

Why is the Cummins X12 a better choice for the fire service than the Paccar MX13?

Weight. The X12 is 20% lighter. 550 pounds lighter, or about 2 firefighters with gear. Lighter weight provides greater cab design flexibility.

Performance. The X12 has more power at higher rpms, which automatic transmissions like. Dealers can work with their OEM to run performance simulations. X12 should provide much better acceleration times.

Support. Cummins has 3700 repair locations across the US/Canada. We allow OEM dealers to become Cummins certified to perform warranty repairs. This will allow dealers to have greater control over the repair event.

Experience. The first Cummins installation in a fire apparatus was in 1937. In the last 20 years we have sold over 50,000 engines in the fire service. We have used our learning to optimize calibrations specifically for the challenging duty cycle of emergency vehicles.

Key Points

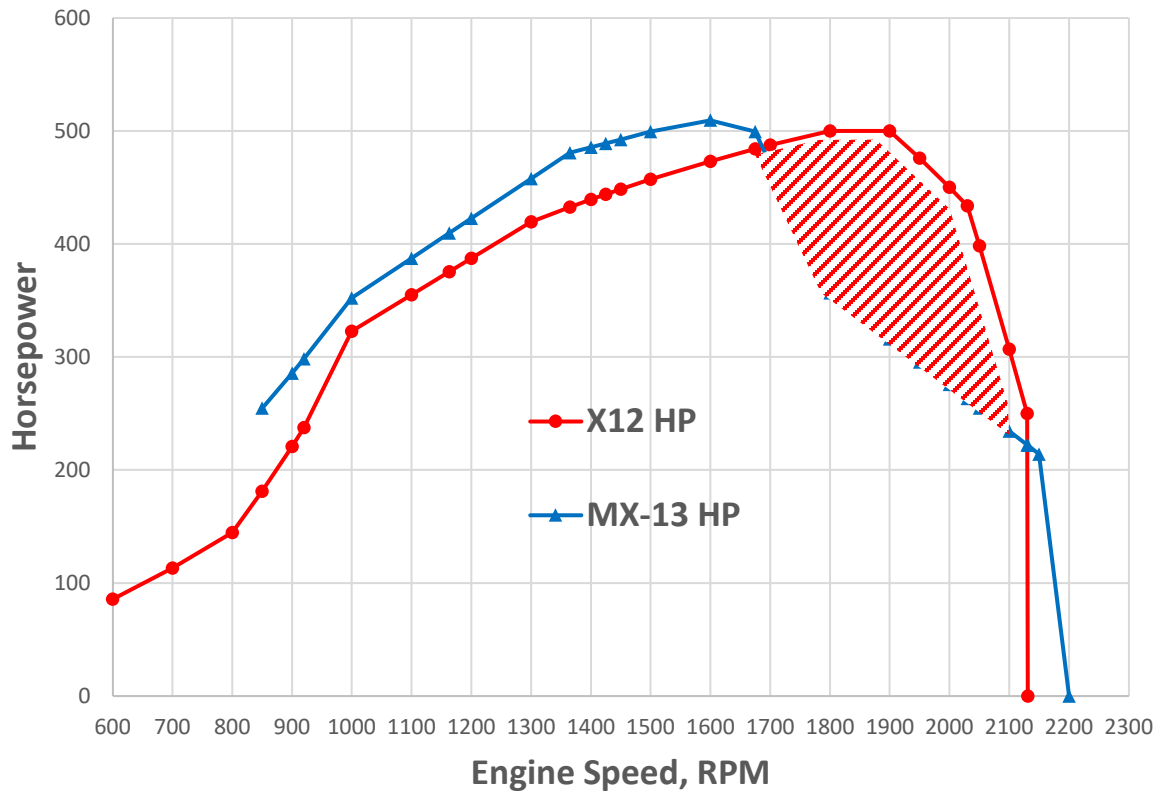
- PX-7 is the Cummins B6.7 engine that is private labeled for PACCAR
- PX-9 is the Cummins L9 engine that is private labeled for PACCAR
- MX-11 has similar Horsepower to the L9 from Cummins
- MX-13 is between the X12 and the X15
- The MX-13 is the engine that Pierce has exclusive use of for their apparatus
- 1800 RPM engine
 - Typically, does not get a good match to Allison
- Old engine system
 - From the 90's
- Electronics are from Europe
 - Difficult for customers trying to maintain their own fleet
- The Allison recommended torque converter for this unit is the TC-531
 - This converter exceeds all pump manufacturers gear case requirements for midship mounted pumps.
 - Will likely use the TC-541 torque converter

- Using the TC-541 torque converter will cause more slipping which will generate more heat
- A higher rear axle ratio will be needed
 - Amount of time to get to speed

	X12			MX13	
	Time (sec)	Distance		Time (sec)	Distance
0-20 MPH	4.6	81		5.3	95
0-30 MPH	9.1	251		10.8	296
0-40 MPH	15.8	596		19.1	718
0-50 MPH	25.1	1217		34.2	1739
0-60 MPH	38.4	2291		47.8	2851

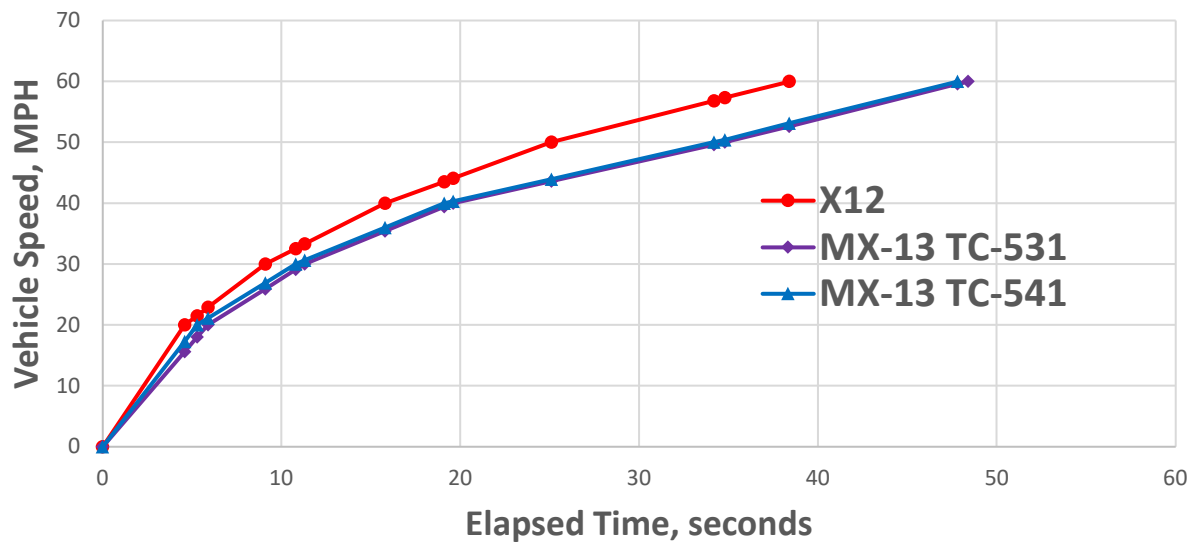
- As you can see from the information for the SCAANs that were run, the X12 gets to 55 mph 9 seconds faster than the MX-13, which is a dramatic difference that the customers will feel.
 - The X12 will have a slight disadvantage on grades as the MX-13 has more torque

X12 500 vs MX-13 510 Horsepower Comparison



- The key to X12 acceleration performance is the large area of higher power at high speeds
- This outweighs the higher torque of the MX-13 at low speeds
 - As the transmission goes through the gears during acceleration, more power is available just after upshifting events, which occur at high speeds
 - The X12 delivers more power to the wheels during acceleration

Acceleration Comparison



- The superior power delivery of the X12 is evident in SCAAN-predicted acceleration
- The torque converter selection for the MX-13 has negligible impact
- MX-13 performance with Allison is limited by its relatively low governed speed
 - X12 has a 5.13 RAR for top gear speed of 65.7 MPH
 - MX-13 must use 4.89 RAR to maintain comparable top gear speed of 65.5 MPH
- The MX-13 uses a Cummins After Treatment module & Turbo
 - Cummins has a huge advantage as the aftertreatment system is optimized for Cummins engines.
- Cummins is the Fire & Emergency industry engine leader, and has been for over 15 years
- Over 50,000 engines in the fire service
- Features and options developed specifically for the fire service
- Cummins has the structure in place through their on-highway representatives that can meet with departments if needed

- Their only job is to help the customer, not sell Peterbilt or Kenworth trucks
- Service
 - Cummins facilities (distributors) are typically very good at service
 - More than 3 times the number of service facilities
 - More locations: Cummins, Freightliner, Kenworth, etc.
 - Not just Kenworth and Peterbilt (long turn around for repairs)
 - Only Kenworth and Peterbilt can clear engine codes on the Paccar engine
 - Work at getting your dealership Cummins Certified
 - Cummins is willing to work with the Sutphen Dealer Network to get you certified
 - Cummins has better Telematics
 - Easier and faster diagnostics
 - Stronger Parts distribution