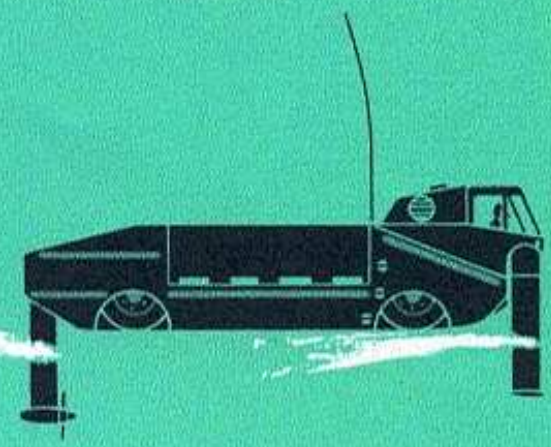
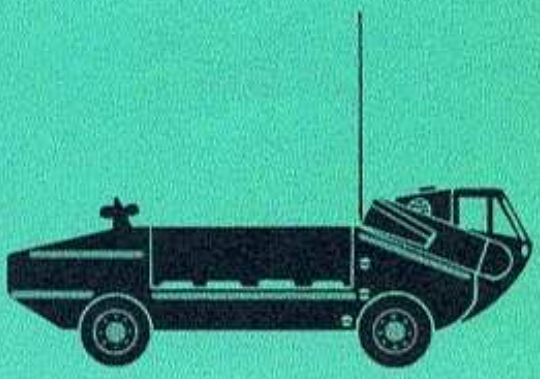


Lycoming LVH

LANDING FORCE AMPHIBIOUS SUPPORT VEHICLE, HYDROFOIL

DEVELOPED UNDER CONTRACT WITH THE BUREAU OF SHIPS FOR THE U. S. MARINE CORPS.

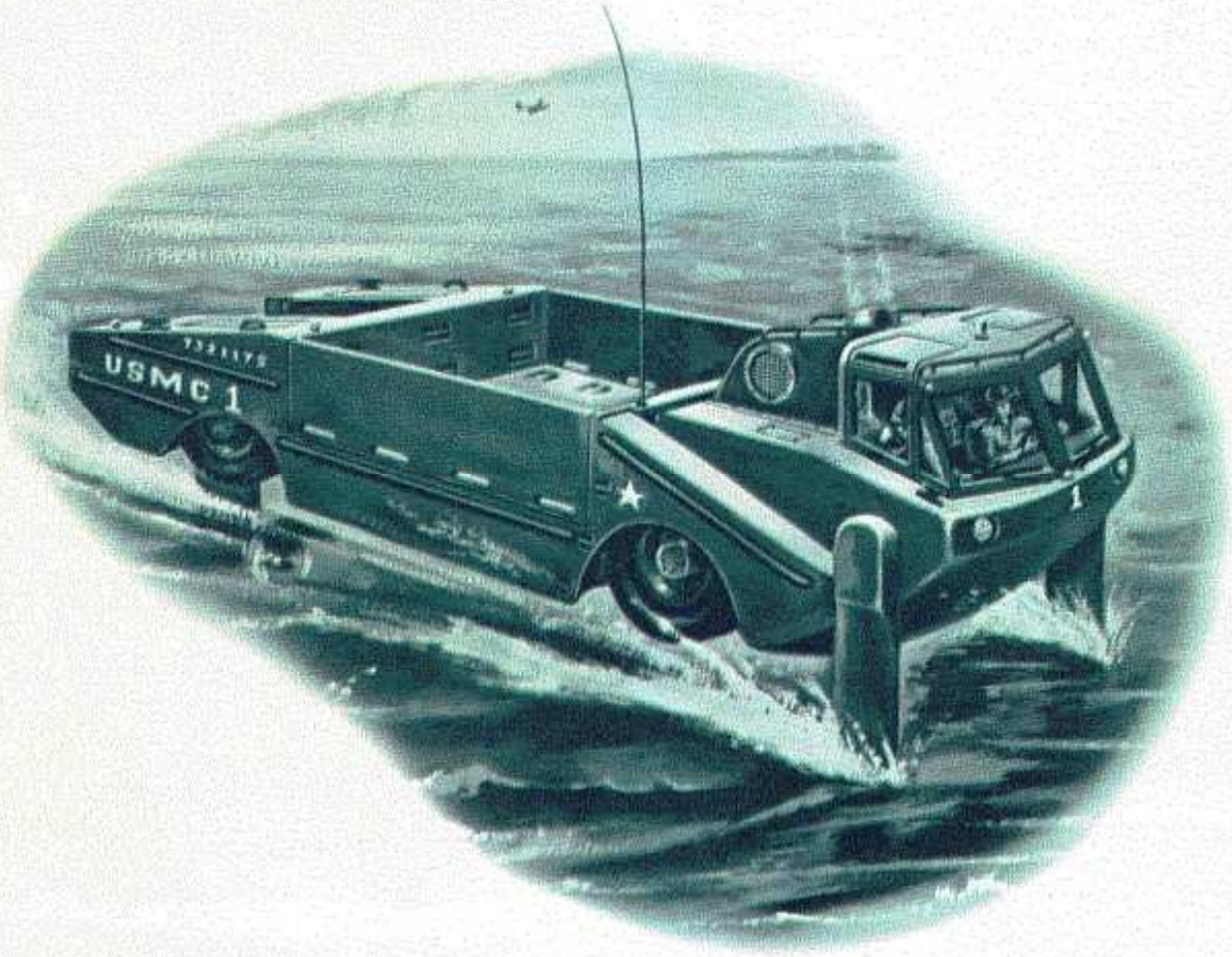


Lycoming
DIVISION OF AVCO CORPORATION
STRATFORD, CONNECTICUT

Lycoming

L V H

LANDING FORCE AMPHIBIOUS SUPPORT VEHICLE, HYDROFOIL



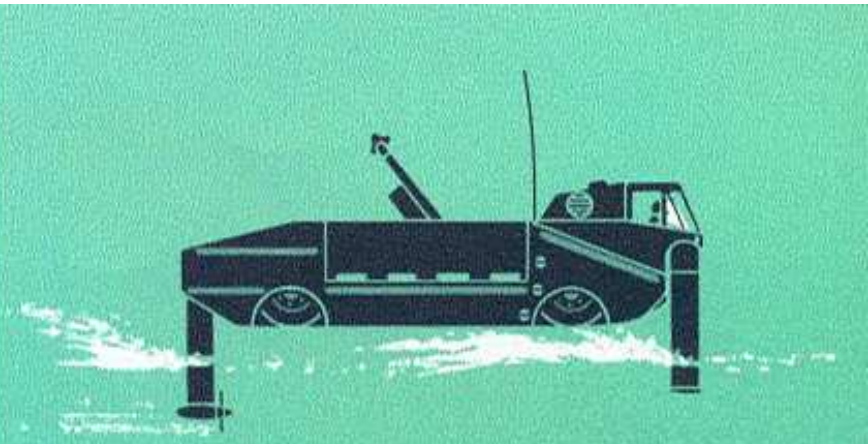
● **HIGH-SPEED AMPHIBIOUS OPERATIONS** — made possible by the combination of a gas turbine engine and controlled incidence, fully submerged hydrofoils! Designed by Avco Corporation's Lycoming Division, the new Landing Force Amphibious Support Vehicle, Hydrofoil (LVH), will give the U. S. Marines a high-performance vehicle to enable them to transport cargo or troops efficiently during all phases of amphibious operations.

● **FLYING OPERATION** — with foils extended, the LVH is capable of speeds in excess of 35 knots, in rough water.

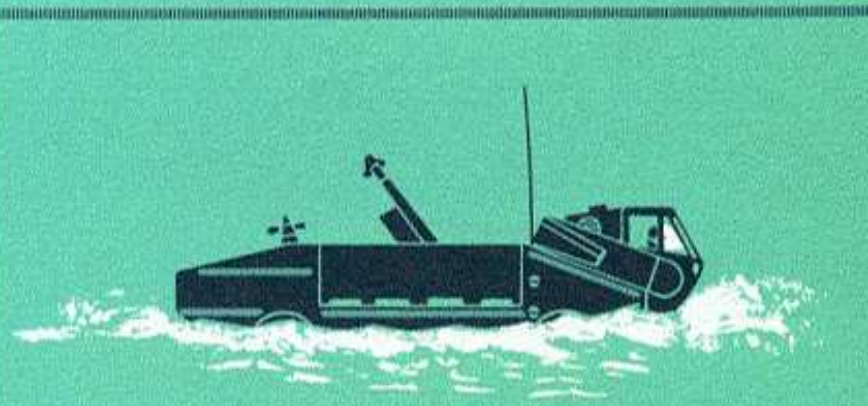
● **BOATING OPERATION** — with foils stored within the hull, the LVH is able to boat through water and surf at speeds up to 12 knots, with full dynamic steering.

● **LAND OPERATION** — with wheels extended and foils stored the LVH can traverse difficult beaches, mud, sand dunes and rough terrain, and travel overland at speeds up to 40 mph.

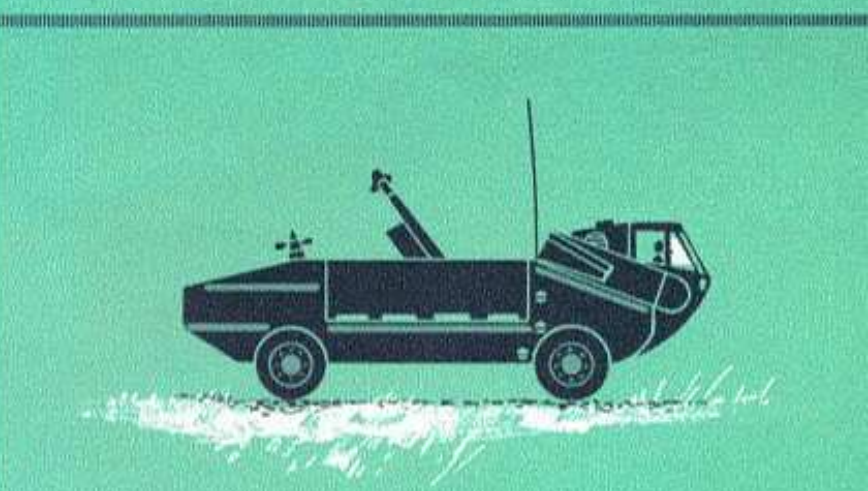
The LVH has a boating speed of 12 knots, almost twice that of existing amphibious vehicles. In its flying configuration with the hull of the LVH out of the water and its wheels retracted, drag is so reduced that speeds in excess of 35 knots may be obtained even in a state three sea.



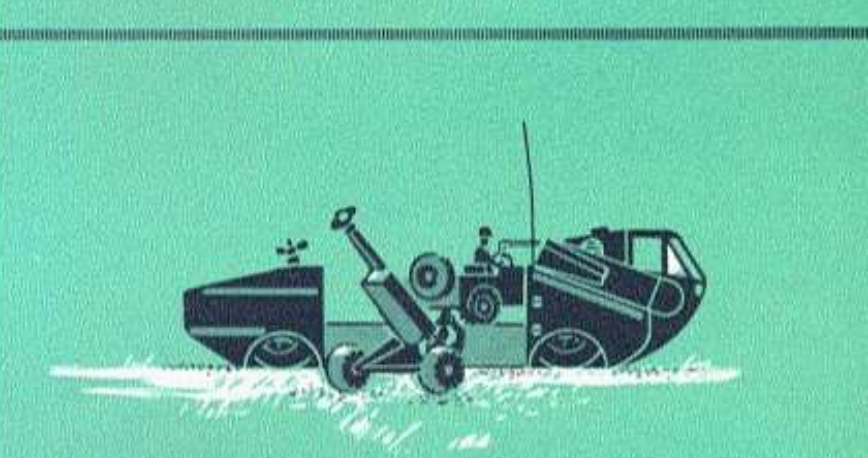
The two hydrofoils, one forward and one aft, are extended and submerged for high speed water operations except through the surf zone. For boating and surf zone operations, the hydrofoils and flying drive retract into the hull and the boating drive is used. The boating drive rotates 90 degrees to provide superior dynamic steering during all boating operations.



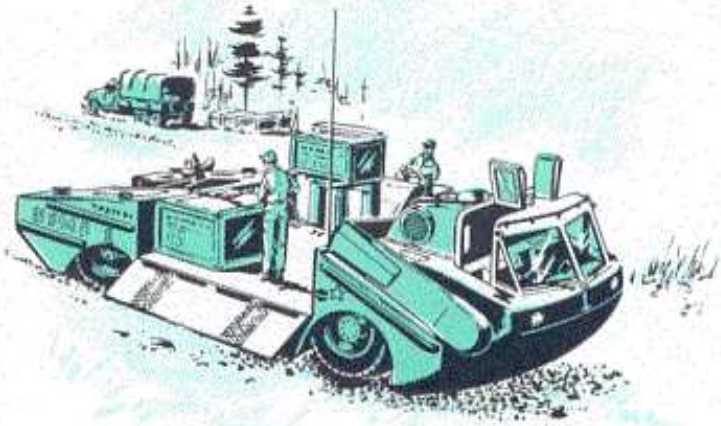
The LVH has a road speed of 40 mph. Four-wheel drive with controlled tire inflation provides maximum traction for traversing difficult beaches, sand dunes, mud, rough terrain and steep grades. Front wheel power steering provides a 38′ turning radius and ease of handling under all conditions.



On land the wheels of the LVH can be retracted, lowering the vehicle to a "kneeling" position to facilitate loading. Using the compartment sides as a ramp, loading or unloading may be accomplished from either side of the cargo compartment. In the kneeling position the cargo bed is only 33″ above the ground.



CARGO



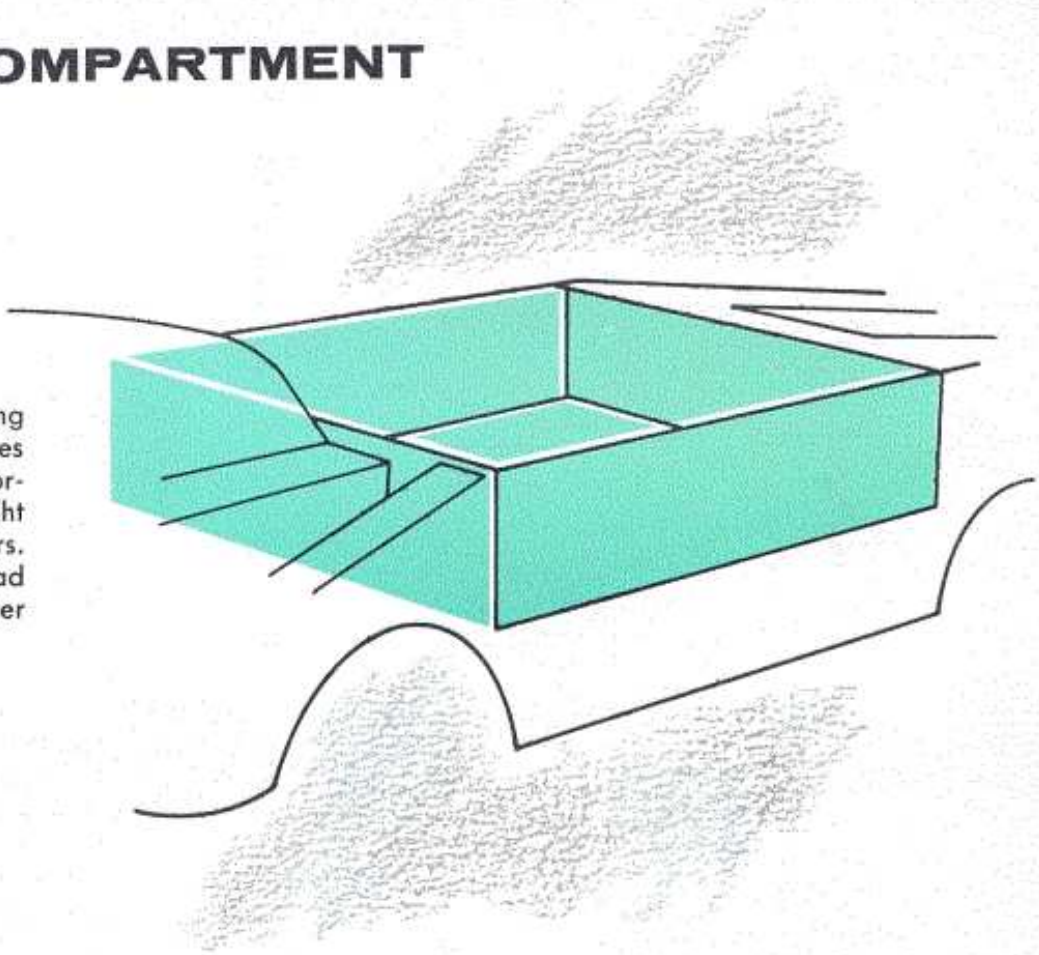
The easily accessible cargo compartment of the LVH has a capacity for transporting five tons of cargo of all types, or large numbers of fully equipped personnel. The compartment sides fold down to become loading ramps, eliminating the need for large cranes or other specialized material handling equipment for normal loads. These ramps are of high-strength honeycomb construction to withstand the characteristic abuse of cargo handling.

WHEELS RETRACTED

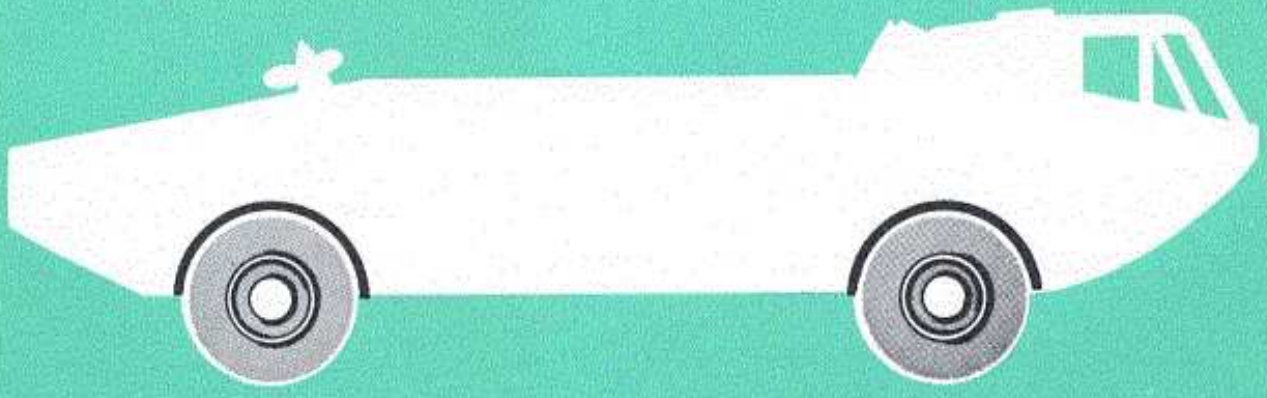
The LVH design incorporates a unique wheel retraction and an independent wheel suspension system in a single unit. This system is capable of lowering or raising the amphibian with its maximum payload of 10,000 pounds. By retracting the wheels, loading or unloading of the vehicle is readily accomplished without the use of specialized handling equipment.

PAYLOAD COMPARTMENT

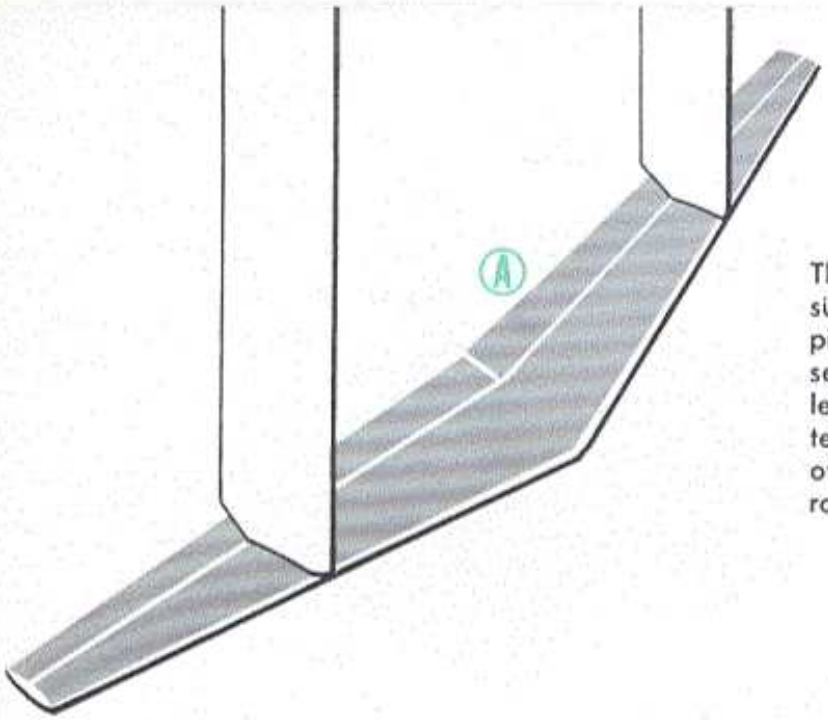
The payload compartment measuring 10' 2" wide by 13' 7" long, provides 138 square feet of unobstructed storage space. It is designed to hold eight standard military Conex containers. The midship location of the payload compartment assures stability under all load conditions.



WHEELS EXTENDED



With wheels extended for normal overland operation the cargo bed is five feet above ground level. The oleo strut suspension system makes possible a smooth ride at all road speeds and reduces stress levels in the hull during land operation. Only 12 seconds are required for either extension or retraction of the wheels. In addition, wheels may be individually retracted for ease of maintenance.

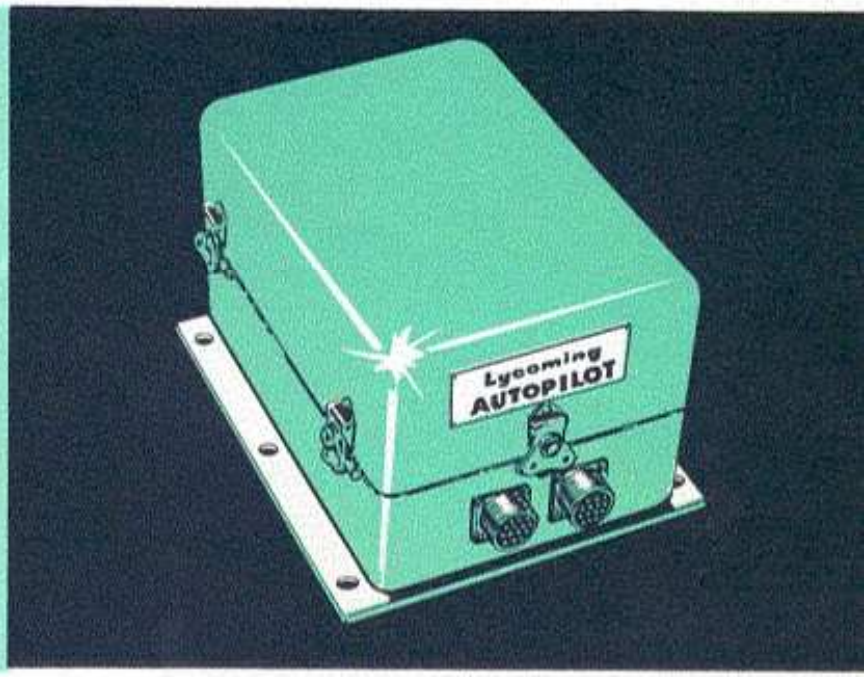


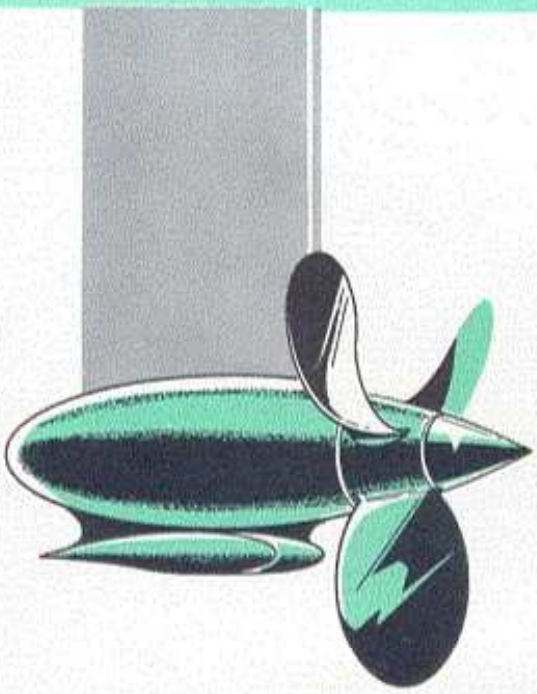
HYDROFOIL SYSTEM

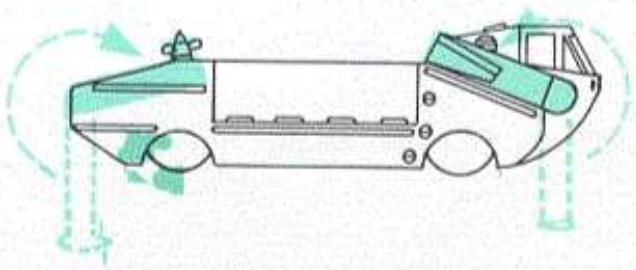
The LVH utilizes incidence controlled, fully submerged hydrofoils, with an A. C. autopilot and hydraulic actuation system. A height sensor is provided to sense the height and length of oncoming waves. The control system then actuates the dual controllable flaps of the foil (A) to allow the LVH to fly over rough water.

AUTOPILOT

The unique Lycoming autopilot has been designed to withstand marine environments and to provide stability even in rough waters over the full speed range of the vehicle with "hands off" operation. Control of the vehicle's attitude and flying height is accomplished by the use of precise sensors and high response servo-control loops.







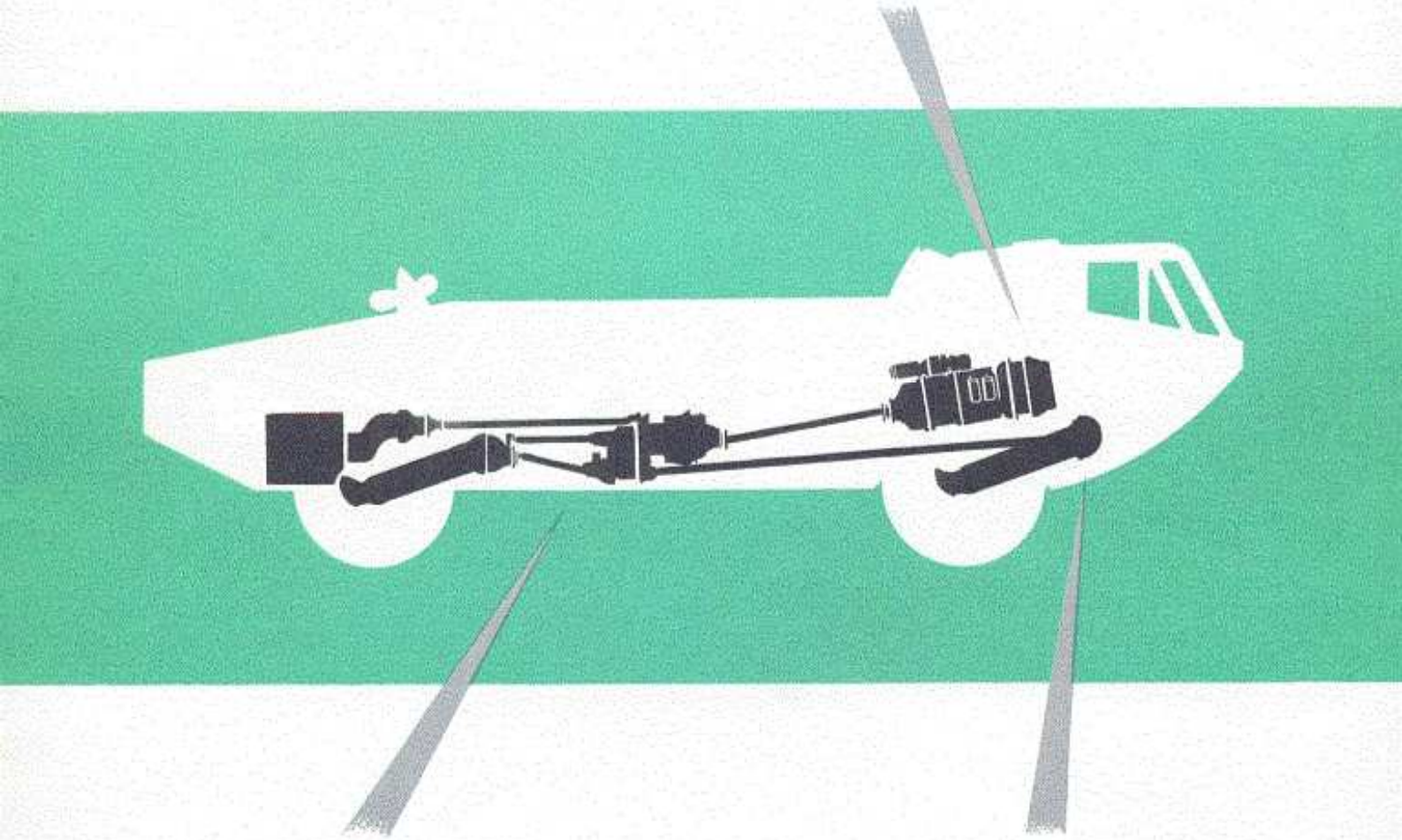
BOATING DRIVE

Separate drives and propellers are provided for boating and flying operations. For flying, a single propeller mounted forward on the nacelle on the rear strut at the intersection with the foil is utilized. For boating operations, the boating drive and propeller is lowered from its cavity in the hull. This system permits the coordination of the boating and wheel drives necessary for arriving or departing from a beach.

MAINTENANCE

POWER PLANT

The TF-1460 gas turbine engine, a rugged marine version of the thoroughly tested Lycoming T53 aircraft engine, provides all power in boating, flying and land operations. This engine has proven its ability to perform reliably under salt water, sand and dust environmental conditions. Extremely compact, the TF-1460 gas turbine engine delivers up to 1200 horsepower yet weighs only 1,200 pounds complete with all accessories and engine gear box.



HULL CONSTRUCTION

The hull of the LVH combines optimum weight and strength characteristics for all operational conditions. It is an integrally stiffened box structure of aluminum and stressed skin in accordance with conservative aircraft design practice. Overall dimensions were designed to allow operations from the LST, LPD and LSD.

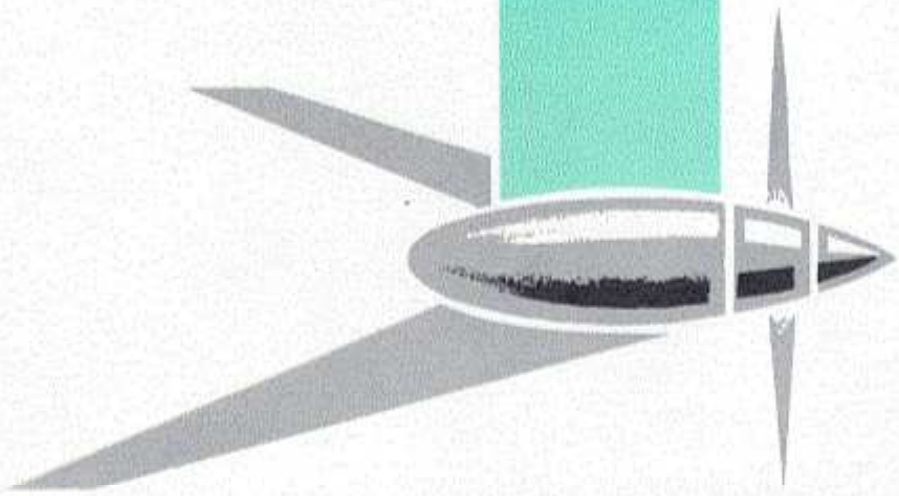
SUSPENSION

Ground mobility of the LVH is enhanced by a tire inflation system which permits the vehicle operator to control the air pressure in each tire, under all operating conditions. The system provides increased contact area on soft or sandy terrain by decreasing tire pressure. For improved high speed operations on surfaced roads, tire pressure is increased. The tire inflation system is expected to perform successfully under all conditions including salt water boating, traversing sand, coral, cross country and highway operations.

Avco

Facilities

Avco Corporation's Lycoming Division plant in Stratford, Connecticut, is one of the finest manufacturing facilities in the United States. Its three main buildings and numerous smaller ones total more than 1,500,000 square feet of floor space and house a full complement of over 4,000 precision machine tools, from small bench lathes to giant three-dimensional mills. This equipment, together with Lycoming's modern laboratory and testing facilities, allows for virtually any type of manufacturing. Testing of amphibious vehicles produced by Lycoming is greatly facilitated by the plant's location at the mouth of the Housatonic River, leading directly into Long Island Sound. In addition to its own excellent facilities, Lycoming Division is supported in the LVH project by the full resources and capabilities of Avco Corporation, and by several expert consultants and subcontractors.



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