



KOHLER®

KDI Series

| Diesel Engines

31.0 – 55.4 kW | 42 – 75 hp

KDI engines are more efficient than ever and can be calibrated to meet every emissions standard in the world.

More power. Smaller footprint. The *ultimate* diesel engine.

Anybody can add more power to an engine.
That's not the hard part.
The challenge is increasing the performance
without increasing the body size.

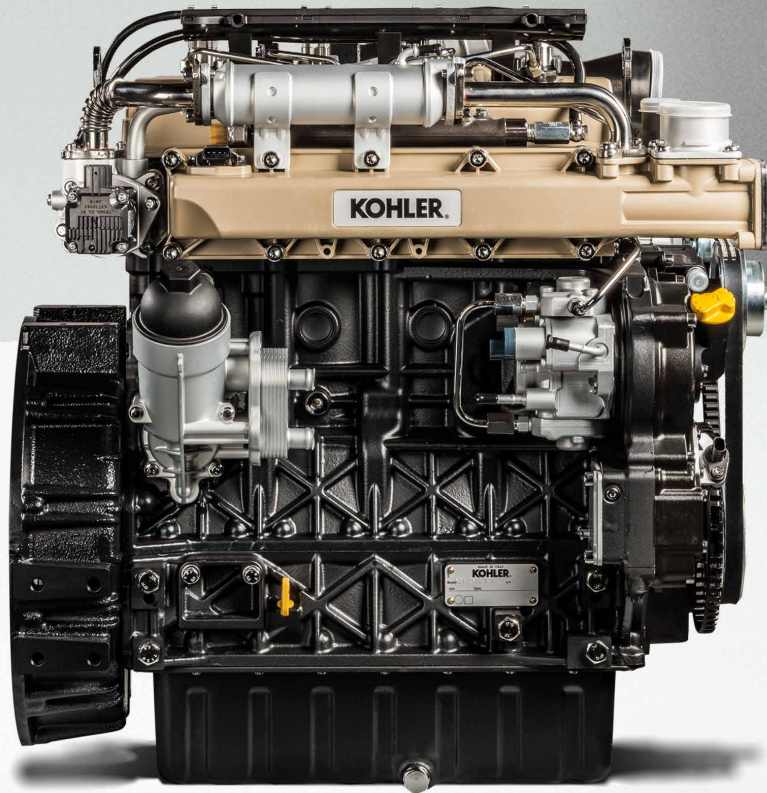
With the KOHLER KDI diesel engine, we started from scratch to build an
entirely new engine experience.

Using state-of-the-art technology to control the combustion process, we
created a diesel that delivers more power and more torque in a smaller
frame. So you can keep your performance and downsize your engine.

But we didn't stop there. The KDI lineup is a comprehensive platform of
engines equipped to meet all emission regulations worldwide.

Our engineers created a specific aftertreatment solution for every continent
on earth in the smallest size possible.

So wherever you are, we offer the most compact solution for your machine.



COMPACT

LOW VIBRATIONS

MORE POWER WITH
SMALL FOOTPRINT



ONE ENGINE PLATFORM
FOR THE ENTIRE WORLD

EASY MAINTENANCE

LONG SERVICE INTERVALS



REDUCED NOISE

SMART EMISSION
MANAGEMENT SYSTEM

EXCELLENT FUEL
EFFICIENCY

Innovations and benefits

COMMON-RAIL SYSTEM

Kohler has selected the most advanced common-rail system available on the market and specifically engineered for extreme durability and longevity within arduous agricultural, industrial and construction equipment applications. The 2000 bar high-pressure pump, together with the advanced multiple injection control of the solenoid-injectors, allows an excellent fuel rate control during the injection process.

TURBOCHARGER AND CHARGE AIR COOLER

The waste-gated turbocharger has been specifically tuned to minimize the turbo-lag response and provide the precise volume of air for an excellent low-end torque capability. The special design of the lubrication system guarantees extended durability of the turbocharger. The use of a charge air cooler is required to ensure the correct air inlet temperature for the optimal engine performance whilst achieving emissions compliance.

4 VALVES

The 4 valves per cylinder design has been selected to enable the installation of the injectors precisely on the cylinder axis and centered with the combustion bowl. This solution allows for a symmetrical fuel atomization and distribution within the combustion bowl ensuring optimal mixing of fuel and air. The design of the combustion bowl itself together with the inlet ports shaping, have been studied and developed with CFD analysis to complete the absolute optimization of the combustion process.

ECU

The engine electronic control unit (ECU), together with the common rail injection system, is a part of the most advanced automotive style engine management system and has been specifically developed for agricultural, industrial and construction equipment applications. It allows a full control of the engine calibration parameters to achieve the engine performances and emissions targets. A CAN bus link allows the ECU to interface with other electronic systems within the final application in order to optimize the engines operating parameters. Options of specific functionalities have been enabled within the ECU in order to provide OEMs with different governing characteristics ensuring total compatibility with individual equipment.

EGR SYSTEM

The Exhaust Gas Recirculation (EGR) system has been designed with CFD analysis and the use of comprehensive research and development resources. The chosen design of a “hot side” EGR layout will avoid valve-sticking problems that are historically the most common failures seen within these systems. Exhaust gas routing across the cylinder head ensures a beneficial preliminary gas cooling before entering the EGR valve to reduce the overall dimensions of the unit to assist installation parameters.

DOC (Diesel Oxidation Catalyst)

The DOC reacts with exhaust gases to reduce carbon monoxide, hydrocarbons, and some particulate matter (PM). It promotes oxidation of several exhaust gas components by oxygen, which is present in ample quantities in diesel exhaust. When passed over an oxidation catalyst, diesel pollutants – carbon monoxide (CO), gas phase hydrocarbons (HC), organic fraction of diesel particulates (SOF) – can be oxidized to CO₂. Kohler strategy is to offer a maintenance free DOC using the latest available technology, able to extend the service intervals and reduce the fuel consumption in order to let the end user spend more time in motion.

DPF (Diesel Particulate Filter)

The DPF is a soot trap, which physically captures diesel particulate matter (PM) and prevent the release into the atmosphere. The DPF traps soot particles but at the same time accumulates ashes from engine oil combustion and particles from engine wear. The DPF is kept clean from the soot, during normal engine operation through a process called filter regeneration. The regeneration strategy has been designed to maintain optimal machine operation, even at low load and low temperatures, thus preventing downtime due to forced regeneration events. From this perspective, the aftertreatment system is a key enabler to spend more time in motion, consequently increasing machine productivity. Kohler engines always operate efficiently with outstanding performance that raise the bar in the off-road market. To ensure extra-long lifecycle of its products, Kohler offer official services aimed at maximizing the uptime of machines, such as the Kohler DPF Switch Program.

KOHLER Flex

The integrated suite of engine systems

KOHLER Flex is the range of solutions for emission control that Kohler has designed to enable each configuration of the engines of the KDI platform to comply with all emissions standards and regulations, worldwide.

At the heart of KOHLER Flex there is the clean combustion of KDI engines that enables the adoption of a compact DPF to meet the more stringent emission standard.

KOHLER Flex combines the clean in-cylinder combustion of KDI engines, made possible by state-of-the-art High Pressure Common Rail (2000 bar), 4 Valves head, Turbocharger, cooled-EGR, and the most compact aftertreatment devices (DOC, DPF and SCR) to comply with all emission requirements. Each combination of KOHLER Flex has been designed in line with the all-in-one philosophy, with the objective of minimize change for OEMs while installing and fitting into existing packages. These systems are efficient and reliable and can be deployed in many combinations to achieve effective emissions solutions for the different markets.

EMISSION STANDARD		KOHLER FLEX SOLUTIONS							
		EA	EB	E5	U3	U4	C4	E5	NE
		EUROPE			NORTH AMERICA & CANADA		CHINA	KOREA	LESS REGULATED COUNTRIES
		STAGE IIIA EQ.	STAGE IIIB	STAGE V	TIER 3	TIER 4 FINAL/CARB	CHINA 4#	STAGE V	
<56KW	MECHANICAL INJECTION			•	•	•			•
	HIGH-PRESSURE COMMON RAIL	•	•	•		•	•	•	(•••)
	C-EGR		•	•		•	•	•	
	DOC		•	•		•	•	•	
	DPF			•		(••)	•	•	

* AVAILABLE END 2024

** WITH LIMITATION ON MAX SULFUR CONTENT IN FUEL

CHINA 4 READY

Turbo common rail engines

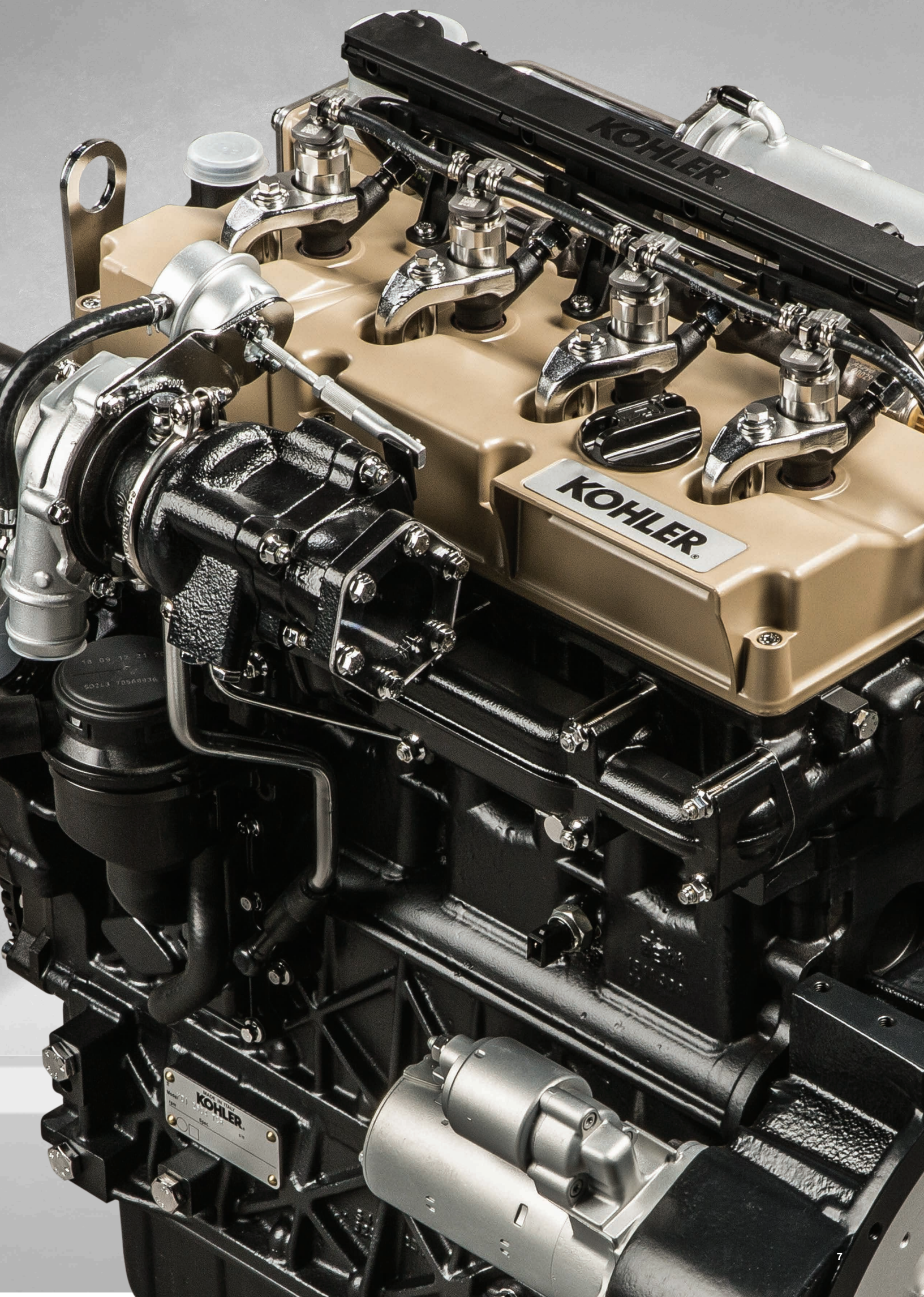
Standard equipment

INTAKE MANIFOLD	OIL FILTER ENGINE MOUNTED
EXHAUST MANIFOLD	FUEL FILTER WITH WATER SENSOR
SIDE OIL REFILLING	ENVIRONMENTALLY FRIENDLY OIL FILTER
ELECTRIC STARTER	ECU
80A ALTERNATOR	OIL SUMP CAPACITY 8.5 L (KDI 1903) AND 11.3 L (KDI 2504)
SAE 4 (7" 1/2)	
CABIN HEATING PROVISION	

Accessories on demand

SAE 3 (11" 1/2)	HIGH FAN CONFIGURATION
RADIATORS WITH INTEGRAL CHARGE AIR COOLER	STRUCTURAL OIL SUMP AND BELL HOUSING
HEAVY DUTY AIR CLEANER	100% POWER TAKE-OFF FRONT PTO
HYDRAULIC PUMP PROVISION ON 3RD AND 4TH PTO	DPF ENGINE MOUNTED
100A ALTERNATOR	ATS INSULATION
BALANCER SHAFTS (FOR KDI 2504 ONLY)	REMOTE OIL FILTER

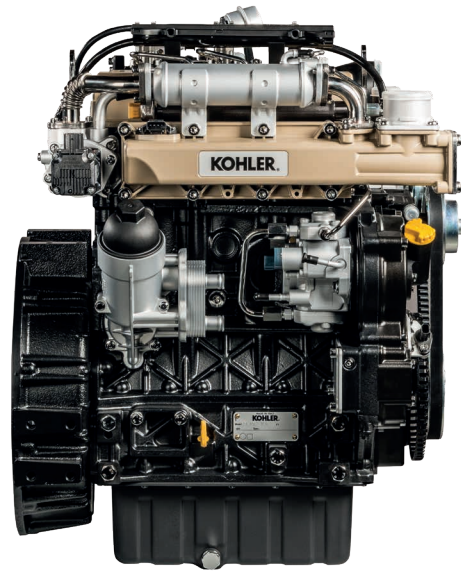




KOHLER

MADE IN THE
KOHLER
Model: 701
Date: 1/05
Spec: 100
1A
1A 09 17 21
9366667 4205
50243 7966936

KDI-TCR1903



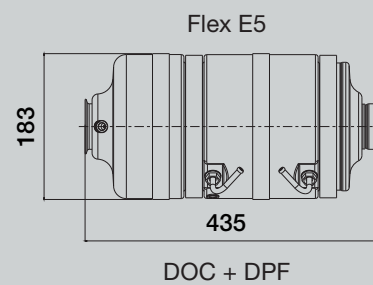
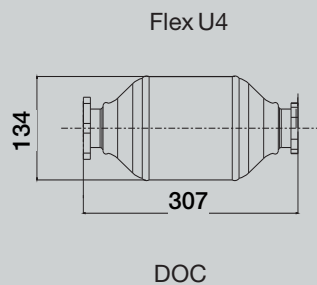
QUICK SPECIFICATIONS	KDI-TCQ 1903U3/26	KDI-TCF 1903U4/26	KDI-TCR 1903E5/26	KDI-TC 1903E5/26
CYLINDERS / FIE	3 / TURBO COMMON RAIL	3 / TURBO COMMON RAIL	3 / TURBO COMMON RAIL	3 / TURBO COMMON RAIL
MAX POWER kW (HP) @ rpm	42 (56) @ 2600	42 (56) @ 2600	42 (56) @ 2600	36 (50) @ 2600
MAX TORQUE Nm @ rpm	225 Nm @ 1500	225 @ 1500	225 @ 1500	170 Nm @ 1500
EMISSION COMPLIANCE	US TIER 3 EQUIVALENT	EU STAGE IIIB US TIER 4 FINAL	EU STAGE V US TIER 4 FINAL*	EU STAGE V US TIER 4 FINAL*
KOHLER FLEX EMISSIONS MANAGEMENT SYSTEM	U3 (EGR)	U4 (EGR+DOC)	E5 (EGR+DOC+DPF)	E5 (EGR+DOC+DPF)
AFTERCooler	•	•	•	-



* Engine capable, homologation process for US – Tier 4 Final ongoing

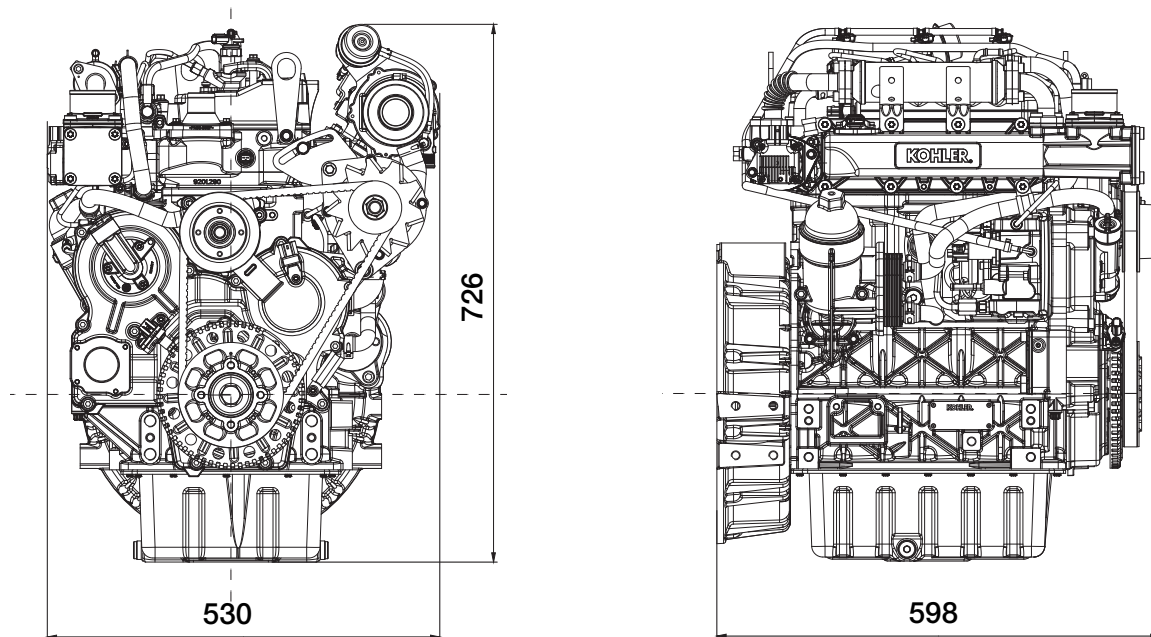
KOHLER Flex ENVELOPE

Dimensions (mm)



Data

Dimensions (mm)

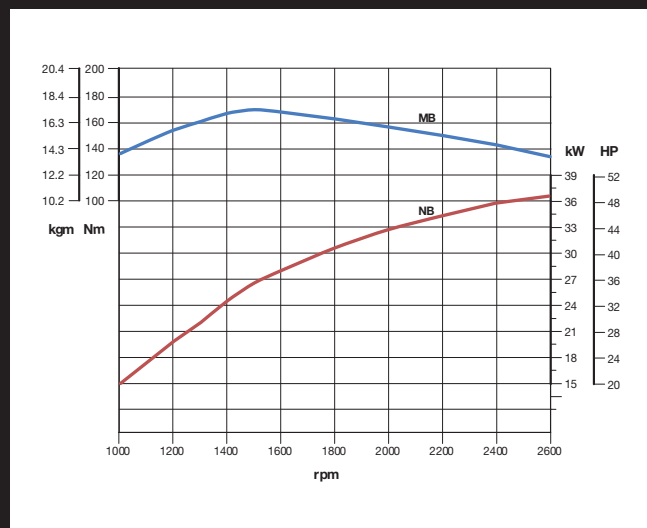
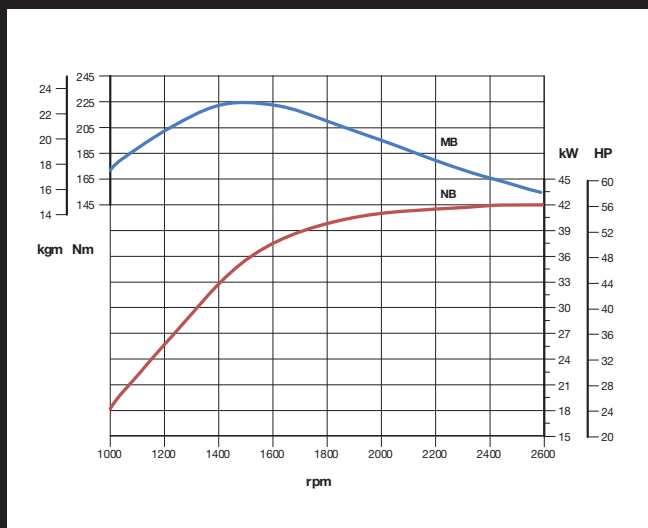


Performance curves

(ACCORDING TO ISO 14396)

KDI-TCQ 1903U3/26 - KDI-TCF 1903U4/26
KDI-TCR 1903E5/26

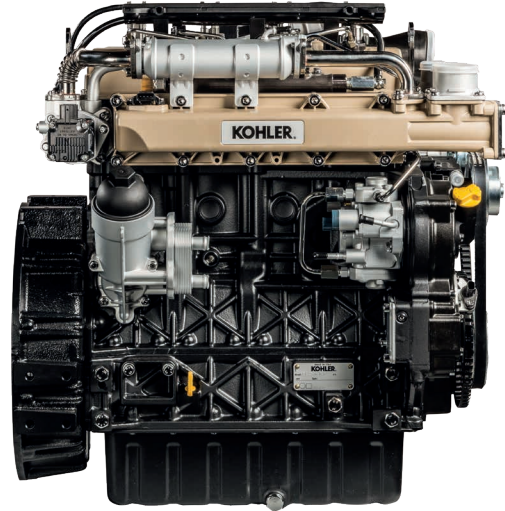
KDI-TC 1903E5/26



— MB - Torque curve
— NB - Power curve

Performances measured according to ISO 14396 without final intake and exhaust line. Actual engine performances may be affected by accessories (intake and exhaust line, charging, cooling fan, etc.), application, ambient operating conditions (temperature, humidity, and altitude) and other factors.

KDI-TCR2504



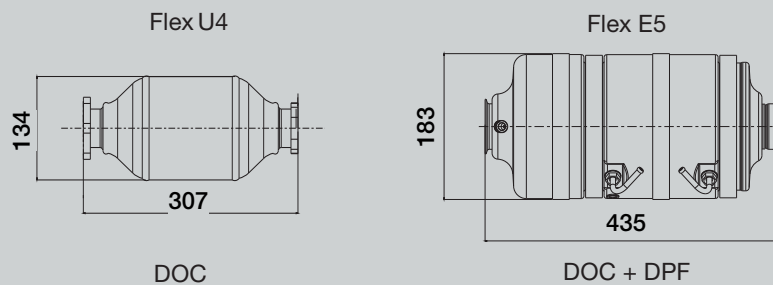
QUICK SPECIFICATIONS	KDI-TCK 2504U3/26	KDI-TCF 2504U4/26	KDI-TCR 2504E5/26
CYLINDERS / FIE	4 / TURBO COMMON RAIL	4 / TURBO COMMON RAIL	4 / TURBO COMMON RAIL
MAX POWER kW (HP) @ rpm	55.4 (74) @ 2600	55.4 (74) @ 2600	55.4 (74) @ 2600
MAX TORQUE Nm @ rpm	300 @ 1500	300 @ 1500	315 @ 1500
EMISSION COMPLIANCE	EU STAGE IIIA US TIER 3 EQUIVALENT	EU STAGE IIIB US TIER 4 FINAL	EU STAGE V US TIER 4 FINAL*
KOHLER FLEX EMISSIONS MANAGEMENT SYSTEM	U3 -	U4 (EGR+DOC)	E5 (EGR+DOC+DPF)
AFTERCooler	•	•	•



* Engine capable, homologation process for US – Tier 4 Final ongoing

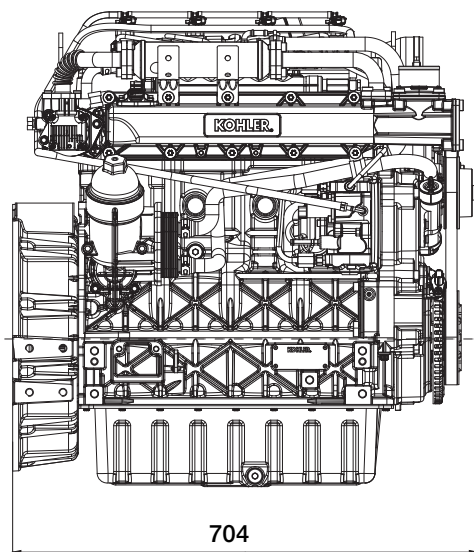
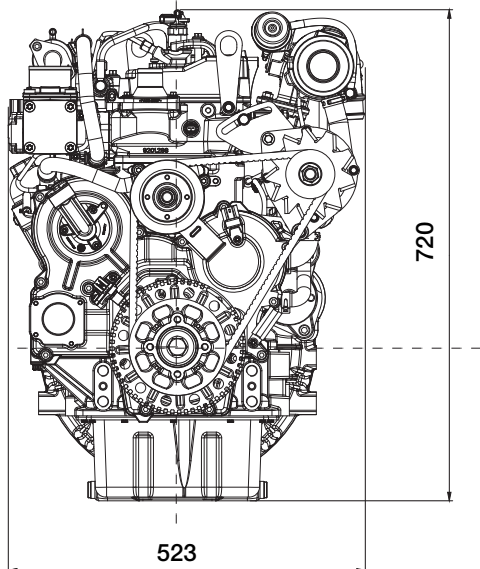
KOHLER Flex ENVELOPE

Dimensions (mm)



Data

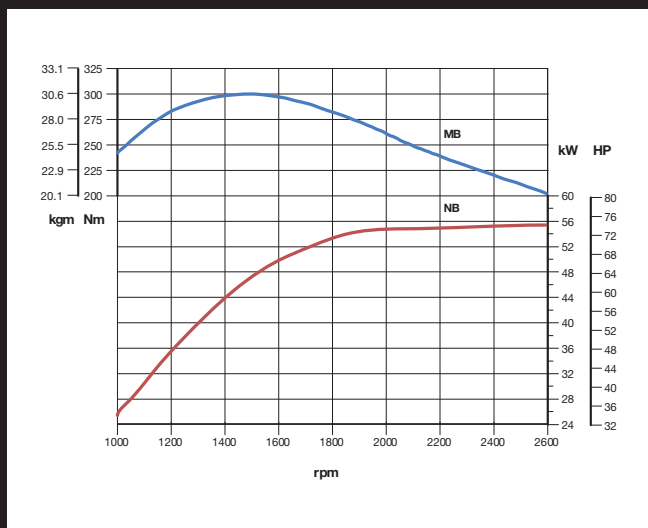
Dimensions (mm)



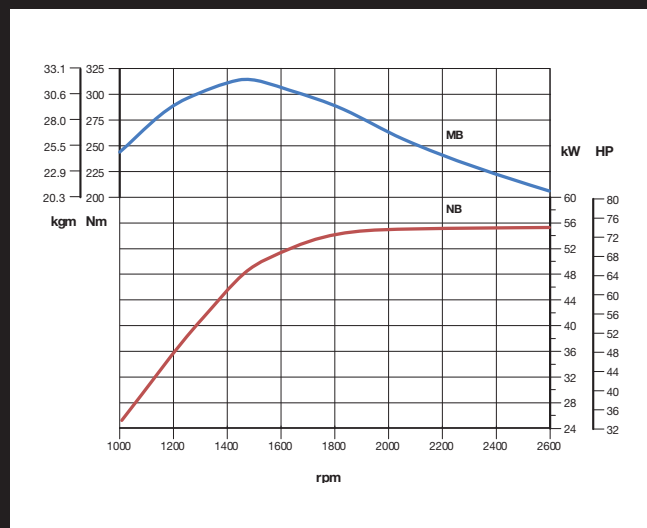
Performance curves

(ACCORDING TO ISO 14396)

KDI-TCK 2504U3/26 - KDI-TCF 2504U4/26



KDI-TCR 2504E5/26



— MB - Torque curve
— NB - Power curve

Performances measured according to ISO 14396 without final intake and exhaust line. Actual engine performances may be affected by accessories (intake and exhaust line, charging, cooling fan, etc.), application, ambient operating conditions (temperature, humidity, and altitude) and other factors.

Mechanical Engines

Standard equipment

INTAKE MANIFOLD

EXHAUST MANIFOLD

SIDE OIL REFILLING

ELECTRIC STARTER

55A ALTERNATOR

SAE 4 (7" 1/2)

CABIN HEATING PROVISION

ENGINE MOUNTED OIL FILTER

FUEL FILTER

OIL SUMP CAPACITY
8.5 L (KDI-M 1903) AND
11.3 L (KDI-M 2504)

Accessories on demand

SAE 3 (11" 1/2)

RADIATORS

HYDRAULIC PUMP PROVISION
ON 3RD AND 4TH PTO

STRUCTURAL OIL SUMP AND BELL
HOUSING

HEAVY DUTY AIR CLEANER

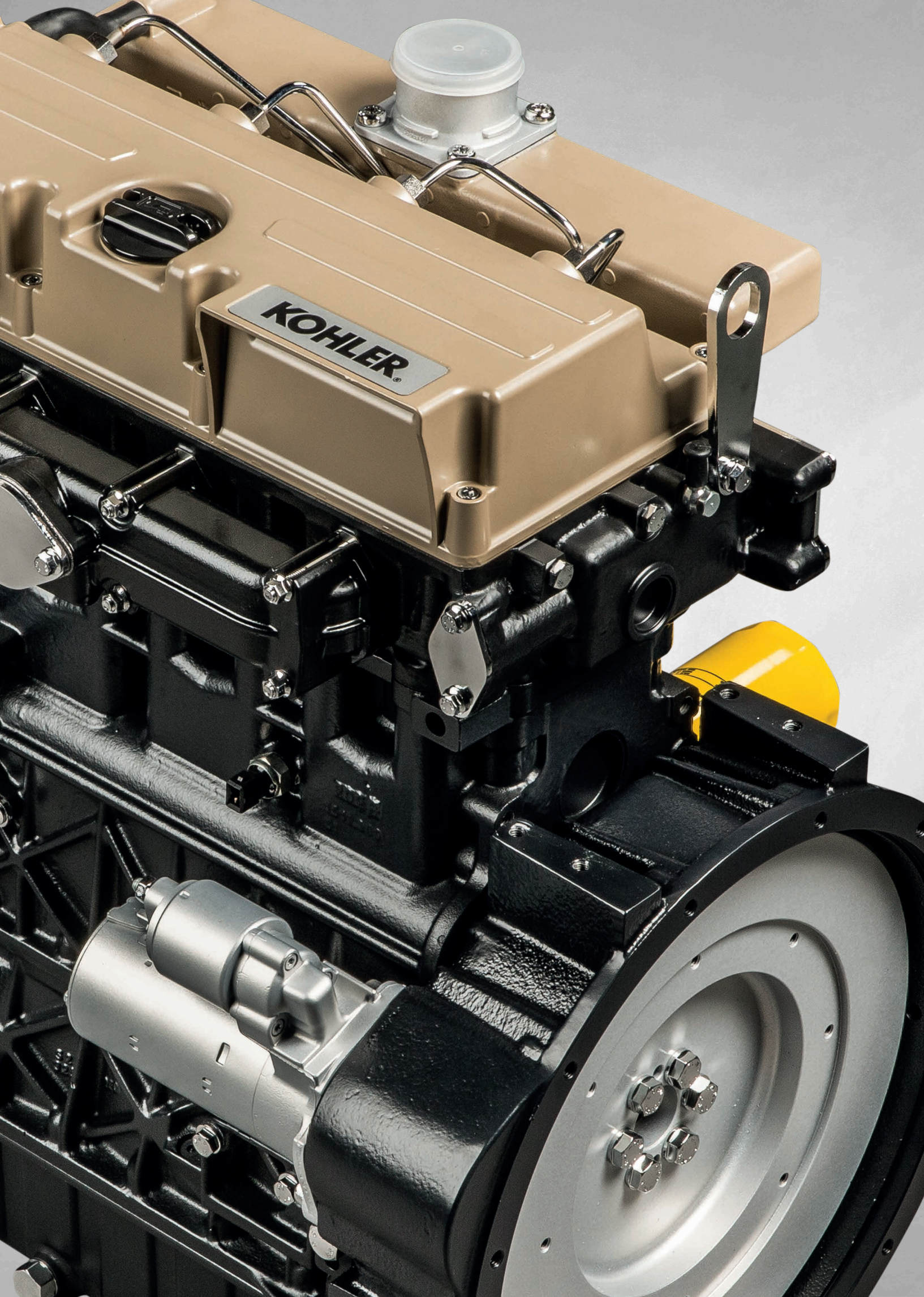
HIGH FAN CONFIGURATION

FUEL FEEDING PUMP

BALANCER SHAFTS
(FOR KDI-M 2504 ONLY)

100% POWER TAKE-OFF
FRONT PTO





KDI-M 1903

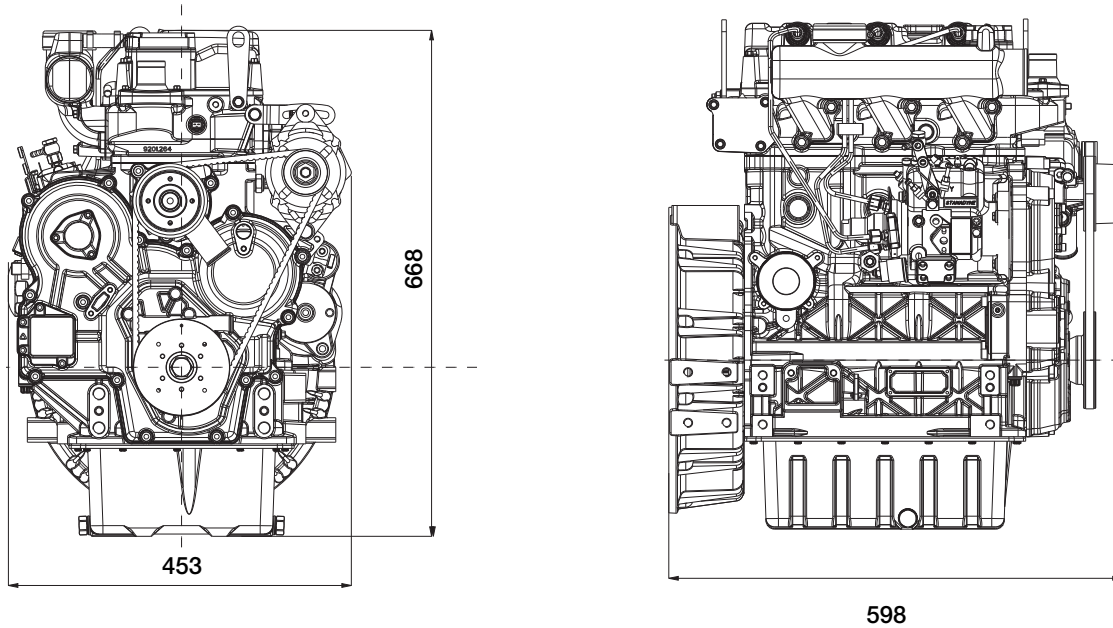


QUICK SPECIFICATIONS	KDI-M 1903EA/26
CYLINDERS / FIE	3 / MECHANICAL ROTARY PUMP
MAX POWER kW (HP) @ rpm	30 (42) @ 2600
MAX TORQUE Nm @ rpm	133 @ 1500
EMISSION COMPLIANCE	EU STAGE IIIA EQ.



Data

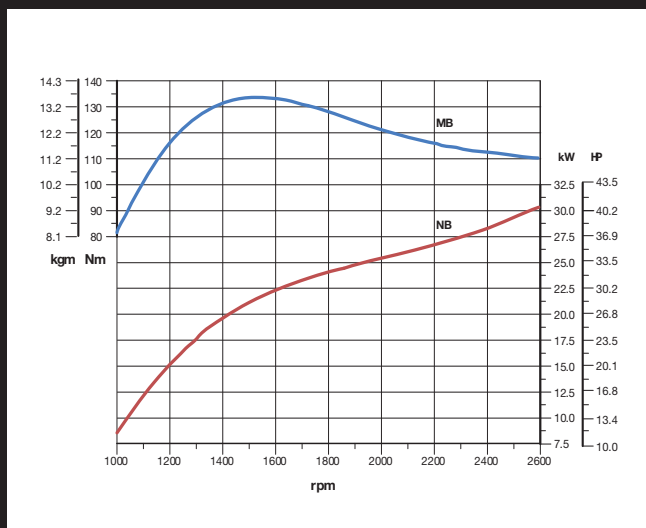
Dimensions (mm)



Performance curves

(ACCORDING TO ISO 14396)

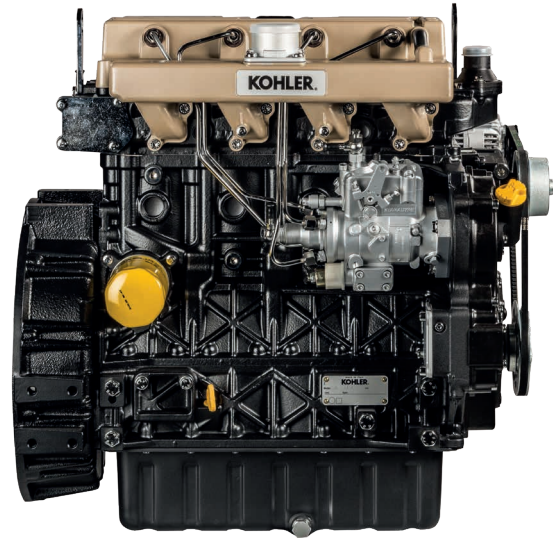
KDI-M 1903EA/26



- MB - Torque curve
- NB - Power curve

Performances measured according to ISO 14396 without final intake and exhaust line. Actual engine performances may be affected by accessories (intake and exhaust line, charging, cooling fan, etc.), application, ambient operating conditions (temperature, humidity, and altitude) and other factors.

KDI-M 2504

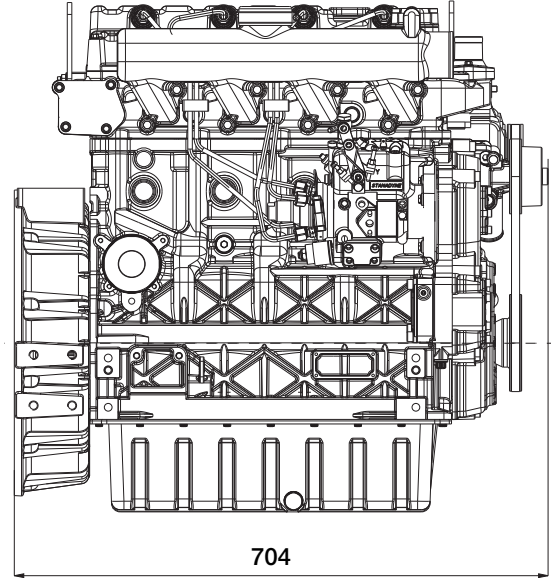
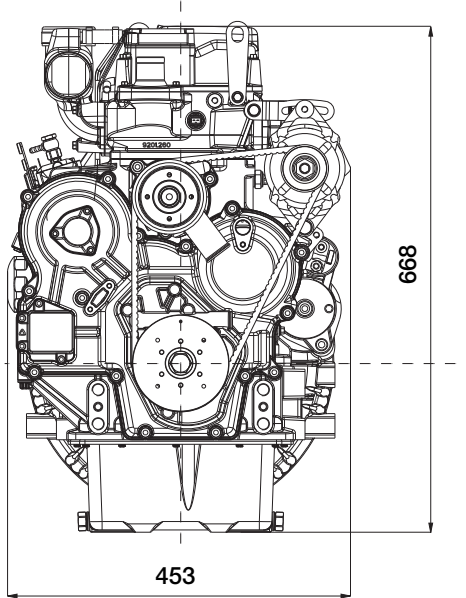


QUICK SPECIFICATIONS	KDI-M 2504EA/26
CYLINDERS / FIE	4 / MECHANICAL ROTARY PUMP
MAX POWER kW (HP) @ rpm	36.4 (49) @ 2600
MAX TORQUE Nmm @ rpm	170 @ 1500
EMISSION COMPLIANCE	EU STAGE IIIA EQ.



Data

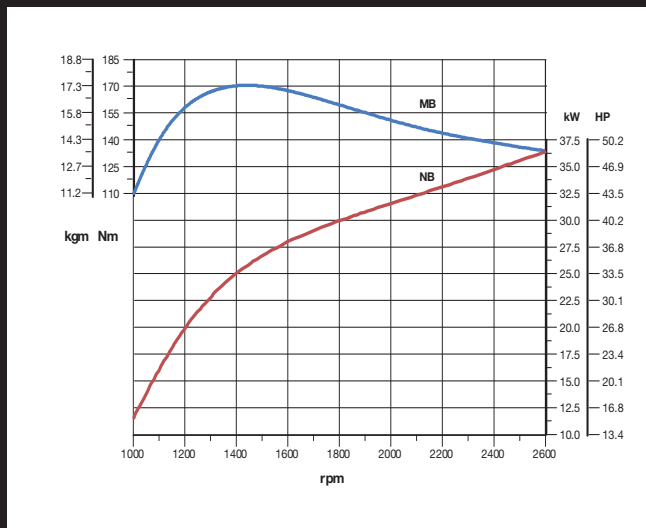
Dimensions (mm)



Performance curves

(ACCORDING TO ISO 14396)

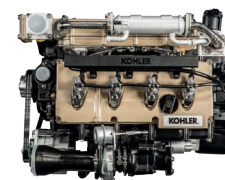
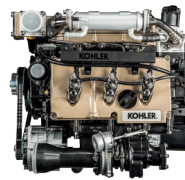
KDI-M 2504EA/26



— MB - Torque curve
— NB - Power curve

Performances measured according to ISO 14396 without final intake and exhaust line. Actual engine performances may be affected by accessories (intake and exhaust line, charging, cooling fan, etc.), application, ambient operating conditions (temperature, humidity, and altitude) and other factors.

Turbo common rail engines



MODEL		KDI-TCR 1903				KDI-TCR 2504		
ENGINE SPECS	4 STROKE DIESEL WITH CYLINDER IN LINE	•				•		
	LIQUID COOLING	•				•		
	4 VALVES PER CYLINDER	•				•		
	IN CRANKCASE CAMSHAFT, GEAR TRAIN DRIVEN	•				•		
	PUSHROD - ROCKER ARMS TIMING WITH HYDRAULIC TAPPETS	•				•		
	CAST IRON CRANKCASE WITH BED-PLATE	•				•		
	CAST IRON CYLINDER HEAD	•				•		
	CLOSED CRANKCASE VENTILATION SYSTEM	•				•		
TECHNICAL FEATURES	CYLINDER	3				4		
	BORE (mm)	88				88		
	STROKE (mm)	102				102		
	ENGINE DISPL (cm³)	1861				2482		
	INJECTION SYSTEM	DI				DI		
	INJECTION EQUIPMENT	TURBO HIGH PRESSURE COMMON RAIL				TURBO HIGH PRESSURE COMMON RAIL		
	AFTERCOOLER	•				•		
PERFORMANCE	MAX POWER (ISO 14396) [kW(HP)@rpm] @2600	42 (56)	42 (56)	42 (56)	37 (50)	55.4 (74)	55.4 (74)	55.4 (74)
	MAX TORQUE (ISO 14396) (Nm@rpm) @1500	225	225	225	170	300	300	315
	LOW-END TORQUE (Nm@1000 rpm)	172	172	172	135	242	242	242
KOHLER FLEX EMISSIONS MANAGEMENT SYSTEM	KOHLER FLEX SOLUTION	U3	U4	E5	E5	U3	U4	E5
	EGR	•	•	•	•	-	•	•
	DOC	-	•	•	•	-	•	•
	DPF	-	-	•	•	-	-	•
	EMISSION COMPLIANCE	US TIER 3 EQ.	EU STAGE IIIB US TIER 4 FINAL	EU STAGE V US TIER 4 FINAL ¹	EU STAGE V US TIER 4 FINAL ¹	US TIER 3 EQ.	EU STAGE IIIB US TIER 4 FINAL	EU STAGE V US TIER 4 FINAL ¹
FUEL ECONOMY	BEST POINT (G/kWh)	215				210		
	MAX POWER (G/kWh@2600 rpm)	237				226		
STARTABILITY	UNAIDED (°C)	DOWN TO -15				DOWN TO -15		
	AIDED (°C) [MANIFOLD GRID HEATER]	BELOW -15				BELOW -15		
	AIDED (°C) [MANIFOLD GRID HEATER+COOLANT HEATER]	BELOW -20				BELOW -20		
FUEL COMPATIBILITY	EN 590	•				•		
	NO 1 DIESEL (US) - ASTM D 975-09 B - GRADE 1-D S 15	•				•		
	NO 2 DIESEL (US) - ASTM D 975-09 B - GRADE 2-D S 15	•				•		
	ARCTIC EN 590/ASTM D 975-09 B (NO PETROLEUM ADDED)	•				•		
	HIGH SULFUR FUEL < 2000 PPM *	-				•		
SERVICE FEATURES	OIL/FILTER CHANGE INTERVAL STD/ SYNTHETIC (hr)	500				500		
	ALTERNATOR BELT REPLACEMENT	36 MTH				36 MTH		
	COOLANT CHANGE	24 MTH				24 MTH		
	OIL CONSUMPTION (% FUEL)	<0.1				<0.1		
	H x L x W (FAN EXCLUDED) (mm)	726 x 598 x 530				720 x 704 x 523		
PHYSICAL CHARACTERISTICS	WEIGHT (kg)	233				267		
	DAILY SERVICE POINTS - POSITIONS	1 SIDE SERVICE				1 SIDE SERVICE		
	AMBIENT OPERATING TEMPS (°C)	-30 TO +50				-30 TO +50		
	GRADEABILITY-ALL ROUND (CONTINUOUS) (deg)	25				25		
	GRADEABILITY-ALL ROUND (INTERMITTENT-1min) (deg)	35				35		
LUBRICATION	OIL TYPE	SAE 10W 40 LOW SAPS/ API CJ-4/ API CK-4/ ACEA E6-E7-E9				SAE 10W 40 LOW SAPS/ API CJ-4/ API CK-4/ ACEA E6-E7-E9		
	MAX TORQUE (Nm)	100				100		
AUXILIARY PTOS (3 RD & 4 TH) (OPTIONAL)	DRIVE RATIO	1.23 TIMES ENGINE SPEED				1.23 TIMES ENGINE SPEED		
	PROVISION FOR A DOUBLE GR.2 TANDEM HYDRAULIC PUMP	•				•		

Mechanical engines



MODEL		KDI-M 1903	KDI-M 2504
ENGINE SPECS	4 STROKE DIESEL WITH CYLINDER IN LINE	.	.
	LIQUID COOLING	.	.
	4 VALVES PER CYLINDER	.	.
	IN CRANKCASE CAMSHAFT, GEAR TRAIN DRIVEN	.	.
	PUSHROD - ROCKER ARMS TIMING WITH HYDRAULIC TAPPETS	.	.
	CAST IRON CRANKCASE WITH BED-PLATE	.	.
	CAST IRON CYLINDER HEAD	.	.
	CLOSED CRANKCASE VENTILATION SYSTEM	.	.
WASTE-GATE TURBOCHARGER	-	-	
TECHNICAL FEATURES	CYLINDER	3	4
	BORE (mm)	88	88
	STROKE (mm)	102	102
	ENGINE DISPL (cm ³)	1861	2482
	INJECTION SYSTEM	DI	DI
	INJECTION EQUIPMENT	MECH-ROTARY PUMP	MECH-ROTARY PUMP
PERFORMANCE	EMISSION COMPLIANCE	EU STAGE IIIA EQ. (EA)	EU STAGE IIIA EQ. (EA)
	MAX POWER (ISO 14396) (kW@rpm)	30 (41.5) @ 2600	36.4 (48.8) @ 2600
	MAX TORQUE (ISO 14396) (Nm@rpm)	133 @ 1500	170 @ 1500
	LOW-END TORQUE (Nm@1000 rpm)	80	110
FUEL ECONOMY	BEST POINT (G/kWh)	223	220
	MAX POWER (G/kWh@2600)	237	234
STARTABILITY	UNAIDED (°C)	DOWN TO -15	DOWN TO -15
	AIDED (°C) [MANIFOLD GRID HEATER]	BELOW -15	BELOW -15
FUEL COMPATIBILITY	EN 590	.	.
	NO 1 DIESEL (US) - ASTM D 975-09 B - GRADE 1-D S 15	.	.
	NO 1 DIESEL (US) - ASTM D 975-09 B - GRADE 1-D S 500	.	.
	NO 2 DIESEL (US) - ASTM D 975-09 B - GRADE 2-D S 15	.	.
	NO 2 DIESEL (US) - ASTM D 975-09 B - GRADE 2-D S 500	.	.
	ARCTIC EN 590/ASTM D 975-09 B	.	.
	HIGH SULFUR FUEL < 2000 ppm*	.	.
	MILITARY NATO FUELS F34 - F35 - F44 - F63 - F64 - F65 *	.	.
	MILITARY US FUELS JP5 - JP8 (AVTUR) *	.	.
	JET FUELS - JET A/ A1*	.	.
HVO - HYDROTREATED VEGETABLE OIL	.	.	
SERVICE FEATURES	OIL/FILTER CHANGE INTERVAL STD/SYNTHETIC (hr)	500	500
	VALVE ADJUSTEMENT	-	-
	ALTERNATOR BELT REPLACEMENT	36 MTH	36 MTH
	COOLANT CHANGE	24 MTH	24 MTH
	OIL CONSUMPTION (% FUEL)	<0.1	<0.1
PHYSICAL CHARACTERISTICS	H x L x W (FAN EXCLUDED) (mm)	667.5 x 598.3 x 452.5	667.5 x 704.3 x 452.5
	WEIGHT (kg)	210	244
	DAILY SERVICE POINTS - POSITIONS	1 SIDE SERVICE	1 SIDE SERVICE
	AMBIENT OPERATING TEMPS (°C)	-30 TO +50	-30 TO +50
	GRADEABILITY-ALL ROUND (CONTINUOUS) (deg)	25	25
	GRADEABILITY-ALL ROUND (INTERMITTENT-1min) (deg)	35	35
LUBRICATION	OIL TYPE	SAE 15W40 / API CH-4	SAE 15W40 / API CH-4
AUXILIARY PTOS (3 RD & 4 TH) (OPTIONAL)	MAX TORQUE (Nm)	100	100
	DRIVE RATIO	1.23 TIMES ENGINE SPEED	1.23 TIMES ENGINE SPEED
	PROVISION FOR A DOUBLE GR.2 TANDEM HYDRAULIC PUMP	.	.

* With restrictions

¹ Engine capable, homologation process for US – Tier 4 Final ongoing

For more information, contact your KOHLER source of supply.
Kohler Co. reserves the right to make modifications without prior notice.

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