

WITH INTERNATIONAL AND CUMMINS,  
**PERFORMANCE AND VALUE**  
ARE A PACKAGE DEAL.



Strong performance. Excellent fuel economy.  
Low maintenance costs. Long life and outstanding  
reliability and durability. High driver satisfaction.  
Unmatched service and support.

With International and Cummins, you get it all.  
A powerful package that meets lower emissions  
requirements – while meeting your need for solid  
performance and bottom-line value.



# THE POWER OF THE PACKAGE.

## HIGH PERFORMANCE. LOW EMISSIONS.

In the rapidly evolving transportation industry, International not only helps you keep up with the changes, but stay well ahead of them. When you spec International® 9000i Series trucks with Cummins ISX and ISM engines, you'll be well prepared for the future.

Cummins ISX is the first heavy-duty engine certified for the EPA '02 emissions requirements. Beyond improving air quality, Cummins ISX and ISM deliver outstanding fuel economy, low maintenance costs and comprehensive Cummins warranty coverage.

With both the Cummins ISX and Cummins ISM, technology makes the difference. Advanced features like cooled Exhaust Gas Recirculation (EGR), a patented Holset Variable Geometry Turbocharger, Load-Based Speed Control and Gear-Down Protection provide all the performance and fuel economy you've come to expect from International and Cummins – plus improved throttle response and better engine braking capability.

Best of all, drivers are delighted to drive International with the ISX and ISM under the hood. In fact, those who have tested the 2002 ISX are thrilled with its performance – especially the way it lets them pull steep grades without dropping gears and cruise down steep hills without using up their brakes. International and Cummins deliver the performance and comfort drivers want – along with the long-life durability and value you demand.

## EMISSIONS ISSUES.

### Why do we need emissions requirements?

Emissions requirements in the trucking industry have evolved over the years to reduce oxides of nitrogen, known as NOx. Engine manufacturers are announcing lower emissions levels to comply with their individual provisions of the consent decree with the Environmental Protection Agency (EPA). Under these agreements, diesel engine manufacturers are required to meet the consent decree emissions requirements.

### What is NOx?

NOx is formed when nitrogen and oxygen are burned under high heat and pressure in an internal combustion engine. When NOx leaves the tailpipe it reacts with airborne hydrocarbons, contributing to the formation of smog. The consent decree emissions requirements that allow 2.5 grams of NOx+NMHC are an 80% reduction from the 1985 level.

■ **The cooling package on Cummins ISX and ISM engines features cooled Exhaust Gas Recirculation (EGR). This simple, but effective, system lowers combustion temperatures and reduces emissions, while maintaining power and efficiency.**

## EMISSIONS SOLUTIONS FROM INTERNATIONAL AND CUMMINS.

### How have the ISX and ISM been changed to meet the new emissions requirements?

The 2002 ISX and ISM will continue to use the same proven design and offer the same standard features. What's different? All that's changed is the addition of three major components to help meet the new requirements and improve engine efficiency: the EGR cooler, EGR control valve and Holset Variable Geometry Turbocharger.

### Have these new engines been tested?

By October 2002, Cummins will have conducted over six million miles (9,656,064 km) of road testing in all conditions and over 115,000 hours of lab testing on the 2002 ISX engines. That's proven performance.

### How do International® 9000i Series trucks help raise performance and value?

At International, we're doing our part to maximize the performance and value of 2002 Cummins ISX and ISM engines with important enhancements to our current models.

- Standard wide-track axles and a 5-degree increase in wheel cut deliver improved maneuverability.
- A new cooling package provides additional cooling capacity for EGR engines.
- Repositioned front spring centers and retuned shock absorbers improve ride quality.
- Pad-mounted accessories and better tolerances/fit result in improved reliability.
- Improved air-conditioning increases quality and reliability.



## EMISSIONS COMPONENTS.

### What is an EGR cooler and is this new?

The EGR cooler cools the exhaust gases from about 1100 degrees to 400 degrees. How? Exhaust gas flows through tubes in the cooler while coolant flows around the tubes and takes the heat away to the radiator. This exhaust is an inert gas which travels into a mixing device and combines with fresh air. This mixture moves from the mixing device into the engine for combustion. Some of the heat that is produced during combustion is absorbed by the inert gas – helping to lower the combustion temperature, thereby lowering the amount of NOx produced.

### What controls exhaust flow into the EGR cooler?

The EGR control valve controls exhaust flow into the EGR cooler. The engine's Electronic Control Module (ECM) controls the EGR control valve, constantly monitoring flow rate for maximum engine efficiency.

### What is a Variable Geometry Turbocharger?

By changing the size of the nozzle, it will change how fast the turbocharger spins. With sophisticated electronic controls, the Holset Variable Geometry Turbocharger can be constantly and precisely adjusted to produce the exact air pressure needed.

The result: maximized fuel economy, good transient response, reduced turbocharger lag, increased engine braking power.

### Why is the Holset VG Turbocharger better than the competition?

The Holset VG Turbo patented design uses a simpler sliding nozzle with only one moving part in the exhaust stream. The simplified design eliminates dozens of moving parts for increased reliability and durability.



## FUEL ECONOMY AND MAINTENANCE.

### How will cooled EGR affect fuel economy?

Depending on the engine you are currently operating, you can expect a 0%-5% loss in fuel economy. For example, if you're currently running an N14 or M11 and switch to a 2002 ISX or ISM, you may experience little or no loss in fuel economy. That's because the electronic features of the ISX and ISM, along with proper spec'ing of transmission and axle ratios, can help offset changes in fuel economy.

### How should I spec the ISX and ISM to achieve maximum fuel economy?

To attain maximum fuel economy for on-highway applications carrying 80,000 lb or less, spec a 435-hp Cummins ISX ST (SmartTorque) to run 1450 rpm at 65 mph. Or you can also spec a 330-hp Cummins ISM to run 1500 rpm at 65 mph. For details, contact your Cummins distributor or your local International dealer. To optimize your selection of electronic features and parameters, consult PowerSpec at [www.powerspec.cummins.com](http://www.powerspec.cummins.com).

### How will oil drain intervals be affected by the new emissions requirements?

Based on normal-duty cycles (5.5-6.5 mpg), oil drain intervals for 2002 ISX and ISM engines will be 25,000 miles (40,234 km). This interval exceeds recommendations of competitive engines and is compatible with most fleet practices, which means most fleets will see no change from their current interval. Light-duty cycles (6.5 mpg and above) can go 35,000 miles (56,328 km) between oil changes.

## ELECTRONIC FEATURES.

### What is Load-Based Speed Control (LBSC) and how does it help maximize fuel economy?

LBSC is a standard electronic feature that controls engine speed in all gears except the top two. During low and intermediate power requirements, LBSC manages the usable engine operating range. It also provides an extended operating range when high power requirements are needed. LBSC ensures proper shifting techniques for better fuel economy (the engine "softens" to indicate to the driver that it is time to shift, reducing driver-to-driver variability) and provides additional rpm as required by operating conditions.

### What is Gear-Down Protection?

Gear-Down Protection is an optional feature that provides engine speed control during cruise mode with light loads and additional performance as required with heavy loads. By maximizing the time drivers spend in top gear, fuel economy is improved.

### Is the engine warranty coverage going to change?

The base warranty of the 2002 ISX and ISM engines has not changed other than to include coverage on all cooled EGR subsystem components and the Variable Geometry Turbocharger. All ISX and ISM engines built on or after October 1, 2002, are backed by 2-year/250,000-mile (402,336 km) Total Coverage and 5-year/500,000-mile (804,672 km) Major Component Coverage.



## SUMMARY.

### What makes International and Cummins the best combination for my operation?

International® 9000i Series trucks and Cummins ISX and ISM engines are engineered to work together to deliver low operating costs and maximum performance, durability, reliability and driver satisfaction. With proven cooled EGR technology, Cummins ISX and ISM meet the EPA 2002 emissions requirements. What's more, fuel economy is enhanced with advanced features like the Holset Variable Geometry Turbocharger, Load-Based Speed Control and Gear-Down Protection. Proper spec'ing of transmissions and axle ratios raise fuel economy even more.

Together, International and Cummins are a powerful package that delivers real performance and value for your operation – today and down the road.

## 2002 ISX RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISX 565	565	1850 @ 1200
ISX 530	530	1850 @ 1200
ISX 500	500	1850 @ 1200
ISX 500	500	1650 @ 1200
ISX 475	475	1850 @ 1200
ISX 475	475	1650 @ 1200
ISX 450	450	1650 @ 1200
ISX 450	450	1550 @ 1200
ISX 400	400	1650 @ 1200
ISX 400	400	1550 @ 1200
ISX 400	400	1450 @ 1200

## 2002 ISX SMART TORQUE RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISX 500 ST	500	1650/1850 @ 1200
ISX 475 ST	475	1650/1850 @ 1200
ISX 450 ST	450	1450/1650 @ 1200
ISX 435 ST*	435	1450/1650 @ 1200
ISX 400 ST	400	1450/1650 @ 1200

## 2002 ISX VOCATIONAL RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISX 465V	465	1650 @ 1200
ISX 435V	435	1450 @ 1200

\*Exclusive to International.

All ISX ratings are 2000 rpm governed speed.

For more information on the unbeatable combination of International trucks and Cummins engines, call 1-800-44-TRUCK (1-800-448-7825), see your International dealer or visit our web site at [www.internationaldelivers.com](http://www.internationaldelivers.com).

## 2002 ISM RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISM 450**	450	1450 @ 1200
ISM 400**	400	1450 @ 1200
ISM 370	370	1450 @ 1200
ISM 370	370	1350 @ 1200
ISM 350	350	1350 @ 1200
ISM 330	330	1350 @ 1200
ISM 330	330	1250 @ 1200
ISM 310	310	1150 @ 1200
ISM 280	280	1150 @ 1200

## 2002 ISM SMART TORQUE RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISM 350 ST	350	1350/1450 @ 1200
ISM 330 ST	330	1250/1350 @ 1200

## 2002 ISM VOCATIONAL RATINGS

Engine Model	Advertised Horsepower	Peak Torque lb-ft @ rpm
ISM 385V	385	1450 @ 1200
ISM 385V	385	1350 @ 1200
ISM 350V	350	1450 @ 1200
ISM 350V	350	1350 @ 1200
ISM 320V	320	1150 @ 1200
ISM 285V	285	1150 @ 1200

\*\*RV, fire truck and motorcoach applications only.

All ISM ratings are 2100 rpm governed speed.



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