Rebuilding the Delco Remy 9000888 Marine Starter



Figure 1- 9000888

The Delco Remy 9000888 marine starter was introduced in 1997 on high performance, large displacement, "top-mount" marine applications (*see Table 1*). Previously, 10MT and 14MT starters had been used on all top-mount marine engines. By top- mount, we are referring to the fact that this starter is flange-mounted above the transmission and engages the flywheel from the back side. Because engagement is from the back, CCW starters are needed for cranking standard CW rotation engines.

Both 10MT and 14MT starters (*see Figure 2*) used in this application were manufactured in both CW and CCW versions, to crank marine engines of either rotation. After the introduction of a new type of transmission in the mid-90s, CCW marine engines were no longer needed. For this reason, the 9000888 is CCW only, to crank a standard CW rotation engine. Almost all marine engines after 1997 are standard CW rotation.

The 9000888 appears innocent enough from the outside. Except for the DE housing, it looks just like any other PG260L starter. But the first time you disassemble one, you will quickly discover that the drive won't come off the shaft. As in other PG260 starters, the drive must come off to access the stationary gear (the most common part to fail in this particular starter). To remove the drive you must first disassemble it.



Figure 2 – 10MT (top) and 14MT (bottom) Starters

Disassembly of the Drive

You will need two things before you start. The first is a tool to peel back the crimp on the drive cover. The other is a small container of *drive grease*. Note that **bearing grease should not be used** inside a clutch-type drive. Dow Corning makes a pink-colored drive grease that is perfect for this job. It is readily available from many of our industry's suppliers.

Before you start, feel the drive clutch for signs of wear. The clutch should turn smoothly in one direction with some resistance but lock, without any slippage, when reversed. If you are unsure what it should feel like, perform the same test with several different rebuilt drives. If the clutch fails

Created by Wes Grueninger and Bob Thomas for the Electrical Rebuilder's Association - © 2009, Electrical Rebuilder's Association – All rights reserved. No portion of this guide may be reproduced in any way, or stored in any electronic retrieval system without the prior written consent of the Electrical Rebuilder's Association

this test, you will not be able to rebuild this drive without more parts and equipment.

To disassemble the drive, you must first remove the crimped-on cover. You can make a tool for this job by slightly modifying a small pair of Vise-Grip pliers. Using a cutoff wheel on a die grinder, cut a groove near the end of the top jaw, and cut an indentation in the end of the bottom jaw *(see Figure 3*).



Figure 3- Modified Vice-Grips

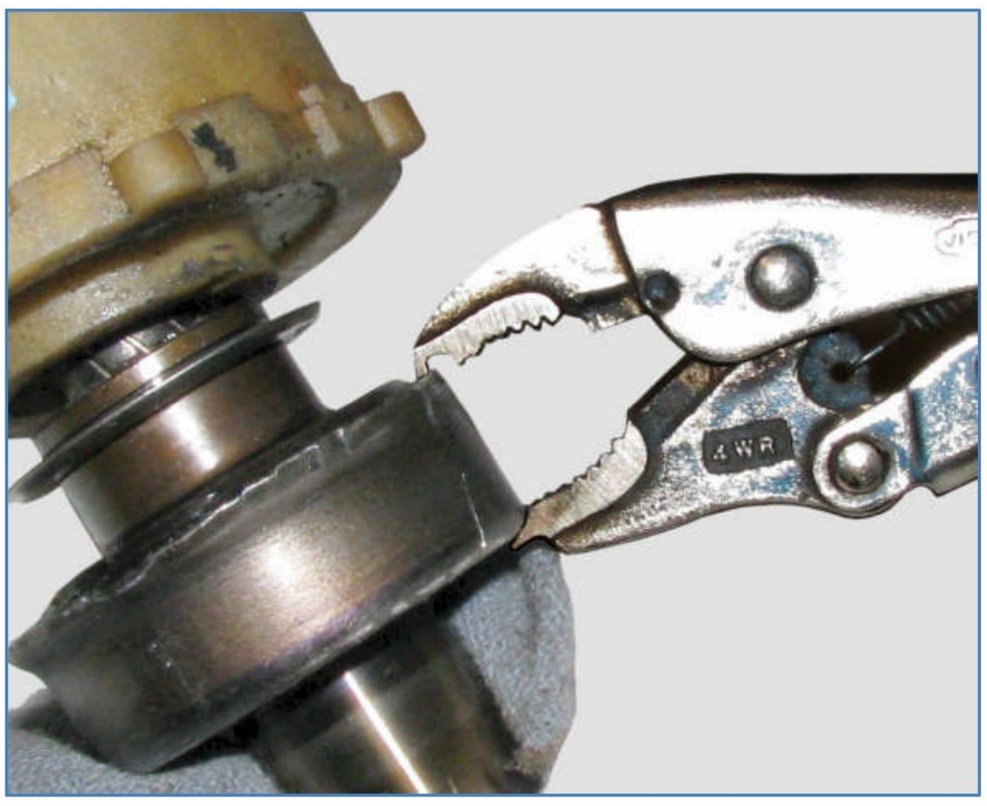


Figure 4- Peeling Open the Drive Cover

Place the drive in a vise, taking care not to scar the smooth shaft between the pinion and the drive body. That part of the shaft rides in a needle bearing and must be smooth and scratch free. Work your way around the drive cover, peeling back the crimp (*see Figure 4*). Pry it open just enough to clear the body, taking care not to tear the metal. Once the crimped side of the cover has been opened all the way around, you can lightly tap around the opened crimp as shown and push the cover off the body of the drive (*see Figure 5*).



Figure 5 – Tap Off the Drive Cover

With the cover and washer removed, you can now remove the pinion shaft, rollers and springs. With the pinion shaft removed, the drive body will drop down on the shaft, which will allow you to rotate the drive one spline. At this point, you will also be able to see the tops of the splines. Notice that every other spline is blind (*see Figure 6*). Once the body is rotated to an open spline, it will slide right off the shaft, making the stationary gear accessible.

Cleaning and Inspecting

At this point you will need to thoroughly clean and inspect the body, springs, rollers and pinion shaft. You will also need to re-form the cover using the drive body and a hammer (*see Figure 7*). Inspect the base of the pinion shaft. It should be

Created by Wes Grueninger and Bob Thomas for the Electrical Rebuilder's Association - © 2009, Electrical Rebuilder's Association – All rights reserved. No portion of this guide may be reproduced in any way, or stored in any electronic retrieval system without the prior written consent of the Electrical Rebuilder's Association

smooth and free of any scratches or pitting. Do not sand or wire brush this part. Polish it on the lathe with a fine Scotch Brite pad. Be sure that the inside of the body is clean and free of old grease. Now you're ready for reassembly.

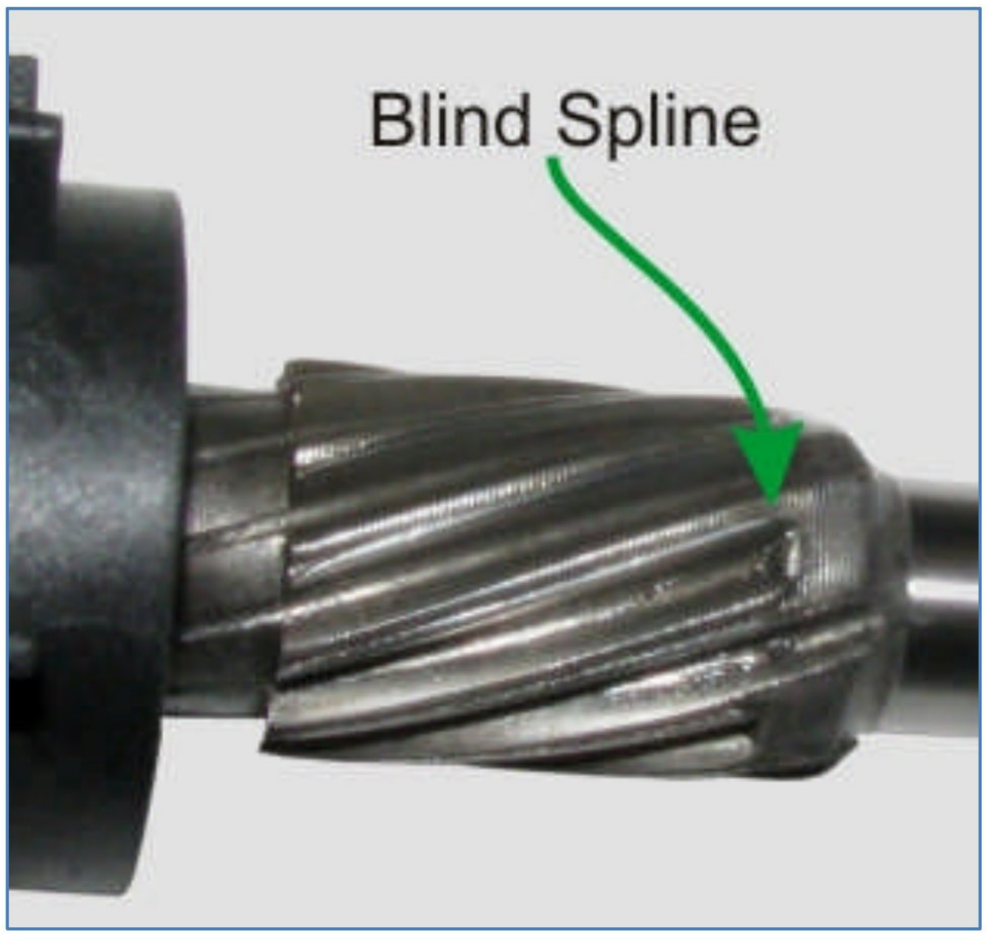


Figure 6 – Blind Spline on Shaft

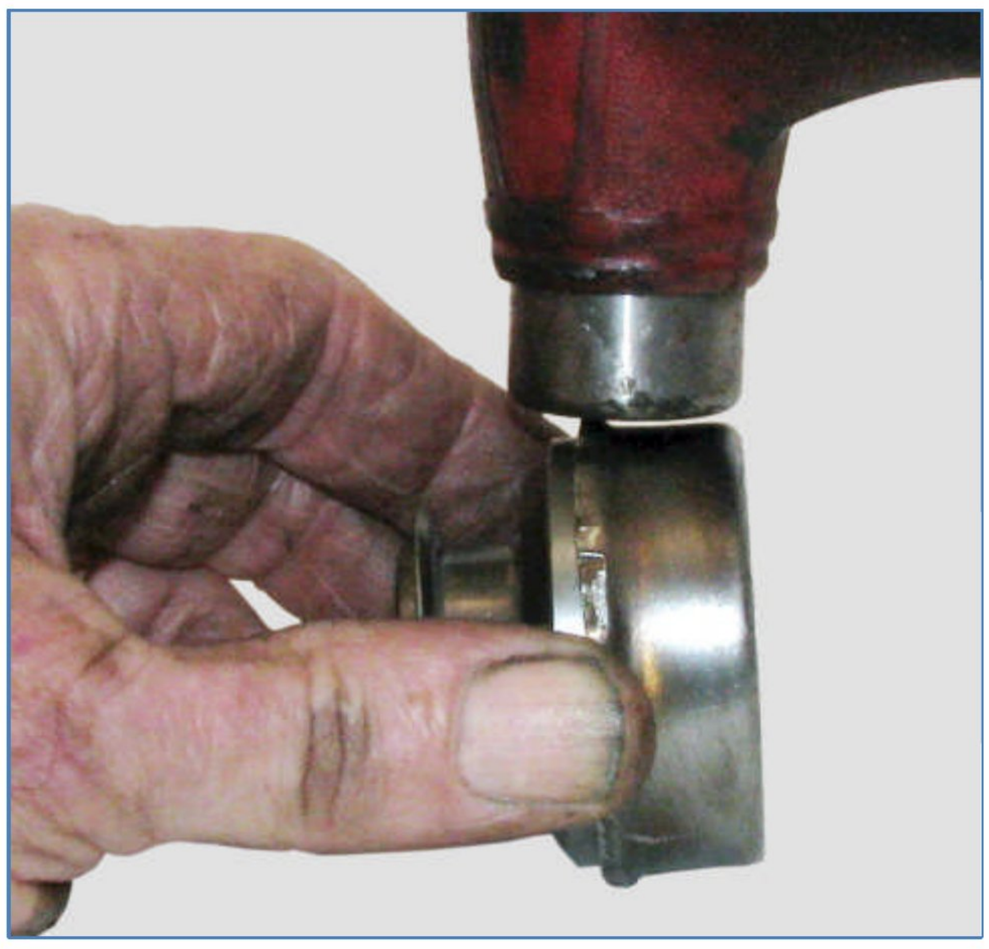


Figure 7 – Re-form Cover

Reassembly of the Drive



Figure 8 – Springs and Rollers Installed

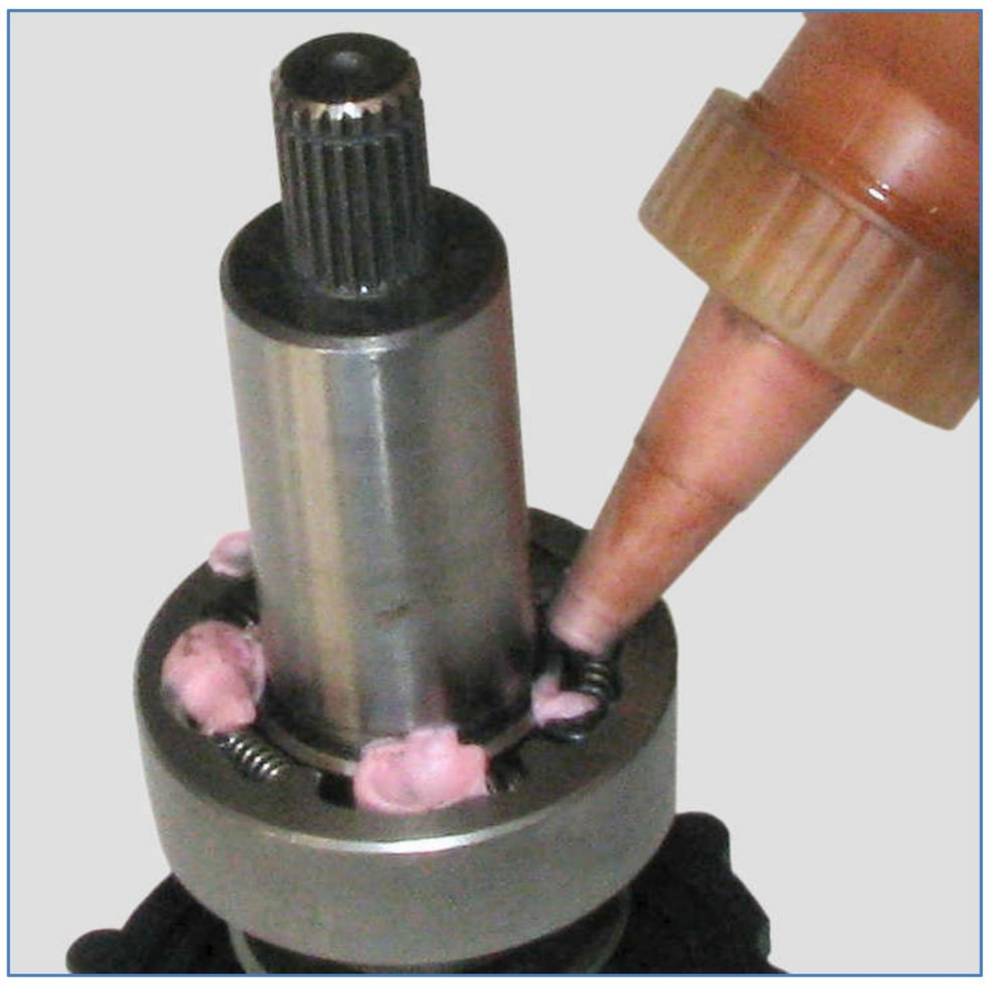


Figure 9 –Add Starter Drive Grease

Don't forget to put the new stationary gear on the shaft before reassembling the drive. Next, place the body on the shaft and align it with a blind spline. If the drive is properly indexed on a blind spline, you will not be able to pull it off of the shaft. You should use a small amount of lubricant (not the pink drive grease) on the splines and

Created by Wes Grueninger and Bob Thomas for the Electrical Rebuilder's Association - © 2009, Electrical Rebuilder's Association – All rights reserved. No portion of this guide may be reproduced in any way, or stored in any electronic retrieval system without the prior written consent of the Electrical Rebuilder's Association

shaft. Replace the pinion shaft, springs and rollers along with a small dab of drive grease on each roller *(see Figures 8 and 9*). Be sure to support the body at this point, or the planetary shaft will push the assembled clutch apart. Fit the washer over the exposed clutch, and push the cover over the body. You may have to use light pressure with an arbor press to fully seat the cover. Now you can use a small hammer to re-form the crimp, making sure it is tight enough to not come off.

With a little practice, this job can be done in less than 15 minutes. The same tool and grease can be used to rebuild any crimped-cover drive clutch.

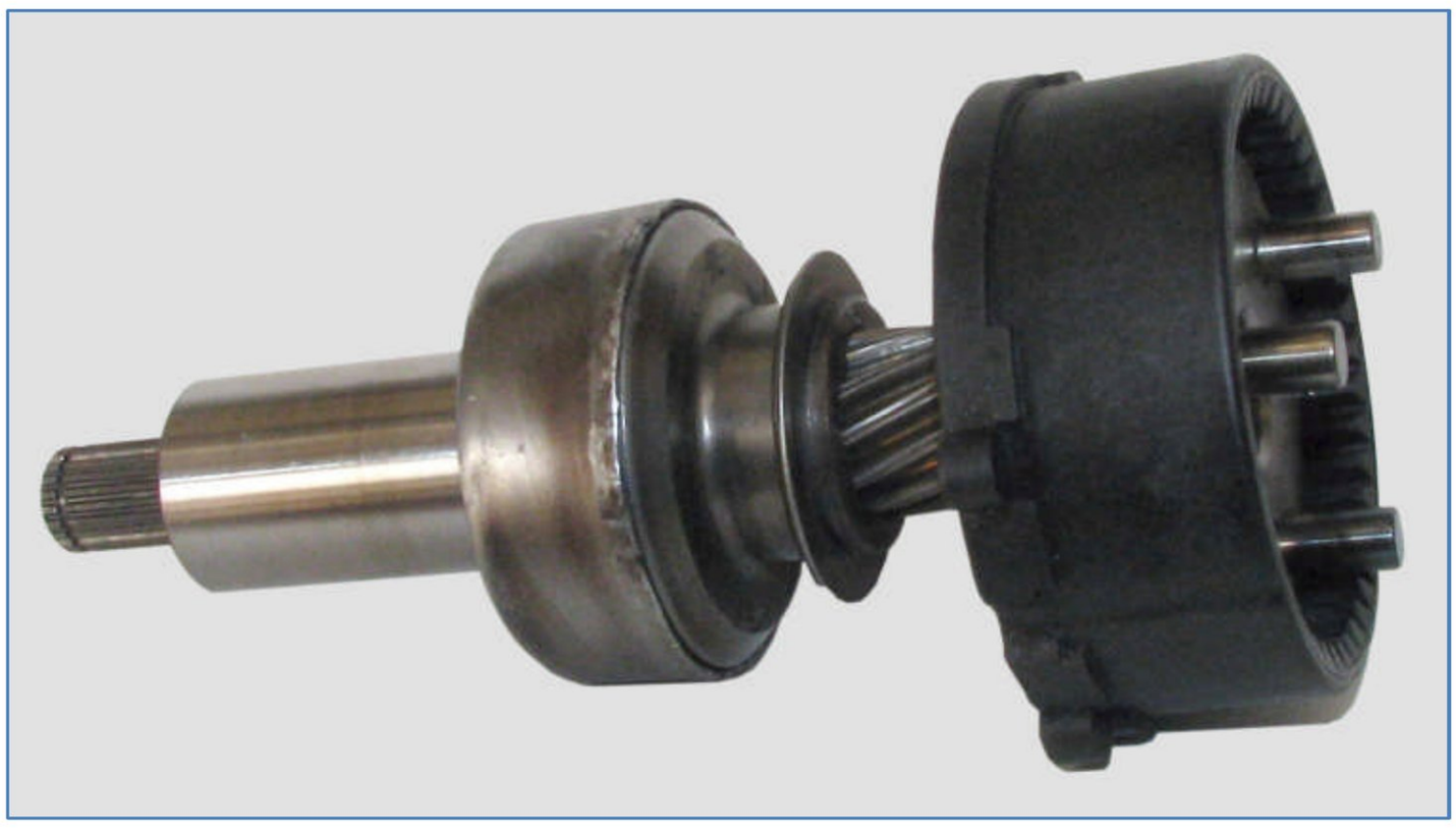


Figure 10 – Completed Drive Assembly

Mercruiser Marine	High-Performance Engines	Model 500 Bulldog GM 8.9L - 540ci - 8cyl 1997-2001
Mercruiser Marine	High-Performance Engines	Model 800SCI
Mercruiser Marine	High-Performance Engines	Model 900SC GM 9.0L - 542ci - 8cyl 1999-2002
Mercruiser Marine	Inboard Engines	Model 350 Mag MPI (Gen +) GM 5.7L - 350ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 350 Mag MPI Horizon GM 5.7L - 350ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 350 Mag MPI MIE (Gen +) GM 5.7L - 350ci - 8cyl 1998-1999
Mercruiser Marine	Inboard Engines	Model 454 Mag MPI Horizon (Gen VI) GM 7.4L - 454ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 5.7L EFI (Gen +) GM 5.7L - 350ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 5.7L EFI (Gen +) MIE GM 5.7L - 350ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 5.7L MIE GM 5.7L - 350ci - 8cyl -1998
Mercruiser Marine	Inboard Engines	Model 8.1S HO GM 8.1L - 496ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 8.1S Horizon GM 8.1L - 496ci - 8cyl
Mercruiser Marine	Inboard Engines	Model 8.2L MIE MPI (LH) (Gen VI) GM 8.2L - 502ci - 8cyl
Mercruiser Marine	Inboard Engines	Model MX 6.2L MPI GM 6.2L - 377ci - 8cyl
Mercruiser Marine	Inboard Engines	Model MX 6.2L MPI Horizon GM 6.2L - 377ci - 8cyl
Mercruiser Marine	Stern Drive	Model 454 Mag MPI Horizon GM 7.4L - 454ci - 8cyl
Volvo Penta Marine	Inboard and Stern Drive	5.7GSiL 8cyl 350ci 5.7L Gas 2000-2002
Volvo Penta Marine	Inboard and Stern Drive	5.7GXiL 8cyl 350ci 5.7L Gas 2000-2007
Volvo Penta Marine	Inboard and Stern Drive	5.7GiL 8cyl 350ci 5.7L Gas 2000-2007
Volvo Penta Marine	Inboard and Stern Drive	8.1GSiL 8cyl 496ci 8.1L Gas 2000-2002
Volvo Penta Marine	Inboard and Stern Drive	8.1GXiL 8cyl 496ci 8.1L Gas 2000-2007
Volvo Penta Marine	Inboard and Stern Drive	8.1GiL 8cyl 496ci 8.1L Gas 2000-2007

Table 1- Known Applications for the 9000888 Starter as of 11-2009

Created by Wes Grueninger and Bob Thomas for the Electrical Rebuilder's Association - © 2009, Electrical Rebuilder's Association – All rights reserved. No portion of this guide may be reproduced in any way, or stored in any electronic retrieval system without the prior written consent of the Electrical Rebuilder's Association