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TITLE

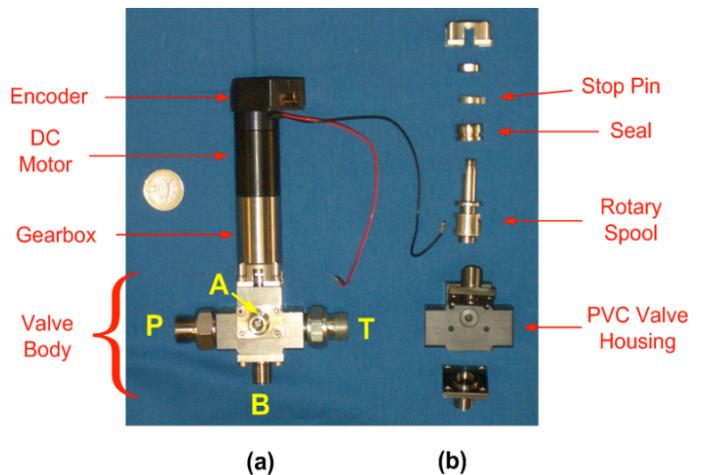
Environment-friendly servo-valve

INVENTORS

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DESCRIPTION

Compared to traditional oil-based hydraulics, water hydraulics is environment-friendly, clean, and safe. In addition water has faster dynamic response than oil. However, due to water properties such as low viscosity, high corrosiveness, and high vapor pressure the development of water-hydraulic components is very challenging. This patent introduces a novel 4-way rotary type electro-hydraulic servo-valve designed for water-hydraulic robotic applications and other dynamic applications. The valve has four ports: two of them are connected to the hydraulic power supply, and the other two to the hydraulic actuator. The flow direction is determined by the valve rotary spool position. The internal spool geometry was designed to avoid sudden changes in the flow direction and thus high-level turbulence, which could result in local cavitation phenomena; which is a common and more pronounced problem with water rather than oil as the operating fluid. The rectangular orifice provides a linear relationship between spool angular displacement and flow. This rotary geometry shows also advantages in terms of practical manufacturability.



APPLICATIONS

The inherent cleanliness and safety of water is advantageous in terms of disposability, cleanliness, fire hazard, safety, operating cost. Applications span from robotics to forestry machines, dynamic motion control platforms and energy plants.

KEYWORDS

Servo-valve, water hydraulics, environment

BIBLIOGRAPHIC DATA TO2009A000271

Servovalvola rotativa, particolarmente di tipo idraulico

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Applicants

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