SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE J2240

Issued 1993-03-09

STARTER ARMATURE REMANUFACTURING PROCEDURES

TABLE OF CONTENTS

Printed in U.S.A.
90-1202B EG

1. ***Scope***—These remanufacturing procedures are recommended guidelines for use by remanufacturers of starter armatures to promote consistent reliability, durability, and safety of remanufactured starters. Installation of remanufactured or rebuilt products is often an economical way to repair a vehicle even though the products may not be identical to original equipment parts. Before processing any part, a remanufacturer should determine if the original design and present condition of the core is suitable for remanufacturing so as to provide durable operation of the part as well as acceptable performance when installed on the vehicle. The remanufacturer should also consider the safety aspects of the product and any recommendations of the original manufacturers related to remanufacturing or rebuilding their product.

   While these procedures are meant to be universal in application, various product types have unique features of dimension and design which may require special remanufacturing processes and tests that are either not covered by or are exceptions to these procedures.

2. ***References***

2.1 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J2073—Automotive Starter Remanufacturing Procedures
SAE J2241—Automotive Starter Drive Assembly Remanufacturing Procedures
SAE J2242—Automotive Starter Solenoid Remanufacturing Procedures

2.1.2 FEDERAL TRADE COMMISSION REGULATION—Available from Federal Trade Commission, FTC Building, 6th Street and Pennsylvania Avenue, NW, Washington, DC 20580.

Federal Trade Commission Regulation: 16CFR20- 2/27/79 Para 39.051 "Rebuilt, Recon....."

2.2 Definitions

2.2.1 Drawings shown in this SAE Recommended Practice are intended for illustration only and not meant to depict any specific unit manufacturer.

3. ***Remanufacturing Procedure***—This document provides a standard procedure for remanufacturing starter armatures for automobiles and light trucks, similar to the armature shown in Figure 1.

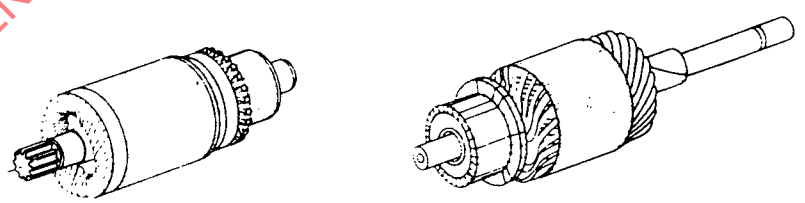

FIGURE 1—STARTER ARMATURE ASSEMBLY

The selection of replacement parts used in the remanufacturing process is critical to the quality, durability, and reliability of the end product. All replacement parts should be carefully evaluated prior to use. Armature cores should be sorted as to repairs that need to be made.

4. Categories of Armature Repairs

4.1 Defective connection at commutator.

4.2 Damaged conductors, good shaft, lamination and commutator.

4.3 Defective shaft, good commutator, lamination and conductor.

4.4 Defective lamination.

4.5 Defective commutator, good lamination, conductor and shaft.

4.6 Defective commutator and conductor, good shaft and lamination.

4.7 Good armature with broken or chipped insulation.

5. Armature Remanufacturing Procedures

5.1 Defective Connections

5.1.1 Reattach conductor.

5.1.2 Electrical test for short and ground.

5.1.3 Verify connection integrity.

5.2 Defective Conductors, Good Commutator, Shaft and Lamination

5.2.1 Remove commutator.

5.2.2 Remove conductor from shaft and core assembly.

5.2.3 Proceed to 6.3.

5.3 Defective Shaft, Good Commutator, Lamination and Conductors

5.3.1 Replace shaft.

5.3.2 Proceed to 6.9.

5.4 Defective Lamination

5.4.1 Salvage usable parts.

5.5 Defective Commutator, Good Lamination, Conductors and Shaft

5.5.1 Remove commutator.

5.5.2 Proceed to 6.7.

5.6 Defective Commutator and Conductor, Good Shaft and Lamination

5.6.1 Remove commutator.

5.6.2 Remove conductors from shaft and core assembly.

5.6.3 Proceed to 6.3.

5.7 Good Armature With Broken or Chipped Insulation

5.7.1 Apply a suitable insulating material.

6. Rewind

6.1 It is assured that all parts, whether new or used, meet appropriate specifications.

6.2 Press shaft into lamination stack, including insulator, to proper dimension.

6.3 Clean slots to remove any foreign material and to aid in alignment of lamination.

6.4 Install slot insulators.

6.5 Install conductors into lamination stack.

6.6 Twist conductors into lamination stack.

6.7 Press commutator to proper location on shaft.

6.8 Make conductor to commutator connection, check for ground and short.

6.9 Install banding if applicable.

6.10 Impregnate assembly, insuring integrity of impregnation.

6.11 Remove excess varnish from shaft.

6.12 Straighten shaft, turn commutator and lamination to proper dimension.

6.13 Check for ground, short and eccentricity of commutator and lamination to shaft.

7. Marking

7.1 Unit is to be marked to comply with FTC regulations.

PREPARED BY THE SAE AUTOMOTIVE STARTER REMANUFACTURING COMMITTEE