

# PROPULSION SYSTEMS DISCUSSION



**Jeffrey Bowles**

Technical Director

Donald L. Blount & Associates, Inc.

870 Greenbrier Circle Suite 600

Chesapeake, VA 23320

[www.dlba-inc.com](http://www.dlba-inc.com)

# INTRODUCTION

- Boats are transportation devices and need to move around.
- All boats have several key systems – structure, electrical, crew, etc.
- The propulsion system provides the necessary motive force and maneuverability.
- Several drive types to choose from; no universal solution.
- Selection of the system type can be based on technical data, logistics, past performance, politics, and emotions.
- Designer's have technical data and perhaps *some* first hand operating experience
- What designers need is more operator feedback-
  - What performance characteristics are most important?
  - What works in the field, and what doesn't?
  - How can these systems be improved?



# FACTORS FOR CONSIDERATION

- Lifecycle cost
    - Capital cost
    - Operating cost
    - Maintenance cost
  - Efficiency
  - Maneuverability
    - Turning capability
    - Directional stability
  - Acceleration
  - Reliability
  - Availability
  - Swimmer safety
  - Launch & recovery operations
- 
- 5 primary alternatives



# SUBMERGED PROPELLERS

## Advantages

- Low capital cost
- High reliability
- Good efficiency at moderate speeds
- Diesel or gasoline



## Disadvantages

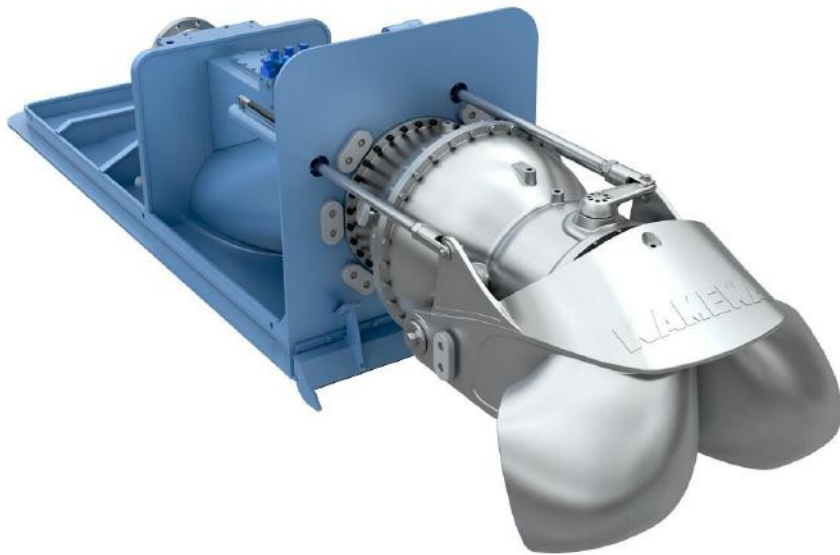
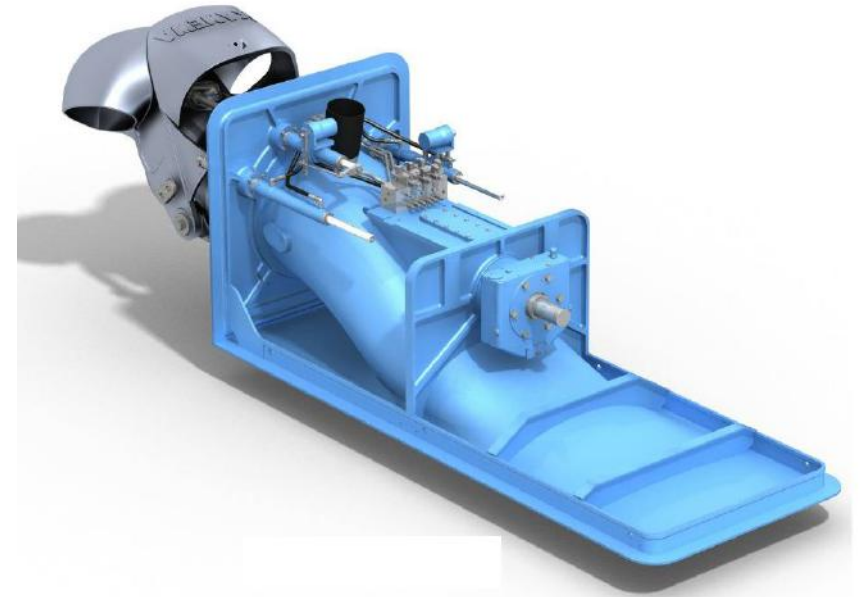
- Exposed
- Maneuverability in reverse
- Engine located fwd in vessel
- Swimmer safety



# WATER JETS

## Advantages

- High efficiency at high vessel speed
- Maneuverability
- Reliability
- Diesel or gasoline
- Above hull bottom



## Disadvantages

- High cost
- High weight
- Directional stability



# OUTBOARDS

## Advantages

- Light weight
- High reliability
- Low capital cost
- Ease of installation



## Disadvantages

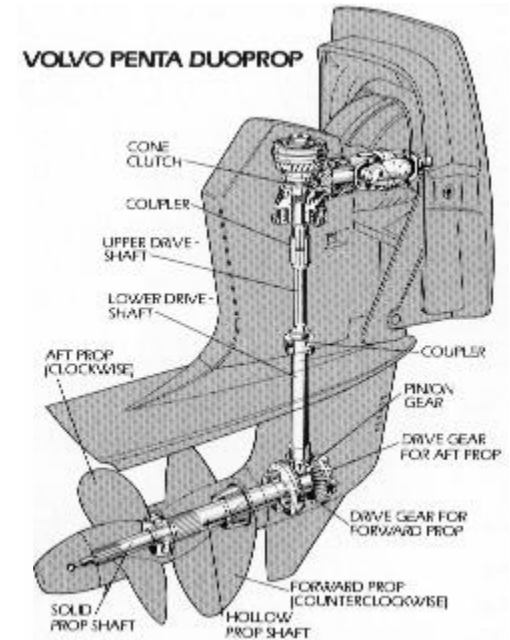
- Limited diesel options
- Limited maneuverability
- Low fuel efficiency
- Swimmer safety



# STERNDRIVES

## Advantages

- Maneuverability
- Diesel or gasoline
- High efficiency



## Disadvantages

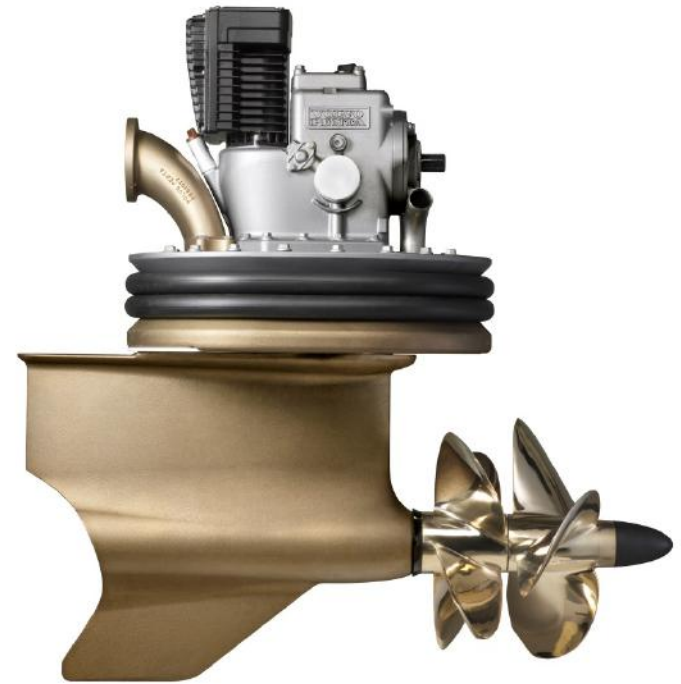
- Exposed (but has tilt)
- Swimmer safety
- Reliability
- Maintenance reqt's



# POD DRIVES

## Advantages

- High efficiency
- High maneuverability
- Diesel or gasoline
- Ease of installation



## Disadvantages

- Limited size/application of single units
- Exposure – no tilt
- High capital cost









# THANK YOU

