

# MOHICAN Inspection ROV System



Our Mohican Inspection Class ROV system incorporates an enhanced propulsion system allowing it to continue working in high current conditions when other systems have to return to surface, providing a customer benefit of reduced vessel time and costs.

- Ultra-High Thrust Greater Than 100 kgf / 220 lbf Both Axial and Lateral
- Six Brushless DC Thrusters with Sub-Atlantic's Statorshield™ Technology and Dynamic Vectoring
- 3000 Volt, 400 Hz Power System
- Long, Small Diameter, Low Drag Tether
- 2,000 Metre / 6,500 Feet Standard Rating
- 35 kg / 77 lbs Standard Payload (Options)
- Auto-Functions
- Multiple Video Channels
- Deep Live Boat, Tunnel or TMS Operation
- Manipulator Options
- Integral High Pressure Cleaning System Option
- Various Skid Options

The Mohican ROV features a small diameter tether and high output brushless DC thrusters operating on Sub-Atlantic's 'Dynamic Vectoring™' system. The Mohican comes with three or six simultaneous video channels transmitted through a fibre-optic telemetry system for sharp, high quality video inspections. The ROV is also equipped with additional power sources for attachment of manipulator and tools such as our high pressure jetting and cleaning skid used in platform inspections.

Mohican uses a 3000 Volt, 400 Hz power transmission system from surface to ROV resulting in a small tether, main lift cable and launch & recovery system. This transmission system makes Mohican particularly suited for long tunnel inspections and deep live-boating operations.



## Live Boat or TMS Operation



The Mohican can be free-flown in 'live boating' mode or with our cage type TMS systems (see TMS data sheet). We also offer a range of Launch and Recovery Systems (LARS)

## Compact Control

Surface equipment consists three basic units:

- Surface Control Unit (SCU) in an 8U x 19" rack mount configuration.
- Transformer Power Unit (TPU) incorporating transformer in a floor mounted cabinet
- Hand Control Unit (HCU) which is lightweight and portable.

The components are generally installed in a ISO control cabin supplied by customer or Sub-Atlantic.



The HCU (top), SCU (left ) and TPU (right) are compact for operation in small control spaces. The three units are linked by interconnecting cables with plugs and sockets

As an alternative, the HCU and SCU can be supplied mounted in a 19 in. rack mount flight case complete with two 9" colour monitors. An additional spare slot can accommodate a video recorder. The rear case panel fixes to the base during operation to locate the HCU.



## Mohican System Specification

### ROV General Specification

Depth Rating.....	2000 msw (6560 fsw ) standard (deeper options)
Payload: .....	35 kg (77 lb) lead ballast
Height.....	800 mm (25.5 in.)
Length.....	1150 mm (45.3 in)
Width .....	770 mm (30.3 in)
Mass in Air.....	290 kg (640 lb)
Max. Thrust @ 0 Knots with zero voltage losses:	
Forward .....	110 kgf (242 lbf)
Reverse.....	110 kgf (242 lbf)
Lateral.....	110 kgf (242 lbf)
Vertical.....	75 kgf (165 lbf)
Max.Velocity/Operational Current (zero tether excursion):	
Forward.....	1.75 m/s (3.5 Kt)
Reverse.....	1.75 m/s (3.5 Kt)
Lateral.....	1.75 m/s (3.5 Kt)
Vertical.....	1.0 m/s (2.0 Kt)
Turning Rate.....	180 Degrees per Second (approx)
ROV Power Requirements .....	440 Vac 3ph 50/60 Hz 15k VA

### Surface Equipment General Specification

#### SCU

Height.....	355 mm (14.0 in.)
Width .....	483 mm (19.0 In.)
Depth.....	450 mm (17.7 In.)
Mass.....	12 kg (27 lb)
SCU Power Requirements.....	220/240 Vac 50/60 Hz 2 kVA

#### TPU

Height.....	650 mm (25.6 in.)
Width .....	630 mm (24.8 In.)
Depth.....	505 mm (19.9 In.)
Mass.....	(approx.)50 kg (330 lb)

#### HCU

Height.....	160 mm (6.3 in.)
Width .....	480 mm (18.9 In.)
Depth.....	230 mm (9.1 In.)
Mass.....	1.5 kg (3 lb)

#### Flight Case Option with 2 x 9" monitors & 8U control module

Height (operation).....	980 mm (38.6 in.)
Height (transport).....	800 mm (31.5 in.)
Width .....	520 mm (20.5 In.)
Depth (operation).....	720 mm (28.3 In.)
Depth (transport).....	550 mm (21.7 In.)
Mass.....	66 kg (145 lb)
SCU Power Requirements.....	220/240 Vac 50/60 Hz 2 kVA

#### Tether and Main Lift Cable Dimensions

Tether (standard).....	16.5 mm / 0.65 in. diameter
Main Lift Umbilical (up to 4000 msw) .....	25.5 mm / 1.0 in. diameter

## Reliable Thrusters

Mohican uses a 6 thruster configuration to provide maximum horizontal and vertical capability.

- 4 x SPE180 horizontal thrusters in a vectored configuration producing very high all round thrust utilising Sub-Atlantic's 'Dynamic Vectoring' system.
- 2 x SPE180 vertical thrusters vectored outward to clear the vehicle lower deck leaving it free of cut-outs in way of tools and skids.

*Sub-Atlantic's SPE-180 high-reliability brushless DC thruster develops 45 kgf (100 lbf) of static thrust in both directions.*



## Statorshield™ Technology Equates to Reliability

Subsea thrusters are prone to water entering through the shaft seals and causing short circuit failure of the stator windings. Statorshield™ technology eliminates this



problem by the introduction of an internal sealed diaphragm located between the rotor and stator, creating two separate isolated and sealed volumes (Rotor cavity and Stator cavity). Water cannot reach the stator and electronics through the shaft seal preventing a catastrophic failure due to shaft seal leakage. Operation can continue until the machine is recovered when the rotor cavity can be flushed, seals replaced and refilled with oil.

## Dynamic Vectoring™

- This allows the thruster vector angle to be adjusted remotely to the optimum thrust setup to suit changing current direction.
- Vector angle is actuated using a 2nd camera tilt unit and is displayed on the video overlay.

## Lighting

- 4 x 250-Watt halogen lamps, dimmer controlled on 2 circuits

## Camera Facilities

- Tilting bracket for mounting two cameras (SIT size) and lamp.
- Tilt position angle on video overlay.

## Electronic Pod and Telemetry

- Fibre-Optic telemetry system providing 3/6 x video, 4 x RS232 & 2 x RS485 and optional Ethernet
- Vehicle Communication utilises 1 x RS485 channel. Uplink/Downlink includes 8 analogue channels and 16 digital switch channels all with 12 bit resolution.
- All electronics are located in a single aluminium alloy housing rated to 2000 msw / 6560 fsw.
- Housing end cap incorporates all the electrical connectors for the various ROV components and optional sensors.
- Vacuum and water ingress alarms.

## Frame

- High impact resistance & buoyant polypropylene.
- Optional bullet for live boating.

## Buoyancy

- Three easily lifted modules with closed cell micro-spheres rated to 2000 msw (6560 fsw).

## Transformer/Junction Box

- The 3000 Volt transformer box serves as the junction box for the tether and the power outlet

## Vehicle Power Outlet

- The transformer box provides a 320Vdc power outlet to drive external equipment up to 7.5 kW (10 hp).
- Optional drive block can be supplied to drive AC motors.

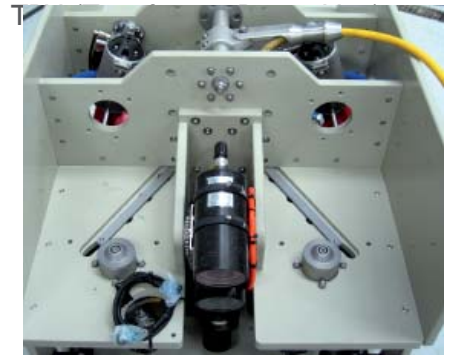
## Surface Equipment

### SCU (Surface Control Unit)

- 2 x 15" Colour monitors
- Light dimmers
- Automatic depth & heading control (altitude optional)
- Tether/Umbilical turns counter
- Video overlay system
- Earth leakage protection system

### HCU (Hand Control Unit)

- 2 x control joysticks
- Light dimmer controls
- Camera and Tilt controls
- Digital switches
- Dynamic Vectoring control
- Auto-function control
- Joystick trims
- Thruster power trims and isolations
- TMS tether pay in/out



*Mohican features Dynamic Vectoring™ that allows remote adjustment of the standard 45 degree thruster vector angle between 25 and 65 degrees. (see mechanism in image above, image also shows Live boating umbilical termination)*

- 400 Hz, Power Inverter and filtering
- 3000 Volt transformer
- Line insulation current monitor
- Main lift cable entry gland

## Tether

The Mohican uses a 16.5 mm / 0.65 in. diameter tether. A neutral tether is also available.

## Main Lift Umbilical

Sub-Atlantic ROVs use a common 25.5 mm / 1.0 in. diameter umbilical suitable for all our open frame vehicles, simplifying spares and interchangeability between systems.

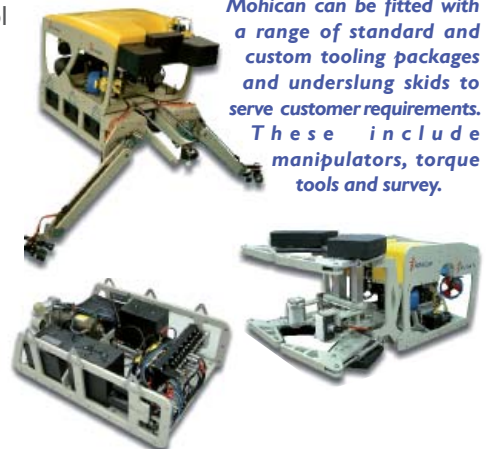
## Sensors & Equipment

The Mohican ROV system will support a range of sensors and equipment, typically:-

- Cameras, Sonar's, Oceanographic Sensors,
- Small hydraulic and electric manipulators
- Tool skids, torque tools, FMD tools, cleaning and jetting tools, inspection equipment.

- Various sizes and configurations available

*Mohican can be fitted with a range of standard and custom tooling packages and underslung skids to serve customer requirements. These include manipulators, torque tools and survey.*





## Tether Management System

Sub-Atlantic's cage type TMS is reknown in the industry for ruggedness,, reliability and simplicity.

- Size 1 suitable for Mohican
- 350metres capacity of 16.5mm diameter tether
- Stainless steel telescopic frame allowing underslung tool skids on ROV
- Fully electric, single drive motor
- Refer to TMS data sheet.

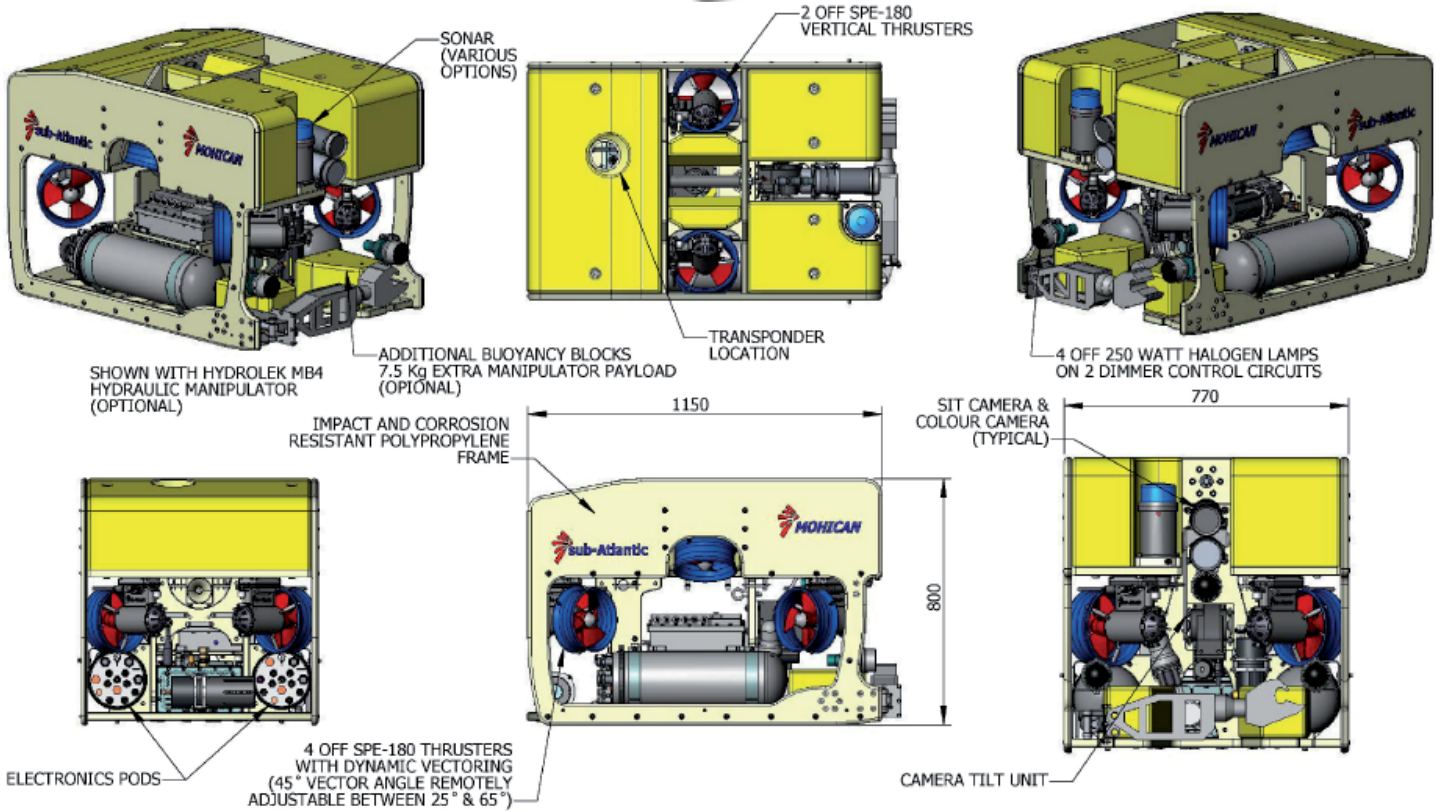


## Launch & Recovery Systems

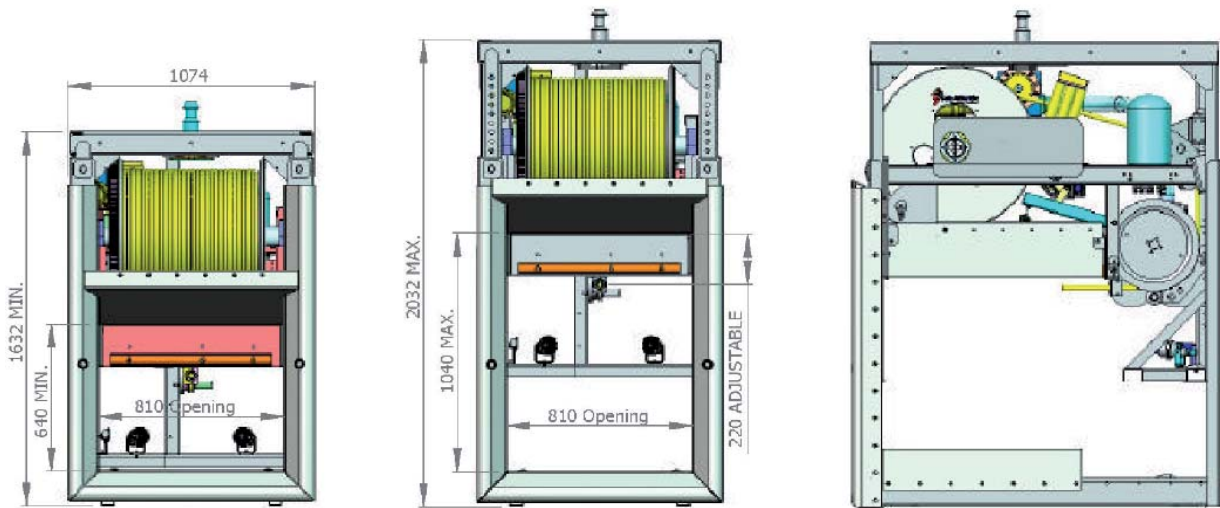
Launch and recovery systems can be supplied to different depth requirements and formats such as A-frame or jib crane.

### Control Cabins

- Various sizes and configurations available
- A60 and Zoned specifications
- Workshop options



### Mohican ROV Dimensions



### Size 1 TMS Dimensions

*The specification details are illustrative for marketing purposes only. Actual equipment may be different as a result of product improvement or other reasons. Specific interface and performance information should be reconfirmed at time of order placement.*



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