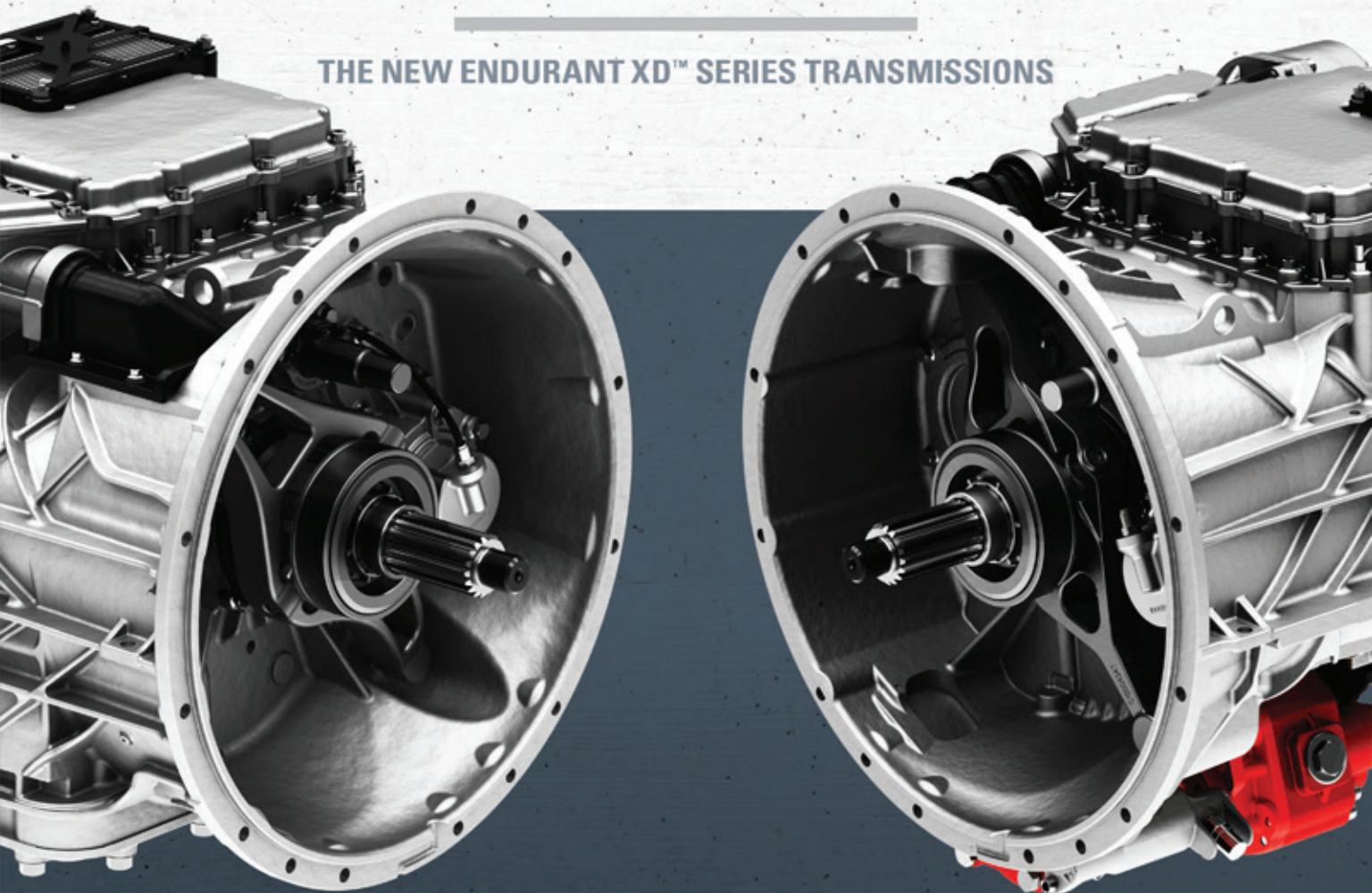


# PERFORMANCE BEYOND ALL EXPECTATIONS

THE NEW ENDURANT XD™ SERIES TRANSMISSIONS

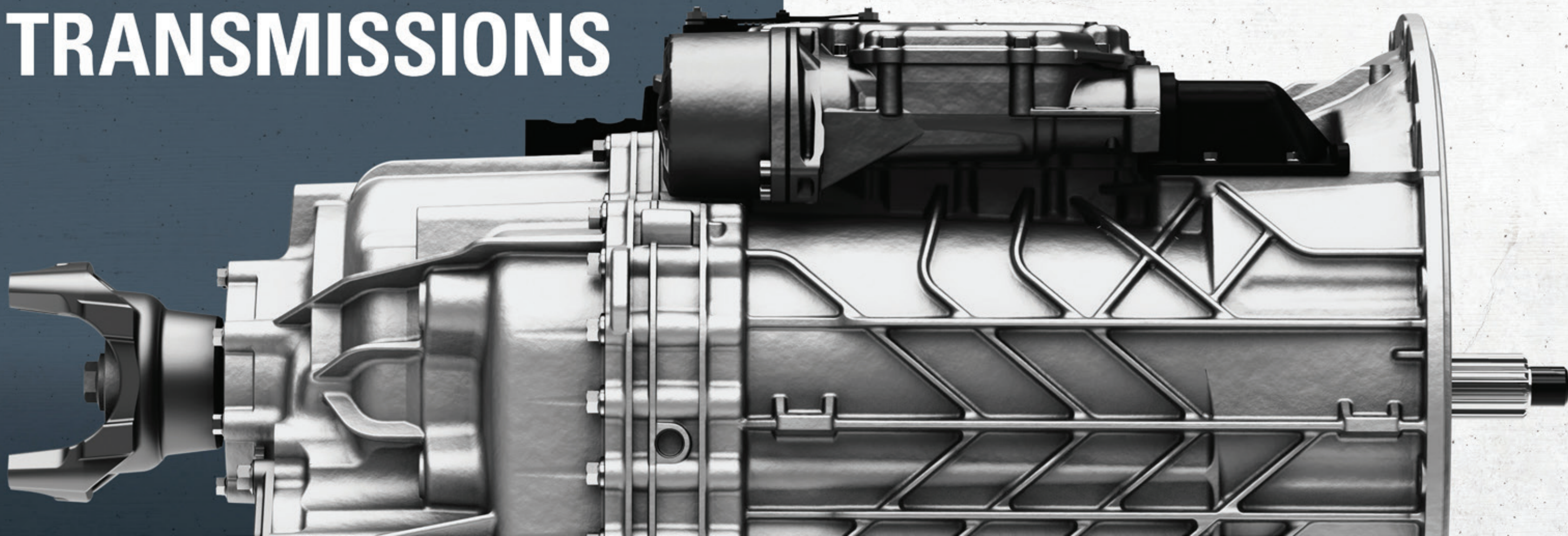


**EATON** 

AUTOMATED  
TRANSMISSION  
TECHNOLOGIES

# THE NEW ENDURANT XD™ AUTOMATED TRANSMISSIONS

This family of purpose-built, high-performance, automated transmissions combine the efficiency, light weight and sophisticated controls of the Endurant platform with the legacy of reliability and toughness from Eaton's 13- and 18-speed transmissions. The Endurant XD series represents a new level of precision, control and durability that will change the way you think about automated transmissions.



# EVOLVE OR GET LEFT IN THE DUST.

NEW INNOVATIONS THAT KEEP YOU AHEAD.



## ENGINEERED FOR RESULTS.

We started with our legendary twin-countershaft design with helical gears and large bearings optimized for higher engine torque. Then we gave it a new 18D ratio set with 20.5:1 overall ratio and small, even steps for smooth shifts and excellent performance in all-driving conditions with 1 to 6 configurable reverse speeds. Plus, new diaphragm spring clutches that enable precise low speed maneuvering in all conditions.

The Endurant XD Series features a clean, contained design with internal wiring and sensors to minimize exposure and corrosion to wires and connectors for improved reliability. It's even 225 pounds lighter than comparable UltraShift® PLUS models.

The new input shaft PTO drive system enables improved mobile PTO operations and increased capacity. Regardless of drive gear, both power take-offs operate at 111% of engine speed with a total combined PTO capacity of 160 horsepower or 610 lb.-ft. of torque. PTO engagement requests are controlled by the transmission to prevent system damage.

## BETTER FOR THE BOTTOM LINE.

The Endurant XD Series is designed to excel on the balance sheet by taking on two of the biggest expense areas: fuel and maintenance costs. To mitigate fuel costs, we designed the Endurant XD Series to be the most efficient, heavy-haul transmission we've ever produced. The highly efficient design features a Precision Lubrication system for up to 2 percent better fuel economy than UltraShift® PLUS.

Smart features like a new internal oil temperature sensor and fluid pressure sensor help protect the transmission from damage and keep maintenance costs down. In fact, if your GCW is under 110,000 lbs. you don't need a transmission cooler, reducing the risk of cooler leaks and further reducing costs. Maintenance costs are minimized thanks to long service intervals – up to 500,000 miles depending on vehicle application – and help keep the truck on the road and making money.

## DESIGNED FOR EVERY DRIVER.

We made sure the Endurant XD Series is versatile enough to give professional drivers the tailored configurations they need to get the job done—at any level of experience. We improved everything from take off to top gear. That includes impressive low speed maneuverability and optimized software. You'll find that our advanced software and diaphragm spring clutch help make Urge to Move and Creep Mode easy and intuitive. And every driver will appreciate the improved efficiency and performance delivered by a comprehensive suite of additional GearLogic features.

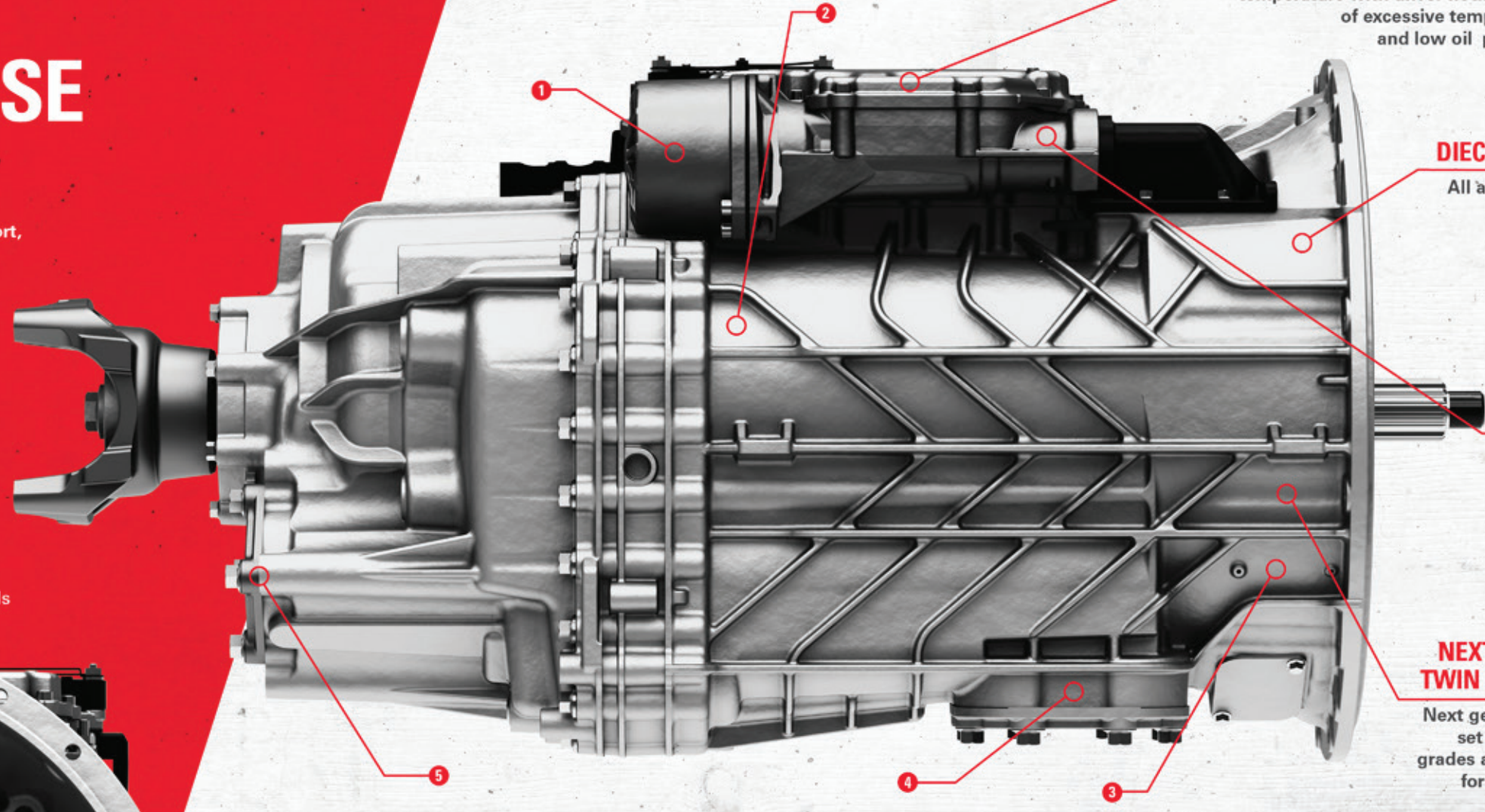
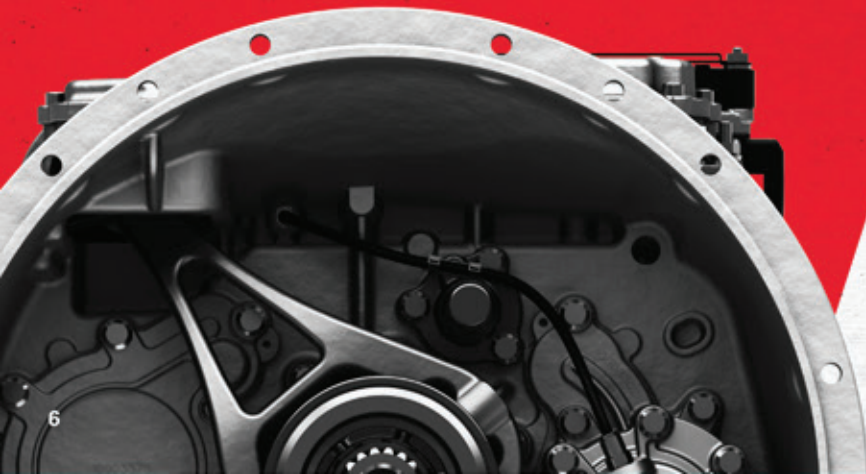
# PERFORMANCE WITHOUT COMPROMISE

The Endurant XD is designed to deliver comfort, drivability and efficiency mile after mile.

Ability to maximize available power with software that keeps the engine in the appropriate RPM range for load and road conditions

Delivers an effortless driving experience with improved skip shift ability and smoother shifts compared to previous 13- and 18-speed automated transmissions

For on-highway applications with a Gross Combined Weight Rating up to 166,000 pounds



## OIL TEMPERATURE AND PRESSURE SENSORS

In-cab display of transmission temperature with driver notifications of excessive temperature and low oil pressure

## HIGH-PRESSURE DIECAST ALUMINUM CASE

All aluminum enclosure enables a weight savings of 225 lbs. compared to legacy transmissions

## MECHATRONIC TRANSMISSION MODULE

Pneumatic valves, shift rails, and sensors in an integrated actuation module for improved reliability and service

## NEXT GENERATION 18-SPEED TWIN COUNTERSHAFT DESIGN

Next generation small-even step ratio set for consistent performance on grades and increased 20.5 overall ratio for no compromise axle selection

1 LINEAR CLUTCH ACTUATOR  
2 INTERNAL WIRING & SENSORS  
3 INTEGRATED CLUTCH HOUSING

4 STANDARD 8 BOLT PTO OPENING  
5 HIGH CAPACITY 4-BOLT REAR PTO OPENING

**THE ENDURANT XD™**

### OFF-HIGHWAY PERFORMANCE GOAL

Optimized calibration for operation on natural rolling terrain or soft soil.

### EXTREME DUTY CLUTCH

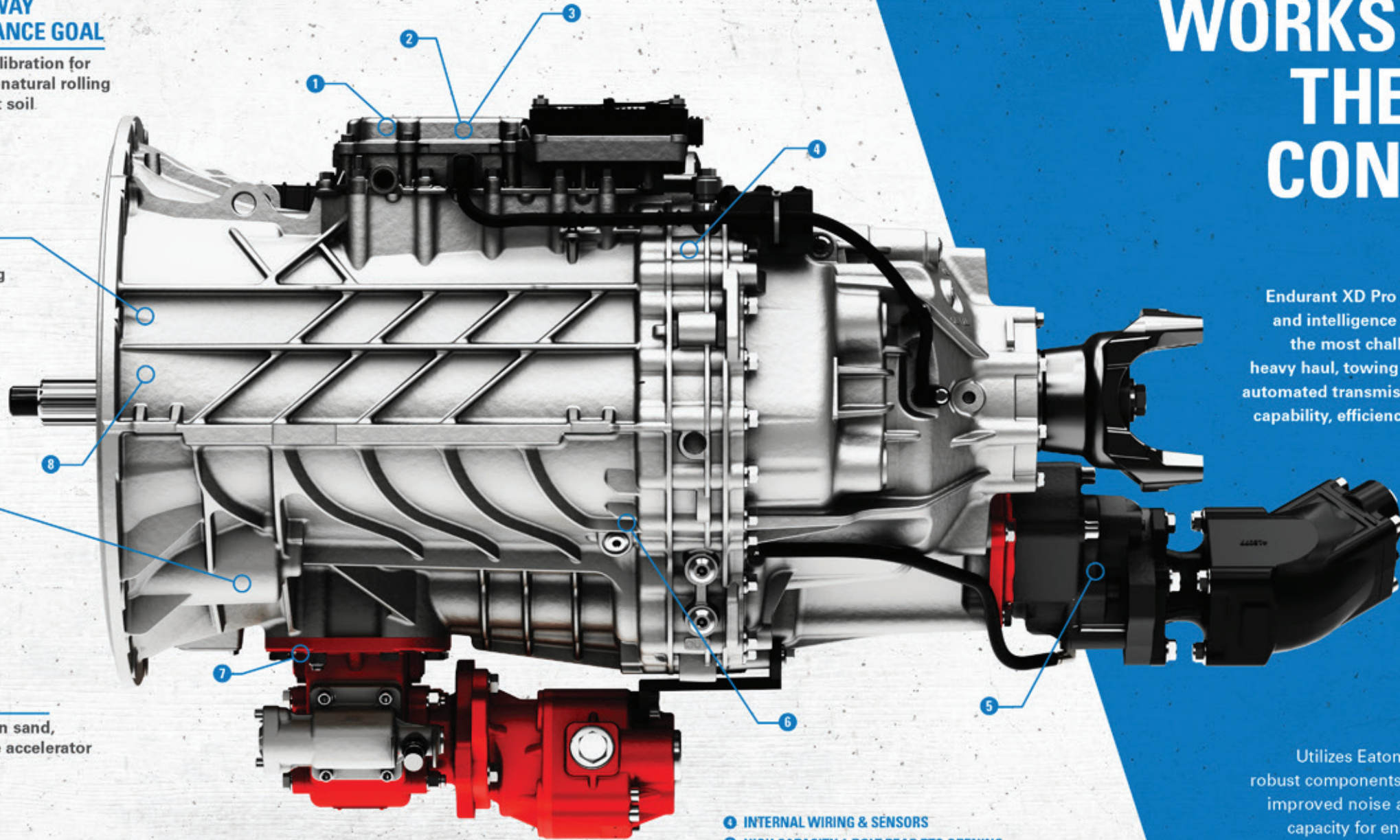
Allows more controlled clutch slip and increased maneuvering time at higher loads.

### INPUT SHAFT DRIVEN PTO SYSTEM

PTO's are driven off the input shaft at fixed 111% of engine speed, independent of chosen gear of the transmission

### ROCK FREE

Helps avoid getting stuck in sand, mud, or snow by using the accelerator to rock the vehicle free.



- 1 MECHATRONIC TRANSMISSION MODULE
- 2 INTERNAL OIL TEMPERATURE SENSOR
- 3 TRANSMISSION FLUID PRESSURE SENSOR

- 4 INTERNAL WIRING & SENSORS
- 5 HIGH CAPACITY 4-BOLT REAR PTO OPENING
- 6 NEXT GENERATION 18-SPEED TWIN COUNTER SHAFT DESIGN
- 7 HIGH CAPACITY 8 BOLT PTO OPENING
- 8 INTEGRATED CLUTCH HOUSING

# WORKS BEST IN THE WORST CONDITIONS

Endurant XD Pro delivers the right mix of hardware and intelligence to give drivers more confidence in the most challenging applications: construction, heavy haul, towing & recovery, and logging. No other automated transmission can match its combination of capability, efficiency, and maintenance requirements.

Unlimited Gross Combined Weight rating

Best in class PTO functionality

Longest maintenance intervals in its class

Can be paired with the most powerful engines with torque ratings from 1650 to 2050 lb.-ft.

Utilizes Eaton's Extreme Duty clutches featuring robust components designed for increased durability, improved noise and vibration, plus higher thermal capacity for enhanced low-speed maneuverability

Up to 6 configurable reverse gears

\*Shown with the Bezares 95X Series PTO and FR bent axis pump (rear) and 2000 series PTO and BELA pump (bottom) available from Eaton

## THE ENDURANT XD PRO™

## GEARLOGIC TECHNOLOGY

Achieving maximum performance requires a combination of strength and smarts. To get the most out of the Endurant XD series hardware, we use GearLogic technology - a suite of intelligent features that improves performance, fuel efficiency, and driver confidence.

FEATURES:	DESCRIPTIONS:
HILL START AID	Prevents unintended roll back or roll forward. When the grade exceeds the programmed threshold, foundation brakes hold the truck for a controlled launch. It works when pointing uphill in drive or facing downhill in reverse.
AUTO NEUTRAL	Automatically switches the transmission into neutral once the parking brake is engaged to prevent potential movement.
ENGINE OVERSPEED PROTECTION	The transmission system up-shifts if necessary to prevent engine overspeed in drive, manual and low modes.
ENHANCED ENGINE BRAKING	Downshifts the transmission to help slow the truck on long, steep descents providing increased brake pad life.
LOAD-BASED SHIFTING	Selects appropriate starting gear and makes shift decisions based on grade, vehicle weight, engine torque and throttle position.
URGETO MOVE	Drivers simply release the brake pedal to automatically inch forward, similar to the feel of a passenger car.
CREEP MODE	Offers ultimate control to "creep" with a locked clutch at engine idle. Choosing different gears in the transmission allows driver to fine tune vehicle speed.
NEUTRAL COAST	Fuel-saving feature that disengages the driveline on slight downhill grades.
SMART GEAR SELECTION	The appropriate starting gear is selected and makes shift decisions based on grade, vehicle weight, engine torque, and throttle position - skip shifting when appropriate, making the most efficient changes based on those conditions.
PREDICTIVE SHIFTING	Uses look-ahead technology to execute shift decisions that improve fuel economy and driver comfort.

## PERFORMANCE GOALS

New for the Endurant XD Series are Performance Goals which combine transmission shift points and clutch calibrations with unique software. This allows operators to easily tailor transmission performance to the demands of the job.

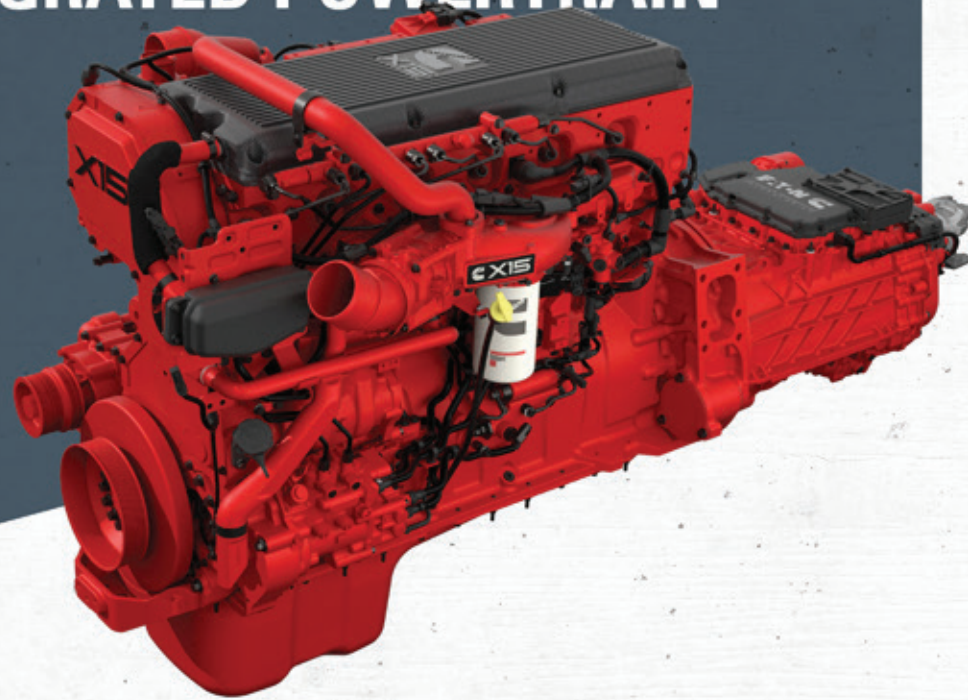
GOALS:	DESCRIPTIONS:	WHO NEEDS IT:	ENDURANT XD	ENDURANT XD PRO
STANDARD	Basic on-highway shift points for regular driving and blend of performance and fuel economy.	For those looking for one-size-fits-all balanced operation to be used on an "average" truck and application.	✓	✓
PERFORMANCE	On-highway shift points tuned to get the most performance from the engine rating, at all vehicle weights.	For the performance seeker, it is suitable for all truck types, weights and applications. A must-have for heavy haul and on-highway grades.	✓	✓
TANKER	Fast shifts for unbaffled tankers to not disrupt the shifting load.	For unbaffled tank haulers, but could be improvement for baffled tankers also. Used as primary option for all driving.	✓	✓
OFF-HIGHWAY	Launch and shift points tuned for changing off-highway conditions. Shifting limited - bias to shifting less often.	All truck types and weights, anytime the truck is on unmaintained roads, soft soil, or difficult terrain.		✓



# CUMMINS INTEGRATED POWERTRAIN

Built with uptime, improved total cost of ownership and ease of operations in mind, Cummins integrated powertrains are the first choice for drivers that need the power to perform.

Cummins offers an integrated power portfolio of heavy duty engines optimized to work seamlessly with the Endurant XD series transmissions. These expertly paired powertrains not only deliver the performance and uptime that you demand, but improved fuel efficiency and long maintenance intervals for a low total cost of ownership.



## EX ENGINE RATINGS – ENDURANT SERIES EXCLUSIVE

For improved powertrain and feature integration, EX ratings are available for Efficiency, Productivity, and Performance series.

EFFICIENCY SERIES EX	PERFORMANCE SERIES EX
<b>Dynamic Power:</b> Adjusts torque to make lighter vehicles operate similarly to heavier vehicles on grades. This provides fuel savings on lightly loaded vehicles by delivering consistent performance across varying loads.	<b>Dynamic Power:</b> Performance Series engines are straight torque ratings and do not require Dynamic Power.
<b>On-Ramp Boost:</b> This Cummins-exclusive feature momentarily disables fuel-saving features and augments the shift calibration to deliver greater acceleration when you need it most	<b>On-Ramp Boost:</b> Performance Series engines are straight torque ratings and do not require On-Ramp Boost.
<b>Predictive Gear Shifting:</b> Leverages GPS data to downshift before the hill to maintain uphill speed.	
<b>Predictive Engine Braking:</b> Looks at the grade ahead and can engage engine brakes early to aid in maintaining the desired maximum speed.	

\*EX features require Endurant XD series and GPS data. Availability of specific features varies by OEM. For more information, visit <https://www.cummins.com/integrated-power#dieselPower>.

## COMMON POWERTRAIN PAIRINGS

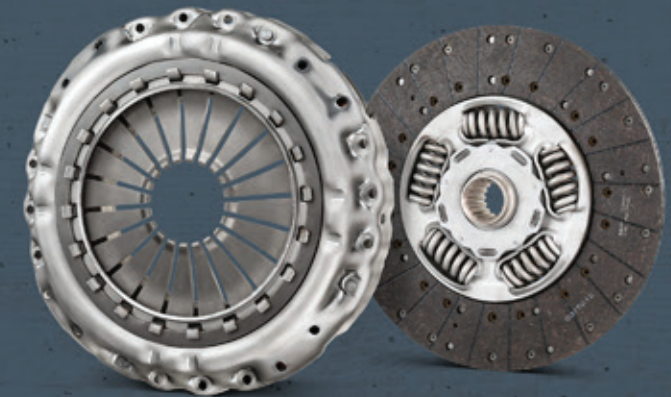
ENGINE FAMILY:	TRANSMISSION:	BEST SUITED FOR:
X15 Efficiency Series	ENDURANT XD	Linehaul and bulk haul operations on-highway. GCW's over 80,000 lbs. and/or hilly terrain.
X15 Productivity Series	ENDURANT XD	On-highway operations looking for more performance. Equipment transports and dedicated flatbed up to 166,000 lbs. GCW.
	ENDURANT XD PRO	All vocational, severe service and off-highway applications. Unlimited GCW and 2050 lb-ft torque ratings.
X15 Performance Series	ENDURANT XD	Premium linehaul, bulk haul and heavy haul. Endurant XD PRO required for applications over 166,000 lbs. GCW or 2050 lb-ft torque rating.
X12 Productivity Series	ENDURANT XD PRO	Weight sensitive vocational applications and bulk haul tractors. High performance-to-weight ratio.

\*Other combinations available, primary pairings shown. Application approval required. Consult with your Roadranger representative.  
 \*\*Off-highway performance goal is exclusive to Endurant XD Pro and Productivity Series engine pairings.

## NEW DIAPHRAGM SPRING CLUTCHES

The Endurant XD series use an Eaton single plate, organic faced diaphragm spring clutch. Compared to clutches traditionally found in manual or older AMTs, these clutches deliver precise low speed maneuvering. The self-adjusting and maintenance-free design reduces out of pocket expenses.

Because we know what drivers expect in an Endurant XD Pro, we fitted it with new Extreme Duty clutches designed to handle the toughest operating conditions without breaking a sweat.



## SPECIFICATIONS

### THE ENDURANT XD™

**605** MAX HORSE POWER

**1,850** LB.-FT MAX TORQUE CAPACITY

**166,000 LBS.** MAX. OPERATING WEIGHT GCWV

**808** LB. SYSTEM WEIGHT (TRANSMISSION, CLUTCH & OIL)

**24.5 PINT** OIL CAPACITY

### THE ENDURANT XD PRO™

**605** MAX HORSE POWER

**2,050** LB.-FT MAX TORQUE CAPACITY

**UNLIMITED** MAX. OPERATING WEIGHT GCWV

**813** LB. SYSTEM WEIGHT (TRANSMISSION, CLUTCH & OIL)

**24.5 PINT** OIL CAPACITY

#### ENGINE MAINTENANCE INTERVALS:

On-Highway Lube Interval: 500,000 miles or 5 years

Vocational Lube Interval: 250,000 miles or 3 years

Clutch: Maintenance free

## GEAR RATIOS

GEAR	D RATIO	STEP SIZE
1 <sup>ST</sup>	14.32	20%
2 <sup>ND</sup>	11.96	19%
3 <sup>RD</sup>	10.02	19%
4 <sup>TH</sup>	8.43	20%
5 <sup>TH</sup>	7.04	19%
6 <sup>TH</sup>	5.90	19%
7 <sup>TH</sup>	4.95	20%
8 <sup>TH</sup>	4.13	19%
9 <sup>TH</sup>	3.46	20%
10 <sup>TH</sup>	2.89	20%
11 <sup>TH</sup>	2.41	19%
12 <sup>TH</sup>	2.02	19%
13 <sup>TH</sup>	1.70	20%
14 <sup>TH</sup>	1.42	19%
15 <sup>TH</sup>	1.19	19%
16 <sup>TH</sup>	1.00	20%
17 <sup>TH</sup>	0.83	19%
18 <sup>TH</sup>	0.70	--
R1	15.25	20%
R2	12.73	19%
R3	10.67	246%
R4*	3.08	20%
R5*	2.57	19%
R6*	2.15	--
OVERALL	20.46	--

\*Endurant XD Pro only

## BACKED BY THE BEST. SO YOU CAN DELIVER YOUR BEST.

The Endurant XD series is backed by the support, solutions, and expertise of the Roadranger network—the most experienced and accessible drivetrain consultants in the business. With their knowledge, and IntelliConnect remote diagnostics monitoring vehicle fault codes, you can count on the Endurant XD series to keep you rolling mile after mile while reducing unplanned downtime.

BACKED BY

**Roadranger**

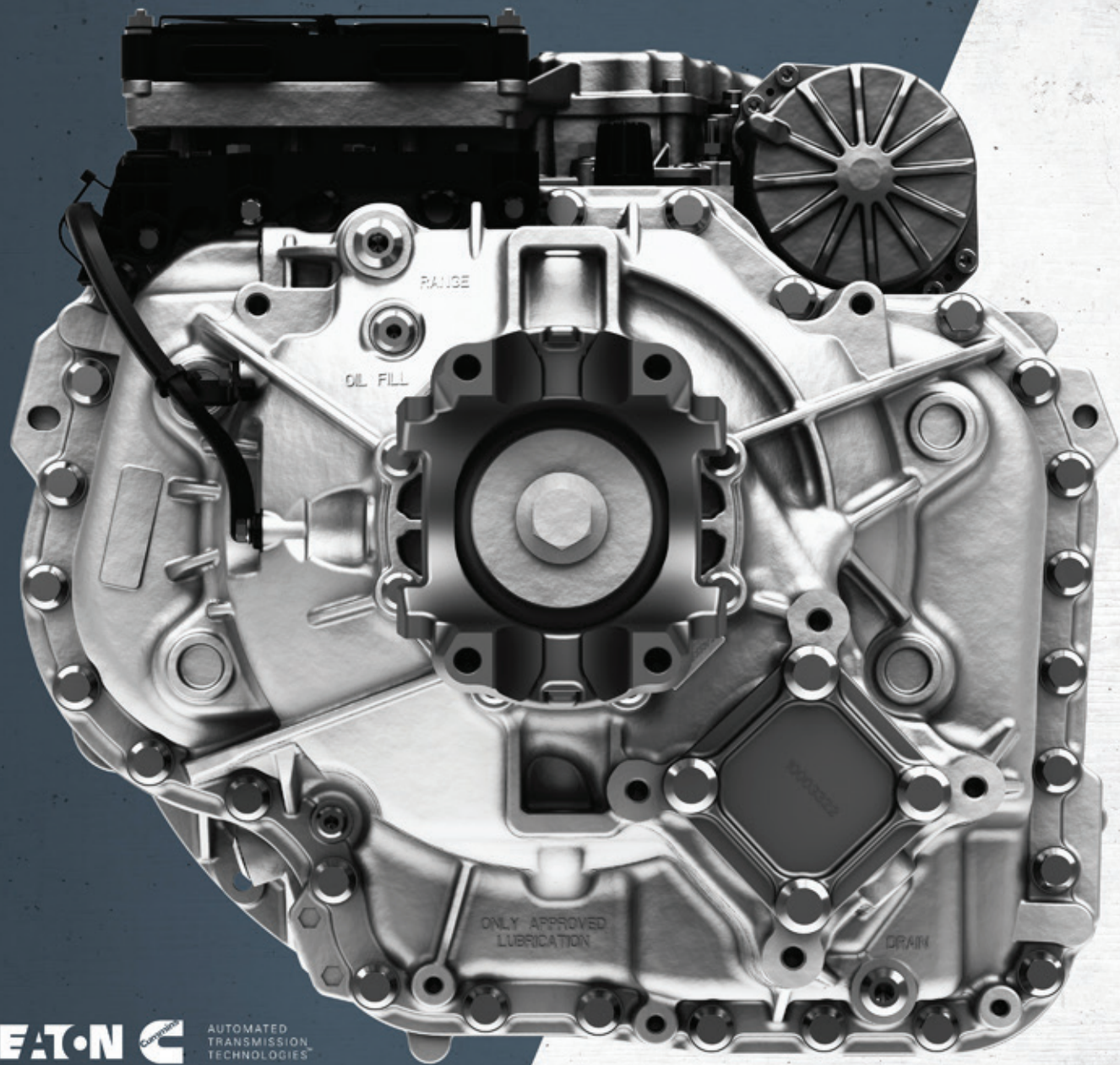
SUPPORT

INTELLICONNECT™

## AVAILABLE MODELS

MODEL	CODE	FORWARD/REVERSE SPEEDS	MAX TORQUE RATING	MAX HORSE-POWER	WEIGHT	MAX GCW	8 BOLT PTO CAPACITY/REAR PTO	SELF ADJUST CLUTCH TYPE
ENDURANT XD™	EXD-16F118D	18/3	1,650 LB-FT	605 HP	808 LBS.	166,000 LBS	160 HP/610 LB-FT TORQUE	STANDARD
ENDURANT XD™	EXD-18F118D	18/3	1,850 LB-FT	605 HP	808 LBS.	166,000 LBS	160 HP/610 LB-FT TORQUE	STANDARD
ENDURANT XD PRO™	EXDP-16F118D	18/6	1,650 LB-FT	605 HP	813 LBS.	UNLIMITED	160 HP/610 LB-FT TORQUE	EXTREME DUTY
ENDURANT XD PRO™	EXDP-18F118D	18/6	1,850 LB-FT	605 HP	813 LBS.	UNLIMITED	160 HP/610 LB-FT TORQUE	EXTREME DUTY
ENDURANT XD PRO™	EXDP-20F118D	18/6	2,050 LB-FT	605 HP	813 LBS.	UNLIMITED	160 HP/610 LB-FT TORQUE	EXTREME DUTY, HIGH TORQUE





AUTOMATED  
TRANSMISSION  
TECHNOLOGIES

Eaton Cummins Automated Transmission Technologies  
13100 E. Michigan Ave., Kalamazoo, MI 49053 USA

800-826-HELP (4357) |  
eatoncummins.com

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