

# MARINE

High speed propulsion engines



MAN Engines



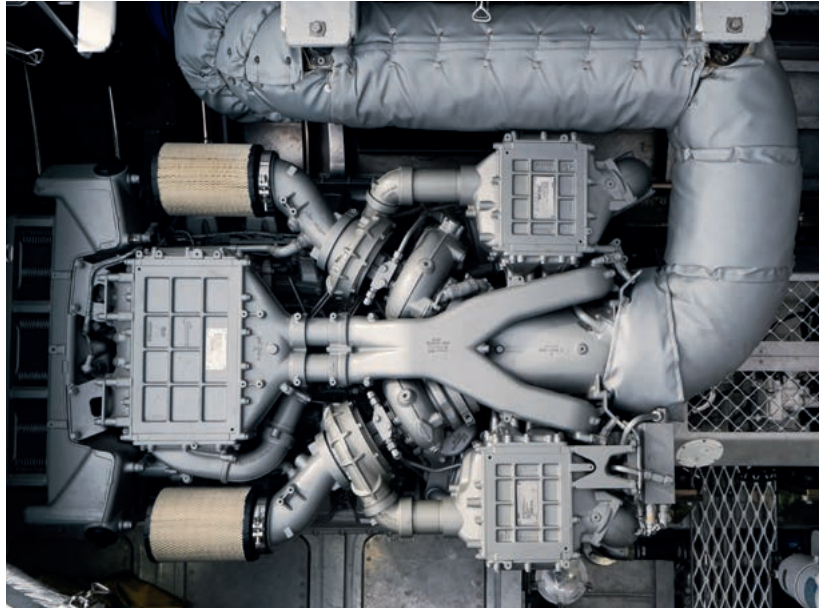
# A RELIABLE DRIVING FORCE

At sea, ships and boats have to contend with elemental forces, while ports require them to navigate precisely through the narrowest of corridors.





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## Description of Engines

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## Benefits

- Maximum torque at the most fuel efficient point of operation
- Maximum torque across a large range of engine speed for a powerful and steady acceleration
- Class-leading compactness for a space-saving design
- Best fuel consumption values and long service intervals minimizing the TCO
- Low acoustics and low vibrations
- Worldwide service network, spare parts available within 24 hours
- Continuous 24/7 hotline support around the clock, 365 days a year

# MAN SERVICE FOR NON-STOP OPERATION



## Worldwide service network

most certainly represented in your area



## Spare parts availability

worldwide available within 24 hours



## Extended warranty

up to 5 years with Work PLUS



## MAN Customer Service

as back-up from the headquarters



## MAN 24/7 Hotline

available 24 hours a day, 365 days a year



## Servicing and maintenance plans

individually for you



## MAN Genuine Oil

customised for MAN engines

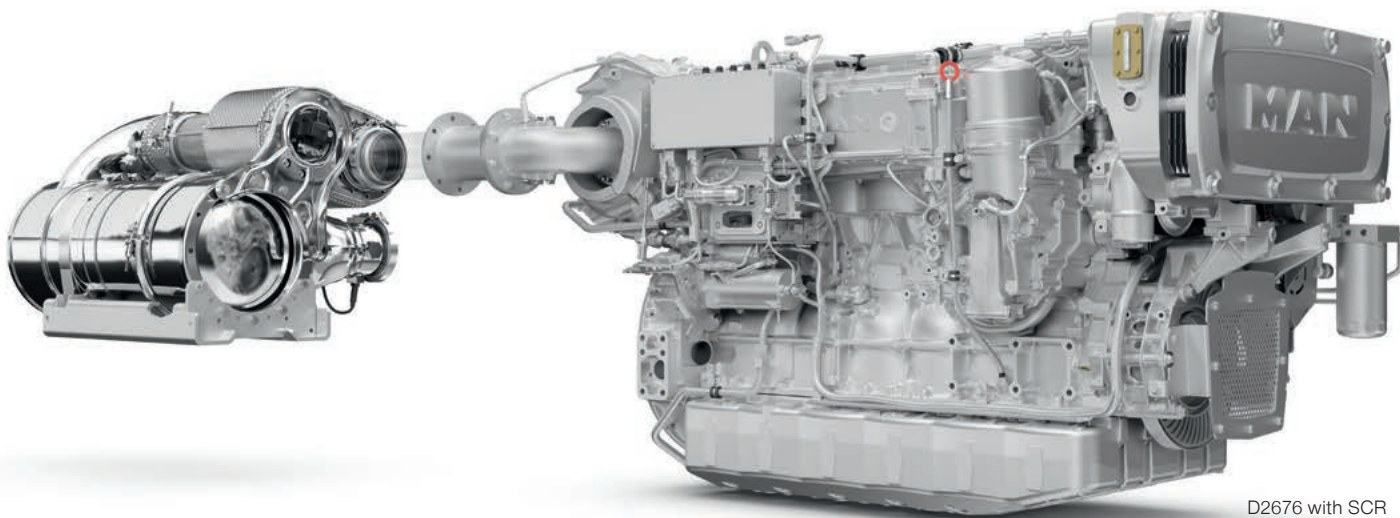


## MAN Engine Academy

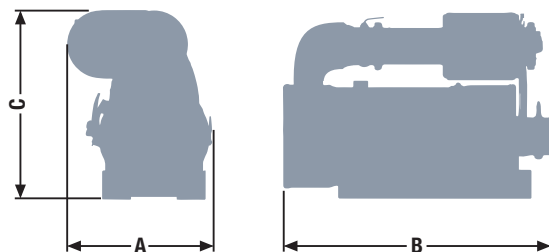
for a deeper understanding of engines

# EXHAUST AFTERTREATMENT IMO TIER III / EPA TIER 4 ( $< 1,066$ KW) AND EU STAGE V ( $< 300$ KW)

Flexibility makes use of free space – also when it comes to exhaust gas aftertreatment: Individual components of the modular exhaust gas aftertreatment kit from MAN Engines, which can be positioned variably, enable a wide range of installation variants as well as maximum design freedom when installed in machinery and vehicles.



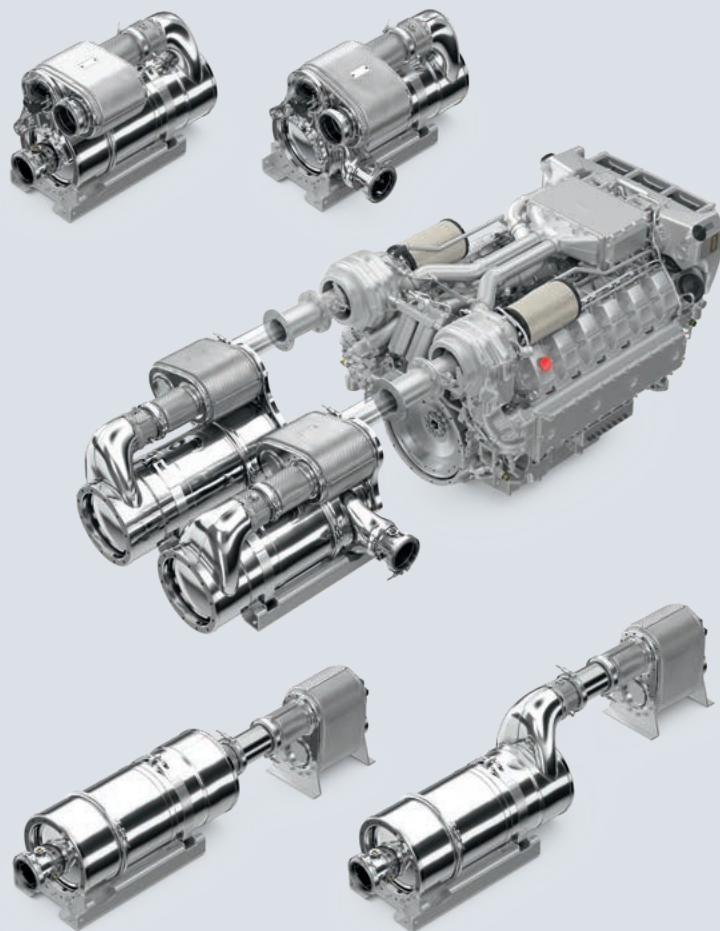
D2676 with SCR



## Dimensions

| Type designation             |    | SCR system |
|------------------------------|----|------------|
| A-Overall width              | mm | 555        |
| B-Overall length             | mm | 950        |
| C-Overall height             | mm | 663        |
| Average weight of SCR system | kg | 115        |

For detailed examinations of installation dimensions, please order drawings from our factory.



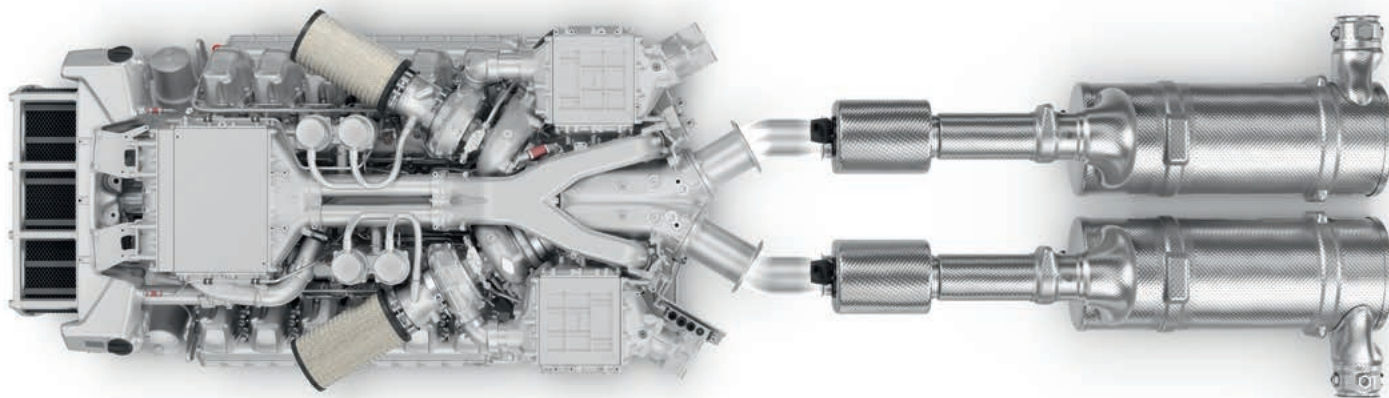


# EXHAUST AFTERTREATMENT

## IMO TIER III/EPA TIER 4

With the D3872, the commercial marine engine family has a new member that complies with IMO Tier III as well as with EPA Tier 4.

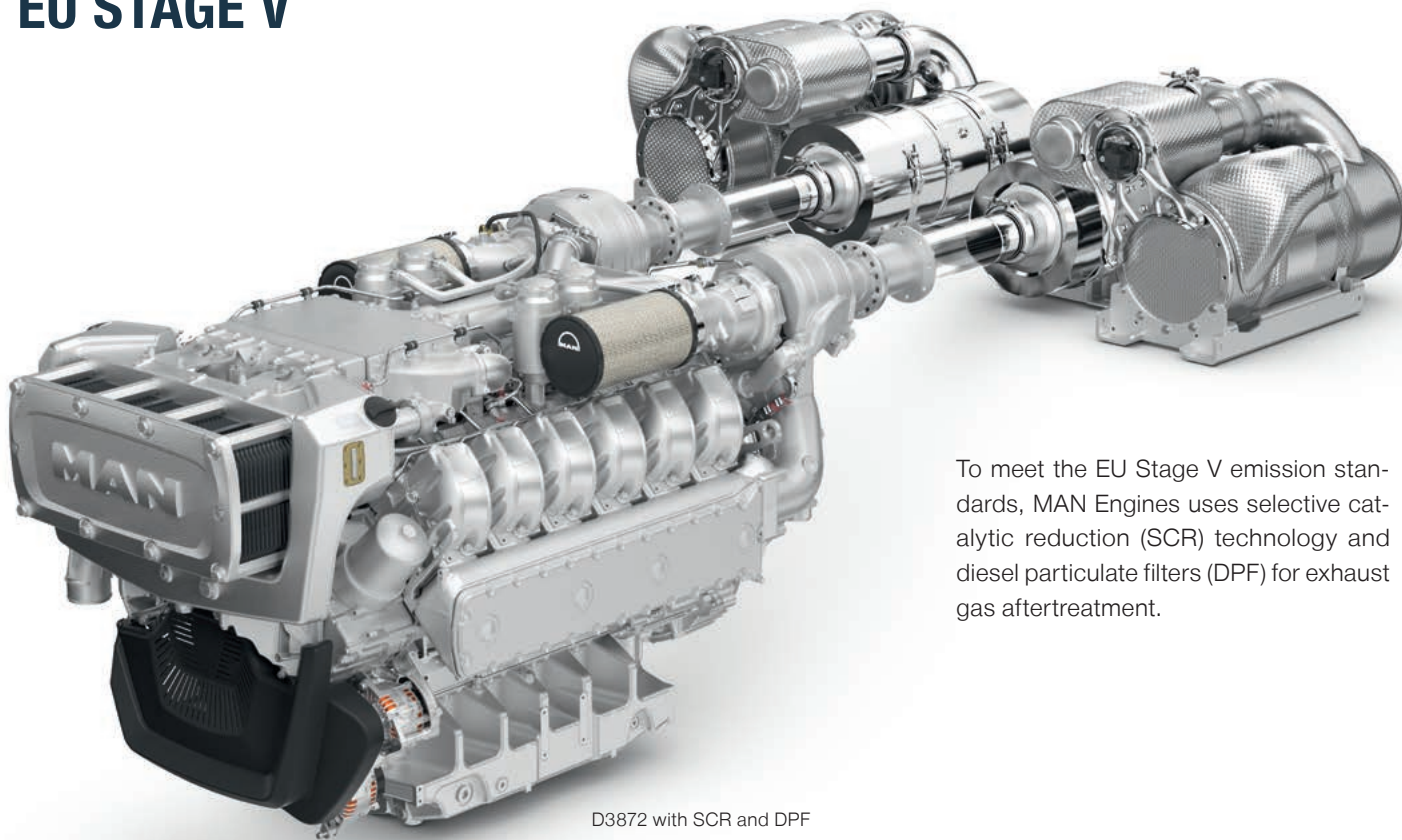
An exhaust system with two long SCR catalytic converters fulfills the emission standards according to IMO Tier III/EPA Tier 4.



D3872 with SCR



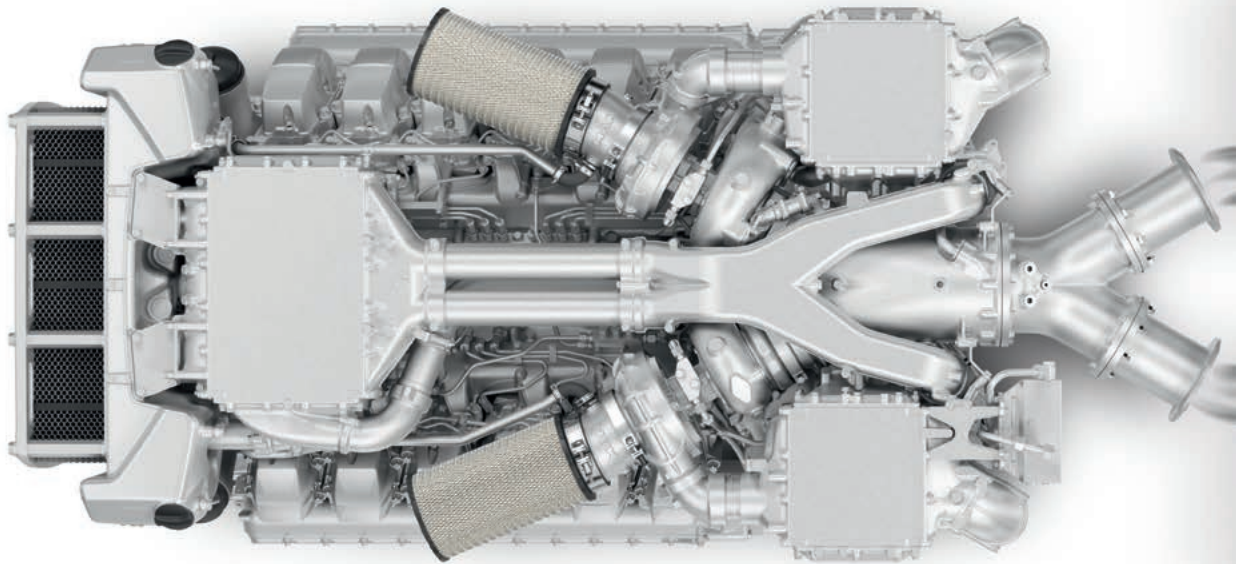
# EXHAUST AFTERTREATMENT EU STAGE V



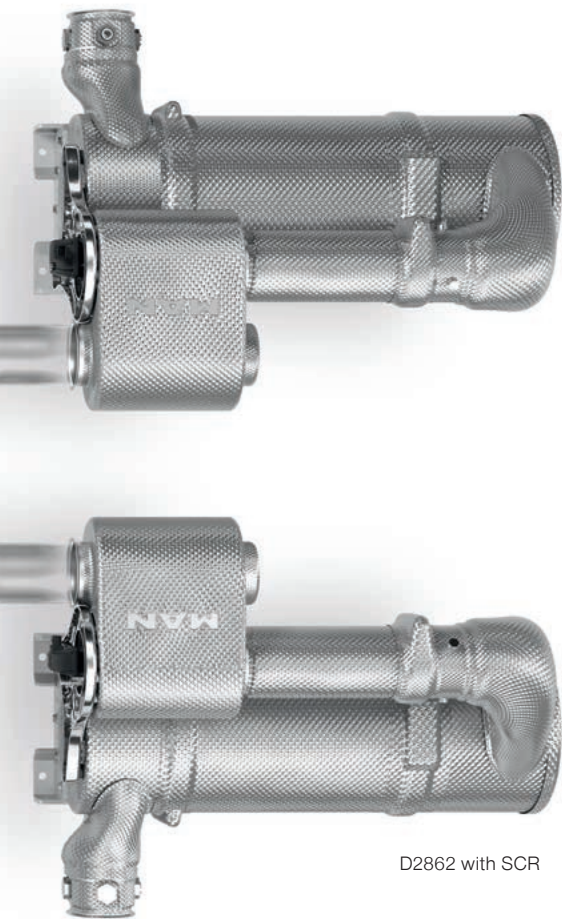
To meet the EU Stage V emission standards, MAN Engines uses selective catalytic reduction (SCR) technology and diesel particulate filters (DPF) for exhaust gas aftertreatment.

D3872 with SCR and DPF

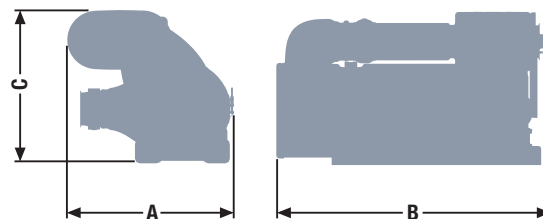
# EXHAUST AFTERTREATMENT IMO TIER III (1,140–1,471 kW)



For power ratings between 1,140 and 1,471 kW MAN engines rely on selective catalytic reduction (SCR) only to achieve the emission standards complying with IMO Tier III.



D2862 with SCR



### Dimensions IMO Tier III

| Type designation             |    | SCR   |
|------------------------------|----|-------|
| A-Overall width              | mm | 669   |
| B-Overall length             | mm | 1,102 |
| C-Overall height             | mm | 615   |
| Average weight of SCR system | kg | 135   |

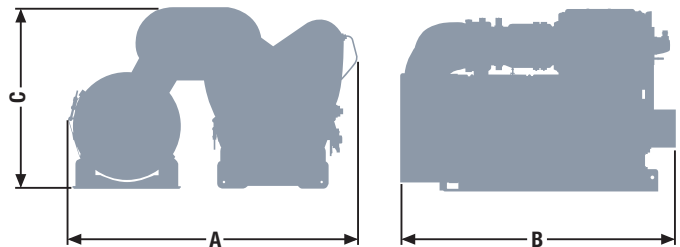
For detailed examinations of installation dimensions, please order drawings from our factory.



# EXHAUST AFTERTREATMENT

## EU STAGE V (> 300 KW)

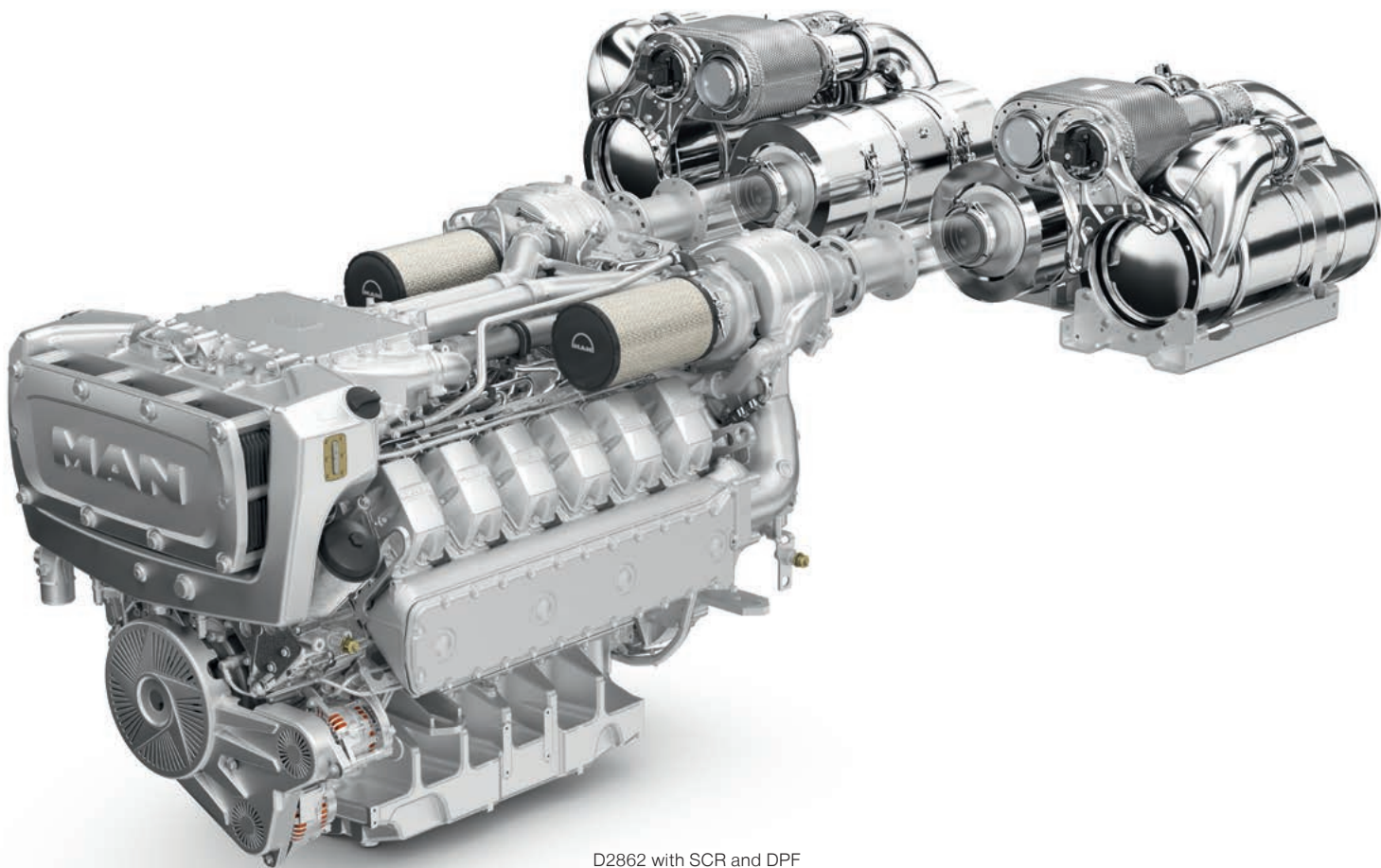
MAN Engines has expanded its commercial marine engine portfolio to EU Stage V engines for inland waterway transport in a range from 368 kW (500 PS) to 1,066 kW (1,450 hp). For power ratings above 300 kW MAN Engines relies on selective catalytic reduction (SCR) and diesel particulate filters (DPF) to achieve the emission standards complying with EU Stage V.



Dimensions EU Stage V

| Type designation             |    | SCR + DPF |
|------------------------------|----|-----------|
| A-Overall width              | mm | 960       |
| B-Overall length             | mm | 950       |
| C-Overall height             | mm | 620       |
| Average weight of SCR system | kg | 180       |

For detailed examinations of installation dimensions, please order drawings from our factory.



D2862 with SCR and DPF

# EXTENDED WARRANTY: MORE COMFORT FOR YOUR BUSINESS



## Benefits

- Work PLUS extensions cover all MAN engine components in the engine room, including cost-intensive components such as the electronics and turbo charger
- The transferability of the extension increases the resale value of your vessel
- All repairs are carried out by an authorised MAN service partner
- You can be sure that only MAN Genuine Parts are used

All MAN engines for workboats are delivered ex works with a one-year warranty. This warranty is valid for the entire scope of supply from MAN, and is therefore also valid for all engine parts. Wearing parts and components that have to be replaced at regular maintenance intervals are excluded from the warranty.

You have the option of taking out additional coverage for yourself and your investment beyond the one-year warranty: Work PLUS offers an extension of the warranty by up to four additional years, meaning that the total warranty would be up to 5 years. The operating hours of your engine will depend on the application.



**For more information, please contact  
your local dealer.**

# MAN GENUINE PARTS: AVAILABLE 24/7 AROUND THE WORLD

Of course, the premium quality of MAN engines is also reflected in high-quality MAN Genuine Parts. And because 'first class' doesn't only apply to our products here at MAN Engines, we ensure that our MAN Genuine Parts are available within 24 hours on working days.

This is made possible by our global service network, external warehouses across all the continents, and the logistics network of our MAN utility vehicles. This round-the-clock availability for MAN Genuine Parts applies to working days, and is for all spare parts for maintenance work on MAN engines for commercial shipping, such as filters, turbochargers, seawater pumps, seals and many more.

Our genuine engines deserve MAN Genuine Parts with two-year warranty and worldwide around-the-clock availability.



## Benefits

- High utilization of your ship and flexibility when organising your journeys
- Quick alternative in original manufacturer quality
- Standard two-year warranty on all MAN Genuine Parts and MAN Genuines Parts ecoline
- Delivery to 2,000 shipping addresses in 95 countries





# 24/7 HOTLINE

With its 24/7 service hotline for marine engines, MAN Engines now provides even easier access to its extensive global service network. Trained employees ensure that an expert service workshop close to you will deal with your concern and will remain in close contact with you.

If your MAN marine engine has a service case, you can receive support by phone right away at the 24/7 hotline with the following telephone numbers. Please have your engine number ready. You can find this on every engine model plate, in your maintenance record and in the registration papers.

**North and Latin America:** +1 754 238 6313

**The rest of the world:** +49 911 420 420

Please note that you may incur costs when ringing the American or German landline number.



## Benefits

- Available round the clock, 365 days a year
- Free referral to a MAN service outlet
- Access to almost 500 service stations
- Continuous support until the service case is concluded

# iSEA ENGINE ELECTRONIC



## Benefits

- Modern multifunction touch screen display (7" or 10")
- Maximum space savings thanks to visualisation of 7 peripherals on a single display: instrumentation, alarm handling, start/stop function, emergency drive, CAN converter, video screen, digital I/O
- Reduction in number of cables thanks to proven CAN bus wiring

**iSea** Intelligent monitoring of engines, gearboxes and exhaust gas aftertreatment on working boats: that's iSea (intelligent surveillance of engines and auxiliaries) from MAN Engines. iSea provides state of the art technology but still looks good – with the optional iSea bridge display. With its numerous connection options and interfaces it is the ideal solution for use on the world's limitless oceans. All the MAN Engines components are perfectly coordinated and intuitively designed. iSea is the future that gives you the best view of the present.



## Throttle lever

A modern classic, the MAN throttle lever for single or multiple engine systems is used in various drive concepts, as well as in hybrid drives. Different modes can be selected at the push of a button. The MAN throttle lever makes sailing and docking more efficient than ever before.

- A perfectly coordinated system offering excellent fuel savings and system reliability
- Better running properties and increased convenience thanks to ergonomic, high quality operator controls
- Less space required thanks to integration of the controller into the iSea box







# REMOTE MONITORING: NEW POSSIBILITIES WITH iSEA CONNECTIVITY

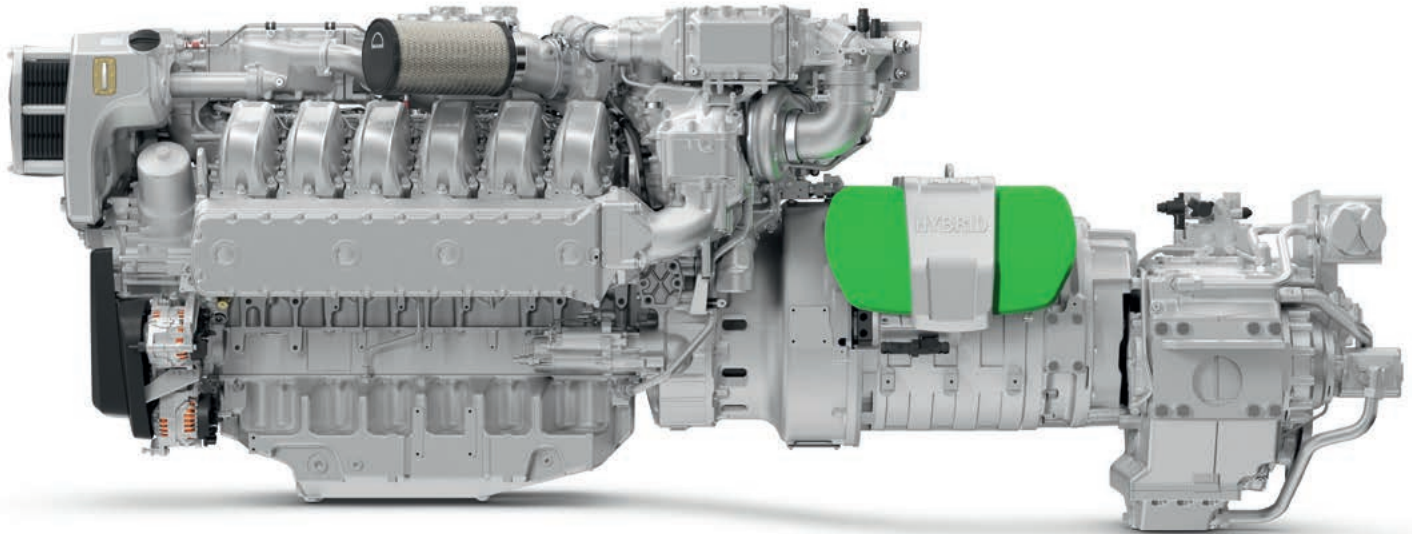
Retrieve and evaluate all important engine data from anywhere? The optional remote monitoring via the MAN Engines Marine Web Interface shows ship owners and MAN service employees the current status of MAN engines (with iSea engine electronics) on board the customer's own fleet around the clock. Fuel consumption, speeds, emissions, load spectra, alarm lists and snapshots of measurement data are displayed. MAN service employees can also access the diagnostic memory, the alarm history and live measurement data.



## Benefits

- Monitoring of fuel consumption, emissions and driving profile to increase efficiency across the entire fleet
- Time and cost-saving initial diagnosis (and troubleshooting if necessary) remotely by MAN service employees
- Additional time savings and reduced downtimes due to the provision of spare parts triggered immediately during the initial diagnosis if required
- Simple and secure remote control in the web browser via secured data connections with maximum data protection

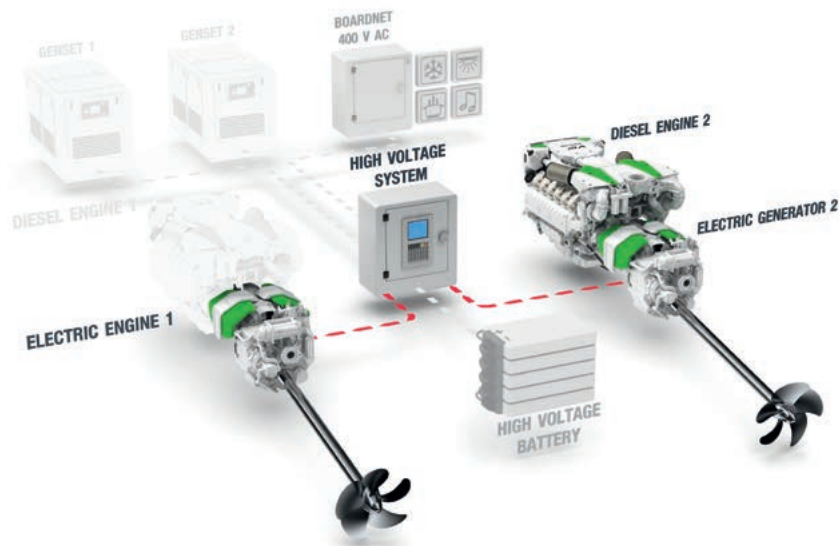
# MAN SMART HYBRID EXPERIENCE: CHANGE OF MOBILITY ON THE WATER



MAN Engines is ushering in a new era of mobility, maximum performance based on intelligent solutions, and comfortable cruising for marine engines. The modular MAN Smart Hybrid Experience is tailored to your individual needs and wishes and is specifically configured with this in mind.

The ability to flexibly combine conventional marine engines and electric motors with batteries and on-board units opens up countless opportunities for incorporating different degrees of hybrid power in leisure craft as well as commercial applications. Based on the desired operating modes, the MAN hybrid system can focus the driving profiles on performance, comfort or efficiency.

MAN Engines offers a tailored solution for your specific hybrid needs.



Please get in touch with our numerous operating modes!







# LIGHT DUTY

## Characteristics

- Annual operating hours:  
≤ 1,000
- Percentage of time at full  
load: ≤ 20 %
- Average load application:  
≤ 50 %

## Typical applications

- Season fishing
- Escort boats and  
patrol boats
- Ambulance boats
- Police boats



# MEDIUM DUTY

## Characteristics

- Annual operating hours:  $\leq 4,000$
- Percentage of time at full load:  $\leq 60\%$
- Average load application: up to 70 % depending on engine type

## Typical applications

- Escort boats and pilot boats
- Fishing boats
- Passenger boats and ferries
- Cruising vessels
- Seagoing patrol boats



# HEAVY DUTY

## Characteristics

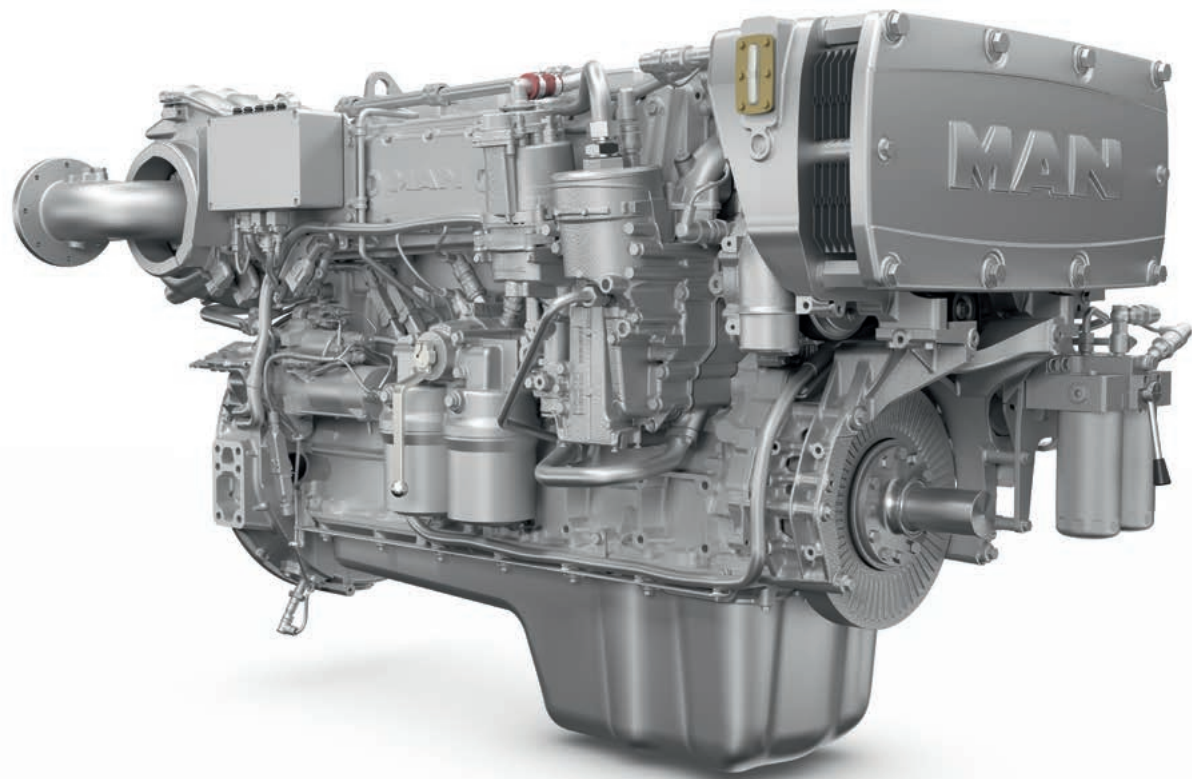
- Annual operating hours: unlimited
- Percentage of time at full load:  $\leq 100\%$
- Average load application:  $\leq 100\%$

## Typical applications

- Trawlers
- Tugs and pushboats
- Freight barges and freighters
- Ferries
- Dredgers



# D2676

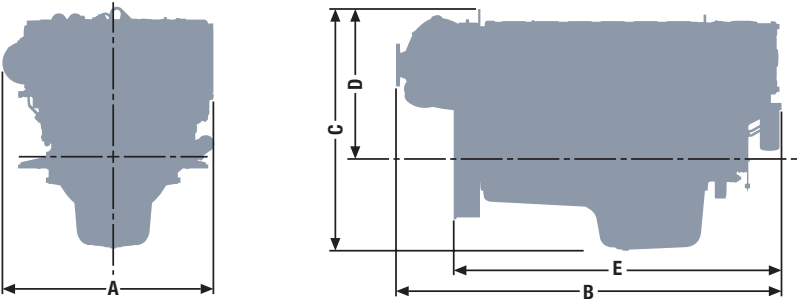


# D2676

## Characteristics

- Cylinders and arrangement: 6 cylinders in-line
- Operation mode: 4-stroke diesel engine, watercooled
- Turbocharging: Turbocharger with charge air intercooler and wastegate
- Number of valves: 4 valves per cylinder
- Fuel system: Common Rail direct fuel injection with high pressure pump and electronic control
- Engine block: High-strength casting with integrated oil and water ducts and replaceable cylinder liners
- Engine lubrication: Force-feed lubrication, lubrication oil cooler in cooling water circuit of the engine
- Type of cooling: Seawater cooled charge air cooler, plate heat exchanger by rubber impeller pump  
Optional: external keel cooling
- Engine control: Electronic injection control (EDC) with engine monitoring including diagnostic unit
- Fuel: DIN EN 590

# D2676



## Dimensions

| Type designation 421/422                                      |    | LE 422/425/426/428/432/435/438/43B/446/456/<br>457/471/474/477/47A/484/487/491/494/497 |       |
|---------------------------------------------------------------|----|----------------------------------------------------------------------------------------|-------|
| A-Overall width                                               | mm |                                                                                        | 986   |
| B-Overall length                                              | mm |                                                                                        | 1,795 |
| C-Overall height – standard oil pan                           | mm |                                                                                        | 1,096 |
| D-Top of engine to crankshaft centre                          | mm |                                                                                        | 674   |
| E-Length of engine from front end to edge of flywheel housing | mm |                                                                                        | 1,527 |
| Average weight of engine ready for installation (dry)         | kg |                                                                                        | 1,251 |

For detailed examinations of installation dimensions, please order drawings from our factory.





Two boats with 2× D2676 LE474 (2× 368 kW), the third with 2× D2676 LE477 (2× 368 kW) with SCR – Eric Hourii

# D2676

## Technical features

|                                                |         | Light duty                                                               |                                                                          |                                                                                         | Medium duty |                                                           |
|------------------------------------------------|---------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|
| Type designation                               |         | LE 446                                                                   | LE 426                                                                   | LE 456                                                                                  | LE 432      | LE 435                                                    |
| Displacement                                   | l       | 12.42                                                                    | 12.42                                                                    | 12.42                                                                                   | 12.42       | 12.42                                                     |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 537 (730)                                                                | 588 (800)                                                                | 625 (850)                                                                               | 412 (560)   | 412 (560)                                                 |
| Rated speed                                    | rpm     | 2,300                                                                    | 2,300                                                                    | 2,300                                                                                   | 2,100       | 2,100                                                     |
| Maximum torque                                 | Nm      | 2,450                                                                    | 2,685                                                                    | 2,740                                                                                   | 2,065       | 2,065                                                     |
| at speed                                       | rpm     | 1,300–2,100                                                              | 1,300–2,100                                                              | 1,400–2,100                                                                             | 1,300–1,900 | 1,300–1,900                                               |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 206                                                                      | 207                                                                      | 214                                                                                     | 199         | 207                                                       |
| Classifiable                                   |         | ✓                                                                        | –                                                                        | –                                                                                       | ✓           | ✓                                                         |
| Exhaust gas aftertreatment                     |         | –                                                                        | –                                                                        | –                                                                                       | –           | –                                                         |
| Exhaust gas status                             |         | IMO Tier II,<br>EPA Tier 3,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier II,<br>EPA Tier 3,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier II | IMO Tier II,<br>EPA Tier 3,<br>China 2,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only

# D2676

## Technical features

| Medium duty                                          |              |                             |              |             |                                                           |
|------------------------------------------------------|--------------|-----------------------------|--------------|-------------|-----------------------------------------------------------|
| Type designation                                     | LE 438       | LE 43B                      | LE 428       | LE 422      | LE 425                                                    |
| Displacement l                                       | 12.42        | 12.42                       | 12.42        | 12.42       | 12.42                                                     |
| Nominal rating <sup>1)</sup> kW (hp)                 | 412 (560)    | 412 (560)                   | 441 (600)    | 478 (650)   | 478 (650)                                                 |
| Rated speed rpm                                      | 2,100        | 2,100                       | 2,100        | 2,100       | 2,100                                                     |
| Maximum torque Nm                                    | 2,075        | 2,071                       | 2,214        | 2,402       | 2,402                                                     |
| at speed rpm                                         | 1,300–1,900  | 1,400–1,900                 | 1,400–1,900  | 1,300–1,900 | 1,300–1,900                                               |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 201          | 200                         | 201          | 201         | 205                                                       |
| Classifiable                                         | ✓            | ✓                           | ✓            | ✓           | ✓                                                         |
| Exhaust gas aftertreatment                           | ✓            | ✓                           | ✓            | –           | –                                                         |
| Exhaust gas status                                   | IMO Tier III | IMO Tier III,<br>EU Stage V | IMO Tier III | IMO Tier II | IMO Tier II,<br>EPA Tier 3,<br>China 2,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

# D2676

## Technical features

| Heavy duty                                              |                             |                                               |                             |             |                                               |
|---------------------------------------------------------|-----------------------------|-----------------------------------------------|-----------------------------|-------------|-----------------------------------------------|
| Type designation                                        | LE 457                      | LE 484                                        | LE 487                      | LE 491      | LE 494                                        |
| Displacement l                                          | 12.42                       | 12.42                                         | 12.42                       | 12.42       | 12.42                                         |
| Nominal rating <sup>1)</sup> kW (hp)                    | 221 (301)                   | 290 (394)                                     | 290 (394)                   | 331 (450)   | 331 (450)                                     |
| Rated speed rpm                                         | 1,800                       | 1,800                                         | 1,800                       | 1,800       | 1,800                                         |
| Maximum torque Nm                                       | 1,320                       | 1,735                                         | 1,760                       | 1,975       | 1,980                                         |
| at speed rpm                                            | 1,000–1,600                 | 1,200–1,600                                   | 1,300–1,600                 | 1,200–1,600 | 1,200–1,600                                   |
| Lowest specific fuel consumption <sup>1) 2)</sup> g/kWh | 206                         | 208                                           | 200                         | 198         | 208                                           |
| Classifiable                                            | ✓                           | ✓                                             | ✓                           | ✓           | ✓                                             |
| Exhaust gas aftertreatment                              | ✓                           | –                                             | ✓                           | –           | –                                             |
| Exhaust gas status                                      | IMO Tier III,<br>EU Stage V | IMO Tier II,<br>EPA Tier 3,<br>RCD 2013/53/EC | IMO Tier III,<br>EU Stage V | IMO Tier II | IMO Tier II,<br>EPA Tier 3,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

2) Consumption at rated power

# D2676

## Technical features

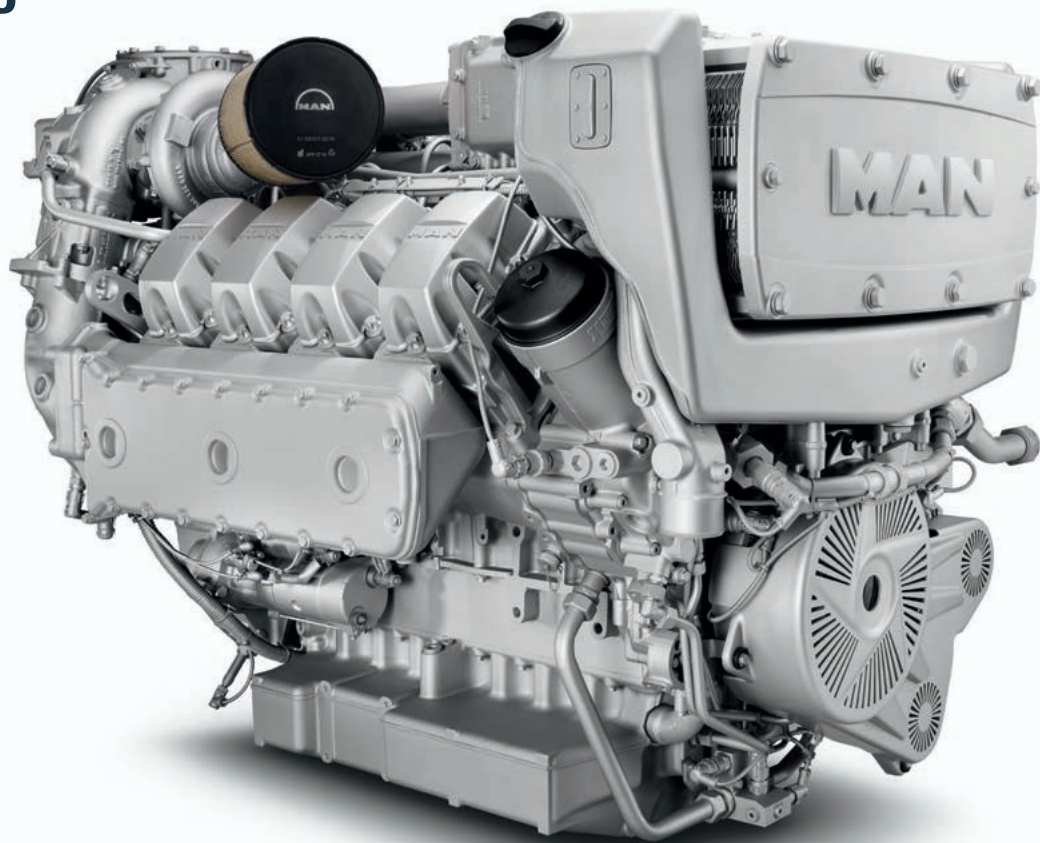
| Type designation                                        | Heavy duty   |             |                                                           |              |                             |
|---------------------------------------------------------|--------------|-------------|-----------------------------------------------------------|--------------|-----------------------------|
|                                                         | LE 497       | LE 471      | LE 474                                                    | LE 477       | LE 47A                      |
| Displacement l                                          | 12.42        | 12.42       | 12.42                                                     | 12.42        | 12.42                       |
| Nominal rating <sup>1)</sup> kW (hp)                    | 331 (450)    | 368 (500)   | 368 (500)                                                 | 368 (500)    | 368 (500)                   |
| Rated speed rpm                                         | 1,800        | 1,800       | 1,800                                                     | 1,800        | 1,800                       |
| Maximum torque Nm                                       | 1,980        | 2,205       | 2,205                                                     | 2,185        | 2,200                       |
| at speed rpm                                            | 1,200–1,600  | 1,300–1,600 | 1,300–1,600                                               | 1,300–1,600  | 1,400–1,600                 |
| Lowest specific fuel consumption <sup>1) 2)</sup> g/kWh | 196          | 199         | 207                                                       | 195          | 198                         |
| Classifiable                                            | ✓            | ✓           | ✓                                                         | ✓            | ✓                           |
| Exhaust gas aftertreatment                              | ✓            | –           | –                                                         | ✓            | ✓                           |
| Exhaust gas status                                      | IMO Tier III | IMO Tier II | IMO Tier II,<br>EPA Tier 3,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III | IMO Tier III,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1

2) Consumption at rated power



# D2868

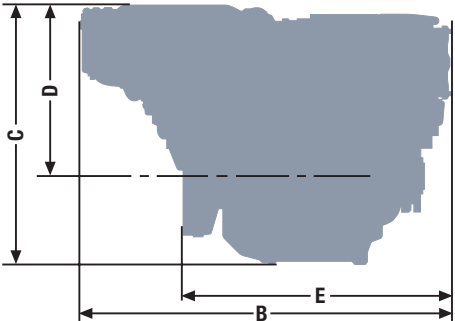
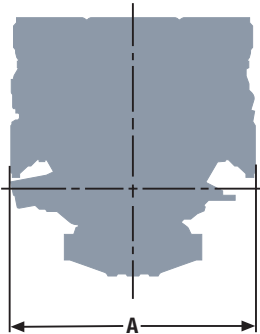


# D2868

## Characteristics

- Cylinders and arrangement: 8 cylinders in 90° V arrangement
- Operation mode: 4-stroke diesel engine, watercooled
- Turbocharging: Turbocharger with charge air intercooler and wastegate  
(1-stage: D2868 LE 426, 2-stage: D2868 LE 436)
- Number of valves: 4 valves per cylinder
- Fuel system: Common Rail direct fuel injection with electronic control
- Engine block: High-strength casting with integrated oil and water ducts  
and replaceable cylinder liners
- Engine lubrication: Closed system with forced feeding, oil cooling and filtering
- Type of cooling: Plate heat exchanger, seawater cooled  
Optional: external keel cooling
- Engine control: Electronic injection control (EDC) with engine monitoring including diagnostic unit
- Fuel: DIN EN 590

# D2868



## Dimensions

| Type designation                                           |    | LE 425/426/<br>431/446 | LE 453 | LE 436/<br>466 | LE 428/429/42B<br>437/449/44C | LE 439/<br>459/469 |
|------------------------------------------------------------|----|------------------------|--------|----------------|-------------------------------|--------------------|
| A-Overall width                                            | mm | 1,153                  | 1,153  | 1,153          | 1,157                         | 1,181              |
| B-Overall length                                           | mm | 1,745                  | 1,745  | 1,736          | 1,647                         | 1,807              |
| C-Overall height – standard oil pan                        | mm | 1,177                  | 1,222  | 1,222          | 1,180                         | 1,253              |
| D-Top of engine to crankshaft centre                       | mm | 765                    | 811    | 811            | 769                           | 845                |
| E-Engine length from front end to edge of flywheel housing | mm | 1,243                  | 1,262  | 1,262          | 1,251                         | 1,286              |
| Average weight of engine ready for installation (dry)      | kg | 1,780                  | 1,941  | 1,941          | 1,780                         | 1,941              |

For detailed examinations of installation dimensions, please order drawings from our factory.



2×D2868 LE436 (2× 882 kW)

# D2868

## Technical features

| Light duty                                           |                                                           |                                           |             |                             |                                                                                         |
|------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------|-------------|-----------------------------|-----------------------------------------------------------------------------------------|
| Type designation                                     | LE 426                                                    | LE 429                                    | LE 453      | LE 459                      | LE 436                                                                                  |
| Displacement l                                       | 16.16                                                     | 16.16                                     | 16.16       | 16.16                       | 16.16                                                                                   |
| Nominal rating <sup>1)</sup> kW (hp)                 | 735 (1,000)                                               | 735 (1,000)                               | 824 (1,121) | 824 (1,121)                 | 882 (1,200)                                                                             |
| Rated speed rpm                                      | 2,300                                                     | 2,300                                     | 2,300       | 2,300                       | 2,300                                                                                   |
| Maximum torque Nm                                    | 3,345                                                     | 3,345                                     | 3,745       | 3,710                       | 4,010                                                                                   |
| at speed rpm                                         | 1,400–2,100                                               | 1,300–2,100                               | 1,200–2,100 | 1,200–2,100                 | 1,200–2,100                                                                             |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 213                                                       | 202                                       | 202         | 200                         | 205                                                                                     |
| Classifiable                                         | –                                                         | ✓                                         | ✓           | ✓                           | –                                                                                       |
| Exhaust gas aftertreatment                           | –                                                         | ✓                                         | –           | ✓                           | –                                                                                       |
| Exhaust gas status                                   | IMO Tier II,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II | IMO Tier III,<br>EPA Tier 4 | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only



# D2868

## Technical features

|                                                |         | Light duty                                |                                                                                         |                                           |
|------------------------------------------------|---------|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|
| Type designation                               |         | LE 439                                    | LE 466                                                                                  | LE 469                                    |
| Displacement                                   | l       | 16.16                                     | 16.16                                                                                   | 16.16                                     |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 882 (1,200)                               | 956 (1,300)                                                                             | 956 (1,300)                               |
| Rated speed                                    | rpm     | 2,300                                     | 2,300                                                                                   | 2,300                                     |
| Maximum torque                                 | Nm      | 4,005                                     | 4,350                                                                                   | 4,230                                     |
| at speed                                       | rpm     | 1,300–2,100                               | 1,300–2,100                                                                             | 1,300–2,100                               |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 197                                       | 199                                                                                     | 200                                       |
| Classifiable                                   |         | ✓                                         | –                                                                                       | –                                         |
| Exhaust gas aftertreatment                     |         | ✓                                         | –                                                                                       | ✓                                         |
| Exhaust gas status                             |         | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only

# D2868

## Technical features

| Medium duty                                          |                                                           |              |                             |                                            |                             |
|------------------------------------------------------|-----------------------------------------------------------|--------------|-----------------------------|--------------------------------------------|-----------------------------|
| Type designation                                     | LE 425                                                    | LE 428       | LE 42B                      | LE 446                                     | LE 449                      |
| Displacement l                                       | 16.16                                                     | 16.16        | 16.16                       | 16.16                                      | 16.16                       |
| Nominal rating <sup>1)</sup> kW (hp)                 | 588 (800)                                                 | 588 (800)    | 588 (800)                   | 662 (900)                                  | 662 (900)                   |
| Rated speed rpm                                      | 2,100                                                     | 2,100        | 2,100                       | 2,100                                      | 2,100                       |
| Maximum torque Nm                                    | 2,955                                                     | 2,930        | 2,955                       | 3,325                                      | 3,310                       |
| at speed rpm                                         | 1,400–1,900                                               | 1,300–1,900  | 1,400–1,900                 | 1,400–1,900                                | 1,400–1,900                 |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 211                                                       | 206          | 209                         | 214                                        | 204                         |
| Classifiable                                         | ✓                                                         | ✓            | ✓                           | ✓                                          | ✓                           |
| Exhaust gas aftertreatment                           | –                                                         | ✓            | ✓                           | –                                          | ✓                           |
| Exhaust gas status                                   | IMO Tier II,<br>EPA Tier 3,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III | IMO Tier III,<br>EU Stage V | IMO Tier II,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 4 |

1) Tolerance +5 % according to DIN ISO 3046-1

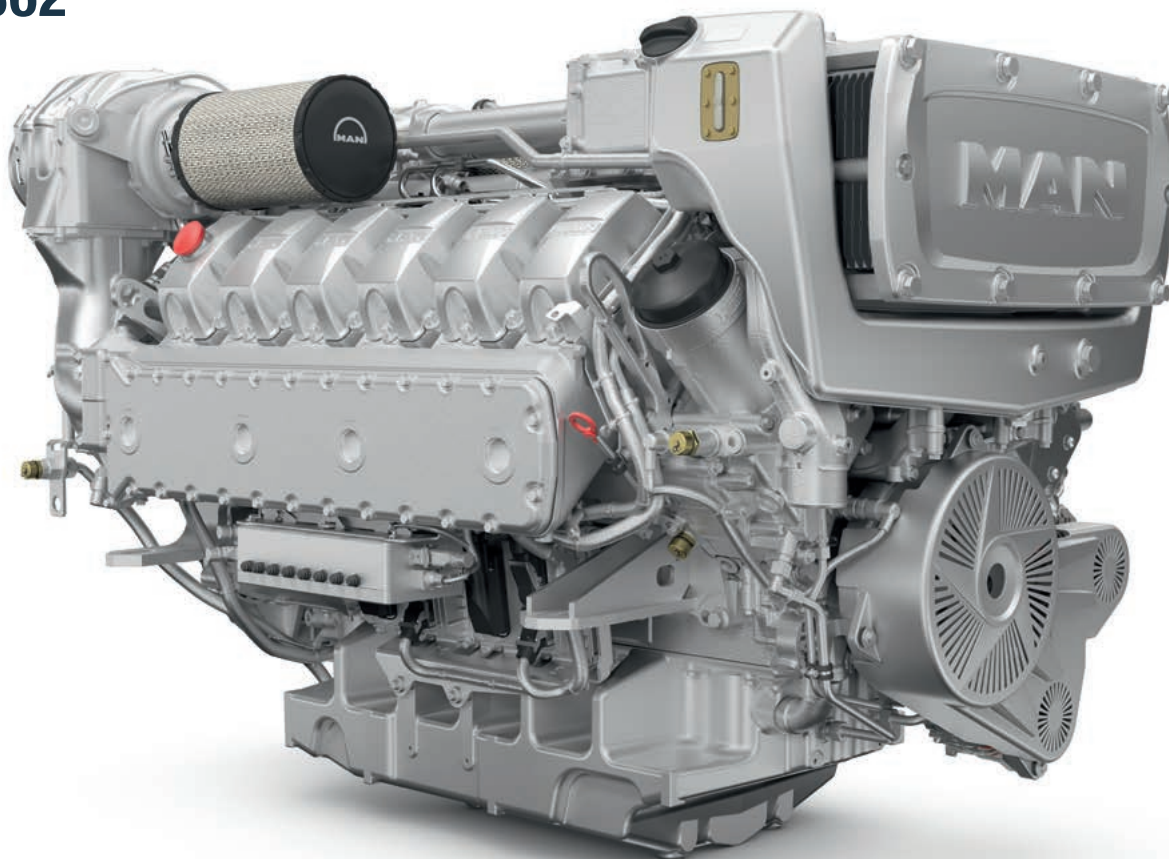
# D2868

## Technical features

| Type designation                               |         | Medium duty                                | Heavy duty  |              |
|------------------------------------------------|---------|--------------------------------------------|-------------|--------------|
|                                                |         | LE 44C                                     | LE 431      | LE 437       |
| Displacement                                   | l       | 16.16                                      | 16.16       | 16.16        |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 662 (900)                                  | 500 (680)   | 500 (680)    |
| Rated speed                                    | rpm     | 2,100                                      | 1,800       | 1,800        |
| Maximum torque                                 | Nm      | 3,327                                      | 3,000       | 2,985        |
| at speed                                       | rpm     | 1,400–1,900                                | 1,100–1,600 | 1,300–1,600  |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 206                                        | 199         | 201          |
| Classifiable                                   |         | ✓                                          | ✓           | ✓            |
| Exhaust gas aftertreatment                     |         | ✓                                          | –           | ✓            |
| Exhaust gas status                             |         | IMO Tier III,<br>EPA Tier 4,<br>EU Stage V | IMO Tier II | IMO Tier III |

1) Tolerance +5 % according to DIN ISO 3046-1

# D2862



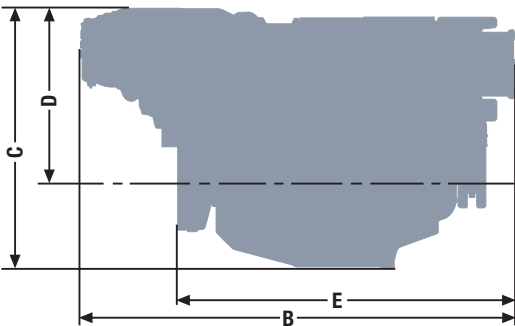
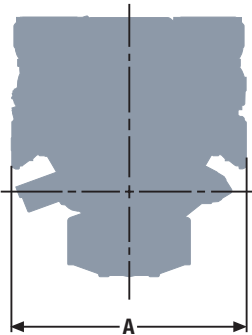
# D2862

## Characteristics

- Cylinders and arrangement: 12 cylinders in 90° V arrangement
- Operation mode: 4-stroke diesel engine, watercooled
- Turbocharging: Turbocharger with charge air intercooler and wastegate  
(1-stage: D2862 LE 446/426, 2-stage: D2862 LE 456/436/476/489/483)
- Number of valves: 4 valves per cylinder
- Fuel system: Common Rail direct fuel injection with electronic control
- Engine block: High-strength casting with integrated oil and water ducts  
and replaceable cylinder liners
- Engine lubrication: Closed system with forced feeding, oil cooling and filtering
- Type of cooling: Plate heat exchanger, seawater cooled  
Optional: external keel cooling
- Engine control: Electronic injection control (EDC) with engine monitoring including diagnostic unit
- Fuel: DIN EN 590



# D2862



## Dimensions

| Type designation                                              |    | LE 424/425/426/<br>435/444/446/<br>454/466 | LE 429/436/439/456/<br>459/476/479/483/<br>489/48B/496/499 | LE 427/428/437/<br>438/43B/447/<br>44A/469 |
|---------------------------------------------------------------|----|--------------------------------------------|------------------------------------------------------------|--------------------------------------------|
| A-Overall width                                               | mm | 1,153                                      | 1,153                                                      | 1,157                                      |
| B-Overall length                                              | mm | 2,130                                      | 2,139                                                      | 1,939                                      |
| C-Overall height – standard oil pan                           | mm | 1,230                                      | 1,272                                                      | 1,293                                      |
| D-Top of engine to crankshaft centre                          | mm | 765                                        | 808                                                        | 827                                        |
| E-Length of engine from front end to edge of flywheel housing | mm | 1,630                                      | 1,658                                                      | 1,608                                      |
| Average weight of engine ready for installation (dry)         | kg | 2,270                                      | 2,420                                                      | 2,270                                      |

For detailed examinations of installation dimensions, please order drawings from our factory.



# D2862

## Technical features

|                                                |         | Light duty                                                                              |                                                                                         |                                           |                                                                          |
|------------------------------------------------|---------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------|
| Type designation                               |         | LE 446                                                                                  | LE 426                                                                                  | LE 429                                    | LE 456                                                                   |
| Displacement                                   | l       | 24.24                                                                                   | 24.24                                                                                   | 24.24                                     | 24.24                                                                    |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 1,029 (1,400)                                                                           | 1,140 (1,550)                                                                           | 1,140 (1,550)                             | 1,213 (1,650)                                                            |
| Rated speed                                    | rpm     | 2,300                                                                                   | 2,300                                                                                   | 2,300                                     | 2,300                                                                    |
| Maximum torque                                 | Nm      | 4,680                                                                                   | 5,185                                                                                   | 5,180                                     | 5,510                                                                    |
| at speed                                       | rpm     | 1,200–2,100                                                                             | 1,200–2,100                                                                             | 1,200–2,100                               | 1,200–2,100                                                              |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 203                                                                                     | 203                                                                                     | 199                                       | 201                                                                      |
| Classifiable                                   |         | ✓                                                                                       | –                                                                                       | –                                         | ✓                                                                        |
| Exhaust gas aftertreatment                     |         | –                                                                                       | –                                                                                       | ✓                                         | –                                                                        |
| Exhaust gas status                             |         | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only

# D2862

## Technical features

|                                                |         | Light duty                                |                                                                                         |                                           |                                                                                         |
|------------------------------------------------|---------|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------|
| Type designation                               |         | LE 459                                    | LE 436                                                                                  | LE 439                                    | LE 476                                                                                  |
| Displacement                                   | l       | 24.24                                     | 24.24                                                                                   | 24.24                                     | 24.24                                                                                   |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 1,213 (1,650)                             | 1,324 (1,800)                                                                           | 1,324 (1,800)                             | 1,397 (1,900)                                                                           |
| Rated speed                                    | rpm     | 2,300                                     | 2,300                                                                                   | 2,300                                     | 2,300                                                                                   |
| Maximum torque                                 | Nm      | 5,518                                     | 6,010                                                                                   | 6,010                                     | 6,130                                                                                   |
| at speed                                       | rpm     | 1,200–2,100                               | 1,200–2,100                                                                             | 1,200–2,100                               | 1,200–2,100                                                                             |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 198                                       | 200                                                                                     | 197                                       | 200                                                                                     |
| Classifiable                                   |         | ✓                                         | –                                                                                       | –                                         | –                                                                                       |
| Exhaust gas aftertreatment                     |         | ✓                                         | –                                                                                       | ✓                                         | –                                                                                       |
| Exhaust gas status                             |         | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only

# D2862

## Technical features

|                                                |         | Light duty                                |                                                                                         |                                           |
|------------------------------------------------|---------|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------|
| Type designation                               |         | LE 479                                    | LE 496                                                                                  | LE 499                                    |
| Displacement                                   | l       | 24.24                                     | 24.24                                                                                   | 24.24                                     |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 1,397 (1,900)                             | 1,471 (2,000)                                                                           | 1,471 (2,000)                             |
| Rated speed                                    | rpm     | 2,300                                     | 2,300                                                                                   | 2,300                                     |
| Maximum torque                                 | Nm      | 6,185                                     | 6,460                                                                                   | 6,508                                     |
| at speed                                       | rpm     | 1,200–2,100                               | 1,200–2,100                                                                             | 1,200–2,100                               |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 197                                       | 199                                                                                     | 197                                       |
| Classifiable                                   |         | –                                         | –                                                                                       | –                                         |
| Exhaust gas aftertreatment                     |         | ✓                                         | –                                                                                       | ✓                                         |
| Exhaust gas status                             |         | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> ,<br>China 2 <sup>2)</sup> ,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only



# D2862

## Technical features

| Type designation                                     | Medium duty                                |                             |                                            |                             |                             |
|------------------------------------------------------|--------------------------------------------|-----------------------------|--------------------------------------------|-----------------------------|-----------------------------|
|                                                      | LE 425                                     | LE 428                      | LE 435                                     | LE 438                      | LE 43B                      |
| Displacement l                                       | 24.24                                      | 24.24                       | 24.24                                      | 24.24                       | 24.24                       |
| Nominal rating <sup>1)</sup> kW (hp)                 | 749 (1,019)                                | 749 (1,019)                 | 882 (1,200)                                | 882 (1,200)                 | 882 (1,200)                 |
| Rated speed rpm                                      | 2,100                                      | 2,100                       | 2,100                                      | 2,100                       | 2,100                       |
| Maximum torque Nm                                    | 3,765                                      | 3,750                       | 4,435                                      | 4,440                       | 4,435                       |
| at speed rpm                                         | 1,200–1,900                                | 1,300–1,900                 | 1,300–1,900                                | 1,400–1,900                 | 1,300–1,900                 |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 203                                        | 199                         | 200                                        | 197                         | 199                         |
| Classifiable                                         | ✓                                          | ✓                           | ✓                                          | ✓                           | ✓                           |
| Exhaust gas aftertreatment                           | –                                          | ✓                           | –                                          | ✓                           | ✓                           |
| Exhaust gas status                                   | IMO Tier II,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 4 | IMO Tier II,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 4 | IMO Tier III,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1

# D2862

## Technical features

|                                                |         | Medium duty                 |                                            |               |                             |                             |
|------------------------------------------------|---------|-----------------------------|--------------------------------------------|---------------|-----------------------------|-----------------------------|
| Type designation                               |         | LE 469                      | LE 466                                     | LE 483        | LE 489                      | LE 48B                      |
| Displacement                                   | l       | 24.24                       | 24.24                                      | 24.24         | 24.24                       | 24.24                       |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 974 (1,325)                 | 1,029 (1,400)                              | 1,066 (1,450) | 1,066 (1,450)               | 1,066 (1,450)               |
| Rated speed                                    | rpm     | 2,100                       | 2,100                                      | 2,100         | 2,100                       | 2,100                       |
| Maximum torque                                 | Nm      | 4,895                       | 5,180                                      | 5,355         | 5,345                       | 5,330                       |
| at speed                                       | rpm     | 1,500–1,900                 | 1,200–1,900                                | 1,100–1,800   | 1,200–1,900                 | 1,100–1,900                 |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 203                         | 203                                        | 203           | 196                         | 200                         |
| Classifiable                                   |         | ✓                           | ✓                                          | ✓             | ✓                           | ✓                           |
| Exhaust gas aftertreatment                     |         | ✓                           | –                                          | –             | ✓                           | ✓                           |
| Exhaust gas status                             |         | IMO Tier III,<br>EPA Tier 4 | IMO Tier II,<br>China 2,<br>RCD 2013/53/EC | IMO Tier II   | IMO Tier III,<br>EPA Tier 4 | IMO Tier III,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1

# D2862

## Technical features

| Type designation                                     | Heavy duty   |                                                           |                                                |                             |
|------------------------------------------------------|--------------|-----------------------------------------------------------|------------------------------------------------|-----------------------------|
|                                                      | LE 437       | LE 454                                                    | LE 424                                         | LE 427                      |
| Displacement l                                       | 24.24        | 24.24                                                     | 24.24                                          | 24.24                       |
| Nominal rating <sup>1)</sup> kW (hp)                 | 551 (749)    | 588 (800)                                                 | 662 (900)                                      | 662 (900)                   |
| Rated speed rpm                                      | 1,800        | 1,800                                                     | 1,800                                          | 1,800                       |
| Maximum torque Nm                                    | 3,300        | 3,510                                                     | 3,950                                          | 3,910                       |
| at speed rpm                                         | 1,000–1,600  | 1,000–1,600                                               | 1,100–1,600                                    | 1,100–1,600                 |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 196          | 202                                                       | 199                                            | 193                         |
| Classifiable                                         | ✓            | ✓                                                         | ✓                                              | ✓                           |
| Exhaust gas aftertreatment                           | ✓            | –                                                         | –                                              | ✓                           |
| Exhaust gas status                                   | IMO Tier III | IMO Tier II,<br>EPA Tier 3,<br>China 2,<br>RCD 2013/53/EC | IMO Tier II,<br>China 2,<br>RCD 2013/53/<br>EC | IMO Tier III,<br>EPA Tier 4 |

1) Tolerance +5 % according to DIN ISO 3046-1

# D2862

## Technical features

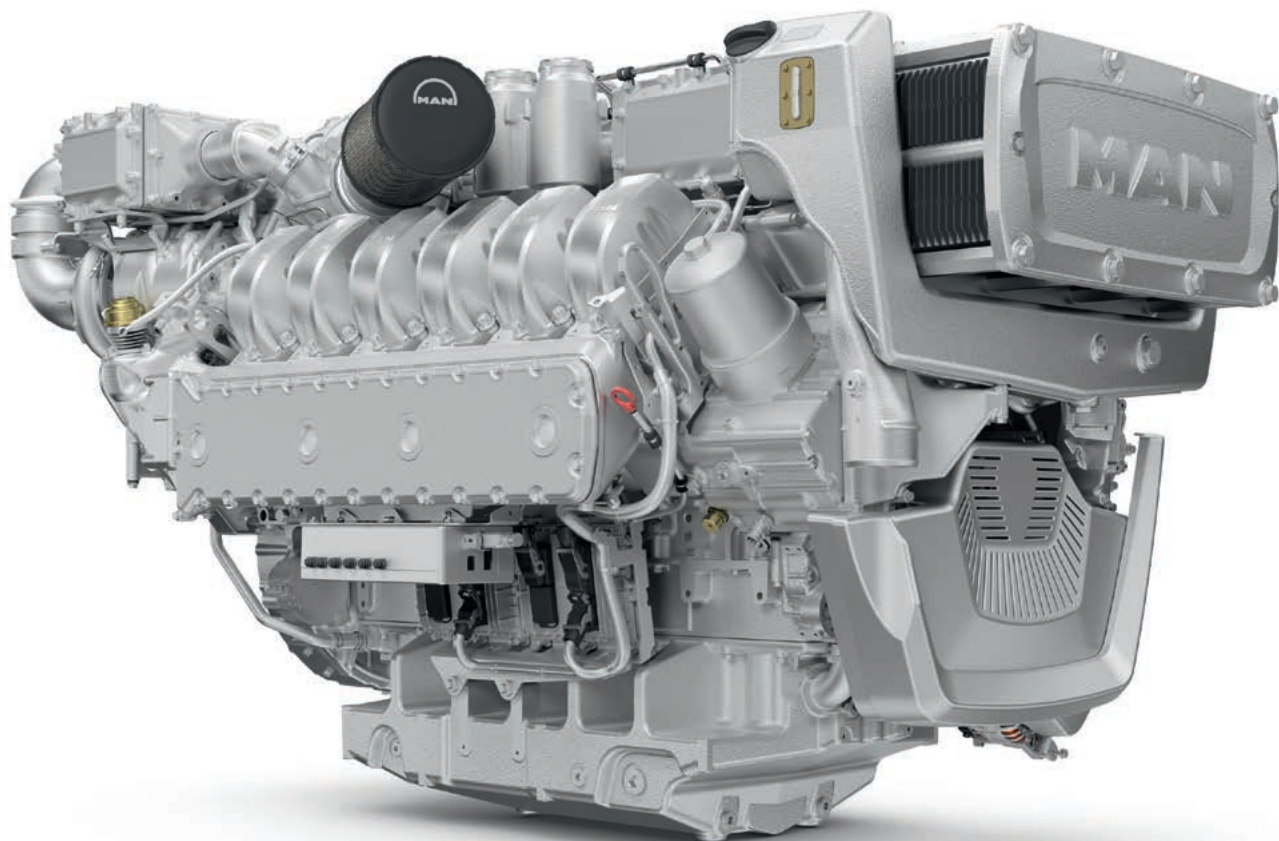
|                                                |         | Heavy duty                                 |                             |                             |
|------------------------------------------------|---------|--------------------------------------------|-----------------------------|-----------------------------|
| Type designation                               |         | LE 444                                     | LE 447                      | LE 44A                      |
| Displacement                                   | l       | 24.24                                      | 24.24                       | 24.24                       |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 735 (1,000)                                | 735 (1,000)                 | 735 (1,000)                 |
| Rated speed                                    | rpm     | 1,800                                      | 1,800                       | 1,800                       |
| Maximum torque                                 | Nm      | 4,380                                      | 4,340                       | 4,388                       |
| at speed                                       | rpm     | 1,100–1,600                                | 1,100–1,600                 | 1,300–1,600                 |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 199                                        | 193                         | 195                         |
| Classifiable                                   |         | ✓                                          | ✓                           | ✓                           |
| Exhaust gas aftertreatment                     |         | –                                          | ✓                           | ✓                           |
| Exhaust gas status                             |         | IMO Tier II,<br>China 2,<br>RCD 2013/53/EC | IMO Tier III,<br>EPA Tier 4 | IMO Tier III,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1



3×D2862 LE438 (3×882 kW)

**D3872**



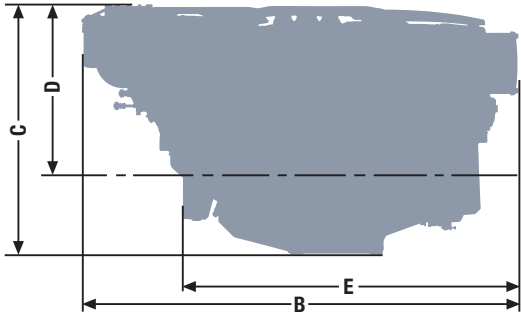
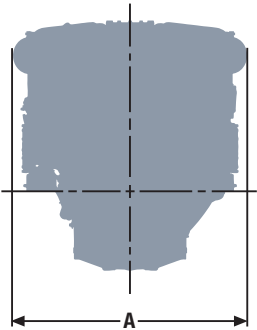


# D3872

## Characteristics

- Cylinders and arrangement: 12 cylinders in 90° V arrangement
- Operation mode: 4-stroke diesel engine, watercooled
- Turbocharging: Two-stage turbocharger with charge air intercooler and wastegate
- Number of valves: 4 valves per cylinder
- Fuel system: Common Rail injection system with MD1 control
- Engine block: High-strength casting with integrated oil and water ducts and single cylinder heads with wet replaceable cylinder liners
- Engine lubrication: Force-feed lubrication by gear pump, lubricating oil cooler in cooling water circuit
- Type of cooling: Seawater cooled charge air cooler and plate heat exchanger by rubber impeller pump
- Engine control: Electronic injection control (EDC)  
Electronic engine monitoring including diagnostic unit
- Fuel: DIN EN 590

# D3872



## Dimensions

| Type designation                                              |    | LE 421/424/427/<br>431/434/437 | LE 432/433/435/<br>443/446 |
|---------------------------------------------------------------|----|--------------------------------|----------------------------|
| A-Overall width                                               | mm | 1,157                          | 1,157                      |
| B-Overall length                                              | mm | 2,144                          | 2,374                      |
| C-Overall height – standard oil pan                           | mm | 1,308                          | 1,328                      |
| D-Top of engine to crankshaft centre                          | mm | 843                            | 863                        |
| E-Length of engine from front end to edge of flywheel housing | mm | 1,765                          | 1,792                      |
| Average weight of engine ready for installation (dry)         | kg | 2,550                          | 2,700                      |

For detailed examinations of installation dimensions, please order drawings from our factory.

# D3872

## Technical features

| Light duty                                           |                                          |                                           |                                          |
|------------------------------------------------------|------------------------------------------|-------------------------------------------|------------------------------------------|
| Type designation                                     | LE 443                                   | LE 446                                    | LE 433                                   |
| Displacement l                                       | 29.62                                    | 29.62                                     | 29.62                                    |
| Nominal rating <sup>1)</sup> kW (hp)                 | 1,471 (2,000)                            | 1,471 (2,000)                             | 1,618 (2,200)                            |
| Rated speed rpm                                      | 2,300                                    | 2,300                                     | 2,300                                    |
| Maximum torque Nm                                    | 6,689                                    | 6,689                                     | 7,358                                    |
| at speed rpm                                         | 1,200–2,100                              | 1,200–2,100                               | 1,200–2,100                              |
| Lowest specific fuel consumption <sup>1)</sup> g/kWh | 196                                      | 199                                       | 195                                      |
| Classifiable                                         | ✓                                        | ✓                                         | ✓                                        |
| Exhaust gas aftertreatment                           | –                                        | ✓                                         | –                                        |
| Exhaust gas status                                   | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier III,<br>EPA Tier 3 <sup>2)</sup> | IMO Tier II,<br>EPA Tier 3 <sup>2)</sup> |

1) Tolerance +5 % according to DIN ISO 3046-1

2) For private use only

# D3872

## Technical features

|                                                |         | Medium duty   |                             | Heavy duty  |                             |                                            |
|------------------------------------------------|---------|---------------|-----------------------------|-------------|-----------------------------|--------------------------------------------|
| Type designation                               |         | LE 432        | LE 435                      | LE 431      | LE 434                      | LE 437                                     |
| Displacement                                   | l       | 29.62         | 29.62                       | 29.62       | 29.62                       | 29.62                                      |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 1,213 (1,650) | 1,213 (1,650)               | 735 (1,000) | 735 (1,000)                 | 735 (1,000)                                |
| Rated speed                                    | rpm     | 2,100         | 2,100                       | 1,800       | 1,800                       | 1,800                                      |
| Maximum torque                                 | Nm      | 6,096         | 6,096                       | 4,387       | 4,387                       | 4,387                                      |
| at speed                                       | rpm     | 1,100–1,900   | 1,100–1,900                 | 1,000–1,600 | 1,100–1,600                 | 1,300–1,600                                |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 193           | 197                         | 195         | 196                         | 200                                        |
| Classifiable                                   |         | ✓             | ✓                           | ✓           | ✓                           | ✓                                          |
| Exhaust gas aftertreatment                     |         | –             | ✓                           | –           | ✓                           | ✓                                          |
| Exhaust gas status                             |         | IMO Tier II   | IMO Tier III,<br>EPA Tier 4 | IMO Tier II | IMO Tier III,<br>EPA Tier 4 | IMO Tier III,<br>EPA Tier 4,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1

## Technical features

|                                                |         | Heavy duty  |                             |                                            |
|------------------------------------------------|---------|-------------|-----------------------------|--------------------------------------------|
| Type designation                               |         | LE 421      | LE 424                      | LE 427                                     |
| Displacement                                   | l       | 29.62       | 29.62                       | 29.62                                      |
| Nominal rating <sup>1)</sup>                   | kW (hp) | 920 (1,251) | 920 (1,251)                 | 920 (1,251)                                |
| Rated speed                                    | rpm     | 1,800       | 1,800                       | 1,800                                      |
| Maximum torque                                 | Nm      | 5,491       | 5,491                       | 5,491                                      |
| at speed                                       | rpm     | 1,100–1,600 | 1,100–1,600                 | 1,100–1,600                                |
| Lowest specific fuel consumption <sup>1)</sup> | g/kWh   | 192         | 192                         | 196                                        |
| Classifiable                                   |         | ✓           | ✓                           | ✓                                          |
| Exhaust gas aftertreatment                     |         | –           | ✓                           | ✓                                          |
| Exhaust gas status                             |         | IMO Tier II | IMO Tier III,<br>EPA Tier 4 | IMO Tier III,<br>EPA Tier 4,<br>EU Stage V |

1) Tolerance +5 % according to DIN ISO 3046-1



## **MAN Truck & Bus SE**

Vogelweiherstraße 33  
90441 Nürnberg, Germany  
[www.man-engines.com](http://www.man-engines.com)

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