



# ***Aqua-Manoeuvra Systems***

*A Division of Innovative Technologies Ltd.*



- Hydraulic Bow Thruster Systems
- Transverse Tunnel Thrusters
- PumpJet Side Thruster Systems
- Azimuthing PumpJet Thruster Systems
- Rotatable Rudder Propeller Drives
- E-Pod Thruster and Propulsion Systems



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**Specifications are subject to change without notice**

**2005**



# **Aqua-M**Systems

## **Marine Thruster Systems...**

**Different Models ranging from Standard Tunnel Thrusters, full 360 degree Azimuthing PumpJets, Rotatable Rudder Propeller and the Azipod Electric Propulsion Drives**

*Aqua Manoeuvra Systems* introduces Thruster and Propulsion Systems designed to provide any ship maximum Maneuverability with "Silent" and Reliable operation.



### **Hydraulic Bow Thruster Systems...**

A series incorporating a piston type hydraulic motor built *inside* the thruster body.

They are very compact, ruggedly designed, and offered as a complete system. Systems are provided with a bow thruster mounted in a Tunnel (steel, fiberglass or aluminum), hydraulic oil reservoir with all required components, drive pump, and full bridge controls. The bow or stern thruster system offers continuous, efficient and reliable operation.

**Available from 15 to 200 Horsepower.**



### **Mechanical Tunnel Thrusters...**

A series of Transverse Tunnel Thrusters, designed with spiral beveled, right angle gears and suitable for electric, diesel engine or hydraulic drives. The versatile series of Aqua-M Thrusters allow installation in a hull with drive shaft horizontal or vertical. Installation may be varied, therefore, to suit the needs of a specific vessel design, providing possible space savings and maintenance access. The thruster drive and propeller shaft are made of high strength stainless steel, and contain anti-friction tapered roller bearings. The right angle gears are case hardened spiral beveled. The pod is completely removable from the tunnel.

**Available from 25 to 1500 horsepower.**

*... Stay on Course with Aqua-Manoeuvra ....*

## **“Silent Running” Electric Thruster Systems...**

*Aqua-M bv*, introduces a new series of bow thruster Systems designed with AC E-motor drives utilizing variable speed frequency converter drive technology. They are designed to minimize noise and cavitation. The thruster tunnel-to-pod ratios are idealized for maximum flow conditions. The propeller is a five (5) bladed, Kaplan style, with a skewed propeller design. The propeller tip speeds are 26 meters / second or less and the motor is mounted directly to the thruster, eliminating the need of an adapter housing and coupling; it mounts on a isolation rubber foundation to eliminate vibration. The complete thruster unit is compact, efficient, “SILENT”... and ruggedly designed for the Vessel of today. **Available from 25 to 1500 Horsepower.**

**PumpJet Thruster Systems...** offering “*DYNAMIC SIDE POWER*” and designed for all types of vessels. They offer high thrust-to-horsepower ratios, are ideal for **high speed vessels and ferries**, and offer small nozzle openings that reduce drag over similar type tunnel thrusters of the same power



They are installed within the ship’s hull lines with no equipment protruding. They do not need to be extended or retracted. They are extremely quiet, have low submergence requirements and are very price competitive when compared to controllable pitch type tunnel thrusters; yet they offer full proportional thrust with no reversing required and constant speed drives.

**Available from 75 to 3500 horsepower.**

*Advanced Technology... Service Proven Designs...  
Letting You Slip In and Out of the Tight Spots*

**Azimuthing PumpJet Thruster Systems...** the Azimuthing PumpJet Series is based upon experience gained in the Offshore Patrol Vessel Markets and provides the following advantages...

**Full 360 degree “ROTATIONAL THRUST”  
providing unique maneuverability in harbors, etc.  
Standby Slow Speed Propulsion and...  
“EMERGENCY” Steering  
with a “Get me Home” Propulsion System...**

The Azimuthing PumpJet is “Unique”, tested at Maritime Research Institute (MARIN-Wageningen-Holland) as part of a joint Industries Project (JIP), and recently installed on a 76m Offshore Coast Guard Vessel (OPV) for loitering, slow speed propulsion with emergency steering, and get home capabilities.

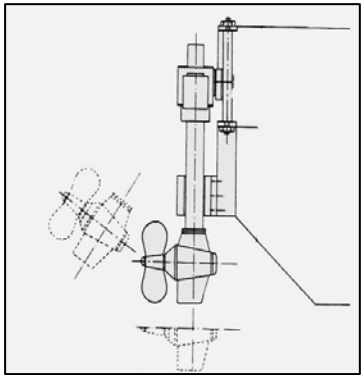


The Azimuthing PumpJet can replace the standard Tunnel thruster system and offers many advantages Over retractable type thruster systems by “offering full Rotatable thrust through 360 degrees”. The Azimuthing PumpJet system can be mounted in fine-faired hulls, and is mounted with no vulnerable parts protruding past the vessel’s hull. They are simple to operate, trouble free, with extended life and economical.  
**Available from 150 to 5000 horsepower, in a series of different configurations.**

Product Summary continued...

The Azimuthing PumpJet Thruster System can be driven hydraulically, by electric motor or by using a direct engine drive. They utilize the latest Control Technology and Material Selection; they can be furnished as complete systems, provide **OPTIMUM MANEUVERABILITY and RELIABILITY with SIMPLIFIED INSTALLATION and OPERATION.**

## Rotatable Rudder Propeller Drives



### *Series SPD – Steerable Propeller Drives...*

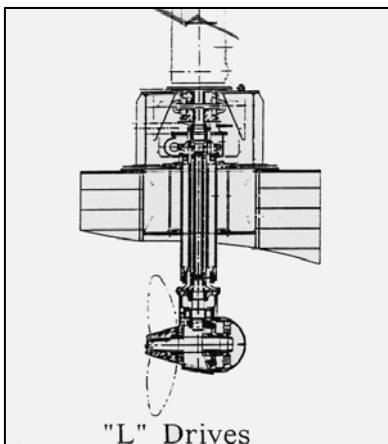
Hydraulic / Electric Steerable Rudder Propeller Drives are steerable through 45-0-45 degrees and complete with full follow-up control systems. The motor is mounted on the drive unit and can be raised or lowered vertically. This allows travel even in very shallow waters and the draught can be adjusted according to the particular state of loading. Maintenance is simple thanks to the possibility of tilting the drive out of the water at an angle of up to 120 degrees.

**Available from 75 up to 1000 Horsepower.**

*Series RPD – Rotatable Propeller Drives-* 360 degree Rotatable Propeller Drives are available in either the “L” Drive or “Z” Drive Configurations. They can be driven hydraulically, direct Diesel drives or full AC/DC variable speed electric drives.

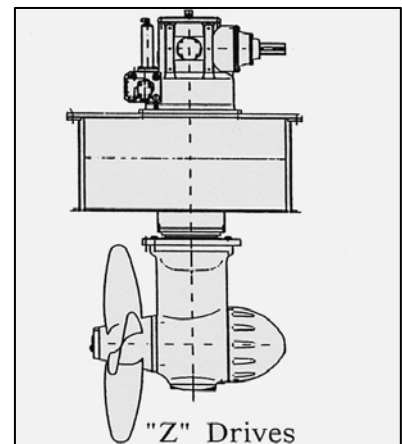
**Available from 200 to 5000 Horsepower and meets all Major classifications.**

The Rotatable *Propeller* units are normally through-hull mounted; in a well and the engine inside the hull or in an enclosure (deck mounted units available). They are being installed on Yachts, Tugs (either as conventional or as tractor tugs), barges, ships, deck cranes, supply vessels and platforms for special work - diving, pipe laying, cable laying / repair where maneuverability is a must; they can be used with fully classed dynamic positioning systems.



"L" Drives

A lot of innovation and safety devices, with the agreement of Classification Boards and **MARPOL** Regulations, gives Marine Propulsion & Thruster Systems *the Pole Position* in the industry.

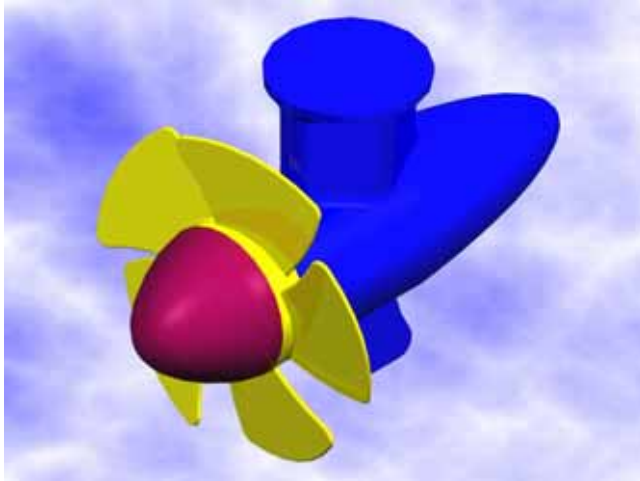


"Z" Drives

**Aqua-Manoeuvra**

Product Summary continued...

***ElectroPod Electric Propulsion Drives...*** Aqua-M. offers a full line of through hull mounted 360 degree Electropod Electric Drives.



***The ElectroPod Propeller units are offered in three configurations.***

**Type APD-F** Fixed Position (non-rotating)

**Type APD-FS** Steerable 90-0-90 Positions

**Type APD-AZ** Full Azimuthing Capabilities

They can be fitted as either conventional or Tractor configurations. Complete systems can be offered with drive motor, controller (variable frequency type) and full bridge controls.

**Available from 300 to 2500 Horsepower.**

In general, Marine Thruster Systems have been designed around the latest technical standards, to meet today's high demands for reliability, ruggedness and quality.

A full range of thrusters are available to meet the design and material requirements of the major classification societies.

## ***About the Company***

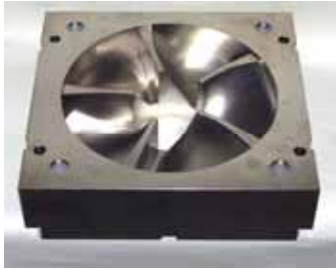


***Aqua- Manoeuvra bv*** offers ***Engineered Propulsion*** for vessels of all types. We design, manufacture and support marine equipment which has a worldwide reputation as the standard of excellence in the industry.

The Company has an experienced staff of technical personnel who are familiar with the demanding requirements of the ocean environment. We are small enough to give you personal attention, yet big enough to give you excellent service. We maintain an extensive inventory of spare parts ready for rapid air shipment to your location. We have sales and service representatives in many key locations around the world. Several of these representatives have systems and spare parts in stock for immediate delivery.

We have an 8,000 square foot facility which includes a full CNC Machining Center for prototype development, manufacturing and assembly plus our test tank. Our in-house engineering department utilizes SolidWorks, TekSoft CAMWorks 2D/3D Mill, BobCAD/CAM and AutoCad. In addition to our line of standard products, we invite customer inquiries for special systems or service. Please feel free to call on us for assistance in your application.

***Aqua-Manoeuvra***  
Product Summary continued...



***Stay ON COURSE  
with Aqua-M by ...***

We offer tailored designed systems to suit any application. This, in combination with evolutionary designs, will fulfill your every need for propulsion and effective side-power.



We have over 30 years of experience in the maritime propulsion world.

***Aqua Manoeuvra ... Marine Thruster Systems***

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