The Engineering Society For Advancing Mobility Land Sea Air and Space®
SAE INTERNATIONAL
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SURFACE VEHICLE RECOMMENDED PRACTICE

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Automotive Starter Drive Remanufacturing Procedures

Foreword—This reaffirmed document has been changed only to comply with the new SAE Technical Standards Board Format. Definitions has been changed to Section 3. All other section numbers have changed accordingly.

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1. Scope—These remanufacturing procedures are recommended guidelines for use by remanufacturers of starter drives 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.

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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 J2240—Starter Armature 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....."

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

4. Remanufacturing Procedure—This document provides a standard procedure for remanufacturing starter drive assemblies for automobiles and light trucks, similar to the starter drive shown in Figure 1.

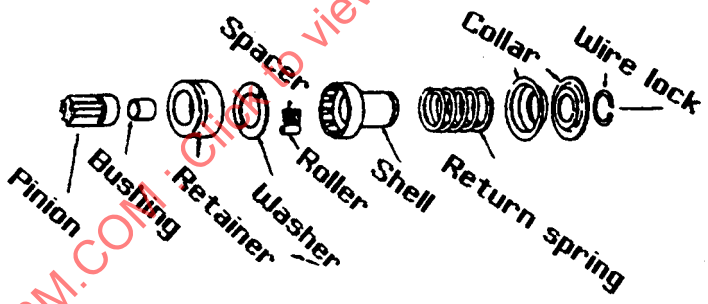

Figure 1—STARTER DRIVE ASSEMBLY

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. Starter drive cores should be sorted as to repairs that need to be made.

5. Starter Drive Remanufacturing Procedures

5.1 Disassemble and scrap—caps, rollers, and roller springs along with other worn items.

5.2 It is recommended that non-gear reduction drives be demagnetized before cleaning.

5.3 Cleaning—All remaining parts must be thoroughly washed to completely remove old grease and dirt.

5.4 Refinishing—Gear and race (pinion), cam and stem assembly (body), and other metal parts are to be refinished by glass bead or steel shot then protected with a rust inhibitor.

6. Gear Race (Pinion)

6.1 Inspect gear and race (pinion) for excessive wear, cracks, broken or chipped teeth and scrap as necessary.

6.2 Grind roller surface to a 30 µm finish for proper matchup of rollers. Do not remove more than 0.203 mm (0.008 in) from the original race outside diameter.

6.3 Remove and install new bushing meeting original specifications as required.

7. Cam and Stem Assembly (Body)

7.1 Inspect for excessive wear, cracks, or other flaws and scrap as necessary.

8. Assembly

8.1 Match gear race (pinion) and cam and stem assembly with appropriate rollers.

8.2 Apply appropriate low/high-temperature grease to each roller cavity (2 g ± 0.5 g).

NOTE—Late model drives require synthetic high-temperature lubricant.

8.3 Assemble gear race (pinion), cam, and stem assembly (body) together.

8.4 Install new oversize rollers.

8.5 Install new roller springs.

8.6 Assemble split washers as required.

8.7 Install and clench new cap cover.

8.8 Install shift flange and correct jump spring if so equipped.

9. Testing

9.1 Holding cam and stem assembly (body), the gear race (pinion) should not slip when 113 N·m (1000 in-lb) torque are applied.

9.2 Over run torque should not exceed 0.19 N·m (1.7 in-lb).

9.3 Spline and bushing should fit a test shaft with no binding or excessive movement.

9.4 Overall appearance should be bright, not pitted or discolored.

10. Marking

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

PREPARED BY THE SAE AUTOMOTIVE STARTER REMANUFACTURING COMMITTEE