

# SmartEfficiency.™

Engines For School Bus.





# SmartEfficiency: High-Achieving And Cost-Lowering.

The Cummins SmartEfficiency initiative is a focused approach that improves uptime and reliability while providing a broad spectrum of reliable engine choices to meet every need. Cummins 2017 engine lineup includes three diesel options and two natural gas engine options, ranging from 200 hp to 350 hp (149-261 kW).

The combination of a low cost of operation, high reliability, clean operation and long-term durability are unsurpassed in the industry. The fact that all Cummins engines use the same control system technology and can be serviced at any authorized Cummins location ensures serviceability anywhere, anytime.

Cummins 2017 L9 and B6.7 diesel engines continue a legacy of proven performance for Type C and Type D traditional school bus chassis. Their efficiency, dependability and durability have made them leaders in this market for years. Our continuous improvement process builds upon that legacy in 2017, with significant gains in reliability and fuel economy.

Since its introduction just a few years ago, the Cummins V5.0 diesel, with its compact V8 design, has proven to be the ideal solution for many types of school buses.

The Cummins Westport ISB6.7 G and ISL G natural gas engines provide school district transportation managers and private school bus fleets with an alternative energy option for those looking to achieve even lower emissions or that operate in nonattainment zones with poor air quality.



# Aftertreatment Technology That's Simply Better.

Cummins B6.7 and L9 diesel engines feature a new Single Module™ aftertreatment system that sets the new standard for efficiency. It combines Selective Catalytic Reduction (SCR) and a Diesel Particulate Filter (DPF) into a single flow-through design.

It occupies up to 70 percent less space and weighs up to 30 percent less. The smaller size allows it to be installed closer to the engine, for better heat management. That, together with the reduced weight, contributes to improved fuel economy.

The UL2 Urea Dosing System eliminates the need for engine coolant lines to the doser, provides more efficient atomization, to minimize the risk of urea dosing deposits and reduces regeneration events, while maintaining a 3 percent to 4 percent Diesel Exhaust Fluid (DEF) usage factor.

Cummins Westport natural gas engines use a maintenance-free Three-Way Catalyst (TWC) with no other aftertreatment needed.



# Smarter Route Management With Connected Diagnostics.

School bus drivers have enough to pay attention to without being concerned about engine fault codes. In the rare event that one is triggered while the bus is in operation, it can be diagnosed immediately over the air, through the addition of Connected Diagnostics. Cummins Connected Diagnostics delivers real-time engine fault code analysis, with a probable diagnosis and a recommended action for school buses that are equipped with telematics.



### The Performance Advantage.

While petroleum prices have dropped over the past couple of years, the benefits of buying a diesel engine versus a gasoline-fueled engine haven't. Gasoline may cost less per gallon, but the extra fuel economy in a diesel still yields a lower fuel cost for most operations. Also, higher torque at lower rpm means stronger acceleration when fully loaded, so every route gets finished quicker. Of course, Cummins and Cummins Westport engines are based off diesel platforms so they last up to 50 percent longer, for a lower total cost of operation and a higher return on investment.

#### Clear Leadership.

Cummins diesel engines are fully compliant with On-Board Diagnostics requirements. All Cummins and Cummins Westport engines meet 2017 U.S. Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) greenhouse gas (GHG) and fueleconomy regulations.



Gasoline Engines Just Don't Compare.

Switching from a gasoline V8 to the Cummins V5.0 diesel will significantly reduce your cost of operation, as diesel fuel economy typically runs 20 percent to 40 percent better than that of a V8 gasoline engine of comparable performance.

Cummins V5.0 goes beyond the traditional diesel attributes of horsepower, torque, reliability and durability to deliver the next dimension of performance. Advanced materials, the latest High Pressure Common Rail (HPCR) fuel system, Cummins VGT® Turbocharger and Cummins emissions control technology combine to produce an extraordinarily clean, quiet and fuel-efficient V8 diesel engine.

The V5.0 combines the latest in Cummins combustion technology with advanced weight-saving components that include a compacted graphite iron (CGI) block, two high-strength aluminum alloy heads and composite valve covers. The high power-to-weight ratio of the V5.0 helps you get the most out of every gallon of fuel. SmartEfficiency really helps make extra room in a tight school transportation budget.

### **V5.0 Maintenance Intervals**

Maintenance Item	Miles/Kilometers	Hours	Months
Oil and Filter	10,000 мі 16,000 км	500	6
Fuel Filter	10,000 мі 16,000 км	500	6
Standard Coolant Change	e 20,000 мі 32,000 км	1,000	12
Coalescing Filter	70,000 мі 112,700 км	2,500	
Particulate Filter Cleaning	150,000 мі 241,000 км	6,500	

Consult your Operation and Maintenance Manual for more information.

### A Clear Advantage.

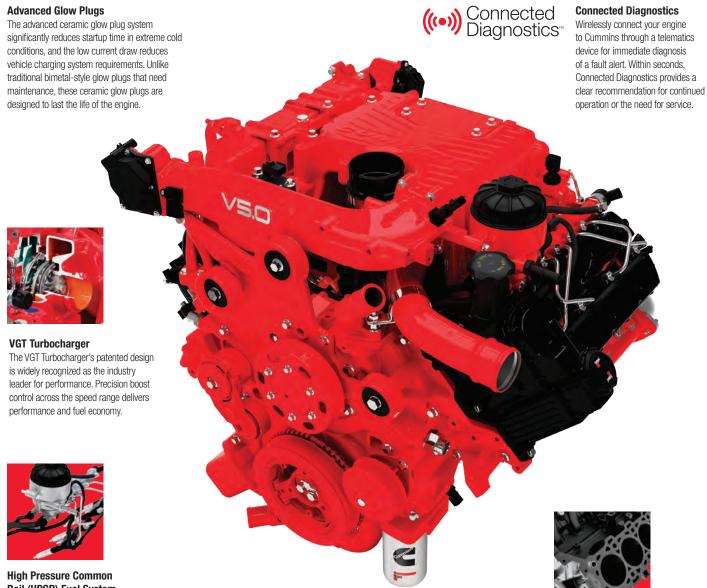
The V5.0 utilizes Cummins advanced technology that has been proven effective and reliable in the toughest on-highway applications. The Cummins Aftertreatment System is fully integrated with the engine to deliver optimum fuel economy and near-zero emissions. The proprietary system consists of the proven combination of Cummins Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR).

### **V5.0 Specifications**

Advertised Horsepower	200-250 HP	186-205 kW
Peak Torque	520-560 LB-FT	705-759 N•M
Bore and Stroke	94 MM x	90 мм
Number of Valves	4 per cy	linder
Peak Injection Pressure	29,000 PSI	2,000 BAR
Governed Speed	3400 RPM	
Number of Cylinders	8	
System Weight	899 LB	408 KG
Engine (Dry)	804 LB	365 KG
Aftertreatment System	95 LB	43 KG

## SmartEfficiency At Work.

Since its introduction, this compact V5.0 diesel has proven to be a workhorse in the school bus market.



### **Rail (HPCR) Fuel System** Higher injection pressures with piezo

Higher injection pressures with piezo fuel injectors produce precise fuel control, for optimized in-cylinder combustion, delivering quick throttle response, quieter operation, better cold-weather starting and better fuel economy.

#### **Forged Steel Crankshaft**

The crankshaft is created from high-strength, durable micro-alloy forged steel, precision-ground for increased durability with smooth, quiet operation.



#### **Dual Overhead Camshafts**

Dual overhead camshafts deliver high-speed capability to improve engine performance. This design enables cost-effective hydraulic adjustment with no maintenance required.

### Cummins Aftertreatment System From Cummins Emission Solutions

This proprietary system features a Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR) technology, for better fuel economy with near-zero emissions.

### Compacted Graphite Iron (CGI) Block

Advanced materials technology provides a combination of high strength at reduced weight, for a higher power-to-weight ratio and exceptional performance and fuel economy.





### A+ Performance, Every™ Test.

While the B6.7 already commands the highest market penetration of any engine in its class, Cummins doesn't take anything for granted. Even with a legacy of over 12 million B Series engines sold over the last 32 years, we continue to improve a proven reliable product. The B6.7 will have accumulated 1.5 million test miles in multiple real-world applications prior to its 2017 launch.

# Taking SmartEfficiency To School: Cummins B6.7.

When you say the word "efficiency" to anyone in the school bus market, the conversation immediately turns to fuel economy – for good reason. It's one of the single most important factors in your total cost of operation. But that's not all, Cummins is making other significant enhancements in everything from reliability to noise reduction to real-time diagnostic capability and performance.

That's why Cummins is redefining a classic and introducing the newest-generation B Series engine – the B6.7.

The Cummins B6.7 for 2017 is more efficient, with up to 7 percent better fuel economy over the EPA 2013 ISB6.7. Plus, the 2017 B6.7 will be fully capable for the introduction of Stop-Start technology that will yield further improvements in fuel economy in school bus duty cycles.

Another major factor in the fuel economy improvement is a fully integrated Single Module aftertreatment system, which incorporates a flow-through design, optimized heat management and improved maintenance intervals. It also contributes to a significant space savings over the previous model.

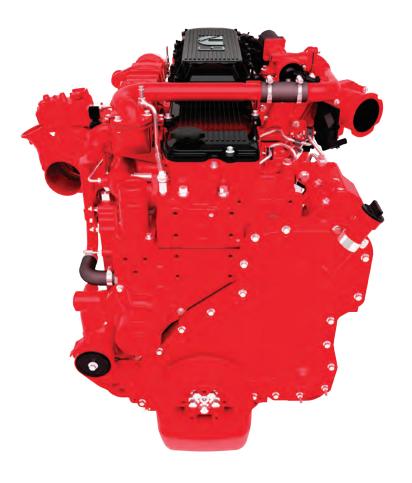
### 2017 B6.7 Maintenance Intervals

Maintenance Item	Miles/Kilometers	Hours	Months
Oil and Filter	15,000 мі	500	6
	24,000 KM		
Fuel Filter	15,000 мі	500	6
	24,000 KM		
Overhead Adjustment	150,000 мі	5,000	48
	240,000 KM		
Standard Coolant Change	е 60,000 мі	2,000	24
	96,000 KM		
Coalescing Filter	75,000 мі	2,500	
	120,000 KM		
DEF Filter	200,000 мі	6,500	
	320,000 KM		
Particulate Filter Cleaning	200,000 мі	6,500	
	320,000 KM		

Consult your Operation and Maintenance Manual for more information.

### 2017 B6.7 Specifications

Advertised Horsepower	200-300 HP	164-224 <sub>KW</sub>
Peak Torque	520-660 LB-FT	705-896 N•M
Governed Speed	2600 LB-FT	
Clutch Engagement Torque	400 LB-FT	542 <b>N</b> •M
Number of Cylinders	6	
Engine Weight (Dry)	1,150 LB	522 KG





Cummins L9 diesel for 2017 delivers outstanding productivity and driveability with the best power-to-weight ratio in its class. Proven reliability keeps your buses on the road longer. Faster, more accurate service provides even greater uptime, and the L9 for 2017 features a new Single Module aftertreatment system that is not only compact, but also has greater thermal efficiency, for improved engine operation. School transportation officials can expect to see as much as 15 percent better fuel economy over the engines of the last decade.

The most important component we put in every L9 engine is the trust that comes from a legacy of over 27 years and 5 million engines. High-strength components, together with features such as replaceable cylinder liners for easier rebuilding, do more than add life to the engine; they also add to its residual value. Cummins designs and manufactures our own integrated engines and aftertreatment systems to provide you with greater performance, uptime, durability and efficiency.



Of course, there's also the trust factor that comes from buying from a company that stands behind its product. Cummins offers the best warranty and extended coverage plans in the industry, and backs them with the largest, most capable support network in North America. We constantly strive to improve efficiency with the latest in real-time diagnostics for accurate, fast service when needed.

#### 2017 L9 Maintenance Intervals

Maintenance Item	Miles/Kilometers	Hours	Months
Oil and Filter	15,000 мі 24,000 км	500	6
Fuel Filter	15,000 мі 24,000 км	500	6
Coolant Filter	15,000 мі 24,000 км	500	6
Overhead Adjustment	150,000 мі 240,000 км	5,000	48
Standard Coolant Change	96,000 MI 96,000 KM	2,000	24
Coalescing Filter	Every 3rd to 4th	Oil Change	Interval
DEF Filter	200,000 мі 320,000 км	6,500	
Particulate Filter Cleaning	200,000 мі 320,000 км	6,500	
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Consult your Operation and Maintenance Manual for more information.

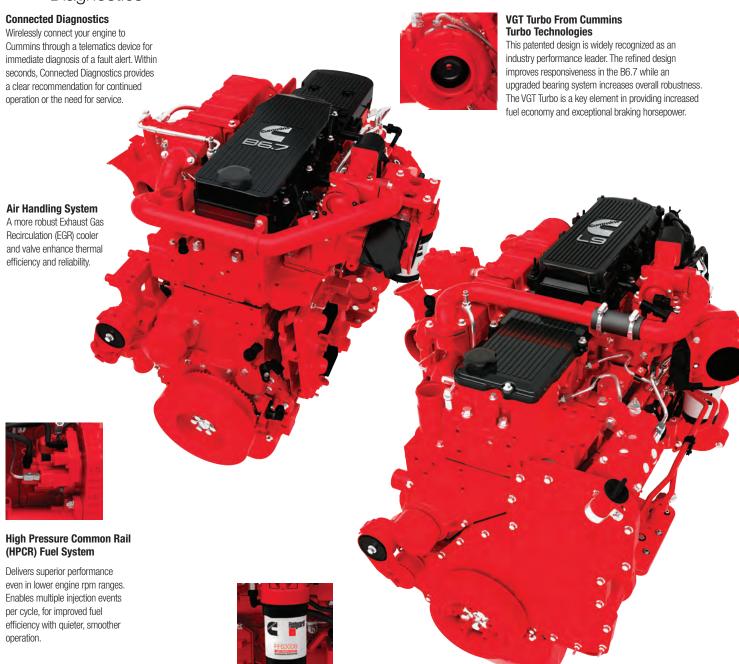
### 2017 L9 Specifications

Advertised Horsepower	260-350 HP	194-261 KW
Peak Torque	720-1000 LB-FT	976-1356 N•M
Governed Speed	2200 RPM	
Clutch Engagement Torque	500 LB-FT	678 N•M
Number of Cylinders	6	
Engine Weight (Dry)	1,695 LB	769 KG

# B6.7 And L9 Advanced Technology.

Cummins designs, develops and supports every component, from the air handling to the exhaust aftertreatment, as a totally integrated system, so we can optimize every function better than other engine manufacturers.





#### Single Module Aftertreatment From Cummins Emission Solutions

Combines high-efficiency SCR, a more reliable dosing unit and a DPF into a single flow-through unit. It is up to 70 percent smaller, so it's easier to install, and as much as 30 percent lighter than the aftertreatment units it replaces. Better heat management improves fuel efficiency and minimizes periodic maintenance.

### Fuel Filters And Lube Filters From Cummins Filtration

Fleetguard® filters protect against corrosion and contaminants with innovative NanoNet® technology.

NanoNet media provides 10 times better protection than conventional fuel filters, for lower cost of operation.



### Single High-Capacity Electronic Control Module (ECM)

Offers higher capacity for faster processing of more information, fully integrated control over the engine and aftertreatment system for optimized performance, improved engine lamp strategy and better driver communication.



### Cummins Westport ISB6.7 G. Low-Emissions, Cost-Efficient And Ultra-Reliable.

You can now spec a natural gas engine perfectly sized for your buses. The Cummins Westport ISB6.7 G combines the strength of a proven diesel engine block and components with innovative combustion technology from the undisputed leader in the natural gas engine industry.

Rated at up to 260 hp (194 kW) with 660 lb-ft (896 N•m) of peak torque, and available with automatic transmissions, the ISB6.7 G has the power to outperform gasoline engines of similar displacement while delivering better fuel efficiency and longer engine life.

The ISB6.7 G is built on a dedicated line at the Cummins Rocky Mount Engine Plant, where the experience of over 12 million B Series engines contributes to dependability and durability. It shares many base engine components with the Cummins B6.7 diesel, for exceptional life-to-rebuild. The wastegate turbocharger, high-energy ignition system – controlled by our own proprietary Engine Control Module (ECM) – and fuel module design have been proven successful on Cummins Westport ISL G and ISX12 G engines.

The ISB6.7 G also utilizes the same Stoichiometric cooled Exhaust Gas Recirculation (SEGR) combustion technology as the ISL G and ISX12 G natural gas engines.

# *1586.7G*

A measured quantity of exhaust gas is passed through a cooler to reduce temperatures before it is mixed with fuel and the incoming air charge, and then it is sent to the cylinder. SEGR results in improved power density and fuel economy, and enables the use of a maintenance-free Three-Way Catalyst (TWC) for emissions control.

### ISB6.7 G Maintenance Intervals\*

Maintenance Item	Miles/Kilometers	Hours	Months
Oil and Filter**	15,000 MI 24.000 KM	500	6
Fuel Filter	30,000 MI 48,000 KM	1,000	12
Spark Plugs	15,000 MI 24,000 KM	500	6
Cooling System Flush	60,000 MI 96,000 KM	2,000	24
Valve Adjustment	45,000 MI 72,000 KM	1,500	18
Air Cleaner/Element	Follow vehicle manufacturer's published recommendations		

Note: Preliminary-subject to change.

### **ISB6.7 G Specifications**

Maximum Horsepower	240 HP	179 kW
Peak Torque	560 LB-FT	759 N•M
Governed Speed	2600 RPM	
Clutch Engagement Torque	295 LB-FT	400 N•M
Туре	4-cycle, spark-ignited, in-line 6-cylinder, turbocharged, CAC	
Engine Displacement	409 CU IN	6.7 L
Bore and Stroke	4.21 IN X 4.88 IN	107 MM X 124 MM
Operating Cycles	4	
Oil System Capacity	4.25 GAL	16.09 L
Coolant Capacity	12.5 QT	11.8 L
System Voltage	12 V	
Net Weight (Dry)	1,150 LB	522 KG
Fuel Type	CNG/LNG/RNG	Methane number 75 or greater
Aftertreatment	Three-Way Cataly	st (TWC)

<sup>\*</sup>Based on normal duty cycle (30 mph average speed).

<sup>\*\*</sup>Requires natural gas engine oil.



### Cummins Westport ISL G and ISL G Near Zero.

The ISL G is the natural choice in alternative-fuel engine technology. With industry-leading performance and first-fit OEM availability, it combines all the advantages of clean-burning, low-cost natural gas with the power and torque needed for school bus applications. Since the ISL G was introduced in 2007, thousands of school bus customers have benefited from the impressive low-end torque, transient response and quiet operation of the ISL G.

Its advanced combustion system uses Stoichiometric cooled Exhaust Gas Recirculation (SEGR). SEGR is an ideal combustion process in which fuel and oxygen are completely consumed, with no unburned fuel or oxygen in the exhaust. The use of cooled EGR improves power density and fuel economy versus lean-burn and traditional stoichiometric engines. SEGR technology also enables the use of a Three-Way Catalyst (TWC) – an effective, maintenance-free aftertreatment device packaged as part of the muffler. The ISL G does not require active aftertreatment such as a Diesel Particulate Filter (DPF) or Selective Catalytic Reduction (SCR)

Ideal for schools in nonattainment zones, we now offer the Cummins Westport ISL G Near Zero engine. Identified by the NZ suffix, the engine tests to a NOx emissions level of .01 grams per bhp-hr – which is 20 times lower than current emissions regulations.

# ISL G

The closed crankcase ventilation (CCV) system on the ISL G Near Zero engine also reduces methane emissions, for a greenhouse gas (GHG) reduction of an additional 9 percent, and provides a reduction of up to 15 percent in CO<sub>2</sub> emissions.

All ISL G engines can operate on compressed natural gas (CNG), liquefied natural gas (LNG) or renewable natural gas (RNG). For additional details about the ISL G and ISL G Near Zero engines, visit cumminswestport.com.

### **ISL G Maintenance Intervals**

Maintenance Item	Miles/Kilometers	Hours	Months
Oil and Filter*	7,500 мі	500	6
	12,000 KM		
Fuel Filter	15,000 мі	1,000	12
	24,000 KM		
Coolant Filter	7,500 мі	500	6
	12,000 KM		
Spark Plugs	45,000 мі	1,500	18
	72,000 KM		
Coolant Change	60,000 мі	2,000	24
	96,000 KM		
Valve Adjustment**	60,000 мі	2,000	24
	96,000 KM		

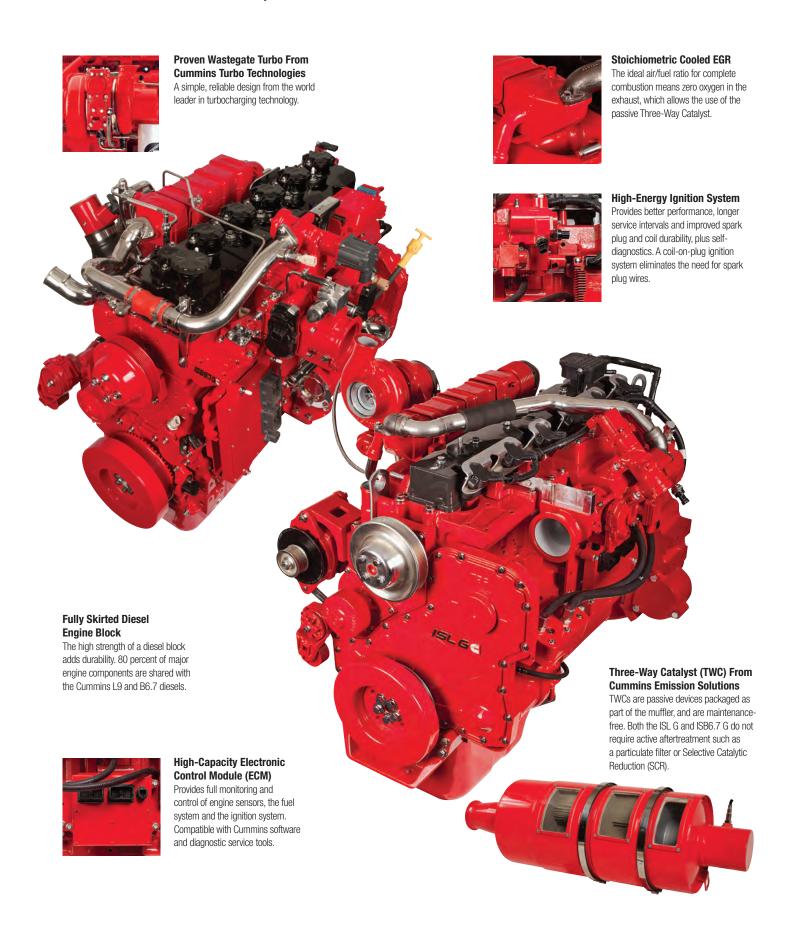
<sup>\*</sup>Requires natural gas engine oil.

### **ISL G Specifications**

Advertised Horsepower	250-300 HP	186-224 KW	
Peak Torque	660-860 LB-FT	896-1166 N•M	
Governed Speed	2200 RPM		
Clutch Engagement Torque	550 LB-FT	746 N•M	
Number of Cylinders	6		
Net Weight (Dry)	1,625 LB	737 KG	
Aftertreatment System	Three-Way Catalyst (TWC)		

<sup>\*\*</sup>Initial valve adjustment at 1,000 hours.

## Cummins Westport. The Natural Choice.





### School Bus Warranty Coverage.

Base engine warranty coverage for Cummins and Cummins Westport school bus applications includes virtually everything, from parts and labor on warrantable failures\* to limited progressive damage for both the engine and aftertreatment system, with no deductible. Every component, from the block casting to the injectors to the aftertreatment system, is covered for 5 years/100,000 miles (160,935 km).

\*Warrantable failures are those due to defects in Cummins materials or factory workmanship.

### **Smarter Extended Coverage Plans.**

School transportation officials are smart about saving money by planning well beyond the current school year. Cummins offers a wide variety of extended protection plans, including 10-year extended coverage options for most school bus engines. For details, contact your Cummins distributor or dealer.

### Right From The Start: PowerSpec.

PowerSpec helps new-vehicle owners – especially school bus operators – find the ideal gearing specs to meet the ideal balance of engine performance and fuel economy. In addition to gearing recommendations, PowerSpec allows authorized users to customize operating parameters on individual buses, or easily cascade a "hot spec" through an entire bus fleet. It reads fault codes, and can be programmed to collect and compare trip information for multiple drivers. See cumminsegines.com/powerspec for more information.

# Bigger And Better. Cummins Service Support.

Cummins-powered school buses are backed by the largest and most capable parts, service and support network in North America, with over 3,500 locations. Our authorized service technicians are fully trained on Cummins and Cummins Westport engines, and have the necessary equipment and Genuine Cummins parts to promptly handle any service issue. The advantages of Connected Diagnostics add peace of mind for school bus fleets. Call 1-800-DIESELS™ (1-800-343-7357) for information and service locations.

### The Answer Desk.

To learn more about Cummins diesels, visit cumminsengines.com. To learn more about natural gas engines, visit the Cummins Westport Natural Gas Academy online at cumminswestport.com. Assistance is also available by phone at 1-800-DIESELS™ (1-800-343-7357), or contact your local Cummins distributor or dealer.





### **V5.0 Ratings**

Engine Model	Advertised HP (KW)	Peak Torque LB-FT (N•M) @ RPM	Governed Speed
V5.0 250	250 (187)	560 (760) @ 1600	3400
V5.0 220	220 (164)	520 (706) @ 1600	3400
V5.0 200	200 (149)	520 (706) @ 1600	3400

### **B6.7 Ratings**

Engine Model	Advertised HP (KW)	Peak Torque LB-FT (N•M) @ RPM	Governed Speed
B6.7 300	300 (224)	660 (895) @ 1600	2600
B6.7 280	280 (209)	660 (895) @ 1600	2600
B6.7 260	260 (194)	660 (895) @ 1600	2600
B6.7 250	250 (187)	660 (895) @ 1600	2600
B6.7 240	240 (179)	560 (759) @ 1600	2600
B6.7 220	220 (164)	600 (814) @ 1600	2600
B6.7 220	220 (164)	520 (705) @ 1600	2600
B6.7 200	200 (149)	520 (705) @ 1600	2600

### **L9 Ratings**

Engine Model	Advertised HP (KW)	Peak Torque LB-FT (N∙M) @ RPM	Governed Speed
L9 350	350 (261)	1000 (1356) @ 1400	2200
L9 330	330 (246)	1000 (1356) @ 1400	2200
L9 300	300 (224)	860 (1166) @ 1300	2200
L9 270	270 (201)	800 (1085) @ 1300	2200
L9 260	260 (194)	720 (976) @ 1300	2200

### ISB6.7 G Ratings

Engine Model	Advertised HP (KW)	Peak Torque LB-FT (N•M) @ RPM	Governed Speed
ISB6.7 G 240	240 (179)	560 (759) @1600	2600
ISB6.7 G 220	220 (164)	520 (705) @1600	2600
ISB6.7 G 200	200 (149)	520 (705) @1600	2600

### ISL G/ISL G Near Zero (NZ) Ratings

Engine Model	Advertised HP (KW)	Peak Torque LB-FT (N•м) @ RPM	Governed Speed
ISL G 300	300 (224)	860 (1166) @ 1300	2200
ISL G 280	280 (209)	900 (1220) @ 1300	2200
ISL G 260	260 (194)	660 (895) @ 1300	2200
ISL G 250	250 (187)	730 (990) @ 1300	2200



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