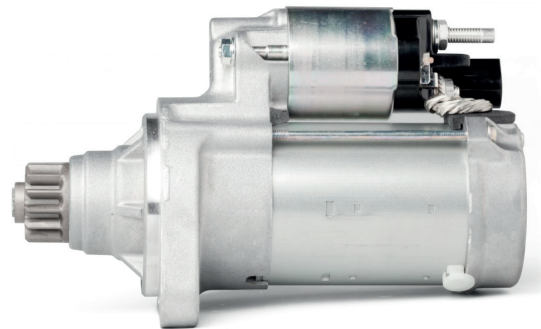
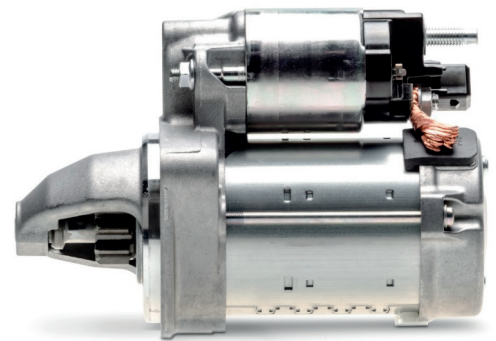
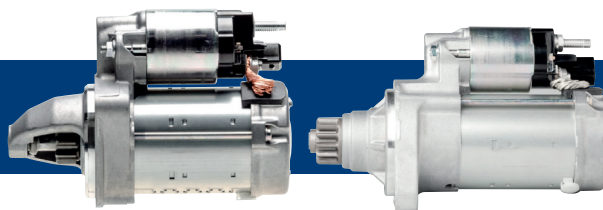


Starters

21 new part numbers added to range

- > DENSO introduces 21 new premium OE-quality part numbers
- > A special focus on European models with Stop-Start System
- > 1,178 additional applications with significant coverage increase, linked to 88 unique OE part numbers
- > Further JLR coverage expansion, including vehicles featuring the JLR's Advanced Intelligent Stop-Start System, which improves fuel consumption by average of 5 to 7 percent. The system incorporates a Tandem Solenoid (TS) Starter with a dedicated secondary battery for instant restarting
- > Increases coverage rate of JLR starters to the most on the market (starting from MY 1996)
- > One-stop shop for VW GROUP Stop-Start System applications thanks to compact range of high durability Advanced Engagement (AE) Starters with key design features including long-life electrical brushes and a unique pinion spring mechanism
- > Introduces several conventional starters, including a starter with heat resistant features designed for MERCEDES OM651 engine
- > Brings the total number of part numbers to 392 (252 alternators and 140 starters) and range coverage to 6,276 applications (3,232 in alternators and 3,044 in starters)
- > Can be found in the DENSO E-catalogue and TecDoc
- > Available April 2018



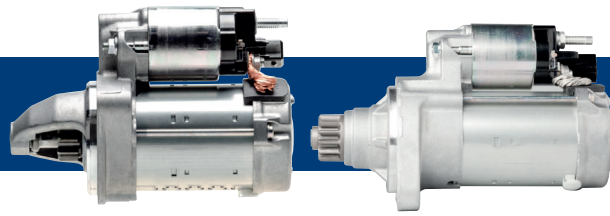


Part Numbers, Applications & OE References Overview

DENSO P/N	Make	Applications	Year	OE Reference
DSN1383	JLR	XF / XJ / XK	2008 > 2015	8W83-11001-BB /-BC /-BD / C2D27864 / C2D3536 / C2P26075
DSN1415 **	JLR	Discovery IV / Range Rover IV / Range Rover Sport	2012 >	DPLA-11001-AC /-AD / LR041976 / LR080307
DSN1416 *	JLR	Discovery V / Range Rover IV / Range Rover Sport	2015 >	FPLA-11001-AA /-AB / LR061893 / LR079918
DSN1417 *	JLR	Discovery V / Range Rover IV / Range Rover Sport	2015 >	FPLA-11001-BA /-BB / LR061894 / LR080292
DSN1418 **	JLR	Discovery IV / Range Rover IV / Range Rover Sport	2009 >	CPLA-11001-BD /-BE /-BF / LR034027 / LR080305
DSN1422 *	JLR	Discovery Sport / Range Rover Evoque	2014 >	GJ32-11001-BC /-BD /-BE / LR070687 / LR084460
DSN1423 **	JLR	Discovery Sport / Range Rover Evoque	2014 >	GJ32-11001-AC /-AD /-AE / LR070686 / LR085507
DSN1424 *	JLR	F-Pace / XE / XF	2015 >	GX73-11001-BC /-BD / T2H2229
DSN1425 **	JLR	F-Pace / XE / XF	2015 >	GX73-11001-AC /-AD / T2H1941
DSN1445	Mercedes-Benz	V-Class / Vito (W447)	2014 >	A 651 906 45 00
DSN1453 *	Opel / Vauxhall	Antara / Cascada / Insignia (A) & (B) / Zafira Tourer C	2014 >	55579119 / 95520368 / 1202382 / 1202531
DSN1460 *	VW Group	A3 (8P) / Golf VI & VII / Passat (362, 365) / Tiguan (5N) / Transporter V & VI	2008 >	02E 911 024 J /-022 C /-023 Q /-023 T /-024 C /-024 H
DSN1461 *	VW Group	A3 (8P) / Golf VI & VII / Passat (362, 365) / Passat (3C) / Tiguan (5N)	2008 >	02M 911 024 B /-021 E /-021 P /-024 C /-024 F /-024 G /-024 S
DSN1462 *	VW Group	Caddy III (2K, 2C) / Golf VI & VII / Polo (6R, 6C) / Transporter V & VI	2009 >	02Z 911 024 B /-021 C /-021 K /-023 S /-024 A /-024 H /-024 L
DSN1463 *	VW Group	Caddy III (2K, 2C) / Golf VI & VII / Leon (1P) / Octavia III (5E) / Touran (1T3)	2009 >	0AM 911 023 J /-021 B /-021 E /-023 G /-023 H /-023 M
DSN1464 *	VW Group	A3 (8V) / Golf VI & VII / Leon (5F) / Octavia III (5E) / Tiguan (5N)	2010 >	02E 911 024 D /-023 M /-024 B /-024 M /-024 P
DSN1465 *	VW Group	Golf Plus / Golf VI & VII / Octavia III (5E) / Polo (6R, 6C) / Yeti (5L)	2009 >	0AM 911 024 A /-023 N /-023 R
DSN1466 *	VW Group	Golf Sportsvan / Golf VI & VII / Leon (5F) / Passat (3G) / Yeti (5L)	2009 >	02Z 911 024
DSN1467 *	VW Group	Caddy III (2K, 2C) / Golf Plus / Golf VI & VII / Octavia III (5E)	2009 >	0AH 911 023 G /-023 F /-023 J
DSN1468 *	VW Group	UP! / MII / Citigo / Golf VII / Polo (6R, 6C) / Tiguan (5N)	2011 >	02M 911 024 J /-021 G /-024 Q
DSN1476	BMW / ROLLS-ROYCE	7 (F01, F02, F03, F04) / Dawn / Ghost / Wraith	2008 >	7566337 / 7579152

* Stop-Start System Application - AE Starter

** Stop-Start System Application - TS Starter



Stop-Start System Technology

As the world's largest rotating electric machine manufacturer, DENSO has been working on Stop-Start System technology since the 1980s and DENSO is the industry's foremost expert in advanced starters for Stop-Start System.

DENSO understands how to seamlessly integrate Stop-Start System components into the vehicle and can offer superior technical support that comes from decades of integration experience. DENSO can also provide OE and AM customers with different Stop-Start System technology solutions depending on their specific needs and requirements.

AE Starter

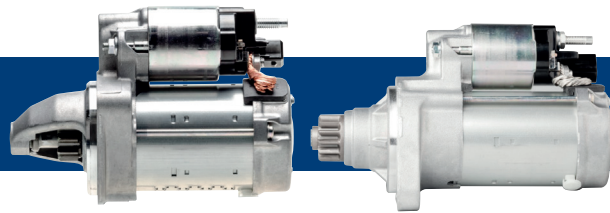
The Advanced Engagement (AE) Starter works like a typical planetary starter but has up to 15 times the durability. As a starter motor-based solution for Stop-Start Systems, the AE starter is the easiest to integrate with the engine - requiring no unique controls, software or engine modifications. At any point after the engine is at zero rpm, the starter can be re-energized to restart the engine.

Technological Highlights

- > Dual layer, long-life electrical brushes
- > Separate pinion from clutch and addition of pinion spring between pinion and clutch
- > Complete meshing before motor rotation by spring compression

TS Starter

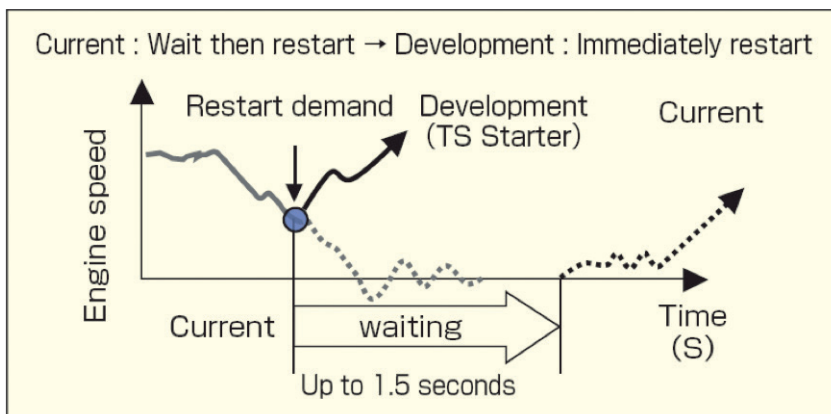
The Tandem Solenoid (TS) Stop-Start System Starter incorporates innovative "Change of Mind" capability and patented technology with all the long-life features of the AE Starter. The TS Starter is a perfect solution for vehicles with Advanced Stop-Start System paired with automatic transmission as well as micro-hybrid systems for energy recovery.



“Change of Mind” TS Starter – Technological Insights

Engine restart times are critical for stop-start engines. A unique starting system is required to restart an engine after fuel supply is cut and before a vehicle comes to a full stop. DENSO has developed TS Starter, which have the capability of restarting before the engine reaches zero rpm. That means it doesn't need to wait for the engine to completely drop from idle speed to zero rpm, like the conventional Stop-Start starter. This is what we call a “Change of Mind” capable starter that allows the engine to restart with no noticeable lag time. DENSO's TS Starter, paired with a high-efficient alternator and battery, and deceleration regeneration system can improve fuel efficiency by more than 7 percent.

Restart during engine run down



The starter, designed specifically for Stop-Start Systems, uses the world's first mechanism to separately control the forward shift of the pinion gear and the motor rotation. The technology enables the engine to cope with restarts in a fast (1.5 seconds quicker) and smooth way while it is still rotating.

Further details of DENSO's rotating range are available online at denso-am.eu, on TecDoc or from your local DENSO Aftermarket contact.

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