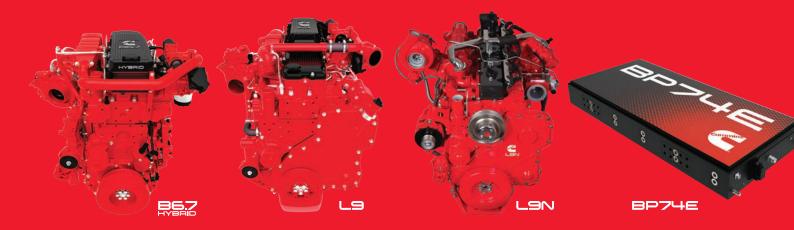
# PORERING TRANST BUSES DA WORLD THAT'S ALWAYS ON.

**ALWAYS ON** 

cummin

### THE POWER OF CHOICE.

Cummins has a long history of providing reliable, proven solutions in one of the industry's hardest working duty cycles. With close to 50 years of experience in the transit market, multiple Cummins engines have achieved a million miles in service. Providing a full portfolio of innovative solutions to make transit buses more efficient in both fuel economy and emission reductions makes Cummins the top choice of cities and regional authorities.



### **INNOVATION THAT'S ALWAYS ON.**

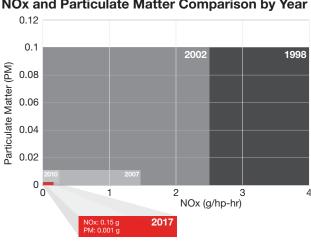
For over 20 years, Cummins has provided natural gas solutions to the transit market while delivering the same reliability, durability and efficiency expected from a Cummins diesel engine.

Since 2001, Cummins has offered mild-hybrid solutions for B Series and L Series diesel engines. Since 2002, Cummins has approved the use of B20 biodiesel, and in 2017 approved the use of paraffinic diesel fuel for B6.7<sup>™</sup> and L9<sup>™</sup> engines. Also in 2017, Cummins announced Cummins Battery Electric powertrain solutions. For extendable range, the Cummins Hybrid Power Plug-In leverages a downsized engine platform and battery system module.

Feature	B6.7 Hybrid	L9 Diesel Engine	L9N Natural Gas Engine	Hybrid Power Plug-In	Battery Electric System
Certified Emissions Level	.14 Cert NOx/bhp-hr .002 g PM/bhp-hr	.17 g NOx/bhp-hr .000 g PM/bhp-hr	.01 g NOx/bhp-hr .002 g PM/bhp-hr	To Be Announced	Zero Emission (In Use)
Connected Diagnostics™ Capable	Yes	Yes	Yes	Yes	Yes
Compatible Fuel Type	Ultra-Low Sulfur Diesel; Paraffinic Diesel Fuel	Ultra-Low Sulfur Diesel; Paraffinic Diesel Fuel	CNG, LNG, RNG	Ultra-Low Sulfur Diesel Fuel	Kilowatt charging
Meets Buy America Requirements	Yes	Yes	Yes	Yes	Yes
Base Warranty	2 Years/ Unlimited Miles	2 Years/ Unlimited Miles	2 Years/ Unlimited Miles	2 Years/ Unlimited Miles	6 Years (Battery Pack Only)
Extended Coverage	Up to 5 Years/ 500,000 miles	Up to 5 Years/ 500,000 miles	Up to 5 Years/ 500,000 miles	Up to 12 Years for the Battery Pack	Battery Pack Only

### **A CLEAR VISION FOR** THE FUTURE.

The combination of reliability, innovation, fuel efficiency and power options to meet every need has made Cummins the top choice for U.S. transit fleets and shuttle operations. But the most notable improvement may be that today's Cummins-powered vehicles produce over 90 percent less Nitrogen Oxide (NOx) and Particulate Matter (PM) compared to 1998.



#### NOx and Particulate Matter Comparison by Year

# **CUMMINS B6.7 AND L9 DIESEL ENGINES.**

Cummins is the leader in the total integration of diesel engines and aftertreatments. We understand how different duty cycles impact engines differently, and that the right technology matters.

The B6.7 engine comes with Cummins Single Module<sup>™</sup> aftertreatment. It combines Selective Catalytic Reduction (SCR) and a Diesel Particulate Filter (DPF) into a single unit. It weighs up to 30 percent less than the unit it is replacing, and takes up to 70 percent less space. This allows it to be positioned closer to the engine for better heat utilization, fewer regenerations and better fuel economy.

Cummins L9 diesel continues to use our proven modular aftertreatment system, because urban transit buses encounter some of the most severe stop-and-go operating conditions.

# **ALTERNATIVE TECHNOLOGIES.**

If you operate in a non-attainment zone or a city where air pollution and greenhouse gas (GHG) emissions are a major concern, Cummins has the alternative fuel options that you need. This includes the B6.7 Hybrid engine and the Cummins Westport L9N natural gas engine. The B6.7 Hybrid uses a steady-state diesel engine to provide power to electric motors for propulsion.

The L9N natural gas engine operates using Stoichiometric-cooled Exhaust Gas Recirculation (SEGR), which utilizes every atom of oxygen in the combustion process. This allows the use of a maintenance-free Three-Way Catalyst (TWC) that never needs regeneration or cleaning. The L9N incorporates a larger catalyst with closed-crankcase ventilation and a specific engine calibration to reduce emissions to certified near-zero standards (.02 g NOx/bhp-hr).

# **BATTERY ELECTRIC SOLUTIONS.**

Powered by 74 kWh battery packs, the Cummins Battery Electric System provides a zero-emissions solution. The compact envelope consists of Cummins proprietary battery management systems as well as battery packaging. High-density Lithium Ion (Li-ion) batteries provide modular and fast-charging capabilities, allowing for scalability when extended range is required.

Operators and passengers will notice the quiet, comfortable and smooth performance. Owners and service managers will appreciate the reduced maintenance costs and downtime. The base system is projected to deliver a 200-mile operating range on a single charge, with an extended range package achieving up to 300 miles between charges.

### HYBRID POWER PLUG-IN.

Cummins Hybrid Power Plug-in system provides the capability of zero-emissions when required, and ultralow emissions in extended range operation. Geofencing capabilities ensure that when operating in non-attainment zones or emission-free city limits, the plug-in hybrid vehicle runs on 100 percent electric battery power. The downsized engine operates like a highly efficient generator, with an on-board charging system providing enhanced range while reducing engine noise.



### TRANSIT BUS WARRANTY COVERAGE.

Base engine warranty coverage for Cummins and Cummins Westport transit 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 is covered by a 2-year/unlimited mileage warranty.

For hybrid, plug-in hybrid and battery-electric solutions the base powertrain will be covered by a 2-year unlimited miles warranty. The batteries will be covered by a 6-year warranty with an extended coverage option for an additional 6 years.

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

### SMARTER EXTENDED COVERAGE PLANS.

You can add a measure of long-term financial security to the package with extended coverage options from Cummins. Options are available up to 5 years/500,000 miles (804,672 km).

#### A SUPPORT STAFF THAT'S ALWAYS ON.

At Cummins, our mission is to provide a whole new level of customer service that delivers faster attention with rapid results. From the moment you engage Cummins Care, you will have access to a Cummins expert with the specialized skill set, experience and in-depth knowledge to take care of your transit bus needs.

- Customer Service
- Technical Support
- Connected Services

In the unlikely event of a fault alert, buses equipped with telematics can use our Connected Diagnostics option to send engine data to Cummins and get an allclear signal for continued operation or the need for immediate service. Cummins Care is on call 24/7/365 at 1-800-CUMMINS<sup>™</sup> (1-800-826-6467) to respond to your needs. That's what it takes to power a world that's Always On.



#### **B6.7 HYBRID TRANSIT BUS RATINGS**

Engine	Advertised HP	Peak Torque	Governed
Model	(kW)	LB-FT (N∙m) @ RPM	Speed
B6.7 280	280 (209)	660 (895) @ 1600	2600

#### **B6.7 SHUTTLE BUS RATINGS**

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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 (186)	660 (895) @ 1600	2600
B6.7 240	240 (179)	560 (759) @ 1600	2600
B6.7 220	220 (164)	600 (813) @ 1600	2600
B6.7 220	220 (164)	520 (705) @ 1600	2600

#### **L9 TRANSIT BUS RATINGS**

Engine Model	Advertised HP (kW)	Peak Torque LB-FT (N•m) @ RPM	Governed Speed
L9 330	330 (246)	1100 (1491) @ 1300	2200
L9 280	280 (209)	900 (1220) @ 1300	2200

#### **L9 SHUTTLE BUS RATINGS**

Engine Model	Advertised HP (kW)	Peak Torque LB-FT (N•m) @ RPM	Governed Speed
L9 380	380 (283)	1250 (1695) @ 1400	2100
L9 370	370 (276)	1250 (1559) @ 1400	2100
L9 350	350 (261)	1150 (1695) @ 1400	2200
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 (1084) @ 1300	2200
L9 260	260 (194)	720 (976) @ 1300	2200

#### **L9N RATINGS**

Engine Model	Advertised HP (kW)	Peak Torque LB-FT (N•m) @ RPM	Governed Speed
L9N 320	320 (239)	1000 (1356) @ 1300	2200
L9N 280	280 (209)	900 (1220) @ 1300	2200



Cummins Inc. Box 3005 Columbus, IN 47202-3005 U.S.A.

1-800-CUMMINS™ (1-800-286-6467) cummins.com

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