



ON ROAD

**Our efficiency.
Your edge.**



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THE ROAD TO INNOVATION

Whether it's about moving people or goods, FPT Industrial provides state-of-the-art powertrain solutions.

We design and develop our engines for any kind of on-road application, from light, medium and heavy commercial vehicles to vocational vehicles and buses. Customers that can rely on cutting-edge technology contents and a lower cost of ownership become free to focus on growth.

Through sophisticated electronic injection systems, a choice of air handling devices, and access to natural gas and hybrid versions, FPT's engines for on-road applications are an ideal solution, offering excellent performance and improved sustainability.

Superior Technology & Outstanding Advantages

Running costs reduction

Low fuel consumption.
Best in class in maintenance intervals.
Passive DPF regeneration technology.
No vehicle downtime thanks to no DPF forced/parked regeneration.
Aftertreatment reliability thanks to more than 1,5 Millions of SCR Aftertreatment produced and more than 25 years of experience on SCR system.

Performance

Power demand and torque response guaranteed in the most severe operating conditions for a wide range of applications.
State-of-the-art injection systems and turbocharging solutions for improved fuel economy.
Proven and break-through after-treatment technologies for emissions reduction and low operating costs.

Respect for the environment

Compliance with the most stringent emissions legislations. The widest range of natural gas engines available on the market.

Flexibility

Availability of a wide range of options to create tailor-made products.
On request supply of interface components such as transmissions, radiators, air filters, silencers, aftertreatment system and cold start accessories. Compact engine lay-out.



The solution for the future, today.

SCR Only Technology for Euro VI step E

Technological excellence and product innovation for FPT Industrial represent the truly determining factor and part of its primary strategic mission.

The company is focusing its research and development activities in order to become the innovation leader in the industrial powertrain field and a reference provider of the most cost-efficient powertrain solutions for Euro VI step E.

FPT Industrial aims to comply with the new emission limits ensuring a minimal impact on the vehicle architecture and the lowest possible increase in cost, an objective that will be achieved through HI-eSCR technology. The breakthrough patented technology, based on an experience of more than 25 years and more than 1,5 million engines produced, allows our engines to meet Euro VI step E standards without resorting to EGR (Exhaust Gas Recirculation), guaranteeing a very high NOx conversion efficiency (over 95% versus 80-85% Competitors adopting EGR).

Emission Standards Scenario

During the combustion process, inside a Diesel engine, the chemical energy is transformed into a mechanical one. Because of the chemistry of combustion, several toxic substances are produced, of which the most harmful are Nitrogen Oxides (NOx) and Particulate Matter (PM).

The new Heavy Duty Euro VI step E exhaust emission regulations, which applies to all new heavy duty commercial vehicles and buses registered from 1st September 2021, introduce:

- No warm-up time (cold start) @ In Service Conformity test
- Particulate Number limitation for In Service Conformity

Euro VI step E Engines

Based on an already state of the art engine range, Euro VI step E maintains the same base engines hardware of Euro VI step D, allowing our customers to retain their class leading features, such as minimized Total Cost of Ownership. Key to the optimization of combustion efficiency is high mean effective cylinder pressure and high injector nozzle pressures.

To achieve these aims, crankcase and cylinder head design results in an high structural rigidity and in swept volume. The engines are fitted with the latest generation of multiple events Common Rail fuel injection equipment with peak nozzle pressures of up to 2200 bar. A new enhanced Electronic Control Unit manage both engine parameters and accurate control of the after-treatment system. The Control Unit has been designed to optimize packaging and to fully integrate all engine, SCR and DPF (Diesel Particulate Filter) functions.

For Cursor engines using the Variable Geometry Turbocharger, electronic control is used to optimize load response at low engine speeds and to increase the effectiveness of the engine brake. In addition, all engines make use of the flap type engine brake valve in order to support the aftertreatment thermal management and to guarantee engine brake power up to 518 kW @ 2600 rpm.

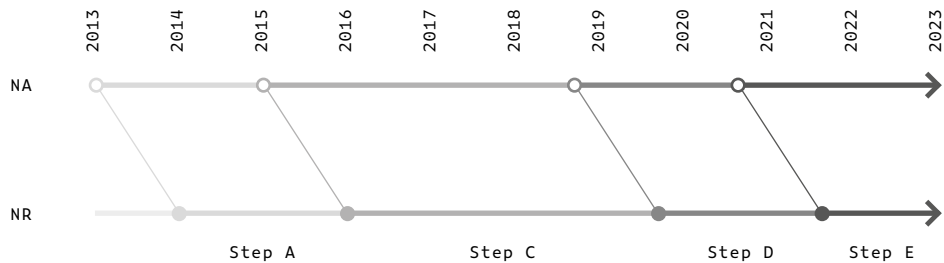
For the very best in environmental performance, the engines were equipped with closed circuit engine breathing systems. By means of the optimized combustion regime, engine-out particulate emissions are very low, meaning that forced/parked regeneration of the DPF is not required, an important aspect in terms of fuel consumption and periodic servicing.

In addition, since the engine only breathes clean filtered air, rather than recirculated exhaust gases, engine wear is maintained very low and oil change intervals are maintained high, with service intervals of up to 150.000 km without increased oil sump.

This also brings advantages in terms of operating costs and reduced down time for scheduled maintenance:

- Low operating costs thanks to fluids economy leadership.
- Best in class vehicle uptime due to low engine wear and long maintenance intervals (up to 150.000 km, depending on mission).
- Best in class on specific power.
- Engine and Hi-eSCR aftertreatment system compact and lean design assuring low total weight and easy installation

Heavy Duty Emission Regulation Evolution



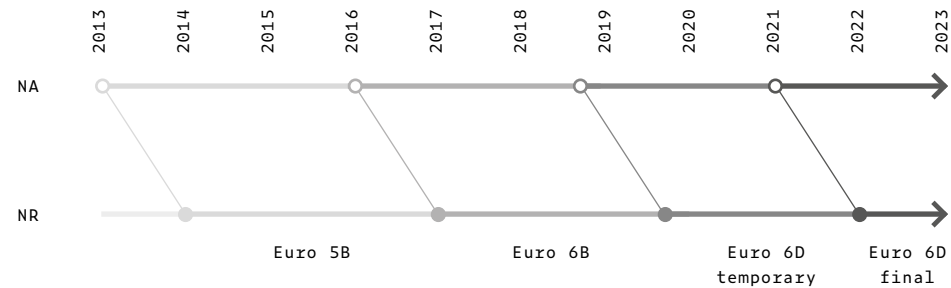
Step	Emission (mg/kWh)	NOx OTL (mg/kWh)	PM OTL (mg/kWh)	Reagent quality (mg/kWh)	ISC (PEMS)	New type Approval due date	New Registration due date	Last date of Registration
A	NOx=460 PM=10	1500	-	NOx=900	Payload:50-60% Power threshold:20%	31/12/2012	31/12/2013	30/12/2016
C	NOx=460 PM=10 PN=6*10 ¹¹ #/kWh	1200	25	NOx=460	Payload:50-60% Power threshold:20% Payload:10-100%	31/12/2015 01/01/2017	31/12/2016 -	31/08/2019 31/08/2019
D	NOx=460 PM=10 PN=6*10 ¹¹ #/kWh	1200	25	NOx=460	Payload:10-100% Power threshold:10%	01/09/2018	01/09/2019	31/12/2021
E	NOx=460 PM=10 PN=6*10 ¹¹ #/kWh	1200	25	NOx=460	Payload:10-100% Power threshold:>10%	01/09/2020	01/09/2021	tbc

Legend

- New Homologations
- New Registrations

Light Duty Emission Regulation Evolution

From NEDC to WLTP



RDE in addition to WLTP



Euro 6d compliance requirements with WLTP and RDE

- Effective from Sept 2019 WLTP (Worldwide harmonized Light vehicles Test Procedure) replaces NEDC test with longer and more power torque demanding cycle with same NOx emission target
- Real Driving Emissions RDE testing in addition to laboratory emission test to control emission vehicle in real operation - with binding NTE limits* (Not To Exceed) on NOx and PN

*NTE limit = CF x Emission Standard (CF = Conformity Factors)

HI-eSCR system

System Description

Due to the opposite reaction to combustion temperature, the reduction of either of the combustion products (NOx or PM) necessarily implies the increase of the other one. In order to reduce NOx, as required by Euro VI step E, it is necessary to work on different combustion management and exhaust gas treatment system.

This means that Euro VI step E emission limits can be reached only through the use of SCR (Selective Catalytic Reduction), either with or without EGR. The use of an EGR system reduces the NOx emissions in the combustion chamber, through exhaust gas recirculation with a consequential increase in the production of particulate matter (PM) and a reduction in combustion efficiency. Furthermore, with high engine-out particulate emissions, a forced regeneration of the DPF is required.

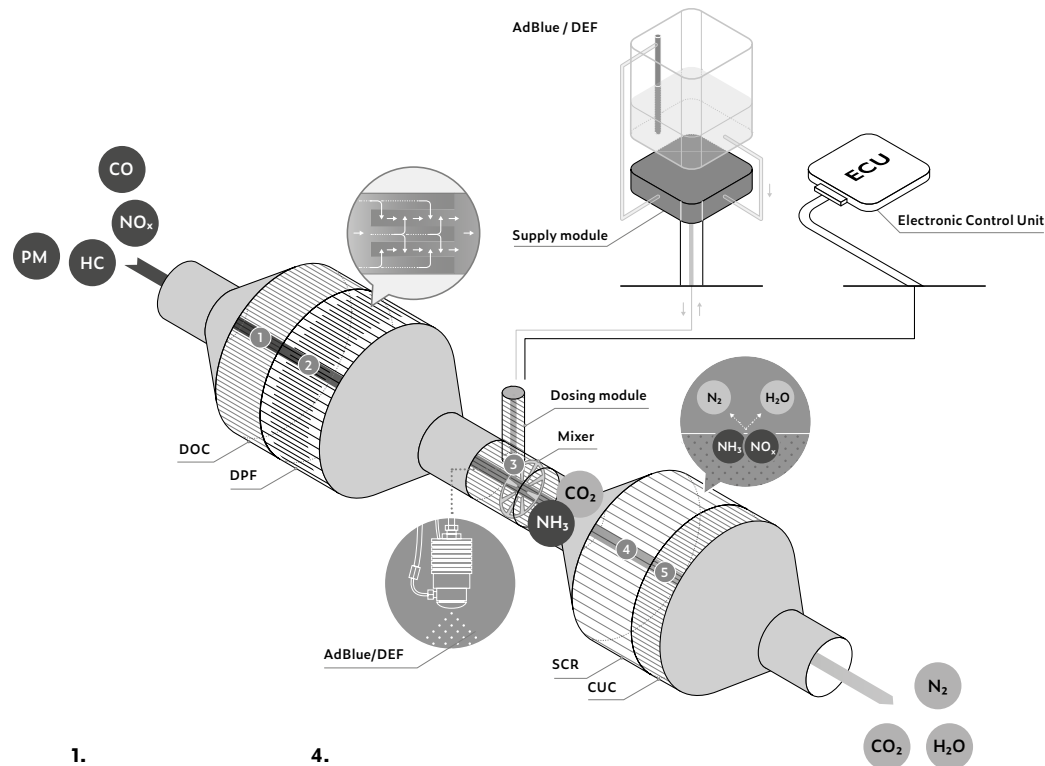
FPT Industrial has chosen instead to increase the engine combustion efficiency to reduce the PM without using re-circulated exhaust gasses for medium and heavy duty engines. While the remaining PM is reduced in the passive DPF, the NOx is reduced in the SCR system, while improving fuel consumption, performance and reliability. FPT Industrial's HI-eSCR is able to reduce the NOx levels more than 95%.

The "SCR Only" technology sees the introduction of a new integrated approach that is the result of extensive research by FPT Industrial, research that has led to the creation of numerous significant patents.

Furthermore, in Euro VI step E debuts the newest Ti-V SCR technology capable of an even higher NOx reduction capability at cold start cycles in respect to competition with Cu-ZeO catalyst. All in all, fuel consumption and reliability will benefit with this upgrade.

Six Reasons to Choose HI-eSCR

SCR Heritage	FPT Industrial's heritage in SCR technology is well-established. Since 2005 we have equipped more than 1.500.000 vehicles with this technology.
Outstanding Performance	Our engines are developed to maximize power density with the shortest load response time with minimal impact on the environment, due to the use of the HI-eSCR system.
Fuel Consumption	The efficiency of the combustion process optimizes fuel consumption reducing customer operating costs.
DPF Passive Regeneration	The absence of EGR improves engine efficiency and drastically reduces the outflow of particulate matter. This allows for the use of a passive DPF, where forced/parked filter regeneration will not be necessary DPF filter replacement/cleaning for heavy duty applications is up to 600.000 km depending on the mission.
Compact Packaging	Compared to competitor's engines, the thermodynamic efficiency of the FPT Industrial solutions allows to maximize power output for each engine space requirement and complexity.
Maintenance Intervals	The optimized combustion process preserves oil's physical properties reducing maintenance activities and related downtime. The engines maintain their best in class oil maintenance intervals of up to 150'000 km, without an increased oil sump.



1. Diesel Oxidation Catalyst (DOC)

$NO \rightarrow NO_2$
HC, CO and PM oxidation

2. Diesel Particulate Filter

PM oxidation with NO_2

3. AdBlue* / DEF Injection

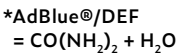
Hydrolysis \rightarrow
 $NH_3 + CO_2$

4. Selective Catalytic Reduction (SCR) Ti-V

NO and NO_2 reduction by NH_3 to N_2 and H_2O

5. Clean Up Catalyst

Residual NH_3 oxidation



Legend

PM Particulate Matter
HC Unburnt Hydrocarbons
 NO_x Nitrogen Oxides

CO Carbon Monoxide
 N_2 Nitrogen
 CO_2 Carbon Dioxide

H_2O Water
Ti-V Titanium-Vanadium

HI-eSCR

Main Components

The whole system is fitted with a network of integrated sensors to control the NO_x and any excess of NH_3 (ammonia) emitted.

Exhaust gas flow coming from the engine enters the DOC, where NO is oxidised in NO_2 , which helps to reduce the PM in the subsequent passive DPF. The filter is automatically regenerated at lower temperatures compared to the active DPF used by our competitors. The ECU (Engine Control Unit), the brain behind the HI-eSCR system, checks, through integrated sensors' network, the amount of Water-Urea (AdBlue) solution to be injected in the exhaust pipe. To increase the durability of the injector, Dosing Module is cooled by the engine coolant.

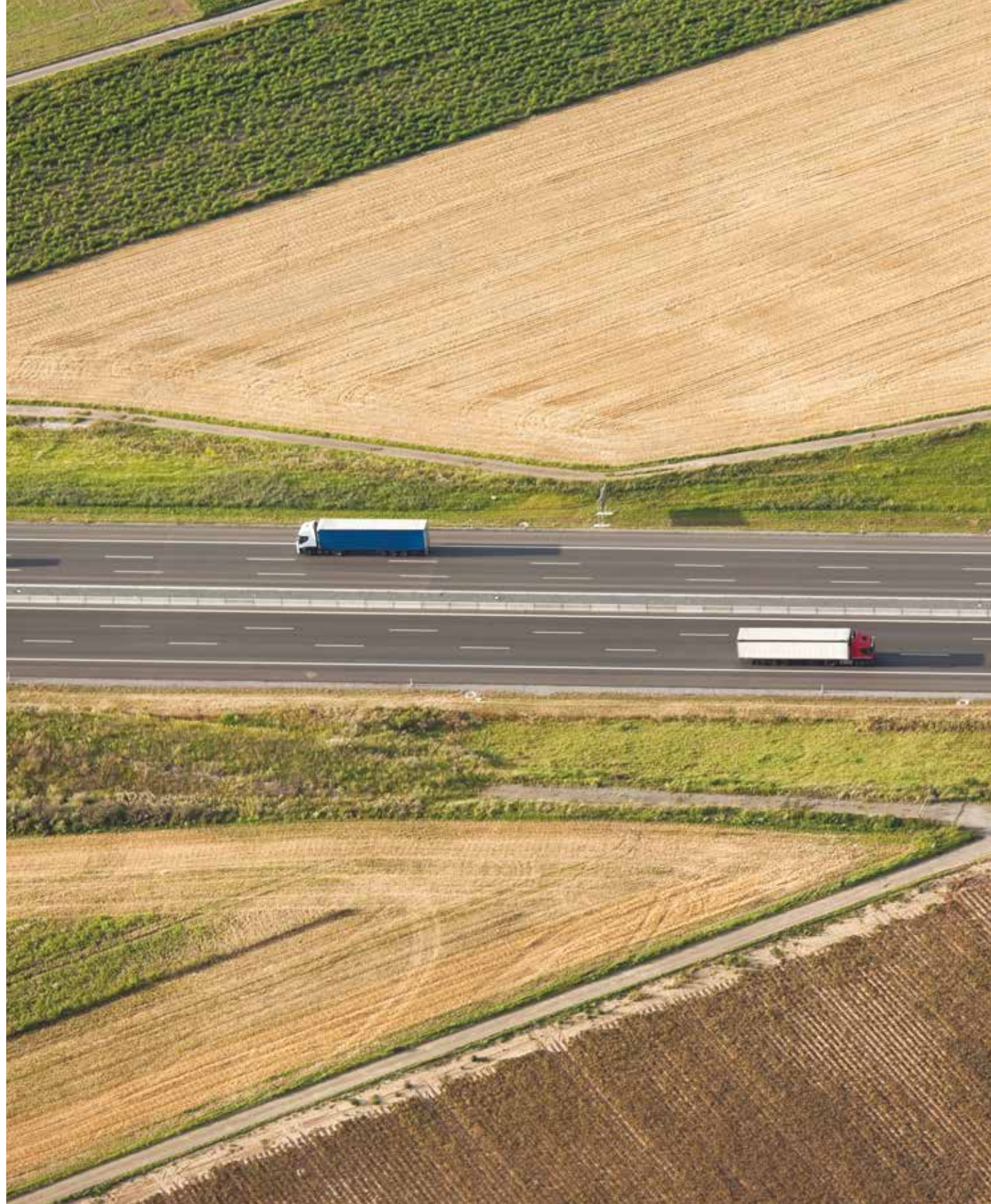
The HI-eSCR after-treatment system adopts a catalyst converting NO_x into Nitrogen (N_2) and Water (H_2O) thanks to the chemical reaction with a Water-Urea solution. In the end, the integrated CUC eliminates the remaining ammonia (NH_3). The result is a reduction of NO_x superior to 95%.

Patents

- "Closed" loop control to allow precise dosing of NO_x and ammonia sensors to provide accurate info on the composition of exhaust gases and reduce the use of AdBlue.
- Adaptive AdBlue dosing system in order to cut the level of NO_x emissions entering the SCR catalyst.
- Thermally insulated high turbulence mixing, to allow homogeneous hydrolysis of urea, creating correct distribution in exhaust gas flow.
- Improved exhaust gas temperature control to speed up SCR light-off in the cold part of emission cycle.

All the components of the exhaust after-treatment system are contained in a compact and fully enclosed structure thereby not impeding body building or chassis equipment mounting activities and minimizing the weight impact.

Our commitment to results has made us a leading player in engines, for the industrial and commercial sector.



ON ROAD ENGINES

THE F1 SERIES

From 116 to 210 hp

Durability

Best in class durability,
up to 400'000 km.

Performance

Best in class in Power
and Torque (up to
210 hp - 470 Nm)

Sustainability

2020 Real Driving
emission compliant
since 2017

Versatility

Best in class versatility:
available for both LD
and HD homologation,
trasversal and longi-
tudinal installation in
diesel, CNG/LNG and
hybrid versions.



Our F1 Series builds upon more than 35 years' experience in light commercial vehicles. We are currently European market leader with about 300.000 units produced per year. The engines in this series deliver optimum efficiency and minimum oil and fuel consumption, together with long service intervals.

F1 series meets Euro VI Step E / Euro 6d Final certification by 2021 adopting an external cooler EGR with by-pass combined with a SCR underfloor and a SCR on filter to meet required Aftertreatment efficiency in all driving conditions.

The F1 engines are available for both transversal and longitudinal installation, in diesel, CNG/LNG and hybrid versions.

F1A



F1C



F1C NG



Engine Specifications

Fuel	Application	Model	Cylinder Arrangement Air intake	Turbocharging	Injection System	Displacement Liters
DIESEL	LIGHT	F1A	L4 / TAA	EVGT	ECR	2, 3
DIESEL	LIGHT	F1A	L4 / TAA	EVGT	ECR	2, 3
DIESEL	LIGHT - MINIBUS	F1A	L4 / TAA	EVGT	ECR	2, 3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
DIESEL	LIGHT - MINIBUS	F1C	L4 / TAA	EVGT	ECR	3
CNG	LIGHT - MINIBUS	F1C NG	L4 / TAA	WG	MPI	3

Power			Torque			Emission Standard	Exhaust System	Pivot
kW	Hp	Rpm	Nm	Kgm	Rpm			
85	116	3500	340	33	1500	Euro 6d final	ec-EGR+DOC+SCRoF+SCR+CUC	
100	136	3500	370	36	1400	Euro 6d final / Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	
115	156	3500	400	41	1500	Euro 6d final / Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	
96	130	2620	350	36	1400	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	●
110	150	2620	400	41	1600	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	●
118	160	3500	400	41	1500	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	
129	175	2865	430	44	1600	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	●
130	177	3500	430	44	1600	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	
155	210	3500	470	48	1400	Euro VI E	ec-EGR+DOC+SCRoF+SCR+CUC	
100	136	3500	350	36	1500	Euro VI E	3 WAY CATALYST	

Legend

Turbocharger

EVGT Electronic Variable Geometry Turbo
WG Fixed Geometry Turbocharger with Waste Gate valve

Injection System

ECR Electronic Common Rail
MPI Multi-Points Injection

Exhaust System

ec-EGR external cooled Exhaust Gas Recirculation
DOC Diesel Oxidation Catalyst
SCRoF Selective Catalytic Reduction on Filter

SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

Key Advantages

	Features	Benefits
Up to 50.000 km Oil Change Intervals	Functional engine design in terms of mechanical clearances, piston rings and engine oil system calculation.	Reduced maintenance needs and operating costs, resulting in best-in-class total cost of ownership.
Starting temperature	Starting temperature with glow plugs down to -25°C . Performance achieved with external cooled EGR, VGT.	F1 Series specifically developed for light commercial vehicles and light buses, guarantees high performance in all conditions.
Electronic Injection System	Common Rail injection system up to 2.000 bar for F1C to comply with Euro VI step E. State-of-the-art technology for accurate fuel delivering.	Top performance (load response, torque, power) obtained with the minimum fuel consumption.
Air Handling	VGT with air-to-air charge cooler. 4 valves per cylinder to improve engine efficiency.	High power that grants the shortest time to torque and assures a low fuel consumption at the same time.
Engine Design	Dual mass flywheel, hydraulic tappets with roller finger followers, multiple fuel injection, suspended oil pan, bed-plate in addition to engine block, timing system driven by toothed belt for F1A.	This engine design ensures a high durability and improves overall comfort by reducing noise & vibration.

	Features	Benefits
Components Integration	Integration of components such as patented CCV (Closed Crankcase Ventilation), oil cooler and pumps (oil, water and steering).	The components integration allows an outstanding compactness and a superior power density.
Diagnosis	New ECU with higher memory capacity and cyber security protected. CAN-BUS control and monitoring interfaces for advanced real-time diagnosis	Quick and accurate service support and reduced vehicle downtime.
Aftertreatment	External cooled EGR (with by pass) combined with SCR underfloor and SCR on filter as the best solution for Euro VI step E on light duty engines applications, to meet required ATS efficiency.	High reliability and optimum running costs (lower fuel consumption, shorter vehicle downtime).
Option List	Radiators, air filters, mufflers, air compressor, air conditioning arrangement. Transversal and longitudinal installation. Diesel, gas and hybrid versions.	FPT engine offer is customer-oriented, with flexible solutions for every need and every kind of user.



**We increase the benefits
for end users and the
environment while creating
value for businesses.**

THE NEF SERIES

From 160 to 320 hp

World-class success
Around 100'000 engines produced every year for all kind of applications (On Road, Off Road, Power generation and Marine).

Effectiveness
Up to less 3% fuel consumption vs EGR competitors.

Sustainability
Low maintenance cost thanks to No EGR and a simpler and proven turbo and fuel injection system.

Reliability
Max uptime thank to No forced regeneration and up to 80'000 km oil change and 300'000 km DPF service.



The NEF series showcases FPT Industrial's technological excellence. Compliant with Euro VI step E standards, it is a compact, cost-effective solution for 6-18 tons trucks and buses and coaches up to 18 meters. Available in 4 and 6 cylinders, with diesel common rail or CNG/LNG multi-point injection, it stands out for reliability.

Thanks to research-driven innovation that has cut down fuel consumption while ensuring impressive performance, these engines are the benchmark in their category.

New N67 NG Diesel Like performance and drivability to be launched in step E certification.

N45



N67 NG

N67



Engine Specifications

Fuel	Application	Model	Cylinder Arrangement Air intake	Turbocharging	Injection System	Displacement Liters
DIESEL	TRUCK	N45	L4 / TAA	WG	ECR	4,5
DIESEL	TRUCK	N45	L4 / TAA	WG	ECR	4,5
DIESEL	BUS	N45	L4 / TAA	WG	ECR	4,5
DIESEL	TRUCK	N45	L4 / TAA	WG	ECR	4,5
DIESEL	TRUCK	N67	L6 / TAA	WG	ECR	6,7
DIESEL	BUS	N67	L6 / TAA	WG	ECR	6,7
DIESEL	TRUCK	N67	L6 / TAA	WG	ECR	6,7
DIESEL	TRUCK	N67	L6 / TAA	WG	ECR	6,7
DIESEL	BUS	N67	L6 / TAA	WG	ECR	6,7
DIESEL	TRUCK & BUS	N67	L6 / TAA	WG	ECR	6,7
CNG	TRUCK & BUS	N67	L6 / TAA	WG	MPI	6,7

Power			Torque			Emission Standard	Exhaust System	Pivot
kW	Hp	Rpm	Nm	Kgm	Rpm			
118	160	2500	580	59	1250	Euro VI E	DOC + DPF + SCR + CUC	●
137	186	2500	680	69	1250	Euro VI E	DOC + DPF + SCR + CUC	●
137	186	2500	750	76	1400	Euro VI E	DOC + DPF + SCR + CUC	●
152	207	2500	750	76	1400	Euro VI E	DOC + DPF + SCR + CUC	●
162	220	2500	800	82	1250	Euro VI E	DOC + DPF + SCR + CUC	●
184	250	2500	950	97	1400	Euro VI E	DOC + DPF + SCR + CUC	●
185	252	2500	850	87	1250	Euro VI E	DOC + DPF + SCR + CUC	●
206	280	2500	1000	102	1250	Euro VI E	DOC + DPF + SCR + CUC	●
210	286	2500	1000	102	1250	Euro VI E	DOC + DPF + SCR + CUC	●
235	320	2500	1100	112	1250	Euro VI E	DOC + DPF + SCR + CUC	●
209	285	2700	1250	127	1000	Euro VI E	3 WAY CATALYST	*

Legend

Turbocharger
WG Fixed Geometry Turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail
MPI Multi-Points Injection

Exhaust System
DOC Diesel Oxidation Catalyst
p-DPF Diesel Particulate Filter w/ passive regeneration
SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

*Max capability

Key Advantages

	Features	Benefits
Up to 80.000 km Oil Change Intervals	Long oil change intervals; functional engine design in terms of mechanical clearances, piston rings, engine oil system calculation.	Reduced maintenance needs and operating costs, resulting in best-in-class total cost of ownership.
Specific Features	Lean lay-out; starting up to -30°C; 25° continuous inclination; high performance without EGR/VGT. Exhaust flaps, more efficient braking and blow-by.	Top performance in every condition. Whether the temperature is very cold or there is need to overtake steep roads, NEF keeps starting and running.
Electronic Injection System	High Pressure Common Rail (up to 1600 bar) for accurate fuel delivery; state-of-the-art system to achieve thermodynamic performance and flat torque curve.	High performance (power, torque, load response) Obtained with the minimum fuel consumption.
Air Handling	Turbocharged with air-to-air aftercooler unit, without using Variable Geometry Turbocharger for Euro VI E emission limits achievement.	High power that grants the shortest time to torque and assures a low fuel consumption at the same time with an excellent load response.
Engine Design	Cast iron cylinder head, rear geartrain lay-out, camshaft in crankcase, suspended oil pan, bed-plate in addition to engine block.	This engine design ensures a high durability and improves overall comfort by reducing noise & vibration.

	Features	Benefits
Components Integration	High components integration such as patented CCV (Closed Crankcase Ventilation), oil cooler, oil and water pumps.	The components integration allows an outstanding compactness and a superior power density.
Diagnosis	New ECU with higher memory capacity and cyber security protected. CAN-BUS control and monitoring interfaces for advanced real-time diagnosis	Quick and accurate service support and reduced vehicle downtime.
Aftertreatment	Hi-eSCR, relying on TiV technology, is the best ATS solution to reach Euro VI E standards; it reduces NOx and heat rejection, and enhances engine performance and reliability.	High reliability, optimized costs (lower fuel consumption, shorter downtime), while improving environment care and compliancy with emission regulations.
Option List	Engine and driveline parts; transmission interface; air compressor, air conditioning compressor; steering pumps; oil sump; Diesel and Natural Gas versions.	FPT engine offer is customer-oriented, with flexible solutions for every need and every kind of user.

Our dependable, robust solutions for all road applications improve efficiency and boost business performance.



THE CURSOR SERIES

From 300 to 570 hp

Performance
11 l engine performance in a 9 l engine package.

Effectiveness
Up to less 3% fuel consumption vs EGR competitors.

Sustainability
Best in class in maintenance cost thanks to no EGR and a simpler and proven turbo and fuel injection system.

Reliability
Max uptime thanks to no forced regeneration; 150'000 km oil change and 600'000 km DPF service.



The CURSOR series stands out for superb performance combined with extremely low fuel consumption. EVGT develops high maximum torque at low RPM and provides it over a wide RPM range.

With the CURSOR 13 CNG/LNG we now have both the most powerful and quiet natural-gas engine on the market, and the broadest engine range. This extends FPT Industrial's offering for long haul and distribution/ municipality trucks as well as for city/ intercity buses and coaches. All engines in this series comply with the Euro VI step E standards.

C87



C87 NG



C11



C13



C13 NG



Engine Specifications

Fuel	Application	Model	Cylinder Arrangement Air intake	Turbocharging	Injection System	Displacement Liters	Power			Torque			Emission Standard	Exhaust System	Pivot
							kW	Hp	Rpm	Nm	Kgm	Rpm			
							DIESEL	TRUCK & BUS	C9	L6 / TAA	WG	ECR			
DIESEL	TRUCK & BUS	C9	L6 / TAA	WG	ECR	8,7	243	330	2200	1400	143	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK & BUS	C9	L6 / TAA	WG	ECR	8,7	265	360	2200	1650	168	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK & BUS	C9	L6 / TAA	EVGT	ECR	8,7	294	400	2200	1700	173	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK & BUS	C11	L6 / TAA	EVGT	ECR	11,1	309	420	1900	1900	194	1050	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C11	L6 / TAA	EVGT	ECR	11,1	338	460	1900	2150	219	1050	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C11	L6 / TAA	EVGT	ECR	11,1	353	480	1900	2300	235	950	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / TAA	WG	ECR	12,9	302	411	1900	2100	214	1000	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / TAA	WG	ECR	12,9	331	450	1900	2200	224	1000	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / TAA	EVGT	ECR	12,9	375	510	1900	2300	235	1000	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / TAA	EVGT	ECR	12,9	420	571	1900	2500	255	1000	Euro VI E	DOC + DPF + SCR + CUC	
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	221	301	2000	1300	133	1000	Euro VI E	3 WAY CATALYST	
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	250	340	2000	1500	153	1100	Euro VI E	3 WAY CATALYST	
CNG	BUS	C9 NG	L6 / TAA	WG	MPI	8,7	264	359	2000	1640	167	1100	Euro VI E	3 WAY CATALYST	
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	280	381	2000	1700	173	1200	Euro VI E	3 WAY CATALYST	
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	294	400	2000	1700	173	1200	Euro VI E	3 WAY CATALYST	
CNG	TRUCK	C13 NG	L6 / TAA	WG	MPI	12,9	343	460	1900	2000	204	1100	Euro VI E	3 WAY CATALYST	

Legend

Turbocharger

WG Fixed Geometry Turbocharger with Waste Gate valve
EVGT Electronic Variable Geometry Turbo

Injection System

ECR Electronic Common Rail
MPI Multi-Points Injection

Exhaust System

DOC Diesel Oxidation Catalyst
p-DPF Diesel Particulate Filter w/ passive regeneration

SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

Key Advantages

	Features	Benefits
Up to 150.000 km Oil Change Intervals	Maximum oil change intervals with the smallest oil sump on the market; functional engine design in terms of mechanical clearances, piston rings, green oil filters, low viscosity oils, engine oil system calculation.	Reduced maintenance needs and operating costs, resulting in best-in-class total cost of ownership.
Specific Features	Lean lay-out and VGT without cooled EGR. Centrifugal blow-by and electronic governed exhaust flap for improved braking.	High performance guaranteed in all conditions, even with very low temperatures (up to -25°C) and high sloping.
Electronic Injection System	Cursor Series feature High Pressure Common Rail (up to 2200 bar).	Optimized fuel delivery assures high performance (power, torque, load response) with the minimum fuel consumption.
Air Handling	VGT with air-to-air charge cooled air system with 4 valves per cylinder to increase engine efficiency through the optimization of thermodynamic performance.	High engine power density and fast load response time obtained with the lowest fuel consumption.
Engine Brake System	The ECU controlled engine brake system reduces brake pad wear. The introduction of an electronic governed exhaust flap increases the engine brake power up to 518 kW.	Improved drivability and lower maintenance cost with a better driving comfort.

	Features	Benefits
Engine Design	Super-finished timing gears, highly flexible injection, bed-plate in addition to engine block, rear geartrain lay-out, suspended oil pan. Integrated C. Rail.	This engine design ensures a high durability and improves overall comfort by reducing noise & vibration.
Components Integration	High components integration such as patented CCV (Closed Crankcase Ventilation), oil cooler, oil and water pumps.	The components integration allows an outstanding compactness and a superior power density.
Diagnosis	New ECU with higher memory capacity and cyber security protected. CAN-BUS control and monitoring interfaces for advanced real-time diagnosis.	Enhanced engine serviceability and diagnosis brings quick and accurate service support and reduced vehicle downtime.
Aftertreatment	Hi-eSCR with Ti V is the best ATS solution to reach Euro VI E standards; it reduces NOx and heat rejection, and enhances engine performance and reliability.	High reliability, optimized costs (lower fuel consumption, shorter downtime), while improving environment care and compliancy with emission regulations.
Option List	Oil sump available for both truck and bus applications; available on both Diesel and natural gas versions.	FPT engine offer is customer-oriented, with flexible solutions for every need and every kind of user



Our R&D activities drive technological excellence and product innovation.

THE NATURAL GAS SERIES

From 136 to 460 hp

Versatility

The widest Natural Gas engine range on the market.

Effectiveness

30-40% fuel cost saving (€/km) Vs. Diesel.

Sustainability

Up to around 100% lower CO2 generation than Diesel, w/ Bio-methane.

Performance

Diesel like performance with lower operating costs.



The Natural Gas Series engines are available in a power range from 136 to 460 hp, Euro VI step E ready, capable to be offered for all kind of applications, from light commercial vehicles to long haul trucks, from urban to intercity buses and coaches.

Natural Gas is a valid alternative solution to conventional fossil fuels, as well as the most environmentally friendly and cost-effective choice currently offered on the market. Its combustion produces much less harmful emissions than other fossil fuels, less noise and it is also considerably less expensive to use.

FPT Industrial has stood at the forefront of the development of Natural Gas engines and boosts today the most powerful and silent 100% Natural Gas engine on the market (with Diesel-like performances) and the broadest engine range, all based on common technology and proprietary engine control strategies.

F1C NG



N67 NG



C87 NG



C13 NG



Engine Specifications

Fuel	Application	Model	Cylinder Arrangement Air intake	Turbocharging	Injection System	Displacement Liters	Power			Torque			Emission Standard	Exhaust System
							kW	Hp	Rpm	Nm	Kgm	Rpm		
CNG	LIGHT - MINIBUS	F1C NG	L4 / TAA	WG	MPI	3	100	136	3500	350	36	1500	Euro VI E	3 WAY CATALYST
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	221	301	2000	1300	133	1000	Euro VI E	3 WAY CATALYST
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	250	340	2000	1500	153	1100	Euro VI E	3 WAY CATALYST
CNG	BUS	C9 NG	L6 / TAA	WG	MPI	8,7	264	359	2000	1640	167	1100	Euro VI E	3 WAY CATALYST
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	280	381	2000	1700	173	1200	Euro VI E	3 WAY CATALYST
CNG	TRUCK	C9 NG	L6 / TAA	WG	MPI	8,7	294	400	2000	1700	173	1200	Euro VI E	3 WAY CATALYST
CNG	TRUCK	C13 NG	L6 / TAA	WG	MPI	12,9	343	460	1900	2000	204	1100	Euro VI E	3 WAY CATALYST
CNG	TRUCK & BUS	N67 NG	L6 / TAA	WG	MPI	6,7	160	218	2500	800	82	1100	Euro VI E	3 WAY CATALYST
CNG	TRUCK & BUS	N67 NG	L6 / TAA	WG	MPI	6,7	185	252	2500	850	87	1100	Euro VI E	3 WAY CATALYST
CNG	TRUCK & BUS	N67 NG	L6 / TAA	WG	MPI	6,7	206	280	2500	1000	102	1100	Euro VI E	3 WAY CATALYST
CNG	TRUCK & BUS	N67 NG	L6 / TAA	WG	MPI	6,7	209	285	2700	1250	127	1000	Euro VI E	3 WAY CATALYST

Legend

Turbocharger
WG Fixed Geometry Turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

Key Advantages

	Features	Benefits
Injection System	Multipoint sequential injection, specific pistons and very quick and stable combustion avoiding backfire. Gas chemical composition doesn't affect combustion.	Accurate fuel delivering and combustion process resulting in competitive fuel economy and engine performance.
Combustion Technology	Improved stoichiometric combustion is the best solution to comply with Euro VI E, assures best in class fuel consumption and lower noise than Diesel.	Best-in-class fuel consumption, maximum comfort and improved environmental care.
Engine Design	Exhaust manifold in Ni-resist cast iron alloy, turbocharger with steel turbine housing & water-cooled bearings, compacted graphite iron cylinder head casting.	This design ensures outstanding reliability and a longer engine life.
Natural Gas Fuel	Natural Gas is one of the cheapest and environmental friendly fuel types that brings strong economic advantages as well.	Best total cost of ownership and improved pollutants emissions.
Aftertreatment System	Lambda closed loop control and a simple three-way catalyst without EGR. FPT NG engines reduce the amount of pollutants by 95%, complying with Euro VI E. Furthermore, for an even clener emissions a GPF (Gasoline Particulate Filter) will reduce particulate emitted in EU VI E 2nd step	Natural gas engine is the best option to combine great performance, lower operating cost, regulations compliancy and environment care.



DRIVELINE

AXLES

Versatility
Products for every kind of application from On to Off highway.

Efficiency
Best in class efficiency, over 98% for light application.

Flexibility
Rear axle available with disc or drum brakes, Single and Twin wheel with differential lock for the best end user flexibility in different application.

Performance
All wheel drive activation and additional traction thanks to Hydrostatic Drive on front axles when needed or slip the rear axle.



To satisfy a complete offer of power-train solutions for On-Road market, FPT develops and manufactures high-performance axles for all commercial categories, from heavy trucks off highway vehicles to light trucks, in urban areas or overland, from delivery to long haul.

From 70's to nowadays FPT has continuously improved driveline products, and today produces 1 axle/ transmission every two minutes.

Axles products with GAW from 2,4 to 32 tons and GVW from 3,5 to 40 ton, are designed to maximize duration and load with minimum weight and maximum efficiency.

FRONT DRIVING



FRONT NON-DRIVING



REAR SINGLE



REAR TANDEM



Axles Specifications

Application	Model	Type	GAW (ton)	GVW (ton)	Brake system	Oil quantity (l)	Weight (kg)	Axle ratio range
MEDIUM TRUCK	5956	F/D/S/HR	6	15	DRUM	6,5	600	4,82 - 8,27
HEAVY TRUCK	5985	F/D/S/T/HR	9 + 9	40	DRUM	6,5	654 + intermediate	3,48 - 6,58
MEDIUM TRUCK	5833	F/ND/S	3,6	10	DISC	0,2	175	NOT APPLICABLE
MEDIUM TRUCK	5845	F/ND/S	4,6	12	DISC	0,3	246	NOT APPLICABLE
MEDIUM TRUCK	5860	F/ND/S	6	16	DISC	NOT PRESENT	316	NOT APPLICABLE
HEAVY TRUCK	5871/2	F/ND/S	7,5	18	DISC	0,7	450	NOT APPLICABLE
HEAVY TRUCK	5886	F/ND/S/T	8,5 + 8,5	40	DISC/DRUM	0,7	460 + intermediate	NOT APPLICABLE
HEAVY TRUCK	5890	F/ND/S/T	9 + 9	40	DISC	NOT PRESENT	456 + intermediate	NOT APPLICABLE
LIGHT TRUCK	NDA SW & TW	R/S/SR	2,4	3,5	DISC	1,35	128	2,92 - 5,63
LIGHT TRUCK	4511	R/S/SR	4	5,2	DISC	1,9	157	2,93 - 5,86
LIGHT TRUCK	4517/3	R/S/SR	4,5	6,5	DISC	3	240	3,91 - 5,13
MEDIUM TRUCK	4517/2	R/S/SR	5	7	DISC	3	215	3,91 - 5,13
MEDIUM TRUCK	4517	R/S/SR	6	8	DISC	3	264	3,15 - 5,57
MEDIUM TRUCK	4521	R/S/SR	7	10	DISC	5,4	296	3,07 - 5,57
MEDIUM TRUCK	MS08	R/S/SR	8,5	12	DISC	6,5	345	3,07 - 5,57
MEDIUM TRUCK	MS10	R/S/SR	10,5	16	DISC	12,7	466	2,93 - 6,83
HEAVY TRUCK	17x	R/S/SR	13	26	DISC/DRUM	12	625	2,64 - 6,17
HEAVY TRUCK	MT23	R/T/SR	11,5 + 11,5	32	DISC/DRUM	post + intermediate	599 + intermediate	2,83 - 6,17
MEDIUM TRUCK*	451146	R/S/HR	11	15	DRUM	11	500	3,48 - 6,58
HEAVY TRUCK*	451391	R/S/HR	13	19	DRUM/DISC	13	675	3,79 - 6,58
HEAVY TRUCK*	451846	R/T/HR	9 + 9	33	DISC	post + intermediate	500 + intermediate	3,97 - 7,51
HEAVY TRUCK*	452146	R/T/HR	11,5 + 11,5	33	DISC/DRUM	post + intermediate	post + intermediate	3,48 - 6,58
HEAVY TRUCK*	452191	R/T/HR	11,5 + 11,5	33	DISC/DRUM	post + intermediate	post + intermediate	3,79 - 6,58
HEAVY TRUCK*	453291	R/T/HR	16 + 16	40	"DISC/DRUM/S-CAM"	post + intermediate	post + intermediate	3,79 - 6,58

Legend

* OFF Highway
 F front axles
 R rear axles
 D driving axle
 ND not driving axles

S solo
 T tandem
 SR single reduction
 HR hub reduction



Key Advantages

	Features	Benefits
Gross Axle Weight	Front axles: 3,6 to 18 ton of GAW and 10 to 40 ton of GVW capability. Rear axles: 2,4 to 32 ton of GAW capability and 3,5 to 40 of GVW.	Maximized payload for every kind of duty.
Hydrostatic Drive	Engageable hydrostatic front-drive axle for temporary additional power. Ideal when additional traction is needed (forwards and reverse).	Improved driveability and vehicle control. Engage/disengage on-to-go. Better fuel consumption and up to 400kg lighter vs. standard all-wheel drive.
Maintenance and Operating Costs	Best in class efficiency, long oil change interval (up to 450 kkm for medium and heavy duty and 350 kkm for light duty). No oil in non-driving axles.	Reduced operating costs and longer service intervals.
Optionality	Rear axle available with Single and Twin wheel with differential lock. Solo and tandem configuration rear axles for heavy duty applications.	End user flexibility for different applications.
Gears Optimization and Brakes	Optimized gear (precision up to 30 μ rad) to reduce noise level for light applications. Air Disc Brakes and up to 30kNm braking torque.	Improved comfort and safety.

TRANSMISSIONS

Flexibility

PTO always available for end user flexibility for different applications.

Comfort

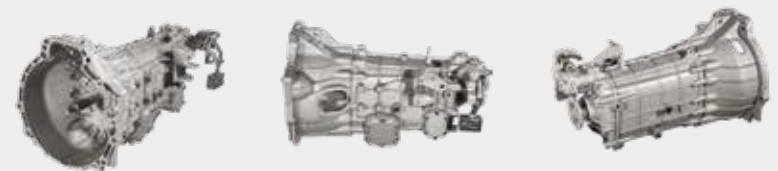
High shifting comfort and precision as a result of a robust and new pre-synchronizer system, low friction bearing and internal shifter grid

Efficiency

Best in class efficiency thanks to low friction bearings and sealings and new synthetic oil (for life oil fill)

Durability

Transmission guaranteed for a lifetime of up to 450kkm.



To satisfy a complete offer of powertrain solutions for On-Road market, FPT develops and manufactures high-performance manual transmissions for light commercial vehicles and minibuses.

Transmission products for light commercial vehicles are designed and engineered to optimize the complete powertrain by our single-reduction rear axles for the 2.3 and 3-liter F1 series engines. The new FT50.6 6-speed longitudinal manual transmission w/ input torque 300 to 500 Nm is characterized by low weight, high sturdiness and gear shifting comfort, thanks to the latests generation of synchronizers and gears.

FT50.6



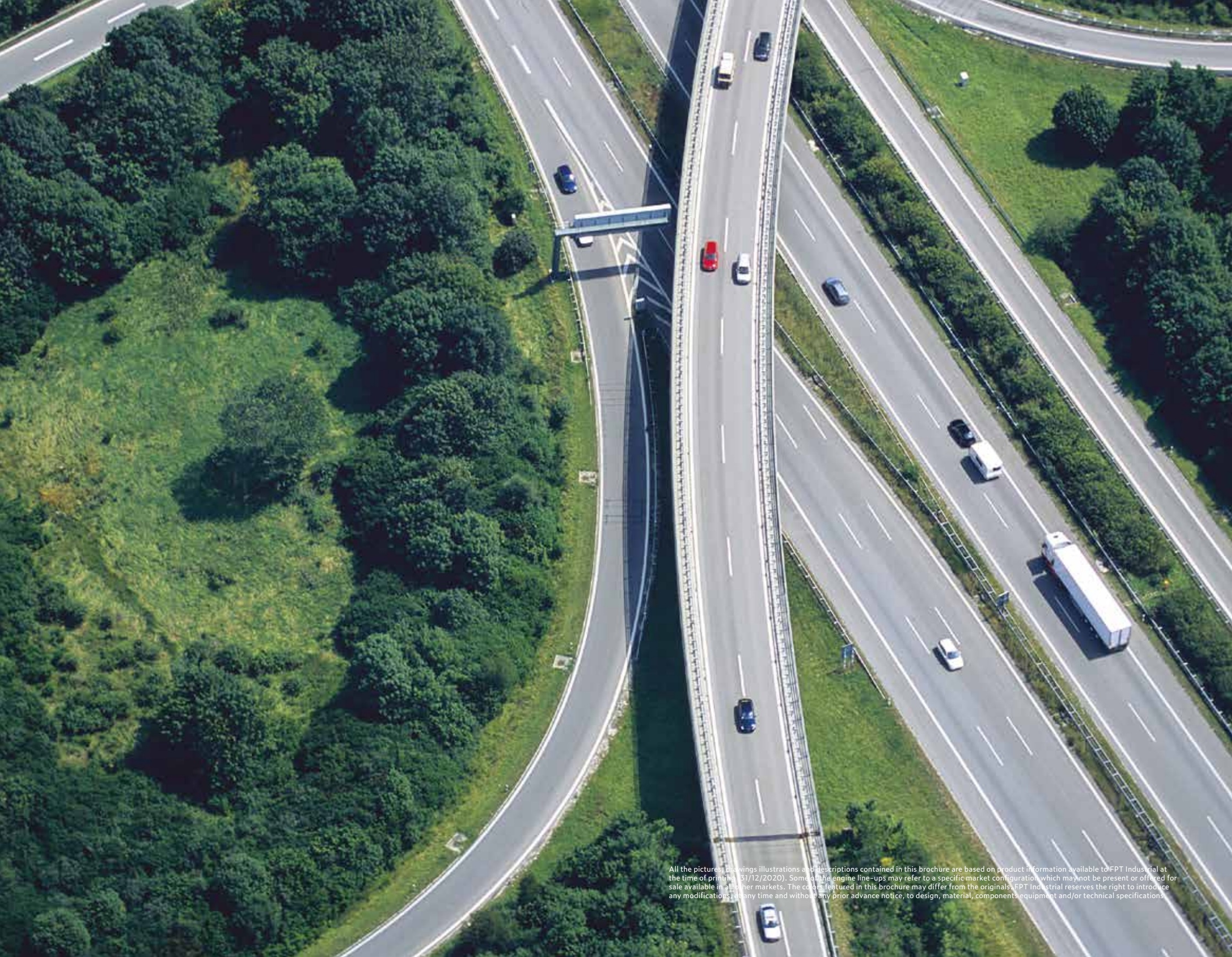
Transmissions Specifications

Application	Model	Shifting	Max Input Torque (Nm)	GVW (ton)	Durability (kkm)	Oil quantity (l)	Weight (kg)	PTO	Gear Ratio
LCV + MINIBUS	FT50.6	6 SPEED MANUAL	500	UP TO 8	350	1,8	57	AVAILABLE	1^ 5,375 2^ 3,154 3^ 2,041 4^ 1,365 5^ 1,000 6^ 0,791 RG 4,838

Key Advantages

	Features Precision (internal grid)	Benefits
Input Torque	Engine input torque up to 500Nm, weight up to 57kg: the 6 speed manual transmissions guarantee a state of art shifting comfort.	Optimized torque/weight ratio.
Maintenance and Operating Costs	Mechanical efficiency > 97%. Oil change interval up to 350kkm.	Reduced maintenance and operating costs.
Optionality and Vehicle Integration	PTO availability for all the line up and by replacing a specific clutch housing, the transmission can be easily adaptable to different engines.	End user flexibility for different applications.
Lifetime	Transmissions guaranteed for a lifetime of up to 450kkm.	High reliability and durability.





All the pictures, drawings, illustrations and descriptions contained in this brochure are based on product information available to FPT Industrial at the time of printing (31/12/2020). Some of the engine line-ups may refer to a specific market configuration, which may not be present or offered for sale available in all other markets. The colors featured in this brochure may differ from the originals. FPT Industrial reserves the right to introduce any modifications, at any time and without any prior advance notice, to design, material, components, equipment and/or technical specifications.

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