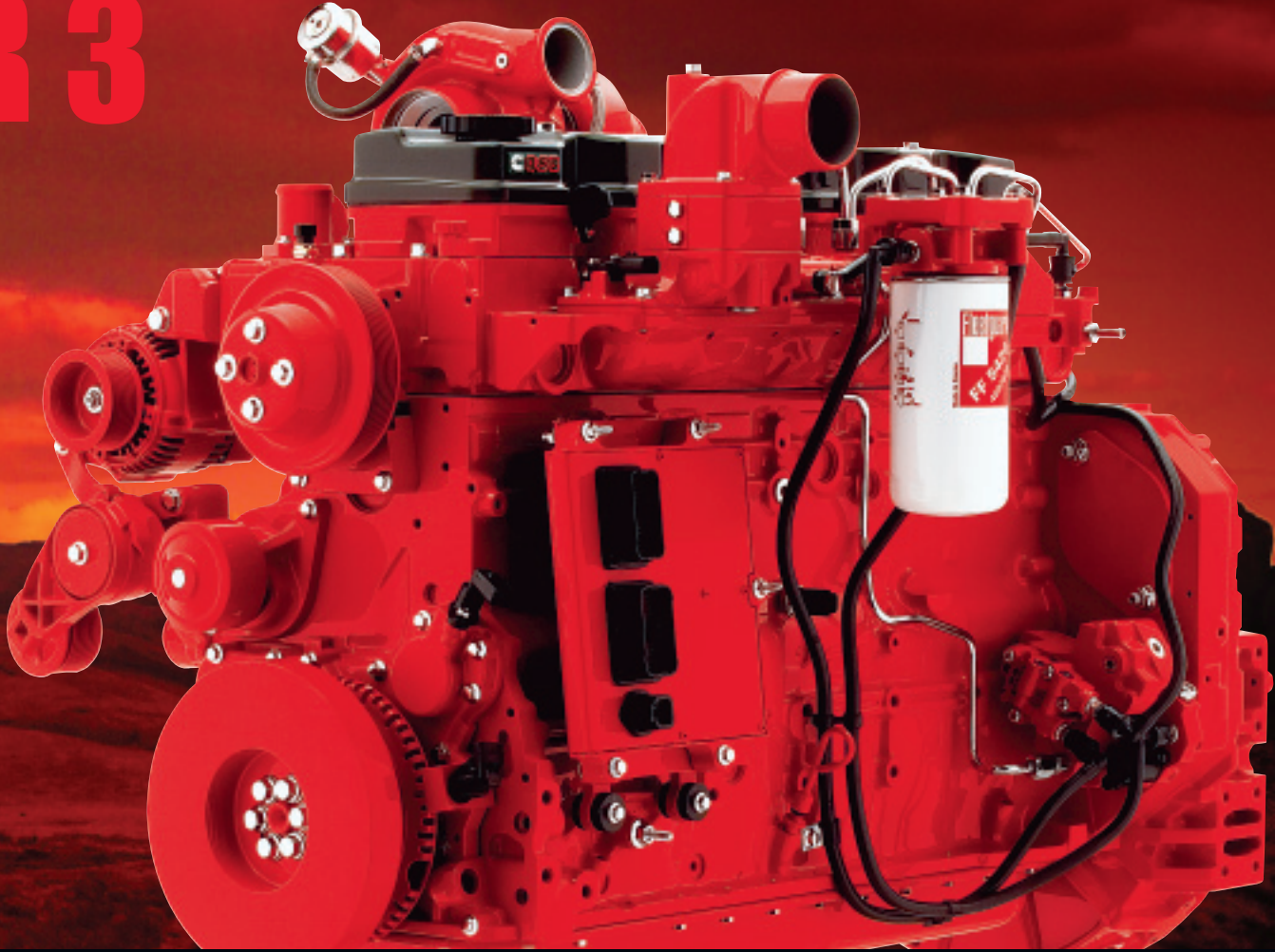




EVERY™ SOLUTION.

TIER 3



THE RIGHT TECHNOLOGY MATTERS
ENGINES FROM 60-522 KW (80-700 HP)

Cleaner, Quieter And More Responsive.

Cummins new generation of Quantum System engines offer every Tier 3/Stage IIIA solution. For every type of equipment and for every environment in the world. From the compact QSB to the high-power QSK19, these engines go beyond meeting Tier 3/ Stage IIIA emissions to offer a more responsive power delivery, a major reduction in noise and minimal maintenance requirements.

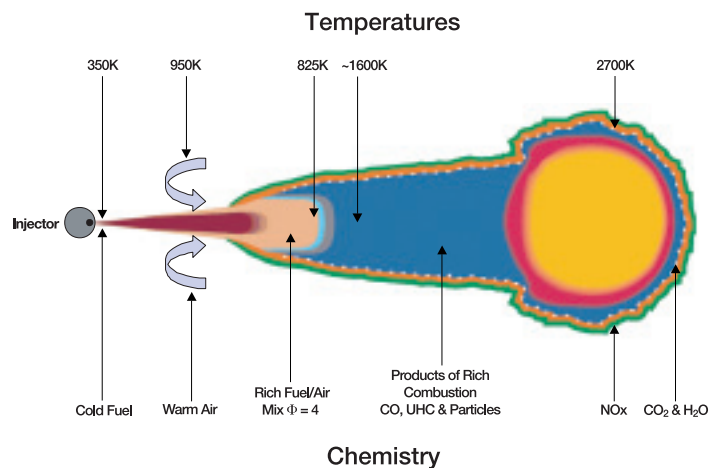
These Quantum System engines have what it takes to make equipment perform. Equipment manufacturers who want to minimize installation changes will benefit from Cummins wide Tier 3/ Stage IIIA product range – as these engine platforms carry forward to Tier 4/Stage IIIB. Additional advantages include easier electronic integration into equipment and upgraded electronic control modules with faster processing power.

Keeping It In-Cylinder.

The Cummins design solution for Tier 3/Stage IIIA is the development of in-cylinder advanced combustion – avoiding the need for additional engineering complexity. As a further performance enhancement, High Pressure Common Rail (HPCR) fuel systems are incorporated on the QSB, QSC, QSL and QSK19 engines. The QSM and QSX were already capable of moving to Tier 3/Stage IIIA with their existing high-efficiency fuel systems.



With full-authority electronic control of injection timing, this new level of combustion efficiency by Cummins enables NOx emissions to be reduced by almost 40% to meet Tier 3/Stage IIIA standards. A higher degree of combustion control combined with fuel injection precision also allows these engines to quickly and easily handle increasing load demands more rapidly.

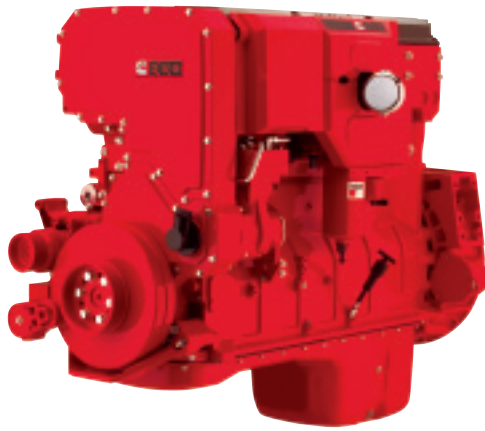


Dependability – A Key Factor.

Cummins is recognized worldwide for dependability in service and low maintenance requirements. Now, with the new range of Tier 3/Stage IIIA engines, Cummins is ready to move even further ahead of the competition.

By achieving lower piston temperatures and lower cylinder pressures, Cummins Tier 3/Stage IIIA engines operate with less mechanical stress, even under tough operating conditions. This translates into higher levels of engine durability.

Lower-Than-Ever Maintenance.



Clean combustion reduces the level of soot in the engine oil, enabling long intervals between oil changes to be maintained. Beyond this, only minimal maintenance intervention is required. Overhead valve set checks at 5,000 hours for QSB, QSC and QSL as well as 1,500 hours for QSM, QSX and QSK19 clearly exceed industry standard intervals.

Fuel pumps and injectors require no scheduled recalibration which means fuel systems are virtually maintenance-free. The systems are also tolerant of variations in fuel quality, particularly of high sulfur levels found in many parts of the world. Cummins electronic management includes self-monitoring and self-protection, requiring no scheduled recalibration to maintain peak fuel efficiency.

Low-maintenance features include leak-prevention techniques that extensively use metal-edged gaskets, silicon-bonded sump joints and whole-life oil seals. Other features such as auto-tensioning fan drive belts require only visual inspection.

Off-Highway Emissions Legislation.

Legislated U.S. and European emissions levels, effective dates and power bands are detailed in the Emissions Standards chart. As part of the EPA Consent Decree, Cummins began introducing Tier 3/Stage IIIA engines in January 2005, a year ahead of the date scheduled for the initial 225 to 560 kW (302-751 hp) power band.

Emissions Standards: 2004-2014

EPA MOH

kW	(hp)
< 8	(< 11)
8-18	(11-24)
19-36	(25-48)
37-55	(49-74)
56-74	(75-99)
75-129	(100-173)
130-224	(174-301)
225-449	(302-602)
450-560	(603-751)
> 560	(> 751)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
< 8											
8-18											
19-36											
37-55											
56-74											
75-129											
130-224											
225-449											
450-560											
> 560											

EU NRMM

kW
19-36
37-74
37-56 [†]
56-74 [†]
75-129
130-560

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
19-36											
37-74											
37-56 [†]											
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225-449	(302-602)
450-560	(603-751)
> 560	(> 751)

	TIER 1 STAGE I			TIER 2 STAGE II		TIER 3 STAGE IIIA			TIER 4 INTERIM STAGE IIIB			TIER 4 FINAL STAGE IV			
	NOx	HC	PM	NOx	HC	PM	NOx	HC	PM	NOx	HC	PM	NOx	HC	PM
< 8	10.5*	1.00		7.5*	0.80								7.5*	0.40	
8-18	9.5*	0.80		7.5*	0.80								7.5*	0.40	
19-36	9.5*	0.80		7.5*	0.60				7.5*	0.30			4.7*	0.03	
37-55	9.20	**	**	7.5*	0.40	4.7*	0.30		4.7*	0.03			4.7*	0.03	
56-74	9.20	**	**	7.5*	0.40	4.7*	0.40		3.40	0.19	0.02		0.40	0.19	0.02
75-129	9.20	**	**	6.6*	0.30	4.0*	0.30		3.40	0.19	0.02		0.40	0.19	0.02
130-224	9.20	1.30	0.54	6.6*	0.20	4.0*	0.20		2.00	0.19	0.02		0.40	0.19	0.02
225-449	9.20	1.30	0.54	6.4*	0.20	4.0*	0.20		2.00	0.19	0.02		0.40	0.19	0.02
450-560	9.20	1.30	0.54	6.4*	0.20	4.0*	0.20		2.00	0.19	0.02		0.40	0.19	0.02
> 560	9.20	1.30	0.54	6.4*	0.20				3.50	0.40	0.10		3.50	0.19	0.04

EU NRMM

kW
19-36
37-74
37-56 [†]
56-74 [†]
75-129
130-560

[†]Power band split at Stage IIIB CD = Consent Decree
 EPA MOH = U.S. Environmental Protection Agency Mobile Off-Highway
 EU NRMM = European Union Non-Road Mobile Machinery
 Regulated emissions levels shown in grams per kilowatt hour (g/kW-hr)
 NOx = Oxides of Nitrogen / HC = Hydrocarbons / PM = Particulate Matter
 / NOx + NMHC (Hydrocarbons) **/** Not Regulated

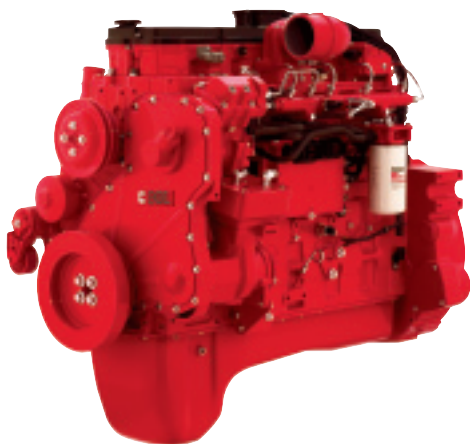
Every Tomorrow.

Tier 3 and Stage IIIA are the imminent emissions regulation hurdles for all our global markets. The specifications chart shows Cummins current and future Tier 3/Stage IIIA engine products, demonstrating our capability to reach these emissions levels with an in-cylinder solution.

These emissions solutions are the direct result of a technology plan that was set into motion in the 1990s. A plan that will carry us through 2014 and beyond, with Cummins Tier 3/Stage IIIA architecture that will extend into Tier 4/Stage IIIB with the addition of aftertreatment. At the core of this road map was a strategic decision not to limit ourselves to any one approach, but to develop the right technology for each application.

A second, but no less important, strategy has been to involve original equipment manufacturers as early as possible in the development and integration phase. This open exchange of information and technology has been – and will continue to be – instrumental in developing vehicles and equipment that perform at the highest levels of efficiency, durability, reliability and productivity.

And we stand behind these engines with information products, service support and warranty programs, backed by the world's largest parts and service network.



Specifications

ENGINE MODEL	ADVERTISED KW (HP) RANGE	QUANTUM SYSTEM	LEVEL OF COMPLIANCE
QSB3.3	60-82 (80-110)	3.3-L	TIER 3/STAGE IIIA
QSB4.5	81-127 (109-170)	4.5-L	TIER 3/STAGE IIIA
QSB6.7	97-205 (130-275)	6.7-L	TIER 3/STAGE IIIA
QSC	160-228 (215-305)	8.3-L	TIER 3/STAGE IIIA
QSL	186-272 (250-365)	9-L	TIER 3/STAGE IIIA
QSM	216-298 (290-400)	11-L	TIER 3/STAGE IIIA
QSX	280-470* (375-630)	15-L	TIER 3/STAGE IIIA
QSK19	391-522 (525-700)	19-L	TIER 3/STAGE IIIA

*Restricted rating.

Cummins PowerMatch.

PowerMatch helps OEMs optimize engine performance so you can lower fuel consumption, increase operator satisfaction, improve equipment life and protect the customer's investment. PowerMatch tailors engine performance to specific equipment models and applications. Advanced electronics are used to enhance power curves and trim ratings, matching the job the equipment will be doing while taking into account variables such as work environment, load factors, ambient temperature and altitude.

PowerMatch can also be used to create a unique torque curve, set up alternate torque curves, alternate governor settings or set up engine protection features. Turn on the Boost Power feature, and the equipment user gets an extra burst of power needed to get through tough spots – but only for as long as needed – so fuel economy and durability are not compromised. Because PowerMatch allows for immediate field-testing of new calibrations, application engineers can quickly develop the optimum calibration for every customer.



Cummins Advisor:

Getting every installation right is what Cummins Advisor is all about. Advisor puts a virtual engineer on the OEM team, allowing the OEM to focus on

machine requirements instead of engine requirements. This shortens engineering cycle times and cost. Cummins Advisor models equipment installation for exceptional productivity, reliability and durability.

Every Part. Online.

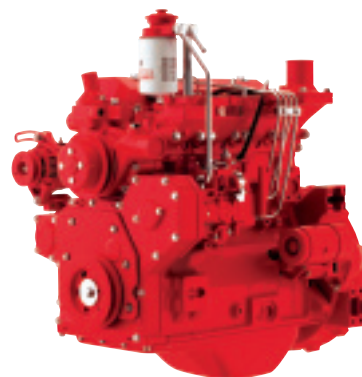
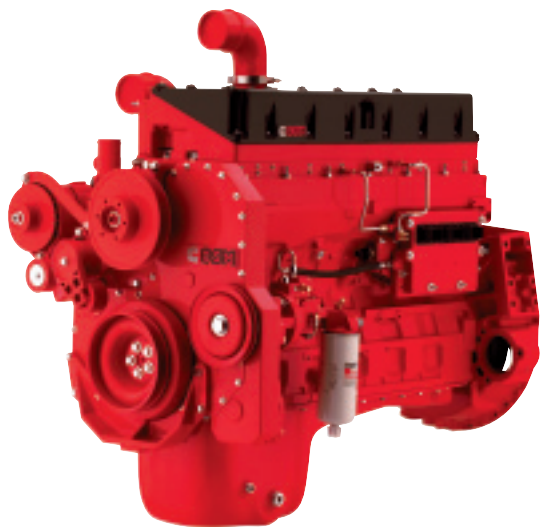
QuickServe® Online (<http://quickservice.cummins.com>)

gives you easy access to parts and service information.

While there are part numbers for over eight million engines indexed in the QuickServe Online

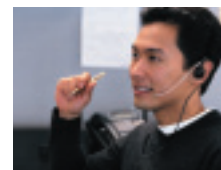


database, you can find the information you need in seconds with our high-speed search function and your engine's serial number.



Every Question. Answered.

- Service Network – Cummins engines are backed by the strength of Cummins global network of over 5,500 service locations worldwide.
- Customer Assistance Center – For technical assistance, service locations and product literature, call 1-800-DIESELS (1-800-343-7357). For customers in Europe, the Middle East and Africa, call +44 (0) 1327 886464 or e-mail to cabo.customerassistance@cummins.com.
- Cummins E-Mail – For online assistance to Cummins-related questions, click on the Contact Us link in the header at everytime.cummins.com.
- Cummins Online Registration – Register all your Cummins engines quickly and easily at everytime.cummins.com to ensure quality parts and service for your engine.





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