F-MAX GEN2 VEHICLE TECHNOLOGIES

Ford TRUCKS

Sharing the load

VEHICLE CONTENT HIGHLIGHTS

Power-Torque improvement

» F-MAX: 510 PS & 2600 Nm
» F-Line: 450 PS & 2300 Nm/2500 Nm
510 - PS & 2600 Nm
» Simplified F-Line Euro6 Powertrain
» Line Up with Power Upgrades

Powertrain Technologies

» Downspeeding – 2.31 FDR Standard for F-MAX & F-MAX Max Range,
2.17 Standard for F-MAX Low Liner
» Overdrive Transmission to Enable Further Engine Downspeeding
» New Smart Driving Modes (Smart EcoMode, Dynamic Sailing, Feed Forward Launch & Idle-Up, Predictive Fan Control)

Vehicle Technologies

» Major Aerodynamic Improvements on F-MAX Cabin
» Digital Mirror System
» Active Grill Shutter for Frontal Drag Reduction and Thermal Management
» Body Exterior Improvements (Winglet, Side Extender Sealing, Bumper Sealer, etc.)

Chassis Technologies

» Front Air Suspension
(Standard for F-MAX Low Liner & optional for F-MAX & F-MAX Max Range)
» Caliper with Pad Return Spring Technology for Reducing Drag Torque Phenomenon
» New Low Rolling Resistance Tyres

Ecotorq Gen2 Engine

Active Grill Shutter

Digital Mirror System

FDR Reduction

Front Air Suspension

New Low Rolling Resistance Tires

Body Exterior Improvements

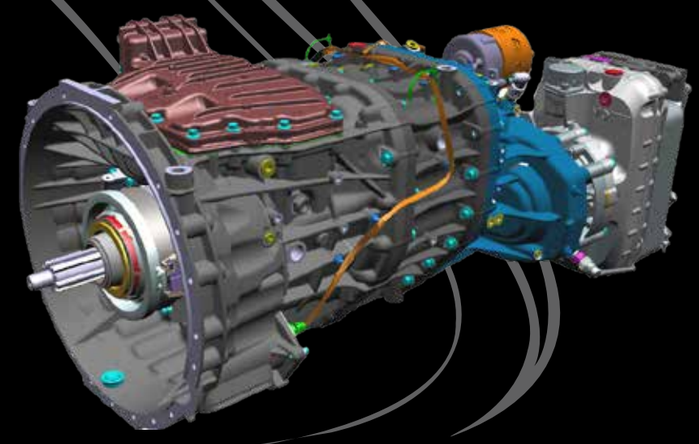
Caliper with Pad Return Spring

GEN2 Ecotorq Engine will be provided for EU6 13L vehicles.
Up to 11.3% CO_2 reduction calculated / simulated with new engine & aero & vehicle technologies with respect to GEN1.5 engine.

AERODYNAMIC IMPROVEMENTS

Aero parts provide CO_2 and fuel economy benefit by closing open spaces on the exterior leading to an optimal air flow around the truck while driving

OVERDRIVE TRANSMISSION



» F-MAX series will have overdrive (OD) tranmission instead of direct drive (DD) transmission for enabling further engine downspeeding

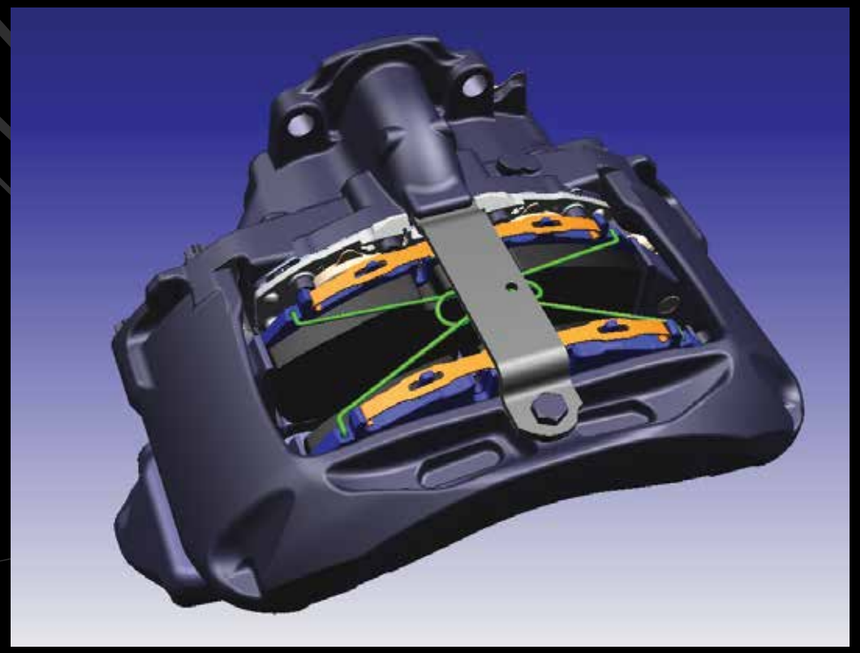
» Difference between DD & OD transmission is gear ratios: DD AMT (17,03 - 1,00) OD AMT (14,107 - 0,823) (For OD transmission, 15th gear has 1:1 ratio)

» OD transmission is selected over DD to provide fuel economy benefit to driver

» With overdrive transmission, engine stays in higher gears in low engine speed regions. It allows drivers to stay in higher gears more compared to current shift strategy by decreasing downshift line.

- 16 forward and 4 reverse gears
- 450 kW/3800 Nm retarder performance
- 2.600 Nm input torque
- 2.500 RPM maximum input speed
- OD: 14,107 - 0,823 forward gear ratios
- 13 l oil capacity

CALIPER WITH PAD RETURN SPRING



» While braking, after brake pedal is pressed, brake pads get in contact with brake disc with the force that caliper pistons applied.

» But after driver takes his foot off the brake pedal, a period of time passes for brake pads to re-align inside of the caliper. Which creates the brake drag torque, the negative torque during acceleration.

With pad return spring

» While braking, after brake pedal is pressed, brake pads get in contact with brake disc. At that time, two V-shaped springs are also compressed.

» After driver takes his foot off the brake pedal, brake pads re-align inside of the caliper with the potential energy of compressed springs immediately.

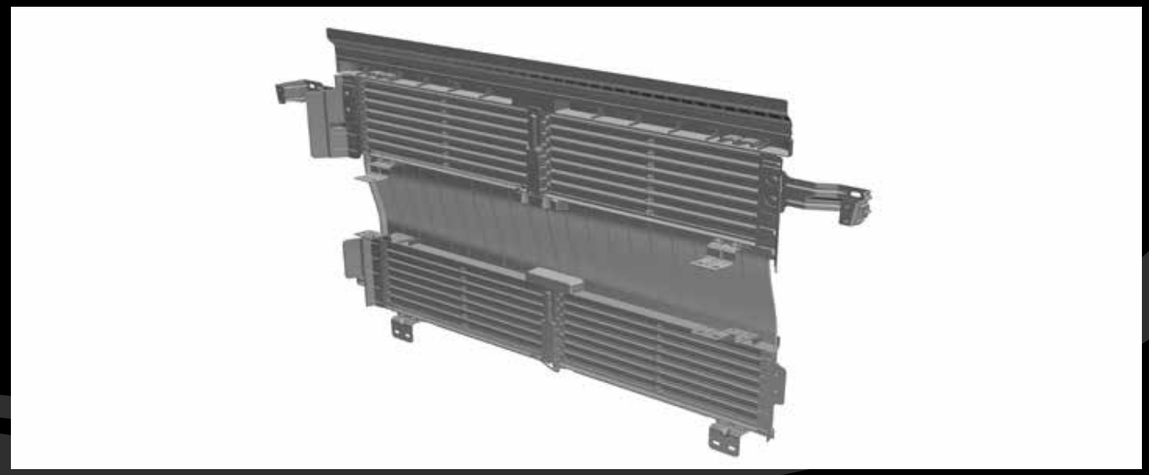
This technology provides customer fuel consumption reduction thanks to the pad return springs.

ACTIVE GRILL SHUTTER

» Active grill shutter (AGS) for heavy commercial vehicles is an aerodynamic system which increases aero efficiency of the truck by avoiding air ingress from grill to engine compartment via LIN based electronic actuator

» The system offers specific fuel consumption gain and CO2 reduction relatively with fully closed AGS

» There are various positions of dierent vane angles while AGS operating based on cooling need of the engine



NEW LOW ROLLING RESISTANCE TYRES

Brand	Position	Size	Pattern	Type	RRC* Value	CO_2** Imp.	Available Vehicles
Continental	Drive	315/80	Eco 5	Long Haul	4,7	2.0%	STD: All except construction
	Steer	315/80	Eco 5	Long Haul	4,5	1.2%	STD: All except construction
	Drive	315/70	Efficient Pro 5	New LRR	3,4	3.2%	STD: F-MAX & F-MAX L & 1845T
	Steer	315/70	Efficient Pro 5	New LRR	3,6	3.0%	STD: F-MAX & F-MAX L & 1845T
	Steer	315/70	Eco 5	Long Haul	4,3	1.7%	STD: All except construction
	Drive	315/70	Eco 5	Long Haul	4,6	2.2%	STD: All except construction
	Steer	385/55	Eco 5	Long Haul	4,4	2.0%	STD: All except construction
	Steer	385/65	Eco 5	Long Haul	4,5	1.5%	STD: All except construction
	Steer	385/55	Efficient Pro 5	New LRR	3,8	2.2%	STD: F-MAX & F-MAX L & 1845T

* RRC: Rolling Resistance Coefficent
** CO_2 improvement values were calculated as: from Ecoregional to ECO5, from Ecoplus to EfficientPro 5.

» Rolling resistance is the energy lost when a tire rolls on a surface, which leads to fuel consumption in vehicles.

Importance:

» It’s a major factor in fuel efficiency, particularly for heavy-duty vehicles like trucks, where it can account for up to one-third of total fuel consumption. Significant fuel savings can be achieved by using low rolling resistance (LRR) tires. These tires are specifically designed to minimize the energy lost as heat when they roll, thereby reducing the vehicle›s overall fuel consumption.

Fuel Savings & Cost Benefits:

» By lowering fuel consumption, it helps fleets-customers save on operational costs while meeting future environmental standards. Reduced fuel use translates to significant long-term cost savings for fleet operators and truck owners.

Lower CO_2 Emissions:

» Reducing rolling resistance can significantly cut fuel consumption, leading to fewer carbon dioxide (CO_2) emissions.

SAILING MODE

» Sailing Mode for F-MAX series is a function that allows the vehicle to accelerate slightly above the cruise set speed by using most efficient engine operating region and then coast below the target speed within a predetermined range. This cycle is repeated as long as the road conditions within horizon is feasible.

» PCC operates according to the road profile ahead of the vehicle. Sailing Mode also looks at this. But differently, it is a function that will operate on a straight and non-curved road profile. It accelerates the vehicle by giving a positive offset to the cruise control set speed and then allows it to coast down to the negative offset. If Level 1 is selected, it will continue with +-3 again.

» It is currently operating under the Predictive Cruise Control (PCC) function. It engages when the road profile obtained from eHorizon is within a predetermined slope range and greater than the turning radius.

SMART DRIVING ACTIONS

Dynamic Torque Extension (DTE)

Engine torque is limited by default and extended based on driver demand upto corresponding permitted acceleration.
It provides fuel consumption benefit to drivers on variable road conditions with active torque control.

Top Speed Increase

Increase the speed limitation from 85 to 90 kph for fleet mode on ConnecTruck (Eco Mode)

Engine Acceleration Limitation

When the vehicle is unladen, the torque is limited with respect to mode selection. The limitation is higher for eco mode and least for power mode.

Specific Fuel Consumption (SFC)

Based Pedal Map Pedal map is re-shaped to help drivers stay in efficient SFC zones during acceleration. Mid pedal corresponding torque values are increased for engine efficiency in low traffic conditions. This enables the truck to travel a certain distance with less fuel consumption and in a shorter time.

FRONT AIR SUSPENSION

- Front air suspension provides suspension to the truck by means of air springs used in place of leaf spring on mechanical suspension.
- It improves customer experience by ride comfort and enhanced vehicle dynamics.
- Front air suspension provides weight reduction of around 30 kg on the truck as compared to mechanical suspension system.
- Ingress & egress to the truck will be much easier for the driver with on demand control on cluster.
- With the help of remote control or on cluster, front axle height can be manually controlled by the driver. The height of the front axle can be loaded into system memory on 2 levels, which enables ease of delivery operations on predefined locations.
- The front axle loads will be measurable with front air suspension system (estimation only)

Mechanical Suspension

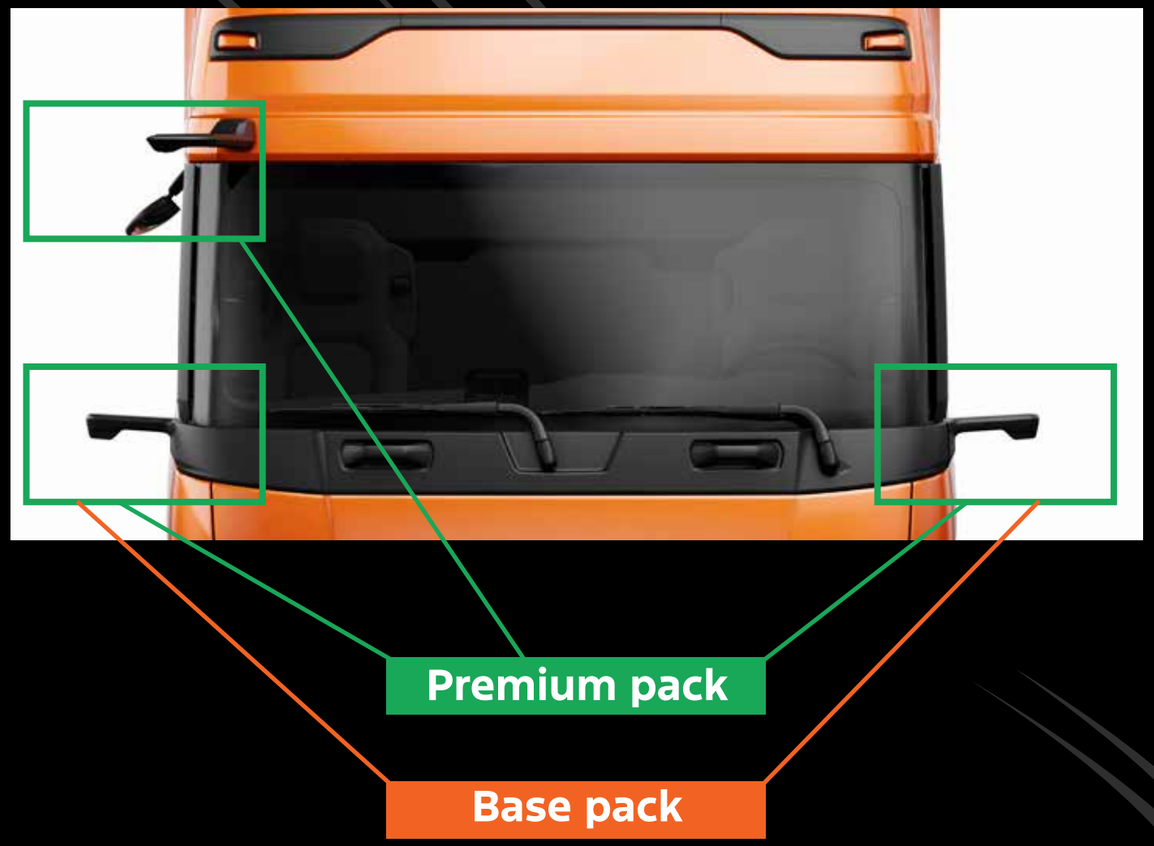
The New Front Air Suspension

DIGITAL MIRROR SYSTEM

- Available for F-MAX series
- Up to 1.3% CO_2 Improvement
- Optimized Screen Dimensions for Driver Comfort
  - Driver Side Monitor - 12 inch (1920x720 pixels)
  - Passenger Side Monitor - 15 inch (1920x720 pixels)
  - Passenger Top Monitor - 9 inch (1280x720 pixels) (Premium version only)
- Auto deicing for each cameras
- Auto brightness adjustment for each cameras
- New Trailer Following System (Autopanning) for reduction of blind spot areas in maneuvers with trailer
- Forward & Reverse Autopanning to Ease of Maneuver
- Improve vision at day & night
  - Eliminates Sun Reflection
  - Better visibility at various weather conditions (sunny/rainy)
- BLIS notifications on 15 inch passenger monitor
- Sentinel Mode for fuel theft & driver/trailer security while vehicle park situation
- Dynamical Assistance Lines on Monitors
- Manual Camera Heating
- Automatic Heating via ambient temperature
- Replacement with conventional mirrors is possible in case of an accident or corruption
- Foldable mirrors




DIGITAL MIRROR SYSTEM



- Base Pack satisfying Class II and IV
- Premium Pack satisfying Class V and VI

Premium pack will not be available with sunvisor.

Cameras will not be available with ADR package.

SENTINEL MODE FOR DIGITAL MIRROR SYSTEM

Sentinel mode aims to create a safe area for trailer and fuel guard zone. Connectruck integrated system aims to inform the fleet manager or driver in situations that occur in the boundary conditions to be determined.

Monitoring the surroundings when the truck fulfill the following conditions:

- Speed at 0 km/h
- Door locked
- Ignition off
- Battery level acceptable
- Wing arm positioning is good
- Driver requested the function by activation on the multimedia screen

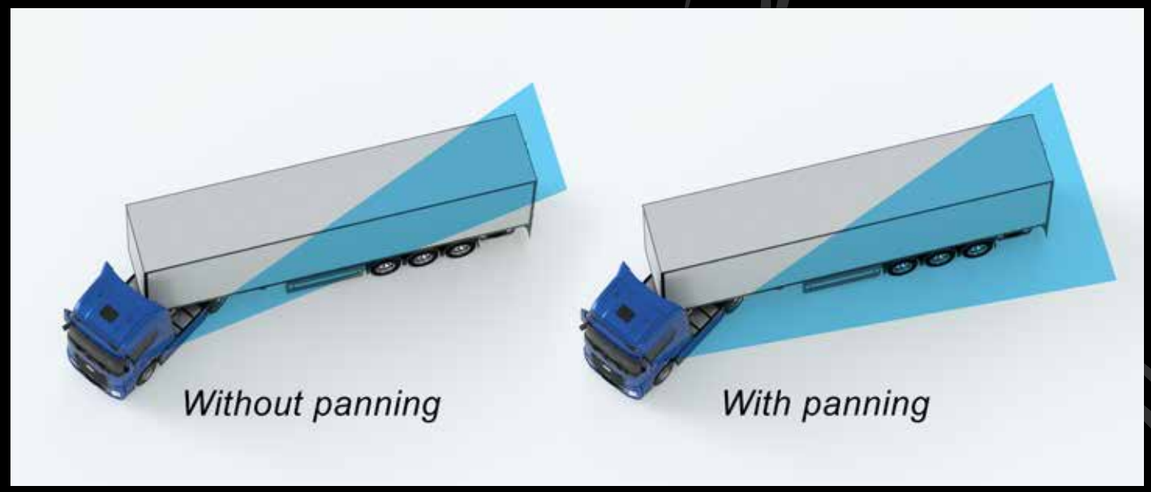
Continuously;

- Record all pedestrians detected into relevant areas (~1000 event memory) In presence of suspicious events;
- Send notification (messages) via CAN to telematic Control unit (TCU) for information driver or fleet manager.
- Save the videos recorded 10 sec. before suspicious event manager and 30 sec after

Sentinel Mode Cover Area

AUTOPANNING FOR DIGITAL MIRROR SYSTEM

- Autopanning allows reduction of blind spot areas in maneuvers with trailer
- Tracking the trailer of an articulated vehicle (like a truck with a trailer) during a ride while the vehicle engage a turn/roundabout (in forward & reverse mode)
- Increasing the visibility of environment of the vehicle in specific conditions (static or very low speed)



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