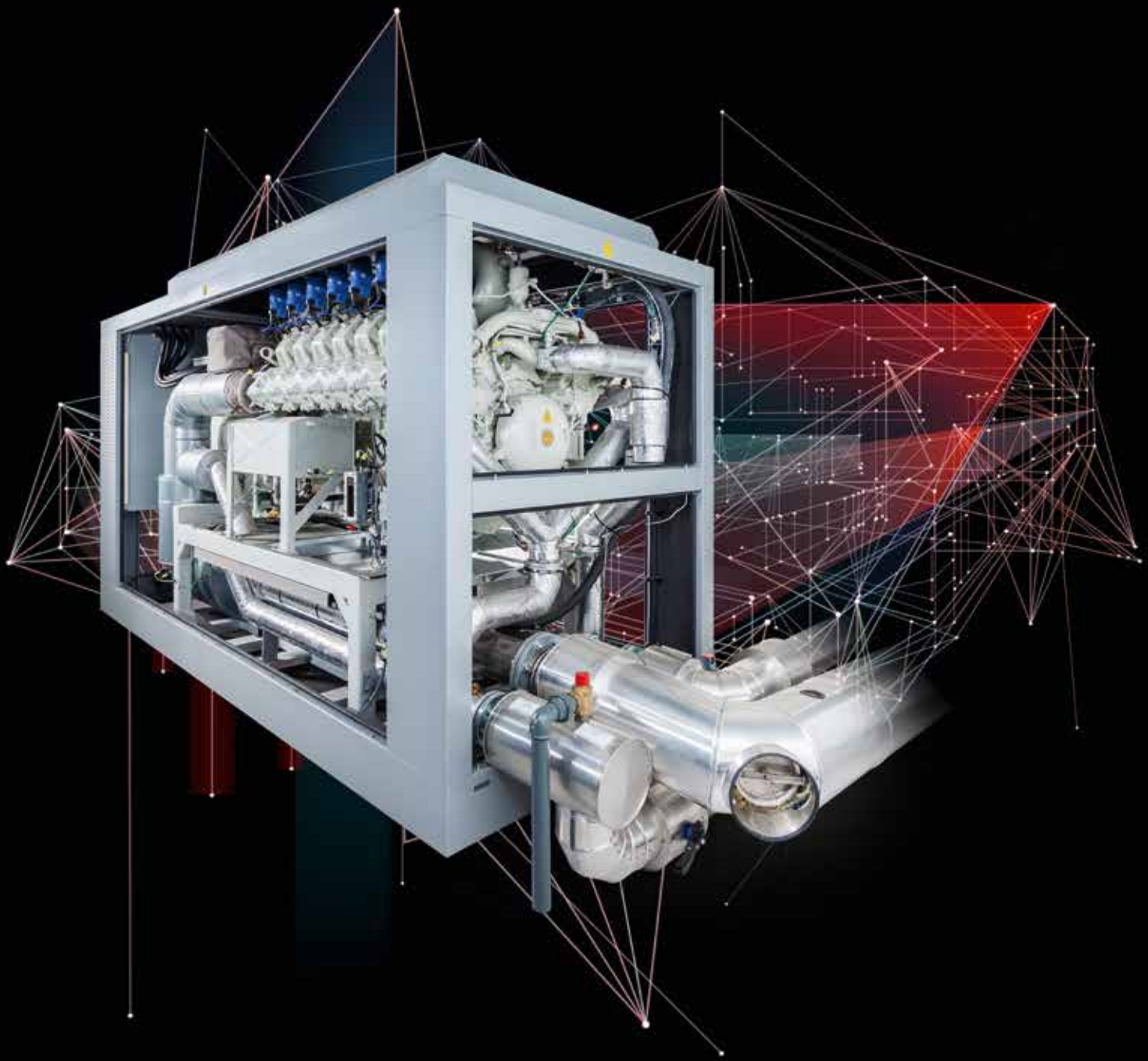
# POWER

## Gas Engines for Power Generation



MAN Engines

# Contents


**Efficient Electricity and Heat Generation**

Application Type and Product Range . . . . . 4
Customer Benefits . . . . . 5
Customized Service Reliability . . . . . 5

**MAN Gas Engines for Power Generation**

E0834 . . . . . 6
E0836 . . . . . 8
E2676 . . . . . 12
E3268 . . . . . 14
E3262 . . . . . 16

# 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 continous 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

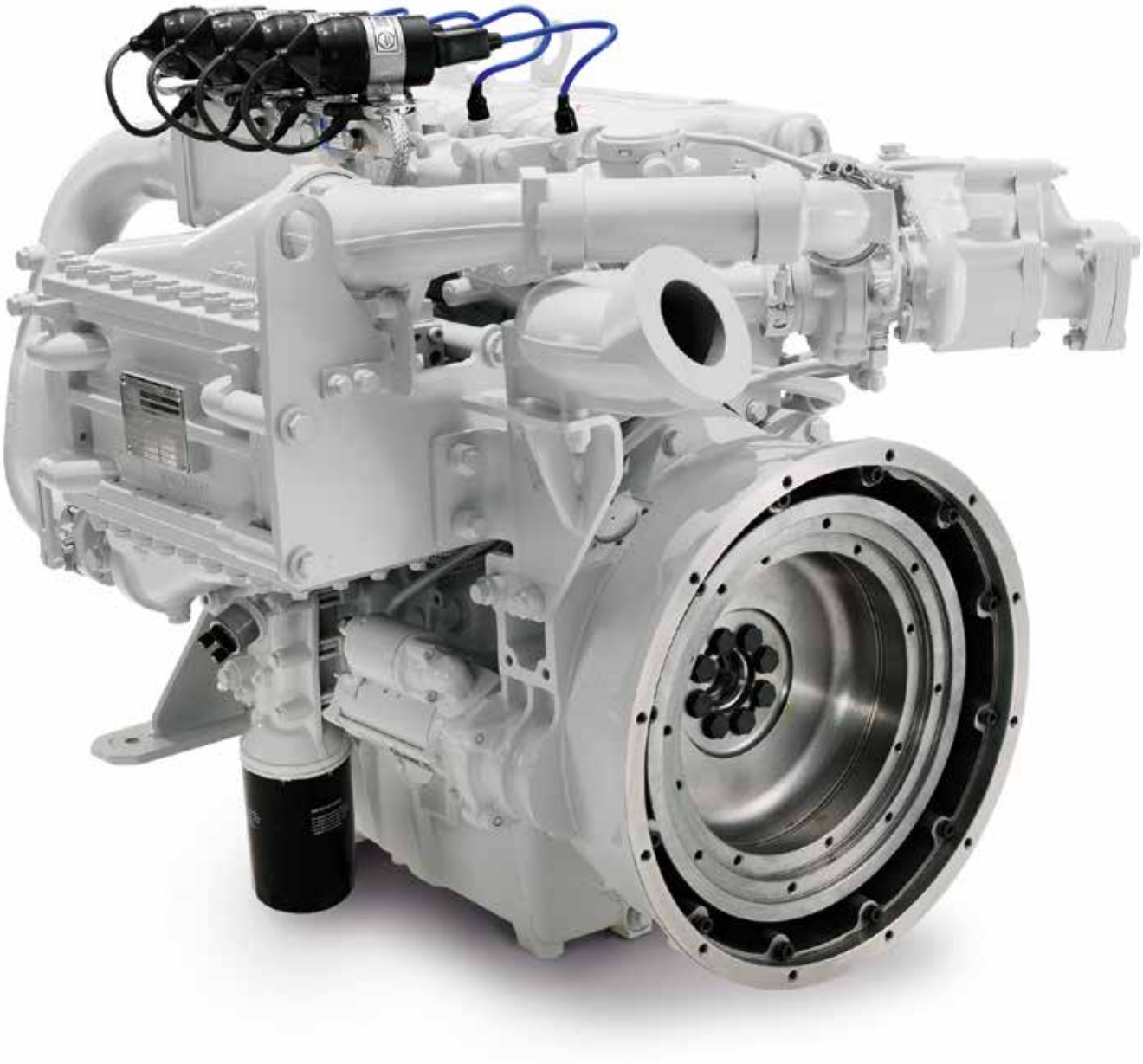
- High power and maximum efficiency
- Low operating costs as a result of low levels of lubricant and fuel consumption as well as extended service intervals (component stability)
- Low emissions due to state-of-the-art combustion technologies
- Low space requirement due to compact design
- Reliable in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

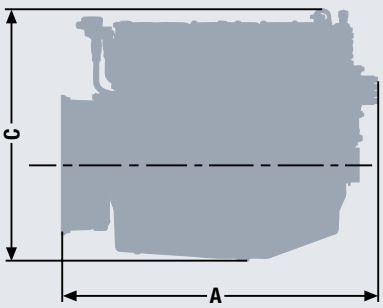
- Cylinders and arrangement: 4 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with pressure-oil lubricated bearings and water-cooled bearing pedestal
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler
- Exhaust system: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

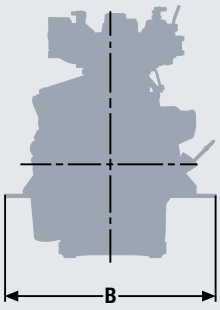
## Technical features

| Mode of operation | | COP with natural gas | | | | | | COP with special gas | |
|---|---|---|---|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | | 1 800 (60) | | | 1 500 (50) | 1 800 (60) |
| **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 |
| Emissons status $NO_x$ [2] | mg/Nm³ | < 500 | < 7 000 | < 500<br>< 100 [4] [6] | < 500 | < 7 000 | < 500<br>< 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.



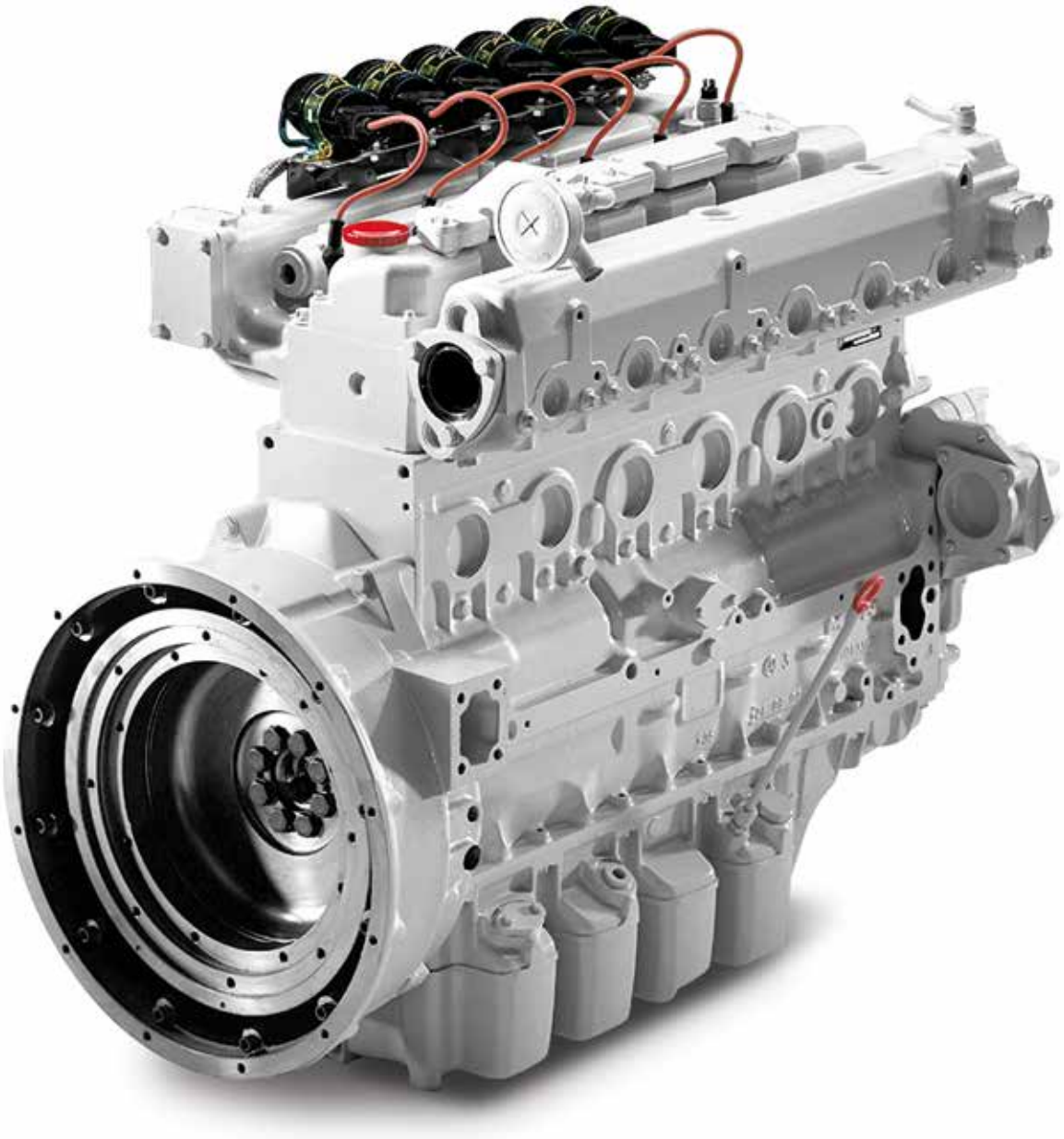




## Dimensions

| 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**

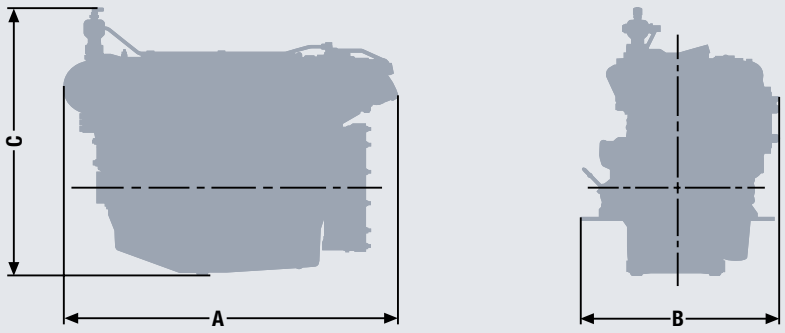
- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with pressure-oil lubricated bearings and water-cooled bearing pedestal
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

## Technical features

| Mode of operation | | COP with natural gas | | | | | |
|---|---|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | | 1 800 (60) | | |
| **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/Nm³ | < 500 | < 7 000 | < 500<br>< 100 [5] [6] | < 500 | < 7 000 | < 500<br>< 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.

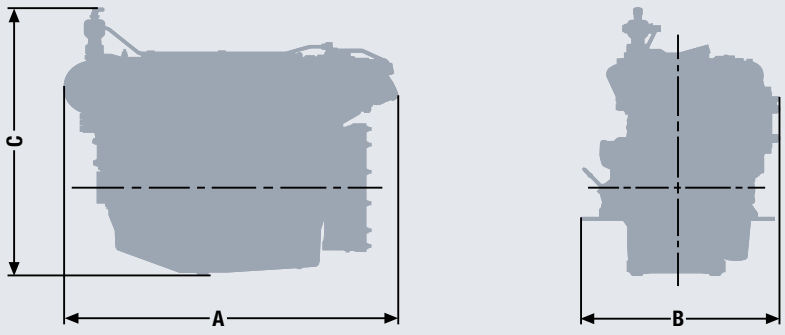
# E0836

## Technical features

| Mode of operation | | COP with special gas | | | |
|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | 1 800 (60) | |
| **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/Nm³ | < 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 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 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**

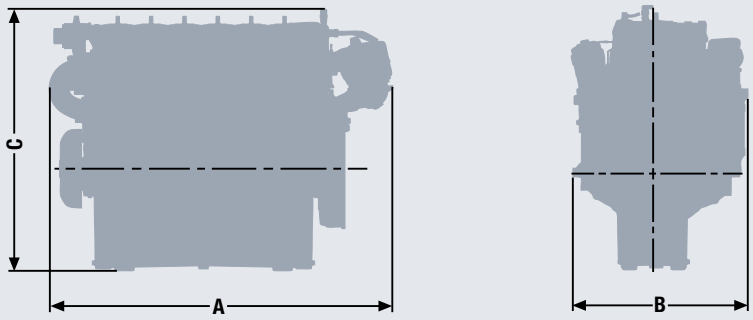
- Cylinders and arrangement: 6 cylinders in-line
- Mode of operation: four-stroke spark-ignition gas engine
- Turbocharging: turbo charger with water-cooled turbine housing and pressure-oil lubricated bearings
- Engine cooling: water-cooled
- Air-fuel mixture cooling: two-stage cooler

## Technical features

| Mode of operation | | COP with natural gas | | | | | | COP with special gas | | |
|---|---|---|---|---|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | | 1 800 (60) | | | 1 500 (50) | | 1 800 (60) |
| **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/Nm³ | < 5 700 | < 250 | < 500<br>< 100 [4][6] | < 6 500 | < 250 | < 500<br>< 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 | | | |
|---|---|---|---|---|---|---|---|
| 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/Nm³ | < 500<br>< 100 [4] [6] | < 500<br>< 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.
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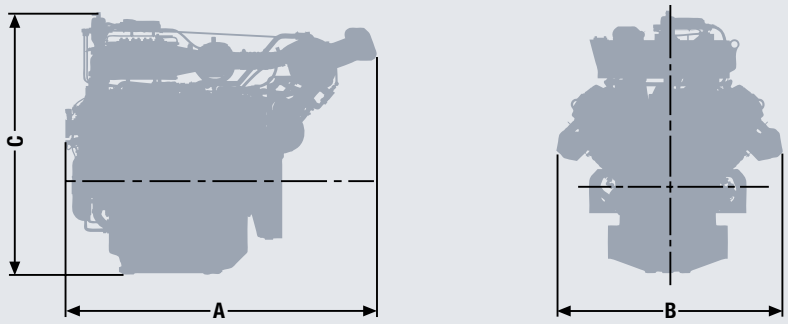
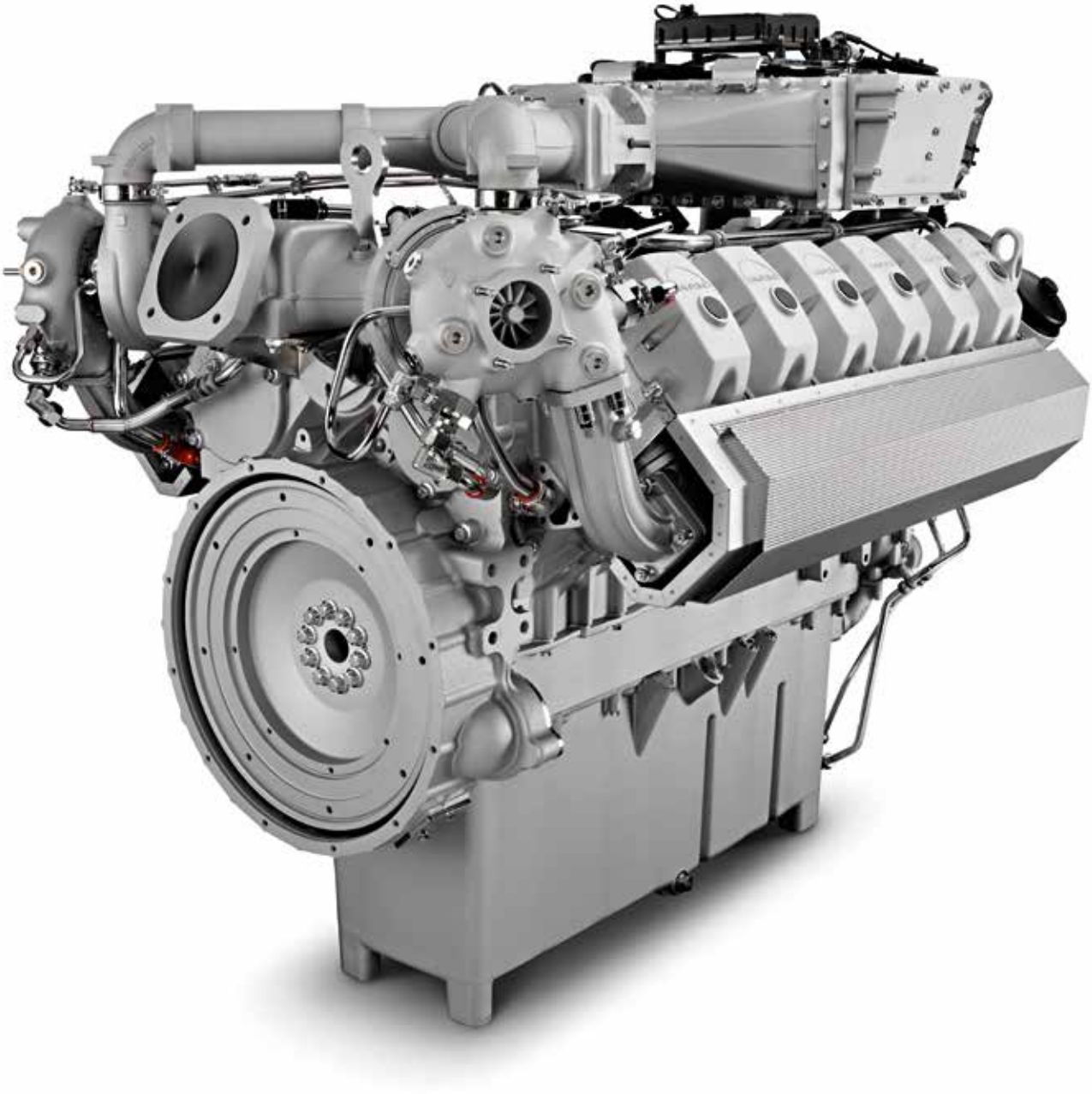



## Dimensions

| Type designation | | LE 212/LE 222/LE224/LE232 |
|---|---|---|
| A-Overall length | mm | 1 620 |
| B-Overall width | mm | 1210 |
| 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 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | | | 1 800 (60) | | |
| **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/Nm³ | < 7 000 | < 250 | < 500<br>< 100 [4)6)] | < 500<br>< 100 [4)6)] | < 7 000 | < 500<br>< 100 [4)6)] | < 500<br>< 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.
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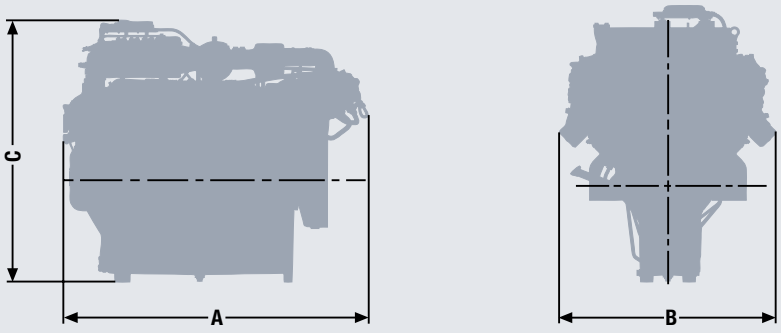



## Dimensions

| Type designation | | E 302 | LE 202/LE 232 |
|---|---|---|---|
| A-Overall length | mm | 1 743 | 1 748 |
| B-Overall width | mm | 1245 | 1243 |
| 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.

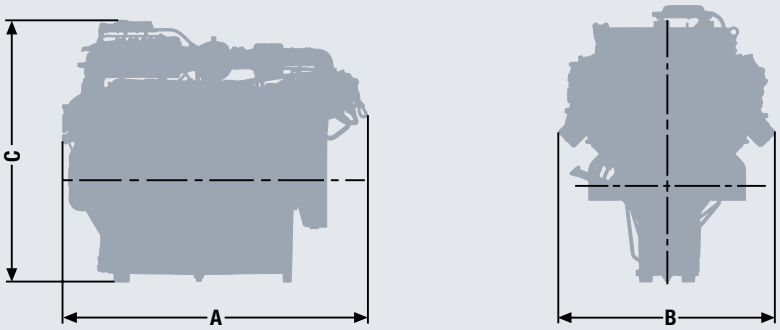
# E3262

## Technical features

| Mode of operation | | COP with special gas | | | | | |
|---|---|---|---|---|---|---|---|
| at engine speed | rpm (Hz) | 1 500 (50) | | | 1 800 (60) | | |
| **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/Nm³ | < 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 | 1243 |
| 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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