Dear Ladies and Gentlemen,

The MINSK MOTOR PLANT was founded in 1963 and now it is a leading developer and manufacturer of modern diesel engines in the CIS countries as for the number of 4- and 6-cylinder in-line diesel engines. Our company offers over 40 engines modifications within the power range from 40 kW to 312 kW, which have been designed for various applications: agricultural machinery, road building machinery, forestry machinery, automobiles and buses, electric power gensets and many other with the engines adaptation to customer specific needs.

Diesel engines of the Minsk Motor Plant are installed in various products manufactured by the leading mechanical engineering enterprises of Russia, the Ukraine, Kazakhstan, Uzbekistan, Poland, Lithuania, Germany, Hungary, Pakistan and many other. Today our engines are successfully applied in:

- tractors by PC “Minsk Tractor Works”, PC “Yuzhmash” (the Ukraine), OJSC “Tashkent Tractor Works” (Uzbekistan), OJSC “Kharkov Tractor Works”, LLS “Onezhsky Tractor Works” (Russia), LLS “Slobozhansk Industrial Company” (Russia), Sp. z o.o. “Farmer”, Sp. z o.o. “Pronar” Poland);
- automobiles by OJSC “GAZ” (Russia), OJSC “MAZ” (Belarus), AMO “ZIL” (Russia), CJSC “AMUR” (Russia);
- buses by OJSC “Pavlovsky Bus” (Russia), OJSC “MAZ” (Belarus), AMO “ZIL” (Russia);
- grain and forage combine harvesters manufactured by PC “Gomselmash” (Belarus), LLS “KZ “Rostselmash” (Russia), OJSC “Lidagroprommash” (Belarus), KF “Agromashholding” (Kazakhstan), LLS “Kazanselmash” (Russia);
- excavators by Tver Excavator Works, Kokhanovsk Excavator Works and LLS JV “Sviatovit” (Russia);
- truck lifts by “Amkodor” (Belarus), JV CJSC “MAZ-MAH” and other;
- road rollers by OJSC “Amkodor” (Belarus) and OJSC “Raskat” (Russia);
- truck concrete mixers and concrete pumps of our own manufacture and those manufactured by OJSC “Tuymazinsky Truck Concrete Mixer Works”, CJSC “KOMZ-Export” (Russia), RUE “MoAZ” (Belarus);
- electric power gensets, compressor and pump sets, welding sets etc.

The Minsk Motor Plant engines design is permanently improved according to customer need and demands. Recently, the serial manufacture has seen a significant amount of design modifications that have allowed to put the engines consumer qualitie and technical specifications in compliance with the modern requirements of reliability, durability, fuel economy, ease of repair and ecology. The automobile emgines manufactured by our company conform to ecological standards **Euro 4** and **Euro 5**, the tractor engines — **Stage 3A** и **Stage 3B**.

In our work we use our own developments and original designing and technological solutions, as well as the other Worlld manufacturers’ experience. One of our strategic partners and supliers of electronically controlled fuel supply systems is “Robert Bosch GmbH”, with which we entered into a strategic partnership afreement in May, 2007. The “Common Rail” fuel management system installed in the engines of the Minsk Motor Plant ensures conformity to the high level of ecological requirements.

We pay special attention to development of new flexible technologies with the use of highly productive numerically controlled machinery and equipment enabling us to manufacture high quality items within the shortest time limits and the minmal costs of preparation for production.

High skilled engineers and technicians, up-to-date R&D facilities, well established experimental manufacturing base provide for prompt development of original engine models for new machinery.

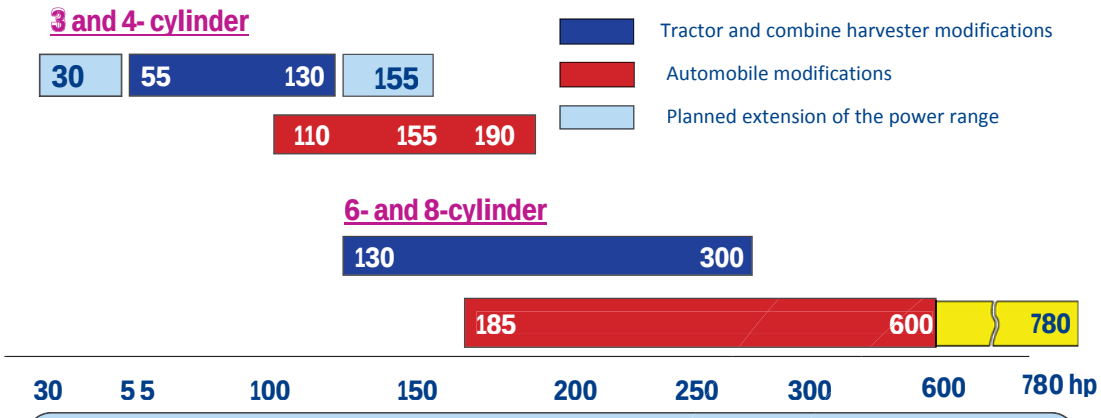
Not only is the OJSC “MMP” permanently improving the quality, but it is actively exploring new business directions. As an example, recently we started manufacture of truck concrete mixers on the MAZ chassis, manufacture of electric power gensets with the output from 32kW to 120kW. The new products of the Minsk Motor Plant are also road patch-repair sets etc.

The OJSC “MMP” strategic partners are the largest companies in Belarus, the CIS and those outside the CIS. We are always open to cooperation and ready to render timely and skilled assistance to our customers and partners in both technical issues and the issues of sales and service of our products.

Best regards ,
Nickolai I. Lobach

General Director
OJSC “Minsk Motor Plant”

OJSC “MMP” engines power range



MMP manufactures diesel engines conforming to international standards:

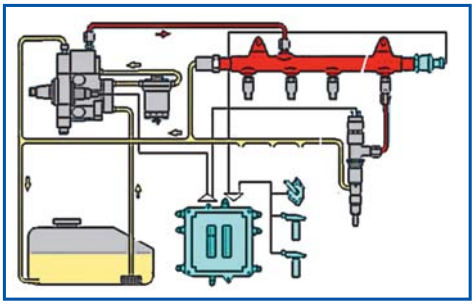
- tractor and combine harvester modifications - **Stage 3A и 3B** according to EC Directive
- automobile modifications - **EURO 4 и EURO 5**

The work is underway for achieving international standards:

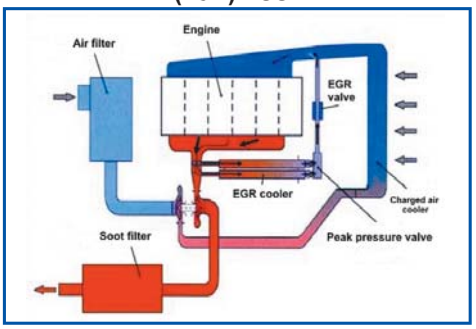
- tractor and combine harvester modifications - **Stage IV** according to EC Directive
- automobile modifications - **EURO 6**

Technologies and technical solutions applied in “MMP“ diesel engines manufacture

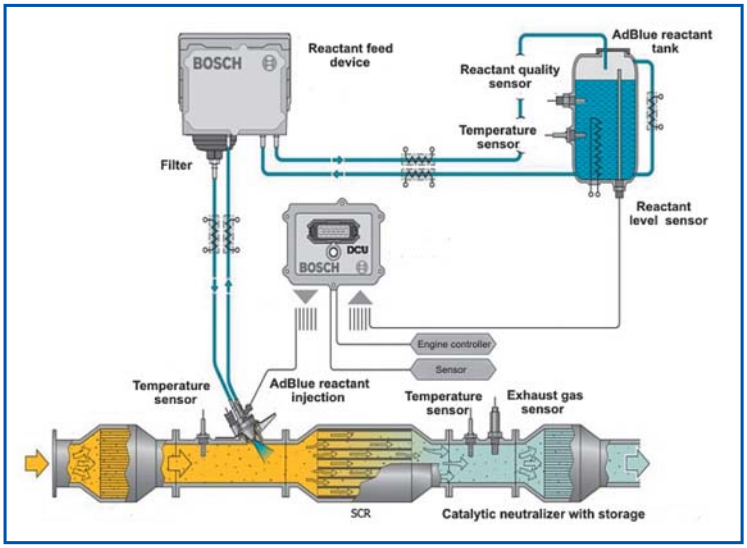
“Common Rail” 1-st and 2-nd generation fuel management system (1500–1800 bars)



Recirculation system diagram (EGR) +CSF



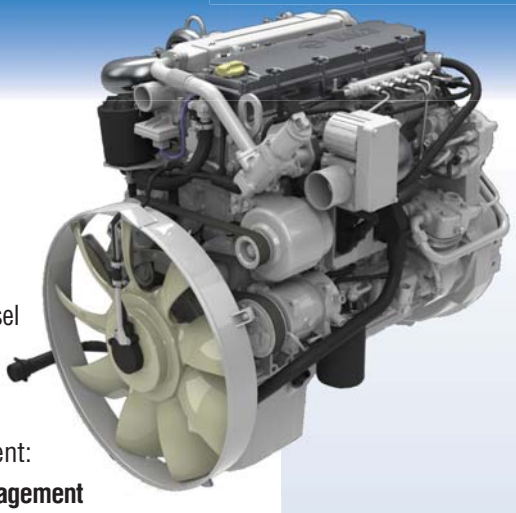
SCR technology – selective catalytic exhaust gas neutrlization system



Diesel engines conforming to international standard EURO 3 and higher, as well as Stage 3A and higher are equipped with “Common Rail” fuel management system.

4-cylinder new generation diesel engines

D-249E5 EURO-5



Basically new design by OJSC "Minsk Motor Plant" — multi-purpose 4-cylinder in-line diesel engine of Д249E5 family sized 110x125 mm, having swept volume of 4,75 litres, four valves for each cylinder, specific fuel consumption — 145 g/hp and a wide power range. The engine is installed in middle tonnage trucks, small and middle capacity buses.

The major design and technological solutions implemented in the engine development:

— **III Generation "Common Rail" accumulator type electronically controled fuel management system** with the maximal injection pressure of up to 180 MPa ensuring the required ecological parameters with keeping the acceptable fuel consumption level, as well as the levels of noise, vibration etc.;

— **enhanced rigidity of cylinder block with elongated lower part**. To reduce the engine overall dimensions, parts and units nomenclature and simplify the engine assembly process, a cylinder block design has been adopted with in-built cavities for water pump and liquid-oil heat exchanger suction;

— **cylinder head with four valves for each cylinder**. To improve the fuel mixtire formation process the injectors are installed vertically aligned with cylinders axes. The cylinder head bolts are positioned evenly around the cylinders circumferences in order to improve the gas junction functionality;

— **crankshaft forged as one part together with 8 counterbalances**, which significantly simplifies the design and allows to reduce the cost of machining. The crankshaft's main and big ends diameters have been enlarged as compared with the previous version (D-245);

— **pistons with the open-type combustion chambers**. To decrease the piston high-heat area and increase the piston rings workability with the engine high forcing, the gallery cooling method is used;

— **rear positioning of the change-gear train** reducing the influence of the crankshaft twist on the gas distribution stages, reducing the noise level, improving the engine units arrangement in the front and rear sections;

— **separate fan and water pump drives with the possibility of change of the fan positioning**. To keep the permanent multi V-belt tension, an automatic tensioner is used. These solutions have allowed to reduce the overall dimensions and simply the process of the engine's assembly;

— compulsory for all engines of this technical level closed engine gases ventilation system;

— **EURO-5 ecological standards** are achieved by the use of the highly efficient cooled down exhaust gas recirculation system (EGR) as well as with the SCR exhaust toxicity reduction technology based on AdBlue carbamide solution;

— the engine has very good prospects for further forcing.

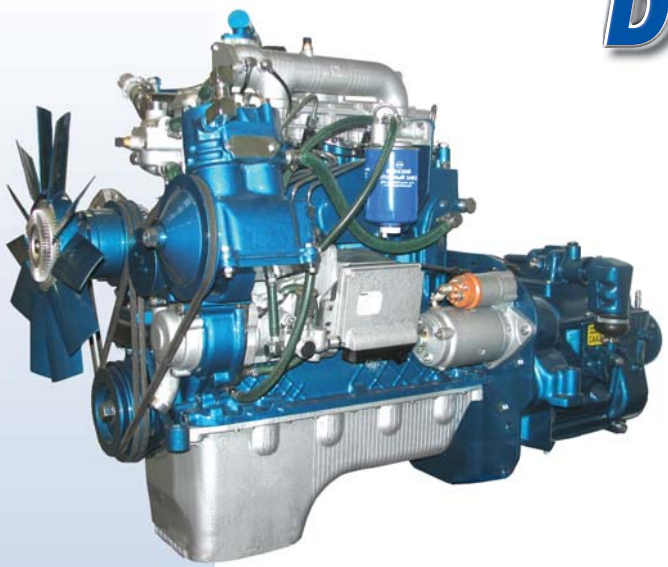
All that has helped to obtain a number of valuable operation qualities:

- Compact overall dimensions comparatively small mass.
- Low specific fuel consumption.
- The optimal installation in a vehicle and ease of service and maintenance.

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)	Mass, kg	Overall dimensions, mm Length x Width x Height	Application
D-249E5	4L	TW	140(190.4)	2300	710(72.4)	1200-1700	197(145)	520	941x701x976	Middle tonnage trucks, small and middle capacity buses

4-cylinder new generation diesel engines

D-245.35E4
EURO-4



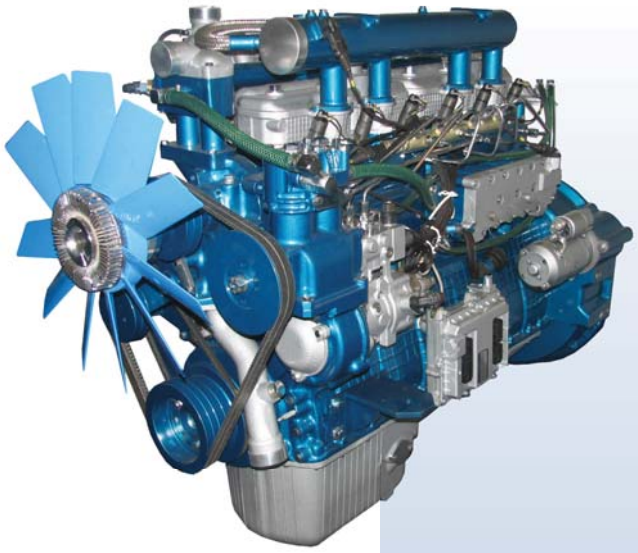
4-cylinder diesel engine is a 4-stroke internal combustion piston engine with in-line vertical positioning of cylinders, direct fuel injection and ignition by compression.

- Swept volume 4,75 litres.
- Output 176,8 hp.
- Maximal torque 650 Nm.
- Turbocharging with adjustable pressure ensure not only easy start and improved engine response backed up by higher torque values at low crankshaft speed, but also the high level of conformity to exhaust gas harmful substances content limitations.
- Charged air intercooling.
- Electronically controled accumulator type II Generation Common Rail fuel injection system with the maximal injection pressure of 160 MPa, ensuring the required ecological parameters with keeping the acceptable levels of fuel economy, noise, vibration etc.
- Catalytic particulate filter.
- Cooled down exhaust gas recirculation system (EGR).

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)	Mass, kg	Overall dimensions, mm Length x Width x Height	Application
D-245.35E4	4L	TW	130(176.8)	2300	650(66.3)	1200-1600	220(162)	525	1755x780x1010	Middle tonnage trucks, small and middle capacity buses

6-cylinder new generation diesel engines

D-263.2E4
EURO-4



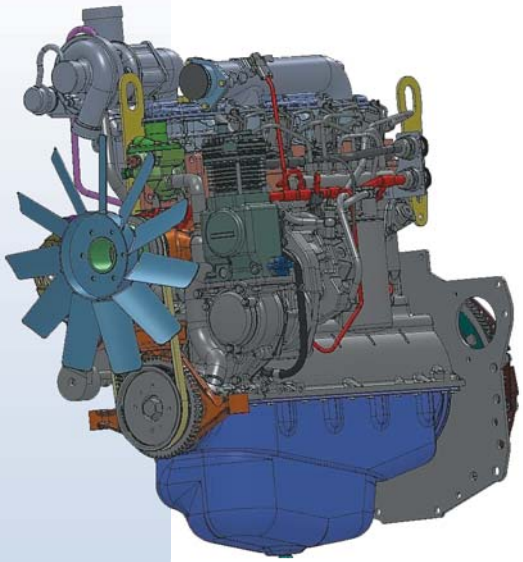
6-cylinder diesel engine is a 4-stroke internal combustion piston engine with in-line vertical positioing of cylinders, direct fuel injection and compression by ignition.

- Swept volume 8,7 litres.
- Rated output 330 hp.
- Torque 1400 Nm.
- Turbocharged, intercooled (TW).
- Electronically controled accumulator type II Generation Common Rail fuel injection system with the maximal injection pressure of 160 MPa, ensuring the required ecological parameters with keeping the acceptable levels of fuel economy, noise, vibration etc.
- Catalytic particulate filter.
- Cooled down exhaust gas recirculation system (EGR).

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)	Mass, kg	Overall dimensions, mm Length x Width x Height	Application
D-263.2E4	6L	TW	243(330)	2100	1400(142.7)	1200–1600	195(143)	750	1308,5x739x1118	Trucks, Buses

4-cylinder new generation diesel engines

D-245S3B
Stage 3B



4-cylinder diesel engine is a 4-stroke internal combustion piston engine with in-line vertical positioning of cylinders, direct fuel injection and ignition by compression.

- Swept volume 4,75 litres.
- Output 110,2 hp.
- Maximal torque 440 Nm.
- Turbocharging with adjustable pressure ensure not only easy start and improved engine response backed up by higher torque values at low crankshaft speed, but also the high level of conformity to exhaust gas harmful substances content limitations.
- Charged air intercooling.
- Electronically controled accumulator type II Generation Common Rail fuel injection system with the maximal injection pressure of 160 MPa, ensuring the required ecological parameters with keeping the acceptable levels of fuel economy, noise, vibration etc.
- SCR technology — selective exhaust gas catalytic neutralization system.

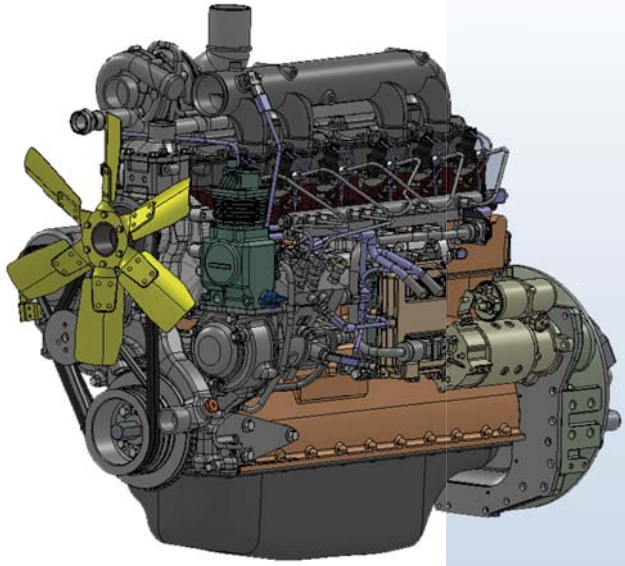
MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)	Mass, kg	Overall dimensions, mm Length x Width x Height	Application
D-245S3B	4L	TW	81(110.2)	2200	440(44.9)	1600	215(158)	450	1055x692x1090	Tractors, front-end loaders, excavators

6-cylinder new generation diesel engines

New

D-260.4S3B

Stage 3B



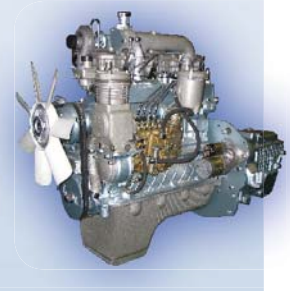
6-cylinder diesel engine is a 4-stroke inte combustion piston engine with in-line vertical positioning of cylinders, direct fuel injection and ignition compression.

- Swept volume 7,12 litres.
- Rated output 212 hp.
- Torque 923 Nm.
- Turbocharged, intercooled (TW).
- Electronically controled accumulator type II Generation Common Rail fuel injection system with the maximal injection pressure of 160 MPa, ensuring the required ecological parameters with keeping the acceptable levels of fuel economy, noise, vibration etc.
- SCR technology — selective exhaust gas catalytic neutralization system

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)	Mass, kg	Overall dimensions, mm Length x Width x Height	Application
D-260.4S3B	6L	TW	156(212)	2100	923(94.2)	1600	215(158)	720	1337x711x1154	Tractors, front-end loaders, combine harvesters, excavators
D-260.1S3B	6L	TW	116(158)	2100	660(67.3)	1600				
D-260.2S3B	6L	TW	100(136)	2100	570(58.1)	1600				

4-cylinder turbocharged diesel engines

engines 4-stroke, 4-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical, in-line with direct fuel injection.

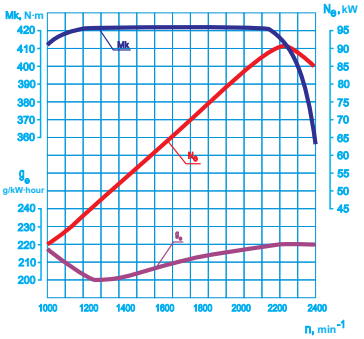


MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)
D-245.7*	4L	TW	90(122.4)	2400	423(43)	1500	215(158)
D-245.9*	4L	TW	100(136)	2400	460(47)	1500	215(158)
D-245.12C	4L	T	80(108.8)	2400	353(36)	1500	218(160.3)
D-245.7E2	4L	TW	90(122.4)	2400	422(43.1)	1500	205(150.7)
D-245.9E2	4L	TW	100(136)	2400	424(43.3)	1600	205(150.7)
D-245.30E2	4L	TW	115(156.4)	2400	526(53.7)	1600	205(150.7)
D-245.7E3	4L	TW	90(122.4)	2400	420(42.8)	1400	200(147)
D-245.9E3	4L	TW	100(136)	2400	460(46.9)	1400	200(147)
D-245.30E3	4L	TW	115(156)	2400	575(58.7)	1500	205(150.7)
D-245.35E3	4L	TW	125(170)	2400	560(57)	1500	200(147)
D-245.7E4	4L	TW	95.6(130)	2200	422(43)	1100-2100	220(161.8)
D-245.9E4	4L	TW	100(136)	2400	460(46.9)	1200-1600	225(165.4)
D-245.35E4	4L	TW	130(176.8)	2300	650(66.3)	1200-1600	220(162)
D-249E4	4L	TW	140(190.4)	2300	710(72.4)	1200-1700	197(145)
D-249.1E4	4L	TW	130(176.8)	2300	660(67.3)	1200-1700	197(145)
D-249E5	4L	TW	140(190.4)	2300	710(72.4)	1200-1700	197(145)

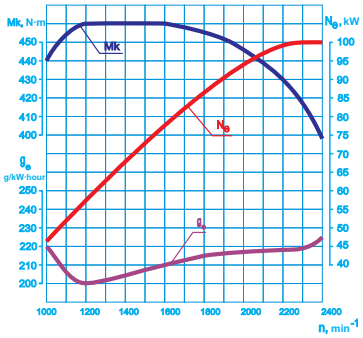
T — turbocharged
TW — turbocharged with charged air intercooling

Diesel engines to automobiles

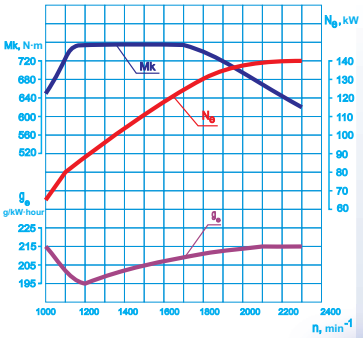
D-245.7E4



D-245.9E4



D-249E4

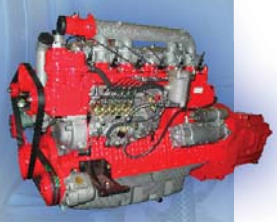


MODEL	Mass, kg	Overall dimensions, mm Length x Width x Height	Application/ Consumer
D-245.7*	530	798x698x977	Buses “PAZ- 3205-07, 32053-07”, all-terrain vehicles “PAZ 3206-07”, trucks GAZ 33081 “Vepr”, GAZ-3309, creeper tractor GAZ-34039
D-245.9*	430	1090x732x957	Buses MAZ 256000, LAZ-695”D”, “ZIL-3250”, PAZ-4234, PAZ-4230, 4230-01, trucks ZIL-4329, ZIL-4327, MAZ-4370, MAZ-437040, MAZ-63038, ZIL-5301
D-245.12C	430	1016x719x1035	Hydraulic pumping equipment, creeper tractor GAZ-34039, creeper snow-marsh-mobile GAZ-34039, railroad repair machines (OJSC “Istiynsky Mechanical Engineering Plant”), sweeping machine KO-318 (OJSC “Kurgandormash”), trucks ZIL-4329, 4327, 5301, buses ZIL-32501
D-245.7E2	600…640	798x698x977	Trucks GAZ-33104 “Valdai”, GAZ-331086 “Zemliak”, GAZ-331081 “Vepr”, buses PAZ-3205-07, -32053-07, -4234, -4230-01; 3-rd size group hydraulic excavator types EO-3322, -3323, -3326, EK-12, -14, -20 and their modifications, ET25 and its modifications, mobile screw compressor sets VVP-9/7U1, -10/7 (OJSC “Poltavsk Turbo-Mechanical Works”)
D-245.9E2	500…540	1090x732x957	Buses PAZ-4230-01, ZIL-3250, PAZ-4234, -4230-01, trucks ZIL-432930, -5301, -4327, “AMUR-5313-20”, “RUSAK-5354”
D-245.30E2	500…540	1498x679x937	Buses PAZ-4234, MAZ-256000, trucks ZIL-4334B1, combat reconnaissance-patrol armoured vehicle “BRDM-2” (OJSC “GAZ”), MAZ-4370, -437041, -437141, -457041, -457041
D-245.7E3	455	1023x653x957	Buses PAZ-4234, trucks GAZ-33104 “Valdai”, GAZ-331086 “Zemliak”, GAZ-331081 “Vepr”
D-245.9E3	500	1016x719x1035	Buses PAZ-4230-01, -4234, -32053-07, trucks ZIL-4329, -4334B1, -5301, “RUSAK-54541”
D-245.30E3	450	1498x676x937	Buses MAZ-256000, -256001, trucks “AMUR-5313-20”, ZIL-4327, -4334B1 GAZ-3309, GAZ-33081 “Sadko”, GAZ-33104 “Valdai”, MAZ-4370, -437041, -437141, -457041, -457041, 3301 “Radimich” (RUE “Gomselmash”), AMUR-5313-20
D-245.35E3	500	927x709x959	Trucks KAMAZ-4308, MAZ-4371
D-245.7E4	500	940x680x1010	Bus PAZ-4234
D-245.9E4	500	1100x780x1410	Trucks ZIL-4329, -4334B1, -5301, RUSAK-54541, Buses PAZ-4234, -32053-07
D-245.35E4	525	1755x780x1010	Trucks MAZ-4380, “AMUR”
D-249E4	520	941x701x976	Trucks OJSC “MAZ”
D-249.1E4	520	941x701x976	
D-249E5	520	941x701x976	

Bore x Stroke — 110x125 mm

6-cylinder turbocharged diesel engines

4-stroke, 6-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical, in-line with direct fuel injection.

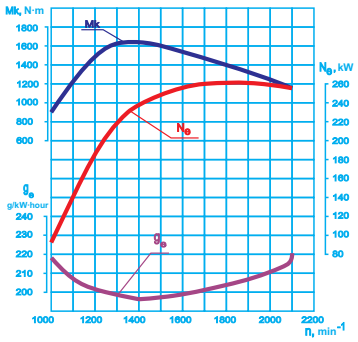


MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)
Bore x Stroke – 110x125 mm							
D-260.5E3	6L	TW	169(230)	2100	920(93.9)	1400	203(149.3)
D-260.11E3	6L	TW	136(185)	2100	730(74.5)	1400	205(151)
D-260.12E3	6L	TW	184(250)	2100	1004(102.4)	1400	202(148.5)
Bore x Stroke 115x140 mm							
D-263.1E3	6L	TW	257(350)	2100	1400(142.8)	1300	220(161.8)
D-263.2E4	6L	TW	243(330)	2100	1400(142.7)	1200-1600	195(147)

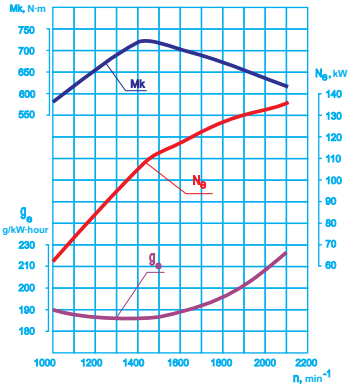
TW — turbocharged with charged air intercooling

Diesel engines to automobiles

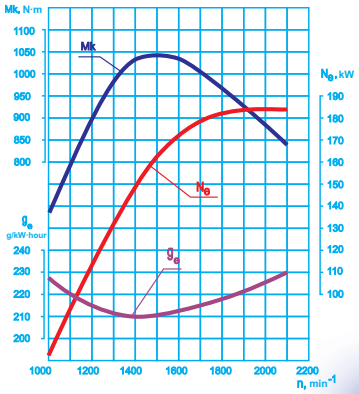
D-263.1E3



D-260.11E3



D-260.12E3



MODEL	Mass, kg	Overall dimensions, mm Length x Width x Height	Application/ Consumer
Bore x Stroke – 110x125 mm			
D-260.5E3	750	1441x766x1111	Trucks MAZ-555145, ZIL-433185
D-260.11E3	750	1476x750x1111	Trucks ZIL-4331-80
D-260.12E3	730	1333x766x1111	Trucks MAZ-555142
Bore x Stroke 115x140 mm			
D-263.1E3	750	1308,5x739x1118	Trailers, dump trucks, automobiles, timber trucks, chassis
D-263.2E4	740	1308,5x739x1118	Trailers, dump trucks, automobiles, timber trucks, chassis

4-cylinder diesel engines without turbocharging

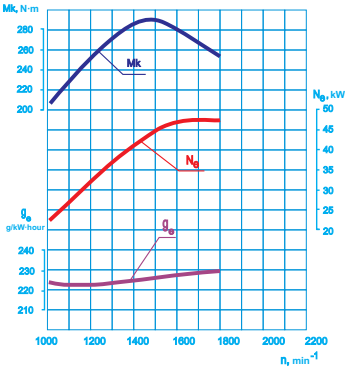
4-stroke, 4-cylinder diesel engines, liquid cooling, vertical, in-line, direct fuel injection.

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)
D-242/242L	4L	NA	46(62)	1800	241(24.6)	1800	226(166)
D-243/243L	4L	NA	60(81)	2200	258(26.3)	1600	226(166)
D-243.1	4L	NA	61(83)	2200	264.8(27)	1600	226(166)
D-244/244L	4L	NA	42(57)	1700	235.4(24)	1400	226(166)
D-242C	4L	NA	47.5(64.4)	1800	252(25.7)	1400	230(169)
D-243C	4L	NA	60(81.6)	2200	260.5(26.6)	1400	235(173)
D-244C	4L	NA	43.5(59)	1700	244(25)	1400	230(169)
D-248C	4L	NA	44(60)	2000	232(23.7)	1400	232(170.6)

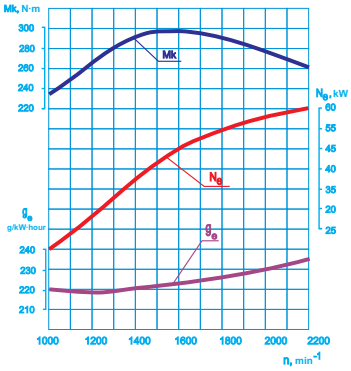
NA — no turbocharging
Bore x Stroke 110x125 mm

Diesel engines to agricultural and road building machinery

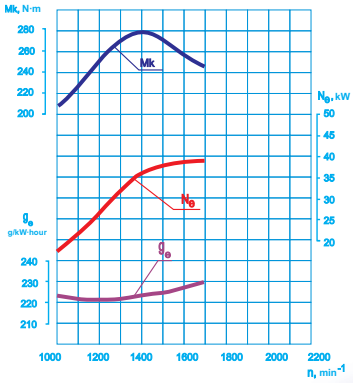
D-242C



D-243C



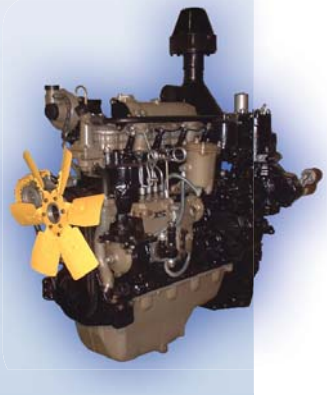
D-244C



MODEL	Mass, kg	Overall dimensions, mm Length x Width x Height	Application/ Consumer
D-242/242L	430/490	1255x683x993	Tractors “Belarus-520, -522, 570, -572” (PC “MTZ”), truck concrete mixers, excavators, self-propelled container loaders, lift trucks OJSC “Amkodor”, tractors PC “YMZ”, mobile compressor sets OJSC “Poltavsk Turbo-Mechanical Works”, welding sets CJSC “Uraltermosvar”, convoy building machines SKB “Trofmash”
D-243/243L	430/490	1255x683x993	Tractors PC “YMZ”, excavator-lifts, lift trucks of 5 tons capacity (CJSC “Avtopogruzchik”), trailers, hydraulic pumping equipment, cranes, mobile pump sets, asphalt pavers OJSC “IRMASH”, self-propelled graders OJSC “Briansky Arsenal”, truck lifts OJSC “Kalinin Mechanical Engineering Works”, diesel engine power gensets, mobile power stations “OJSC “Electroagregat”, mobile compressor sets OJSC “Mechanical Engineering Works “Arsenal”, road rollers CJSC “Raskat”
D-243.1	430	1255x683x993	Pump sets
D-244/244L	430	1255x683x993	Universal tractor-cultivators “Belarus” (PC “MTZ”), Tractors PC “YMZ”, Hydraulic pumping equipment LLS “Energomash”
D-242C	430	1255x683x993	Tractors 3TM-60/62, single-bucket excavators (SUE“Omsktransmash”)
D-243C	430	1255x683x993	Tractors “Belarus-800, -820, -900 -920” (PC “MTZ”), road rollers CJSC “Raskat”, hydraulic lifts of 7 t capacity and their modifications (OJSC “Excavator Works”)
D-244C	430	1255x683x993	Universal tractor-cultivators “Belarus-510E, -512E, -530, -550, -552” (PC “MTZ”)
D-248C	430	1335x870x1027	Tractors LTZ-55, -60 (JSC “Lipetsk Tractor Works”)

4-cylinder diesel engines with turbocharging

4-cylinder turbocharged diesel engines4-stroke, 4-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical, in-line with direct fuel injection.

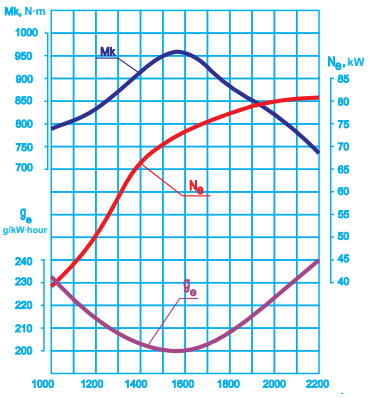


MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)
D-245/245L	4L	T	77(105)	2200	334(34)	1400	220(162)
D-245.5	4L	T	65(88.7)	1800	345(35.2)	1400	217(159.6)
D-245.16C/16LC	4L	T	95(129)	1800	630(64.3)	1500	205(150.7)
D-245C	4L	T	79(107.4)	2200	343(35)	1400	230(169)
D-245S2	4L	TW	81(110.2)	2200	440(44.9)	1600	240(176.5)
D-245.2S2	4L	TW	90(122.4)	2200	501(51)	1600	245(180)
D-245.43S2	4L	TW	62(84.3)	1800	411(41.9)	1400	220(162)
D-245S3A	4L	TW	81(110.2)	2200	352(36)	1600	225(165)
D-245.2S3A	4L	TW	90(122)	2200	351(35.8)	1600	225(165.4)
D-245.5S3A	4L	TW	70(95.2)	1800	371(37.8)	1400	210(154)
D-245.43S3A	4L	TW	62(84.3)	1800	329(33.6)	1400	210(154)
D-245S3AM	4L	TW	81(110.2)	2200	440(44.9)	1600	240(176.5)
D-245.2S3AM	4L	TW	90(122.4)	2200	501(51.1)	1600	240(176.5)
D-245.5S3AM	4L	TW	70(95.2)	1800	464(47.3)	1400	230(169)
D-245.43S3AM	4L	TW	62(84.3)	1800	411(41.9)	1400	230(169)

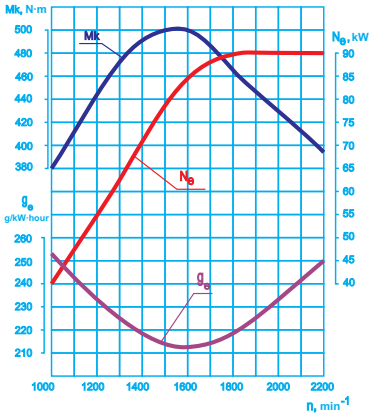
T — turbocharged
TW — turbocharged with charged air intercooling
Bore x Stroke 110x125 mm

Diesel engines to agricultural and road building machinery

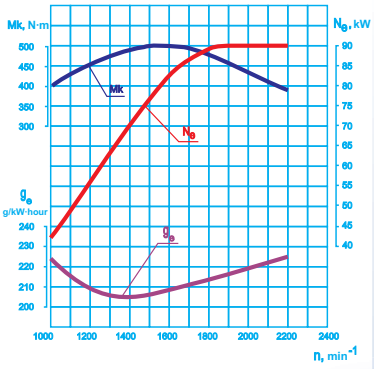
D-245S3AM



D-245.2S3AM



D-245.2S3A



MODEL	Mass, kg	Overall dimensions, mm Length x Width x Height	Application/ Consumer
D-245/245L	450/485	1048x689x1335	Tractors “Belarus” (PC “MTZ”), creeper tractor-cultivators, mower-crushers PC “KTZ”, Tractors PC “YMZ”, excavators OJSC “Donetsky Excavator”, excavators-lifts, hydraulic excavators, mobile compressor sets OJSC “Poltavsk Turbo-Mechanical Works”, chassis to self-propelled mining machines and chassis to drilling machines NRS “Krivorozhrudmash”, wheeled asphalt pavers “Dormashina”
D-245.5	450	993x689x1080	Truck concrete mixers, tractors, single-bucket excavators SUE “Omsktransmash”
D-245.16/16L	495/512	1125x765x1305	Timber tractors LLS “Onezhsky Tractor Works”
D-245C	450	1025x691x1071	Tractors “Belarus” (PC “MTZ”), front-end loaders CJSC “Cheliabinsk Road Building Machines”
D-245S2	430	1056x691x1071	Tractors “Belarus-1021, -1025, 1022.3” (PC “MTZ”), sweeping machines KM-32001-06 (OJSC “Vniistroydormash”), rollers Amkodor-330C, -540, -536, -451A (OJSC “Amkodor”)
D-245.2S2	450	1056x691x1071	Tractors “Belarus” (PC “MTZ”), wheeled front loader LLS “Engineering Center”, concrete mixer drives OJSC “Tuymazinsky Truck Concrete Mixer Works”, compressor stations OJSC “Mashzavod”
D-245.43S2	430	1025x691x1071	Tractors “Farmer-8244C2S2” (LLS SIE “Agromashinvest”), truck lifts OJSC “Amkodor”
D-245S3A	450	1055x692x1090	Tractors “Belarus-1021, -1025, 1022.3” (PC “MTZ”)
D-245.2S3A	450	1055x692x1090	Tractors “Belarus” (PC “MTZ”)
D-245.5S3A	450	1023,5x692x1090	
D-245.43S3A	450	1056x688x1071	
D-245S3AM	430	1056,5x703,5x1075	
D-245.2S3AM	450	1056,5x703,5x1075	
D-245.5S3AM	430	1056,5x703,5x1075	
D-245.43S3AM	430	1056,5x703,5x1075	

6- and 8-cylinder diesel engines with turbocharging

4-stroke, 6-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical in-line with direct fuel injection.

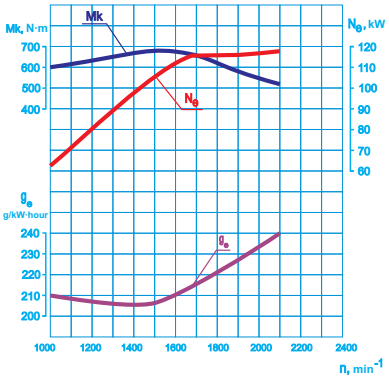
4-stroke, 8-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical, V-type cylinders positioning and direct fuel injection.

MODEL	Number and positioning of cylinders	Gas exchange system type	Rated output, kW (hp)	Rated speed, rpm	Maximal torque, Nm (kgf·m)	Speed at maximal torque, rpm	Specific fuel consumption (minimal), g/kW·hour (g/hp·hour)
Bore x Stroke 110x125 mm							
D-260.1	6L	T	114(155)	2100	622(63.5)	1400	220(162)
D-260.2	6L	T	96(130)	2100	500(51.0)	1400	226(166)
D-260.4	6L	TW	154(210)	2100	808(82.3)	1500	220(162)
D-260.14	6L	TW	103(140)	1800	682(69.6)	1400	235(172.8)
D-260.1C	6L	T	116(157.7)	2100	527(53.8)	1400	238(175)
D-260.2C	6L	T	98(133.3)	2100	445.7(45.5)	1400	235(173)
D-260.4C	6L	TW	156(212)	2100	709.4(72.4)	1500	220(162)
D-260.1S2	6L	TW	116(157.7)	2100	659(67.2)	1500	240(176.5)
D-260.2S2	6L	TW	100(136)	2100	568(58)	1500	240(176.5)
D-260.4S2	6L	TW	156(212)	2100	922(94)	1500	240(176.5)
D-260.1S3A	6L	TW	116(157.7)	2100	527(53.8)	1600	240(177)
D-260.2S3A	6L	TW	100(136)	2100	455(46.4)	1600	240(177)
D-260.4S3A	6L	TW	156(212)	2100	709(72.3)	1600	240(177)
Bore x Stroke 110x140 mm							
D-262S2	6L	TW	220.5(300)	2100	1320(134.7)	1500	230(169)
D-262.1S2	6L	TW	206(280)	2100	1233(130.9)	1500	230(169)
D-262.2S2	6L	TW	184(250)	2100	1130(115.3)	1500	230(169)
8-cylinder turbocharged diesel engines with turbocharging							
D-280	8V	TW	312.5(425)	2100	1913(195)	1300	225(165)

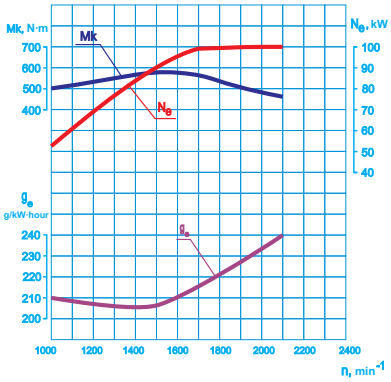
T — turbocharged
TW — turbocharged with charged air intercooling

Diesel engines to agricultural and road building machinery

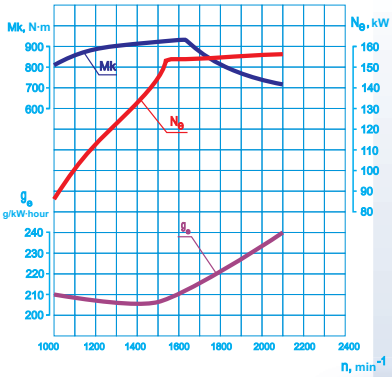
D-260.1S3A



D-260.2S3A



D-260.4S3A

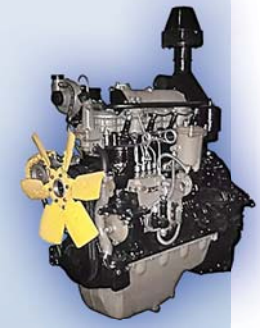


MODEL	Mass, kg	Overall dimensions, mm Length x Width x Height	Application/ Consumer
Bore x Stroke 110x125 mm			
D-260.1	650	1337x711x1154	Tractors “Belarus-1522” (PC “MTZ”), combine harvesters “Niva-Effect” (LLS “KZ “Rostselmash”), front-end loaders OJSC “Amkodor”, asphalt pavers, road rollers CJSC “Raskat”, concrete pumps OJSC “Tuymazinsky Truck Concrete Mixer Works”
D-260.2	650	1337x711x1154	Tractors “Belarus-1221, -1220” (PC “MTZ”) front-end loaders OJSC “Amkodor”, excavators OJSC “Donetsky Excavator”
D-260.4	700	1337x711x1154	Tractors “Slobozhanets” (LLS “Slobozhansk Industrial Company”), combine harvesters KZS-7 (RUE “Gomselmash”), excavators OJSC “IRMASH”, self-propelled graders OJSC “Briansky Arsenal”, pump sets
D-260.14	600	1373x712,5x1154	Tractors VT-100L “(OJSC “Volgograd Tractor Works”), excavators OJSC “Donetsky Excavator”, skidder tractors T-147 (OJSC “Abakan Experimental Mechanical Engineering Works”), self-propelled graders (“Beldortekhnika”)
D-260.1C	650	1337x711x1154	Tractors “Belarus-1523” (PC “MTZ”)
D-260.2C	650	1337x711x1154	Tractors “Belarus-1221, -1222” (PC “MTZ”)
D-260.4C	700	1337x711x1154	Combine harvesters “Vector” (LLS “KZ “Rostselmash”)
D-260.1S2	600	1337x711x1154	Tractors “Belarus-1523” (PC “MTZ”), front-end loaders Amkodor-342B, -342C-02, -342-03 (OJSC “Amkodor”)
D-260.2S2	600	1337x711x1154	Tractors “Belarus-1221, -1222” (PC “MTZ”)
D-260.4S2	650	1337x711x1154	Tractors “Belarus-2022” (PC “MTZ”), tractors (OJSC “Kharkov Tractor Works”)
D-260.1S3A	720	1337x711x1154	Tractors “Belarus-1523” (PC “MTZ”)
D-260.2S3A	720	1337x711x1154	Tractors “Belarus-1221, -1222” (PC “MTZ”)
D-260.4S3A	720	1337x711x1154	Tractors “Belarus-2022” (PC “MTZ”)
Bore x Stroke 110x140 mm			
D-262S2	750…950	1378,5x719x1237	Tractors “Belarus-3022B” (PC “MTZ”), combine harvesters “Don-1500” (LLS “Slobozhansk Industrial Company”)
D-262.1S2	750…950	1378,5x719x1237	Tractors “Belarus-2822” (PC “MTZ”)
D-262.2S2	750…950	1270,5x719x1237	Tractors “Slobozhanets” (LLS “Slobozhansk Industrial Company”), combine harvesters “Lida-1300” (OJSC “Lidagroprommash”)
8-cylinder turbocharged diesel engines with turbocharging			
D-280S	1380	1552x1092x1190	Universal power appliances RUE “Gomselmash”

4 - stroke, 4 -, 6 - and 8-cylinder diesel engines for power gensets

4-stroke, 4- and 6-cylinder diesel engines with gas-turbine charging, liquid cooling, vertical, in-line with direct fuel injection.

4-stroke, 8-cylinder diesel engines with gas-turbine supercharging, liquid cooling, vertical, V-type cylinders positioning and direct fuel injection.



MODEL	Rated output engine, kW	Rated output electroaggregat, kW	Rated speed, min^{-1}	Specific fuel consumption at nominal regime, g/kW·hour	Gas exchange system type	Fuel injection pump model*
4-cylinder diesel engines						
D-246.1	42	30	1500	220	NA	4UTNI 776 776Э 776Э2
D-246.2	54	40	1500	215	T	
D-246.3	65	50	1500	210	TW	776-01 776-01Э 776-01Э2
D-246.4	77	60	1500	210	TW	
6-cylinder diesel engines						
D-266.2	95	75	1500	212	TW	366-01 366-01Э 366-01Э2
D-266.3	115	90	1500	209	TW	
D-266.4	127	100	1500	208	TW	
8-cylinder diesel engines						
D-286	237	200	1500	204	TW	171-50
D-286.1	294	250	1500	198	TW	171-50
D-286.2	375	315	1500	198	TW	171-50

L — in-line, vertical
T — turbocharged
TW — turbocharged with charged air intercooling
* Using other high pressure fuel injection pumps is possible

Industrial diesel engines

MODEL	Overall dimensions, mm Length x Width x Height	Mass, kg	Application/ Consumer
4-cylinder diesel engines			
D-246.1	993,5x676x1223	450	Diesel engine power gensets (CJSC “Altai Power Means”), Electric power gensets (OJSC “MMP”, OJSC Bavlensk Works “Electroagregat”, CJSC “Uraltermosvar”, SC “TSS”, LLS “IzhElectroagregat”, LLS “PSM”) and others.
D-246.2	993,5x683,5x1223	460	Electric power gensets (OJSC “MMP”, SC “TSS”, UE “NIISA”, IP “BME-Diesel”)
D-246.3	965,5x679x958	460	Electric power gensets AD-30, -50, -60 (OJSC “MMP”, OJSC Bavlensk Works “Electroagregat”)
D-246.4	965,5x679x958	460	Diesel engine power gensets (CJSC “Altai Power Industry Means”), Electric power gensets (OJSC “MMP”, OJSC Bavlensk Works “Electroagregat”, CJSC “Uraltermosvar”, SC “TSS”, LLS “IzhElectroagregat”, OJSC “SHZSA”, LLS “PSM”)
6-cylinder diesel engines			
D-266.2	1282,5x711x1168	650	Electric power gensets (OJSC “MMP”, OJSC “SHZSA”)
D-266.3	1282,5x711x1168	650	Diesel electric unit AD80C-T400-2P (UE “NIISA”)
D-266.4	1282,5x711x1168	650	Electric power gensets (OJSC “MMP”, OJSC “Electroagregat”)
8-cylinder diesel engines			
D-286	1549x1172x1172	1375	OJSC “MMP”, IP “BME-Diesel”
D-286.1	1540x1172x1172	1375	OJSC “MMP”, IP “BME-Diesel”
D-286.2	1561x1173x1206	1380	OJSC “MMP”, IP “BME-Diesel”

The Minsk Motor Plant Test Center (OJSC "MMP" TC) conforms to the criteria of the Republic of Belarus Accreditation System. It has been accredited by the National Accreditation Authority and the Committee for Standards, Metrology and Certification under the Councill of Minister of the Republic of Belarus for conformity to STB ISO/MEC 17025. The availability of accredited laboratories allows to perform the entire range of independent testing of diesel engines of our own make as well as to render testing services to other companies.

The major research and testing work is done along the following directions:

- The basic diesel engine specifications (output, torque, speed, fuel consumption, air consumption, pressure, temperature, fuel density, injection angle, oil consumption on burning etc.)
- Startup characteristics evaluation (with a possibility to do testing in a climatic chamber under negative temperatures).
- Vibration.
- Noise.
- Hermeticity of cooling, fuel supply and oiling systems.
- Exhaust gas opacity.
- Harmful substances content in exhaust gas (hydrocarbons, carbon oxides, nitrogen oxides, particles).
- Air filters testing (oil loss within the engine inclination angle limits for air cleaners with oil bath; dust transmittance factor; initial air cleaner resistance depending on air consumption; air cleaner operation duration till ultimate resistance; air cleaner ultimate resistance).
- Turbocharger basic specifications and parameters.
- Oiling and cooling systems pumps performance.
- Labelling requirements.

The Test Center is equipped with up-to-date means of measurement and testing machinery of the World's leading manufacturers: (AVL (Austria), HBM, Pierburg (Germany), MEZSERVIS (Czechia), Mettler Toledo (Switzerland) allowing to conduct certification, inspection, periodical and research testing of diesel engines for conformity to standards EURO-3, EURO-4, EURO-5, Stage 3A, Stage 3B, Stage 4.

Test Center

Gas analyzer AMA 4000 "Pierburg", Germany

Vibration test bench GW-V1322, Gearing&Watson Electronics, UK

Microtunnel Smart Sampler SPC 472, AVL, Austria

Test bench with automation system "PUMA", AVL, Austria

Test bench NC 132 "Motorpal", Czech Republic

Test bench control board

Aluminium casting

The MMP Aluminium Foundry Department renders services of **gravity die casting** (including casting with sand mould cores), **high pressure and low pressure die casting** with aluminium alloys **АК9, АК9ч, АК9п, АК12М2МгН, АК5М4**.

The basic castings nomenclature: **pistons**, including those with ni-resist inserts, **sumps, branches, manifolds, fuel injection pump housings, cylinders, connecting rods**, etc.

The weight of the castings produced — from **0,1 kg** to **20,0 kg**.

Basically, the castings are meant for use in the company engines manufacture. A large group of castings is produced without use of sand mould cores, but there is a whole number of castings, such as **intake manifolds**, different kinds of **branches**, that are produced with the use of cores. The cores are produced by semi-automates in heated tooling.

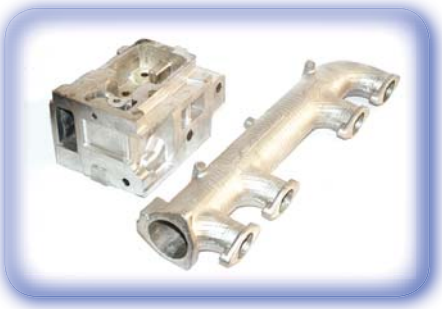
A technology has been developed for manufacturing friction parts and units of composite aluminium materials designed instead of costly bronze, brass and aluminium-tin alloys allowing to prolong machinery life, raise working characteristics and reduce the mass.

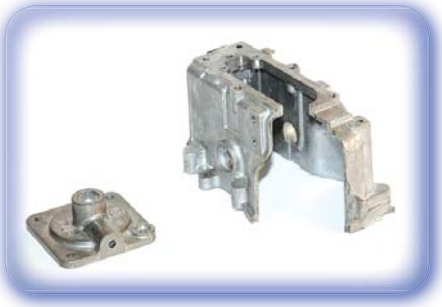
The Aluminum Foundry Dept capacities provide for annual output of up to 5 thousand tons of aluminium items produced by gravity die casting and low pressure die casting and 4 thousand tons of high pressure die castings.

The gravity die casting section is equipped with both universal machines and special purpose machines. The high pressure die casting section is equipped with various capacity machines with horizontal and vertical compression boxes. Low pressure die casting machines are also in operation within the Foundry Department.

It is possible to produce castings with customer materials and tooling.






Electric power gensets and compressor sets

Diesel engine electric power gensets

The Minsk Motor Plant offers 2-nd automation degree diesel engine electric power gensets of its driven by the engines of its own manufacture designed for operation as prime and standby electric power sources with the load of 32 kVa.

The gensets are equipped with “Mecc Alte” ECO (Italy) and other European manufacturers' alternators providing 3-phase power supply.

The power gensets are driven by reliable diesel engines of the OJSC “Minsk Motor Plant” with the speed of 1 500 rpm and liquid cooling system.

Technical Specifications

Specification description	OJSC “MMP” power gensets (MDG) values													
Full electric output, kVa	30	40	60	70	85	105	130	150	200	250	300	350	400	450
Power output, kW	24	32	48	56	68	84	104	120	160	200	240	280	320	360
Speed, rpm1500(cosφ), 0,8 Voltage, V 400/230, Frequency, Gz 50														
Hourly fuel consumption at rated output, litres/hour	5,8	7,7	11,4	12,8	15,6	19,8	23,8	31,3	35,8	44,8	51,6	58,2	68,8	74,3
Fuel tank capacity, litres	200±10				320±10				420±10					
Mass, kg, no more than	920	980	1070	1190	1500	1570	1620	1650	2450	2550	2600	2790	2980	3290
Average recovery time, from	3	3	3	3	3,5	3,5	3,5	3,5	4,2	4,2	4,2	4,5	4,5	4,5
Overall dimensions, mm, no more than														
– length	1960	1960	1960	1960	2500	2500	2500	2500	3200	3200	3200	3200	3200	3200
– width	800	800	800	800	800	800	800	800	1200	1200	1200	1200	1200	1200
– height	1600	1600	1600	1600	1700	1700	1700	1700	1800	1800	1800	1800	1800	1800
Model diesel engine OJSC “MMP”	D246.1	D-246.2	D-246.3	D-246.4	D-266.2	D-266.3	D-266.4		D-286.1			D-286.2		

Mobile diesel engine compressor sets

Mobile diesel engine compressor manufactured by the Minsk Motor Plant have been designed for compressed air supply to equipment and machinery used on sites with limited or no electric power supply, as well as for road building and repair work.

Advantages:

1. Smooth connection of diesel engine to compressor through clutch basket.

2. Technical service accessibility: the compressor set manufacturer (MMP) is also the manufacturer of the diesel engine (drive).

Technical Specifications

Parameters	Productivity, m³ /min			
	3	6	10	12
Rated operation pressure, atm	13,0	7,0	10,0	7,0
Fuel consumption under full load, kg/hour	9,2		17,5	
MMP diesel engine with liquid cooling drive	D 243		D245	
Compressor block	“ROTORCOMP”, Germany			
Dry mass, kg	no more than 1350		no more than 1800	
Overall dimensions (length, width, height), mm	3500x1650x1750		3750x1800x1980	

3. High reliability and long service life.

4. Ease of operation and maintenance.

5. Stable operation with long use.

6. Possibility of operation in hard climatic conditions: from – 40 to +45 °C

Converting trucks to diesel

Conversion of ZIL 130/131 and GAZ-66 trucks to operation with diesel engines is reasonable from the economy viewpoint and it is not a technologically complex procedure requiring special equipment and conditions. The OJSC “MMP” provides a package of the necessary technical documentation (Instruction manual on trucks conversion, diesel engines Operation and Maintenance Manual) for that purpose.

Our high skilled personnel are ready to render full technical assistance in diesel engines installation in the trucks.

Attached to diesel engines are gear-box and a mounting kit for installation in the truck, water and oil radiators (customer option), charged air cooler, steering booster valve box, air cleaner, connecting and fixing elements, sensors, relays.

Basic performance specifications of the engines to trucks ZIL-130/131 and GAZ-66

Specification description	ZIL -130/131			GAZ-66
	D-245.9	D-245.9E2	D-245.30E2	D245.12C
Type	Diesel			
Displacement, litres	4,75			
Rated output, hp	136		156	108,8
	at 2400 rpm			
Maximal torque	460 Nm at 1500 rpm	424 Nm at 1600 rpm	526 Nm at 1600 rpm	353 Nm at 1300-1700 rpm
Configuration	4L			
Fuel supply system	Direct injection			
Recommended fuel	Diesel			
Fuel consumption, l/100 km	18-21			19

Dealer centers

RUSSIA

LLS "TRADE HOUSE "MINSK MOTOR PLANT"
Moscow Region., Noginsk, 41 Industrialnaya Str.
Phone: +7 49651 15737, 56661

LLS "ASK BelAgro-Service"
Moscow Region, Ivanteevka , 1 Sanatorny Proezd,
Phone: +7 495 5806373

LLS "Tsentr TTM"
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Moscovskoye Shosse Str., 302/2
Phone: +7 831 2748922

CJSC "ARESAGAZSERVICE"
Lipetsk, 113 Kovaliova Str.
Phone: +7 4742 483483

LLS "TRADE HOUSE MTZ-ELAZ"
Republic of Tatarstan, Yelabouzhsky District, Industrial Site "Alabuga", Street 9, Building 1/1
Phone: +7 85557 55323

LLS "JENESY"
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CJSC "TEKHAVTOTSENTR"
Moscow, 100 Shosseynaya Str., Building 1
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LLS "AVTO-ALIANS"
Moscow Region, Liubertsy, 86 Mira Str.
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LLS "NormalresursNN"
Nizhny Novgorod,
17A Kuzbasskaya Str.,
Phone: +7 831 2798138

LLS TRADE HOUSE "Altai Precision Items Works"
Barnaul, 6/2 Kosmonavtov Avenue
Phone: +7 385 2757545

UKRAINE

LLS "ASK" BELAGROSERVICE"
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LLS "TPK "Omega-Avtopostavka"
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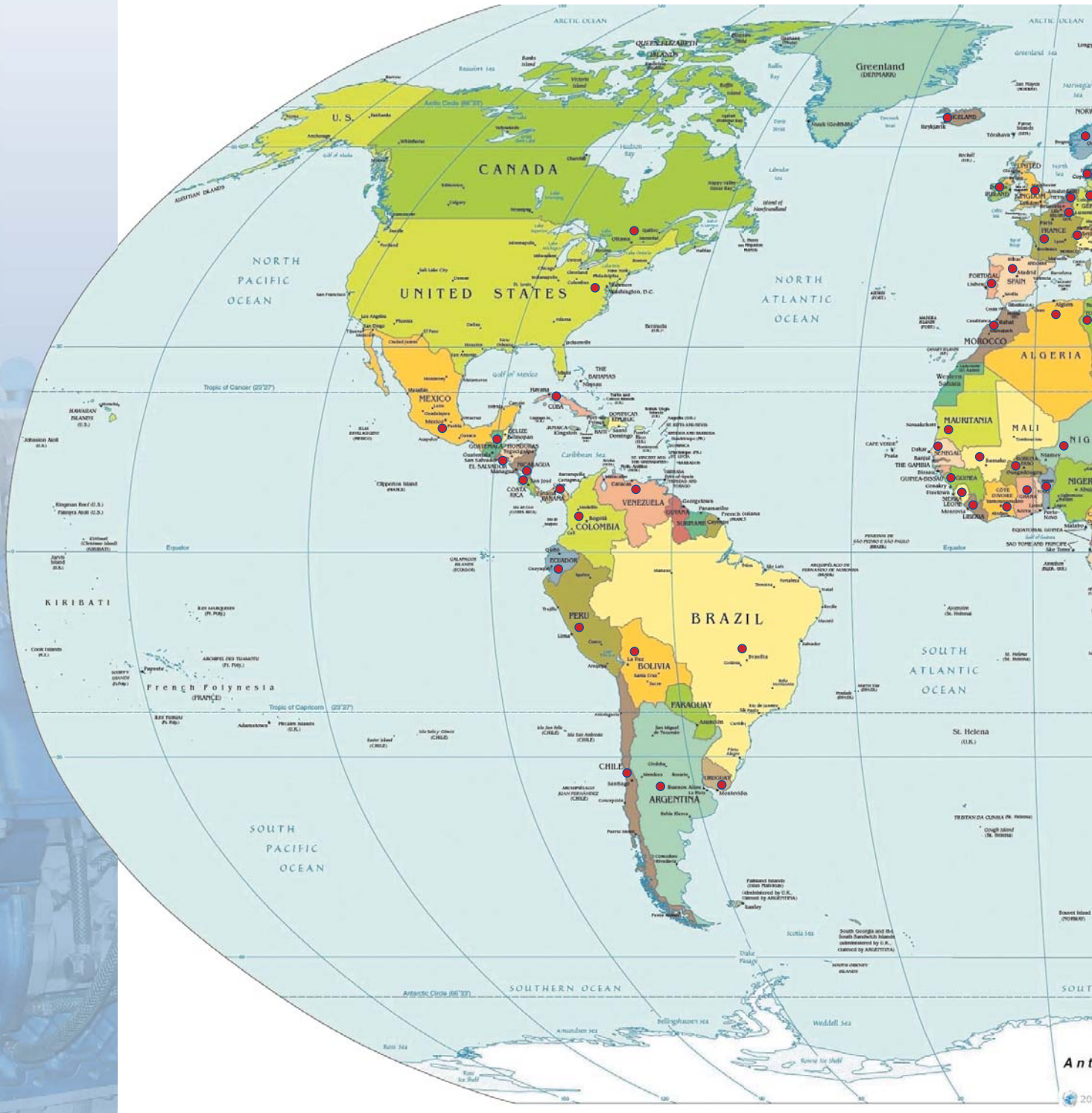
Geography of with engines



machinery equipped manufactured by MMP

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