 x 14" 75 x 50 x 50cm 30 x 20 x 20"
	Ark Angel ARR 420	ARK		£1424 \$1697 €1593	28kg 110lb	350kg 750lb	420 x44/118 x37cm 165 x17/47x 14.5" 95 x 50 x 50cm 37.4 x 20 x 20"
	Nile KN365	ARK		£1797 \$2142 €2010	35kg 68.2lb	425kg 937lb	365x71/175x52cm 143 x 28/69 x 20.5" 98 x 56 x 50cm 38.6 x 22 x 20"
	Res-Q-Raft 400	CPI Rescue Products		N/A	50kg 44lb	950kg 2090lb	302x 120/231x56cm 119 x 47/91 x 22" N/A
	430RR Rescue Raft	INMAR		£3000 \$3500* €3200	72.7kg 160lb	1023kg 2250lb	427x 147/198x51cm 168 x 58/78 x 20" 140 x 84 x 61cm 55 x 33 x 24"
	Fat Boy	JPW inc		£4100 \$4444 €4300	32.7kg 72lb	400kg 882lb	305 x 66/165 x 50cm 120x26/65x 19.5" 100 x 86 x 60cm 40 x 34 x 24"
	Rescue Raft RS8ER WR0212	MFC INTERNATIONAL		N/A	26kg 57.2lb	820kg 1804lb	350x134/190x56*cm 137 x52.7/75 x 22" 88 x 50 x 33cm 35 x 19.7 x 13"
	Rescue Raft RS10ER WR0214	MFC INTERNATIONAL		N/A	35kg 77lb	950kg 2090lb	400x134/190 x56*cm 158 x 75/91 x 22" 88 x 55 x 35cm 35 x 22 x 14"
	MRR130	MUSTANG SURVIVAL (WING INFLATABLES)		N/A	50kg 110lb	909kg 2000lb	396 x 89/196 x 53cm 156 x 35/77 x 21" 96.5 x 114 x 125cm 38 x45 x49"
	2.4m Raft	NORTHERN DIVER		£606 \$800 €700	25kg 55.1lb	400kg 882lb	240 x 60/130 x 35cm 94.5 x23.6/55 x 14" 92 x 67 x 25cm 36.2 x 26.4 x 9.8"

NOTES: **COST:** Approx, INCLUDES local tax/VAT **USES/ FEATURES:** ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ ■ ■ = Option

INFLATABLE NON-POWERED RAFTS

approx. AIR CAPACITY INFLATION TIME (Hand Powered or CA)	MAX WORKING PRESSURE FLOOR/DECK	MATERIALS: TUBES/SPONSONS FLOOR/DECK	INFLATE		LOADING			VALVES		ACC		VIZ		NOTES	WWW.	
			SELF-BAILING	CHAMBERS / THWARTS	MANUAL/POWER PUMP	GRAB/LIFT HANDLES	FLIP TAB / GRAB CORD	HD-TOW/ LT DUTY EYES	PRESSURE RELEASE	1-WAY / 2-WAY	CARRY BAG / PADDLES	REPAIR KIT/ WARRANTY	REFLECTIVE/ CUSTOM			COLOUR OPTIONS
600 L 21.2cuft 8-12mins	0.24-0.28BAR 3.5-4.5 Psi * BAR * Psi	1055g PVC closed-cell foam floor	■	* 2	□ 6	2 6	■ -	6 4	-	■ -	□ -	3 -	□ -	■ ■	*No bolsters, seating is a but a PVC strip. *Floor is solid foam (not inflatable). *Via bailing sock which can be closed.	arkinfloatables.com
1200 L 42.4cuft 12-15mins	0.24-0.28BAR 3.5-4.5 Psi 0.55 BAR 8 Psi	1450g PVC 8cm/3" drop- thread deck	■	2 4	□ 8	12 8	■ -	8 15	-	■ -	□ -	3 -	□ ■	■ ■	60cm bow & stern kick. Additional rear PVC band seat.	arkinfloatables.com
1648 L 58.2cuft 12-15mins	0.24-0.28BAR 3.5-4.5 Psi 0.17 BAR 2.5 Psi	1450g PVC I-beam deck	■	2 5	□ -	8 -	■ -	10 10	-	■ -	□ -	3 -	□ ■	■ ■	70cm bow & stern kick	arkinfloatables.com
1900 L 67 cuft 4-10mins	N/A	32oz PVC. 40oz Evaloy- drop-thread deck	■	0 -	□ -	- 10	■ -	14 6	■ -	■ -	□ -	1 -	□ ■	■ ■	This raft being updated or discontinued. Removable inflatable floor	cpiwatersresqproducts.com
2400 L 85 cuft 10-15mins	0.16-0.2 BAR 2.8-3 Psi 0.6-0.7 BAR 9-10 Psi	1.2mm Hypertex, polyester, dual coated	■	2 5	□ ■	6 -	■ -	6 4	■ -	■ -	□ ■	1/ 3	□ ■	■ ■	*Rescue Agencies=\$2995	inmarboats.com
1600 L 56.5 cuft <15mins	0.17 BAR 2.5 Psi 0.17 BAR 2.5 Psi	32/42oz PVC coated Polyester drop-thread deck	■	2 8	□ ■	- 2	■ -	4 -	■ -	■ -	□ -	5- 10	■ -	■ ■	10" bow kick. Removable drop-stitch floor. Foot thwarts. Rescue Celubra is power-capable so will be in the powered craft GUIDE	jpwin.com
1815 L 64cuft 3mins	0.2 BAR 3.25 Psi 0.4 BAR 6 Psi	Hypalon TPU 12cm/5" drop- thread deck	NO	- 3	□ □	7 -	■ -	- 3	■ -	■ -	□ ■	2 2	□ ■	■ ■	*Height is not tube diameter hence low volume Leaffield Valves. Optional rear bolster and storage pockets	mfc-international.com
2000 L 70.6cuft 3mins	0.2 BAR 3.25 Psi 0.4 BAR 6 Psi	Hypalon TPU 12cm/5" drop- thread deck	NO	- 3	□ □	4 -	■ -	- 3	■ -	■ -	□ ■	2 2	□ ■	■ ■	*Height is not tube diameter hence low volume Leaffield Valves. Optional rear bolster and storage pockets	mfc-international.com
2350 L 83 cuft <2/>5mins	0.24 BAR 3.5Psi 0.31 BAR 4.5 Psi	33oz PU-coated Polyester. I-beam floor	■	2 5	□ □	6 -	■ ■	32 2* 16	■ -	■ -	□ ■	1 -	□ ■	■ ■	Federal Aviation specification reflective panels 10" bow kick *2x3" Tow Eyes + 16x2" eyes. Flip cord/web housed in internal pouches	mustangsurvival.com
692 L 24.4 cuft <1- 3.8mins*	0.35 BAR 5Psi 0.7 BAR 10 Psi	1.2mm PVC 8cm/3" drop- thread DWF/PVC Floor	NO	- 3	□ ■	- 6	■ -	- -	■ -	■ -	□ ■	2 2	□ ■	■ ■	*Power pump to Hand Inflation time calculated at 50 pump strokes/min. NB the 2.7 and 3.3 raft are power-capable so will be in the powered craft GUIDE	ndiver-rescue.com

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

Images NOT to Scale	MODEL	COMPANY	ORIGIN	approx COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/sq Metre lb/Sq Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	CBS6	NORTHERN DIVER		£1260 \$1600 €1550	62kg 136.7lb	700kg 1543lb	380 x 80/170 x 45cm 150x31.5/67 x17.7" 120 x 60 x 40cm 47 x 24 x 16"
	CBS8	NORTHERN DIVER		£1460 \$1850 €1750	70kg 154.3lb	900kg 1984lb	420x100/200x50cm x39.4/x 19.7" 135 x 68 x 45cm 53 x 27 x 18"
	R120	NRS		£2550 \$3095 €3250	54.5kg 120lb	N/A	371 x 71/163 x 46cm 146 x 40/76 x 18" 114 x 66 x 38cm 45 x 26 x 15"
	R130	NRS		£2800 \$3395 €3550	60.5kg 133lb	N/A	396 x 71/163 x 46cm 156 x 37/74 x 18" 125 x 66 x 10cm 49 x 26 x 14"
	R140	NRS		£3500 \$3695 €3850	76kg 167lb	N/A	430x109/221x 56cm 169 x 43/87 x 22" 125 x 66 x 66cm 49 x 26 x 16"
	Slice XL Cataraft	NRS/STAR		£1950 \$2195 €1766	30-36kg 66-79lb	900kg 1980lb	361 x 66/178x56cm 142 x 26/70x 22" 152 x 76cm 60 x 30"
	Rescue Cat	RAPID APPROACH RESCUE		£2000 \$2150 €2100	34kg 75lb	900kg 1980lb	358 x 61/173 x 56cm 141 x 24/68 x 22" 115 x 81 x 66cm 45 x 32 x 16"
	12' Rescue Raft Self bailing version SB120	ROCKY MOUNTAIN RAFTS		£2600 \$3150 €2750	54.5kg 120lb	>800kg >1760lb	366 x 66/158 x 46cm 144 x 26/62 x 18" 117 x 76 x 34cm 46 x 30 x 14"

NOTES: **COST:** Approx, INCLUDES local tax/VAT **USES/ FEATURES:** ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL  = Option

Images NOT to Scale	MODEL	COMPANY	ORIGIN	approx COST inc tax / VAT	WEIGHT	LOAD CAPACITY Kg/sq Metre lb/Sq Foot	DIMENSIONS L x int/ext Wx H/D PACKED
	16' Rescue Raft drop-Stitch Deck SB1600	ROCKY MOUNTAIN RAFTS		£3300 \$3800 \$4550 €3550	195lb	>1350kg >3000lb	488x122/234x56cm 192 x 48/92 x 22" 152 x 76 x 41cm 60 x 30 x 16"
	Phat Cat PC120	ROCKY MOUNTAIN RAFTS		£1500 \$1650 €1750	23-29kg 51-63lb	>180kg >400lb	358 x 61/173 x 56cm 141 x 24/68 x 22" 76 x 56 x 36cm 30 x 22 x 14"
	Ionic Urban Raft	SAFEQUIP		£3600 \$5040 €4320	42kg 92.4lb	1000kg 2200lb	320x144/220 x 38cm 126 x 57/87 x 15" 100 x 70 x 45cm 39 x 27.6 x 18"
	WWR3700 SIT38040	SIT Ltd		N/A	37kg 81.4lb	300kg 660lb	370 x 85/175x45cm 146 x/x" 80 x 80 x 50cm 31.5 x 31.5 x 19.7"
	WWR4300 SIT38006	SIT Ltd		N/A	60kg 132lb	450kg 990lb	430 x 100/200 x 50cm 169 39.4/79x19.5" 90 x 90 x 50cm 35.4 x 35.4 x 19.7"
	RTB1 RTB1 SEB	SURVITEC/ DSB gmbH IC BRINDLE		£3995 €4550	43kg 94.6lb	600kg 1320lb	300 x 40/120x40cm 118x15.8/47x15.8" 105 x 50 x 38cm 41.3 x 19.7 x 14"
	IBS	WING INFLATABLES		\$13000	49kg 108lb	612kg 1350lb	366x79/165x43cm 144x31/65x17" 117 x 86 x 61cm 46 x 34 x 24"
	3.6m Raft	WRS INTERNATIONAL	 	£3900 \$5000 €4366	55kg 122lb	700kg 1544lb	360x84/180x48cm 142x 33/71x18.9" 120 x 60 x 60cm 47.2 x 23.6 x 23.6"
	4m Raft	WRS INTERNATIONAL	 	£5210 \$6500 €5900	60kg lb	1000kg 2200lb	400x76/180x52cm 157.5x30/48x20.5" 100 x 100 x 60cm 39 x 39 x 23.6"

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **USES/ FEATURES:** ● = PARTIAL FEATURE and/or OK BUT NOT IDEAL ■ = Option

INFLATABLE NON-POWERED RAFTS

approx. AIR CAPACITY INFLATION TIME (Hand Pumped or CA)	MAX WORKING PRESSURE FLOOR/DECK	MATERIALS: TUBES/SPONSORS FLOOR/DECK	FEATURES										NOTES	WWW.		
			SELF-BAILING	CHAMBERS / THWARTS	MANUAL/POWER PUMP	GRAB/LIFT HANDLES	FLIP TAB / GRAB CORD	HD-TOW/ LT DUTY EYES	VALVES PRESSURE RELEASE	1-WAY / 2-WAY	CARRY BAG / PADDLES	REPAIR KIT/ WARRANTY			REFLECTIVE/ CUSTOM	COLOUR OPTIONS
3200 L 113cuft >15mins	0.17 BAR 2.5 Psi 0.14 BAR 2 Psi	44oz/3000-denier RockShield PVC. 66oz PVC I-Beam lace-in floor	■	2-4 5	□	8 -	-	2-4 12-14	■	■	□	3/5	□	■	Also 13 and 14' models. Leafield D7 valves. Also non-'rescue' colours: Green, Grey, Blue, Torquoise, Beige, Purple. *Available as non-self bailing- drop-thread deck. 31" bow rise	rockymountainrafts.com
2300 L 81cuft >10mins	0.17 BAR 2.5 Psi 0.14 BAR 2 Psi	44oz/2000-denier RockShield PVC. 66oz PVC floor	■	0* 4	□	-	-	12 8	■	■	□	3/6	□	*two integral, transverse bolsters/chambers. Leafield D7 valves. Also non-'rescue' colours: Green, Grey, Blue, Torquoise, Beige, Purple. Splash net & foot cups	rockymountainrafts.com	
1550 L 54.7cuft <2/>10mins	0.2BAR 3 Psi 0.4BAR 6 Psi	'Orca' Hypalon. 6" drop-thread deck	NO	1 5	□	8 2	■	2 8*	■	■	■	5	□	Leafield valves. 6" Deck. * D-Ring under deck can provide flip tab	safequip.co.uk	
1740 L 61.4cuft <1/<8m	0.2BAR 3 Psi 0.4BAR 6 Psi	Neoprene-coated Hypalon. 6" drop-thread deck	■	2 5	□	7 4	■	4 5	■	■	■	2 2	□	Leafield valves	sitltd.co.uk	
2480 L 87.6cuft >2/>10mins	0.2BAR 3 Psi 0.4BAR 6 Psi	Neoprene-coated Hypalon. 6" drop-thread deck	■	3 5-6	□	8 2	■	- 14	■	■	■	2 2	□	Larger WWR5000 also available. Leafield valves.	sitltd.co.uk	
1000 L 35.3cuft <1/<4m	0.2BAR 3 Psi 0.4BAR 6 Psi	Hypalon/Neoprene coated polyester. 6" drop-thread deck	NO	0* 4	□	0 0	■	4 8	■	■	■	2 4	□	* 2x Wooden seats SEB=quick inflation version with CA cylinder	icbrindle.com	
1415 L 50cuft 3-10mins	0.31 BAR 4.5Psi 0.31 BAR 4.5 Psi	40oz Polyurethane. drop-thread deck	NO	2 6	□	- *	■	- -	■	■	■	5	□	*Perimeter cord acts as lift/grab handles	inflatable-solutions.com	
1900 L 67cuft <2/>8min	0.3 BAR 3.6 Psi 0.1 BAR 1.5 Psi	PVC/PU. 15cm I-Beam deck*	■	2 5	■	6 -	■	- 12	■	■	■	3	□	Leafield C7 7 A6 valves. *Available as non-self bailing with drop-thread deck.	wrsinternational.com	
2200 L 78cuft <2/>10min	0.3 BAR 3.6 Psi 0.1 BAR 1.5 Psi	PVC/PU. 15cm I-Beam deck	■	3 5	■	6 4	■	- 5	■	■	■	3	□	Leafield C7 7 A6 valves. 6 x Foot retaining cups/ loops.	wrsinternational.com	

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve

INFLATABLE & SOLID 'SHORT' RESCUE BOARDS

'Short' as distinct from the numerous long boards and basically modified surf boogie or body boards. These short boards are often called 'sleds' in North America because they are huge compared to a standard sport body board. Most derive from the surf community but in rescue terms it is probably the Carlson Board from the 80's that steered the entire water rescue and swiftwater community towards use of short boards for water entry rescue (as distinct from towing). High-speed towing is now where you see most short boards - on the back of a PWC/RWCs both as a rescue measure in surf, flood and swiftwater and for general transport of a surfer to or from the hairy wave face on a surf beach. Be aware though that just because a board/sled has forward-mounted D-rings, doesn't mean it can be towed by an RWC - these exert a degree of force through acceleration that surfers long ago realised needed to be mitigated by additional elastic connections or strengthened fixings. Of course you could bypass the RWC altogether and power the board itself which is what the ASAP 156 jet-board on the right does. With an average 50minute run-time this is an exciting, if rather more expensive option! The 156 does have a forward towing option but more for recovery than deployment. Swiftwater rescue boards either have no tow eyes because they're intended for swimmers or the eyes are more for control lines and hauling, neither of which involves fast acceleration. True surf-oriented boards are also more able to cope with large waves that can bend or snap boards not designed for that environment. Some, like the Peruvian Suntech boards are reinforced - in their case with a longitudinal aluminium I-beam.

Another offshoot has been ice rescue which has spawned a few quite odd designs like the *Angel-Guard* but in principle the main players like *Ice Rescue Systems RTS* and *MARSARS sled* above, are modified boards, longer than most RWC boards but not quite a lifeguard's long board. They are however, considerably more complex than simply a flotation aid. Both are

rectangular with numerous integrated slings and the *MARSARS sled* has a 4:1 hauling mechanism built into the centre of the board that helps haul an in-water victim on board the sled via a set of forearm straps- there are even two rollers in the end to facilitate easier victim movement onto the sled.



We see a definite difference between boards with a US surf background like *Extractor*, *P2P* and *Lifesled* (better known in surf circles as *Wahoo International*) and those from a European water rescue background like *WRSMFC*, *WRS* and *NDiver*. These latter boards and indeed most inflatable short boards are better suited to 'flat' or flood water (and ice or mud) than they are to rough water like surf or swiftwater. They can however be deflated and stored in a considerably smaller space than a solid board although deployment times are also considerably longer. In general, the inflatable boards are the domain of multi-discipline rescue agencies not necessarily using them on every call or with simply no more space on the truck for any more kit. We have dealt with the specifics of inflatable craft in the previous guides to watercraft so no need to discuss that further here - the same rules apply, the materials are the same, the valves are the same only the sheer size and volume and therefore the time to inflate (a couple of minutes even with a hand pump) are different.

Beach rescue and standby rescue teams are more likely to go for a solid board

and for some boards storage as a flat- one piece can sometimes be easier to fit on or around a rescue vehicle than a plump bag of deflated board.

Something that all 'short' boards have in common is a plethora of handles and all go to great lengths to ensure that they are strongly fixed to the deck. In the case of inflatables it is exactly the same as all inflatable watercraft with glued or preferably

'SHORT' RESCUE BOARDS/SLEDS



welded seams having a considerable track record. Solid boards (which aren't necessarily solid as we'll see shortly) can be a bit trickier because the plastic or foam 'shell' that they have to be fixed into can have inherent localised weakness. So most overcome this by spreading the load either by broadening the rivet bed as you can see on the *MARSARS* or by running the handles as a continuous length into and out of the body of the board as you see with the *Lifesleds*.

Extractor mould the threaded receiver into the HDPE shell and claim a 7000lb/3181kg test pull which is quite impressive and likely one of the strongest options. P2P have neoprene covered solid rubber handles while NRS has low-profile flat straps.

Some have a 'last-chance' handle right at the back and some even have a last chance sling/cord hanging off the back. Apart from the special purpose boards all of the towable boards have a curved 'stern' both in terms of smoothing off the roughly 4"/100mm side profile and the crescent shape which accommodates the shape of a 'casualty' who is hanging on for grim death more comfortably and safely than a square back edge. In the case of the title picture opposite from *Lifesled* the rescuer is using the board as an in-water access tool and is knelt on it while assisting the casualty that has just been hot-loaded after having his hand grabbed by the RWC driver. He will then be swung back to the waiting rescuer who ensures he has a firm handhold for the journey back to shore. For inland swiftwater and floods the use of the not-so-short, short board was pioneered for rescue by Robert Carlson after using a regular surf boogie board for sport riverboarding or river sledging as its sometimes called since the early 70s. The Carlson Board took the standard boogie design, added a slick, hardened plastic base and deep crescent curve to the rear as well as four handles, none of which had been seen on rescue boards before. These days the board's curved body channel has evolved into two 'limb' channels that retain the forearms better



when grasping the handles. The boards still have their original vivid green base as well as a curved profile nose to tail.

The NRS board opposite shows a textured, padded surface common to most boards that offers a tactile surface to help grip the body, *ExtractorX Sled* for instance has a 3/8" thick dimpled PVC layer while some like *Extractor* and *Carlson* have scallops in the top surface to better hug the body arms. In fast moving water and particularly on the back of a fast moving RWC any slight turn can make it hard to hang on and virtually impossible on a slick



NRS

RESCUE

SWIFTWATER RESCUE EQUIPMENT

- Dry suits • Wetsuits • Footwear • Gloves • Helmets
- Life Jackets • Rescue hardware and more...

nrsrescue.com | rescue@nrs.com

The WRS Rapid D inflatable board



top-surface. This sideways skid at higher speeds is mitigated in some models like *Extractor's River X* and *JetRescue's Newk* by use of strakes or channels in the underside that keep the board in line - much as you see on RIBs.

We mentioned earlier that the non-inflatable sleds are not necessarily 'solid', some like the *Extractor* range are expanded foam but have differing densities and are hollow. Some are solid 'polystyrene' but it may surprise some to learn that regular polystyrenes (EPS more-so than EPP) will absorb some water - perhaps up to 7% of total board volume. Talking of volumes, the relative board sizes is not immediately apparent in our tables

as the images are NOT to scale but the difference between a river board/body board compared to one intended to be towed by an RWC can be huge. The *Extractor River X Extreme* above middle is 4'8" long and approximately 130L in volume while the *WRS* on the left is 6'4" long and around 180L and the *NDiver* on the right is 6'8" long and 280L. Make sure you read the dimensions and volumes to get an accurate idea of size.

REALISTIC WATER RESCUE TRAINING



FITCC

Fayetteville Technical Community College
2201 Hull Rd,
Fayetteville, NC 28303
Tel +1 (910) 678-8400
www.faytechcc.edu



'SHORT' RESCUE BOARDS/SLEDS

KEY to TABLES.....

Any use, feature, accessory or component that is **inherent** in the product is shown as a **solid coloured square** ■■■■

If it's an **OPTION** it is shown as an **outline square** □□□□

A circle ● in the 'USE' columns indicates that this feature is only partially present and/or is OK for that purpose but not ideal.

ORIGIN: The 'manufacturer's country, not necessarily the country of manufacture, If we know it's made in a different country there will be a smaller inset flag. 🇵🇪 = Peru 🇬🇷 = Greece

COST: a rough guide only - **includes** local taxes/VAT. Varies with exchange rates, extra taxes etc. We usually round up to the nearest Pound£/US Dollar\$/Euro€. We now give a **currency conversion** figure in orange £\$€ which is simply to give an idea of price, it is not the selling price which will have import duties and bulk shipping etc. to add.

LOAD BUOYANCY VOLUME: These are all linked but all manufacturers show it differently. **LOAD** capacity in terms of the weight of person that the board is designed to carry or more importantly that the connecting D-Rings can cope with. **BUOYANCY** of the board, like a PFD or lifejacket is directly related to the weight it can carry whereas **VOLUME** is more an indication of the sheer size of the board usually correlating with load capacity - - the greater the volume the greater the load capacity. As with inflatable platforms, you can work on roughly 100kg per square metre or 67.2 pounds per square foot.

DIMENSIONS: Length by width by depth/thickness.

MATERIALS: (and type of construction) for the board itself,

for the top surface and for the bottom which is often the same as the entire board if it is rotomoulded or a solid foam.

EPS=Expanded Polystyrene. EPP=Expanded Polypropylene

HANDLES TETHER POINTS: Tether points are th attachment D-Rings or in some cases simple thru-board holes that can be used for towing, hauling, securing and directional control but NOT NECESSARILY high speed towing by an RWC - see the next category for clarification.

RWC TOWING: whether or not the board can be towed at high speed by an RWC/PWC or similar high speed watercraft.

NOSEGUARD VALVE PLUG: **NOSEGUARD** or Bump protection - this can be a separate plastic or rubber nose, sometimes detachable as with the P2P Rescue Sled or it may be protection offered by a continuation up the side of a hull protection as with the WRS board. **VALVE** for inflatable boards - usually a combined inflate/deflate valve, some have an additional PRV or Pressure Release Valve in case of over-inflation. **PLUG** is present on some hollow boards as a drainage measure but can also be used to add ballast or extra floatation (expanded foam) .

SURF/SWIFTFLAT WATERICE: Surf and swiftwater are not necessarily the same as you can get fast moving water with virtually no wave-forms. Here we mean operating in sea waves/ surf and fast moving water *with* waves where point loading on the crest or in the dip of a wave can snap or fold if not designed for the purpose. Flat water is flood, lakes and mud where the load is evenly distributed but this can also be 'calmer' swiftwater. **ICE** Any board/sled can be used if you're careful but true ice design requires a longer board, tougher materials (not usually inflatable) and provision for dragging, ice awls, etc.



TRAIN IN SAFETY AT THE NEWEST FACILITY IN THE USA

In an increasingly flood-prone world, swift water rescue training is critically important for first responders. specialized training can often be difficult and dangerous to arrange in natural outdoor settings.

In spring 2023, Fayetteville Technical Community College (FTCC), already known for its educational and training services to Fort Bragg, will open the only indoor swift water rescue training facility on the east coast of the United States.

An 88,000-gallon indoor tank allows for a variety of training scenarios, including different weather, water temperatures, obstacles, and rescue challenges, including simulated rescues at night. Located on FTCC's 30-acre state-of-the-art Fire & Rescue Training Complex on Tom Starling Road in Fayetteville, North Carolina.

Learn more <https://www.faytechcc.edu/swrtf>



MANUFACTURER	ASAP	AQUACENTER	CARLSON	EXTRACTOR SLED	EXTRACTOR SLED	EXTR
MODEL VARIANT	Rescue 156	Jet Ski Rescue	Carlson River Rescue -	Mega	Pro	Rive
ORIGIN						
COST <small>CURRENCY CONVERSION ONLY</small>	£7421 \$9040 €8600	€565 \$700 €650	£405 \$500 €470	£1940 \$2400 €2250	£1724 \$2100 €1990	£905
WEIGHT	30kg 66lb	13.6kg 30lb	5.7kg 12lb 9oz	31.8kg 70lb	27kg* 55lb*	
INFLATABLE <small>SOLID HOLLOW</small>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
LOAD BUOYANCY VOLUME	60kg 132lb 230L		75kg 165lb 120L	270kg 600lb 310L	180kg 397lb 160L	54.5H
DIMENSIONS <small>height x width x Depth</small>	145 x 60 x 28cm 4'9" x 2' x 11"		142 x 61 x 10cm 4'8" x 2' x 4"	206 x 104 x 14cm 6'9" x 3'6" x 5.5"	160-170 x 95 x 10cm 5'3"-5'7" x 3'1.5" x 4"	142 4'
MATERIALS: CORE	HD EPP	Drop-Stitch PVC	Closed cell polyethylene foam	HDPE & 10-13mm LDPE inner	HDPE & 10-13mm LDPE inner	Roto
EXTERIOR - Top	?	UV-safe Mil-Rubber	-	3/8" PVC deck pad	3/8" PVC deck pad	3/8" T
EXTERIOR - Bottom	?	hard plastic 'sheet'	hard plastic 'sheet'	hard plastic 'sheet'	HDPE	
HANDLES TETHER POINTS	11+2* 3 (rear)	14 3	4 -	10 3	8or10 3	
RWC TOWABLE	NO	<input checked="" type="checkbox"/>	NO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
NOSE-GUARD VALVES <small>PLUG</small>	- - -	- 1 -	- - -	<input checked="" type="checkbox"/> - 1	<input type="checkbox"/> - 1	
SURF/SWIFT <small>FLAT-WATER ICE</small>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
OTHER COLOURS				<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
NOTES	A water-Jet-propelled board 16kmh/. Price includes battery charger. *2 'pilot' handles	Includes handpump and repair kit		Range of RWC connection option packages	*Wt includes all optional extras. Tail buoyancy reduced for easier loading and inclined ride when towed. Optional Nose bumper	Elbow Base-P H
WEBSITE	asapwatercrafts.com	aquacenter.gr	carlsonriverboard.com	extractorsled.com	extractorsled.com	extra

COSTS: Any £/\$/€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax **USES/ FEATURES:** = PARTIAL FEATURE and/or

'SHORT' RESCUE BOARDS/SLEDS



EXTRACTOR SLED	EXTRACTOR SLED	EXTRACTOR SLED	HSA	ICE RESCUE SYSTEMS	JET RESCUE	
Extractor X Rescue	RWCiD Pro	RWCiD Mega	Standard/Tow	RTS Rapid Transit-Sled (Ice)-	Newks SLISA	
\$1100 €1045	-	-	£1940 \$2400 €2250 \$2600	£2300 \$2800 €2660	£789 \$978 €915	
8.2kg 18lb	11kg 24lb	16kg 35lb		12.7kg 28lb	12kg 26.4lb	
■	■	■		■	■	
120kg 120lb 130L	approx 200L	>260L	114kg 250lb 200L 160kg 350lb 300L	310L	approx 120L	
185 x 61 x 15cm 8" x 2' x 6"	185 x 107 x 10cm 6'1" x 3'6" x 4"	229 x 109 x 10cm 7'6" x 3'7" x 4"	173x211x96 107x-13cm	158 x 127 x 15.4cm 5'2" x 4'2" x 6"	150 x 90 x 9cm 4'11" x 3' x 3.5"	
Unmoulded PE Textured PVC PE	Coated Drop-Stitch PVC Chemical welding Grooved PVC pad PE	Coated Drop-Stitch PVC Chemical welding Grooved PVC pad PE		HD Polyethylene Foam deck pad HD Polyethylene	Heat Laminated PE Soft Deck Pad Hard skin	
6 7*	8 3	11-12 5	11 13 3	6 4	10 3	
NO	■	■	□	NO	■	
□ - 1	■ HalkeyRoberts+PRV -	■ HalkeyRoberts+PRV -		- - -	■ - -	
■ ■	■ ■	■ ■	■ ■	■ ■ ■	■ ■	
					■	
recesses in deck. pic shows optional DPE ice rails	DISCONTINUED inc pump with pressure gauge & bag. Optional Reflective strips	DISCONTINUED There was also a 16ft long 'TEAM' model to carry up to 10 people	PWC Mount kit NOT included. Also a larger 'Fish'-board with 180/400lb buoyancy.	Ice Awl pouches.		
extractorsled.com	extractorsled.com	extractorsled.com	highsurfrescue.com	icerescuesystems.com	jetrescue.com	


OK BUT NOT IDEAL ■ ■ ■ = Option INFLATION TIME: 300L= 1-2mins with manual/electric pump VALVES PRV=Pressure Relief Valve



MANUFACTURER	LIFESLED		LIFESLED	MARSARS	MFC INTERNATIONAL	
MODEL VARIANT	WAHOO INTERNATIONAL-LS1		WAHOO INTERNATIONAL-LS2	Ice Rescue Sled	Jet-Ski Board WR0213/001	Rescue
ORIGIN						
COST	£1700 \$2100 €1970	£2100 \$2600 €2440	£805 \$995 €935	?	£2100 \$2700 €2500	£620
WEIGHT	15.5kg 34lb	19kg 42lb	13.6kg 30lb	?	9kg 20lb	
INFLATABLE SOLID HOLLOW	■	■	■	■	■	
LOAD BUOYANCY VOLUME	approx 170L	approx 200 L	approx 160 L	240lb 350 L	150kg/330lb 300L	200L
DIMENSIONS height x width x Depth	160 x 95 x 12cm 5'3" x 3'1" x 4"	188 x 104.1 x 10cm 6'2" x 3'5" x 4"	107 x 96 x 15.25cm 5'6" x 3'2" x 6"	188 x 104.1 x 18cm 6'5" x 2'3" x 7"	160 x 95 x 12.5cm 5'3" x 3'1" x 5"	185 x 95 x 12.5cm 6'8" x 3'1" x 5"
MATERIALS: CORE	Composite	Composite	V-Drop-Stitch	HD Polyethylene	Glued Hypalon or Welded TPU	PVC
EXTERIOR - Top	-	-	UV-safe Mil-Rubber	HD Polyethylene	-	c
EXTERIOR - Bottom	-	-	-	HD Polyethylene	Double-Skin	No
HANDLES TETHER POINTS	10 3	12 3	12 3	8 3	10 3	
RWC TOWABLE	■	■	■	NO	■	
NOSE-GUARD VALVES PLUG	■ - -	■ - -	■ 1 -	- - -	- 1x Leaffield -	- 1
SURF/SWIFT FLAT-WATER ICE	■ ■	■ ■	- ■	■ ■	■ ■	
OTHER COLOURS			-		■	
NOTES			Includes pump, transport bag & repair kit	integrated 4:1 haul system & rollers within the board to pull victims on-board. Ice Awl pouches.	Inflation Pressure=0.86Bar Includes Repair kit & Carry Bag	Inc Ha
WEBSITE	lifesled.com	lifesled.com	lifesled.com	marsars.com	mfc-international.com	r

COSTS: Any £/\$/€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax **USES/ FEATURES:** = PARTIAL FEATURE and/or

'SHORT' RESCUE BOARDS/SLEDS

		USES					
							
							
SRP LIFE BOARD V2	NRS RESCUE BOARD	P2P RESCUE RESCUE SLED	P2P RESCUE INFLATABLE SLED	P2P RESCUE LG INFLATABLE SLED	P2P RESCUE RESPONDER		
							
£777 €728	£400 \$495 €465	£1780 \$2200 €2065	£767 \$950 €890	£805 \$995 €935	£2660 \$3295 €3090		
14kg 30.9lb	18.2kg 11lb	14.5kg 32lb	9kg 20lb	10.5kg 23lb	18.2kg 40lb		
■	■	■	■	■	■		
441lb 280L	135L	100L	approx 160L	approx 200L	135 L		
105 x 15cm 3'5" x 5.9"	145 x 63.5 x 10cm 4'9" x 2'1" x 4"	167.6 x 91.5 x 10cm 5'6" x 3' x 4"	167.6 x 99 x 10cm 5'6" x 3'3" x 4"	182.9 x 106.7 x 10cm 6' x 3'6" x 4"	213.3 x 86.3 x 10cm 7' x 34" x 4"		
Drop Stitch or Hypalon Non-slip EVA PVC/EVA	PVC Drop Stitch - -	EPP High Density Plastic Multi-layer skin	- Neoprene Multi-layer skin	- Neoprene Multi-layer skin	EPS/Fibreglass - -		
12 7	6 2	9 3	12 5	14 3	11 3		
■	■	■	■	■	■		
Leaffield -	-Leaffield1xD7 1xPRV-	■ - -	- 1 -	- 1 -	■ - -		
■ ■	■ ■	■ ■	■ ■	■ ■	■ ■		
		■	■ ■ □	■ ■			
Hand-pump, bag & repair kit.	Includes pump and repair kit	Replaceable Nose Cone	Includes pump, transport bag & repair kit	Includes pump, transport bag & repair kit	Plastic protection nose-skid		
srpdiver.com	nrs.com	p2prescue.com	p2prescue.com	p2prescue.com	p2prescue.com		

OK BUT NOT IDEAL ■ ■ ■ = Option **INFLATION TIME:** 300L = 1-2mins with manual/electric pump **VALVES** PRV=Pressure Relief Valve



MANUFACTURER	PPC FOILING	SEA EAGLE	SUNTECH	SUNTECH	SUNTECH
MODEL VARIANT		Rescue	5859" Rescue	62" Rescue Sled	66"
ORIGIN					
COST	£1010 \$1290 €1220	£245 \$300 €285	£735 \$909 €853	£760 \$939 €881	£810
WEIGHT	0kg 0lb	7kg 15lb	9kg 20lb	10.8kg 23.8lb	
INFLATABLE SOLID HOLLOW	■	■	■	■	
LOAD BUOYANCY VOLUME	approx 200L	105kg 231lb 105 L	93/124L	131L	
DIMENSIONS height x width x Depth	184 x 106 x 11cm	152 x 74 x 13cm 5' x 2'5" x 5"	148 x 89 x 11cm 4'10"/11" x 2'11" x 4.4"	158 x 92 x 11cm 5'1" x 3' x 4.4"	168 x 106 x 11cm 5'6" x 3'5" x 4.4"
MATERIALS: CORE	Moulded Foam	Glued 1000Denier	EPS & Alu stringers	EPS & Alu stringers	EPS & Alu stringers
EXTERIOR - Top	EVA traction top	Non-Slip EVA pad	non-slip. Anti-Delamination Vinyl	non-slip. Anti-Delamination Vinyl	non-slip. Anti-Delamination Vinyl
EXTERIOR - Bottom	triple layer PVC	Multi-layer skin	0.6-0.9mm vinyl	0.6-0.9mm vinyl	0.6-0.9mm vinyl
HANDLES TETHER POINTS	8 3	4(+6cord) 11	14 3	14 3	
RWC TOWABLE	■	■	■	■	
NOSE-GUARD VALVES PLUG	■ 1 -	- 1 -	■ - 1	■ - 1	
SURF/SWIFT FLAT-WATER ICE	■ ■	■	■ ■	■ ■	
OTHER COLOURS					
NOTES	Foam core is moulded not CNC cut.	DISCONTINUED Pack size 6x14x32" 15x36x81cm Inflate <30seconds HiVis Reflective strips. Inc Pump, Bag & Repair kit	Alu stringer is an H-profile aluminium bar running thru centre line	Alu stringer is an H-profile aluminium bar running thru centre line	Alu stringer is an H-profile aluminium bar running thru centre line
WEBSITE	ppcfoiling.com	rescue.seaeagle.com	suntechboard.com	suntechboard.com	suntechboard.com

COSTS: Any £/\$/€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax **USES/ FEATURES:** = PARTIAL FEATURE and/or

'SHORT' RESCUE BOARDS/SLEDS



SUNTECH	SUNTECH	TIKI FACTORY	TIKI FACTORY	TIKI FACTORY	TIKI FACTORY	WRS
Rescue Sled	72" Rescue Sled	Rescue Rocket	Rescue Sweammer	Rescue Sled	Rescue Plan 205*	Rapid D
£999 €940	£840 \$1039 €975	£80 \$100 €92	£140 \$171 €160	£560 \$700 €650	£1076 \$1335 €1250	£860 \$1120 €985
13kg 28.6lb	0kg 0lb	2kg 4.4lb	3kg 6.6lb	8kg 17.6lb	7.5kg 15.5lb	13.5kg 30lb
■	■	■	■	■	■	■
139L	162L	38L	70L	160L	150L	180L
138 x 92 x 11cm 5" x 3' x 4.4"	181 x 99 x 11cm 6'1" x 3'3" x 4.4"	98 x 43 x 10cm 3'2" x 1'5" x 4"	110 x 70 x 10cm 3'8" x 2'4" x 4"	168 x 99 x 10cm 5'6" x 3'3" x 4"	205 x 70 x 10cm 5'6" x 2'4" x 4"	160 x 95 x 12cm 6.3 x 3.7 x 4.7"
Alu stringers non-slip. Anti- delamination Vinyl 0.6-0.9mm vinyl	EPS & Alu stringers non-slip. Anti- delamination Vinyl 0.6-0.9mm vinyl	Drop-Stitch PVC Tactile EVA pad PVC	Drop-Stitch PVC Tactile EVA pad PVC	Drop-Stitch PVC Tactile EVA pad Extra PVC half layer	Drop-Stitch PVC Tactile EVA pad Extra PVC half layer	Drop-Stitch PVC Non-Slip EVA pad Polymer clad
14 3	14 3	4 0	2 10	12 3	6 0	10 3
■	■	NO	NO	■	NO	■
■ - 1	■ - 1	- 1 -	- 1 -	- 1 -	- 1 -	■ 2x Leaffield -
■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■
Alu stringer is an H-profile aluminium bar running thru centre line	Alu stringer is an H-profile aluminium bar running thru centre line	Alternative to the life- guard can or torpedo. Inflation in <1min pack size 40x27x10cm	Inflation in 1min Optional, detachable stabilising fins (for hull) pack size 70x15x15cm	Inflation in 3mins or <1min with CO cylinder pack size 70x50x20cm	*also a 215cm version with inflatable side walls see WATER RESCUE BUYERS GUIDE Inflation in 3mins or <30sec with CO cylinder pack size 70x27x18cm	Pack size 100x55x15cm
rescueboard.com	suntechboard.com	rescue.tiki-factory.com	rescue.tiki-factory.com	rescue.tiki-factory.com	rescue.tiki-factory.com	wrsinternational.com

OK BUT NOT IDEAL ■ ■ ■ = Option INFLATION TIME: 300L= 1-2mins with manual/electric pump VALVES PRV=Pressure Relief Valve

HAND-PORTABLE SUB-SEA ROVS



VideoRay's Pro3 (now in it's Pro4 & 5 versions) in use with St. Louis County Sheriff's Rescue Squad in Minnesota's sector of the Great Lakes

We should first define the acronym that we're using here - ROV or Remote Operated Vehicle - further defined by the term SubSea because an ROV could just as easily be your kids toy car. There are other terms - UUV is Underwater Unmanned Vehicle and AUV is an Autonomous Underwater Vehicle which is not directly controlled by an operator but rather preprogrammed to carry out a specific task via a specified route and mode - these don't use a tether and are not usually utilised by rescue teams. As far as ROVs are concerned, there is a fine line between a mini or hand-portable underwater Remote Operated Vehicle that rescue agencies would or could use and the smaller end of the scientific and oilfield ROVs defined as Work-Class ROVs that look like a block of flats with arms. The difference of course is the ability for your average search team to be able to carry and deploy it and their ability to buy it in the first place. All of the models in this guide cost less than a fire truck - some of them cost less than a set of tyres for your Off Road vehicle but those big boxy exploration and maintenance ROVs are 5 and 6 figure sums or they weigh the same as a small elephant at their smallest! Take this Oceaneering OmniMaxx on the right - it looks a lot like some of the models in our guide if you look at this picture in isolation, but it's 1.3m/50" long and over a quarter of a tonne and don't even bother about asking the cost. They know you can't afford it, rescue/emergency response isn't mentioned



once in their blurb. Most of the big ROV manufacturers don't mention rescue or search & recovery in their list of possible taskings and industries served. They are all about inspection and maintenance of pipelines, subsea comms cables, ships and submarines - you can see where all the money is - oil, gas, shipping and the military... rescue, not so much. So even though ROV's like that Omni Maxx might be the kind of vehicle that a dive team would crave, it is, to all intents and purposes, 'out of your league'.

As we said earlier, it's a fine line between the most 'recreational' ROV and the cheapest Search and/ or Rescue ROV but cost is often the first consideration.

Emergency responders and Government agencies not related to defence are unlikely to have money to burn and for most, an ROV is a luxury. It will be tempting to look at some of the numerous Chinese 'recreational' models costing only a few hundred up to a thousand or two on the basis that any capability is better than nothing? Or is it? Once you rock up to a scene with expectations of a capability in underwater search and maybe light-recovery you effectively have a duty of care to perform that task to a level of professionalism expected of any emergency service. Deploying an ROV that looks like your kids skillfully constructed it using one of those month by month publications that builds into a complete ROV might leave you with egg on your face. Because, despite the fact it worked fine in the practice pool, when it came to deployment at an actual incident with time pressing, weather rubbish and the incident commander waiting for you to perform, the video graphics looked sketchy, the tether ran out 20feet short

of the target and the battery packed up after 7 minutes because the water is pretty chilly. Not buying 'cheap' is a broad concept that you could apply to any technological kit used for rescue but ROVs - whether aerial or subsea - are a relatively new phenomenon with many new companies vying for your attention and most don't have the kind of track record that you might otherwise look for in selecting equipment. That's certainly true of aerial ROVs but in fact, subsea ROVs do have some specialists from our sector. Regular readers of **TECHNICAL RESCUE** magazine will be familiar with *JW Fishers* who have been featuring for the past 30 years and this century we have seen Canadian company *DeepTrekker* and US company *VideoRay* targeting the rescue, inspection and research sectors. It's fair to say that *Deeptrekker* and *VideoRay* represent perhaps the more technological end of things - reliable modern complex subsea robotics with a range of vehicles that include an absolute maze of mission possibilities. Compared to the many Chinese models available (which may or may not be good) *Deeptrekker*, *VideoRay* and *JW Fishers* have skin in the game, a track record in rescue that you can hang your hat on. *JW Fishers* represents the bombproof, more traditional end of robotics. Their *Sea Lion* and slightly more basic *Sea Otter* are perhaps the most robust in this sector with a simple cylinder modified to take the lighting units, thrusters and manipulators common to all ROV's. We often think of them in terms of that great (and probably urban myth) analogy that retells how NASA engineers were proud of their latest innovation after thousands of hours of research and design and hundreds of thousands of dollars - a pen that could write in any orientation, underwater, in zero gravity, in freezing temperatures or extreme heat to which the Soviets replied that they too has such an innovation - they called it a pencil. Whether this is true or not, and we doubt it, the point of the analogy is that simple is often the best option. With ROVs being operated in an alien environment by rescuers who rarely get level of use and experience that deep-sea explorers and maintenance workers get but who may be operating under critical time and environmental constraints, the less to go wrong the better.

POWER/BATTERIES

All of these ROVs are electrically driven but not all have an independent on-board battery system. Some can only operate via hardwire connection to a top-side power source usually housed in a Pelican style hardcase like this Video-Ray power-case (right). With transformers, many can use other top-side power sources like vehicle batteries or even mains supplies. Many fuel-driven generators on rescue trucks have AC power sockets which some, like *Video-*



Ray's Defender, can use. But for the most part, in rescue we're talking independent battery power. The top-side systems provide much greater longevity and easier power monitoring and management than autonomous on-board batteries and, since a tether is usually used for retrieval, control and live feed, it is not a stretch to add a power cable. Nevertheless a tether adds bulk and drag which an on board battery doesn't but work/



search durations are radically different - expect 1 to 4 hours with an on-board high end Li-ion or polymer. The BlueROV2 above quotes 2hours for heavy use up to 6 hours with 'light' use. A tether may allow up to 8 hours from a top-side powerpack.

CONTROL of THRUSTERS

In terms of controlling your ROV this relies on thrusters, basically impellers that can have variable orientation but are more usually fixed. Vector thrusters are paired in opposing directions as you can see in the *Fishers Sea Lion* at the top and the *BlueROV2* above with additional vertical thrusters for lift. Variable thrusters can be rotated to give infinite directional control. The way you control might



NEW-COMPILING

be via a simple thumb toggle or, taking a leaf out of military UAVs, the *Play Station*-style controller is seen by many under 50 year-olds as an easier means to control the ROV. The control systems and imaging options are often pre-mounted into a *Peli*-style hard case with the monitor handily located in the lid and ready for use when you open the case like the Fisher system top for their Sea Lion2. Lighter weight, out-of-the-box controllers are also available like the *Deeptrekker* system above left used to control its DTG3 ROV and *Video-Ray's Expeditionary* controller above using a tablet with add-ons from the main control box. Lap top computers are another common interface to provide video and sonar viewing.



complex field in itself with most ROVs designed to accommodate a specific brand/model of multi-beam rather than scanning or side-scansonar (see our separate GUIDE to SONAR). The image below is via a Kongsberg Flexview sonar which can be retrofitted to many ROVs and in this case has picked out the outline of a bicycle but humans can be far less distinct and it takes a skilled operator with lots of experience to discern a bone-fide target from all the other clutter than may be adorning a lake, bay or river bed.

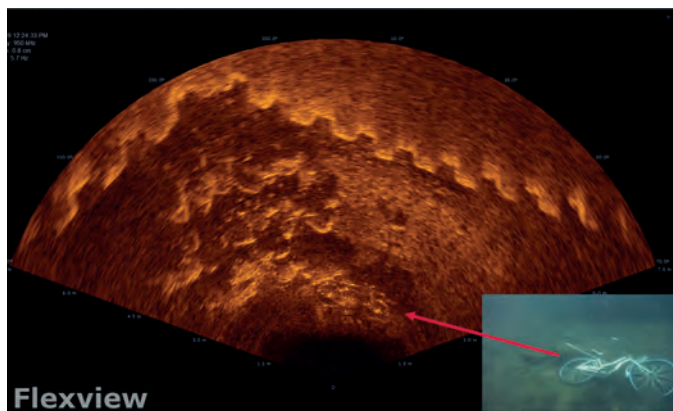
SENSORS

On-board sensors can provide data on temperature, depth, direction/orientation, size of and proximity to objects. Exact location of your ROV has to be achieved via transponders **rather than GPS because satellite-based systems only work in the surface layers of water**. A little easier to work out is orientation of the ROV in terms of whether it is upside down etc and this is achieved with an onboard gyroscope or gimbal relaying attitude to the system. This is all important information that affects the ability of the ROV to perform and enable the controller to carry out specific tasks. Some ROVs have these sensors as standard, most can be added to a package. At a minimum, rescuers will want the option of temperature because the colder it is, the shorter time your battery will last and a navigation package. Navigation in terms of directing the ROV where to go is usually undertaken with **USBL** tracking which uses the surface boat (if you are using one) as its reference GPS. There are also computer analytics that use DVL or Doppler Velocity Log (speed relative to the seabed) and distance from mother-ship figures to calculate location. Usually, DVL just give you an accurate speed.

VIDEO, IMAGING & LIGHTING

Getting your Remotely Operated Vehicle to the underwater scene is only one part of the package requirements, in fact, by itself is of no use whatsoever. The ROVs need to be able to do something tangible and this means at least the ability to scan an area with Sonar or IR etc or film and illuminate a scene and to relay that back in real time to the team on top. There they will view data and control the ROV from a mobile 'command-Post' like the *Fishers* model above. Real-time visuals include video and higher resolution stills and these generally need to be well illuminated. All ROVs have on-board lighting - arrays of LEDs these days offering differing lighting levels and types of beam from long range spot to short range wide-area flood. Something that doesn't require lighting is Sonar. Sonar is the most often used asset by rescue agencies and this is a

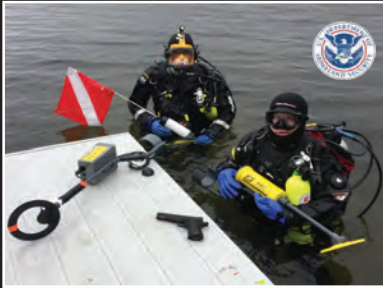
Your ROV may be equipped with a manipulator arm that can



either grab and retrieve objects (to a very specified weight) or perform other manipulation and or cutting tasks but the vast majority of dive and surface water rescue teams are using their ROVs as a search tool so it is the video capability and/or acoustic/sonar imaging that are most important. And these are elements that can really rack up the bill on your ROV. Imaging sonar will triple the price of a US\$10K ROV. It's always the add-ons that get you but these add-ons can be crucial. High Definition video aided by high intensity white light LEDs with images relayed by a hard-wire (fibre-optic) tether offer the most reliable way to get the best quality images to the controller on top though there are WiFi telemetry systems that will undoubtedly improve in the coming years. This may not be quite as useful a development as you might think because virtually all ROV deployments would use a tether to the surface anyway in order to deploy, recover or find your ROV should it shut-down and become lost or entrapped. The downfall of video is that it relies on fairly clear water and this is often not what you're dealing with in inclement weather which is why acoustic imaging or sonar is a more favoured function - it not only 'sees' through the murk, it does so over distance of 100s

Make Searching Open Waters Safer & Easier with JW Fishers Underwater Equipment

Hand Held Underwater Metal Detectors



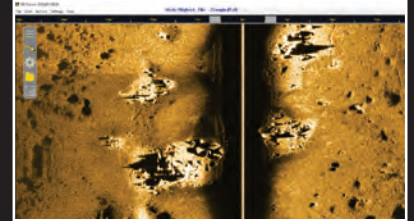
Pulse 8X

- Detects ALL metals on land & underwater
- Audio and Visual output
- Commercial construction
- Ideal for evidence recovery
- Rated #1 by US Homeland Security

SAR-1

- "Snareless" design with VIBRATING handle
- Bright red LED display
- Specialized for low visibility environments
- 200' depth rating

Side Scan Sonar



* Simulated Drowning Victim



600kHz - CW

- Simple to operate
- Up to 225' (75m) range on each side
- Displays images on laptop or tablet
- Commercial construction
- Works in all waters, regardless of clarity
- In use by public safety dive teams

450kHz / 900 kHz - CHIRP

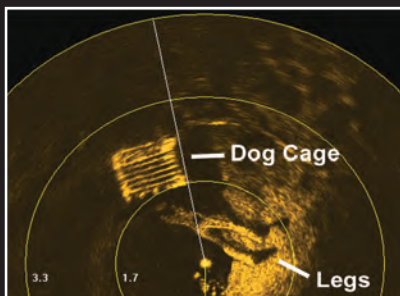
- Fully digital
- Up to 495' (150m) range on each side
- Breaks down for easy transport (case included)
- Commercial construction
- Low cost and easy operation
- Complete turnkey system

Remote Operated Vehicle with Sector Scanning Sonar



SeaLion-3

- 7 vectored, thruster system
- Front and rear 1080p HD cameras
- Two monitors for viewing and control
- Picture in picture (PIP) functionality
- Easily transportable
- Commercial construction
- 1,000' depth capability



SCAN-650

- Target sizing capability
- 360° sweep pattern
- High resolution imagery
- User friendly software
- Commercial construction
- ROV, pole or tripod mountable
- Starting at \$6,995



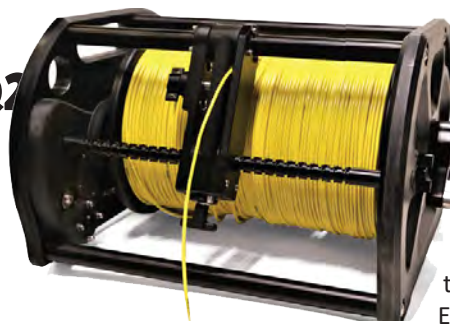
PHONE: (508) 822-7330
 info@jwfishers.com
 jwfishers.com

of feet. It is sonar which sets apart the more serious ROV packages.

MORE TECHNICAL INFO on Cameras VIDEO & IMAGING

TETHERS

Technically a tether is simply the load-capable connection between your ROV and top-side that enables you to drag it back should it lose power. Once you add a power cable and data transmission cable (fibre-optics) your tether is actually an umbilical providing and receiving vital power and/or data as well as being the distance restrain and haul-back line. Power transmission cables like the Video-Ray Expedition Reel below, may not be as long as a simple tether cord or cord & fibre-optic tether which is only limited in length by the capabilities of your ROV and sheer weight and bulk of log tether lengths. Your ROV will have a depth rating which is related to water pressure and what the casing can withstand. This can be anything from 5metres/16feet to 2000m/6560ft. Two things to note here - 1) you might think 5metres - what the hell use is that? But if you are an inland water rescue or dive team it is highly likely that the vast majority of your incidents will involve water depths of less than 30ft so size isn't everything. 2) Equally, do not think that if your ROV has a limit of say 100feet, you only need 100 feet of tether or umbilical. Again, it's not about depth, it's about lateral searching. JWfisher's tether option for the 1000ft rated Seal Lion is 1500ft, not so that you can run it so far beyond 1000feet that you might break it but so that you can move up to 1500ft laterally from your control position - it might only ever be 15ft deep. Of course you then have concerns about the battery life and in particular if you are fighting a current or water flow. That's when that tether might become even more crucial as it allows you to run your ROV out to the max and then manually haul it back rather than operating on only half the limit because you are guiding it back under power before passing the PONR.



Tethers add considerably to the air weight of the package and to the in-water drag that the ROV experiences though they are often neutrally buoyant, Experienced controllers learn to manage the cables so that they impart the minimum drag from the cable reel or pack to the water's edge. In-water there's not too much you can do other than avoid changes of direction after obstacles or even seaweed wracks that will conspire to add drag and limit the endurance time of your ROV.

MANIPULATION ARM, GRABS & TOOLS

Other add-ons include the ubiquitous grasping jaws that you see in every deep-sea film but for rescuers, it's not so common even though it can prove immensely useful. Some are more versatile than others, the simplest, cheapest options are single axis arms that only move up and down or left and right. Some don't move at all and are 'grabbers' or other tools that connect direct to the ROV body. Manipulators like the set sported by Video-Ray's Defender below, can operate in all axis directions, swivelling at the union and articulating at the elbow and 'wrist'. The best option might be a modular arrangement that allows you to quickly remove or attach a **MANIPULATOR ARM** or a head (connecting directly to an ROV without the articulated arm) and if that also allowed you the choice of **GRAB** jaws, hydraulic **CUTTER** or even a **LASER** so much the better. But as an inherent feature that you specify at the time of purchase, these are extra expenses, complications to electronics and snag hazards that could trip you up if you are only using them infrequently. Blueprint make a generic series of manipulator arms and tools (pic right) that are used by *Boxfish* and *Video-Ray* among others.



In terms of retrieval of an object or body by grabbing it with jaws, the grip strength is not the same as the ROV's load capacity. You must remember that a strong grip closure can damage an item or disintegrate a cadaver so your control needs to be finite and accurate. You have the advantage that the load capacity is significantly increased by the buoyancy of water - a 10kg/22lb payload may just be enough to move an adult weighing 100kg/220lb under the water. *DeepTrekker*, *Video-Ray* and *Boxfish* offer a **LASER** (scaler) which is not a James Bond villain cutting tool but a rangefinder or incredibly accurate measuring device using two beams.

KEY to TABLES.....

Any use, feature, accessory or component that is **inherent** in the product is shown as a **solid coloured square** ■■■■■
 If it's an **OPTION** it is shown as an **outline square** □□□□□
 A circle ● in the 'USE' columns indicates that this feature is only partially present and/or is OK for that purpose but not ideal.
ORIGIN: The 'manufacturer's country, not necessarily the country of manufacture, If we know it's made in a different country there will be a smaller inset flag.
COST: a rough guide only - **includes** local taxes/VAT. Varies with exchange rates, extra taxes etc. We usually round up to the nearest Pound£/US Dollar\$/Euro€. We now give a currency conversion figure in orange £\$€ which is simply to give an idea of price, it is not the selling price which will have import duties and bulk shipping etc. to add.
WEIGHT (with cable/tether) Weight of the ROV only - this does not include the control system usually housed in a waterproof case like Pelican - such systems can add 15-25kg/33-55lb to the weight of the ROV and tether as an entire system
DIMENSIONS height x width x Depth: of the ROV only
DEPTH RATING
ROV LIFT/GRAB CAPACITY
SUPPLIED OPTIONAL TETHER
SPEED OPERATING TEMP
POWER- BATTERY TETHER

ONBOARD BATTERY DURATION

TEMP SONAR GPS DIRECTION GPS = TRANSPONDER that can be interrogated for position because satellite GPS only functions in shallow water. BAE's POSYDEN system seeks to have acoustic buoys across the world to provide a bat-like response to a known location to provide GPS style data.

METAL DETECTION LASER RF

MANIPULATOR GRAB CUTTER

VECTOR/VERT/VARIABLE THRUSTERS

CAMERA(S)

RESOLUTION

B W COLOUR PAN TILT

LID LAPTOP HAND MONITOR

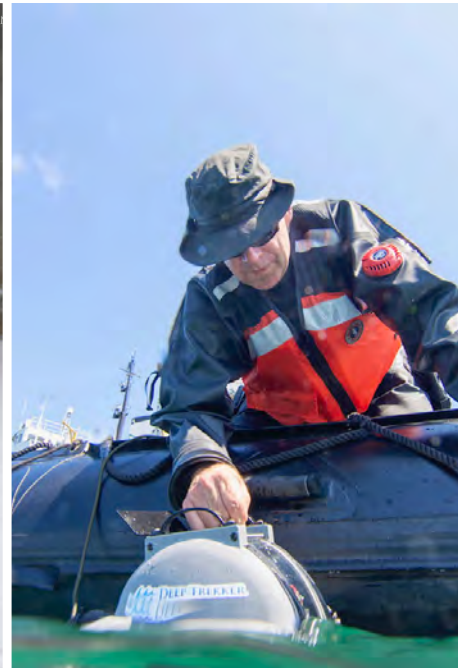
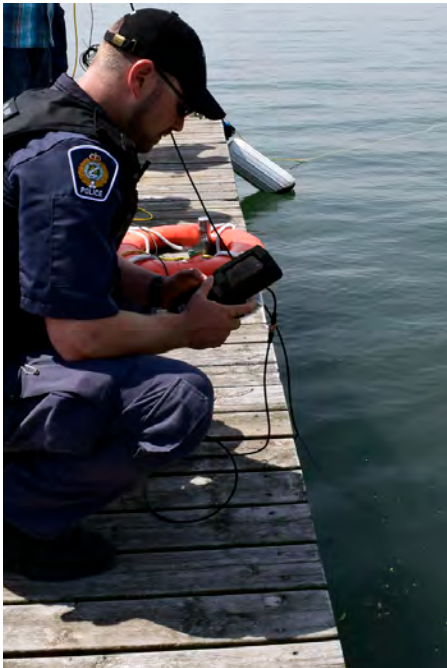
DIRECTIONAL LIGHTING

CASE SD/STORAGE

WARRANTY

SLOW FAST FLOW/CURRENT: Conditions under which the ROV can reasonably operate - dictated by the engine/thruster power. All will operate in still, slow moving water and a current that a person could remain standing in.

Fill in explanations



Rapid response underwater search & recovery ROVs

 DEEP TREKKER™

deeptrekker.com



Images NOT to Scale

MANUFACTURER	BLUE ROBOTICS	BOXFISH	DEEPTREKKER
MODEL VARIANT	BlueROV2 Alu-frame	ROV +	Revolution
ORIGIN			
COST	£0 \$4650/4940* €0	£0 \$0 €0	£0 >\$40,000 €0
WEIGHT (with cable/tether)	11 12kg 24 27lb	24kg* 53lb	35kg 75lb
DIMENSIONS height x width x Depth	45.7 x 33.8 x 25.4cm 28 x 17 x 14"	71.4 x 43.5 x 35.1cm 28 x 17 x 14"	71.7 x 0 x 0cm 0 x 0 x 0"
DEPTH RATING	100/300m 328/984ft	500/1000m 1640/3300ft	305m 1000ft
ROV LIFT/GRAB CAPACITY	1.2-1.4kg/2.6-3.1lb	??	32kg/70lb
SUPPLIED OPTIONAL TETHER	100m/330ft 300m/984ft	350m/1150ft 3000m/10000ft	300m/984ft <2000m/6560ft
SPEED OPERATING TEMP	3knots	-10to45°C/ 14-113°F	-10to50°C/ 14-122°F
POWER= BATTERY TETHER		Lithium Polymer 21.6v ■	21.6v ■
ONBOARD BATTERY DURATION	2-6hrs	4-14hrs	3hrs
TEMP SONAR GPS DIRECTION		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
METAL DETECTION LASER RF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MANIPULATOR GRAB CUTTER		<input type="checkbox"/>	<input type="checkbox"/> ■ <input type="checkbox"/> ■ rotates 260°
VECTOR/VERTVARITHRUSTERS	4 +2 Vertical	8	6
CAMERA(S) RESOLUTION OPTION B W COLOUR PAN TILT	1 main 1080p ■ +-90°	1main + 2 fore/aft NavCams 4K ■	1x front 4K HD 1920x1080, 30FPS ■
LID LAPTOP HAND MONITOR		17"	
DIRECTIONAL LIGHTING	2 or 4x 0 to 1500 lumen	2 x 0 to 8500 lumen 1 rear light	1000 lumen (option 1-4000lmn)
CASE(S) SD/STORAGE		■	■ ■
WARRANTY		1 year	1 year
SLOW FAST FLOW/CURRENT	■	■	■
NOTES	*Price excludes controllers, monitor etc.	*Weight includes salt water ballast. 5hrs Battery mains Recharge or 1.5hrs Field recharge. Auto RTB if comms are lost Blueprint Oculus and tool compatible	Field-changeable tool heads.
WEBSITE	bluerobotics.com	boxfish.nz	deeptrekker.com

NOTES: COST: Approx, INCLUDES local tax/VAT £\$€=Currency conversion only - exc duty, shipping etc. USES/ FEATURES: ● = PARTIAL FEATURE



DEEPTREKKER		DEEPTREKKER		DEEPTREKKER	
Pivot		Photon		DTG3	
£0 \$17600 €0		£0 \$0 €0		£0 \$8500 €0	
20kg 45lb		11.6kg 25.6lb		8.5kg 18lb	
57.6 x 36 x 31.3cm 0 x 0 x 0"		57.6 x 36 x 31cm 0 x 0 x 0"		27.9 x 32.5 x 25.8cm 11 x 12.8 x 10.2"	
305m 1000ft		120-305m 400-1000ft		200m 656ft	
100-150m/328-492ft <2000m/6560ft -10to50°C/ 14-122°F		<2000m/6560ft -10to50°C/ 14-122°F		75m/246ft 200m/656ft	
19.2v		19.2v			
1.5hrs		2.5hrs		1.5hrs	
rotates 97°		rotates 0°		rotates 180°	
6		6		3	
1x front 4K HD 1920x1080, 30FPS 		1x front 4K HD 1920x1080, 30FPS 		1x front 4K HD 1920x1080, 30FPS 	
		178 mm (7") Wide-Angle LCD			
1000 lumen (option 1-4000lmn)		1000 lumen (option 1-4000lmn)		1000 lumen (option 1-4000lmn)	
1 year		1 year		1 year	
deeptrekker.com		deeptrekker.com		deeptrekker.com	

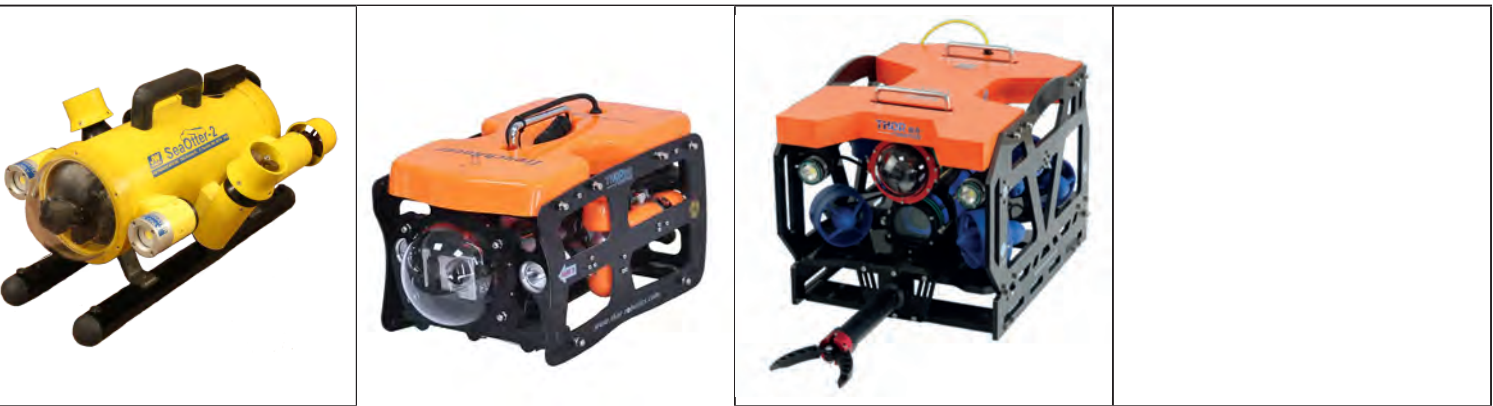
and/or OK BUT NOT IDEAL = Option N/A = info Not Available/not given






Images NOT to Scale

MANUFACTURER	HSE	HSE	JW FISHERS
MODEL VARIANT	M2	M2Pro	Sea Otter II
ORIGIN			
COST	£0 \$0 €0	£0 \$0 €0	£0 \$21000 €0
WEIGHT (with cable/tether)	0kg 0lb	0kg 0lb	0kg 0lb 0oz
DIMENSIONS <small>height x width x Depth</small>	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
DEPTH RATING			152m 500ft
ROV LIFT/GRAB CAPACITY			
SUPPLIED OPTIONAL TETHER			250ft 1500ft
SPEED			4mph
POWER= BATTERY via TETHER	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
ONBOARD BATTERY DURATION			
TEMP SONAR GPS DIRECTION	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
METAL DETECTION LASER RF			<input type="checkbox"/>
MANIPULATOR GRAB CUTTER		<input checked="" type="checkbox"/>	<input type="checkbox"/>
VECTOR/VERTVARITHRUSTERS			4
CAMERA(S) RESOLUTION B W COLOUR PAN TILT			1x Front 1x Rear <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
LID LAPTOP HAND MONITOR			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 10.5" Colour
LIGHTING DIRECTIONAL			<input type="checkbox"/> 2200 Lumen LED - Front LED Ring - Rear
CASE(S) SD/STORAGE			2 <input checked="" type="checkbox"/> <input type="checkbox"/>
WARRANTY			2 years
SLOW FAST FLOW/CURRENT	<input checked="" type="checkbox"/>		<input type="checkbox"/>
NOTES			
WEBSITE	hse-uav.com	hse-uav.com	jwfishers.com

NOTES: COST: Approx, INCLUDES local tax/VAT £\$€=Currency conversion only - exc duty, shipping etc. USES/ FEATURES: ● = PARTIAL FEATURE



<p>JW FISHERS</p> <p>Sea Lion II</p>	<p>THOR ROBOTICS</p> <p>TrenchRover 110</p>	<p>THOR ROBOTICS</p> <p>TrenchRover 200H</p>	
			
<p>£0 \$30,000 €0</p>	<p>£0 \$0 €0</p>	<p>£0 \$0 €0</p>	
<p>0kg 0lb</p>	<p>4.2kg 9.25lb</p>	<p>15kg 9.25lb</p>	
<p>0 x 0 x 0cm 0 x 0 x 0"</p>	<p>36 x 20 x 20cm 14.2 x 7.9 x 7.9"</p>	<p>50 x 34 x 28cm 19.7 x 13.4 x 11"</p>	
<p>305m 1000ft</p>	<p>5-30m 16-98ft</p>	<p>30m 98ft</p>	
<p>250ft 1500ft 4mph</p>	<p>30m 1.5kn 2.8kmh</p>	<p>30m 2kn 3.7kmh</p>	
	<p>12v 3Ah NiMH or 5Ah LiPo</p>	<p>12v 3Ah NiMH or 5Ah LiPo</p>	
<p>□ □ □</p>			
<p>□</p>			
<p>□</p>		<p>■</p>	
<p>4</p>	<p>4 x 8000rpm</p>	<p>8 x 8000rpm</p>	
<p>■ □ □ 15" Colour</p>		<p>■ □ □</p>	
<p>■ 2200 Lumen LED - Front LED Ring - Rear</p>	<p>2x 300 lumen</p>	<p>2x 300 lumen</p>	
<p>2 ■ ■</p>	<p>■ ■</p>	<p>■ ■</p>	
<p>2 years</p>	<p>2 years</p>	<p>2 years</p>	
<p>■</p>	<p>■</p>	<p>■</p>	
<p>as a power-boost option to counter sudden current/flow change</p>	<p>Wireless version available. NB: uses propriety battery <u>not</u> supplied</p>	<p>Wireless version available. NB: uses propriety battery <u>not</u> supplied</p>	
<p>jwfishers.com</p>	<p>thorrobotics.com</p>	<p>thorrobotics.com</p>	

and/or OK BUT NOT IDEAL □ □ □ = Option N/A = info Not Available/not given



Images NOT to Scale

MANUFACTURER	VIDEO RAY	VIDEO RAY	VIDEO RAY
MODEL VARIANT	Pro4 ip65 Ultra	Pro5	Mission Specialist Defender
ORIGIN			
COST	£0 \$0 €0	£0 \$0 €0	£0 \$0 €0
WEIGHT (with cable/tether)	6.1kg 13.5lb	11.8 36.6kg 26 80.9lb	17.2 32kg 38 71.6lb
DIMENSIONS height x width x Depth	37.5 x 28.9 x 22.3cm 14.75 x 11.4 x 8.75"	51.6 x 33 x 25.7cm 20.3 x 13 x 10.1"	71.1 x 39.4 x 23.8cm 28.8 x 15.5 x 10.4"
DEPTH RATING	305m 1000ft	305m 1000ft	1000m 3280ft
ROV LIFT/GRAB CAPACITY		11.3 22.6kg 25 50lb	11.3- 22.6kg 25 50lb
SUPPLIED OPTIONAL TETHER		76m/250ft 550m/1804ft	76m/250ft 550m/1804ft
SPEED		4.4 kn	4.4 kn
POWER= BATTERY via TETHER		48vDC NiMH or Li-ion & 48vDC	48vDC NiMH or Li-ion & 48vDC
ONBOARD BATTERY DURATION			NIMH 1-2hrs, Li-ion 2-4hrs 1-8.5hr
TEMP SONAR GPS DIRECTION	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
METAL DETECTION LASER RF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MANIPULATOR GRAB CUTTER	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
VECTOR/VERTVARITHRUSTERS		2 + 1 vertical	4 + 3 vertical
CAMERA(S) RESOLUTION B W COLOUR PAN TILT		1x Front 13mp still. 16x digital zoom <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1x Front 1x Rear 13mp still. 16x digital zoom <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
LID LAPTOP HAND MONITOR	<input checked="" type="checkbox"/> <input type="checkbox"/> 15" Colour	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 15-21" Colour	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 15-21" Colour
LIGHTING DIRECTIONAL		2x7600 Lumen spot & flood on both LED arrays	2x7600 Lumen spot & flood on both LED arrays
CASE(S) SD/STORAGE	2 <input checked="" type="checkbox"/> <input type="checkbox"/>	3 <input checked="" type="checkbox"/> <input type="checkbox"/>	3 <input checked="" type="checkbox"/> <input type="checkbox"/>
WARRANTY	2 years	2 years	2 years
SLOW FAST FLOW/CURRENT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOTES	Ultra a simpler system with lighter control system (8.4kg) but doesn't accept most accessories including sonar and does not operate in fast flow/currents.	Sonar options include Teledyne, Trittech and Blueprint systems. Bluepribrnt Oculuus systems offer 5 to 120m/394ft ranges.	Sonar options include Teledyne, Trittech and Blueprint systems. Bluepribrnt Oculuus systems offer 5 to 120m/394ft ranges..
WEBSITE	videoray.com	videoray.com	videoray.com

NOTES: COST: Approx, INCLUDES local tax/VAT £\$€=Currency conversion only USES/ FEATURES: ● = OK BUT NOT IDEAL = Option

1x Full or 2Half ads

WATER RESCUE TRAINING MANIKINS

Ruth Lee's Man-Overboard manikin is given low-visibility clothing in it's Search & Rescue variant to make finding it harder. No reflective tape or bright colours.



In its simplest form, an in-water training manikin hasn't necessarily changed much in the past 50 years - a bunch of yacht fenders tied together for arms and legs and stuffed into overalls with more shoved into the chest area to make the torso and finished off with a crab-fishing marker buoy as the head. Simple. But rescuers soon got tired of the lack of realism that a fully floating and relatively light dummy provided and started to improvise by drilling and filling with sand or water

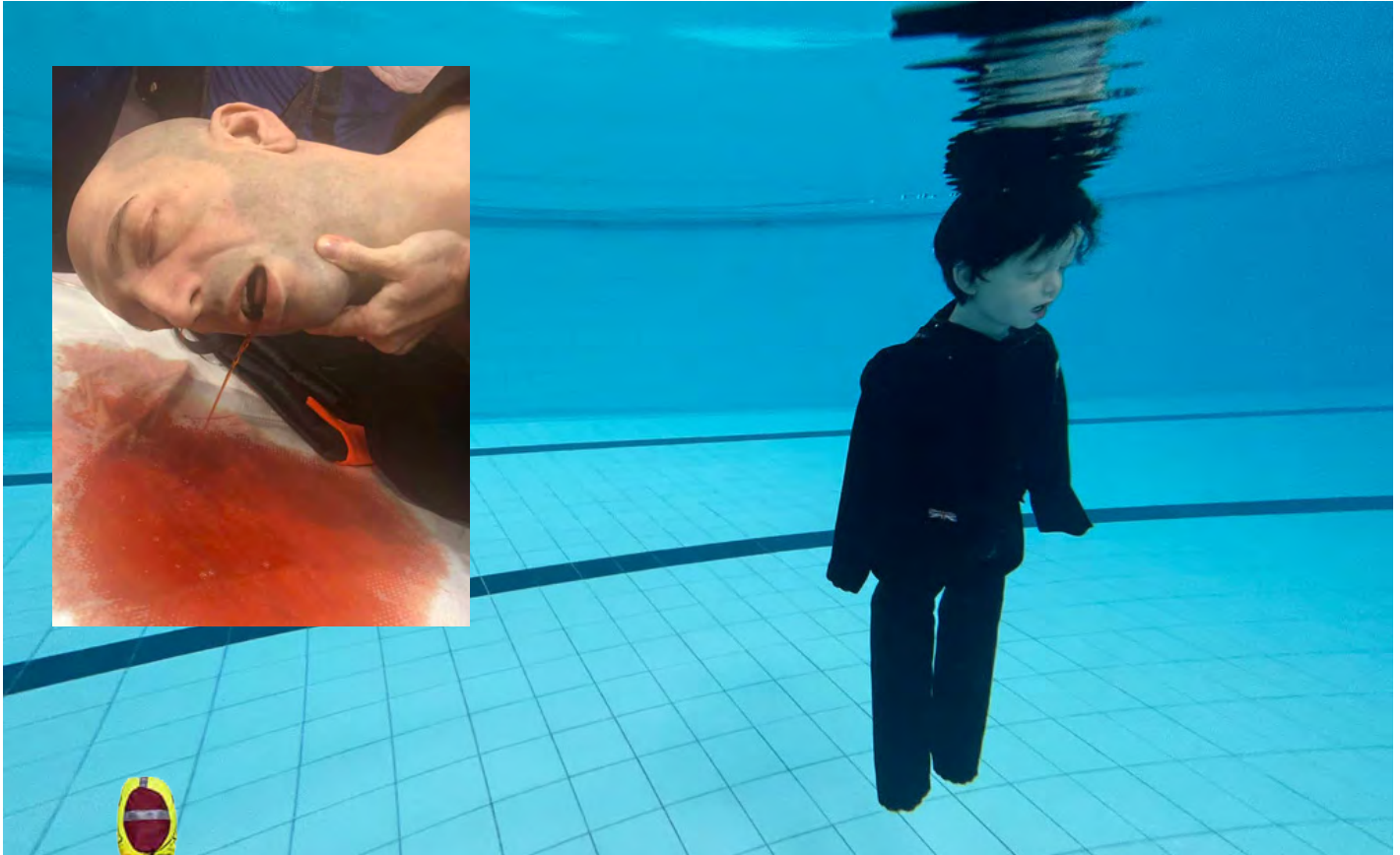
for weight and adding extra layers of clothing. The Dacon Dummy on the left is the modern incarnation of these early fender-style manikins. These also worked OK on dry land and in fact many a fire service had their own versions of dummies made out of tyres, fenders and fire hoses stuffed with material. Even though medical sector companies like Simulaids were producing trauma manikins or bits of manikins

as long ago as the 60's we didn't really start seeing more realistic full-weight manikins that could be thrown and dragged around in any rescue scenario until the 80's when we had the iconic lifelike rubber/plastic/metal *Rescue Randy* from

Simulaids costing a small fortune and the more amorphous but distinctly more affordable *Ruth Lee* filled fabric manikins. There were others of course producing both realistic and amorphous dummies alongside these early market leaders like the Swedish SRP (right) and ELJI Sport models but as you'll see from our tables - none have quite the scope of these two brands that have tried to corner the market by covering every type of rescue. Water rescue seemed to take a back seat for a while because early development of more realistic training manikins centred on the needs of land-based fire & Rescue services and medical responders. These 'land' manikins could be used short term for water rescue but it quickly became apparent that your hugely expensive and definitely submerged, *Rescue Randy* with metal components didn't last so long in salt water and chlorinated water submersions. Similarly a lot of the fabric models quickly succumbed to mould, disintegration of fibres and some truly unwelcome smells. They all needed materials and constructions more suited to us in water and even today, there is a specific delineation of tasking between land and water manikins - water can do land tasks (but not fire involved training) but land can't do water unless you're treating them as semi-disposable. One very amorphous model, the *Fibrilight BOB* is effectively a giant, shaped dry bag where you fill with whatever weight of water you can deal with and roll the top closed as with any dry bag.

Simulaids (right) were always oriented towards patient





ABOVE: The future should be hyper-realistic manikins like these Lifecast/RuthLee adult and juvenile models with full CPR/Airway management interaction but fiscal prudence will mean that more traditional designs will always have a place.



Dave Halliwell and his company *Lifecast body simulation* (lifecastbodysim.com) producing the most scarily realistic manikin heads and torsos in the world. Hollywood-quality medical manikins

in fact that are now termed 'hyper-realistic' and include full size and fully featured babies and toddlers - scary stuff. We have to confess that we consider Dave as one of our own here at TECHNICAL RESCUE as he's been a local paramedic and ALS trainer for decades as many of our own Unit personnel going back to the early nineties can attest. However, we don't blow smoke without good cause and Dave/Lifecast literally lead the world in this stuff. We featured some of his work in TECHNICAL RESCUE#81 including the ability (inset-top-left) for their advanced water manikin to aspirate foamy, pinkish water during and after CPR in about the most realistic post-drowning resus training currently available. What *Ruth Lee* did was to come up with a rugged outer-skin that attached

treatment so they always had a more realistic head for *Rescue Randy* that allowed rescuers to at least try mouth-to-mouth on a mouth rather than a sword fencing face shield but *Ruth Lee* manikins were more about handling and rough handling at that. Despite their amorphous, Squid-Games appearance, they offered softer limbs and body than the human-replicants and were/are perhaps more realistic to handle than they look especially for those models with some kind of skeletal-like inserts that mimic human bone in the way it maintains rigidity of limbs and torso. Ultimately of course this arms race between the realism of a very human-looking manikin and the more utilitarian fabric and fender manikins collided with Ruth Lee's collaboration with the Silicon-meister himself

Half page ad



securely to the hyper-realistic torso (above) and provided the correct orientation, weight and durability for water rescue training. It ain't cheap but at the moment, this is



the gold-standard for water rescue - something that provides the physical needs of handling a victim in-water together with proper medical intervention.

Meanwhile back in the original realistic replicant world and *Rescue Randy* was modified and had some offspring. He was given rust-proof joints and salt/chlorine tolerant skin before immaculately and miraculously conceiving three youngsters all of whom were sent off to work in water. Simulaids and other plastic body'd manikins had the advantage of being able to easily alter the weight and orientation by adding/removing water or sand in some models. Simulaids have ports and valves (below) that mean you don't have to suffer the firefighters curse of having to drag your heavy-ass manikin hundreds of yards across all kinds of terrain and up or down stairs and ladders to set up your training scenario. You could empty your manikin for storage or transport and fill it up on-site. As a readily available and heavy filling, water is perfect for changing the weight and orientation of the manikin from full floating to full sinking (with some clothes on and possibly a dive weight). The valves allow filling and rapid draining.



KEY to TABLES.....

Any use, feature, accessory or component that is **inherent** in the product is shown as a **solid coloured square** ■■■■

If it's an **OPTION** it is shown as an **outline square** □□□□

A circle ● in the 'USE' columns indicates that this feature is only partially present and/or is OK for that purpose but not ideal.

ORIGIN: The 'manufacturer's country, not necessarily the country of manufacture, If we know it's made in a different country there will be a smaller inset flag.

COST: a rough guide only - **includes** local taxes/VAT. Varies with exchange rates, extra taxes etc. We usually round up to the nearest Pound£/US Dollar\$/Euro€. We now give a **currency conversion** figure in orange £\$€ which is simply to give an idea of price, it is not the selling price which will have import duties and bulk shipping etc. to add.

AMORPHOUS HUMAN FACE: Amorphous is a general representative shape. HUMAN closely resembles a human in the head and upper torso and will always have a realistic face. Some amorphous manikins have a human face to enhance realism and/or allow CPR actions but not necessarily actual CPR

SPINAL RESISTANCE WAISTNECK: Generally a reinforcing strip, alloy, plastic or carbon-fibre that runs up the spine. It keeps the manikin in-line rather than completely bending at the waist or the neck but not fully rigid - will allow limited bend under pressure.

ARTICULATE ELBOW SHOULDER: The arm will bend at these points. Shoulder joints often rotate as well as hinge.

ARTICULATE KNEE WAIST NECK: The legs will bend at the knee

and hip. The head will 'flop' forward or backward unless it has a spinal resistance insert.

LIFTING ATTACHMENTS: To suspend the full weight of the manikin out of water for drying

CPR AIRWAY CAPABLE: CPR has a mouth into which you can breath or entrain air/oxygen and will have a torso that can resist compressions. **AIRWAY** is a much more advanced feature allowing realistic intubation

ADVANCED FEATURES: D

VARIABLE WEIGHT: You can make the manikin heavier or lighter either by removing/adding internal weight packs or by adding external weight packs or replacing limbs/components with lighter/heavier options.

REDISTRIBUTE WEIGHT: The orientation and buoyancy of the manikin can be adjusted by manipulating the weight distribution with the dummy eg. weight shift from upper torso to upper legs to orient into a more upright stance in the water.

SOLAS REFLECTIVE: SOLAS is the international maritime approval/standard for quality reflective tape but there are non-SOLAS reflective materials and some may want the manikin to be low vis in order to test search capabilities!

IN WATER ORIENTATION: How the manikin sits in water, most will be head-up with the body and legs at an angle or upright as if treading water. Most will also be semi-submerged with the help of saturated material covers but some may sink.

Body recovery manikins sink but of course a drowning victim that may still be alive and able to be resuscitated may also be underwater depending on their attire.

WITH REPLACEABLE BOOTS: May be integrated and difficult to remove/replace - others are usually slip-on/off rubber wellies.



A WORLD FIRST FOR WATER RESCUE ADVANCED WATER RESCUE MANIKIN



An exciting collaboration between the experts at Ruth Lee Ltd and Lifecast Body Simulation creating **a world-first for water rescue.**

The most realistic water rescue manikin in the world. From rescue to resuscitation with advanced life support features.

Available world-wide through a network of distributors in more than 40 countries.

☎ +44 (0) 1490 413 282 ✉ SALES@RUTHLEE.CO.UK 🌐 WWW.RUTHLEE.COM



MANUFACTURER	CQC FIBRELIGHT	CQC FIBRELIGHT	DACON	ELJI SPORT	ELJI SPORT
MODEL VARIANT	BoB	BoB+	Rescue Dummy	Water Rescue Woman	Water Rescue Man
ORIGIN					
COST	£00 \$00 €00	£00 \$00 €00	£0 >\$40,000 €0	£0 \$00 €0	£0 \$0 €0
DRY WEIGHT	1-30kg 2.2-66lb	1.2-55kg 2.6-121lb	22-85kg 49-187lb	30kg 66lb	30kg 66lb
HEIGHT	1.74m 5'8"	1.74m 5'8"	1.9m 6'2"	1.5m 5'	1.7m 5'7"
MATERIALS OUTER INNER	Coated Polyester Foam + Water	Coated Polyester + Polyurethane Liner Foam + Water	PVC/ Stainless Steel Air/Water	PVC, Polyester, Rubber ?	PVC, Polyester Rubber ?
AMORPHOUS HUMAN FACE	■	■	■	■ ■	■ ■
SPINAL RESISTANCE WAIST NECK					■
ARTICULATE ELBOW SHOULDER	□ □*	□ □*	■ ■	■ ■	■ ■
ARTICULATE KNEE WAIST NECK	□ □ □*	□ □ □*	■ ■ ■	■ ■	■ ■
LIFTING ATTACHMENTS			Rear lifting eye		
CPR AIRWAY CAPABLE					
ADVANCED FEATURES					
VARIABLE WEIGHT	Water	Water			
REDISTRIBUTE WEIGHT	No	No			
SOLAS REFLECTIVE	No	No	■	■	■
IN WATER ORIENTATION	FLOAT/NEUTRAL	FLOAT/NEUTRAL	SINK* FLOAT 90-180°		
WITH REPLACEABLE BOOTS	No	No	□ □ □	□ □ □	□ □ □
STORAGE BAG HARD-CASE			■	■	■
WARRANTY			1 year	1 year	1 year
OTHER COLOURS					
NOTES	*All extremities can bend depending on how much water is put in.	Will retain 80% of start weight on land after 3hrs. *All extremities can bend depending on how much water is put in.	Extremely robust, can be dropped from height * negative buoyancy version available for body-recovery training		
WEBSITE	cqc.co.uk	cqc.co.uk	daconrescue.com	eljisport.com	deeptrekker.com

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **USES/ FEATURES:** = PARTIAL FEATURE and/or OK BUT NOT IDEAL = Option

WATER RESCUE MANIKINS

ELJI SPORT	PAX	RUTH LEE	RUTH LEE	RUTH LEE	RUTH LEE	RUTH LEE
Water Rescue Child	Water Rescue	MOB II Adult	MOB Youth	MOB Toddler	MOB Toddler	MOB Toddler
£0 \$8500 €0	£0 \$00 €1250	£0 \$800 €0	£0 \$0 €0	£0 \$0 €0	£0 \$0 €0	£0 \$0 €0
10kg 22lb 1m 3'3"	45kg 99lb 1.82m 6'	40kg 88lb 1.8m 5'11"	20kg 44lb 1.3m 4'3"	8kg 17.6lb 0.9m 2'11"	5kg 11lb 0.7m 2'4"	5kg 11lb 0.7m 2'4"
PVC, Polyester, Rubber ?		Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam
■ ■	■	■	■	■	■	■
		■ ■	■ ■	■ ■	■ ■	■ ■
■ ■ ■ ■						
		rear web loop	rear web loop	rear web loop	rear web loop	rear web loop
		Foam pads	Foam pads			
■	■	■	■	■	■	■
		FLOAT 45-90°	FLOAT 45-90°	FLOAT 45°	FLOAT 45°	FLOAT 45°
□ □	■	■	■	■	■	■
■ 1 year		■	■	■	■	■
	■ ■	■	■	■	■	■
	includes solid foam lifejacket					
deeptrekker.com	pax-bags.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com




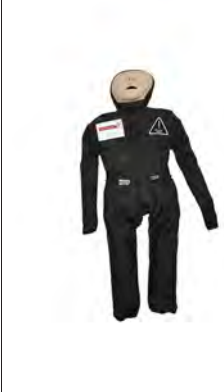

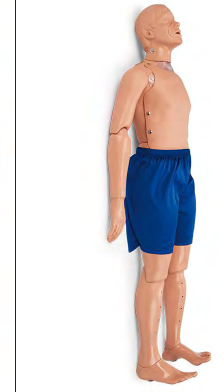






N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve



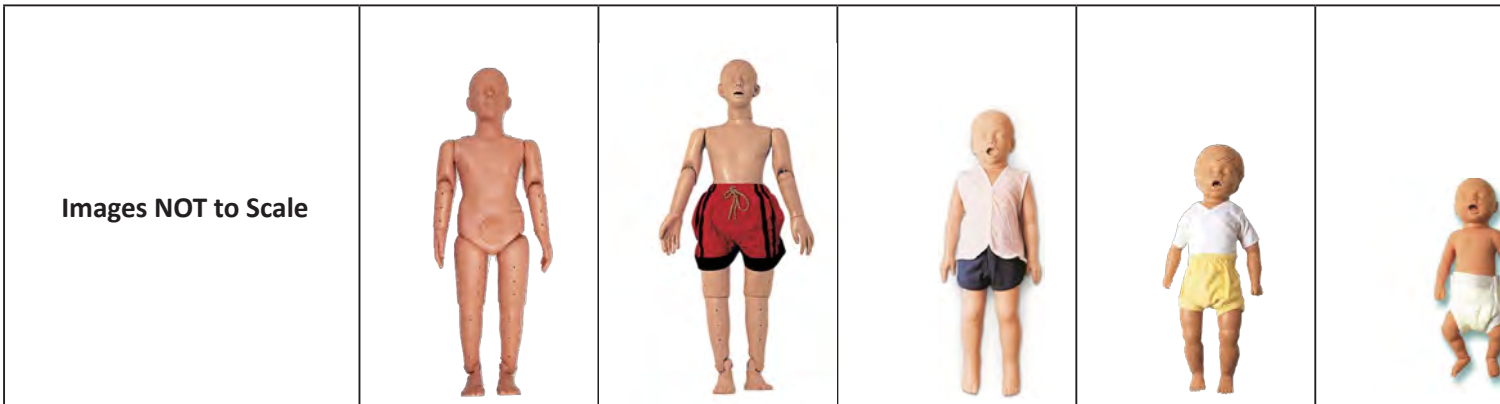
MANUFACTURER	RUTH LEE	RUTH LEE	RUTH LEE	RUTH LEE	RUTH LEE
MODEL VARIANT	Surf Adult	Pool Adult	Pool Youth	Advanced Adult	Advanced Toddler
ORIGIN					
COST	£0 \$0 €0	£0 \$1400 €0	£0 \$900 €0	£0 \$0 €0	£0 \$0 €0
DRY WEIGHT	20kg 44lb	30kg 66lb	16kg 35.3lb	0kg 0lb	12kg 26.4lb
HEIGHT	1.5m 5'	1.3m 4'3"	1.1m 3'7"	1.9m 6'2"	0.95m
MATERIALS OUTER INNER	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam
AMORPHOUS HUMAN FACE	■	■ ■	■ ■	■ ■	■
SPINAL RESISTANCE WAIST NECK					
ARTICULATE ELBOW SHOULDER		■	■	■	■
ARTICULATE KNEE WAIST NECK					
LIFTING ATTACHMENTS	rear web loop	rear web loop	rear web loop		
CPR AIRWAY CAPABLE				■ ■	■ ■
ADVANCED FEATURES				Lung fluid/foam	Lung fluid/foam
VARIABLE WEIGHT					
REDISTRIBUTE WEIGHT					
SOLAS REFLECTIVE	■	■	■	■	■
IN WATER ORIENTATION	FLOAT 90°	SINK/NEUTRAL BUOY-	SINK/NEUTRAL BUOY-	FLOAT 45°	FLOAT 45°
WITH REPLACEABLE BOOTS	-	-	-	■	■
STORAGE BAG HARD-CASE					
WARRANTY					
OTHER COLOURS	■	■	■	■	■
NOTES	Arms loped above head for in-water pick-up			<i>lifecastbodysim.com</i>	<i>lifecastbodysim.com</i>
WEBSITE	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **USES/ FEATURES:** = PARTIAL FEATURE and/or OK BUT NOT IDEAL = Option

WATER RESCUE MANIKINS

						
	RUTH LEE	RUTH LEE	RUTH LEE	RUTH LEE	SIMULAIDS	SIMULAIDS
Model	Heli-Winch	Body Recovery Adult	Body Recovery Youth	Body Recovery Toddler	Water Rescue Adult	Water Rescue CPR Adult
Origin						
Price	£0 \$0 €0	£0 \$0 €0	£0 \$0 €0	£0 \$0 €0	£1260 \$985 €1665	£1446 \$0 €2261
Weight	40kg 88lb	50kg 110lb	30kg 66lb	10kg 22lb	20kg 44lb	20kg 44lb
Height	1.8m 5'11"	1.8m 5'11"	1.3m 4'3"	0.9m 2'11"	1.65m 5'5"	1.65m 5'5"
Material	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Nylon Mesh/ Reinforced PVC Polypropylene plastic /non-absorbant (1 Day <0.1%) closed cell foam	Vinyl/ Stainless Steel Air/Water	Vinyl/ Stainless Steel Air/Water
Features	■	■ ■	■ ■	■ ■	■ ■	■ ■
Additional Features	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
Other Features					■ ■	■ ■
Additional Features		rear web loop	rear web loop	rear web loop		
Material					Water	Water
Other Features	■	■	■	■		
Floatation	FLOAT 45°	SINKS	SINKS	SINKS	FLOAT 90°	FLOAT 45°
Other Features	■	■	■	-	-	-
Warranty					3 Years	3 Years
Other Features	■	■	■	■	■	■
Notes	Shorter legs and different weight distribution to MOB version. Lifetec-Australia version shown.	Includes hair. Can withstand drop height into water of 5-6m	Includes hair. Can withstand drop height into water of 5-6m	Includes hair. Can withstand drop height into water of 5-6m	Arms loped above head for in-water pick-up	
Website	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com	ruthlee.com.com

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve



MANUFACTURER	SIMULAIDS	SIMULAIDS	SIMULAIDS	SIMULAIDS	SIMULAIDS
MODEL VARIANT	Water Rescue Adolescent	Water Rescue CPR Adolescent	Water Rescue Timmy	Water Rescue Billy	Water Rescue C
ORIGIN					
COST	£1065 \$840 €1412	£1542 \$0 €2190	£323 \$273 €0	£317 \$267 €0	£285 \$252 €0
DRY WEIGHT	9kg 19.8lb	5kg 11lb	5kg 11lb	40kg -12lb	2.3kg 5lb
HEIGHT	1.25m	0.7m 2'4"	0.7m 2'4"	1.8m 5'11"	0.5m 20"
MATERIALS OUTER INNER	Vinyl/ Stainless Steel Air/Water	Vinyl/ Stainless Steel Air/Water	Vinyl/ Stainless Steel Air/Water	Vinyl/ Stainless Steel Air/Water	Nylon Mesh/ Reinforced PV Polypropylene pl /non-absorbant Day<0.1%) closed foam
AMORPHOUS HUMAN FACE	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
SPINAL RESISTANCE WAIST NECK	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
ARTICULATE ELBOW SHOULDER	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
ANKLE KNEE WAIST NECK	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LIFTING ATTACHMENTS					rear web loop
CPR AIRWAY CAPABLE		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>			
ADVANCED FEATURES					
VARIABLE WEIGHT	Water	Water	Water		
REDISTRIBUTE WEIGHT					
SOLAS REFLECTIVE					
IN WATER ORIENTATION	FLOAT	FLOAT	FLOAT	FLOAT	SINKS
WITH REPLACEABLE BOOTS	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
STORAGE BAG HARD-CASE					
WARRANTY	3 Years	3 Years	3 Years	3 Years	3 Years
OTHER COLOURS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
NOTES			3 Years old	6-9 month old	baby
WEBSITE	simulaids.com	simulaids.com	simulaids.com	simulaids.com	simulaids.com

NOTES: **COST:** Approx, **INCLUDES** local tax/VAT **USES/ FEATURES:** = PARTIAL FEATURE and/or OK BUT NOT IDEAL = Option

						
	SRP	SRP	SRP	SRP		
Category	Water CPR	Water Floating 15-9161F	Water Sinking 15-9161S	Water Sinking Child 15-9161SB		
						
Price	£285 \$252 €0	£00 \$00 €00	£00 \$00 €00	£00 \$00 €00		
Weight	40kg 88lb	40kg 88lb	40kg 88lb	18kg 39.6lb		
Height	1.8m 5'11"	1.8m 5'11"	1.8m 5'11"	1m 3'3"		
Material	PVC	PVC				
Cell	■	■	■	■		
Features	■ ■	■ ■	■ ■	■ ■		
Additional Features	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■		
Other	■					
Search		Heat bar for FLIR searching				
Valves	■	■	■	■		
Float/Sink	FLOAT	FLOAT	SINKS	SINKS		
Other Markers	□	□	□	□		
Search			■	■		
Search		Heat bar for FLIR searching				
Website	srp.se	srp.se	srp.se	srp.se		

N/A = info Not Available/not given INFLATION TIME: Hand Pump/ Compressed Air VALVES PRV=Pressure Relief Valve