

# HARTZELL ENGINE TECHNOLOGIES STARTERS

## HARTZELL ENGINE TECHNOLOGIES E-DRIVE STARTERS



- Lightweight neodymium permanent magnet motor • In line design • Self-resetting torque limiter for kickback protection
- Internal solenoid engagement • Drive pinion supported by bearings on both ends

E-Drive aircraft starters offer industry-leading, robust, high duty cycle starters in a lightweight package. By utilizing a powerful neodymium permanent motor driven through a self-resetting negative torque-sensing device, the E-Drives provides unparalleled kickback protection, preventing hours of down time and replacement costs. The E-Drive aircraft starter is solenoid engaged, eliminating the need for a Bendix drive. Its low current draw helps maintain good battery life.



- High Performance Armature • Robust spring design • Increased commutator bar length • High performance field housing • Thin laminations
- Rare earth neodymium magnets • High quality magnetic alloy • Small package • 12 & 24 volt winding configuration • Stronger flux field • Redesigned Brush Holder
- Improved temperature stability • Metal construction for heat sinking • 9.5 lbs. • Offset brush position for increased brush contact area

### APPLICATION CHART

#### E-Drive Number - Approved Alternative for the following:

ERB-8011	ERB-8012	ERZ-8011	ERZ-8012
MHB-4001	MHB-4015	MZ-4205	MZ-4204
MHB-4002	MHB-4002	MZ-4206	MZ-6204
MHB-4003	MHB-6001	MZ-4207	
MHB-4005		MZ-4217	
MHB-4007		MZ-4218	
MHB-4010		MZ-4219	
MHB-4012		MZ-4221	
MHB-4013		MZ-4224	
MHB-4014		MZ-4222	
MHB-4016		MZ-4223	
MHB-4017		MZ-4225	
MHB-4019		MZ-6222	
MHB-4020		MZ-6224	



- Starter system designed for maximum performance • Drive assembly integrates proprietary pinion gear, clutch, torque limiter, and actuator in one complete module
- Available for coarse and fine pitch ring gears, clockwise and counterclockwise rotation • No periodic service or recurring maintenance required • 9.5 lbs.

Model	Description	Lycoming Engine	Replaces	Part No.	Price
ERZ-8011	Clockwise rotation, 12 Volt, 149 tooth - 12/14 Pitch Gear	235, 290, 320, 340, 360, 540	31A21198, Sky-Tec 149-NL, 149-12PM, LS, Lamar PM1201, PM1204, MZ-4205 thru -4207, -4217 thru -4219, -4221 thru -4226, -6222, -6224	07-01102	---
ERZ-8012	Clockwise rotation, 12 Volt, 122 tooth - 12/12 Pitch Gear	235, 290, 320, 360, 540	31A21210, Sky-Tec 122-NL, 122-12PM, LS, Lamar PM1203, MZ-4204, -6204	07-01103	---
ERB-8011	Clockwise rotation, 24 Volt, 149 tooth - 12/14 Pitch Gear	235, 320, 340, 360, 540	31B21064, Sky-Tec 149-NL, 149-NL/ec, 149-24, Lamar PM2401, MHB-4010, -4016 thru -4020, -6014, -6016, -6018	07-01099	---
ERB-8012	Clockwise rotation, 24 Volt, 122 tooth - 10/12 Pitch Gear	235, 290, 320, 340, 360, 540	31B21211, Sky-Tec 122-NL/ec, 122-24PM, LS, Lamar PM2403, MHB-4015, -6001, MMU-4001, -6001, Delco 1109669	07-01101	---
ELB-8011*	Reverse/Counter rotation, 24 Volt, 12/14 Pitch Gear	LTIO-540, LTIGO-540	14214, Sky-Tec 149-NLR/ec*, Lamar PM2404, MHB-4014, MHB-6014	07-02665	---
ELZ-8021*	Reverse/Counter rotation, 12 Volt, 12/14 Pitch Gear	LIO-320, LO-360, LTO-360, LIO-360	14215, Sky-Tec 149-NLR, Lamar PM1204, MZ-4220, MZ-6220	07-02666	---

## HARTZELL ENGINE TECHNOLOGIES FACTORY OVERHAULED STARTERS

If No Cores are Available at factory, we will require your core for overhaul.



Mfg. Ref.	Part Number	Price
MC-6501	07-06503	---
MHB-4020R	CALL	CALL
MZ-4204R	CALL	CALL
MZ-4219R	CALL	CALL
MZ-4224R	CALL	CALL
646238-2R	07-02650	---

## HARTZELL STARTER OVERHAUL KITS



Lamar Technologies overhaul kits include all parts necessary for a normal major overhaul, as well as any special tools, lubricants, and thread compounds. The model specific kits cover all starters manufactured by Lamar Technologies in eight different kits. The overhaul manual has been rewritten to highlight tear down and assembly with detailed drawings and instructions. The manual covers all aspects of the rebuild in easily understood steps with tech support just a call or email away. (See Documents Tab). Average time to do a complete overhaul can be accomplished in less than an hour reducing downtime and increase revenue, as well as maintain the quality standards of the maintenance organization.

Description	Part No.	Price
PM1203-OHK - Fits all PM1203 starters	07-01270-1	---
PM1204-OHK - Fits all PM1204 starters	08-06007-1	---
PM2403-OHK - Fits all PM2403 starters	07-01273-1	---



## QUALITY AIRCRAFT OVERHAULED STARTER ADAPTERS

Description	Part No.	Price
642083A12	07-19956	---
642087A68	07-19960	---
642087A69	07-19962	---
642087A70	07-19963	---
643259A18	07-19968	---
643259A39	07-19969	---
658440A1	07-19970	---

## HARTZELL STARTERS FOR CONTINENTAL



Hartzell Permanent Magnet Starters represent the next generation in starter technology, setting new standards in performance and reliability. These lightweight starters deliver exceptional torque to start virtually any general aviation piston engine in nearly any environment, yet weigh about 40% less than conventional starters. The key is patented permanent magnet motor design. It replaces the bulky windings of a conventional starter motor with lightweight permanent magnets. These TBO starters are built to go the distance between engine overhauls. Conventional starters generally don't last, they usually have to be pulled off for repair or replacement at least once during the life of the engine. 24V unit is the new OEM part for Cirrus aircraft. P/N 07-01274

## CONVERSION CHART

The Magnaflite lightweight starter listed in the table below will be superseded by the E-Drive and/or X-Drive starter listed therein. All Magnaflite P/N's listed below that are currently installed, being installed or in inventory are in no way affected. Standard Limited Warranty, is in effect and returns for reason of supersedure will not be accepted.

KAPS Part Number	X-Drive Left Hand Solenoid	X-Drive Right Hand Solenoid	E-Drive
MHB-6016	SRB-9021	SRB-9031	ERB-8011
MHB-6018	SRB-9021	SRB-9031	ERB-8011
MMU-6001	SRB-9022	SRB-9032	ERB-8012
MZ-6204	SRZ-9022	SRZ-9032	ERZ-8012
MZ-6222	SRZ-9021	SRZ-9031	ERZ-8011
MZ-6224	SRZ-9021	SRZ-9031	ERZ-8011
MZ-6226	SRZ-9021	N/A	ERZ-8011

## TCM ENERGIZER STARTERS

FACTORY NEW			
Model	Volt/Amp	Part No.	Price
ES646238-2	12V	07-01333	---
ES646275-1	24V	07-02652	---

FACTORY OVERHAULED			
Model	Volt/Amp	Part No.	Price
646238-2R	12V	07-02650	---
646275-1R	24V	07-06502	---