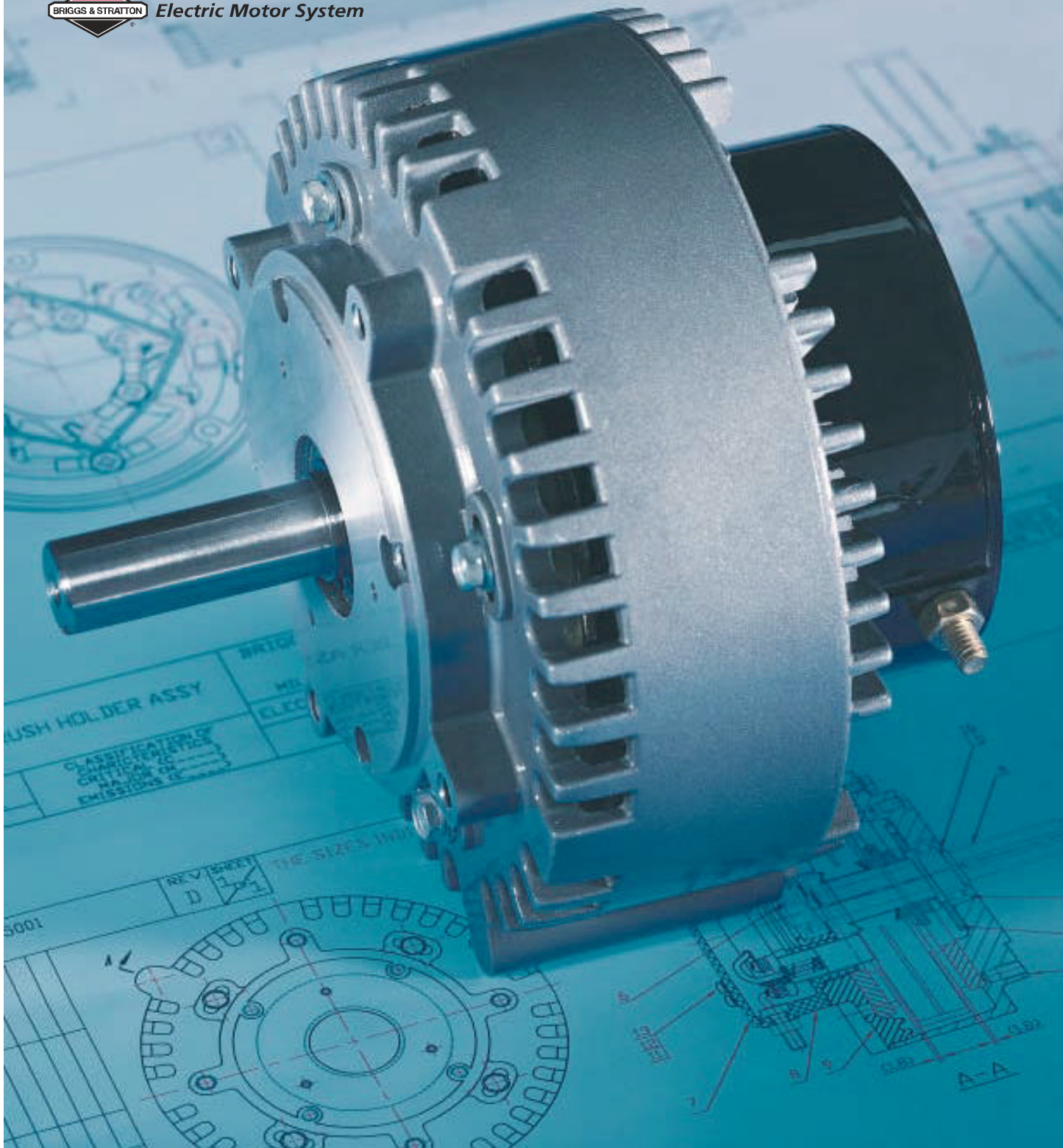


Etek™



Electric Motor System



Briggs & Stratton is renowned worldwide for leadership in power technology.

You have counted on our gas engines for performance, power, reliability, and profitability. Now, you can get those same benefits from our Etek™ Electric Motor System. An innovative product in battery powered equipment.

Do not let the small size fool you. The uniquely integrated Etek™ system provides a highly efficient combination of hardworking power and torque. Compared to other DC motor systems, the Etek™ system reduces maintenance costs, uses less energy and offers a longer operating life. All in a smaller, lighter weight design.

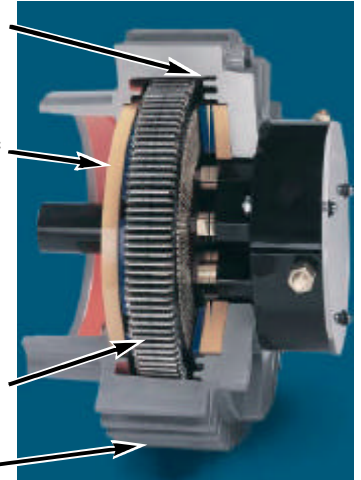
The compact size, 50% smaller and 20 lbs. lighter than other motors, results in a high power-to-weight ratio. You get high torque at low speeds and longer run life between charges.

FEATURES



Motor provides 32 ft-lbs of torque independent of vehicle voltage. Maximum speed is self regulating and is set by the manufacturer to meet specific application requirements. Improved regenerative braking can be set to meet terrain requirements and individual needs for "feel". Reduces brake wear and enhances battery life.

- Axial air gap DC disc armature motor means a lot of power in a small package.
- Permanent magnet field provides high efficiency and minimal loss of speed as motor increases.
- Reliability and rugged construction, with no commutator connections, reduce maintenance costs and extend motor life.
- High power-to-weight ratio due to compact disc construction and integral commutator.
- Lightweight aluminum frame.



SAFETY



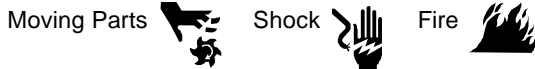
! The safety alert symbol is used to identify safety information about hazards which can result in death, serious injury, and/or property damage.

! **WARNING** Indicates a hazard which, if not avoided **could result in death or serious injury.**

! **CAUTION** Indicates a hazard which, if not avoided **might result in death or serious injury.**

CAUTION when used without the alert symbol, indicates a situation that could result in damage to the motor.

HAZARD SYMBOLS AND MEANINGS



! WARNING



Electrocution or serious injury can occur if proper precautions are not followed.

- **DO NOT** pour or spray water on the motor while running or cleaning.
- **DO NOT** attempt to repair or make adjustments to the motor while in operation.
- Keep the motor clean of grass, chaff and dirt. An accumulation of combustible material around or on the motor will prevent cooling and may result in a fire, and personal injury.

! WARNING



Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories. Traumatic amputation or severe laceration can result.

- Operate unit with guards in place.
- Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawstring or items that could become caught.

GENERAL INFORMATION



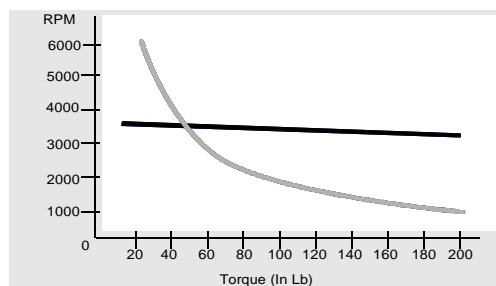
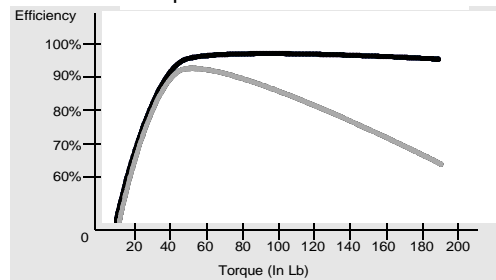
- Voltage Constant: 72 RPM per Volt
- Torque Constant: 1.14 in lb/Amp (0.13 Nm/Amp)
- Maximum Motor Current: 330 amps for 1 minute
- Motor Weight: 21 lbs.
- Motor Output: Maximum 15 Hp, 6 Hp continuous
- Maximum Motor Voltage: 48 V.D.C.
- Maximum No Load Current: 6 Amp

OPERATION



In tests, the Briggs & Stratton Etek™ motor outperformed the competition by maintaining consistent speed and optimal efficiency across a wide range of loads.

- Briggs & Stratton Motor
- Competitive Motor



APPLICATION



WARNING

Briggs & Stratton does not approve or authorize the use of this motor on 3-wheel All Terrain Vehicles (ATVs), motor bikes, aircraft products or vehicles intended for use in competitive events. Use of this motor in such applications could result in property damage, serious injury (including paralysis), or even death.

WARNING



Battery gas can explode.

- Keep sparks and flames away from batteries.
- Never place a metal object across battery posts to check for charge - use a voltmeter or hydrometer.
- Keep battery post and electrical connection covers in place.

WARNING



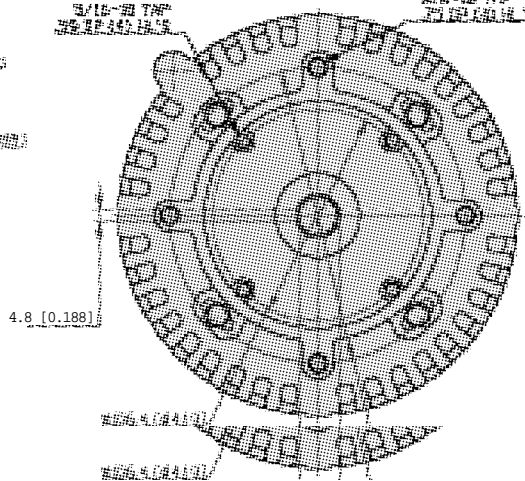
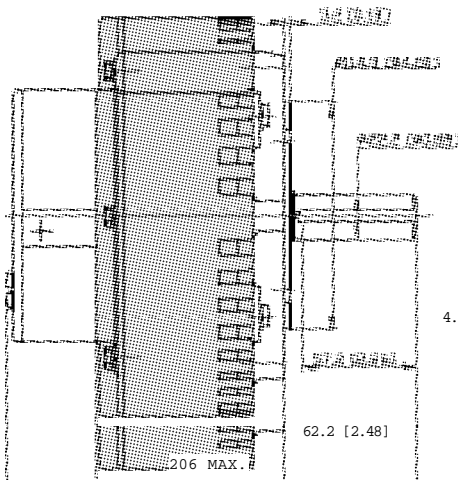
Ensure proper battery capacity for the desired output.

- Do not use battery pack voltages above 48 volts.
- Never connect motor directly to battery power without the use of a contactor(s) and/or electronic controller.
- Batteries develop extremely high currents, use precaution.

WARNING



Briggs & Stratton recommends the use of overcurrent protection when applying this motor. Use of properly sized fuses and/or breakers are recommended.



MAINTENANCE



WARNING



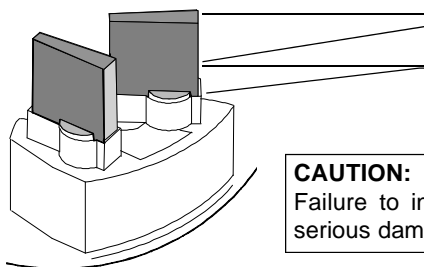
Batteries can develop extremely high currents. Motor removal, or brush housing replacement should be done by a qualified technician.

DEBRIS CLEANING

Periodically remove grass, chaff or dirt around the air cooling vents of the frame to prevent overheating of the motor.

BRUSH INSPECTION

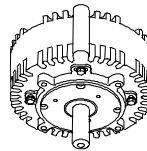
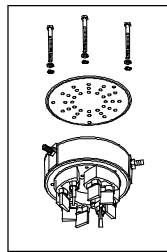
Yearly or every 100 hours have brushes inspected for wear. Replacement of brush housing is recommended when brush length is at 1/8" above brass holder. Torque brush cover bolts to 8.8 in. lbs.



Normal wear area.
Replace at minimum 1/8" above brass holder.

CAUTION:
Failure to inspect brushes could cause serious damage to the motor.

SERVICE



The Briggs & Stratton Etek™ motor is so durable and efficient, we are only offering the brush pack as a service item.

Brush housing To order use: P/N **696952**, includes complete brush set along with cover(p/n 696953), bolts and washers.

WARNING

DO NOT disassemble the motor. Voltage and output have been pre-set by the factory. Any tampering with the magnet settings may cause serious damage to the motor.

To obtain replacement parts, you may locate your nearest Authorized Briggs & Stratton Service Dealer in our dealer locator map on our web site www.briggsandstratton.com or in the



"Yellow Pages™" directory under "Engines, Gasoline" or similar category.

Briggs & Stratton motor technology is licensed from Lynch IP under U.S. Patent No. 4,823,039 and PCT Patent Application No. PCT/GB94/028121.

ABOUT YOUR ENGINE WARRANTY

Briggs & Stratton welcomes warranty repair and apologizes to you for being inconvenienced. Any Authorized Service Dealer may perform warranty repairs. Most warranty repairs are handled routinely, but sometimes requests for warranty service may not be appropriate. For example, warranty would not apply if engine damage occurred because of misuse, lack of routine maintenance, shipping, handling, warehousing or improper installation. Similarly, warranty is void if the serial number of the engine has been removed or the engine has been altered or modified.

If a customer differs with the decision of the Service Dealer, an investigation will be made to determine whether the warranty applies. Ask the Service Dealer to submit all supporting facts to its Distributor or the Factory for review. If the Distributor or the Factory decides that the claim is justified, the customer will be fully reimbursed for those items that are defective. To avoid misunderstanding which might occur between the customer and the Dealer, listed below are some of the causes of engine failure that the warranty does not cover.

Normal wear: Engines, like all mechanical devices, need periodic parts service and replacement to perform well. Warranty will not cover repair when normal use has exhausted the life of a part or an engine.

Improper maintenance: The life of an engine depends upon the conditions under which it operates, and the care it receives. Some applications, such as tillers, pumps and rotary mowers, are very often used in dusty or dirty conditions, which can cause what appears to be premature wear. Such wear, when caused by dirt, dust, spark plug cleaning grit, or other abrasive material that has entered the engine because of improper maintenance, is not covered by warranty.

This warranty covers engine related defective material and/or workmanship only, and not replacement or refund of the equipment to which the engine may be mounted. Nor does the warranty extend to repairs required because of:

1. PROBLEMS CAUSED BY PARTS THAT ARE NOT ORIGINAL BRIGGS & STRATTON PARTS.
2. Equipment controls or installations that prevent starting, cause unsatisfactory engine performance, or shorten engine life. (Contact equipment manufacturer.)
3. Leaking carburetors, clogged fuel pipes, sticking valves, or other damage, caused by using contaminated or stale fuel. (Use clean, fresh, lead-free gasoline and Briggs & Stratton gasoline stabilizer, Part No. 5041.)
4. Parts which are scored or broken because an engine was operated with insufficient or contaminated lubricating oil, or an incorrect grade of lubricating oil (check oil level daily or after every 8 hours of operation. Refill when necessary and change at recommended intervals.) OIL GARD may not shut down running engine. Engine damage may occur if oil level is not properly maintained. Read Operating & Maintenance Instructions.
5. Repair or adjustment of associated parts or assemblies such as clutches, transmissions, remote controls, etc., which are not manufactured by Briggs & Stratton.
6. Damage or wear to parts caused by dirt, which entered the engine because of improper air cleaner maintenance, re-assembly, or use of a non-original air cleaner element or cartridge. (At recommended intervals, clean and re-oil the Oil-Foam element or the foam pre-cleaner, and replace the cartridge.) Read Operating & Maintenance Instructions.
7. Parts damaged by overspeeding, or overheating caused by grass, debris, or dirt, which plugs or clogs the cooling fins, or flywheel area, or damage caused by operating the engine in a confined area without sufficient ventilation. (Clean fins on the cylinder, cylinder head and flywheel at recommended intervals.) Read Operating & Maintenance Instructions.
8. Engine or equipment parts broken by excessive vibration caused by a loose engine mounting, loose cutter blades, unbalanced blades or loose or unbalanced impellers, improper attachment of equipment to engine crankshaft, overspeeding or other abuse in operation.
9. A bent or broken crankshaft, caused by striking a solid object with the cutter blade of a rotary lawn mower, or excessive v-belt tightness.
10. Routine tune-up or adjustment of the engine.
11. Engine or engine component failure, i.e., combustion chamber, valves, valve seats, valve guides, or burned starter motor windings, caused by the use of alternate fuels such as, liquefied petroleum, natural gas, altered gasolines, etc.

BRIGGS & STRATTON OWNER WARRANTY POLICY effective July 1, 2001

LIMITED WARRANTY

Briggs & Stratton Corporation will repair or replace, free of charge, any part, or parts of the engine that are defective in material or workmanship or both. Transportation charges on parts submitted for repair or replacement under this Warranty must be borne by purchaser. This warranty is effective for the time periods and subject to the conditions stated herein. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at www.briggsandstratton.com or as listed in the "Yellow Pages™" under 'Engines, Gasoline' or similar category.

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE YEAR FROM PURCHASE, OR TO THE EXTENT PERMITTED BY LAW ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. LIABILITY FOR CONSEQUENTIAL DAMAGES UNDER ANY AND ALL WARRANTIES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. Some countries or states do not allow limitations on how long an implied warranty lasts, and some countries or states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from country to country and state to state.

WARRANTY PERIOD*

Products	WITHIN U.S.A. AND CANADA		OUTSIDE U.S.A. AND CANADA	
	Consumer Use	Commercial Use	Consumer Use	Commercial Use
Vanguard™ engines.	2 years			
Diamond Plus®, Industrial Plus™, I/C®, Sleeve Bore Intek™, and ELS™ engines.	2 years	1 year	2 years	1 year
Quantum®, Diamond Power®, Kool Bore Intek™, and Power Built™ OHV engines.	2 years	90 days	2 years	90 days
Standard engines installed on lawn mowers, riders, edgers, shippers, shredders, string trimmers, tillers and Sno/Gard engines.	2 years	90 days	1 year	90 days
Classic™ engines and all other standard engines and products.	1 year	90 days	1 year	90 days
Etek™ electric motor.	1 year			

* NOTE THE FOLLOWING SPECIAL WARRANTY PERIODS: 5 years for consumer use, 90 days for commercial use of Touch-N-Mow™ starter on the Quantum® and Intek™ engines; 2 years for emission control systems on engines certified by EPA and CARB; 1 year for consumer use of all engines and products in India, commercial use of Vanguard™ engines in India, and consumer use of Quantum Diamond Power® and Kool Bore Intek™ engines in Australia, New Zealand, the Middle East, and Africa.

The warranty period begins on the date of purchase by the first retail consumer or commercial end user, and continues for the period of time stated in the table above. "Consumer use" means personal residential household use by a retail consumer. "Commercial use" means all other uses, including use for commercial, income producing or rental purposes. Once an engine has experienced commercial use, it shall thereafter be considered as a commercial use engine for purposes of this warranty. Engines used in competitive racing or on commercial or rental tracks are not warrantied.

NO WARRANTY REGISTRATION IS NECESSARY TO OBTAIN WARRANTY ON BRIGGS & STRATTON PRODUCTS. SAVE YOUR PROOF OF PURCHASE RECEIPT. IF YOU DO NOT PROVIDE PROOF OF THE INITIAL PURCHASE DATE AT THE TIME WARRANTY SERVICE IS REQUESTED, THE MANUFACTURING DATE OF THE PRODUCT WILL BE USED TO DETERMINE THE WARRANTY PERIOD.

Briggs & Stratton Engines Are Made Under One Or More Of The Following Patents: Design D-247,177 (Other Patents Pending)

6,135,426	5,823,153	5,619,845	5,497,679	5,197,425	5,086,890	4,995,357	4,694,792	4,430,984	DES.309,458
6,116,212	5,819,513	5,606,948	5,320,795	5,197,422	5,070,829	4,977,879	4,684,917		DES.309,457
6,077,063	5,813,384	5,606,851	5,271,363	5,191,864	5,058,544	4,971,219	4,633,556		DES.308,871
6,064,027	5,809,958	5,548,955	5,269,713	5,188,069	5,040,503	4,895,119	4,630,498		DES.308,872
6,040,767	5,765,713	5,546,901	5,265,700	5,186,142	5,040,644	4,875,448	4,522,080		DES.356,951
6,014,808	5,645,025	5,503,125	5,243,878	5,138,996	5,009,208	4,819,593	4,520,288		DES.361,771
5,894,715	5,642,701	5,501,203	5,235,943	5,105,331	4,996,956	4,719,682	4,453,507		DES. 375,963