

## PROPULSIVE SYSTEMS FOR AIR CUSHION VEHICLES.

### Introduction.

The title of this paper suggests the general coverage of propulsion systems that are appropriate to the air cushion vehicle field. Whilst the early part of the paper deals with these general aspects, it is true to say that there have been many reports dealing with this topic. A summary of the basic principles is required however, so that the many aspects involved in selecting the propulsion system for any specific craft may be fully appreciated, and also so that the paper may be more self contained.

The second part of the paper will deal with the practical aspects of hovercraft propulsion systems by studying the evolution and final design of the propulsion system as fitted to the Vosper Thornycroft VT1 series of hovercraft with reference to particular points made in the foregoing theoretical dissertation.

## Basic Considerations.

Selection of a propulsion system to suit any particular design concept is a complex task, combining the many and often diverse requirements of the designers. Certain basic considerations determine, in many instances, the type or 'family' of propulsion installation that is required, but the final design is a matter for more detailed investigation involving many parameters; seeking to optimise yet having to compromise.

Consider firstly the role of the craft and the terrain over which it is required to travel. The terrain can be split, conveniently, into three categories; overland, overwater and 'over both'. This categorisation does not necessarily select the propulsion system but serves more to negate some, particularly in the case of vehicles required to operate overland. At risk of stating the obvious the reference is to systems employing water as the propulsion media. Conversely, most systems providing overland propulsion provide a motive force, albeit inefficiently in some instances, when traversing stretches of water. The notable exception being the linear induction motor which lends itself only to operation over prepared overland tracks.

Categorising the craft in terms of role is best achieved by studying the areas where most development has been attained, that is where the biggest market was found. Currently it can be said that most Air Cushion Vehicles have been developed for civil marine transportation. As such the craft does not necessarily require full amphibious