

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER B-58-6

Relating to Conversion of Engines to Alternative Fuels

ROUSH INDUSTRIES INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43004 and 43006 of the Health and Safety Code and Section 10753(d) of the Revenue and Taxation Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: The dedicated liquefied petroleum gas (LPG) retrofit system, manufactured by Roush Industries Inc. (Roush) of 12249 Levan Road, Livonia, MI 48150, is certified as described below for the following 2013 model-year Ford Motor Company 6.8 liter heavy-duty engine.

Fuel Type: Gasoline to LPG

Engine Family: DFMXE06.8BW5                      Displacement: 6.8 liter

Engine Models: F450/550 Chassis Cab, F650 Chassis Cab, Step Van, Motor Home

Major Retrofit System Components: See Attachment A

All emission control systems, excluding the gasoline fuel and evaporative emission control systems, and the engine manufacturer's tune-up label shall be retained. The engine shall be adjusted to Roush's tune-up specifications. The production retrofit system shall be in all material respect the same as that for which certification is granted.

The certification exhaust emission standards for this engine family in grams per brake horsepower-hour are:

Emission Standard	<u>NMHC</u>	<u>NOx</u>	<u>CO</u>	<u>PM</u>	<u>HCHO</u>
HDO @110,000 Miles	0.14	0.20	14.4	0.01	0.01

The certification exhaust emission values for this engine family with the dedicated LPG retrofit system in grams per brake horsepower-hour are:

Certification Levels		<u>NMHC</u>	<u>NOx</u>	<u>CO</u>	<u>PM</u>	<u>HCHO</u>
	@110,000 Miles	0.07	0.08	2.2	0.000	0.000

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials in the application to demonstrate certification compliance with the emission standards set forth in Section 4 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer has stated that the retrofit system described above is identical, as defined in Title 13, California Code of Regulations, Section 2030(c), to the alternative fuel system described in the certification application of its engine family DRIIE06.8BW5 which was certified by ARB per Executive Order A-344-0039-1. At the request of the manufacturer, the retrofit system is certified under Section 2030(c) (expedited approval using carry-over / carry-across of data from new engine certification).

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials in the application to demonstrate certification compliance with the on-board diagnostic system requirements in Section 6 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer shall provide a supplemental emission control information label, which shall be affixed in a permanent manner adjacent to the original Vehicle Emission Control Information label, and shall comply with the labeling requirements described in Section 3(e) of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials required to demonstrate certification compliance with the warranty requirements, including warranty notification under Sections 3(f)(5) , 3(g), and 9 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer may be subject to in-use enforcement emission testing as described in Section 12 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer shall maintain a record of each engine on which the retrofit system is installed as required in Section 3(h) of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines." The manufacturer shall supply a copy of installation information upon request and annually report the annual sales by March 1 of the following calendar year.

The retrofit system certified under this Executive Order must conform to all applicable California emission regulations. Certification of the retrofit system shall not be construed as a certification to sell, offer for sale, or advertise any component of the retrofit system as an individually certified part.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 13 day of October 2014.



Annette Hebert, Chief  
Emissions Compliance, Automotive Regulations and Science Division

B-58-6  
Attachment A  
Page 1/2  
4-6-2016

**SECTION 6 – EXHAUST EMISSIONS PARTS LIST**

- Test Group: DRIIE06.8BW5
- Evaporative Families: DRIIF0265LPG & DRIIF0415LPG

**2013 MODEL YEAR ENGINE**

Engine Calibration	Vehicle	Speed limit <sup>6</sup>	LPG Tank Size <sup>4</sup>	OEM Part Number (12A650)	Roush Calibration (03P150) ■
DDF418YR505 <sup>2</sup>	F-450/F-550 Chassis Cab	85 or 75	67 gal (aft-axle)	DC3A-BFX*	PDEB- AB <sup>4</sup>
DDF418NR505 <sup>2</sup>	F-450/F-550 Chassis Cab	85 or 75	52 gal (aft-cab)	DC3A-BCX*	PDEB- AB <sup>4</sup>
DDF418YR511 <sup>5</sup>	F-450/F-550 Chassis Cab	85 or 75	67 gal (aft-axle)	DC3A-BFX	PDEB- AC
DDF418NR511 <sup>5</sup>	F-450/F-550 Chassis Cab	85 or 75	52 gal (aft-cab)	DC3A-BCX	PDEB- AC
DDF418PR511 <sup>6</sup>	F-450/F-550 Chassis Cab	85 or 75	50 gal (1 long tank) <sup>6</sup>	DC3A-BCX*	PDEB- AC
DDF41LYR512 <sup>6</sup>	F-450/F-550 Chassis Cab	60	67 gal (aft-axle)	DC3A-BFX*	PDEB- BA <sup>6</sup>
DDF41LNR512 <sup>6</sup>	F-450/F-550 Chassis Cab	60	52 gal (aft-cab)	DC3A-BCX*	PDEB- BA <sup>6</sup>
DDF41LPR512 <sup>6</sup>	F-450/F-550 Chassis Cab	60	50 gal (1 long tank) <sup>6</sup>	DC3A-BCX*	PDEB- BA <sup>6</sup>
DDF418YR513 <sup>7</sup>	F-450/F-550 Chassis Cab	85 or 75	67 gal (aft-axle)	DC3A-BFX	PDEB- AD
DDF418NR513 <sup>7</sup>	F-450/F-550 Chassis Cab	85 or 75	52 gal (aft-cab)	DC3A-BCX	PDEB- AD
DDF418PR513 <sup>7</sup>	F-450/F-550 Chassis Cab	85 or 75	50 gal (1 long tank)	DC3A-BCX*	PDEB- AD
DDF41LYR513 <sup>7</sup>	F-450/F-550 Chassis Cab	60	67 gal (aft-axle)	DC3A-BFX*	PDEB- BB
DDF41LNR513 <sup>7</sup>	F-450/F-550 Chassis Cab	60	52 gal (aft-cab)	DC3A-BCX*	PDEB- BB
DDF41LPR513 <sup>7</sup>	F-450/F-550 Chassis Cab	60	50 gal (1 long tank)	DC3A-BCX*	PDEB- BB
DDF418RR505 <sup>2</sup>	Step-Van	85 or 75	67 gal (aft-axle)	DU9A-BX*	PDEB-SA
DDF418RR510 <sup>5</sup>	Step-Van	85 or 75	67 gal (aft axle)	DU9A-BX*	PDEB-SB
DDF418RR511 <sup>5</sup>	Step-Van	85 or 75	67 gal (aft axle)	DU9A-BX*	PDEB-SC
DDF418RA40 <sup>9</sup>	Step-Van	85 or 75	45 gal (1 side tank)	DU9A-BX*	PDEB-SC
DDF418QR505 <sup>2</sup>	Motor Home	85 or 75	67 gal (aft-axle)	DU9A-AX*	PDEB-MA
DDF418QR511 <sup>5</sup>	Motor Home	85 or 75	67 gal (aft-axle)	DU9A-AX*	PDEB-MB
DDF618AR505 <sup>2</sup>	F-650	85 or 75	83 gal (2 long tanks) <sup>5</sup>	DC4A-AX*	PDFB- AA
DDF61HAR505 <sup>2</sup>	F-650	85 or 75	45 gal (2 short tanks)	DC4A-AX*	PDFB- AA
DDF61UAR505 <sup>5</sup>	F-650	85 or 75	67 gal (aft-axle)	DC4A-AX*	PDFB- AA
DDF618AR510 <sup>2</sup>	F-650	85 or 75	83 gal (2 long tanks) <sup>5</sup>	DC4A-AX*	PDFB- AB
DDF61HAR510 <sup>2</sup>	F-650	85 or 75	45 gal (2 short tanks)	DC4A-AX*	PDFB- AB
DDF61UAR510 <sup>5</sup>	F-650	85 or 75	67 gal (aft-axle)	DC4A-AX*	PDFB- BA

■Part differs from OEM

\*Same suffix as OEM, unique Roush LPG calibration

<sup>9</sup>Added per C09 - Federal calibration to reflect federal sales only.

<sup>2</sup>Added per C02, <sup>4</sup>Updated per C04; <sup>5</sup>Added per C05; <sup>6</sup>Added per C06; <sup>7</sup>Added per C07

TEST GROUP: DRIIE06.8BW5

ISSUED: October 15, 2012

REVISED: 08/10/2012; 09/14/2012; 02/21/2013; 04/15/2013; 07/30/2013; 12/12/2013; 03/06/2014; 09/29/2014; 06/29/2015

06.05.01.04

**SECTION 6 – EXHAUST EMISSIONS PARTS LIST (continued)**

- Test Group: DRIIE06.8BW5
- Evaporative Families: DRIIF0265LPG & DRIIF0415LPG

**2013 MODEL YEAR ENGINE**

Catalyst	F-450/F-550 Motor Home, Step Van F-650	9C34 – 5E212 - AC 9C34 – 5E212 - AC 8C40 – 5E212 - AC	
Fuel Pump (2) ■		P11BB – 10A020 – AA; – AB <sup>5</sup>	
Cylinder Head Temperature Sensor		9L3A – 6G004 – AA	
Camshaft Position Sensor		1W7E – 6B288 – AB	
Crankshaft Position Sensor		1W7E – 6C315 – AA	
PCV Valve		9L1E – 6A666 – AA	
Univ. Heated Oxygen Sensor – Upstream (2)		8F9A – 9Y460 – GA	
		BL3A – 9G444 – DA (Bus)	
Heated Oxygen Sensor – Downstream		8F9A – 9Y460 – EA (F450/F550)	
		F85F – 9G444 – BB (alt F450/F550)	
Fuel Rail & Injector Assembly ■		P11BB – 9F899LH – AC (LH)	
		P12EB – 03D002 – AA (RH except Bus)	
		P11BB – 9F899RH – AC (RH Bus)	
Fuel Rail Pressure Control Module (FRPCM) ■		P11BB – 9G866 – CC	
		P13EB – 10E200 – AA <sup>3</sup> (alt)	
		P13EB – 10E200 – AB <sup>7</sup> (alt) <sup>▼</sup>	
Pedal Position Sensor Assembly (ETC) - Adjustable		BC34 – 9F836 – CA	
Pedal Position Sensor Assembly (ETC) - Fixed		BC3A – 9F836 – DD	
Mass Airflow/Intake Air Temperature Sensor		BR31 – 12B579 – AA	
Knock Sensor (2) (deactivated)		AL3A – 12A699 – BA	
Electric Throttle Body		9C3E – 9F991 – CA	
		9C3E – 9F991 – BA (alt)	
Throttle Body Position Sensor		AG1E – 9E928 – AA	
		6L2E – 9E928 – AA (alt)	
Integrated Fuel Pressure Temperature Sensor (IPTS) ■		P10C3 – 9G756 – AA	
SRM (Smart Relay Module) ■		<b><u>F450-550/Motor-Home/Step-Van</u></b>	
(Interfaces IPTS sensor to PCM via CAN)		P12EB – 03P200 – FA	Aft-axle
		P12EB – 03P200 – FB (alt) <sup>7▲</sup>	
		P12EB – 03P200 – FC (alt) <sup>7</sup>	
		P12EB – 03P205 – FA (alt) <sup>4</sup>	
		P12EB – 03P205 – FB (alt) <sup>5</sup>	
		P12EB – 03P205 – FC (alt) <sup>7</sup>	
		P12EB – 03P200 – GA	Aft-cab
		P12EB – 03P200 – GB (alt) <sup>7</sup>	
		P12EB – 03P205 – GA (alt) <sup>4</sup>	
		P12EB – 03P205 – GB (alt) <sup>7</sup>	
		P12EB – 03P205 – HA <sup>6</sup>	1 long tank 1 side tank <sup>9</sup>
		P12EB – 03P205 – HB (alt) <sup>7</sup>	1 long tank
		<b><u>F-650</u></b>	
		P13FB – 03P200 – AA	2 short
		P13FB – 03P205 – AA <sup>4</sup>	
		P13FB – 03P200 – BA	2 long
		P13FB – 03P205 – BA <sup>4</sup>	

■Part differs from OEM

\*Same suffix as OEM, unique Roush LPG calibration

▲Part number omitted in error from C05

▼Part number added per ARC01

<sup>2</sup>Added per C02; <sup>3</sup>Added per C03; <sup>4</sup>Updated per C04; <sup>5</sup>Added per C05; <sup>6</sup>Added per C06; <sup>7</sup>Added per C07;

<sup>9</sup>Added per C09

TEST GROUP: DRIIE06.8BW5

ISSUED: October 15, 2012

REVISED: 08/10/2012; 09/14/2012; 02/21/2013; 04/15/2013; 07/30/2013; 12/12/2013; 03/06/2014; 09/29/2014; 06/29/2015

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