



Ultra EC™

Ultra EC™ Motors

Ultra performance in a complete family of brushless slotless miniature motors.

Portescap

No two applications are the same.

One design definitely does not fit all. Not when your application has specific performance requirements for high speed, high torque or a balance of both. Not when all that performance needs to fit in a small space. And not when you need to deliver ultra performance at an optimized cost. That's why we created the **Ultra EC™** platform of motors.

Ultra EC™

Three different product lines address your specific performance requirements:



ECS line for ultra high speed and responsiveness in direct-drive applications.



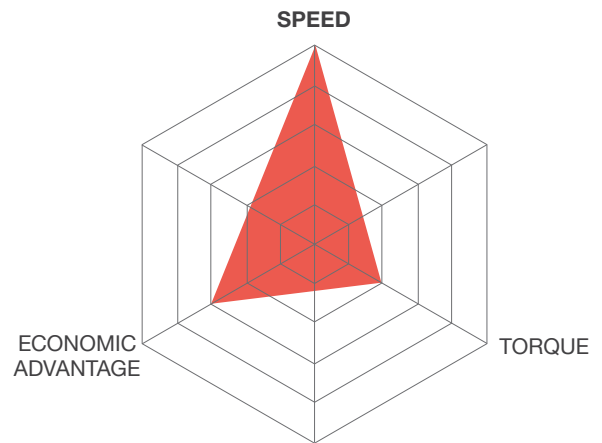
ECP line for balanced performance in a cost-efficient motor that fits an ultra wide range of applications.



ECT line for ultra high torque in the smallest package.

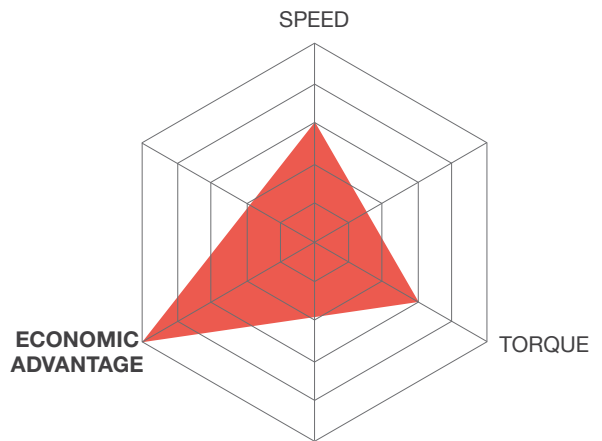
ECS line: Ultra high speed and responsiveness.

Ultra ECS motors are tailored for high-speed, high-acceleration direct-drive applications. With a high-end magnetic circuit and minimal iron losses, these dynamic designs can reach amazing mechanical powers such as delivering **180 W continuously at 50,000 rpm** in a 22 mm diameter motor (22ECS60). With advanced vibration-damping and built-in temperature monitoring, ECS motors are designed for cool, virtually silent and vibration-free operation.



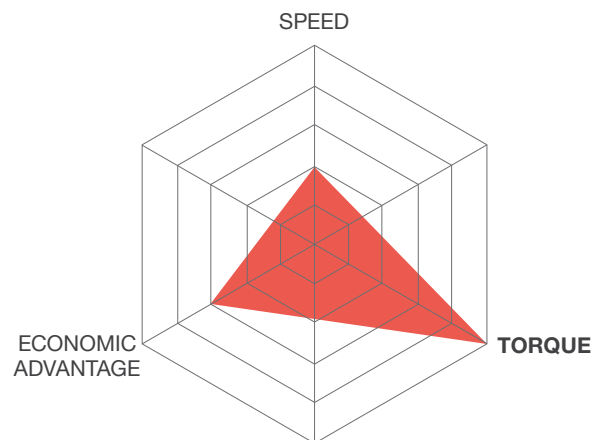
ECP line: Ultra performance for a wide range of applications.

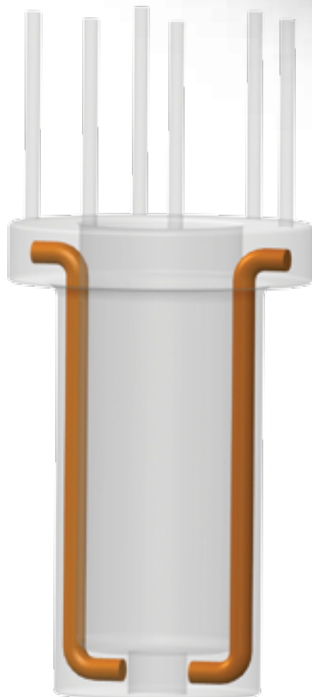
Ultra ECP two-pole motors balance speed and torque capabilities, bringing premium performance to the most commonly specified brushless motor working points. Compatible with gearboxes and encoders, these cost-optimized motors can provide **30 percent more continuous torque and 100 percent more power** over similar competitive motors without compromising on the smooth operation and long life you expect from Portescap's brushless slotless motors.



ECT line: Ultra high torque in the smallest package.

Featuring a multipolar design, our Ultra ECT motors approach the torque capabilities of much larger motors. **Continuous torque can be up to two times higher** than comparable brushless DC motors of the same size over the entire low speed range typically used with gearheads. Even compared to multipolar miniature motors from our competition, the ECT line delivers 20 to 150 percent more torque, with a lower speed drop under load. These cool-running motors feature built-in temperature monitoring, and are compatible with gearboxes and encoders.





Ultra EC™ Coil

Ultra EC™ technology drives performance.

Portescap's Ultra EC™ motors are crafted around our patented **U coil technology** – a new design that is the key to the outstanding performance of these brushless slotless miniature motors. This unique coil design allows two-pole motors, for example, to deliver 30 percent more torque compared to the same size motor using a conventional coil design, with substantially lower iron losses.

Ultra EC™ coil features.

Straight turns

Inner and outer heads

Special output to prevent loose wires

Axial and radial forming

Ultra EC™ benefits.

Greater efficiency of copper turns, minimized joule losses

Optimum package size

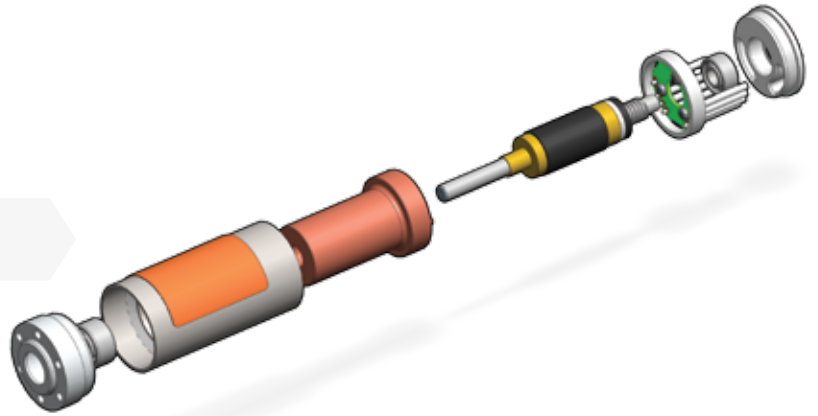
Maximized useful volume of copper

Stronger coil integrity

Perfect integration into motor design

Ability to reach a wide range of torque constants

Simple, cost-efficient design – wide-ranging performance



Ultra EC™ Because targeted performance matters to U.

All three product lines owe their performance to our innovative U coil design – the core of the Ultra EC™ family platform. The Ultra U coil uses straight copper turns to maximize the effectiveness of the magnetic field, with coil heads perfectly integrated into the compact motor design.

With minimal joule and iron losses, maximum power is available to achieve the specific performance characteristics you're looking for in the frame size you require. And of course, minimal losses also means greater efficiency and cooler operation.



Portescap's innovative patented Ultra U coil

The right motor for the right application.

SPEED

TORQUE



ECS line: High-speed applications.

- Respirators
- High-speed spindles
- Medical hand tools
- Dental hand tools
- High-end impellers



ECP line: The universal performance solution.

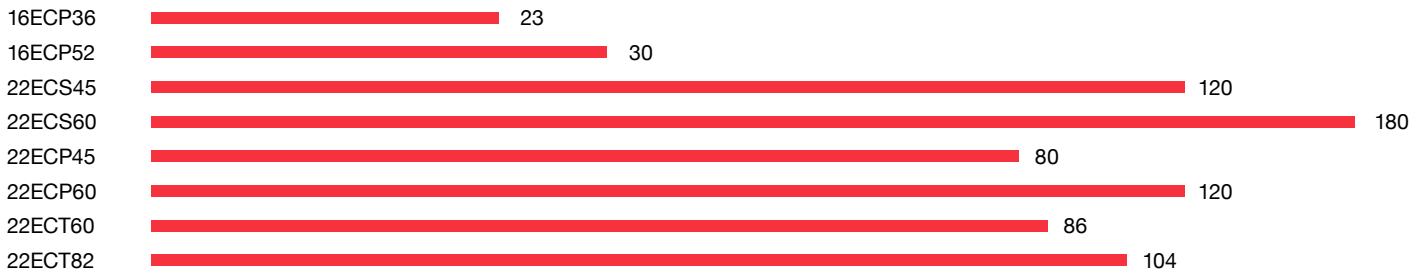
- Automated hand tools
- Factory automation
- Lab automation
- Disposable medical tools
- Grippers
- Automation actuators



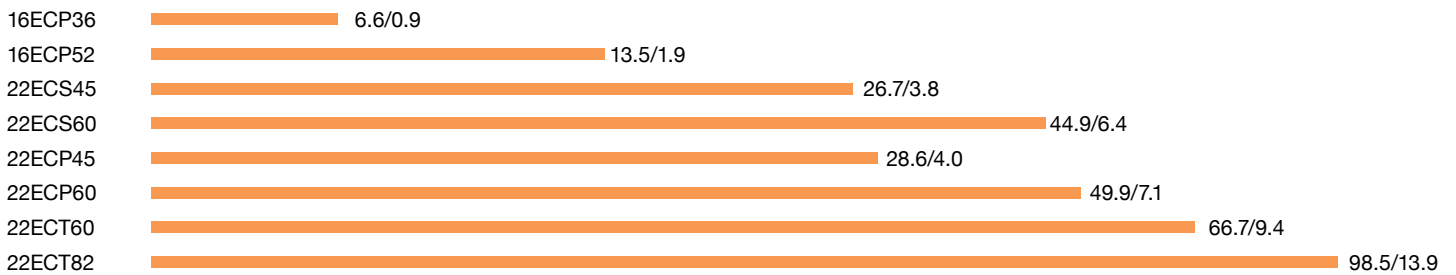
ECT line: High-torque applications.

- Industrial hand tools
- Electric screwdrivers
- Strapping hand tools
- Pruning shears
- Robotics
- Exoskeletons
- X/Y Axis

Ultra EC™ Maximum Continuous Power (watts).



Ultra EC™ Maximum Continuous Torque (mNm/oz-in).



The sizes you need.

We currently offer a variety of motor diameters and lengths within each Ultra EC line, designed to optimize your application and outperform other motor technologies – and we are continuously adding new diameter sizes. Find the ideal size and performance characteristics for your application with our dynamic motor selection tool, [MotionCompass™](#).



Customization options for a perfect application fit.

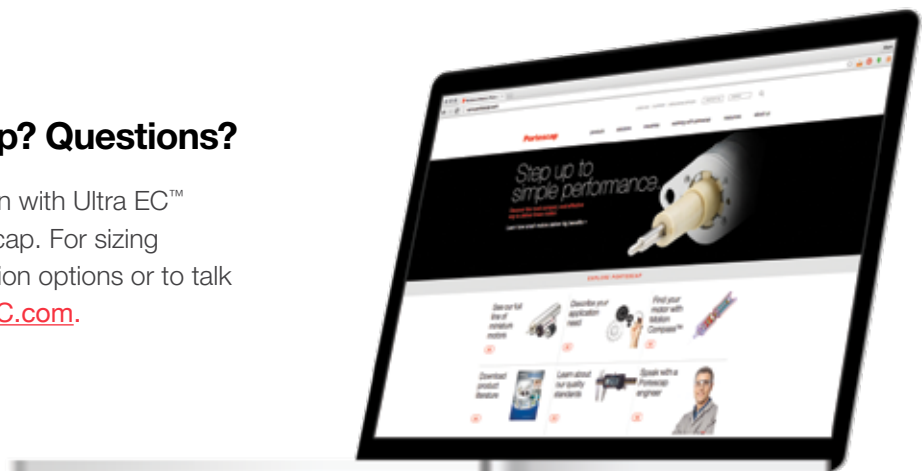
Need something special? We can customize materials, shafts, connectors, coils, gearing, seals and more. With our iterative prototyping capabilities, Portescap can quickly develop the right motor configuration for your specific application requirements.

Typical performance.

	Diameter (mm)	Length (mm)	Maximum Continuous Mechanical Power (watts)	Speed for Maximum Continuous Mechanical Power (rpm)	Maximum Continuous Torque (mNm/oz-in)	Motor Regulation R/k2 (10 ³ /Nms/typical)	Mass (g/oz)
16ECP36	16	36	23	50,000	6.6/0.9	67.8	41/1.4
16ECP52	16	52	30	30,000	13.5/1.9	18.1	62/2.2
22ECS45	22	45	120	60,000	26.7/3.8	8.5	100/3.5
22ECS60	22	60	160	50,000	44.9/6.4	3.7	140/4.9
22ECP45	22	45	80	40,000	28.6/4.0	7.5	100/3.5
22ECP60	22	60	120	35,000	49.9/7.1	3.1	140/4.9
22ECT60	22	60	86	19,000	66.7/9.4	1.5	123/4.3
22ECT82	22	82	104	16,000	98.5/13.9	0.8	174/6.1

Customization? Sizing help? Questions?

Make the difference for your application with Ultra EC™ brushless slotless motors from Portescap. For sizing information, specifications, customization options or to talk with a Portescap engineer, visit [UltraEC.com](#).



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