FPT
POWERTRAIN TECHNOLOGIES

ON ROAD
ENGINES & DRIVELINE

Our efficiency.
Your edge.

v09/2022

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Index

ABOUT FPT INDUSTRIAL

FPT Industrial is the Brand of Iveco Group, dedicated to the design, development, production, sale, and assistance of powertrain systems for On-Road, Off-Road, Marine and Power Generation applications.
The company employs more than 8,000 people worldwide, in ten manufacturing plants and ten R&D centers. The FPT Industrial sales network consists of over 70 dealerships and over 700 service centers in almost 100 countries.
A wide product offering, including six engine ranges from 42 hp to 1,000 hp, transmission with torque up to 500 Nm, front and rear axles from 2,45 to 32 ton GAW (Gross Axle Weight).
FPT Industrial offers the most complete line-up of Natural Gas engines on the market for industrial applications, with power that goes from 50 to 520 hp.
A dedicated ePowertrain division is driving the transition to zero-emission mobility and transportation with electric drivelines from light to heavy commercial vehicles, from 145 kW to 840 kW, modular battery storage and management systems for zero-emission commercial and people transport.
This extensive offering and a strong focus on R&D activities make FPT Industrial a world leader in industrial powertrains.
We work for businesses serving other businesses, and we are committed to satisfy the requirements of both direct and final Customers.
We are proud to be a people-oriented and innovation-driven Company, that builds Customer advantage through continuous research an improvement, and creates value by leveraging this advantage.

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, high efficiency combustion, a choice of air handling devices, advanced emission control strategy 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.

Innovation-driven solutions 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 keep the innovation leadership in the industrial powertrain field and a reference provider of the most cost-efficient powertrain solutions.

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 break-through 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 Recircu-lation), guaranteeing a very high NOx conversion efficiency (over 95%).

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.

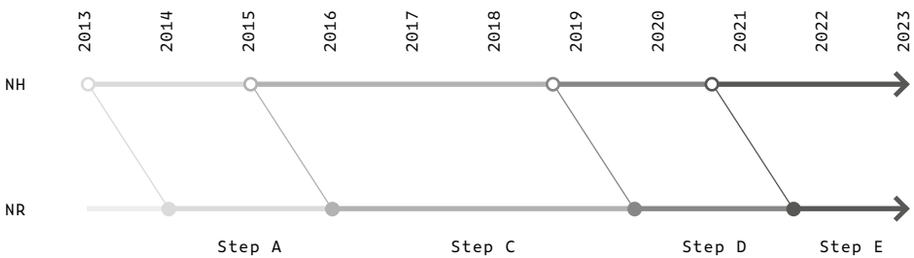
To achieve these aims, crankcase and cylinder head design results in an high structural rigidity and in swept volume. The engines are fitted with the latest generation of multiple events Common Rail fuel injection equipment with peak nozzle pressures of up to 2200 bar.
A new enhanced Electronic Control 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 inte-grate 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



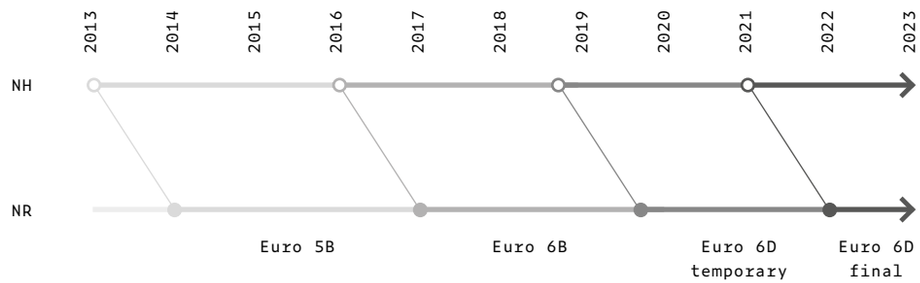
Step	Emission (mg/kWh)	NOx OTL (mg/kWh)	PM OTL (mg/kWh)	Reagent quality (mg/kWh)	ISC (PEMS)	New type Approval due date	New Registration due date	Last date of Registration
A	NOx=460 PM=10	1500	–	NOx=900	Payload:50-60% Power threshold:20%	31/12/2012	31/12/2013	30/12/2016
C	NOx=460 PM=10 PN=6*10^{11} #/kWh	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 addiction 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 requried 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

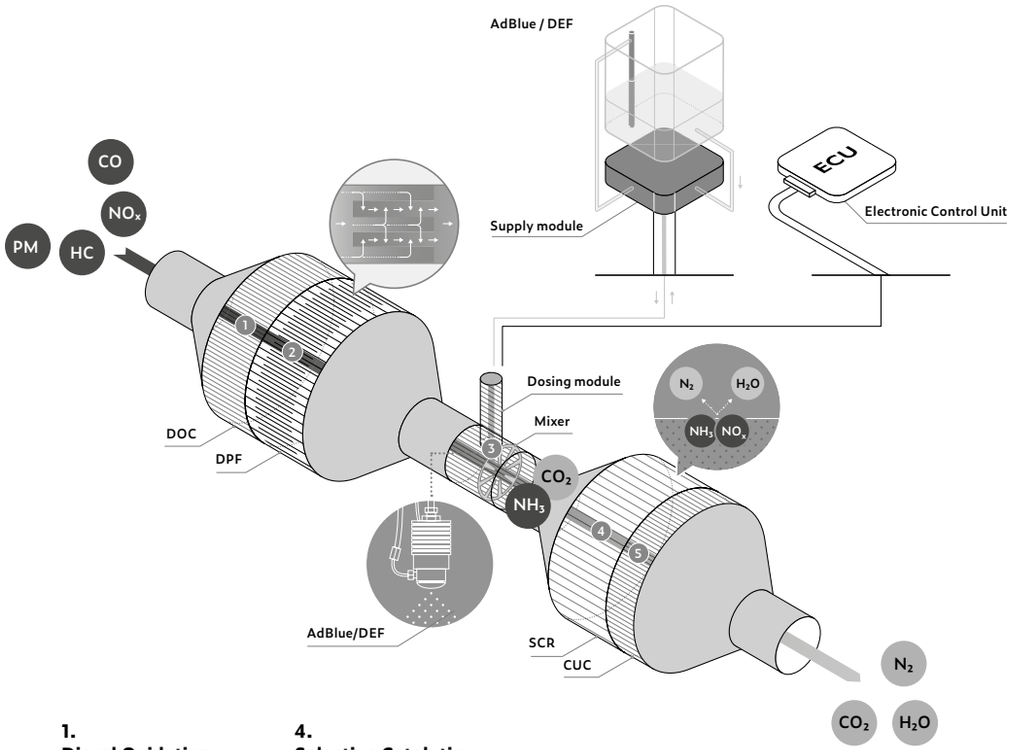
The absence of EGR improves engine efficiency and drastically reduces the outflow of particulate matter.
This allows for the use of a passive DPF, where forced/parked filter regeneration will not be necessary DPF filter replacement/cleaning for heavy duty applications is up to 600.000 km depending on 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 → 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

*AdBlue®/DEF
$= CO(NH_2)_2 + H_2O$

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

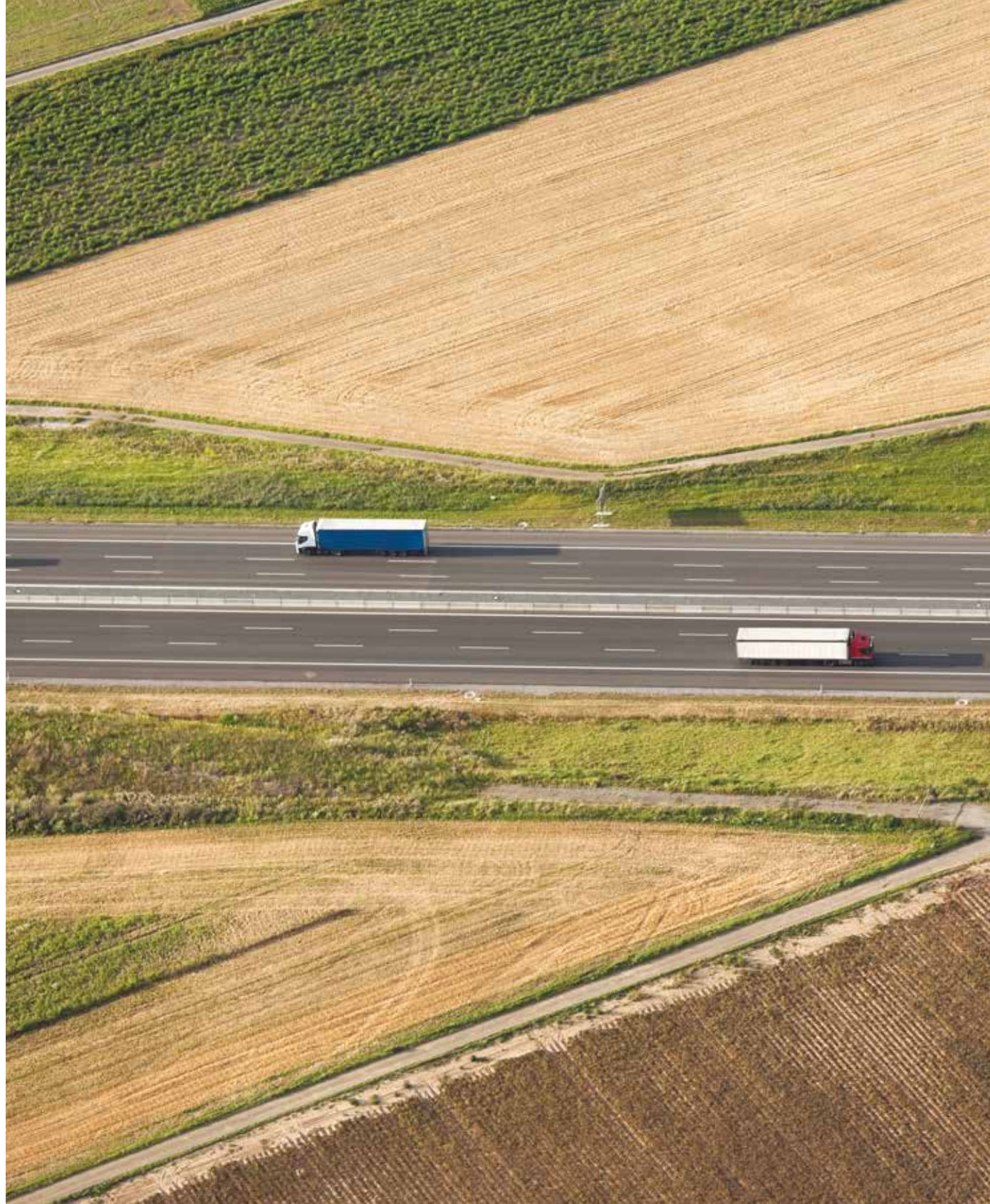
The whole system is fitted with a network of integrated sensors to control the NOx and any excess of NH3 (ammonia) emitted.
Exhaust gas flow coming from the engine enters the DOC, where NO is oxidised in NO2, which helps to reduce the PM in the subsequent passive DPF. The filter is automatically regenerated 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 NOx into Nitrogen (N2) and Water (H2O) thanks to the chemical reaction with a Water-Urea solution. In the end, the integrated CUC eliminates the remaining ammonia (NH3). The result is a reduction of NOx superior to 95%.

Patents

- "Closed" loop control to allow precise dosing of NOx 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 NOx 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

Engine Specifications

Fuel	Application	Model	Cylinder Arrangement / Valves per cyl.	Turbocharging	Injection System	Displacement Liters	Power kW	Power Hp	Power Rpm	Torque Nm	Torque Kgm	Torque Rpm	Emission Standard	Exhaust System	Pivot
DIESEL	LIGHT	F1A	L4 / 4	EVGT	ECR	2,3	85	116	3500	340	33	1500	Euro 6d final	EGR+DOC+SCRoF+SCR+CUC	
DIESEL	LIGHT	F1A	L4 / 4	EVGT	ECR	2,3	100	136	3500	370	36	1400	Euro 6d final / Euro VI E	EGR+DOC+SCRoF+SCR+CUC	
DIESEL	LIGHT	F1A	L4 / 4	EVGT	ECR	2,3	115	156	3500	400	41	1500	Euro 6d final / Euro VI E	EGR+DOC+SCRoF+SCR+CUC	
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	96	130	2620	350	36	1400	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	•
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	110	150	2620	400	41	1600	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	•
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	118	160	3500	400	41	1500	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	129	175	2865	430	44	1600	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	•
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	129	175	3500	430	44	1600	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	
DIESEL	LIGHT - MINIBUS	F1C	L4 / 4	EVGT	ECR	3	152	207	3500	470	48	1400	Euro VI E	EGR+DOC+SCRoF+SCR+CUC	
NATURAL GAS	LIGHT - MINIBUS	F1C NG	L4 / 4	WG	MPI	3	100	136	3500	350	36	1500	Euro VI E	3 WAY CATALYST	
DIESEL	TRUCK	N45	L4 / 4	WG	ECR	4,5	118	160	2500	580	59	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK	N45	L4 / 4	WG	ECR	4,5	137	186	2500	680	69	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	BUS	N45	L4 / 4	WG	ECR	4,5	137	186	2500	750	76	1400	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK	N45	L4 / 4	WG	ECR	4,5	152	207	2500	750	76	1400	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK	N67	L6 / 4	WG	ECR	6,7	162	220	2500	800	82	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	BUS	N67	L6 / 4	WG	ECR	6,7	184	250	2500	950	97	1400	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK	N67	L6 / 4	WG	ECR	6,7	185	252	2500	850	87	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK	N67	L6 / 4	WG	ECR	6,7	206	280	2500	1000	102	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	BUS	N67	L6 / 4	WG	ECR	6,7	210	286	2500	1000	102	1250	Euro VI E	DOC + DPF + SCR + CUC	•
DIESEL	TRUCK - BUS	N67	L6 / 4	WG	ECR	6,7	235	320	2500	1100	112	1250	Euro VI E	DOC + DPF + SCR + CUC	•
NATURAL GAS	TRUCK - BUS	N67 NG	L6 / 4	WG	MPI	6,7	162	220	1930	800	82	1250	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK - BUS	N67 NG	L6 / 4	WG	MPI	6,7	185	252	2100	850	87	1250	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK - BUS	N67 NG	L6 / 4	WG	MPI	6,7	206	280	2000	1000	102	1250	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK - BUS	N67 NG	L6 / 4	WG	MPI	6,7	210	286	2000	1250	127	1250	Euro VI E	3 WAY CATALYST	*

Legend

Turbocharger
EVGT Electronic Variable Geometry Turbo
EVGT BB Electronic Variable Geometry Turbo Ball Bearing
WG fixed geometry turbocharger with Waste Gate valve
eWG electronic fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail
ECR 2500bar Electronic Common Rail 2500 bar pressure
MPI Multi-Points Injection

Exhaust System
EGR external Exhaust Gas Recirculation
DOC Diesel Oxidation Catalyst
SCRoF Selective Catalytic Reduction on Filter
DPF Diesel Particulate Filter w/ passive regeneration
SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

*Max capability

Engine Specifications

Fuel	Application	Model	Cylinder Arrangement / Valves per cyl.	Turbocharging	Injection System	Displacement Liters	Power kW	Power Hp	Power Rpm	Torque Nm	Torque Kgm	Torque Rpm	Emission Standard	Exhaust System	Pivot
DIESEL	BUS	C9	L6 / 4	WG	ECR	8,7	228	310	2200	1300	133	1100	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK - BUS	C9	L6 / 4	WG	ECR	8,7	251	341	2200	1400	143	1100	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK - BUS	C9	L6 / 4	WG	ECR	8,7	265	360	2200	1650	168	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK - BUS	C9	L6 / 4	EVGT	ECR	8,7	294	400	2200	1700	173	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK - BUS	C11	L6 / 4	EVGT	ECR	11,1	309	420	1900	2000	204	870	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C11	L6 / 4	EVGT	ECR	11,1	338	460	1900	2150	219	925	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C11	L6 / 4	EVGT	ECR	11,1	353	480	1900	2300	235	970	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	WG	ECR	12,9	302	411	1900	2120	216	1200	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	WG	ECR	12,9	332	452	1900	2200	224	870	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	EVGT	ECR	12,9	357	490	1900	2400	245	950	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	EVGT	ECR	12,9	375	510	1900	2300	235	900	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	EVGT	ECR	12,9	387	530	1900	2400	245	950	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	C13	L6 / 4	EVGT	ECR	12,9	419	570	1900	2500	255	1000	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	338	460	1650	2300	235	770	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	338	460	1650	2500	255	820	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	368	500	1650	2400	245	795	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	368	500	1650	2600	265	843	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	397	540	1650	2500	255	910	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	397	540	1650	2700	275	956	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	426	579	1650	2600	265	940	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	426	579	1650	2800	286	978	Euro VI E	DOC + DPF + SCR + CUC	
DIESEL	TRUCK	XC13	L6 / 4	EVGT BB	ECR 2500bar	12,9	442	601	1900	2850	275	1100	Euro VI E	DOC + DPF + SCR + CUC	*
NATURAL GAS	TRUCK	C9 NG	L6 / 4	WG	MPI	8,7	221	301	2000	1300	133	1000	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK	C9 NG	L6 / 4	WG	MPI	8,7	250	340	2000	1500	153	1100	Euro VI E	3 WAY CATALYST	
NATURAL GAS	BUS	C9 NG	L6 / 4	WG	MPI	8,7	264	359	2000	1640	167	1100	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK	C9 NG	L6 / 4	WG	MPI	8,7	280	381	2000	1700	173	1200	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK	C9 NG	L6 / 4	WG	MPI	8,7	294	400	2000	1700	173	1200	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK	C13 NG	L6 / 4	WG	MPI	12,9	338	460	1900	2000	204	1100	Euro VI E	3 WAY CATALYST	
NATURAL GAS	TRUCK	XC13 NG	L6 / 4	eWG	MPI	12,9	353	480	1900	2200	224	1100	Euro VI E	EGR + 3 WAY CATALYST	
NATURAL GAS	TRUCK	XC13 NG	L6 / 4	eWG	MPI	12,9	382	520	1900	2500	255	1100	Euro VI E	EGR + 3 WAY CATALYST	*

Legend

Turbocharger
EVGT Electronic Variable Geometry Turbo
EVGT BB Electronic Variable Geometry Turbo Ball Bearing
WG fixed geometry turbocharger with Waste Gate valve
eWG electronic fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail
ECR 2500bar Electronic Common Rail 2500 bar pressure
MPI Multi-Points Injection

Exhaust System
EGR external Exhaust Gas Recirculation
DOC Diesel Oxidation Catalyst
SCRoF Selective Catalytic Reduction on Filter
DPF Diesel Particulate Filter w/ passive regeneration
SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

*Max capability

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 40 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.

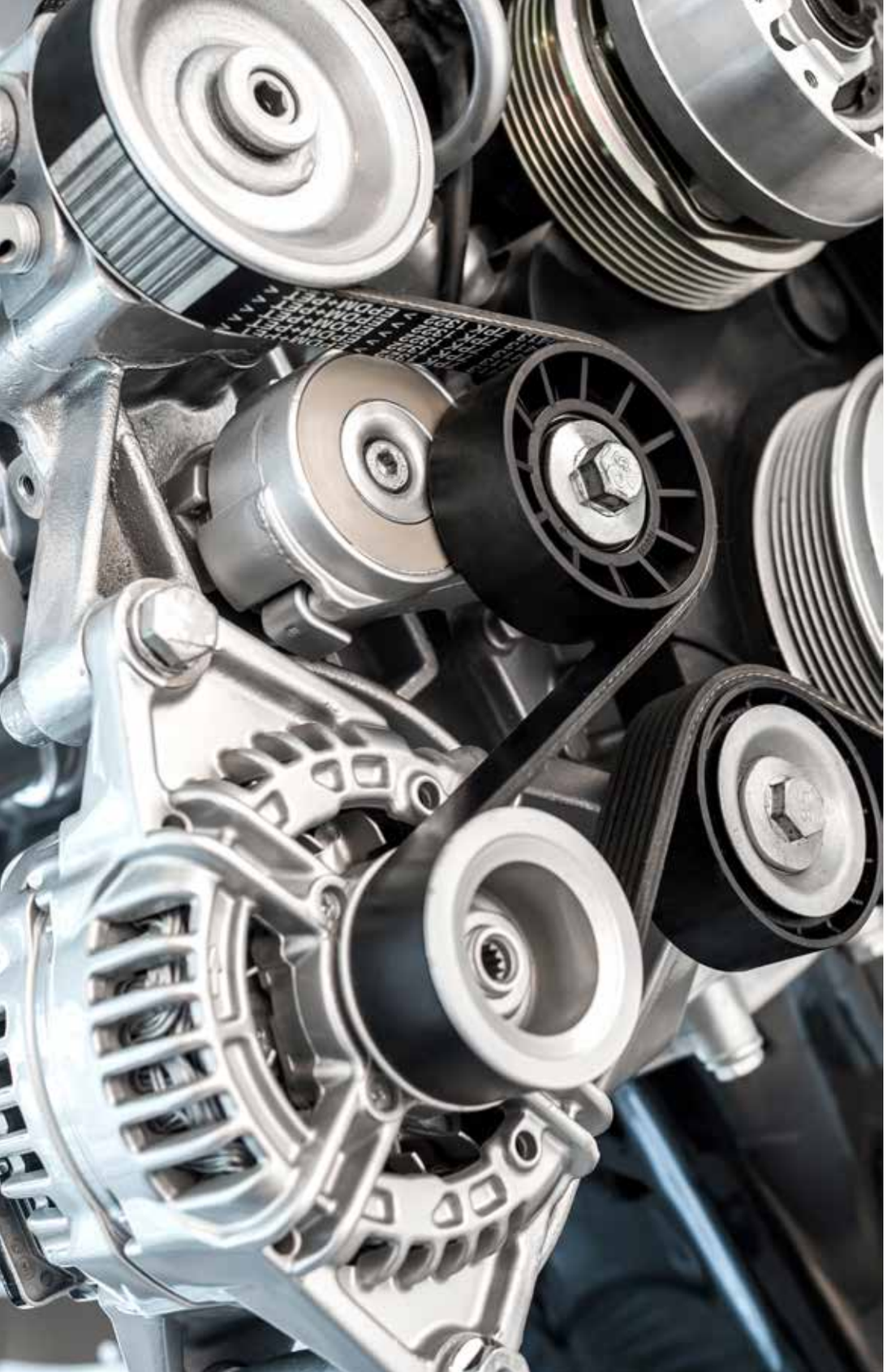
F1 series meets Euro VI Step E / Euro 6d Final certification by 2021 adopting an external cooler EGR with by-pass combined with a SCR underfloor and a SCR on filter to meet required Aftertreament efficiency in all driving conditions.

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

F1A

F1C

F1C NG



F1A

Total Displacement (L):	2,3
Arrangement:	4 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	88
Stoke (mm):	94
Exhaust system:	EGR+DOC+SCRoF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 707 x 662 x 826
Dry Weight (kg)	202

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	Pivot
LIGHT	85 (116) @ 3.500	340 @ 1.500	Euro 6d final	
LIGHT	100 (136) @ 3.500	370 @ 1.400	Euro 6d final / Euro VI E	
LIGHT	115 (156) @ 3.500	400 @ 1.500	Euro 6d final / Euro VI E	

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
EVGT Electronic Variable Geometry Turbo

Injection System
ECR Electronic Common Rail

Exhaust system
EGR external Exhaust Gas Recirculation
DOC Diesel Oxidation Catalyst
SCRoF Selective Catalytic Reduction on Filter
SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

F1A for LCVs

F1C

Total Displacement (L):	3
Arrangement:	4 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	96
Stoke (mm):	104
Exhaust system:	EGR+DOC+SCRoF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 858 x 704 x 739
Dry Weight (kg)	257

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	Pivot
LIGHT-MINIBUS	96 (130) @ 2.620	350 @ 1.400	Euro VI E	X
LIGHT-MINIBUS	110 (150) @ 2.620	400 @ 1.600	Euro VI E	X
LIGHT-MINIBUS	118 (160) @ 3.500	400 @ 1.500	Euro VI E	
LIGHT-MINIBUS	129 (175) @ 2.865	430 @ 1.600	Euro VI E	X
LIGHT-MINIBUS	129 (175) @ 3.500	430 @ 1.600	Euro VI E	
LIGHT-MINIBUS	152 (207) @ 3.500	470 @ 1.400	Euro VI E	

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
EVGT Electronic Variable Geometry Turbo

Injection System
ECR Electronic Common Rail

Exhaust system
EGR external Exhaust Gas Recirculation
DOC Diesel Oxidation Catalyst
SCRoF Selective Catalytic Reduction on Filter
SCR Selective Catalytic Reduction
CUC Clean Up Catalyst

F1C for LCVs

F1C NG

Total Displacement (L):	3
Arrangement:	4 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	96
Stoke (mm):	104
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 745 x 695 x 750
Dry Weight (kg)	245

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	Pivot
LIGHT-MINIBUS	100 (136) @ 3.500	350 @ 1.500	Euro VI E	

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

F1C NG for LCVs

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.

Our R&D activities drive technological excellence and product innovation, increasing benefits for end users while creating value for business.

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 thanks 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

N67 NG

N45

Total Displacement (L):	4,5
Arrangement:	4 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 854 x 782 x 910
Dry Weight (kg)	400

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	Pivot
TRUCK	118 (160) @ 2.500	580 @ 1.250	Euro VI E	X
TRUCK	137 (186) @ 2.500	680 @ 1.250	Euro VI E	X
BUS	137 (186) @ 2.500	750 @ 1.400	Euro VI E	X
TRUCK	152 (207) @ 2.500	750 @ 1.400	Euro VI E	X

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail

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

N45 for Buses

N45 for Trucks

N67

Total Displacement (L):	6,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.100 x 782 x 924
Dry Weight (kg)	530

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	Pivot
TRUCK	162 (220) @ 2.500	800 @ 1.250	Euro VI E	X
BUS	184 (250) @ 2.500	950 @ 1.400	Euro VI E	X
TRUCK	185 (252) @ 2.500	850 @ 1.250	Euro VI E	X
TRUCK	206 (280) @ 2.500	1.000 @ 1.250	Euro VI E	X
BUS	210 (286) @ 2.500	1.000 @ 1.250	Euro VI E	X
TRUCK - BUS	235 (320) @ 2.500	1.100 @ 1.250	Euro VI E	X

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail

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

N67 for Buses

N67 for Trucks

N67 NG

Total Displacement (L):	6,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.060 x 704 x 868
Dry Weight (kg)	548

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	
TRUCK - BUS	162 (220) @ 1.930	800 @ 1.250	Euro VI E	
TRUCK - BUS	185 (252) @ 2.100	850 @ 1.250	Euro VI E	
TRUCK - BUS	206 (280) @ 2.000	1.000 @ 1.250	Euro VI E	
TRUCK - BUS	210 (286) @ 2.000	1.250 @ 1.250	Euro VI E	*Max capability

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

N67 NG for Buses

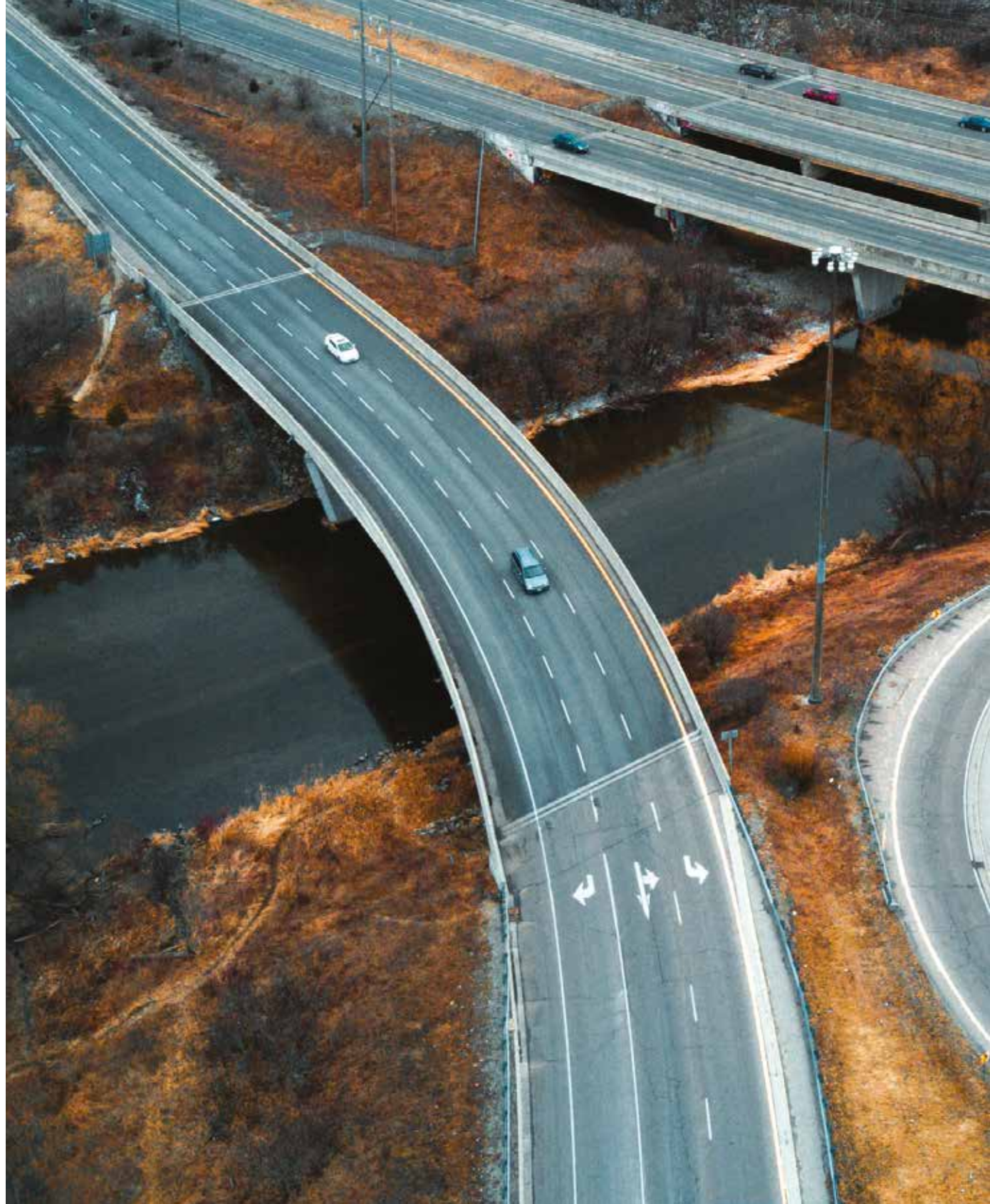
N67 NG for Trucks

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 600 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.

The new XC13 allows the attainment of both performance (best-in-class) and sustainability benefits.

Being the first FPT multi-fuel single base engine means it is compatible with a wide range of market requirements, with limited impact on vehicle installation, ready for next generation emission challenges.

C9

C9 NG

C11

C13

C13 NG

XC13

XC13 NG

C9

Total Displacement (L):	8,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT/WG
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	117
Stoke (mm):	135
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.181 x 1.001 x 1.079
Dry Weight (kg)	860

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Turbocharger	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
BUS	WG	228 (310) @ 2.200	1.300 @ 1.110	Euro VI E
TRUCK - BUS	WG	251 (341) @ 2.200	1.400 @ 1.100	Euro VI E
TRUCK - BUS	WG	265 (360) @ 2.200	1.650 @ 1.200	Euro VI E
TRUCK - BUS	EVGT	294 (400) @ 2.200	1.700 @ 1.200	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail

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

C9 for Buses

C9 for Trucks

C9 NG

Total Displacement (L):	8,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	117
Stoke (mm):	135
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.433 x 1.014 x 1.100
Dry Weight (kg)	870

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Turbocharger	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK	WG	221 (301) @ 2.000	1.300 @ 1.000	Euro VI E
TRUCK	WG	250 (340) @ 2.000	1.500 @ 1.100	Euro VI E
BUS	WG	264 (359) @ 2.000	1.640 @ 1.100	Euro VI E
TRUCK	WG	280 (381) @ 2.000	1.700 @ 1.200	Euro VI E
TRUCK	WG	294 (400) @ 2.000	1.700 @ 1.200	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

C9 NG for Buses

C9 NG for Trucks

C11

Total Displacement (L):	11,1
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	128
Stoke (mm):	144
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.286 x 1.035 x 1.149
Dry Weight (kg)	1.148

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Turbocharger	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK - BUS	EVGT	309 (420) @ 1.900	2.000 @ 870	Euro VI E
TRUCK	EVGT	338 (460) @ 1.900	2.150 @ 925	Euro VI E
TRUCK	EVGT	353 (480) @ 1.900	2.300 @ 970	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
EVGT Electronic Variable Geometry Turbo

Injection System
ECR Electronic Common Rail

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

C11 for Buses

C11 for Trucks

C13

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT/WG
Injection System:	ECR
Cooling System:	Liquid
Bore (mm):	135
Stoke (mm):	150
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.360 x 1.008 x 1.171
Dry Weight (kg)	1.197

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Turbocharger	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK	WG	302 (411) @ 1.900	2.120 @ 1.200	Euro VI E
TRUCK	WG	332 (452) @ 1.900	2.200 @ 870	Euro VI E
TRUCK	EVGT	357 (490) @ 1.900	2.400 @ 950	Euro VI E
TRUCK	EVGT	375 (510) @ 1.900	2.300 @ 900	Euro VI E
TRUCK	EVGT	387 (530) @ 1.900	2.400 @ 950	Euro VI E
TRUCK	EVGT	419 (570) @ 1.900	2.500 @ 1.000	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
EVGT Electronic Variable Geometry Turbo
WG fixed geometry turbocharger with Waste Gate valve

Injection System
ECR Electronic Common Rail

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

C13 for Trucks

C13 NG

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.610 x 1.027 x 1.178
Dry Weight (kg)	1.150

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Turbocharger	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK	WG	338 (460) @ 1.900	2.000 @ 1.110	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

C13 NG for Trucks

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

NEW

XC13

The first FPT multi-fuel single base engine

Unique core structure for diesel, methane and future hydrogen applications.

Best-in-class power, torque and braking power.

Easily adaptable for different vehicle installations and for a wide market coverage.

Further reduction CO_2 emissions and Euro VII ready.

FPT Industrial is successfully combining performance, emissions goals, reliability, and everyday needs.

The new XC13 is a breakthrough in this area: best-in-class performance thanks to improved combustion efficiency, making it a primary contributor to achieving the 2025 fleet-wide CO_2 emissions target.

The XC13 will be available in diesel and methane versions, with future provision for hydrogen technology and ready for next generation emission challenges.

Key new technology contents

Single base engine	Unique core structure for multi-fuel & multi-application configurations.
Combustion Efficiency	Higher peak cylinder (270 bar) and fuel injection pressure (2.500 bar) for diesel. EGR for methane.
New cylinder head – block material	From standard casting to Compacted Graphite Iron (CGI) casting.
Reduced friction	New materials on connecting rod pins and crankpins.
Air Handling	Down-speeding with new divided flow turbo (unique for diesel version). New electric turbo control (eWG) for Methane.
New valvetrain	To achieve best-in-class braking power.
Proprietary FPT software	Advanced combustion control and thermal management.

XC13

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Diesel 4 stroke
Air handling:	TCA
Turbocharging:	EVGT BB
Injection System:	ECR 2500bar (+13% vs previous gen.)
Cooling System:	Liquid
Bore (mm):	135
Stoke (mm):	150
Exhaust system:	DOC+DPF+SCR+CUC

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	1.365 x 1.079 x 1.185 (L[2]xWxH)
Dry Weight (kg)	1.018 (-10% vs previous gen.)

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Data comparison (vs previous generation):

Performance:	*BEST-IN-CLASS*	Power up to 600 Hp (+5%)
	BEST-IN-CLASS	Torque up to 2.850 Nm (+14%)
Sustainability:		CO_2 reduction (-9%)
		Euro VI E / Euro VII ready
Braking power:	*BEST-IN-CLASS*	530kW @ 2.300rpm (+29%)
Durability:		up to 1,6Mio km (+33%)

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	
TRUCK	338 (460) @ 1.650	2.300 @ 770	Euro VI E	
TRUCK	338 (460) @ 1.650	2.500 @ 820	Euro VI E	
TRUCK	368 (500) @ 1.650	2.400 @ 795	Euro VI E	
TRUCK	368 (500) @ 1.650	2.600 @ 843	Euro VI E	
TRUCK	397 (540) @ 1.650	2.500 @ 910	Euro VI E	
TRUCK	397 (540) @ 1.650	2.700 @ 956	Euro VI E	
TRUCK	426 (579) @ 1.650	2.600 @ 940	Euro VI E	
TRUCK	426 (579) @ 1.650	2.800 @ 978	Euro VI E	
TRUCK	442 (601) @ 1.900	2.850 @ 1.100	Euro VI E	* Max capability

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
EVGT BB Electronic Variable Geometry Turbo Ball Bearing
eWG electronic fixed geometry turbocharger with Waste Gate valve

Injection System
ECR 2500bar Electronic Common Rail 2500 bar pressure

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

XC13 for Trucks

XC13 NG

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	eWG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	135
Stoke (mm):	150
Exhaust system:	EGR + 3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	1.365 x 1.067 x 1.167 (L[2]xWxH)
Dry Weight (kg)	1.050 (-10% vs previous gen.)

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Data comparison (vs previous generation):

Performance:	*BEST-IN-CLASS*	Power up to 520 Hp (+13%)
	BEST-IN-CLASS	Torque up to 2.500 Nm (+25%)
Sustainability:		CO_2 reduction (-10%)
		Euro VI E / Euro VII ready
Braking power:	*BEST-IN-CLASS*	245kW @ 2.300rpm (+300%)
Durability:		up to 1,2Mio km (+20%)

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	
TRUCK	353 (480) @ 1.900	2.200 @ 1.100	Euro VI E	
TRUCK	382 (520) @ 1.900	2.500 @ 1.100	Euro VI E	* Max capability

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
eWG electronic fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

Exhaust system
EGR external Exhaust Gas Recirculation

XC13 NG for Trucks

In the path of innovation, we are sustainability driven, sharing values and benefits with our people, business partners and environment.

THE NATURAL GAS SERIES

From 136 to 520 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 CO_2 generation than Diesel, w/ Bio-methane.

Performance
Diesel like performance with lower operating costs.

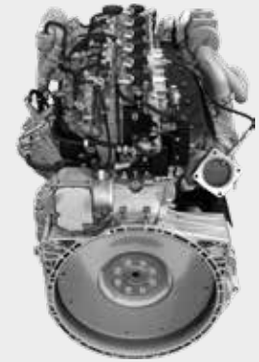
The Natural Gas Series engines are available in a power range from 136 to 520 hp, Euro VI step E ready, capable to be offered for all kind of applications, from light commercial vehicles to long haul trucks, from urban to intercity buses and coaches.

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 fore-front 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

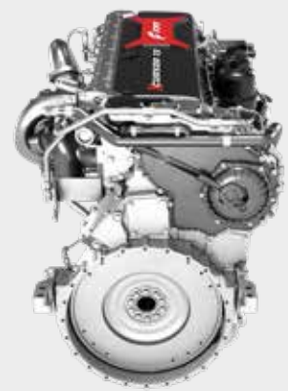
N67 NG



C9 NG

C13 NG

XC13 NG



F1C NG

Total Displacement (L):	3
Arrangement:	4 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	96
Stoke (mm):	104
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 745 x 695 x 750
Dry Weight (kg)	245

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
LIGHT-MINIBUS	100 (136) @ 3.500	350 @ 1.500	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Injection System
MPI Multi-Points Injection

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

F1C NG for LCVs

N67 NG

Total Displacement (L):	6,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.060 x 704 x 868
Dry Weight (kg)	548

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	
TRUCK - BUS	162 (220) @ 1.930	800 @ 1.250	Euro VI E	
TRUCK - BUS	185 (252) @ 2.100	850 @ 1.250	Euro VI E	
TRUCK - BUS	206 (280) @ 2.000	1.000 @ 1.250	Euro VI E	
TRUCK - BUS	210 (286) @ 2.000	1.250 @ 1.250	Euro VI E	*Max capability

Air Handling
TCA Turbocharged with aftercooler

Injection System
MPI Multi-Points Injection

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

N67 NG for Buses

N67 NG for Trucks

C9 NG

Total Displacement (L):	8,7
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	117
Stoke (mm):	135
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.433 x 1.014 x 1.100
Dry Weight (kg)	870

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK	221 (301) @ 2.000	1.300 @ 1.000	Euro VI E
TRUCK	250 (340) @ 2.000	1.500 @ 1.100	Euro VI E
BUS	264 (359) @ 2.000	1.640 @ 1.100	Euro VI E
TRUCK	280 (381) @ 2.000	1.700 @ 1.200	Euro VI E
TRUCK	294 (400) @ 2.000	1.700 @ 1.200	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

C9 NG for Buses

C9 NG for Trucks

C13 NG

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	WG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	104
Stoke (mm):	132
Exhaust system:	3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.610 x 1.027 x 1.178
Dry Weight (kg)	1.150

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard
TRUCK	338 (460) @ 1.900	2.000 @ 1.110	Euro VI E

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
WG fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

C13 NG for Trucks

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.

XC13 NG

Total Displacement (L):	12,9
Arrangement:	6 Cyl. in line
Valves per cylinder:	4
Thermodynamic cycle:	Otto 4 stroke
Air handling:	TCA
Turbocharging:	eWG
Injection System:	MPI
Cooling System:	Liquid
Bore (mm):	135
Stoke (mm):	150
Exhaust system:	EGR + 3 WAY CATALYST

WEIGHT AND DIMENSIONS

Dimensions[1] (mm)	(L[2]xWxH) 1.365 x 1.067 x 1.167
Dry Weight (kg)	1.050 (-10% vs previous gen.)

[1] Dimensions can be changed according to engine options
[2] Length at flywheel

Application	Max power kW (HP) @ rpm	Max Torque Nm @ rpm	Emission standard	
TRUCK	353 (480) @ 1.900	2.200 @ 1.100	Euro VI E	
TRUCK	382 (520) @ 1.900	2.500 @ 1.100	Euro VI E	* Max capability

Air Handling
TCA Turbocharged with aftercooler

Turbocharger
eWG electronic fixed geometry turbocharger with Waste Gate valve

Injection System
MPI Multi-Points Injection

Exhaust system
EGR external Exhaust Gas Recirculation

XC13 NG for Trucks

Main features and data comparison (vs previous generation):

Performance:
Power up to 520 Hp (+13%) *BEST-IN-CLASS*
Torque up to 2.500 Nm (+25%) *BEST-IN-CLASS*

New electric turbo control – eWG - and EGR.

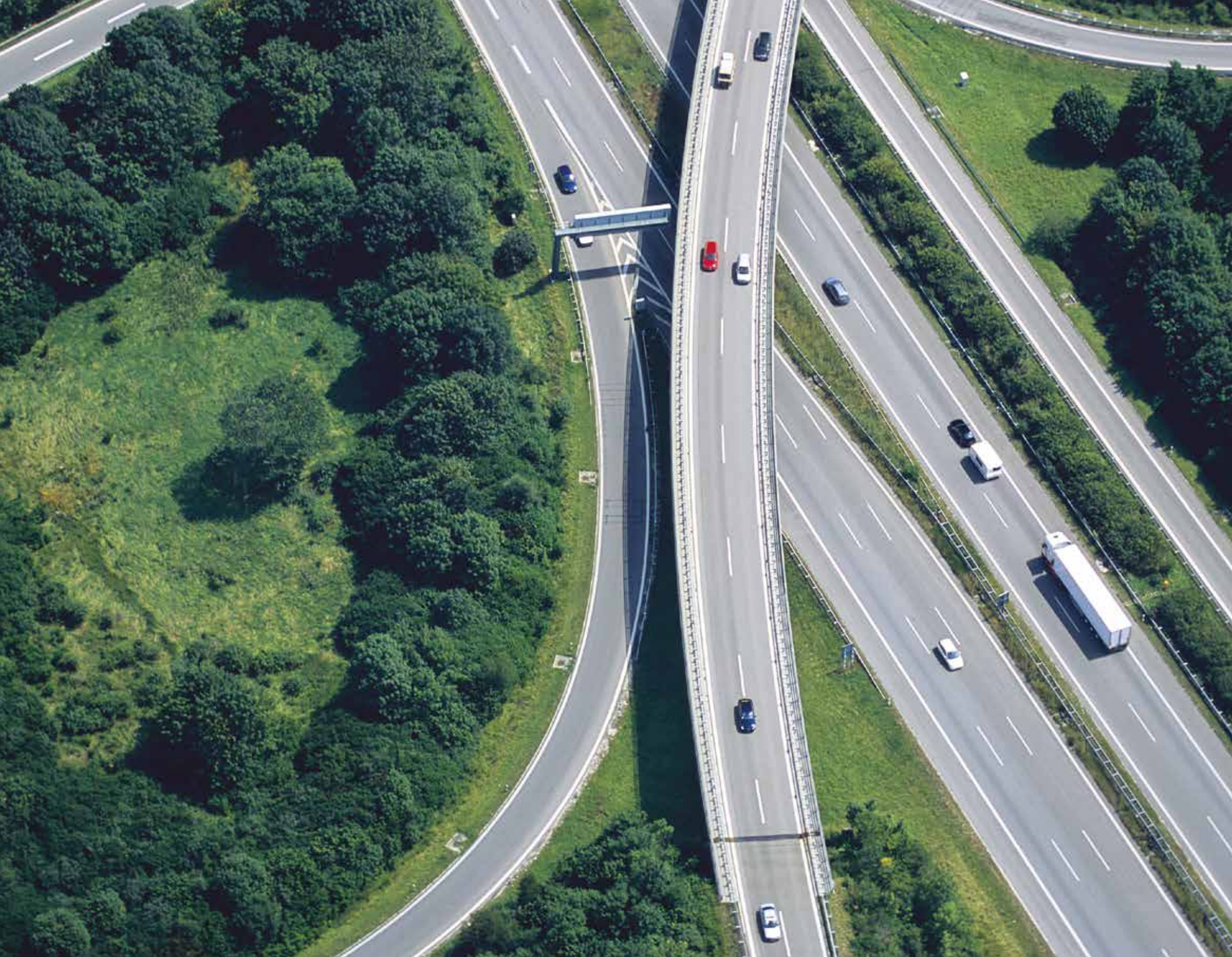
Sustainability:
CO_2 reduction (-10%)
Euro VI E / Euro VII ready

A primary contributor to achieving the 2025 fleet-wide CO_2 emission target, thanks to reduced friction for maximizing efficiency and proprietary FPT software for advanced combustion control and thermal management.

Braking power & Reduced weight:
Braking power up to 245kW @ 2.300rpm (+300%)
Weight reduction 80 kg (-10%) *BEST-IN-CLASS*

Further improved thanks to the new cylinder head and block materials.

Durability:
up to 1,2Mio km (+20%)



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 2,45 to 32 ton 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 + 8	700 + 805 (int)	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	NO OIL	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 + 0,7	460 + 460 (int)	NOT APPLICABLE
HEAVY TRUCK	5890	F/ND/S/T	9 + 9	40	DISC	NO OIL	456 + 456 (int)	NOT APPLICABLE
LIGHT TRUCK	NDA SW & TW	R/S/SR	2,45	3,5	DISC	1,35	134 (SW) | 140 (TW)	2,92 - 5,63
LIGHT TRUCK	4511	R/S/SR	3,7	5	DISC	1,9	166	2,93 - 5,86
LIGHT TRUCK	4517/3	R/S/SR	5	7	DISC	3,1	250	5,13 - 5,86
LIGHT TRUCK	4517/2	R/S/SR	5,4	7,2	DISC	3,1	215	3,91 - 5,13
MEDIUM TRUCK	4517	R/S/SR	5,6	8	DISC	3,1	265	3,15 - 5,57
MEDIUM TRUCK	4521	R/S/SR	6,8	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	2,31 - 6,17
HEAVY TRUCK	MT23	R/T/SR	11,5 + 11,5	32	DISC/DRUM	34	1.330	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	11,5	500	3,97 - 7,51
HEAVY TRUCK*	452146	R/T/HR	11,5 + 11,5	33	DISC/DRUM	21	1.359	3,48 - 6,58
HEAVY TRUCK*	452191	R/T/HR	11,5 + 11,5	33	DISC/DRUM	38	1.542	3,79 - 6,58
HEAVY TRUCK*	453291	R/T/HR	16 + 16	40	"DISC/DRUM/S-CAM"	38	1.586	3,79 - 6,58

Legend

*	OFF Highway	D	driving axle	T	tandem
F	front axles	ND	not driving axles	SR	single reduction
R	rear axles	S	solo	HR	hub reduction

AXLES for LIGHT DUTY

Type:	Rear application
GAW range (ton):	2,45 to 5,4
GVW range (ton):	3,5 to 7,2
Brake system:	Disc
Weight (Kg):	134 to 250
Axle ratio range:	2,92 to 5,86

Rear

Model	NDA Single Wheel	NDA Twin Wheel	4511	4517/3	4517/2
Type	S/SR	S/SR	S/SR	S/SR	S/SR
GAW (ton)	2,45	2,45	3,7	5	5,4
GVW (ton)	3,5	3,5	5	7	7,2
Brake System	DISC	DISC	DISC	DISC	DISC
Oil quantity (l)	1,35	1,35	1,9	3,1	3,1
Weight (Kg)	134	140	166	250	215
Axle ratio range	2,92-5,63	2,92-5,63	2,93-5,86	5,13 & 5,86	3,91-5,13

Legend:

*	OFF Highway
F	front axles
R	rear axles
D	driving axles
ND	not driving axles
S	solo
T	tantem
SR	single reduction
HR	hub reduction
NA	not applicable

Axles for Light

AXLES for MEDIUM DUTY

Type:	Front & Rear application
GAW range (ton):	3,6 to 11
GVW range (ton):	7 to 16
Brake system:	Drum/Disc
Weight (Kg):	175 to 600
Axle ratio range:	2,93 to 8,27

Front

Model	5956	5833	5845	5860
Type	D/S/HR	ND/S	ND/S	ND/S
GAW (ton)	6	3,6	4,6	6
GVW (ton)	15	10	12	16
Brake System	DRUM	DISC	DISC	DISC
Oil quantity (l)	6,5	0,2	0,3	NO OIL
Weight (Kg)	600	175	246	316
Axle ratio range	4,82-8,27	NA	NA	NA

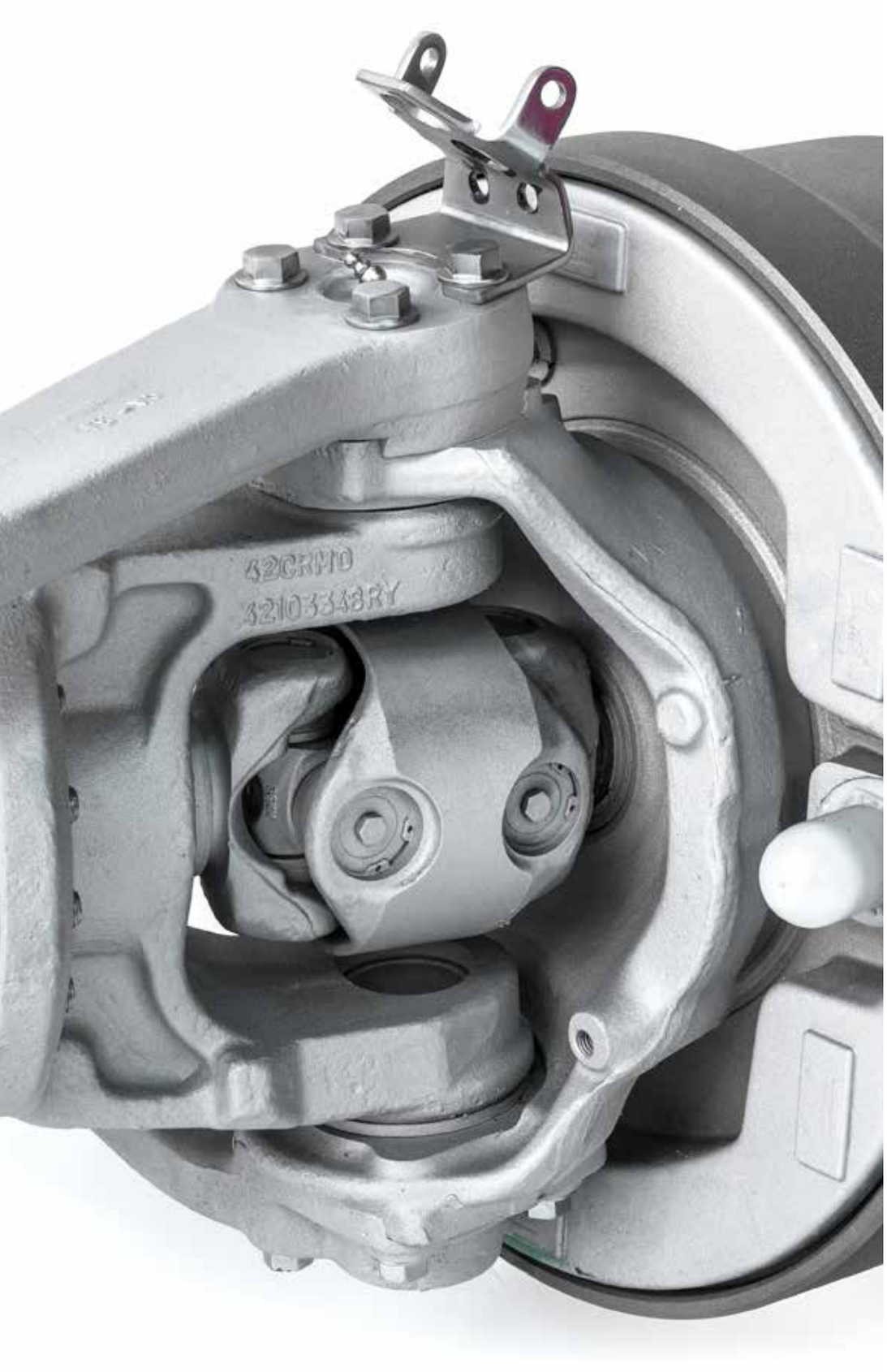
Rear

Model	4517	4521	MS08	MS10	451146*
Type	S/SR	S/SR	S/SR	S/SR	S/HR
GAW (ton)	5,6	6,8	8,5	10,5	11
GVW (ton)	8	10	12	16	15
Brake System	DISC	DISC	DISC	DISC	DRUM
Oil quantity (l)	3,1	5,4	6,5	12,7	11
Weight (Kg)	265	296	345	466	500
Axle ratio range	3,15-5,57	3,07-5,57	3,07-5,57	2,93-6,83	3,48-6,58

Legend:

*	OFF Highway	S	solo
F	front axles	T	tantem
R	rear axles	SR	single reduction
D	driving axles	HR	hub reduction
ND	not driving axles	NA	not applicable

Axles for Medium



AXLES for HEAVY DUTY

Type:	Front & Rear application
GAW range (ton):	7,5 to 16+16
GVW range (ton):	18 to 40
Brake system:	Drum/Disc/S-Cam
Weight (Kg):	450 to 1.586
Axle ratio range:	2,31 to 7,51

Front

Model	5985	5871/2	5886	5890
Type	D/S/T/HR	ND/S	ND/S/T	ND/S/T
GAW (ton)	9+9	7,5	8,5+8,5	9+9
GVW (ton)	40	18	40	40
Brake System	DRUM	DISC	DRUM/DISC	DISC
Oil quantity (l)	6,5 + 8	0,7	0,7 + 0,7	NO OIL
Weight (Kg)	700 + 805 (int)	450	460 + 460 (int)	456 + 456 (int)
Axle ratio range	3,48-6,58	NA	NA	NA

Rear

Model	17x	MT23	451391*	451846*	452146*	452191*	453291*
Type	S/SR	T/SR	S/HR	T/HR	T/HR	T/HR	T/HR
GAW (ton)	13	11,5+11,5	13	9+9	11,5+11,5	11,5+11,5	16+16
GVW (ton)	26	32	19	33	33	33	40
Brake System	DRUM/DISC	DRUM/DISC	DRUM/DISC	DISC	DRUM/DISC	DRUM/DISC	DRUM/DISC/ S-CAM
Oil quantity (l)	12	34	13	11,5	21	38	38
Weight (Kg)	625	1.330	675	500	1.359	1.542	1.586
Axle ratio range	2,31 - 6,17	2,83-6,17	3,79-6,58	3,97-7,51	3,48-6,58	3,79-6,58	3,79-6,58

Legend:

*	OFF Highway	S	solo
F	front axles	T	tantem
R	rear axles	SR	single reduction
D	driving axles	HR	hub reduction
ND	not driving axles	NA	not applicable

Axles for Heavy

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: 2,45 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 µrad) 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

Application:	LCV - Minibus
Speeds:	6-speed
Shifting:	Manual
Max input Torque (Nm):	500
GVW (ton):	up to 8
Durability (kKm):	350
Oil quantity (liters):	1,8
Dry Weight (Kg):	57
PTO:	Available

Application	Gear Ratio
LCV - MINUBUS	1^ 5,375
	2^ 3,154
	3^ 2,041
	4^ 1,365
	5^ 1,000
	6^ 0,791
	RG 4,838

FT50.6

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.

NOTE

NOTE

NOTE

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