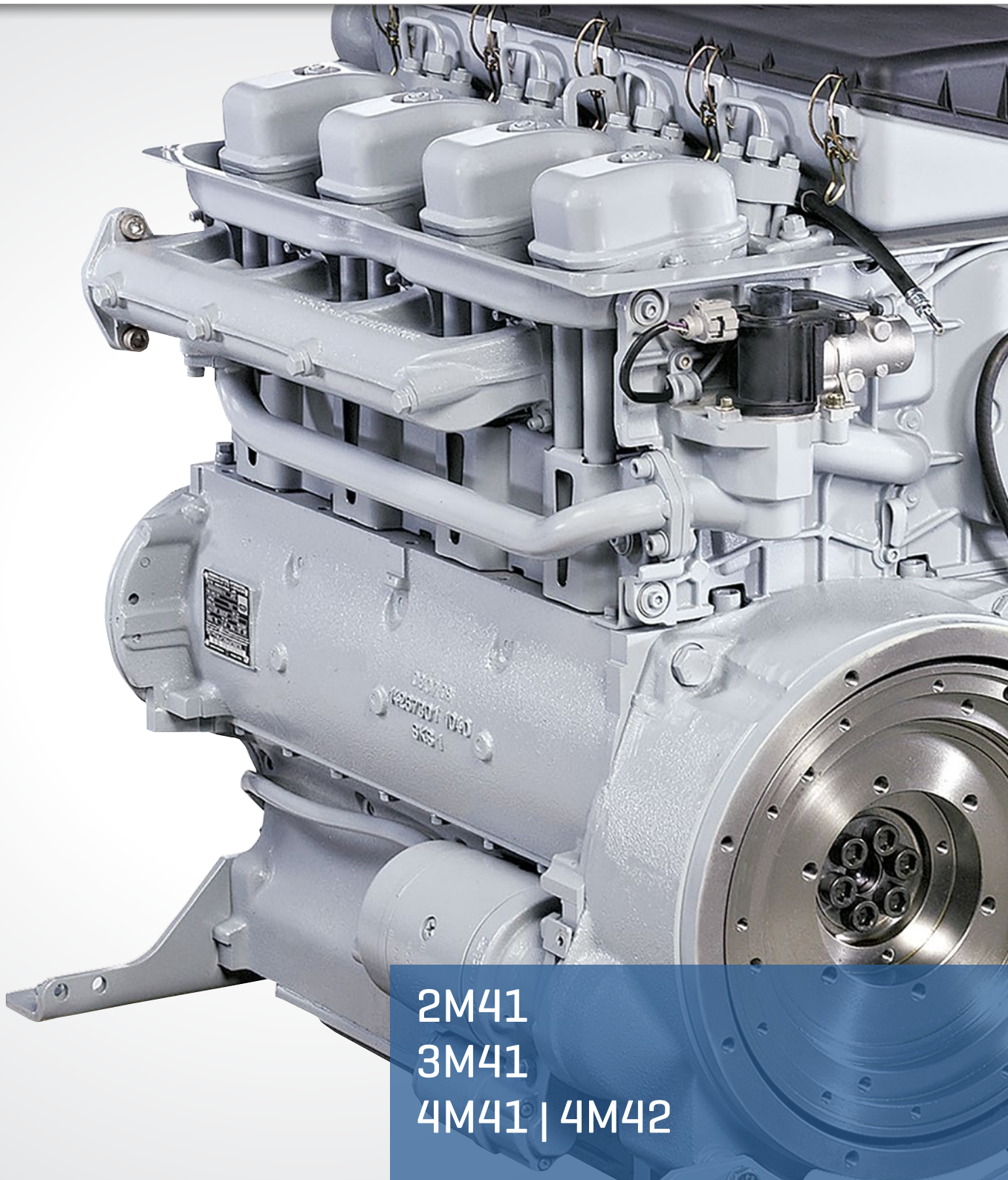
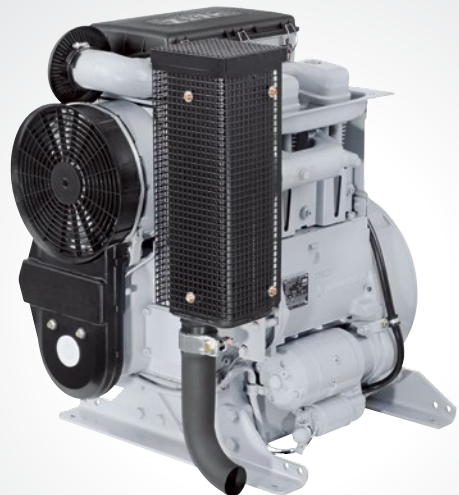
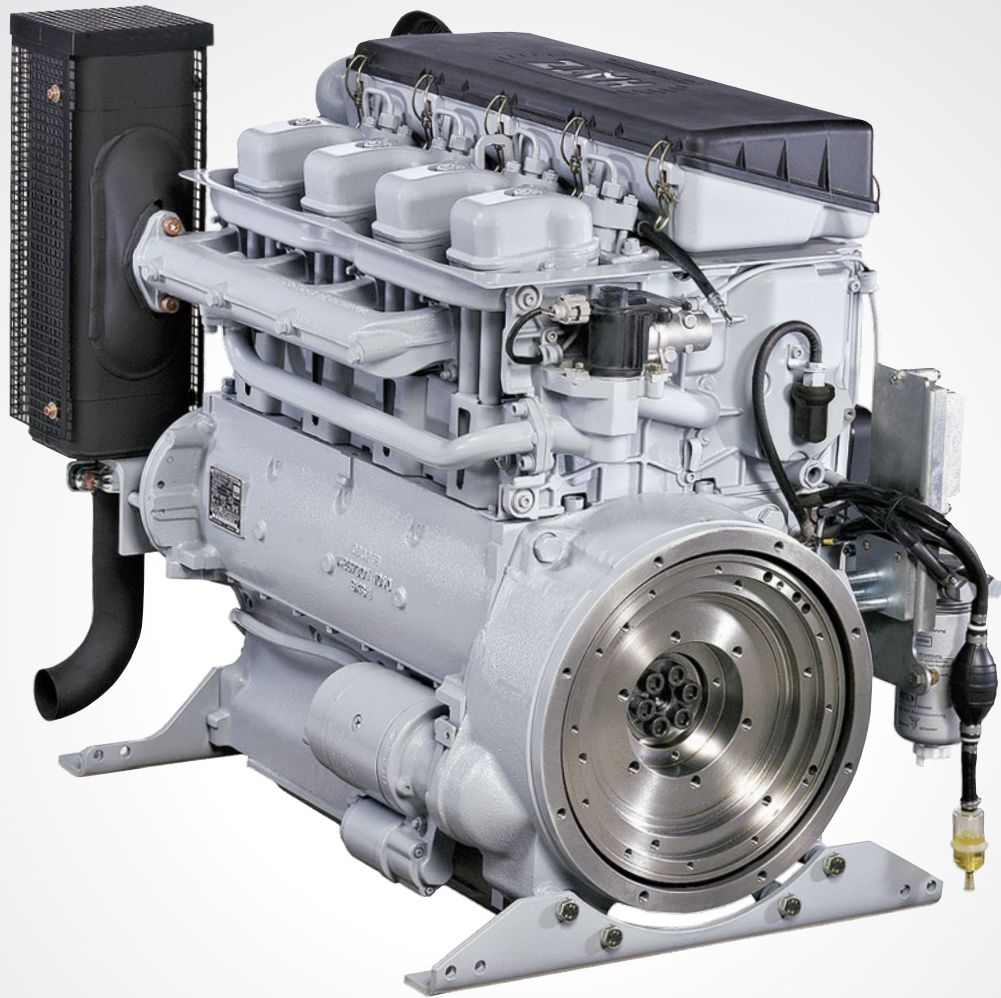


CREATING POWER SOLUTIONS.



2M41
3M41
4M41 | 4M42

Hatz diesel engines | data sheet



Simple operation

The M-series engines are fitted with an automatic hydraulic belt tensioner, self-bleeding injection pump, automatic cold start feed, and a signal transmitter for air filter maintenance as standard. Operation is also therefore easy even for non-specialists without long familiarization.

Wide power range, one engine platform

The M-series of the Hatz diesel engines is available as two-cylinder [2M41] with 15 up to 28 kilowatts, three-cylinder [3M41] with 22 up to 43 kilowatts and four-cylinder [4M41 and 4M42] with 30 up to 56 kilowatts. This saves both time and money for the development and construction of entire machinery series.

Hatz M-series: Always ready for operation

The Hatz M-series is the long-running success among the industrial diesel engines. The 2, 3 and 4 cylinder engines have been successfully established in the market for about 30 years – and they are still considered to be unbeatable. The rugged basic power train, above all the strongest crankshaft of all engines in the market, has remained unchanged since the market launch. So running times of many tens of thousands of hours are no problem for the engines in the Hatz M-series.

Environmental aspects

Hatz diesel engines in the L/M-series are the only exhaust-reduced, air-cooled engines available in this power range. The Hatz 4M42 is fitted with an exhaust gas recirculation. They fulfill the strict emission standards of EU Stage IIIA as well as the regulations of the US EPA Tier 4 interim. In the configuration below 19 kilowatts the Hatz 2M41 even fulfils the requirements of EU Stage V and US EPA Tier 4 final.

Fuel consumption and cold start

M-series engines are among the most efficient in the market. Fuel consumptions of 212 grams per kilowatt hour testify to the optimized combustion process. 6-hole VCO nozzles, as well as the monoblock single pumps, and the optimized combustion chamber geometry all make their contribution to this. Without a pre glow system the engines start reliably as low as $-10\text{ }^{\circ}\text{C}$; with a pre glow system and corresponding resources even $-32\text{ }^{\circ}\text{C}$ is no problem.

Unique automatic engine protection

The integrated, intelligent, mechanical automatic engine protection protects the engine. When a cooling fan malfunctions, there is not enough oil, or the inclination is too high, the engine is automatically stopped to prevent engine damage.

Maintenance and repair with little effort

All necessary points for oil and air filter service as well as for valve adjustment are easily accessible from the outside. This facilitates and speeds up the maintenance significantly. The M-series is built with a modular construction principle. Length-independent components such as cylinder heads, cylinders, conrods, bearing shells, injection nozzles, injection pumps, air filters, engine regulators, starter, and alternator are identical for all engines. Engine repair is easier and more cost effective. Furthermore, storekeeping for wearing parts is much easier to organize.

Robust and durable design



Hatz engines are designed for an exceptionally long service life. The best possible materials and components coupled with uncompromising quality assurance contribute to the fact that Hatz engines have been setting

the benchmark in the industry for many years when it comes to robustness and service life. And should, contrary to expectations, a spare part actually be needed, more than 500 service partners in 120 countries are available quickly and dependably with advice and assistance as well as Hatz Genuine Spare Parts.

Sales area (Exhaust certificate)		IFN Rating ICFN Rating F/IFN/ICFN Rating			
		2M41	3M41	4M41	4M42
USA (EPA/CARB constant speed)	[rpm]	1500-2000	–	–	–
USA (EPA 2-Speed)	[rpm]	1500-2000	–	–	–
USA (EPA variable speed)	[rpm]	2000	–	–	–
EU (constant speed)	[rpm]	1500-3000	1500-3000	1500-1800	1800-3000
EU (variable speed)	[rpm]	1500-3000	1500-3000	1500-1800	–
India CPCB I (Genset)	[rpm]	1500	1500	1500	–
All others (Non-EPA)	[rpm]	1500-3000	1500-3000	1500-3000	–

Technical data, performance table

Technical data		2M41	3M41	4M41	4M42
Type		Air-cooled 4-stroke diesel engine			
Cylinder		2	3	3	4
Injection system		Direct injection			
Exhaust aftertreatment only US EPA Tier 4 final		—	—	—	EGR
Bore x stroke [mm / in]		102 x 105 / 4.02 x 4.13			
Displacement [l / cu in]		1.716 / 104.7	2.574 / 157.0	3.432 / 209.4	
Mean piston speed @ 3000 rpm [m/s / ft/min]		10.5 / 2.067			
Compression ratio		20.0:1		20.8:1	
Lubrication oil consumption, related to full load		max. 1 % of fuel consumption			
Oil filling	max. [l / US qts]	5.5 / 3.0	8.5 / 5.0	14.0 / 5.0	
	min. [l / US qts]	5.8 / 3.2	9.0 / 5.3	14.8 / 5.3	
Speed control	Lowest idle speed [rpm]	900		1,000	
	Static speed droop @ 3000 rpm	approx. 5 %			
Combustion air required @ 3000 rpm approx. [kg/h / cfm] ¹		188 / 92	282 / 138	376 / 184	
Cooling air required @ 3000 rpm approx. [kg/h / cfm] ¹		2,095 / 1,024	2,818 / 1,377	3,540 / 1,730	
Mass moment of inertia J _{engine} [kg m ² / lb ft ²]	SAE-flywheel 8°	0.64 / 15.2	0.65 / 15.4	0.67 / 15.9	
	flywheel for F+S clutch	0.49 / 11.6	0.50 / 11.9	0.51 / 12.1	
Starter [V]		12 [2.7 kW / 3.6 hp] 24 [4.0 kW / 5.4 hp]			
Alternator charging current @ 3000 / 1500 rpm [A]		60 / 42 [14 V] 40 / 28 [28 V]			
Battery capacity min. / max. [Ah]		88 / 143 [12 V] 55 / 110 [24 V]			
Dimensions	Engine with heavy flywheel [kg / lb]	294 / 648	— / —	— / —	— / —
	Engine with electric start 12 V or 24 V [kg / lb]	258 / 569	308 / 679	373 / 822	378 / 833

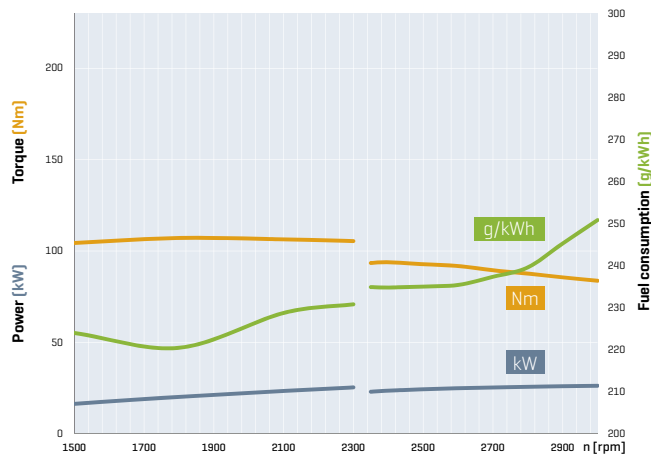
Engine output max. [kW / hp] ²	[rpm]	2M41	3M41	4M41	4M42
Vehicle output acc. to DIN ISO 1585.	3000	28.3 / 38.5	43.3 / 58.9	57.5 / 78.2	— / —
	2600	26.9 / 36.6	40.6 / 55.2	53.8 / 73.2	— / —
	2300	25.3 / 34.4	38.1 / 51.8	51.0 / 69.4	— / —
Blocked ISO brake horsepower (IFN) for heavily intermittent loading acc. to ISO 3046-1.	3000	26.3 / 35.8	39.8 / 54.1	53.1 / 72.2	51.5 / 70.0
	2600	25.0 / 34.0	37.8 / 51.4	50.6 / 68.8	48.0 / 65.3
	2300	25.4 / 34.5	38.9 / 52.9	52.0 / 70.7	47.6 / 64.7
	2000	22.4 / 30.5	34.5 / 46.9	46.0 / 62.6	42.4 / 57.7
	1800	20.2 / 27.5	31.1 / 42.3	41.3 / 56.2	38.6 / 52.5
	1500	16.4 / 22.3	25.0 / 34.0	34.0 / 46.2	— / —
ISO standard power output (ICXN) [10 % overload permissible]	3000	23.7 / 32.2	35.8 / 48.7	47.8 / 65.0	— / —
Blocked ISO standard power output (no overload permissible) acc. to ISO 3046-1. For constant speed and constant load (ICFN).	2600	22.5 / 30.6	34.0 / 46.2	45.5 / 61.9	— / —
	2300	22.9 / 31.1	35.0 / 47.6	46.8 / 63.6	— / —
	2000	20.2 / 27.5	31.1 / 42.3	41.4 / 56.3	— / —
	1800	18.2 / 24.8	28.0 / 38.1	37.2 / 50.6	— / —
	1500	14.8 / 20.1	22.5 / 30.6	30.6 / 41.6	— / —

¹ For other speeds there is a linear reduction in the air requirement.

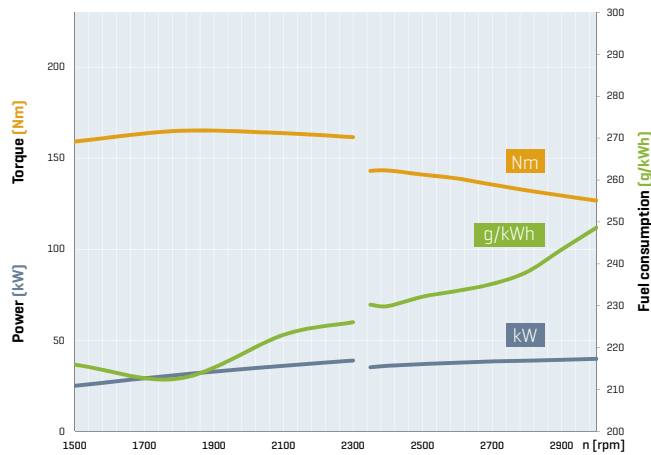
² Version „Z“ with counter balance shaft: power reduction about 0.3–1.5 kW depending on cylinder and speed.

Power, torque and fuel consumption

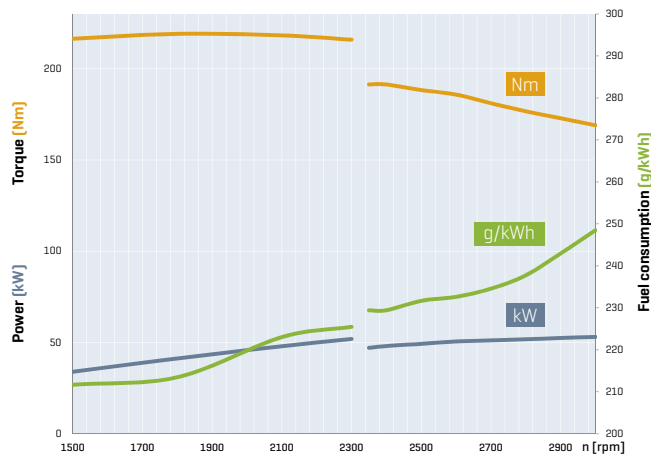
2M41



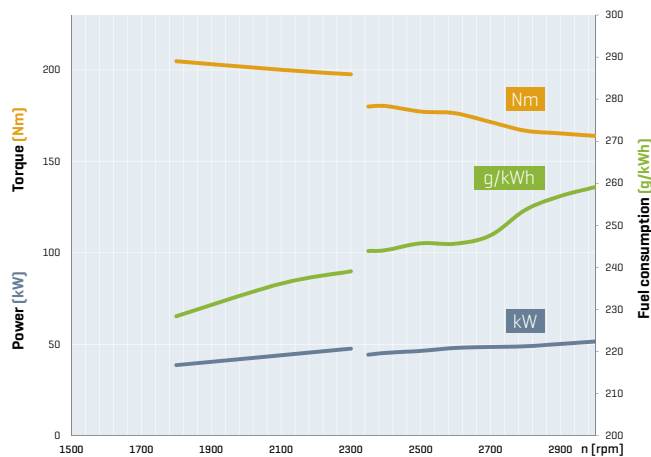
3M41



4M41



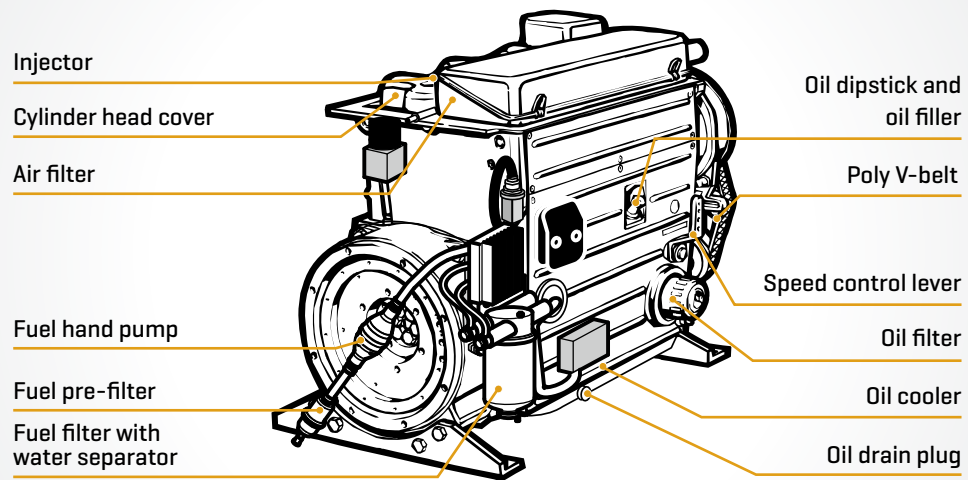
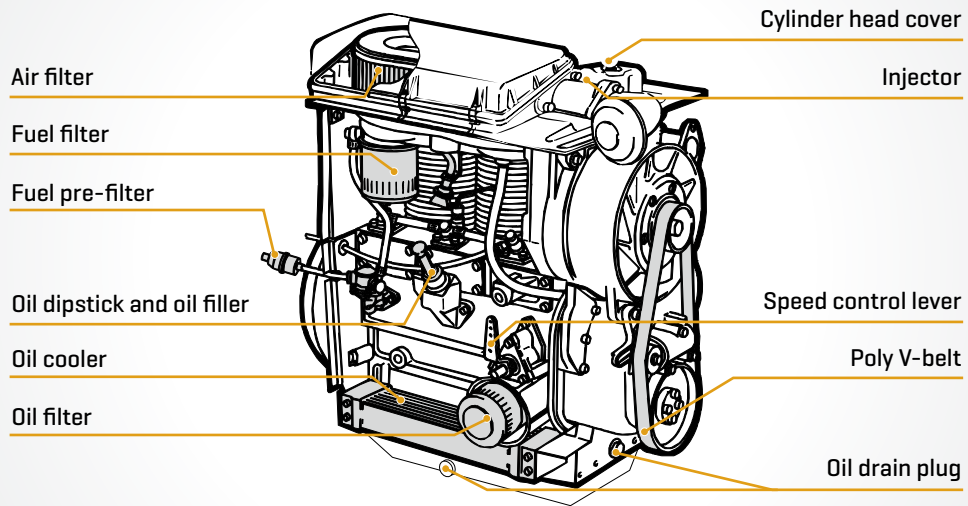
4M42



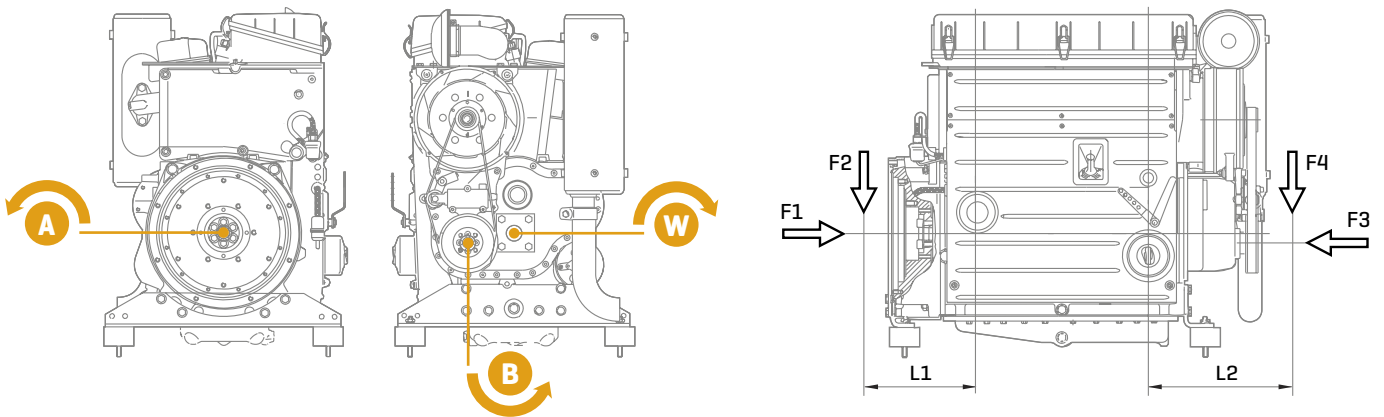
Power ratings

For the power ratings, refer to standard reference conditions of ISO 3046-1 (IFN): +25 °C (77 °F), 100 kPa, relative humidity 30 %. The specified power is reached during the running-in period, and can be 5 % less on delivery. Power reduction acc. to ISO 3046-1. Standard values: More than 100 m above sea level approx. 1 % per 100 m. Above 25 °C approx. 4 % per 10 °C. The power taken from the alternator also has to be added to the power calculation.

Maintenance and operating points



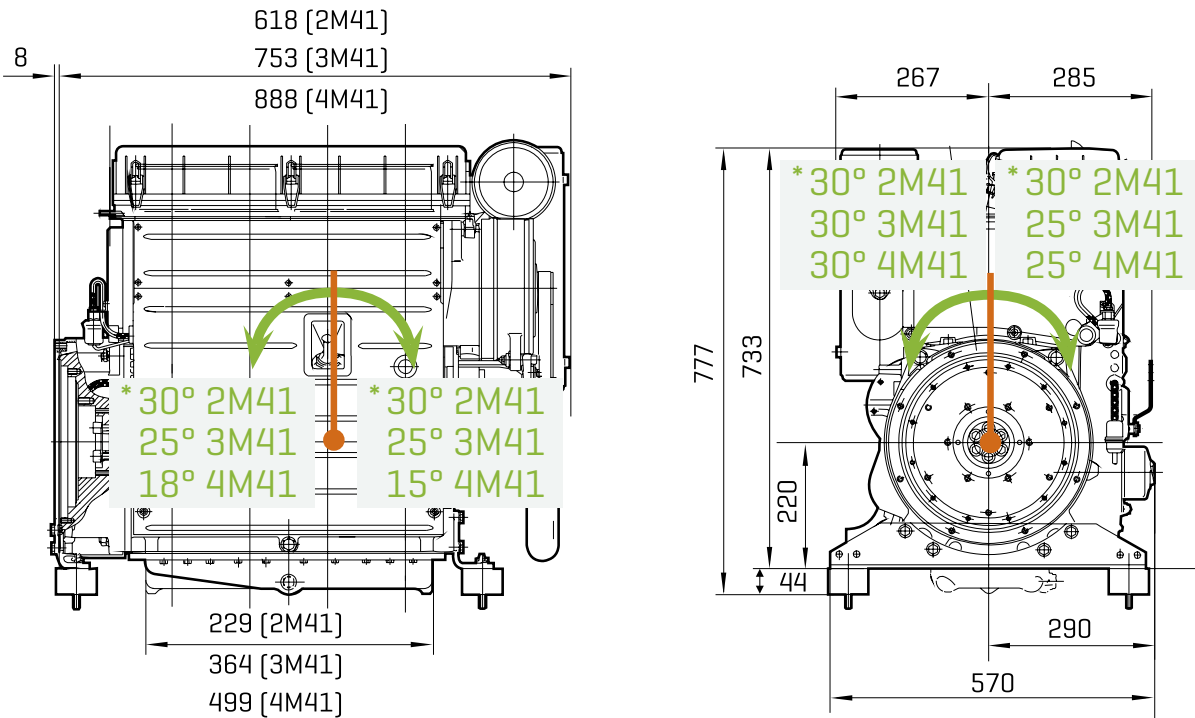
Power take off



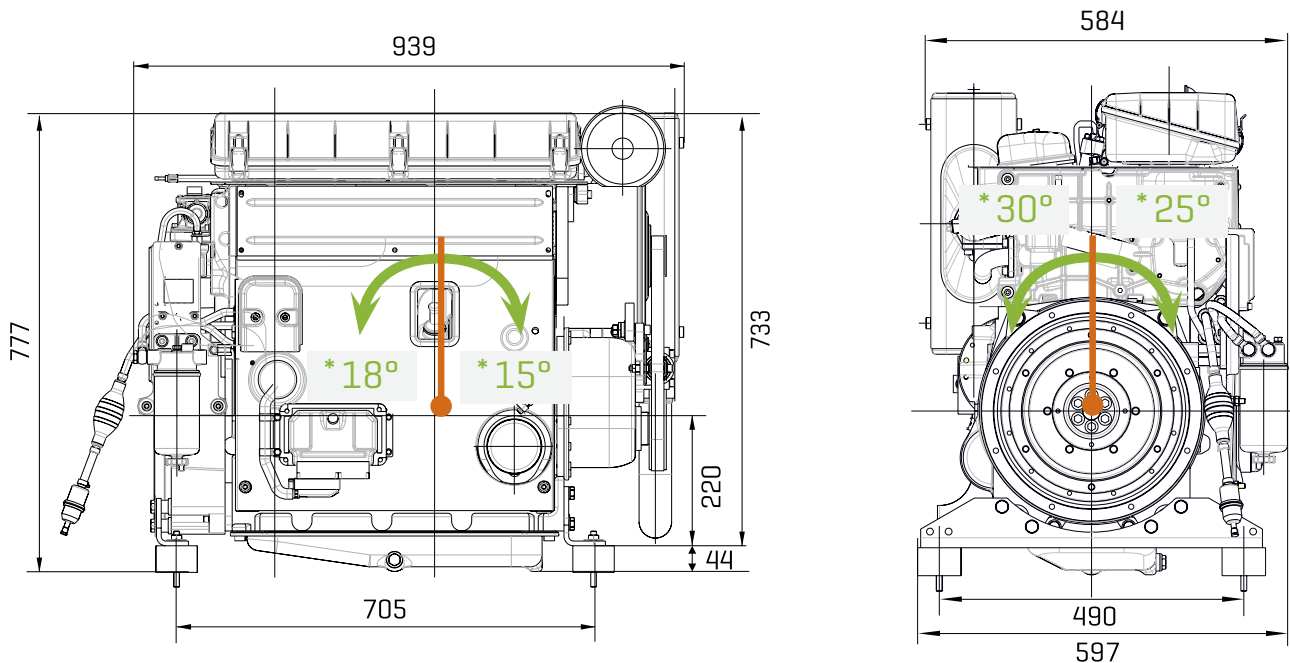
Power take off		2M41	3M41	4M41	4M42
Transmittable torque	A			Full torque	
	B		32 Nm with engine speed		
	W		70 Nm with engine speed		
Permissible load	F1		2700 N		
	F2		$F2 = \frac{400\,000}{L1 \text{ [mm / in]} - 73 / 2.87} \text{ [N]}$		
	F3		1770 N		
	F4		$F4 = \frac{228\,330}{L2 \text{ [mm / in]} - 76 / 2.99} \text{ [N]}$		

Dimensions [mm]

2M41 | 3M41 | 4M41



4M42



Flexible mounting is normally recommended for M series engines. This mounting keeps the noise level of the driven unit low. Another possibility is the flexible mounting with elevated engine brackets [not shown here]. Rigid mounting is only possible up to an operating speed of 2300 rpm.

Spread of box dimensions ± 3 mm due to tolerance. Drawings with detail and connection dimensions as PDF and DXF can be found at www.hatz-diesel.com.

* Max. tilt position

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