

High Performance Motors for Battery-Operated Power Tools

Peak performance for **ergonomics** and **efficiency**
in fastening, gripping and cutting applications.

Portescap

Your tools can be more powerful and efficient

Battery-powered tools have an operating profile quite different from other motor-driven applications.

At first, there's little resistance as the bolt threads in, or as the jaws of a cutting or gripping tool approach the work piece. During this stage, a motor that operates at a **faster free speed** saves time and boosts productivity.

Then, when the tool performs the more forceful work of tightening, cutting or gripping, the need for torque becomes paramount. A motor that delivers **higher peak torque** can perform a wider range of tough jobs without excessive heating.

These alternating speed and torque cycles must be constantly repeated in demanding industrial applications. Cycles can have different profiles, calling for a special motor design that minimizes the losses to achieve the best solution possible. We understand how to make your cordless tools more powerful and efficient.

That's why we created the **Ultra EC™** platform.

Faster free speed » Higher productivity

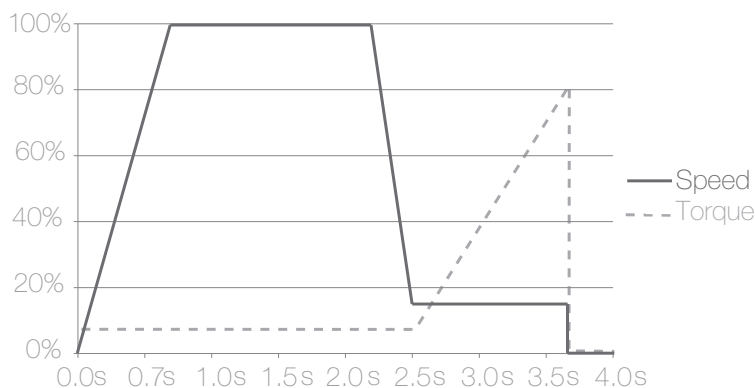
Higher peak torque » Wider torque capabilities

Losses = iron losses (eddy current) + copper losses

Rundown Phase

Tightening Phase

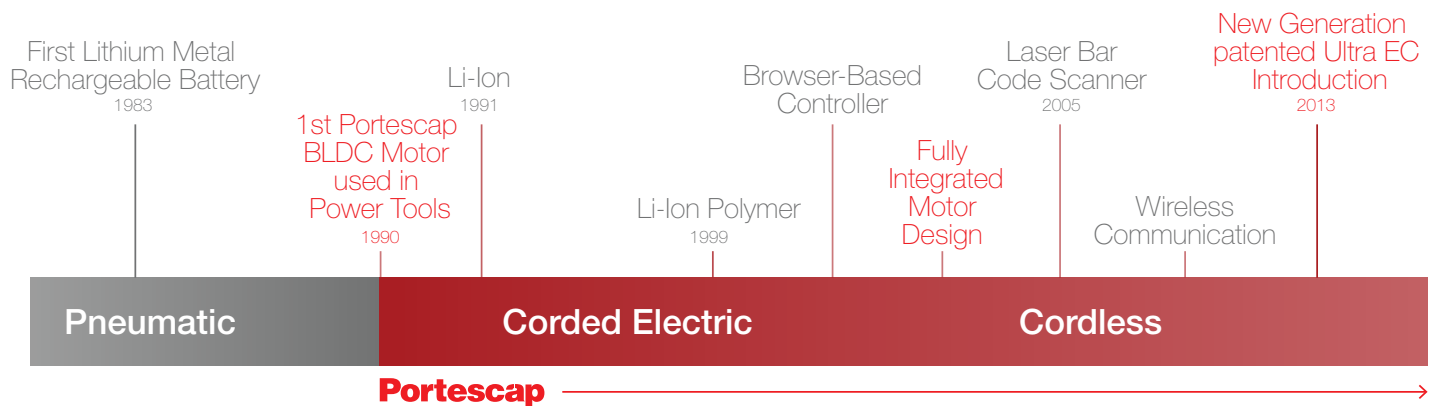
Typical Working Cycle for Battery Tools



Cycles are repeated continually during normal usage

Portescap is the performance leader.

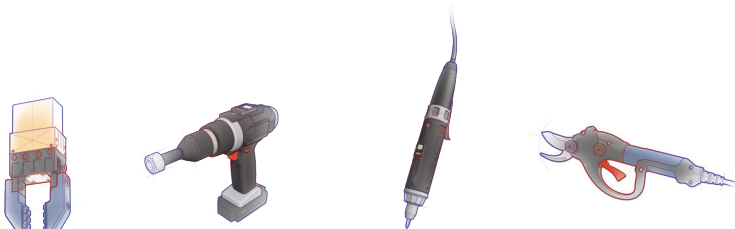
- Designing key industry solutions for more than 25 years
- Enabling the transition from pneumatic to electric tools
- Driving ergonomic and performance gains across applications
- Setting the performance standard for industrial power tools
- Offering customization capabilities to optimize each application
- **Ultra EC™**, the next generation of power and performance



For more than 25 years, leading manufacturers have relied on Portescap's innovative products, expertise and support to develop advanced corded tools and transition successfully to battery-powered tools while improving quality control, flexibility and error-proofing.

The right motor for the right application.

Bring your unique application requirements to Portescap. We'll create an optimized motor that delivers the repeatable peak speed and torque you need for outstanding ergonomics, power and efficiency.

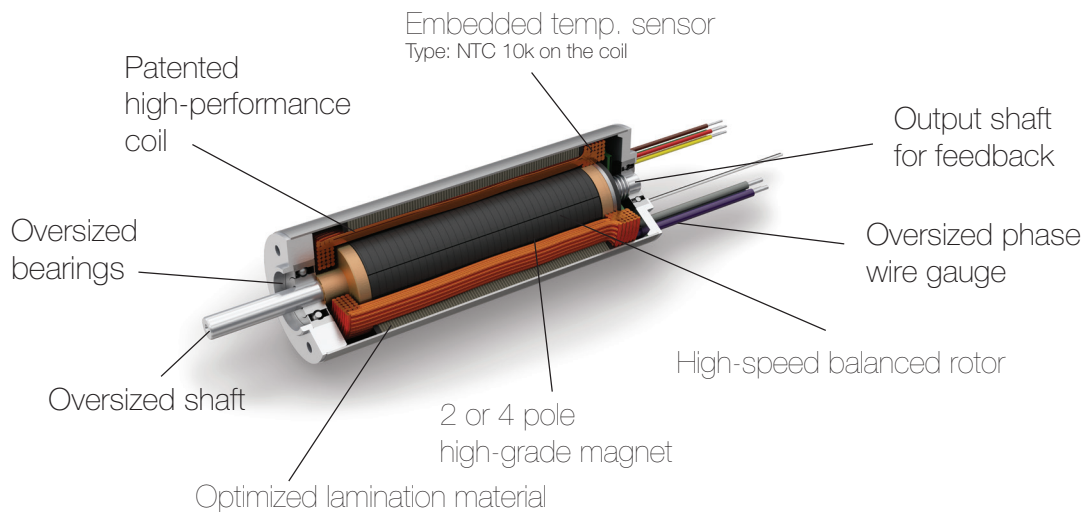


- Nutrunners
- Screwdrivers
- Pruning shears
- Agricultural tightening devices
- Grippers
- Strapping tools
- Stapling tools
- Robots
- Exoskeletons

The ideal technology for industrial power tools

Portescap provides advanced motion solutions that maximize power and efficiency while improving the user experience. We're pleased to present our new **Ultra EC™** brushless slotless motors, engineered in Switzerland and introducing our patented **U coil technology**. This revolutionary new design optimizes speed and torque in a compact package for the most challenging applications.

Fasteners, grippers and cutting tools benefit from increased performance, lower weight and greater energy-efficiency.



Patented U Coil Technology

- High performance at low voltage
- High speed capability
- tBalanced motor losses
- High responsiveness and power density
- Minimized mass and volume

What's your application challenge?

Freedom. Higher performance in a smaller package for more agile tools.

Productivity. Faster free speed and higher peak torque to get more jobs done faster.

Repeatability. Predictable, accurate speed and torque cycles with each operation.

Safety. Smooth, consistent operation without stalling.

Comfort. Lighter, more compact, lower vibration tools.

Efficiency. Accurate speed, optimum torque and extended battery life to save time and effort every workday.

Portescap miniature motors provide:

Faster rundown. Save time in the free-run phase to finish each operation faster and move on to the next.

Higher peak torque. Count on the same tool to perform reliably from light to heavy-duty work.

Smaller size, lighter weight. Design more compact, ergonomic tools around miniature motors that supply maximum power density.

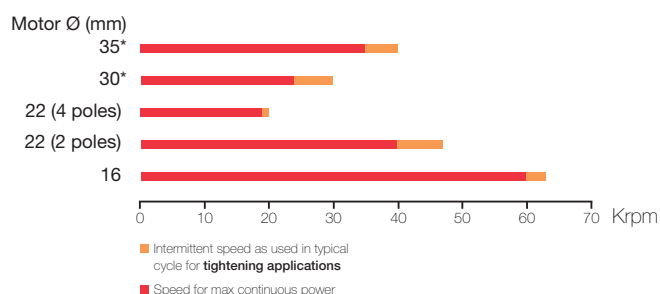
Reduced operator fatigue. Give workers tools they can use comfortably all day long.

Lower operating temperature. Deliver energy to the application – not the user – for longer battery and motor life.

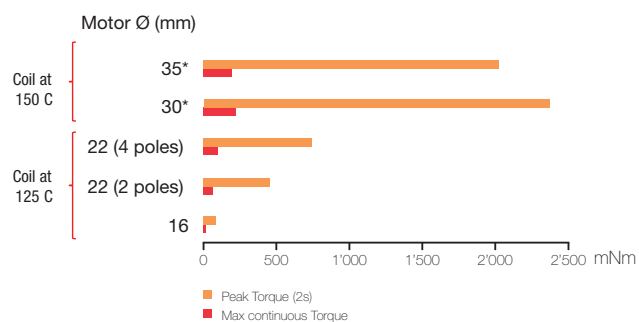
The sizes and performance you need.

	Max Cont. Torque (mNm)	Peak Torque (2s) (mNm)	Speed for Max Continuous Power	Diameter (mm)	Length (mm)	# Poles	Mass (g)	Recommended Applications
16ECP36	7.2	34.6	60,000	16	36	2	41	μ torque tools/screwdriver, gripper
16ECP52	15.1	87.5	40,000	16	52	2	62	μ torque tools/screwdriver, gripper
22ECP45	28.6	173	40,000	22	45	2	100	μ torque tools/screwdriver, gripper
22ECP60	50.5	279	35,000	22	60	2	140	μ/low torque tools, stapling & agricultural tools
22ECT60	65.7	454	19,000	22	60	4	123	μ/low torque tools, stapling & agricultural tools
22ECT82	98.5	741	16,000	22	82	4	174	low torque nutrunner, strapping/stapling/agricultural tools
30ECT64*	138	1,340	20,500	30	64	4	263	low/mid torque nutrunner, strapping/stapling/agricultural tools
30ECT90*	225	2,370	16,000	30	90	4	380	mid torque nutrunner
30ECT64 HS*	138	1,341	24,000	30	64	4	263	mid torque nutrunner, strapping/agricultural tools
30ECT90 HS*	225	2,370	20,000	30	90	4	380	mid/high torque nutrunner
35ECS60*	115	1,056	35,000	35	60	2	300	mid/high torque nutrunner
35ECS80*	195	2,025	27,500	35	80	2	450	high torque nutrunner

Speed Range



Torque Range



*Please check with your Portescap representative.

Many capabilities. One focus.



Collaborative innovation. Dedicated resources.

Our early engagement with you helps advance your design and production capabilities, so you can bring a superior solution to market faster.



Customization and testing for a perfect application fit.

Need something special? With our iterative design capabilities, Portescap can quickly develop the right motor configuration for your specific application requirements.

Customization options.

- Housing design
- Assembly integration
- Pinion design or specific mounting
- Coil/winding optimized for battery voltage
- Lamination optimized for low heat rise
- Gearbox/encoder integration

Testing capabilities.

- Prototype bench testing
- Electrical parameters
- Complete mechanical specs
- Design and temperature simulations
- Noise spectrum analysis
- Application analysis (free run vs. tightening cycle)

More than just motors.

Originated in Switzerland and driven by a passion for precision, customer-centric innovation, technical excellence and best-quality service since 1931, Portescap has become a recognized leading expert in miniature motors and precision motion control solutions for the industrial tools market.



Motion solutions for better battery-powered tools.

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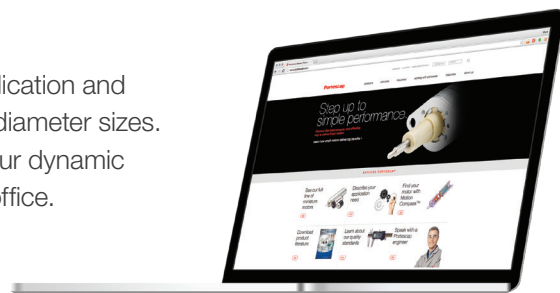
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Customization? Sizing Help? Questions?

We currently offer a variety of motor diameters 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™, or contact your regional Portescap office.



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