

INSTALLING NEW SMART INTEGRATED MAGNETIC SWITCH (SMART IMS) ON STARTING MOTOR

Information to be used when upgrading **Delco Remy 29MT™, 37MT™, 38MT™, 39MT™, 41MT™ & 42MT™** Heavy Duty Starting Motors with **Smart IMS Technology** for improved starting system performance and reliability.

WARNING!!! ALWAYS USE PROPER EYE PROTECTION WHEN PERFORMING ANY MECHANICAL REPAIRS TO A VEHICLE – INCLUDING, BUT NOT LIMITED TO, ANY INSTALLATION AND OR REPAIRS TO THE DELCO REMY® STARTING MOTORS. FAILURE TO USE PROPER EYE PROTECTION CAN LEAD TO SERIOUS AND PERMANENT EYE DAMAGE.

DANGER!!! To avoid injury or damage, always **disconnect the negative cable at the battery** before removing or replacing the starting motor. FAILURE TO DISCONNECT THE BATTERY GROUND CABLE CAN LEAD TO SERIOUS INJURY.

FOLLOW ENGINE OR VEHICLE MANUFACTURER’S INSTRUCTIONS FOR REMOVING AND INSTALLING THE STARTING MOTOR FROM THE ENGINE.

SMART INTEGRATED MAGNETIC SWITCH (SMART IMS) INSTALLATION PROCEDURES

NOTICE: If the Old IMS has dual inputs from the vehicle controller, the Smart IMS will not work properly – conversion should not be done. See illustrations for electrical connections to install this Smart IMS in the original IMS position, or add to an existing starting motor without IMS. It may be mounted in other allocated locations to accommodate engine fit. **CLEAN all connections and fasteners prior to reassembly, and TIGHTEN all connections according to the procedure and torque specifications provided below.**

- a) Disconnect the negative (-) cables at the battery before working on the starter to make the system safe.
- b) Remove **OLD IMS** from Starting Motor to be upgraded by removing all connections from the motor. Identify leads and keep all fasteners for reuse. It may require the starting motor be removed from the engine to gain proper access.
- c) When making the electrical connections, orient all terminals with the crimped section facing outward from the joint, to insure a flat and secure connection, and avoid bending the terminal connectors. Run leads down the side of the solenoid and secure later.
- d) The **Smart IMS (shown in Figure A)** is internally grounded to the case, and there is no need to have a separate ground if the motor is grounded through the engine mounting. Attach the provided **Smart IMS Ground Lead [11]** if the original IMS had a ground connection or the starting motor is an isolated ground model by connecting the lead between the **Solenoid Ground [8]** (small ring terminal) and **Smart IMS Mounting Bolts [4]** location (large ring terminal).
- e) Mount the **Smart IMS** in the appropriate IMS mounting location, and torque **mounting bolts [4]**.
- f) Remove the **Solenoid Motor Terminal Nut [9]** from the starting motor solenoid.
- g) Attach the **Smart IMS Motor Terminal Lead [10]** (small diameter wire) to the **Solenoid Motor Terminal [9]**.
- h) Attach the **Smart IMS Battery Input Lead [2]** (large wire, large ring terminal & RED heat shrink) to the **Solenoid Battery Stud [5]**.
- i) Attach the **Smart IMS Switch Output Lead [3]** (small ring terminal) to **Solenoid Switch Input [7]** stud.
- j) **Smart IMS Input [1]** installation will vary depending on vehicle wiring. This is the Start Enable Signal from the vehicle wiring.
 - A. In most cases you will attach the vehicle start enable circuit to the **Smart IMS Input terminal [1]** in the same manner.
 - B. If the Old IMS input has a Plug Type Connector [Figure C] to the vehicle wiring, reinstall it onto the **Smart IMS Input terminal [1]**.
 - C. If the starting motor has an OCP connector in series with the vehicle wiring, you can leave the OCP and wiring in the circuit, or install a sealed M5 ring terminal into the wiring to bypass the OCP circuit and attach to the **Smart IMS Input terminal [1]**.
 - D. If the starting motor has an Integrated OCP Harness on the OLD IMS Ground [Figure B], it will be replaced with the **Smart IMS Ground Lead [11]**. The vehicle wiring from the Old IMS input will connect to the **Smart IMS Input terminal [1]**.
- k) Secure all leads to solenoid with provided zip tie around the solenoid body as shown for each respective model.
- l) Torque any remaining terminals that were disturbed during the upgrade procedure.
- m) Install starter per manufacturer’s instructions if it was removed from the engine. Reconnect battery cables.

TORQUE TABLE

Connection #	Smart IMS INPUT		Smart IMS (+) Battery IN, RED	Smart IMS Mounting Bolts	Solenoid Battery (+) stud		Solenoid Switch IN term		Solenoid Motor (M) Terminal	
	1	2			3	4	5	6		7
38MT, 39MT	2.0–2.5 Nm (18–22 lb in)	4.0–5.0Nm (35–44 lb in)	7.7–9.8 Nm (68–87 lb in)		24.5–27.5 Nm (18–20 lb ft)		2.0–2.5 Nm (18–22 lb in)		19.6–22.5 Nm (15–17 lb ft)	
29MT					14.7–17.7 Nm (10–13 lb ft)		2.0–2.5 Nm (18–22 lb in)			7.3–9.3 Nm (65–82 lb in)
37, 41, 42MT					27-34 Nm (20-25 lb ft)		1.8-3.4 Nm (16-30 lb in)			

NOTICE: You may note that the starting motor with **Smart IMS** may behave different during certain events. The **Smart IMS** unit is designed to prohibit operation when the engine is running, prevent rapid re-engagement damage, and lockout when the system voltage is too low which may require a jump start or charging of the batteries. In addition, crank limits are included with required cool down periods where the starter cannot be energized which reduces damage due to over-cranking events. Extended crank times can be detrimental to a starting motor, and the engine manufacturers diagnostics should be consulted to resolve the problem. Some of the protective features will go unnoticed to the operator such as abutment detection and auto-disengage at engine start.

Technical support: USA 800 372 0222, Mexico 01 800 000 7378, Brazil 0800 703 3526, South America 55 11 3183 0384 or visit delcoremy.com

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Connection & Wiring Legend

1. Smart IMS INPUT (from vehicle)
2. Smart IMS Battery IN (+, RED) lead
3. Smart IMS Switch OUT lead
4. Smart IMS Mounting Bolts
5. Solenoid Battery (+) stud
6. Starter Ground (-) stud
7. Solenoid Switch INPUT terminal
8. Solenoid Ground (-) terminal
9. Solenoid Motor Terminal (M)
10. Smart IMS Motor Terminal lead
11. Smart IMS Ground lead

**38MT & 39MT
Smart IMS
Wire Routing**

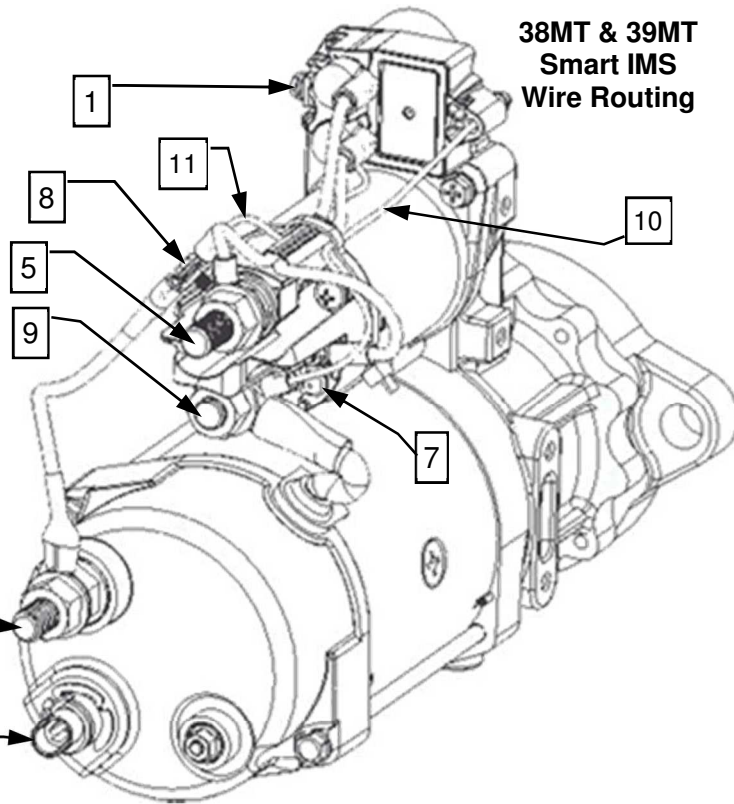


Figure A – Smart IMS Kit Leads & Connections

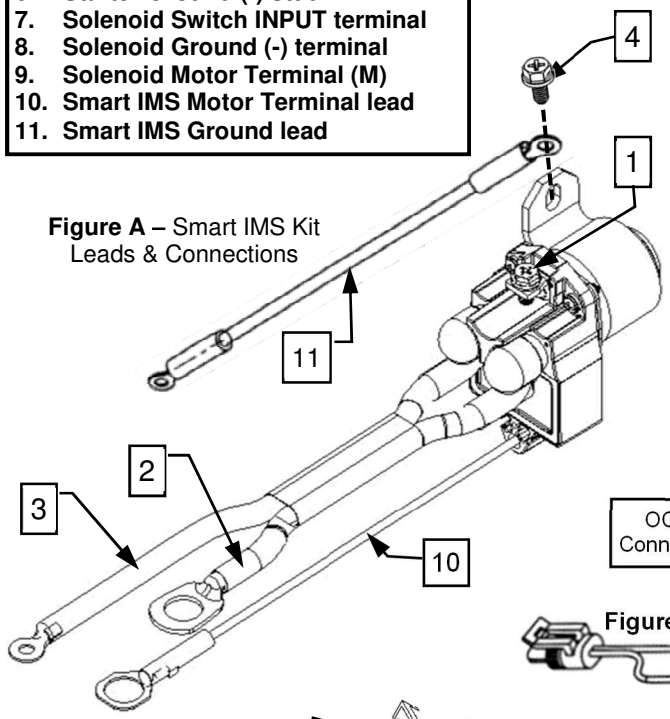


Figure B – Integrated OCP Harness – discard, and use provided Ground Lead

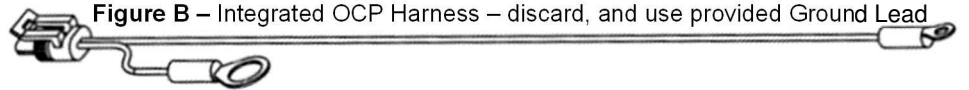
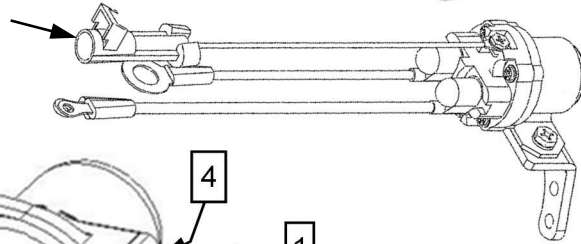
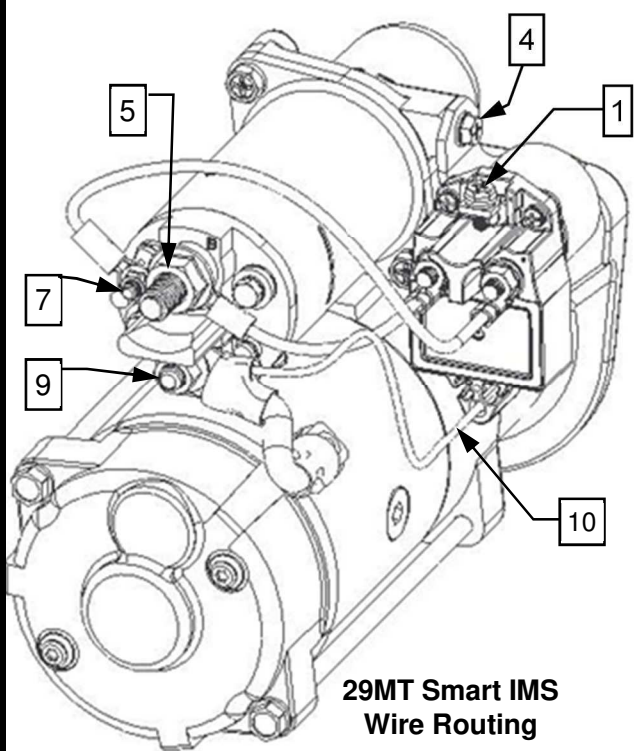


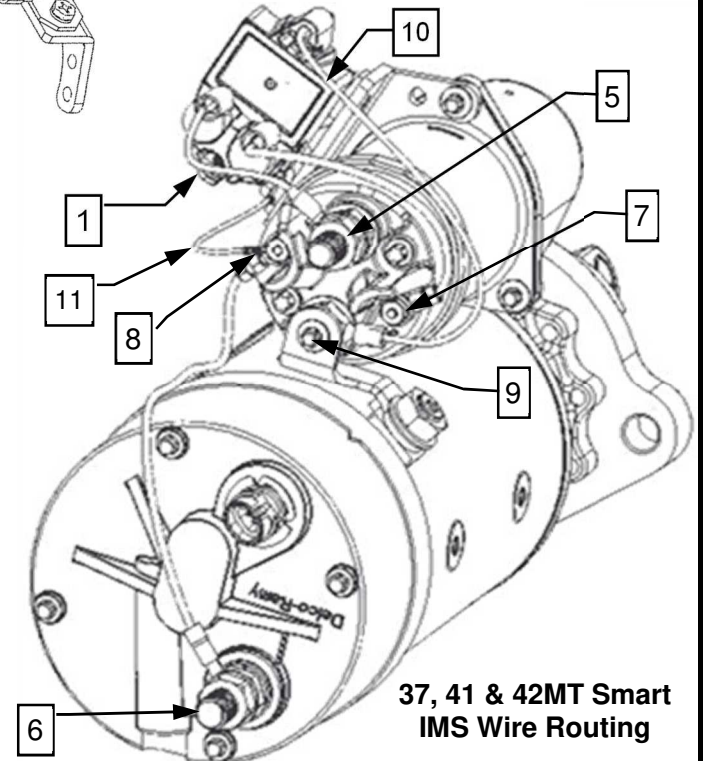
Figure C – OLD IMS with Switch Connection Lead to vehicle harness and transfer Lead to Smart IMS Input [1]



**29MT Smart IMS
Wire Routing**



**37, 41 & 42MT Smart
IMS Wire Routing**



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