PT. Marine Propulsion Solutions

Tunnel Thruster Systems

Marine Thruster & Propulsion Systems

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The versatility of **MPS-Marine Thruster Systems** allows installation in a hull with the drive shaft horizontal or vertical. Installation may be varied, therefore, to suit the needs of any specific vessel design providing possible space savings and convenient maintenance access.

**Applications**

- Drives: Electrical … Diesel … and Hydraulic

**Various alternatives for installation arrangements**

- Electric Motor Vertical & Horizontal
- Hydraulic Motor
- Right Angle Gear Drives
- Direct Diesel Drives
### MPS Tunnel Thruster Series

**Model 16BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 45 Kw, 50 Kw
- Max Power Rating: 50 Kw, 55 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 760 Kgf, 835 Kgf
- Propeller dia: 410 mm, 510 mm
- Tunnel outer dia: 440 mm, 540 mm
- Tunnel wall thk: 12 mm, 12 mm
- Tunnel length std: 750 mm, 750 mm

**Model 20BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 68 Kw, 75 Kw
- Max Power Rating: 75 Kw, 82 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 1140 Kgf, 1250 Kgf
- Propeller dia: 510 mm, 640 mm
- Tunnel outer dia: 540 mm, 640 mm
- Tunnel wall thk: 12 mm, 15 mm
- Tunnel length std: 750 mm, 1000 mm

**Model 24BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 90 Kw, 100 Kw
- Max Power Rating: 100 Kw, 110 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 1250 Kgf, 1525 Kgf
- Propeller dia: 610 mm, 740 mm
- Tunnel outer dia: 610 mm, 740 mm
- Tunnel wall thk: 12 mm, 18 mm
- Tunnel length std: 1500 mm, 1500 mm

### MPS Tunnel Thruster Series

**Model 28BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 112 Kw, 125 Kw
- Max Power Rating: 125 Kw, 137 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 1900 Kgf, 2085 Kgf
- Propeller diameter: 710 mm, 860 mm
- Tunnel outer dia: 740 mm, 890 mm
- Tunnel wall thk: 12 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

**Model 200BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 180 Kw, 200 Kw
- Max Power Rating: 200 Kw, 220 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 3050 Kgf, 3350 Kgf
- Propeller diameter: 710 mm, 860 mm
- Tunnel outer dia: 740 mm, 890 mm
- Tunnel wall thk: 12 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

**Model 275BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 250 Kw, 275 Kw
- Max Power Rating: 275 Kw, 300 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 4189 Kgf, 4570 Kgf
- Propeller diameter: 710 mm, 860 mm
- Tunnel outer dia: 740 mm, 890 mm
- Tunnel wall thk: 12 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

### MPS Tunnel Thruster Series

**Model 350BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 315 Kw, 350 Kw
- Max Power Rating: 350 Kw, 385 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 5330 Kgf, 5860 Kgf
- Propeller diameter: 1220 mm, 1375 mm
- Tunnel outer dia: 1280 mm, 1435 mm
- Tunnel wall thk: 15 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

**Model 500BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 450 Kw, 500 Kw
- Max Power Rating: 500 Kw, 550 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 7615 Kgf, 8375 Kgf
- Propeller diameter: 1220 mm, 1375 mm
- Tunnel outer dia: 1280 mm, 1435 mm
- Tunnel wall thk: 15 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

**Model 600BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 450 Kw, 500 Kw
- Max Power Rating: 500 Kw, 550 Kw
- Input speed (max): 1500 rpm, 1800 rpm
- Maximum Thrust: 7615 Kgf, 8375 Kgf
- Propeller diameter: 1220 mm, 1375 mm
- Tunnel outer dia: 1280 mm, 1435 mm
- Tunnel wall thk: 15 mm, 15 mm
- Tunnel length std: 1000 mm, 1000 mm

### MPS Tunnel Thruster Series

**Model 800BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 720 Kw, 800 Kw
- Max Power Rating: 800 Kw, 850 Kw
- Input speed (max): 1000 rpm, 1200 rpm
- Maximum Thrust: 12185 Kgf, 12945 Kgf
- Propeller diameter: 1775 mm, 1990 mm
- Tunnel outer dia: 1810 mm, 2080 mm
- Tunnel wall thk: 18 mm, 20 mm
- Tunnel length std: 1500 mm, 1500 mm

**Model 1000BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 900 Kw, 1000 Kw
- Max Power Rating: 1000 Kw, 1100 Kw
- Input speed (max): 1000 rpm, 1200 rpm
- Maximum Thrust: 15230 Kgf, 16750 Kgf
- Propeller diameter: 1775 mm, 1990 mm
- Tunnel outer dia: 1810 mm, 2080 mm
- Tunnel wall thk: 18 mm, 20 mm
- Tunnel length std: 1500 mm, 1500 mm

**Model 1200BTM**
- Electric Frequency: 50 Hz, 60 Hz
- Power Rating: 1080 Kw, 1200 Kw
- Max Power Rating: 1200 Kw, 1320 Kw
- Input speed (max): 1000 rpm, 1200 rpm
- Maximum Thrust: 18275 Kgf, 20110 Kgf
- Propeller diameter: 1775 mm, 1990 mm
- Tunnel outer dia: 1810 mm, 2080 mm
- Tunnel wall thk: 18 mm, 20 mm
- Tunnel length std: 1500 mm, 1500 mm

* Consult Marine Propulsion Solutions - technical staff to determine applicable power for each specific use.
* All specifications subject to change without notice. Specifications is for guidance purposes only – request a certified drawing for construction.
**Tunnel/Bow Thruster**

MPS Propulsion is a manufacturer of Tunnel/Bow Thrusters for commercial vessels. Initially used in the bows of ferries and tugs, these versatile control devices soon became popular in offshore oil servicing boats and larger ocean-going craft. They permit unassisted maneuvering alongside of oilrigs, vessels, loading platforms and docks - and provide precise control at slow speeds through locks, narrow channels and bridges. Today, MPS Tunnel/Bow Thrusters are found in applications all over the world where precision vessel control is needed.

**In The Hull**

The Tunnel Thruster is installed athwartship in a tunnel low down in the bow. Sometimes a second unit is installed in the stern. For dynamic positioning and station keeping, as many as five Tunnel Thrusters have been used in a single application. With 180° thrust --90° to either port or starboard -- the Tunnel Thruster gives added maneuverability and control for docking and slow-speed operations. Because the Tunnel Thruster is relatively small in its athwartship dimension, it can be installed in a ship with fine entrance lines and can be located in the optimum position for maximum turning moment. Complete overhaul, maintenance and removal of the mechanism are often accomplished without dry-docking.

**Direct Engine Bow Thruster Drive**

**Tunnel/Bow Thruster Adaptability**

MPS Propulsion manufactures the Tunnel/Bow Thruster with an input flange in either the vertical or the horizontal position. Customer-supplied power may be in the form of a diesel engine, gas turbine, electric motor or hydraulic motor. Models cover a wide variety of HP and RPM ranges, with diameters from 36" to 120". Azimuth and through-the-hull thrusters are also available.

**The Tunnel/Bow Thruster Package**

The MPS Propulsion Tunnel/Bow Thruster consists of a cylindrical weldment, supporting near its center a right angle gear pod with an input shaft, coupling, and propeller shaft, and a Kaplan type propeller with blades working in close proximity to a corrosion and abrasion resistant wear ring.

Forged steel shafts are mounted on tapered and straight roller bearings. Drive gears are case hardened, spiral bevels designed for shock resistance, long life and quietness. Complete drive mechanism lubrication is through a flooded system, the entire Tunnel/Bow Thruster gearbox is running in submerged oil.

The gearbox, connected to a gravity tank 10 feet above the load water line, is equipped with sight gauges to show the thrusters oil level and give visual proof of tightness of seals, which keep water out of the mechanism.
High Efficiency

Marine Propulsion Solutions Pte Ltd fixed pitch, four blade Kaplan-type propeller, together with our efficient mechanical gear system, means low parasitic power losses from input to output - and the highest thrust in relation to tunnel diameter.

**Bow/Stern Thrusters Designed and Built to Maintain High Thrust Over a Long Life**

- Forged steel gears and propeller shafts
- Gear sets are lapped & matched
- Abrasion & corrosion resistant tunnels
- Tapered roller bearings
- Precisely engineered shim sets
- Special seals
- Four-blade Manganese Bronze propeller
- Extra heavy duty construction
- Three-point pod support
- Extra thick “chill rings” control distortion
- Bronze components where required
- Vertical or horizontal input shaft positions

Underwater Gear Box

The underwater gear box (Pod) is of a “Torpedo” shape, designed to keep the hydrodynamic resistance to a minimum level and to make sure the optimum hydrodynamics aspects are met.

The right angled gears are of the high tensile strength, carbonized and case hardened spiral bevel gear designs, which are lapped in pairs for silent operation.

The propeller mounts to a 1:12 taper on an ample sized propeller shaft and pushed in position with an end-plate, fitted with axial bolts in the propeller shaft. For the larger units, the propeller is mounted without a key using a SKF assembly on a conical shaft (hydraulically mounted).

The end-plate protects vulnerable threads and provides also for the ability to pull the propeller off the shaft by turning the plate over.

**Bearings**

Most bearings used in the MPS Thruster Systems are tapered roller bearings, sized for a long life time. Mechanical losses are kept to a minimum.

The design life time for the bearings is over 20,000 hours, under full continuous load.
Sealing Systems

High quality nitrate rubber O-rings are applied between all static surfaces. Oil sealing opposing air are by means of lip seals.

Special attention has been given to the most important seal in the transverse thruster: The propeller shaft sealing system.

MPS Thruster Systems uses an axial “Deep-Sea Seal” Pressed by the propeller hub to a ni-resist seat. This sealing system is very reliable and resistant against penetration of dirt/debris (such as sand, mud, plastics, fishing lines etc.)

The application of this seal offers supreme protection against oil leakage, giving the best environmental protection as well as a safeguard for the valuable internal power transmission parts inside the thruster drive.

Lubrication:

The lubrication of the Transverse Thrusters are of the oil bath type, the optimum solution in providing supreme lubrication to all rotating parts such as gearwheels and bearings, as well as the seals.

In order to achieve a positive pressure inside the thruster drive, the lubricant is pressurized by a header tank.

The header tank is complete with a self-closing type oil level sight glass and a filler/breather cap offering a single oil-filling point for the complete system.

Ship Shape

Stay on course with
MPS Propulsion Thruster Systems

Reliable products for an unpredictable Environment...
All MPS Propulsion Thruster Systems products and services come with an extensive warranty and come fully guaranteed with the possibility of certification by all the major classification bureaus like American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanische Lloyd, Lloyds of London, etc., for unrestricted sea-service.

**Full support ...** throughout your project and many years after that.

**Service and Consultancy...** as you can rely on the AAA Road service for help when you find yourself stranded with your car, you can also rely on MPS Propulsion -Marine Thruster Systems to support you in case any of our equipment breakdown. A team of highly skilled technicians and service engineers will provide all the back-up you require. Service and maintenance programs are available for anybody that doesn’t want to be bothered with the technical sides of leisure cruising.

Over 45 years of experience is behind us and we learn every day, that’s why You will never find better **Experts in Technology**.

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