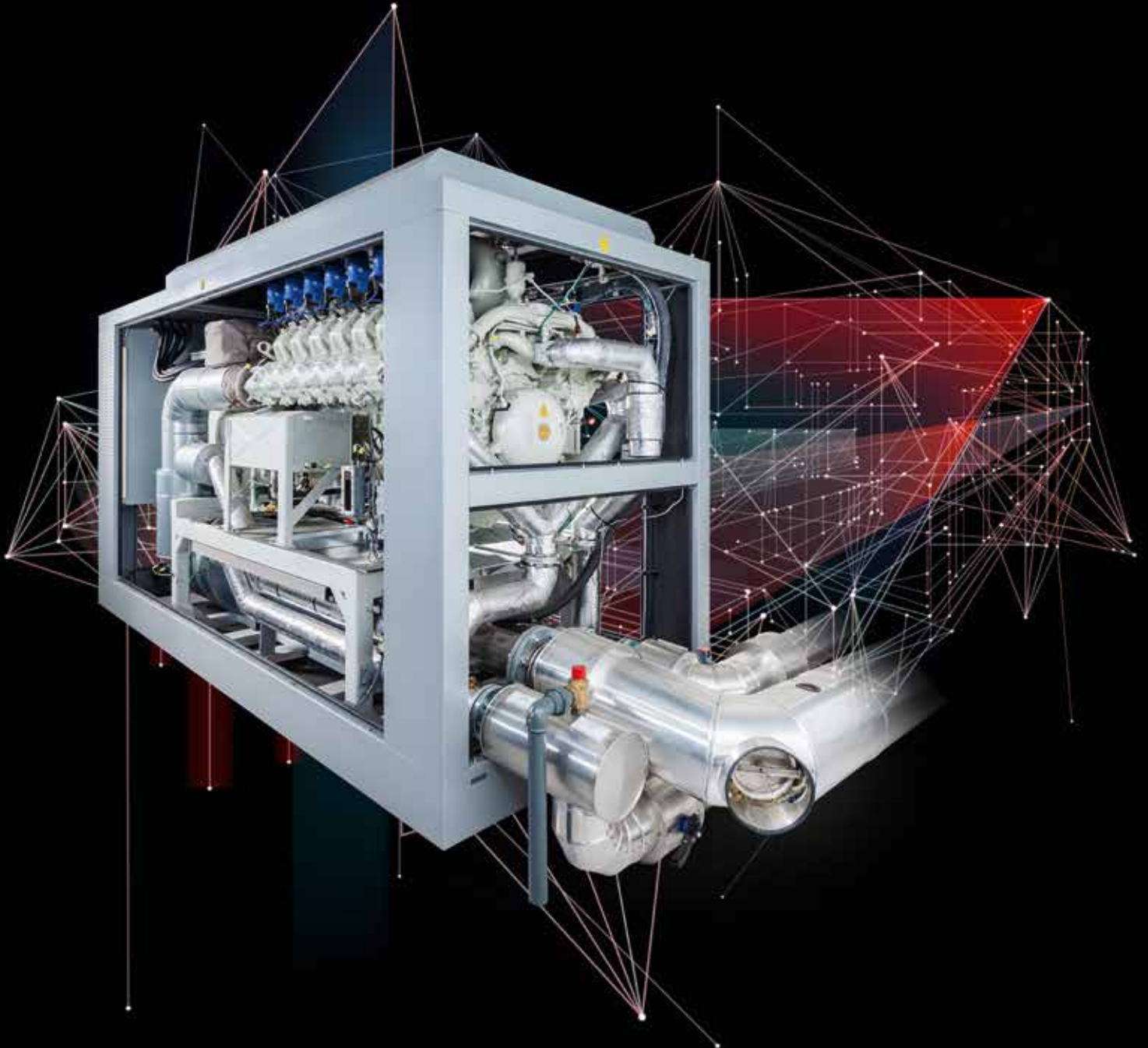


POWER

Gas Engines for Power Generation



MAN Engines







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MAN Gas Engines for Power Generation

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Efficient Electricity and Heat Generation

Manufacturers and operators of CHP applications have strong requirements. Robust, compact engines have to work reliably 24 hours a day, 7 days per week. Economic operation over the life cycle of the entire plant is therefore essential. This requires a high level of

efficiency by maximum utilisation of primary energy and low plant operating costs. With their continuous development programme, MAN engines always make a contribution to greater efficiency. Reliable and low in emissions.

Application Type and Product Range

Mode of operation		COP with natural gas		COP with special gas	
at engine speed	rpm (Hz)	1 500 (50)	1 800 (60)	1 500 (50)	1 800 (60)
Type	Cylinders	Power (kW) ¹⁾			
E0834	4	37–68	45–68	68	68
E0836	6	56–110	64–110	110	110
E2676	6	140–220	160–250	220	250
E3268	8	370	390	370	390
E3262	12	275–550	300–580	450–550	450–580

1) in accordance with German Industrial Standard DIN ISO 3046, Part 1



Customer Benefits

- High power and maximum efficiency
- Low operating costs as a result of low levels of lubricant and fuel consumption as well as extended service intervals (component stability)
- Low emissions due to state-of-the-art combustion technologies
- Low space requirement due to compact design
- Reliable in use thanks to field-tested technology
- Long service life resulting from application-specific design

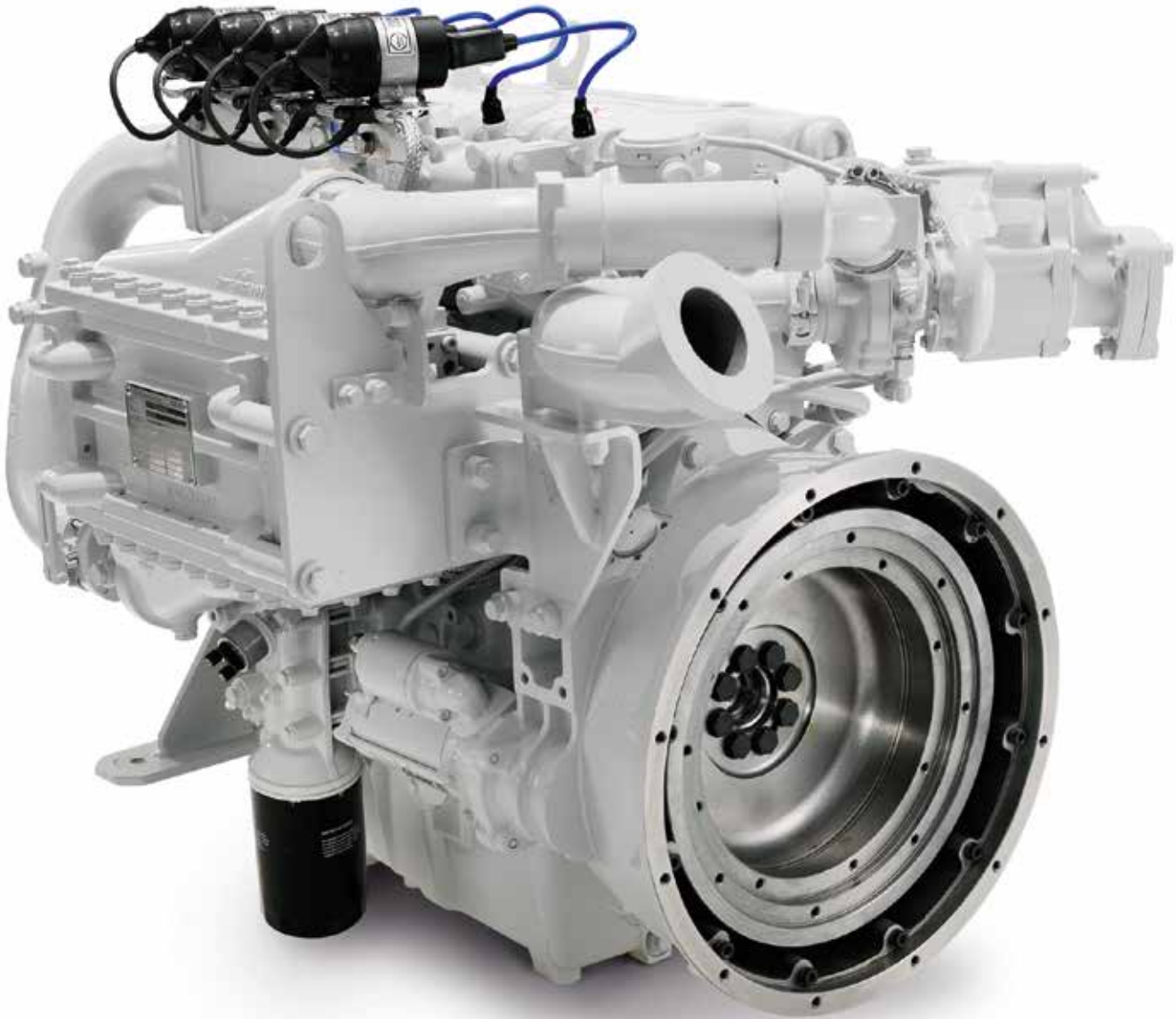
Customized Service Reliability

Low-pollutant and fitted with state-of-the-art combustion technology, MAN natural-gas and special-gas engines pave the way to the future of cogeneration. Energy supply is an essential component for economic success. This is why of course you can always count on our corporation after the purchase should you need help.

MAN offers you, as a power unit manufacturer, a customized service concept. With us as your partner, you yourself are to provide the service for your end users. We customize our training courses to match your requirements by employing the in-depth and proven MAN expertise: Reliable and efficient – just like a MAN gas engine.



E0834



Characteristics E0834 E

- Cylinders and arrangement: 4 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Engine cooling: water-cooled
- Exhaust system: water-cooled exhaust pipe

Characteristics E0834 LE

- Cylinders and arrangement: 4 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with pressure-oil lubricated bearings and water-cooled bearing pedestal
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler
- Exhaust system: water-cooled exhaust pipe

Technical features

Mode of operation		COP with natural gas						COP with special gas	
		1 500 (50)			1 800 (60)			1 500 (50)	1 800 (60)
at engine speed rpm (Hz)									
Engine version		E 312	E 302	LE 302	E 312	E 302	LE 302 ⁴⁾	LE 302	LE 302 ⁴⁾
Bore	mm	108	108	108	108	108	108	108	108
Stroke	mm	125	125	125	125	125	125	125	125
Displacement	l	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
ISO standard power ⁵⁾	kW	37	54	68	45	62	68	68	68
Air-fuel ratio	λ	1.5	1.0	1.6	1.5	1.0	1.6	1.4	1.5
Coolant heat ¹⁾	kW	29	46	54	31	51	54	52	55
Exhaust heat based on 120 °C ¹⁾	kW	26	33	33	35	40	37	35	38
Efficiency ¹⁾									
– mechanical ⁵⁾	%	33.5	37.1	39.1	32.5	37.1	38.2	39.0	37.8
– thermal	%	49.1	53.5	53.1	46.8	53.7	51.9	52.0	52.5
– total	%	82.6	90.6	92.2	79.3	90.8	90.1	91.0	90.3
Emissions status NO _x ²⁾	mg/Nm ³	< 500	< 7 000	< 500 < 100 ⁴⁾⁶⁾	< 500	< 7 000	< 500 < 100 ⁴⁾⁶⁾	< 500	< 500
Combustion ³⁾		m	st	m	m	st	m	m	m

1) at 100 % load

2) with 5 % exhaust-gas oxygen

3) m = lean, st = stoichiometric

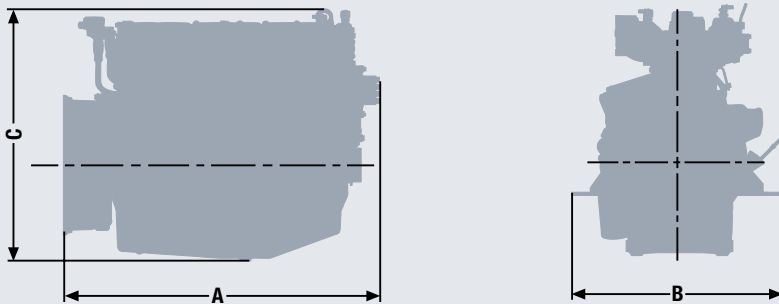
4) data conditional and on request

5) in accordance with German Industrial Standard DIN ISO 3046, Part 1

6) emission status available on request, including SCR technology

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas.

The values are provided for information purposes only and are non-binding.

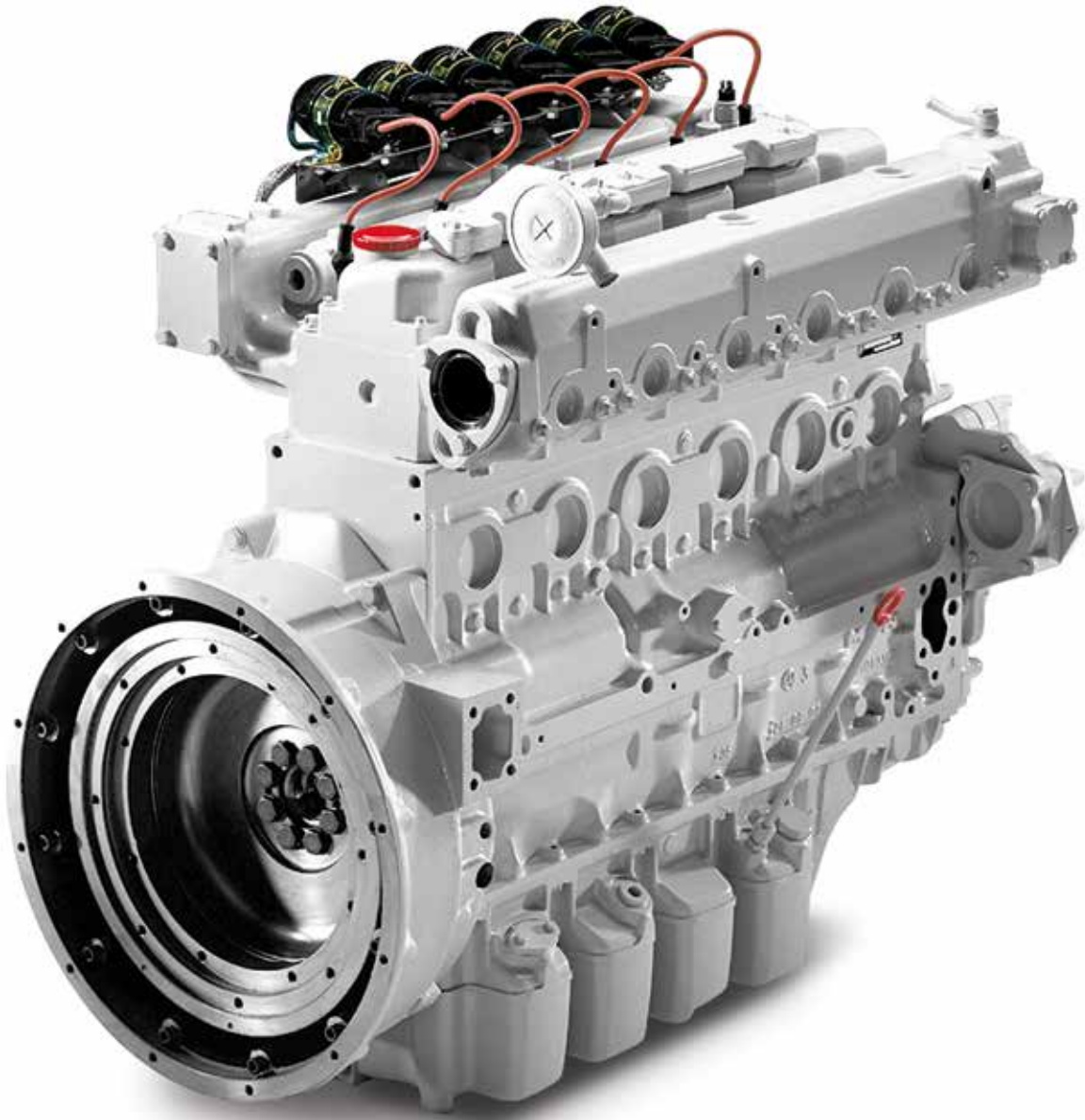


Dimensions

Type designation		E 312	E 302	LE 302
A-Overall length	mm	862	862	1055
B-Overall width	mm	742	742	809
C-Overall height	mm	870	870	870
Dry weight	kg	430	430	495

All data are reference values. Please request installation drawings for detailed specifications.

E0836



Characteristics E0836 E

- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Engine cooling: water-cooled
- Exhaust system: water-cooled exhaust pipe

Characteristics E0836 LE

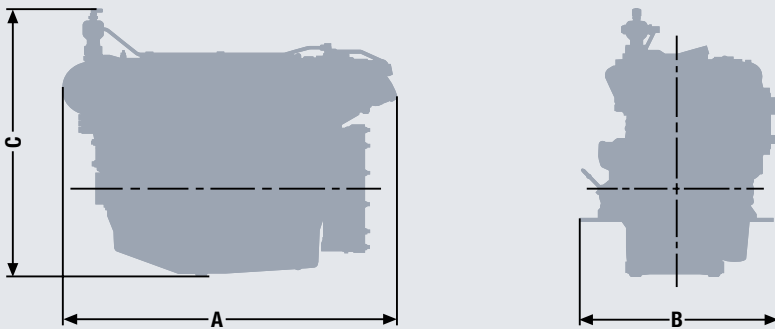
- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with pressure-oil lubricated bearings and water-cooled bearing pedestal
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

Technical features

Mode of operation		COP with natural gas					
		1 500 (50)			1 800 (60)		
at engine speed		rpm (Hz)					
Engine version		E 312	E 302	LE 302	E 312	E 302	LE 302
Bore	mm	108	108	108	108	108	108
Stroke	mm	125	125	125	125	125	125
Displacement	l	6.9	6.9	6.9	6.9	6.9	6.9
ISO standard power ⁴⁾	kW	56	75	110	64	85	110
Air-fuel ratio	λ	1.50	1.00	1.65	1.50	1.00	1.68
Coolant heat ¹⁾	kW	41	63	82	58	70	89
Exhaust heat based on 120 °C ¹⁾	kW	37	46	50	48	55	51
Efficiency ¹⁾							
– mechanical ⁴⁾	%	35.0	37.3	39.6	33.8	37.0	38.0
– thermal	%	47.9	53.3	49.6	55.2	53.6	52.1
– total	%	82.9	90.6	89.2	89.0	90.6	90.1
Emissions status NO _x ²⁾	mg/Nm ³	< 500	< 7 000	< 500 < 100 ^{5) 6)}	< 500	< 7 000	< 500 < 100 ^{5) 6)}
Combustion ³⁾		m	st	m	m	st	m

1) at 100 % load 2) with 5 % exhaust-gas oxygen 3) m = lean, st = stoichiometric 4) in accordance with German Industrial Standard DIN ISO 3046, Part 1
5) data conditional and on request 6) emission status available on request, including SCR technology

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas.
The values are provided for information purposes only and are non-binding.



Dimensions

Type designation		E 312	E 302	LE 302
A-Overall length	mm	1090	1090	1300
B-Overall width	mm	740	740	740
C-Overall height	mm	930	930	1030
Dry weight	kg	520	520	605

All data are reference values. Please request installation drawings for detailed specifications.

E0836

Technical features

Mode of operation		COP with special gas			
		1 500 (50)		1 800 (60)	
at engine speed rpm (Hz)					
Engine version		LE 202	LE 302 ⁵⁾	LE 202	LE 302 ⁵⁾
Bore	mm	108	108	108	108
Stroke	mm	125	125	125	125
Displacement	l	6.9	6.9	6.9	6.9
ISO standard power ⁴⁾	kW	110	110	110	110
Air-fuel ratio	λ	1.40	1.49	1.40	1.45
Coolant heat ¹⁾	kW	85	82	102	98
Exhaust heat based on 120 °C ¹⁾	kW	50	55	51	54
Efficiency ¹⁾					
– mechanical ⁴⁾	%	40.1	39.4	38.6	37.4
– thermal	%	49.3	49.3	53.7	52.0
– total	%	89.4	88.7	92.3	89.4
Emissions status NO _x ²⁾	mg/Nm ³	< 500	< 500	< 500	< 500
Combustion ³⁾		m	m	m	m

1) at 100 % load

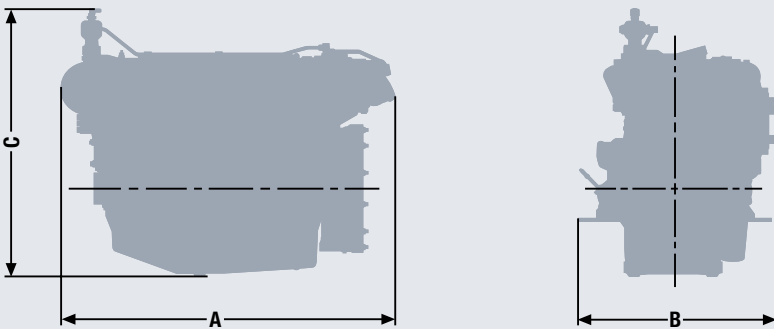
2) with 5 % exhaust-gas oxygen

3) m = lean, st = stoichiometric

4) in accordance with German Industrial Standard DIN ISO 3046, Part 1

5) data conditional and on request

Technical data is based on a calorific fuel value of 10kWh/Nm³ for natural gas and 6kWh/Nm³ for special gas. The values are provided for information purposes only and are non-binding.

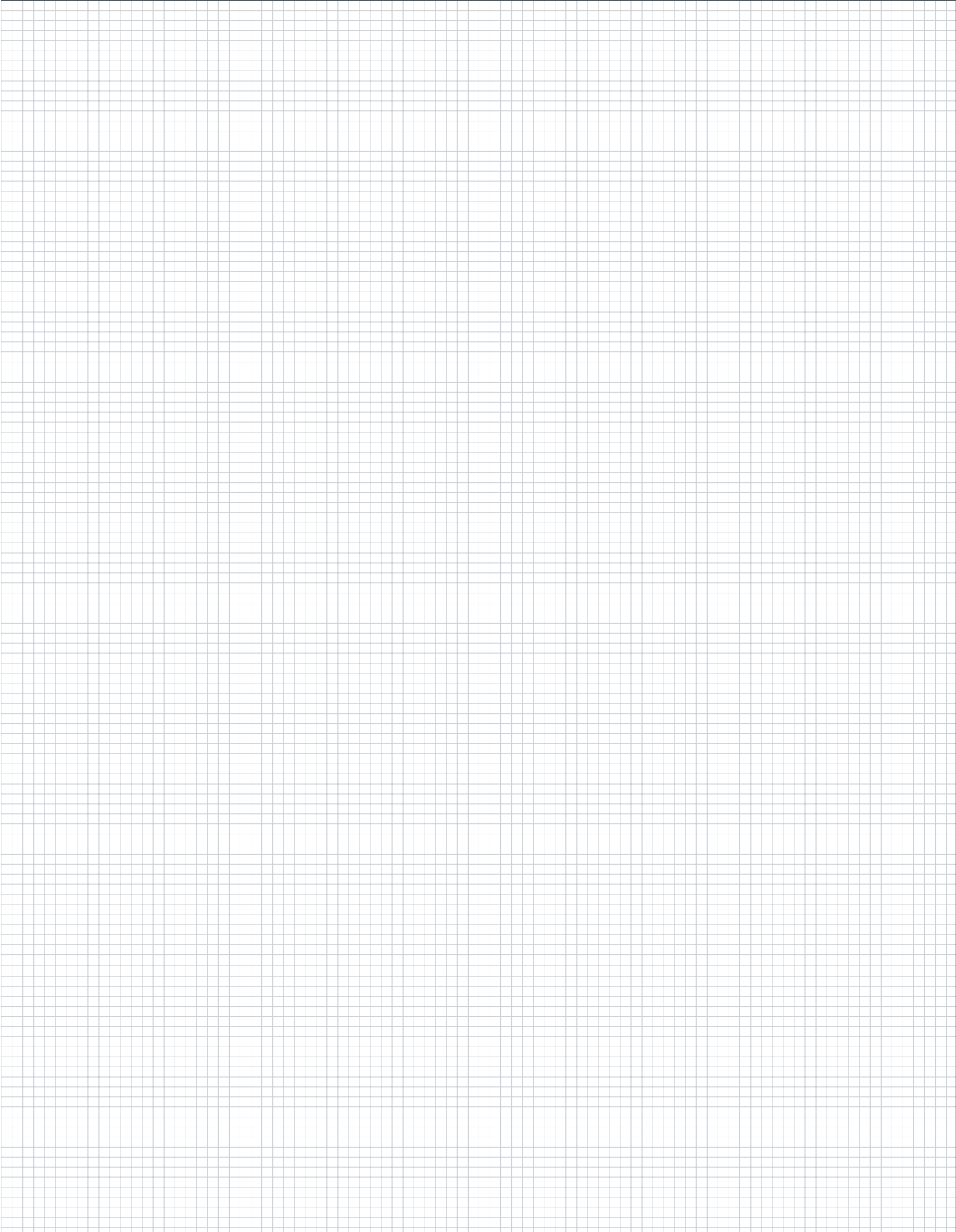


Dimensions

Type designation	LE 202/LE 302	
A-Overall length	mm	1300
B-Overall width	mm	740
C-Overall height	mm	1030
Dry weight	kg	605

All data are reference values. Please request installation drawings for detailed specifications.

Notes



E2676



Characteristics E2676 E

- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Engine cooling: water-cooled
- Exhaust system: water-cooled exhaust pipes

Characteristics E2676 LE

- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with water-cooled turbine housing and pressure-oil lubricated bearings
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

Technical features

Mode of operation		COP with natural gas						COP with special gas		
		1 500 (50)			1 800 (60)			1 500 (50)	1 800 (60)	
at engine speed rpm (Hz)										
Engine version		E 302 ⁴⁾	LE 202 ⁴⁾	LE 202	E 302 ⁴⁾	LE 202 ⁴⁾	LE 202	LE 212 ⁴⁾	LE 212	LE 212
Bore	mm	126	126	126	126	126	126	126	126	126
Stroke	mm	166	166	166	166	166	166	166	166	166
Displacement	l	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
ISO standard power ⁵⁾	kW	140	220	220	160	250	250	220	220	250
Air-fuel ratio	λ	1.00	1.73	1.73	1.00	1.74	1.72	1.57	1.62	1.61
Coolant heat ¹⁾	kW	107	113	110	122	124	113	109	108	121
Exhaust heat based on 120 °C ¹⁾	kW	86	130	121	104	156	148	131	113	137
Efficiency ¹⁾										
– mechanical ⁵⁾	%	39.3	41.3	43.4	38.7	39.4	41.1	40.2	42.2	40.3
– thermal	%	54.2	47.8	46.8	54.7	49.1	46.4	49.1	44.1	46.4
– total	%	93.5	89.1	90.2	93.4	88.5	87.5	89.3	86.3	86.7
Emissions status NO _x ²⁾	mg/Nm ³	< 5 700	< 250	< 500 < 100 ⁴⁾⁶⁾	< 6 500	< 250	< 500 < 100 ⁴⁾⁶⁾	< 250	< 500	< 500
Combustion ³⁾		st	m	m	st	m	m	m	m	m

1) at 100 % load

2) with 5 % exhaust-gas oxygen

3) m = lean, st = stoichiometric

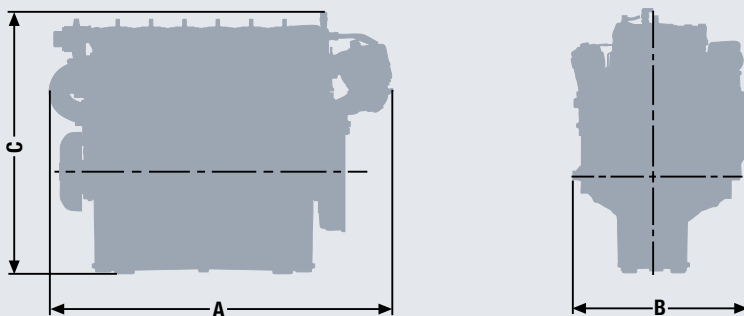
4) data conditional and on request

5) in accordance with German Industrial Standard DIN ISO 3046, Part 1

6) emission status available on request, including SCR technology

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas.

The values are provided for information purposes only and are non-binding.

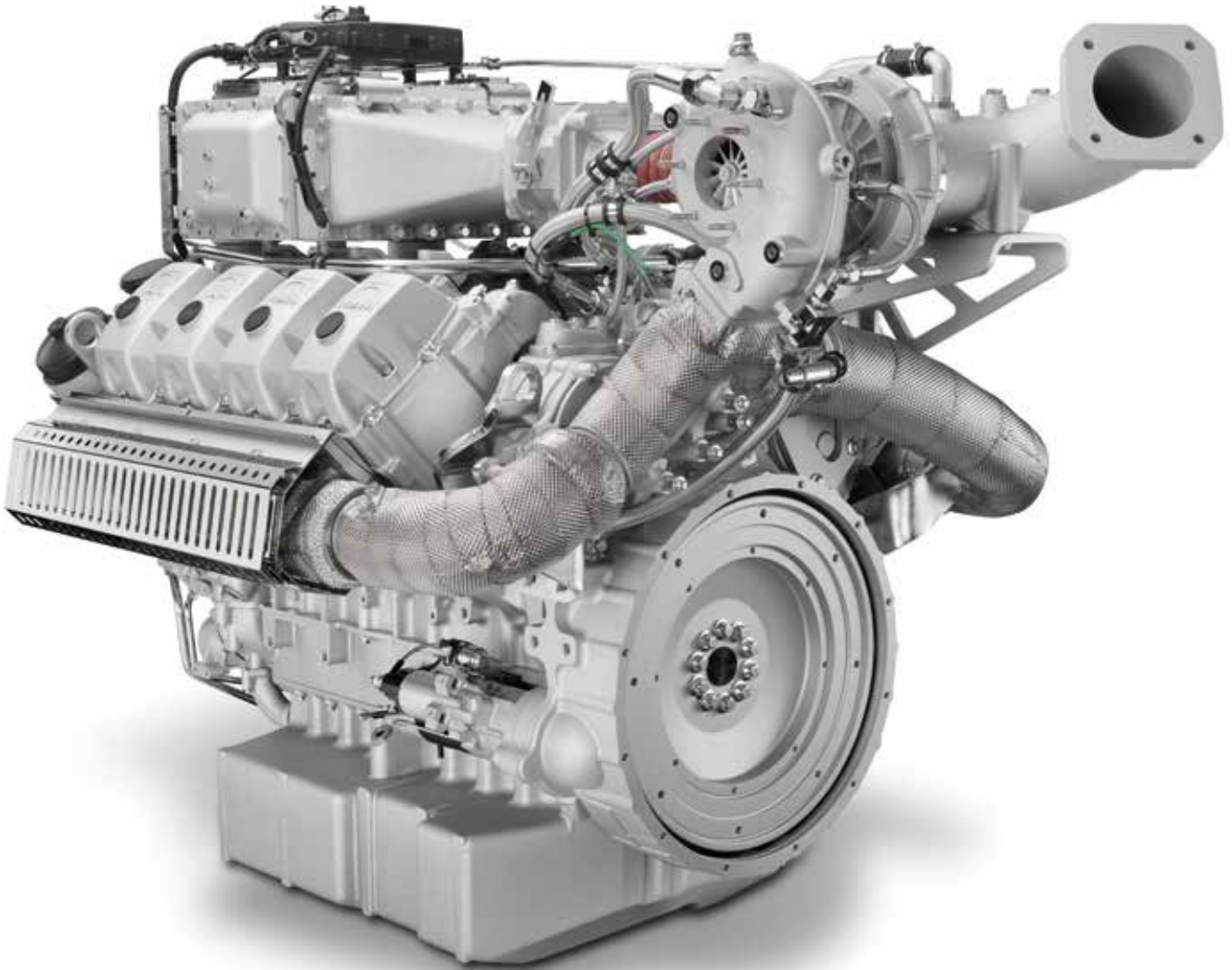


Dimensions

Type designation		E 302	LE 202	LE 212
A-Overall length	mm	1 594	1 589	1 589
B-Overall width	mm	936	808	808
C-Overall height	mm	1 175	1 206	1 206
Dry weight	kg	967	985	985

All data are reference values. Please request installation drawings for detailed specifications.

E3268



Characteristics

- Cylinders and arrangement: 8 cylinders in 90° V arrangement
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with water-cooled turbine housing and pressure-oil lubricated bearings
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

Technical features

Mode of operation		COP with natural gas		COP with special gas			
		1 500 (50)	1 800 (60)	1 500 (50)		1 800 (60)	
at engine speed	rpm (Hz)	1 500 (50)	1 800 (60)	1 500 (50)		1 800 (60)	
Engine version		LE 212	LE 212 ⁴⁾	LE 222 ⁴⁾	LE 222	LE 232 ⁴⁾	LE 222 ⁴⁾
Bore	mm	132	132	132	132	132	132
Stroke	mm	157	157	157	157	157	157
Displacement	l	17.2	17.2	17.2	17.2	17.2	17.2
ISO standard power ⁵⁾	kW	370	390	370	370	370	390
Air-fuel ratio	λ	1.69	1.69	1.49	1.52	1.46	1.51
Coolant heat ¹⁾	kW	225	229	239	214	229	223
Exhaust heat based on 120 °C ¹⁾	kW	201	233	224	198	223	235
Efficiency ¹⁾							
– mechanical ⁵⁾	%	42.6	40.0	39.7	42.1	40.1	40.8
– thermal	%	47.2	47.7	49.5	46.9	48.9	47.9
– total	%	89.9	87.7	89.2	89.0	89.0	88.7
Emissions status NO _x ²⁾	mg/Nm ³	< 500 < 100 ⁴⁾⁶⁾	< 500 < 100 ⁴⁾⁶⁾	< 250	< 500	< 500	< 500
Combustion ³⁾		m	m	m	m	m	m

1) at 100 % load

2) with 5 % exhaust-gas oxygen

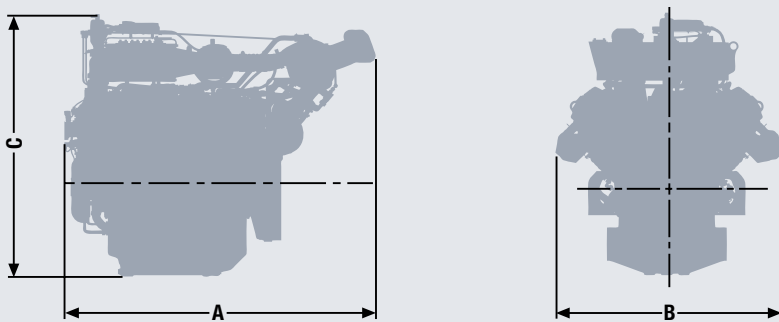
3) m = lean, st = stoichiometric

4) data conditional and on request

5) in accordance with German Industrial Standard DIN ISO 3046, Part 1

6) emission status available on request, including SCR technology

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas. The values are provided for information purposes only and are non-binding.

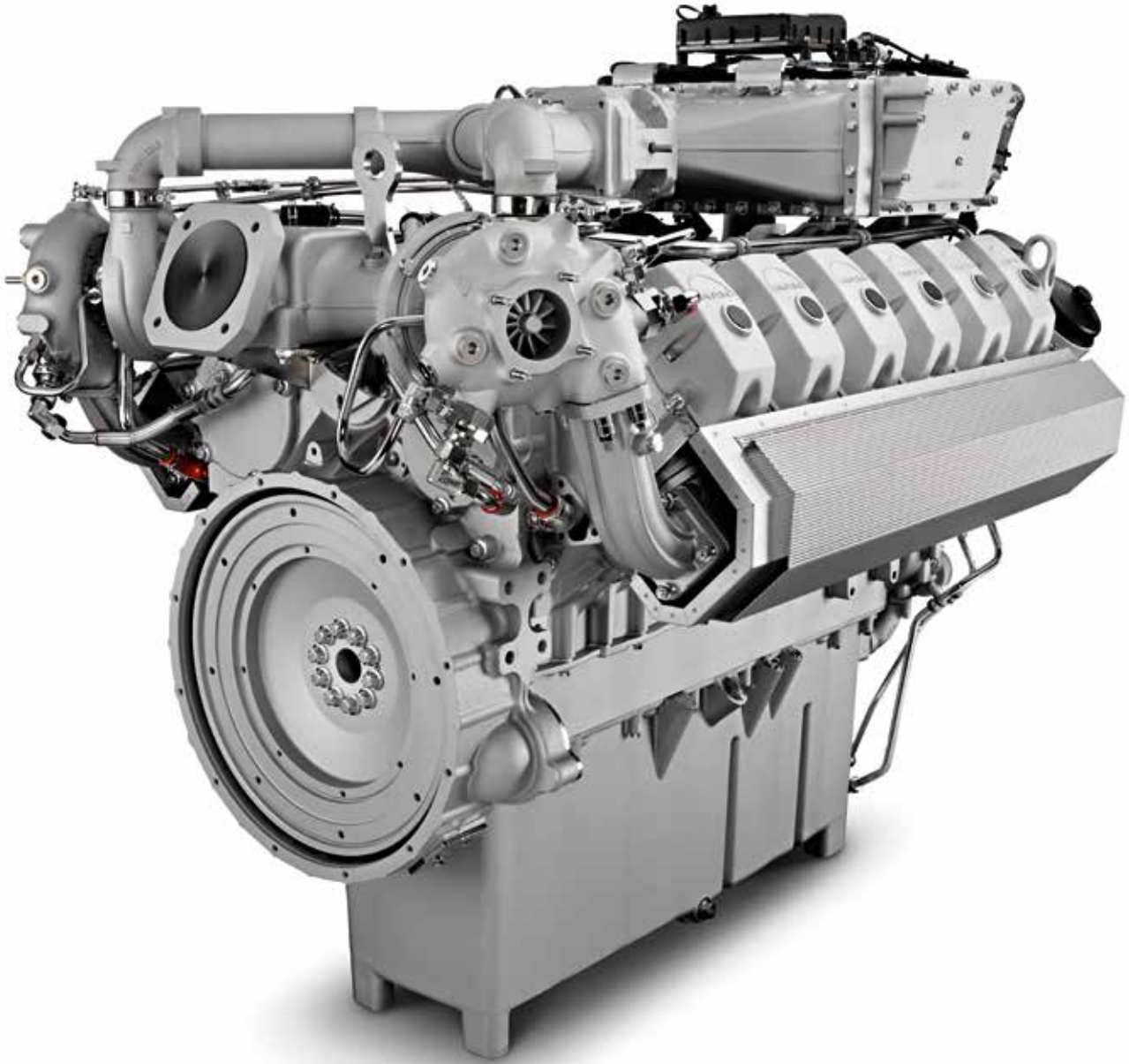


Dimensions

Type designation	LE 212/LE 222/LE224/LE232	
A-Overall length	mm	1 620
B-Overall width	mm	1 210
C-Overall height	mm	1 422
Dry weight	kg	1 497

All data are reference values. Please request installation drawings for detailed specifications.

E3262



Characteristics E3262 E

- Cylinders and arrangement: 12 cylinders in 90° V arrangement
- Mode of operation: four-stroke spark-ignition gas engine
- Engine cooling: water-cooled
- Exhaust system: water-cooled exhaust pipes

Characteristics E3262 LE

- Cylinders and arrangement: 12 cylinders in 90° V arrangement
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with water-cooled turbine housing and pressure-oil lubricated bearings
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

Technical features

Mode of operation		COP with natural gas						
		1 500 (50)			1 800 (60)			
at engine speed		rpm (Hz)						
Engine version		E 302 ⁴⁾	LE 202	LE 202	LE 232 ⁴⁾	E 302 ⁴⁾	LE 202	LE 232 ⁴⁾
Bore	mm	132	132	132	132	132	132	132
Stroke	mm	157	157	157	157	157	157	157
Displacement	l	25.8	25.8	25.8	25.8	25.8	25.8	25.8
ISO standard power ⁵⁾	kW	275	550	550	450	300	580	450
Air-fuel ratio	λ	1.00	1.68	1.68	1.64	1.00	1.70	1.62
Coolant heat ¹⁾	kW	218	358	336	233	239	392	252
Exhaust heat based on 120 °C ¹⁾	kW	157	329	312	257	187	339	272
Efficiency ¹⁾								
– mechanical ⁵⁾	%	39.6	40.3	41.7	41.3	38.7	40.0	39.6
– thermal	%	54.0	50.2	48.3	48.9	54.9	49.9	50.4
– total	%	93.6	90.5	90.0	90.2	93.6	89.9	90.0
Emissions status NO _x ²⁾	mg/Nm ³	< 7 000	< 250	< 500 < 100 ⁴⁾⁶⁾	< 500 < 100 ⁴⁾⁶⁾	< 7 000	< 500 < 100 ⁴⁾⁶⁾	< 500 < 100 ⁴⁾⁶⁾
Combustion ³⁾		st	m	m	m	st	m	m

1) at 100 % load

2) with 5 % exhaust-gas oxygen

3) m = lean, st = stoichiometric

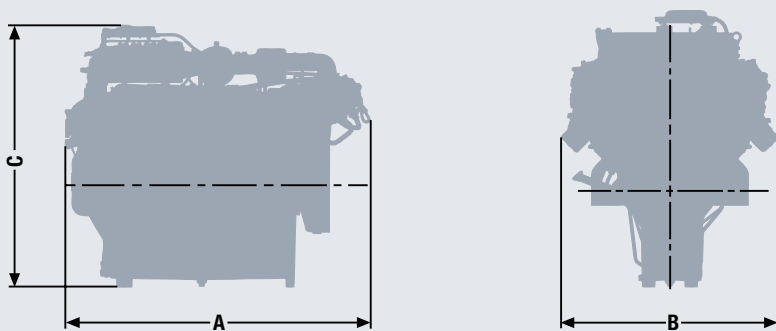
4) data conditional and on request

5) in accordance with German Industrial Standard DIN ISO 3046, Part 1

6) emission status available on request, including SCR technology

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas.

The values are provided for information purposes only and are non-binding.



Dimensions

Type designation		E 302	LE 202/LE 232
A-Overall length	mm	1 743	1 748
B-Overall width	mm	1 245	1 243
C-Overall height	mm	1 494	1 500
Dry weight	kg	1 763	1 849

All data are reference values. Please request installation drawings for detailed specifications.

E3262

Technical features

Mode of operation		COP with special gas					
		1 500 (50)			1 800 (60)		
at engine speed	rpm (Hz)						
Engine version		LE 202	LE 212 ⁴⁾	LE 242 ⁴⁾	LE 202 ⁴⁾	LE 212 ⁴⁾	LE 242 ⁴⁾
Bore	mm	132	132	132	132	132	132
Stroke	mm	157	157	157	157	157	157
Displacement	l	25.8	25.8	25.8	25.8	25.8	25.8
ISO standard power ⁵⁾	kW	550	550	450	580	580	450
Air-fuel ratio	λ	1.55	1.60	1.46	1.52	1.56	1.44
Coolant heat ¹⁾	kW	339	321	236	397	384	246
Exhaust heat based on 120 °C ¹⁾	kW	315	302	270	375	347	295
Efficiency ¹⁾							
– mechanical ⁵⁾	%	41.8	42.1	40.0	38.9	40.1	38.3
– thermal	%	48.1	46.9	50.5	51.6	49.8	52.3
– total	%	89.9	89.0	90.5	90.4	89.8	90.6
Emissions status NO _x ²⁾	mg/Nm ³	< 500	< 500	< 500	< 500	< 500	< 500
Combustion ³⁾		m	m	m	m	m	m

1) at 100% load

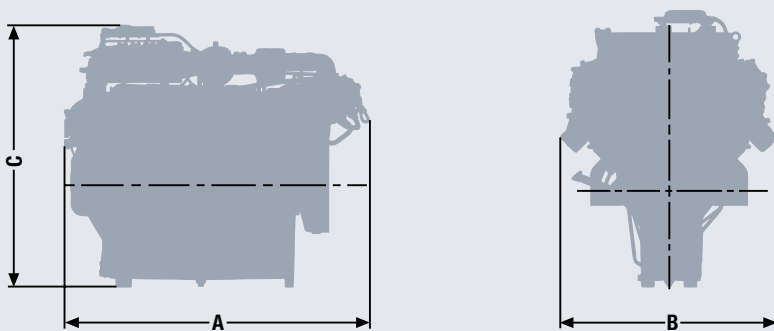
2) with 5% exhaust-gas oxygen

3) m = lean, st = stoichiometric

4) data conditional and on request

5) in accordance with German Industrial Standard DIN ISO 3046, Part 1

Technical data is based on a calorific fuel value of 10 kWh/Nm³ for natural gas and 6 kWh/Nm³ for special gas. The values are provided for information purposes only and are non-binding.



Dimensions

Type designation	LE 202/LE 212/LE242	
A-Overall length	mm	1 748
B-Overall width	mm	1 243
C-Overall height	mm	1 500
Dry weight	kg	1 849

All data are reference values. Please request installation drawings for detailed specifications.

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