

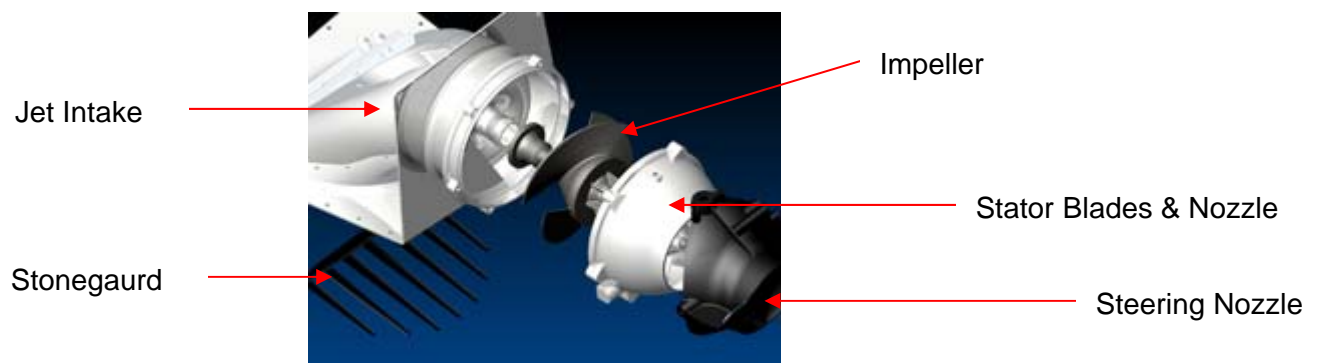
## TECHNOLOGY BACKGROUNDER

### Gibbs Technologies

#### *Explaining High Speed Amphibious (HSA) Technology*

The Gibbs Aquada incorporates a number of technological advances for amphibian transportation. Three of the many advances in technology are the Jet, the Hull and the Retracting Suspension System. Brought together in this unique vehicle, the Gibbs Aquada is truly the first ever high-speed amphibian.

#### 1. WATER JET



#### **Main function:**

- To take in a large quantity of water accelerate it and discharge it from the rear of the amphibian at high velocity, thus propelling the amphibian forward at speed

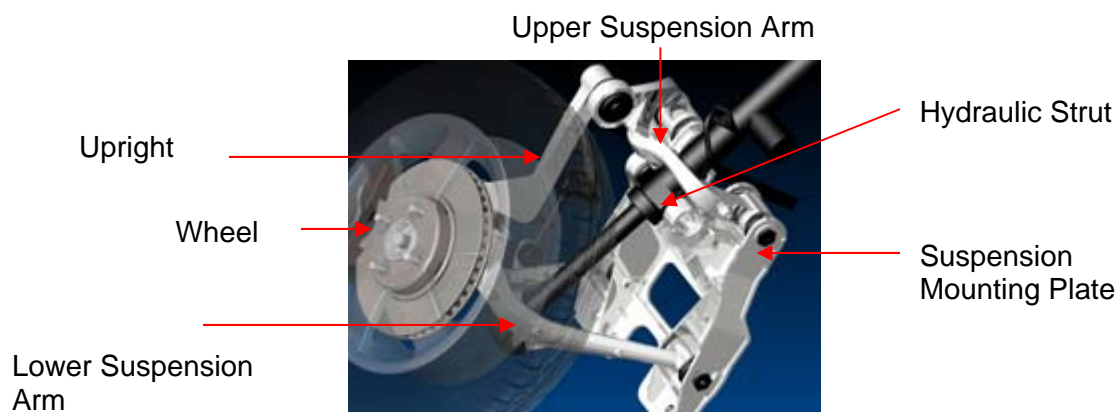
#### **How it works:**

- Water enters the jet from beneath the amphibian via the jet intake. A flush mounted stoneguard prevents large objects from entering
- The engine driven rotating impeller accelerates the flow, this imparts axial and centrifugal energy to the water stream.
- The stator blades & nozzle then straightens and converges the flow producing a high-speed jet. This is used to propel the amphibian
- The steering nozzle is mounted on the back of the stator nozzle and is connected to the normal steering wheel. It is used to direct the water jet in order to steer the amphibian
- The Water Jet may be run in reverse to provide the amphibian with a low speed reversing capability

## Advantages

- The water jet provides a highly manoeuvrable water-craft. Indeed with the steering at full lock, the amphibian will turn on its own length in displacement mode.
- The impeller is contained inside the body of the jet, therefore is very safe for swimmers.
- The Gibbs Aquada Jet has been designed to be lighter and more compact, compared to most other water jets it is half the length and one third of the weight.
- Easy to repair and service

## 2. RETRACTING SUSPENSION



### Main Function:

- Provides conventional standards of ride and handling when in road operation
- Retracts all four wheels out of the water flow stream, thus reducing hull drag for marine use.

### How it works:

- The Gibbs Aquada is transformed from land to water mode at the touch of a single button. The amphibian senses when it is in water, and so will not allow retraction of its wheels when on dry-land
- Hydraulic pressure is applied to the Hydraulic Strut, which lifts the wheel and tyre assembly to its retracted position within the wheel housing
- At the same time the wheels are 'decoupled' so they are no longer driven by the engine

### **Advantages**

- Retracting the wheels into the wheel housing prevents them from dragging through the water, enabling the amphibian to plane faster and manoeuvre better.

### **Strut Hydraulic technology**

Below are important components of the hydraulic strut that enables it to provide normal suspension and retract the wheel:

- Conventional Spring/Damper
- Bump Stop
- Hydraulic Retraction Strut
- Variable ride height
- Retraction lock pin prevents retraction on road
- 17 valves in Hydraulic system

### **Aluminium Technology**

- Lightweight components

## **3. HULL**



### **Main Function:**

- Provides a stable planing surface allowing the Gibbs Aquada to skim/plane over the surface of the water when given sufficient thrust from the jet.
- Provides grip for high speed handling performance on water.

### **How it works:**

- The hull has a keel fin that gives directional stability

- Spray rails and chines contain the spray either side of the amphibian and away from the cockpit
- In addition Chines and Strakes provide grip in cornering to give exceptional manoeuvrability.

### **Advantages**

- Managing the spray ensures that the occupants remain dry.
- The hull has been carefully, hydro-dynamically engineered to ensure maximum manoeuvrability on water in displacement and planing modes.
- Designed to be aerodynamic in road mode and hydrodynamic in marine mode.
- Composite construction, single piece mould.
- Provides over 1750kg of hydrodynamic lift.