

# MULLION

FLOATATION GARMENTS & LIFE JACKETS



## Colofon

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# THE SEA SHALL NOT HAVE THEM

Mullion Marine Safety and Personal Floatation Devices (PFD's) are designed to protect lives in some of the harshest and unforgiving environments known to man. Our focus is to design and produce the best possible safety solutions to meet different end uses combining comfort and durability with technical safety and protection.

Sadly, lives have consistently been lost to the cruel and unforgiving seas, with far too many modern day tragedies, often due to the wearer's lack of protective clothing or life jackets.

Our Life jackets, Floatation and Immersion suits are the preferred choice of workers in offshore energy oil and gas exploration; wind farm operations; commercial and inshore fishing; inland lakes and waterways; ports, docks and harbours; fisheries protection; coast guards; search and rescue; emergency services; international shipping and coastal communities worldwide.



## GUIDANCE IN SELECTION OF APPROPRIATE PERSONAL FLOATATION DEVICES

**FOLLOW THE CHECKLIST BELOW TO MAKE THE RIGHT CHOISE OF FLOATATION GARMENT:**

- ✓ Check legal requirements
- ✓ Check requirements of national administration according to country / area of use
- ✓ Check own company requirements
- ✓ Check own company risk assessments
- ✓ Perform own risk assessment if none already existing
- ✓ Assess area of use and nature of work to be carried out
- ✓ Consider associated clothing / equipment to be worn and assess compatibility of all PPE with LSA product to be worn
- ✓ Check application of use according to the normative standards
- ✓ Select appropriate product according to area and application of use

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# CONSTANT WEAR GARMENTS

Floatation garments provide protection from the elements whilst working, and in the event of an accidental immersion, prolong life and aid rescue. All Mullion Floatation garments are designed for constant wear and are classified as 50 Newton PFDs(\*).

(\*) PFD: Personal Floatation Device which, when correctly worn and used in water, will provide the user with a specific amount of buoyancy which will increase the likelihood of survival. A PFD can be in the form of either an inherently buoyant foam garment or an inflatable life jacket.

Constant Wear suits approved under ISO 15027 are also tested for thermal protection according to the protection levels in the table on p 8. They are designed to be worn as working suits to protect the wearer from cold and wet conditions during normal activities. At the same time they will provide the necessary thermal protection in the event of the wearer being immersed in water.

## THE KEY PROTECTION FACTORS GIVEN ARE:

### 1. FOR WORKING USE

- Comfort and warmth
- Waterproofing to EN 343

### 2. FOR WATER IMMERSION

- Floatation of wearer in water to prolong survival
- Reduction of cold shock and the effect of hypothermia in water
- Allows the wearer to manoeuvre himself in the water and to be recovered without encumbrance
- Conspicuousness in the water to aid recovery

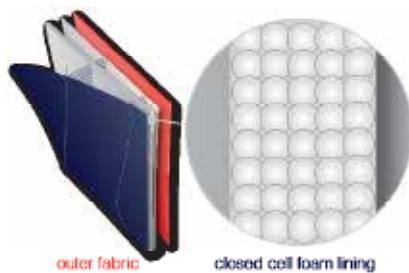
## FLOATATION SUITS

The aim of Mullion constant wear floatation garments is to protect against accidental immersion in water by providing the inherent buoyancy to assist a person in staying afloat, with the added advantage of a certain degree of protection against cold water shock and hypothermia while in the water.

These garments are designed to be comfortable to wear for constant working use and will keep the wearer warm and dry while doing so. In the case of accidental immersion or a Man Overboard situation these garments will float the wearers indefinitely in a comfortable position and allow them to swim to a rescue boat or liferaft without encumbrance.

These suits will not self-right the wearer automatically if face-down or unconscious in the water. Therefore, it is recommended that they are always worn in combination with a 275N life jacket to guarantee the optimum performance, including automatic self-righting.

It is also recommended that for two piece versions the Jacket and Trouser are always worn together to achieve optimum performance and protection.



## STANDARD FEATURES

### 1. GARMENT FULLY WATERPROOF

All outer materials on the constant wear suits are waterproof and conform to the standard EN 343. All seams on the suits are taped and 100% waterproof. The pocket flaps are fully water repellent and a storm flap which covers the front zipper will give optimum waterproofness of the suit/jacket.

### 2. INHERENT BUOYANCY

The buoyancy of the floatation garment is created by a closed cell foam. The Mullion suits have an inherent actual buoyancy varying from a minimum of 50N to 100N.

### 3. THERMAL PROTECTION CATEGORIES

The suits provide a degree of thermal protection against cold water shock and delay hypothermia upon immersion.

	Suit performance level			
	A	B	C	D
Period of immersion (h)	6	4	2	2
Water temperature (°C)	2	2	5	10





#### 4. ANTI-FLUSHING STRAPS

The suits are designed with anti-flushing straps to arms and legs. These can be used upon immersion. After falling in the water the anti-flushing straps can be tightened so the water in the suit can be warmed up by the body temperature of the wearer which will delay hypothermia.

#### 5. MARINE GRADE WHISTLE

The Marine grade ISO 12402 approved whistle is attached to the suit and can be used in immersion situations to alert rescue teams. The whistle is positioned in the optimum position and placed for ease of access.

#### 6. SOLAS APPROVED RETRO REFLECTIVE TAPE ON SUITS

To increase visibility of the wearer, retro reflective tapes on the hood and/or wrists and/or arms and/or chest and/or legs are added.

#### 7. EASY DONNING

The suits have either zips or wide legs for ease of donning over boots or shoes.

#### 8. HOOD AND COLLAR WITH BUILT-IN CHIN AND FACE PROTECTION

To increase comfort and to give the wearer optimum protection in heavy weather conditions a hood and collar is added with built-in chin and face protection.

#### 9. POCKETS WITH FLEECE OR FOAM HAND WARMER LINING

On every suit there are pockets (on the chest or hips) with fleece or foam lining to keep hands comfortably dry and warm.

Standard	Actual Buoyancy level (size L)	Fabric	Extra abrasion resistance	ID Pocket	Special features	Colour	Reference	Sizes	Page
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AQUAFLOAT RANGE										
<b>SUPERIOR 1 piece Suit</b>	EN ISO 12402-5/6 EN ISO 15027	74 N	300D*	Knees + Seat (450D)	Yes	-	Red Navy	1MHN	S-3XL	14
<b>SUPERIOR Jacket</b>	EN ISO 12402-5/6	54 N	300D*	Seat (450D)	Yes	-	Red Navy	1MMV	S-3XL	15
<b>SUPERIOR Trousers</b>	EN ISO 12402-5/6	56 N	300D*	Knees + Seat (450D)	No	-	Red Navy	1MQU	S-3XL	15
<b>HARNESS Jacket</b>	EN ISO 12402-5/6 Option: EN ISO 12401	54 N	300D*	-	No	Optional Harness EN ISO 12401	Red	1MMW	S-3XL	16
<b>SEAMASTER II Jacket</b>	EN ISO 12402-5/6 EN 20471	54 N	300D*	-	No	High-visibility (EN 471)	Hi-Vis Yellow Navy	1MMX	S-3XL	17



NORTH SEA RANGE										
<b>NORTH SEA I 1 piece Suit</b>	EN ISO 12402-5/6 EN ISO 15027	74N	210D*	-	No	-	Red Black Hi-Vis Yellow Black	1MHC	S-3XL	20
<b>NORTH SEA II 2 piece Suit</b>	EN ISO 12402-5/6	121N	210D*	-	No	-	Hi-Vis Yellow Black	1MIA	S-3XL	21



Standard	Actual Buoyancy level (size L)	Fabric	Extra abrasion resistance	ID Pocket	Special features	Colour	Reference	Sizes	Page
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X5000 COMFORT RANGE

<b>X5000 1 piece suit</b>	EN ISO 12402-5/6	88 N	300D*	No	No	High-visibility Breathability	Hi-Vis yellow Black	1MHT	S-3XL	24
<b>X5000 Jacket</b>	EN ISO 12402-5/6	51 N	300D*	No	No	High-visibility Breathability-	Hi-Vis yellow Black	1MMG	S-3XL	25
<b>X5000 Trousers</b>	EN ISO 12402-5/6	51 N	300D*	Knees + Seat (450D)	No	High-visibility Breathability	Hi-Vis yellow Black	1MQS	S-3XL	25



X5000 COMFORT RANGE

<b>X6 1 piece suit</b>	EN ISO 12402-5/6	74 N	300D	Knees + Seat (600D)	Yes	Superior reinforcements on knees and seat	International Flame Navy	1MHS	S-3XL	28
<b>X6 Jacket</b>	EN ISO 12402-5/6	54 N	300D	Seat (600D)	Yes	Superior seat reinforcement	International Flame Navy	1MMY	S-3XL	29
<b>X6 Trousers</b>	EN ISO 12402-5/6	56 N	300D	Knees + Seat (600D)	No	Superior reinforcements on knees and seat	International Flame Navy	1MQV	S-3XL	29



**THE AQUAFLOAT  
RANGE COVERS  
ALL GENERAL  
REQUIREMENTS OF  
A DEMANDING  
END-USER**



# AQUAFLOAT RANGE

## PROFESSIONAL RANGE OF FLOATATION SUITS

The Aquafloat Range is our broadest range of floatation garments covering all general requirements of a demanding end-user. It is available in a variety of one piece suits, jackets and trousers appropriate to different end uses.



AQUAFLOAT SUPERIOR SUIT



AQUAFLOAT SUPERIOR JACKET



AQUAFLOAT SUPERIOR TROUSERS



AQUAFLOAT HARNESS JACKET



SEAMASTER II



**AQUAFLOAT SUPERIOR SUIT**

**1MHN**

**ACTUAL BUOYANCY: 74N (SIZE L)**

The AquaFloat Suit is a constant wear floatation suit tested according to ISO 15027: Class D for 2 hours thermal protection in cold water.

**SUPERIOR BENEFITS:**

- Reinforcement panels added to knees and seat area.
- High collar + extra protective chin strap with touch and close fastening. High-Visibility yellow adjustable insulated peaked hood, with built-in chin and face protection stowed in collar
- ID pocket on the chest



**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to arms and legs with easy grip pull tabs + retro-reflective tape.
- Front zip closure under double stormflap with touch & close fastening
- 2 patched chest pockets with water repellent flaps + marine grade whistle
- 1 Napoleon pocket under storm flap
- 2 lower hip pockets with fleece handwarmer
- Zip closure and gusset at leg for ease of donning over boots
- Adjustable waist belt and elasticated back waist
- SOLAS approved retro-reflective tape on hood, chest and shoulders.
- Inner adjustable neoprene wrist seals.





**AQUAFLOAT SUPERIOR JACKET** **1MMV**

**ACTUAL BUOYANCY: 56N (SIZE L)**

The AquaFloat Jacket is covering all general requirements of a demanding end-user.

**SUPERIOR BENEFITS:**

- High collar + extra protective chin strap with touch and close fastening. High-Visibility yellow adjustable insulated peaked hood, with built-in chin and face protection stowed in collar
- ID pocket on the chest

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Crutch strap for wearer's safety
- Anti-flushing straps at arms
- Front zip closure under double stormflap with touch & close fastening
- 2 patched chest pockets with water repellent flaps + marine grade whistle
- 1 Napoleon pocket under storm flap
- 2 lower hip pockets with fleece handwarmer
- Adjustable waist belt and elasticated back waist. Elasticated drawcord with toggles in the hem
- Retro-reflective tape on hood, upper arms, wrists
- Inner adjustable neoprene wrist seals.



**AQUAFLOAT SUPERIOR TROUSERS** **1MQU**

**ACTUAL BUOYANCY: 56N (SIZE L)**

The AquaFloat Trouser is designed to be worn in combination with the jacket for wear as a two piece suit to meet full approval as a buoyancy aid.

**SUPERIOR BENEFITS:**

- Reinforcement panels added to knees and seat area.

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to legs with easy grip pull tabs.
- Front zip closure under double stormflap with touch & close fastening
- 2 lower hip pockets with fleece handwarmer
- Adjustable elasticated shoulder braces
- Reinforcement panels added to knees and seat area
- Zip closure and gusset at leg for ease of donning over boots
- Retro-reflective tape on ankles.



**AQUAFLOAT HARNESS JACKET**

**1MMW**

**ACTUAL BUOYANCY: 54N (SIZE L)**

The Aquafloat Harness jacket is a uni-colour red jacket designed to add an EN ISO 12401 deck safety harness to the harness apertures included on the chest. It can be supplied with or without the harness pre-fitted.

**SUPERIOR BENEFITS:**

Lifejacket attachment loops on front chest and back neck for secure fitting of lifejacket

High collar + extra protective chin strap with touch and close fastening. High-Visibility yellow adjustable insulated peaked hood, with built-in chin and face protection stowed in collar

Concealed internal waist belt for snug fit

Harness apertures included on chest for adding a EN ISO 12401 harness.

Optional pre-fitted ISO 12401 deck safety harness

Easy access at the hem for adding logo's on the back of the jacket



**KEY FEATURES:**

Fully waterproof outer fabric + taped seams

Crutch strap for wearer's safety

Anti-flushing straps at arms

Front zip closure under double stormflap with touch & close fastening

2 patched chest pockets with water repellent flaps + marine grade whistle

1 Napoleon pocket under storm flap

2 lower hip pockets with fleece handwarmer

Retro-reflective tape on hood, shoulders and arms

Inner adjustable neoprene wrist seals.







**SEAMASTER II** **1MMX**

**ACTUAL BUOYANCY: 54N (SIZE L)**

The Aquafloat Seamaster II jacket is an EN 20471 high-visibility yellow multi-pocket floatation jacket designed to achieve maximum visibility when worn day and night.

**SUPERIOR BENEFITS:**

- High collar + extra protective chin strap with touch and close fastening. High-Visibility yellow adjustable insulated peaked hood, with built-in chin and face protection stowed in collar
- ID pocket on the chest
- Concealed internal waist belt for snug fit
- Hi Visibility yellow fabric + reflective tape areas designed to achieve optimum conspicuousness and fully certified to EN471 standard
- Loop on left sleeve to add a light or other accessory



**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Crutch strap for wearer's safety
- Anti-flushing straps at arms
- Front zip closure under double stormflap with touch & close fastening
- 2 lower chest pockets with fleece hand warmer
- 2 lower pockets with water repellent flaps
- 1 sleeve pocket + marine grade whistle
- 1 radio pocket on chest
- 1 Napoleon pocket under storm flap
- ID pocket on the chest
- Retro reflective tape on hood, shoulders, back, front, chest, upper and lower arms
- Inner adjustable neoprene wrist seals.
- 1 inside pocket



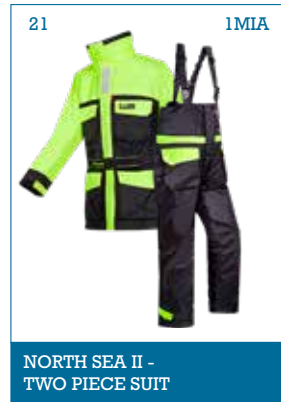
**CONSTANT WEAR, GENERAL DECK  
AND CREW USE**



# NORTH SEA

## ACTIVE RANGE OF FLOATATION SUITS

Basic range in the Mullion collection. The Mullion North Sea range is available in 2 variations appropriate to different end uses.





**NORTH SEA (ONE PIECE SUIT) 1MHC**

**ACTUAL BUOYANCY: 74N (SIZE L)**

The North Sea one piece suit is a constant wear floatation suit tested according to ISO 15027: Class D for 2 hours thermal protection in cold water.

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to arms & legs
- Hood folded in neck area
- Front zip closure under double stormflap with touch & close fastening
- 2 patched chest pockets with flap
- 2 lower hip pockets with fleece handwarmer
- Inner adjustable neoprene wrist seals.
- 1 inside pocket





## NORTH SEA II - TWO PIECE SUIT

1MIA

### ACTUAL BUOYANCY: 121N (SIZE L)

The North Sea II – two piece suit is ideal for use in the same areas as the one piece but with the added flexibility and comfort afforded by separate jacket and trousers. This two piece suit is sold as a combination.

### KEY FEATURES:

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to arms & legs
- Hood folded in neck area
- Front zip closure under double stormflap with touch & close fastening
- 2 patched chest pockets with flap
- 2 hip pockets with fleece handwarmer on jacket & trouser
- Adjustable elasticated shoulder braces
- Retro-reflect tape on hood and chest
- 1 inside pocket





**DESIGNED FOR MAXIMUM  
BREATHABILITY**



# COMFORT RANGE

## BREATHABLE FLOATATION SUITS

The X5000 Comfort Range is available in a one piece suit or a jacket and trousers which are designed to offer maximum breathability for the wearer.

Ideal for use in leisure activities.





X5000 SUIT

1MHT

**ACTUAL BUOYANCY: 88N (SIZE L)**

The X5000 suit is designed to offer maximum breathability for the wearer. Ideal for use in leisure activities.

**SUPERIOR BENEFITS:**

High breathability for active use without discomfort
Lightweight and flexible for ease of movement in active use
Specially developed lining combined with perforated foam to optimize breathability & wicking of perspiration for wearer comfort
High adjustable collar + detachable (zipped), adjustable, insulated, peaked hood + chin strap for optimum face protection
Additional ventilation system at underarms and across upper back & chest
High visibility hood, collar strip, waist strip, upper body and arms + silver reflective piping feature for optimum conspicuousness
Elasticated waist + waistbelt for comfort of fit



**KEY FEATURES:**

Fully waterproof + highly breathable outer fabric + taped seams
Anti-flushing straps to arms and legs with easy grip pull tabs + retro-reflective tape.
Collar with flap with touch and close fastening
Detachable hood with drawstring, chin protection and peak
Zip closure with chin protection under double flap with touch and close fastening
2 inset hip pockets with WP zip
Zip closure and gusset at leg for ease of donning over boots
Adjustable waist belt and elasticated back waist
retrorefl. tape on hood, chest, wrists & ankles
Fixed lining: highly breathable foam + wicking lining complex
Inner adjustable neoprene wrist seals.
2 inside pockets
Inside pocket for storage of hood





**X5000 JACKET** **1MMG**

**ACTUAL BUOYANCY: 51N (SIZE L)**

The X5000 jacket is designed to offer maximum breathability for the wearer. Ideal for use in yachting and leisure activities.

**KEY FEATURES:**

- Fully waterproof + highly breathable outer fabric + taped seams
- Anti-flushing straps at arms
- Collar with flap with touch and close fastening
- Detachable hood with drawstring, chin protection and peak
- Zip closure with chin protection under double flap with touch and close fastening
- 2 patched pockets with WP zip closure
- Adjustable waist belt and elasticated back waist
- retrorefl. tape on hood, chest & wrists
- Fixed lining: highly breathable foam + wicking lining complex
- Inner adjustable neoprene wrist seals.
- 2 inside pockets
- Inside pocket for storage of hood



**X5000 TROUSERS** **1MQS**

**ACTUAL BUOYANCY: 51N (SIZE L)**

The X5000 trouser is designed to offer maximum breathability for the wearer. Ideal for use in yachting and leisure activities.

**KEY FEATURES:**

- Fully waterproof + highly breathable outer fabric + taped seams
- Anti-flushing straps to legs with easy grip pull tabs.
- Zip closure under double flap with touch and close fastening
- 2 inset hip pockets with WP zip
- Adjustable elasticated shoulder braces
- Reinforcement panels added to knees and seat area
- Zip closure and gusset at leg for ease of donning over boots
- Elasticated waist in the back
- Fixed flotation lining stops at knee level.



**EXTREME WEAR,  
PILOTS, RIB, FRC  
AND LIFEBOAT  
OPERATORS AND  
CREWS**



# EXTREME RANGE

## FLOATATION SUITS DESIGNED TO FULFIL REQUIREMENTS IN EXTREME CONDITIONS

The extreme range is specifically designed to diminish snagging hazards in extreme conditions. The range is designed with superior reinforcement panels on knees and seat areas for enhanced abrasion resistance.

These floatation suits are created for FRC (Fast Rescue Craft), Lifeboat and RIB (Rigid Inflatable Boat) operators and to fulfill the requirements of extreme conditions.

The Extreme Range is available in 3 variations appropriate to different end uses.





X6 SUIT

1MHS

**ACTUAL BUOYANCY: 74N (SIZE L)**

The X6 suit is designed to fulfil requirements in extreme conditions. It has superior reinforcement panels on knees and seat areas for enhanced abrasion resistance.

**SUPERIOR BENEFITS:**

- High abrasion resistance reinforcement panels added to knees and seat area
- High collar + extra protective chin strap with touch and close fastening. High-Visibility yellow adjustable insulated peaked hood, with built-in chin and face protection stowed in collar
- ID pocket on left sleeve and extra pocket on right arm for strobe light
- SOLAS approved retro-reflective tape on hood, upper arms and wrists
- No chest pockets to minimize snagging hazards



**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to arms and legs with easy grip pull tabs + retro-reflective tape.
- Collar with flap with touch and close fastening
- Peaked hood foldaway in collar
- Zip closure under double flap with touch and close fastening
- 2 set-in handwarmer pockets with T&C fastening
- Fireflypocket
- 1 sleeve pocket with ID pocket & whistle
- 2 loops for light
- 1 Napoleon pocket under storm flap
- Reinforcement panels added to knees and seat area
- Zip closure and gusset at leg for ease of donning over boots
- Adjustable belt in the waist
- Retro-reflective tape on hood, upper arms, wrists and ankles.
- Inner adjustable neoprene wrist seals.



**X6 JACKET** **1MMY**

**ACTUAL BUOYANCY: 54N (SIZE L)**

The X6 jacket is designed to fulfil requirements in extreme conditions. It has superior reinforcement panels on seat areas for enhanced abrasion resistance.

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps at arms
- Collar with flap with touch and close fastening
- Peaked hood foldaway in collar
- Zip closure under double flap with touch and close fastening
- 2 set-in handwarmer pockets with T&C fastening
- 1 sleeve pocket with ID pocket & whistle
- 2 loops for light
- 1 Napoleon pocket under storm flap
- Seat reinforcement
- Retro-reflective tape on hood, upper arms, wrists and ankles.
- Inner adjustable neoprene wrist seals.



**X6 TROUSERS** **1MQV**

**ACTUAL BUOYANCY: 56N (SIZE L)**

The X6 trouser is designed to fulfil requirements in extreme conditions. It has superior reinforcement panels on knees and seat areas for enhanced abrasion resistance.

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Anti-flushing straps to legs with easy grip pull tabs.
- Anti-flushing straps to legs with easy grip pull tabs
- Front fly with zipper
- 2 inset pockets with touch & close fastening
- Adjustable elasticated shoulder braces
- Reinforcement panels added to knees and seat area
- Zip closure and gusset at leg for ease of donning over boots
- Retro-reflective tape on ankles.



# SOLAS IMMERSION SUITS

Immersion and Anti-Exposure Suits are regulated by the International Maritime Organization (IMO) under the International Convention for Safety of Life at Sea (SOLAS).

In accordance with the SOLAS requirements and according to the LSA (Life Saving Appliances) Code, Chapter II, 2.3:

## **THE PRIMARY AIMS IN WEARING THESE TYPE OF SUITS ARE:**

- ☑ to reduce the risk of cold shock and delay the onset of hypothermia;
- ☑ to enable the user to propel himself in the water and extricate himself from the water without it becoming an encumbrance;
- ☑ to make the user sufficiently conspicuous in the water so as to aid his recovery

## **LEVEL**

An un-insulated immersion suit or anti-exposure suit is intended to provide the wearer with up to 1 hour protection in a water temperature range of  $> 5^{\circ}\text{C}$

An insulated immersion suit is intended to provide the wearer with up to 6 hours protection in a water temperature range of  $> 0^{\circ}\text{C}$ .



# STANDARD FEATURES ON OUR SOLAS IMMERSION SUITS

## 1. SOLAS APPROVED

Approved to 2010 SOLAS regulations (according to MSC.81(70); MSC.200(80), MSC.207(81), MSC.226(82)).



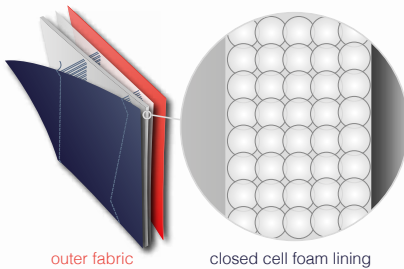
## 2. FULLY WATERPROOF

All outer fabrics are waterproof according to the standard EN 343. Immersion suits are taped with the most advanced seam technology ensuring maximum waterproofness.



## 3. THERMAL PROTECTION

Fully tested and certified under SOLAS regulations to give either 1 hour or 6 hours thermal protection against cold water shock and hypothermia during water immersion.



## 4. BOOTS, GLOVES AND HOOD

Provide thermal protection to the head, hands and feet on water immersion.



## 5. SOLAS APPROVED RETRO-REFLECTIVE TAPE

To enhance visibility and aid location of wearer.



## 6. MARINE GRADE WHISTLE

To aid location and rescue



## 7. COMPATIBILITY

All suits must be worn in conjunction with a compatible SOLAS / MED approved life jacket.







Standard	Actual Buoyancy level (size L)	Thermal protection	Fabric	Special features	Colour	Clo value	Reference	Sizes	Page
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Standard	Actual Buoyancy level (size L)	Thermal protection	Fabric	Special features	Colour	Clo value	Reference	Sizes	Page		
SEMI DRY	SSS1A 1 piece Suit	SOLAS Immersion + Anti-Exposure suit	100 N	1 Hour	300D	Semi Dry Suit	International Flame	0,2	1MG4	S-XL	36
	THERMAL LINER 1 piece Suit	—	65 N	SSS1A + Liner = 6 hours	Closed cell foam + nylon	—	Size colour coded	0,75 (in combination with 1MG4)	1MC6	S-XL	37
	SSS2A 1 piece Suit	SOLAS Immersion + Anti-Exposure suit	154 N	6 Hours	300D	Semi Dry Suit	International Flame	0,75	1MG5	S-XXL	38
	MAS II	SOLAS immersion suit	—	6 Hours	Neo- prene	Dry Suit	Orange	0,75	1MHZ	S-XL	39



**IDEAL FOR OFFSHORE  
INSTALLATIONS, OFFSHORE  
SUPPLY VESSELS, BULK CARRIERS,  
COMMERCIAL SHIPS OPERATING  
IN COLD WATER AREAS**





# SMART RANGE

## OFFSHORE IMMERSION, ANTI-EXPOSURE AND CONSTANT WEAR SUITS

### SOLAS IMMERSION SUITS USED BY:

Large sea-going vessels; SOLAS regulated commercial cargo or passenger ships; offshore oil and gas rigs; offshore wind farms

### SOLAS ANTI-EXPOSURE SUITS USED BY:

Rescue boat and marine evacuation system crews

### ISO 15027 CONSTANT WEAR SUITS USED BY:

Offshore windfarms; offshore oil and gas; Search and rescue; Passenger transfer operators





SMART SOLAS SUIT 1A

1MG4

**ACTUAL BUOYANCY: 100N (SIZE L)**

The Smart SOLAS Suit 1A is a semi-dry suit which provides optimum features and flexibility as a working suit combined with full approval as a SOLAS Immersion + Anti-Exposure Suit offering multifunctional use for emergency abandonment situation.

**SUPERIOR BENEFITS:**

- Can also be used as a working suit due to flexibility and comfort of design
- Provides a minimum of 1 hour of thermal protection against cold water shock and delays hypothermia upon immersion.
- Provides additional buoyancy due to inherent floatation foam lining in excess of the SOLAS requirements of 70 Newton for an anti-exposure suit
- Additional neoprene hood for extra thermal protection during water immersion
- Fixed insulated hood for constant wear working use
- Adjustable waist belt with heavy duty metal interlocking buckles
- Compatible with Mullion SOLAS Hi-Rise 275N Life jackets
- Soft and flexible neoprene socks for flexibility to wear under standard work boots and give added thermal protection during water immersion
- SOLAS approved retro-reflective tape on hood, shoulders, arms and back
- Comfortable soft neoprene neck seal. 5 fingered neoprene gloves stowed in arm pockets for working use and for thermal protection during water immersion. Inner fixed neoprene wrist seals.

**KEY FEATURES:**

- Fully waterproof outer fabric + taped seams
- Wide anti-flushing straps on arms and ankles to give added thermal protection during water immersion
- Colour coded and sized storage bag with quick-rip touch and close opening panel to allow rapid donning in an emergency situation
- Elasticated leg panels for snug fit and to increase thermal protection during water immersion
- Straight collar
- Additional neoprene hood.
- Zip closure under flap with touch & close fastening
- Sleeve pocket with neoprene gloves stored inside.
- 1 sleeve pocket + marine grade whistle
- Adjustable belt in the waist
- Possibility to increase thermal protection from 1 to 6 hours as increasing the buoyancy by combining with our thermal floatation liner 1MC6. The thermal floatation liners are colour coded for sizing.



### OPTIONAL EXTRAS

Possibility to increase thermal protection from 1 to 6 hours as well as increasing the buoyancy by combining with our thermal floatation liner 1MC6. The thermal floatation liners are colour coded for sizing (S= red, M= navy, L= orange, XL=navy).

### SMART THERMAL FLOATATION LINER

1MC6

This thermal floatation liner offers the flexibility to add to the Smart 1A Suit to increase the protection level to 6 hours, as and when needed.

#### SUPERIOR BENEFITS:

Flexible lightweight floatation liner gives both added buoyancy and thermal protection

Easy access centre front zip

Elastic thumb loops and foot stirrup straps to aid easy donning and security of fit under the Smart 1A Suit

Colour coded for ease of matching sizes



#### KEY FEATURES:

Double sided smooth nylon quilted to 5mm foam liner for ease of donning

Heavy duty front zip

Butted and taped seams for reduction of bulk



SMART SOLAS SUIT 2A

1MG5

**ACTUAL BUOYANCY: 154N (SIZE L)**

The Smart SOLAS Suit 2A is a semi-dry suit and similar to the SSS 1A but has a higher buoyancy and thermal protection level (6 hours) provided by an additional foam insulation liner.

**SUPERIOR BENEFITS:**

Can also be used as a working suit due to flexibility and comfort of design

Provides a minimum of 6 hours of thermal protection against cold water shock and hypothermia upon immersion

Higher buoyancy due to double foam layer. Double layer foam insulation lining.

Additional neoprene hood for extra thermal protection during water immersion

No fixed hood

Adjustable waist belt with heavy duty metal interlocking buckles

Compatible with Mullion SOLAS Hi-Rise 275N Life jackets

Thicker neoprene boots

SOLAS approved retro-reflective tape on hood, shoulders, arms and back

Comfortable soft neoprene neck seal. 5 fingered neoprene gloves stowed in arm pockets for working use and for thermal protection during water immersion. Inner fixed neoprene wrist seals.

**KEY FEATURES:**

Fully waterproof outer fabric + taped seams

Wide anti-flushing straps on arms and ankles to give added thermal protection during water immersion

Colour coded and sized storage bag with quick-rip touch and close opening panel to allow rapid donning in an emergency situation

Elasticated leg panels for snug fit and to increase thermal protection during water immersion

Straight collar

Additional neoprene hood.

Zip closure under flap with touch & close fastening

Sleeve pocket with neoprene gloves stored inside.

1 sleeve pocket + marine grade whistle

Adjustable belt in the waist



MAS II

1MHZ

Neoprene drysuit provides a minimum of 6 hours of thermal protection against cold water shock and hypothermia upon immersion.

**KEY FEATURES:**

5 mm neoprene material
Hood with velcro face seal
Waterproof zipper
Ankle strap in black webbing with touch and close fastening
Black webbing lifting strop with steel buckle and D-ring
Solas approved retro-reflective tape
3 finger neoprene gloves







# SOLAS FIREFIGHTER RANGE

Ship's crew fire fighting outfits are regulated by the International Maritime Organization (IMO) under the International Convention for Safety of Life at Sea (SOLAS).

## IN ACCORDANCE WITH:

- ☑ SOLAS requirements, chapter II-2, Part C, regulation 10
- ☑ ISO 22488: 2011 - shipboard firefighter's outfits
- ☑ Fire Safety Systems Code

## THE PRIMARY AIMS IN WEARING THESE OUTFITS ARE:

- ☑ To allow ships' crews to fight a fire on board ships prior to activation of any installed fixed fire fighting system.
- ☑ To guarantee the wearer of this equipment, free and easy movement even in narrow spaces



**IDEAL FOR OFFSHORE FACILITIES,  
SUPPLY VESSELS, BULK CARRIERS, OIL AND  
LPG TANKERS, COMMERCIAL VESSELS,  
CONTAINER AND CARGO VESSELS.**





# SOLAS FIREFIGHTER RANGE

This equipment has been developed in close cooperation with our Sioen Firefighter Clothing department. Siofire manufacture specialized firefighter clothing. They have developed solutions for all risks to which firemen are exposed. Their vast experience has helped us to develop a firefighter suit for our demanding offshore customers.



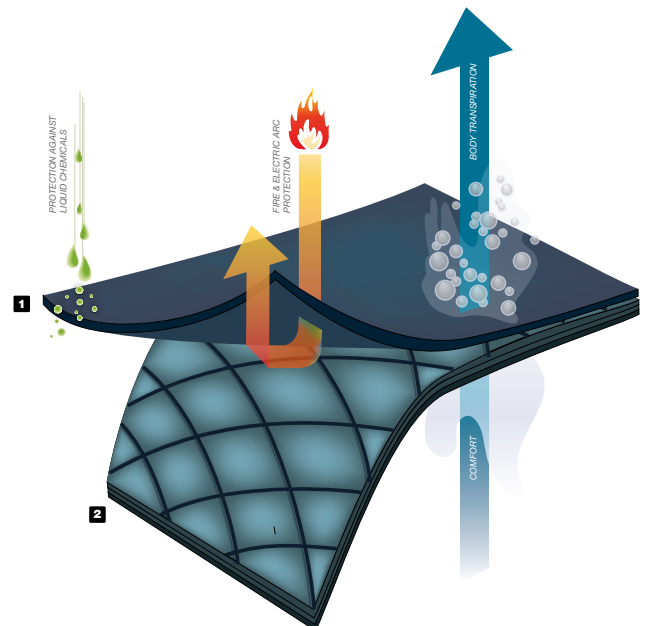


1. **FIRE FIGHTER INTERVENTION JACKET (1MMF)**  
approved according to SOLAS and EN 469
2. **FIRE FIGHTER INTERVENTION TROUSERS (1MPF)**  
approved according to SOLAS and EN 469
3. **FIRE HELMET (2MZP)**  
approved according to SOLAS and EN 443
4. **FIRE GLOVES LEATHER (2MZO)**  
approved according to SOLAS and EN 659
5. **FIRE BOOTS (2MZN)**  
approved according to SOLAS and EN ISO 20345/EN15090
6. **FIREFIGHTERS STORAGE BAG (139Z)**



**COMPLEX 531:**

1. outer fabric: Aramide
2. quilted lining: FR Cotton-Aaramide





**FIRE FIGHTER INTERVENTION JACKET** 1MMF

Professional fire fighter jacket that complies to SOLAS/MED regulations

**KEY FEATURES:**

- Fire resistant garment with two-layer aramid thermal insulation barrier. Breathable. Excellent wicking performance. Outer shell treated with water repellent finish.
- Sleeve narrowing by touch and close fastening
- Stand-up collar with touch and close fastening to protect the neck
- Front zip closure under flap
- Flame resistant triple trim reflective tape on chest, back and arms for optimum visibility day and night



**FIRE FIGHTER INTERVENTION TROUSERS** 1MPF

Professional fire fighter trousers that complies to SOLAS/MED regulations

**KEY FEATURES:**

- Fire resistant garment with two-layer aramid thermal insulation barrier. Breathable. Excellent wicking performance. Outer shell treated with water repellent finish.
- Front fly with zipper
- Adjustable elasticated shoulder braces
- Flame resistant triple trim reflective tape on legs for optimum visibility day and night



**FIRE HELMET** **2MZP**

Durable and adjustable flame retardant helmet with neck protector and replaceable visor.

**KEY FEATURES:**

- Leather neck protector to protect neck, ears and part of the cheeks against flames, sparks, steam and liquids
- Full-surface impact protection and insulation against heat all over the entire helmet inside.
- Nomex chin strap (with 3-point attachment) with quick release buckle
- One helmet fits head sizes 52-65 cm
- Replaceable visor
- Inner and outer shell detachable for inspection, cleaning and maintenance



**FIRE GLOVES LEATHER** **2MZO**

Heat and cut resistant leather gloves with Kevlar thread on seams. Perfect fit with elastic tightening at the wrists.

**KEY FEATURES:**

- Cow-nappa leather
- Sleeve narrowing by touch and close fastening
- Kevlar thread
- Lining with cut resistant insulation material (100 % Para-aramide)
- Eurotex membrane



**FIRE BOOTS**

**2MZN**



**FIREFIGHTER STORAGE BAG**

**139Z**

Electrical insulating fireman's boots, with rubber uppers, a protective toe cap, a flame retardant rubber outsole and a comfortable woven cotton canvas lining.

**KEY FEATURES:**

- Flame retardant rubber upper with heat insulation and chemical resistance
- Flame retardant, fuel oil resistant and slip resistant rubber outsole
- Withstands 18kV and high temperature
- Cold insulating outsole construction
- Steel midsole that withstands pins and sharp objects
- Comfortable woven cotton canvas lining
- Steel toe cap (EN ISO 20345)



ISO 12402





# INFLATABLE LIFE JACKETS

An inflatable life jacket is a Personal Floatation Device (PFD)\* from which the buoyancy is obtained by means of an inflation system and a compressed CO<sub>2</sub> gas cylinder.

Mullion inflatable life jackets are available in 2 levels of buoyancy: 150 newton or 275 newton.

(\* PFD: Personal Floatation Device which, when correctly worn and used in water, will provide the user with a specific amount of buoyancy which will increase the likelihood of survival. A PFD can be in the form of either an inherently buoyant foam garment or an inflatable life jacket.

## THE KEY PROTECTION FACTORS GIVEN ARE:

- ✔ Keeps you afloat in the water and give you extra time. Time for rescue services to reach you.
- ✔ Are suited to activities where persons are likely to enter the water unexpectedly
- ✔ Supports your head and upper torso above the water level to minimize the risk of drowning
- ✔ Self-right you if you fall face-down position and/or unconscious
- ✔ Conspicuousness in the water to aid recovery



Safety of Life at Sea (SOLAS) life jackets meet very high performance standards

\* SOLAS is mandatory on board of all ships on international voyages including passenger ships and cargo ships of 500 gross tonnes or more.

\* A SOLAS life jacket has two chambers, each of which has an automatic inflation system.

# A MULLION SINGLE CHAMBER INFLATABLE LIFE JACKET

## STANDARD FEATURES

### 1. MARINE GRADE WHISTLE

A Marine grade EN ISO 12402 approved whistle is fitted to the life jacket. This whistle can be used in immersion situations to alert rescue teams. The whistle is fitted in the optimum position for ease of access.

### 2. SOLAS APPROVED RETRO-REFLECTIVE TAPE ON BLADDER

When the bladder is inflated, the retro-reflective tapes increase the visibility of a man overboard to assist location and rescue.

Required surface area for 150N: 300 cm<sup>2</sup>

Required surface area for 275N: 400 cm<sup>2</sup>

### 3. ORAL INFLATION TUBE

An oral tube is provided to allow inflation by mouth; top-up or deflation

### 4. RED RECOVERY GRAB STRAP MARKED "LIFT"

The recovery grab strap facilitates manual recovery of a person from the water during rescue operations.

### 5. CRUTCH STRAP

The crutch strap prevents the life jacket from rising above the head and ensures a secure fit and optimum stability of the PFD in water.

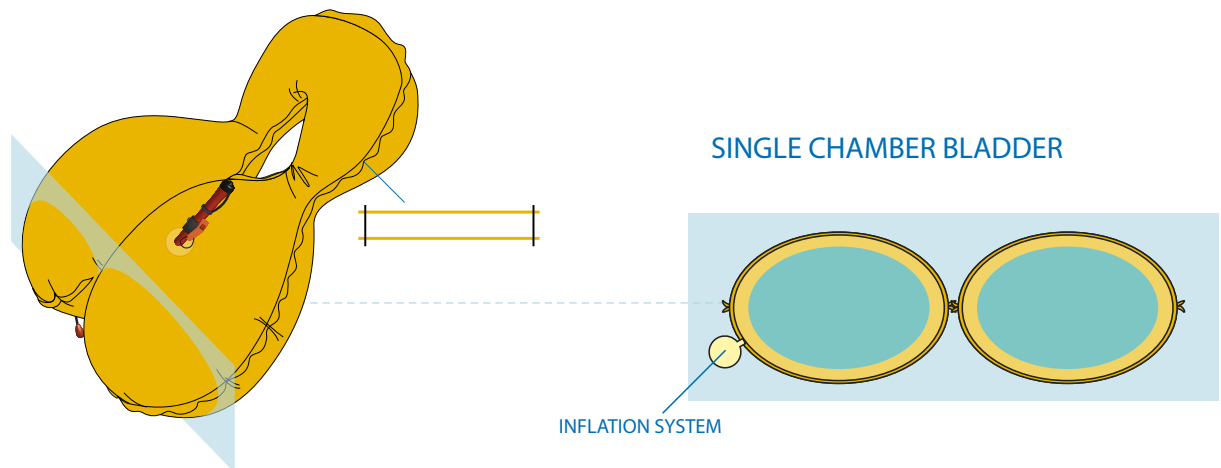
### 6. INFLATION SYSTEM

The inflation system is required to activate and pierce the cylinder in order to release the gas inside the bladder and allow it to inflate.

This is normally both automatic and manual. Manual only systems can be supplied for special purpose use.

### 7. BLADDER

All bladders are constructed with air tight materials and seams. Standard colour is Spanish yellow to enhance wearer location and visibility in water.



# A MULLION DOUBLE CHAMBER INFLATABLE LIFE JACKET\*

(\* All Mullion double chamber life jackets are SOLAS approved

## STANDARD FEATURES:

### 1. MARINE GRADE WHISTLE

A Marine grade EN ISO 12402 approved whistle is fitted to the life jacket. This whistle can be used in immersion situations to alert rescue teams. The whistle is fitted in the optimum position for ease of access.

### 2. AUTOMATIC WATER-ACTIVATED SOLAS LIGHT AND SOLAS APPROVED RETRO-REFLECTIVE TAPE ON BLADDER

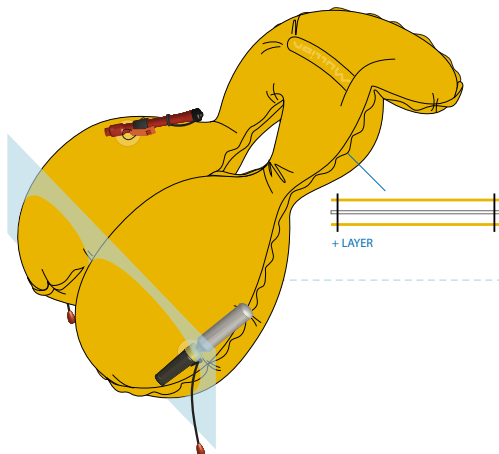
When the bladder is inflated, the retro reflective tape and the SOLAS light increase the visibility of a man overboard to assist location and rescue. The SOLAS approved rescue light which is automatically activated is positioned on the bladder for optimal visibility and rescue.

Required surface area for 150N: 400 cm<sup>2</sup>

Required surface area for 275N: 400 cm<sup>2</sup>

### 3. OVERPRESSURE (OP) TUBE + ORAL INFLATION TUBE

The overpressure tube relieves pressure on one of the chambers when both chambers are automatically inflated simultaneously. The oral tubes can also be used for inflation by mouth; top-up or deflation.



### 4. RED RECOVERY GRAB STRAP ON BLADDER MARKED "LIFT"

The recovery grab strap facilitates manual recovery of a person from the water during rescue operations.

### 5. TWO AUTO INFLATION SYSTEMS (DOUBLE CHAMBER) WITH MANUAL OVER-RIDE

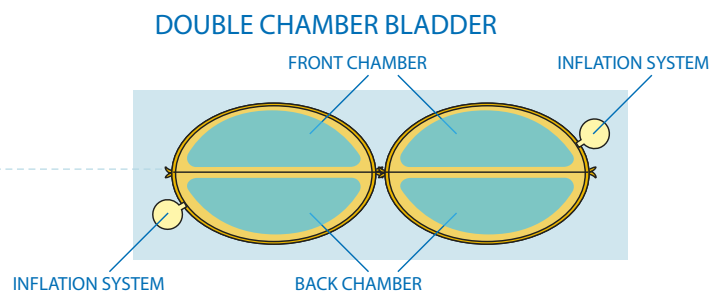
A SOLAS approved life jacket has two chambers, each of which has an automatic inflation system which will activate on immersion in water. The manual over-ride can activate the inflation systems by pulling the toggles firmly, in the unlikely event that the automatic system fails. This way a pin will pierce the CO<sub>2</sub> cylinder which will inflate the bladder.

### 6. SECURE RETAINERS (STEEL D-RING, CRUTCH STRAP, BUDDY LINE)

A safety line can be attached to the steel D-ring, attached to the centre front buckle, to prevent the wearer from falling overboard.

The crutch strap prevents the life jacket from rising above the head and ensures a secure fit and optimum stability of the PFD in water.

A buddy line can be used to attach multiple persons in water together. The high-visibility orange buddy line is stowed on the front edge of the bladder.



Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
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Actual buoyancy level: 172 N



COMPACT 150		Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
REGULAR	EN ISO 12402-3	PA-1000D	No	Yes	No	1x38	-	No	Red Blue	3MV1E6N15	57	
HEAVY DUTY WIPE CLEAN	EN ISO 12402-3 EN ISO 12401	PVC -Tektor	Yes	No	Yes	1x38	Extra reinforced + comfort neck	No	Red	3MXAE6N18	58	
LOCATOR	EN ISO 12402-3/6 EN ISO 12401	PVC -Tektor	Yes	No	Yes	1x38	Extra reinforced + comfort neck	Safelink Solo	Red	3MX8E6N18	58	

Actual buoyancy level: 157 N



STREAM 150		Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
REGULAR	EN ISO 12402-3 EN ISO 12401	PA-420D	Yes	No	Yes	1x33	-	No	Red Navy Blue Black	3MXWA4N18	60	



HI-TIDE 150		Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
REGULAR	EN ISO 12402-3 EN ISO 12401	PA-420D	Yes	No	Yes	1x33	-	No	Red	3MXFA4NM1	63	
WIPE CLEAN	EN ISO 12402-3 EN ISO 12401	PA-420D	Yes	No	Yes	1x33	-	No	Red	3MXGA4NM1	64	
LOCATOR	EN ISO 12402-3/6	PA-420D	Yes	No	No	1x33	Reinforced	Easy Rescue	Red	3MYTF0NM1	64	

Actual buoyancy level: 294 N



COMPACT 275		Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
WIPE CLEAN	SOLAS EN ISO 12402-2 EN ISO 12401	PA-1000D	Yes	No	Yes	2x60	Extra reinforced + comfort neck	No	Red	2MUCE6N18	66	
SUPREME	EN ISO 12402-2 EN ISO 12401	PVC -Tektor	Yes	No	Yes	1x60	Extra reinforced + comfort neck	No	Red	3MYIE6N18	68	



HI-TIDE 275		Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
REGULAR	EN ISO 12402-3 EN ISO 12401	PA-420D	Yes	No	Yes	1x60	-	No	Red	3MXHA4NM1	71	
WIPE CLEAN	EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	1x60	Reinforced	No	Red	3MXJA4NM1	72	
HEAVY DUTY	EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	1x60	Reinforced	No	Hi-Vis Yellow	3MXUA4NM1	72	
ULTRAFTT	EN ISO 12402-2 EN ISO 12401	PES-300D + anti-static fibre	Yes	No	Yes	1x60	Flame retardant + Anti-static	No	Hi-Vis Orange Hi-Vis Yellow	3MXVA4EF7	73	
WELDERS	EN ISO 12402-2 EN ISO 12401	Aluminized fabric	Yes	No	Yes	1x60	Flame retardant	No	Silver	3MVZA4VP1	74	

Standard	Cover fabric	Metal interlock buckles	Quick release plastic buckles	D-ring	CO <sub>2</sub> gas cylinder	Special features	Beacon	Colour	Reference	Page
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Actual buoyancy level: 180 N



SOLAS HI-RISE 150	REGULAR	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x38	-	No	Red/Black Blue/Black	2MSFA4NM1	77
	WIPE CLEAN	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x38	Reinforced	No	Red	2MSG44NM1	78

Actual buoyancy level: 320 N



SOLAS HI-RISE 275	REGULAR	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	-	No	Red/Black	2MTSA4NM1	81
	WIPE CLEAN	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	Reinforced	No	Red	2MTTA4NM1	82
	SPRAY- HOOD	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	Reinforced+ sprayhood	No	Red	2MTTF5NM1	82
	MOB1 LOCATOR	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	Reinforced	MOB1	Red	2MTTF2NM1	82
	M100 LOCATOR	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	Reinforced	M100	Red	2MTTF3NM1	82
	HARNESS	SOLAS EN ISO 12402-2 EN ISO 12401	PA-420D	Yes	No	Yes	2x60	+ attachment loops for Fall Arrest Harness	No	Red/Black	2MU6F0NM1	83
	sMRT LOCATOR	SOLAS EN ISO 12402-2/6	PA-420D	Yes	No	Yes	2x60	Reinforced	sMRT AU10	Red	2MTKF3NM1	84





**THE PREFERRED CHOICE OF FISHERMEN AND PROFESSIONAL USERS WHERE MINIMUM SIZE AND WEIGHT COMBINED WITH MAXIMUM PERFORMANCE IS FAVOURED**



# COMPACT® 150

## SUPERIOR BENEFITS

- ✓ The unique design fits high on the chest to afford maximum working flexibility with minimal snagging hazards.
- ✓ All snag hazards are removed to ensure safe working practice.
- ✓ Optimum safety features for operational readiness indication and service requirements give the wearer total assurance.
- ✓ Highly abrasion resistant and durable materials are used to give extended life in harsh working environments.

The Mullion Compact® 150N CE/ISO range exists of 3 types of life jackets each with a specific feature based on different working conditions.



**COMPACT 150 REGULAR****3MV1****ACTUAL BUOYANCY: 172N**

The Compact 150 Mark II is ideal for general heavy use professional and commercial applications due to its high abrasion resistance outer cover.

**KEY FEATURES:**

High abrasion resistance fabric
Quick burst zip fastening cover
Quick release buckle
Detachable crutch strap
Inflation system operational readiness indicator window on the back.
Service date information window on the back

**INFLATABLE BLADDER:**

Single chamber
Oral inflation tube
SOLAS approved retro-reflective tape on bladder
Red recovery grab strap on bladder marked "LIFT"
38g CO <sub>2</sub> gas cylinder
Inflation system
Marine grade whistle







**COMPACT 150 SUPREME**

**3MXA**

**ACTUAL BUOYANCY: 172N**

The Compact Supreme 150 Heavy Duty Wipe clean lifejacket is ideal for heavy commercial fishing applications especially for potters, crabbers, lobster fishermen and also suitable for construction workers.

**KEY FEATURES:**

High abrasion resistance fabric reinforced with additional high abrasion resistance 'Tektor' fabric around the sides and lower edges of the cover to prevent damage.

Durable wipe clean PVC reinforcement

To increase comfort and avoid irritation to the neck there is a comfort collar padding to the back of the neck.

Mesh back feature for better stability in wear and in-water plus improves weight dispersal & reduces pressure on back of neck for added comfort.

Zip cover fastening with burst point at centre back neck. Added protective cover over zip to reduce possibility of water ingress leading to inadvertent inflation/protects zip from abrasion and damage.

Marine grade stainless steel interlocking belt buckles and D-ring approved as deck safety harness for attachment of safety line.

Detachable crutch strap

Inflation system operational readiness indicator window on the back.

Service date information window on the back



**SAFELINK SOLO COMPACT 150 SUPREME**

**3MX8**

**ACTUAL BUOYANCY: 172N**

The Safelink SOLO Compact Supreme 150 Heavy Duty Wipe clean lifejacket is integrated with the Kannad Safelink SOLO Personal Locator Beacon.

**KEY FEATURES:**

High abrasion resistance fabric reinforced with additional high abrasion resistance 'Tektor' fabric around the sides and lower edges of the cover to prevent damage.

Durable wipe clean PVC reinforcement

To increase comfort and avoid irritation to the neck there is a comfort collar padding to the back of the neck.

Mesh back feature for better stability in wear and in-water plus improves weight dispersal & reduces pressure on back of neck for added comfort.

Zip cover fastening with burst point at centre back neck. Added protective cover over zip to reduce possibility of water ingress leading to inadvertent inflation/protects zip from abrasion and damage.

Marine grade stainless steel interlocking belt buckles and D-ring approved as deck safety harness for attachment of safety line.

Detachable crutch strap

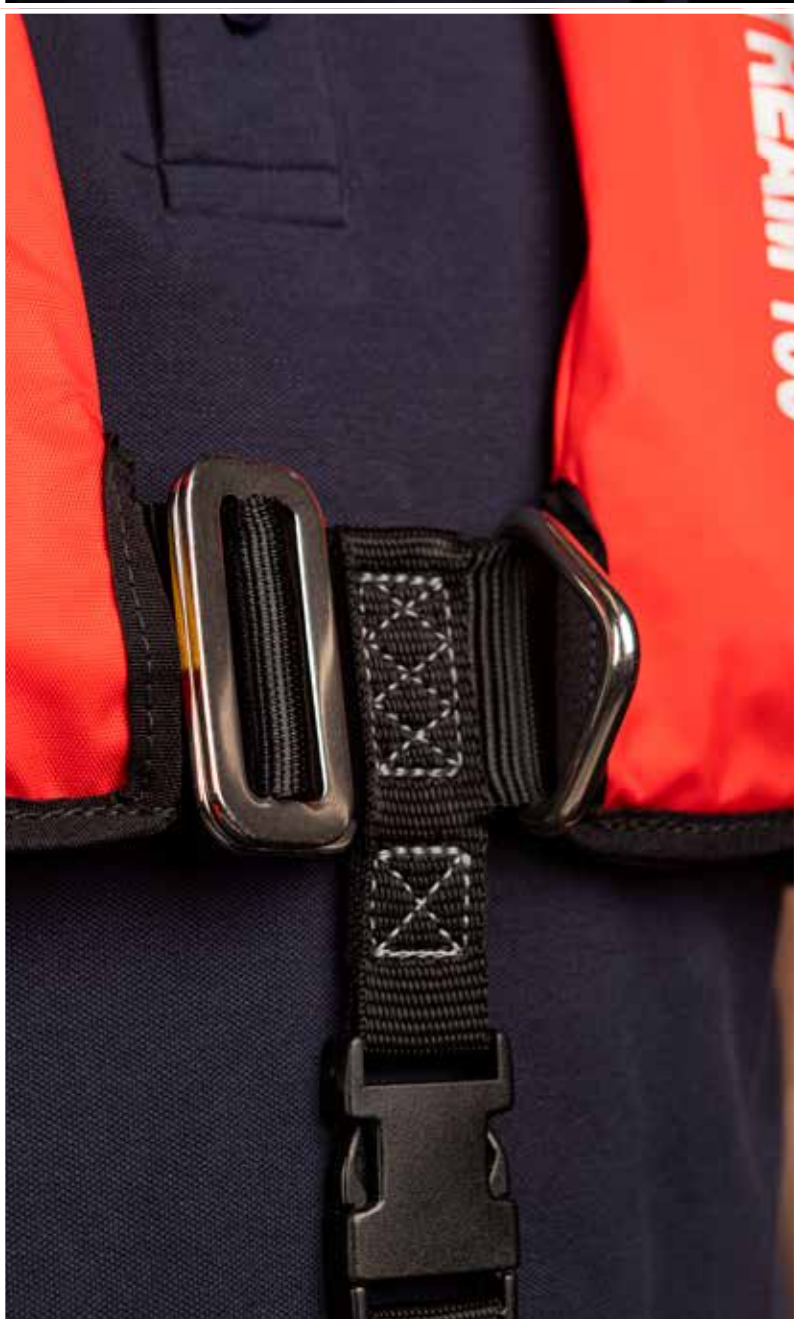
Inflation system operational readiness indicator window on the back.

ID numbers for serial numbers of both PFD and PLB displayed on a waterproof ID card inserted in a window pocket on the left back.

Service date information window on the back



**CONSTANT WEAR,  
ALL-WEATHER LIFE  
JACKET**



# STREAM 150

CONSTANT WEAR,  
ALL-WEATHER LIFE JACKET.



STREAM 150

3MXW

## ACTUAL BUOYANCY: 157N

The Stream 150N lifejacket is a constant wear, all-weather lifejacket for general use with foul weather clothing. The Stream 150N is a standard horseshoe design with a touch and close fastening cover and a single back strap.

## KEY FEATURES:

Durable waterproof fabric
Touch and close fastening cover
Stainless steel interlocking belt buckles
Adjustable waist belt
Detachable crutch strap
Service date information tag on the belt
Integrated deck safety harness approved to EN ISO12401



**IDEAL FOR GENERAL USE WITH  
FOUL WEATHER CLOTHING**



# HI-TIDE 150

## STANDARD HORSESHOE STYLE

The Hi-Tide 150 life jacket is a constant wear, all-weather life jacket for general use with foul weather clothing.

The Hi-Tide 150N range is available in 3 variations appropriate to different end uses.





### HI-TIDE 150 REGULAR - ULTRAFIT

3MXF

#### ACTUAL BUOYANCY: 187N

Ultrafit horseshoe design 150 Newton single chamber inflatable life jacket. Ideal for general use with foul weather clothing.

#### SUPERIOR BENEFITS:

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

#### KEY FEATURES:

Durable waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Zip fastening cover

Stainless steel interlocking belt buckles

Adjustable waist belt

Detachable crutch strap

Integrated deck safety harness approved to EN ISO 12401





**HI-TIDE 150 WIPE CLEAN - ULTRAFIT** **3MXG**

**ACTUAL BUOYANCY: 157N**

Ultrafit horseshoe design 150 Newton single chamber inflatable life jacket. Ideal for heavy duty industrial use with foul weather clothing.

**SUPERIOR BENEFITS:**

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- Integrated deck safety harness approved to EN ISO12401



**EASY RESCUE HI-TIDE 150 WIPE CLEAN - ULTRAFIT** **3MYT**

**ACTUAL BUOYANCY: 157N**

The Hi-Tide 150 Ultrafit Wipe Clean is integrated with the Easy Rescue Personal Locator Device.

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Quick release buckle
- Zip fastening cover
- Adjustable waist belt
- Detachable crutch strap
- Service date information tag on the belt



**IDEAL FOR ONSHORE AND  
OFFSHORE USE UNDER EXTREME  
CONDITIONS WITH SPECIAL  
PROTECTIVE CLOTHING  
AND OR HEAVY EQUIPMENT**



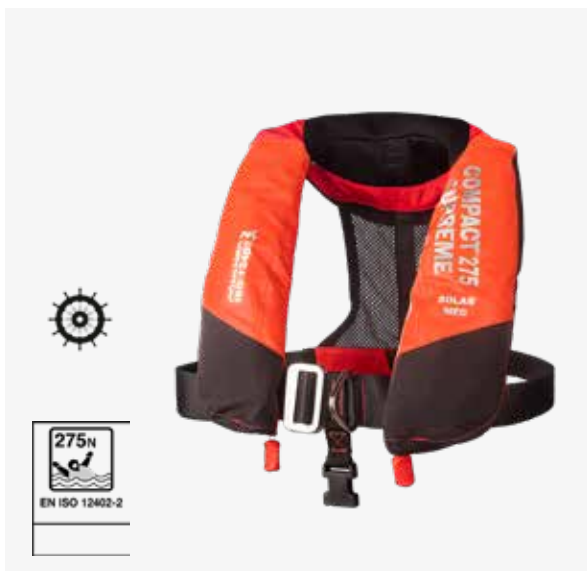


# COMPACT® 275

The Compact® 275 life jacket is a constant wear, all-weather life jacket for onshore and offshore use with special protective clothing.

The Compact® 275N range is available in 2 variations appropriate to different end uses.



**COMPACT 275 SUPREME SOLAS -  
ULTRA FIT****2MUC****ACTUAL BUOYANCY: 294N**

The Compact Supreme 275 SOLAS Heavy Duty Wipe Clean lifejacket is ideal for offshore extreme use with foul weather clothing and heavy equipment. The Wipe Clean PVC reinforcement cover is ideal for heavy duty industrial use and for heavy commercial fishing applications.

**KEY FEATURES:**

High abrasion resistance fabric reinforced with additional high abrasion resistance 'Tektor' fabric around the sides and lower edges of the cover to prevent damage.

Durable wipe clean PVC reinforcement

To increase comfort and avoid irritation to the neck there is a comfort collar padding to the back of the neck.

Mesh back feature for better stability in wear and in-water plus improves weight dispersal & reduces pressure on back of neck for added comfort.

Zip cover fastening with burst point at centre back neck. Added protective cover over zip to reduce possibility of water ingress leading to inadvertent inflation/protects zip from abrasion and damage.

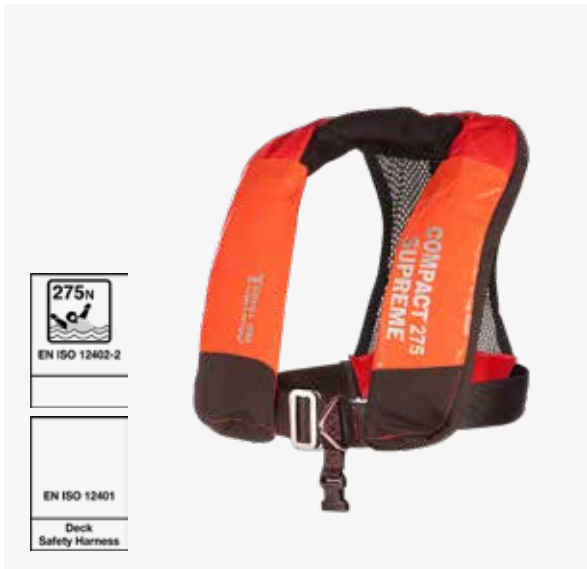
Marine grade stainless steel interlocking belt buckles and D-ring approved as deck safety harness for attachment of safety line.

Detachable crutch strap

2 Inflation systems operational readiness indicator windows on the back

Service date information window on the back





### COMPACT 275 SUPREME

3MY1

#### ACTUAL BUOYANCY: 294N

The Compact Supreme 275 Heavy Duty Wipe clean lifejacket is ideal for heavy commercial fishing applications especially for potters, crabbers, lobster fishermen and also suitable for construction workers.

#### KEY FEATURES:

High abrasion resistance fabric reinforced with additional high abrasion resistance 'Tektor' fabric around the sides and lower edges of the cover to prevent damage.

Durable wipe clean PVC reinforcement

To increase comfort and avoid irritation to the neck there is a comfort collar padding to the back of the neck.

Mesh back feature for better stability in wear and in-water plus improves weight dispersal & reduces pressure on back of neck for added comfort.

Zip cover fastening with burst point at centre back neck. Added protective cover over zip to reduce possibility of water ingress leading to inadvertent inflation/protects zip from abrasion and damage.

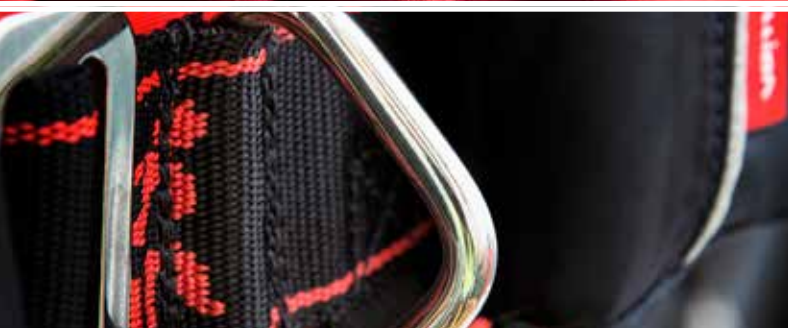
Marine grade stainless steel interlocking belt buckles and D-ring approved as deck safety harness for attachment of safety line.

Detachable crutch strap

Inflation system operational readiness indicator window on the back.

Service date information window on the back





**IDEAL FOR ONSHORE AND  
OFFSHORE USE UNDER EXTREME  
CONDITIONS WITH SPECIAL  
PROTECTIVE CLOTHING  
AND OR HEAVY EQUIPMENT**

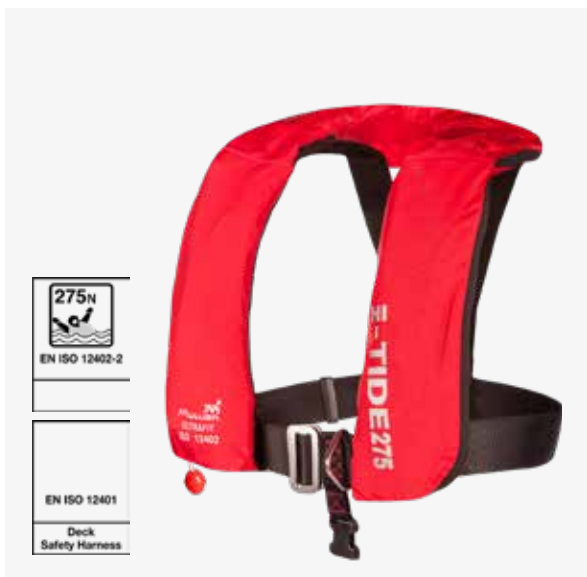


# HI-TIDE 275

The Hi-Tide 275 life jacket is a constant wear, all-weather life jacket for onshore and offshore use with special protective clothing.

The Hi-Tide 275N CE range is available in 5 variations appropriate to different end uses.





### HI-TIDE 275 REGULAR - ULTRAFIT

3MXH

#### ACTUAL BUOYANCY: 294N

Ultrafit horseshoe design 275 Newton single chamber inflatable life jacket. Ideal for general use with foul weather clothing and heavy equipment.

#### SUPERIOR BENEFITS:

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

#### KEY FEATURES:

Durable waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Zip fastening cover

Stainless steel interlocking belt buckles

Adjustable waist belt

Detachable crutch strap

Integrated deck safety harness approved to EN ISO 12401





**HI-TIDE 275 WIPE CLEAN - ULTRAFIT** **3MXJ**

**ACTUAL BUOYANCY: 294N**

Ultrafit horseshoe design 275 Newton single chamber inflatable life jacket. Ideal for heavy duty industrial use with foul weather clothing and heavy equipment.

**SUPERIOR BENEFITS:**

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- Integrated deck safety harness approved to EN ISO12401



**HI-TIDE 275 HEAVY DUTY - ULTRAFIT** **3MXU**

**ACTUAL BUOYANCY: 294N**

The Heavy Duty Hi-Tide 275 is ideal for construction, port and dock workers. It is suitable for use in environments where heavy abrasion, dirt, oil and grease may cause premature wear and damage to the bladder.

**SUPERIOR BENEFITS:**

Padded back neck and offset double shoulder straps for comfort and reduction of weight to the back neck

The high visibility yellow cover with SOLAS retro-reflective tape gives enhanced safety in high activity areas

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- Integrated deck safety harness approved to EN ISO12401
- Solas approved retro-reflective tape on front cover



HI-TIDE 275 FR AST - ULTRAFIT

3MXV

**ACTUAL BUOYANCY: 294N**

The Hi-Tide 275 Flame Retardant Antistatic is ideal for use by workers in areas where there is risk of fire or explosion caused by static, sparks or combustible materials. This lifejacket is giving optimum protection for wearers in such ATEX environments.

**SUPERIOR BENEFITS:**

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

**KEY FEATURES:**

Hi-Vis orange or yellow FR AST waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Zip fastening cover with FR AST protective cover over zip

Interlock FR AST buckles

Adjustable waist belt

Detachable crutch strap

1 radio loop

Integrated deck safety harness approved to EN ISO12401

All straps and belt in FR AST webbing

Fr reflective striping 50 mm







**WELDERS 275** **3MVZ**

**ACTUAL BUOYANCY: 294N**

The 275 Welders lifejacket is ideal for use by workers conducting welding activities in marine environments. This Lifejacket has a tough PanotexR aluminized cover protecting it from molten metal splashes and sparks.

**KEY FEATURES:**

- Durable aluminized Panotex silver wipe clean cover
- FR Touch and close fastening cover
- Interlock FR AST buckles
- Adjustable waist belt
- Detachable crutch strap
- Integrated deck safety harness approved to w12401
- All straps and belt in FR AST webbing





**IDEAL FOR OFFSHORE EXTREME  
USE WITH FOUL WEATHER  
CLOTHING AND EQUIPMENT**





# HI-RISE 150

## SUPERIOR BENEFITS

- ✔ These life jackets are dual approved to SOLAS 2010 regulations and EN ISO 12402.
- ✔ Designed to combine optimum safety and comfort.
- ✔ Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders.
- ✔ The bladder has a unique hinged head pillow for optimal comfort and head support in water.
- ✔ The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance.

The Hi-Rise 150 range is available in 2 variations appropriate to different end uses.



**HI-RISE 150 SOLAS REGULAR****2MSF****ACTUAL BUOYANCY: 180N**

The HI-Rise 150 is a stylized horseshoe design with a zip closure cover and a double back strap for general offshore use. This lifejacket is dual approved to latest SOLAS 2010 regulations and EN ISO 12402.

**SUPERIOR BENEFITS:**

Designed to combine optimum safety and comfort

Ideal for offshore use with foul weather clothing

The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

The bladder has a unique hinged head pillow for optimal comfort and head support in water

**KEY FEATURES:**

Durable waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Zip fastening cover

Stainless steel interlocking belt buckles

Adjustable waist belt

Detachable crutch strap

Marine grade stainless steel D-ring in front

Reflective silver piping on front





**HI-RISE 150 SOLAS WIPE CLEAN** **2MSC**

**ACTUAL BUOYANCY: 180N**  
 This Hi-Rise 150 Wipe clean PVC reinforced version is ideal for heavy duty industrial use.

**SUPERIOR BENEFITS:**

- Designed to combine optimum safety and comfort
- The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance
- Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders
- The bladder has a unique hinged head pillow for optimal comfort and head support in water

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- Marine grade stainless steel D-ring in front





**IDEAL FOR OFFSHORE EXTREME  
USE WITH FOUL WEATHER  
CLOTHING AND EQUIPMENT**





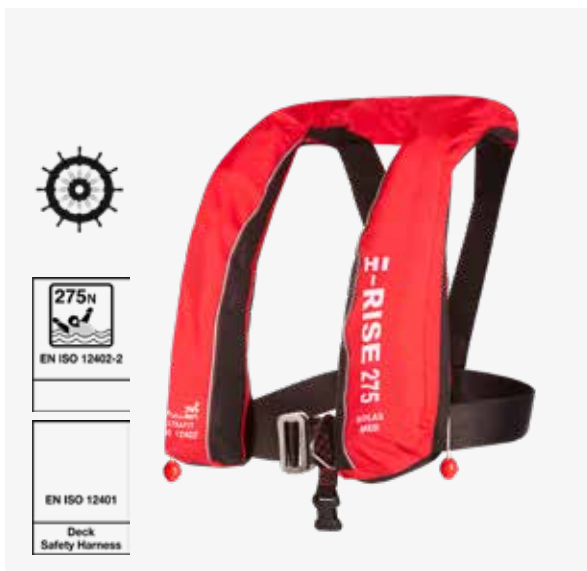
# HI-RISE 275

## SUPERIOR BENEFITS

- ✓ These life jackets are dual approved to SOLAS 2010 regulations and EN ISO 12402.
- ✓ Designed to combine optimum safety and comfort.
- ✓ Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders.
- ✓ The bladder has a unique hinged head pillow for optimal comfort and head support in water.
- ✓ The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance.

The Hi-Rise 275 range is available in 7 variations appropriate to different end uses.





### HI-RISE 275 SOLAS REGULAR - ULTRAFIT

2MTS

#### ACTUAL BUOYANCY: 320N

Ultrafit horseshoe design 275 Newton double chamber inflatable life jacket. Ideal for offshore use with foul weather clothing and heavy equipment.

#### SUPERIOR BENEFITS:

Designed to combine optimum safety and comfort

The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

The bladder has a unique hinged head pillow for optimal comfort and head support in water

#### KEY FEATURES:

Durable waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Zip fastening cover

Stainless steel interlocking belt buckles

Adjustable waist belt

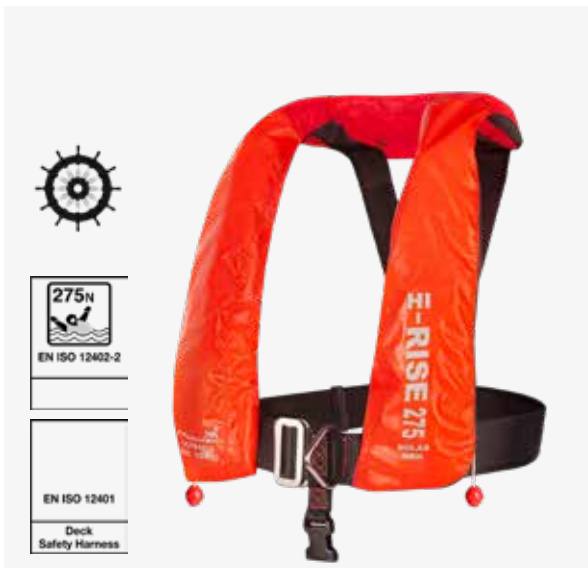
Detachable crutch strap

Integrated deck safety harness approved to EN ISO12401

Reflective silver piping on front







**HI-RISE 275 SOLAS WIPE CLEAN - ULTRAFIT** **2MTT**

**ACTUAL BUOYANCY: 320N**

Ultrafit horseshoe design 275 Newton double chamber inflatable life jacket. Ideal for heavy duty offshore use with foul weather clothing and heavy equipment.

**SUPERIOR BENEFITS:**

- Designed to combine optimum safety and comfort
- The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance
- Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders
- The bladder has a unique hinged head pillow for optimal comfort and head support in water

**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- Integrated deck safety harness approved to EN ISO12401



**HI-RISE 275 SOLAS SPRAYHOOD - ULTRAFIT** **2MTTF5NM1**



**MOB 1 HI-RISE 275 SOLAS WIPE CLEAN-ULTRAFIT** **2MTTF2NM1**



**M100 HI-RISE 275 SOLAS WIPE CLEAN - ULTRAFIT** **2MTTF3NM1**



**HI-RISE 275 SOLAS - ULTRAFIT + FALL ARREST HARNESS**

**2MU6**

**ACTUAL BUOYANCY: 320N**

The Hi-Rise 275 SOLAS Ultrafit lifejacket is also available with the addition of a fall arrest harness. The lifejacket has an attachment system, which can easily be fitted to most fall arrest harnesses.

**SUPERIOR BENEFITS:**

Designed to combine optimum safety and comfort

The Hi-Rise 275 SOLAS life jacket is also available with the addition of a fall arrest harness. The life jacket has an attachment system, which can easily be fitted to most fall arrest harnesses. \* Standard fall arrest harness options available. \* Other models of fall arrest harness can be considered on request.

Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders

The bladder has a unique hinged head pillow for optimal comfort and head support in water



**KEY FEATURES:**

Durable waterproof fabric

Double shoulder straps for comfort and reduction of weight to the back neck.

Fitted with fall arrest harness conform to EN 361

Zip fastening cover

Stainless steel interlocking belt buckles

Adjustable waist belt

Detachable crutch strap

Integrated deck safety harness approved to EN ISO12401

Reflective silver piping on front

**THE HI-RISE 275 SOLAS LIFE JACKET IS IDEAL FOR EXTREME OFFSHORE USE**



**SMRT HI-RISE 275 SOLAS** **2MTK**

**ACTUAL BUOYANCY: 320N**

The sMRT Hi-Rise 275 is a lifejacket specifically designed with an integrated Personal Locator Beacon (PLB). This lifejacket is compatible with sMRT AU10 model.

**SUPERIOR BENEFITS:**

- Designed to combine optimum safety and comfort
- The Wipe Clean PVC reinforced version is ideal for heavy duty industrial use
- The shape of the bladder is tailored to the contours of the wearer to create a snug secure fit whilst giving supreme in-water performance
- The sMRT H-Rise 275 is a lifejacket specifically designed to integrate a Personal Locator Beacon (PLB). This lifejacket is compatible with MRT AU10 model.
- Stylized horseshoe design with offset shoulder straps to alleviate weight and pressure stress on neck and shoulders
- The bladder has a unique hinged head pillow for optimal comfort and head support in water



**KEY FEATURES:**

- Durable waterproof fabric
- Durable wipe clean PVC reinforcement
- Double shoulder straps for comfort and reduction of weight to the back neck.
- Zip fastening cover with snag proof press-stud security system for zip closures
- Stainless steel interlocking belt buckles
- Adjustable waist belt
- Detachable crutch strap
- 2 Inflation systems operational readiness indicator windows on the back
- Beacon access zip on front
- Service date information window on the back
- Black/silver chequered retro-reflective tap on the upper chest
- Additional foam and double fabric padding layer to protect the beacon inside the cover

# INFLATION MECHANISM

HALKEY | ROBERTS®

HALKEY ROBERTS  
ALPHA AUTO



LIN04MORA

HALKEY ROBERTS  
ALPHA AUTO  
INFLATION SYSTEM  
+ T-TOGGLE



LIM00001H

HALKEY ROBERTS  
ALPHA AUTO  
INFLATION SYSTEM  
+ BALL TOGGLE



LIN04SBRA

HALKEY ROBERTS  
AUTO SUPER BOBBIN



LIN04PARA

HALKEY ROBERTS  
ALPHA MANUAL  
FIRING CLIP



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

UML United Moulders Ltd

UNITED MOULDERS  
LTD MK5 AUTO



LIN03MARA

UNITED MOULDERS  
MK5 AUTO  
INFLATION SYSTEM



LIN03CARA

UNITED MOULDERS  
MK5 AUTO  
INFLATION SYSTEM



LIN03PARA

UNITED MOULDERS  
MK5 MANUAL  
Z-FIRING CLIP



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

## UNITED MOULDERS LTD

### PRO SENSOR ELITE AUTO



LIMR0001U

UNITED MOULDERS  
PROSENSOR ELITE  
AUTO



LIT00002U

UNITED MOULDERS  
PROSENSOR AUTO  
CARTRIDGE



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

## HAMMAR®

BETTER SOLUTIONS FOR SAFETY AT SEA

### HAMMAR A1 / M1

#### HYDROSTATIC AUTO



LIN01F000Z

HAMMAR A1/M1  
AUTO FRONT



1MZWA2YN3

NEOPRENE SLEEVE. 3 SIZES: FOR 33 GM CYL.,  
38 GM CYL., 60 GM CYL.



LIN01B000

HAMMAR A1/M1  
AUTO BACK



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

## HAMMAR®

BETTER SOLUTIONS FOR SAFETY AT SEA

### HAMMAR MA1/ EC

#### HYDROSTATIC SINGLE POINT INDICATOR AUTO



LIMR0001U

HAMMAR AUTO  
FRONT SINGLE  
POINT INDICATOR



LIT00002U

NEOPRENE SLEEVE. 3 SIZES: FOR 33 GM CYL.,  
38 GM CYL., 60 GM CYL.



LIT00002U

HAMMAR MA1  
PROTECTION CAP



LIN04B330

HAMMAR BACK  
+ 33GR CYLINDER



LIN04B380

HAMMAR BACK  
+ 38GR CYLINDER



LIN04B600

HAMMAR BACK  
+ 60GR CYLINDER

UML United Moulders Ltd

**UNITED MOULDERS LTD**  
**MINI-MANUAL**



LIM00013U

UNITED MOULDERS  
 MICRO MANUAL  
 INFLATION SYSTEM



LIP00009U

UNITED MOULDERS  
 MANUAL FIRING  
 CLIP



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

UML United Moulders Ltd

**UNITED MOULDERS LTD**  
**PRO SENSOR ELITE MANUAL**



LIMR0003U

UNITED MOULDERS  
 PROSENSOR ELITE  
 MANUAL



LCY033000

CO<sub>2</sub> CYLINDER 33GR



LCYS38000

CO<sub>2</sub> CYLINDER 38GR



LCY060000

CO<sub>2</sub> CYLINDER 60GR

# PERSONAL LOCATION DEVICES



## SAFELINK SOLO

LEU000030

The Safelink Solo beacon works by transmitting an emergency frequency signal via the 406 MHz frequency. The beacon must be activated by the wearer when the life jacket is inflated.



## M100

LEA00002G

A unique emergency alert of a MOB is transmitted to all AIS (Automatic Identification System) receivers within a radius of 4 miles. The GPS location of the MOB will become viewable on the AIS receiver. The additional 121.5 MHz homing signal facilitates precise location of the MOB. The beacon will activate automatically by means of full inflation of the life jacket.



## MOB1

LEA00001G

A unique emergency alert of a MOB is transmitted to all AIS (Automatic Identification System) receivers within a radius of 4 miles. The GPS location of the MOB will become viewable on the AIS receiver. The beacon will activate automatically by means of full inflation of the life jacket.



## EASY RESCUE MULLION

LE0013090

The Easy Rescue has a built in GPS and transmits a distress signal to all AIS receivers. When the life jacket inflates in an emergency, a ripcord tears off a magnetic switch from the transmitter. This leads to an automatic activation of the AIS emergency beacon.



## SMRT AU10

LE0013060

The sMRT AU10 beacon will send a distress signal to a local receiver (vessel). The beacon will activate by means of full water immersion. Frequencies 121,5MHz and AIS.

# ACCESSORIES



**1MZ9A2GWL**

STANDARD CRUTCH STRAP FOR ALL LIFE JACKETS APART FROM COMPACT + FR/AST MODELS. LENGTH 120 CM.



**2MZFA2GWL**

CRUTCH STRAP FOR COMPACT ONLY. LENGTH 140CM



**2MZRA2GWC**

FR/AST CRUTCH STRAP FOR ALL FR/AST LIFE JACKET MODELS. LENGTH 120CM



**LLI0000OS**

SOLAS S.O.S. LIGHT



**LWH030C10**

WHISTLE



**1MZWA2YN3033**

NEOPRENE SLEEVE FOR 33 GM CYLINDER



**1MZWA2YN3038**

NEOPRENE SLEEVE FOR 38 GM CYLINDER



**1MZWA2YN3060**

NEOPRENE SLEEVE FOR 60 GM CYLINDER



**IRFQ50M0R**

(LENGTH : 12CM)

**IRFP50M0R**

(LENGTH : 22CM)  
SOLAS REFLECTORS  
SELF-ADHESIVE



**3MZX - 3MZ4 -  
2MZU - 3MZN**

FR WELDERS COVER

3MZX - FOR HI-TIDE 150 ULTRAFIT  
3MZ4 - FRO HI-TIDE 275 ULTRAFIT  
2MZU - FOR SOLAS 150  
3MZN - FOR SOLAS 275 ULTRAFIT



**LL0002590**

LIGHT BRACKET FOR  
LLI0000OS



# TECHNICAL INTRODUCTION TO MARITIME SAFETY CLOTHING

## DIFFERENT TYPES OF PROTECTION CAN BE OPTIONALLY COMBINED

- ✓ Inherent buoyancy or inflatable buoyancy
- ✓ Thermal protection against hypothermia
- ✓ Foul weather protection
- ✓ High visibility
- ✓ Flame retardant, chemical resistant and antistatic properties

## DEFINITIONS AND EXPLANATIONS

### INHERENT BUOYANCY MATERIAL

Buoyancy provided by a material which is less dense than water, e.g. a closed cell foam, and forming a permanent part of the garment.

### PERSONAL FLOTATION DEVICE (PFD)

A safety device for persons engaged in activities, whether in relation to their work or their leisure, in or near water. PFDs, when correctly worn, should give a reasonable assurance of safety from drowning to a person who is immersed in water by providing a specific amount of extra buoyancy to increase the chances of survival..

PFDs can be divided into the following two main classes:

- those which provide face up in-water support to the user regardless of physical conditions (life jackets).
- those which require the user to make swimming and other postural movements to position the user with the face out of the water (buoyancy aids).

Within these main two classes there are a number of levels of support, types of buoyancy, activation methods.

### BUOYANCY AID

Garment or device which when correctly worn and used in water, will provide a specific amount of buoyancy to assist the wearer to float in a vertical or upward position with the airways clear of the water. This type of device will NOT self-right the wearer from a face-down position.

### FLOTATION GARMENT – CONSTANT WEAR SUIT

A floatation garment is a type of constant wear suit designed to keep the wearer warm and dry at work and protect against drowning in water with a degree of thermal protection against cold shock and hypothermia. These garments are also technically classified as PFDs or buoyancy aids, always offering a minimum of 50 Newtons buoyancy. By means of the inherent floatation buoyancy foam lining, this type of garment will keep wearers afloat indefinitely and allow them to swim without undue encumbrance. However they will not automatically self-right the wearer from a face-down position. For this the use of a compatible life jacket is required, preferably of a 275N buoyancy level to ensure optimum self-righting performance is achieved.

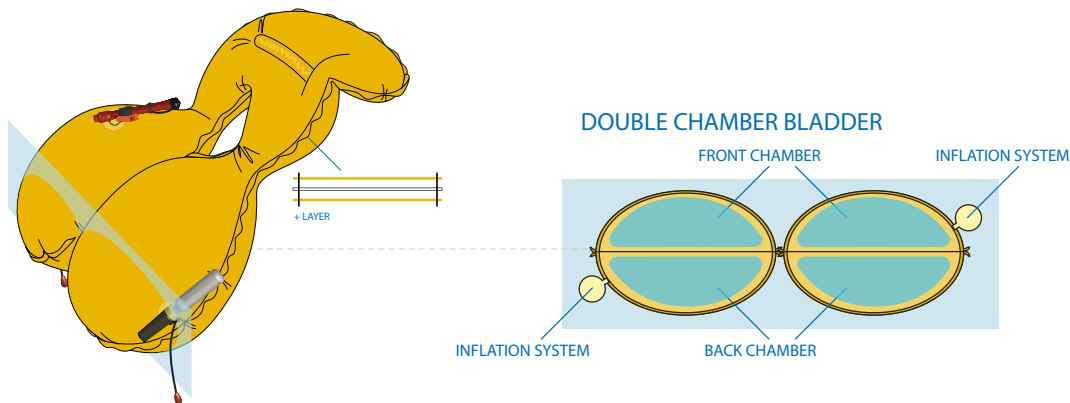
## INFLATABLE LIFE JACKET

Personal flotation device from which the buoyancy is obtained by inflating it by mouth (orally inflated) or from a compressed CO<sub>2</sub> gas cylinder; either manually by pulling a handle operated by the wearer, or automatically without the wearer carrying out any action, but as a result of immersion in water, either by a hydrostatic mechanism or a cellulose cartridge type of mechanism. Mullion 150N and 275N inflatable life jackets are made of a single-chamber bladder (EN / ISO standards) or double-chamber bladder (required for IMO/SOLAS regulations). A 'stand alone' automatic life jacket will self-right the wearer if correctly donned; it will turn over a person falling into the water face down, even if he/she is unconscious, it will NOT, however protect against cold shock or hypothermia. These are mainly worn on their own in warmer climates where there is less risk of cold water immersion and shock.

They can also be worn in conjunction with a constant wear suit, the latter being the ideal combination to give the wearer all round protection. Where the two are worn together, it is important to follow the donning instructions strictly and check and test their compatibility as one can counteract the other and have a negative effect on the self-righting properties. For example a 150 Newton life jacket worn with a constant wear floatation suit is not recommended for self-righting purposes; for this application we advise the use of a compatible 275 Newton life jacket. If in doubt please contact Mullion for guidance.

## DOUBLE-CHAMBER BUOYANCY SYSTEMS

Buoyancy provided by 2 separate inflatable compartments, such that if mechanical damage occurs to one, the other can still operate and provide sufficient buoyancy on its own (required for IMO / SOLAS application).



## HYPOTHERMIA

A condition where the body core temperature is below 35°C, that is, 2°C lower than the 'normal' core body temperature (=37°C). The state of hypothermia is of a higher risk to a person immersed in cold water than in a cold air environment, due to the fact that water is a greater conductor of heat than air. Consequently the body cools much more rapidly in water than in still air of the same temperature (approximately 25 times faster).

## MARITIME PPE PRODUCT STANDARDS



### EN ISO 12402-5: 50N BUOYANCY AIDS

Have a buoyancy of no less than 50 Newton for the average adult. This level is intended for use by those who are competent swimmers and who are near to bank or shore, or who have help and a means of rescue close at hand. These garments have minimal bulk, but they are of limited use in disturbed water, and cannot be expected to keep the user safe for a long period of time. They do not have sufficient buoyancy to protect people who are unable to help themselves. They require active participation by the user.



EN ISO 12402-4

#### EN ISO 12402-4: 100N LIFE JACKETS

Have buoyancy of no less than 100 Newton for the average adult. This level is intended for those who may have to wait for rescue, but are likely to do so in sheltered water. The device should not be used in rough conditions.



EN ISO 12402-3

#### EN ISO 12402-3: 150N LIFE JACKETS

Have buoyancy of no less than 150 Newton for the average adult. This level is intended for general application or for use with foul weather clothing.



EN ISO 12402-2

#### EN ISO 12402-2: 275N LIFE JACKETS

Have buoyancy of no less than 275 Newton for the average adult. This level of life jacket is intended primarily for offshore use under extreme conditions. It is also of value to those who are wearing clothing which traps air or loads such as tool belts which may adversely affect the self-righting capacity of the life jacket.



#### IMO / SOLAS / MED

The International Maritime Organisation governs the Convention of Safety Of Life at Sea (SOLAS). This Convention requires that SOLAS requirements are met for all life-saving equipment carried and used on board all ships on international voyages including passenger ships and cargo ships of 500 gross tonnes or more. This includes life jackets, abandonment suits and immersion suits.

Recognition that the equipment fully complies with the requirements of the MED (Marine Equipment Directive) will be denoted by a 'Ships Steering Wheel' mark which must be on all equipment sold to European Community Ships of 500 tons or more in size.

#### SOLAS LIFE JACKETS

All life jackets must be of double chamber design with 2 automatic inflation systems as well as be fitted with a SOLAS approved light and buddy line for optimum safety.

#### SOLAS IMMERSION + ANTI-EXPOSURE SUITS

These Immersion and Anti-Exposure Suits should provide the highest level of safety and performance. They incorporate inherent buoyancy which gives the wearer flotation and thermal protection in order to provide the optimum chance of survival and rescue before any negative effects of cold water immersion set in and to protect against the risks of drowning.

In accordance with the SOLAS requirements, according to the LSA Code, Chapter II, 2.3:

- Where required as Immersion suits, they are designed to cover the whole body (including boots to cover the feet), with the exception of the face and with separate gloves that are permanently attached to the suit.
- Where required as Anti-Exposure suits only, they can be designed and supplied without the boots fitted (as permitted by the Administration) and equipped with a pocket for a portable VHF radio / telephone.

An un-insulated immersion suit or anti-exposure suit is intended to provide the wearer with up to 1 hour protection in a water temperature range of > 5°C

An insulated immersion suit is intended to provide the wearer with up to 6 hours protection in a water temperature range of > 0°C.

These suits are designed to be worn in conjunction with a compatible SOLAS / MED approved life jacket.

### EN ISO 15027-1: CONSTANT WEAR SUITS

A constant wear suit is designed to be worn as a working suit to keep the wearer warm and dry during normal activities and to provide thermal protection in the event of accidental immersion, to prolong life and to aid rescue. An individual's estimated thermal protection time when wearing this type of equipment will depend upon the water temperature, weather conditions, clothing, the cold tolerance of the person and the person's behaviour. The primary aims in wearing a constant wear suit are:

to reduce the risk of cold shock and to delay the onset of hypothermia;

to enable the user to propel himself in the water and extricate himself from the water without it becoming an encumbrance;

to make the user sufficiently conspicuous in the water so as to aid his recovery.

### HSE / MENSAFE COMPATIBILITY TEST PROTOCOL FOR LIFE JACKETS AND IMMERSION SUITS ON OFF-SHORE INSTALLATIONS

This protocol ensures compatibility of combinations of life jackets and immersion suits likely to be used in differing emergency scenarios by offshore installation personnel.

The format for this Test Protocol is based on core tests, such as donning, ergonomic factors and in-water performance.

### EN 1095 / ISO 12401: DECK HARNESSSES / SAFETY LINES

This European and International Standard is applicable to harnesses and safety lines in the following sizes of body weight. Size 1: over 50kg, Size 2: between 20kg and 50kg, Size 3: lower than 20kg; which are intended to be worn by all persons when in the exposed cockpit or on the working deck of a craft afloat. It is not applicable to dinghy "trapeze" harnesses, windsurfing harnesses, seat harnesses for fast motor boats or harnesses intended to protect against falls from a height.

Deck safety harnesses and safety lines manufactured according to this International Standard will give reasonable assurance that the wearer will remain attached to the craft.

The primary aims in wearing a deck safety harness are:

- to prevent the wearer from falling into the water
- to assist in recovering the wearer onto the working deck.

### THERMAL PROTECTION CATEGORIES

	Suit performance level			
	A	B	C	D
Period of immersion (h)	6	4	2	2
Water temperature (°C)	2	2	5	10

## SOME DEFINITIONS

**CLO VALUE:** A unit to express the relative thermal insulation value. One CLO = 0.1555 °C x m<sup>2</sup> / W

**DRY SUIT:** A garment that stops the entry of significant quantities of water upon immersion, the insulation depends on the wearer staying dry.

**SEMI-DRY SUIT:** A garment that allows controlled entry of a limited amount of water when the wearer is immersed.

**WET SUIT:** A garment that allows the controlled entry and exit of water when the wearer is immersed. By keeping a stationary layer of water close to the body, this will work as an insulation layer.

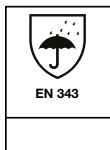
**IMMERSION SUIT:** A suit intended to protect the wearer from the effects of immersion in cold water.

**ABANDONMENT SUIT:** An immersion suit, designed to permit rapid donning in the event of an imminent immersion

**ANTI-EXPOSURE SUIT:** A protective suit designed for use by rescue and life boat crews and marine evacuation systems parties. It requires head and hand protection but the feet need not be covered. This type of suit requires a minimum buoyancy of 70N.

**FLOATATION SUIT:** A floatation garment is a type of constant wear suit designed to keep the wearer warm and dry at work and protect against drowning in water with a degree of thermal protection against cold shock and hypothermia. These garments are also technically classified as PFDs or buoyancy aids, always offering a minimum of 50 Newtons buoyancy. By means of the inherent floatation buoyancy foam lining, this type of garment will keep wearers afloat indefinitely and allow them to swim without undue encumbrance. However they will not automatically self-right the wearer from a face-down position. For this the use of a compatible life jacket is required, preferably of a 275N buoyancy level to ensure optimum self-righting performance is achieved.

## OTHER EUROPEAN PPE STANDARDS



### EN 343

Protective clothing against rain, wind and cold at temperatures higher than -5°C. Performance parameters:  
x: waterproofness (3 levels)  
y: breathing properties (3 levels)



### EN ISO 20471

High-visibility clothing:  
x: surface of fluorescent and retro-reflective material (3 levels)  
y: quality of the retroreflective material (2 levels)



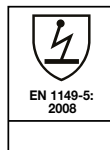
### EN ISO 14116

Protection against flames:  
x: flame spreading index (3 levels).  
y: durability index



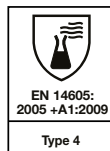
### EN ISO 11612

Protective clothing for workers exposed to heat: A: min. requirements, fabric combination conforms to EN 533 index 3 + min.



### EN 1149-5

Protection against the danger caused by static electricity



### EN 14605

Protection against liquid chemicals, spraytight (type 4)



### EN 469

Protective clothing against fire  
Xf2 the performance in the heat test : flame  
Xr2 the performance in the heat test : radiation  
Y2 the performance in the waterproofness tests  
Z2 the resistance against water vapour

### EC COUNCIL DIRECTIVE 89/686/EC:

Basic Health and Safety Requirements for PPE.

EN 420:2003  
+A1:2009

Protective gloves. General requirements and test methods.

EN 15090  
2012  
F2 HI3 P CI SRA

Footwear for fire suppression and rescue interventions

EN 50321  
2018  
Class 0

Footwear for electrical protection



# SIZE TABLE

SIZE TABLE FLOTATION GARMENTS: BODY MEASUREMENTS				
Size	Mass Kg	Height	Chest	Waist
XS	< 50 kgs	158-176	80-88	68-76
S	50-70 kgs	164-182	88-96	76-84
M	70-80 kgs	164-182	96-104	84-92
L	80-90 kgs	170-188	104-112	92-100
XL	90-110 kgs	170-188	112-120	100-108
XXL	> 110 kgs	176-194	120-128	108-116
XXXL	> 110 kgs	176-194	128-136	116-124
XXXXL	> 110 kgs	176-194	136-144	124-132

SIZE RANGE SMART SOLAS: BODY MEASUREMENTS					
SIZE	Height	Chest	Waist	Socks 1MG4	Socks 1MG5
S	164-182	80-96	68-84	40/42	43/45
M	170-188	96-112	84-100	43/45	
L	176-205	112-136	100-124	43/45	
XL	176-205	136-144	124-132	46/48	
2XL	176-205	144-152	132-140	48	

SIZE RANGE MAS	
SIZE	Body measurements
S	150-165
M	165-180
L	180-195
XL	195-205

SIZE RANGE SINGLE CHAMBER LIFE JACKETS			
SIZE	Mass Kg	Chest	Height
UNI	≥ 40 Kgs	86cm-151cm	≥ 150 cm

SIZE RANGE SOLAS LIFE JACKETS			
SIZE	Mass Kg	Chest	Height
UNI	≥ 40 Kgs	≤ 180 cm	≥ 150 cm

# NOTES

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