State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-633-1

Relating to Exemptions Under Section 27156
of the California Vehicle Code

Cobra Engineering
FI2000R-ARB

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 FI2000R-ARB, produced and marketed by Cobra Engineering of 23801 E. La Palma Avenue, Yorba Linda, California 92887, 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 the 2008 model year and older on road motorcycles, as listed in Exhibit A.

The FI2000R-ARB is an electronic control box designed to increase fuel into the combustion chamber during high load conditions. The FI2000R-ARB has no user adjustments and is not designed to allow a user to download or modify the programming. The FI2000R-ARB does not modify or remove any component during installation.

This Executive Order is valid provided the installation instructions for the FI2000R-ARB will not recommend tuning the motorcycle to specifications different from those of the Cobra Engineering.

Changes made to the design or operating conditions of the FI2000R-ARB, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the FI2000R-ARB using any identification other than that shown in this Executive Order or marketing of the FI2000R-ARB 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 FI2000R-ARB may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on previously submitted emissions test results (Yamaha and Harley Davidson motorcycles under Executive Order D-633), and new emissions test data generated on two motorcycles (Suzuki and Kawasaki models) not originally equipped with an oxygen sensor. Testing was conducted using the Cold-Start CVS-75 Federal Test Procedure. Results from emissions testing conducted at Ecologic Testing Laboratory, located in Fullerton, California, are shown below in grams per kilometer.

2007 Suzuki GSX1300RZ			
	HC	CO	NOx
Stock	1.489	14.5	0.120
Device	1.251	14.2	0.122
Difference	-0.238	-0.3	0.002
% Change	-16%	-2%	2%

2007 Kawasaki Ninja ZX-6R		
	HC+NOx	CO
Standards	0.7	12
Device w/dfs	0.5	7.7

2007 Yamaha VStar 1.3L			
	HC	CO	NOx
Stock	0.115	1.112	0.027
Device	0.113	1.121	0.029
Difference	-0.002	0.009	0.002
% Change	-2%	8%	1%

2007 Harley Davidson Sportster 1.2L			
	HC	CO	NOx
Stock	0.981	3.692	0.308
Device	1.081	3.857	0.314
Difference	0.1	0.165	0.006
% Change	10%	4%	2%

Exhaust emissions during comparative Cold-Start CVS-75 Federal Test Procedure for the Suzuki, Yamaha, and Harley Davidson motorcycles showed that the FI2000R-ARB did not cause emissions to exceed the baseline by more than the allowed limits of 10 percent on hydrocarbon (HC) and oxides of nitrogen (NOx), and 15 percent on carbon monoxide (CO). Emission levels of the Kawasaki motorcycle met the applicable emission standards. A similar effect on emissions is expected with the installation of the FI2000R-ARB on those motorcycles listed in Exhibit A of this Executive Order.

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 COBRA ENGINEERING'S FI2000R-ARB.

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 15th day of May 2008.

Annette Hebert, Chief
Mobile Source Operations Division

EVALUATION SUMMARY

Manufacturer Name: Cobra Engineering

Name of Device: Fi2000R-ARB

Background:

Cobra Engineering of 23801 E. La Palma Avenue, Yorba Linda, California 92887, has submitted an application for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Fi2000R-ARB for 2008 model year and older on road motorcycle applications as listed in Exhibit A of the Executive Order.

Recommendation:

Grant exemption to Cobra Engineering as requested and issue Executive Order D-633-1.

Device Description:

The Fi2000R-ARB is an electronic control box designed to increase fuel into the combustion chamber during high load conditions. For oxygen sensor equipped motorcycles, it uses the existing oxygen sensor(s) to monitor air/fuel mixtures and increase the fuel injector pulse when the oxygen sensor readings show lean conditions. For non oxygen sensor equipped motorcycles it uses the stock fuel injector pulse width to determine areas of operation which can be made similar to closed-loop conditions. The Fi2000R-ARB is installed in series to the oxygen sensor (factory equipped oxygen sensor models only) and the fuel injector wiring harness. No wires are cut during installation and factory style connectors are pre-installed on the wiring harness of the Fi2000R-ARB. The Fi2000R-ARB has no user adjustments and is not designed to allow a user to download or modify the programming.

Discussion/Basis for the Recommendation:

Cobra Engineering received Executive Order D-633 on March 19, 2008, applicable to selected motorcycles originally equipped with an oxygen sensor. Cobra Engineering has now applied for motorcycles not originally equipped with an oxygen sensor, and seeks to consolidate all motorcycle applications for the Fi2000R-ARB under one Executive Order. To determine the impact of the Fi2000R-ARB on emissions for motorcycles not originally equipped with an oxygen sensor, two motorcycles were selected for testing. Each motorcycle had a different type of emission control system (see Table 1 below).

Table 1. Test motorcycles

Model Year	Model	Test Group	Emission Control Systems
2007	Kawasaki ZX600P7	7KAXC.599AAF	OC, SFI and AIR
2007	Suzuki GSX1300RZ	7SKXC1.3VW1	SFI and AIR

Testing for the Suzuki consisted of one Cold-Start CVS-75 Federal Test Procedure (FTP) test cycle in the baseline configuration followed by one Cold-Start CVS-75 Federal Test Procedure (FTP) test cycle in modified configuration, with the Fi2000R-ARB installed. Testing for the Kawasaki consisted of one Cold-Start CVS-75 Federal Test Procedure (FTP) test cycle in the modified configuration, with the Fi2000R-ARB installed. Results from emissions testing conducted at Ecologic Testing Laboratory, located in Fullerton, California, are shown below in grams per kilometer.

2007 Suzuki GSX1300RZ			
	HC	CO	NOx
Stock	1.489	14.5	0.120
Device	1.251	14.2	0.122
Difference	-0.238	-0.3	0.002
% Change	-16%	-2%	2%

2007 Kawasaki Ninja ZX-6R		
	HC+NOx	CO
Standards	0.7	12
Device w/dfs	0.5	7.7

Exhaust emissions during comparative Cold-Start CVS-75 Federal Test Procedure for the Suzuki showed that the FI2000R-ARB did not cause emissions to exceed the baseline by more than the allowed limits of 10 percent on hydrocarbon (HC) and oxides of nitrogen (NOx), and 15 percent on carbon monoxide (CO). Emission levels of the Kawasaki met the applicable emission standards. The Air Resources Board did not perform testing to confirm the test results submitted by the applicant but Air Resources Board staff did verify the modified injector pulse width at Ecologic.

Similar effect on motorcycle emissions is expected with the installation of the Fi2000R-ARB on motorcycles listed in Exhibit A of this Executive Order.

Based on the test results and information submitted by Cobra Engineering, the staff concludes that the Fi2000R-ARB meets the requirements for a VC 27156 exemption for 2008 model year and older on road motorcycle applications as listed in Exhibit A of the Executive Order.

Exhibit A

BRAND	PART #	MODEL FITMENT
OPEN LOOP CRUISER (Motorcycles not originally equipped with an O2 sensor)		
Harley	692-1600-50	Dresser 95-05 (ARB)
	692-1602-50	Dresser 2006 (ARB)
	692-1605-50	Dyna 04-05 (ARB)
	692-1605-50	Softail 01-05 (ARB)
	692-1604-50	Softail 2006 (ARB)
	692-1601-50	V-Rod 02-07 (ARB)
Kawasaki	92-1968-50	Vulcan 900 Classic 06-08 (ARB)
	92-1968-50	Vulcan 900 Classic LT 06-08 (ARB)
	92-1968-50	Vulcan 900 Custom 07-08 (ARB)
	92-1940-50	Vulcan 1500 Classic 05-08 (ARB)
	92-1962-50	Vulcan 1500 Mean Streak 02-03 (ARB)
	92-1963-50	Vulcan 1500 Nomad 00-04 (ARB)
	92-1962-50	Vulcan 1600 Mean Streak 04-08 (ARB)
	92-1963-50	Vulcan 1600 Classic 03-08 (ARB)
	92-1963-50	Vulcan 1600 Nomad 05-08 (ARB)
Suzuki	92-1962-50	Marauder 1600 '04 (ARB)
	92-1826-50	Boulevard M50 05-08 (ARB)
	92-1826-50	Boulevard C50 05-08 (ARB)
	92-1840-50	Boulevard C90 05-08 (ARB)
	92-1845-50	Boulevard M109R 06-08 (ARB)
Yamaha	92-1772-50	Warrior 02-08 (ARB)

OPEN LOOP SPORTBIKE (Motorcycles not originally equipped with an O2 sensor)		
Honda	92-5000-50	CBR600RR 03-06 (ARB)
	92-5004-50	CBR600RR 07-08 (ARB)
	92-5001-50	CBR1000RR 04-07 (ARB)
	92-5006-50	CBR1000RR 2008 (ARB)
	92-5003-50	RC51 02-07 (ARB)
Kawasaki	92-5150-50	ZX6R 03-04 (ARB)
	92-5153-50	ZX6R 05-07 (ARB)
	92-5155-50	Ninja 650R 06-07 (ARB)
	92-5151-50	ZX10R 04-07 (ARB)
	92-5052-50	Z750/Z1000 02-06 (ARB)
	92-5054-50	ZX-14 06-07 (ARB)
	92-5057-50	VERSYS 2008 (ARB)
Suzuki	92-5100-50	GSXR600 04-05 (ARB)
	92-5107-50	GSXR600 06-07 (ARB)
	92-5101-50	SV650 03-06 (ARB)
	92-5102-50 92-5108-50	GSXR750 04-05 (ARB) GSXR750 06-07 (ARB)
	92-5103-50	GSXR1000 03-04 (ARB)
	92-5106-50	GSXR1000 05-06 (ARB)
	92-5104-50	SV1000 03-07 (ARB)
	92-5109-50	V-Strom 1000 03-07 (ARB)
	92-5105-50	GSX1300R 01-07 (ARB)
Yamaha	92-5050-50	YZF-R6 04-05 (ARB)
	92-5051-50	YZF-R1 04-06 (ARB)

Exhibit A

BRAND	PART #	MODEL FITMENT
CLOSED LOOP (Motorcycles equipped with an O2 sensor)		
Harley	692-1608CL-50	Dresser 2007 (ARB)
	692-1612CL-50	Dresser 2008 (ARB)
	692-1609CL-50	Dyna 2006 (ARB)
	692-1606CL-50	Dyna 07-08 (ARB)
	692-1611CL-50	Rocker 2008 (ARB)
	692-1607CL-50	Softail 07-08 (ARB)
	692-1620CL-50	Sportsters 07-08 (ARB)
	692-1613CL-50	V-Rod 2008 (ARB)
Honda	92-1650CL-50	VTX1800C/R/S/F/N 02-08 (ARB)
Kawasaki	92-1964CL-50	Vulcan 2000 04-08 (ARB)
	"	Vulcan 2000 Classic 06-08 (ARB)
	"	Vulcan 2000 Classic LT 06-08 (ARB)
Yamaha	92-1771CL-50	Road Star 2008 (ARB)
	92-1773CL-50	Roadliner/Stratoliner 06-08 (ARB)
	92-1774CL-50	V-Star 1300/Tourer 07-08 (ARB)
	92-1777CL-50	Raider 2008 (ARB)
Victory	92-1051CL-50	Vegas 2008
	92-1051CL-50	Kingpin 2008
	92-1051CL-50	Hammer 2008
	92-1051CL-50	Jackpot 2008

CLOSED LOOP SPORTBIKE (Motorcycles equipped with an O2 sensor)		
Honda	92-5002CL-50	CBR600F4i 01-07
	92-5005CL-50	CB919 02-08
Kawasaki	92-5056CL-50	ZX10R 08
	92-5055CL-50	Z1000 07-08
Suzuki	92-5110CL-50	GSXR1000 07-08
Yamaha	92-5157CL-50	YZF-R6 06-07
	92-5161CL-50	YZF-R1 07-08
	92-5156CL-50	FZ6 04-07
	92-5158CL-50	FZ1 06-07
	92-5159CL-50	FJR1300 03-05
	92-5160CL-50	FJR1300 06-08