Sales Program C&I, Agriculture, Mining

Edition 2/18
valid from 10/2018

Power. Passion. Partnership.





MTU: Power. Passion. Partnership.

MTU is the core brand of Rolls-Royce Power Systems AG, which is a world-leading provider of high- and medium-speed diesel and gas engines, complete drive systems and distributed energy systems for the most demanding requirements. The product range of MTU is one of the widest and most modern in the sector. We offer comprehensive, powerful and reliable engine solutions for yachts, commercial ships and naval vessels, construction and industrial vehicles, agricultural machinery, mining, rail and military vehicles as well as for the oil and gas industry. We also provide a full line of service products to help you maximize uptime and performance. For over 100 years, MTU has been known for cutting-edge innovation and technological leadership. That same spirit of innovation inspires our sustainability efforts. Today and in the future, our focus is on developing and implementing system solutions to maximize efficiency and meet emissions standards.

On-Highway engine from Mercedes-Benz:	Off-Highway engine from MTU:
OM 934	MTU 4R 1000
OM 936	MTU 6R 1000
OM 470	MTU 6R 1100
OM 471	MTU 6R 1300
OM 473	MTU 6R 1500

Explanation of the engine designation

Series 900, 460, 1000, 1100, 1300, 1500, 2000, 4000

Example:

16 V **4000** C 23

- 23 — Application segment/Design index
- C — Application
- 4000 — **Series**
- V — Cylinder-config.: V = V-engine
- R = In-line engine
- 16 — No. of cylinders

General specifications

Cooling variants	
Separate circuit charge air cooling	2000/4000
Air-to-air charge-air cooling	460/900/S60/ 1000/1100/1300/1500

Diesel engine for mobile industrial, agricultural and mining applications

> Four-stroke, direct-injection
> Liquid-cooling and air-cooling
> V or In-line configuration

Power Definition

Rated power of diesel engines in this Sales Program corresponds to ISO 3046
ICFN = ISO standard (continuous) fuel stop power
IFN = ISO standard fuel stop power
(ratings also apply to SAE J 1995 and J 1349 standard conditions)
Barometric pressure: 1000 mbar
Site altitude above sea level: 100 m

MTU applies a policy of continual products and systems improvements. Please note, specifications are subject to change without notice. All dimensions are approximate. Details are subject to options selected. Please contact your MTU distributor for current information and binding data.

For further information on MTU C&I, Agriculture and Mining products please contact your MTU distributor or visit: **www.mtu-online.com**

Selection Guideline
Typical Applications

For information on specific on-highway certificates please contact your MTU distributor/dealer.

Diesel engines for C&I, Agriculture and Mining applications

75 kW - 295 kW (101 bhp - 396 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5A – Heavy duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling						
4R 904 C21	**75**	**101**	2200	400	295	1200-1600	⑳㉓㉛
4R 904 C31	**90**	**121**	2200	470	347	1200-1600	⑳㉓㉛
4R 924 C22	**95**	**127**	2200	550	406	1200-1600	㊳㊴
6R 906 C21	**130**	**174**	2200	700	516	1200-1600	⑳㉓㉛
6R 906 C31	**150**	**201**	2200	750	553	1200-1600	⑳㉓㉛
6R 926 C22	**175**	**235**	2200	850	627	1200-1600	㊳㊴
6R 926 C32	**195**	**261**	2200	1020	752	1200-1600	㊳㊴
6R 460 C11R	**220**	**295**	1800	1400	1033	1300	⑳㉓㉛
6R 460 C11	**242**	**325**	1800	1600	1180	1300	⑳㉓㉛
6R 460 C21	**260**	**349**	1800	1750	1291	1300	⑳㉓㉛
6R 460 C31	**295**	**396**	1800	1900	1401	1300	⑳㉓㉛
6R 460 C22	**265**	**355**	1800	1850	1290	1300	㉙㊳㊴
6R 460 C32	**295**	**396**	1800	2000	1475	1300	㉙㊳㊴

Optimization:
⑳ EPA Nonroad T3 Comp (40CFR89)
㉓ EU Nonroad St IIIA Comp (97/68/EC)
㉙ China Onroad Stage V (GB17691-2005)
㉛ China NRMM Stage III (GB20981-2014)
㊳ EPA Nonroad T4i Comp (40CFR1039)
㊴ EU Nonroad St IIIB Comp (97/68/EC)

All 5A-ratings can be used for 5B applications!

Diesel engines for C&I and Mining applications

224 kW - 336 kW (300 bhp - 450 bhp)

> Intake air temperature: 25°C

5A – Heavy duty operation

Engine model	Reference no.	Rated power ICFN			Peak Torque			Optimization
		kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling							
S60 (12.7 l)	6063MK33	**224**	**300**	2100	1424	1050	1350	⑤⑲
	6063MK33	**242**	**325**	2100	1559	1150	1350	⑤⑲
	6063MK33	**261**	**350**	2100	1831	1350	1350	⑤⑲
	6063MK33	**280**	**375**	2100	1831	1350	1350	⑤⑲
	6063MK33	**298**	**400**	2100	1898	1400	1350	⑤⑲
	6063MK33	**298**	**400**	2200	1830	1350	1350	⑤⑲
S60 (14 l)	6063HK33	**336**	**450**	2100	2237	1650	1350	⑤⑲
S60 (14 l)	6063HV33	**242**	**325**	2100	1559	1150	1350	⑳㉓㉛
	6063HV33	**280**	**375**	2100	1830	1350	1350	⑳㉓㉛
	6063HV33	**298**	**400**	2100	1898	1400	1350	⑳㉓㉛
	6063HV33	**317**	**425**	2100	2000	1475	1350	⑳㉓㉛
	6063HV33	**336**	**450**	2100	2102	1550	1350	⑳㉓㉛

Optimization:
⑤ EU Nonroad St II Comp (97/68/EC)
⑲ EPA Nonroad T2 Comp (40CFR89)
⑳ EPA Nonroad T3 Comp (40CFR89)
㉓ EU Nonroad St IIIA Comp (97/68/EC)
㉛ China NRMM Stage III (GB20981-2014)

All 5A-ratings can be used for 5B applications!

Diesel engines for C&I, Agriculture and Mining applications

100 kW - 400 kW (134 bhp - 536 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5A – Heavy duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air cooling						
4R 1000 C10	**100**	**134**	2200	600	443	1200-1500	㉑㉗㊵
4R 1000 C20	**115**	**154**	2200	675	498	1200-1500	㉑㉗㊵
4R 1000 C30	**129**	**173**	2200	750	553	1200-1600	㉑㉗㊵
6R 1000 C20	**180**	**241**	2200	1000	738	1200-1600	㉑㉗㊵
6R 1000 C30	**210**	**282**	2200	1150	848	1200-1600	㉑㉗㊵
6R 1100 C30	**280**	**375**	1700	1900	1401	1300	㉑㉗㊵
6R 1300 C20	**320**	**429**	1700	2100	1549	1300	㉑㉗㊵
6R 1300 C30	**340**	**456**	1700	2200	1623	1300	㉑㉗㊵
6R 1500 C30	**400**	**536**	1700	2600	1918	1300	㉑㉗㊵

Optimization: ㉑ EPA Nonroad T4 (40CFR1039)
㉗ EU Nonroad St IV (97/68/EC)
㊵ UN ECE R96 Emission Flex Package (EFP)

All 5A-ratings can be used for 5B applications!

Diesel engines for C&I, Agriculture and Mining applications

115 kW - 400 kW (154 bhp - 536 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5A – Heavy duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air cooling						
4R 1000 C21	**115**	**154**	2200	675	498	1200-1500	㊺
4R 1000 C31	**129**	**173**	2200	750	553	1200-1600	㊺
6R 1000 C11	**180**	**241**	2200	1000	738	1200-1600	㊺
6R 1000 C21	**195**	**261**	2200	1100	811	1200-1600	㊺
6R 1000 C31	**210**	**282**	2200	1200	885	1200-1600	㊺
6R 1100 C11	**240**	**322**	1600	1700	1254	1300	㊺
6R 1100 C21	**260**	**349**	1600	1800	1328	1300	㊺
6R 1100 C31	**280**	**375**	1600	1900	1401	1300	㊺
6R 1300 C21	**320**	**429**	1600	2200	1623	1300	㊺
6R 1300 C31	**340**	**456**	1600	2300	1696	1300	㊺
6R 1500 C21	**380**	**510**	1600	2600	1918	1300	㊺
6R 1500 C31	**400**	**536**	1600	2700	1991	1300	㊺

Optimization: ㊺ EU Nonroad St V (2016/1628)

Diesel engines for C&I and Mining applications

567 kW - 1865 kW (760 bhp - 2500 bhp)

> Intake air temperature: 25°C
> Charge-air coolant temperature: 45°C (12V2000C12/S4000)
50°C (16V2000C12)

5A – Heavy duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Separate circuit charge-air cooling (SCCC)						
12V 2000 C12	**567**	**760**	2100	3300	2441	1350	⑲
16V 2000 C12	**783**	**1050**	1800/2100	4450	3288	1350	⑲
12V 4000 C11R	**1193**	**1600**	1900	7612/7595	5614/5602	1500	☒②
12V 4000 C15	**1150**	**1542**	1800	7351	5422	1494	㉑
12V 4000 C11	**1286**	**1725**	1900	6985	5151	1500	☒②
12V 4000 C13R	**1193**	**1600**	1800	7595	5600	1500	☒⑲㉛
12V 4000 C25	**1250**	**1676**	1800	7990	5893	1494	㉑
12V 4000 C13L	**1425**	**1910**	1800	9070	6690	1500	☒⑲㉛
12V 4000 C35	**1500**	**2012**	1800	9588	7072	1494	㉑
16V 4000 C11R	**1600**	**2146**	1800	10188	7515	1500	②
16V 4000 C11	**1715**	**2300**	1900	9313	6896	1500	☒②
16V 4000 C13R	**1492**	**2000**	1800	9520	7022	1350	☒⑲㉛
16V 4000 C13	**1750**	**2345**	1800	11141	8216	1500	☒⑲㉛
16V 4000 C13	**1750**	**2345**	1900	11141	8216	1500	☒
16V 4000 C13L	**1865**	**2500**	1800/1900	11870	8754	1500	☒⑲㉛

Optimization: ☒ Fuel consumption optimized
② EPA Nonroad T1 Comp (40CFR89)
⑲ EPA Nonroad T2 Comp (40CFR89)
㉑ EPA Nonroad T4 (40CFR1039)
㉛ China NRMM Stage III (GB20981-2014)

All 5A-ratings can be used for 5B applications!

Diesel engines for C&I, Agriculture and Mining applications

110 kW - 375 kW (148 bhp - 503 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5B – Medium duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling						
4R 904 C61	**110**	**148**	2200	580	428	1200-1600	⑳㉓㉛
4R 904 C71	**129**	**173**	2200	675	498	1200-1600	⑳㉓㉛
4R 924 C71	**145**	**194**	2200	705	520	1200-1600	⑳㉓㉛
4R 924 C52	**115**	**154**	2200	610	450	1200-1600	㊳㊴
4R 924 C62	**129**	**173**	2200	675	498	1200-1600	㊳㊴
4R 924 C72	**150**	**201**	2200	800	590	1200-1600	㊳㊴
6R 906 C51	**170**	**228**	2200	810	595	1200-1600	⑳㉓㉛
6R 906 C61	**190**	**255**	2200	1000	735	1200-1600	⑳㉓㉛
6R 906 C71	**205**	**275**	2200	1100	810	1200-1600	⑳㉓㉛
6R 926 C61	**220**	**295**	2200	1200	885	1200-1600	⑳㉓㉛
6R 926 C71	**240**	**322**	2200	1300	959	1200-1600	⑳㉓㉛
6R 926 C52	**210**	**282**	2200	1120	826	1200-1600	㊳㊴
6R 926 C62	**225**	**302**	2200	1200	885	1200-1600	㊳㊴
6R 926 C72	**240**	**322**	2200	1300	959	1200-1600	㊳㊴
6R 460 C41	**315**	**422**	1800	2000	1475	1300	⑳㉓㉛
6R 460 C51	**335**	**449**	1800	2000	1475	1300	⑳㉓㉛
6R 460 C61	**360**	**483**	1800	2200	1623	1300	⑳㉓㉛
6R 460 C71	**375**	**503**	1800	2200	1586	1300	⑳㉓㉛
6R 460 C42	**315**	**422**	1800	2000	1475	1300	㉙㊳㊴
6R 460 C52	**335**	**449**	1800	2000	1475	1300	㉙㊳㊴
6R 460 C62	**360**	**483**	1800	2200	1620	1300	㉙㊳㊴
6R 460 C72	**375**	**503**	1800	2200	1620	1300	㊳㊴

Optimization:
⑳ EPA Nonroad T3 Comp (40CFR89)
㉓ EU Nonroad St IIIA Comp (97/68/EC)
㉙ China Onroad Stage V (GB17691-2005)
㉛ China NRMM Stage III (GB20981-2014)
㊳ EPA Nonroad T4i Comp (40CFR1039)
㊴ EU Nonroad St IIIB Comp (97/68/EC)

Diesel engines for C&I and Mining applications

317 kW - 429 kW (425 bhp - 575 bhp)

> Intake air temperature: 25°C

5B – Medium duty operation

Engine model	Reference no.	Rated power ICFN			Peak Torque			Optimization
		kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling							
S60 (12.7 l)	6063MK33	**317**	**425**	2100	2000	1475	1350	⑤⑲
	6063MK33	**332**	**445**	2200	2000	1475	1350	⑤⑲
	6063MK33	**336**	**450**	2100	2102	1550	1350	⑤⑲
	6063MK33	**354**	**475**	2100	2102	1550	1350	⑤⑲
S60 (14.0 l)	6063HV33	**354**	**475**	2100	2102	1550	1350	⑳㉓㉛
	6063HV33	**373**	**500**	2100	2102	1550	1350	⑳㉓㉛
	6063HV33	**391**	**525**	2100	2373	1750	1350	⑳㉓㉛
	6063HV33	**397**	**533**	2000	2373	1750	1350	⑳㉓㉛
	6063HV33	**410**	**550**	2100	2373	1750	1350	⑳㉓㉛
	6063HK33	**391**	**525**	2100	2373	1750	1350	⑤⑲
	6063HK33	**397**	**533**	2000	2373	1750	1350	⑤⑲
	6063HK33	**410**	**550**	2100	2373	1750	1350	⑤⑲
	6063HK33	**410**	**550**	2300	2373	1750	1350	⑤⑲
	6063HK33	**429**	**575**	2100	2373	1750	1350	⑤⑲

Optimization:
⑤ EU Nonroad St II Comp (97/68/EC)
⑲ EPA Nonroad T2 Comp (40CFR89)
⑳ EPA Nonroad T3 Comp (40CFR89)
㉓ EU Nonroad St IIIA Comp (97/68/EC)
㉛ China NRMM Stage III (GB20981-2014)

Diesel engines for C&I, Agriculture and Mining applications

150 kW - 460 kW (201 bhp - 617 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5B – Medium duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air cooling						
4R 1000 C40	**150**	**201**	2200	800	590	1200-1600	㉑㉗㊵
4R 1000 C50	**170**	**228**	2200	900	664	1200-1600	㉑㉗㊵
6R 1000 C40	**230**	**308**	2200	1250	922	1200-1600	㉑㉗㊵
6R 1000 C50	**260**	**349**	2200	1400	1033	1200-1600	㉑㉗㊵
6R 1100 C40	**300**	**402**	1700	2000	1475	1300	㉑㉗㊵
6R 1100 C50	**320**	**429**	1700	2100	1549	1300	㉑㉗㊵
6R 1300 C40	**360**	**483**	1700	2300	1696	1300	㉑㉗㊵
6R 1300 C50	**380**	**510**	1700	2380	1755	1300	㉑㉗㊵
6R 1300 C60	**390**	**523**	1700	2460	1814	1300	㉑㉗㊵
6R 1500 C50	**430**	**577**	1700	2750	2028	1300	㉑㉗㊵
6R 1500 C60	**460**	**617**	1700	2900	2139	1300	㉑㉗㊵

Optimization: ㉑ EPA Nonroad T4 (40CFR1039)
㉗ EU Nonroad St IV (97/68/EC)
㊵ UN ECE R96 Emission Flex Package (EFP)

Diesel engines for C&I, Agriculture and Mining applications

150 kW - 480 kW (201 bhp - 644 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

5B – Medium duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air cooling						
4R 1000 C41	**150**	**201**	2200	850	627	1200-1600	⑮
4R 1000 C51	**170**	**228**	2200	950	701	1200-1600	⑮
6R 1000 C41	**230**	**308**	2200	1300	959	1200-1600	⑮
6R 1000 C51	**260**	**349**	2200	1450	1069	1200-1600	⑮
6R 1000 C61	**280**	**375**	2200	1550	1143	1200-1600	⑮
6R 1100 C41	**300**	**402**	1600	2000	1475	1300	⑮
6R 1100 C51	**320**	**429**	1600	2100	1549	1300	⑮
6R 1100 C61	**340**	**456**	1600	2200	1623	1300	⑮
6R 1300 C41	**360**	**483**	1600	2400	1770	1300	⑮
6R 1300 C61	**390**	**523**	1600	2600	1918	1300	⑮
6R 1500 C51	**430**	**577**	1600	2850	2102	1300	⑮
6R 1500 C61	**460**	**617**	1600	3000	2213	1300	⑮
6R 1500 C71	**480**	**644**	1600	3100	2286	1300	⑮

Optimization: ⑮ EU Nonroad St V (2016/1628)

Diesel engines for C&I and Mining applications

634 kW - 2013 kW (850 bhp - 2699 bhp)

> Intake air temperature: 25°C
> Charge-air coolant temperature: 45°C (12V 2000/16V 2000 C66/ S4000)
47°C (16V 2000 C22)

5B – Medium duty operation

Engine model	Rated power			Peak Torque			Optimization
	ICFN						
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Separate circuit charge-air cooling (SCCC)						
12V 2000 C22R	**634**	**850**	2100	3750	2766	1500	⑲
12V 2000 C22	**675**	**905**	2100	4000	2950	1500	⑲
12V 2000 C66R*	**783**	**1050**	1800	4636	3419	1100	㊳㉛
12V 2000 C66	**783**	**1050**	2100	4636	3419	1100	㊳㉛
16V 2000 C22	**899**	**1205**	2100	5250	3872	1500	⑲
16V 2000 C66	**970**	**1301**	2100	5286	3899	1400	㊳㉛
12V 4000 C21R	**1398**	**1875**	1900	7610	5613	1500	☒②
16V 4000 C21R	**1492**	**2000**	1900	9494	7003	1500	②
12V 4000 C21	**1510**	**2025**	1900	8199	6047	1500	☒②
12V 4000 C23R	**1510**	**2025**	1800	8482	6255	1700	☒⑲㉛
12V 4000 C23R	**1510**	**2025**	1900	on request	on request	on request	☒⑲
12V 4000 C23	**1680**	**2253**	1800/1900	9435	6959	1700	☒⑲㉛
12V 4000 C55	**1750**	**2347**	1900	9258	6828	1805	㉑
12V 4000 C65	**1864**	**2500**	1800	10409	7677	1710	㉑
12V 4000 C65	**1864**	**2500**	1900	9861	7273	1805	㉑
16V 4000 C21	**1864**	**2500**	1900	10146	7483	1500	☒②
16V 4000 C45	**2000**	**2682**	1800	11169	8238	1710	㉑
16V 4000 C21L	**2013**	**2699**	1900	10933	8064	1500	☒②

Optimization: ☒ Fuel consumption optimized
② EPA Nonroad T1 Comp (40CFR89)
⑲ EPA Nonroad T2 Comp (40CFR89)
㉑ EPA Nonroad T4 (40CFR1039)
㉛ China NRMM Stage III (GB20981-2014)
㊳ EPA Nonroad T4i Comp (40CFR1039)
* also available for 2A application

Diesel engines for C&I and Mining applications

2013 kW - 3000 kW (2699 bhp - 4023 bhp)

> Intake air temperature: 25°C
> Charge-air coolant temperature: 45°C (S4000)

5B – Medium duty operation

Engine model	Rated power ICFN			Peak Torque			Optimization
	kW	bhp	rpm	Nm	lb-ft	rpm	
	Separate circuit charge-air cooling (SCCC)						
16V 4000 C23R	**2013**	**2699**	1800	11310	8342	1700	☒⑲㉛
16V 4000 C23R	**2013**	**2699**	1900	on request	on request	on request	☒⑲
16V 4000 C31	**2125**	**2850**	1900	11142	8228	1800	☒
16V 4000 C23	**2240**	**3000**	1800	12566	9268	1700	☒⑲㉛
16V 4000 C55	**2240**	**3004**	1800	12509	9226	1710	㉑
16V 4000 C65	**2400**	**3218**	1800	13403	9886	1710	㉑
20V 4000 C22	**2720**	**3650**	1800	15159	11181	1500	②
20V 4000 C23	**2800**	**3755**	1800	15728	11600	1700	☒⑲㉛
20V 4000 C23L	**3000**	**4023**	1800	16852	12429	1700	☒⑲㉛

Optimization: ☒ Fuel consumption optimized
② EPA Nonroad T1 Comp (40CFR89)
⑲ EPA Nonroad T2 Comp (40CFR89)
㉑ EPA Nonroad T4 (40CFR1039)
㉛ China NRMM Stage III (GB20981-2014)

Diesel engines for C&I and Mining applications

290 kW - 496 kW (389 bhp - 665 bhp)

> Intake air temperature: 25°C
> Charge-air coolant temperature: 45°C (S2000)

5C – Short-time duty operation

Engine model	Reference no.	Rated power ICFN			Peak Torque			Optimization
		kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling							
6R 1000 C70	–	**290**	**389**	2000	1400	1033	1200-1600	㉑㉗㊵
S60 (12.7 l)	6063MK33	**373**	**500**	2100	2102	1550	1350	⑤⑲
	6063MK33	**373**	**500**	2300	2237	1650	1350	⑤⑲
S60 (14.0 l)	6063HV33	**447**	**600**	2100	2576	1900	1350	⑳㉓
	6063HV45	**447**	**600**	2300	2576	1900	1350	⑳㉓
	6063HV33	**470**	**630**	2100	2576	1900	1350	⑳㉓
	6063HV33	**496**	**665**	2300	2576	1900	1350	⑳㉓
	6063HV45	**496**	**665**	2300	2576	1900	1350	⑳㉓
	6063HK45	**447**	**600**	2300	2576	1900	1350	⑤⑲
	6063HK33	**447**	**600**	2100	2576	1900	1350	⑤⑲
	6063HK33	**470**	**630**	2100	2576	1900	1350	⑤⑲
	6063HK33	**496**	**665**	2300	2576	1900	1350	⑤⑲
	6063HK45	**496**	**665**	2300	2576	1900	1350	⑤⑲

Optimization:
⑤ EU Nonroad St II Comp (97/68 EC)
⑲ EPA Nonroad T2 Comp (40CFR89)
⑳ EPA Nonroad T3 Comp (40CFR89)
㉑ EPA Nonroad T4 (40CFR1039)
㉓ EU Nonroad St IIIA Comp (97/68/EC)
㉗ EU Nonroad St IV (97/68/EC)
㊵ UN ECE R96 Emission Flex Package (EFP)

All 5A/5B-ratings can be used for 5C applications!

Diesel engines for Underground Mining applications

75 kW - 205 kW (101 bhp - 275 bhp)

> Intake air temperature: 25°C

manufactured by

optimized by

Underground Mining

Engine model	Reference no.	Rated power ICFN			Peak Torque			Optimization
		kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling							
4R 904 C	4R 904 C21	**75**	**101**	2200	400	295	1400	MSHA
	4R 904 C31	**90**	**121**	2200	470	345	1400	MSHA
	4R 904 C	**100**	**134**	2200	520	385	1400	MSHA
	4R 904 C61	**110**	**147**	2200	580	430	1400	MSHA
	4R 904 C71	**130**	**174**	2200	675	500	1400	MSHA
6R 906 C	6R 906 C31	**150**	**201**	2200	750	553	1400	MSHA
	6R 906 C51	**170**	**228**	2200	810	597	1400	MSHA
	6R 906 C	**180**	**241**	2200	900	665	1400	MSHA
	6R 906 C61	**190**	**255**	2200	1000	738	1400	MSHA
	6R 906 C71	**205**	**275**	2200	1100	811	1400	MSHA

Optimization: MSHA (US regulation 30 CFR part 7)

Diesel engines for Underground Mining applications

224 kW - 429 kW (300 bhp - 575 bhp)

> Intake air temperature: 25°C

Underground Mining

Engine model	Reference no.	Rated power ICFN			Peak Torque			Optimization
		kW	bhp	rpm	Nm	lb-ft	rpm	
	Air-to-air charge-air cooling							
S60 (12.7 l)	6063MK32	**224**	**300**	2100	1424	1050	1350	MSHA
	6063MK32	**242**	**325**	2100	1600	1150	1350	MSHA
	6063MK32	**261**	**350**	2100	1830	1350	1350	MSHA
	6063MK32	**280**	**375**	2100	1830	1350	1350	MSHA
	6063MK32	**298**	**400**	2100	1830	1350	1350	MSHA
	6063MK32	**317**	**425**	2100	2000	1475	1350	MSHA
	6063MK32	**336**	**450**	2100	2102	1550	1350	MSHA
	6063MK32	**354**	**475**	2100	2102	1550	1350	MSHA
S60 (14.0 l)	6063HK32	**392**	**525**	2100	2373	1750	1350	MSHA
	6063HK32	**410**	**550**	2100	2373	1750	1350	MSHA
	6063HK32	**429**	**575**	2100	2373	1750	1350	MSHA

Optimization: MSHA (US regulation 30 CFR part 7)

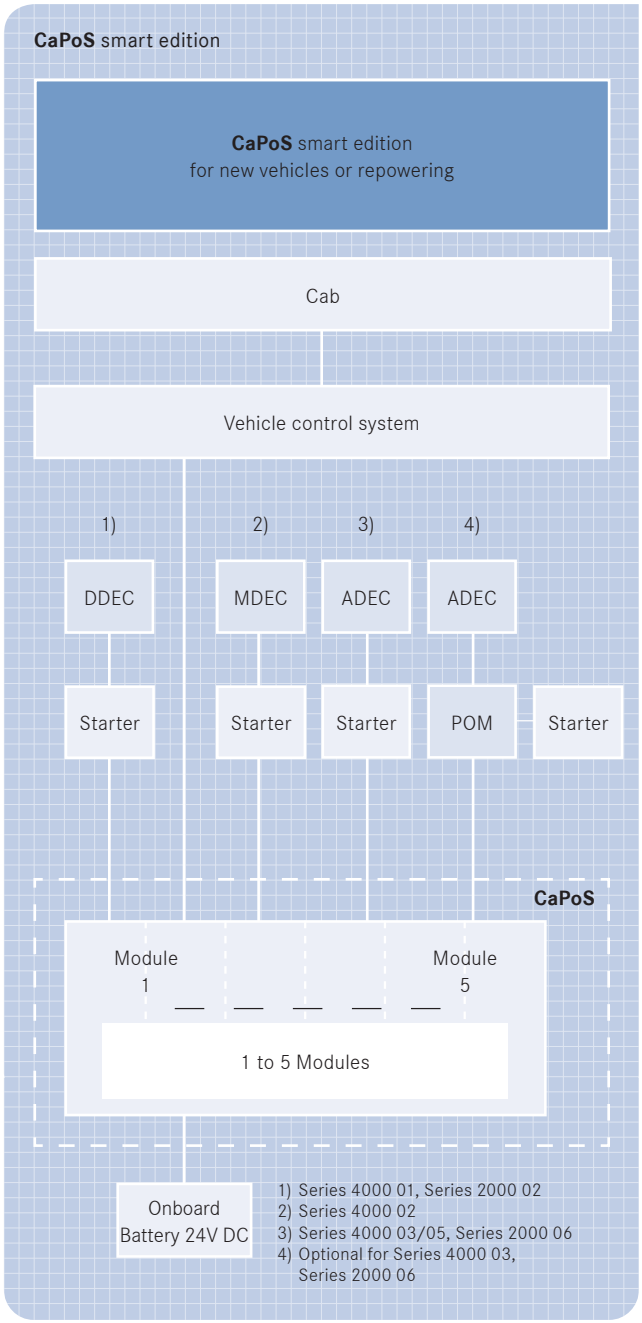
Automation

CaPoS smart edition – **Ca**pacitor **Po**wer **S**ystem for Series 2000, 4000

Reliable power right from the start.
CaPoS smart edition was especially developed for heavy and duty applications and provides the high energy required by the 24V DC starters during the starting sequence.

CaPoS uses capacitor technology to optimize startup behavior. The number of modules to be used depends on the type of engine involved and its breakaway torque. CaPoS smart edition may be used autonomously or in conjunction with the **motiv***line* automation system.

The most important features at a glance:
- Autonomous and modular construction
- Maintenance-free system
- Significant reductions in weight and volume compared with conventional starter batteries
- Optimized cold-starting capabilities
- Low life-cycle costs
- No voltage interruption during start-up
- On-board voltage of 24V DC
- Integrated self-monitoring system with interface to vehicle control system
- Integrated DC-/DC converter for automatical recharging
- IP66 protection



We manage everything for you.

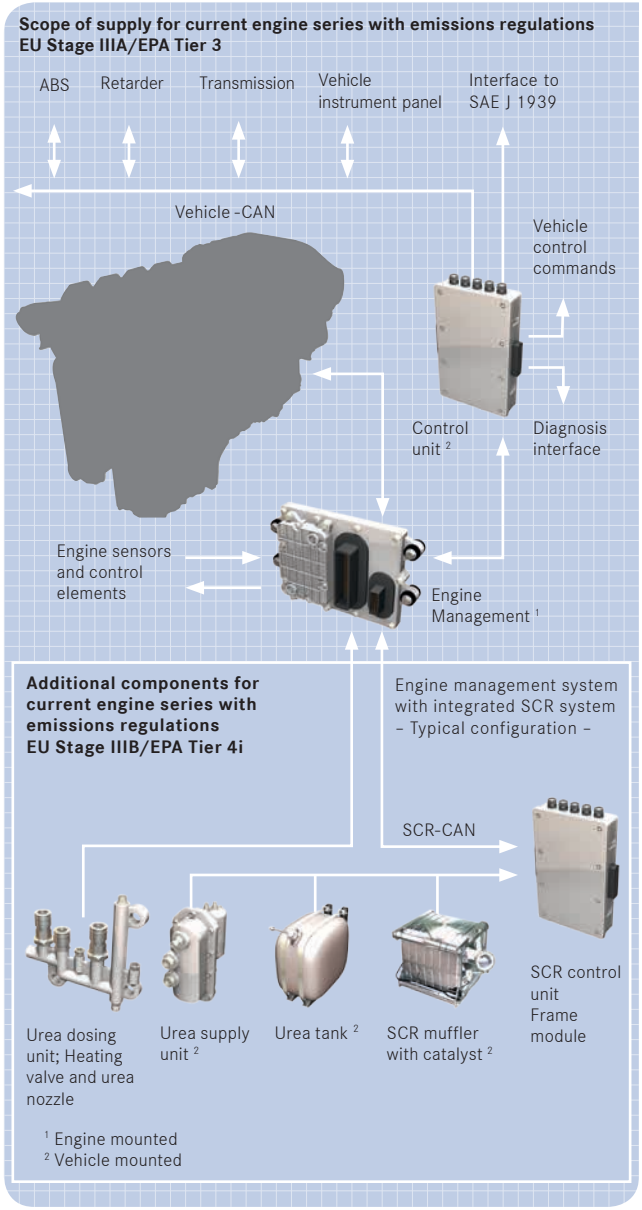
All our engines are equipped with electronic engine controls. Intelligent electronics ensure that performance and efficient operation are achieved under all operating conditions. Innovative, high-end technology takes over the control, regulation and monitoring of the drive system. The systems are modular in order to be able to adapt the diesel engine to the complex optimal operating conditions of the equipment. In addition, operating conditions that could lead to damage are detected in time.

Your benefits:

- Protection of the engine and therefore safety by:
  - Reporting critical operating conditions
  - Temporary reduction in power
  - Automatic shutdown
  - Start inhibitor
  - Over speed regulation
  - Self-diagnosis and regulation for the system
- Standard interfaces for external system connections, such as CAN data bus and SAE J 1939
  - Easy integration with the vehicle
  - Flexible adjustment to the vehicle or vehicle components and project specific needs
  - Interface for engine diagnosis
- High availability and fail-safe operation
- High power efficiency
- Low fuel consumption
- Minimal exhaust emissions that fully meet all legal requirements

For engines equipped with SCR systems, we are your expert technology partner. The latest electronics integrate the necessary SCR components for the reduction of emissions intelligently into the overall system. This ensures optimal tuning of all engine and emission control functions.

Engine management system – Typical configuration Series 460, 900



motiv*line* – the management technology for mining applications with Series 4000-03

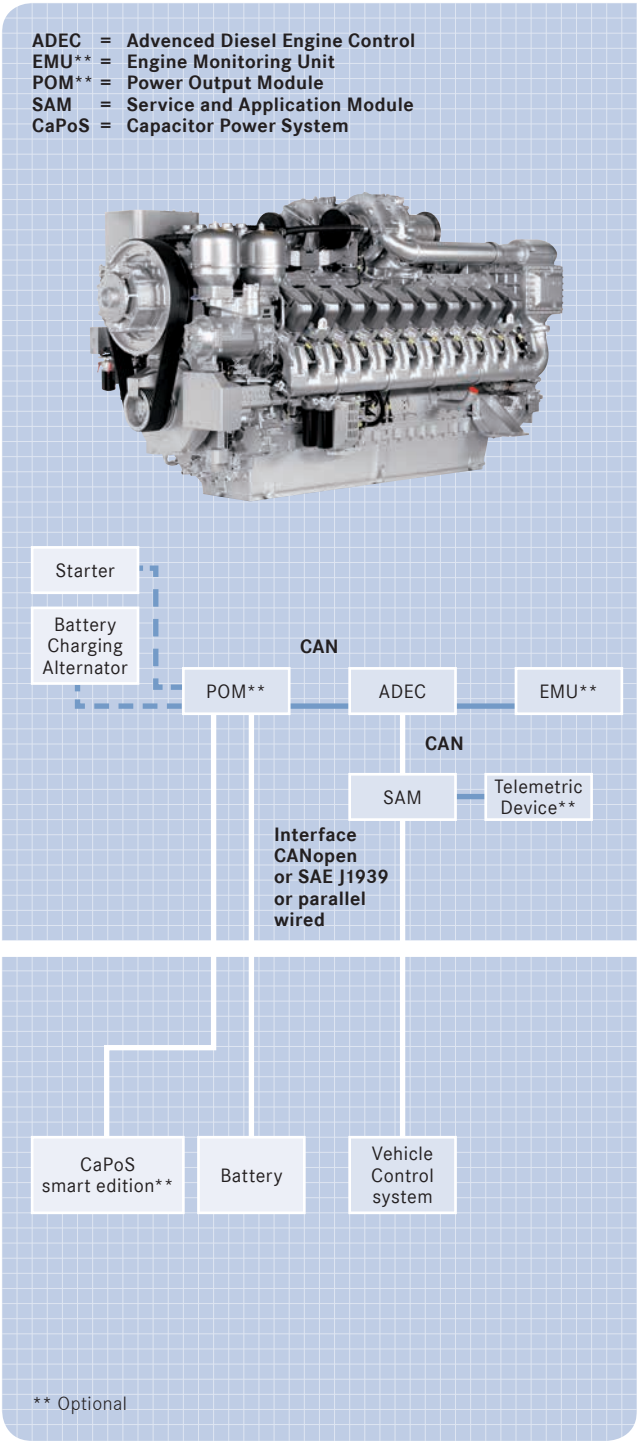
The **motiv***line* automation system is an innovative highend technology developed by MTU for mining vehicles. **motiv***line* performs the control and monitoring functions for the entire engine plant. The modular system guarantees optimum adaptation of the diesel engine to the diversity of operating conditions in mining.

motiv*line* supports:
> flexible adaptation to the vehicle and/or its components and project-specific requirements
> automatic power output adjustment or optional engine shutdown by the integrated safety system and all other necessary monitoring and safety functions
> Interface - MTU telemetric device for GSM* - for MTU **Value**Care Product Remote Services (optional with user agreement), which provides direct access to the data of your MTU engine
> Easy adaptation by means of MTU interface module **SAM**

motiv*line* harmonizes the engine integration into the vehicle. Because of that optimized conditions generates:
> **high power- efficiency**
> **low fuel consumption**
> **minimal exhaust emissions that are substantially below the legal limits**

For the **Series 4000 engines**, a new engine management system **ADEC** has been developed, whilst there is also an extensive range of standardized solutions available - with options for flexible interfaces. The Engine Monitoring Unit **EMU** provides further enhanced availability by means of additional monitoring and diagnostic options for the engine. Complementing the **SAM** interface module, **POM** optimizes the start process and simplifies cabling to the starter and alternator. The complete **Plug & Play** system makes installation of the engine in the vehicle considerably simpler and faster.

* Global System for Mobile Communications

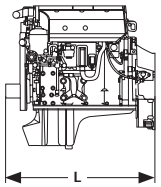


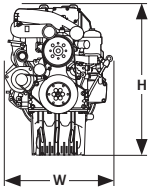
Diesel engines for C&I, Agriculture and Mining applications

manufactured by

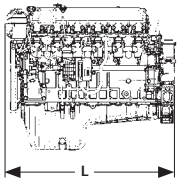
optimized by

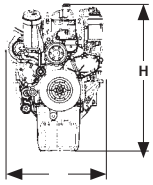
Series 900





Series 460





Diesel engines for C&I, Agriculture and Mining applications

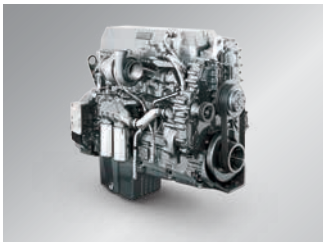
Engine	Cylinder data			Dimensions, max.	Mass, max.
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)
4R 904 Cx1 4 Cyl./In-Line	102/130 (4.0/5.1)	1.06 (65)	4.2 (256)	830 x 672 x 945 (33 x 26 x 37)	395 (870)
4R 924 Cx1 4 Cyl./In-Line	106/136 (4.2/5.4)	1.20 (73)	4.8 (293)	830 x 645 x 925 (33 x 25 x 36)	405 (893)
4R 924 Cx2 4 Cyl./In-Line	106/136 (4.2/5.4)	1.20 (73)	4.8 (293)	830 x 645 x 925 (33 x 25 x 36)	415 (915)
6R 906 Cx1 6 Cyl./In-Line	102/130 (4.0/5.1)	1.06 (65)	6.4 (391)	1087 x 688 x 956 (43 x 27 x 38)	530 (1168)
6R 926 Cx1 6 Cyl./In-Line	106/136 (4.2/5.4)	1.20 (73)	7.2 (439)	1087 x 681 x 956 (43 x 27 x 38)	530 (1168)
6R 926 Cx2 6 Cyl./In-Line	106/136 (4.2/5.4)	1.20 (73)	7.2 (439)	1087 x 681 x 956 (43 x 27 x 38)	545 (1202)
6R 460 C11R-C21 6 Cyl./In-Line	128/166 (5.0/6.5)	2.13 (129)	12.8 (781)	1315 x 785 x 1142 (52 x 31 x 45)	920 (2028)
6R 460 C31-C71 6 Cyl./In-Line	128/166 (5.0/6.5)	2.13 (129)	12.8 (781)	1320 x 750 x 1115 (52 x 30 x 44)	920 (2028)
6R 460 Cx2 6 Cyl./In-Line	128/166 (5.0/6.5)	2.13 (129)	12.8 (781)	1320 x 750 x 1115 (52 x 30 x 44)	930 (2072)

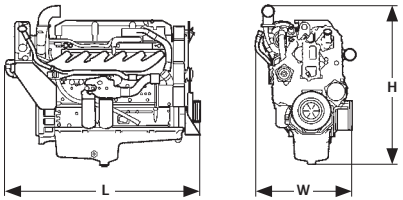
Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.

Please contact your mtu distributor for current information and binding data.

Diesel engines for C&I and Mining applications

Series 60





Diesel engines for C&I and Mining applications

Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
S60 6 Cyl./In-line	130/160 (5.1/6.3)	2.12 (129)	12.7 (775)	1455 x 925 x 1380 (57 x 36 x 54)	1290 (2844)	3.5 - 5.8 (5.7 - 9.5)
S60 6 Cyl./In-line	133/168 (5.2/6.6)	2.33 (142)	14.0 (854)	1455 x 925 x 1380 (57 x 36 x 54)	1215 (2680)	2.4 - 5.4 (4.0 - 8.9)

Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.
Please contact your mtu distributor for current information and binding data.

Diesel engines for C&I, Agriculture and Mining applications

manufactured by

optimized by

Series 1000/OM 934/936

Series 1300/OM 471

Series 1100/OM 470

Series 1500/OM 473

Diesel engines for C&I, Agriculture and Mining applications

Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
4R 1000 Cx0 4 Cyl./In-Line	110/135 (4.3/5.3)	1.28 (78)	5.1 (311)	818 x 755 x 1033 (32.2 x 29.7 x 40.7)	510 (1124)	3.0 - 5.0 (4.9 - 8.2)
6R 1000 Cx0 6 Cyl./In-Line	110/135 (4.3/5.3)	1.28 (78)	7.7 (470)	1059 x 821 x 1033 (41.7 x 32.3 x 40.7)	669 (1475)	2.6 - 3.6 (4.2 - 6.0)
6R 1100 Cx0 6 Cyl./In-Line	125/145 (4.9/5.7)	1.77 (108)	10.7 (652)	1325 x 955 x 1230 (52.7 x 37.6 x 48.4)	950 (2094)	3.0 - 3.4 (4.9 - 5.6)
6R 1300 Cx0 6 Cyl./In-Line	132/156 (5.2/6.1)	2.13 (130)	12.8 (781)	1375 x 980 x 1260 (54.1 x 38.6 x 49.6)	1083 (2388)	2.8 - 3.4 (4.6 - 5.6)
6R 1500 Cx0 6 Cyl./In-Line	139/171 (5.5/6.7)	2.60 (159)	15.6 (952)	1425 x 1005 x 1290 (56.1 x 39.6 x 50.8)	1235 (2723)	2.7 - 3.1 (4.4 - 5.1)

Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.
Please contact your mtu distributor for current information and binding data.

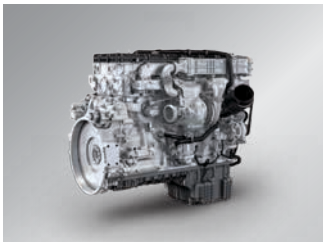
Diesel engines for C&I, Agriculture and Mining applications

manufactured by

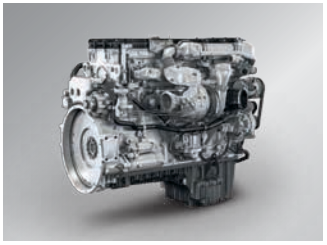
optimized by

Series 1000/OM 934/936

Series 1300/OM 471



Series 1100/OM 470



Series 1500/OM 473

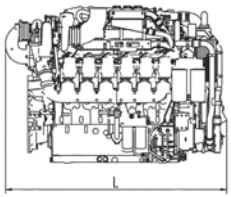
Diesel engines for C&I, Agriculture and Mining applications

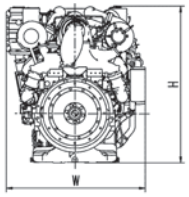
Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
4R 1000 Cx1 4 Cyl./In-Line	110/135 (4.3/5.3)	1.28 (78)	5.1 (311)	948 x 860 x 1033 (37 x 34 x 41)	510 (1124)	3.0 - 4.3 (4.9 - 7.2)
6R 1000 Cx1 6 Cyl./In-Line	110/135 (4.3/5.3)	1.28 (78)	7.7 (470)	1067 x 929 x 1031 (42 x 37 x 41)	672 (1482)	2.4 - 3.8 (3.9 - 6.2)
6R 1100 Cx1 6 Cyl./In-Line	125/145 (4.9/5.7)	1.77 (108)	10.7 (652)	1295 x 1029 x 1183 (51 x 41 x 47)	938 (2068)	2.8 - 3.9 (4.5 - 6.4)
6R 1300 Cx1 6 Cyl./In-Line	132/156 (5.2/6.1)	2.13 (130)	12.8 (781)	1393 x 1043 x 1215 (55 x 41 x 48)	1071 (2361)	2.8 - 3.4 (4.5 - 5.5)
6R 1500 Cx1 6 Cyl./In-Line	139/171 (5.5/6.7)	2.60 (159)	15.6 (952)	1442 x 1099 x 1237 (57 x 43 x 49)	1230 (2712)	2.6 - 3.2 (4.2 - 5.3)

Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.
Please contact your mtu distributor for current information and binding data.

Diesel engines for C&I and Mining applications

Series 2000





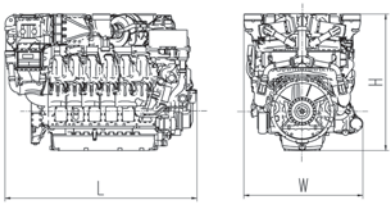
Diesel engines for C&I and Mining applications

Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
12V 2000 Cx2 12 Cyl./90°V	130/150 (5.1/5.9)	1.99 (121)	23.9 (1458)	1864 x 1205 x 1286 (73.4 x 47.4 x 50.6)	2416 (5326)	3.2 - 4.3 (5.3 - 7.0)
16V 2000 Cx2 16 Cyl./90°V	130/150 (5.1/5.9)	1.99 (121)	31.9 (1947)	2360 x 1247 x 1314 (93 x 49,1 x 51,7)	2994 (6601)	3.0 - 3.8 (4.9 - 6.3)
12V 2000 Cx6 12 Cyl./90°V	135/156 (5.3/6.2)	2.23 (136)	26.8 (1633)	2028 x 1278 x 1461 (79.8 x 50.3 x 57.5)	2950 (6503)	3.8 (6.2)
16V 2000 Cx6 16 Cyl./90°V	135/156 (5.3/6.2)	2.23 (136)	35.7 (2177)	2378 x 1288 x 1488 (93.6 x 50.7 x 58.6)	3350 (7385)	3.5 (5.7)

Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.
Please contact your mtu distributor for current information and binding data.

Diesel engines for C&I and Mining applications

Series 4000



Diesel engines for C&I and Mining applications

Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
12V 4000 Cx1 12 Cyl./90°V	165/190 (6.5/7.5)	4.06 (248)	48.8 (2978)	2409 x 1588 x 1736 (94.8 x 62.5 x 68.3)	6045 (13325)	4.0 - 5.1 (6.6 - 8.3)
16V 4000 Cx1 16 Cyl./90°V	165/190 (6.5/7.5)	4.06 (248)	65.0 (3967)	2879 x 1588 x 1736 (113.4 x 62.5 x 68.3)	7030 (15615)	3.5 - 4.4 (5.8 - 7.3)
20V 4000 Cx2 20 Cyl./90°V	165/210 (6.5/8.3)	4.49 (274)	89.8 (5480)	3647 x 1609 x 2065 (143.6 x 63.3 x 81.3)	9865 (21750)	3.6 (6.0)
12V 4000 Cx3 12 Cyl./90°V	170/210 (6.7/8.3)	4.77 (291)	57.3 (3493)	2497 x 1629 x 2065 (98.3 x 64.1 x 81.3)	7000 (15430)	4.2 - 5.9 (6.8 - 9.7)
16V 4000 Cx3 16 Cyl./90°V	170/210 (6.7/8.3)	4.77 (291)	76.3 (4656)	3020 x 1629 x 2065 (118.9 x 64.1 x 81.3)	8100 (17860)	3.6 - 5.4 (6.0 - 8.9)
20V 4000 Cx3 20 Cyl./90°V	170/210 (6.7/8.3)	4.77 (291)	95.4 (5822)	3647 x 1609 x 2065 (143.6 x 63.3 x 81.3)	10700 (23590)	3.6 - 4.5 (6.0 - 7.4)

Please note, specifications are subject to change without notice.
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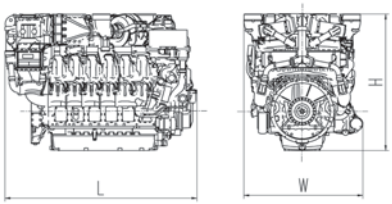
Please contact your mtu distributor for current information and binding data.

Diesel engines for C&I and Mining applications

Series 4000



Diesel engines for C&I and Mining applications

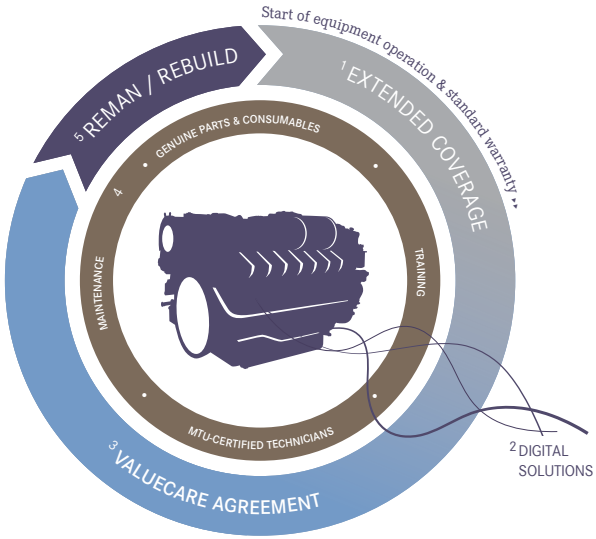
Engine	Cylinder data			Dimensions, max.	Mass, max.	Weight/Power ratio
	Bore/Stroke mm (in)	Cyl. displac. l (cu in)	Total displac. l (cu in)	L x W x H mm (in)	(dry) kg (lbs.)	kg/kW (lbs./bhp)
12V 4000 Cx5 12 Cyl./90°V	170/210 (6.7/8.3)	4.77 (291)	57.2 (3491)	2633 x 1631 x 1997 (103.7 x 64.2 x 78.6)	7960 (17549)	4.3 - 6.9 (7.0 - 11.4)
16V 4000 Cx5 16 Cyl./90°V	170/210 (6.7/8.3)	4.77 (291)	76.3 (4656)	3201 x 1631 x 1997 (126.0 x 64.2 x 78.6)	9350 (20613)	4.1 - 4.9 (6.7 - 8.0)

Please note, specifications are subject to change without notice.
All dimensions are approximate. Details are subject to options selected.
Please contact your mtu distributor for current information and binding data.

MTU **Value**Care

Ensure a long, reliable life.

As your equipment ages, its needs–and yours–change.
MTU **Value**Care wraps around your MTU investment, providing 360 degrees of customized support, for optimal value at every stage of life.



MTU **Value**Care can help you:

1. Avoid the unexpected with added protection beyond the standard warranty*.
2. Make better decisions faster with digitally-enhanced tools*.
3. Maximize availability and optimize lifecycle costs with a individually tailored **Value**Care Agreement*.
4. Improve system performance and extend equipment life with on-demand support from MTU.
5. Keep a good thing going with MTU reman/rebuild solutions.

* Available for mining engines and systems.

MTU **Value**Care

Rely on MTU expertise.

To give your equipment a long and productive life, choose a partner you can trust. Only MTU-certified technicians know how to get the job done right using proven service methods, MTU-specified maintenance schedules and genuine OEM parts and consumables. Whatever level of support you need, our global network of factory-trained professionals is ready to prepare a customized plan to help you maximize performance and minimize life-cycle-costs.

If you need us a little:

On-Demand Support–including professional inspections and preventive maintenance recommendations from MTU – helps you identify and address problems early, save on repairs or unexpected downtime, and optimize your equipment's performance and longevity. Inspections include visual assessment, test run and leak check, on-site oil and coolant analysis, diagnostic evaluation and reporting.

If you need us a lot:

ValueCare Agreements for mining applications make it easy to keep your business running smoothly and reduce total cost of ownership by maximizing uptime, optimizing lifecycle costs and helping you avoid equipment related business disruptions through preventive maintenance.

Learn from the best.
Training is a great way to become proficient with MTU engines and systems and get maximum efficiency from your equipment. From preventive maintenance to diagnostics and repair, our training programs provide a hands-on learning experience with knowledgeable, expert trainers. We offer a wide range of customized training programs around the world to maximize your return on investment.

Never compromise.
MTU engines and systems are built to last with legendary high standards. When it's time for service, don't settle for anything less. For maximum reliability, performance and uptime, choose a name you can trust – MTU.

ValueCare Agreements

Focus on your operations. Leave the rest to us.

Service solutions designed around your priorities
ValueCare Agreements make it easy to optimize lifecycle costs, maximize uptime and devote more time and resources to your core business, with tailored solutions to move your business forward.

Gold

Maximize operational uptime
Gold includes all benefits of Bronze and Silver levels plus:
- Operational uptime commitment to meet or exceed your availability targets
- Engine preservation management
- Monthly reporting including availability and repair times
- Annual performance meetings and trend analysis

Silver

Eliminate unexpected maintenance costs
Silver includes all benefits of Bronze level plus:
- Predefined rate per operating hour for maintenance and repairs
- Predefined prices for extended component maintenance and major overhauls
- Quarterly reliability reporting
- Proactive remote engine health monitoring, including maintenance planning and troubleshooting

Bronze

Ensure parts availability and price stability
- Only for customers with selfservice maintenance capabilities
- Predefined rate per operating hour for basic maintenance components
- Automatic delivery of preventive spare parts based on operating hours
- Quarterly maintenance reporting and maintenance forecast
- Annual on-site engine health check

MTU **Value**Care

Protect your investment.

MTU engines – backed by Extended Coverage – provide invaluable peace of mind beyond the standard warranty. With Extended Coverage, you can be assured that the costs of unexpected repairs are covered, with service performed by MTU-certified technicians–upholding resale value and ensuring long-term confidence in your MTU investment.

Extended Coverage protects you from the cost of unexpected repairs beyond your standard warranty, with professional service from MTU-certified technicians and coverage tailored to your needs. Packages can also be extended up to 5 years and are fully transferrable, enhancing resale value. Coverage includes material and labor for troubleshooting, fault clearance and corrective services to engines and on-engine electronics (excluding gearbox, alternators, or similar components). To ensure maximum quality, all repairs are conducted using only genuine parts from MTU.

Digital Solutions

The future is digital.

Fueled by your system's data—and supplemented with MTU's exclusive expertise, smart analytics and extensive database—our digital solutions magnify the power of your MTU investment.

From proactive failure prevention and intelligent troubleshooting to instant failure support and smart maintenance planning, digital solutions unlock the full potential of your MTU system.

Go! Act

Service in your pocket
Designed to support on-site operators of MTU-powered equipment, Go! Act:
- Receives push notification of failure codes from connected assets
- Provides crew members with vital information about failure codes
- Supports event reporting with convenient photo capture functionality
- Enables direct communication with fleet managers or the MTU Customer Assistance Center

Go! Manage

Monitor your fleet
Built for fleet managers with MTU-powered equipment, Go! Manage:
- Provides a live overview of fleet, asset and engine conditions
- Displays active and closed alarms
- Enables interaction and communication with on-site staff via Go! Act
- Shows maintenance schedule, with completed tasks clearly marked
- Supports remote troubleshooting via multigraph

Remanufactured Products

Exchange and save.

Factory remanufactured MTU products deliver the same high standards of performance, service life and quality as new MTU products, along with identical warranty coverage – at a fraction of the cost. And with design and model-related updates, they also feature similar technological advancements. Developed by R&D engineers, the remanufacturing process saves you time and money, while benefiting the environment through the reuse of materials. To help you work efficiently, a wide range of remanufactured parts, engines and systems are available worldwide.

Reduce lifecycle costs.
As you evaluate your long-term power needs, you must consider a variety of factors. Factory remanufactured products are a smart solution, helping you reduce the total lifecycle cost of your equipment.

Save time.
Factory remanufactured products put your equipment back to work faster than an overhaul, which reduces downtime, service time and indirect costs such as storage.

Maintain MTU standards.
All products are remanufactured to strict MTU standards by MTU-certified technicians at regional MTU reman centers. Only MTU can remanufacture MTU parts, engines or systems to original MTU factory specifications.

Protect the environment.
Since remanufacturing is an efficient use of resources and energy, factory remanufactured products benefit the environment as well.

Service Network

Local support. Worldwide.

Whenever and wherever you need expert support, MTU specialists are available. Our global service network of more than 1,200 locations – backed by our cutting-edge Parts Logistics Centers – provides you this assurance.To find your local MTU distributor, visit www.mtu-online.com.

Always on call, 24/7
Whether it's connecting you with a local service partner or assigning an urgent problem to a dedicated team of MTU experts, we're ready to assist you–wherever you are, whatever you need.

Europe, Middle East, Africa	+49 7541 90-77777
Asia/Pacific	+65 6860 9669
North and Latin America	+1 248 560 8888

info@mtu-online.com

Local support. Worldwide.
We ensure that you receive individualized support from our global network of more than 1,200 service centers – anywhere, anytime.

- Global headquarters
- Regional headquarters
- Sales and customer service center

Exhaust emissions

Many countries have implemented environmental legislation to protect people from consequences of polluted air. For this reason an increasing number of countries regulate emissions from specific mobile and stationary sources.

Emission standards may apply internationally, nationally and/or for specific areas. The enforcement of an emission legislation may depend for example on the area where the equipment is used and the way it is operated.

The emission legislations may be categorized by power range and/or cylinder capacity. Emission legislations generally require a certificate which states compliance. Stationary applications may require on-site approvals (on-site emission test) depending on the particular emission legislation.

Please find as follows examples of emission standards which apply to the C&I, Agriculture and Mining Industry. For details please consult the applicable legislation and/or permitting authority.

Emission legislation for C&I, Agriculture and Mining applications may differentiate between mobile and stationary applications/ machinery.

Nonroad mobile machinery emission legislation may differentiate between constant and variable speed applications.
Nonroad mobile machinery emission legislation may differentiate between ratings and cylinder volume.

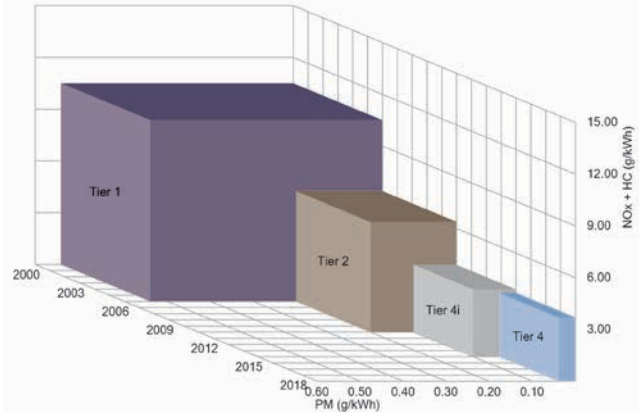
Emission legislation for mobile applications are e.g. US EPA, EU NRMM, China NRMM, MoEF India/CPCB

Stationary emission legislation differentiates between emergency standby and non-emergency applications. Usually non-emergency applications have more stringent emission limits. Engines for emergency standby applications are often limited by operating hours per year. The operating hour limitation may be defined differently from country to country. Especially stationary applications may be subject to more stringent regional or municipal emission limits (e.g. Non-Attainment Areas).

Emission legislation for stationary applications is highly fragmented, e.g. US EPA, EU NRMM, TA-Luft, NEA Singapore, MoEF India/CPCB, China NRMM.

Sample for emission stages in C&I, Agriculture and Mining industry: EPA

EPA NRMM > 560 kW



Examples for emission level description:

- US EPA Nonroad Tier 4 (40CFR1039)
  -> certified
- US EPA Nonroad Tier 2 Comp (40CFR89)
  -> compliant with emission legislation - not certified
- US EPA Nonroad Tier 2 Comp
  -> compliant and corresponding to emission limit values - not certified

Please note that the engines and systems (only) comply with the country or region specific emission requirements and have appropriate emission certification(s) which are explicitly stated in respective RRPS/MTU defined technical specifications. Any Export/Import/Operation of the engine in countries or regions with different applicable emission law requirements is at the customers responsibility.

Emission Flex Package

No matter where in the world your machines operate, you need a drive package that performs. With our Emission Flex Package, you increase the flexibility in highly regulated markets as well as in countries with no or lower emissions standards. With two engine generations from 100-460 kW, we are well prepared to offer the solution that meets your individual requirements best.

Emission Flex Package for Series 460, 500 and 900
EU Stage IIIB/EPA Tier 4i engines
To be operated in non-regulated countries, your used EU Stage IIIB/EPA Tier 4i engines can be adjusted accordingly. For this modification, no hardware changes are necessary; the MTU-certified, authorized service dealers only update the software and decertify the engine*. The aftertreatment system may remain in the vehicle, saving time and removal costs. However, if the SCR components are removed, even higher sulphur tolerances may be achieved. This is completely up to you. We help you decide which option is best for you.

Emission Flex Package for Series 1000-1500
EU Stage IV/EPA Tier 4f
If you plan to operate your EU Stage IV/EPA Tier 4f engines in countries with no or less stringent emissions regulations, MTU offers two options:

- **Order new engines with the Emission Flex Package.** This allows you to export your machines to anywhere from highly regulated countries to less or non-regulated countries with just one engine installation
- **Adjust** your engines in operation to more lenient emissions regulations. The modification is done by software update and recertifying* to UN ECE R96 Emission Flex Package (EFP) emission standard, no hardware changes are necessary. Removal of the SCR components is optionally. The new emissions conformity is documented in the system data.

* Due to emission compliance regulations you need to remove labels and certification numbers in advance so that de-/recertication can be conducted.

Benefits:
- **Quick and easy modification** through electronic update only
- **Cost-efficient solution** for customers selling and purchasing used EU Stage IIIB/EPA Tier 4i products in non-regulated countries
- **Higher sulphur tolerance** so that engines can be operated anywhere
- **Economical use of resources** by enabling second life for engines outside of emission regulated markets
- **Higher technological standard** than older, non-regulated engines which directly translates into fuel savings and lower life-cycle costs

Benefits compared to classic
EU Stage IIIA/EPA Tier 3 engines:
- **Common engine platform and dimensions**
- **Less integration effort** due to identical interfaces and same dimensions
- **Better fuel efficiency**
- **Better power curves** for more efficient operation
- **Future-proof engines** that are continually enhanced

Notes

Additional available sales programs:

– Marine
– Rail
– Gendrive
– Oil & Gas

Conversion Table

1 kW	= 1.360 PS	g	= 9.80665 m/s²
1 kW	= 1.341 bhp	π	= 3.14159
1 HP	= 1.014 PS	e	= 2.71828
1 oz	= 28.35 g		
1 lb	= 453.59 g	1 lb	= 16 oz
1 short ton	= 907.18 kg	1 short ton	= 2000 lbs
1 lb/HPh	= 447.3 g/PSh	1 ft lb	= 1.356 Nm
1 lb/HPh	= 608.3 g/kWh	1 ft/min	= 0.00508 m/s
1 gal/HPh(US)	= 4264 g/kWh	pDiesel	= 0.83 kg/l
1 kWh	= 860 kcal	1 lb/sqin	= 0.069 bar (1 psi)
1 cal	= 4.187 J	1 mm HG	= 1.333 mbar (133.3 Pa)
1 BTU	= 1.055 kJ	1 mm WS	= 0.0981 mbar (9.81 Pa)
1 inch	= 2.540 cm	T (K)	= t (°C) + 273.15
1 sq. inch	= 6.542 cm²	t (°C)	= 5/9 x (t (°F) -32)
1 cu. inch	= 16.387 cm³	t (°C)	= 5/4 x t (°R)
1 foot	= 3.048 dm	1 foot	= 12 inches
1 sq. foot	= 9.290 dm²	1 yard	= 3 feet
1 land mile	= 1.609 km	1 land mile	= 5280 feet
1 naut. mile	= 1.853 km	1 naut. mile	= 6080 feet
1 GB Gallon	= 4.546 l		
1 US Gallon	= 3.785 l		
1 US Barrel	= 0.159 m³		
	= 42 US Gallons		

Energy:	1 J = 1 Ws = 1 VAs = 1 Nm
Power:	1 W = 1 VA = 1 Nm/s
Force:	1 N = 1 kgm/s²
Pressure:	1 Pa = 1 N/m² (1 bar = 10^5 Pa)
MEP (bar)	$= \frac{P_{cyl}(kW) \times 1200}{n(1/min) \times V_{cyl}(l)}$
Torque (Nm)	$= \frac{P_{ges}(kW) \times 30000}{n(1/min) \times \pi}$

MTU Friedrichshafen GmbH
MTU Asia Pte Ltd
MTU America Inc.
Part of the Rolls-Royce Group

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