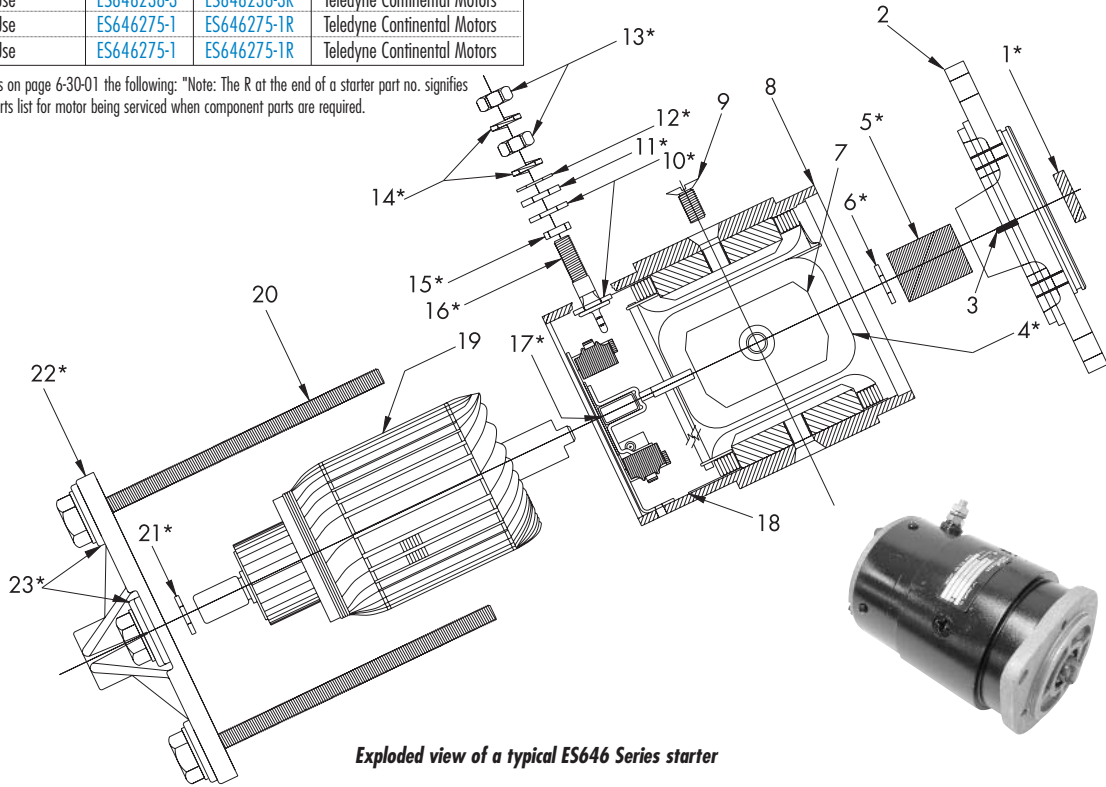


| Starter Part No. | Replaced By | Current Starter Part No. | Factory Overhaul Part No. | Engine/Airframe Application |
|------------------|-------------|--------------------------|---------------------------|-----------------------------|
| 646238 | Use | ES646238-2 | ES646238-2R | Teledyne Continental Motors |
| 646238-1 | Use | ES646238-3 | ES646238-3R | Teledyne Continental Motors |
| 646238-2 | Use | ES646238-2 | ES646238-2R | Teledyne Continental Motors |
| 646238-3 | Use | ES646238-3 | ES646238-3R | Teledyne Continental Motors |
| 646275 | Use | ES646275-1 | ES646275-1R | Teledyne Continental Motors |
| 646275-1 | Use | ES646275-1 | ES646275-1R | Teledyne Continental Motors |

OE-A-Z Manual states on page 6-30-01 the following: "Note: The R at the end of a starter part no. signifies overhauled." See parts list for motor being serviced when component parts are required.



Exploded view of a typical ES646 Series starter

ES646 Series Service Parts

| No. | Description | Part No. | ES646238 | ES646238-2 | ES646238-1 | ES646238-3 | ES646275 | ES646275-1 |
|-----|-------------------------|-----------------------------------------------------|----------|------------|------------|------------|----------|------------|
| 1* | Oil seal | ES646328 | • | • | • | • | • | • |
| 2 | Drive end head assembly | ES646326 | • | • | • | • | • | • |
| 3 | Roll pin, drive end | MS16562-21 | • | • | • | • | • | • |
| 4* | Field coil package | ES646351 ¹ | • | • | • | • | • | • |
| 5* | Drive end bearing | ML18A | • | • | • | • | • | • |
| 6* | Fiber washer, drive end | ES646368 | • | • | • | • | • | • |
| 7 | Pole shoe blocks | ES652928 | • | • | • | • | • | • |
| 8 | Housing assembly | ES646377-2 ES646378-1 ES646377-3 ³ | • | • | • | • | • | • |
| 9 | Pole shoe screw | ES652927 | • | • | • | • | • | • |
| 10* | Washer | ES646359 | • | • | • | • | • | • |
| 11* | Washer insulator | ES646361 | • | • | • | • | • | • |
| 12* | Flat washer | ES646362 | • | • | • | • | • | • |
| 13* | Nut, hex | ES646364 | • | • | • | • | • | • |
| 14* | Lockwasher | ES646363 | • | • | • | • | • | • |

| No. | Description | Part No. | ES646238 | ES646238-2 | ES646238-1 | ES646238-3 | ES646275 | ES646275-1 |
|-----------|------------------------------|--------------------------|----------|------------|------------|------------|----------|------------|
| 15* | Square insulator | ES646360 | • | • | • | • | • | • |
| 16* | Terminal stud | ES646357 | • | • | • | • | • | • |
| 17* | Brush plate assembly | MDL1064E ¹ | • | • | • | • | • | • |
| 18 | Insulator, field to housing | ES646371 | • | • | • | • | • | • |
| 19 | Armature | ES646333 ES646374 | • | • | • | • | • | • |
| 20 | Thru-bolt | ES646365 | • | • | • | • | • | • |
| 21* | Fiber washer, commutator end | ES646367 | • | • | • | • | • | • |
| 22* | Commutator end head assembly | ES646502 | • | • | • | • | • | • |
| 23* | Lockwashers | 12X0199 | • | • | • | • | • | • |
| Not shown | Solenoid | Not required ES649107 | • | • | • | • | • | • |
| Not shown | Connector | Not required ES649108 | • | • | • | • | • | • |
| Not shown | Brush spring set | MZ19S | • | • | • | • | • | • |
| 24 | Repair kit | 90-3025 | • | • | • | • | • | • |

* Items represent mandatory replacement parts required at each overhaul and are available in repair kits from Kelly Aerospace, Inc.

¹ 90-2526 brush set kit also available

² Recessed thru-bolt requires (2) lockwashers

³ ES646377-3 has two holes to accommodate the installation of ES649107 solenoid

