



CITY AND COUNTY OF SAN FRANCISCO  
 San Francisco Municipal Transportation Agency  
 Request for Proposals  
 THE PROCUREMENT OF  
 30-Foot, 40-FOOT AND 60-FOOT LOW FLOOR  
 DIESEL HYBRID COACHES

Proposal Section	Title	Bid Submission Requirements
3-K	K. Engine	<ol style="list-style-type: none"> <li>1) Provide a description of the engine offered in your proposal.</li> <li>2) Provide technical data and other supporting documentation for engine performance with emphasis on hybrid system integration.</li> <li>3) Provide technical data and other supporting documentation to demonstrate the performance of the engine in the following areas: emissions (CARB certification), audible noise, vibration, and reliability.</li> <li>4) Explain any engine recalls or re-design performed by the engine manufacturer within the last five years.</li> <li>5) Provide a summary of current or planned transit applications for the engine. If current transit use is limited, provide a summary of current usage outside the transit industry.</li> <li>6) Describe any problems the engine has experienced and how they were handled.</li> <li>7) Describe how the engine system will comply with anticipated laws regulating the amount of time an engine idles.</li> </ol>

New Flyer is proposing the Cummins ISB applicable for Hybrid operation. Attached is information regarding the proposed engine and the CARB status can be found in section 4-A.

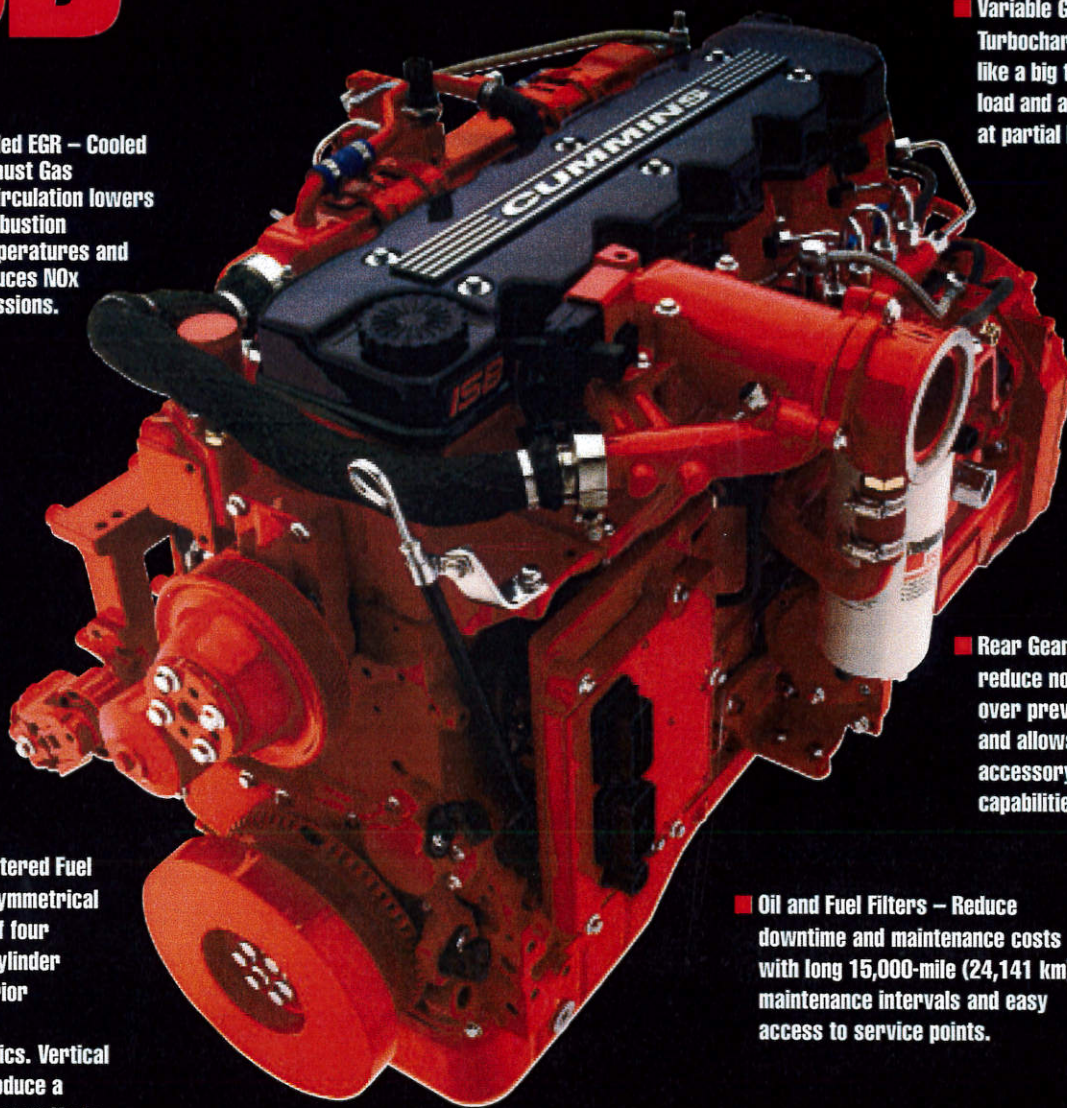




# EVERY MILE. ISB

■ **Cooled EGR – Cooled Exhaust Gas Recirculation** lowers combustion temperatures and reduces NOx emissions.

■ **Variable Geometry Turbocharger** – Works like a big turbo at full load and a small turbo at partial load.



■ **Rear Gear Train** – Helps reduce noise up to 80% over previous ISB engines and allows for increased accessory drive capabilities.

■ **24-Valve Centered Fuel Injection** – Symmetrical positioning of four valves per cylinder allows superior “breathing” characteristics. Vertical injectors produce a balanced spray pattern for optimum combustion. The result: improved performance, improved fuel economy and reduced emissions.

■ **High-Pressure Common-Rail Fuel System** – Maintains high injection pressures regardless of engine speed for optimum performance across the entire rpm range.

■ **Oil and Fuel Filters** – Reduce downtime and maintenance costs with long 15,000-mile (24,141 km) maintenance intervals and easy access to service points.

## SPECIFICATIONS

Advertised Horsepower	185-300 bhp	138-224 kW
Peak Torque	420-660 lb-ft	570-895 N-m
Governed Speed	2500-2800 rpm	
Clutch Engagement Torque	350 lb-ft	475 N-m
Number of Cylinders	6	
Oil System Capacity	4 U.S. gallons	15.2 liters
Net Weight	1,150 lb	522 kg





## Cummins ISB. Makes Every Job Better.

This is a true leap in technology and performance. The electronic 6-cylinder Cummins ISB has significantly improved acceleration. Yet, it runs 80% quieter. With a combustion process so efficient, it meets the street emissions standards without exhaust aftertreatment.

## A Cool Way To Clean The Air.

At Cummins, we take our commitment to the environment very seriously. That's why the ISB is equipped with cooled Exhaust Gas Recirculation (EGR). This proven technology lowers combustion temperatures, resulting in significantly less NOx and other emissions.

## Savings Every Mile.

The ISB does not require special fuels. Plus, the ISB gets up to 2% better mpg than its predecessor, so you could actually reduce fuel costs.



## High Performance At Every RPM.

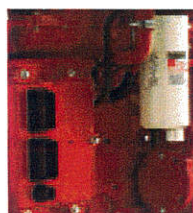
The ISB's superior performance comes from a constant flow of high-pressure fuel, injected at the precise moment for optimum burn efficiency. Regardless of engine speed, the pressure inside the common-rail fuel system does not fluctuate. So you get smooth, responsive performance across the entire power band.

## So Quiet, You Won't Know It's A Diesel.

A stiffened block. A rear-mounted gear train. High-pressure fuel injection. An isolated valve cover. Electronic fuel injection. An enclosed tappet cavity. They all add up to a significant reduction in engine noise and vibration. A full 80% quieter than the previous model.

## Turbocharging Ahead Of The Pack.

The ISB's patented Variable Geometry Turbocharger is standard on all models above 245 horsepower. It constantly adjusts airflow based on engine load, fuel quality, ambient pressure, temperature and other conditions. The result is reduced turbo lag, improved transient response and increased fuel economy.



## Advanced Electronics. Simplified Maintenance.

Diagnostics. Engine protection features. Programmable features. Data management capabilities. The

ISB has a full package of electronic features to help your vehicles – and your business – run smoother. It even makes your technician's life easy, with oil, oil filter and fuel filter changes all at 15,000 miles (24,141 km).

## The Strength Of Cummins Service.

Service for the ISB engine can be performed by every authorized Cummins facility. Of course, Cummins engines are backed by nearly 3,500 authorized Cummins parts or service outlets in North America. Cummins is the only manufacturer to offer a QuickServe® Guarantee (see [www.cummins.com](http://www.cummins.com) for details).

## Every Question, Answered.

The ISB is being built in a facility that meets demanding QS9000 quality standards. So you know it's built right – and built to last. For more details about Cummins ISB, see your local Cummins dealer or distributor, call 1-800-DIESELS (1-800-343-7357) or visit our web site at [www.everytime.cummins.com](http://www.everytime.cummins.com).



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**2. ENGINE & ACCESSORIES**

- Engine Switch Box
- Electronic Control Module (ECM)

**2.1. Cummins ISB 6.7L (EPA 2013) Engine**

**2.1.2. Engine Specifications**

**2.1.1. Description**

The Cummins ISB engine is a 6.7 liter, four-stroke, inline, six cylinder, diesel engine. See "Fig. 4-1: Engine Views" on page 3.

Rated Power..... 280 HP @ 2400 RPM

Peak Torque ..... 660 ft-lb. @ 1600 RPM

Displacement..... 6.7 liters (409 cu. in.)

Firing Order ..... 1-5-3-6-2-4

Aspiration ..... Turbo Charge

Engine Weight (dry) ..... 1151 lb. (522 kg)

The major components and accessories of the engine are:

- Fuel System (Refer to Section 7 of this manual).
- Engine Protection System
- Air Intake System
- Exhaust System

Oil Capacity (including filter)  
..... 18.6 U.S. qt. (17.65 liters)

Coolant Capacity (engine only)  
..... 12 U.S. qt. (11.5 liters)

Refer to the Cummins Operation & Maintenance Manual for further information on the engine.