State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-686

Relating to Exemptions Under Section 27156
of the California Vehicle Code

SMS Signature Cars
SMS 296 Supercharger Kit

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the installation of the SMS 296 Supercharger Kit, manufactured and marketed by SMS Signature Cars, 2735 Wardlow Road, Corona, California 92882, has been found not to reduce the effectiveness of the applicable vehicle pollution control systems and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 2005 to 2010 model year Chrysler/Dodge Challenger, Charger, 300C, and Magnum equipped with either a 5.7L or 6.1L V8 engine and certified to Low Emission Vehicle II Low Emission Vehicle (LEV II LEV) or less stringent emission standards. The following engine test groups are **excluded** from this Executive Order **: ACRXV05.7UP0, 9CRXV05.7UP0, 8CRXV05.7MD0, 7CRXV05.7MD1, 7CRXV05.7MD3, and 6CRXV05.7MD1.**

The SMS 296 Supercharger Kit consists of the following main components: A SMS 296 twin screw supercharger with a 90 mm diameter pulley, intake manifold, Chrysler MAP sensor with extended range, bypass valve, high flow injectors, intercooler, reflashed ECM, Intake Air Temperature Sensor (for 6.1L models only), and a new air cleaner housing with an open element style filter. Boost is limited to 6 pounds per square inch. The crankshaft pulley is replaced with a new 165 mm diameter pulley. Installation does not require any modification to the stock coolant thermostat. Installation of the supercharger kit requires the rerouting and replacement of the positive crankcase ventilation hose; the new hose has an SAE30R7 rating. All supplied fuel hoses are Avon's CADBAR 9000 series or metal, and fuel and vapor line connectors supplied with the kit are OEM – equivalent parts.

This Executive Order is valid provided that the installation instructions for the SMS 296 Supercharger Kit will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the SMS 296 Supercharger Kit, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

This Executive Order shall not apply to any SMS 296 Supercharger Kit advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

Marketing of the SMS 296 Supercharger Kit using any identification other than that shown in this Executive Order or marketing of the SMS 296 Supercharger Kit for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

This Executive Order does not constitute any opinion as to the effect the use of the SMS 296 Supercharger Kit may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on submitted emission and OBD II system test data generated on a 2009 model year 5.7L Dodge Challenger (test group 9CRXV05.71PO) modified with the SMS 296 Supercharger Kit.

The Air Resources Board reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE SMS 296 SUPERCHARGER KIT.

No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a ten-day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 28 day of March 2011.

Annette Hebert, Chief
Mobile Source Operations Division

EVALUATION SUMMARY

Manufacturer Name: SMS Signature Cars

Name of Device: SMS 296 Supercharger Kit

Background:

SMS Signature Cars of 2735 Wardlow Road, Corona, California 92882, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the SMS 296 Supercharger Kit designed for 2005 to 2010 model year Chrysler/Dodge Challenger, Charger, 300C, and Magnum equipped with either a 5.7L or 6.1L V8 engine, and certified to Low Emission Vehicle II Low Emission Vehicle (LEV II LEV) or less stringent emission standards. The following engine test groups are **excluded** from this application: **ACRXV05.7UP0, 9CRXV05.7UP0, 8CRXV05.7MD0, 7CRXV05.7MD1, 7CRXV05.7MD3, and 6CRXV05.7MD1.**

Recommendation:

Grant exemption to SMS Signature Cars as requested, and issue Executive Order D-686.

Device Description:

The SMS 296 Supercharger Kit consists of the following main components: A SMS 296 twin screw supercharger with a 90 mm diameter pulley, intake manifold, Chrysler MAP sensor with extended range to 2 Bar, bypass valve, high flow injectors, intercooler, reflashed ECM, and a new air cleaner housing with an open element style filter. For the 6.1L models, the Intake Air Charge Temperature (IAT) Sensor is replaced with the OEM sensor used in the 5.7L engine to allow the same casting to mount the IAT sensor for both 6.1L and 5.7L models. Boost is limited to 6 pounds per square inch. The crankshaft pulley is replaced with a new 165 mm diameter pulley. Installation does not require any modification to the stock coolant thermostat. Installation of the supercharger kit requires the rerouting and replacement of the positive crankcase ventilation hose; the new hose has a SAE30R7 rating. All supplied fuel hoses are Avon's CADBAR 9000 series or metal, and fuel and vapor line connectors supplied with the kit are OEM – equivalent parts.

Discussion/Basis for the Recommendation:

To demonstrate the emissions impact of the SMS 296 Supercharger Kit, SMS Signature Cars conducted emissions testing on a 2009 model year 5.7L Dodge Challenger (test group 9CRXV05.71PO) modified with the SMS 296 Supercharger Kit. Testing was conducted at California Environmental Engineering (CEE), located in Santa Ana, California; and consisted of two Cold-Start CVS-75 Federal Test Procedure (FTP), one Supplemental Federal Test Procedure (SFTP) test cycle and an examination of the OBD II system. Test results showed that the emission levels, with the supercharger kit installed, met the applicable emission standards and the supercharger kit did not affect OBD II system operation. Results of testing conducted at CEE are shown below (in grams per mile).

California Environmental Engineering*

	CVS-75 FTP				SFTP US06/SC03	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards, 50K	0.075	3.4	0.05	0.015	0.14/0.20	8.0/2.7
Device Test 1	0.066	1.8	0.01	0.001	0.09/0.13	1.4/1.3
Device Test 2	0.052	1.3	0.03	0.001		
Average w/df	0.064	1.6	0.03	0.002		

Confirmatory testing was done at ARB's Haagen-Smit Laboratory. Results are shown below (in grams per mile).

	CVS-75 FTP			
	NMOG	CO	NOx	HCHO
Standards, 50K	0.075	3.4	0.05	0.015
Device Test 1	0.124	1.8	0.04	0.002
Device Test 2	0.071	1.6	0.04	0.002
Device Test 3	0.078	1.8	0.06	0.002
Device Test 4	0.099	2.7	0.08	0.002
Average	0.093	2.0	0.06	0.001

Emissions data generated during confirmatory testing showed wide deviations in NMOG, CO, and NOx values. Staff cannot ascertain if the wide range of emissions data were due to driving inconsistencies with the vehicle's six-speed manual transmission, unstable emission characteristic of the modified vehicle or laboratory equipment calibration. To reduce testing time, staff informed SMS Signature Cars that it may conduct testing at a different independent emissions laboratory in lieu of confirmatory testing at ARB. Hence, additional data was submitted by SMS Signature Cars from testing performed at Quantum Technologies, located in Lake Forest, California. Results are shown below (in grams per mile).

Quantum Technologies*

	FTP				SFTP US06	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards, 50K	0.075	3.4	0.05	0.015	0.14	8.0
Device w/df	0.075	1.4	0.03	0.001	0.10	1.2

The emission test results in the modified configuration at Quantum were either at or below the applicable certification standards. Examination of the OBD II system showed the SMS 296 Supercharger Kit did not affect OBD II system operation. A similar effect on vehicle emissions and OBD II monitoring is expected with the installation of the SMS 296 Supercharger Kit on the other vehicles listed in this Executive Order.

SMS Signature Cars's SMS 296 Supercharger Kit meets the criteria for exempting general criteria parts for those vehicles listed in the Executive Order.

At CEE: NMOG and HCHO were calculated using the following conversion factors: NMOG/NMHC=1.04 and HCHO/NMHC= 0.02. Measured values were, NMHC 0.063, 0.050, CO 1.746, 1.336, NOx 0.012, 0.027. 50K additive deterioration factors (dfs) used were NMOG 0.0052, CO 0.10, NOx 0.007, and HCHO 0.0. Vehicle test weight and horsepower target coefficients were, 4500 lbs. and 44.35, 0.4781, 0.02005 respectively. Max Boost measured at 5.41 psi.

At Quantum: NMOG and HCHO were calculated using the following conversion factors: NMOG/NMHC=1.04 and HCHO/NMHC= 0.02. Measured values were, NMHC 0.067, CO 1.33, NOx 0.022. 50K additive deterioration factors (dfs) used were NMOG 0.0052, CO 0.10, NOx 0.007, and HCHO 0.0. Vehicle test weight and horsepower target coefficients were, 4500 lbs. and 44.35, 0.4781, 0.02005 respectively. Max Boost measured at 5.8 psi.

* California Environmental Engineering uses a CVS measurement system which requires two CVS-75 FTP tests to show emissions consistency on very low emitting vehicles. Quantum Technologies uses a Bag Mini Diluter (BMD) measurement system, designed to address the testing of Low Emission Vehicle II (LEV II) emissions by using a smaller dilution ratio compared to a CVS system. The BMD bag concentrations are higher for a more precise measurement on emissions on low emitting LEV II vehicles.