



Hartzell Engine Technologies LLC

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www.HartzellEngineTech.com

AIRCRAFT STARTER & PARTS PRICE LIST

RELEASE DATE » January 2, 2013

AUTHOR » HET Sales Department

REV » Original: Formatted to HET
Design Standards

Hartzell Engine Technologies (HET) is the leading OEM supplier of aircraft cabin heating solutions and engine accessories, including turbocharging systems, alternators, starters, and fuel pumps.

***NOTE** The following statements are excerpts from the FAA Advisory Circular 20-62C entitled "ELIGIBILITY, QUALITY, AND IDENTIFICATION OF APPROVED REPLACEMENT PARTS" All HET products offered herein meet the requirement of FAA Advisory Circular 20-62C.*

FAA Advisory Notice » Background

An increasing amount of replacement parts (including standard parts), materials, appliances and instruments are offered for sale as being of aircraft quality and origin of these units are unknown. Users of such units are usually not aware of the potential hazards involved with replacement parts that are not eligible for use on certified aircraft. Frequently such units are deceptively advertised and presented as "unused," "like new," or "remanufactured." This implies that the quality of such units is equal to an original or appropriately repaired or overhauled.

The performance rules for replacement of parts and materials used in the maintenance and alteration of U.S. certificated aircraft are specified in Federal Aviation Regulations (FAR) 43.13 and FAR 145.57. The responsibility for the continued airworthiness of the aircraft, which includes the replacement of parts, is the responsibility of the owner/operator as outlined in FAR 91.163, FAR 121.363, FAR 123.45, FAR 127.131 and FAR 135.143 (a).

Identification of the Approved Parts

Approved serviceable replacement parts are identified as follows:

- By an FAA Form 8130-3 (Formerly FAA Form 186), Airworthiness Approval Tag. An Airworthiness Approval Tag identifies a part or group of parts that have been approved by an authorized FAA representative.
- By an FAA Technical Standard Order (TSO) number and identification mark that indicates the part or appliance has been manufactured under the requirements of FAR 37.
- By an FAA/PMA symbol, together with the manufacturer's name, trademark or symbol, part number, and the make and model of the type certificated product on which the part is eligible for installation, stamped on the part. An FAA Parts Manufacturer Approval (FAA/PMA) is issued under FAR 21.305. The make and model information may be on a tag attached to the part.
- By shipping ticket, invoice, or other document which provides evidence that the part was produced by a manufacturer holding an FAA Approved Production Inspection System issued under FAR 21, Subpart F, or by a manufacturer holding an FAA Production Certificate issued under FAR 21, Subpart G.



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- By a certificate of airworthiness for export issued by a foreign government under the provisions of FAR 21, Subpart N.

Know Your Supplier

It has come to our attention that many reproduced parts and components, particularly instruments which have been manufactured by persons other than the original manufacturer, are available for purchase and installation on U.S. certificated aircraft. Often, an original part is used as a sample to produce duplicates. The reproduced parts appear to be as good as the original part; however, there are many unknown factors to be considered that may not be readily apparent to the purchaser, i.e. heat treating, plating, inspections, tests, and calibrations. All too often the faulty part is not discovered until a malfunction or an accident occurs.

Summary

In accordance with FAR's, certification of materials, parts, and appliances for return to service, for use on aircraft, is the responsibility of the person or agency who signs the approval. The owner/operator, as denoted in paragraph 3 of this advisory circular, is responsible for the continued airworthiness of the aircraft. To assure continued safety in aircraft operation, it is essential that great care be used when inspecting, testing and determining the acceptability of all parts and materials. Particular caution should be exercised when the identity of materials, parts, and appliances cannot be established or when their origin is in doubt.

General Terms & Conditions

- All prices are subject to change without notice. Invoice prices will be seller's price in effect at time of shipment.
- All prices are F.O.B. Hartzell Engine Technologies plant point of shipment.
- All prices in this catalog are less sales and excise taxes. All quotations and/or contracts shall be subject to increase without notice by the amount of any sales, use or excise taxes levied against such transactions by any Federal, State, Municipal or other domestic or foreign government agency unless tax exemption certificate can be furnished which will meet the approval of such agency.
- All orders are payable in U.S. funds.
- Hartzell Engine Technologies is not responsible for any part left on the unit which is not part of the normal overhaul.
- HET reserves the right to return any unit that cannot be overhauled disassembled.



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FACTORY NEW AIRCRAFT STARTERS

Two (2) Years* Unlimited Hours Warranty on New E-Drive, X-Drive, and M-Drive Aircraft Starters:

Read full policy on pg 19. For more info: www.hartzellenginetech.com/aircraft-parts/aircraft-starter.html

1. Aircraft Starters for Lycoming Engines » Factory New

Part Number	Description	List Price	Core Charge
ELB-8011	E-Drive Reverse Direction Aircraft Starter 24V, 12/14 Pitch, 149 Tooth » Replaces Sky-Tec 149-NLR/ec, Lycoming 31B26900	\$750.00	
ELZ-8021	E-Drive Reverse Direction Aircraft Starter 12V, 12/14 Pitch, 149 Tooth » Replaces Sky-Tec 149-NLR Lycoming 31A26901	\$704.00	
ERB-8011	E-Drive Starter 24V, 12/14 Pitch, 149 Tooth » Replaces Sky-Tec 149-NL, 149-NL/ec, Lycoming 31B26040	\$736.00	
ERB-8012	E-Drive Starter 24V, 10/12 Pitch, 122 Tooth » Replaces Sky-Tec 122-NL, 122-NL/ec, Lycoming 31B26042	\$736.00	
ERZ-8011	E-Drive Aircraft Starter 12V, 12/14 Pitch, 149 Tooth » Replaces Sky-Tec 149-NL, Lycoming 31A26041	\$680.00	
ERZ-8012	E-Drive Aircraft Starter 12V, 10/12 Pitch, 122 Tooth » Replaces Sky-Tec 122-NL, Lycoming 31A26043	\$680.00	
SRB-9021	X-Drive Aircraft Starter LH Solenoid 24V, 12/14 Pitch, 9 Tooth » Replaces Sky-Tec 149-24HT, 149-24LS	\$672.00	
SRB-9022	X-Drive Aircraft Starter LH Solenoid 24V, 10/12 Pitch, 9 Tooth » Replaces Sky-Tec 122-24PM	\$672.00	
SRB-9031	X-Drive Aircraft Starter RH Solenoid 24V, 12/14 Pitch, 9 Tooth » Replaces Sky-Tec 149-24PM	\$672.00	
SRB-9032	X-Drive Aircraft Starter RH Solenoid 24V, 10/12 Pitch, 9 Tooth » Replaces Sky-Tec 122-24PM	\$672.00	
SRZ-9021	X-Drive Aircraft Starter LH Solenoid 12V, 12/14 Pitch, 9 Tooth » Replaces Sky-Tec 149-12LS	\$608.00	
SRZ-9022	X-Drive Aircraft Starter LH Solenoid 14V, 10/12 Pitch, 9 Tooth » Replaces Sky-Tec 122-12LS	\$608.00	
SRZ-9031	X-Drive Aircraft Starter RH Solenoid 12V, 12/14 Pitch, 9 Tooth » Replaces Sky-Tec 149-12PM	\$608.00	
SRZ-9032	X-Drive Aircraft Starter RH Solenoid 14V, 10/12 Pitch, 9 Tooth » Replaces Sky-Tec 122-12PM	\$608.00	



1. Aircraft Starters for Lycoming Engines » Factory New

Part Number	Description	List Price	Core Charge
MHB-4001	Replaced by MHB-4016		
MHB-4001R	Replaced by MHB-4016		
MHB-4003	Replaced by MHB-4020		
MHB-4003R	Replaced by MHB-4020		
MHB-4007	Replaced by MHB-4018		
MHB-4007R	Replaced by MHB-4018		
MHB-4009	Replaced by MHB-4014		
MHB-4009R	Replaced by MHB-4014		
MHB-4010	Replaced by MHB-4016		
MHB-4010R	Replaced by MHB-4016		
MHB-4012	Replaced by MHB-4020		
MHB-4012R	Replaced by MHB-4020		
MHB-4013	Replaced by MHB-4018		
MHB-4013R	Replaced by MHB-4018		
MHB-4014	24V Aircraft Starter, Gear Reduction ***LW14214	\$1,204.00	\$200.00
MHB-4015	Replaced by MMU-4001		
MHB-4015R	Replaced by MMU-4001		
MHB-4016	24V Aircraft Starter, Gear Reduction	\$1,424.00	
MHB-4018	Replaced by ERB-8011		
MHB-4019	Replaced by MHB-4020		
MHB-4019A	Replaced by MHB-4020		
MHB-4019R	Replaced by MHB-4020		
MHB-4020	Replaced by ERB-8011		
MHB-6014	24V Aircraft Starter, 12/14 Pitch, 149 Tooth	\$930.00	
MHJ-4002	Replaced by MHJ-4003S		
MHJ-4003S	24V Aircraft Starter, Direct Drive	\$1,382.00	
MMU-4001	Replaced by ERB-8012		
MZ-4205	Replaced by MZ-4226		
MZ-4205R	Replaced by MZ-4226		



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1. Aircrafts Starter for Lycoming Engines » Factory New

Part Number	Description	List Price	Core Charge
MZ-4206	Replaced by MZ-4222		
MZ-4206R	Replaced by MZ-4222		
MZ-4216	Replaced by MZ-4220		
MZ-4216R	Replaced by MZ-4220		
MZ-4217	Replaced by MZ-4226		
MZ-4217R	Replaced by MZ-4226		
MZ-4218	Replaced by MZ-4222		
MZ-4218R	Replaced by MZ-4222		
MZ-4220	Replaced by MZ-6220		
MZ-4221	Replaced by MZ-4226		
MZ-4221R	Replaced by MZ-4226		
MZ-4222	12V Aircraft Starter, Gear Reduction	\$1,382.00	
MZ-4226	Replaced by ERZ-8011		
MZ-6220	12V Aircraft Starter, 12/14 Pitch, 149 Tooth	\$784.00	
PM1201	12V Aircraft Starter, 12/14 Pitch, 149 Tooth	\$714.00	
PM1203	12V Aircraft Starter, 10/12 Pitch, 122 Tooth	\$778.00	
PM1204	12V Aircraft Starter, Counter-rotating	\$778.00	
PM2401	24V Aircraft Starter, 12/14 Pitch, 149 Tooth	\$742.00	
PM2403	24V Aircraft Starter, 10/12 Pitch, 122 Tooth	\$742.00	
PM2404	24V Aircraft Starter, Counter-rotating	\$742.00	

2. Continental Motors Aircraft Starter » Factory New

Part Number	Description	List Price	Core Charge
MRB-7000	M-Drive Aircraft Starter - Factory New, 24V	\$904.00	
MRZ-7000	M-Drive Aircraft Starter - Factory New, 12V	\$904.00	
ES646238-2	Starter (TCM Energizer Replacement) - 12V, Direct Drive	\$778.00	
ES646238-3	Starter (TCM Energizer Replacement) - 12V, Direct w/Solenoid	\$778.00	
ES646275-1	Starter (TCM Energizer Replacement) - 24V, Direct Drive	\$840.00	
PM1207	12V Aircraft Starter	\$788.00	
PM1207	24V Aircraft Starter	\$788.00	



OVERHAUL / EXCHANGE AIRCRAFT STARTERS

Limited Six (6) Months* Warranty on Overhauled Components: Read full policy on page 19.

For more info please visit: www.hartzellenginetech.com/aircraft-parts/aircraft-starter.html

3. Lycoming Engine Starters » Overhaul / Exchange

Part Number	Description	List Price	Core Charge
MCL-6501R	12V Aircraft Starter	\$498.00	\$150.00
MHB-4001	Replaced by MHB-4016R		
MHB-4001R	Replaced by MHB-4016R		
MHB-4002	Replaced by MHB-4017R		
MHB-4002R	Replaced by MHB-4017R		
MHB-4003	Replaced by MHB-4020R		
MHB-4003R	Replaced by MHB-4020R		
MHB-4004R	24V Aircraft Starter	\$1,212.00	\$175.00
MHB-4005R	24V Aircraft Starter	\$1,212.00	\$235.00
MHB-4007	Replaced by MHB-4018R		
MHB-4007R	Replaced by MHB-4018R		
MHB-4008	Replaced by MHB-4008R		
MHB-4008R	24V Aircraft Starter	\$692.00	\$134.00
MHB-4009	Replaced by MHB-4014R		
MHB-4009R	Replaced by MHB-4014R		
MHB-4010	Replaced by MHB-4016R		
MHB-4010R	Replaced by MHB-4016R		
MHB-4011	Replaced by MHB-4017R		
MHB-4011R	Replaced by MHB-4017R		
MHB-4012	Replaced by MHB-4020R		
MHB-4012R	Replaced by MHB-4020R		
MHB-4013	Replaced by MHB-4018R		
MHB-4013R	Replaced by MHB-4018R		
MHB-4014	Replaced by MHB-4014R		



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3. Lycoming Engine Starters » Overhaul / Exchange

Part Number	Description	List Price	Core Charge
MHB-4014R	24V Aircraft Starter	\$820.00	\$200.00
MHB-4015	Replaced by MMU-4001R		
MHB-4015R	Replaced by MMU-4001R		
MHB-4016	Replaced by MHB-4016R		
MHB-4016R	24V Aircraft Starter	\$820.00	\$200.00
MHB-4017	Replaced by MHB-4017R		
MHB-4017R	24V Aircraft Starter	\$714.00	\$200.00
MHB-4018	Replaced by MHB-4018R		
MHB-4018R	24V Aircraft Starter	\$820.00	\$200.00
MHB-4019	Replaced by MHB-4020R		
MHB-4019A	Replaced by MHB-4020R		
MHB-4019R	Replaced by MHB-4020R		
MHB-4020	Replaced by MHB-4020R		
MHB-4020R	24V Aircraft Starter	\$714.00	\$200.00
MHJ-4002	Replaced by MHJ-4003SR		
MHJ-4003	Replaced by MHJ-4003SR		
MHJ-4003SR	24V Aircraft Starter	\$546.00	\$190.00
MHJ-4004	Replaced by MHJ-4004R		
MHJ-4004R	24V Aircraft Starter	\$1,336.00	\$300.00
MHJ-4005	Replaced by MHJ-4005R		
MHJ-4005R	24V Aircraft Starter		
MHJ-4101S	Replaced by MHJ-4003SR		
MHP-4101	Replaced by MHJ-4003SR		
MMU-4001	Replaced by MMU-4001R		
MMU-4001R	24V Aircraft Starter	\$778.00	\$200.00
MZ-4204	Replaced by MZ-4204R		
MZ-4204R	12V Aircraft Starter	\$682.00	\$165.00
MZ-4205	Replaced by MZ-4217R		
MZ-4205R	Replaced by MZ-4217R		
MZ-4206	Replaced by MZ-4222R		



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3. Lycoming Engine Starters » Overhaul / Exchange

Part Number	Description	List Price	Core Charge
MZ-4206R	Replaced by MZ-4222R		
MZ-4207	Replaced by MZ-4219R		
MZ-4207R	Replaced by MZ-4219R		
MZ-4208	Replaced by MZ-4208R		
MZ-4208R	12V Aircraft Starter	\$596.00	\$124.00
MZ-4214R	12V Aircraft Starter	\$904.00	\$100.00
MZ-4216	Replaced by MZ-4220R		
MZ-4216R	Replaced by MZ-4220R		
MZ-4217	Replaced by MZ-4217R		
MZ-4217R	12V Aircraft Starter	\$714.00	
MZ-4218	Replaced by MZ-4222R		
MZ-4218R	Replaced by MZ-4222R		
MZ-4219	Replaced by MZ-4219R		
MZ-4219R	12V Aircraft Starter		
MZ-4220	Replaced by MZ-4220R		
MZ-4220R	12V Aircraft Starter	\$714.00	\$200.00
MZ-4221	Replaced by MZ-4217R		
MZ-4221R	Replaced by MZ-4217R		
MZ-4222	Replaced by MZ-4222R		
MZ-4222R	12V Aircraft Starter	\$714.00	\$200.00
MZ-4223	Replaced by MZ-4219R		
MZ-4223R	Replaced by MZ-4219R		
MZ-4224	Replaced by MZ-4224R		
MZ-4224R		\$714.00	\$200.00
MZ-4225	Replaced by MZ-4225R		
MZ-4225R	12V Aircraft Starter		
MZ-4226	Replaced by MZ-4226R		
MZ-4226R	12V Aircraft Starter		
PM1201R	12V, 12/14 Pitch, 149 Tooth	\$982.00	\$100.00
PM2401R	24V, 12/14 Pitch, 149 Tooth	\$536.00	\$100.00



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4. Continental Motors Aircraft Starters » Overhaul / Exchange

Part Number	Description	List Price	Core Charge
646238-2R	12V Aircraft Starter	\$454.00	\$150.00
646238-3R	12V Aircraft Starter, w/Solenoid	\$500.00	\$150.00
646275-1R	24V Aircraft Starter	\$500.00	\$190.00

5. Starter Overhaul Kits

Part Number	Description	List Price	Core Charge
90-3000	For MCL-6501	\$240.00	
90-3001	For MCL-6502	X	
90-3002	For MCL-6503	X	
90-3004	For MHB-4001; MHB-4002; MHB-4003; MHB-4007	\$458.00	
90-3005	For MHB-4004	X	
90-3006	For MHB-4005	X	
90-3007	For MHB-4006	X	
90-3008	For MHB-4008	X	
90-3009	For MHB-4009; MHB-4014	\$486.00	
90-3010	For MHB-4010; MHB-4011; MHB-4012; MHB-4013	\$458.00	
90-3011	For MHB-4016; MHB-4017; MHB-4018; MHB-4019,A; MHB-4020	\$436.00	
90-3012	For MHJ-4002; MHJ-4003,S	\$264.00	
90-3013	For MHJ-4004; MHJ-4005	X	
90-3014	For MHP-4004	X	
90-3015	For MHP-4101	X	
90-3016	For MMU-4001	\$458.00	
90-3017	For MZ-4203	X	
90-3018	For MZ-4204	\$454.00	
90-3019	For MZ-4205; MZ-4206; MZ-4207	\$432.00	
90-3020	For MZ-4208	X	
90-3021	For MZ-4214	X	
90-3022	For MZ-4216; MZ-4220	\$440.00	
90-3023	For MZ-4217; MZ-4218; MZ-4219	\$440.00	



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5. Starter Overhaul Kits

Part Number	Description	List Price	Core Charge
90-3024	For MZ-4221; MZ-4222; MZ-4223; MZ-4224; MZ-4225; MZ-4226	\$408.00	
90-3025	For ES646238,-2; ES646238-1,-3; ES646275, -1	\$262.00	
90-3026	For MHB-6014	\$416.00	
90-3027	For MHB-6016	\$324.00	
90-3028	For MMU-6001	\$420.00	
90-3029	For MZ-6204	X	
90-3030	For MZ-6220	X	
PM1201-OHK	Overhaul Kit for PM1201/1202	\$289.00	
PM1203-OHK	Overhaul Kit for PM1203	\$289.00	
PM1204-OHK	Overhaul Kit for PM1204	\$289.00	
PM2401-OHK	Overhaul Kit for PM2401/2402	\$289.00	
PM2403-OHK	Overhaul Kit for PM2403	\$289.00	
PM2404-OHK	Overhaul Kit for PM2404	\$289.00	
PM1207-OHK	Overhaul Kit for PM1207	\$237.00	
PM2407-OHK	Overhaul Kit for PM2407	\$237.00	
90-3031	For MZ-6222; MZ-6224; MZ-6226	\$406.00	



PARTS SECTION

Limited One (1) Year* Warranty on New Components: Read full warranty policy on page 19.

For more info please visit: www.hartzellenginetech.com/aircraft-parts/aircraft-starter.html

6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
40095	Bendix Drive Shaft	\$57.50	
40102	Comm. End Head Assembly	\$65.50	
40104	Comm. End Bearing	\$29.00	
40106	Drive End Head Assembly	\$365.50	
40106-2	Drive End Head Assembly	\$394.00	
40107	Brush Retainer Insulator	\$3.80	
40110	Brush Holder	\$28.50	
40112	Retaining Track Plate	\$16.50	
50025	Insulator	\$6.00	
50025	Washer, Insulator	\$1.60	
50029	Hex nut	\$6.50	
50063	Armature, 12V	\$368.00	
50064	Armature Housing	\$163.00	
50070	Armature, 24V	\$368.00	
50073	Rubber Insert	\$5.00	
50074	Thrust Ball	\$6.50	
50075	Insulator - Arm Housing	\$2.50	
50101	Armature Housing	\$176.00	
50102	Comm. End Head Assembly	\$65.50	
50106	Drive End Head Assembly	\$365.50	
50110	Bendix Drive Shaft	\$161.00	
90-2018	Brg & Seal Pkg	\$53.00	
90-2139	Bendix Pin Pkg	\$91.00	
90-2140	Bendix Pin Pkg	\$35.00	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
90-2191	Mounting Screw Pkg	\$28.00	
90-2232	Thrust Washer Pkg	\$10.50	
90-2271	Thrust Washer Pkg	\$5.00	
90-2359	Term Stud Pkg	\$12.00	
90-2502	Term Stud Pkg	\$54.00	
90-2520	Gear Assembly	\$78.50	
90-2521	Brush and Terminal Stud Package	\$91.50	
90-2522	Hardware and Insulator Package	\$15.00	
90-2523	Brush Spring Package	\$8.80	
90-2524	Through Bolt Package	\$8.50	
90-2525	Thrust Washer Package	\$35.50	
90-2526	Brush Set	\$48.50	
90-263	Thrust Washer Pkg	\$3.50	
90-2677	Thrust Washer Pkg	\$7.00	
90-2860	Key Pkg-Bendix Drive Pkg	\$9.00	
90-601	Thrust Washer Pkg	\$7.50	
90-716	Term Stud Pkg	\$25.50	
90-726	Term Stud Pkg	\$75.50	
90-876	Term Stud Pkg	\$26.00	
90-877	Term Stud Pkg	\$28.00	
2305002	Armature, 12V, Lycoming	\$145.00	
2305003	Armature, 24V, Lycoming	\$164.00	
2305017	Assembly, Shaft Output	\$80.00	
5005001	Assembly, Starter Nose	\$193.00	
5101002	Support, Intermediate Shaft	\$40.00	
5201003	Case, Motor, Lycoming	\$94.50	
5305001	End Bell	\$50.50	
5401001	Shield, Grease	\$9.50	
6301003	Label, Starter Drive Maintenance	\$2.10	
7801008	Washer, Wave	\$4.20	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
9005001	Assembly, Flux Ring, Lycoming	\$147.00	
EBB-75A	Starter Drive- Bendix	\$171.50	
EBB-124A	Starter Drive- Bendix	\$179.00	
EBB-131A	Starter Drive- Bendix	\$147.50	
EBB-142A	Starter Drive- Bendix	\$179.00	
EBB-224A	Bendix Drive	\$171.50	
ES1930611	Screw Switch	\$3.80	
ES4243	Thru Bolt	\$4.50	
ES646326	Flange Assembly D.E.	\$122.50	
ES646328	Oil Seal	\$5.00	
ES646330	Cover Assembly	\$113.00	
ES646333	Armature	\$277.00	
ES646351	Coil Assembly 12V	\$96.00	
ES646357	Stud Terminal	\$11.50	
ES646359	Washer	\$1.80	
ES646360	Square Insulator	\$6.50	
ES646361	Washer Insulator	\$2.00	
ES646362	Flat Washer	\$2.00	
ES646363	Lock Washer	\$1.80	
ES646364	Nut Hex	\$4.00	
ES646365	Hex Bolt	\$9.00	
ES646367	Fiber Washer	\$3.00	
ES646368	Fiber Washer DE	\$2.00	
ES646371	Insulator Field to Housing	\$2.20	
ES646374	Armature	\$326.00	
ES646376	Field Coil Assembly	\$113.00	
ES646377-2	Housing Assembly 12V	\$342.00	
ES646377-3	Housing Assembly 12V	\$342.00	
ES646378-1	Housing Assembly 24V	\$342.00	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
ES649107	Solenoid 12V	\$108.50	
ES649108	Connector	\$92.50	
ES652927	3/8 - 24X.670 Screw	\$4.20	
ES652928	Pole Shoe Blocks	\$27.00	
GJ-20DS	Thru Bolt Pkg	\$41.50	
LT-EBB-124A	Starter Drive Kit for Lycoming 122T 03 Starter	\$120.00	
LT-EBB-131A	Starter Drive Kit for Lycoming 149T 01/02 Starter	\$120.00	
LT-EBB-142A	Starter Drive Kit for Lycoming 149T 04 Starter	\$120.00	
MBG-2012BS	Brush Set	\$44.00	
MBG-2012CS	Brush Set	\$54.00	
MBG-2012S	Brush Set	\$68.00	
MBP-2002D	CE Head Assembly	\$78.00	
MCL-1005PS-1	Field Coil Pkg	\$243.50	
MCL-2136	D E Head Assembly	\$141.00	
MCL-2136A	D E Head Assembly	\$141.00	
MDC-0034	Bearing, Sleeve	\$9.50	
MDL-1002B	CE Head Assembly	\$65.00	
MDL-1005FS	Field Coil Pkg	\$144.00	
MDL-1064ES	Brush Holder Assembly	\$66.00	
MDL-1064G	Brush Plate	\$76.00	
MDL-2005CS-1	Field Coil Pkg	\$182.00	
MDL-2005CSS	Field Coil	\$354.00	
MDL-2012ES	Brush Set	\$32.50	
MDZ-2012CS	Brush Set	\$73.00	
MFX-1064AS	Brush Plate Assembly	\$92.00	
MG-77A	Bearing, DE	\$6.60	
MHB-1005BS	Field Coil	\$105.00	
MHB-1007B	Field Coil	\$230.00	
MHB-2012AS	Brush Set	\$48.50	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
MHB-2012S	Brush Set	\$48.50	
MHB-2384BS	Frame & Field	\$456.50	
MHB-2397S	Frame & Field Assembly	\$371.00	
MHB-2399S	Armature	\$352.50	\$50.00
MHB-2400	C E Head Assembly	\$99.00	
MHB-3005AS	Field Coil Pkg	\$145.00	
MHB-3005BS	Field Coil Pkg	\$145.00	
MHB-3005S	Field Coil Pkg	\$145.00	
MHD-2012S	Brush Set	\$58.00	
MHJ-1045	Gear Housing Assembly	\$367.00	
MHJ-2147S	Armature	\$494.00	
MHJ-36	Bearing, DE	\$15.00	
MHJ-44	Shaft, Bendix Drive	\$182.00	
MHP-1002	Spacing Ring Assembly	\$193.00	
MHP-1005AS-1	Field Coil	\$100.00	
MHP-2003	D E Head Assembly	\$108.50	
ML-18A	Bearing, DE	\$5.00	
MMU-2386S	Armature	\$419.00	
MS16562-21	Roll Pin	\$1.20	
MZ-0040A	Sleeve, Bearing	\$5.00	
MZ-1005AS	Field Coil Pkg	\$154.00	
MZ-1005QSS	Field Coil Pkg	\$142.50	
MZ-1005RSS	Field Coil Pkg	\$142.50	
MZ-1024AG	Cover Band	\$22.50	
MZ-1236	Int Brg Assembly	\$41.50	
MZ-1376	D E Head Assembly	\$54.50	
MZ-1390	Gear Housing Assembly	\$117.00	
MZ-17	Terminal, Stud	\$24.00	
MZ-19S	Brush Spring Set	\$4.40	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
MZ-2002F	C E Head Assembly	\$67.00	
MZ-2002U	C E Head Assembly	\$70.00	
MZ-2002V	C E Head Assembly	\$77.50	
MZ-2386S	Armature	\$478.00	
MZ-2397S	Field & Frame Assembly	\$372.00	
MZ-2399S	Armature	\$368.00	
MZ-2400	C E Head Assembly	\$96.00	
MZ-2412S	Armature	\$412.00	
MZ-2413	DE Head Assembly	\$167.00	
MZ-24A	Cover Band	\$13.50	
MZ-298	Bearing, DE	\$6.00	
MZ-298-1	Bearing, DE	\$10.00	
MZ-3005GS	Field Coil Pkg	\$150.50	
MZ-326	Shaft, Bendix Drive	\$83.00	
MZ-326A	Shaft, Bendix Drive	\$76.50	
MZ-339	Bearing	\$4.20	
MZ-364	Bearing	\$11.00	
MZ-393	Retainer Plate	\$4.50	
MZ-395	Thrust Washer	\$2.00	
MZ-396	Gear	\$108.00	
OHK-0001	Kit Tools, Grease, Lycoming	\$32.50	
OHK-0002	Kit, Planetary Gears, Lycoming	\$37.80	
OHK-0003	Kit, Thru Bolt and Anchor Ring, Lycoming	\$31.50	
OHK-0004	Kit, Brush Assembly, 12V Pos - Fits 12V Lycoming	\$46.20	
OHK-0005	Kit, Brush Assembly, 12V Neg - Fits 12V Lycoming	\$46.20	
OHK-0006	Kit, Brush Assembly, 24V Pos - Fits 24V Lycoming	\$46.20	
OHK-0007	Kit, Brush Assembly, 24V Neg - Fits 24V Lycoming	\$46.20	
OHK-0008	Kit, Brush Bracket & Spring, Lycoming	\$21.00	
OHK-0009	Kit, Hardware, Lycoming	\$20.00	



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6. Aircraft Starter Replacement Parts

Part Number	Description	List Price	Core Charge
OHK-0010	Kit, Fasteners, Lycoming	\$21.00	
PS-1432C	Housing, Pinion Assembly	\$287.50	
PS-1432CS	Housing, Pinion Pkg	\$303.00	
PS-1432E	Housing, Pinion Assembly	\$364.00	
PS-1432F	Housing, Pinion Assembly	\$394.00	
PS-1435	Housing, Pinion Assembly	\$304.00	
PS-2432B	Housing, Pinion Assembly	\$420.00	
PS-2432BS	Housing & Shaft Pkg	\$472.00	
X-3991	Bearing, Ball	\$19.50	
X-5384	Bendix Pin	\$5.60	
XA-0997	Needle Bearing	\$15.50	
XA-0998	Needle Bearing	\$19.50	
XA-1024	Oil Seal	\$17.00	
XA-1026	Seal, Shaft	\$8.00	
XA-560	Oil Seal	\$25.00	



Hartzell Engine Technologies LLC
 2900 Selma Highway
 Montgomery, AL 36108 USA

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GENERAL WARRANTY POLICY

7. Limited Warranty Policy

Hartzell Engine Technologies LLC (HET) warrants that all new, rebuilt or overhauled products (or minor revision derivatives thereof), sold by Hartzell Engine Technologies LLC, Montgomery, Alabama, shall be free from defects in material and workmanship under normal use and service for a period of:

New E-Drive, M-Drive & Energizer Aircraft Starters	New X-Drive Aircraft Starters
2 Years* Unlimited Hours	2 Years* Unlimited Hours (Kickbacks not covered)
New Replacement Components & MHB, MHJ, MZ Aircraft Starters	Overhauled Starters
1 Year* Unlimited Hours (Kickbacks not covered)	6 Months*

The warranty period begins (unless otherwise noted) from the date of installation into the aircraft if, and only if, the following conditions are met:

- A. The unit and warranty claim, with all requested information properly supplied has been returned to any authorized Hartzell Engine Technologies LLC, distributor. International Customers may utilize a HET Authorized Service Center or a HET Distributor. Units must be returned within 30 days of the product failure date.
- B. No substitute parts shall have been installed in the product without prior authorization of Hartzell Engine Technologies LLC, Montgomery, Alabama USA.
- C. The product shall not have been disassembled, repaired, or altered outside of HET approved facilities unless express prior authorization was granted in writing.
- D. The product shall not have been subject to misuse, accident, or improper installation unless proof is submitted to the satisfaction of Hartzell Engine Technologies LLC, that such abuse was not a cause for the claimed defect.
- E. The duration of this Limited Warranty shall be for the unused portion of the original warranty period. Any replacement unit or repair shall not establish a new warranty period.



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*NOTE * Units will be activated automatically for a shelf stock warranty period and in all cases shall expire thirty-six (36) months from date of manufacture (see I.D. plate). Units held in distribution stock over thirty-six (36) months can be returned to the factory for complete testing, recertification, new warranty, and new packaging for a charge of 20 percent of list price.*

8. Limitations and Exclusions

- A. The sole responsibility and liability of Hartzell Engine Technologies LLC and your exclusive remedy under this claim arising out of, connected with, or resulting from, this sale or the performance or breach of any condition or warranty thereunder, or from the manufacture, delivery, or use of the product shall be the repair of, or replacement, or credit for this defective product at Hartzell Engine Technologies LLC's option.
- B. **IN NO EVENT, WHETHER AS A RESULT OF A BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, SHALL HARTZELL ENGINE TECHNOLOGIES BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR PENAL DAMAGES OR EXPENSES, INCLUDING BUT NOT LIMITED TO, COSTS OF REMOVAL AND REPLACEMENT OF THE PRODUCT(S), LOSS OF PROFIT, GOODWILL, OR REVENUES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, DAMAGE TO ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF SUBSTITUTE PRODUCTS, FACILITIES, OR SERVICES, DOWN TIME, OR COSTS OR CLAIMS OF THIRD PARTIES FOR SUCH DAMAGES OR EXPENSES.**

9. Warranty Registration

- A. Warranty Registration is required on every new unit sold by Hartzell Engine Technologies LLC and sold through an authorized Hartzell Engine Technologies distributor.
- B. Warranty Registration must be completed by logging on to the internet via www.HartzellEngineTech.com and following the path to warranty registration. The installing agency must file the registration showing all information required therein. The warranty registration must be accomplished within 10 days of the date of installation or this warranty is void.
- C. An owner copy of the warranty registration may be printed out once registration is completed and should be kept with the aircraft's log book and/or paperwork file carried in the aircraft. When requesting warranty consideration, the Warranty Registration copy should be returned with the unit to an authorized Hartzell Engine Technologies distributor along with information pertaining to the removal and installation dates and suspected difficulty.



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10. Specific Terms

- A. The foregoing warranty is exclusive and in lieu of all other warranties or remedies whether written, oral, implied, or statutory. Any and all implied warranties of merchantability, fitness for a particular purpose, course of dealing or usage of trade are hereby expressly disclaimed and excluded. The Warranty Registration must be completed within 10 days from the date of installation of the equipment or this warranty is void.
- B. Acceptance of the product by you shall constitute your acknowledgment and acceptance of the terms, provisions, limitations, and exclusions set forth herein. Such terms, provisions, limitations, and exclusions shall not be modified, deleted, or supplemented except by an express written acknowledgment of Hartzell Engine Technologies.

11. General

- A. **Any claims under this warranty should be made through a Hartzell Engine Technologies LLC authorized distributor or service center.** Any claim made, which cannot be reasonably duplicated, will not be considered applicable to warranty and shall be returned "as is". All claims shall be handled according to standard warranty procedures; see your authorized distributor for details. A list of HET distributors may be obtained from Hartzell Engine Technologies LLC via Internet at www.HartzellEngineTech.com or by Tel: (334) 386-5400.
- B. All products returned by a distributor for warranty consideration are to be shipped to Hartzell Engine Technologies LLC, 2900 Selma Highway, Montgomery, Alabama 36108 (USA) freight prepaid. If the warranty claim is accepted, the replacement parts, if shipped individually, will be shipped surface freight, prepaid.



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CORE RETURN & RETURN GOODS POLICY

12. Core Return Policy

Any unit being returned for core or warranty core credit shall be, as removed from the engine, complete and not disassembled. No core or warranty core credit will be allowed for automotive units. Units that are rusty or cannot be overhauled for any reason will be classified as scrap, having no value. Units which have been weld repaired, as well as units which have been disassembled and then reassembled with old parts, will also be classified as scrap, having no value. A percentage of the core value will be charged for all missing or damaged parts. At no time will the damaged or missing parts charge on any unit exceed the core value of that unit.

- Cores will only be accepted for credit 12 months from date of invoice.
- Cores returned in excess of cores invoiced will become the property of Hartzell Engine Technologies LLC and will only be credited for up to 10% of core value.
- Cores must be of like purchase or a direct superseded unit.

Description	Percentage of Core Charge
STARTERS »	
Hardware Missing	5%
Gear Missing or Sub-Shaft Damaged	10%
Armature Frozen/Binding or Switch Missing	20%
Lever Missing	22%
Armature Missing	25%
Drive End Housing Damaged/Missing	35%
End Frames-Elongated Bolt Holes/Missing	35%
Housing or Locating Pins Damaged	35%
Intermediate Gear Hsg.-Missing/Damaged	35%



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CORE RETURN ADDRESS:

Hartzell Engine Technologies LLC
4570 Newcomb Avenue
Montgomery, AL 36108 USA

Please feel free to contact us if you have any questions or concerns regarding your returned goods;
(877) 359-5355 Toll free » (334) 386-5400 Phone » (334) 386-5410 Fax

13. Return Goods Policy

Hartzell Engine Technologies will accept returned goods with the following conditions:

- A. The part must have been originally purchased from Hartzell Engine Technologies LLC and must be a current production part.
- B. Parts may be returned within 90 days after invoice without restocking charge as long as the product is in its original packaging.
- C. Parts returned after 90 days are subject to a minimum of 20% restocking charge. No merchandise may be returned after one year.
- D. All returns must include: Date of purchase, Hartzell Engine Technologies LLC invoice number, and the reason for return.