



# ***Pleuger<sup>®</sup> Type WFSD Thruster Azimuthing Thruster for Offshore Applications***

*Flowserve has expanded its reputation as the global leader in innovative pumping solutions by producing high-performing, heavy-duty thrusters for offshore applications under its Pleuger heritage name.*



Photo courtesy of Keppel Offshore & Marine

## ***New Design Enhances Proven Technology***

*By combining decades of applications expertise with a renewed investment in its rugged, versatile tilted-shaft, azimuthing thruster design, Flowserve is positioned as the prominent choice for offshore thruster market needs.*

The Flowserve azimuthing thruster has been designed with the versatility to apply thrust in any direction. Its proven, robust construction performs both propulsion and steering duty for many offshore applications, including:

- Semi-submersible drilling rigs
- Floating production, storage and offloading (FPSO) vessels
- Drill ships
- Crane vessels
- Pipelay vessels
- Other offshore vessels

The azimuthing thruster can be mounted and dismantled underwater without dry-docking. The improved tilted propeller shaft design assures minimum thruster-hull and thruster-thruster interaction, resulting in higher net thrust. The welded steel housing allows customization to meet specific application needs.



***Experience In Motion***

The Flowserve WFSD thruster with tilted propeller axis is designed for optimum net thrust output and long service life. Flowserve has incorporated many advanced features to deliver maximum performance as well as ease in installation and maintenance.

- 7° tilted propeller shaft reduces thruster-wall interaction
- Duplex thrust bearing allows windmilling at any speed
- Automatic pressure compensation system adapts differential pressure to draft
- Fully-flooded gear housing provides optimum lubrication
- Easy underwater mounting; secured during installation by hydraulically operated locking mechanism
- Industry-leading service ratings and safety factors
- Fully redundant closed loop hydraulic steering system as standard

### Optimized for Each Application – Serviced for Life

Flowserve engineers work with customers to design the best solution for each application. Design integrity is not compromised by simply configuring standard subassemblies. In addition, several optional configurations are available, including containerized and retractable azimuthing thrusters.



Containerized azimuthing thruster

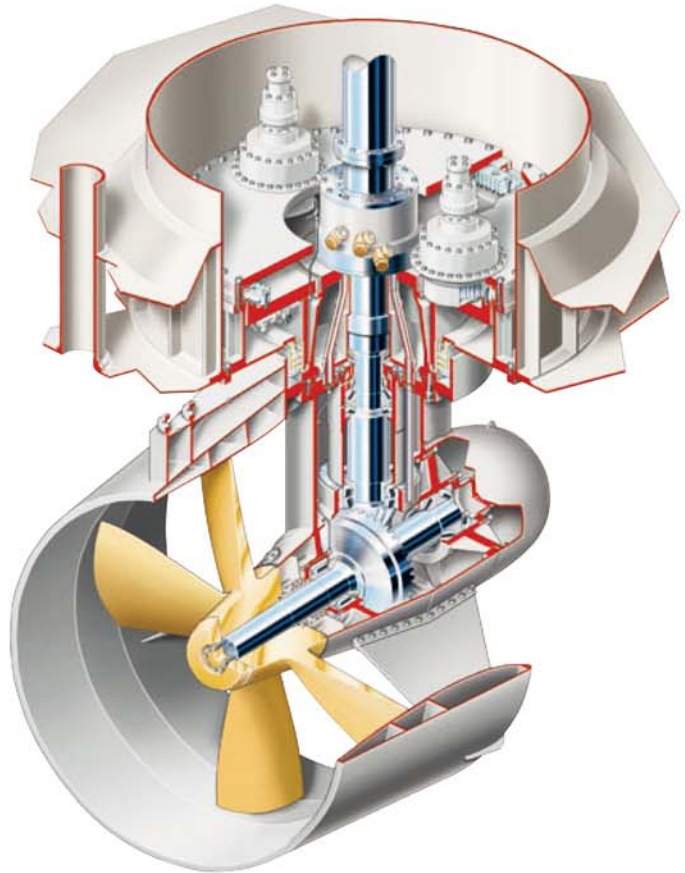


Lifetime service and support provided by Flowserve

Flowserve Type WFSD Thruster inquiries can be directed to: [thruster@flowserve.com](mailto:thruster@flowserve.com)

### Basic Design Parameters

- Up to 5 m (16.5 ft) propeller diameter
- Up to 4500 kW (6000 hp) input
- 4- or 5-blade fixed pitch propeller (FPP)



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