

**ULLMAN**



**PROTECTING PEOPLE**

# References



ROYAL AUSTRALIAN NAVY



ROYAL SWEDISH NAVY



FINNISH NAVY



U.S. NAVY



UAE ARMED FORCE



FINNISH BORDER GUARD



SWEDISH COAST GUARD



AUSTRALIAN FEDERAL POLICE



EMERCOM



MARITIME SERVICE GUARDIA CIVIL



ROYAL NEW ZEALAND NAVY



UK MINISTRY OF DEFENCE



INDIAN NAVY



U.S. COAST GUARD



QATAR ARMED FORCES



TACTICAL RESPONSE GROUP



CANADIAN COAST GUARD



SOUTH AFRICAN POLICE



SOUTH AFRICAN SEA RESCUE



ROYAL DUTCH SEA RESCUE



REPUBLIC OF SINGAPORE NAVY



ROYAL NORWEGIAN NAVY



UK ROYAL MARINES



U.S. NAVAL SPECIAL WARFARE COMMAND



NATIONAL AIR AND NAVY SERVICE OF PANAMA



UAE PRESIDENTIAL GUARD



GERMAN FEDERAL COAST GUARD



ROYAL OMAN POLICE



SWEDISH SEA RESCUE



GERMAN SEA RESCUE



CANADIAN S.O.F. COMMAND



U.S. SOUTHERN COMMAND



DOMINICAN NAVY



ROYAL SAUDI NAVY



GERMAN NAVY



SINGAPORE NAVAL DIVING UNIT



ITALIAN COAST GUARD



HONG KONG POLICE FORCE



ICELANDIC COAST GUARD



NATO

MORE REFERENCES ON BACK COVER

## The Ullman heritage

In 1982 Johan Ullman M.D. served as the 1:st Surface Attack Flotilla doctor on board the Swedish destroyer HMS Halland.

Examining sailors that had served for 9 months on board the flotilla's Motor-Torpedo boats, he found that more than 80% had back problems. He thought that this was not good - nor very fair.



Thus Dr. Ullman started his scientific research at the Orthopaedic dept. of Sahlgrenska University Hospital in Gothenburg, internationally recognised for research in back trauma and injuries.

He developed measuring methods and techniques, pioneering the field of whole-body impact at sea, as well as analysing the human physiological and motoric response to shock and impact.

As Dr. Ullman was already famous for a number of epochal inventions in the field of human factors, ergonomics and injury prevention, the Swedish Coastguard asked him to create, based on his scientific results, technologies protecting people at sea from injuries caused by impact exposure.

The first organisations to standardise on Dr. Ullman's seats were the Swedish Coastguard, the Swedish Sea Rescue, the Dutch Sea Rescue KNRM and the UK Royal Marines.

After three decades Ullman Seats are still the world-leading brand - still unsurpassed in performance and the de-facto adopted standard in agencies in more than 55 countries worldwide.

Operators today face ever increasing challenges, far higher speeds with more determined enemies, so the scientific research continues.

The continuous technical development is based on scientific evidence and on tight cooperation with end-users, old and new, like the US Navy Seal Teams, New Zealand and Australian Navies, Scandinavian and Middle Eastern Special Forces and Coastguards.

The Ullman Coat of Arms, dating back to 1685, has now been adopted as the seal for the Ullman line of products. It covers the front of this booklet

The motto "Protegam Populus" is translated to "Protecting People".



— JOCKEY SEATS —



PATROL  
PAGE 11



BISCAYA  
PAGE 10



COMPACT  
PAGE 9

— BUCKET AND BOLSTER SEATS —



DAYTONA SERIES  
PAGE 16-17



ARCTIC  
PAGE 13



ATLANTIC SERIES  
PAGE 14-15

# JOCKEY SEATS

The Ullman Jockey seats allow you to use both arms and legs to absorb impacts in the best possible way. The seat optimizes your body posture and puts you in a balanced straddling position to withstand both vertical and lateral forces.

The Ullman Semi Active Suspension System utilizes your muscular reflex system. In calm seas the suspension is perceived as soft and comfortable, in rough seas, the seat adapts and becomes stiffer. To protect you.

## — THE SPACIOUS SEAT —



**Ullman Compact Seat gives you full impact protection while allowing the maximum free space in the cockpit.**

The Compact Seat features shorter saddle sides and a lower backrest. With the handle on top the Compact is very slender and does not require more space than the person seated. The seat is designed to fit in limited spaces and on boats where broad aisles and deck space are crucial. It is the lightest professional suspension seat on the market.

The compact seat is preferred by many military and police organizations across the globe.

### REFERENCE USERS

- » Royal New Zealand Navy
- » Ministry of Defence UK
- » German Water Police
- » Royal Australian Navy
- » Danish Sea Rescue
- » Marine Police India
- » United States CG
- » CAN SOF COM
- » Hong Kong PD

## Compact

### FEATURES

- » New geometry, shape and angle
- » New improved full length cushioning
- » Full XLT Suspension
- » 150 mm Vertical Travel
- » All non corrosive materials
- » Narrow back rest
- » Horse shoe handle
- » Watertight stowage pouch

# Biscaya

## FEATURES

- » New and updated!
- » New geometry, shape and angle of seat
- » New improved full length cushioning
- » Larger ergonomic handles
- » Soft seat front edge
- » Full XLT Suspension
- » 150mm Travel
- » All non corrosive materials
- » High Backrest
- » Two Anatomic Grab Handles

## – THE NO.1 JOCKEY SEAT –

**Ullman Biscaya Seat is the no. 1 Suspension Seat in the world - the original Ullman seat. It has a high backrest and long saddle sides supporting the thighs in varied seating positions.**

The Biscaya is developed for active sitting in the very worst of conditions. It offers the safest postures and suspension optimized to synergize with the human muscular protection system. Safe lateral stabilisation and shock absorption.

Two handles on the backrest provide safe support for the person seated or standing behind.



## REFERENCE USERS

- » German Navy
- » Saudi Royal Navy
- » Guardia Civil
- » Portugese Navy
- » Guardia Costiera
- » KNRM
- » US Navy EOD
- » US Southern Command
- » Finnish Border Guard

## – PREMIUM COMFORT –

**Ullman Patrol seat offers the most excellent comfort even during very long missions. A hybrid seat with a large, soft padded seating surface, it allows a wide variety of seating positions.**

The Patrol seat is highly favoured by the most demanding customers that spend days at a time riding and patrolling the oceans.

Derived from customer feedback the Patrol features a softer and larger seating area that allows you to alter your seating position during long transits and patrol missions. The Patrol Seats is the most comfortable jockey seat out there.



## REFERENCE USERS

- » Indian Navy
- » Panama Navy (SEMAN)
- » Australian Federal Police
- » Icelandic Coast Guard
- » Colombia Coast Guard
- » Sea Rescue South Africa
- » Oman Police CG
- » Malta Armed-Forces
- » UAE Armed Forces

# Patrol

## FEATURES

- » Full XLT Suspension
- » 150mm Travel
- » All non corrosive materials
- » High Backrest
- » Wide Backrest
- » Two Large Anatomic Grab Handles

# BOLSTER & BUCKET SEATS

## — HIGH SEA RACING —



Originally developed in cooperation with the Norwegian Special Forces, the Arctic Seat is the most active of our bucket seats.

Compared to the Atlantic Seat it has a shorter seating pan and a lower backrest. With a less reclined backrest the seat puts you in a more active driving position. The seat allows both straddling and reclined seating positions.

This solid bucket seat is suitable for limited spaces and fast vessels where you need to be able to alter your seating position. A multi position seat with good lateral support

The Arctic seat is used by offshore race teams and special forces around the globe.

### REFERENCE USERS

- » Norwegian Navy
- » US Coast Guard
- » Colombian Coast Guard
- » UAE Presidential Guard
- » UAE SOC
- » Marine Rescue NSW

## Arctic

### FEATURES

- » Twin UD530 Adjustable (6-level)
- » Full ALM Spring Unit
- » 200mm Vertical Travel
- » Full carbon fibre back
- » Low back rest
- » Lumbar support
- » Torso Lateral support
- » Thigh Lateral support

# Atlantic

## FEATURES

- » Twin UD530 Adjustable (6-level)
- » Full ALM Spring Unit
- » 200mm Vertical Travel
- » Full carbon fibre back
- » High backrest
- » Lumbar support
- » Torso Lateral support
- » Thigh Lateral support

## — THE CLASS LEADER —

**Allow your body to work at its full potential at all times, in all positions.**

In the Atlantic Seat, you can stand fully supported and shock-protected in a straddling position and interact with the seat. It also lets you sit back in a reclined position, still maintaining the S-shape of your spine. Strap in and be ready for any challenge, confidently letting the seat do all the work.

To secure optimal protection in all positions, the Atlantic seat optimises the different body postures for handling both static and dynamic loads. It is designed for both open and cabin boats.

The adjustable suspension and the multiple positions make the Atlantic seat the most versatile and comfortable top-of-the-line seat to date.



## REFERENCE USERS

- » Canadian CG
- » Swedish CG
- » Swedish Pilot
- » Colombian CG
- » US Navy
- » FESA
- » Norwegian CG
- » Baltic pilot
- » Emercom

## — PROFESSIONAL LUXURY —

**Safety for all passengers on board high-speed boats is always our main focus.**

The Atlantic Crew has the same size and shape as the Atlantic seat. Slightly heavier and a more rustic design makes it more accessible, allowing employers to equip vessels with many seats to protect their most valuable assets - the workforce.

It has become popular in the wind farm and offshore industry, where strict legislation requires the best proven shock mitigation. The Arctic seat comes with 200mm dampers and vinyl upholstery.



## ALL NEW

# Atlantic Crew

## FEATURES

- » Twin UD530
- » Full ALM Spring Unit
- » 200mm Vertical Travel
- » Strategic Monocoque GRP Shell
- » Torso Lateral support
- » Thigh Lateral support

# Daytona

## FEATURES

- » Anatomic seat and backrest
- » Full lateral support
- » Ultra light weight (22kg)
- » Twin UD430 Adjustable
- » DLM Spring Unit
- » 150 mm Vertical Travel
- » Strategic Carbon Fibre Monocoque

## — EXTREME PERFORMANCE —

**With Powerboat- and F1 Racing DNA, the Daytona seat gives full support and protection for platforms where space is limited and light weight is crucial.**

When you need to rely on the seat to protect you from impacts, for you to focus on the stenous task of extreme high speed boating.

The carbon fibre structure follows the natural curve of your back and gives you full support throughout the seat.

With the carbon fibre monocoque shell and the aluminium frame, the seat is ultra light, making it suitable for all high performance boats where space and weight is crucial. Daytona has been tested by several organizations and has proven itself to be a seat to rely on.



## REFERENCE USERS

- » US Navy
- » Naval Special Warfare Group 4
- » Swedish Navy PTK
- » Emercom
- » Griffon Hoverwork
- » Québec's maritime transport organization
- » G.I. Joe: Retaliation

## — SAFETY FIRST —

**We believe that everyone on board should be equally protected and have therefore developed Daytona Crew as a cost effective option to the Daytona Seat.**

The monocoque structure is made of fibre glass making it available in both black and white.

Daytona Crew is suitable for large crew transport vessels as well as for small leisure ribs. With some slight changes to the lateral supports, the crew version is suitable for all persons, large and small.



## ALL NEW

# Daytona Crew

## FEATURES

- » Anatomic seat and backrest
- » Lateral support
- » Light weight (25kg)
- » Twin UD430
- » DLM Spring Unit
- » 150 mm Vertical Travel
- » Strategic GRP Monocoque

# ACCESSORIES



## Ullman Console

— THE EPITOME OF ERGONOMICS —



**The Ullman Aerodynamic Console is designed and shaped to reduce air resistance while protecting the crew from wind and spray.**

It is designed for optimal ergonomics in the most challenging operational conditions. It can be used for port or starboard helm position and provides optimal positioning for steering wheel and throttle.

The console is built in GRP sandwich and is strategically reinforced to withstand high impacts. It is fitted with a 10 mm (3/8") heavy-duty windscreen.

The Ullman Console can be used with a traditional steering wheel or with the Ullman Steering Bar System. The dashboard holds twin 15 inch chart plotters. There is an easy-access hatch for stowage, installation of electronics and inspection.

Ullman Aerodynamic Console optional accessories include grab handles and various locking mechanisms. Standard colours are black or white. Customer specified gel coat colours are available to order.



### FOLDABLE FOOT REST

CNC-cut ALU 7075-T6. Super grip diamond shape surface and anti-slip ridge along outside surface allows custom height setting. The large foot pad provides support for the whole front foot. Free movement of heel allows the muscular system full motion.



### MULTI BASES

These bases can be built to accommodate 1, 2 or more seats in line. This allows ample storage space with hatches. Bases can be welded with aluminium plates or constructed in composite.



### ADJUSTABLE DAMPER

Hard anodized aluminium internal components of acid proof stainless steel 316L. Easy set-up dial with 6 level adjustable compression gives you a wide range from soft to stiff. Stroke: 150 or 200mm.



### DECK INSERT BOLTS

For mounting on GRP deck.

Bolts fit flush to deck, no tripping hazard. Allows for quick and easy removal of the seats and leaves nothing sticking out. Outside thread: M20 Inside thread: M8.



### TRACK SYSTEMS

Quick Release system using aircraft cargo rails in combination with a special nut and washer machined from SS 316L. Takes about 20 seconds to undo and fasten. Allows for quick and easy modularization of a deck or a cabin.



### SLIDING SYSTEMS

All sliders in the Ullman Slider range are ultra strong, very lightweight and smooth sliding, allowing you to set the optimal position of the seat easily and with confidence. Available for all Ullman seats.



### ADJUSTABLE ARMRESTS

The 7 axis adjustable armrest can be set up and adjusted exactly where you want it. It can be fitted with Joysticks, Trackballs, Pistol Grip Handles etc. Fits most seats.



### FRONT SEAT HANDLE

When Ullman Jockey Seats are mounted without a console or another seat in front, a front seat handle is recommended. This gives the rider the support necessary to hold on and control the body at high impact.



### CORDURA SEAT COVERS

Tightly fitted cover for the jockey seat range. It is designed to stay on the seat all the time. Cordura is a heavy duty nylon fabric used in workwear and tactical clothing. It has the highest abrasion grading available. Now also available with MOLLE system.



### COATED SPRING UNIT

Black powder coating is available on all parts. With black spring unit, and coated handles and the matte upholstery, nothing will reflect light. No one will see you coming.



### COATED HANDLES

Handles with thermal insulation can be fitted to any Ullman seat. This polymer coating also gives a softer surface and higher friction than stainless steel. It is very useful for cold climates and in situations where anti-glare is important.



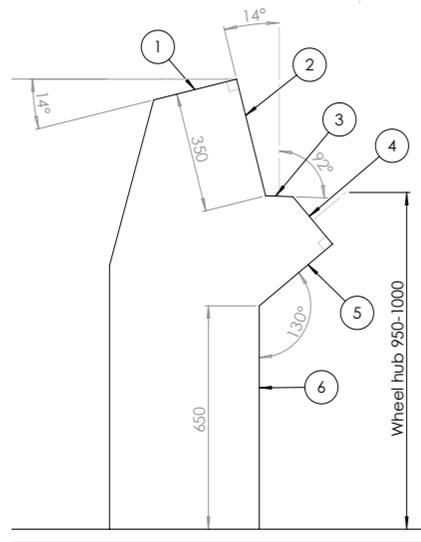
### 2 & 4 POINT HARNESS

Highly adjustable harness for secure seating. Allows you to relax and let the seat do the job. Where there is risk for capsizing, crews on cabin boats are recommended to use lap belts. This is to prevent head and neck injuries when a boat gets turned upside down.

# Optimize Cockpit Ergonomics

This generic helm console provides good visibility forward, convenient location of navigation screens, easy access to the helm and throttle control, and ample space for feet and legs, even in rough conditions.

(1) To minimize the deadspace distance between the screen and the forward field of vision, the console's top surface should slant down forward. Remember that the far end of the top surface sets the lower limit for the field of vision, and helmsmen need to see the bow clearly.



(2) The plotter screen should be mounted on a plane optimally inclined 12°–16° forward from vertical. To minimize reflected glare from the sky, the screen should be mounted so a perpendicular line through its center points to just below the operator's chin.



The wheel should be offset slightly to port from a fore-and-aft line drawn through the driver. This permits better postural balance, as the operator's hands at the helm and throttle are symmetrical to the torso.

Full article on **Designing Cockpits for Speed** available at [www.ullmandynamics.com](http://www.ullmandynamics.com)

— AT YOUR SERVICE —

## Custom Cockpit Design



User interfaces and cockpit layout are crucial to the ergonomics and performance of the craft.

Therefore we make sure that every cockpit where a seat is installed is optimised for human function and safety.

We work closely with boat builders, assisting designers and naval engineers to secure peak performance and 100% optimal function for the user. It's all about protecting people.



## Custom Products

For customers with special requirements, we create custom product to fit any operational requirements. Some examples are steering systems, foldable seats and custom fastening solutions.

### FOLD-UP JOCKEY SEAT

Developed for the Finnish Navy, this seat is easily operated to quickly clear space. It automatically locks in up or down position.



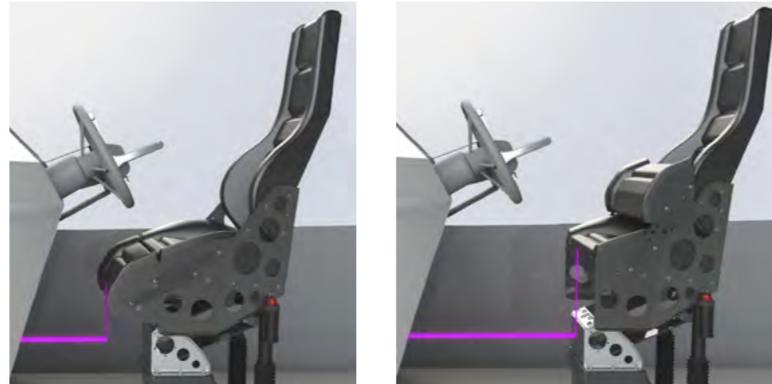
### ULLMAN STEERING SYSTEM



Full control of throttle and steering while holding on. In active use by coast guard and sea rescue. Significantly increases maneuverability and reduces the time to train new boat operators.

### ATLANTIC FOLDABLE

Developed with the Colombian Coast Guard this seat allows operation as standing bolster with full support for the lower back, for calm weather operations.



**They are scientifically proven to provide better Shock Mitigation than any other seats.**

They are developed based on medical science. They work in synergy with the human body. Have been shown to reduce impact exposure by 76%.

**Do not break.**

Structural failure often causes injuries. Structural failure causes down-time and repair costs.

**Do not corrode.**

Corrosion limits lifetime. Corrosion causes functional failure. Corrosion looks unprofessional and indicates a poor choice of materials.

**Do not need any maintenance.**

Maintenance is expensive and causes down-time. All Ullman seats are constructed without joints or moving parts. That eliminates the need for lubrication and maintenance

**The lightest weight.**

Less weight means more payload or higher speed.

## Why choose Ullman seats?

**The smallest footprint.**

Frees deck space for cargo or more crew.

**Outperform any other jockey seats in terms of comfort.**

They are the result of 20 years of scientific research and engineering development.

**Reduce risk of injuries.**

Solid scientific unbiased proof is available on request.

**Reduce physical fatigue.**

Solid scientific unbiased proof is available on request.

**Do not bottom-out.**

Bottoming-out is inherently dangerous, and can give up to 3 times amplification of impact as opposed to the required reduction. Injuries can lead to lifelong suffering. Injuries can lead to legal claims.

Bottoming-out is a design fault and seat manufacturers and operating authorities could be held liable for injuries.

**The EU legislation on WBV**

Requires use of the most effective shock reduction available.

**3 years worldwide warranty – extendable.**

“They just don’t break”

**Height adjustment where it is useful – for the feet.**

Short operators don’t want to be seated lower. Tall operators don’t want to be seated higher. Seated eye-height level is most important and differs very little between tall and short people. (Height adjustment by reducing travel of suspension is counter-productive and can be dangerous, as it causes bottoming-out.)

**Have been in use by professional operators in demanding operations for many years in more than 50 countries – with zero failures.**

Several professional user organizations have thoroughly and scientifically evaluated different seats and adopted Ullman seats as a benchmark standard. Certificates from such agencies are available on request.

**Lower life cycle costs.**

Large sums can be saved on seats that last the lifetime of the boat.

# Technical Specifications

✓ = Standard  
 ◆ = Optional  
 ✗ = On request

Model	Seating positions		Recommended use		Seating height (mm)			Damper & spring unit				Upholstery			Covers		
	Straddle/jockey	Sit-down/bucket	Driver/helm	Passengers	700	750	810	UD430	UD430 6-level adjustable	UD530	UD530 6-level adjustable	Leaflex system	Leather upholstery	Vinyl upholstery	Neoprene upholstery	Cordura cover black/aze grey/solas orange	Weather protection cover
Atlantic	✓	✓	✓	✓	✓	◆	◆	✗	✗	◆	✓	ALM	✓	◆	◆	◆	◆
Atlantic custom	✓	✓	✓	✓	✓	◆	◆	✗	✗	◆	✓	ALM	✓	◆	◆	◆	◆
Atlantic crew	✓	✓	✓	✓	✓	◆	◆	✗	✗	✓	◆	ALM	◆	✓	◆	◆	◆
Arctic	✓	✓	✓	✓	✓	◆	◆	✗	✗	◆	✓	ALM	✓	◆	◆	◆	◆
Daytona	✗	✓	✓	✓	✗	✗	✗	◆	✓	✗	✗	DLM	✓	◆	◆	◆	◆
Daytona custom	✗	✓	✓	✓	✗	✗	✗	◆	✓	✗	✗	DLM	✓	◆	◆	◆	◆
Daytona crew	✗	✓	✓	✓	✗	✗	✗	✓	◆	✗	✗	DLM	◆	✓	◆	◆	◆
Patrol	✓	✓	✓	✓	✓	✓	✓	✓	◆	✗	✗	XLT	◆	◆	✓	◆	✓
Biscaya	✓	✗	✓	✓	✓	✓	✓	✓	◆	✗	✗	XLT	◆	◆	✓	◆	✓
Compact	✓	✗	◆	✓	✓	✓	✓	✓	◆	✗	✗	XLT	◆	◆	✓	◆	✓

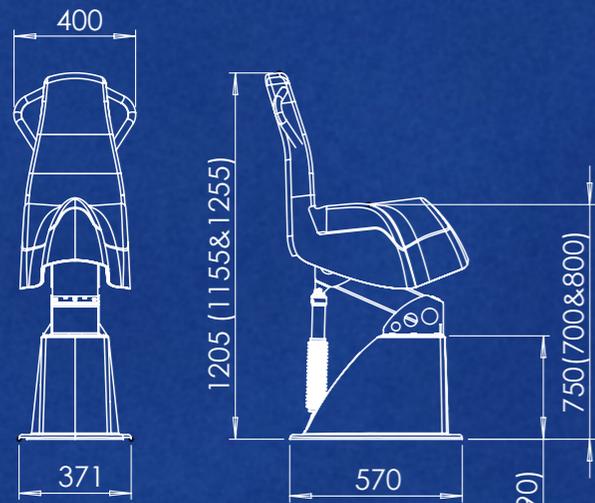
# Technical Specifications

✓ = Standard  
 ◆ = Optional  
 ✗ = On request

Model	Seat belt / harness		Armrests			Black insulating coating (pur)		Handles									
	Lapbelt air-tech	Lapbelt heli-tech	4-Point harness heli-tech	7 Axis armrest	Joystick or trackball adapter for armrest	Pistol grip handles for 7axis armrest	Black coated spring unit	Black coated handels	Grab handles / front seat handle	Handles for passenger behind	Lateral support waist	Lateral support straddle	Foldable Footrest	6 level adjustable footrest	Slider (150 / 200 / 250mm)	Swivel (45 / 90 / 180 / 360°)	Track system (quick release)
Atlantic	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	✓	✓	◆	◆	◆	◆	◆
Atlantic custom	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	✓	✓	◆	◆	◆	◆	◆
Atlantic crew	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	✓	✓	◆	◆	◆	◆	◆
Arctic	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	✓	✓	◆	◆	◆	◆	◆
Daytona	◆	◆	◆	◆	◆	◆	◆	◆	◆	✗	✓	✗	◆	✗	◆	◆	◆
Daytona custom	◆	◆	◆	◆	◆	◆	◆	◆	◆	✗	✓	✗	◆	✗	◆	◆	◆
Daytona crew	◆	◆	◆	◆	◆	◆	◆	◆	◆	✗	✓	✗	◆	✗	◆	◆	◆
Patrol	◆	✗	✗	◆	◆	◆	◆	◆	◆	✓	◆	✓	◆	✗	◆	◆	◆
Biscaya	◆	✗	✗	✗	✗	✗	◆	◆	◆	✓	◆	✓	◆	✗	◆	◆	◆
Compact	◆	✗	✗	✗	✗	✗	◆	◆	◆	✓	✗	✓	◆	✗	◆	◆	◆

# Drawings

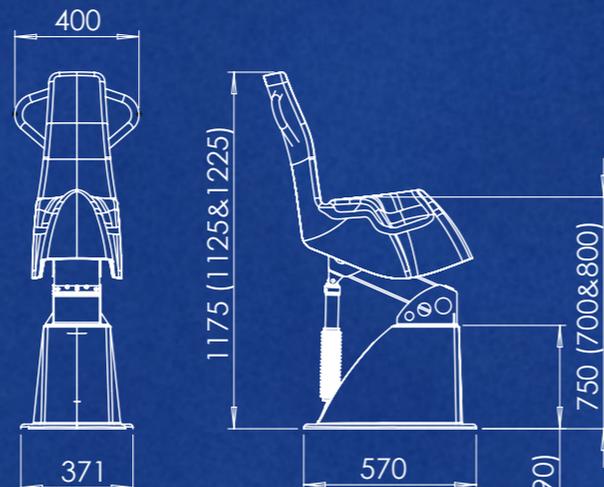
## Patrol



PATROL

WEIGHT	22KG / 48,5LBS
STROKE	150 MM / 5.9 IN
DAMPER	UD 430
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, GRP, NEOPRENE

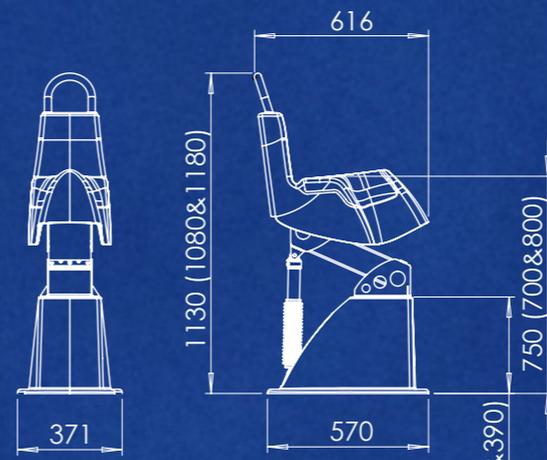
## Biscaya



BISCAYA

WEIGHT	20KG / 44LBS
STROKE	150 MM / 5.9 IN
DAMPER	UD 430
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, GRP, NEOPRENE

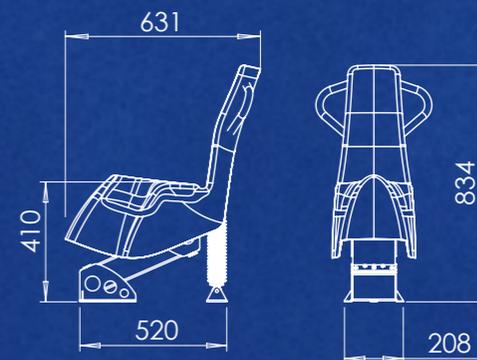
## Compact



COMPACT

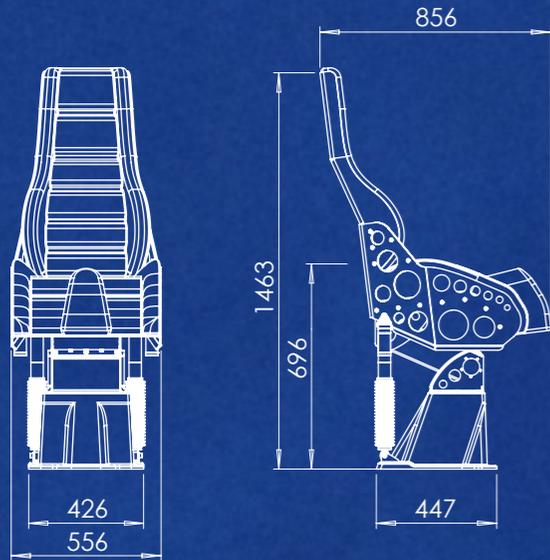
WEIGHT	19KG / 41,9LBS
STROKE	150 MM / 5.9 IN
DAMPER	UD 430
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, GRP, NEOPRENE

## Seat type -00



All Ullman Jockey seats and Atlantic seats can be fitted to existing bases. These seats are called type -00. Here, the dampers are mounted on the backrest, which allows a level mounting surface for both dampers and spring unit. Weight reduction = 6-8 kg

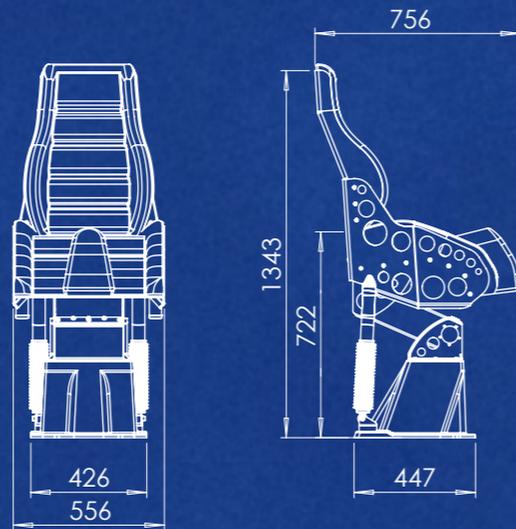
## Atlantic Series



ATLANTIC

WEIGHT	43.5KG / 95,9 LBS
STROKE	200 MM / 7.9IN
DAMPERS	2x UD 530 ADJUSTABLE
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, CARBON FIBRE, PREMIUM LEATHER / VINYL

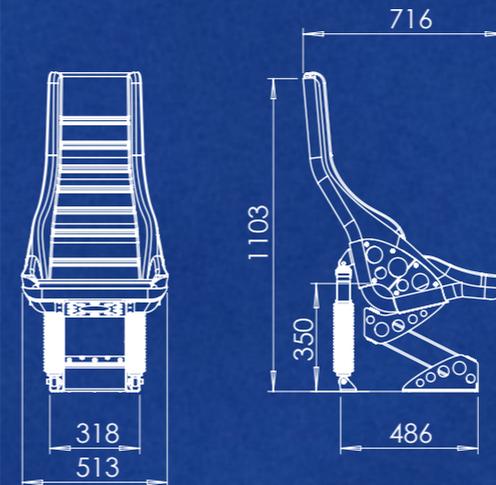
## Arctic



ARCTIC

WEIGHT	41.5KG / 91,5 LBS
STROKE	200 MM / 7.9IN
DAMPERS	2x UD 530 ADJUSTABLE
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, CARBON FIBRE, PREMIUM LEATHER / VINYL

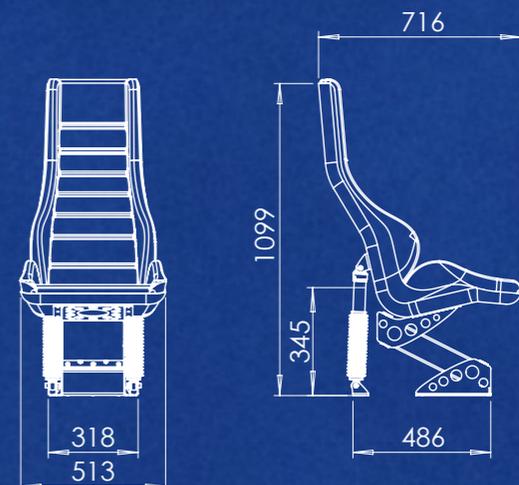
## Daytona



DAYTONA

WEIGHT	22KG / 52.9 LBS
STROKE	150 MM / 5.9 IN
DAMPERS	2x UD 430 ADJUSTABLE
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, CARBON FIBRE, PREMIUM LEATHER / VINYL

## Daytona Crew



DAYTONA CREW

WEIGHT	25KG / 57.3LBS
STROKE	150 MM / 5.9 IN
DAMPERS	2x UD 430
MATERIALS	STAINLESS STEEL SS-316L, MARINE GRADE ALUMINIUM, GRP, VINYL

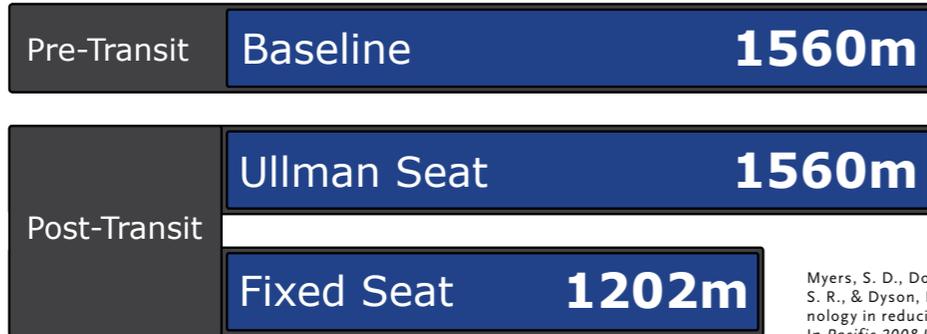
# Fatigue

Travelling on high-speed boats is physically exhausting. High energy consumption makes you very tired and affects physical performance. Ullman suspension seats significantly reduce energy consumption compared to fixed seating.

Running performance is significantly reduced in military personnel after a high-speed transit when using fixed seats. Using Ullman Jockey Seats increases post-transit physical performance and endurance by 30.5 % compared to fixed seats.

The test below shows zero reduction in running distance of passengers on Ullman seats, while passengers on fixed seats reduced their running distance by 358 meters.

Ullman Seats not only reduce the risk of injury but they also enhance the operational performance of the boat crew and passengers. When operators are challenged with military or lifesaving tasks, the difference between exhausted and alert could mean life or death.



The graph on the opposite page shows a recording done with a DaccR.

Green = Speed over ground  
Blue = g-force on boat  
Red = g-force on driver in Ullman seat

It shows the significant shock mitigation of the Ullman seats.

**Platform**  
Two military HSC  
28' Arctic RIB (Halmatic)

**Transit details:**  
HSC ran side-by-side  
Duration: 3 hours  
Sea-state: 2-3  
Speed: ~40 knots.

**Seating:**  
Standard In-service fixed seats  
Ullman Jockey Seat Biscaya.

Myers, S. D., Dobbins, T. D., King, S., Hall, B., Gunston, T., Holmes, S. R., & Dyson, R. (2008). The effectiveness of shock mitigation technology in reducing motion induced fatigue in small high speed craft. In *Pacific 2008 International Maritime Conference*.

# The Impact of Shock

The human body has a complex system of muscular reflexes, developed and evolved to protect us from injury.

Reflexes are designed to trigger reactions in our muscles, to protect us against impacts. The muscular response is obvious in our legs, but is also at hand in our arms, torsos and necks. When muscles react to impact, they contract - to serve as shock absorbers - and to stabilise the spine and joints.

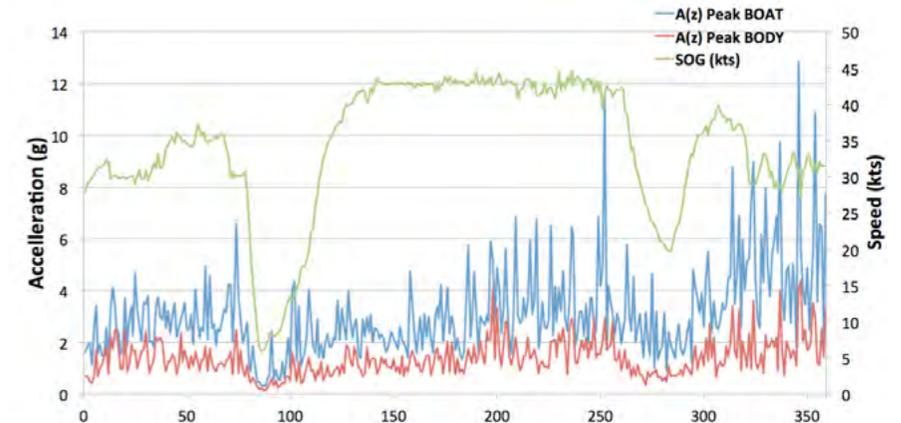
Sitting in a traditional seat always puts your spine into a C-shape. - Sitting hurts. Then the weight of the head is hanging forward of its supporting structures in the neck. This is the worst position for the spine to be in when exposed to a vertical impact. There is risk for head jolts. This can cause whiplash-like distortion injuries and disk ruptures in the neck. Even the risk of vertebral fractures and lumbar disk hernias is much higher with the spine in this C-shape.

Standing keeps the spine in its natural, balanced, S-shaped posture. So race-boat drivers have often chosen to stand. But standing does multiply impact forces and causes injuries to the spine.

The Ullman Seats are developed with a special semi-active suspension system, designed to synergise with nature's muscular, reflex-based, protection system. All Ullman seats are also designed to maintain the optimal S-shape of the spine and balance of the head at all times.

The progressive patented suspension system and the synergies with the biologic response, neutralises the resonance effects that make other suspension seats capable of bottoming out - multiplying impacts.

Ullman Seats are developed based on pioneering medical science. They are independently scientifically validated and proven to give the most effective shock protection of all seats.



# References



NORWEGIAN POLICE  
RESPONSE TEAM



ITALIAN SPECIAL FORCES



COLOMBIAN NAVY



MALTA ARMED FORCES



MEXICAN ARMED FORCES



FRESHWATER LIFE BOAT  
ISLE OF WIGHT



PORTUGUESE NAVY  
SEA RESCUE



GERMAN NAVY KAMPF-  
SCHWIMMER KOMPANIE



LITHUANIAN  
COAST GUARD



FINNISH LIFE BOAT  
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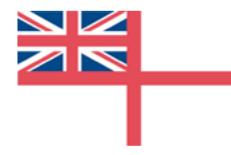
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GUARD



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# References



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