



ASIS RIVERINE 12M

High Performance Aluminum

Patrol Watercraft 12M (Waterjet Propulsion)

GENERAL CHARACTERISTICS



Watercraft for use in military operations, able to operate in shallow waters, with high mobility and maneuverability, built with an aluminium hull, with collar edge high density foam, coated with polyethylene, with weapon system, communications system (command and control), navigation system, night vision system, armoured protection level 3, dual engine turbo diesel powered, waterjet propulsion, with center console and area for troop transport capable of carrying 18 (eighteen) people or 2,000 (two thousand) kg of cargo, develop under this condition speeds of at least 30 (thirty) knots at cruising speed and 36 (thirty six) knots at full throttle. It should be able to be transported by fixed-wing military aircraft (Hercules model C-130) and rotary wing military aircraft. It should be capable of beaching to allow the loading and unloading of troops from the bow through articulated ramp. It should also be capable of operating in shallow waters and the coastline (up to Sea Level 2 NATO) as well as being able to maneuver at high speed

TECHNICAL DETAILS OF WATERCRAFT

Length Overall:	12.00 m
Beam:	3.10 m
Draft:	0.69 m
Dead rise	18 degrees
Crew	2 (Two) Persons (260 Kg)
Passengers	1 (Sixteen) persons (2,080 Kg)
Payload	2,000kg
Lightship Weight	7,000 kg
Fuelled Empty Weight	8,000 kg
Full Load Weight	10,300 kg
Fuel Capacity	2 x 700 Ltrs
Top Speed (Light Condition)	36 knots
Cruising Speed	32 knots
Standard Engine Package (2 inboard engines with waterjet propulsion)	2 x Yanmar 6LY2A 440HP with ZF280-1 gearboxes and Hamilton HJ 292 waterjets

2.1

WEIGHT of Boat

- ◇ **2.1.1** Unloaded Weight of about 7,000 Kg
- ◇ **2.1.2** Light Ship Weight (With Fuel) About 8,000 Kg

2.2

CARRYING Capacity

- ◇ **2.2.1** 18 (Eighteen) people (2 Crews and 16 PAX)
- ◇ **2.2.2** Loaded weight maximum of 2000 Kg

2.3

PERFORMANCE (With Maximum Load)

- ◇ **2.3.1** Cruise: 32(thirty-two) knots
- ◇ **2.3.2** Full throttle: 36 (thirty Six) knots
- ◇ **2.3.3** Autonomy of at least 250nm without the need of additional fuel tank
- ◇ **2.3.4** Capable of total stop, starting from the maximum speed, over a distance of one and a half times the length of the vessel without compromising the impeller system.
- ◇ **2.3.5** Ability to be driven in a controlled curve of 180 degrees, at full speed, a distance not exceeding one and a half times the length of the vessel and the pilot continues to have full control while executing the curve.
- ◇ **2.3.6** The vessel s also provide ballistic protection for ammunition of up to 7.62 mm caliber

HULL

- ◇ **2.4.1** V-shaped, built with naval aluminium plate, thickness of ¼ inch Alloy 5083.
- ◇ **2.4.2** Made with structural reinforcements and double steel plate keel, welded for protection, allowing beaching at speed and the unloading of troops
- ◇ **2.4.3** Removable fender built with polyethylene foam in solid cell and Neoprene / Hypalon, on the bow and the sides of the vessel as part of a system that ensures the buoyancy of the vessel, ensuring that it remains at least 150mm above the water level when fully loaded and 10% out of the water when completely flooded, serving as a survival platform for the people onboard.
- ◇ **2.4.4** Exterior paint in camouflage pattern

CONSOLE And Deck/Cockpit

- ◇ **2.5.1** The entire hull, deck, structure and console are constructed of up to 6,0mm thick aluminium alloy plate 5083 grade.
- ◇ **2.5.2** All lockers and hatches including the engine hatches are fitted with locks. The engine hatches are each fitted with twin gas struts to assist opening the hatches and to lock them in the open position.
- ◇ **2.5.3** ASIS RIVERINE 12M is fitted with non-slip and impact absorbing coating.

- ◇ **2.5.4** ASIS RIVERINE 12M is fitted with four lift points on the deck for lifting the craft using a 4-legged strop. These lift points can be used for general lifting of the craft as well as for slinging the craft under a rotary wing military aircraft. The lift points are designed for lifting the maximum craft weight, without any personnel onboard. The lift point is bolted to the hull structure and on completion is overload tested to twice its Safe Working Load or to 7 tons whichever is the greater
- ◇ **2.5.5** ASIS RIVERINE 12M is fitted with bench seats on th deck for 16 troops seated back to back strap and grab handles to be fitted. The seats are secured to the deck to enable installation and removal of the seats.
- ◇ **2.5.6** ULLMAN BISCAYA Suspension seats for 2x fully equipped crew members
- ◇ **2.5.7** The cockpit have a removable/retractable canopy allowing protection against precipitation and sunlight
- ◇ **2.5.8** Provide the cockpit console, the collective weapon shooters bow, stern, port and starboard stations, and the troops onboard with armor protection level 3 (up to 7.62 mm calibre).
- ◇ **2.5.9** Have horizontal polyethylene armor plates, removable, fixed on the collar of the vessel, being optimized for oblique trajectories of projectiles from 0 degrees to 15 degrees
- ◇ **2.5.10** The components of the armor should be lightweight and modular allowing for their removal without the need of special tools
- ◇ **2.5.11** Ballistic protection does not interfere with the normal operation of the craft
- ◇ **2.5.12** The engine compartment and fuel tanks are also protected above the waterline with Dyneema panels specified to protect against a 7.62mm round to NATO level 3.
- ◇ **2.5.13** The deck will self-drain with the craft in the Full Load condition without the use of bilge pumps. This is a feature of all ASIS RIVERINE 12.5M.

ENGINES Compartment And Propulsion Engine

- ◇ **2.6.1** Two YANMAR diesel inboard engines, turbo charges, marine with minimum power of 440 HP each and functioning independently.
- ◇ **2.6.2** Multi fuel, running on diesel, JP5 and JP 8
- ◇ **2.6.3** 24V engine electrical system
- ◇ **2.6.4** ZF Gear Box: ZF 280-1 with the cooling system of the lubricating oil.
- ◇ **2.6.5** Hamilton Waterjets HJ292: The waterjets coupled to the engines (one in each) must have minimum power of 12 to 15 KW and should be controlled by switch/levers on the cockpit console for each independent waterjet. The waterjets must be installed using only screws and mechanical components making for their easier removal for maintenance, with no need to use welding equipment in order to remove them.
- ◇ **2.6.6** Independent hydraulic steering control and reversal
- ◇ **2.6.7** Impeller cover (waterjet) above the waterline for remove debris from the axis of the impeller.
- ◇ **2.6.8** Water filtration and sand retention system with self-cleaning capability (backwash) and dual flow capable of sending water to cool the engine coming from both the hull as the waterjet, allowing an uninterrupted flow. The filter should be 'screen' type made of stainless steel and will protect the engine from debris greater than 0.020 inches in diameter
- ◇ **2.6.9** High performance independent damp exhaust system (VETUS HD water-lock silencer) with low pressure return through the stern, underneath the stern deck, in order to reduce the discharge noise level. (Level 1 Aural non-detestability)
- ◇ **2.6.10** Each engine is fitted with a water inlet that allows the washing of galleries internal engine cooling with water through the hose connection, for preventative maintenance-post operation.

ELECTRICAL System and Equipment

- ◇ **2.7.1** All electrical cables and harnesses will be secured by metal clamps with protection against abrasion, except in the electrical boxes, where plastic clamps can be used
- ◇ **2.7.2** Electric circuit composed of two independent groups of batteries. Batteries will be 12 VDC, interconnected in order to provide two outputs with voltage of 24 VDC non-grounded. One output of 24 VDC will be used to start the engines; the other output shall be used for the remaining circuits of the vessel.
- ◇ **2.7.3** Provided a subsystem of 12 VDC non-grounded, obtained through a converter 24 VDC-12 VDC.
- ◇ **2.7.4** The outlets and connectors of 24 and 12 volts in different sizes to prevent the connection of devices in the wrong voltage.
- ◇ **2.7.5** The power distribution board (12 and 24 volts) will be used for distributing all the current required to operate the vessel and must have at least 4 spare circuits for each voltage (12 and 24 volts).
- ◇ **2.7.6** The circuit breakers protected by waterproof two-pole circuit breakers.
- ◇ **2.7.7** Circuits over 50 A enclosed by waterproof single or double-pole circuit breakers.
- ◇ **2.7.8** The engine start batteries are installed within the engine compartment in splash proof battery boxes. The services batteries are installed inside the console within a splash proof battery box. All the batteries are secured in place to prevent any movement.
- ◇ **2.7.9** The circuit breakers will be identified with their function, designating circuit and amperage

- ◇ **2.7.10** Each battery bank is isolated by a marine single-pole battery isolator switch. The switches are mounted for ease of operation from the open deck. The photograph shows a typical ASIS RIVERINE 12.5M installation.
 - ◇ **2.7.11** The batteries must be packed with support that allows for their safety, keeping them fixed in their bases, withstanding movements with abrupt maneuvers in all directions of the vessel.
 - ◇ **2.7.12** The cables should be clearly identified, at its ends, by aluminium tags or tubular labels affixed to the harness
 - ◇ **2.7.13** Provided a 'master switch' (switch) each group of batteries.
 - ◇ **2.7.14** Provided at least, 4 (four) bilge pumps with fire protection, capable pumps with fire protection, capable of being operated electrically or manually
 - a) In the cabin, there should be a switch to operate the pumps, with each one having the minimum output of 7,500 litres per hour
 - b) Provided electrical buoy (ignition protected) for automatic operation, and each bilge pump must have a power indicator in the console center console.
- The pumps must be activated automatically even with the vessel docked, preventing damage with inadvertent entry of water.
- ◇ **2.7.15** The battery charging system should be mounted so that the alternator, operated by the engines, charge both sets of batteries. The circuit shall isolate each alternator enabling that, in case of failure of one of the alternators, the other can provide the necessary to charge the battery groups
 - ◇ **2.7.16** Have an 'emergency outlet' of 24 volt, NATO standard, installed and connected to the starting circuit of the engines by the use of its own switch.

- ◇ **2.7.17** Have installed in a waterproof console the complete instrumental for control of the engines, start button, test lamp and panel lighting controlled by a dimmer. The console must contain the analog instrumentation that includes tachographs, engine coolant temperature, engine oil pressure, engine hour meter and voltmeter. Visual and audible alarms (with a mute switch) must state: low oil pressure, engine high water temperature, high temperature of the gearbox or low voltage/failure on the load system failure, and only a visual alarm (LED) to indicate the presence of water in the fuel filter

- ◇ **2.7.18** All alarms and indicator lights, as well as the lighting of the instrument panel must have LEDs (light Emitting Diode) capable of being used with Night Vision Systems or be converted / treated with a filter material compatible with Night Vision Systems.

- ◇ **2.7.19** All the lighting of the vessel must be connected to a switch BLACKOUT so that, when the switch is activated, the entire lighting supply be turned off.

- ◇ **2.7.20** 4 (four) outlets of 12 VDC and 5 outlets of 24 VDC, with different sizes between the voltages, scattered throughout the vessel).

- ◇ **2.7.21** Lightning protection system with one compartment to store the lightning rod when not in use

- ◇ **2.7.22** JABSCO Search Light with joy stick control

FUEL System

- ◇ **2.8.1** Fuel tank made of aluminium thickness $\frac{1}{4}$ inch Alloy 5083, with the bottom and sides laminated (no weld beads) and capable of at least 1,400 liters.
- ◇ **2.8.2** Filter water separator in the fuel supply line for each of the motors. The filters should be installed in locations that allow easy access to perform maintenance.
- ◇ **2.8.3** Rubber pads for support on the structure of the vessel.
- ◇ **2.8.4** Racor fuel filters
- ◇ **2.8.5** Dual fuel pump, as well as dual fuel return

COMMAND and Control System (Material Equipment and Accessories)

- ◇ **2.9.1** NVG Compatible magnetic compass
- ◇ **2.9.2** The radar screen will be fitted with an IR filter.
- ◇ **2.9.3** 24VDC navigation horn
- ◇ **2.9.4 GPS Communication System:**
 - a. GARMIN GPSMAP-7407 XSV 7" Display 2no
 - b. GARMIN Radar- GMR-24 HD Marine Radar Scanner 4kw 48NM, GARMI
 - c. Blue Chart g2 Vision SD Card (Region: West Africa)
 - d. Garmin GSD 22 Echo sounder

The information system should be clearly viewed by the pilot and the vessel commander.

◇ **2.9.5** Stroboscopic infrared light at the top of the vessel

◇ **2.9.6 FLIR NIGHT VISION SYSTEM**

a. M-618CS 9 HZ Pal Gyro-Stabilized Long-Range Thermal Night Vision System

2.10

GUN Mount Base and Gun Post

◇ **2.10.1** 1 (one) shooting station at the stern of the vessel with 1 (one) mount. Docking mount (Gun Mount Base) for 0.50 machine gun.

◇ **2.10.2** 2 (two) shooting stations at the bow of the vessel ready receive mounts for automatic machine guns and machine guns type 'galting'.

◇ **2.10.3** Ammunition storage for 7.62mm and 0.50 we with quick and easy access in each station shooting.

◇ **2.10.4** The 2 (two) shooting stations at the bow should have electrical connectors (MS3102E20-8S) for the installation of machine gun-type 'galting' Minigun - GAU 17. The electrical connection should allow 2 (two) guns to be used at the same time.

◇ **2.10.5** All weapons foundations are designed for a recoil load of 1,500 lbs (700kg).