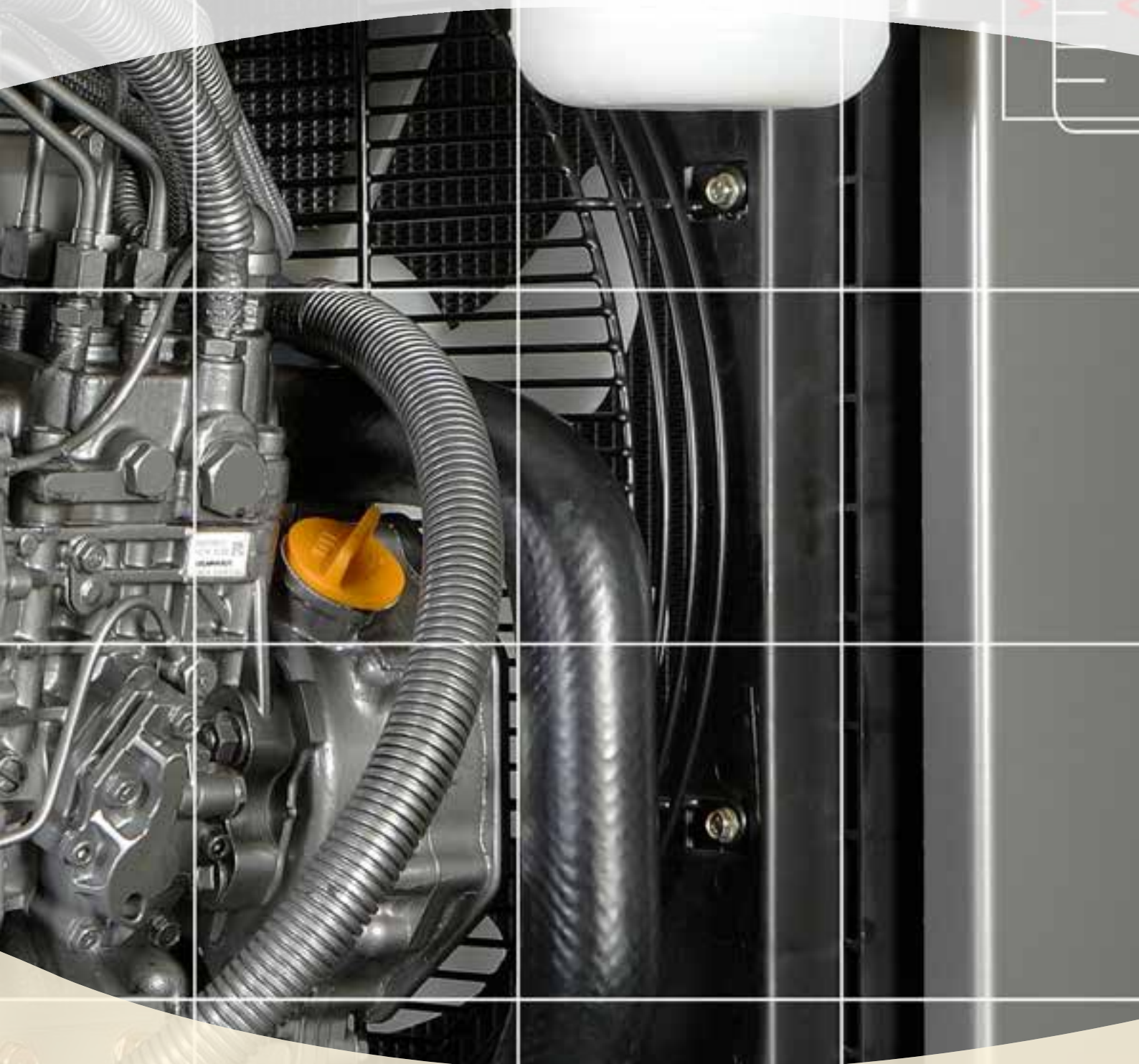


BARRUS



YANMAR



JOHN DEERE

Kawasaki
Engines

TOYOTA
INDUSTRIAL ENGINE

YANMAR

- 3. LN Series
- 10. TNV Series
- 18. MM Series
- 21. Final Tier 4 Series up to 19kW
- 24. Final Tier 4 19kW to 56kW
- 29. TNV / TNM Power Packs
- 36. Spare Parts
- 37. Fast Moving Spare Parts



JOHN DEERE

- 39. Stage 3A Generator Drives
- 43. Tier 3 / Stage 3A Engines
- 48. Interim Tier 4 Stage IIIB Emission Regulations
- 51. Final Tier 4 Stage IV Emission Regulations
- 56. Spare Parts

Kawasaki Engines

- 57. 4-Stroke Vertical
- 69. 4-Stroke Horizontal
- 79. 2-Stroke Horizontal
- 83. 2-Stroke Vertical
- 87. Spare Parts

TOYOTA INDUSTRIAL ENGINE

- 88. 2.2 litre LPG Engine



- 92. Detection, Prevention, Treatment products

DIESEL EMISSION DATA

- 95. Variable Speed
- 97. Constant Speed

YANMAR

L48N

Output : 3.5kW (4.7ps)

L70N

Output : 4.9kW (6.7ps)

LN Series

AIR-COOLED DIESEL ENGINES

L100N

Output : 7.4kW (10ps)





EXCEEDING POWER AND ENVIRONMENTAL EXPECTATIONS

Designed with Yanmar's proprietary direct injection technology, maximum combustion efficiency is realized through the ideal match between the combustion chamber and injection system. This means a powerful, but environmentally friendly engine.

COMPACT, DIRECT INJECTION ENGINE = EASY INSTALLATION & LOW FUEL CONSUMPTION

Keeping with the tradition of compact design, the new L-N series are simple to install. It fits in cramped spaces without sacrificing power and performance. Yanmar's proprietary direct injection technology allows the engine to sip rather than gorge on fuel. This means lower running cost in the world of rising fuel prices.

LOW VIBRATION AND LOW NOISE

Superior vibration and noise reduction is achieved through the use of precision balancers. This leads to operating comfort even under long working hours.

QUICK AND EASY START

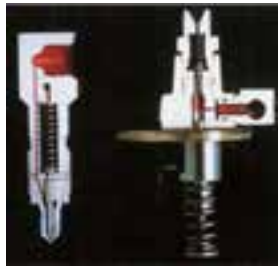
Starting is a breeze with the standard recoil starter. Starter motor and switch are also available as an option.

THE TOTAL FIE EXPERTISE ONLY A COMPLETE DIESEL MAKER CAN PROVIDE

Yanmar developed the miniaturized fuel injection system, one of the world's smallest. They have since raised it to a level of

LN Series

efficiency that ensures you maximum power from every drop of diesel. Its extraordinarily low fuel consumption is a result of this super-precise FIE and its direct injection system - the first ever to go in this type of engine.



A LITTLE ENGINE BUILT TO STAND UP TO HARD WORK

The design, structure and materials of the L-N combine to form a rugged, hard working machine. With tough but lightweight alloys used for main engine parts, an extra tough crankshaft and an overall simplified structure the L-N is a compact package of power.

FAST, EFFORTLESS STARTS FROM A ONE-PULL RECOIL STARTER

A short and smooth pull of the toggle kicks off the engine, as simple as a gasoline model. It is made easy by a special auto-return decompressor and Yanmar's own efficient combustion system. Electric starting is also a useful option.





SPECIFICATIONS

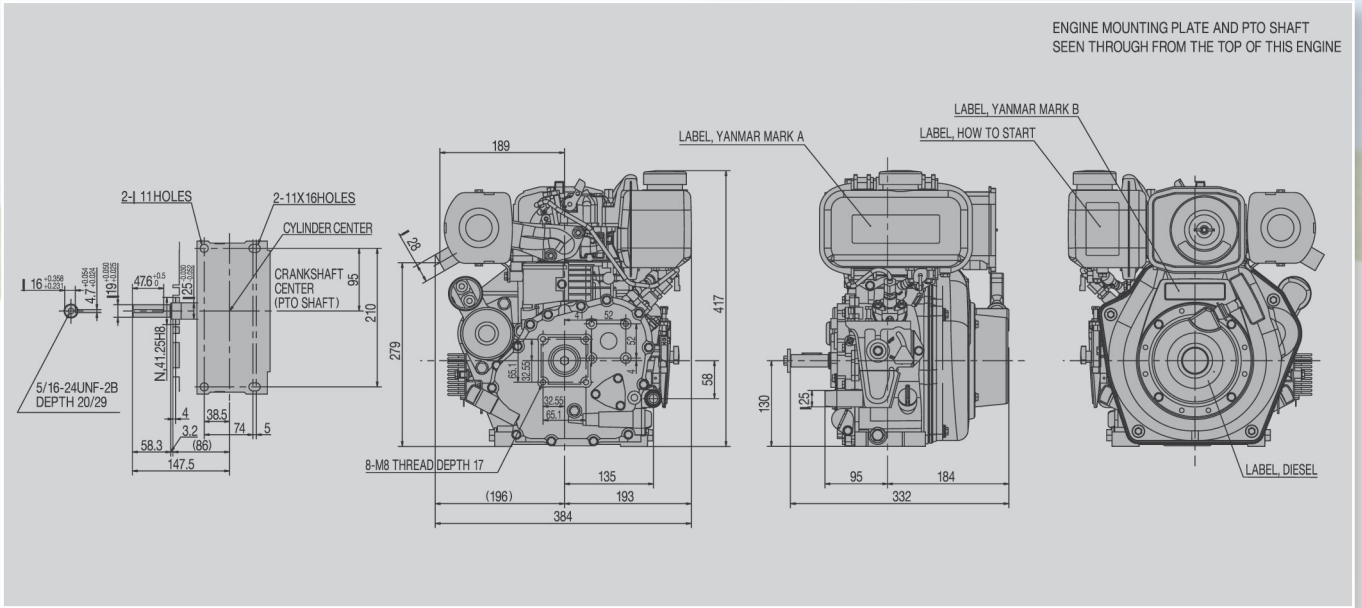
Engine Model			L48N		L70N		L100N	
Type			4 stroke, vertical cylinder, air cooled diesel engine					
No. of Cylinders			1					
Bore x Stroke		mm	70 x 57		78 x 67		86 x 75	
Displacement		cc	219		320		435	
Continuous Rated Output	Engine Speed	r/min	3600	3000	3600	3000	3600	3000
	Output	hp / kW	4.15 / 3.1	3.75 / 2.8	5.9 / 4.4	5.5 / 4.1	8.85 / 6.6	7.7 / 5.7
Maximum Rated Output	Engine Speed	r/min	3600	3000	3600	3000	3600	3000
	Output / Eng. Speed	hp / kW	4.7 / 3.5	4.2 / 3.1	6.6 / 4.9	6.0 / 4.5	10.0 / 7.4	8.7 / 6.5
High Idling		r/min	3800 ± 30	3175 ± 30	3800 ± 30	3175 ± 30	3800 ± 30	3175 ± 30
Engine Weight (Dry)	Electric Starter	kg	32.0		41.0		53.5	
	Recoil Start	kg	27.0		36.0		48.5	
Cooling System			Forced air by flywheel fan					
Lubricating System			Forced lubrication with trochoid pump					
Starting System			Electric / recoil					
Dimension	Overall Length	mm	332		378		412	
	Overall Width	mm	384		422		471	
	Overall Height	mm	417		453		494	
Lubricating System	Dipstick Upper Limit	litre	0.80		1.1		1.6	
	Dipstick Lower Limit	litre	0.55		0.7		1.0	
Fuel Oil Tank Capacity		litre	2.4		3.3		5.4	

APPLICATION CODE

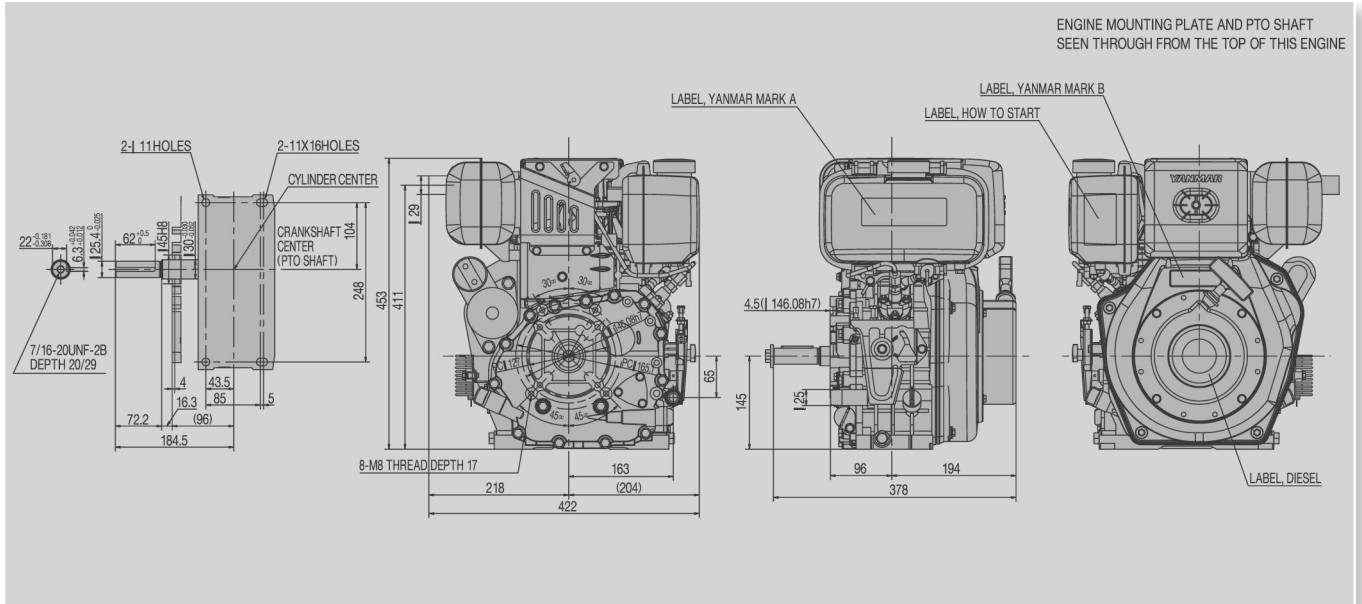
	EPA or NON-EPA	rpm	PTO + flange	Starting motor + recoil	Air cleaner	Speed control device	Muffler	FO Tank + FO-pump	Fan case	Remarks (big oilpan, special specifications etc...)	
L48 L70 L100	V	6	A	F	1	T	1	A	A	S	11 1

TECHNICAL DRAWINGS

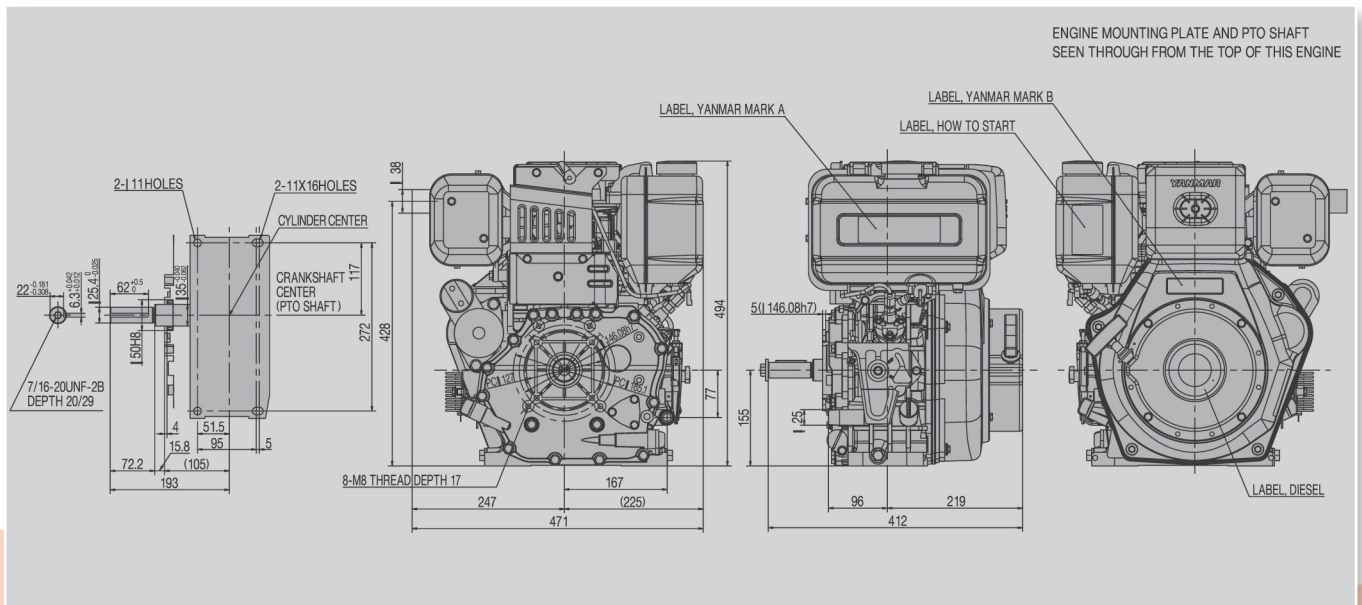
L48N



L70N



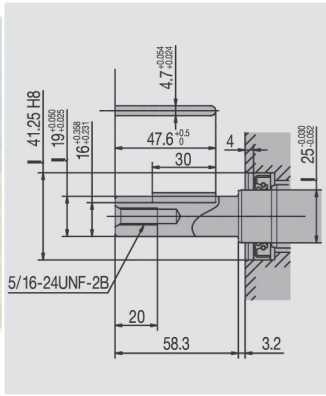
L100N



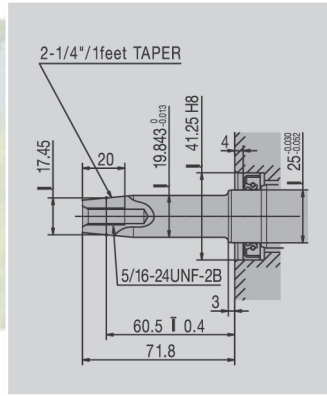
PTO DIMENSIONS

L48N

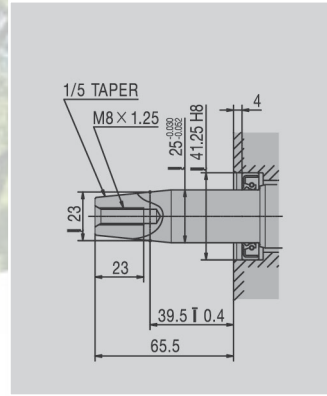
Keyway Shaft E-D



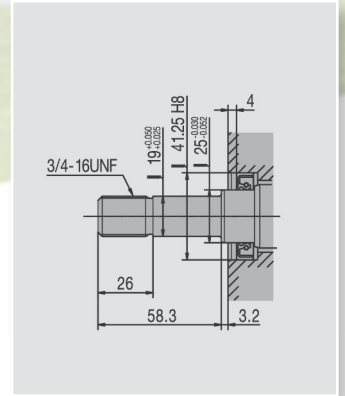
Taper Shaft E-DG



Taper Shaft E-DI

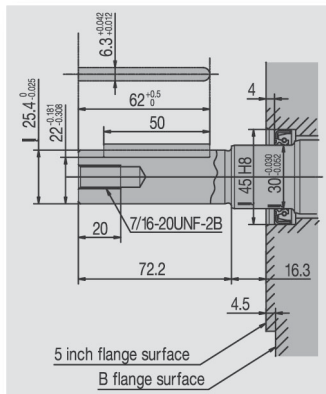


Thread Shaft E-DP

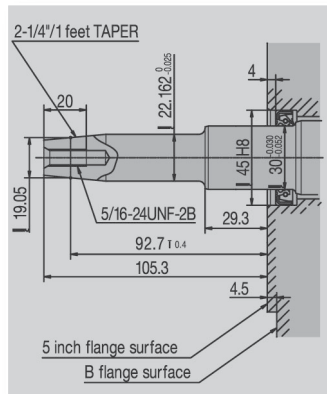


L70N

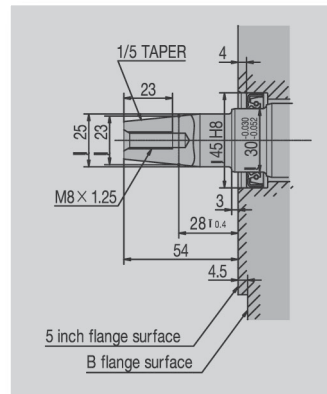
Keyway Shaft E-D



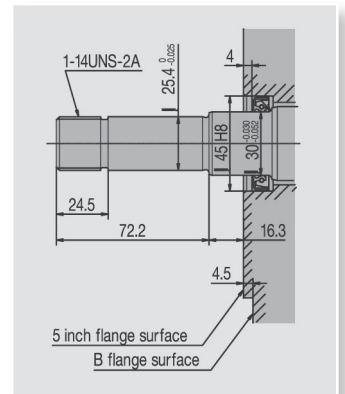
Taper Shaft E-DG



Taper Shaft E-DI

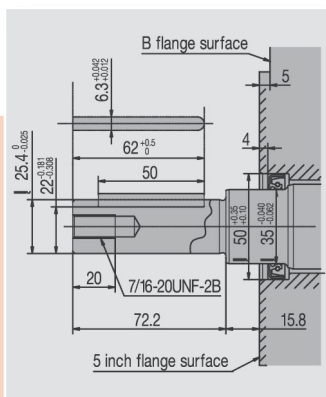


Thread Shaft E-DP

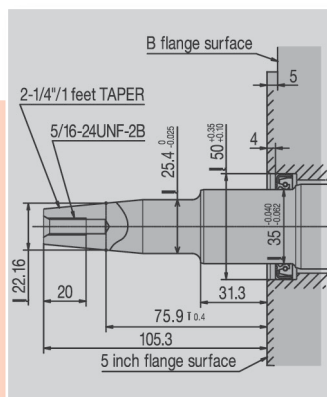


L100N

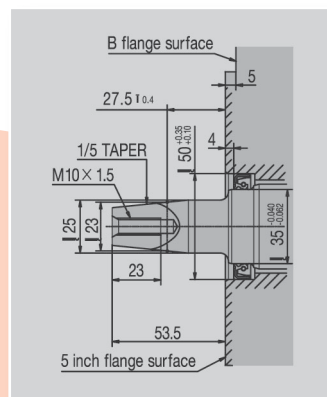
Keyway Shaft E-D



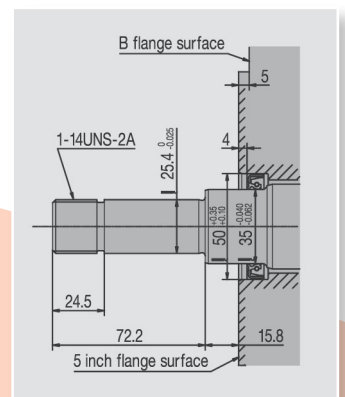
Taper Shaft E-DG



Taper Shaft DG

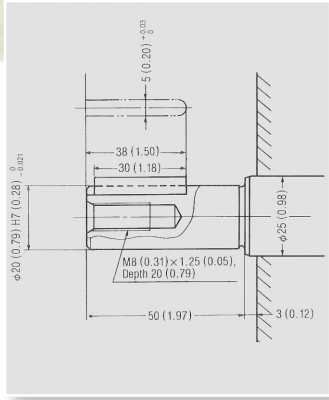


Thread Shaft E-DP



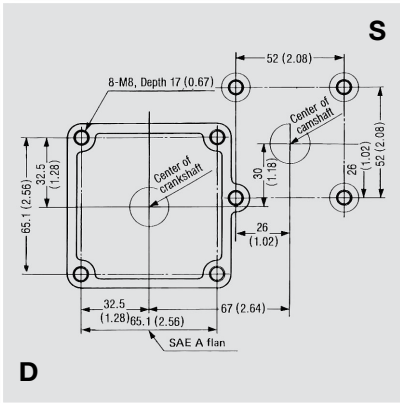


L48N S Camshaft

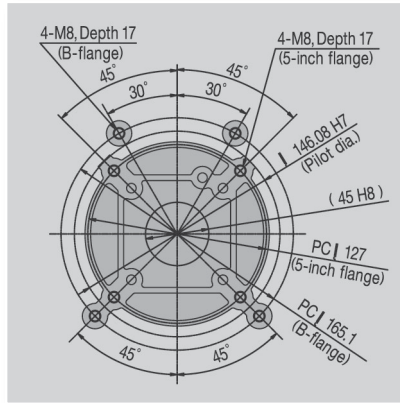


PTO Flanges

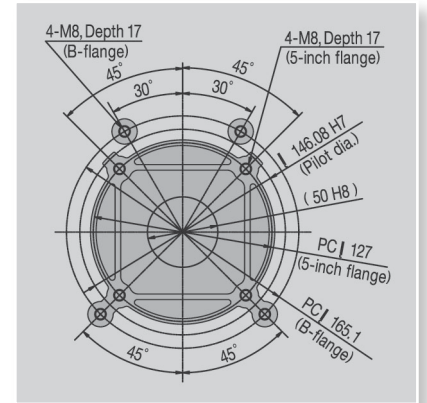
L48N



L70N

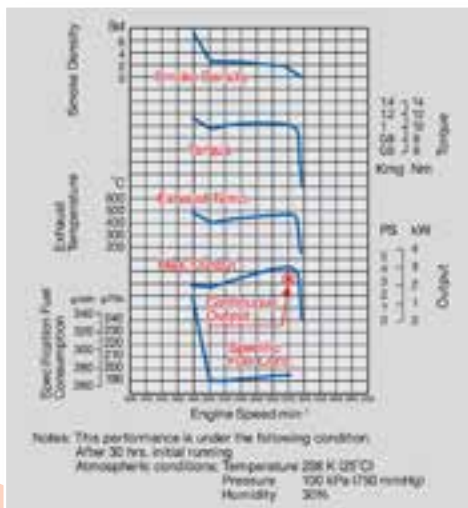


L100N

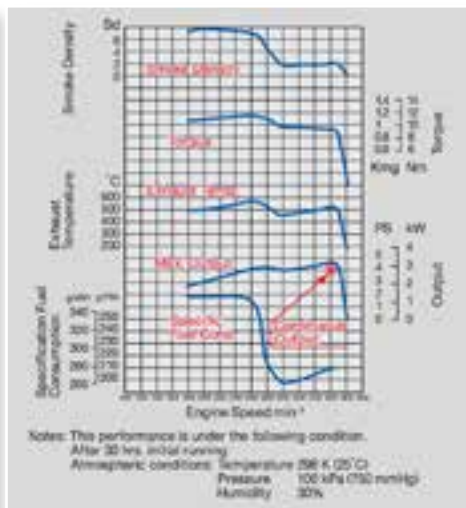


PERFORMANCE CURVES

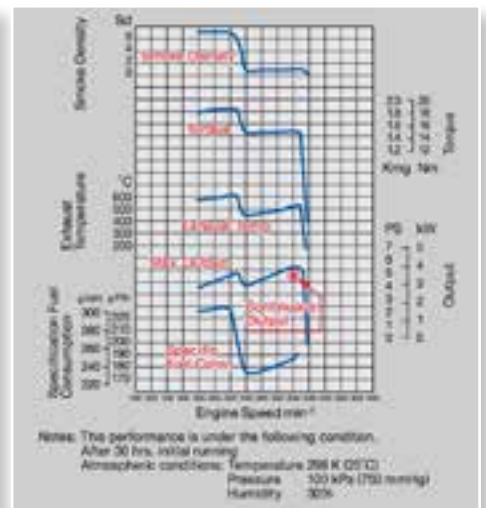
L48N5



L48N6



L70N5

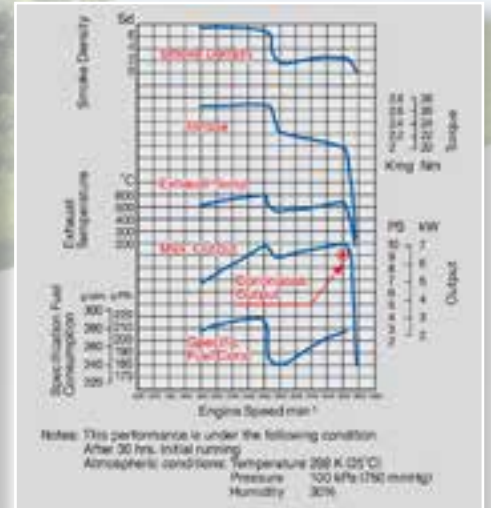
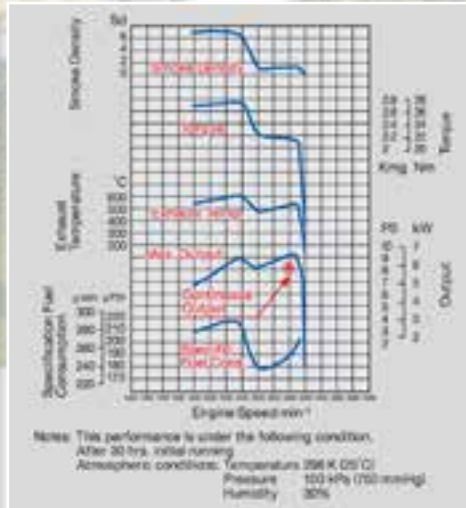
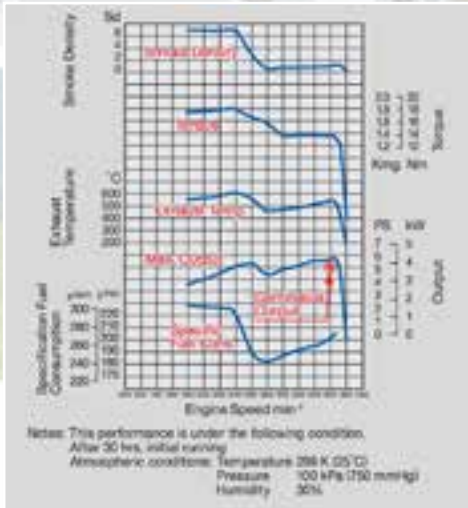


PERFORMANCE CURVES

L70N6

L100N5

L100N6



ACCESSORIES

Engine Model		L48N			L70N			L100N		
		General	Generator	Pump	General	Generator	Pump	General	Generator	Pump
Fuel System	Fuel Tank (2.4 litre)	●	●	●						
	Fuel Tank (3.3 litre)				●	●	●			
	Fuel Tank (5.4 litre)							●	●	●
	Without Fuel Tank	▲	▲	▲	▲	▲	▲	▲	▲	▲
Starting System	Starting Motor (with recoil starter)	●	●	●	●	●	▲	●	●	●
	Recoil Starter	▲	▲	▲	▲	▲	●	▲	▲	▲
	Key Switch	●	▲	▲	●	▲	▲	●	▲	▲
	Without Key Switch	▲	●	●	▲	●	●	▲	●	●
Electrical System	Charging Dynamo (12V-15A)	●	●	●	●	●	●	●	●	●
	Charging Dynamo (12V-1A)	▲	▲	▲	▲	▲	▲	▲	▲	▲
	Without Charging Dynamo	▲	▲	▲	▲	▲	▲	▲	▲	▲
PTO System	Straight (E-D)	●			●			●		
	Straight (D)	▲			▲			▲		
	Taper (E-DG)		●			●			●	
	Taper (DG)		▲						▲	
	Taper (E-D)		▲			▲			▲	
	Thread (E-DP)			●			●			●
Speed Control Device	General Use (By Remote & Hand)	●	▲	▲	●	▲	▲	●	▲	▲
	Constant Speed Type (By Hand)	▲	●	▲	▲	●	▲	▲	●	▲
	Friction Plate Type (By Hand)	▲	▲	●	▲	▲	●	▲	▲	●
Maintenance Tools	●	●	●	●	●	●	●	●	●	

YANMAR

TNV Series

WATER-COOLED DIESEL ENGINES

2TNV

Output : 9.9 kW (13.3 hp)

3TNV

Output : 15.5 kW (20.8 hp) - 27.1 kW (36.5 hp)

4TNV

Output : 35.7 kW (47.9 hp) - 62.5 kW (83.8 hp)





THE TNV ADDS A WHOLE RANGE OF “GOODIES” THAT MAKE THIS ENGINE A MECHANICAL “WORK OF ART”

IDI ENGINES

1. COMBUSTION CHAMBER

By investigating flow characteristics using experimental and numerical analysis methods, Yanmar research has achieved improved flow mixing in both the main chamber and the special mouth surrounding the injector. More efficient use of the incoming air charge results in cleaner burn and lower exhaust emissions.

2. FUEL INJECTION EQUIPMENT MECHANICAL PUMP

Instead of a PFR pump, a newly developed in-line pump has been used for the smaller TNV engines. Adjustments are made solely in Yanmar’s FIE factory ensuring precise compliance with regulations. Also the following features are incorporated:

- Increased force is applied by the governor to quicken the fuel controlling rack response time. Engine revs are more constant. Matching to a wide range of machinery is simplified.
- Emissions have been reduced by controlling fuel injection timing according to engine load.
- Cam profiles are matched to nozzle throttle needs, which give a better controlled injection rate. Emissions are reduced.

IDI ENGINES

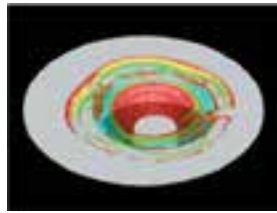
1. NOZZLE INSTALLATION ANGLE

The installation angle of the fuel injection nozzle is greater than that in conventional engines, so that uneven atomization of fuel between injections can be reduced. Excellent matching between intake swirl ration and the shape of the combustion chamber has resulted in uniform mixing of fuel in the combustion chamber. Therefore, performance including combustion efficiency, startability, noise and exhaust emission has been improved. on the 4TN94L, -98 and 98T by using 2 inlet and 2 exhaust valves, air intake and expulsion is markedly improved. Vertically mounted injector nozzle minimizes imbalance spray pattern.

TNV Series

2. COMBUSTION CHAMBER

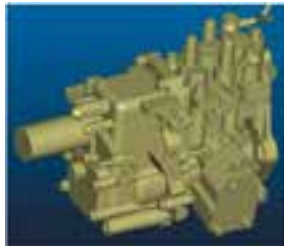
It increases the fluid energy of air and fuel charge. the swirl effect produced in the chamber continues while combustion occurs, aiding mixing and results in lower exhaust emissions compared to conventional chambers.



3. FUEL INJECTION EQUIPMENT MP Pump

A new pump has been developed especially for the TNV engine series. Our aim was to make improvements over a wide range of areas to even further reduce emissions. Features are:

- High injection pressure.
- Use of a mono plunger reduces uneven injection between the cylinders.
- Timing Control Device system optimizes injection to take into account speeds, loads and the startup phase.
- New mechanical governor helps to maintain cleaner exhausts.
- Minimum variation from chosen revs at low speed using constant pressure valve.

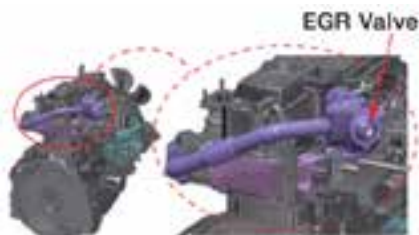


Fuel Injection Pump

- Multiple numbers of very small holes are used to achieve uniform atomization.
- Holes are not simply drilled, their inside edges are carefully rounded to promote even flow and direction of spray, also to reduce resistance.
- Low sack nozzle profile improves combustion. Double corn shape protects from cavitation.

4. EGR VALVE (≥37kW)

Modulation of the EGR valve by the engine control unit provides for the needs of all kind of equipment.



5. ELECTRONIC CONTROL (≥37kW)

The electronic control system brings the world the highly evolved electronic governing technologies of many years' experience. It's a standard fitting on the 37kW+ engine series, superbly matched to all kinds of equipment, and also available as an option on sub-37kW units.

This is the system that expands work flexibility.

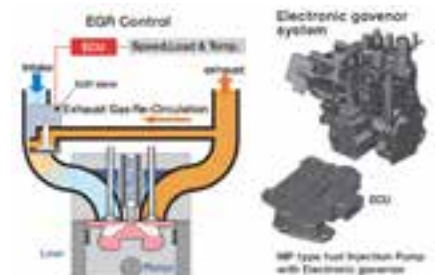


The EGR valve is modulated according to the RPM, load etc. to reduce NOx emissions and treat the environment well. Fuel injection is regulated to the optimum level on starting and acceleration and black diesel smoke is much reduced. All is controlled by external switches. Integrated operation of the equipment ECU by CAN-bus communication enables RPM adjustment and the switching of governor features to suit the needs of the job. ECU troubleshooting and service tools have been enhanced for finding the answers on a PC.

NOISE LEVEL REDUCTION

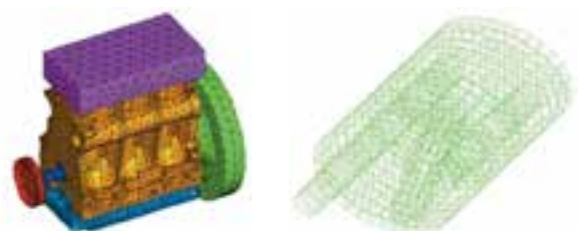
1. CYLINDER BLOCK NOISE REDUCTION

Yanmar's original CAE techniques have optimized the stiffness, minimized transformation, and reduced radiant noise.



2. MUFFLER NOISE REDUCTION

Original CAE technique is used to design a muffler with optimized volumes and sound isolation material.



SPECIFICATIONS

Engine Model	2TNV70	3TNV70	3TNV76	3TNV82A (-B)	3TNV84T-B	3TNV88-B	
Type	Vertical cylinder, 4-cycle water-cooled diesel engine						
Combustion	Indirect injection (IDI)						
Aspiration	Natural aspiration				Turbocharged	Natural aspiration	
No. of Cylinders	2	3					
Cyl. Bore x Stroke (mm)	70 x 74		76 x 82	82 x 84	84 x 90	88 x 90	
Displacement (cc)	570	854	1116	1331	1496	1642	
Direction of Rotation	Anti-clockwise (viewed from flywheel)						
Governor System	Mechanical						
EGR System	-	-	-	-	-	-	
Cooling System	Radiator						
Lubrication System	Forced lubrication by trochoid pump						
Starting System	Electric starting						
Dry Mass (Back Plate) kg	73	87	94	111	150	138	
Dry Mass (Bell Housing) kg	84	98	112	128	159	148	
Applicable Engine Regulation	EPA Tier 3 Compliance	-	-	-	-	-	
	EPA IT4 Compliance	-	-	● (≥ 19kW)	● (≥ 19kW)	● (≥ 19kW)	● (≥ 19kW)
	EPA Tier 4 Compliance	●	●	● (≥ 19kW)	● (≥ 19kW)	● (≥ 19kW)	● (≥ 19kW)
	EC Stage IIIA (Generator Use)	-	-	● (≥ 19kW)	-	-	-
	EC Stage IIIA (Industrial Use)	-	-	● (≥ 19kW)	● (≥ 19kW)	● (≥ 19kW)	●

Engine Model	4TNV84T-B	4TNV84T-Z	4TNV88-B	4TNV94L (-B)	4TNV98-Z	4TNV98T-Z	
Type	Vertical cylinder, 4-cycle water-cooled diesel engine						
Combustion	Indirect injection (IDI)						
Aspiration	Turbocharged		Natural aspiration			Turbocharged	
No. of Cylinders	4						
Cyl. Bore x Stroke mm	84 x 90		88 x 90	94 x 110	98 x 110		
Displacement cc	1995		2190	3053	3319		
Direction of Rotation	Counterclockwise (viewed from flywheel)						
Governor System	Mechanical	Electric	Mechanical		Electric		
EGR System	-	Cooled EGR	-	-	Hot EGR	Cooled EGR	
Cooling System	Radiator						
Lubrication System	Forced lubrication by trochoid pump						
Starting System	Electric starting						
Dry Mass (Back Plate) kg	165	165	155	-	-	-	
Dry Mass (Bell Housing) kg	174	174	165	235	240	280	
Applicable Engine Regulation	EPA Tier 3 Compliance	-	-	-	-	● (≥ 56kW)	
	EPA IT4 Compliance	●	●	●	●	● (≥ 56kW)	
	EPA Tier 4 Compliance	-	-	-	-	-	
	EC Stage IIIA (Generator Use)	●	-	●	-	●	●
	EC Stage IIIA (Industrial Use)	●	●	●	●	●	●

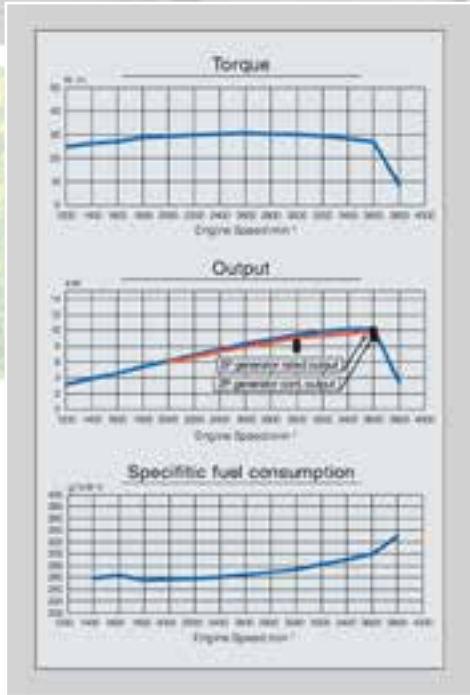
OUTPUT

Model		2TNV70	3TNV70	3TNV76	3TNV82A (-B)	3TNV84T-B	3TNV88-B			
Industrial use	NET kW/ NET hp/ Gross kW	min ⁻¹ (rpm)	3600	9.9 / 13.3 / 10.5	15.5 / 20.8 / 17.0	-	-	-		
			3400	9.6 / 12.9 / 10.1	14.7 / 19.7 / 16.1	-	-	-		
			3200	9.3 / 12.5 / 9.8	14.0 / 18.8 / 15.1	18.2 / 24.4 / 19.9	-	-		
			3000	9.1 / 12.2 / 9.5	13.7 / 18.4 / 14.6	17.9 / 24.0 / 19.2	21.9 / 29.4 / 23.0	-	27.1 / 36.3 / 28.2	
			2800	8.5 / 11.4 / 8.8	12.8 / 17.2 / 13.6	16.7 / 22.4 / 17.8	20.4 / 27.4 / 21.3	29.1 / 39.0 / 30.2	25.2 / 33.8 / 26.1	
			2700	8.2 / 11.0 / 8.4	12.4 / 16.6 / 13.1	16.1 / 21.6 / 17.1	19.7 / 26.4 / 20.5	-	24.3 / 32.6 / 25.1	
			2600	7.9 / 10.6 / 8.1	11.8 / 15.8 / 12.5	15.5 / 20.8 / 16.5	19.0 / 25.5 / 19.7	26.8 / 35.9 / 27.7	23.5 / 31.5 / 24.2	
			2500	7.6 / 10.2 / 7.8	11.4 / 15.3 / 12.0	14.9 / 20.0 / 15.8	18.2 / 24.4 / 18.9	-	22.6 / 30.3 / 23.3	
			2400	7.3 / 9.8 / 7.5	11.0 / 14.8 / 11.5	14.3 / 19.2 / 15.1	17.5 / 23.5 / 18.1	-	21.6 / 29.0 / 22.2	
			2300	7.0 / 9.4 / 7.2	10.5 / 14.1 / 11.0	13.8 / 18.5 / 14.4	16.8 / 22.5 / 17.3	-	20.7 / 27.8 / 21.2	
			2200	6.6 / 8.9 / 6.8	9.9 / 13.3 / 10.3	13.2 / 17.7 / 13.8	16.0 / 21.5 / 16.5	-	19.9 / 26.7 / 20.4	
			2100	6.3 / 8.4 / 6.5	9.5 / 12.7 / 9.9	12.5 / 16.8 / 13.0	-	-	-	
			2000	6.0 / 8.0 / 6.1	9.0 / 12.1 / 9.3	11.8 / 15.8 / 12.3	-	-	18.0 / 24.1 / 18.4	
Generator use	NET kW/ NET hp/ Gross kW	Stand-by	3600	10.0 / 13.4 / 10.6	16.0 / 21.5 / 17.6	19.5 / 26.1 / 21.7	-	-		
			3000	8.5 / 11.4 / 8.8	13.3 / 17.8 / 14.3	16.6 / 22.3 / 17.9	-	-		
			1800	-	8.0 / 10.7 / 8.3	10.7 / 14.3 / 11.1	13.2 / 17.7 / 13.8	18.3 / 24.5 / 18.6	16.3 / 21.9 / 16.9	
			1500	-	6.7 / 9.0 / 6.8	9.0 / 12.1 / 9.2	11.0 / 14.8 / 11.3	15.3 / 20.5 / 15.5	13.5 / 18.1 / 13.9	
			Continuous	3600	9.1 / 12.2 / 9.7	14.5 / 19.4 / 16.1	17.7 / 23.7 / 19.9	-	-	-
				3000	7.7 / 10.3 / 8.1	12.1 / 16.2 / 13.1	15.1 / 20.2 / 16.5	-	-	-
				1800	-	7.3 / 9.8 / 7.5	9.8 / 13.1 / 10.1	12.0 / 16.1 / 12.6	16.6 / 22.5 / 17.2	14.8 / 19.8 / 15.4
1500	-	6.1 / 8.2 / 6.3	8.2 / 11.0 / 8.4	9.9 / 13.3 / 10.3	14.1 / 19.1 / 14.4	12.3 / 16.5 / 12.7				

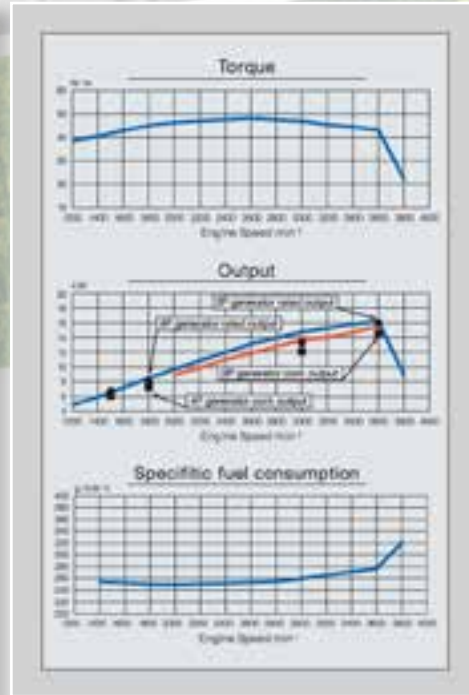
Model		4TNV84T-B	4TNV84T-Z	4TNV88-B	4TNV94L (-B)	4TNV98-Z	4TNV98T-Z			
Industrial use	NET kW/ NET hp/ Gross kW	min ⁻¹ (rpm)	3600	-	-	-	-	-		
			3400	-	-	-	-	-		
			3200	-	-	-	-	-		
			3000	-	41.2 / 55.2 / 42.7	35.0 / 46.9 / 36.5	-	-	-	
			2800	-	38.6 / 51.8 / 39.9	33.7 / 45.2 / 35.0	-	-	-	
			2700	-	37.1 / 49.8 / 38.3	32.5 / 43.6 / 33.7	-	-	-	
			2600	35.7 / 47.9 / 36.7	-	31.3 / 42.0 / 32.3	-	-	-	
			2500	34.5 / 46.3 / 35.5	-	30.1 / 40.4 / 31.0	-	51.1 / 68.5 / 52.1	62.5 / 83.8 / 63.9	
			2400	33.5 / 44.9 / 34.3	-	28.8 / 38.6 / 29.6	-	49.3 / 66.1 / 50.2	-	
			2300	-	-	27.7 / 37.1 / 28.5	-	47.4 / 63.6 / 48.2	-	
			2200	-	-	26.5 / 35.5 / 27.2	-	45.6 / 61.1 / 46.3	55.5 / 74.4 / 56.5	
			2100	-	-	-	35.6 / 47.7 / 36.2	43.8 / 58.7 / 44.4	-	
			2000	-	-	24.1 / 32.3 / 24.6	35.3 / 47.3 / 35.9	41.9 / 56.2 / 42.5	-	
Generator use	NET kW/ NET hp/ Gross kW	Stand-by	3600	-	-	-	-	-		
			3000	-	-	-	-	-		
			1800	26.9 / 36.1 / 27.7	-	21.6 / 29.0 / 22.4	-	40.8 / 54.7 / 41.6	50.1 / 67.2 / 50.9	
			1500	21.3 / 28.6 / 21.8	-	18.0 / 24.1 / 18.5	-	34.4 / 46.1 / 34.9	41.7 / 55.9 / 42.2	
			Continuous	3600	-	-	-	-	-	-
				3000	-	-	-	-	-	-
				1800	24.3 / 32.6 / 25.1	-	19.6 / 26.3 / 20.5	-	36.4 / 48.8 / 37.2	45.3 / 60.7 / 46.1
1500	19.1 / 25.6 / 19.6	-	16.4 / 22.0 / 16.9	-	30.7 / 41.2 / 31.2	37.7 / 50.6 / 38.2				

PERFORMANCE CURVES

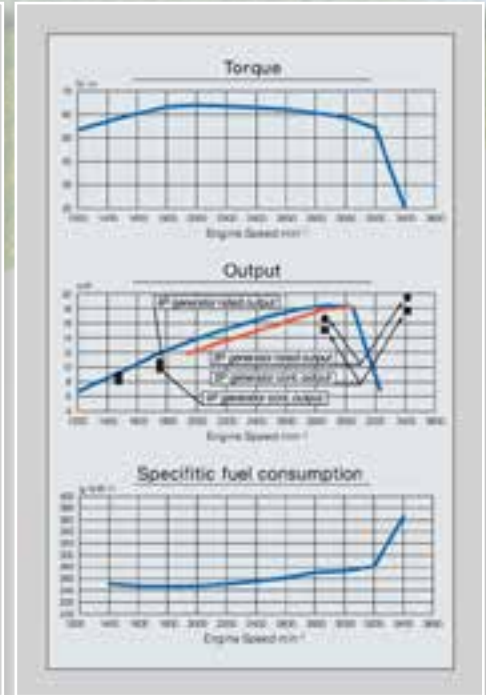
2TNV70



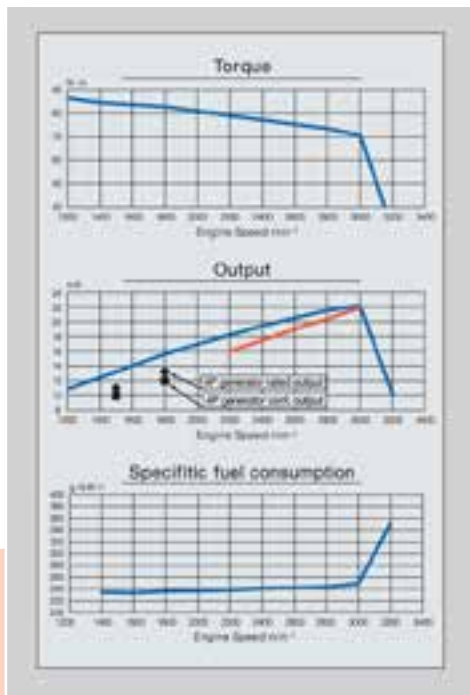
3TNV70



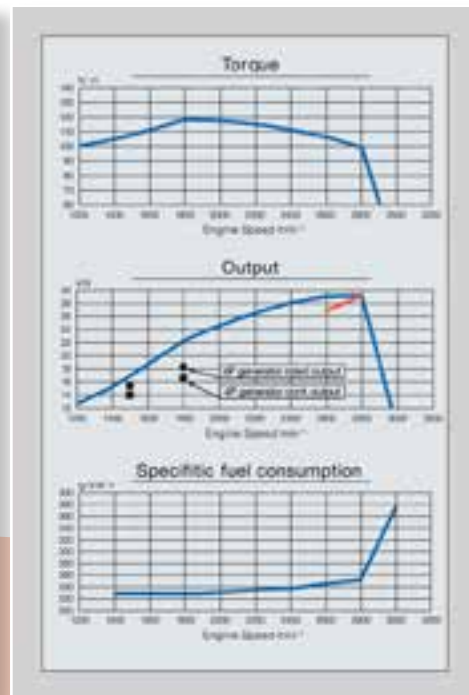
3TNV76



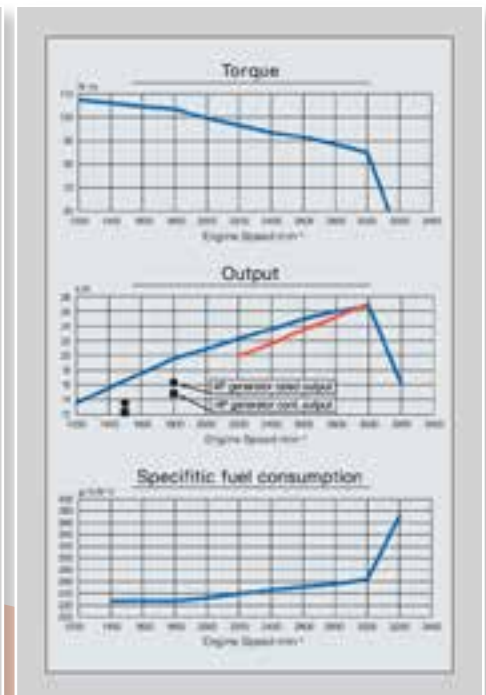
3TNV82A(-B)



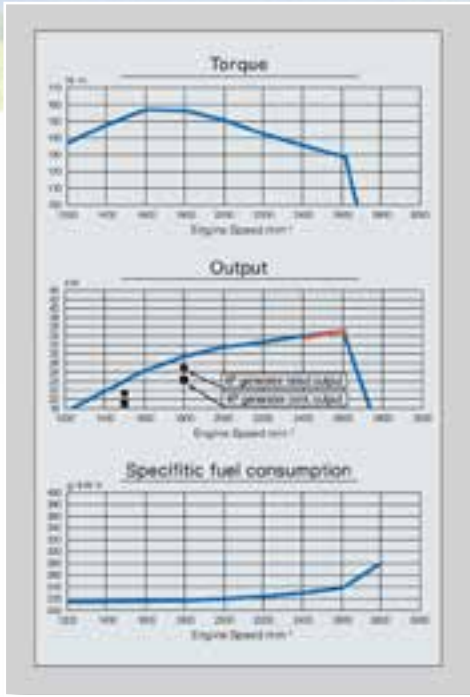
3TNV84T-B



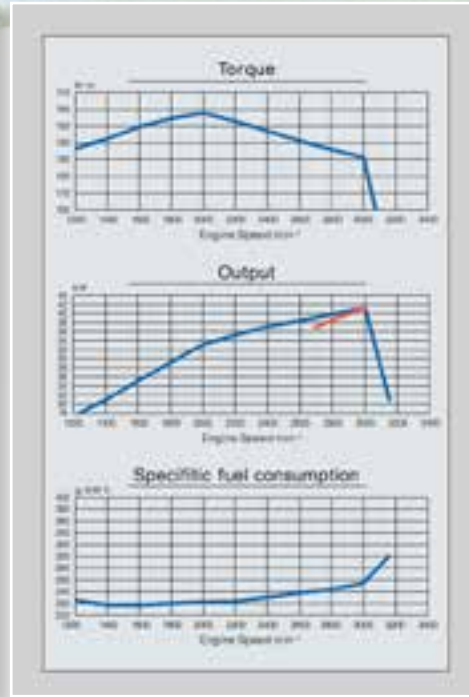
3TNV88-B



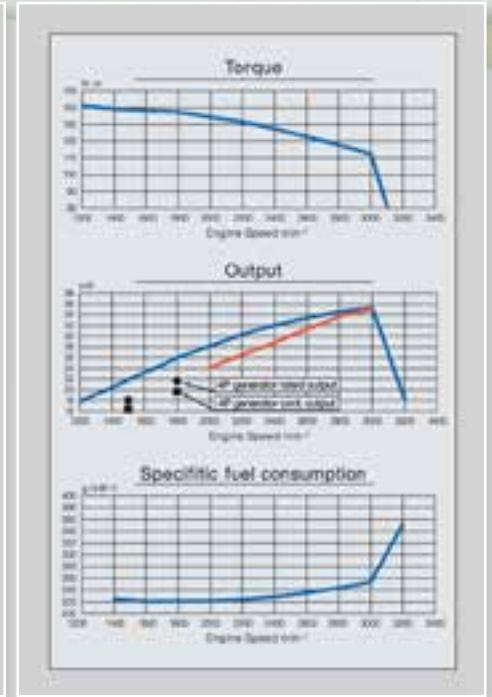
4TNV84T-B



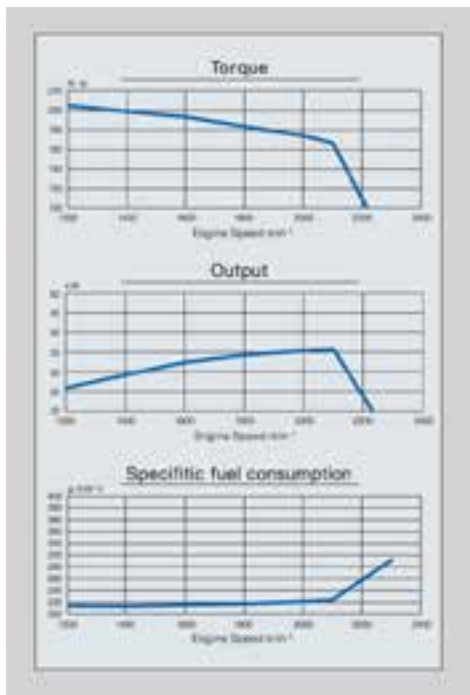
4TNV84T-Z



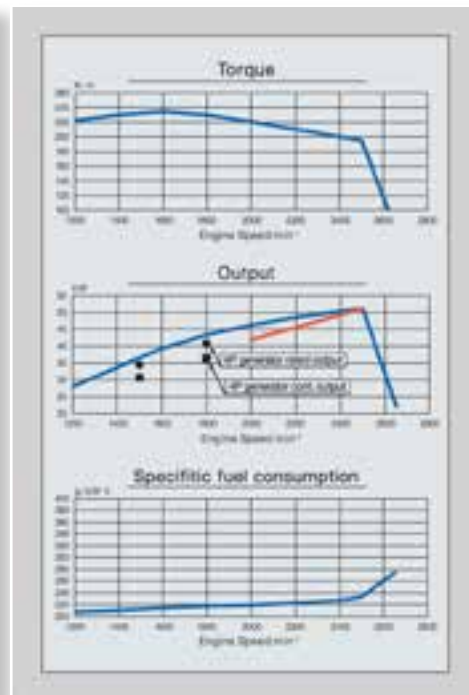
4TNV88-B



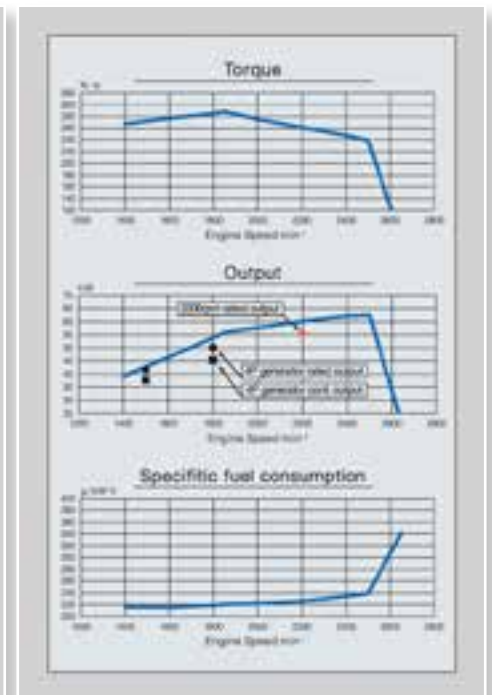
4TNV94L(-B)



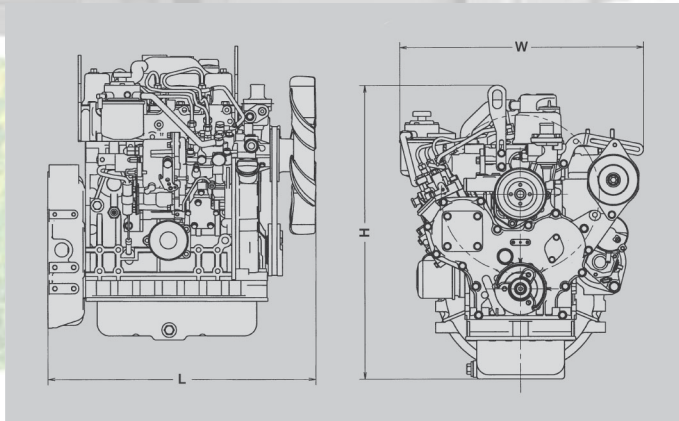
4TNV98-Z



4TNV98T-Z



ENGINE DIMENSIONS



Model	2TNV70	3TNV70	3TNV76
L	415	504	524
W	427	427	427
H	521	549	572

Model	3TNV82A(-B)	3TNV84T-B	3TNV88-B	4TNV84T-B	4TNV84T-Z	4TNV88-B
L	528.5	615.7	564.5	655	675	655
W	498.5	517.5	517.5	517.5	517.5	517.5
H	561	652	622	685	685	622

Model	4TNV94L(-B)	4TNV98-Z	4TNV98T-Z
L	719	719	719
W	496	496	574
H	717	717	784

All measurements in (mm)

3TNV76



3TNV88-B



4TNV98-Z



YANMAR

MM Series

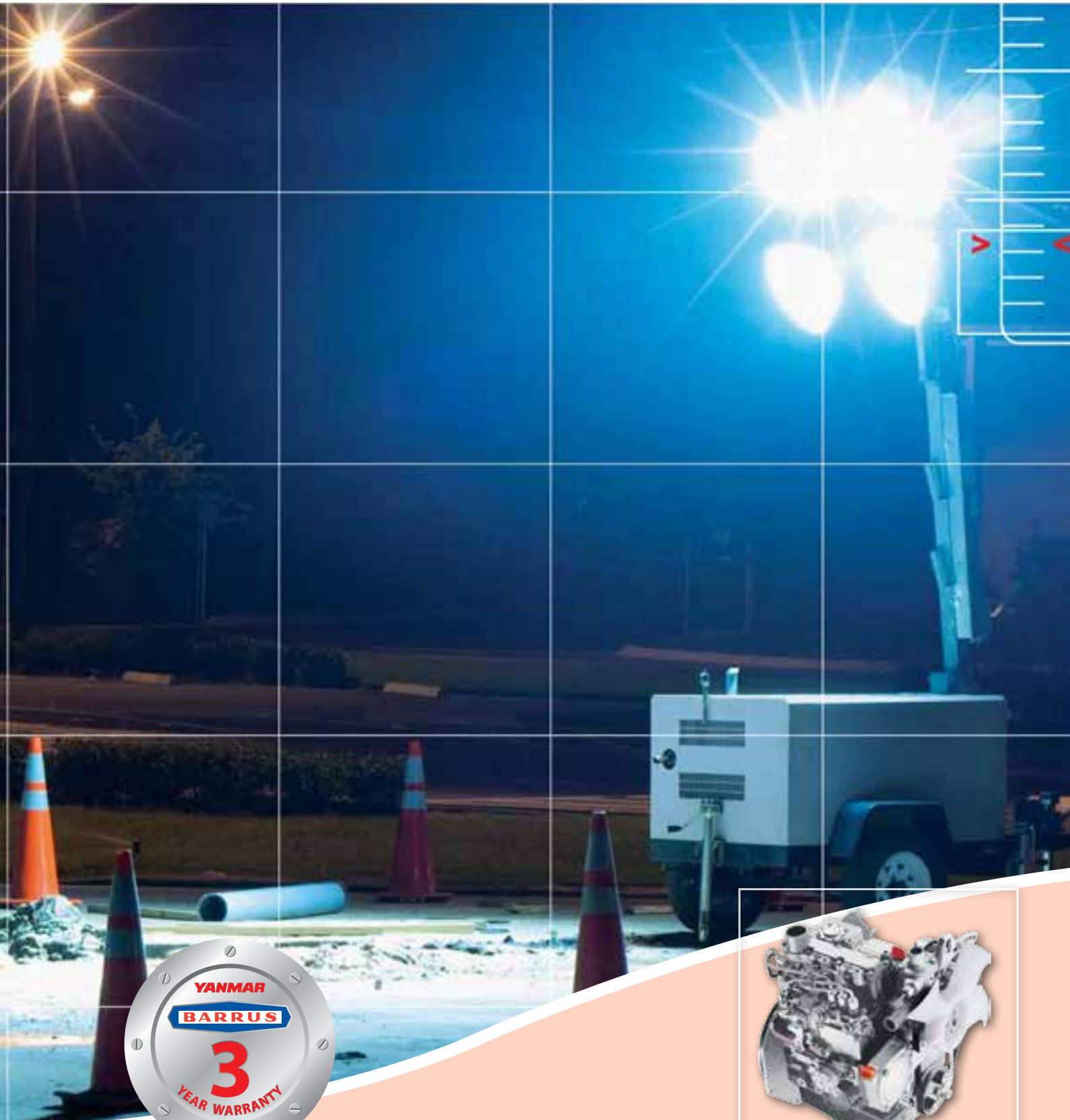
WATER-COOLED DIESEL ENGINES

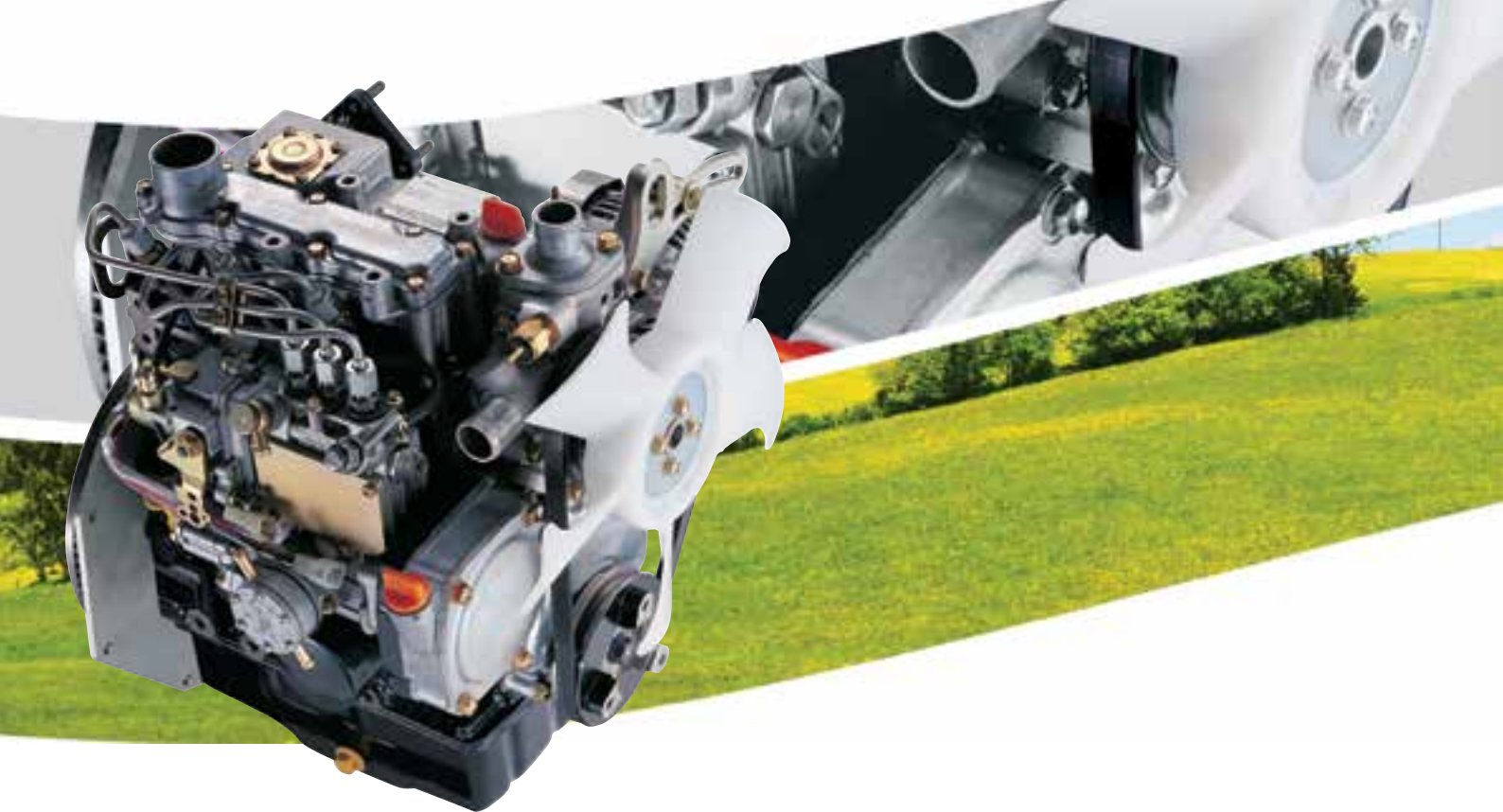
3TNM68

Output : 14.1kW (18.9hp)

3TNM72

Output : 17.0kW (22.8hp)





ULTRA-COMPACT & HIGH PERFORMANCE (BEST IN CLASS POWER DENSITY*)

The secret to that power density lies in the new cylinder body. In addition to its extremely high output for the size, the engine also has smaller base for flexible installation on a wider range of work machines. *Power density is the ratio of engine output relative to the engine's external dimensions. The MM series is ahead even of the present 3TNV70.

LOW NOISE & VIBRATION (THE LADDER FRAME STRUCTURE)

The ladder frame structure of the cylinder block achieves drastic reductions of noise and vibration from the engine body.



ENVIRONMENTALLY FRIENDLY (COMPLIANT WITH EPA TIER 4 IN THE U.S AND EXTRA LOW FUEL CONSUMPTION)

The high combustion performance is achieved together with low emissions that satisfy EPA Tier 4. Yanmar's original combustion technologies and MC fuel injection pump and nozzle are the key to this achievement.



EASY INSTALLATION

With its compact size and universal base attachment design, the MM series is an easy replacement for almost all major applications.

- Lawn & Garden Equipment
- Small Agricultural Machinery
- Utility Vehicles
- Compact Generators

MM Series

SPECIFICATION

Model		3TNM68			3TNM72			
Type		Vertical cylinder, 4-cycle water-cooled diesel						
Combustion		Indirect injection (IDI)						
Aspiration		Naturally aspirated						
No. of Cylinders		3						
Bore x Stroke (mm)		68 x 72			72 x 74			
Displacement (cc)		784			903			
Rated Output		Speed	NET		Gross	NET		Gross
		min ⁻¹	kW	hp	kW	kW	HP	Kw
Industrial Use	Intermittent	3600	14.1	18.9	14.7	17.0	22.8	18.2
		3400	13.5	18.1	14.1	16.5	22.1	17.3
		3200	12.8	17.2	13.3	15.6	20.9	16.3
		3000	12.6	16.9	13.0	14.7	19.7	15.3
Generator Use	Stand-by	3600	14.6	19.6	15.2	17.0	22.8	18.2
		3000	12.2	16.4	12.6	14.5	19.4	15.2
		1800	7.3	9.8	7.4	8.6	11.5	8.8
		1500	6.1	8.2	6.2	7.3	9.8	7.4
	Continuous	3600	13.3	17.8	13.9	15.5	20.8	16.7
		3000	11.1	14.9	11.5	13.2	17.7	13.9
		1800	6.6	8.8	6.7	7.8	10.5	8.0
		1500	5.5	7.4	5.6	6.6	8.9	6.7
Cooling System		Radiator						
Starting System		Electric starting						
Dimensions (Back Plate)	Length (mm)	431			450			
	Width (mm)	416			416			
	Height (mm)	500			506			
Dry Mass (Back Plate) kg		77			83			
Dry Mass (Semi SAE # 6 Bell Housing) kg		86			92			
Dry Mass (SAE # 5 Bell Housing) kg		99			105			

Note: When specification varies, the above engine speed and rated output will vary accordingly.

YANMAR

Final Tier 4 Series up to 19kW

WATER-COOLED DIESEL ENGINES



3TNM74F

Output : 17.8kW (23.9hp)

3TNV74F

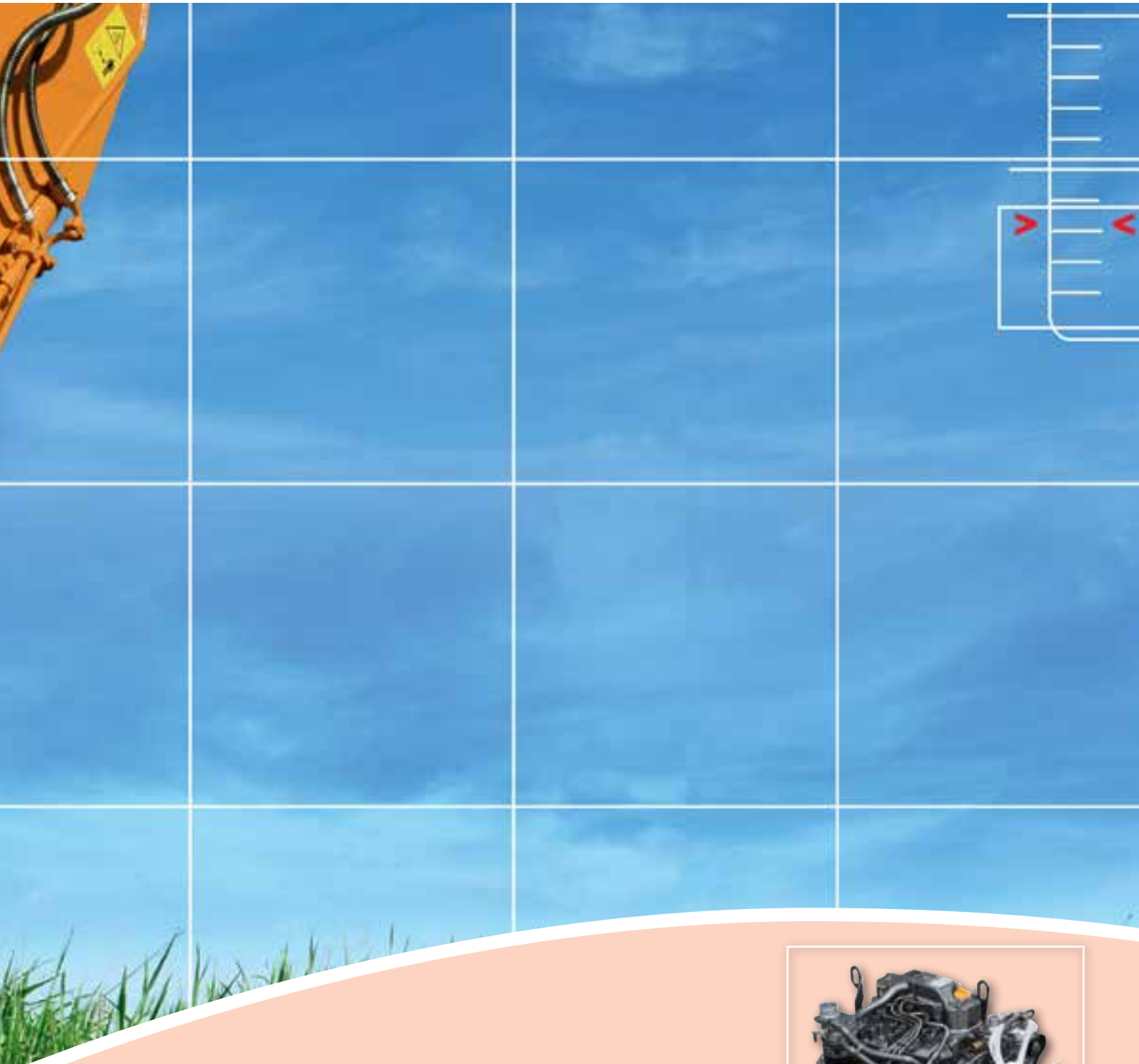
Output : 13.7kW (18.4hp)

3TNV80F

Output : 17.8kW (23.9hp)

3TNV88F

Output : 18.2kW (24.4hp)



EPA FINAL TIER 4 COMPLIANT DIESEL ENGINES

YANMAR'S NEW DIESEL ENGINES COMPLY WITH THE LATEST EMISSIONS REGULATIONS THROUGH THEIR ORIGINAL ADVANCED DIESEL ENGINE TECHNOLOGIES AND BY DRAWING ON THEIR 100 YEARS EXPERIENCE



3TNM74F



3TNV74F



3TNV80F



3TNV88F



FEATURES

- Compact durable power
- Clean emissions
- Low fuel consumption
- Low noise, low vibration
- Installation sustainability
- High altitude performance control
- Direct injection (3TNV88F only)
- Electronic engine control (3TNV88F only)

MODEL	3TNM74F	3TNV74F	3TNV80F	3TNV88F
Emission Regulation	EPA Final Tier 4			
Combustion	Indirect injection (IDI)			Direct Injection (DI)
Aspiration	Natural Aspiration			
Fuel Injection System	Mechanical			Mechanical with electronic governor
EGR System	N/A			Hot EGR
Cylinders	3			
Bore (mm)	74		80	88
Stroke (mm)	77		84	90
Displacement (cc)	993		1267	1642
Max Rated Output (hp / kW@ rpm)	23.9 / 17.8 @ 3600	18.4 / 13.7 @ 3000	23.9 / 17.8 @ 3000	24.4 / 18.2 @ 2400
Length (mm)	450	504	523	588
Width (mm)	416	427		577
Height (mm)	506		532	697
Dry Weight (kg)	88	103	117	152

NOTE: 1. Conforms to SAE J1995,
2. The 3TNM74F engine only has a backplate, and 3TNV74F/80F/88F all have flywheel housings.

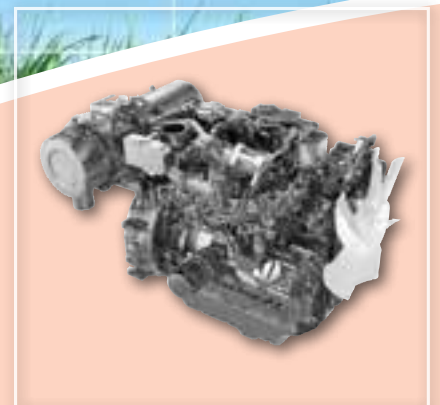
YANMAR

Final Tier 4 19kW to 56kW

WATER-COOLED DIESEL ENGINES

TNV Series Common Rail

EPA Tier 4 (19 - 56kW)
EU Stage IIIB (37 - 56kW)



TNV SERIES COMMON RAIL ENGINES

EPA TIER 4 (19 - 56kW) EU Stage IIIB (37 - 56kW)



* "DPF" is the filter device designed to remove particulate matter (PM) from exhaust gas.

Direct injection to create clean-burning power

Common rail system to allow fine-tuned electronic control of fuel injection

Cooled EGR (Exhaust Gas Recirculation) to reduce mono-nitrogen oxides (NOx)

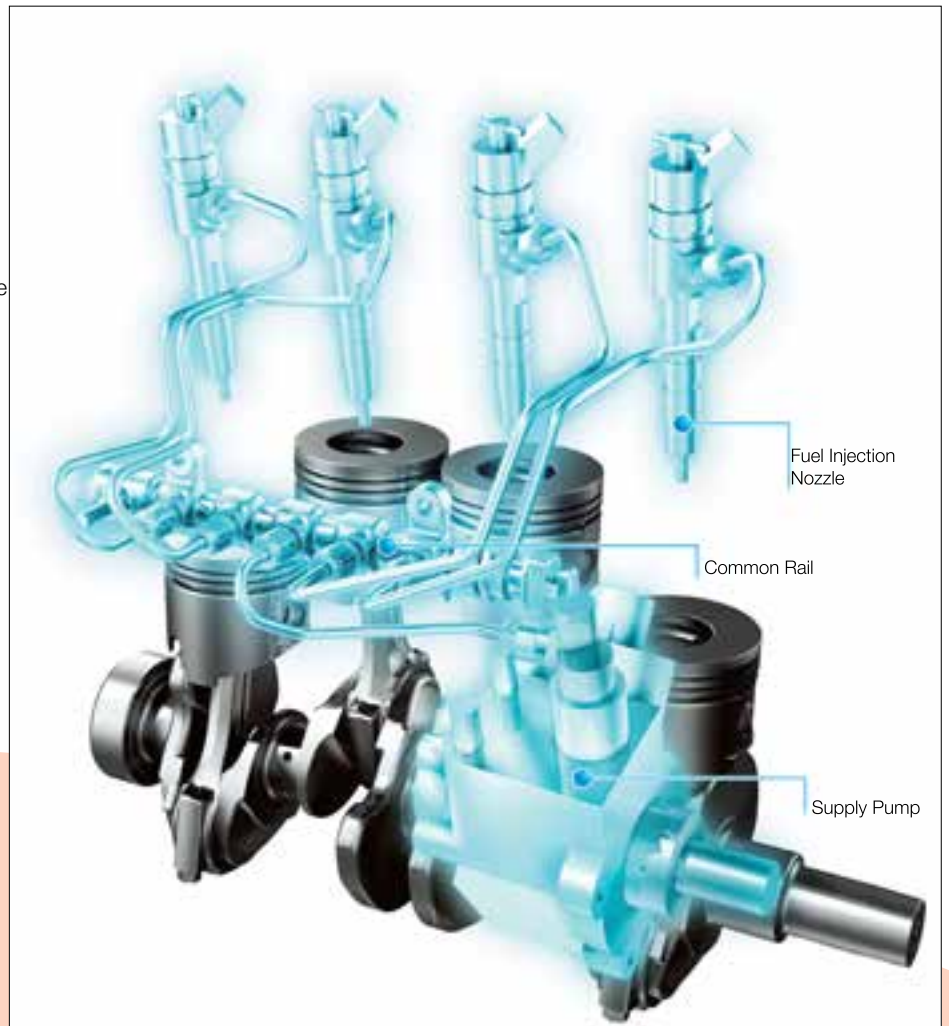
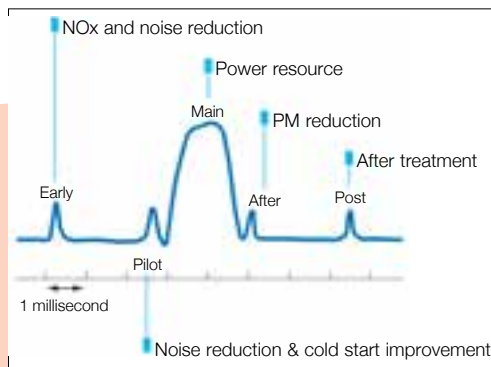
Diesel Particulate Filter (DPF*) to catch particulate matter (PM) in the exhaust gas

Fully electronic control to provide total intelligent engine control

COMMON RAIL INJECTION SYSTEM

High-pressure fuel is stored in the common rail, and the amount, frequency, and timing of fuel injection are precisely controlled electronically in 1/1000th of a second intervals. Using a high pressure multi-stage injection system, we can reduce the amount of mono-nitrogen oxides (NOx) and particulate matter (PM) contained in the exhaust gas and achieve a quiet, fuel-efficient engine.

FUEL INJECTION PATTERNS OF COMMON RAIL



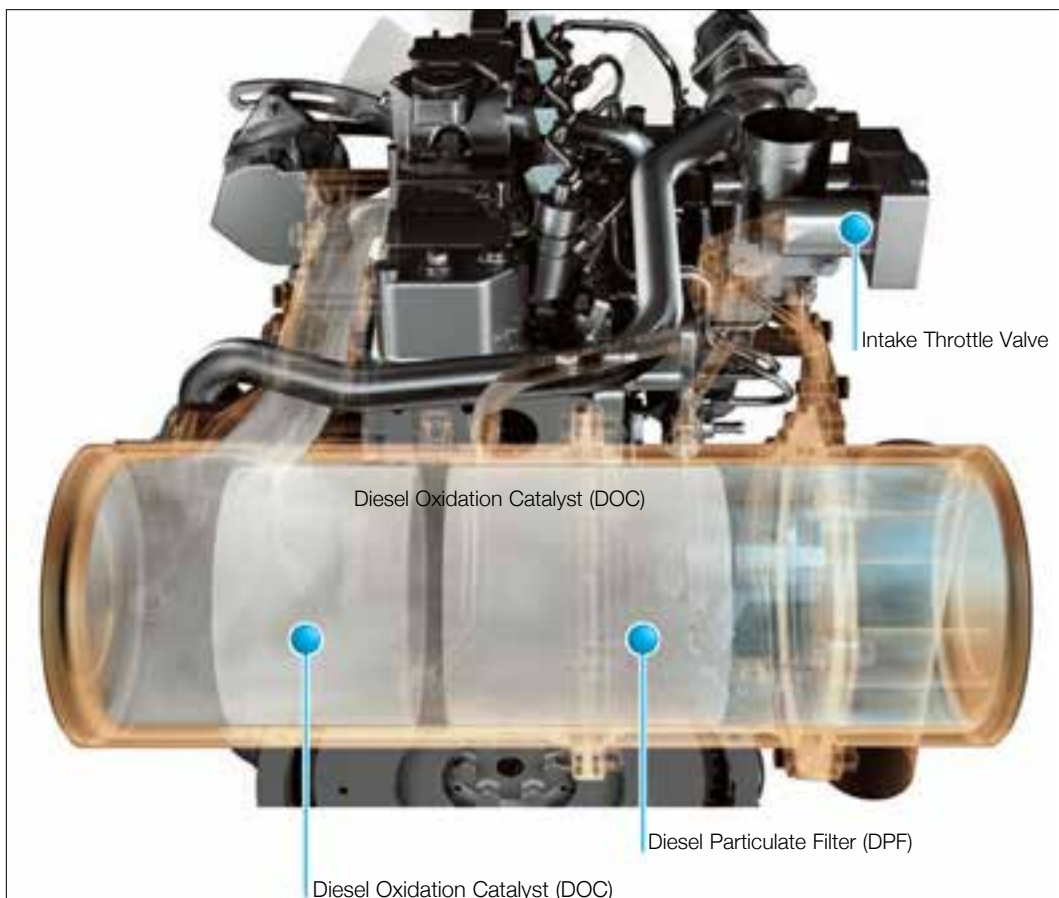
COOLED EGR (EXHAUST GAS RECIRCULATION) SYSTEM

This is a system to recirculate some of the exhaust gas back into the air intake. This lets us reduce NO_x emission by controlling the oxygen concentration in the combustion chamber and reducing the combustion temperature. The circulated exhaust gas is cooled by the EGR Cooler and also has its flow volume electronically controlled by the EGR Valve, depending on the engine operation state, in order to attain the optimum combustion conditions.



DIESEL PARTICULATE FILTER (DPF) SYSTEM

Our engines include a DPF system to catch particulate matter (PM) contained in the exhaust gas. The PM trapped inside the DPF is processed when the DPF automatically regenerates, keeping the filter constantly clean.



YANMAR'S ORIGINAL DPF REGENERATION CONTROL COMBINES THREE MODELS

ASSIST REGENERATION

When the particulate matter (PM) is trapped in the DPF, the intake throttle valve operates automatically. By reducing the intake air volume and controlling the temperature inside the DPF, the collected particles are automatically eliminated.

RESET REGENERATION

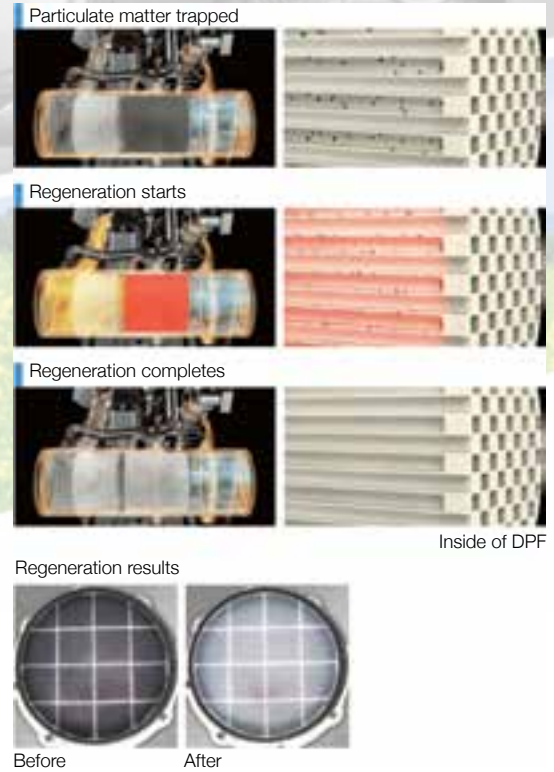
Following combustion in the cylinder, a small amount of fuel is burnt, and the reaction heat from DOC is used to control the temperature in the DPF and automatically eliminate the collected particles.

STATIONARY REGENERATION

The operator can also use manual control to eliminate the particles collected with the DPF.

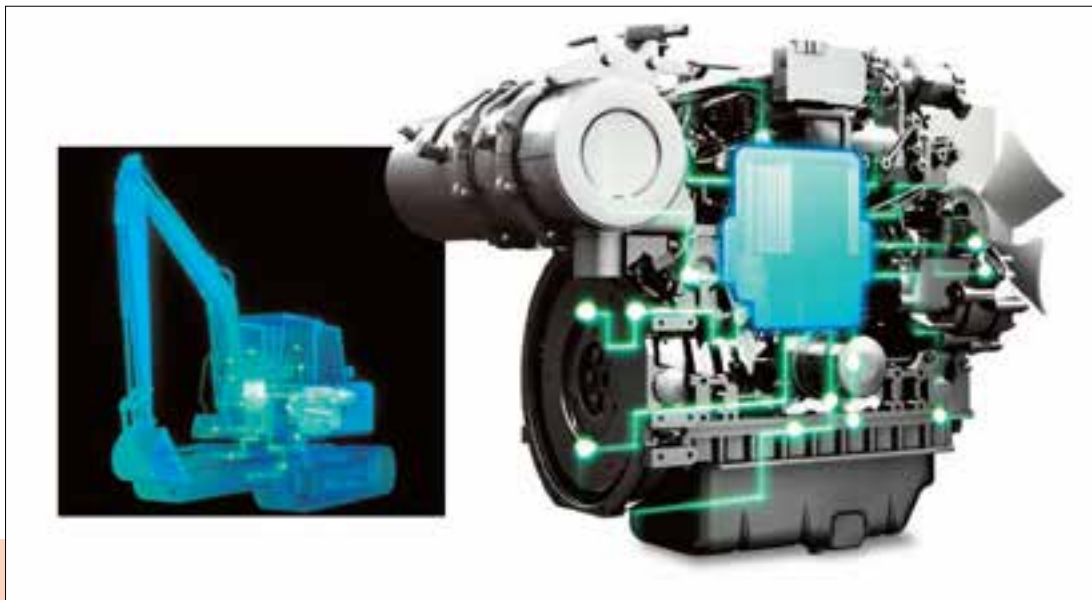


DPF regeneration request switch



ECU (ENGINE CONTROL UNIT)

The ECU is the brain of an engine and constantly exchanges information between the engine itself and the operating machinery to accurately determine operation status and provide optimum control for the situation.



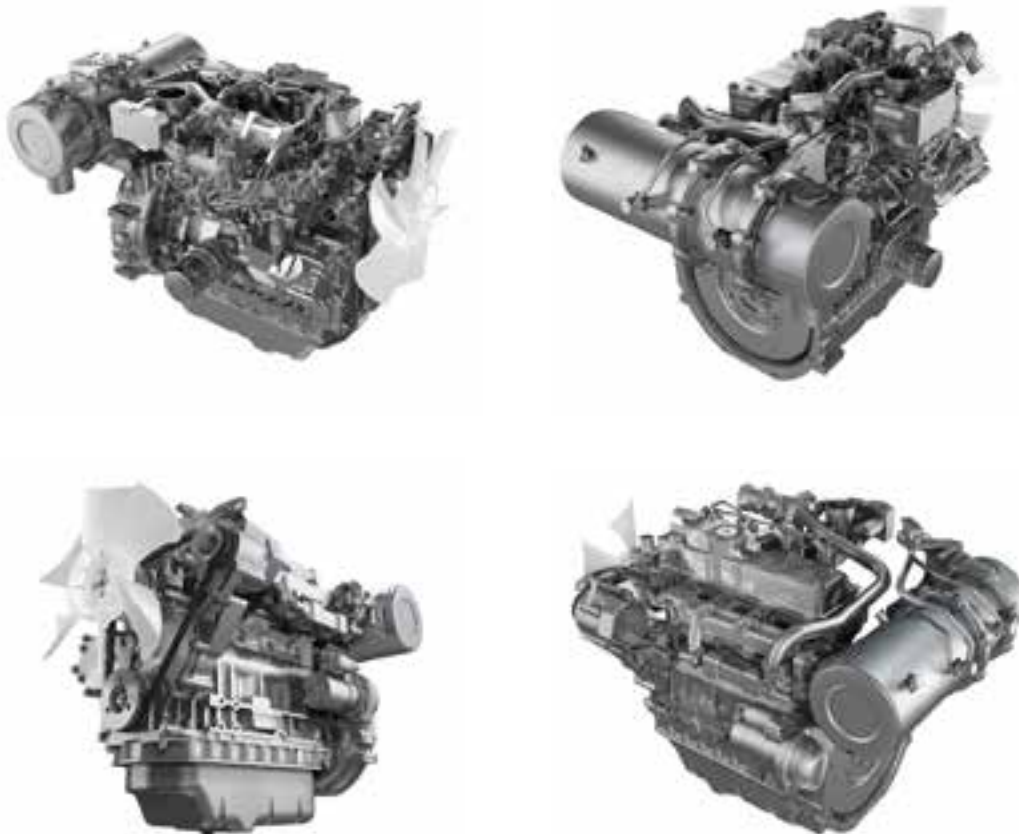
TNV SERIES COMMON RAIL ENGINES

SPECIFICATION

Model	3TNV88C	3TNV86CT	4TNV88C	4TNV86CT	4TNV98C	4TNV98CT
Emission Regulation	EPA Tier 4			EPA Tier 4 / EU Stage III B		
Combustion System	Direct Injection (DI)					
Aspiration	Naturally Aspirated	Turbocharged	Naturally Aspirated	Turbocharged	Naturally Aspirated	Turbocharged
Fuel Injection System	Common Rail					
EGR System	Cooled EGR					
Cylinders	3			4		
Bore (mm)	88	86	88	86	98	98
Stroke (mm)	90				110	
Displacement (cc)	1642	1568	2190	2091	3319	3319
Max Rated Output kW / hp @ r/min *1	27.5 / 36.9 @ 3000	32.4 / 43.4 @ 3000	35.5 / 47.6 @ 3000	44.0 / 59.0 @ 3000	51.7 / 69.3 @ 2500	53.7 / 72.0 @ 2500
After Treatment System	Diesel Particulate Filter (DPF)					
Length (mm) *2	781		871	890	970	
Width (mm) *2	536		524	543	556	574
Height (mm) *2	751	762	746	766	806	820
Dry Weight (kg) *2	170	175	205	210	270	275

*1 Conforms to SAE J1995

*2 With Diesel Particulate Filter (DPF) on flywheel housing



YANMAR

TNV / TNM Power Packs

WATER-COOLED DIESEL ENGINES

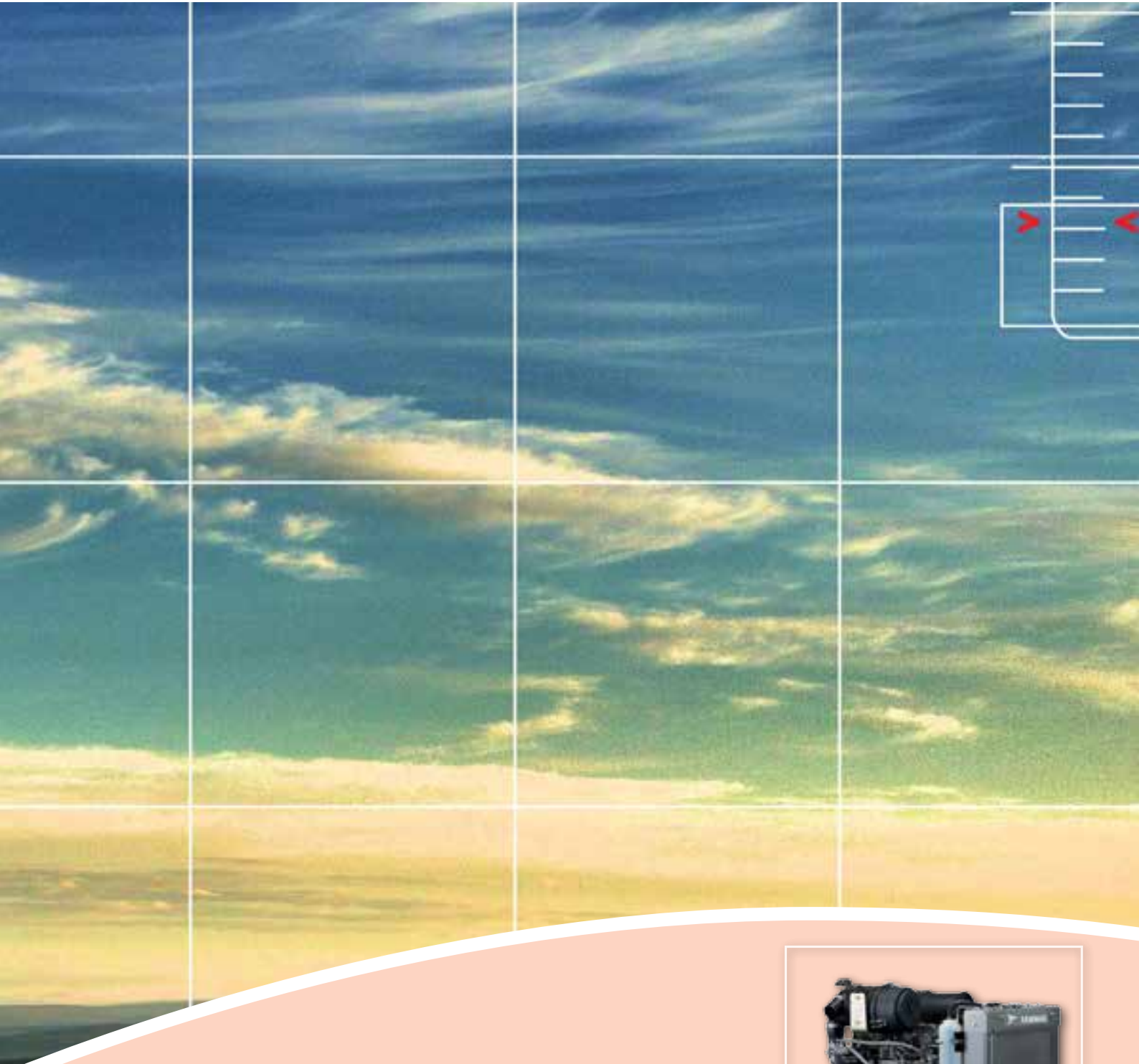


3TNM68/72

3TNV70/76/88

4TNV88/98

Rated Output : 6.1 - 61.7 kW





THE WIDE OUTPUT LINEUP OF TNV / TNM POWER PACKS

ENGINE SPEC SELECTION CODE

Power Pack Group		Application		3TNM68	3TNM72	3TNV70	3TNV76
Group A	Induspack	General industrial use		-AS	-AS	-	-CS
	Genepack A	Generator use (open type)	2-pole	-HA	-HA	-	-
			4-pole	-GA	-GA	-	-GA
Group B	Genepack B	Generator use (enclosed type)	2-pole	-	-	-HB	-HB
			4-pole	-	-	-	-GB

Power Pack Group		Application		3TNV88(-B)	4TNV88(-B)	4TNV98(-Z)	4TNV98T(-Z)
Group A	Induspack	General industrial use		-DS	-DS	-NS	-NS
	Genepack A	Generator use (open type)	2-pole	-	-	-	-
			4-pole	-GA	-GA	-GA	-GA
Group B	Genepack B	Generator use (enclosed type)	2-pole	-	-	-	-
			4-pole	-GB	-GB	-GB	-GB

SPECIFICATIONS

Model	3TNM68	3TNM72	3TNV70	3TNV76	3TNV88(-B)	4TNV88(-B)	4TNV98(-Z)	4TNV98(-Z)
Type	Vertical 4-cylinder water cooled diesel engine							
Combustion	Indirect injection				Direct injection			
Aspiration	Naturally aspirated							Turbocharged
No. of Cylinders	3				4			
Cyl. Bore x Stroke (mm)	68 x 72	72 x 74	70 x 74	76 x 82	88 x 90		98 x 110	
Displacement (cc)	784	904	854	1116	1642	2190	3319	
Direction of Rotation	Anti-clockwise							
Cooling System	Radiator							
Lubrication System	Forced lubrication by trochoid pump							
Starting System	Starting motor (D.C. 12V)							

OUTPUT

Industrial use (Induspack)	Model	3TNM68	3TNM72	3TNV76	3TNV88(-B)	4TNV88(-B)	4TNV98-Z	4TNV98T-Z
	Code	-AS	-AS	-CS	-DS	-DS	-NS	-NS
Rated output [kW / min ⁻¹]		14.1 / 3600	17.1 / 3600	18.7 / 3200	26.8 / 3000	35.4 / 3000	50.7 / 2500	61.7 / 2500



OUTPUT

Model				3TNM68	3TNM68	3TNM72	3TNM72	3TNV70	3TNV76	
Code				-HA	-GA	-HA	-GA	-HB	-HB	
Generator use (Genepack)	Engine output [kW / min ⁻¹]	2-pole	for 50Hz @ 3000 min ⁻¹	Prime Power	10.9	-	13.0	-	12.1	15.1
				Rated Power	12.0	-	14.3	-	13.3	16.6
			for 60Hz @ 3600 min ⁻¹	Prime Power	12.9	-	15.1	-	14.5	17.7
				Rated Power	14.2	-	16.6	-	16.0	19.5
		4-pole	for 50Hz @ 1500 min ⁻¹	Prime Power	-	5.5	-	6.6	-	-
				Rated Power	-	6.1	-	7.3	-	-
			for 60Hz @ 1800 min ⁻¹	Prime Power	-	6.6	-	7.8	-	-
				Rated Power	-	7.3	-	8.6	-	-
	Applicable Generator Capacity [kVA]	2-pole	for 50Hz @ 3000 min ⁻¹	Prime Power	11.2	-	13.3	-	12.4	16.0
				Rated Power	12.3	-	14.8	-	13.6	17.1
			for 60Hz @ 3600 min ⁻¹	Prime Power	13.2	-	15.7	-	15.0	18.4
				Rated Power	14.7	-	17.2	-	16.6	20.2
4-pole			for 50Hz @ 1500 min ⁻¹	Prime Power	-	5.3	-	6.6	-	-
				Rated Power	-	5.9	-	7.5	-	-
			for 60Hz @ 1800 min ⁻¹	Prime Power	-	6.6	-	8.0	-	-
				Rated Power	-	7.5	-	8.8	-	-

Model				3TNV76	3TNV88(-B)	4TNV88(-B)	4TNV98	4TNV98T	
Code				-GA, GB	-GA, GB	-GA, GB	-GA, GB	-GA, GB	
Generator use (Genepack)	Engine output [kW / min ⁻¹]	2-pole	for 50Hz @ 3000 min ⁻¹	Prime Power	-	-	-	-	
				Rated Power	-	-	-	-	
			for 60Hz @ 3600 min ⁻¹	Prime Power	-	-	-	-	
				Rated Power	-	-	-	-	
		4-pole	for 50Hz @ 1500 min ⁻¹	Prime Power	8.2	12.2	16.4	30.7	37.7
				Rated Power	9.0	13.2	18.0	34.1	41.4
			for 60Hz @ 1800 min ⁻¹	Prime Power	9.8	14.7	19.6	36.4	45.3
				Rated Power	10.7	16.2	21.6	40.8	50.1
	Applicable Generator Capacity [kVA]	2-pole	for 50Hz @ 3000 min ⁻¹	Prime Power	-	-	-	-	
				Rated Power	-	-	-	-	
			for 60Hz @ 3600 min ⁻¹	Prime Power	-	-	-	-	
				Rated Power	-	-	-	-	
4-pole		for 50Hz @ 1500 min ⁻¹	Prime Power	8.4	12.6	17.0	33.2	41.2	
			Rated Power	9.2	13.5	18.7	36.7	45.0	
		for 60Hz @ 1800 min ⁻¹	Prime Power	10.0	15.4	20.6	40.0	50.0	
			Rated Power	11.0	16.8	22.7	44.4	55.0	

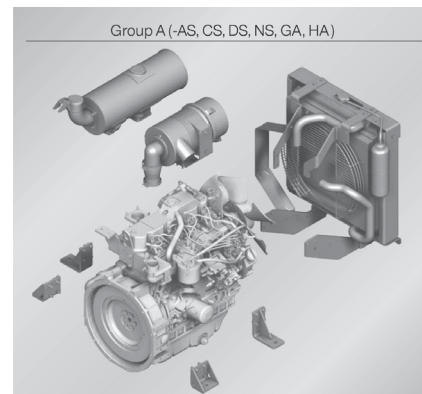
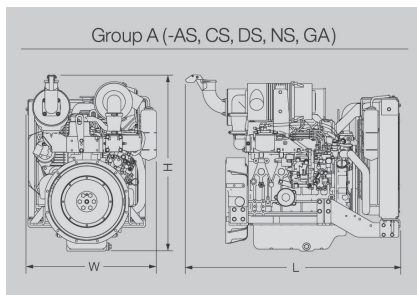
DIMENSIONS

GENEPACK A (-GA, HA)

Model	3TNM68	3TNM72	3TNV76	3TNV88	4TNV88	4TNV98	4TNV98T
Code	-GA, -HA	-GA, -HA	-GA	-(B)GA	-(B)GA	-GA	-GA
Length (mm)	751	722	745	821	1002	1041	938
Width (mm)	474	464	518	609	609	703	703
Height (mm)	668	683	696	792	824	926	925
Weight (kg)	132	138	158	180	210	280	284

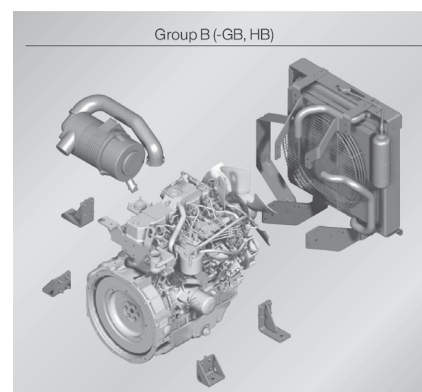
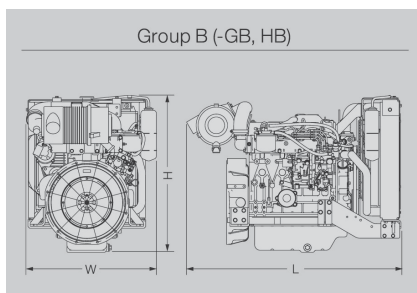
INDUSPACK (-AS, CS, DS, NS)

Model	3TNM68	3TNM72	3TNV76	3TNV88	4TNV88	4TNV98	4TNV98T
Code	-AS	-AS	-CS	-(B)DS	-(B)DS	-ZNS	-ZNS
Length (mm)	751	722	814	821	1002	1042	936
Width (mm)	474	464	514	609	609	701	701
Height (mm)	668	683	696	792	824	967	967
Weight (kg)	132	138	158	181	211	280	284



GENEPACK B (-GB, HA)

Model	3TNV70	3TNV76	3TNV76	3TNV88	4TNV88	4TNV98	4TNV98T
Code	-HB	-GB	-HB	-(B)GB	-(B)GB	-GB	-GB
Length (mm)	798	814	814	875	1002	1155	1154
Width (mm)	518	518	518	609	609	703	703
Height (mm)	683	672	694	731	726	846	846
Weight (kg)	143	153	153	175	202	271	276





YANMAR

Spare Parts



Picture for illustration purposes only

‘Quality where it counts’

When you've made an investment in a highly engineered Yanmar engine, it makes sense to maintain its reliability by using only genuine Yanmar parts. Genuine parts are not just spare parts they are an important component of the whole machine. Imitation parts are invariably inferior in materials and manufacturing quality. They are not made to last, neither do they do the job that genuine parts are designed and made to do. Genuine parts are designed to fulfil all technical and performance requirements precisely. When you choose genuine Yanmar parts you are 100% assured of quality, reliability and compliance with original equipment specifications.

Engine Model	Oil Filter Element	Fuel Filter Element	Air Filter Element	Alternator/Cooling Water Belt	Engine Gasket Set
L40E-DE	114250-35100 (Q)	114250-55121	114250-12581	N/A	714250-92605
L40E-SE	114250-35100	114250-55121	114250-12581	N/A	714250-92605
L60E-DE	114250-35100 (R)	114250-55121	114250-12581	N/A	714350-92605
L60E-SE	114250-35100	114250-55121	114250-12581	N/A	714350-92605
L75E-DE	114250-35100 (S)	114250-55121	114650-12591	N/A	714550-92605
L75E-SE	114250-35100	114250-55121	114650-12591	N/A	714550-92605
L90E-DE	114250-35100 (T)	114250-55121	114650-12591	N/A	714550-92605
L90E-SE	114250-35100	114250-55121	114650-12591	N/A	714550-92605
L40AE-DE	114250-35110	114250-55121	114250-12581	N/A	714270-92605
L40AE-SE	114250-35100	114250-55121	114250-12581	N/A	714270-92605
L48AE-DE	114250-35110	114250-55121	114250-12581	N/A	714770-92605
L48AE-SE	114250-35100	114250-55121	114250-12581	N/A	714770-92605
L60AE-DE	114250-35110	114250-55121	114250-12581	N/A	714370-92605
L60AE-SE	114250-35100	114250-55121	114250-12581	N/A	714370-92605
L70AE-DE	114250-35110	114250-55121	114250-12581	N/A	714870-92605
L70AE-SE	114250-35100	114250-55121	114250-12581	N/A	714870-92605
L75AE-DE	114250-35110	114250-55121	114650-12591	N/A	714589-92605
L75AE-SE	114250-35100	114250-55121	114650-12591	N/A	714589-92605
L90AE-DE	114250-35110	114250-55121	114650-12591	N/A	714689-92605
L90AE-SE	114250-35100	114250-55121	114650-12591	N/A	714689-92605
L100AE-DE	114250-35110	114250-55121	114650-12591	N/A	714970-92605
L100AE-SE	114250-35100	114250-55121	114650-12591	N/A	714970-92605
L48N	114250-35110	114250-55121	114250-12581	N/A	114210-92600
L70N	114250-35110	114250-55121	114210-12590	N/A	714220-92600
L100N	114250-35110	114250-55121	114210-12590	N/A	714310-92600
L48V	114250-35110	114250-55121	114250-12581	N/A	714110-92600
L70V	114250-35110	114250-55121	114210-12590	N/A	714210-92600
L100V	114250-35110	114250-55121	114210-12590	N/A	714310-92600
TF50	104200-35150	105370-55710	105100-12570	N/A	705090-92601
TF60/70	(B)	105370-55710	105100-12570	N/A	705100-92601
TF80/90	(B)	105370-55710	105300-12570	N/A	705300-92605
TF110/120	(B)	105370-55710	105500-12570	N/A	705500-92605
TF140/160	(B)	105370-55710	105500-12570	N/A	705700-92601
3TNM68 AS	119305-35151	119810-55650	119655-12560	25132-003500	119125-92600
3TNM68 GA	119305-35151	119810-55650	119655-12560	25132-003400	119125-92600
3TNM68 HA	119305-35151	119810-55650	119655-12560	25132-003400	119125-92600
3TNM72 AS	119305-35151	119810-55650	119655-12560	171001-72290	119025-92600
3TNM72 GA	119305-35151	119810-55650	119655-12560	25132-003450	119025-92600
3TNM72 HA	119305-35151	119810-55650	119655-12560	25132-003450	119025-92600
2T72HLE	124085-35112 (N)	104500-55710	171022-12530	121522-42290	724086-92605
3T72HLE	124085-35112 (N)	104500-55710	171022-12530	121522-42290	721086-92605
2T75HLE	124085-35112 (N)	104500-55710	171022-12530	25132-003600	724586-92605
3T75HLE	124085-35112 (N)	104500-55710	129350-12900	25132-003600	721586-92605
3T80LE	124085-35112 (N)	124550-55700	121120-12901-	25132-003600	721180-92605
3T84HLE(-G1)	124085-35112 (N)	104500-55710	121120-12901-	25132-003600	729380-92605 (U)
2T90LE	124085-35112 (N)	124550-55700	121120-12901-	25132-003700	NLA
3T90LE	124085-35112 (N)	124550-55700	121120-12901-	25132-003700	721400-92605
3T95LE	121850-35151	41650-502320	121850-12510	25152-004300	721872-92605
4T95LE	121850-35151	41650-502320	121850-12510	25152-004300	721952-92605
4T95LTE	121850-35151	41650-502320	121850-12510	25152-004400	721087-92605
6T95LE	123672-35151	41650-502320	124610-12620	124610-77351	NLA
6T95LTE	123672-35151	41650-502320	126650-12620	124610-77351	NLA
3TN66E-S/G2	119305-35151 (A)	124550-55700	119860-12510	119256-42290	719288-92600
3TNA72E-S/G2	119305-35151 (A)	124550-55700	119860-12510	119656-42290	719688-92600
3TN75E-S/G1/G2	129150-35152 (A)	119810-55650	121120-12901-	25132-003600 (C) (D)	719888-92604
3TNC78E-S/G1/G2	129150-35152 (A)	119810-55650	121120-12901-	25132-003900 (M)	719888-92620
3TN82E-S/G1/G2	129150-35152 (A)	129100-55650	121120-12901-	25132-003600 (E)(F)(G)	NLA
4TN82E-S	129150-35152 (A)	129100-55650	121120-12901-	25132-003600 (H)	729488-92605
4TN82E-G1/G2	129150-35152 (A)	129100-55650	121120-12901-	25132-003600 (J)(K)	729488-92605
3TN82TE-S	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729188-92615
3TN82TE-G1	129150-35152 (A)	129100-55650	121120-12901-	25132-003700	729188-92615
3TN82TE-G2	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729188-92641
4TN82TE-S	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729488-92655
4TN82TE-G1	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729488-92674
3TN84E-S	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729105-92600

- (A) Available in 12-pack (-12)
- (B) Element is rarely replaced/reusable metal strainer
- (C) 3TN75E-G1 use 25132-003700 EFF. S/N 05228
- (D) 3TN75E-G2 use 25132-003700 EFF. S/N 10740
- (E) 3TN82E-S use 121492-42290 EFF. S/N 00644
- (F) 3TN82E-G1 use 121492-42290 EFF. S/N 00621
- (G) 3TN82E-G2 use 121492-42290 EFF. S/N 00756

- (H) 4TN82E-S use 121492-42290 EFF. S/N 00524
- (J) 4TN82E-G1 use 121492-42290 EFF. S/N 00254
- (K) 4TN82E-G2 use 121492-42290 EFF. S/N 00570
- (L) Element listed applies to U.S. supplied kit air cleaner
- (M) Earlier 3TNC78 series used 36" belt 25132-003600
- (N) Available in 12-pack 124550-35110-12
- (O) YDG3800E use 114250-35100 prior to S/N 00382

Yanmar Fast Moving Spare Parts

Engine Model	Oil Filter Element	Fuel Filter Element	Air Filter Element	Alternator/Cooling Water Belt	Engine Gasket Set
3TN84E-G1	129150-35152 (A)	129100-55650	121120-12901-	25132-003700	729111-92630
3TN84E-G2	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729115-92610
4TN84E-S	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729405-92635
4TN84E-G1	129150-35152 (A)	129100-55650	121120-12901-	25132-003700	729405-92635
4TN84E-G2	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729411-92655
4TN84TE-S/G2	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729406-92615
4TN84TE-G1	129150-35152 (A)	129100-55650	121120-12901-	121492-42290	729406-92615
2TNE68E-SA/G2A	119305-35151 (A)	124550-55700	119287-12510 (L)	25137-003400	719309-92610
3TNE68-SA/G1A	119305-35151 (A)	124550-55700	119287-12510 (L)	25137-003300	719265-92611
3TNE68-G2A	119305-35151 (A)	124550-55700	119287-12510 (L)	119256-42290	719265-92611
3TNE74-SA	119305-35151 (A)	124550-55700	119287-12510 (L)	25157-003500	719623-92610
3TNE74-G2A	119305-35151 (A)	124550-55700	119287-12510 (L)	25157-003500	719623-92610
3TNE78A-SA/G1A	129150-35152 (A)	119810-55650	129087-12510 (L)	25132-003900	719822-92600
3TNE78A-G2A	129150-35152 (A)	119510-55650	129087-12510 (L)	25132-003900	719822-92610
3TNE82A-SA/G1A	129150-35152 (A)	119810-55650	129087-12510 (L)	25132-003900	719823-92610
3TNE84-SA	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003800	729211-92630
3TNE84-G1A	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003700	729211-92630
3TNE84-G2A	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003800	729211-92640
3TNE84T-SA/G1A	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003800	729202-92660
3TNE88-SA	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003800	729209-92600
3TNE88-G1A	129150-35152 (A)	129100-55650	129087-12510 (L)	25132-003700	729209-92600
4TNE84-SA	129150-35152 (A)	129100-55650	129687-12510 (L)	121492-42290	729209-92600
4TNE84-G1A	129150-35152 (A)	129100-55650	129687-12510 (L)	25132-003700	729209-92600
4TNE84-G2A	129150-35152 (A)	129100-55650	129687-12510 (L)	121492-42290	729608-92615
4TNE84T-SA	129150-35152 (A)	129100-55650	129687-12510 (L)	121492-42290	729418-92605
4TNE84T-G1A	129150-35152 (A)	129100-55650	129687-12510 (L)	121492-42290	729418-92615
4TNE88-SA	129150-35152 (A)	129100-55650	129687-12510 (L)	121492-42290	729609-92600
4TNE88-G1A	129150-35152 (A)	129100-55650	129687-12510 (L)	25132-003800	729609-92600
4TNE94E-SA/G1A	129150-35152 (A)	119000-55601	129687-12510 (L)	25132-004100	729900-92600
4TNE98E-SA/G1A	129150-35152 (A)	119000-55601	129687-12510 (L)	25132-004100	729902-92610
4TNE106(T)E-SA/G1A	119005-35100 (A)	119000-55601	123950-12560-01	25133-004900	723900-92660
2TNV70-ASA	119305-35151 (A)	119810-55650	119287-12510 (L)	171001-42290	719415-92600
2TNV70-HGE	119305-35151 (A)	119810-55650	119287-12510 (L)	171001-42290	719415-92620
3TN70-ASA	119305-35151 (A)	119180-55650	119287-12510 (L)	25132-003600	719515-92600
3TN70-GGE/HE	119305-35151 (A)	119810-55650	119287-12510 (L)	171001-42290	719515-92620
3TNV76-CSA	119305-35151 (A)	119810-55650	129087-12510 (L)	25132-003600	719717-92650
3TNV76-(G)(H)GGE	119305-35151 (A)	119810-55650	129087-12510 (L)	25132-003600	719717-92680
3TNV82A-DSA	129150-35152 (A)	119802-55800 (A)(X)	129087-12510 (L)	25132-003700	719823-92780
3TNV82A-GGE	129150-35152 (A)	119802-55800 (A)(X)	129087-12510 (L)	25132-003800	719823-92790
3TNV84T-KSA	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119865-42290	729246-92730
3TNV84T-GGE	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119831-42290	729246-92690
3TNV88-DSA	129150-35152 (A)	119802-55800 (A)(X)	129087-12510 (L)	119865-42290	729001-92780
3TNV88-GGE	129150-35152 (A)	119802-55800 (A)(X)	129087-12510 (L)	119831-42290	729001-92790
4TNV84T-DSA	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119865-42290	729508-92630
4TNV84T-GGE	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119831-42290	729508-92630
4TNV88-DSA	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119865-42290	729601-92780
4TNV88-GGE	129150-35152 (A)	119802-55800 (A)(X)	129687-12510 (L)	119831-42290	729601-92780
4TNV98-NSA	129150-35152 (A)	119802-55800 (A)(X)	129935-12520-01 (L)	25132-004150	729907-92670
4TNV98-GGE	129150-35152 (A)	119802-55800 (A)(X)	129935-12520-01 (L)	129052-42290	729907-92670
4TNV98T-NSA	129150-35152 (A)	123907-55800 (Z)	129935-12520-01 (L)	25132-004150	729907-92770
4TNV98T-GGE	129150-35152 (A)	123907-55800 (Z)	129935-12520-01 (L)	129052-42290	729907-92770
2V750	119305-35151 (A)	118200-55510	119287-12510 (L)	N/A	718200-92600
YDG2000E(-1)(-2)	114250-35110 (V)	114250-55121	114250-12581	N/A	714250-92605
YDG3000E(-1)(-2)	114250-35110 (W)	114250-55121	114250-12581	N/A	714350-92605
YDG3800E(-1)(-2)	114250-35110 (O)	114250-55121	114650-12591	N/A	714550-92605
YDG4500E(-1)(-2)	114250-35110 (P)	114250-55121	114650-12591	N/A	714650-92605
YDG2001E	114250-35110	183284-55323	114250-12581	N/A	714250-92605
YDG2501E	114250-35110	183284-55323	114250-12581	N/A	714770-92605
YDG3501E	114250-35110	183284-55323	114250-12581	N/A	714870-92605
YDG5001E	114250-35110	183284-55323	114650-12591	N/A	783384-92605
YDG2700E(E)	114250-35110	183254-55120	114250-12581	N/A	714771-92605
YDG3700E(E)	114250-35110	183254-55120	114250-12581	N/A	714871-92605
YDG5500(E)	114250-35110	183254-55120	114650-12591	N/A	714651-92605
YDG2700EV	114250-35110	X3A06351KA0	114250-12581	N/A	714110-92600
YDG3700EV	114250-35110	X3A06351KA0	114210-12590	N/A	714210-92600
YDG5500EV	114250-35110	X3A06351KA0	114210-12590	N/A	714310-92600

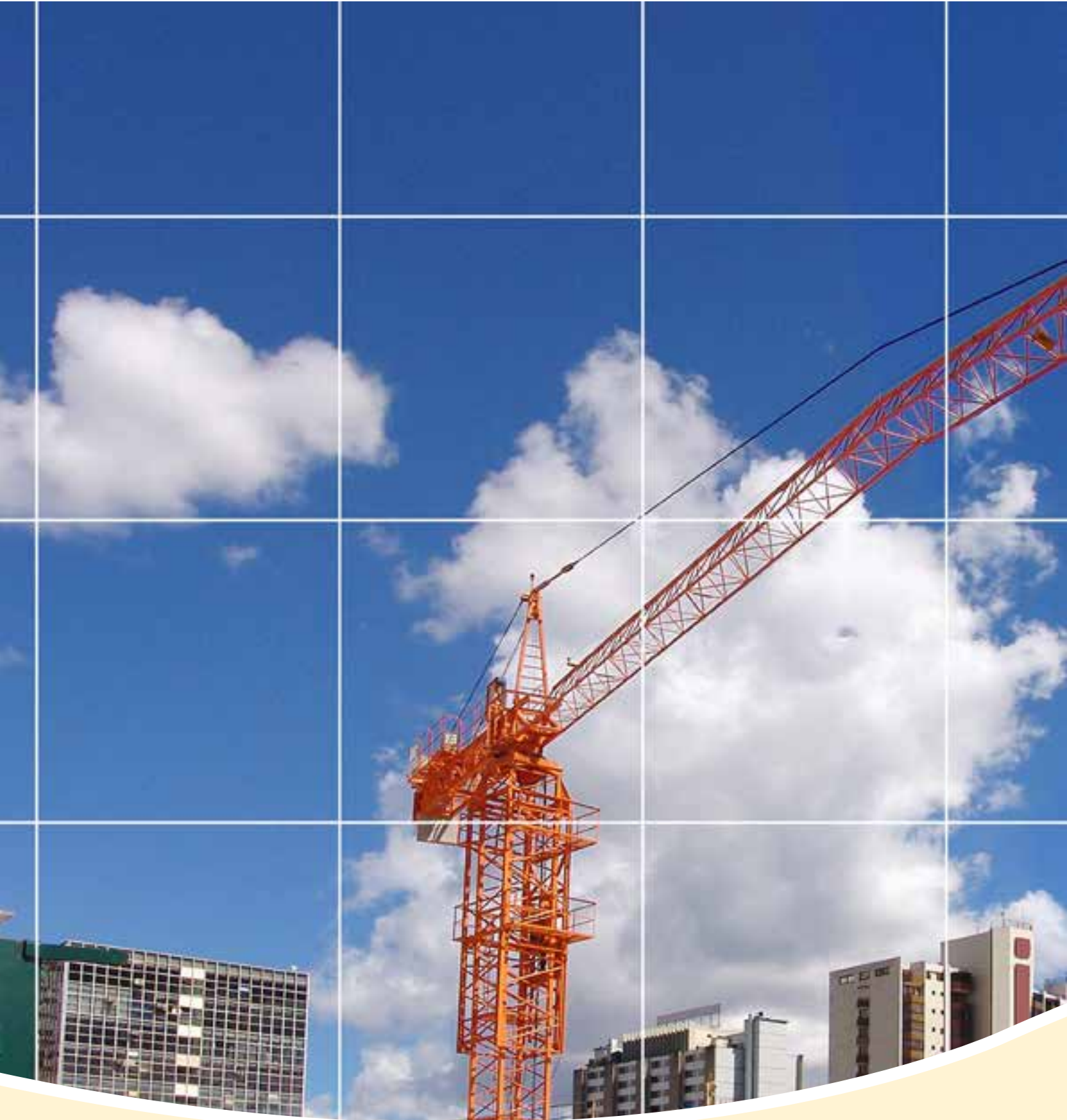
- (P) YDG4500E use 114250-35100 prior to S/N 01139
- (Q) L40E-DE use 114250-35110 EFF. S/N 58518
- (R) L60E-DE use 114250-35110 EFF. S/N 56746
- (S) L75E-DE use 114250-35110 EFF. S/N 01415
- (T) L90E-DE use 114250-35110 EFF. S/N 03420
- (U) 3T84HLE "S" or "G1-S" use 729386-92605
- (V) YDG200E use 114250-35100 prior to S/N 54756

- (W) YDG3000E use 114250-35100 prior to S/N 52865
- (X) Optional "1 MICRON" filter 129004-55801
- (Z) Optional "1 MICRON" filter 129907-55800
- N/A Not applicable on this model
- NLA No longer available



JOHN DEERE

Stage 3A Generator Drives

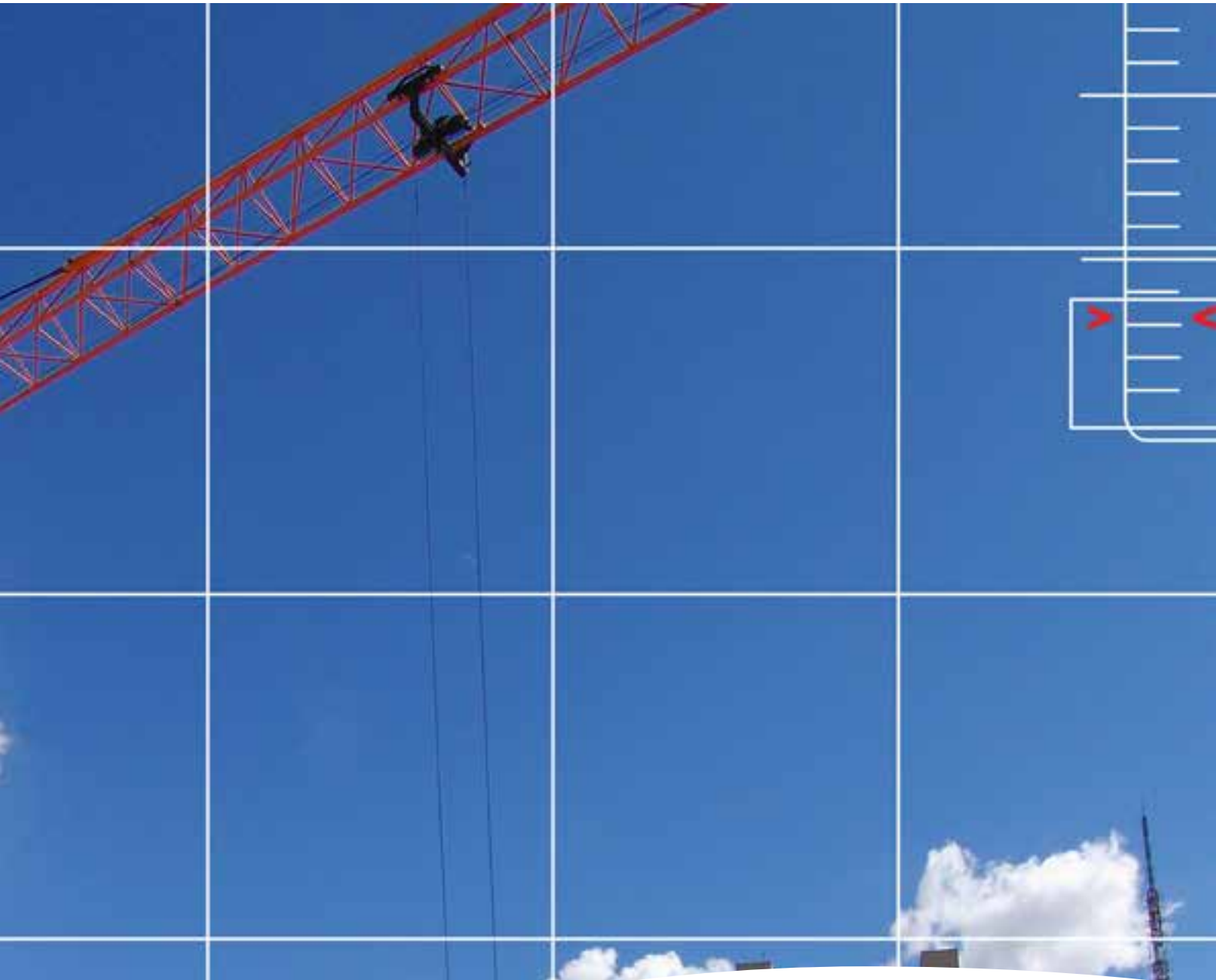


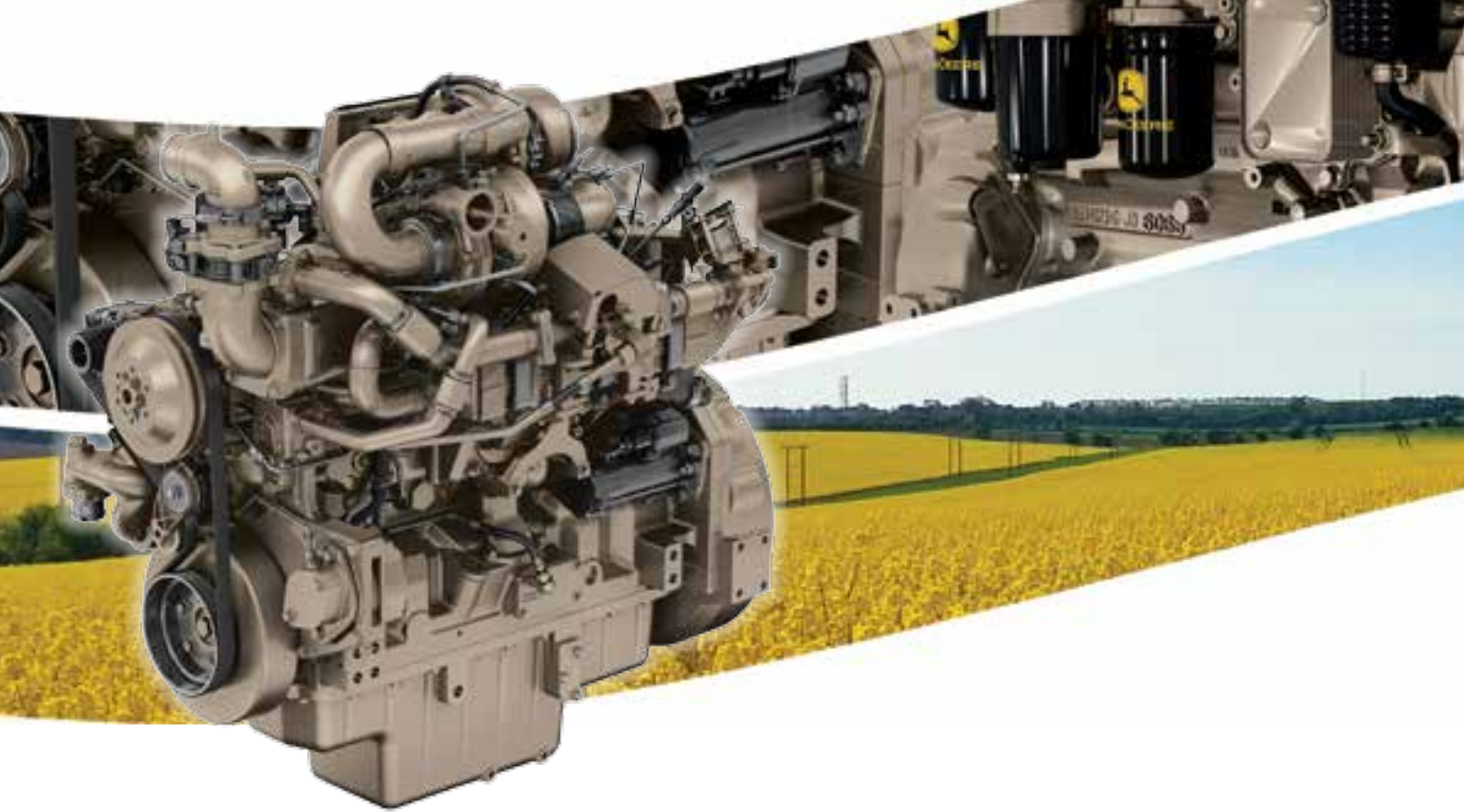
PowerTech M

Output : 28 kW (38 hp) - 61 kW (82 hp)

PowerTech E

Output : 75 kW (101 hp) - 287 kW (384 hp)





EASY MAINTENANCE

John Deere design their engines to facilitate maintenance. The interchangeable wet sleeves enable better temperature control in the combustion chamber and optimize engine performance. They can be replaced on site without having to remove the engine, thus minimizing the machine's downtime and maintenance costs. By using helical-cut gears, engine noise is reduced along with maintenance costs. The crankshaft bearings, camshafts and cylinder heads are also interchangeable.

RELIABILITY

John Deere's sturdy, compact engine blocks are the basis of our products' longevity. But John Deere is also the guarantee of numerous technological assets, which themselves are synonymous with reliability. For example, the dynamically balanced moving parts, such as the track rod and crankshaft, make the engine quieter and limit vibrations, while the automatic belt tightener minimizes maintenance costs and increases belt life. In addition, several functions, such as the thermostat box and the intake air collector, have been built into the cylinder head to limit the risk of leakage.

EASY INSTALLATION

The engine is installed into the machine by using the engine block's front and side mounts. John Deere offer several options and variants in order to ensure their engines' perfect integration and guarantee easy access to the service points for the entire service life of the engine.

QUALITY

John Deere's continuing research and development efforts are the key to the constant improvement of their engines. The commitment to technology excellence and a rigorous manufacturing process are the best guarantees of each John Deere engine's precision. Performance, fuel efficiency, reliability and easy installation, in keeping with environmental standards, are the key words that characterize their engines.

Stage 3A Generator Drives



GSPU model*	Engine Power Prime		Prime Ratings		Typical Generator Efficiency	Typical Fan Power
	kW	hp	kVA	kWe**	%	kW
PowerTech M						
3029TFU80	28	38	29 - 31	24 - 25	88 - 92	1.3
	32	42	32 - 34	26 - 27	88 - 92	2.2
3029HFU80	37	50	39 - 41	31 - 33	88 - 92	1.4
	42	56	43 - 45	34 - 36	88 - 92	2.4
4045HFU81	57	77	61 - 63	48 - 51	88 - 92	2
	61	82	63 - 66	50 - 53	88 - 92	3.4
Powertech E						
4045HFU82	76	101	81 - 84	64 - 67	88 - 92	2
	78	105	82 - 86	65 - 69	88 - 92	3.4
	94	126	98 - 103	79 - 82	88 - 92	4
	96	129	98 - 103	78 - 82	88 - 92	6.7
	112	150	116 - 121	92 - 97	88 - 92	6
	115	154	113 - 119	91 - 95	88 - 92	10.3
6068HFU82	139	187	144 - 151	115 - 121	88 - 92	7.3
	142	190	140 - 148	112 - 118	88 - 92	12.6
	184	246	193 - 202	154 - 162	88 - 92	7.3
	193	259	197 - 206	157 - 165	88 - 92	12.6
6090HFU84	230	309	240 - 252	192 - 201	90 - 94	15.2
	235	315	241 - 252	192 - 202	90 - 94	18.9
	277	371	292 - 306	234 - 245	90 - 94	15.2
	287	384	299 - 313	239 - 251	90 - 94	18.9



JOHN DEERE

Tier 3 / Stage 3A Diesel Engines



PowerTech M

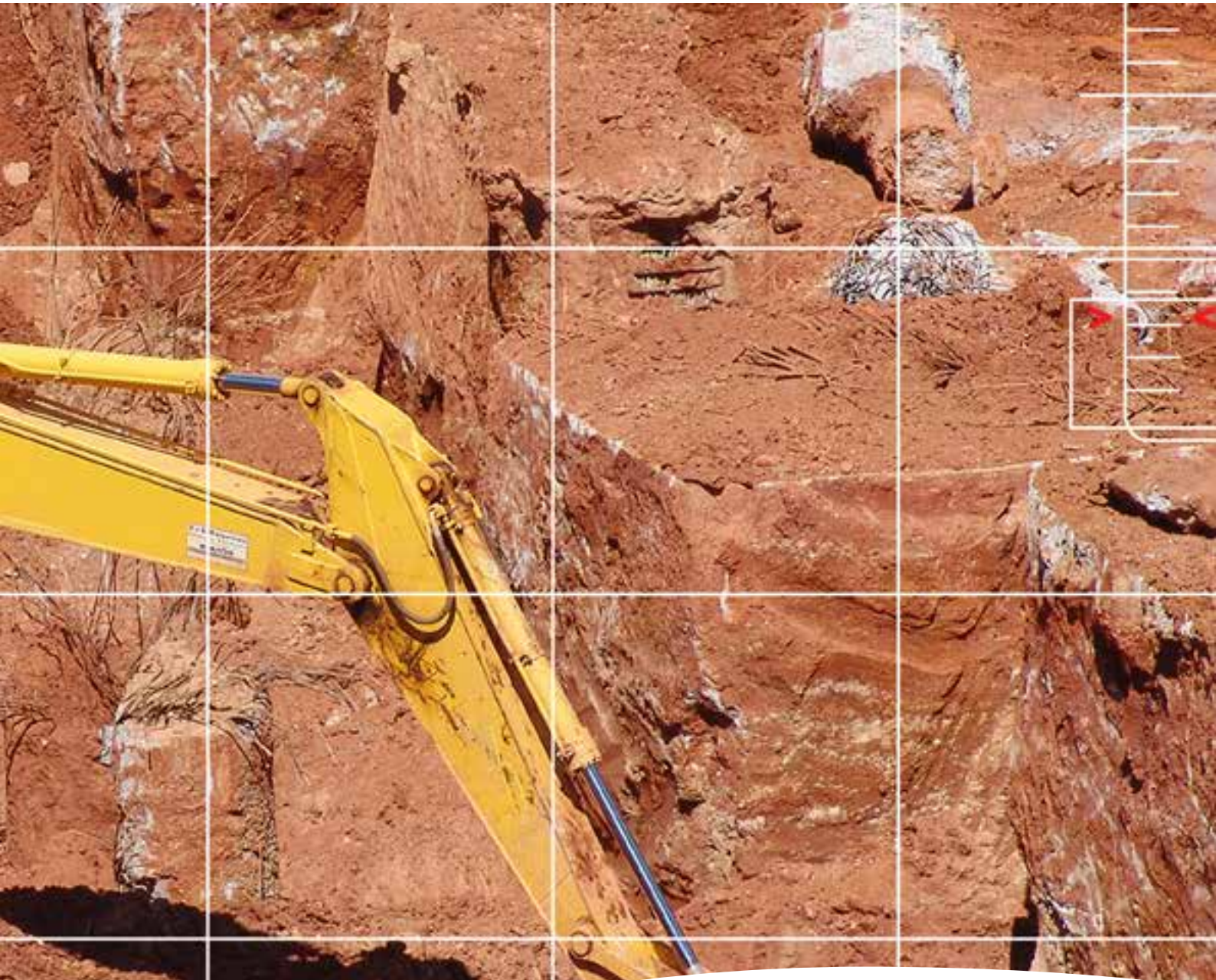
Output : 56 kW (75 hp) - 74 kW (99 hp)

PowerTech E

Output : 63 kW (85 hp) - 149 kW (200 hp)

PowerTech Plus

Output : 111 kW (149 hp) - 448 kW (600 hp)



POWERTECH M - 2.9L, AND 4.5L ENGINES

FIXED GEOMETRY TURBOCHARGER

Fixed geometry turbochargers are sized for a specific power range and optimized to provide excellent performance across the entire torque curve. They are also designed to maximize fuel economy between the engine's rated speed and peak torque.

MECHANICAL UNIT PUMP (MUP) FUEL SYSTEM

This system uses camshaft-driven MUPs, connected to the injectors by a short fuel line. The short fuel line between the unit pumps and the injectors helps to alleviate after-injection, secondary injection, and other injection abnormalities (2.9L).

MECHANICAL ROTARY PUMP

The timing and fuel injection pressures are optimized to maximize performance and fuel economy at a given rated speed (4.5L).

2-VALVE CYLINDER HEAD

Cross-flow (4.5L) and U-flow (2.9L) head design provides excellent breathing from a lower-cost 2-valve cylinder head.

TURBOCHARGED

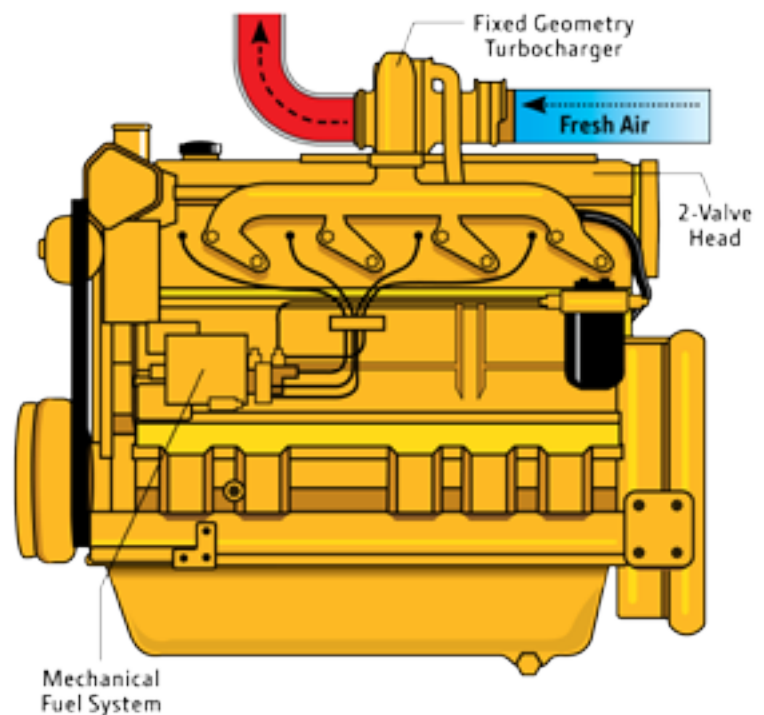
In turbocharged engines, the air is pre-compressed. Due to the higher pressure, more air is supplied into the combustion chamber, allowing a corresponding increase in fuel injection, which results in greater engine output.

COMPACT SIZE

Mounting points are the same as previous engine models.

ADDITIONAL FEATURES

- Self-adjusting poly-vee fan drive
- Forged-steel connecting rods
- Either-side service
- 500-hour oil change
- Glow plugs (2.9L)
- Optional balancer shafts



Stage 3A Generator Drives

POWERTECH E - 4.5L, 6.8L AND 9.0L ENGINES

FIXED GEOMETRY TURBOCHARGER

Fixed geometry turbochargers are sized for a specific power range and optimized to provide excellent performance across the entire torque curve. They are also designed to maximize fuel economy between the engine's rated speed and peak torque.

HIGH-PRESSURE COMMON-RAIL (HPCR) AND ENGINE CONTROL UNIT (ECU)

The HPCR fuel system provides variable common rail pressure, multiple injections, and higher injection pressures, up to 1,600 bar (23,000 psi). It also controls fuel injection timing and provides precise control for the start, duration, and end of injection.

2-VALVE CYLINDER HEAD

Cross-flow head design provides excellent breathing from a lower-cost 2-valve cylinder head.

4-VALVE CYLINDER HEAD

The 4-valve cylinder head provides excellent airflow (9.0L).

TURBOCHARGED

In turbocharged engines, the air is pre-compressed. Due to the higher pressure, more air is supplied into the combustion chamber, allowing a corresponding increase in fuel injection, which results in greater engine output (4.5L).

AIR-TO-AIR AFTERCOOLED

This is the most efficient method of cooling intake air to help reduce engine emissions. It enables an engine to meet emissions regulations with better fuel economy and the lowest installed costs.

COMPACT SIZE

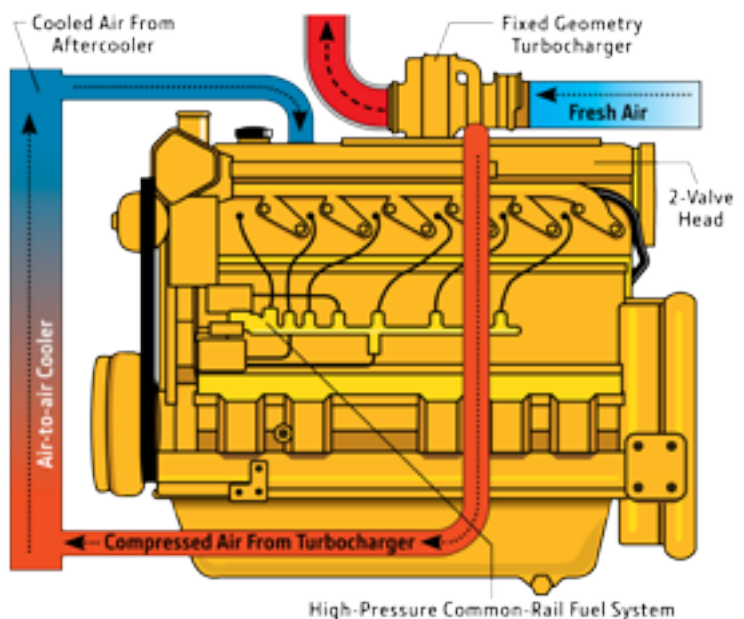
Mounting points are the same as previous engine models.

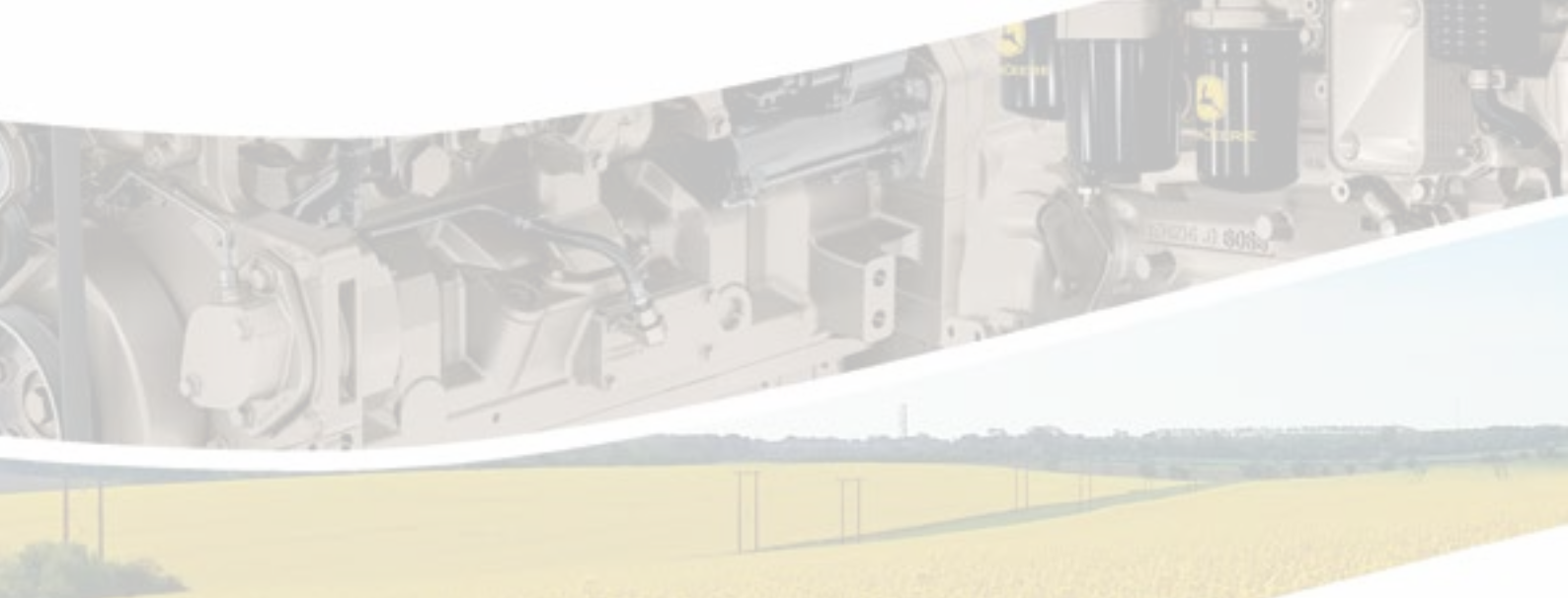
JOHN DEERE ELECTRONIC ENGINE CONTROLS

Electronic engine controls monitor critical engine functions, providing warning and/or shutdown to prevent costly engine repairs and eliminate the need for add-on governing components, all lowering total installed costs.

ADDITIONAL FEATURES

- Self-adjusting poly-vee fan drive
- Forged-steel connecting rods
- Replaceable wet-type cylinder liners
- Either-side service
- 500-hour oil change
- Gear driven auxiliary drive
- Optional balancer shafts (4.5L)





DIFFERENT TECHNOLOGIES FOR DIFFERENT APPLICATIONS

If there's one thing you can count on in the off-highway industry, it's every application having different power demands. The jobs that our family of PowerTech™ engines tackle every day are as varied as the equipment they power.

You might have minimal horsepower demands. Or you might need an engine that can be pushed to the limits without increasing your fuel costs. Either way, John Deere has an engine platform to fit your performance needs, while meeting emissions regulations.

POWERTECH M

The simplest of the PowerTech family, these engines have 2-valve heads, fixed geometry turbochargers and mechanical fuel systems. PowerTech M engines (4.5L) are perfect for less demanding applications. Their mechanical controls are simple to operate and maintain.

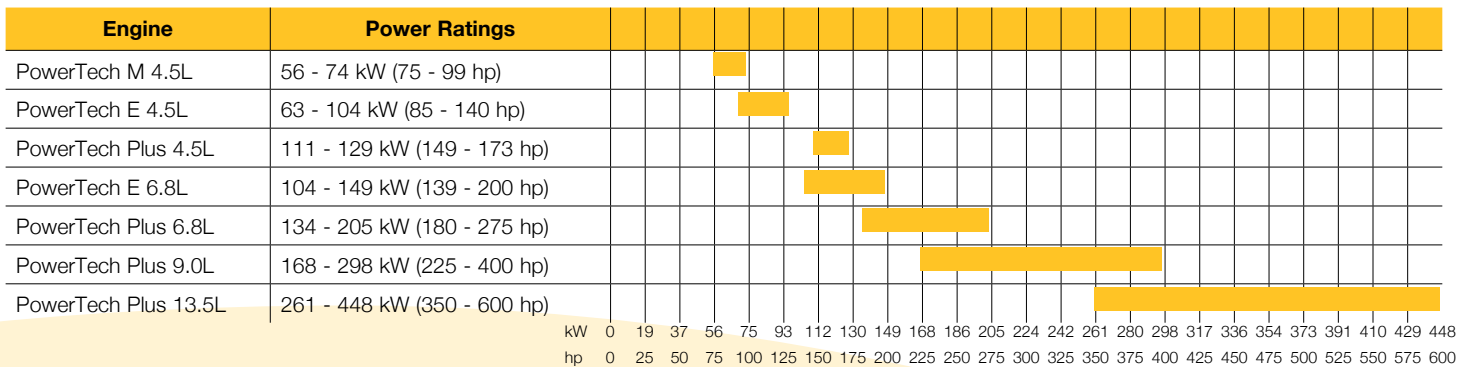
POWERTECH E

These engines also have 2-valve heads and fixed geometry turbochargers, but introduce full-authority electronic controls and more sophisticated fuel delivery- high-pressure common-rail (HPCR) fuel systems.

QUALITY

John Deere's continuing research and development efforts are the key to the constant improvement of their engines. The commitment to technology excellence and a rigorous manufacturing process are the best guarantees of each John Deere engine's precision. Performance, fuel efficiency, reliability and easy installation, in keeping with environmental standards, are the key words that characterize their engines.

POWER RATINGS





JOHN DEERE

Interim Tier 4 / Stage IIIB Diesel Engines

PowerTech PWX

Output : 63 kW (85 hp) - 91 kW (122 hp)

PowerTech PVX

Output : 93 kW (125 hp) - 224 kW (300 hp)

PowerTech PSX

Output : 168 kW (225 hp) - 448 kW (600 hp)





THE RIGHT SOLUTION FOR INTERIM TIER 4 / STAGE IIIB AND BEYOND

John Deere engines 56 kW (75 hp) and above will use our proven PowerTech Plus engine technologies, which include cooled exhaust gas recirculation (EGR) with the addition of an exhaust filter. The lineup will continue to include 4.5L, 6.8L, 9.0L and 13.5L in-line, 4 and 6-cylinder engines.

Some John Deere engines below 56 kW (75 hp) meet interim Tier 4 and Stage III A emissions regulations without the use of cooled EGR or an exhaust filter.

By choosing EGR first for our Tier 3/Stage III A solution, John Deere proved we could they could meet Interim Tier 4/Stage III B emissions regulations for off-highway equipment with diesel engines using a simple single-fluid solution. Our Interim Tier 4 / Stage III B approach continues to use cooled EGR for NOx reduction and adds an integrated exhaust filter for particulate matter (PM) reduction. It is simple to install, operate, and maintain while delivering the power, fluid efficiency, reliability, and low cost of ownership you've come to expect from John Deere.

COOLED EGR IS A PROVEN TECHNOLOGY

- Doesn't require extra fluids that add cost and inconvenience.
- Similar operational and maintenance procedures compared to previous John Deere engines.
- Technicians already understand how to service cooled EGR-based engines.

INTEGRATED EXHAUST FILTERS ARE EASY TO MAINTAIN

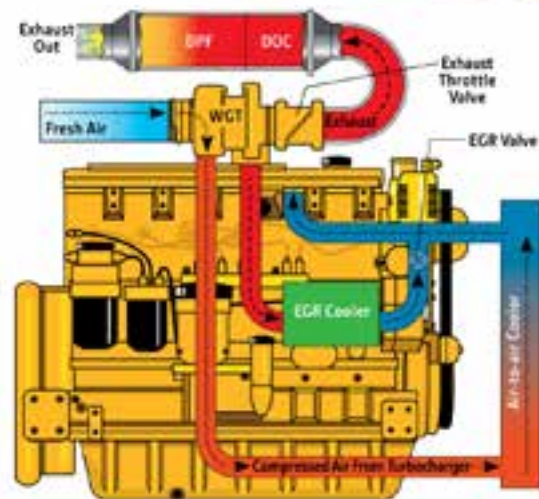
- John Deere exhaust filters are designed to meet the demands of rugged off-highway applications.
- Trapped PM is oxidized within the exhaust filter through a self-activating cleaning process.
- In most cases, the cleaning process does not have an impact on machine operation or require operator involvement.
- Exhaust filter replaces the muffler in most applications.

Interim Tier 4 Stage IIB Diesel Engines

POWERTECH PWX - 63kW to 91kW (85hp to 122hp)

TRIED-AND-TRUE PERFORMANCE

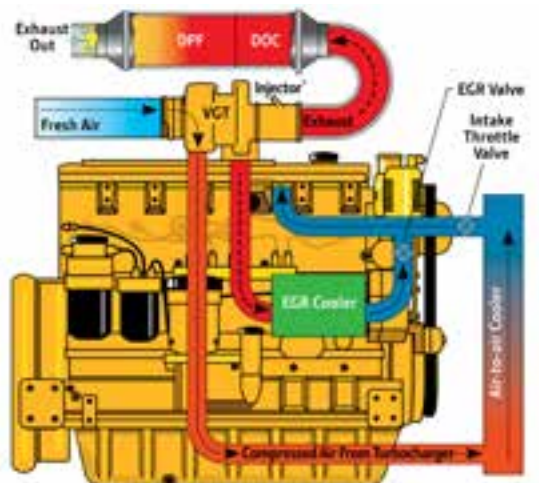
Equipment owners who want straightforward, cost-effective power rely on PowerTech PWX 4.5L engines. These compact engines blend proven cooled EGR technology with simple and reliable wastegated turbocharging to maintain transient response and peak torque in all operating conditions. Their 4-valve cylinder heads also provide excellent airflow for greater low-speed torque. Multiple rated speeds let you fine-tune your engine selection to reduce noise and increase fuel economy.



POWERTECH PVX - 93kW to 224kW (125hp to 300hp)

IMPROVED PERFORMANCE AND EFFICIENCY

When you need unparalleled performance, PowerTech PVX 4.5L, 6.8L or 9.0L engines are the perfect fit for your application. These displacements utilize our proven cooled EGR technology with variable geometry turbocharging (VGT) to optimize performance and combustion efficiency, reduce emissions, and improve fluid economy.

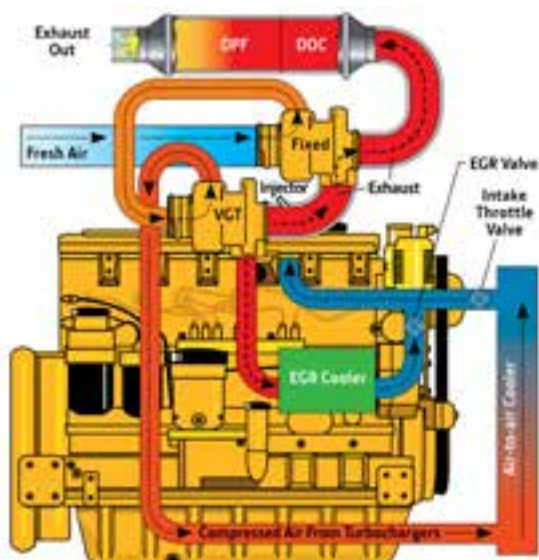


*For engines 130 kW (174 hp) and greater.

POWERTECH PSX - 168kW to 448kW (225hp to 600hp)

RUGGED PERFORMANCE AND RESPONSIVENESS

For off-highway applications where you need maximum transient response and low-speed torque, a PowerTech PSX 6.8L, 9.0L or 13.5L engine is exactly what you need. Along with proven cooled EGR technology, all three displacements feature series turbochargers that improve performance and responsiveness.





JOHN DEERE

Final Tier 4 / Stage IV Diesel Engines



PowerTech EWX

Output : 35 kW (48 hp) - 55 kW (74 hp)

PowerTech PVS

Output : 104 kW (140 hp) - 187 kW (250 hp)

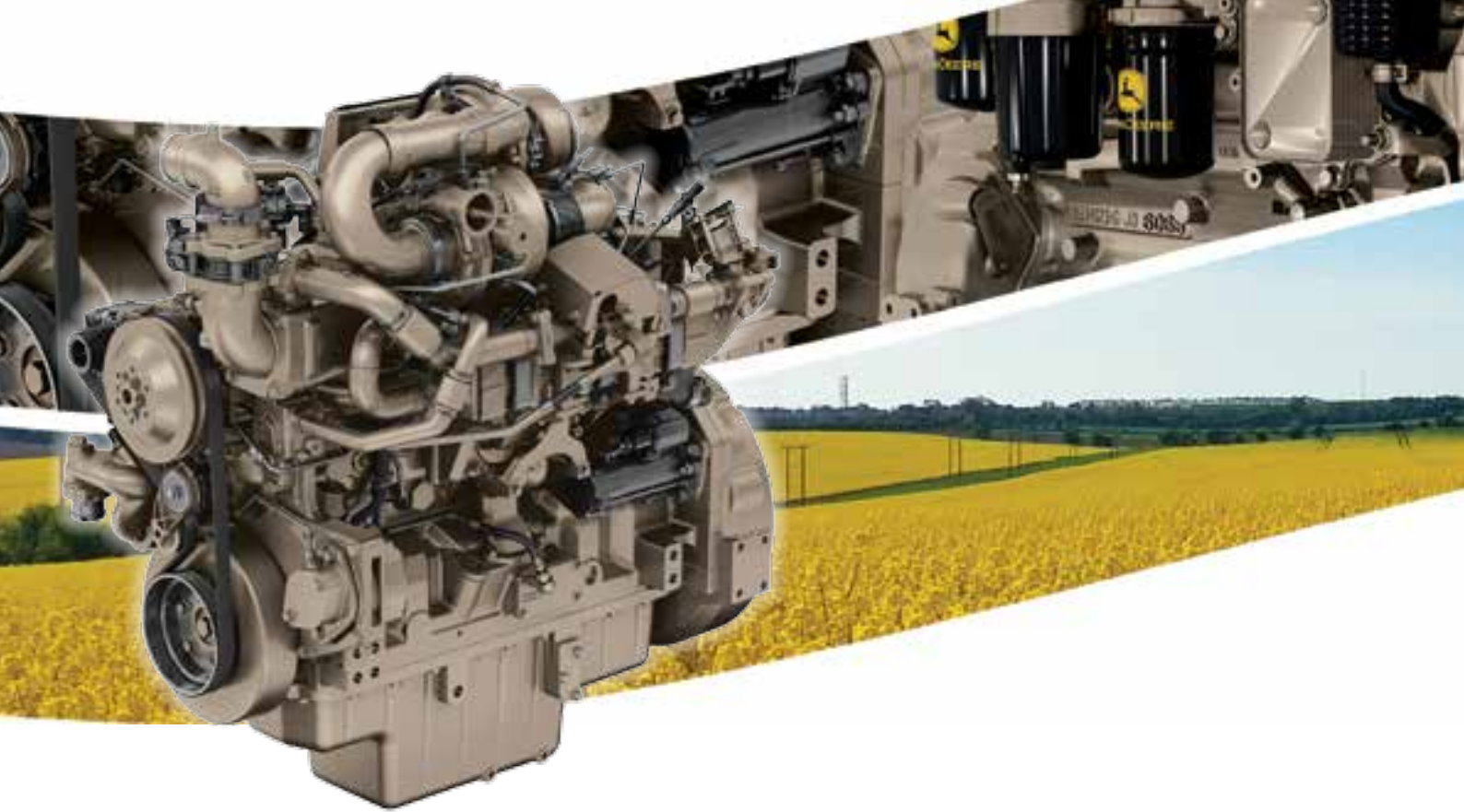
PowerTech PWL

Output : 63 kW (85 hp) - 104 kW (140 hp)

PowerTech PSS

Output : 93 kW (125 hp) - 448 kW (600 hp)





THE RIGHT TECHNOLOGY FOR MAXIMUM PERFORMANCE

John Deere PowerTech Final Tier 4/Stage IV engines, 56kW (75hp) and above, are built on a proven platform of emissions control technologies including cooled exhaust gas recirculation (EGR), exhaust filters, and selective catalytic reduction (SCR).

You can count on John Deere engines to deliver reliable power day in and day out, year after year, and in the toughest off-highway working conditions. John Deere Final Tier 4/Stage IV engines maintain power density, torque and transient response. It all adds up to more productivity, uptime, and value for your machines.

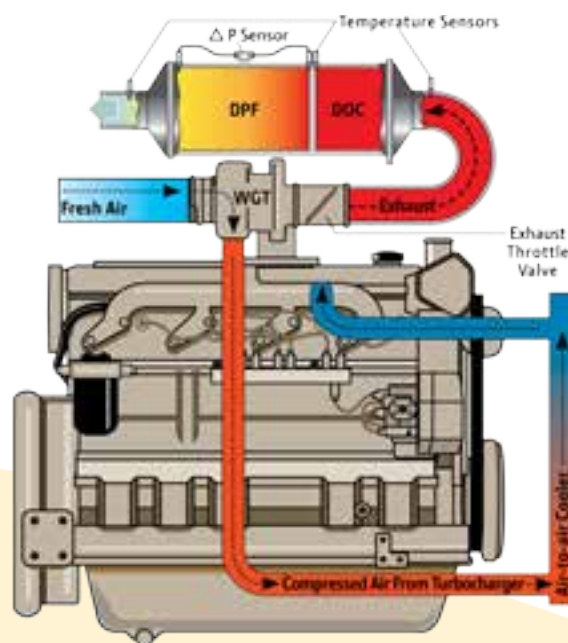
INTEGRATED EMISSIONS CONTROL SYSTEM

- Optimize solution utilizing the right combination of emissions-reduction components to maximise performance whilst meeting regulations.
- Specifically designed to meet the rigorous demands of off-highway applications.

POWERTECH EWX - 36kW to 55kW (48hp to 74hp)

FORTHRIGHT PERFORMANCE AND RELIABILITY

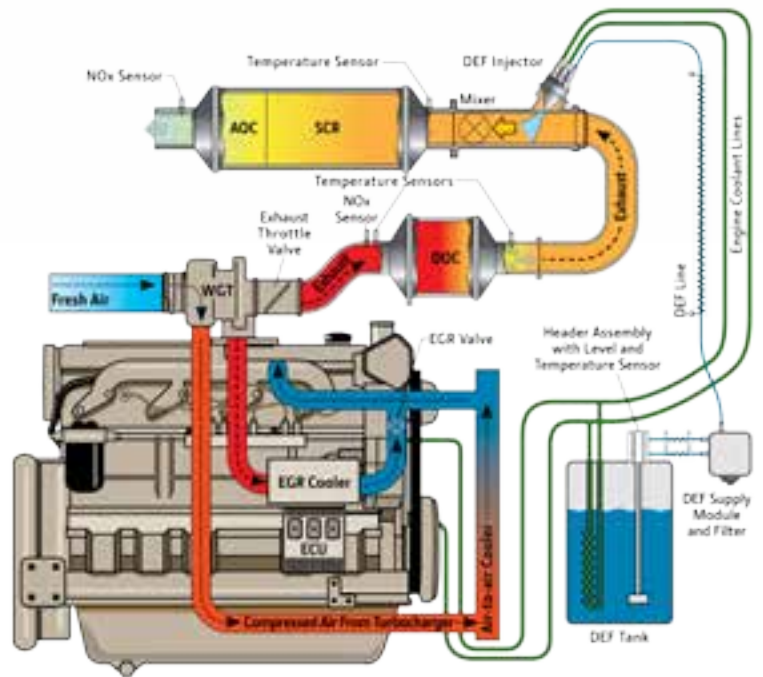
Our straightforward PowerTech EWX 2.9L and 4.5L engines have 2-valve cylinder heads, high-pressure common-rail fuel systems, full authority electronic controls, and proven exhaust filters. These compact, cost-effective engines blend advanced emissions control technologies with simple wastegated turbocharging to maintain transient response and peak torque in all operating conditions.



Final Tier 4 Stage IV Emission Regulations

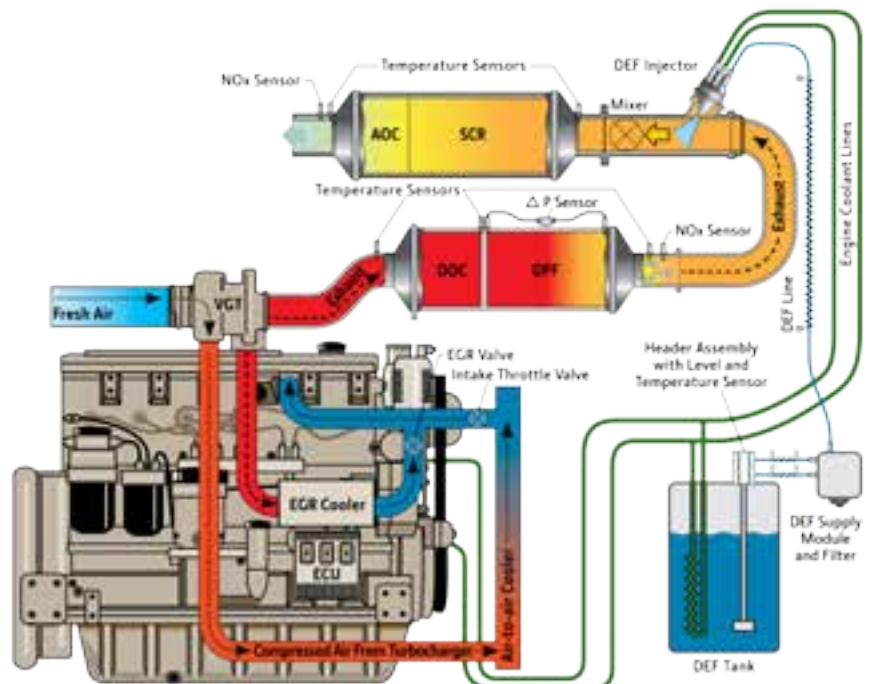
POWERTECH PWL - 63kW to 104kW (84hp to 140hp) UNCOMPROMISING POWER FOR ANY JOB

Our PowerTech PWL 4.5L engines deliver impressive power in a compact package. They combine advanced combustion technologies, enhanced engine calibration, and simple wastegated turbocharging to meet PM levels without a filter. Pairing our proven PowerTech Plus technology with a DOC and an optimized SCR system, these engines offer a compact power solution.



POWERTECH PVS - 104kW to 187kW (140hp to 250hp) A STEP UP IN POWER AND FLUID ECONOMY

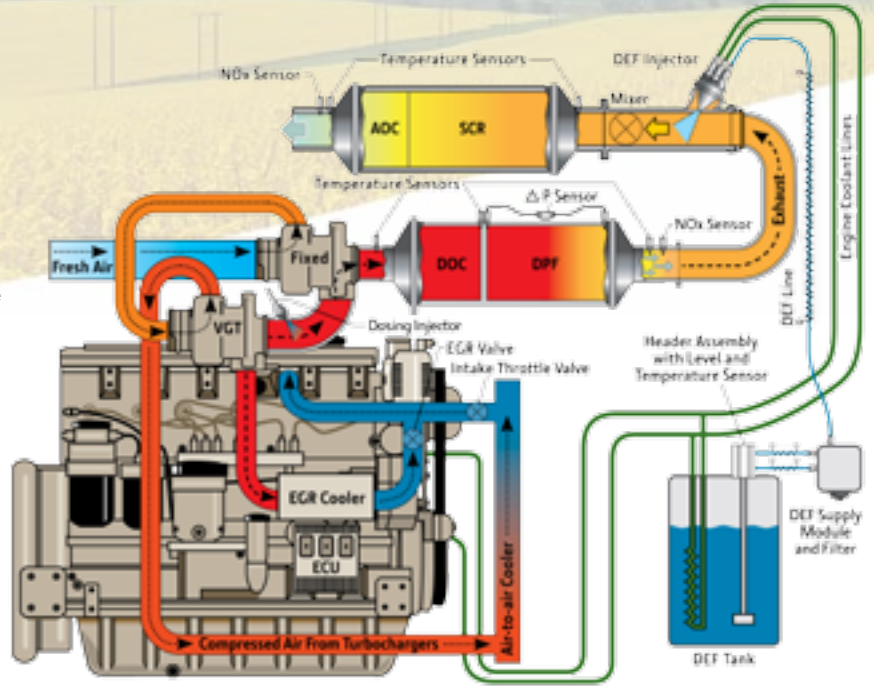
PowerTech PVS 6.8L engines provide reliable power for a wide range of applications. They utilize our proven PowerTech Plus technology with variable geometry turbocharged (VGT) and an optimized SCR system to improve combustion efficiency, reduce emissions, enhance performance, and improve fluid economy.



POWERTECH PSS - 93kW to 448kW (125hp to 600hp)

ULTIMATE PERFORMANCE AND RESPONSIVENESS

For ultimate performance in off-highway applications, PowerTech PSS 4.5L, 6.8L, 9.0L, or 13.5L engines can do almost any job. They can handle steep grades at high altitudes and deliver maximum transient response and low-speed torque. Along with proven PowerTech Plus technology and an optimized SCR system designed specifically for off-highway applications, all displacements feature series turbochargers that improve performance and responsiveness.



PowerTech PSS 9.0L and 13.5L engine configuration shown.

INDUSTRIAL ENGINE POWER RATINGS

Engine	Power Ratings	Turbocharging	Cooled EGR	Exhaust Filter	PM After treatment	SCR	Power Range
PowerTech EWX 2.9L	36 - 55 kW (48 - 74 hp)	Wastegate	No	Yes	DOC/DPF	No	37 - 55 kW
PowerTech EWX 4.5L	55 kW (74 hp)	Wastegate	No	Yes	DOC/DPF	No	55 kW
PowerTech PWL 4.5L	63 - 104 kW (85 - 140 hp)	Wastegate	Yes	No	DOC	Yes	63 - 104 kW
PowerTech PSS 4.5L	93 - 129 kW (125 - 173 hp)	Series	Yes	Yes	DOC/DPF	Yes	93 - 129 kW
PowerTech PVS 6.8L	104 - 187 kW (140 - 250 hp)	VGT	Yes	Yes	DOC/DPF	Yes	104 - 187 kW
PowerTech PSS 6.8L	168 - 224 kW (225 - 300 hp)	Series	Yes	Yes	DOC/DPF	Yes	168 - 224 kW
PowerTech PSS 9.0L	187 - 317 kW (250 - 425 hp)	Series	Yes	Yes	DOC/DPF	Yes	187 - 317 kW
PowerTech PSS 13.5L	309 - 448 kW (414 - 600 hp)	Series	Yes	Yes	DOC/DPF	Yes	309 - 448 kW

kW: 0, 37, 75, 112, 149, 186, 224, 261, 298, 336, 373, 410, 448
 hp: 0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600

Spare Parts



Picture for illustration purposes only

'Quality where it counts'

When you've made an investment in a highly engineered John Deere engine, it makes sense to maintain its reliability by using only genuine John Deere parts. Genuine parts are not just spare parts they are an important component of the whole machine. Imitation parts are invariably inferior in materials and manufacturing quality. They are not made to last, neither do they do the job that genuine parts are designed and made to do. Genuine parts are designed to fulfil all technical and performance requirements precisely. When you choose genuine John Deere parts you are 100% assured of quality, reliability and compliance with original equipment specifications.

4-Stroke Vertical Engines



FJ Series

Output : 3.4 kW (4.5 hp)

FX Series

Output : 9.9 kW (13.2 hp) - 16.6 kW (22.2 hp)

FS Series

Output : 9.9 kW (13.2 hp) - 16.6 kW (22.2 hp)

FR Series

Output : 11.3 kW (15.1 hp) - 16.6 kW (22.2 hp)





Engine Model	FJ180V STD	FJ180V PRO	FJ180V KAI
Engine Type	Air-cooled, 4-stroke		
Number of Cylinders	1		
Bore x Stroke (mm)	65 x 54		
Displacement (cc)	179		
Max. Power (kW / hp)	3.4 / 4.5 @ 3600 rpm		
Max. Torque (Nm / ft.lbs)	10 / 7.3 @ 2400 rpm		
Fuel Tank Capacity (litres)	1.6		
Oil Capacity (litres)	0.6		
Dry Weight (kg)	17 kg		
Dimensions (L x W x H)	391 x 325 x 286 mm	425 x 323 x 284 mm	422 x 353 x 289 mm

FEATURES

- Dual element cleaner
- Rotating grass screen
- Internally vented carburettor
- Cast iron cylinder liner
- Combined crankcase design
- Large sealed fan
- Metal engine shroud (FJ180V KAI)
- Heavy duty recoil (FJ180V KAI)
- Roller ball type top bearing (FJ180V KAI)

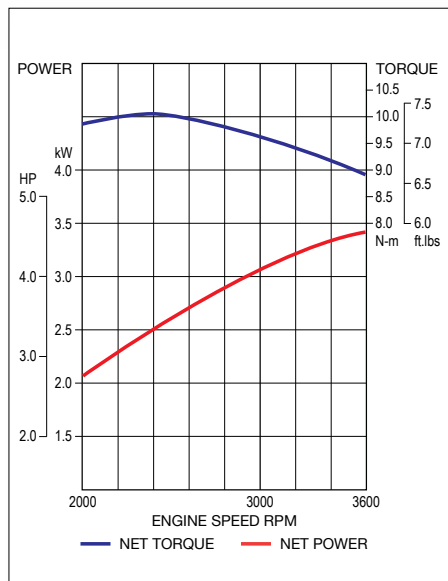
OPTIONS

- Shaft variation: 7/8" x 62 mm: 7/8" x 80mm: 25 x 80 mm
- Flywheel brake
- Various speed control options
- Spin-on oil filter
- M10 threaded mounting holes
- Fuel tank options

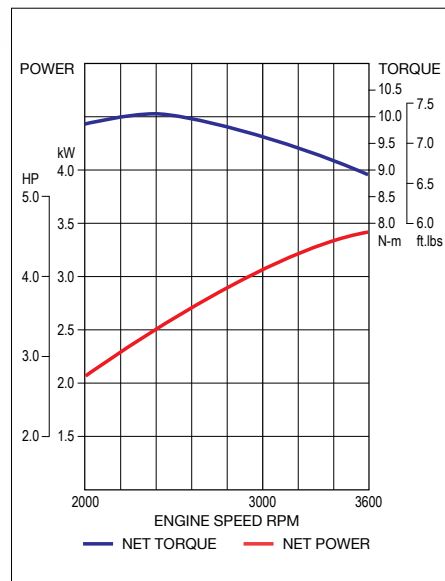
FJ Series Vertical

POWER CURVES

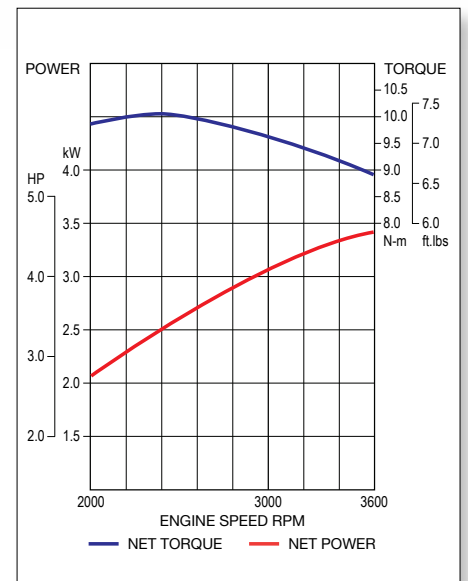
FJ180V STD



FJ180V PRO



FJ180V KAI



FJ180V STD



FJ180V PRO



FJ180V KAI



Engine Model	FX481V	FX541V	FX600V	FX651V	FX691V	FX730V
Engine Type	Air-cooled, 4-stroke, V-twin, vertical shaft, OHV					
Number of Cylinders	2					
Bore x Stroke (mm)	73 x 72			78 x 76		
Displacement (cc)	603			726		
Max. Power (kW / hp)	9.9 / 13.2 @ 3600 rpm	11.3 / 15.1 @ 3600 rpm	12.7 / 17.0 @ 3600 rpm	14.1 / 18.8 @ 3600 rpm	15.4 / 20.6 @ 3600 rpm	16.6 / 22.2 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	38.4 / 28.3 @ 2800 rpm	39.1 / 28.8 @ 2200 rpm	40.4 / 29.8 @ 2200 rpm	53.2 / 39.2 @ 1800 rpm	53.7 / 39.6 @ 2000 rpm	54.3 / 40.0 @ 2000 rpm
Oil Capacity (litres)	1.8			2.1		
Dry Weight (kg)	40.7			46.6		
Dimensions (L x W x H)	468 x 429 x 544 mm			479 x 448 x 565 mm		

FEATURES

- Overhead V-valves
- 90 degree V-twin
- High performance lubrication system
- Electronic spark ignition
- Automatic compression release
- Heavy duty shift type starter

OPTIONS

- Internally vented carburetor with fuel shut-off solenoid (Twin barrel- FX651, 691, 730)
- Rotating grass screen
- Canister air filter
- Cast iron cylinder liners
- Metal engine covers
- Muffler option (FX481, 541, 600)

FX Series Vertical



FX541V



FX651V



FX730V

Engine Model	FX751V	FX801V	FX850V	FX921V	FX921V DFI	FX1000V	FX1000V DFI
Engine Type	Air-cooled, 4-stroke, V-twin, vertical shaft, OHV						
Number of Cylinders	2						
Bore x Stroke (mm)	84.5 x 76			89.2 x 80			
Displacement (cc)	852			999			
Max. Power (kW / hp)	17.5 / 23.4 @ 3600 rpm	18.9 / 25.3 @ 3600 rpm	19.9 / 26.6 @ 3600 rpm	21.6 / 28.9 @ 3600 rpm		23.5 / 31.4 @ 3600 rpm	
Max. Torque (Nm / ft.lbs)	62.0 / 45.7 @ 2000	63.0 / 46.4 @ 2200		66.7 / 49.2 @ 2400		69.6 / 51.3 @ 2400	
Oil Capacity (litres)	2.0			1.7			
Dry Weight (kg)	58			65.4			
Dimensions (L x W x H)	488 x 464 x 626 mm			508 x 500 x 636 mm	508 x 511 x 636 mm	508 x 500 x 636 mm	508 x 511 x 636 mm



FX801V



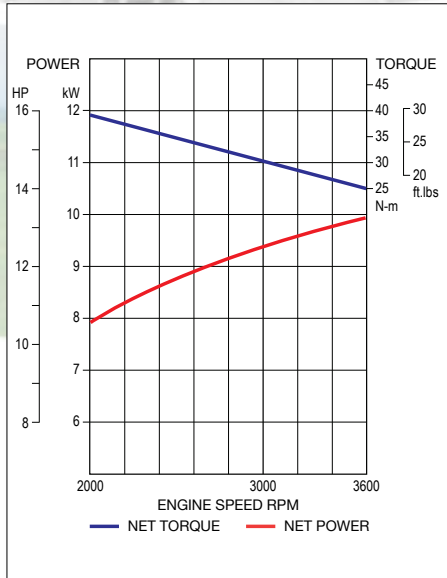
FX921V



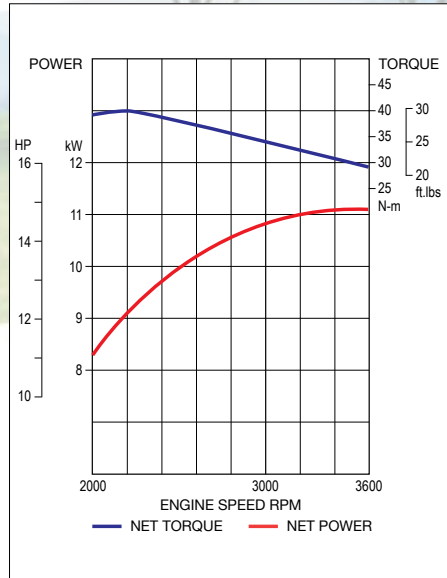
FX1000V

POWER CURVES

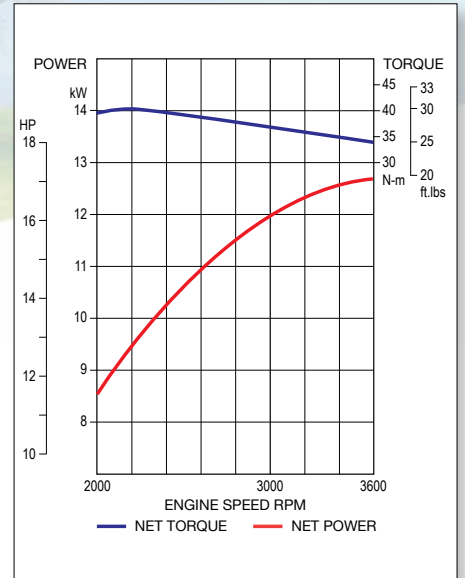
FX481V



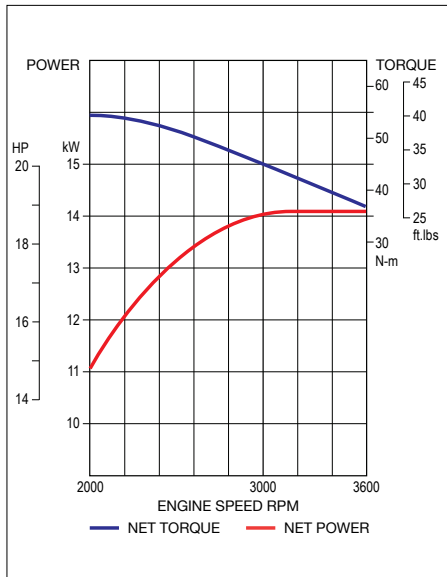
FX541V



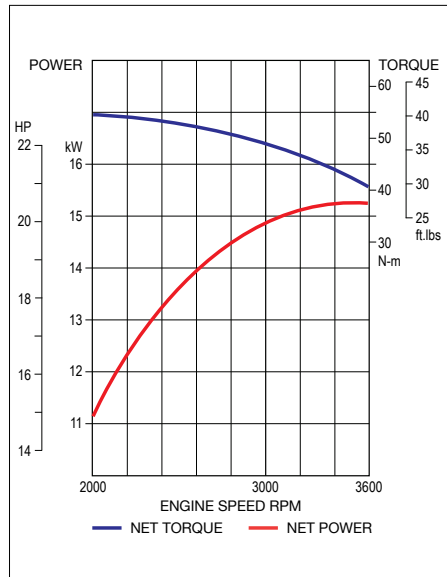
FX600V



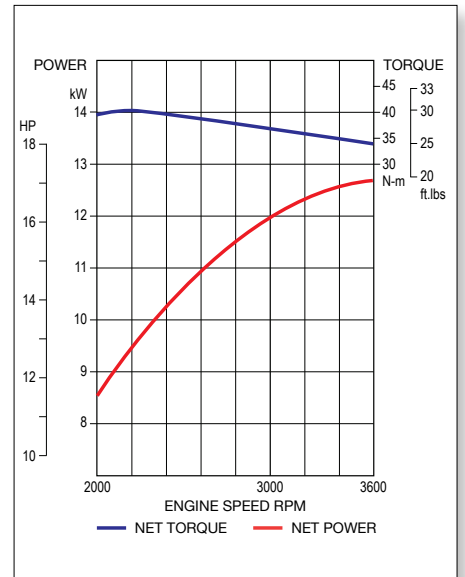
FX651V



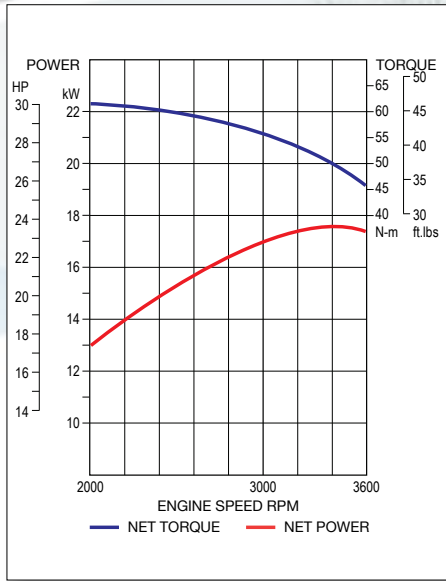
FX691V



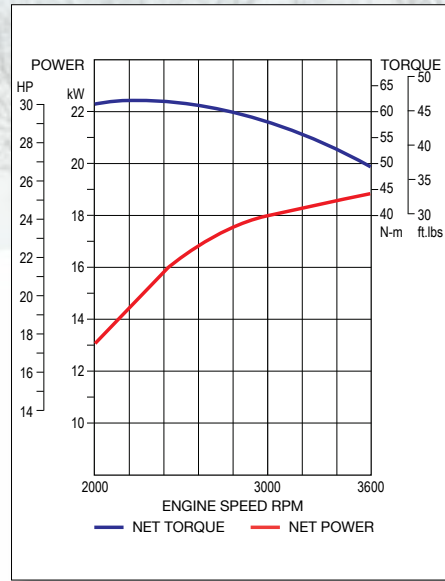
FX730V



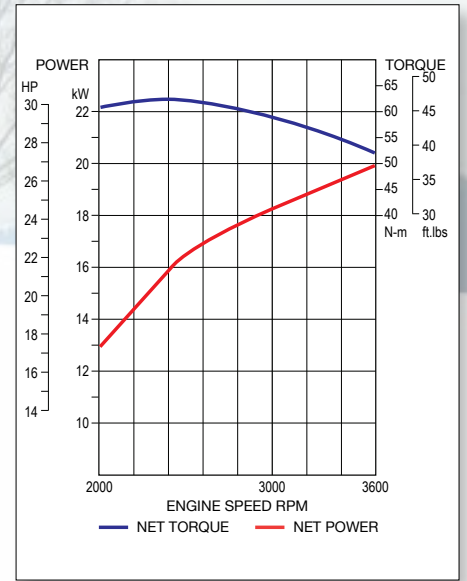
FX751V



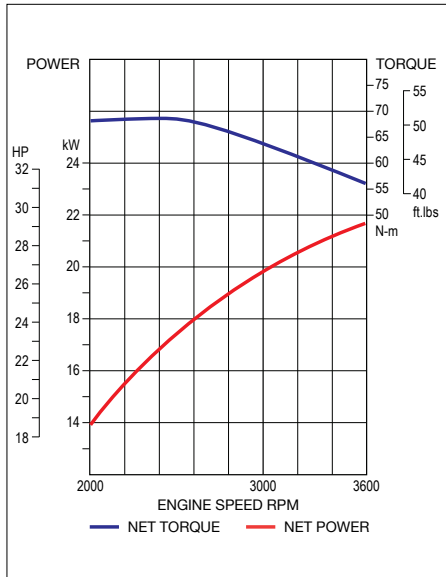
FX801V



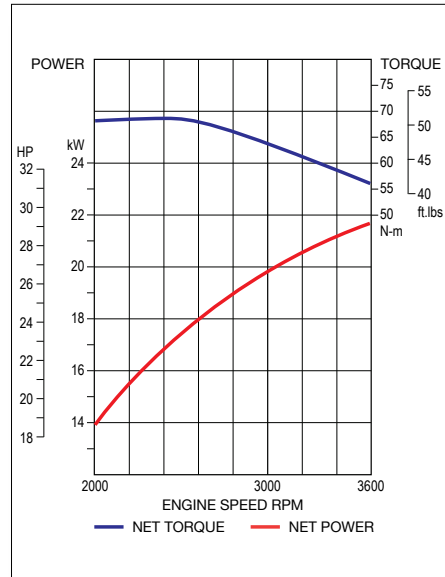
FX850V



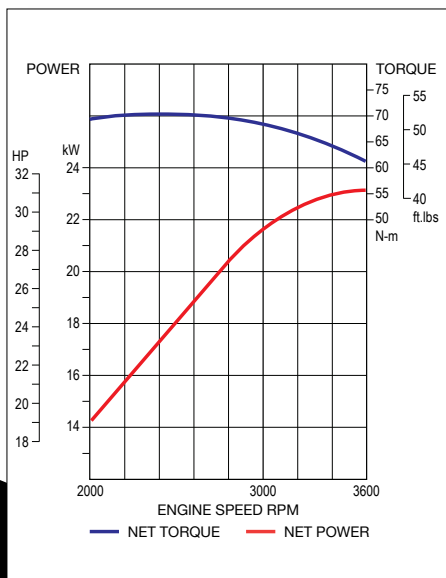
FX921V



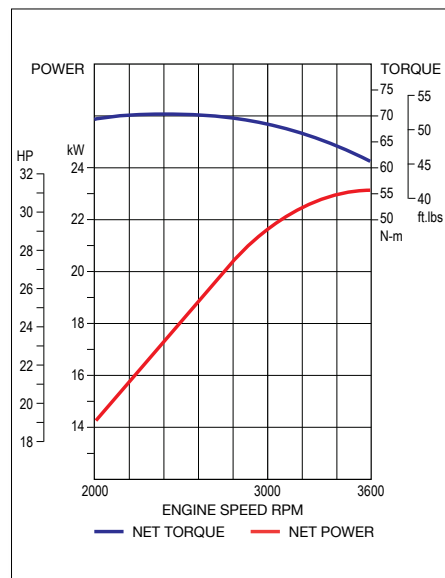
FX921V DFI



FX1000V



FX1000V DFI





Engine Model	FS481V	FS541V	FS600V	FS651V	FS691V	FS730V
Engine Type	Air-cooled, 4-stroke, V-twin, vertical shaft, OHV					
Number of Cylinders	2					
Bore x Stroke (mm)	73 x 72			78 x 76		
Displacement (cc)	603			726		
Max. Power (kW / hp)	9.9 / 13.2 @ 3600 rpm	11.3 / 15.1 @ 3600 rpm	12.7 / 17.0 @ 3600 rpm	14.1 / 18.8 @ 3600 rpm	15.4 / 20.6 @ 3600 rpm	16.6 / 22.2 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	38.4 / 28.3 @ 1800 rpm	39.1 / 28.8 @ 2200 rpm	40.4 / 29.8 @ 2200 rpm	53.2 / 39.2 @ 1800 rpm	53.7 / 39.6 @ 2000 rpm	54.3 / 40.0 @ 2000 rpm
Oil Capacity (litres)	1.8			2.1		
Dry Weight (kg)	36.7			41.5		
Dimensions (L x W x H)	483 x 429 x 362 mm			500 x 457 x 383 mm		

FEATURES

- Overhead V-valves
- 90 degree V-twin
- High performance lubrication system
- Electronic spark ignition
- Automatic compression release

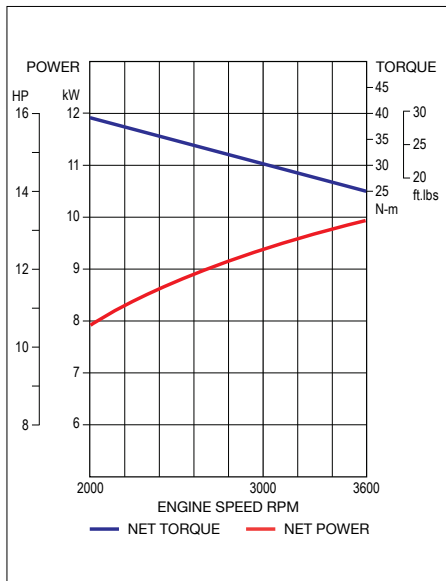
OPTIONS

- Internally vented carburetor with fuel shut-off solenoid
- Rotating grass screen
- Dual element air filter
- Cast iron cylinder liners
- Muffler option (FS481, 541, 600)

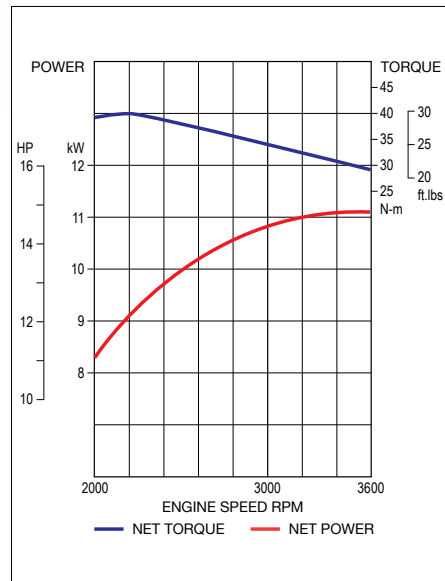
FS Series Vertical

POWER CURVES

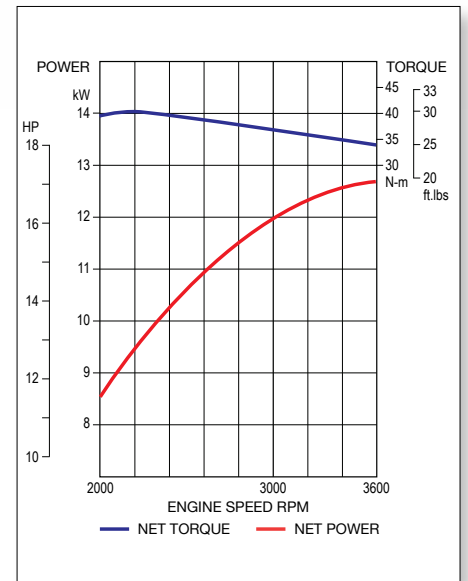
FS481V



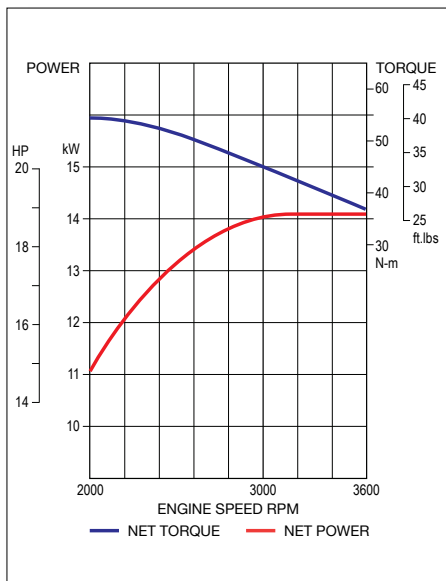
FS541V



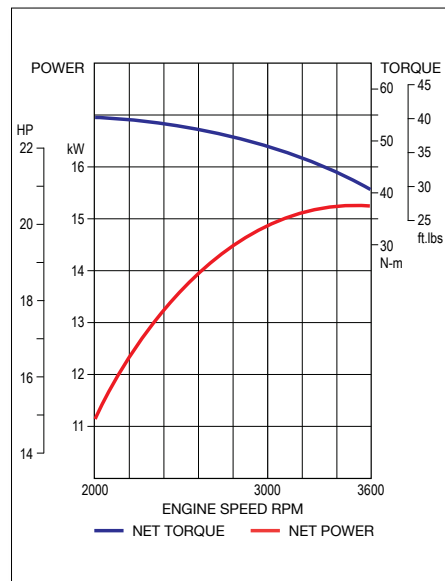
FS600V



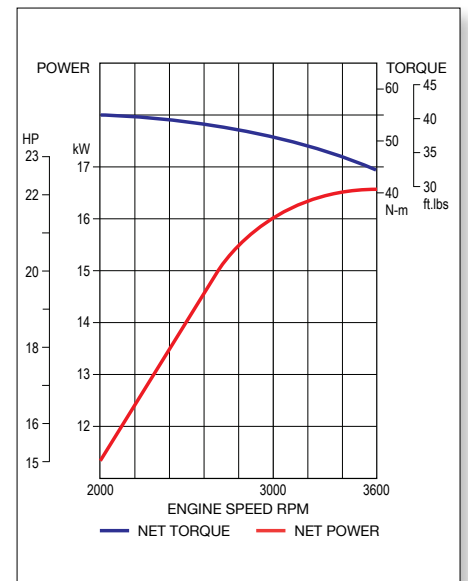
FS651V



FS691V



FS730V





Engine Model	FR541V	FR600V	FR651V	FR691V	FR730V
Engine Type	Air-cooled, 4-stroke, V-twin, Vertical shaft, OHV				
Number of Cylinders	2				
Bore x Stroke (mm)	73 x 72		78 x 76		
Displacement (cc)	603		726		
Max. Power (kW / hp)	11.3 / 15.1 @ 3600	12.7 / 17 @ 3600	14.1 / 18.8 @ 3600	15.4 / 20.6 @ 3600	16.6 / 22.2 @ 3600
Max. Torque (Nm / ft.lbs)	39.1 / 28.8 @ 2200	40.4 / 29.8 @ 2200	53.2 / 39.2 @ 1800	53.7 / 39.6 @ 2000	54.3 / 40 @ 2000
Oil Capacity (litres)	1.8		2.1		
Dry Weight (kg)	36.7		40.4		
Dimensions (L x W x H)	482 x 429 x 362		498 x 461 x 384		

FEATURES

- Overhead V-valves
- 90 degree V-twin
- High performance lubrication system
- Electronic spark ignition

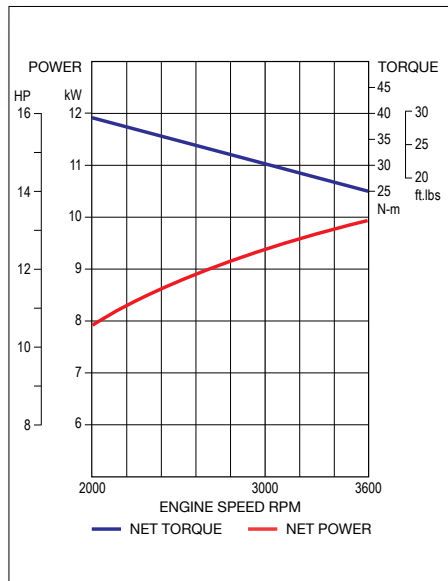
OPTIONS

- Automatic compression release
- Internally vented carburettor with fuel shut-off solenoid
- Rotating grass screen
- Cast iron cylinder liners

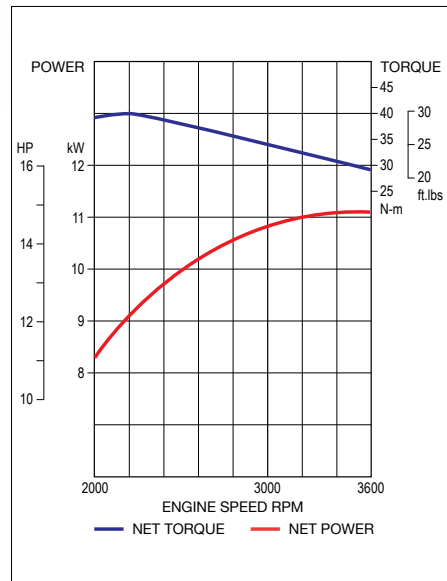
FR Series Vertical

POWER CURVES

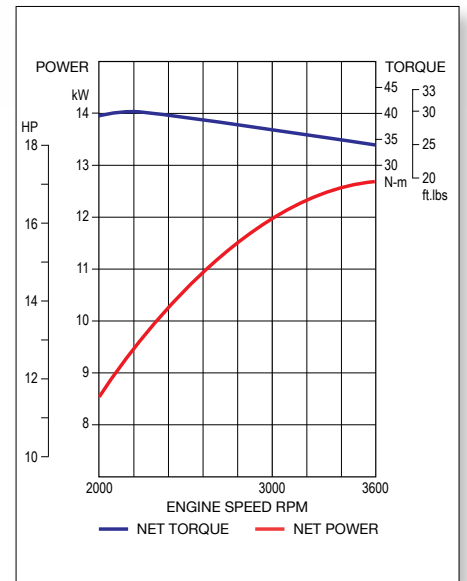
FR541V



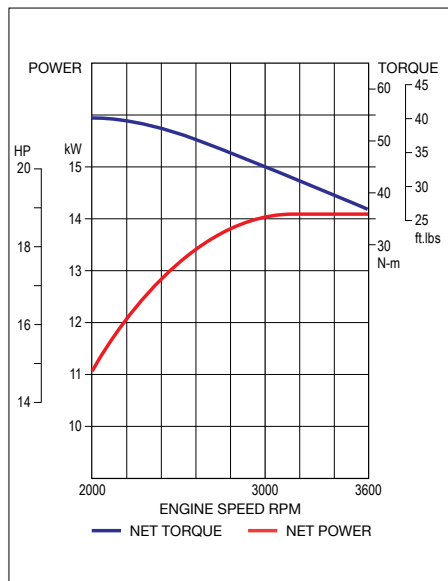
FR600V



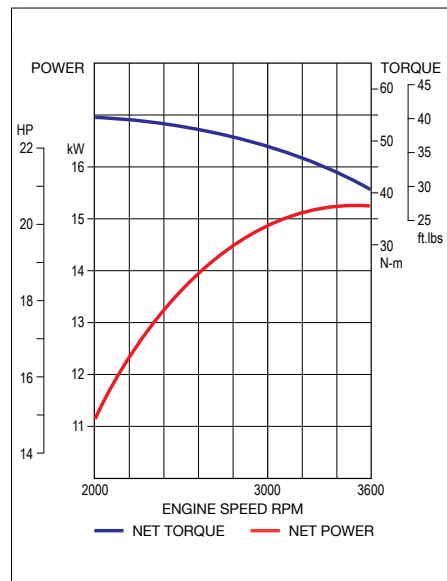
FR651V



FR691V



FR730V



FR600V

4-Stroke Horizontal Engines



FJ Series

Output : 1.9 kW (2.5 hp) - 5 kW (6.7 hp)

FE Series

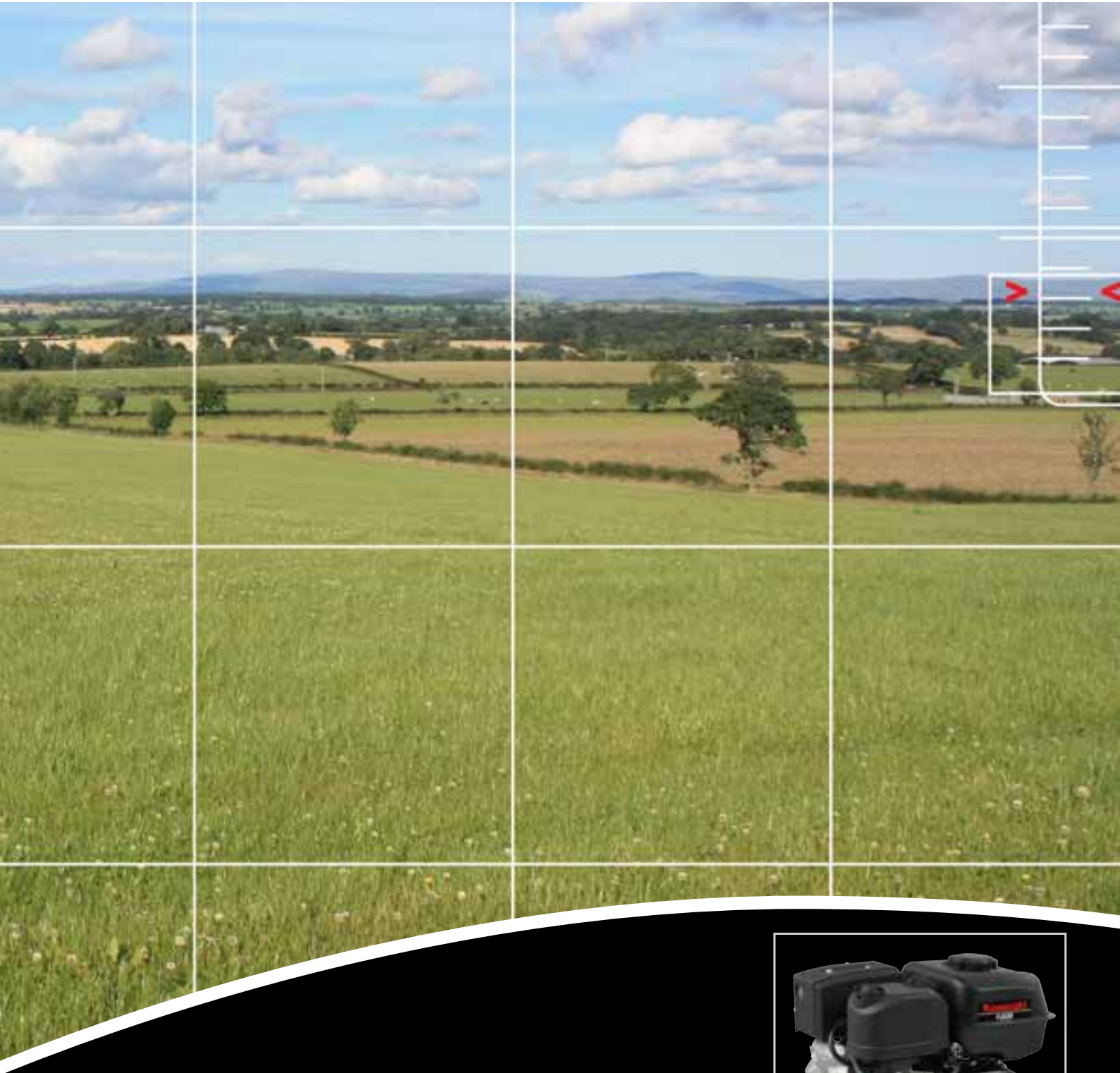
Output : 2.6 kW (3.4 hp) - 8.6 kW (11.5 hp)

FH Series

Output : 12.3 kW (16.4 hp) - 17.5kW (23.4 hp)

FD Series

Output : 15.3 kW (20.5 hp) - 20 kW (26.8 hp)





Engine Model	FJ100	FJ180	FJ220
Engine Type	Air-cooled, 4-stroke, horizontal shaft, OHV		
Number of Cylinders	1		
Bore x Stroke (mm)	56 x 40	65 x 54	72 x 54
Displacement (cc)	99	179	220
Max. Power (kW / hp)	1.9 / 2.5 @ 3600 rpm	4.1 / 5.5 @ 3600 rpm	5 / 6.7 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	5.0 / 3.6 @ 2800 rpm	11.2 / 8.6 @ 2400 rpm	14 / 10.3 @ 2400 rpm
Fuel Tank Capacity (litres)	1.6	3.6	
Oil Capacity (litres)	0.46	0.6	
Dry Weight (kg)	10.8	17.5	18
Dimensions (L x W x H)	280 x 306 x 315	304 x 364 x 370	

FEATURES

- Dual element air cleaner
- Internally vented carburettor
- Cast iron cylinder
- K-twin balancer (FJ180 & 220)
- Overhead V-valves (FJ180 & 220)
- Spherical combustion chamber (FJ180 & 220)
- Roller ball type top bearing (FJ180 & 220)
- Inner vent carburettor

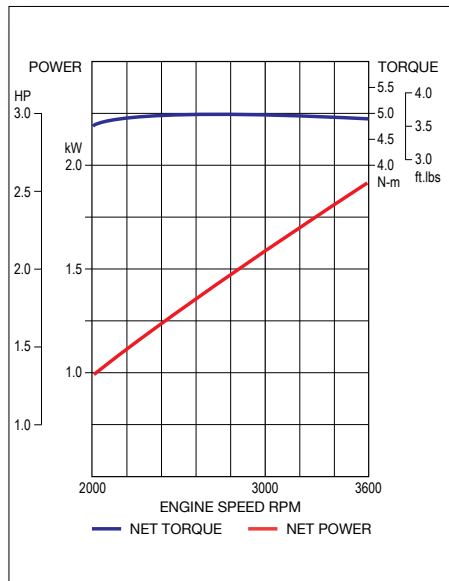
OPTIONS

- Shaft variation: 15 x 50 mm, 3/4" x 58mm straight shaft (FJ100)
- Recoil start (FJ100)
- Reduction 2:1 gearbox
- Oil level sensor (FJ180 & 220)
- Heavy duty (oil bath) air filter (FJ180 & 220)
- Electric starter (FJ180 & 220)
- Charging coil options (FJ180 & 220)
- Oil drain extension (FJ180 & 220)
- Square muffler with deflector (FJ180 & 220)
- Fuel level gauge in fuel tank (FJ180 & 220)

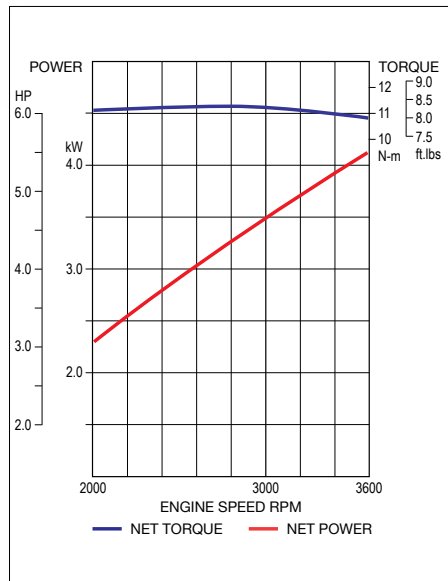
FJ Series Horizontal

POWER CURVES

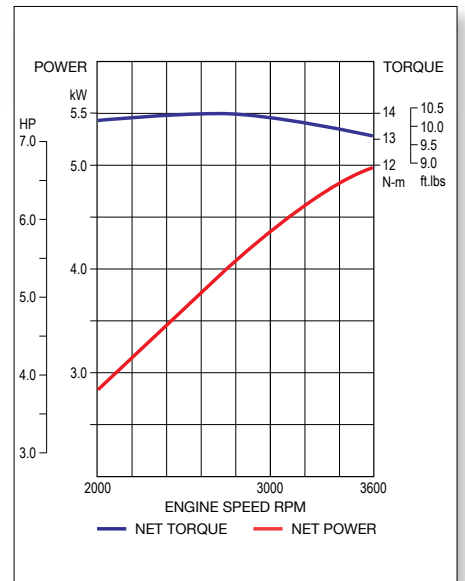
FJ100



FJ180



FJ220



FJ100



FJ180



FJ220



Engine Model	FE120D	FE170D	FE250D	FE290D	FE350D	FE400D
Engine Type	Air-cooled, 4-stroke, horizontal shaft, OHV					
Number of Cylinders	1					
Bore x Stroke (mm)	60 x 44	66 x 50	76 x 55	78 x 60	83 x 65	87 x 67.5
Displacement (cc)	124	171	249	286	351	401
Max. Power (kW / hp)	2.6 / 3.4 @ 3600 rpm	3.7 / 4.9 @ 3600 rpm	5.6 / 7.5 @ 3600 rpm	6.5 / 8.7 @ 3600 rpm	7.8 / 10.4 @ 3600 rpm	8.6 / 11.5 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	7.5 / 5.5 @ 2800 rpm	9.9 / 7.3 @ 2800 rpm	14.8 / 10.9 @ 2500 rpm	17.2 / 12.6 @ 2800 rpm	20.8 / 15.3 @ 2800 rpm	25.2 / 18.5 @ 2800 rpm
Fuel Tank Capacity (litres)	2.5	3.4	5.3	6.0	6.4	
Oil Capacity (litres)	0.6		1.1		1.3	
Dry Weight (kg)	14.6	17.5	26.8	30.4	34.0	34.5
Dimensions (L x W x H mm)	291 x 349 x 347	300 x 354 x 370	344 x 395 x 432	363 x 408 x 441	378 x 422 x 454	380 x 422 x 461

FEATURES

- Cast iron cylinder
- Dual element air filter
- Reciprocating balancer (FE250D, 290D, 400D)
- Pressurised lubrication (FE290D, 350D, 400D)
- Hydraulic valve lifters (FE250D, 400D)

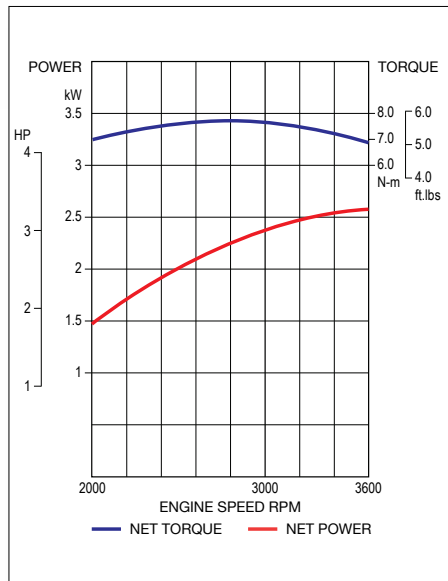
OPTIONS

- Various shaft options (FE120D, 170D, 250D)
- Shaft variation: 25 x 60, 1" x 72mm straight and tapered (FE290D, 350D, 400D)
- Various speed control systems
- 5 or 13 amp charge coil
- Oil level switches
- Reduction 2:1 gearbox (FE120D, 170D, 250D, 290D)

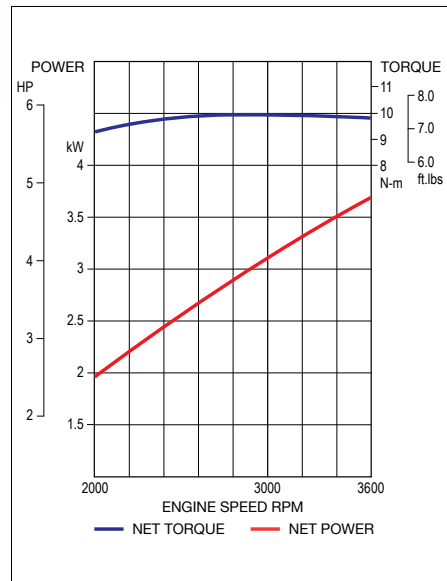
FE Series Horizontal

POWER CURVES

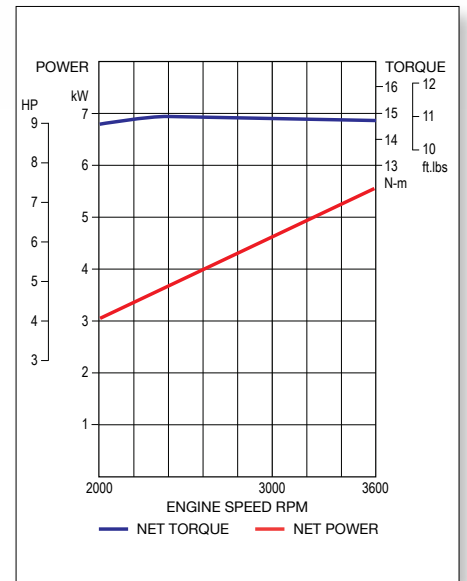
FE120D



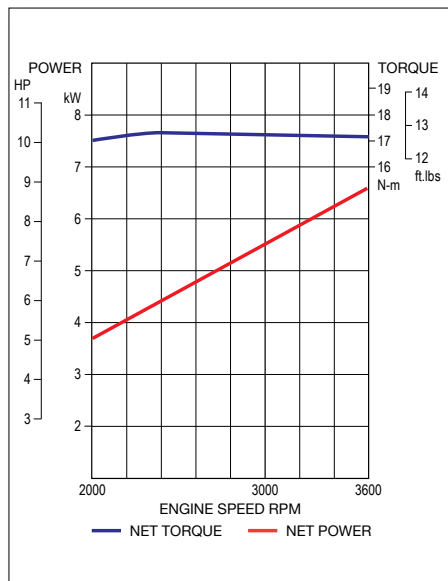
FE170D



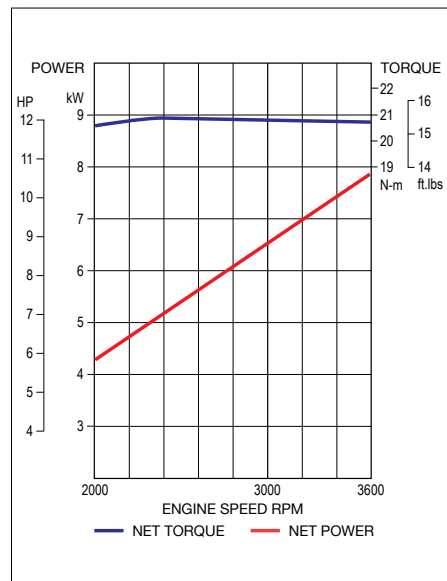
FE250D



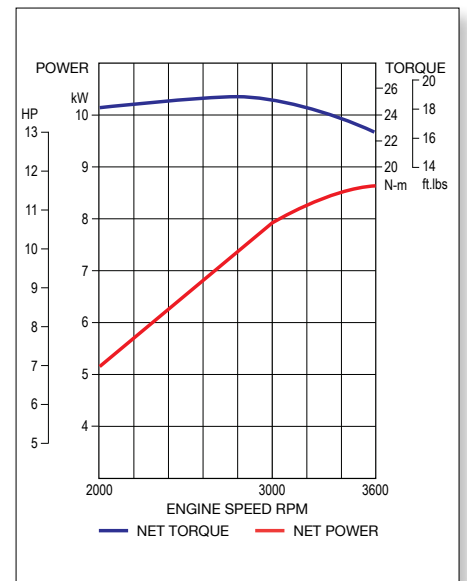
FE290D



FE350D



FE400D





Engine Model	FH601D	FH641D	FH680D	FH721D	FH770 KAI
Engine Type	Air-cooled, 4-stroke, Horizontal shaft, OHV				
Number of Cylinders	2				
Bore x Stroke (mm)	75.2 x 76				80 x 76
Displacement (cc)	675				746
Max. Power (kW / hp)	12.3 / 16.4 @ 3600 rpm	13.6 / 18.2 @ 3600 rpm	14.5 / 19.4 @ 3600 rpm	16 / 21.4 @ 3600 rpm	17.5 / 23.4 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	44.8 / 33 @ 2000 rpm	46.4 / 34.2 @ 2000 rpm	46.4 / 34.2 @ 2200 rpm	48.2 / 35.5 @ 2400 rpm	56 / 41.3 @ 2200 rpm
Fuel Tank Capacity (litres)	1.9				
Dry Weight (kg)	45.4				46.0
Dimensions (L x W x H)	347.5 x 330 x 492 mm				343.4 x 438.4 x 664.8

FEATURES

- Overhead V-valves
- Pressurised lubrication
- Dual element air filter
- Internally vented carburettor
- Rotating grass screen
- Cast iron cylinder liners
- Oil cooler (FH770D KAI)

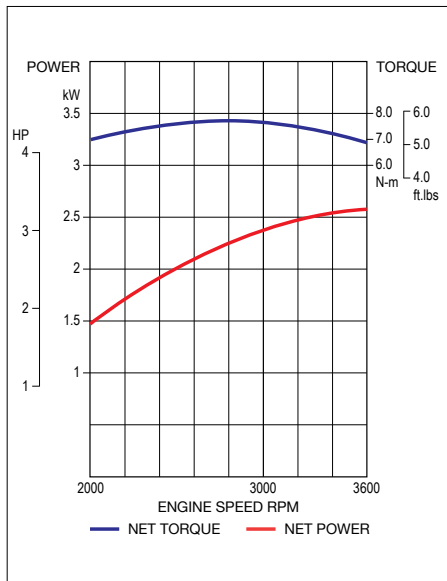
OPTIONS

- Shaft variation: 1 1/8" x 100 mm, 1" x 60 mm (flywheel)
- Various speed control systems
- 13 or 20 amp charge coil
- Various oil drain & starter options
- Oil pressure switches

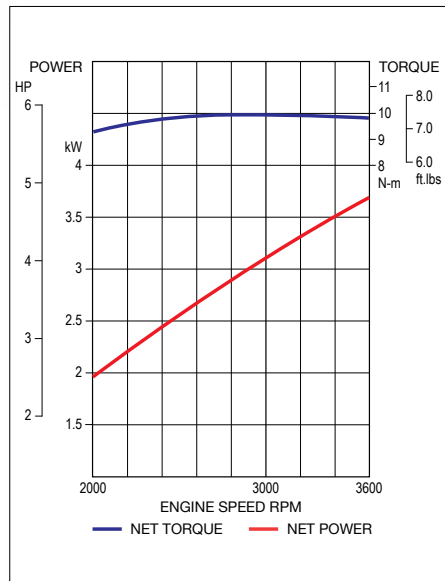
FH Series Horizontal

POWER CURVES

FH601D



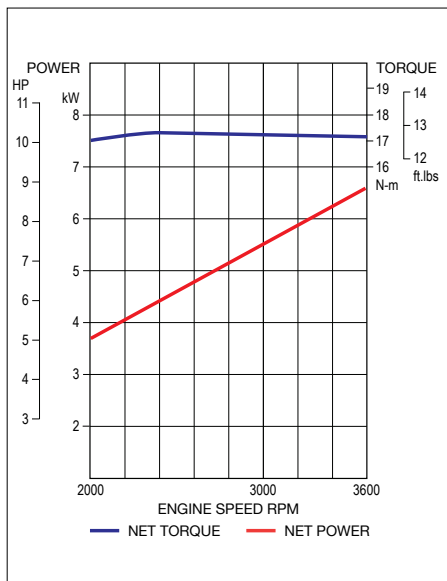
FH641D



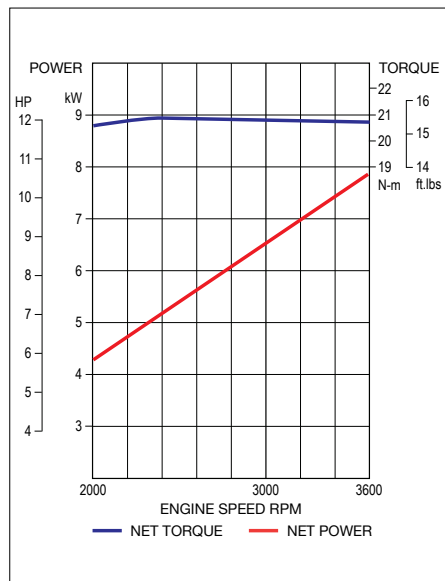
FH680D



FH721D



FH770D KAI



FH770D KAI



Engine Model	FD671D	FD750D	FD750D DFI	FD791D DFI	FD851D DFI
Engine Type	Liquid-cooled, 4-stroke, Horizontal shaft, OHV				
Number of Cylinders	2				
Bore x Stroke (mm)	78 x 78				82 x 78
Displacement (cc)	745				824
Max. Power (kW / hp)	15.3 / 20.5 @ 3600 rpm	17.5 / 23.4 @ 3600 rpm	17.7 / 23.7 @ 3600 rpm	18.3 / 24.5 @ 3600 rpm	20 / 26.8 @ 3600 rpm
Max. Torque (Nm / ft.lbs)	50 / 36.9 @ 2400 rpm	52 / 38.3 @ 2300 rpm	51.3 / 37.8 @ 2400 rpm	52.5 / 38.7 @ 2400 rpm	59 / 43.5 @ 2400 rpm
Fuel Tank Capacity (litres)	2				
Dry Weight (kg)	57				
Dimensions (L x W x H)	520 x 458 x 580 mm				

FEATURES

- Overhead V-valves
- Pressurised lubrication
- Dual element air filter (FD671D, 750D)
- Twin barrel carburettor (FD671D, 750D)
- Cooling temperature switch (FD671D, 750D)
- Cast iron cylinder liners
- Multiport digital fuel injection (FD750D DFI, 791D DFI, 851D DFI)
- Compact electronic control unit (FD750D DFI, 791D DFI, 851D DFI)
- High pressure pulse-type fuel pump (FD750D DFI, 791D DFI, 851D DFI)

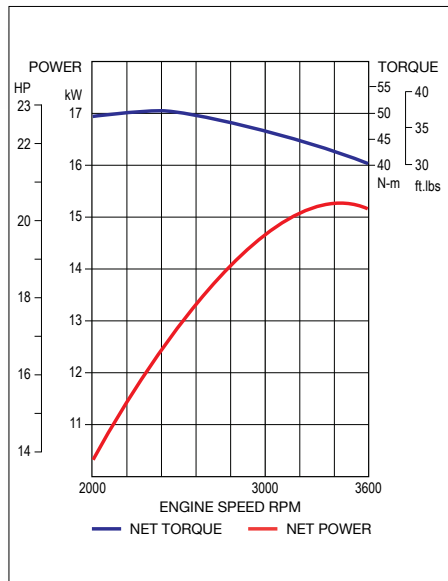
OPTIONS

- Shaft variation: 1" x 80 mm, 1 1/8" x 80 mm, 1 1/8" x 110 mm
- Various speed control systems
- 13, 20 or 30 amp charge coil
- Various oil drain & starter options
- Oil pressure switches
- Heavy duty canister air filter

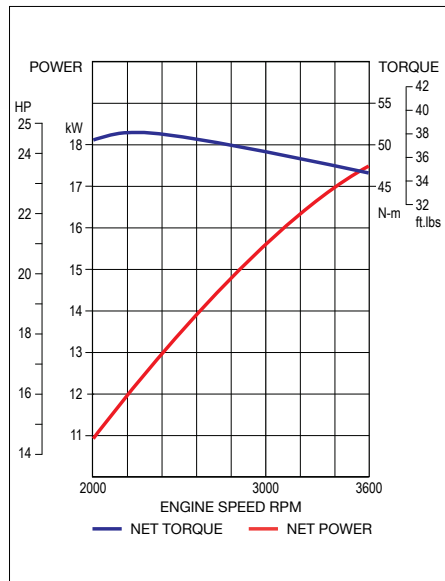
FD Series Horizontal

POWER CURVES

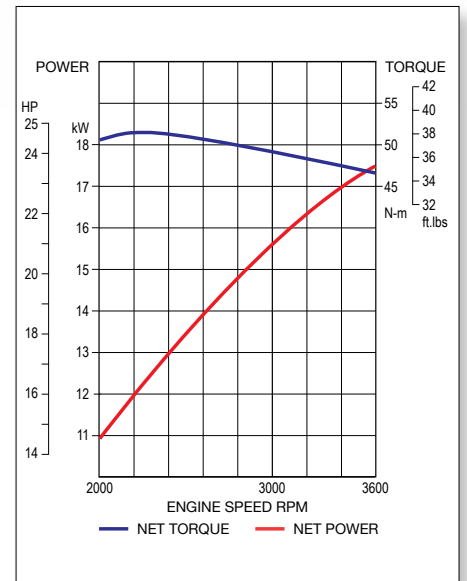
FD671D



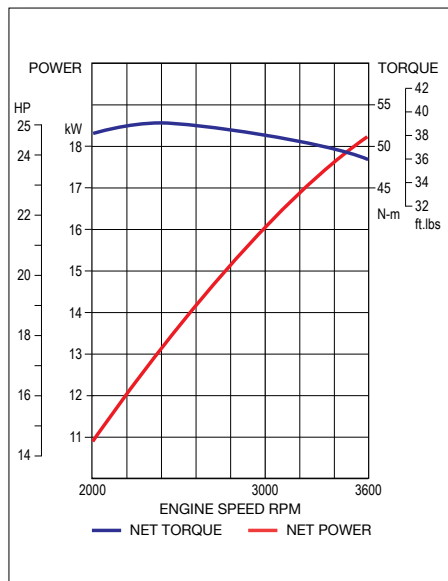
FD750D



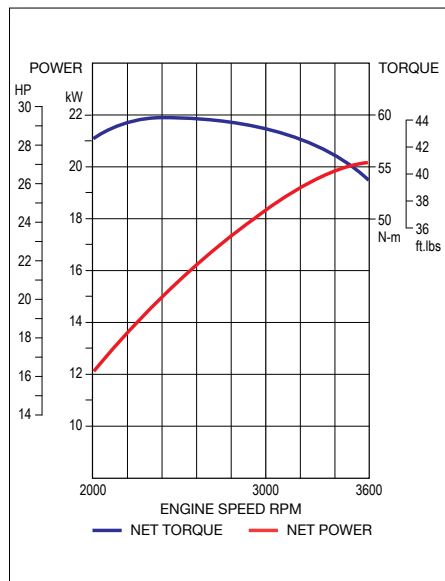
FD750D DFI



FD791D DFI

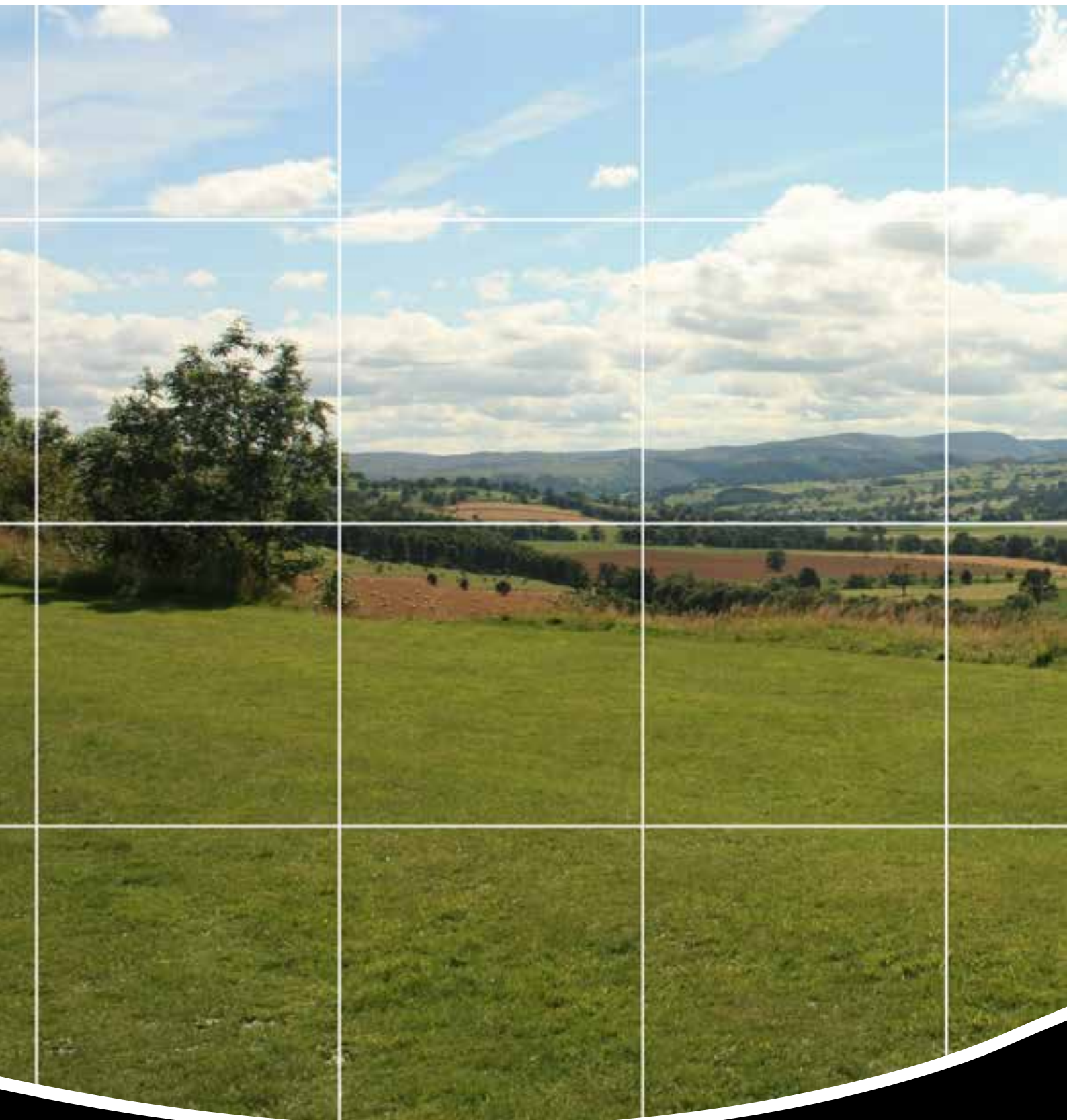


FD851D DFI



FD851D DFI

2-Stroke Horizontal Engines

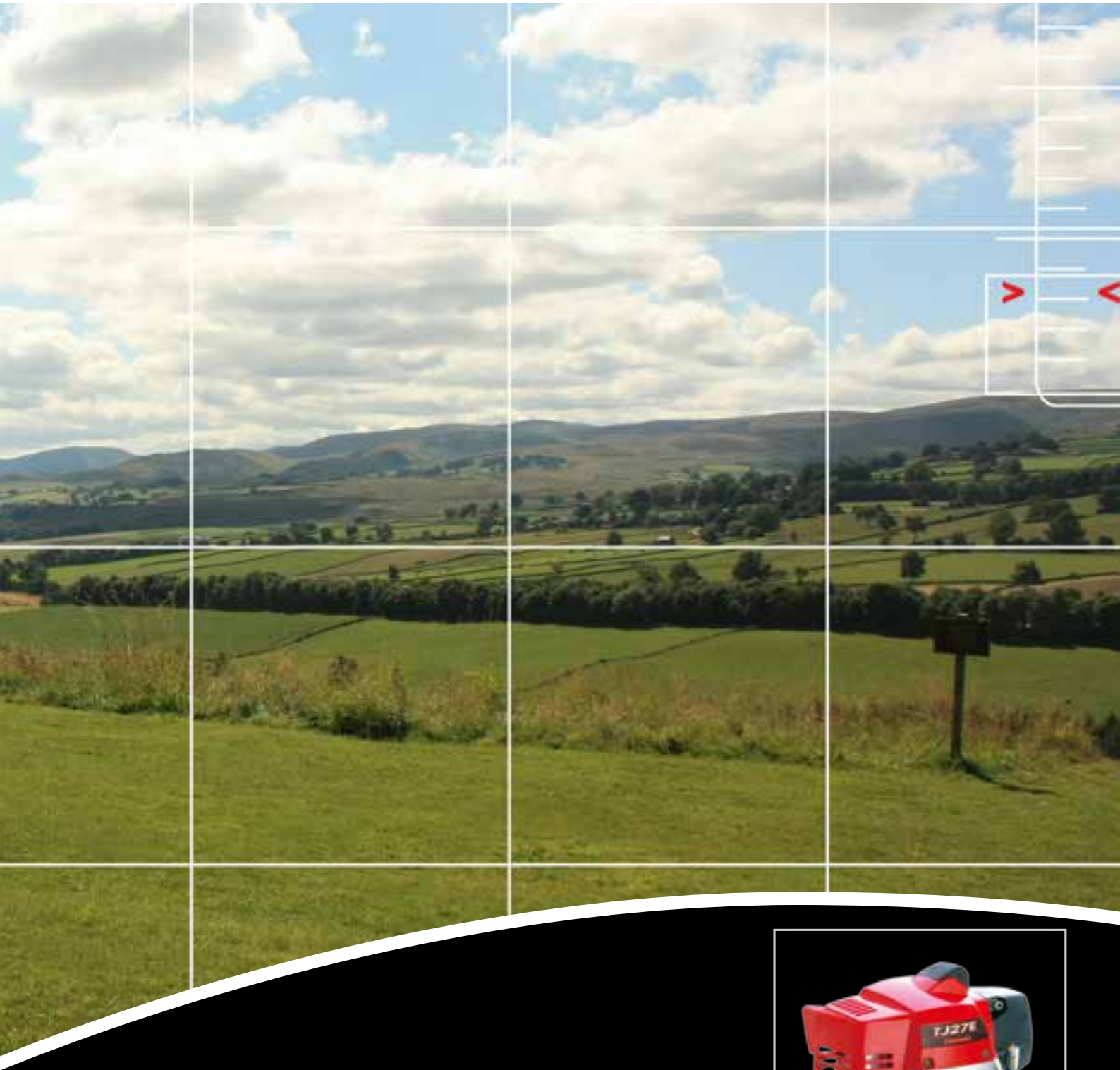


TJ Series

Output : 0.63 kW (0.84 hp) - 2.0 kW (2.7 hp)

TK Series

Output : 2.9 kW (3.88 hp)





Engine Model	TJ23E	TJ27E	TJ35E	TJ45E	TJ53E	TK65
Engine Type	Air-cooled, 2-stroke, Single cylinder, Horizontal shaft					
Cylinders	1					
Bore x Stroke (mm)	32 x 29	34 x 29	37 x 32	42.5 x 32	44 x 35	48.5 x 35
Displacement (cc)	23.3	26.3	34.4	45.4	53.2	64.7
Max. Power (kW / hp)	0.63 / 0.84 @ 7500 rpm	0.77 / 1.03 @ 7500 rpm	1.03 / 1.38 @ 7000 rpm	1.42 / 1.9 @ 7500 rpm	2.0 / 2.7 @ 8500 rpm	2.9 / 3.88 @ 8000 rpm
Max. Torque (Nm / ft.lbs)	0.97 / 0.71 @ 5000 rpm	1.18 / 0.87 @ 5000 rpm	1.55 / 1.14 @ 5000 rpm	2.18 / 1.6 @ 5000 rpm	3.0 / 2.2 @ 5000 rpm	4.5 / 3.32 @ 5000 rpm
Fuel Tank Capacity (litres)	0.5		0.7	0.9	1.1	-
Dry Weight (kg)	2.6		3.1	3.9	4.5	4.4
Dimensions (L x W x H)	171 x 246 x 221 mm	171 x 253 x 221 mm	181 x 262 x 238 mm	189 x 264 x 262 mm	203 x 290 x 275 mm	172 x 346 x 261 mm

FEATURES

- Diaphragm carburetor (exc. TJ53E)
- Crankcase machined as a set (TJ53E)
- KAR start system
- Large volume purge port
- Polyurethane foam air filter (exc. TJ53E)
- Lightweight piston (TJ53E)
- Dynamically balanced flywheel (TJ53E)
- Full cover design
- Centrifugal clutch installed
- Felt air cleaner element (TJ23E)
- Low-tone muffler

TK65 FEATURES

- Specialised blower / sprayer engine
- Diaphragm carburettor
- Large muffler
- Large volume purge port
- Large paper element air cleaner
- 50:1 fuel mixture

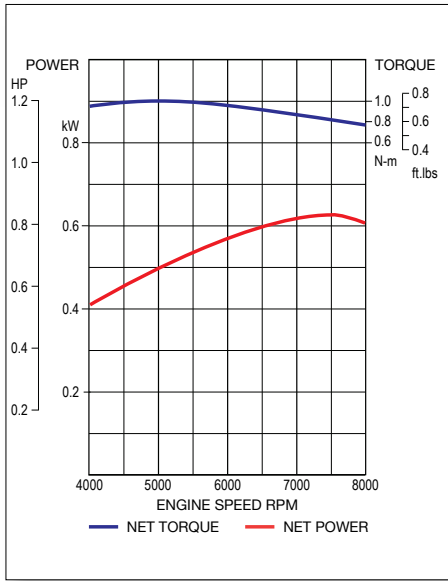
OPTIONS

- Kill switch (exc. TJ53E)

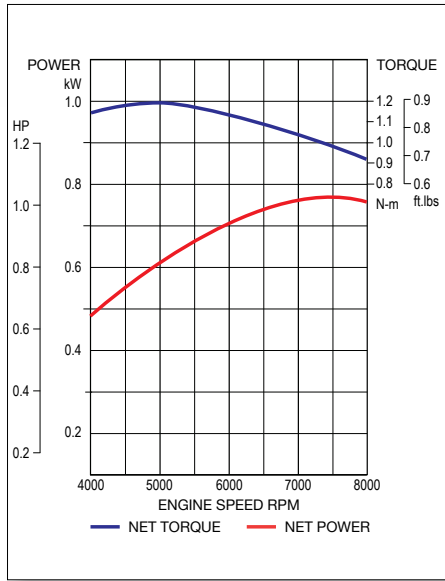
2-Stroke Horizontal Engines

POWER CURVES

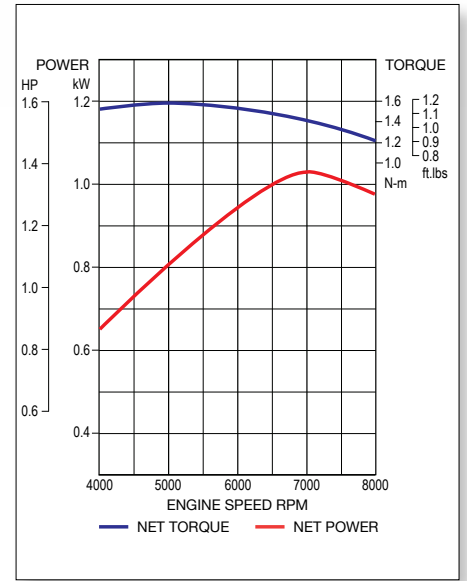
TJ23E



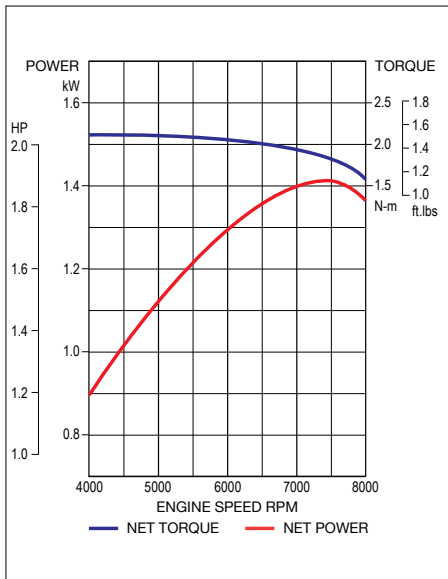
TJ27E



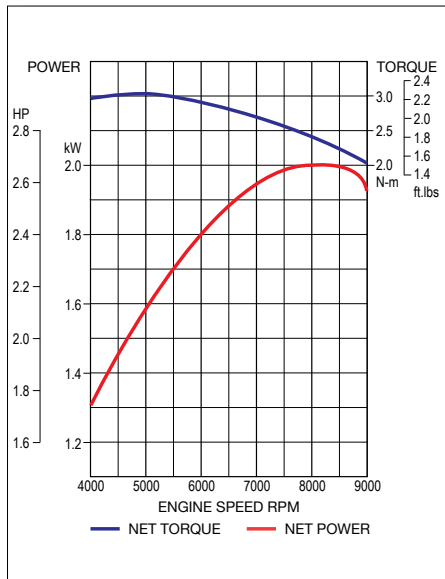
TJ35E



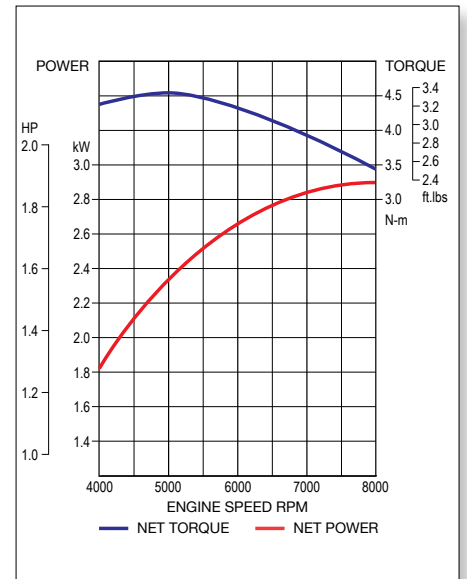
TJ45E



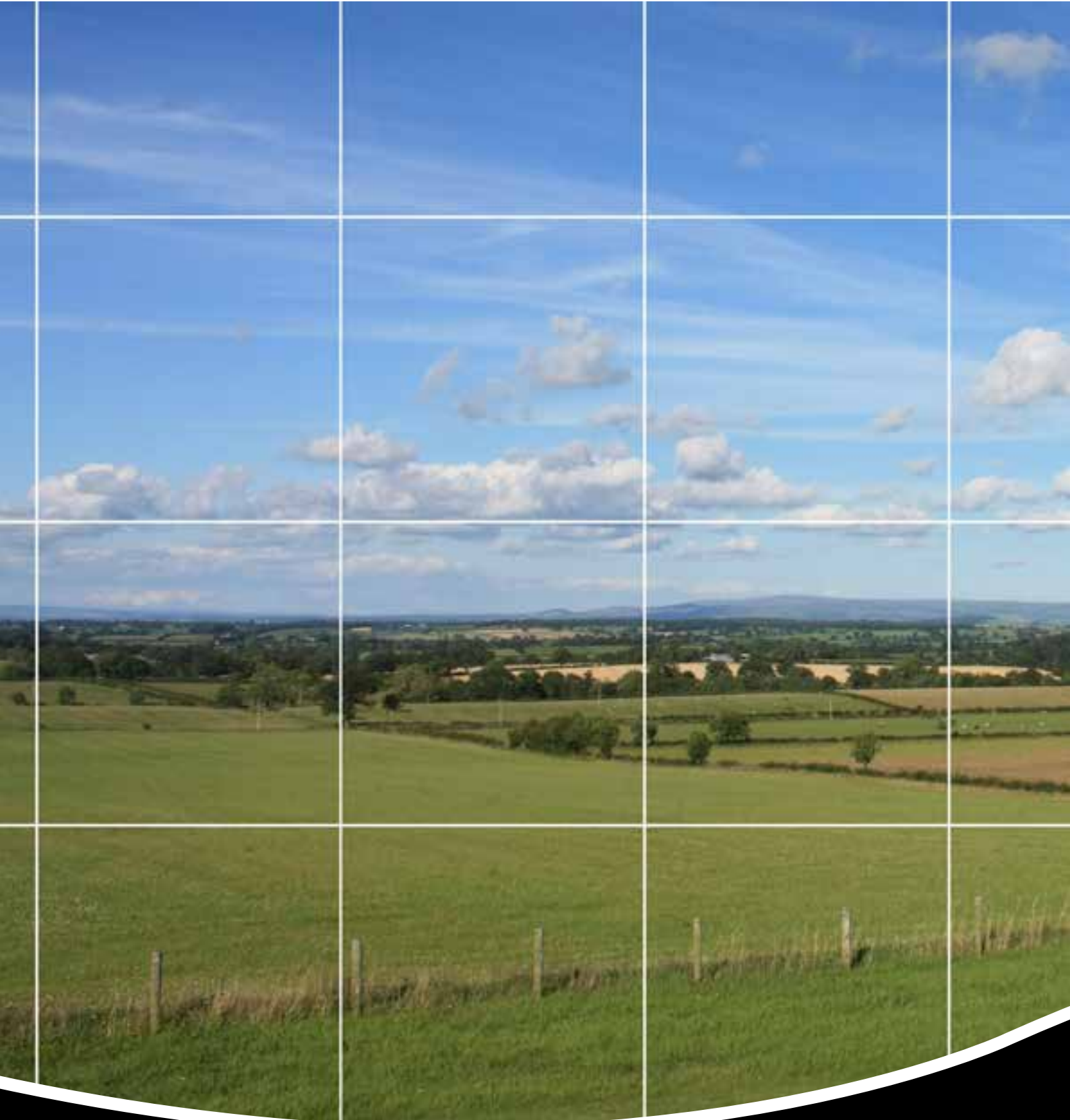
TJ53E



TK65

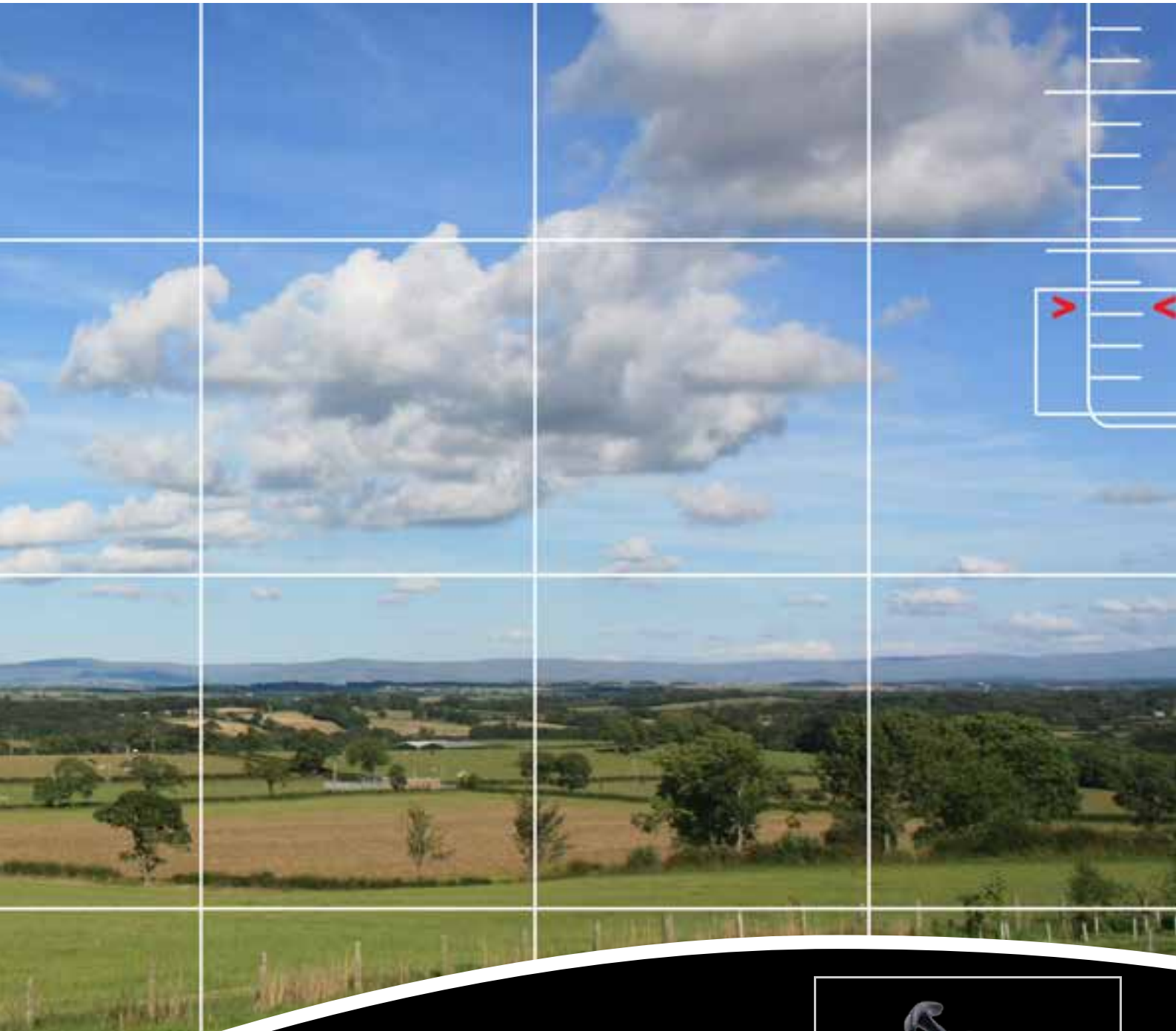


2-Stroke Vertical Engine



TJ Series

Output : 0.63 kW (0.84 hp)





Engine Model	TJ23V
Engine Type	Air-cooled, 2-stroke, Single cylinder, Vertical shaft
Cylinders	1
Bore x Stroke (mm)	32 x 28
Displacement (cc)	22.5
Max. Power (kW / hp)	0.63 / 0.84 @ 8000 rpm
Max. Torque (Nm / ft.lbs)	0.94 / 0.69 @ 5000 rpm
Fuel Tank Capacity (litres)	0.4
Dry Weight (kg)	2.2
Dimensions (L x W x H)	218 x 250 x 186 mm

FEATURES

- Diaphragm carburetor
- Electronic spark ignition
- Centrifugal clutch installed
- Large volume purge pump

OPTIONS

- Full cover design
- Large felt element air filter
- Lightweight

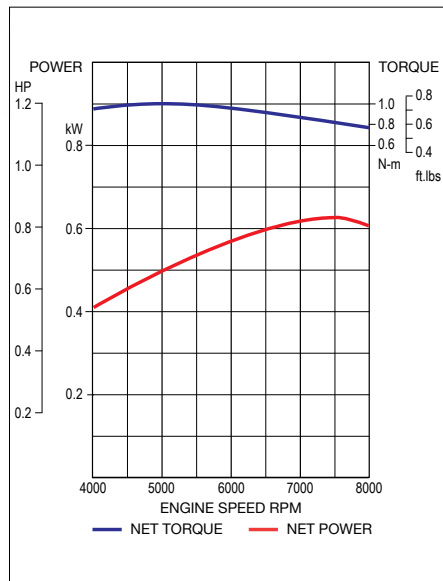
2-Stroke Vertical Engine

TJ35E



POWER CURVES

TJ23E



Spare Parts



Picture for illustration purposes only

‘Quality where it counts’

When you've made an investment in a highly engineered Kawasaki engine, it makes sense to maintain its reliability by using only genuine Kawasaki parts. Genuine parts are not just spare parts they are an important component of the whole machine. Imitation parts are invariably inferior in materials and manufacturing quality. They are not made to last, neither do they do the job that genuine parts are designed and made to do. Genuine parts are designed to fulfil all technical and performance requirements precisely. When you choose genuine Kawasaki parts you are 100% assured of quality, reliability and compliance with original equipment specifications.



LPG Exclusive

Output : 42kW @ 2570 rpm

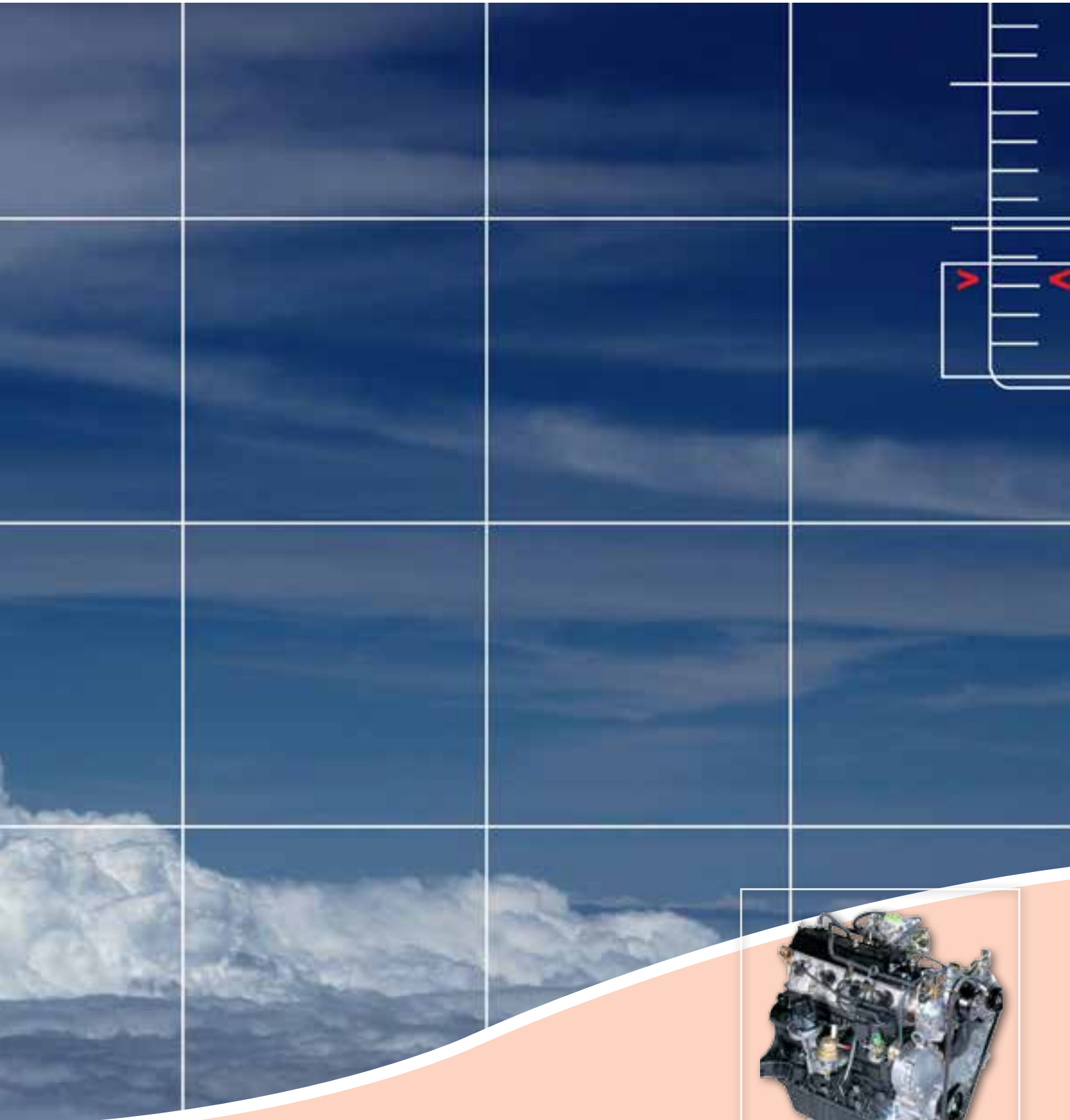
Gas Exclusive

Output : 44kW @ 2570 rpm

Toyota LPG Engines

LPG Convertible

Output : 42kW (LPG) , 43kW (G)





Engine Model	Toyota 4Y Type Engine
Engine Type	4 cycle, water cooled, in-line, OHV
Combustion Chamber Type	Wedge
Aspiration / Air Intake Type	Natural / Counter flow
Cylinders	4
Bore x Stroke (mm)	91 x 86
Displacement (litres)	2.2
Compression Ratio	8.8 : 1
Fuel Type	Gasoline, LPG, NG
Dimensions (L x W x H)	682.9 x 509.6 x 683.2 mm
Dry Weight (kg)	134
Rotation Direction	Anti-clockwise viewed from flywheel
Valve Clearance Intake / Exhaust	0 mm / 0 mm (Hydraulic Lash Adjuster)
Fuel Control	Gasoline: Multi-port injection LPG / NG: Electronic control mixer + injector
Ignition Control	Distributor & ESA (Electronic spark advance)
Speed Control	Electronic governor
Throttle Control	Electronic control throttle

Toyota 4Y 2.2L Engine



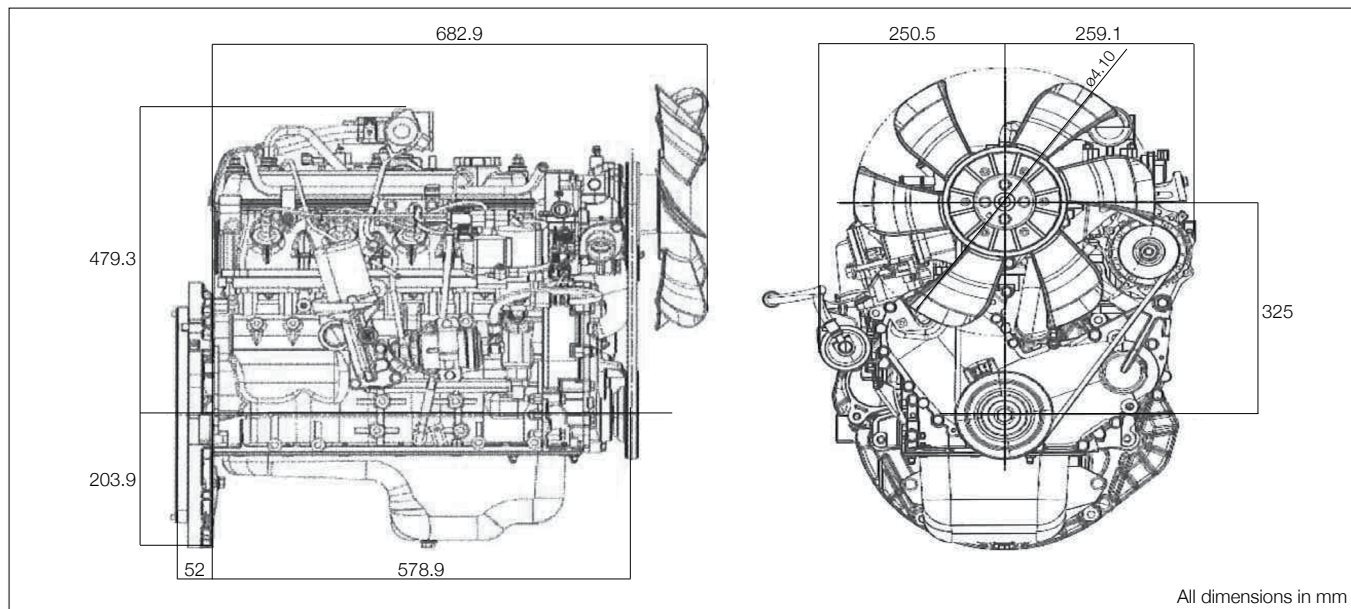
ENGINE PERFORMANCE

Fuel Type	LPG Exclusive	Gasoline Exclusive	LPG Convertible
Max Output (net) kW / rpm	42 / 2570	44 / 2570	42 / 2570 (LPG) 43 / 2570 (G)
Max Torque (net) Nm / rpm	160 / 2200	165 / 2570	160 / 2200 (LPG) 162 / 2570 (G)
Fuel Consumption g / kWh	233	310	310

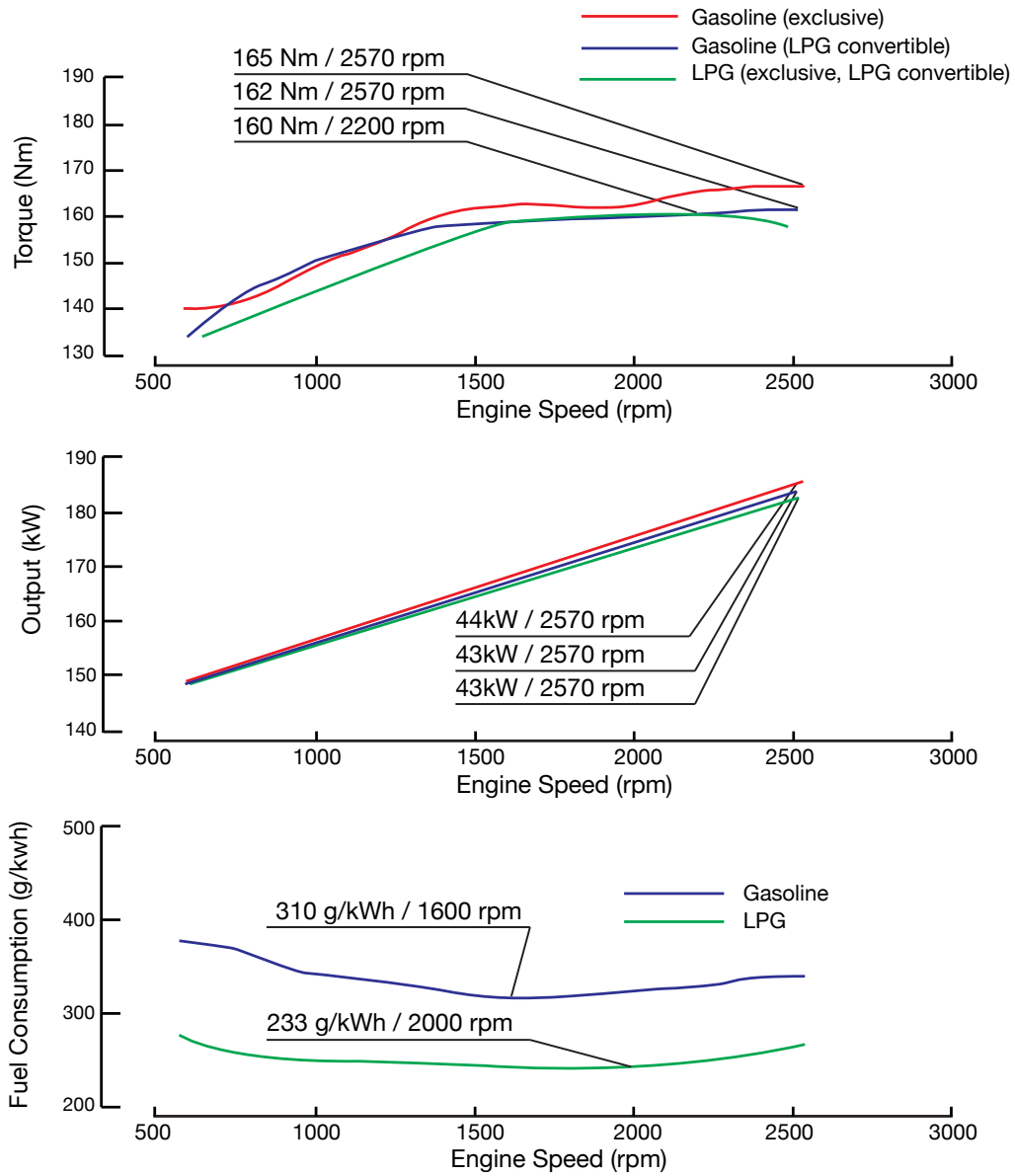
No load maximum revolution - 2570 rpm

No load minimum revolution - 750 rpm

TECHNICAL DRAWINGS



TECHNICAL DRAWINGS





Fuel
BRIGHT

DETECTION - PREVENTION - TREATMENT

The FUEL BRIGHT range specialises in innovative and proven products to ensure the quality of stored and transferred fuels. With today's high fuel prices and the precision of modern machinery, ensuring the quality of your fuel has never been more important.

Condensation and water build up in fuel tanks is almost unavoidable and causes serious damage to fuel injection systems & components, leading to severe repair bills and loss of earnings. We all know that prevention is better than cure, which is where our products come in. If you have an already existing problem, our tools/products are all you need to identify the issue, determine the severity of the problem and treat it effectively.

Today's fuels can legally contain bio-fuel. This bio-fuel content can cause damage to expensive fuel injection equipment if the correct precautions are not taken.

Bio-fuels absorb water from their surrounding environment. Allowing microbes the water they require to live, these then form into colonies causing filters to block, less efficient combustion and component wear.

The products in the FUEL BRIGHT range are specifically designed and tested to help keep your stored fuel at its best for longer as well as tackle already existing problems.



Kolor Kut Water Finding Paste, otherwise known as Water Gauging Paste, is used to test for the presence of water in the bottom of oil, diesel, petrol, gasoline, fuel oil, and kerosene tanks. Place a thin film of Kolor Kut Water Finding Paste on a clean gauge line, or rod, approximately where water level is expected to appear. Lower the tape into the tank until the bottom is reached and, on removal, the water level will appear by positive contrast of colours. Instantaneously in petrol, diesel, kerosene and gas oils but heavy oils will require a few seconds to show.



This product will successfully gauge water content in all petroleum and hydrocarbons as well as sulphuric acid, nitric acid, hydrochloric acid, ammonia, soap solutions, salt and other chloride solutions.



Soltron is a mixture of naturally occurring proteins, enzymes and amino acids. The use of Soltron will ensure that you are protected against contamination from microbial and bacterial growth "Bugs". These "bugs" reproduce in your fuel tank contaminating your fuel which in turn blocks your filters causing engine failure. These organisms can after time, attain an immunity to chemical biocidal treatments. However, Soltron breaks up the "bugs" so that they pass through the fuel filters and are removed during combustion. Soltron breaks down bacteria, fungi and yeasts in a prophylactic biocidal role.

SOL1 - 50ml treats 250L

SOL2 - 125ml treats 625L

SOL3 - 500ml treats 2500L

SOL4 - 1L treats 5000L



STANADYNE[®]

Made by American Fuel Equipment Manufacturer Stanadyne and approved by OEM's such as John Deere, Caterpillar, Ford, Volkswagen and GM. Stanadyne's

Performance Formula eliminates the need for expensive "premium" or blended fuels and is your insurance against poor quality diesel.

- Boosts Cetane to Increase Power and Fuel Economy.
- Cleans, Lubricates and Protects Fuel System Components.
- Compatible with ULS Diesel and all Fuel Systems.
- Provides Cold Weather Protection.
- Removes varnish and other deposits to prevent plugging.

- Cleans and protects fuel system components.
- Helps remove water from fuel.
- Protects against corrosion with an alcohol free formula.
- Effective with up to B20 bio-diesel blends.
- Upgrades and stabilizes fuel by reducing sludge and fuel tank contaminants



MR. FUNNEL

The Fuel Filter Funnel is a heavy-duty, anti-static and fast flow funnel with built in filter technology. When fuel is poured through it, water and debris will not pass through. Only clean, filtered fuel flows through to your engine. The funnel will filter petrol, diesel,

heating oil and kerosene. The sump area collects the deflected water and debris for proper disposal. Choose the funnel with the flow rate that best suits your fuel transfer needs.



RFF1C
2.5 gal. per min



RFF3C
3.5 gal. per min



RFF8C
5 gal. per min



RFF15
12 gal. per min

Fuel BRIGHT Water Soaker

Super absorbent polymer with mesh filter containment. It is common for condensation to build up in most fuel tanks, especially in Agricultural and Marine equipment stored outside for longer periods. This will cause damage to expensive engine fuel injection components. The Water Soaker will remove any build up of water as well as preventing any further water from accumulating. The Water soaker sits at the bottom of the tank where the collective water settles and absorbs it.



ALSO AVAILABLE



Bacteria Test Kits



Fuel Analyser



Fuel Sampling Pump

Diesel Emission Data - Variable Speed

LEGEND

EPA	Tier 1	Tier 2	Tier 3	Interim Tier 4	Final Tier 4
EU	Stage I	Stage II	Stage IIIA	Stage IIIB	Stage IV

New emissions regulations take effect January 1st of the year indicated by colour change unless otherwise noted.

EXAMPLES

NOx	2.0	2.0, the maximum amount of nitrogen oxides (NOx) allowed in grams / kW-hr.
NMHC	0.19	0.19, the maximum amount of non-methane hydrocarbons (NMHC) allowed in grams / kW-hr.
PM	0.025	0.025, the maximum amount of particulate matter (PM) allowed in grams / kW-hr.

NMHC + NOx	7.5	7.5, the maximum amount of NMHC + NOx allowed in grams / kW -hr.
PM	0.80	0.80, the maximum amount of PM allowed in grams / kW-hr.

EPA NONROAD EMISSIONS REGULATIONS

kW	HP	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0 - 7	0 - 10					7.5 0.80			7.5 0.40							
8 - 18	11 - 24					7.5 0.80			7.5 0.40							
19 - 36	25 - 49				7.5 0.60				7.5 0.30					4.7 0.03		
37 - 56	50 - 74				7.5 0.40				4.7 0.30	Option 1*				4.7 0.03		
						4.7 0.40	Option 2*		4.7 0.03							
57 - 74	75 - 99				7.5 0.40				4.7 0.40				3.4 0.19 0.02			0.40 0.19 0.02
75 - 129	100 - 174			6.6 0.30				4.0 0.30					3.4 0.19 0.02			0.40 0.19 0.02
130 - 224	175 - 299			6.6 0.20												
225 - 449	300 - 599	6.4 0.20						4.0 0.20				2.0 0.19 0.02			0.40 0.19 0.02	
450 - 559	600 - 749		6.4 0.20													
≥ 560	≥ 750							6.4 0.20				3.5 0.19 0.10				3.5 0.19 0.04

*In the 50 to 75 horsepower category there are two options. Option 1 requires a reduced PM level (.30 vs. .40) but allows Final Tier 4 to be delayed one year (2013).

NOTE: The vertical dashed lines separating the years show when the seven-year life of the Tier 2/3 Equipment Flexibility Provision ends and engines can no longer be placed in vehicle production.

EU NONROAD EMISSIONS REGULATIONS

kW	HP	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0 - 7	0 - 10	Not regulated in EU														
8 - 18	11 - 24	Not regulated in EU														
19 - 36	25 - 49	8.0 1.5 0.80						7.5 0.60								
37 - 56	50 - 74				7.0 1.3 0.40				4.7 0.40					4.7 0.025		
57 - 74	75 - 99				7.0 1.3 0.40				4.7 0.40				3.3 0.19 0.025			0.40* 0.19 0.025
75 - 129	100 - 174			6.0 1.0 0.30				4.0 0.30					3.3 0.19 0.025			0.40* 0.19 0.025
130 - 559	175 - 749		6.0 1.0 0.20				4.0 0.20					2.0 0.19 0.025			0.40 0.19 0.025	
≥ 560	≥ 750	Not regulated in EU														

*October 1, 2014

FUEL SULFUR REGULATIONS

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EPA	5000 ppm						500 ppm			15 ppm					
EU	2000 ppm						1000 ppm			10 ppm					



Diesel Emission Data - Constant Speed

LEGEND

EPA	Tier 1	Tier 2	Tier 3	Interim Tier 4	Final Tier 4
EU	Stage I	Stage II	Stage IIIA	Stage IIIB	Stage IV

New emissions regulations take effect January 1st of the year indicated by colour change unless otherwise noted.

EXAMPLES

NOx	2.0	2.0, the maximum amount of nitrogen oxides (NOx) allowed in grams / kW-hr.
NMHC	0.19	0.19, the maximum amount of non-methane hydrocarbons (NMHC) allowed in grams / kW-hr.
PM	0.025	0.025, the maximum amount of particulate matter (PM) allowed in grams / kW-hr.

NMHC + NOx	7.5	7.5, the maximum amount of NMHC + NOx allowed in grams / kW -hr.
PM	0.80	0.80, the maximum amount of PM allowed in grams / kW-hr.

EPA NONROAD EMISSIONS REGULATIONS NEW SOURCE PERFORMANCE STANDARD (NSPS)

kW	HP	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0 - 7	0 - 10			7.5 0.40							
8 - 18	11 - 24			7.5 0.40							
19 - 36	25 - 49			7.5 0.30					4.7 0.03		
37 - 55	50 - 74			4.7 0.30	Option 1*				4.7 0.03		
				4.7 0.40	Option 2*			4.7 0.03			
56 - 74	75 - 99			4.7 0.40				3.4 0.19 0.02			0.40 0.19 0.02
75 - 129	100 - 174		4.0 0.30					3.4 0.19 0.02			0.40 0.19 0.02
130 - 224	175 - 299										
225 - 449	300 - 599		4.0 0.20				2.0 0.19 0.02			0.40 0.19 0.02	
450 - 559	600 - 749										
≥ 560	≥ 750		6.4 0.20				3.5 0.19 0.10				3.5 0.19 0.04

*In the 50 to 75 horsepower category there are two options. Option 1 requires a reduced PM level (.30 vs. .40) but allows Final Tier 4 to be delayed one year (2013).

NOTE: The vertical dashed lines separating the years show when the seven-year life of the Tier 2/3 Equipment Flexibility Provision ends and engines can no longer be placed in vehicle production.

The new source performance standard (NSPS) required most stationary engines to be Tier 1 compatible on 1st April 2006 and meet current nonroad mobile standards after 1st January 2007.

EPA. Environmental Protection Agency.

EU: European Union.

EU NONROAD EMISSIONS REGULATIONS CONSTANT SPEED

kW	HP	2007	2008	2009	2010	2011	2012	2013	2014	2015
0 - 7	0 - 10	Not regulated in EU								
8 - 18	11 - 24	Not regulated in EU								
19 - 36	25 - 49	8.0 1.5 0.80				7.5 0.60				
37 - 56	50 - 74	7.0 1.3 0.40					4.7 0.40			
57 - 74	75 - 99	7.0 1.3 0.40					4.7 0.40			
75 - 129	100 - 174	6.0 1.0 0.30				4.0 0.30				
130 - 559	175 - 749	6.0 1.0 0.20				4.0 0.20				
≥ 560	≥ 750	Not regulated in EU								

European Union directive 97/68/EC requires constant speed engines, such as mobile gen-sets, meet stage II emissions levels on 01 January 2007. The directive also requires constant speed engines meet Stage III A emissions levels beginning 01 January 2011.



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