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Hydraulic SubSea Thruster and Propulsor Systems...

Designed for all types of Rov’s, Auv’s and Manned Submersibles

- Hydraulic SubSea Thrusters
- Electric/Hydraulic Power Packs
- Hydraulic Valve Packs (HCU)
- Hydraulic Servo Valve Modules
- Pressure Compensated Reservoirs
- Pressure Compensators

Series HPT

Hydraulic ROV Thruster Systems

Engtek SubSea Systems – A Division of Engtek Manoeuvre Systems Pte Ltd introduces a new series of Light Weight Hydraulic Thruster Systems using Light Weight Nozzle Technology and designed to provide any remotely operated vehicle, autonomous underwater vehicle or a manned submersible with maximum Maneuverability, Silent and Reliable operation....

Rated from 12 to 110 Horsepower (10 - 85 Kw)

Fast Control of Magnitude
Silent - Robust - Ruthlessly Reliable

- With Direction of Thrust
The **HPT** is a “unique” series of **SubSea Hydraulic Thruster Systems**, designed to be integrated with an highly efficient piston type hydraulic motor and incorporated to fit to the mounting strut as an integral part of the thruster hub with the Nozzle constructed in fiber composite, high density material. They come complete with Nozzle, mounting bracket and are offered from 12 to 110 horsepower.

The hydraulic motor integrates/mounts to the thruster pod and baring assembly, therefore extremely lightweight and compact. The design speed of the propeller averages 28 meters/sec or less, offering efficient and silent operation. Depending on the Model Series, either a 4 or 5 bladed propellers are used. The thruster systems are pressure compensated and operational to all ocean depths.

All thruster pod assemblies are manufactured from a high density ...fiber composite with all attaching hardware either 316 stainless steel or aluminum (hard anodized).

<table>
<thead>
<tr>
<th>Model</th>
<th>Thrust Max Static (Kgf) @ 250 Bar</th>
<th>Propeller Diameter (MM)</th>
<th>Weight in Air (Kg)</th>
<th>Weight in Water (Kg)</th>
<th>Maximum Operating Pressure (Bar)</th>
<th>Motor Capacity (cc/rev)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPT230</td>
<td>210 Kgf</td>
<td>230</td>
<td>12.2</td>
<td>8.7</td>
<td>350</td>
<td>10</td>
</tr>
<tr>
<td>HPT300</td>
<td>360 Kgf</td>
<td>300</td>
<td>14.3</td>
<td>7.3</td>
<td>300</td>
<td>23 &amp; 32</td>
</tr>
<tr>
<td>HPT380</td>
<td>415 Kgf</td>
<td>380</td>
<td>22.8</td>
<td>18.4</td>
<td>300</td>
<td>45</td>
</tr>
<tr>
<td>HPT420</td>
<td>570 Kgf</td>
<td>420</td>
<td>25.7</td>
<td>15.7</td>
<td>300</td>
<td>63</td>
</tr>
<tr>
<td>HPT500</td>
<td>1075 Kgf</td>
<td>500</td>
<td>48.5</td>
<td>25.5</td>
<td>300</td>
<td>107 &amp; 125</td>
</tr>
<tr>
<td>HPT750</td>
<td>1280 Kgf</td>
<td>750</td>
<td>142.4</td>
<td>74.5</td>
<td>400</td>
<td>160 &amp; 180</td>
</tr>
<tr>
<td>HPT950</td>
<td>1500 Kgf</td>
<td>950</td>
<td>174.8</td>
<td>90.8</td>
<td>400</td>
<td>250</td>
</tr>
</tbody>
</table>

Thrust figures are "measured" with a type 19A Nozzle Profile at zero speed of advance.

The thruster body is shaped to minimize resistance and offers a rugged body design and is compatible with most Rov, Auv vehicle material construction.

Propeller shafts are made of high strength stainless steel, and contain anti-friction tapered roller bearings.

An efficient and compact piston type hydraulic motor is designed to be fitted to the thruster strut as part of the thruster hub. This motor has variable horsepower (constant torque) characteristics. The hydraulic motor has optimum running clearances and hydraulic balance to assure sustained high efficiency over the life of the motor. The inertia of rotating parts is low... parts are symmetrical, providing dynamic balance and free of vibration.
The SubSea Thruster pod design incorporates Silicon carbide rotary shaft seal arrangements that keeps hydraulic oil from leaking out of the thruster and ensures positive sealing preventing ocean water intrusion. The sealing arrangement is easily removed for cleaning or replacement, without removal of the thruster unit from the ROV.

The SubSea Thruster Systems are designed with special attention towards minimal need of maintenance. The thruster pod is easily disassembled and the hydraulic motor easily removable.

**Kort Type Nozzles**... are used for increased thrust efficiency.

The SubSea Hydraulic Thruster System comes as a complete assembly, tested and ready for installation. The assembly consists of:

- Thruster Pod with integrated hydraulic piston type motor
- A Bi-Directional four or five bladed Kaplan Style propeller
- Nozzle Assembly
- Pedestal + Base mounting

**SubSea Propulsion Thruster Units are:**

- Simple in Design
- Light Weight (sometimes 30% less the weight of competitors)
- Rugged in design and operation
- Easy mounting and maintenance operations
- Long running hours
- World Wide Spares available
- Marine Body Classification available for material and performance

**Other SubSea Propulsion Hydraulic Products:**

**Electric/Hydraulic Power Packs** – SubSea Propulsion offers an extensive range of hydraulic power packs driven by electric motors designed for subsea operation. They are oil filled and pressure compensated for full ocean depth operation. Units are complete with electric motor, single or dual hydraulic pumps, pump to motor mounting block, power connectors with water ingress and motor winding temperature sensors. A separate pressure compensator is required to maintain pressure of oil in the motor at 1 bar (15 psi) above ambient to depth.

Dual shaft-ended drives allow use of two hydraulic pumps. This allows the option of separate propulsion and tooling hydraulics using separate hydraulic circuits.

Applications include:

- ROV and TMS Hydraulic Power Packs
- Tooling Hydraulic Power Packs
- Drives for Water Jetting power packs for pipe and cable burial tools

**Model Sizes:** 460V to 4160V, 3PH, 60HZ
Rated from 25 to 1500 Hp (18.5 – 1,120 Kw) 2 and 4 pole options

**Standard sizes / other options available to suit customer requirements**

Electric/Hydraulic Power Packs can be offered as complete power modules including electric motor, single/dual hydraulic pump, servo valve control package, pressure compensated oil reservoir with mounted compensation system, all in one compact package with shock absorbing mounting frame.
Engtek SubSea Propulsion Solenoid Valve Modules (HCU’s)

Hydraulic Solenoid valve packs can be furnished to perform a number of functions on the ROV, such as rate control manipulators, actuators, pumps, cutters etc. They can be configured in a number of versions and include a oil filled/pressure compensated housing, complete with manifold block with each valve fitted with a pilot check and cross over relief valve to protect the circuit with an integral pressure reducing valve, manifold over pressure relief valve, water ingress alarm, diode steering with diagnostic LEDs visible through a clear manifold cover.

Engtek SubSea Propulsion Thruster Servo Control Modules (TCU’s)

Engtek SubSea Systems offers a wide range of Thruster Servo Control Valve Modules. They are normally configured for variable speed control of hydraulic thrusters fitted to the ROV or other applications that require variable speed functions. Valve Modules can be configured using both Servo or uni or bi-directional functions.

SubSea Propulsion Servo Valve Manifolds can accommodate a number of valves (4, 6, 7 or 8) One valve is required for the operation of one thruster unit. Other stations can be utilized to operate variable speed tools etc.

Servo Control Valves are sized to maintain the least pressure drop across the valve at full rated flow and pressure. The valves are mounted to the manifold that includes a combined soft start and over pressure relief valve block. The soft start valve is designed to off-load the electric motor on initial start up and is completely automatic, with no electric input. The over pressure valve provides system protection in the event of failure of the pump pressure compensator and is fully adjustable.

The valve manifold lid cavity is isolated from the main system and separately pressure compensated. This allows the lid to be drained and removed on deck for maintenance of the valve pack without disturbing the main system hydraulics.

The Thruster Servo Control Module is fitted with an electric sub sea connector (number of pins determined by valve stack)

Stay ON COURSE with – Engtek SubSea Thruster Systems …

We offer tailored designed systems to suit any application. This, in combination with evolutionary designs, will fulfill your every need for propulsion and effective power. We have over 40 years experience in the maritime propulsion world.