

DiskDrive 50

Compact hubless thruster

User guide

The DiskDrive50 thruster is a direct-drive, brushless thruster with a hubless propeller. The hubless design offers superior resistance to tangling due to debris in the water. Its slim-line form factor makes it ideal for space-constrained applications, such as vertical stabilisation thrusters.

Integration guidelines:

The DiskDrive50 is driven by an integrated 3-phase brushless permanent-magnet motor. It can be driven by sensorless brushless electronic speed controllers (ESC). Connect the three thruster wires to the three output wires of the ESC. If the thruster rotates in an undesired direction, swap two wires to reverse.

Maximum operating voltage: **16 V**

Maximum current: **25 A**

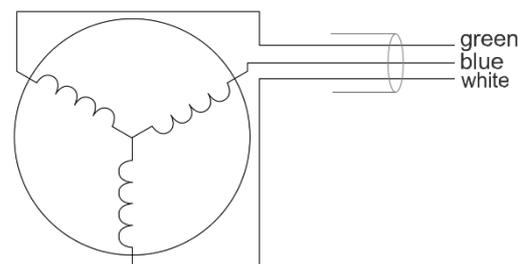
The thruster is delivered with a 0.8-1m long cable. It is the user's responsibility to fit a suitable underwater connector or hull penetrator.

For best performance, a suitable housing or shroud should be added around the thruster. The housing should provide a cavity for the thruster, with mating surfaces that provide a seat for the thruster's outer stator perimeter ring and the mounting holes. Adding a smoothly curved intake duct to the thruster improves thrust and efficiency, and improves overall hydrodynamic drag of the vehicle. A ducted housing reference design is available on request.



Safety and Handling

- Moving parts: do not touch propeller when motor is powered! Keep away body parts to avoid injury.
- Strong magnets: When changing propellers or disassembling motor, keep the magnetic rings well separated from each other, and away from any ferromagnetic objects. Do not let the magnet rings touch each other directly. Avoid getting skin or body parts getting trapped between the magnet rings.
- Do not run the thruster outside of water. The motor requires water for lubrication and cooling.
- Avoid prolonged exposure to direct sunlight and UV radiation.
- Do not operate thruster with broken propellers, damaged cable or other defects



Replacing the Propeller

Propellers may get chipped or damaged when the thruster is exposed to pebbles, rocks or other hard debris. Spare propellers are available from Hydromea in clockwise and counter-clockwise rotation. Follow these steps to replace a propeller:



Place thruster on clean and non-magnetic surface, free of ferromagnetic objects or particles.



Lift thruster and gently push down against a propeller blade near the outer ring until bottom ring falls out.



Place bottom ring on table, leave top ring in thruster. **Careful:** keep rings separate! Strong magnets!



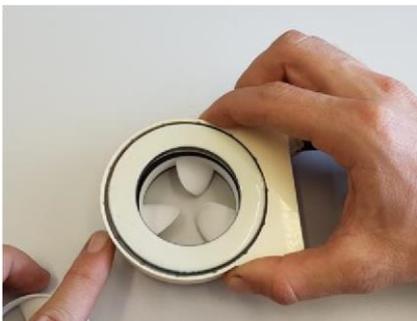
Remove old propeller. Check that magnet rings are clean.



Insert new propeller. Make sure it is seated properly.



Slowly move thruster with top ring above bottom ring.



Slowly decrease distance until bottom ring snaps in place. **Careful:** Never place fingers between rings - pinching hazard!



Check that propeller is fully seated and rings are parallel. Manually rotate rings to check for free movement.

Disclaimer:

The Hydromea DiskDrive50 thruster is an OEM component for integration by experienced equipment manufacturers. It is the customer's responsibility to ensure safe operation of the thruster within their equipment, and avoid injury or harm. Hydromea shall not be held liable for any damage, including but not limited to damage to equipment, environment, any harm or injury to persons, that result from use of its products. The DiskDrive50 thruster shall not be used in safety-critical applications or medical applications.