

TD / TCD 3.6 L4



Operation manual

EU Stage IV & V / US EPA Tier 4

The engine company.



Notes

- This engine is defined exclusively for purpose according to the scope of delivery and built by the equipment manufacturer (use for the intended purpose). Any other use above and beyond this will be considered as misuse. The manufacturer will not accept any liability for damages resulting from this. The user bears the sole risk.

- Use for the intended purpose also includes observance of the operating, maintenance and repair instructions specified by the manufacturer. The engine may only be used, maintained and serviced by persons who are familiar with it and are aware of the hazards.

The relevant rules for the prevention of accidents and other generally recognised safety and occupational medicine rules must be observed.

- Unauthorised modifications to the engine will exclude the manufacturer from all liability for resulting damage.
- Equally, manipulations to the injection and control system can affect the engine's performance and the exhaust characteristics. In this case, compliance with environmental regulations will no longer be guaranteed.
- Do not change the cooling air feed area to the blower or fan. An unobstructed cooling air supply must be guaranteed.

The manufacturer will accept no liability for damages resulting from this.

- As a general rule, only DEUTZ original parts may be used when carrying out maintenance/repair work on the engine. These have been designed especially for your engine and ensure fault-free operation.

Maintenance/cleaning work on the engine may only be carried out when the engine is not running and has cooled down. When performing such works, make sure that the electrical system is switched off (remove ignition key).

The rules for the prevention of accidents on electrical systems (e.g. -VDE-0100/-0101/-0104/-0105 Electrical Protection Measures against Dangerous Live Voltages) must be observed.

Cover all electrical components tightly when cleaning with liquids.

Failure to observe the following safety instructions may result in damage to property, environmental damage and serious injury to persons, including death!

- Read the operating instructions before use. If you have any trouble understanding these, please contact DEUTZ Support info@deutz.com or your local service partner.
- Make sure that the operating instructions are available to everyone who operates, maintains or repairs the engine and that the contents have been understood.
- Before use, have a qualified person instruct you in the operation of the device or the engine.

- Wear suitable personal protective equipment (e.g. ear protection, safety gloves, safety glasses, protective clothing, safety helmet, safety shoes).
- Only let the engine run when the bonnet / engine compartment is closed. **Caution Risk of injury!**
- Do not approach a running engine if the bonnet / engine compartment is not closed. **Attention Risk of injury!**
- It is generally not permitted to enter the engine and/or engine and exhaust after-treatment parts. Access is only permitted on specially designated and marked areas (treads). **Attention Risk of injury! Risk of property damage!**
- Do not reach into the engine compartment (only permitted in case of service or maintenance using suitable personal protective equipment and trained personnel). **Caution Risk of injury!**
- The engine, engine parts and exhaust system can be very hot — even after a long period of downtime. **Caution Risk of fire and injury!**
- Regardless of the operating condition of the engine, the exhaust gas can be very hot and suddenly change its temperature. This applies in particular to regeneration mode. **Caution Risk of fire and injury!**
- Engine parts and exhaust system may be sharp-edged. **Caution Risk of injury!**
- Before working on the engine, take suitable measures to ensure that the engine cannot be started unintentionally. **Caution Risk of injury!**
- Pay attention to unusual noises and switch off the engine in case of doubt! **Risk of property damage!**

- In the event of smoke or fire in the engine compartment, switch off the engine as quickly as possible. In the event of a fire, take yourself and other persons to safety. **Caution Risk of injury! Risk of property damage!**
- Avoid open sources of fire and heat in the immediate vicinity of the engine, exhaust after-treatment system and tank system. **Caution Risk of injury! Risk of property damage!**
- Only operate the engine in areas where there is a risk of fire by observing special precautions. Note the risk assessment for working places. **Caution Risk of explosion, injury and fire! Risk of property damage!**
- The engine must not be operated in an explosive atmosphere (according to ATEX Directive 94/9/EC). **Caution Risk of explosion, injury and fire! Risk of property damage!**
- If liquids, in particular oil, fuel and gases, are leaking, switch off the engine as quickly as possible. Do not smoke, use open light or fire. **Caution Risk of explosion, injury and fire! Risk of property damage! Risk of environmental damage!**
- Leaking liquids lead to an increased risk of slipping and falling. **Caution Risk of injury!**
- Operate the engine only outdoors or with adequate ventilation (including shutting down the device). **Caution Note for LPG engines:** LPG (Liquefied Petroleum Gas) is heavier than air and can accumulate near the ground and in pits in high concentrations! **Caution Risk of explosion, injury, poisoning and suffocation!**
- Do not operate the engine unattended or without monitoring. **Caution Risk of injury! Risk of property damage!**
- Do not operate, maintain or repair the engine if you are tired or unfocused. **Caution Risk of injury! Risk of property damage!**
- Do not operate, maintain or repair the engine if you are under the influence of medication, drugs or alcohol, if you have any health restrictions or if you are unable to do so. **Caution Risk of injury! Risk of property damage!**
- Do not leave children or helpless persons unattended near the engine. **Caution Risk of injury!**
- Do not swallow any engine fluids. Observe the information in the safety data sheets. **Caution Risk of injury!**
- Do not swallow or drink any engine fluids, in particular oil, fuel, hydraulic fluids, UREA ("AdBlue®") and coolant. Observe the information in the safety data sheets. **Caution Risk of injury!**
- Avoid inhaling exhaust, fuel, or oil vapours (including gaseous fuels such as liquefied petroleum gas or natural gas). **Caution Risk of poisoning and suffocation!**
- Do not allow engine fluids to get into your eyes. Avoid skin contact with the operating materials. This applies in particular to oil, fuel, hydraulic fluids, UREA ("AdBlue®") and coolant. Observe the information in the safety data sheets. **Caution Risk of injury!**
- Observe noise protection and environmental protection regulations (e.g. operation in drinking water protection areas) **Caution Risk of injury! Risk of environmental damage!**
- Loud engine noise can severely impair voice communication and the perception of audible warning signals. **Caution Risk of injury! Risk of property damage!**
- Optical warning devices (e.g. display) may not be legible or only be legible to a limited extent under unfavourable environmental conditions. **Caution Risk of property damage!**
- Gas engines or engines with burners in the exhaust after-treatment system are equipped with a high-voltage ignition system. Observe the corresponding warnings. **Caution Risk of injury!**
- Electromagnetic fields emanating from the engine can influence the function of electrical and electronic devices despite compliance with the applicable directives on electromagnetic compatibility (EMC). **Caution Risk of property damage!**
- Persons with pacemakers should avoid the immediate vicinity of the engine. **Caution Risk of injury!**
- Only trained personnel may operate, maintain or service the engine. Access to the engine by unauthorised persons is prohibited. **Caution Risk of injury! Risk of property damage!**
- Have the engine serviced regularly by authorised personnel in accordance with the manufacturer's instructions. **Caution Risk of injury! Risk of property damage!**

Notes

- DEUTZ recommends the use of genuine DEUTZ spare parts. **Risk of property damage!**
- When the intended engine service life is reached, the engine must be subjected to a general overhaul by authorised personnel or replaced.
Caution Risk of injury! Risk of property damage!
- In addition to the safety instructions given in the operating instructions, the safety instructions in the technical bulletins (TR) must also be observed.
- In addition to the safety instructions listed here, special regulations of the vehicle manufacturer / equipment manufacturer / machine manufacturer or of the operator may apply.

CALIFORNIA PROPOSITION 65 WARNING



WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Always start and operate the engine in a well-ventilated area.

If in an enclosed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system.

Do not idle the engine except as necessary.

For more information go to

www.P65warnings.ca.gov/diesel

Dear customer,

Congratulations on the purchase of your DEUTZ engine.

The air/liquid-cooled engines made by DEUTZ are developed for a wide variety of applications. A comprehensive range of variants ensures that the respective special requirements are fulfilled.

The engine is equipped accordingly for the particular installation situation, i.e. not all the components described in the operating manual are installed in your engine.

We have endeavoured to highlight any differences so that you will be able to locate the operating and maintenance instructions applicable to your engine quickly and easily.

Please make sure that this operating manual is available to everyone involved in the operation, maintenance and repair of the engine and that they have understood the contents.

If you have any queries, please contact us, we'll be happy to advise you.

Sincerely,

DEUTZ AG

Engine number

Please enter the engine serial number here. This will simplify the handling of questions about customer service, repair and spare parts.

Components of the exhaust aftertreatment system

Please enter the serial numbers of the exhaust aftertreatment components.

Diesel oxidation catalytic converter

Diesel particle filter

SCR catalytic converter

Notes

Illustrations and data in this instruction manual are subject to technical changes in the course of further development of the engine.

No parts of this document may be reproduced in any form or by any means without our express approval.

DEUTZ SERVICE PORTAL



The official online shop for original DEUTZ spare parts and accessories. Here you can access the digital documentation of your DEUTZ engine and quickly and securely order the appropriate spare parts.

Service online -- around the clock:

www.deutz-serviceportal.com

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DEUTZ engines

DEUTZ engines and the appropriate exhaust aftertreatment components are the result of years of research and development. The detailed know-how gained by this in connection with the high quality demands are the guarantee for production of engines with a long life, high reliability and low fuel consumption. Naturally the high demands for protection of the environment are also met.

Safety precautions when the engine is running

Maintenance work or repairs may only be performed on the shut-down engine. Make sure that the engine cannot be started inadvertently — **Danger of accident!**

After repairs: Check that all protective equipment is mounted and all tools have been removed from the engine.

Observe industrial safety regulations when running the engine in an enclosed space or underground.

When working on the running engine, work clothing must be close fitting.

Never fill the fuel tank while the engine is running.

Service and maintenance

Service and maintenance are the prerequisite for the engine satisfying the demands placed on it. Compliance with the specified maintenance intervals and careful execution of service and maintenance work are therefore absolutely necessary.

Special care should be taken under abnormally demanding operating conditions.

Original DEUTZ parts

Original DEUTZ parts are subject to the same strict quality demands as the DEUTZ engines. Of course, further developments for the improvement of the engines are also introduced in the original DEUTZ parts. Only the use of original DEUTZ parts manufactured according to the state-of-the-art can guarantee perfect functioning and high reliability.

DEUTZ Xchange components

DEUTZ replacement parts are a low-cost alternative. Of course, the quality standards here are just as high as for new parts. DEUTZ replacement parts are equal to the original DEUTZ parts in function and reliability.

Asbestos

The gaskets used in this engine contain no asbestos. Please use the appropriate original DEUTZ parts for maintenance and repair work.

Service

We want to preserve the high performance of our engines and with it the confidence and satisfaction of our customers. This is why we have a global network of service branches.

The name DEUTZ means more than just engines created as a result of sophisticated development work, it also stands for a complete service package that guarantees the optimum operation of our engines as well as customer service that you can count on.

Please contact your DEUTZ partner in case of malfunctions and spare parts inquiries. Our specially trained personnel will ensure fast, professional repairs using original DEUTZ spare parts in case of damage.

The DEUTZ homepage provides a continuously updated overview of the service partners near you, and information on product areas and services.

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Danger



This symbol is used in all safety instructions which, if not observed, present a direct danger to life and limb for the person involved. Pay attention to it carefully. Forward safety instructions to your operating personnel as well. Furthermore, the legislation for "general regulations for safety and the prevention of accidents" must be observed.

General

Caution



This symbol indicates a danger to the part and engine. The relevant instructions must be observed, failure to do so can lead to destruction of the part and the engine.

Notes



You will find this symbol in all instructions of the general type.

Model

Engine type designation

This manual covers the following engine types

TD 3.6 L4

TCD 3.6 L4

TCD	
T	Exhaust gas turbocharger
C	Charge air cooler
D	Diesel

3.6	
3.6	Displacement in litres

L4	
L	in a row
4	Number of cylinders

Emissions legislation



The engine and the corresponding EAT system (Exhaust After Treatment) are adapted to each other and linked by an appropriate electronic controller. They are only certified by the responsible authorities and comply with the permissible exhaust limits in this combination. Operation of the engine with other EAT systems is not allowed.

The engines of these operating instructions fulfill the following exhaust emissions regulations

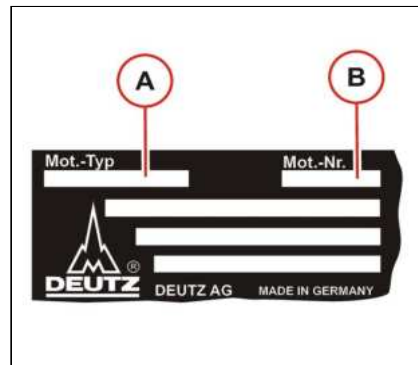
TCD 3.6 L4 With exhaust aftertreatment system	
USA	EPA Tier 4 final
EU	Stage IV
EU	Stage V
TD 3.6 L4 < 56 kW Without exhaust aftertreatment system	
USA	EPA Tier 4 final
EU	Stage IV
EU	Stage V

The exact certification is printed on the engine rating plate.



The engines of this operating manual may only be used with a functioning exhaust aftertreatment system (provided this is included in the DEUTZ scope of deliver).

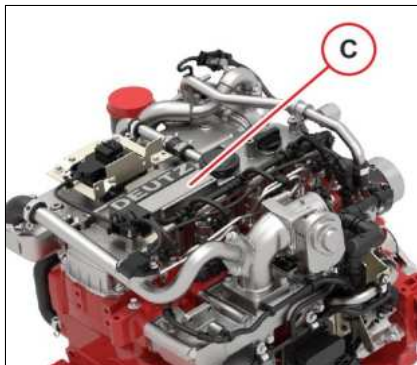
Engine description



Rating plate

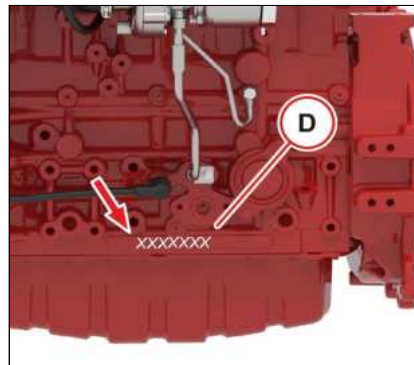
The type (A), engine number (B) and performance data are stamped on the rating plate.

The engine type and number must be stated when purchasing spare parts.



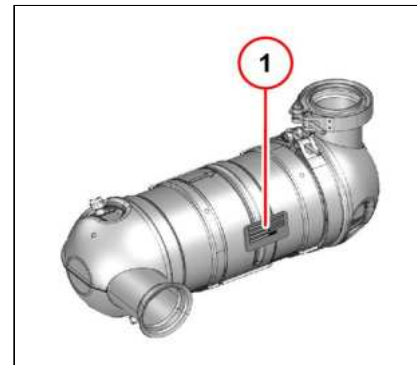
Position of the rating plate

The rating plate (C) is fixed to the cylinder head cover or the crankcase.



Engine number

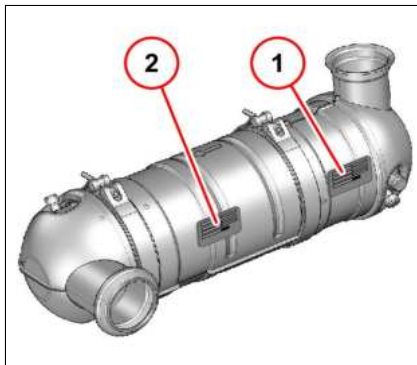
The engine number (D) is stamped onto the crankcase (arrow) and onto the rating plate.



Serial numbers of the exhaust aftertreatment components

- 1 Rating plate of the diesel oxidation catalytic converter

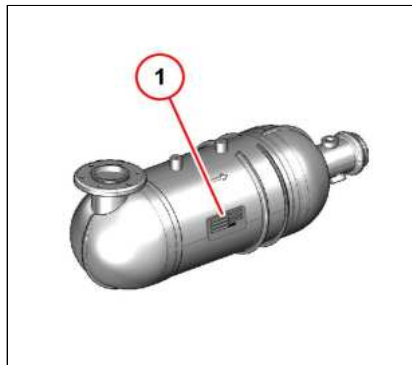
The serial numbers of the exhaust aftertreatment components are stamped on the rating plates.



Serial numbers of the exhaust aftertreatment components

- 1 Rating plate of the diesel oxidation catalytic converter
- 2 Rating plate of the diesel particle filter

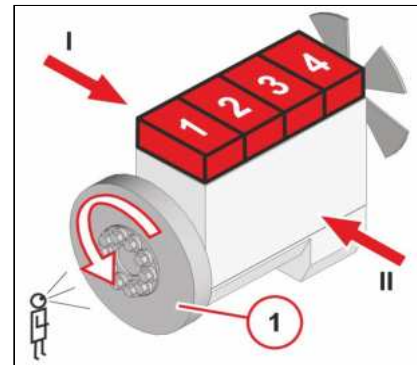
The serial numbers of the exhaust aftertreatment components are stamped on the rating plates.



Serial numbers of the exhaust aftertreatment components

- 1 Rating plate of the SCR catalyst

The serial numbers of the exhaust aftertreatment components are stamped on the rating plates.



Cylinder numeration

- I Left
- II Right

Cylinder arrangement

The cylinders should be counted consecutively starting from the flywheel (1).

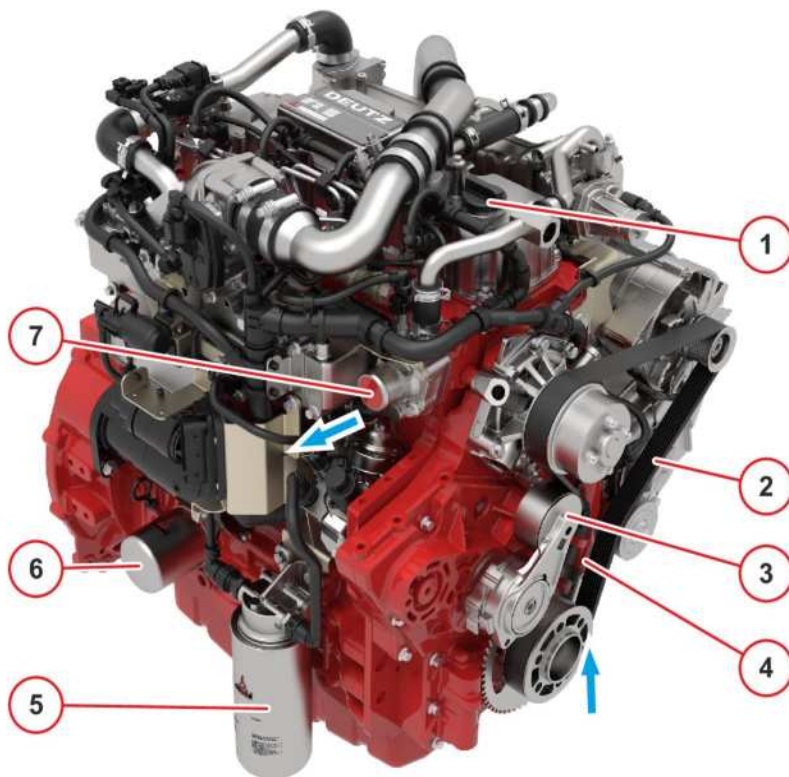
Direction of rotation

Looking onto the flywheel.

Left-hand rotation: anti-clockwise

Engine sides

Looking onto the flywheel.



TD 3.6 L4

Industrial engine

View from right (example)

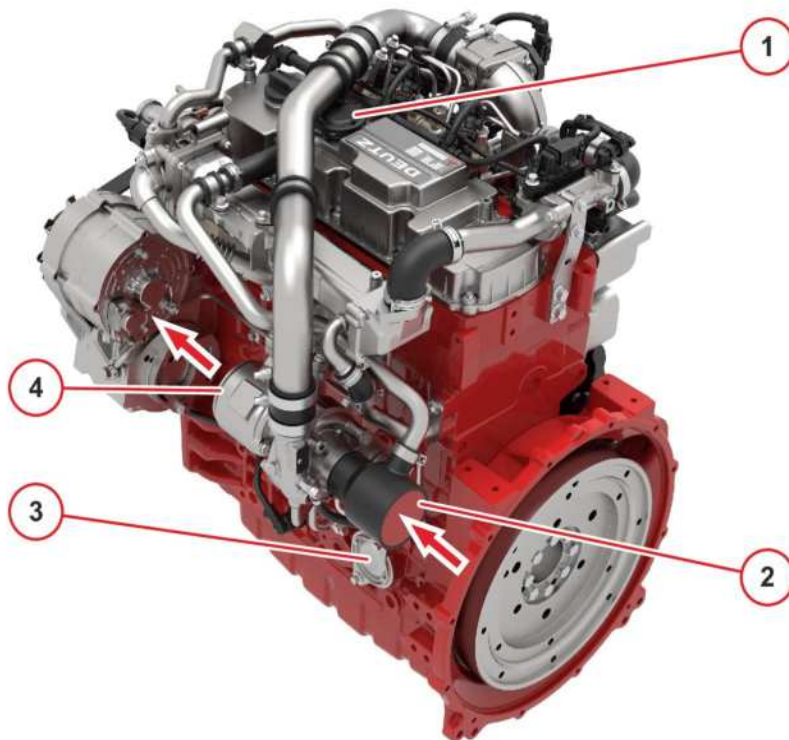
- 1 Lube oil filling
- 2 V-belts
- 3 Tension pulley
- 4 Coolant inlet
- 5 Fuel filter
- 6 Lube oil spare filter
- 7 Coolant outlet

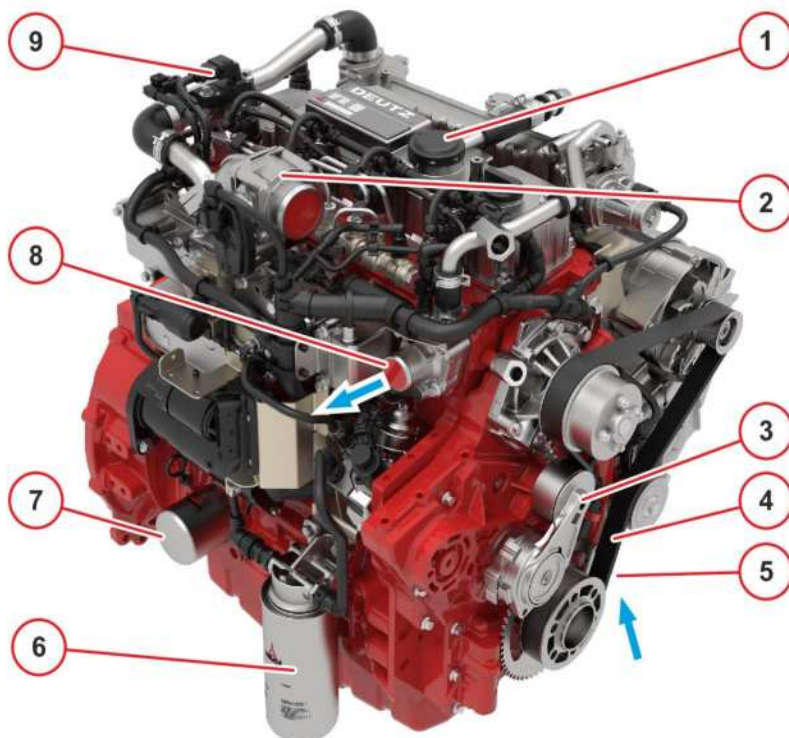
TD 3.6 L4

Industrial engine

View from left (example)

- 1 Crankcase ventilation
- 2 Combustion air inlet
- 3 Lubricating oil spare filter
Optional
- 4 Exhaust outlet



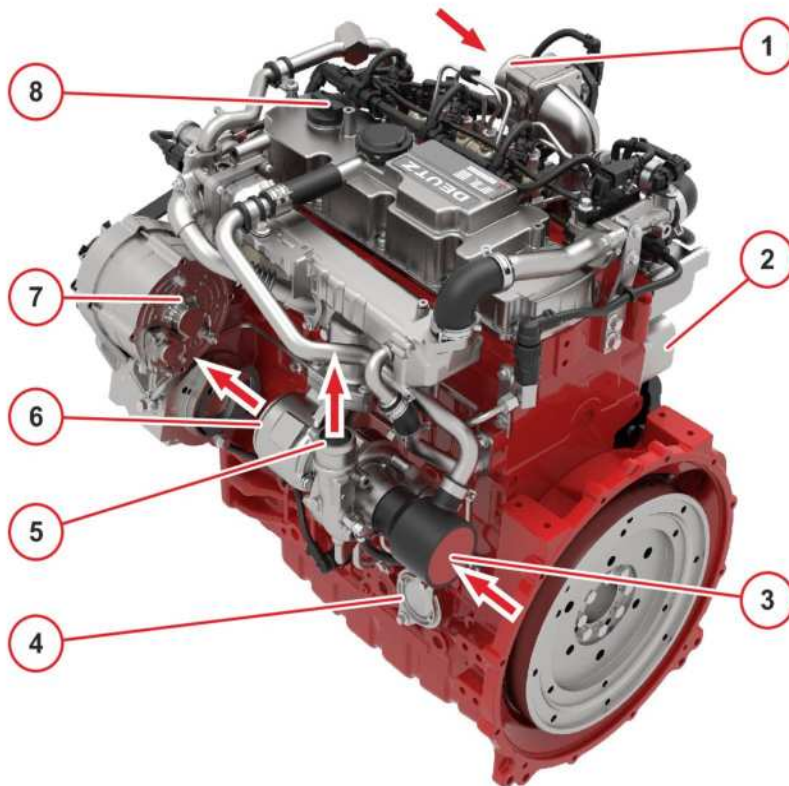


TCD 3.6 L4

Industrial engine

View from right (example)

- 1 Crankcase ventilation
- 2 Throttle valve
- 3 Tension pulley
- 4 V-rib belts
- 5 Coolant inlet
- 6 Fuel filter
- 7 Lube oil spare filter
- 8 Coolant outlet
- 9 Differential pressure flow meter

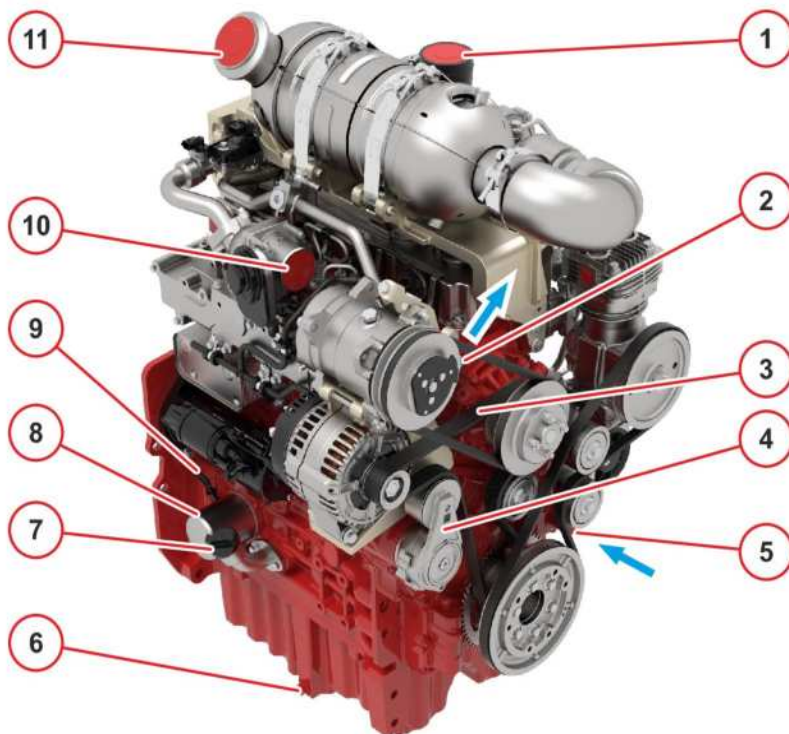


TCD 3.6 L4

Industrial engine

View from left (example)

- 1 Charge air inlet
- 2 Lubricating oil cooler
- 3 Combustion air inlet
- 4 Lubricating oil spare filter
Optional
- 5 Charge air outlet
- 6 Exhaust outlet
- 7 Alternator
- 8 Lube oil filling



TCD 3.6 L4

Agricultural engineering

View from right (example)

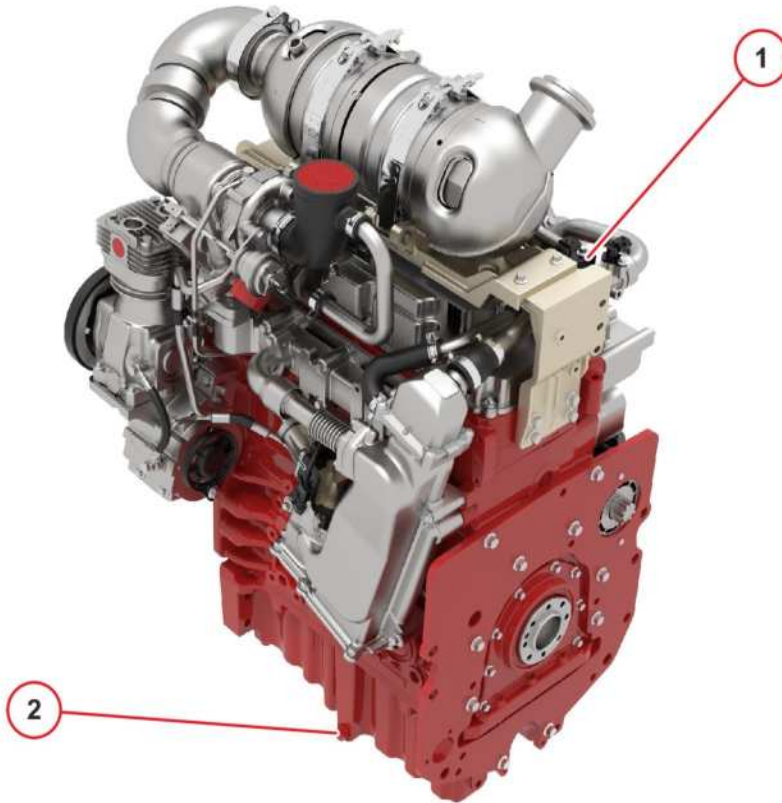
- 1 Intake air inlet
- 2 Coolant outlet
- 3 V-rib belts
- 4 Tension pulley
- 5 Coolant inlet
- 6 Lubricating oil drain plug
- 7 Lube oil filling
- 8 Lube oil spare filter
- 9 Lubricating oil dipstick
- 10 Combustion air inlet
- 11 Exhaust outlet

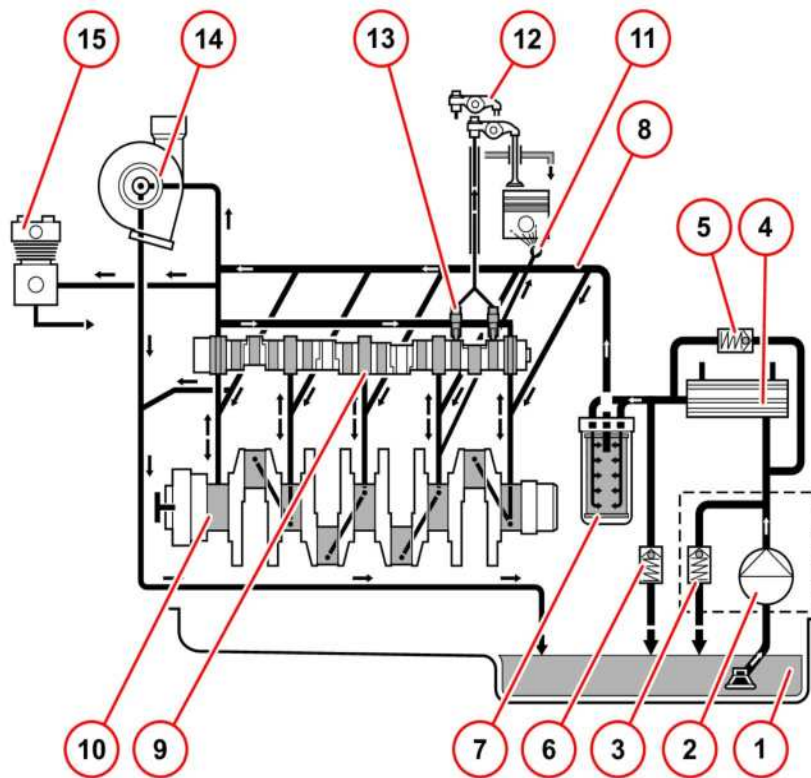
TCD 3.6 L4

Agricultural engineering

View from left (example)

- 1 Differential pressure flow meter
- 2 Lubricating oil drain plug

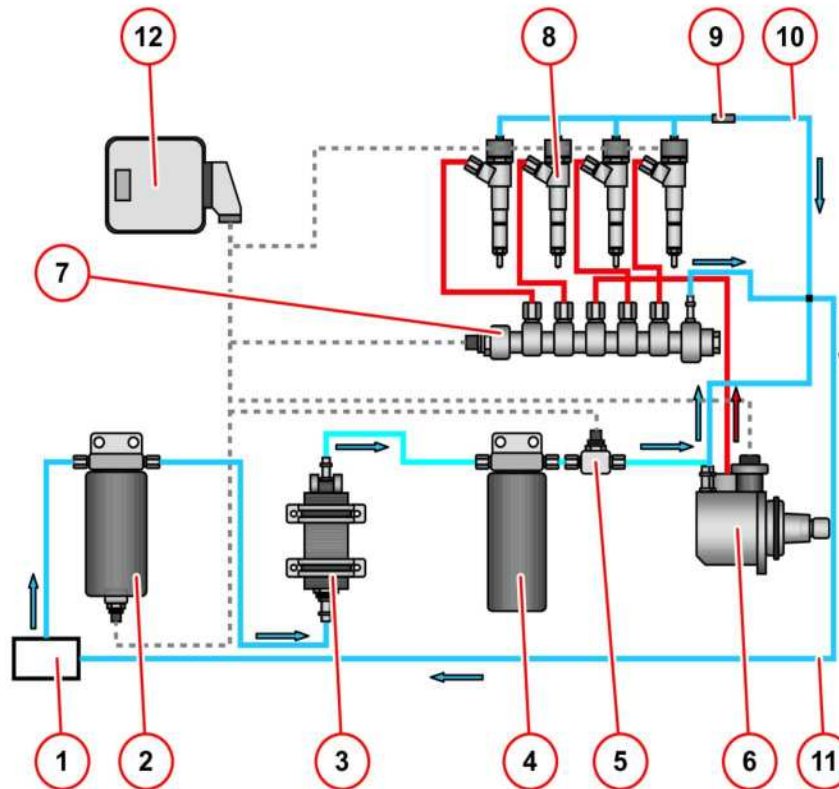




Lubricating oil system

(example)

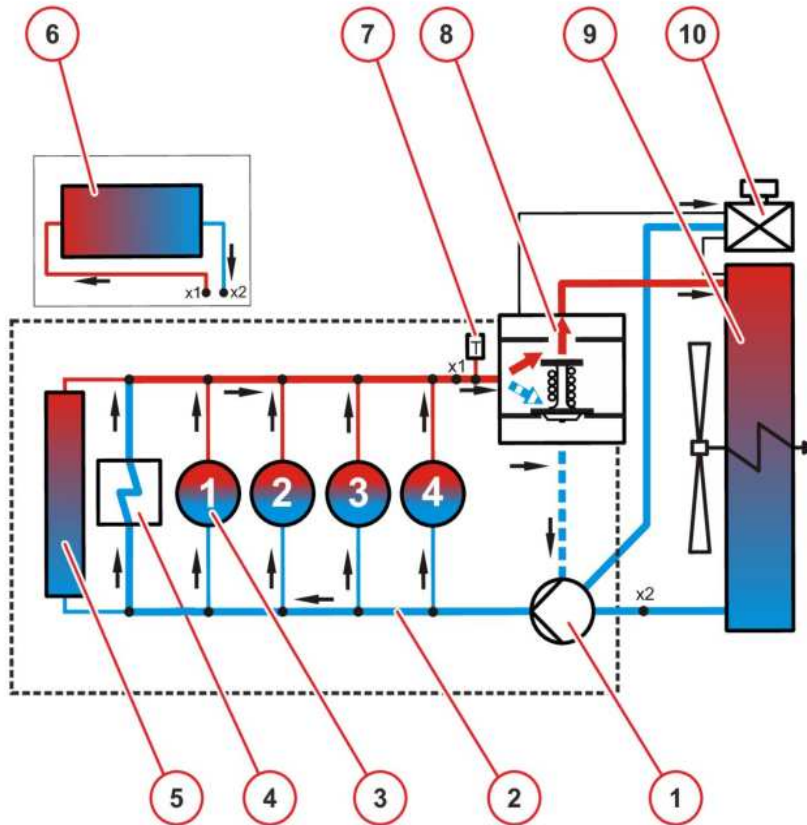
- 1 Lubricating oil pan
- 2 Lubricating oil pump
- 3 Pressure control valve
- 4 Lubricating oil cooler
- 5 Bypass valve
- 6 Pressure control valve
- 7 Lubricating oil filter
- 8 Main lube oil channel
- 9 Camshaft bearing
- 10 Crankshaft bearings
- 11 Piston cooling nozzle
- 12 Rocker arm
- 13 Hydraulic tappets
- 14 Turbocharger
- 15 Compressor
Optional



Fuel schematic

(example)

- 1 Fuel tank
- 2 Fuel pre-filter
- 3 Fuel supply pump (electric)
- 4 Fuel filter
- 5 Fuel transducer
- 6 Overflow valve with control block FCU (Fuel Control Unit)
- 7 High-pressure storage vessel (rail)
- 8 Injector
- 9 Check valve
- 10 Return line
- 11 Fuel return to the fuel tank
- 12 Engine control unit



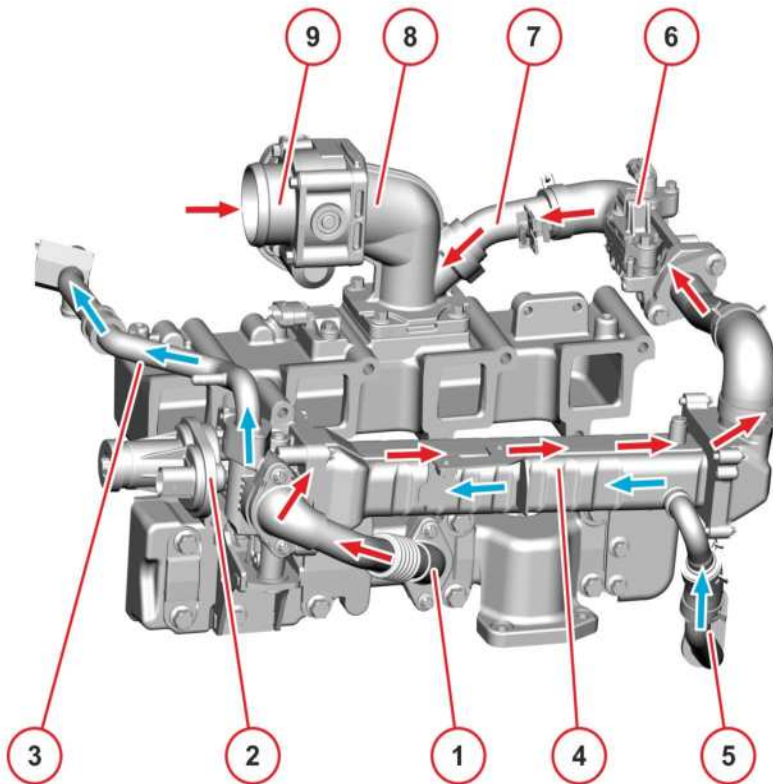
Coolant plan

(example)

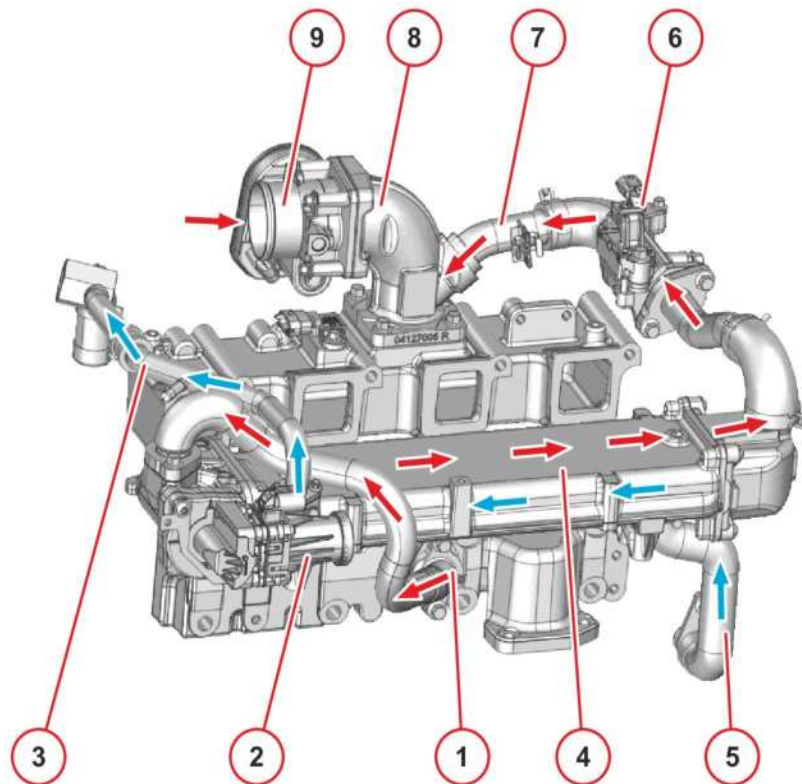
- 1 Coolant pump
- 2 Coolant supply for engine cooling
- 3 Cylinder pipe/head cooling
- 4 Lubricating oil cooler
- 5 Exhaust return cooler.
- 6 Connection possibility for cab heating
- 7 Temperature sensor
- 8 Thermostat
- 9 Compensation tank
- 10 Cooler

Exhaust gas recirculation Stage V / Tier 4

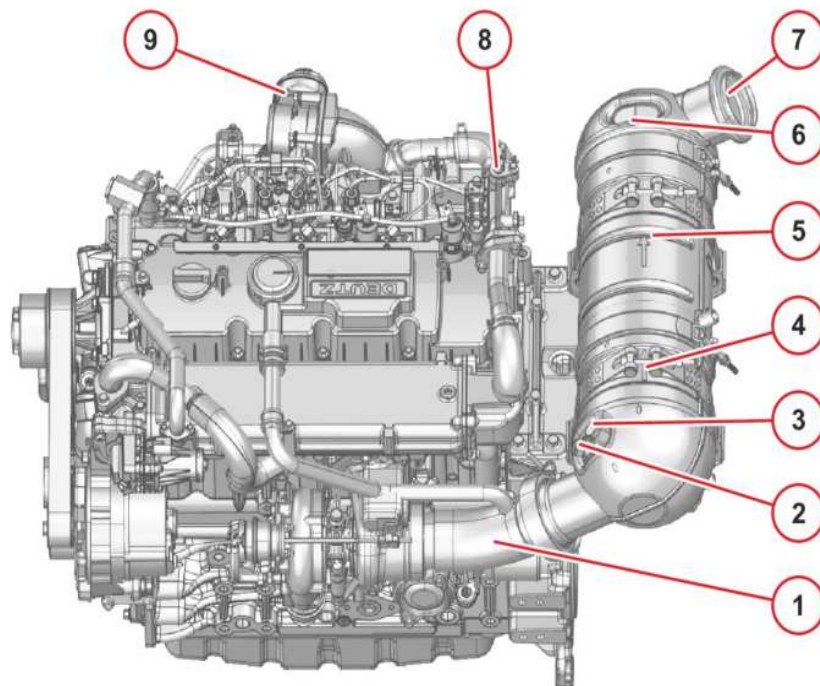
- 1 Exhaust partial flow (uncooled)
- 2 Actuator (electric)
- 3 Coolant return
- 4 Exhaust return cooler.
- 5 Coolant intake
- 6 Differential pressure flow meter
- 7 Exhaust partial flow (cooled)
- 8 Mixing pipe
- 9 Throttle valve



Exhaust gas recirculation Stage IIIA, IIIB / Tier 4i, 4



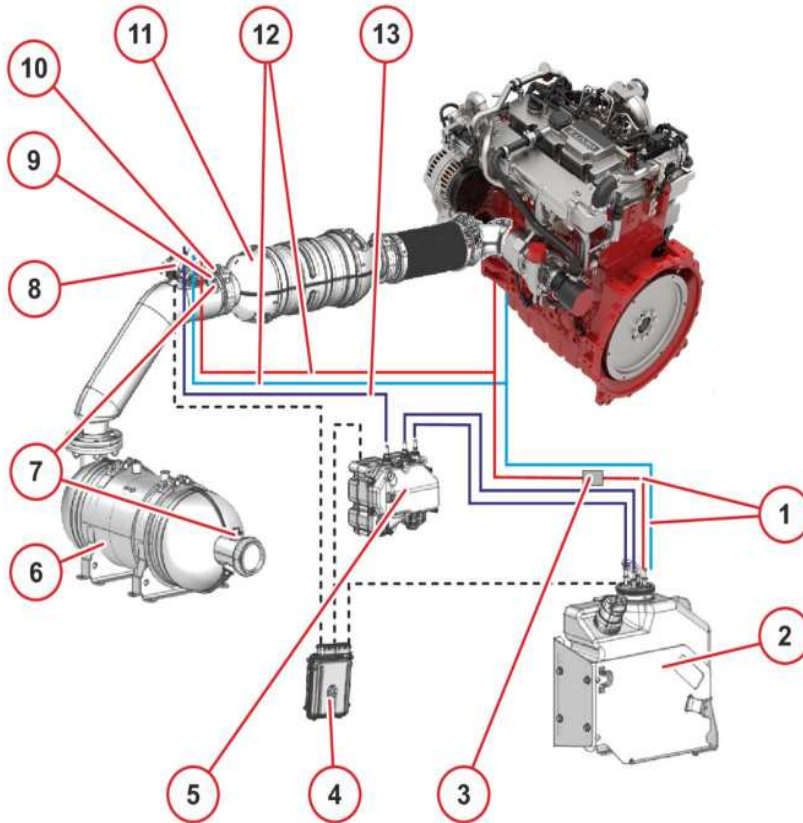
- 1 Exhaust partial flow (uncooled)
- 2 Actuator (electric)
- 3 Coolant return
- 4 Exhaust return cooler.
- 5 Coolant intake
- 6 Differential pressure flow meter
- 7 Exhaust partial flow (cooled)
- 8 Mixing pipe
- 9 Throttle valve



Exhaust gas aftertreatment system

Diesel particle filter

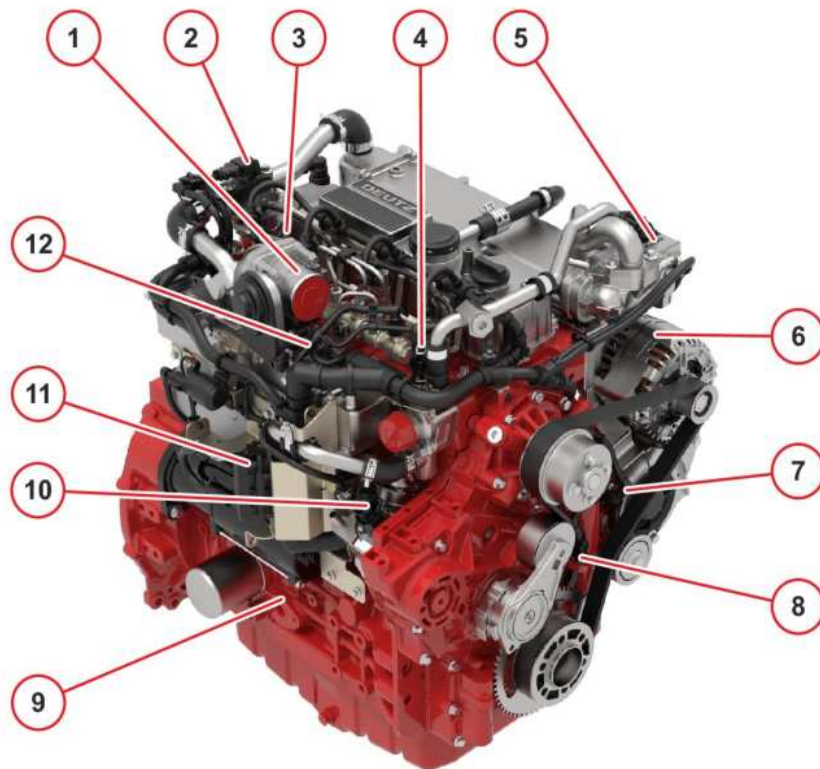
- 1 Decoupling line
- 2 Differential pressure sensor
- 3 Exhaust temperature sensor
- 4 Diesel oxidation catalytic converter
- 5 Diesel particle filter
Optional
- 6 Differential pressure sensor
- 7 Exhaust outlet
- 8 Differential pressure flow meter
- 9 Throttle valve



Exhaust gas aftertreatment system

SCR catalytic converter

- 1 Coolant line for preheating the SCR tank
- 2 SCR tank
- 3 Solenoid valve
- 4 Engine control unit
- 5 SCR supply pump
- 6 SCR catalytic converter
- 7 NOx sensor
- 8 Metering unit
- 9 Pressure sensor
- 10 Temperature sensor
- 11 Diesel oxidation catalytic converter
- 12 Coolant line for cooling the metering unit
- 13 SCR line

**Electronic engine control**

- 1 Throttle valve
- 2 Differential pressure flow meter
- 3 Rail pressure sensor
- 4 Coolant temperature transmitter
- 5 Actuator
- 6 Alternator
- 7 Speed transmitter via camshaft
- 8 Speed transmitter via crankshaft
- 9 Lubricating oil pressure sensor (on the opposite side)
- 10 Overflow valve with control block FCU (Fuel Control Unit)
- 11 Central connector (for engine control unit)
- 12 Charge air pressure transmitter, charge air temperature transmitter

Information about the engine electronics

This engine is equipped with an electric control unit.

The equipping of the respective system depends on the desired scope of function and the planned type of engine application.

The installation regulations of the DEUTZ AG must also be taken into account.

Precautions



The connections of the control units are only dust and water proof when the mating plugs are plugged (protection class IP69K)! The control units must be protected against spray water and moisture until plugging in the mating plugs!

Reverse polarity can lead to failure of the control units.

To avoid damaging the control units, all the connections on the control unit must be disconnected before electric welding work. Interventions in the electrical system contrary to the DEUTZ regulations or by unqualified personnel can permanently damage the engine electronics and have serious consequences which are not covered by the manufacturer's guarantee. It is strictly prohibited:

- a) to make changes or add connections to the wiring of the electrical control devices and the data transmission cable (CAN lines).
- b) to switch control units.

Warranty claims will otherwise be lost.



Diagnostic and maintenance work may only be carried out by authorised personnel using equipment approved by DEUTZ.

Installation notes

The control units are calibrated to the respective engine and identified by the engine number. Every engine may only be operated with the appropriate control unit.

Nominal value sensors (pedal position sensors) required for vehicle operation must be connected to the cable harness on the vehicle side and calibrated using the DEUTZ diagnostic program SERDIA (SERVICE DIAGNOSIS). Wiring and cable assignment of the vehicle side cable harness must be taken from the DEUTZ connection diagram.

Supply voltage


12 Volt

24 Volt

Sufficient charging of the battery must be ensured. Interruption of the power supply while the engine is running can cause damage to the electrics/electronics. Failure of the supply voltage leads to engine standstill.

Voltages above 32 Volt will destroy the control unit.

Diagnostics

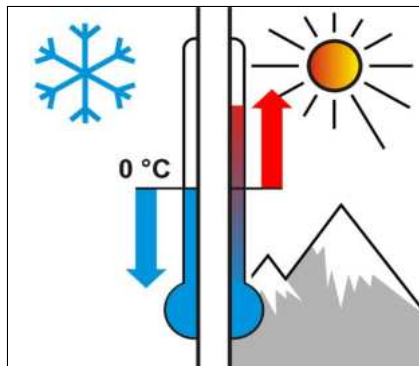
DEUTZ control units are equipped with self-diagnostics. Active and passive error entries are saved in the error memory. Active errors are displayed on error lamps/diagnostics lamps or a display  76.

A diagnosis can be made with:

- Error lamp (flash code)
- CAN bus
- DEUTZ electronics display
- Diagnostic socket (SERIDA)

Equipment-side wiring

The DEUTZ AG installation regulations must be adhered to. In particular, the plug contact must be crimped with the DEUTZ tools provided for this purpose. If it is necessary to do so, plugged-in contacts may only be removed from the plug housing with the proper tools.



Low ambient temperature

The operation of engines under cold or even Arctic climatic conditions requires modifications to the engine during installation, engine operation and maintenance. If these modifications are not taken into account, this can have an impact on the engine starting properties, performance, reliability and the operation of the corresponding exhaust aftertreatment system.



Operating an engine under cold or Arctic climatic conditions without suitable modifications can affect the warranty.

Use of engines in low load operation (engine does not reach the operating temperature) over a long time period under cold climatic conditions results in fuel waste, increased wear and potentially to engine damage. These low temperature conditions result in incomplete combustion and therefore to a build-up of deposits on components within the engine. In addition, operating an engine with low exhaust temperatures and low exhaust gas mass flow can cause premature faults such as engine or the exhaust aftertreatment system failure.

The following measures can be taken by the operator:

Lubricating oil

- Select the lubricating oil viscosity according to the ambient temperature.
- Halve the oil change times in case of frequent cold starts.

Fuel

- Use winter fuel below 0°C ▮ 48.

Battery

- The battery must be well-charged before the engine is started ▮ 69.
- Warming the battery to about 20°C improves the engine starting behaviour. (Remove and store the battery in a warm room).

Cold start aid

- The engines in these operating instructions are equipped with glow plugs ▮ 32.

Coolant

- Observe the mixing ratio of anti-freeze/cooling water ▮ 49.

The following possibilities can be considered by the device manufacturer or retrofitted by authorised specialist personnel:

- Warming the cooling circuit and/or the oil circuit when the engine is not running.
- Maintaining the desired engine operation temperature, particularly in low-load operation, requires:
 - Superimposition of additional load through the application.
 - Use of a device cooler hood or housing.
 - Housing the oil pan and the underside of the engine in order to protect against cold air through the engine fan.
 - If possible, use of a temperature-dependent fan coupling.
- Insulation of fuel lines, filters, pumps or even tanks.
- Warming of the intake air through intake air preheating or diverting the warm engine compartment air.
- Warming the crankcase ventilation.

If you have any additional questions, please contact your equipment supplier or DEUTZ partner.

High ambient temperature, high altitude



These engines are equipped with an electric control unit.

Under the operating conditions listed below, the amount of fuel is reduced automatically, controlled by the electronic control unit.

- Application at high altitude
- Application at high ambient temperatures


Reason: Air density decreases as altitude or ambient temperature increase. This also reduces the quantity of oxygen in the engine intake air, resulting in a fuel/air mixture that is too fatty without any reduction in the fuel injection rate.

- The results would be:
 - black smoke in the exhaust
 - high engine temperature
 - reduced engine performance
 - possible impairment of the starting behaviour


If you have any additional questions, please contact your equipment supplier or DEUTZ partner.

Preparation for initial commissioning

(maintenance schedule E 10)

- Remove corrosion protection from protected engine.
- Remove and existing transport devices.
- Check battery and cable connections and install if necessary.
- Check the belt tension  66.
- Have the engine monitor or warning system checked by authorised personnel.
- Check engine mounting.
- Check all hose connections and clips for correct fit.

The following actions must be performed additionally for generally overhauled engines:

- Check the fuel pre-filter and main filter and change if necessary.
- Check suction intake air filter (if available, maintain according to maintenance pointer).
- Drain lubricating oil and condensation from the C-intercooler.
- Fill up with engine lubricating oil.
- Filling the coolant system  82.


Fill up with engine lube oil.

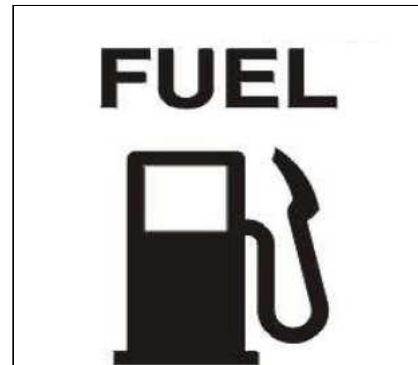


Lack of lube oil or overfilling lead to engine damage.




The engines are generally supplied without lubricating oil filling. Select the engine lubricating oil quality and viscosity before filling. DEUTZ lubricating oils can be ordered from your DEUTZ partner


- Fill the engine with lubricating oil via the oil filler neck.
- Observe the lubricating oil filling level  82.



Pour in fuel



Never fill the fuel tank while the engine is running. Pay attention to cleanliness. Do not spill any fuel. Only use clean commercially available brand diesel fuel. Observe fuel quality  48. Use summer or winter fuel depending on the ambient temperature.

- Fuel low-pressure system must be vented before initial start-up after filling with the electric fuel supply pump.  58.



Filling with AdBlue®



AdBlue® is known by different names depending on the region:
in the USA as DEF (Diesel Exhaust Fluid), in Brazil as ARLA32.

The technical designation is AUS32. AdBlue® is a registered trademark of the Verband der Automobilindustrie e.V (VDA - German Association of the Automotive Industry).



Only re-fuel when the engine is not running. Only fill with AdBlue®!
Other media (e.g. diesel), even in the smallest amounts, can cause destruction of the system.

If you have filled with e.g. diesel and this has gotten into the system, the complete SCR injection system must be replaced!



If the filled medium (e.g. diesel) has not reached the lines and supply pump/metering module, emptying and thoroughly cleaning the SCR tank is sufficient.
Pay attention to cleanliness.

AdBlue® minimum refilling quantity

When fuelling with AdBlue®, the following minimum refilling quantities must be adhered to. Filling below the prescribed minimum refilling quantity is only permissible if the tank does not have sufficient spare tank volume at the time of filling.

Tank volume	Minimum refilling quantity
< 20 litres	5 litres or a full tank
≥ 20 litres	10 litres or a full tank

Filling the coolant system



The coolant must have a prescribed concentration of cooling system corrosion protection!
Never operate the engine without coolant, not even briefly!




Order cooling system corrosion protection agent from your DEUTZ partner.

- Fill cooling system via the compensation tank.
- Close compensation tank with valve.
- Start the engine and warm up until the thermostat opens.

- Engine operation with open thermostat 2 - 3 minutes.
- Check the coolant level and top up coolant if necessary.



Danger of scalding from hot coolant!
Cooling system under pressure!
Only open the cap when cool! Observe safety regulations and national specifications when handling cooling media.

- If required, repeat procedure with engine start.
- Fill up coolant to the MAX mark on the compensation tank and close the cooling system cap.
- Switch on any available heating and set to the highest level so that the heating circuit is filled and vented.
- Observe the filling volume of the cooling system  82.

Trial run



Additional venting of the fuel system by a 5-minute trial run on no-load or low load is absolutely essential.

Carry out a brief trial run up to operating temperature (approx. 90 °C) after preparations.

Do not load the engine if possible.

- Work with the engine not running:
 - Check engine for tightness.
 - Check lubricating oil level, if necessary re-fill

- Check the coolant level and top up coolant if necessary.
- Work during the trial run:
 - Check engine for tightness.



Before starting make sure that there is nobody in the engine/work machine hazard zone.

After repairs: Check that all protective equipment is mounted and all tools have been removed from the engine.

When starting with glow plugs do not use any additional starting devices (e.g. injection with start pilot). Danger of accident!



If the engine fails to fire and the error lamp lights, the electronic engine control has activated the start lock to protect the engine. The start lock is released by switching off the system with the ignition key for about 30 seconds.

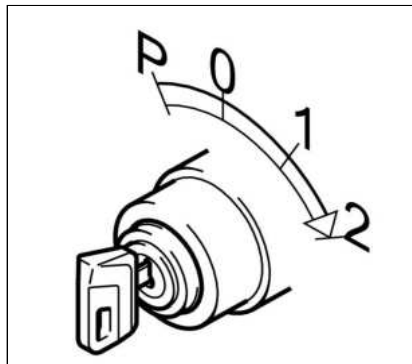
Start the engine for a maximum of 20 seconds uninterrupted. If the engine does not start up, wait for one minute and then repeat the starting process.

If the engine does not start up after two starting processes, determine the cause as per fault table. [70](#).

Do not run the engine up to high idling speed/full load operation straight from cold.



Disconnect the engine by uncoupling devices to be driven where possible.



with cold starting device

- Insert key.
 - Step 0 = no operating voltage.
- Turn key to the right.
 - Step 1 = operating voltage.
 - Engine is ready for operation.
- The electronic engine control activates the current feed to the glow plugs when the engine coolant temperature falls below a certain temperature.
- Push in the key and turn further to the right against the spring pressure.
 - Level 2 = start.
- release the key as soon as the engine starts up.
 - Pilot lamps go out.

If the starter is controlled by the electronic engine control via a relay:

- the maximum start duration is limited.
- the pause between two start attempts is specified.
 - the start is then continued automatically
- starting while the engine is running is prevented.

If the touch start function is programmed, a short start command with the ignition key in position 2 or a start button, if available, suffices.

Electronic engine control

The system monitors the condition of the engine and itself.

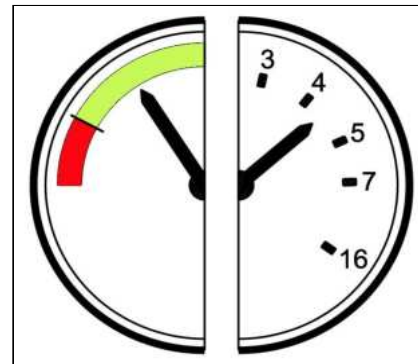
- Function test
 - Ignition on, error lamp lights up for approx. 2 seconds and then goes out.
 - Check the error lamp if there is no reaction after switching on the ignition.
- Error light does not light up.
 - After the lamp test an extinguished lamp indicates an error-free and trouble-free operating state within the scope of the control possibilities.
- Continuous light
 - Error in system.
 - Operation continued with restrictions.
 - The engine must be checked by a DEUTZ partner.
 - If a lamp lights steadily a monitored measuring variable (e.g. coolant temperature, lubricating oil pressure) has left the permissible value range.

Depending on the fault, the engine power may be reduced by the electronic engine control to protect the engine.

- Flashing
 - Serious error in system.
 - Switch off prompt for the operator. Attention: Failure to do so will lead to loss of guarantee!
 - The engine has reached switch-off condition.


- Engine forced to run at low power to cool the engine, with automatic shutdown if necessary.
- The switch-off process has been accomplished.
- There may be a start lock after engine stop.
- The start lock is deactivated by turning off the system with the ignition key for approx. 30 seconds.
- Additional control lamps, e.g. for lubricating oil pressure or lubricating oil temperature, are switched on if necessary.
- In order to avoid critical situations the power reduction can be bypassed, automatic switch-off delayed or a start lock bypassed using the optional override key on the instrument panel. This brief deactivation of the engine protection functions is logged in the control unit.

The engine protection functions are released in cooperation with the equipment manufacturer and the DEUTZ installation consulting and may be designed individually. This is why the operating manual of the device manufacturer must be observed.















Display instrument

Possible displays:

- Colour scale
 - Display of operating state by coloured areas:
 - green = normal operating state
 - red = critical operating state
Take suitable action.
- Measured value scale
 - Actual value can be seen directly. The target value must be taken from the technical data. 

Instruments and symbols

Instruments/symbols	Designation	Possible displays	Measure
	Lube oil pressure indicator	Lubricating oil pressure in the red	Switch off engine
	Coolant temperature	Coolant temperature too high	Switch off engine
	Lubricating oil temperature	Lubricating oil temperature too high	Switch off engine
	Lubricating oil pressure control light	Lubricating oil below minimum	Switch off engine
	Lubricating oil level	Lubricating oil pressure too low	Shut down the engine, allow to cool and top up with lubricating oil
	Coolant level	Coolant level too low	Shut down the engine, allow to cool and top up coolant
	Operating time counter	Indicates the engine operating time passed	Observe the maintenance intervals

Instruments/symbols	Designation	Possible displays	Measure
	Horn	With acoustic signal	See fault table 70
	SCR function lamp	Continuous light Flashing	Check AdBlue® filling level Check SCR system
	Ash lamp	Continuous light	The ash lamp indicates, that loading of the diesel particle filter with incombustible residues has reached a critical level and must be replaced. 42
	Regeneration lamp	Continuous light Flashing	Initiate standstill regeneration 42
	Engine warning lamp	Continuous light Flashing	Initiate standstill regeneration in combination with the regeneration lamp 42



DEUTZ Electronic Display

In order to show measured values and error messages of the EMR control unit, a CAN display is optionally available, which can be integrated into the dashboard of the driver's position of working machines.

The following data may be displayed if they are sent by the control unit.

- Engine speed
- Engine torque (current)
- Coolant temperature
- Intake air temperature
- Exhaust gas temperature
- Lubricating oil pressure
- Coolant pressure
- Charge air pressure

- Fuel pressure
- Status of the regeneration of the diesel particle filter
- Operation monitoring of the diesel particle filter
- Faults in the exhaust aftertreatment system
- Filling level of the SCR tank
- Battery voltage
- Position of the accelerator pedal
- Fuel consumption
- Operating hours

Error messages are displayed in clear text and acoustically; the error memory of the control unit can be read out.

For a detailed description, refer to the operating instructions enclosed with the DEUTZ Electronic Display.

Selective Catalytic Reduction (SCR)

The DEUTZ SCR system reduces the NOx emissions from the engine (NOx=nitric oxides).

A reduction agent, AdBlue®, injected into the exhaust system reacts in the SCR catalytic converter with the NOx emissions in the exhaust gas and reduces these to nitrogen (N₂) and water (H₂O).

The injected volume of SCR is controlled by the engine electronics.

Warning strategy SCR system



The display and monitoring of the exhaust aftertreatment system can be executed either with pilot lights or with a CAN interface and a corresponding display, depending on the engine version.
Please see the device manufacturer's operating manual.

In order to comply with the regulations of the European Union (EU) and the Environmental Protection Agency (EPA), the DEUTZ SCR system reacts with a warning strategy to faulty operation of the exhaust gas aftertreatment system.

Emission-relevant faults are:

- AdBlue® filling level
- Catalytic converter efficiency/Adblue® quality
- Manipulation
- System fault



An acoustic signal must sound in case of a fault. If a DEUTZ display is used, this has an appropriate signal.
An acoustic signal transmitter must be installed additionally if an SCR function lamp or customer display is used.

Power reduction

If a serious fault occurs or a fault is not remedied, the system reacts by reducing the engine performance.

There is a one or two-stage performance reduction depending on the type of fault.

Power reduction	
Stage 1	Torque reduction
Stage 2	Torque reduction + Engine speed limitation

Bridging of the power reduction

A separate emergency switch has been provided, in order to temporarily disable power reductions caused by the exhaust aftertreatment system.

This function is available for a limited period and is expected to enable the user to move the machine to a safe location.

This function is available for engines with power reduction levels 1 and 2, in accordance with EU legislation, and with power reduction level 1, in accordance with EPA legislation.

Standstill regeneration



Temperatures of approx. 600 °C occur on the exhaust pipe during regeneration.
A special engine operating state becomes active during standstill regeneration and the machine is not allowed to be used during the active standstill regeneration.
Danger of burns!

The SCR system is monitored for possible formation and build-up of crystals (crystallisation)

As soon as crystallisation is detected, a standstill regeneration request is issued.

This is displayed by a flashing regeneration lamp.

The standstill regeneration must be initiated by the operator.

It is recommended that standstill regeneration be undertaken as soon as possible.

If standstill regeneration is not undertaken, the engine control unit will activate the specified engine protection functions.

Every standstill regeneration slightly dilutes the engine oil with fuel. The number of standstill regenerations is therefore monitored.

AdBlue® filling level

Warnings begin from an AdBlue® filling level below 15 %.

AdBlue® filling level	SCR function lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
< 15%	Continuous light	OFF	SCR symbol Text message	None
< 10%	flashes (0.5 Hz)	OFF	SCR symbol Text message	None
< 5%	flashes (0.5 Hz)	Continuous light Acoustic signal	SCR symbol Text message Acoustic signal	None
< 5% ≥ 10 min	flashes (1 Hz)	Continuous light Acoustic signal	SCR symbol Text message Acoustic signal	Stage 1
< 5% ≥ 15 min	flashes (2 Hz)	Flashing Acoustic signal	SCR symbol Text message Acoustic signal	Stage 1
< 5% ≥ 20 min	flashes (2 Hz)	Flashing Acoustic signal	SCR symbol Text message Acoustic signal	Stage 2

Catalytic converter efficiency/AdBlue® quality

If the catalytic converter efficiency (conversion rate) is too low, warnings are sent to the SCR function lamp or optionally to the CAN display despite previous refuelling. Warnings are also given due to use of the wrong reduction agent.

Catalytic converter efficiency/AdBlue® quality	SCR function lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
too low	Continuous light Acoustic signal	Continuous light	SCR symbol Text message Acoustic signal	Stage 1 After pre-warning time
too low not remedied	Continuous light Acoustic signal	Flashing	SCR symbol Text message Acoustic signal	Stage 2 After pre-warning time

Manipulation

If the system detects a manipulated part or use of the wrong reduction agent, the performance is reduced. The performance is reduced in stages and depends on the motor performance.

Manipulation	SCR function lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
detected	Continuous light Acoustic signal	Continuous light	SCR symbol Text message Acoustic signal	Stage 1 After pre-warning time
not remedied	Continuous light Acoustic signal	Flashing	SCR symbol Text message Acoustic signal	Stage 2 After pre-warning time

System fault

System faults may be faults of individual SCR components such as an implausible NOx or temperature sensor value. The performance is reduced if the SCR injection is impaired by a system fault.

System fault	SCR function lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
detected	Continuous light Acoustic signal	Flashing	SCR symbol Text message Acoustic signal	None
detected ≥ 10min	Continuous light Acoustic signal	Flashing	SCR symbol Text message Acoustic signal	Stage 2

Crystallisation

Crystallisation results when the engine's workload is too low, or its operating times are too short.

System fault	Regeneration lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
detected Standstill regeneration required	flashes (0.5 Hz)	OFF	Text message Acoustic signal	None
detected Standstill regeneration required	flashes (0.5 Hz)	Continuous light	Text message Acoustic signal	Stage 1

System fault	Regeneration lamp	Engine warning lamp	DEUTZ CAN display	Power reduction
detected Standstill regeneration required	flashes (3 Hz)	Flashing	Text message Acoustic signal	Stage 2

Diesel oxidation catalyst (DOC)

The diesel oxidation catalytic converter has a catalytic surface which is used to convert the pollutants in the exhaust gas into harmless substances. Here, carbon monoxides and unburned hydrocarbons are made to react with oxygen and converted into carbon dioxide and water. In addition, the nitrogen monoxides are converted to nitrogen dioxides.

Temperatures $> 250\text{ }^{\circ}\text{C}$ are necessary for a high degree of efficiency.


Diesel particle filter (DPF)

The combustion of diesel fuel results in soot, which is separated in the diesel particle filter. This must be regenerated as the contamination with soot increases. That means that the soot in the diesel particle filter is burned.

The regeneration is based on a continuous regeneration process, which is activated as soon as the exhaust temperature of $250\text{ }^{\circ}\text{C}$ is exceeded at the inlet of the exhaust gas aftertreatment system. The filter contamination with soot is monitored continuously by the engine control unit.

Regeneration

The passive particle filter system burns the soot in the filter with the nitrogen oxide contained in the exhaust, which is first oxidised in the DOC. This process takes place continuously as soon as the exhaust temperature exceeds $250\text{ }^{\circ}\text{C}$. The passive particle filter system does not contain a burner. A prerequisite for the passive continuous regeneration is having a sufficient ratio of nitrogen oxides to soot in the raw exhaust gas of the engine.

Regeneration differs depending on the variant of the external exhaust gas recirculation and exhaust emissions stage.  21

Normal operation

Under normal operating conditions (exhaust temperature > 250 °C), the filter contamination with soot remains in a permissible range and no actions are necessary.

The regeneration lamp is OFF.

Support mode



During this operating state, an acoustic change occurs to the running of the engine.

If the operating conditions of the engine do not permit any passive regeneration, the contamination of the diesel particle filter with soot will increase.

A throttle valve controlled via the engine control unit is located in the combustion air inlet. This is used to increase the exhaust gas temperature for regeneration of the diesel particle filter, if this is not reached during normal operation.

This can be the case if:

- The engine only has short operating times.
- The engine workload is not high.

This process is automatically activated by the engine control unit, the operator does not need to perform any actions.

The regeneration lamp is OFF.

Power reduction

If a serious fault occurs or a fault is not remedied, the system reacts by reducing the engine performance.

There is a one or two-stage performance reduction depending on the type of fault.

Power reduction	
Stage 1	Torque reduction
Stage 2	Torque reduction + Engine speed limitation

Bridging of the power reduction

A separate emergency switch has been provided, in order to temporarily disable power reductions caused by the exhaust aftertreatment system.

This function is available for a limited period and is expected to enable the user to move the machine to a safe location.

This function is available for engines with power reduction levels 1 and 2, in accordance with EU legislation, and with power reduction level 1, in accordance with EPA legislation.

Standstill regeneration



Temperatures of approx. 600 °C occur on the exhaust pipe during regeneration. A special engine operating state becomes active during standstill regeneration and the machine is not allowed to be used during the active standstill regeneration. Danger of burns!

If the support mode does not attain an adequate reduction of the soot contamination, the filter will continue to become contaminated with soot and a standstill regeneration will be necessary.

This is displayed by a flashing regeneration lamp.

The standstill regeneration must be initiated by the operator.

We recommend carrying out a necessary standstill regeneration as quickly as possible, as otherwise the diesel particle filter will continue to become contaminated with soot.

If the standstill regeneration is not carried out, the engine control unit will activate the specified engine protection functions, depending on the contamination of the diesel particle filter.

Every standstill regeneration slightly dilutes the lubricating oil with fuel. The number of standstill regenerations is therefore monitored.

Implementation of the standstill regeneration

The engine must be brought into a "safe state" for the regeneration:

- Shut down the engine on an open terrain at a safe distance to flammable objects.
- Warm up the engine; the coolant temperature must reach at least 75 °C.
- Operate the engine in idling.
- The engine control unit now requires a signal indicating that the unit is safely parked (stationary signal).
- This occurs independently of the application, for example by:
 - Activating the parking brake.
 - Engaging a specified gear position in the gearbox.

- Operating the release button.
Position depends on application, see device manual.

The regeneration lamp lights up continuously.

Once the standstill regeneration has been released, the engine automatically increases the speed level.

Using the device during standstill regeneration is prohibited.

The regeneration lasts 35 to 40 minutes on average.

The standstill regeneration can be interrupted at any time by pressing the regeneration button again or by removing the regeneration release.

Using the device during standstill regeneration also leads to it being interrupted.

The request for standstill regeneration remains until it is completed without interruption.

Certain engine faults lead to excessive carbon emissions from the engine which cannot be seen due to the diesel particle filter.

In such cases, the diesel particle filter can be loaded very quickly, among other things, to a level which no longer allows a standstill regeneration by the operator.

Very short intervals between two standstill regenerations (<10 hours) can be an indication of such a defect.

Please contact the DEUTZ service.

The regeneration lamp goes out when regeneration has been successfully completed.

If the standstill regeneration request is not observed and the diesel particle filter is overloaded to an impermissible level, then the diesel particle filter can only be regenerated via DEUTZ service.

Replacing the diesel particle filter

It may be necessary to replace the diesel particle filter after a high filter running time as non-combustible residues accumulate in the diesel particle filter - so-called ash.

If the ash loading goes beyond a certain level, this will be indicated by the ash lamp.

The diesel particle filter needs to be replaced.

The machine can operate normally until the replacement is carried out by the service.




The time interval between two regeneration requests is shortened in proportion to the run time.

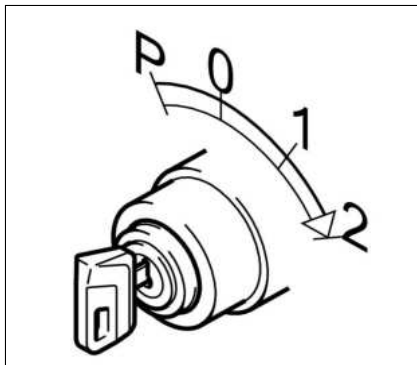
Please contact your DEUTZ partner.

DEUTZ particle filters come with a catalysing coating, so require a special cleaning procedure to prevent damage to the coating. The DEUTZ filter replacement programme guarantees that the filter medium is properly cleaned, and the medium fully functions and performs as if it were a new part!

Display of the regeneration control

The display and monitoring of the exhaust aftertreatment system can be executed either with pilot lights or with a CAN interface and a corresponding display, depending on the engine version.

Instruments/symbols			Power reduction	Remark
				
Regeneration lamp	Engine warning lamp	Ash lamp		
OFF	OFF	OFF		Normal operation
OFF	OFF	OFF		Support mode
flashes (0.5 Hz)	OFF	OFF		Standstill regeneration required Approval by the operator required
flashes (0.5 Hz)	Continuous light	OFF	Stage 1	Standstill regeneration required Approval by the operator required
flashes (3 Hz)	Flashing	OFF	Stage 2	Please contact your DEUTZ partner
Continuous light	OFF	OFF		Standstill regeneration
OFF	OFF	Continuous light		100% ash load Please contact your DEUTZ partner
OFF	OFF	Flashing		105% ash load Please contact your DEUTZ partner
OFF	Continuous light	Flashing	Stage 1	110% ash load Please contact your DEUTZ partner



Shutting down



Avoid switching off from full load (coking/blockage of the remaining lubricating oil in the turbocharger bearing housing). The turbocharger's lube oil supply is no longer ensured! This shortens the life of the turbocharger.

Run the engine in low idling speed for approximately one minute after relieving the load.

- Move the key to position 0.
 - P = gear position: park
 - 0 = gear position: Shut down engine
 - 1 = gear position: Ignition on
 - 2 = gear position: Start engine

Lag time



The control unit remains active for about another 40 seconds to save the system data (lag) and then switches off automatically. For engines with an SCR system, this process can take up to 2 minutes as the SCR lines must be pumped until empty. For this reason, the power supply to the engine must not be suddenly interrupted by the breaker.

General

Modern diesel engines place very high demands on the lubricating oil used. The specific engine performances increased constantly in recent years lead to increased thermal stress of the lubricating oil. In addition, the lubricating oil is subject to heavier contamination due to reduced lubricating oil consumption volumes and increased lubricating oil change intervals. For this reason it is necessary to observe the requirements and recommendations described in this operating manual in order not to shorten the life of the engine.

Lubricating oils always consist of a base lubricating oil and an additive package. The additives perform the most important tasks of a lubricating oil (e.g. wear protection, corrosion protection, neutralisation of acids from combustion products, prevention of coke and soot deposits on the engine components). The properties of the base lubricating oil are also decisive for the quality of the product, e.g. with regard to the thermal load.

In principle, all engine lubricating oils of the same specification can be mixed. Mixtures of engine lubricating oils should however be avoided because the worst properties of the mixture always dominate.

The lubricating oils approved by DEUTZ AG have been thoroughly tested for all engine applications. The active ingredients they contain are compatible with each other. Therefore, the use of additives for lubricating oils is not permitted in DEUTZ engines.

The **lubricating oil quality** has a considerable influence on the life, efficiency and thus the economy of the engine. As a general principle, the better the lubricating oil quality, the better these properties.

The **lubricating oil viscosity** describes the way the lubricating oil flows, depending on the temperature. The lubricating oil viscosity only has a small influence and effect on the quality of the oil.

Synthetic lubricating oils are used increasingly and offer advantages. These lubricating oils have better temperature and oxidation stability, as well as relatively low cold viscosity. Since some processes which are relevant for determining the lubricating oil change times are largely dependent on the oil quality (e.g. the infiltration of soot and other contamination), the oil change time for synthetic lubricating oils may not be increased in relation to the specifications on lubricating oil change intervals.

Biodegradable lubricating oils may be used in DEUTZ engines if they meet the requirements of this operating manual.

Quality

Lubricating oils are classified by DEUTZ according to their efficiency and quality class (DQC: DEUTZ Quality Class). the higher the quality class (DQC I, II, III, IV), the more effective/the better quality the lubricating oil is.

The DQC quality classes are still to be extended by the DQC-LA quality classes which include the modern, low-ash lubricating oils (LA = Low Ash).

The choice of lubricating oil essentially depends on the exhaust aftertreatment system.

The following lubricating oils are permissible for the engines in this operating manual:

Permissible quality class	
DEUTZ	Other
Engines with exhaust aftertreatment system	
DQC III LA *	Please contact your DEUTZ partner or visit www.deutz.com
DQC IV LA *	
* Sulphur content in the fuel < 15 mg/kg	

For low-ash engine oils released according to the DQC system a corresponding note is given in the oil release list.

DEUTZ lubricating oils DQC IV, low ash DEUTZ Oil Rodon 10W40 Low SAPS	
Container	Ordering number:
20 litre canister	0101 7976
209 litre barrel	0101 7977

Lubricating oil change intervals

- The intervals depend on:
 - Lubricating oil quality
 - Sulphur content in the fuel
 - Engine application type
 - Number of standstill regenerations
- The lubricating oil replacement interval must be halved if at least one of the following conditions applies:
 - Ambient temperatures below -10 °C (14 °F) or lubricating oil temperature below 60 °C (140 °F).

- Sulphur content in diesel fuel greater than 0.5 mass fraction.
- If the prescribed lubricating oil change intervals are not reached within a year, the lubricating oil must be changed at least once a year.

Viscosity

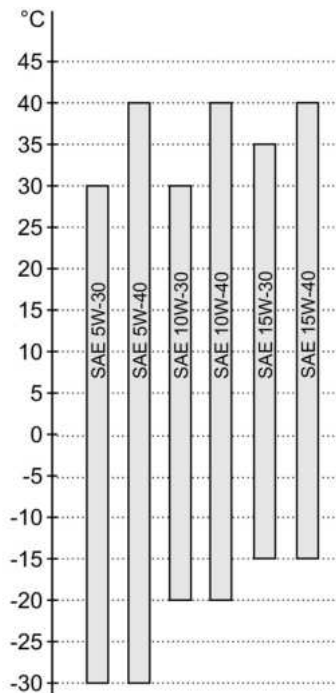
The ambient temperature at the installation site or in the area of application of the engine is decisive for selecting the right viscosity class. Too high a viscosity can lead to starting difficulties, too low a viscosity can endanger the lubricating effect and result in high lubricating oil consumption. At ambient temperatures below -40 °C, the lubricating oil must be pre-heated (e.g. by storing the vehicle or the machine in a hall).

The viscosity is classified according to SAE. Oils suitable for multiple ranges must always be used.



The prescribed lubricating oil quality must be observed when selecting the viscosity class!

Depending on the ambient temperature we recommend the following common viscosity classes.



Permissible fuels

In order to satisfy the exhaust gas legislation, diesel engines that are equipped with an exhaust aftertreatment system may only be operated with a sulphur-free diesel fuel.

The operational reliability and durability of the individual exhaust aftertreatment technologies cannot be assured upon failure to comply.

Exhaust gas after-treatment systems	
SCR	Selective catalytic reduction
DOC	Diesel oxidation catalytic converter
DPF	Diesel particle filter

The following fuel specifications are approved:

- Diesel fuels
 - EN 590 (B7)
sulphur <10 mg/kg
 - ASTM D 975 Grade 1-D S15
 - ASTM D 975 grade 2-D S15
sulphur <15 mg/kg
- Biodiesel fuel mixtures
 - EN 16734 (B10)
 - EN 16709 (B20 / B30)
 - ASTM D 7467
- Synthetic and paraffinic fuels
 - EN 15940
- Light heating oils
 - In EN 590 quality
sulphur <10 mg/kg

The warranty is excluded when using other fuels which do not meet the requirements of this operation manual.

The certification measurements for compliance with the legal emission limit values are carried out with the test fuels specified in the laws. These correspond to the diesel fuels described in this operating manual according to EN 590 and ASTM D 975. With the other fuels described in this operating manual, no emission values are guaranteed.

The respective fuels prescribed by law must be used to comply with the national emission regulations (e.g. sulphur content).

Please contact your DEUTZ partner or visit www.deutz.com

Winter operation with diesel fuel

Special demands are placed on the cold behaviour (temperature limit value of the filtrability) for winter operation. Suitable fuels are available at fuel stations in winter.



For engines with common rail injection, the mixing of petroleum and adding of extra low additives is not permissible.

At low ambient temperatures paraffin discharges can lead to blockages in the fuel system and cause operating faults. Winter diesel fuel must be used at ambient temperatures below 0 °C (up to -20 °C) (this is offered at fuel stations in good time before the start of winter).

- Special diesel fuels can be used for arctic climates up to -44 C.

General



Never operate the engine without coolant, not even briefly!

In liquid-cooled engines, the coolant must be conditioned and monitored, otherwise the engine could be damaged by:

- corrosion
- Cavitation
- freezing
- overheating

Water quality

The right water quality is important for conditioning the coolant. Clear, clean water within the following analysis values should always be used:

Analysis values		min	max	ASTM
ph value		6.5	8.5	D 1293
Chlorine (Cl)	[mg/l]	-	100	D 512 D 4327
Sulphate (SO ₄)	[mg/l]	-	100	D 516
Total hardness (CaCO ₃)	[m-mol/l]		3.56 356	D 1126
	[°dGH]		20.0	-
	[°e]		25.0	-
	[°fH]		35.6	

Specifications of the water quality are made by the local water board.

The water must be conditioned if it deviates from the analysis values.

- **pH value too low:**

Add diluted caustic soda or potassium soda. It is advisable to make small test mixtures.

- **Total hardness too high:**

Mixing with softened water (pH neutralized condensate or water softened by ion exchanger).

- **Chlorides and/or sulphates too high:**

Mixing with softened water (pH neutralized condensate or water softened by ion exchanger).

Cooling system protective agent



Health damaging nitrous amines form when nitrite-based cooling system corrosion protection agents are mixed with amine-based agents!



Cooling system corrosion protection agents must be disposed of in an environmentally friendly way.
Observe the notes on the safety data sheet.

The coolant is conditioned for liquid-cooled DEUTZ engines by mixing an antifreeze with corrosion protection inhibitors on an ethylene-glycol base with the water.

Products released are recorded according to the following DEUTZ cooling system protection specifications.

DEUTZ cooling system corrosion protection agent	
Specifications	Remarks
DQC CA-14	siliceous on the basis of MEG
DQC CB-14	free of silicates on the basis of organic acids (OAT) and MEG
DQC CC-14	free of silicates on the basis of organic acids (OAT) and MEG

DEUTZ cooling system corrosion protection agent	
Container	Ordering number:
5 litre canister	0101 7990
20 litre canister	0101 7991
210 litre barrel	0101 7992

The DEUTZ cooling system protection agent corresponds to quality class DEUTZ DQC CB-14.

This cooling system corrosion protection agent is free from nitrite, amine and phosphate and is adapted to the materials in our engines. Order from your DEUTZ partner.

If the DEUTZ cooling system corrosion protection agent is not available please contact your DEUTZ partner or visit www.deutz.com.

The cooling system must be monitored regularly. This also includes checking the coolant system corrosion protection agent concentration in addition to checking the coolant level.

The control of the concentration of the cooling system protection agent can be done using the DEUTZ Refractometer (**Order number: 0293 7499**).

Cooling system corrosion protection agent percentage	Water percentage	Cold protection up to
min. 35 %	65 %	-22 °C
40 %	60 %	-28 °C
45 %	55 %	-35 °C
max. 50 %	50 %	-41 °C

At temperatures below - 41 °C, please contact your responsible DEUTZ partner.

It is possible to use other cooling system corrosion protection agents (e.g. chemical corrosion protection agents) in exceptional cases. Consult your DEUTZ partner.

AdBlue® (SCR reducing agent)



AdBlue® is known by different names depending on the region:
in the USA as DEF (Diesel Exhaust Fluid), in Brazil as ARLA32.
The technical designation is AUS32.
AdBlue® is a registered trademark of the Verband der Automobilindustrie e.V (VDA - German Association of the Automotive Industry).



Protective gloves and goggles must be worn when handling AdBlue®.
Do not swallow.
Ensure sufficient ventilation.
Pay attention to cleanliness.
Residues of AdBlue® must be disposed of in an environmentally friendly manner.
Observe the notes on the safety data sheet.

Exhaust gas after-treatment systems

SCR	Selective catalytic reduction
-----	-------------------------------

AdBlue® is a highly-pure, aqueous, 32.5% urea solution which is used as an NOx reduction agent for SCR exhaust aftertreatment in vehicles with diesel engines.

The product is designated as AdBlue® or AUS 32 (AUS: Aqueous Urea Solution) and must correspond to the DIN 70070, ISO 222411 or ATSTM D 7821.

The length of time that AdBlue® can be kept without losing quality depends on the conditions of its storage.

It crystallises at -11 °C and at over +30 °C a hydrolysis reaction is initiated, i.e. it begins to slowly release ammonia and carbon dioxide.

Direct sunlight on exposed storage containers must always be avoided.

Barrels must not be stored for longer than one year!

Ensure that the materials and storage containers used are resistant to AdBlue®.

AdBlue® freezes below -11°C ambient temperature.

It is necessary to preheat the SCR system at ambient temperatures below -11 °C.

DEUTZ offers its customers an additive reducing agent, DEUTZ® PowerBlue.

The patented formula improves the injection pattern of the urea solution and prevents crystallisation and potential blocking of the catalytic converter.

Users with frequent applications in low load operation, with several starts and stops and at low external temperatures benefit in particular from the additive reducing agent.

DEUTZ® PowerBlue	
Container	Ordering number:
10 litre canister	0101 6546
208 litre barrel	0101 6547
1000 litre canister	0101 4648



SCR tank

The SCR tank may only be filled with AdBlue®. Filling with other media can lead to destruction of the system.

In this case the metering pump must be replaced.

AdBlue® should not remain in the tank for longer than 4 months.


This must be documented.

Empty and clean the SCR tank when decommissioning.

Please contact your DEUTZ partner.





















This can be found at www.deutz.com.




Assignment of the DEUTZ maintenance and service schedules to the maintenance intervals

Routine maintenance work plan TD/TCD 3.6 L4			
Stage	Activity	To be performed by:	Maintenance interval every operating hours (oh)
E10	Initial commissioning	Authorised qualified personnel	When commissioning new or overhauled engines
E20	Daily inspection	Operator	1x daily or every 10 oh in continuous operation
E30	Maintenance	Qualified personnel	500 ^{1) 2) 3)}
E40	Extended maintenance I		1,000 ³⁾
E50	Extended maintenance II	Authorised qualified personnel	3,000 ³⁾
E70	Major overhaul		5,000 ^{3) 4)}
1)	The lubricating oil load may be high depending on the application. The lubricating oil change interval must be halved here  46.		
2)	Specification for lubricating oil change interval, based on lubricating oil quality DQC III.		
3)	The display of the operating hours should be ensured by the device manufacturer. The engine operating hours are recorded by the control unit. Enquiry via the CAN bus and display in a display or creation/display via electromechanical counter.		
4)	The best time for a general overhaul depends to a great extent on the load, application and ambient conditions and the care and maintenance of the engine during the operating time. Your DEUTZ partner will advise you on determining the best time for a general overhaul.		

Maintenance measures

Stage	Activity	Measure
E10		The measures are described in chapter 3.
E20	Check	Lubricating oil level (refill when necessary)
		Coolant level (refill when necessary)
		Check engine for tightness (visual check for leakage)
		Exhaust system including exhaust aftertreatment components for leaks
		Suction air filter/dry air filter (if available maintain according to maintenance pointer)
		Emptying of the water tank in the fuel pre-filter

Stage	Activity	Measure
E30	Check	Lubricating oil level (refill when necessary)  46
		Coolant (additive concentration)  62
		Intake air pipes for damage  64
		V-belts
	Renew	Lube oil A lube oil application/change strategy adapted optimally to the individual engine application type can be created, for example, with the DEUTZ oil diagnosis. Ask your DEUTZ partner  55
		Lubricating oil filter  55
E40	Check	C-intercooler cooler inlet area (drain lube oil/condensation)
		battery and cable connections  69
		Cold starting device
		Engine mounting (tighten if necessary, renew if damaged)
		Fastenings, hose connections/clips (renew if damaged)
		V-rib belt and tensioning pulley  66
	Renew	Fuel filter  58
		Fuel pre-filter  58
		Dry air filter  64
		V-belts  66
		SCR-feed pump filter cartridge  58
E50	Renew	V-rib belt and tensioning pulley  66
annually	Check	Engine monitor, warning system To be maintained by authorised service personnel only!
	Renew	Fuel filter  58
		Fuel pre-filter  58
		Lubricating oil  55
		Lubricating oil filter  55
Every 2 years	Renew	Dry air filter  64
		Coolant  62
		V-belts  66

Stage	Activity	Measure
Every 3 years	Renew	SCR-feed pump filter cartridge  58
Status dependent	Change	Dry air filter (if available maintain according to maintenance pointer)  64
		Diesel particle filter, the required exchange is displayed by the ash lamp or via an electronic display, depending on the engine version (see DEUTZ exchange programme)
	Empty	Fuel pre-filter with water trap. If the warning system is activated (lamp/horn), the water trap bowl must be emptied immediately  58

Maintenance diagram

A self-adhesive maintenance diagram is provided with every engine. This should be stuck to the engine or device in a prominent position.

Ordering number: 0312 3897 (TD/TCD 3.6 L4)

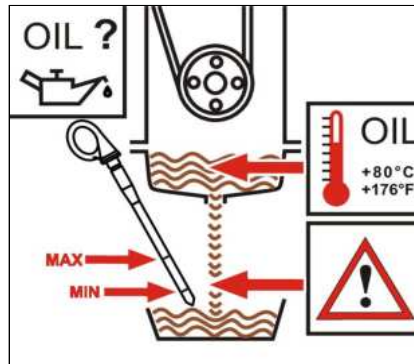
Regulations for working on the lubricating oil system



Do not work on the running engine!
Smoking and naked lights are prohibited!
Be careful with hot lubricating oil. Danger of scalding!



Ensure the highest degree of cleanliness when working on the lubricating oil system. Carefully clean the area around the components concerned. Blow wet parts dry with compressed air. Observe safety regulations and national regulations when working with lube oils! Dispose of leaking lube oil and filter elements according to regulations. Do not allow used lubricating oil to seep into the ground. Do a trial run after all work. Pay attention to leakage and lube oil pressure and then check the engine lube oil level.



Checking the lubricating oil level.



Lack of lube oil or overfilling lead to engine damage.
The lubricating oil level may only be checked when the engine is horizontal and switched off.
Only check lubricating oil level whilst warm, at least 5 minutes after shutting down.



Be careful with hot lubricating oil. Danger of scalding!
Do not pull out the dipstick while the engine is running. Danger of injury!

- Pull out the lubricating oil dipstick and wipe off with a lint-free, clean cloth.
- Insert the lubricating oil dipstick as far as it goes.
- Remove the lubricating oil dipstick and read the lubricating oil level.

- The lubricating oil level must always be between MIN- and MAX-1 markings! If necessary, fill up to MAX-marking.

Changing the lubricating oil





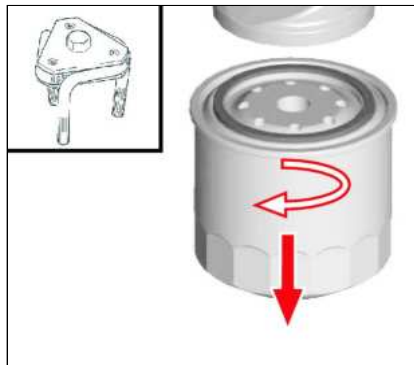
550 operating hours after the last standstill regeneration, the control unit automatically requests a new standstill regeneration to reset the soot load of the diesel particulate filter or to refresh the SCR system. The counter is then reset automatically. It is therefore recommended to have a standstill regeneration done by an authorised DEUTZ partner each time before changing the lubricating oil. This avoids any premature fuel ingress into the lubricating oil. In addition, implementation of standstill regeneration together with maintenance prevents unnecessary additional downtimes.

- Warm up engine (lubricating oil temperature > 80 °C).
- Position the engine or vehicle so as to be level.
- Shut down engine
- Position a collecting vessel under the lubricating oil drain plug .
- Unscrew the lubricating oil drain plug, drain the lubricating oil.
 - In the case of agricultural technology engines with a separate oil pan, both oil drain plugs must be unscrewed.
- Turn in and tighten lubricating oil drain plug fitted with new sealing ring.

Tightening torque:

55 Nm

- Fill in lubricating oil.
 - Quality/viscosity information  46
 - Filling quantity  82
- Run the engine warm (lubricating oil temperature > 80 °C).
- Position the engine or vehicle so as to be level.
- Check lubricating oil level, if necessary re-fill



Change lubricating oil filter



Filter may never be pre-filled. Danger of soiling!

- Loosen and unscrew filter with tool (**order no.: 0189 9142**)
- Collect escaping lube oil.
- Clean the sealing surface of the filter carrier with a clean, lint-free cloth.



- Oil the seal of the new DEUTZ original spare filter lightly.
- Screw on new filter by hand until the gasket is touching and tighten.

Tightening torque:

10 Nm - 12 Nm



Specifications when working on the fuel system



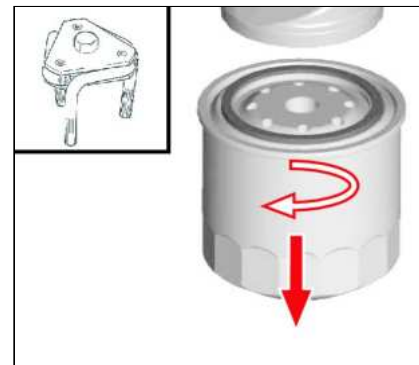
Engine must be switched off!
Smoking and naked lights are prohibited!
No injection/high pressure pipes may be disconnected while the engine is running.
Careful with hot fuel.
Ensure the highest degree of cleanliness when refuelling and working on the fuel system.
Carefully clean the area around the components concerned. Blow wet parts dry with compressed air.
Observe safety regulations and national regulations when working with fuels.
Dispose of leaking fuel and filter elements properly. Do not allow fuel to seep into the ground.
After all works on the fuel system, the system should be vented, a trial run performed and the tightness checked.
It is necessary to vent the fuel system when recommissioning, following maintenance work or if the tank has been completely emptied.



Additional venting of the fuel system by a 5-minute trial run on no-load or low load is absolutely essential.
Pay attention to utmost cleanliness due to the high production accuracy of the system!
The fuel system must be tight and closed.
Make a visual inspection for leaks/damage in the system.



Clean and dry the engine and engine compartment thoroughly before beginning work.
Areas of the engine compartment from which dirt could be loosened must be covered with a fresh, clean foil.
Work on the fuel system may only be carried out in an absolutely clean environment.
Contamination of the air such as dirt, dust, moisture etc. must be avoided.



Replace fuel change filter

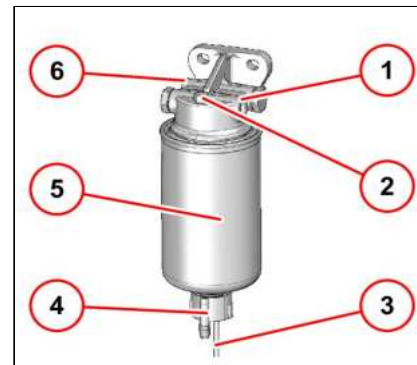
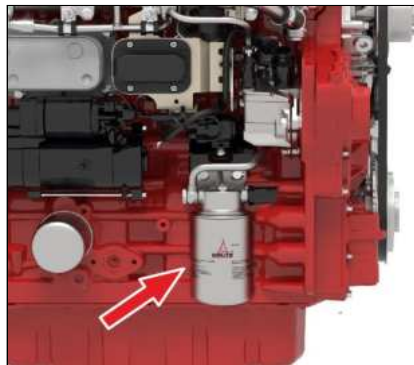


Filter may never be pre-filled. Danger of soiling!

- Loosen and unscrew filter with tool (**order no.: 0189 9142**).
- Collect escaping fuel.
- Clean the sealing surface of the filter carrier with a clean, lint-free cloth.



- Oil the seal of the new DEUTZ original spare filter lightly.
- Screw on new filter by hand until the gasket is touching.
Tightening torque:
10 Nm - 12 Nm
- Vent the fuel system.



Change/vent fuel pre-filter

- 1 Fuel supply to the fuel supply pump.
- 2 Venting screw
- 3 Electrical connection for water level sensor
- 4 Drain plug
- 5 Filter cartridge
- 6 Fuel supply from the fuel tank.

Empty water tank

- Shut down engine
- Place suitable collecting containers underneath.
- Electrical connection
 - Disconnect cable connections.
- Loosen drain plug.
- Drain fluid until pure diesel fuel runs out.
- Mount drain plug.

Tightening torque:

1.6 Nm \pm 0.3 Nm

- Electrical connection
 - Connect cable connections.

Change the fuel pre-filter insert

- Shut down engine
- Shut off the fuel supply to the engine (with high lying tank).
- Place suitable collecting containers underneath.
- Electrical connection
 - Disconnect cable connections.
- Loosen drain plug and drain liquid.
- Disassemble filter insert.
- Clean any dirt off the sealing surfaces of the new filter cartridge and opposite side of filter head.
- Wet the sealing surfaces of the filter cartridge slightly with fuel and screw back on to the filter head, clockwise.

Tightening torque:

17 Nm - 18 Nm

- Mount drain plug.

Tightening torque:

1.6 Nm \pm 0.3 Nm

- Electrical connection
 - Connect cable connections.
- Open the fuel shutoff tap and vent the fuel system, see venting the fuel system.

Vent the fuel system

The fuel system is vented via the electric fuel supply pump.

In order to ensure that no error messages are generated, no attempt should be made to start the system up whilst venting.

This process is carried out as follows:

- Ignition "ON"

The electronic fuel supply pump switches on for 20 seconds in order to vent the fuel system and build up the required fuel pressure.

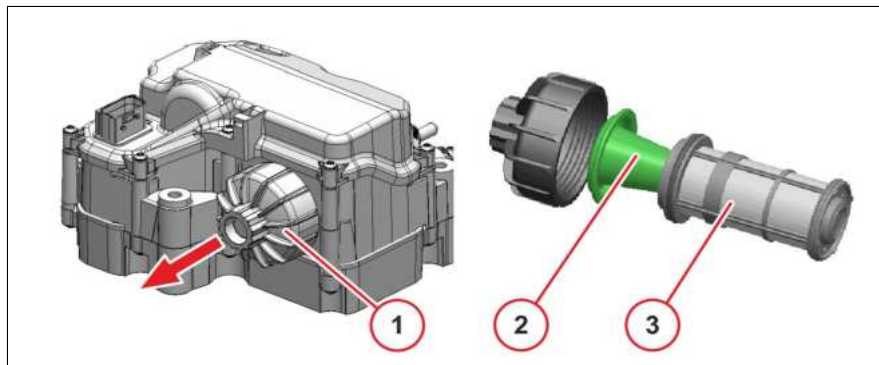
Wait until the electric fuel supply pump is disconnected from the control unit.

- Ignition "OFF"

Repeat the process at least 4 times until the fuel system is vented.



Failure to observe the venting process will result in damage to the high-pressure pump of the injection system.



Change the filter cartridge of the SCR supply pump

- 1 Cover
- 2 Compensation body
- 3 Filter cartridge



Protective gloves must be worn when working with components of the SCR system.
Pay attention to cleanliness.

- Insert new filter insert with compensation body.
- Mount cover.
Tightening torque:
22.5 Nm \pm 2.5 Nm
- Electrical connection
 - Connect cable connections.
- Start the engine.

- Shut down engine
- Electrical connection
 - Disconnect cable connections.
- Place suitable collecting containers underneath.
- Remove cover.
 - Socket wrench insert 27 mm
- Pull out filter insert and compensation body.

Specifications when working on the cooling system




Danger of scalding from hot coolant!
Cooling system under pressure! Only open the cap when cool!
The coolant must have a prescribed concentration of cooling system corrosion protection agent!
Observe safety regulations and national specifications when handling cooling media.
Observe the manufacturer's specifications for an external cooler.
Dispose of leaking liquids properly and do not allow them to seep into the ground.
Order coolant corrosion protection agent from your DEUTZ partner.
Never operate the engine without coolant, not even briefly!

Checking the coolant level with an external cooler

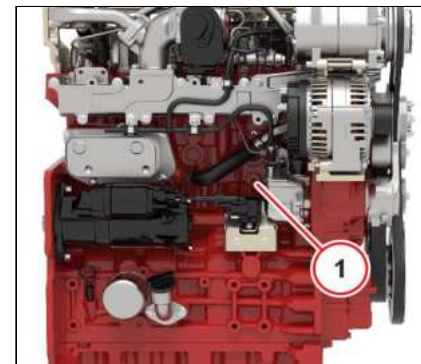
- Fill in new coolant and vent the system according to the specifications of the cooling system manufacturer.
- Open the cooling system cap (1) carefully.
- The coolant level must always be between the MIN and MAX marks of the compensation tank! If necessary, fill up to MAX-marking.



Check coolant additive concentration

- Open the cooling system cap (1) carefully.
- Check the coolant additive mixing ratio in the cooler/compensation tank (2) with a conventional freeze protection measuring instrument (1) (e.g. hydrometer, refractometer).  49.

The corresponding test device can be ordered from your DEUTZ partner under the order no.: 0293 7499.



Emptying the cooling system

- Open the cooling system cap (1) carefully.
- Place suitable collecting containers underneath.
- Remove the locking screw (1) in the crankcase.
- Drain the coolant.
- Insert the locking screw (1) with a new sealing ring.

Tightening torque:

35 Nm

- Close the cooling system sealing cover.



- Check coolant level in the cooled engine and top up to the MAX mark or filling level on the compensation tank if necessary.

Fill and ventilate cooling system



Danger of scalding from hot coolant!
Cooling system under pressure! Only open the cap when cool!

- Open the cooling system cap (1) carefully.
- Loosen the cooler venting screw if necessary.
- Fill coolant up to the max. mark or filling limit.
- Switch on any available heating and set to the highest level so that the heating circuit is filled and vented.
- Close the cooling system sealing cover.
- Close the cooler venting screw if necessary.
- Run engine up to operating temperature (opening temperature of the thermostat).
- Shut down engine

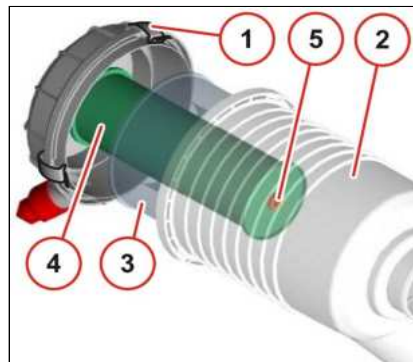
Regulations for working on the intake system



Do not work on the running engine!



Ensure the highest degree of cleanliness when working on the intake system, close intake openings if necessary. Dispose of old filter elements properly.



Maintaining the dry air filter



Do not clean the filter element (3) with petrol or hot liquids!
Renew damaged filter elements.

- Maintain the filter element (3) according to the interval in the maintenance schedule.
- Lift up the clamping yoke (1).
- Remove the filter hood (2) and pull out the filter element (3).
- Filter element (3):
 - blow out with dry compressed air (max. 5 bar) from the inside to the outside if soiling is only slight,
 - renew if heavily soiled.

Renewing the safety cartridge of the dry air filter



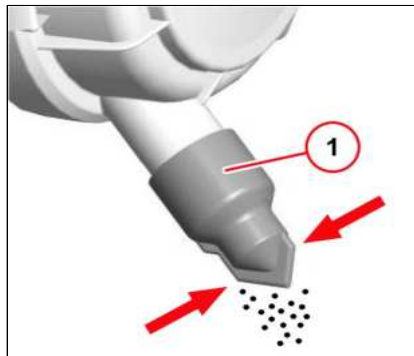
Never clean the safety cartridge (4).

- Renew the safety cartridge (4) at the interval specified in the maintenance schedule.
- To do this:
 - Unscrew hexagon nut (5), pull out safety cartridge (4).
 - Insert new safety cartridge, screw on hexagonal nut.
- Insert filter element (3), mount filter hood (2) and fix with clamping yoke (1).



Maintenance indicators for dry air filter

- The dry air filter is maintained according to a maintenance indicator or service gauge.
- Maintenance is necessary when:
 - the yellow indicator light of the **maintenance switch** illuminates when the engine is running.
 - the red field (1) of the **maintenance indicator** is fully visible.
- After completion of the maintenance work push the reset button on the service gauge. The service gauge is ready for operation again.



Clean the dry air filter dust discharge valve.

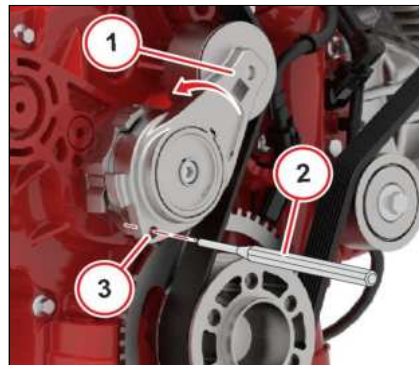
- Empty the dust discharge valve (1) by pressing together the discharge slit.
- Remove any stuck on dust residues by squeezing the upper area of the valve.
- Clean the discharge slit.

Checking the belt drive



Only carry out work on the belt drive with the engine at a standstill!
After repairs: Check that all protective equipment is mounted and all tools have been removed from the engine.

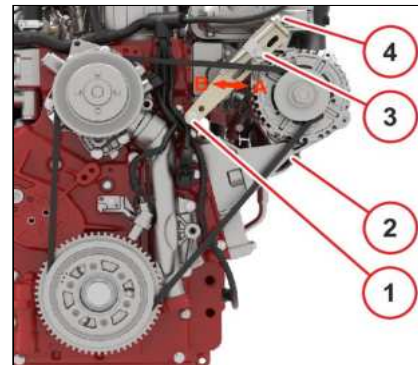
- Check the entire belt drive visually for damage.
- Renew damaged parts.
- Remount protective devices if necessary.
- Pay attention to correct fit of new belts, check the tension after running for 15 minutes.



Replace V-rib belt

- 1 Tension pulley
- 2 Retaining pin
- 3 Assembly bore

- Press tensioning roller with socket wrench in the direction of the arrow until a retaining pin can be fixed in the assembly bore. The V-ribbed belt is now tension free.
- First pull the V-ribbed belt off the smallest roller or off the tensioning roller.
- Mount new V-ribbed belt.
- Retain tensioning pulley using the pin wrench and remove the holding pin.
- Tension V-ribbed belt using the tensioning roller and socket wrench. Check whether the V-ribbed belt is correctly in its guide.



Renewing the V-belt

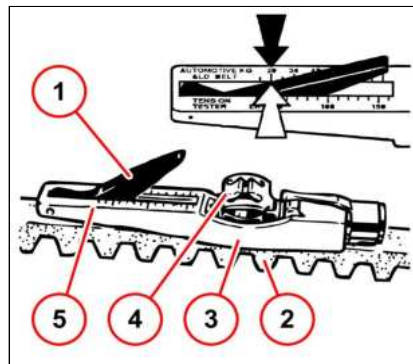
- 1 Screw
- 2 Screw
- 3 Screw
- 4 Setting screw

- Loosen all screws and lock nuts.
- Move the generator in direction (B) until the V-belt is slack.
- Remove the v-belt and fit a new one.
- Move the generator in direction (A) until the V-belt has attained the correct tension.
- Check the belt tension 82.
- Tighten all screws and lock nuts again.

Tightening torque:

- Screw (1) 30 Nm
- Screw (2) 42Nm

- Screw (3) 30 Nm



Checking V-belt tensioning

- Lower indicator arm (1) into the measuring device.
- Place guide (3) between two belt pulleys on the V-belt (2). The stop must be at the side.
- Press the button (4) at right angles to the V-belt (2) evenly until you hear or feel the spring snap in.
- Lift the measuring device carefully without altering the position of the indicator arm (1).
- Read the measured value at the point of intersection of arrow, scale (5) and indicator arm (1).
- Retighten and repeat the measurement if necessary.

Tool

The v-belt tension measurement device (**order no.: 0189 9062**) is available to order from your DEUTZ partner.

Cleaning work



With all cleaning work it must be ensured that components are not damaged (e.g. bent cooler grille etc.).

Cover electrical/electronic parts and connections to clean the engine (e.g. control units, generator, solenoid valves etc.). Do not aim water/steam jet directly at them. Run the engine warm afterwards.



Only carry out cleaning work on the engine when it is not running!

Remove the engine cover and cooling air hood if applicable and replace after cleaning. The respective applicable environmental regulations must be observed.

General

The following causes of contamination make cleaning the engine necessary:

- High dust content in the air
- Chaff and chopped straw in the area of the engine
- Coolant leaks
- Lubricating oil leakage
- Fuel leaks

Because of the different application conditions, cleaning depends on the degree of soiling.

Cleaning with compressed air

- Blowing dirt off or out. Always blow the cooler and cooling fins from the exhaust air side to the fresh air side.

Cleaning with cold cleaner

- Spray the engine with cold cleaner and leave it for about 10 minutes to take effect.
- Spray the engine clean with a high pressure water jet.
- Warm up the engine so that the water residues evaporate.

Cleaning with a high pressure cleaner

- Clean the engine with a steam jet (maximum spray pressure 60 bar, maximum steam temperature 90 °C, distance at least 1 meter).
- Warm up the engine so that the water residues evaporate.
- Always clean the cooler and cooling fins from the exhaust air side to the fresh air side.

Regulations regarding work on the electrical system



Do not touch live parts, replace faulty indicator lamps immediately.



Pay attention to correct polarity of the connections.

Cover electrical/electronic parts and connections to clean the engine (e.g. control units, generator, solenoid valves etc.). Do not aim water/steam jet directly at them. Run the engine warm afterwards.

Under no circumstances may the voltage be tested by tapping against the earth cable. During electrical welding work, the earthing terminal of the welding device must be directly clamped to the part to be welded.

Three-phase current generator: Do not interrupt the connection between the battery, generator and controller while the engine is running.

Battery



When clamping off the battery, electronically stored data may be lost.

Keep the battery clean and dry.

Make sure that the battery fits correctly and tightly.

Dispose of old batteries in an environmentally friendly way.



Danger of explosion! The gases released by the battery are explosive!



Fire, sparks, smoking and naked lights are prohibited!

Danger of acid burns! Wear protective gloves and glasses! Avoid contact with skin and clothing.

Danger of short circuit! Do not place tools on top of the battery!

Removing the battery

- When clamping off the battery, always disconnect the negative pole first. Otherwise there is a risk of a short circuit!
- Remove the fastenings and take out the battery.

Installing the battery

- Insert new or charged battery and attach the fastenings.
- Clean the terminals and battery poles with fine-grained sandpaper.
- When connecting, connect the plus pole first and then the minus pole. Otherwise there is a risk of a short circuit!
- Make sure the terminals have a good contact. Tighten the clamping screws by hand.
- Grease the assembled terminals with an acid-free, acid-resistant grease.

Faults and corrective measures

Faults	Causes	Measures
Engine does not start up or starts up with difficulty	Not disconnected (if possible)	Check coupling
	Fuel tank empty	Tanks
	Fuel suction pipe blocked	Check
	Starting limit temperature not reached	Check
	Cold starting device	Check/replace
	Wrong SAE viscosity class of the engine lubricating oil	Change lubricating oil
	Fuel quality does not comply with operating manual	Change the fuel
	Battery defective or not charged	Check battery
	Cable connections to the starter loose or oxidised	Check cable connections
	Starter defective or pinion doesn't mesh	Check starter
	Air filter soiled/turbocharger defective	Check/replace
	Air in fuel system	Vent the fuel system
	Compression pressure too low	Checking the compression pressure
	Exhaust gas backpressure too high	Check
	High pressure pipe leaking	Check/replace
	High-pressure pump defective	Check/replace
Engines starts up, but runs irregularly or misfires	Exhaust gas backpressure too high	Check
	Compression pressure too low	Checking the compression pressure
	Cold starting device	Check/replace
	Air in fuel system	Vent
	Fuel filter contaminated	Clean
	Fuel quality does not comply with operating manual	Change the fuel
	Injector defective	Change
	High pressure pipe leaking	Check/replace
	Engine cable harness defective	Check/replace

Fault table

Faults

Faults	Causes	Measures
Engine does not start and diagnostic lamp flashes	Engine electronics prevents starting	Check error according to error code and eliminate error if necessary
Speed changes are possible and diagnostic lamp lights up	Engine electronics has detected a system error and activates an equivalent speed	Check error according to error code and eliminate error if necessary
Engine shuts down unintentionally	Engine brake flap closed	Check control of engine brake flap Please contact your DEUTZ partner
	Power supply interrupted	Please contact your DEUTZ partner
	Leakage or low pressure in fuel low pressure circuit	Visual inspection Please contact your DEUTZ partner
	Electronics malfunction	read the error memory of the engine control unit
	Fuel supply not guaranteed	Check fuel system pressure.
Charge pilot lamp lights up while engine is running	Insufficient tension on V-belt or V-ribbed belt	Check/replace/tension
	V-belt or V-ribbed belt torn	Replace
	Cable connections loose or disconnected	Fasten/replace
	Generator, rectifier or regulator defective	Please contact your DEUTZ partner
	Test circuit open	Please contact your DEUTZ partner
Engine gets too hot. Temperature warning system is activated	Venting line to the coolant compensation tank blocked.	Clean
	Defective lubricating oil cooler	Check/replace
	Lubricating oil filter soiled on the air and/or lubricating oil side	Change
	Lubricating oil level too high	Check lubricating oil level, if necessary drain
	Lubricating oil pressure too low	Fill up lubricating oil
	Injector defective	Change
	Coolant heat exchanger soiled	Clean
	Coolant pump defective (V-belt or V-ribbed belt torn, loose)	Check/replace/tension
	Low coolant	Fill up
	Resistance in cooling system is too high / flow volume too low	Check the cooling system
	Fan / visco coupling defective, V-belt or V-ribbed belt torn, loose	Check/change/tension
	Fan speed too low (hydrostatic fan drive only)	Check/replace

Faults	Causes	Measures
Engine gets too hot. Temperature warning system is activated	Charge air pipe leaking	Check charge air line
	Charge air pipe soiled	Check/clean
	Air filter soiled/turbocharger defective	Check/replace
	Air filter maintenance indicator / service gauge defective	Check/replace
	Fan defective / V-belt or V-ribbed belt torn, loose	Check/replace/tension
	Exhaust gas backpressure too high	Check
	Throttle valve defective	Check/replace
	Coolant temperature transmitter defective	Check/replace
	Coolant thermostat defective	Check/replace
	Coolant cover defective	Check/replace
Engine lacks power	Lubricating oil level too high	Check lubricating oil level, if necessary drain
	Exhaust gas recirculation, actuator defective	Check/replace
	Fuel suction temperature too high	Check system
	Fuel quality does not comply with operating manual	Change the fuel
	Air filter soiled/turbocharger defective	Check/replace
	Air filter maintenance indicator / service gauge defective	Check/replace
	Fan defective / V-belt or V-ribbed belt torn, loose	Check/replace/tension
	Charge air pipe leaking	Check charge air line
	Charge air pipe soiled	Clean
	Valve clearance incorrectly adjusted	Check/adjust
	High pressure pipe leaking	Check/replace
	Injector defective	Change
	Throttle valve defective	Check/replace
	Exhaust gas recirculation, actuator defective	Check/replace
	Exhaust gas backpressure too high	Check/clean
	Exhaust gas turbocharger defective	Change

Fault table

Faults

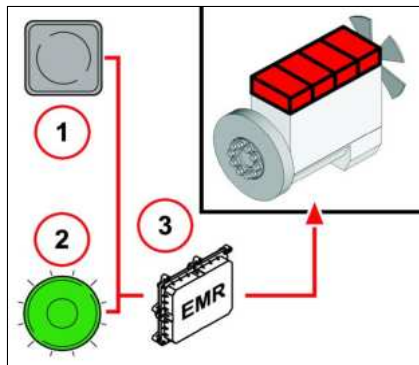
Faults	Causes	Measures
Engine performs poorly and diagnostic lamp lights	Engine electronics reduce performance	Please contact your DEUTZ partner
Insufficient engine braking power	Engine brake flap without function	Check the engine brake flap for function and damage Please contact your DEUTZ partner
Engine doesn't work on all cylinders	High pressure pipe leaking	Check/replace
	Injector defective	Change
	Compression pressure too low	Checking the compression pressure
	Engine cable harness defective	Check/replace
Engine has no, or too little, lubricating oil pressure	Lubricating oil pressure too low	Fill up lubricating oil
	Engine is tilted too far	Check engine mounting / reduce inclination
	Wrong SAE viscosity class of the engine lubricating oil	Change lubricating oil
	Lubricating oil pressure sensor defective	Check/replace
	Lubricating oil control valve jammed	Check/clean
	Lubricating oil suction pipe blocked	Check/clean
Engine lubricating oil consumption too high	Lubricating oil level too high	Check lubricating oil level, if necessary drain
	Engine is tilted too far	Check engine mounting / reduce inclination
	Crankcase ventilation defective	Check/replace
	Wrong SAE viscosity class of the engine lubricating oil	Change lubricating oil
	Valve shaft seals defective	Check/replace
	Piston rings worn	Check/replace
	Exhaust gas turbocharger defective	Check/replace
Lubricating oil in the exhaust system	Engine operated continuously with too low a load (< 20% - 30%)	Check load factor
	Valve shaft seals defective	Check/replace
	Exhaust gas turbocharger defective	Check/replace
Lubricating oil in the cooling system	Lubricating oil cooler or lubricating oil cooler plate leaking.	Please contact your DEUTZ partner
Coolant in lubricating oil	Lubricating oil cooler or lubricating oil cooler plate leaking.	Please contact your DEUTZ partner

Faults	Causes	Measures
Engine emits blue smoke	Lubricating oil level too high	Check lubricating oil level, if necessary drain
	Engine is tilted too far	Check engine mounting / reduce inclination
	Crankcase ventilation defective	Check/replace
	Wrong SAE viscosity class of the engine lubricating oil	Change lubricating oil
	Valve shaft seals defective	Check/replace
	Piston rings worn	Check/replace
	Exhaust gas turbocharger defective	Check/replace
Engine emits white smoke	Fuel quality does not comply with operating manual	Change the fuel
	Cold starting device defective	Check/replace
	Injector defective	Change
	Condensation	Warm up the engine so that the water residues evaporate.
	Coolant in the exhaust gas	Check
Engine emits black smoke	Diesel particle filter defective	Please contact your DEUTZ partner
	Charge air pipe leaking	Check/replace
	Injection system defective	Please contact your DEUTZ partner
	Charge air pressure sensor defective	Check/replace
Abnormal noises	Leaks in suction intake pipes and exhaust pipes cause whistling noises	Eliminate leak
		Replace gasket if necessary
Fault in SCR system	AdBlue® tank empty/display full	Check tank sensor
	SCR not working	Check plug connections and lines at the supply pump and injector Check plugs and cables of supply pump and sensors
	SCR not working (cold)	Lines frozen, clean lines, check heating AdBlue® tank frozen, check heating
Frequent standstill regenerations	Air filter soiled/turbocharger defective	Check/replace
	Charge air pipe leaking	Check charge air line
	Injector defective	Change

Fault table

Faults

Faults	Causes	Measures
Frequent standstill regenerations	Differential pressure of flow meter defective	Change
	NOx sensor defective	Change
	Differential pressure sensor of diesel particulate filter is issuing an implausible signal	Change
	Differential pressure line added	Clean



Engine protection function of the electronic engine control

- 1 Diagnosis button
- 2 Diagnostics lamp
- 3 Electronic engine control (EMR)



When all errors are rectified, the diagnostics lamp goes out. For some errors, it is necessary to switch off the ignition, wait 30 seconds and only then switch back on the ignition.

The appropriate monitoring functions are switched off when a sensor fails. Only the sensor failure is documented in the error memory.

Depending on the design of the monitoring functions, the electronic engine control can protect the engine in certain problematical situations by monitoring important limit values during operation and checking the correct function of the system components.

Depending on the seriousness of a recognised fault, the engine can continue to operate with limitations, during which the diagnostics lamp lights up continuously or indicates a serious system error by flashing. In this case, the engine should be switched off as soon as safely possible.

Diagnostics lamp

The diagnostics lamp is located in the vehicle drive stand.

The diagnostics lamp can release the following signals:

- Function test
 - Ignition on, diagnostics lamp lights up for approx. 2 seconds and then goes out.
 - Check the diagnostics lamp if there is no reaction after switching on the ignition.
- The lamp does not light up
 - After the lamp test an extinguished lamp indicates an error-free and trouble-free operating state within the scope of the control possibility.
- Continuous light
 - Error in system.
 - Operation continued with restrictions.

- The engine must be checked by a DEUTZ partner.
- If a lamp lights steadily a monitored measuring variable (e.g. coolant temperature, lubricating oil pressure) has left the permissible value range.
- Depending on the fault, the engine power may be reduced by the electronic engine control to protect the engine.
- Flashing
 - Serious error in system.
 - Switch off prompt for the operator. Attention: Failure to do so will lead to loss of guarantee!
 - Engine forced to run at low power to cool the engine, with automatic shutdown if necessary.
 - The engine has reached switch-off condition.
 - The switch-off process has been accomplished.
 - There may be a start lock after engine stop.
 - The start lock is deactivated by turning off the system with the ignition key for approx. 30 seconds.
 - In order to avoid critical situations the power reduction can be bypassed, automatic switch-off delayed or a start lock bypassed using the optional emergency key on the instrument panel. This brief deactivation of the engine protection functions is logged in the control unit.

- Please contact your service partner in case of malfunctions and spare parts inquiries. Our specially trained personnel will ensure fast, professional repairs using original DEUTZ spare parts in case of damage.

Diagnosis button

The diagnosis button allows the errors currently saved in the error memory of the electronic engine control to be visualised in the form of a flash code. The flash codes permit:

- Errors that may occur can be classified.
- Clear display of the error as visual signal.
 - The blink codes can only be interpreted by a DEUTZ partner.

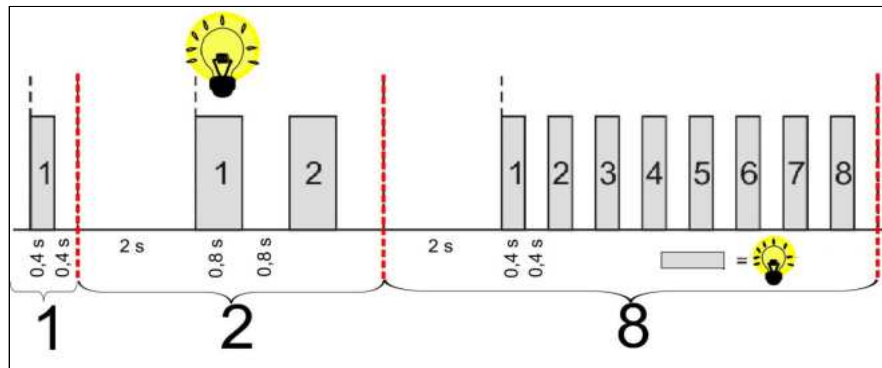
Use of the diagnostic key

The flash code displays all errors in the error memory, this means active as well as passive ones.

The control unit must be switched off to start the enquiry (ignition off). Following this, the diagnosis button should be pressed for approx. 1 second during the start (ignition on).

The next error (i.e. the following one in the error memory) can then be displayed by pressing the diagnostic key again. If the last existing fault has been shown the first fault will be shown again by pressing the diagnosis button once more.

After the display of the error flash code, the diagnostics lamp goes out for five seconds.



Displaying system errors by blink code

Example:

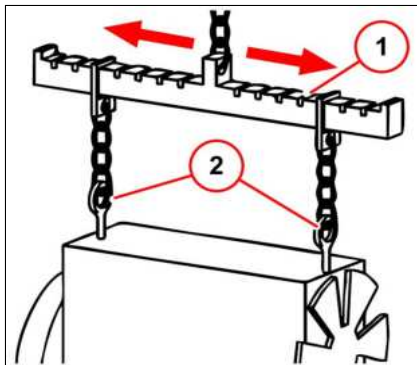
1 x short flash

2 x long flash

8 x short flash

This flash code indicates a break or short circuit in the wiring of the charge air temperature sensor. The temporal sequence of the flash signals is shown in the illustration.

- The blink codes can only be interpreted by a DEUTZ partner.

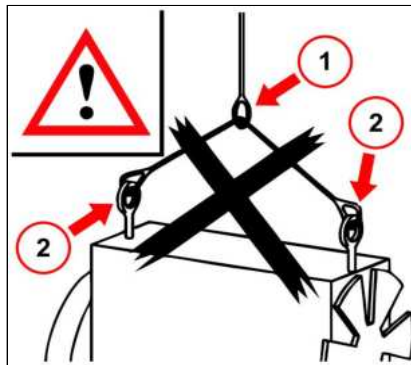


Suspension equipment



The transport devices mounted on this engine are adapted to the engine weight. If the engine is transported with add-on components, the transport devices must be designed accordingly.

- Only use the correct suspension equipment for engine transportation.
- The suspension device (1) must be adjustable for the engine's centre of gravity.
- Following transport/before commissioning the engine: Remove the transport equipment (2).



Mortal danger!
The engine may tip or crash down if suspended incorrectly.

- The fastening attachment cannot be fixed securely above the centre of gravity (1).
- The fastening attachment can slip, the engine swings backwards and forwards (1).
- Too short a fastening attachment causes bending torques in the transport device (2) and can damage it.

General

Engines contain the following types of corrosion protection:

- Internal corrosion protection
- External corrosion protection



Your DEUTZ partner has the right corrosion protection agent for your needs.

The following measures for corrosion protection after taking the engine out of operation meet the requirements for 12 months corrosion protection.

The following corrosion protection work may only be carried out by persons familiar with it and instructed in the potential dangers.

A shorter corrosion duration is to be expected in case of deviation from the measures by exposure of the corrosion protected engines or parts to unfavourable conditions (installation outdoors or storage in damp, unventilated places) or damage to the corrosion protection coating.

The engine corrosion protection must be checked about every 3 months by opening the covers. If corrosion is detected, the corrosion protection should be renewed.

After completion of the corrosion protection work, the crank drive may no longer be turned in order to prevent the corrosion protection agent from being scraped off in the bearings, bearing liners and cylinder liners.

Before operating a corrosion protected engine, the corrosion protection must be removed.

Exhaust gas aftertreatment system

Selective Catalytic Reduction (SCR)

The SCR system can be taken out of operation for up to 4 months after completely shutting down (includes all lag functions) and the following conditions:

- The engine or the vehicle / device should be parked at a covered location, e.g. garage or hall, if it has been shut down for a longer period of time.
- Completely fill the SCR tank.
- Evaporation of water as part of the AdBlue® must be avoided.
- Do not disconnect electrical or hydraulic connections.
- Maximum storage time at -40 °C to 40 °C 2 months.
- Maximum storage time at -40 °C to 25 °C 4 months.

If the shutdown time of 4 months mentioned above has been exceeded, proceed as follows:

- Completely empty the SCR tank.
- Completely fill the SCR tank with new AdBlue®.
- Replace the filter cartridge of the SCR supply pump, if available.
- Warm up the engine to operating temperature and load so that pressure builds up and AdBlue® is injected.

If a fault is detected:

- Shut down engine.
- Wait for the end of the lag time of the EDC (Electronic Diesel Control).
- Repeat the process several times if necessary.

Please contact your DEUTZ partner if the fault cannot be remedied.

Corrosion protection of engines which have already been in operation

Internal corrosion protection

The internal corrosion protection is always effected by wetting the walls with the corrosion protection agent by running the engine. The corrosion protection run can be carried out once to protect the different systems.

Fuel system

- Fill fuel tank with EN590 or ASTM D975 grade 1–D S15 biodiesel-free fuel
- Perform a corrosion protection run with no load for at least 5 minutes.



Close the fuel/tank/supply line to the engine so that the system is protected against dirt and dust. Protect the electronics against moisture and corrosion. Standstill times of longer than 4 weeks must always be avoided with biodiesel.

Lubricating oil system

- Drain the lubricating oil from the engine at operating temperature.

- Fill the engine with preservation oil and perform a corrosion protection run (together with corrosion protection run for the fuel system). For this, run the engine to reach a temperature of 60 °C, duration of at least 5 minutes, so that all components of the lubricating oil system are wet, or wet all accessible components with preservation oil and pump preservation oil at a temperature of around 60 °C through the engine until all bearings and bearing liners are wet.
- Clean the lubricating oil pan, cylinder head with rocker arms, valves, valve springs thoroughly with diesel fuel or cleaning agent.

Air compressor

- If an air compressor is installed, a corrosion protection agent must be sprayed into the compressor suction system after shutting down the engine until it emerges visibly from the pressure nozzle.

Cooling system

- Depending on the series the engines are equipped with a cooling air, cooling lubricating oil or coolant system (cooling water with cooling system protection agent).
- In liquid-cooled engines, the coolant must be drained and the cooling system cleaned.
- Then carry out a corrosion protection run so that a coating forms on the inside surfaces of the cooling system. With a mixture consisting of:
 - Treated water
 - Corrosion protection agentor

- Treated water
- Corrosion protection agent with light antifreeze
- The duration of the corrosion protection run and the concentration of the corrosion protection agent are specified by the manufacturer of the corrosion protection agent.

- Then drain the coolant.

Intake air lines

- Spray corrosion protection oil or preservation oil into the intake air pipe.

External corrosion protection

The engine must be cleaned thoroughly with cleaning agent before external corrosion protection.

Bare external parts and surfaces

- Coat or spray all bare exterior parts and surfaces (e.g. flywheel, flange faces) with corrosion protection agent.
- Under extreme conditions, e.g. sea transport, a long-term corrosion protection oil should be used.

Rubber parts

- Rubber parts (e.g. mufflers) which are not painted must be rubbed with talcum powder.

Belt drives

- Disassemble V-belts and V-rib belts and store packed.
- Spray V-belt pulleys and tension pulleys with corrosion protection agent.

Engine openings

- All engine openings must be fitted with airtight, watertight covers to delay the evaporation processes of the corrosion protection agent. If an air compressor is installed, then the suction and pressure connection must be sealed by a cap.

Air should be locked out to avoid ventilation of the engine (chimney effect) for the suction from an air supply pipe.

Storage and packing

- After being protected against corrosion, the engine must be stored in a dry, ventilated hall and suitably covered.

The cover must lie loosely on the engine so that air can circulate around the engine to prevent condensation from forming. Use desiccant if necessary.

Re-application of engine corrosion protection

If the max. protection duration of the corrosion protection is reached or damaged corrosion protection is detected and the engine is to stay in storage, new corrosion protection must be applied. The new corrosion protection protects the engine or spare parts for another 12 months.

The new corrosion protection is applied in the same way as the initial corrosion protection with a corrosion protection run. If a corrosion protection run is not possible (engine is removed from the device or system for example), certain special conditions must be observed for application of new corrosion protection which are described below:

Internal corrosion protection

Fuel system

- DEUTZ recommends using diesel fuel containing polycyclic aromatic hydrocarbons $\leq 8.0 \text{ } \%(m/m)$, a lubricity of ≤ 400 micrometres in the HFRR test (EN ISO 12156-1) and biodiesel (FAME) $\leq 0.1 \text{ } \%(V/V)$.

Pump fuel with a separate pump or a fuel hand pump until the fuel system is full. Then drain the fuel mixture.

Lubricating oil system

- Press warm preservation oil at approx. 60°C into the lubricating oil circuit with a separate pump, or with the prelubricating hand pump. Turn over the engine by hand or with the electric turning gear so that all bearings and bearing liners are wet. The engine can also be turned over with the starter without starting the engine.
- Remove the cylinder head cover and spray valves, valve springs and rocker arms with preservation oil.

Cooling system

- The corrosion protection does not normally need to be renewed up to 24 months. If necessary, the coolant system can be filled with a mixture of corrosion protection agents and circulated by an external pump, so that a new coating can form on the inside surfaces of the cooling system.
- The duration of the corrosion protection run and the concentration of the corrosion protection agent are specified by the manufacturer of the corrosion protection agent.
- Then drain the coolant.

Removal of corrosion protection

Removal of internal corrosion protection

Fuel system

- Fill the fuel tank and fuel system with the proper fuel.

Lubricating oil system

- Fill the engine with lubricating oil via the oil filler neck.

Cooling system

- If the implemented corrosion protection agent is compatible with the intended coolant system protection agent, this can be filled directly into the coolant system as specified.
- If it is uncertain whether the implemented corrosion protection agent is compatible with the coolant system protection agent, the cooling system should be purged with fresh water for about 15 minutes before filling.

Removal of corrosion protection from external parts

- All areas and components coated with corrosion protection agent must be washed off with distilled fuel or a suitable cleaning agent.
- Wash out grooves of V-belts if necessary.
- Fit V-belts and V-rib belts according to specifications.
- Fill up the coolant.

Corrosion protection agent / cleaning agent

Please ask your DEUTZ partner for reference products for the corrosion protection agents/cleaning agents to be used which meet DEUTZ requirements.

or see www.deutz.com

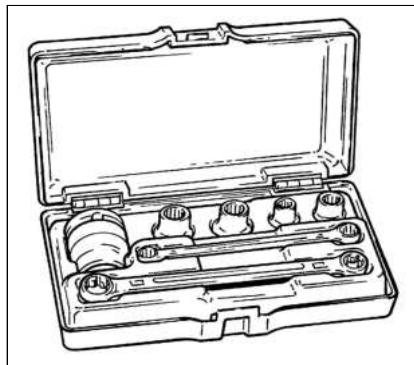
General technical data

Engine type	Unit	TD 3.6L4	TCD 3.6 L4
Working principle		Four-stroke diesel engine	
Charging		Exhaust gas turbocharger	Turbocharger with charge air cooling
Type of cooling		water-cooled	
Cylinder arrangement		in a row	
Number of cylinders		4	
Bore/stroke	[mm]	98/120	
Engine swept volume	[cm ³]	3621	
Combustion method		Direct injection	
Injection system		Common Rail	
Exhaust gas recirculation		Externally cooled	
Exhaust aftertreatment		Diesel oxidation catalytic converter and/or Diesel particle filter	Diesel oxidation catalytic converter and/or Diesel particle filter and/or Selective Catalytic Reduction
Valves per cylinder		2	
Ignition sequence of the engine		1-3-4-2	
Direction of rotation looking onto the flywheel		left	
Engine power according to ISO 3046	[kW]	See engine rating plate	
Speed (nominal speed)	[rpm]	See engine rating plate	
Coolant volume (only engine content without cooler / hoses and pipes)	[l]	≈4.6	
Permissible continuous coolant temperature	[°C]	max. 110	
Temperature difference between coolant inlet/outlet	[°C]	8	
Start of thermostat opening	[°C]	Please contact your DEUTZ partner	
Thermostat fully open	[°C]		

Engine type	Unit	TD 3.6L4	TCD 3.6 L4
Lube oil change volume (with filter) Industrial engines/Agricultural technology	[l]	≈9* / ≈11*	
Lube oil temperature in the lube oil pan, maximum	[°C]	125	
Lube oil pressure minimum (low idle speed, engine warm)	[kPa/bar]	140/1.4	
Permissible maximum combustion air temperature after charge air cooler	[°C]	50	
V-belt tension		Pre-tighten/retighten	
V-belts AVX 13 (width: 13 mm)	[N]	650±50 / 400±50	
V-rib belt tensioning		Automatic tensioning spring-loaded clamping roller	
Weight without cooling system according to DIN 70020-A Industrial engines/Agricultural technology	[kg]	≈350	
*specified lube oil filling volumes apply for standard versions. The lubricating oil filling volume may vary in engines which deviate from the standard, e.g. different lubricating oil pan/lubricating oil dipstick variants and/or special inclined versions. The lubrication oil dipstick mark is always decisive			

Tool ordering

The special tools described in this chapter are available to order from your DEUTZ partner.

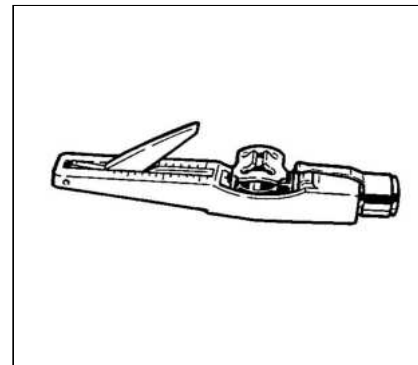


Hexalobular tool kit

Ordering number:

0189 9092

Tool kit for loosening and tightening hexalobular screws.

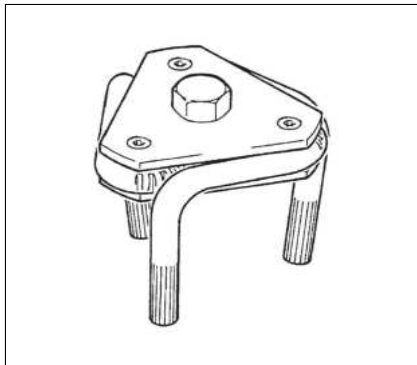


V-belt tension meter

Ordering number:

0189 9062

Measuring device for testing the specified v-belt tension.

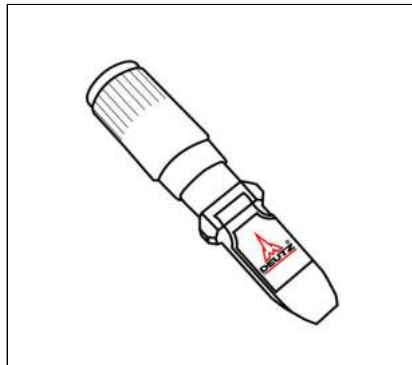


Special wrench for loosening exchangeable filters

Ordering number:

0189 9142

For loosening interchangeable filters.



Refractometer

Ordering number:

0293 7499

The following operating media can be evaluated with this test device:

- Coolant
- Battery acid
- SCR reduction agent

DEUTZ Operating Fluids



DEUTZ Oil Rodon 10W40
low SAPS (DQC IV-10 LA)

5 L	-
20 L	0101 7976
209 L	0101 7977

DEUTZ Clean-Diesel
InSyPro

1 L	0101 7967
5 L	0101 7968

DEUTZ Cooling System
Conditioner

5 L	0101 7990
20 L	0101 7991
210 L	0101 7992



WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area
- If in an enclosed area, vent the exhaust to the outside
- Do not modify or tamper with the exhaust system
- Do not idle the engine except as necessary

For more information go to www.P65warnings.ca.gov/diesel

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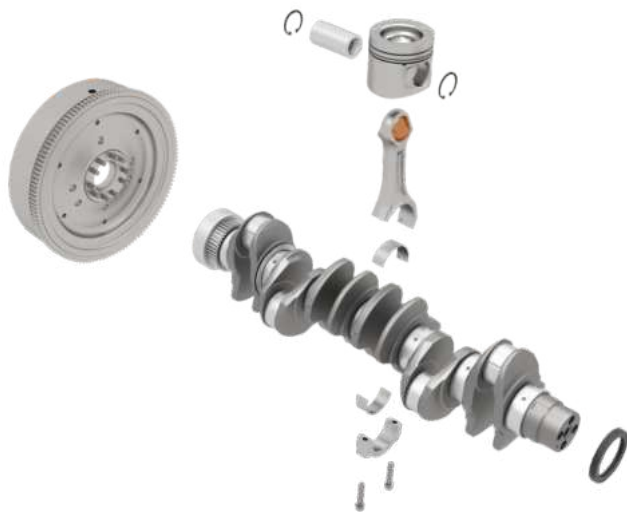
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Original operating instructions

The engine company.



TD / TCD 3.6 L4



Ersatzteilliste

EU Stufe IIIB, IV & V / US EPA Tier 4i & 4

Spare Parts Catalogue

EU Stage IIIB, IV & V / US EPA Tier 4i & 4

Catalogue de Pièces de Rechange

EU Niveau IIIB, IV & V / US EPA Tier 4i & 4

Lista de Piezas de Repuesto

UE Nivel IIIB, IV & V / US EPA Tier 4i & 4

The engine company.



Die in dieser Ersatzteilliste aufgeführten Bauteile sind nur für Reparatur von Deutz Motoren der bezeichneten Baureihe zu verwenden (bestimmungsgemäßer Gebrauch). Über den fachgerechten Einbau von Ersatzteilen informieren die Betriebsanleitung (Wartungsarbeiten) und das Werkstatt-handbuch (Reparaturarbeiten) ausführlich. Für Schäden oder Verletzungen von Personen, die aus der Nichtbeachtung der entsprechenden Anleitung führen, übernimmt der Hersteller keine Haftung.

The parts contained in this Catalogue are type-specific and shall be used only for repairing engines belonging to the DEUTZ engine family given on the cover (approved purpose). Full information for the proper installation of spare parts are to be found in the relevant Operating Manual (maintenance work) and Workshop Manual (repair work). The manufacturer shall not be liable for any damage or injury of persons resulting from non-compliance with guidelines given in the manuals.

La présente nomenclature de pièce détachées énumère les composants à utiliser uniquement à des fins de réparation des moteurs Deutz de la série indiquée (utilisation conforme). Le manuel d'utilisation (travaux d'entretien) et le manuel d'atelier (réparations) apportent de plus amples informations sur le montage approprié des pièces détachées. Le fabricant décline toute responsabilité concernant les dommages ou blessures de personnes résultant du non-respect des présentes instructions.

Los componentes indicados en esta lista de piezas de repuesto se emplearán exclusivamente para la reparación de motores Deutz de la serie indicada (uso conforme a la finalidad). Respecto al correcto montaje de las piezas de repuesto, véanse los manuales de instrucciones (trabajos de mantenimiento) y el manual de servicio (trabajos de reparación). El fabricante no responderá por daños o lesiones de personas resultantes de la inobservancia de la instrucción correspondiente.

As peças e partes componentes relacionadas nesta lista de peças sobressalentes serão utilizadas (uso a que se destinam) somente para a reparação de motores Deutz da série designada. O manual de instruções de serviço (trabalhos de manutenção) e o manual de oficina (trabalhos de reparação) proporcionar informações pormenorizadas quanto à montagem tecnicamente correta de peças sobressalentes. O fabricante não assume qualquer responsabilidade por danos ou lesões pessoais resultantes da inobservância das instruções correspondentes.

I componenti elencati in questa lista di pezzi di ricambio devono essere utilizzati soltanto per la riparazione di motori Deutz della serie specificata indicata (uso conforme alla destinazione). Il libretto di istruzioni (interventi di manutenzione) ed il manuale d'officina (interventi di riparazione) forniranno delucidazioni dettagliate sul montaggio corretto dei pezzi di ricambio. Il fabbricante non si assume nessuna responsabilità per danni o lesioni a persone dovuti all'inosservanza delle relative istruzioni.

De onderdelen in deze onderdelenlijst mogen uitsluitend worden gebruikt voor reparatie van Deutz-motoren uit de vermelde bouwserie (gebruik volgens de voorschriften). Uitvoerige informatie over de correcte montage van onderdelen is te vinden in de gebruiksaanwijzing (onderhoudswerkzaamheden) en de werkplaatshandleiding (reparaties). De fabrikant is niet aansprakelijk voor beschadigingen of lichamelijke letsels die voortvloeien uit de niet-aanleving van de desbetreffende voorschriften.

De i denna reservdelslista upptagna komponenterna ska endast användas för reparation av Deutz-motorer av angivna byggserie (ändamålsenlig användning). Utörliga informationer angående korrekt montering av reservdelar framgår av instruktionsboken (skötselarbeten) och verkstadshandboken (reparationer). För person- och materialskador som uppstår på grund av ignorering av respektive anvisning, övertar tillverkaren inget ansvar.

De i denne reservdelsliste angivne komponenter må kun anvendes til reparation af Deutz-motorer i den anførte serie (Anvendelse i overensstemmelse med formålet). Detaljer vedrørende den korrekte montering af reservedele fremgår af instruktionsbogen (service) samt værktøjsdatabogen (reparation). Producenten påtager sig intet ansvar for skader på personer eller ting som følge af, at bestemmelserne i den relevante vejledning ikke er overholdt.

Tässä varaosa- luettelossa luetelluja komponentteja tulee käyttää vain ilmoitetun tyyppisten Deutz-moottoreiden korjaustöissä (käyttötarkoituksen mukainen käyttö). Käyttöohjeesta (kohdasta Huoltotyöt) ja korjaamokäsikirjasta (kohdasta Korjaustyöt) käy yksityiskohtaisesti ilmi, kuinka varaosat asennetaan asianmukaisesti. Valmistaja ei vastaa vahingoista tai henkilöiden loukkaantumisista, jotka johtuvat siitä, että vastaavaa ohjetta ei ole noudatettu.

Komponenter som er oppført på denne reservdelslisten, er bare beregnet til reparasjon av DEUTZ motorer som tilhører de serier som er angitt (forskrittsmessig bruk). Fagmessig innmontering av reservedeler er utførlig beskrevet i instruksjonsboken (vedlikeholdsarbeid) og verkstedshåndbo-

ken (reparasjonsarbeid). Produzenten påtar seg ikke ansvar for materielle skader eller personskader som skyldes at de relevante anvisningene ikke har blitt fulgt.

القطع المدرجة في لائحة قطع الغيار هذه، معدة فقط للإستعمال في تصليح محركات دويتس من الفئة المناسبة (استعمالها مقتصر على الغاية الأساسية).

تتضمن إرشادات التشغيل (أعمال الصيانة) وكتيب الورشة (التصليحات) تعليمات مستفيدة لتزكيب قطع الغيار كما يجب. لا يتحمل المنتج أي مسؤولية في ما يختص بالأضرار وإصابات الأشخاص الناتجة عن عدم التقيد بالإرشادات المناسبة.

Ta εξαρτήματα που περιλαμβάνονται σ' αυτόν τον κατάλογο ανταλλακτικών μερών πρέπει να χρησιμοποιούνται μόνο για την επισκευή κινητήρων Deutz της αναφερόμενης κατασκευαστικής σειράς (προοριζόμενη χρήση). Για τη σωστή τοποθέτηση των ανταλλακτικών μερών ενημερώνουν αναλυτικά οι οδηγίες λειτουργίας (εργασίες συντήρησης) και το εγχειρίδιο συνεργείου (εργασίες επισκευής). Ο κατασκευαστής δεν αναλαμβάνει καμία ευθύνη για υλικές ζημιές και τραυματισμούς που θα προκληθούν από τη μη τήρηση των αντίστοιχων οδηγιών.

Bu yedek parça listesinde belirtilen yapı parçaları yalnızca, adı geçen yapı serisine mensup DEUTZ motorlarının tamiri için kullanılabilir (amacı uygun kullanım). Yedek parçaların kurulumu uygun olarak yapılması için detaylı bilgiyi, işletim talimatından (bakım işleri) ve atölye el kitabından (tamir işleri) edinebilirsiniz. İlgili talimatlara riayet edilmediği takdirde, kişilere oluşacak hasar veya yaralanmaları durumunda Üretici, sorumluluk üstlenmez.

Приведенные в данном перечне запасных частей детали предназначены только для ремонта двигателей Deutz указанных серий (использование по назначению). Правильный монтаж запасных частей подробно описывается в руководствах по эксплуатации (работы по техобслуживанию) и ремонту (ремонтные работы). Изготовитель не несет никакой ответственности за ущерб или травмирование персонала вследствие несоблюдения соответствующего руководства.

Części zamienne znajdujące się na niniejszej liście przeznaczone są wyłącznie do napraw silników Deutz oznaczonej serii (zastosowanie zgodne z przeznaczeniem).

Fachowy montaż części zamiennych opisany jest obszernie w instrukcji obsługi (prace konserwacyjne) i książce warsztatowej (naprawy). Producent nie ponosi odpowiedzialności za uszkodzenia sprzętu lub obrażenia ludzi, które wynikną z nieprzestrzegania odpowiedniej instrukcji.

Ersatzteilliste
Spare Parts Catalogue
Catalogue de pièces de rechange
Lista de piezas de repuesto
Lista de peças sobressalentes
Listino parti di ricambio
Onderdelenlijst
Reservdelslista
Reservedelsliste
Varaosaluettelo
Reservedelsliste
Κατάλογος ανταλλακτικών
Yedek parça Listesi
Список запасных частей
لائحة قطع الغيار
Lista części zamiennych

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Sehr geehrter Kunde

Die Motoren der Marke DEUTZ sind für ein breites Anwendungsspektrum entwickelt. Dabei wird durch ein umfangreiches Angebot von Varianten sichergestellt, dass die jeweiligen speziellen Anforderungen erfüllt werden.

Ihr Motor ist dem Einbaufall entsprechend ausgerüstet, das heißt nicht alle in dieser Ersatzteilliste dargestellten Bauteile und Komponenten sind an Ihrem Motor angebaut.

Obwohl die Grafiken weitgehend nicht mit allen Details dargestellt sind, können die einzelnen Varianten deutlich unterschieden werden, so dass das für Ihren Motor relevante Ersatzteil leicht herauszufinden ist. Über Positions-, Baugruppen- und Motornummer wird in jedem Fall das richtige Ersatzteil ermittelt.

Bitte beachten Sie bei dieser Ersatzteilbestellung unsere Bestellhinweise (siehe nachfolgende Beispielgrafiken), damit wir Ihnen schnell und zuverlässig die benötigten Ersatzteile in der jeweils dem letzten Änderungsstand entsprechenden Ausführung liefern können.

Für Ihre Rückfragen stehen wir Ihnen gerne beratend zur Verfügung.

Ihre

DEUTZ AG

Bestellangaben

Bei der Bestellung von Original DEUTZ Teilen sind folgende Angaben erforderlich:

- Motor-Nr.
- Ident-Nr.
- Stückzahl

Dokumentationsaufbau


Die Bildtafeln dieser Ersatzteilliste sind nach Motor-Baugruppen sortiert.

Die Ident-Nr. 06/59 besteht aus Baugruppe (z.B. 06) und Position (z.B. 59).

Symbolerklärung

 Baugruppennummer (z.B. 06)

 Änderungsziffer (z.B. 000)

 Anschlussymbol
Tritt immer mindestens paarweise auf (z.B. A-A, B-B, C-C etc.)

Service

Wenden Sie sich bei Betriebsstörungen und Ersatzteillfragen an eine unserer zuständigen Service-Vertretungen. Unser geschultes Fachpersonal sorgt im Schadensfall für eine schnelle und fachgerechte Instandsetzung unter Verwendung von Original DEUTZ Teilen.

Einen Überblick über die DEUTZ Partner in ihrer Nähe, über deren Produkt-Zuständigkeiten und Service-Leistungen können Sie der DEUTZ-Internetseite entnehmen.

<http://www.deutz.com>

Gegenüber Darstellungen und Angaben dieser Ersatzteilliste sind technische Änderungen, die zur Verbesserung der Motoren notwendig werden, vorbehalten. Nachdruck und Vervielfältigung jeglicher Art, auch auszugsweise, bedarf unserer schriftlichen Genehmigung.

Dear Customer

DEUTZ engines are developed to meet the requirements of a wide range of applications. An extensive program of variant options gives them their high flexibility.

Your engine is custom-made, i.e. specifically equipped for your requirement, which means that not all of the components and assemblies contained in this catalogue are fitted to your engine.

The greater part of the illustrations does not depict all details, and yet you will find it easy to differentiate between versions and thus to identify the parts pertaining to your engine model. Fig. Item No., Assembly Group No., Engine Serial No. are the codes that infallibly lead to the right spare part.

When placing your order, please observe our ordering hints (see graphic examples below). This allows speedy and reliable delivery of the required parts that are based on latest engineering standards.

If there are any questions, please do not hesitate to contact us.

Sincerely,

DEUTZ AG

Order information

Please specify the following information when ordering original DEUTZ parts:




- Engine no.
- Ident no.
- Quantity

Document structure

The picture diagrams in this spare list are sorted according to engine assembly groups.

The ident no. 06/59 is made up of the assembly group (e.g. 06) and item number (e.g. 59).

Explanation of symbols

-  Assembly No. (e.g. 06)
-  Revision level (e.g. 000)
-  A connection symbol
Always occurs at least in pairs
(e.g. A-A, B-B, C-C etc.)

Service

In case of operational trouble with your equipment or queries about spare parts please contact your nearest service dealership. Our skilled staff of service experts will trace and remedy any defect quickly, using genuine DEUTZ parts.

An overview of the DEUTZ partners in your area, their product responsibilities and range of services provided can be found on the DEUTZ home page.

<http://www.deutz.com>

This Spare Parts Catalogue is subject to engineering changes necessary for engine advancement. All rights reserved. No part of this publication may be reprinted or reproduced in any form, without our prior permission in writing.

Cher client

Les moteurs de la marque DEUTZ ont été développés pour une gamme étendue d'applications. Il existe un grand choix de variantes répondant aux exigences spéciales demandées dans chaque cas.

Votre moteur est équipé pour le cas d'application envisagé, ce qui signifie que toutes les pièces et composants représentés dans ce catalogue de pièces de rechange ne sont pas montés sur votre moteur.

Bien que les graphiques ne représentent pas tous les détails, les variantes se distinguent nettement les unes des autres, si bien que vous trouverez sans problème la pièce de rechange correspondant à votre moteur. Les numéros de référence, de l'organe et du moteur permettent en tous les cas de retrouver la pièce de rechange que vous cherchez.

Lors de votre commande de pièces de rechange veuillez respecter nos indications de commande, (cf. les tableaux graphiques suivants) afin que nous puissions vous fournir rapidement et sûrement les pièces de rechange demandées dans la version correspondante réactualisée.

Nous restons à votre entière disposition pour toute question complémentaire.

DEUTZ AG

Indications de commande

Lors d'une commande de pièces de rechange d'origine DEUTZ, il est nécessaire de fournir les indications suivantes :

- n° de moteur
- n° d'identification
- nombre

Structure de la documentation

Les tableaux illustrés de cette liste de pièces de rechange sont classés par groupe de moteur.

Le n° d'identification 06/59 est constitué du n° de groupe (p.ex. 06) et du n° de position (p.ex. 59).

Explication des symboles

- 06-** Numéro de groupe constitutif
(p. ex. 06)
- 000** Indice de modification (p. ex. 000)
- A** Symbole d'assemblage
Se présente toujours par paire
(p. ex. A-A, B-B, C-C etc.)

Service

En cas de panne de fonctionnement et pour toute question relative à des pièces de rechange, veuillez vous adresser à notre point de service responsable pour votre secteur. Notre personnel qualifié assure une remise en état rapide et appropriée de votre moteur en n'utilisant que des pièces d'origine DEUTZ.

Vous trouverez un aperçu des partenaires DEUTZ les plus proches avec leurs compétences techniques et les services qu'ils vous offrent, sur le site internet de DEUTZ.

<http://www.deutz.com>

Nous nous réservons le droit de procéder dans cette liste de pièces de rechange à toutes modifications techniques utiles visant à améliorer la qualité des moteurs. Toute réimpression ou reproduction du présent document, même partielle, exige notre autorisation écrite.

Estimado cliente

Los motores de la marca DEUTZ se han desarrollado para una amplia gama de aplicaciones. Una extensa oferta de variantes garantiza que se cumplan las exigencias especiales de cada caso.

Su motor se ha equipado de acuerdo con el caso de montaje. Esto significa que en su motor están montados los componentes mostrados.

Pese a que la mayoría de los gráficos no contiene todos los detalles, se pueden distinguir bien las diferentes variantes de modo que resulta fácil identificar el repuesto correspondiente a su motor. El repuesto correcto para cada caso se determina a través de los números de posición, de grupo constructivo y de motor.

Le rogamos que tenga en cuenta nuestras indicaciones al confeccionar su pedido de repuestos para que le podamos suministrar rápida y eficazmente los repuestos requeridos en el modelo correspondiente al último estado de modificación.

En caso de dudas, estamos a su disposición para asesorarle.

DEUTZ AG

Datos del pedido

Para realizar un pedido de repuestos originales de DEUTZ tendrá que incluir los siguientes datos:




- N.° del motor
- N.° de identificación
- Número

Estructura de la documentación

Las láminas de esta lista de piezas de repuestos están clasificadas según el grupo de motor.

El n.° de identificación 06/59 está compuesto por un n.° de grupo (p. ej. 06) y un n.° de posición (p. ej. 59).

Explicación sobre los símbolos

-  Número del grupo constructivo (p. ej. 06)
-  Cifra de modificación (p. ej. 000)
-  Símbolo de conexión
Aparece siempre en grupos de dos (p. ej. A-A, B-B, C-C).

Servicio

En caso de anomalías en el funcionamiento y cuestiones sobre repuestos, diríjase a uno de nuestros centros responsables del servicio técnico. Nuestro personal especializado y cualificado se ocupará de arreglar eficientemente y con rapidez cualquier desperfecto, utilizando repuestos originales DEUTZ.

En la página de internet de DEUTZ encontrará un resumen de los centros de DEUTZ más cercanos, los productos de los que se ocupa cada centro y la gama de servicios disponibles.

<http://www.deutz.com>

Nos reservamos el derecho a efectuar, frente a las representaciones e indicaciones de esta lista de repuestos, las modificaciones técnicas necesarias para perfeccionar los motores. Para la reimpresión y reproducción en cualquier forma, también en la de extractos, se requiere nuestra autorización por escrito.

Prezado cliente

Os motores da marca DEUTZ foram desenvolvidos para um grande número de aplicações vasto. Assegura-se ao mesmo tempo o cumprimento das exigências específicas correspondentes através da ampla oferta de variantes.

O seu motor encontra-se equipado de acordo com o tipo de montagem, isto é, nele não estão embutidas todas as peças e partes componentes representadas na lista de peças sobressalentes.

Embora os gráficos não se encontrem amplamente representados com todos os pormenores, é possível distinguir claramente cada uma das variantes, de forma a se encontrar facilmente a peça sobressalente de importância para o seu motor. É possível, em todo o caso, verificar a devida peça sobressalente correta.

Quanto ao pedido de peças sobressalentes queira, por favor, observar as nossas instruções para encomendas (veja os gráficos de exemplo que seguem), a fim de podermos fornecer-lhes rápida e seguramente as peças sobressalentes necessárias de acordo com a correspondente versão à da última alteração atualizada.

Estamos à sua inteira disposição para um aconselhamento no caso de quaisquer pedidos de informação que nos dirigir.

A sua

DEUTZ AG

Dados necessários para a encomenda

Para encomendar as peças originais DEUTZ é necessário indicar os seguintes dados:

- Número de série do motor
- Números de identificação
- Quantidade

Esquema da documentação

As figuras representativas das peças sobressalentes estão agrupadas por módulos do motor.

O Número de identificação 06/59 consiste do número do módulo (por ex. 06) e da posição (por ex. 59)

Explicação dos símbolos

-06- Número dos módulos (p.ex. 06)

000 Algarismo variável (p.ex. 000)

A Símbolo de conexão
Introduzir sempre, no mínimo, em pares (p. ex. A-A, B-B, C-C etc.)

Serviço

No caso de avarias operacionais e de possíveis consultas relacionadas com peças e partes sobressalentes, queiram dirigir-se a uma das nossas representações autorizadas de serviço. O nosso pessoal técnico especializado procurará, em caso de uma avaria, proceder a uma reparação rápida e tecnicamente competente, com a aplicação de peças originais DEUTZ.

Consulte a informação na página da Internet DEUTZ (ver em baixo) sobre os parceiros DEUTZ da sua área, as suas competências de produtos e prestações de serviços.

E, mesmo na ausência de um registro de competência de produtos direto, qualquer parceiro DEUTZ estará disponível para dar o seu conselho competente.

<http://www.deutz.com>

Reservamo-nos o direito de proceder a alterações de ordem técnica na representação e nos dados desta lista de peças sobressalentes que se tornem necessárias para o aperfeiçoamento dos motores. Toda e qualquer reimpressão e reprodução, mesmo só em parte, requer a nossa autorização por escrito.

Egregio cliente

I motori DEUTZ sono stati sviluppati per un ampio spettro d'uso. Grazie ad una vasta offerta di varianti viene garantito che verrà fatto fronte alle rispettive esigenze particolari.

Il Suo motore è allestito secondo lo specifico caso di montaggio, vale a dire che non tutti gli elementi ed i componenti illustrati nel Suo listino dei pezzi di ricambio sono integrati nel Suo motore.

Nonostante le immagini non siano illustrate con tutti i dettagli, si possono distinguere chiaramente le singole varianti, così da poter trovare con facilità il pezzo di ricambio adatto al Suo motore. In ogni caso sarà possibile identificare il pezzo di ricambio giusto tramite numero di posizione, di gruppo di assemblaggio e di motore.

Per l'ordinazione di pezzi di ricambio voglia osservare le nostre indicazioni al fine di permetterci di fornirle in modo celere e sicuro i pezzi di ricambio necessari nella relativa versione, conforme all'ultima modifica.

Siamo a Vs. completa disposizione per eventuali chiarimenti.

Sua

DEUTZ AG

Dati di ordinazione

Per l'ordinazione di pezzi di ricambio originali DEUTZ, indicare sempre i seguenti dati:

- N. del motore
- Codice d'identificazione
- Quantità pezzi

Struttura della documentazione

Le tavole di questa lista dei pezzi di ricambio sono suddivise secondo i gruppi costruttivi dei motori in base alle unità dei motori

Il codice d'identificazione 06/59 è costituito dall'unità costruttivo (per es. 06) e dalla posizione (per es. 59)

Legenda

- 06-** Numero dell'unità dell'elemento costruttivo (ad esempio 06)
- 000** Numero variabile (ad esempio 000)
- A** Simbolo di collegamento
compare sempre almeno a coppie
(ad esempio A-A, B-B, C-C, ecc.)

Servizi

In caso di avarie o richieste di ricambi, rivolgersi immediatamente ai nostri Centri di Assistenza autorizzati. Il nostro personale appositamente addestrato è a disposizione in caso di guasto per un intervento rapido, garantendo l'uso di ricambi originali DEUTZ.

Una panoramica dei partner DEUTZ di zona, delle relative competenze e dei servizi di assistenza offerti è illustrata alla pagina Internet.

<http://www.deutz.com>

L'azienda si riserva il diritto di apportare le modifiche necessarie alle illustrazioni e alle indicazioni di questa lista dei pezzi di ricambio con lo scopo di migliorare i propri motori. Per la ristampa e la riproduzione di qualsiasi tipo è necessaria la nostra autorizzazione scritta.

Geachte klant

De motoren van het merk DEUTZ werden ontwikkeld voor een breed toepassings-spectrum. Door middel van een uitgebreid aanbod van varianten wordt er steeds weer voor gezorgd dat er aan de betreffende specifieke eisen wordt voldaan.

Uw motor werd uitgerust in overeenstemming met de specifieke inbouwsituatie. Dat wil zeggen dat uw motor niet al de onderdelen bevat die in deze lijst werden opgenomen.

Hoewel de tekeningen in de meeste gevallen niet alle details bevatten, kunnen de verschillende uitvoeringen duidelijk onderscheiden worden, zodat u het voor uw motor relevante onderdeel gemakkelijk kunt vinden. Met behulp van het positie-, het module- en het motornummer kunt u het juiste onderdeel in ieder geval bepalen.

Houdt u bij het bestellen van onderdelen a.u.b. rekening met onze bestelaanwijzingen (zie onderstaande voorbeeldtekeningen), zodat wij u de benodigde onderdelen snel en in hun juiste uitvoering kunnen leveren.

Voor nadere inlichtingen staan wij geheel tot uw beschikking.

DEUTZ AG

Bestelgegevens

Bij bestelling van originele DEUTZ-onderdelen dienen de volgende gegevens verstrekt te worden:


- Motornummer
- Identificatienummer
- Aantal

Gebruiksaanwijzing voor documentatie


De afbeeldingen in deze onderdelenlijst werden gesorteerd naar motormodule.

Het identificatienummer (bijv. 06/59) bestaat uit het modulenummer (bijv. 06), gevolgd door het positienummer (bijv. 59).

Verklaring van de symbolen

 Nummer van de module (b.v. 06)

 Modificatie cijfer (b.v. 000)

 Het aansluitsymbool verschijnt altijd minstens paarsgewijs (bijv. A-A, B-B, C-C, enz.)

Service

In geval van storingen en met vragen omtrent reserveonderdelen kunt u terecht bij een van onze service-vertegenwoordigers. Ons geschoolde vakpersoneel zorgt in geval van schade of storingen voor een snelle en vakkundige reparatie met originele DEUTZ-onderdelen.

Een overzicht van de DEUTZ-dealers in uw omgeving, van hun productverantwoordelijkheid en hun onderhoudsdiensten vindt u op de internetsite van DEUTZ

<http://www.deutz.com>

Technische wijzigingen ten opzichte van de tekeningen en gegevens in deze onderdelenlijst, die noodzakelijk zijn ter verbetering van de motoren, blijven voorbehouden. Het nadrukken of kopiëren van deze gebruiksaanwijzing of gedeelten ervan, in welke vorm dan ook, is niet toegestaan zonder onze voorafgaande schriftelijke toestemming.

Bäste kund

Deutz motorer har utvecklats för att täcka ett brett användningsområde. Tack vare ett omfattande utbud av varianter säkerställs att alla speciella krav uppfylls.

Din motor är alltid rätt utrustad inför monteringen, vilket innebär att inte alla delar och komponenter som finns i den här reservdelslistan behöver finnas på din motor.

Trots att inte alla detaljer visas på ritningarna, är det enkelt att skilja på de olika varianterna. Därmed är det lätt att hitta den reservdel som passar till just din motor. Den korrekta reservdelen fastställs via positionsnummer, modulnummer och motornummer.

Beakta våra beställningsanvisningar vid beställning av reservdelar (se nedanstående exempel), så att vi snabbt och tillförlitligt kan leverera de nödvändiga reservdelarna i det utförande som motsvarar den senaste ändringsstatusen.

Vi hjälper gärna till om du har några frågor.

Ditt

DEUTZ AG

Beställningsuppgifter

För beställning av DEUTZ original reservdelar krävs följande uppgifter:

- Motornr.
- ID-nr.
- Antal

Dokumentationens uppbyggnad

Illustrationerna i denna reservdelslista är sorterade enligt motorns moduler.

ID-numret 06/59 består av modul (t.ex. 06) och position (t.ex.59).

Symbolförklaring

-06- Modulnummer (t.ex. 06)

000 Förändringsnummer (t.ex. 000)

A Anslutningssymbol
visas alltid minst parvis
(t.ex. A-A, B-B, C-C, osv)

Service

Vänd dig till någon av våra servicerepresentanter vid driftstörningar och frågor som rör reservdelar. Våra utbildade fackmän reparerar motorn snabbt och korrekt med hjälp av DEUTZ originaldelar.

Här får du en överblick över DEUTZ partner i din närhet och om deras produktansvar och service. Även om det inte finns något direkt produktansvar, så hjälper DEUTZ partner ändå till med kompetent rådgivning.

<http://www.deutz.com>

Vi förbehåller oss att göra tekniska ändringar, nödvändiga för att förbättra motorerna ytterligare, gentemot de bilder och uppgifter som finns i den här reservdelslistan. Varje typ av kopiering och mångfaldigande, även delar av den, kräver vårt skriftliga tillstånd.

Kære kunde

De væskekølede motorer fra firmaet DEUTZ er udviklet til et bredt anvendelsesspektrum. Derved sikres det på grund af det omfattende udbud af varianter, at de individuelle specielle krav kan opfyldes.

Deres motor er udstyret, så den svarer til brugstilfældet; det vil sige, at ikke alle i denne reservedelsliste viste dele og komponenter er monteret på motoren.

Selv om de grafiske afbildninger ikke kan vises med alle detaljer, kan man tydeligt se forskel på de enkelte varianter, så De let kan finde de reservedele, som er relevante til Deres motor. Ved hjælp af positions-, type- og motor-nummeret kan man altid finde frem til den rigtige reservedel.

Første gang De bestiller reservedele, bedes De bemærke vore bestillingshenvisninger, så vi hurtigt og korrekt kan finde frem til de nødvendige reservedele i den udførelse, som svarer til den nyeste ændringstilstand.

Vi står gerne til rådighed, hvis De har spørgsmål.

Deres

DEUTZ AG

Bestillingsangivelser

Ved bestillingen af originale DEUTZ-dele er det nødvendigt med følgende angivelser:

- Motor-nr.

- Ident.-nr.

- Antal

Dokumentationens opbygning


Billederne i denne reservedelsliste er sorteret efter motorkomponenter.

Ident-nr. 06/59 er opbygget af komponent (f.eks. 06) og position (f.eks. 59).

Symbolforklaring

 Delmontagenummer (f.eks. 06)

 Ændringsciffer (f.eks. 000)

 Tilslutningssymbol
optræder altid mindst parvis
(f.eks. A-A, B-B, C-C osv.)

Service

I tilfælde af driftsforstyrrelser og ved reservedelsspørgsmål kan De henvende Dem til en af vores ansvarlige servicerepræsentanter.

Vores skolede fag-personale sørger i tilfælde af skader for en hurtig og faglig korrekt istandsættelse under anvendelse af originale dele.

De kan få et overblik over de DEUTZ-partnere, der er beliggende i nærheden af Dem, over deres produktkompetencer og serviceydelser på DEUTZ's internetside.

<http://www.deutz.com>

Ret til tekniske ændringer, som bliver nødvendige til forbedring af motorene, forbeholdes. Eftertryk og mangfoldiggørelse af enhver art, også i uddrag, kun tilladt med vores skriftlige samtykke.

Hyvä asiakas

DEUTZ-moottorit on kehitetty laajaa käyttäjäkuntaa silmälläpitäen. Niinpä tarjolla on laaja valikoima moottorivaihtoehtoja, jotka täyttävät asiakkaiden vaihtelevat moottoritarpeet.

Moottorinne on toimitettu tietyin varustein, eivätkä kaikki tässä varaosaluettelossa esiintyvät osat välttämättä kuulu moottorinne varusteisiin.

Vaikka kaaviokuvat eivät sisällä kaikkia yksityiskohtia, eri vaihtoehtot on kuitenkin helppo erottaa toisistaan moottorillenne tärkeiden varaosien tunnistamiseksi. Position, rakenneryhmä ja moottorinumeron avulla pystytään joka tapauksessa toimittamaan oikea varaosa.

Varaosa tilatessa on noudatettava annettuja tilausohjeita, jotta pystymme nopeasti ja varmasti toimittamaan tarvittavat, kyseisen mallin viimeisintä teknistä kehitystä vastaavat varaosat. Annamme mielellään lisätietoa ja vastaamme kysymyksiinne.

DEUTZ AG

Tilaustiedot

Alkuperäisten DEUTZ-varaosien tilauksen yhteydessä on ilmoitettava seuraavat tiedot:

- Moottori numero
- Tunnusnumero
- Kappalemäärä

Dokumentaation rakenne

Tämän varaosaluettelon kuvat on ryhmitelty moottorin rakenneryhmien mukaan.

Tunnusnumero 06/59 koostuu rakenneryhmästä (esim. 06) ja osanumerosta (esim. 59).

Symbolien selitykset

-06- Rakenneryhmänumero (esim. 06)

000 Muutosnumero (esim. 000)

A Liitäntäsymboli
Ilmenee aina vähintään parittain (esim. A-A, B-B, C-C, jne.)

SERVICE

Käyntihäiriöissä ja varaosakysymyksissä voit kääntyä DEUTZ-edustajanne puoleen. Vauriotapauksessa koulutettu henkilökunta huolehtii nopeasta ja asianmukaisesta korjauksesta käyttämällä alkuperäisiä DEUTZ-osia.

DEUTZin internetsivuilta löydät yleiskatsauksen kaikista lähelläsi olevista DEUTZ-edustajista ja heidän tuotteistaan ja palveluistaan (ks. alla). Ja vaikka yksilöllistä tuoteedustusta ei olisikaan mainittu, DEUTZ-edustaja auttaa sinua eteenpäin asiantuntevalla neuvonnalla.

<http://www.deutz.com>

Tämän varaosaluettelon kuvauksien ja tietojen suhteen pidämme oikeuden muutoksiin, jotka ovat tarpeellisia moottorin teknisen kehityksen kannalta. Kaikenlaisen jälkipainosten ja kopioiden tekoon, myös osittaiseen, tarvitaan kirjallinen lupamme.

Kjære kunde

Væskekjølte motorer av merket DEUTZ er utviklet med tanke på mange forskjellige bruksområder. Et bredt spekter av varianter sikrer at mange forskjellige spesielle krav kan oppfylles.

Din motor er utstyrt for det aktuelle bruksområdet. Derfor vil ikke alle deler og komponenter som er oppført på denne reservedelslisten, være montert på din motor.

Selv om bildene ikke alltid viser alle detaljer, kan de enkelte variantene tydelig skilles fra hverandre slik at det er lett å finne frem til de relevante reservedelene til din motor. Ved hjelp av posisjonsnummer, komponentgruppenummer og motornummer kan du i hvert enkelt tilfelle finne frem til riktig reservedel.

Vi ber deg vennligst følge våre anvisninger ved bestilling av reservedeler (se bildeeksempel nedenfor) slik at vi kan levere de reservedelene du har bruk for, raskt og sikkert og ifølge de seneste endringer.

Vi står gjerne til din disposisjon hvis du har ytterligere spørsmål.

Vennlig hilsen

DEUTZ AG

Bestillingsangivelser

Ved bestilling av originale DEUTZ deler er følgende opplysninger nødvendige:




- Motor-nr.
- Ident-nr.
- Antall

Dokumentasjonsoversikt

Illustrasjonene i denne reservedelslisten er sortert etter komponentgruppe.

Ident-nr. 06/59 består av konstruksjonsgruppe (f.eks 06) og posisjon (f.eks 59).

Symbolforklaring

-  Delenummer (f.eks. 06)
-  Endringsnummer (f.eks. 000)
-  Koblingssymbol
Føres alltid opp parvis
(f.eks. A-A, B-B, C-C osv.)

Service

Ta kontakt med en av våre ansvarlige service-representanter ved driftsforstyrrelser og spørsmål angående reservedeler. Vårt utdannede fagpersonale sørger for rask og fagmessig reparasjon med DEUTZ originaldeler.

En liste over DEUTZ-partnerne i nærheten av deg, samt hvilken produktkompetanse og hvilke serviceytelser de tilbyr, finner du på DEUTZ' nettsider.

<http://www.deutz.com>

Vi forbeholder oss tekniske forandringer i våre beskrivelser og opplysninger i denne instruksjonsboken som er nødvendig for forbedring.

Αξιότιμε πελάτη

Οι κινητήρες DEUTZ έχουν σχεδιαστεί για ένα ευρύ φάσμα εφαρμογών. Κατά την προσπάθειά μας αυτή εξασφαλίστηκε μέσω μιας πολυπληθούς προσφοράς κατασκευαστικών παραλλαγών, ώστε να εκπληρώνονται όλες οι ειδικές απαιτήσεις των πελατών μας.

Ο κινητήρας σας εξοπλίζεται ανάλογα με την κάθε περίπτωση τοποθέτησης, και αυτό σημαίνει ότι τα κατασκευαστικά εξαρτήματα και στοιχεία, τα οποία περιλαμβάνονται σε αυτό τον κατάλογο ανταλλακτικών, δεν είναι εξ ολοκλήρου εφαρμοσμένα στον κινητήρα σας.

Αν και οι γραφικές παραστάσεις δεν είναι διαμορφωμένες με όλες τις λεπτομέρειες, μπορεί εντούτοις να προκύψει διαχωρισμός μεταξύ των μεμονωμένων κατασκευαστικών παραλλαγών κατά σαφή τρόπο, ούτως ώστε να μπορείτε να βρείτε με ευκολία τα ανταλλακτικά εκείνα, τα οποία αφορούν τον κινητήρα σας. Μέσω του αριθμού θέσης, ομάδας εξαρτημάτων και κινητήρα μπορεί να διαπιστωθεί σε κάθε ξεχωριστή περίπτωση το σωστό ανταλλακτικό.

Παρακαλούμε προσέξτε για την παραγγελία ανταλλακτικών τις οδηγίες μας, που έχουν σχέση με τις παραγγελίες αυτές, (βλέπε τα ακόλουθα υποδείγματα), με σκοπό να σας προσφέρουμε μία σύντομη και εμπιστευτική παράδοση των ανταλλακτικών που

χρειάζεστε, στον κατασκευαστικό τύπο, ο οποίος ανταποκρίνεται στην εκάστοτε έκδοση αναθεώρησης.

Βρισκόμαστε πάντοτε στη διάθεση σας, αν έχετε ερωτήματα, προσφέροντάς σας και τις αναγκαίες συμβουλευτικές υπηρεσίες.

Η εταιρεία σας

DEUTZ AG

Στοιχεία παραγγελίας

Κατά την παραγγελία των γνήσιων ανταλλακτικών DEUTZ χρειάζονται τα ακόλουθα στοιχεία:

- Αρ. κινητήρα
- Αρ. αναγνώρισης
- Αρ. τεμαχίων

Διάρθρωση περιγραφής

Οι πίνακες με εικόνες αυτού του καταλόγου ανταλλακτικών είναι ταξινομημένοι σύμφωνα με τα συγκροτήματα κινητήρων.

Ο αρ. αναγνώρισης 06/59 αποτελείται από συγκρότημα (π.χ 06) και θέση (π.χ 59).

Επεξηγήσεις συμβόλων

(06-) Αριθμός κατασκευαστικής ομάδας (π.χ 06)

000 Ψηφίο μετατροπής (π.χ 000)

A Σύμβολο συνδέσεων – εμφανίζεται πάντοτε τουλάχιστο σε ζεύγη (π.χ A-A, B-B, C-C κ.λ.π)

ΣΕΡΒΙΣ

Για βλάβες λειτουργίας και ερωτήσεις σχετικά με ανταλλακτικά μέρη απευθυνθείτε σε έναν αρμόδιο αντιπρόσωπό μας για το σέρβις. Το εκπαιδευμένο μας τεχνικό προσωπικό θα μεριμνήσει σε περίπτωση βλάβης για τη γρήγορη και σωστή επιδιόρθωση, χρησιμοποιώντας γνήσια ανταλλακτικά μέρη. Μία συνοπτική αναφορά για τους συνεργάτες της DEUTZ στην περιοχή σας, για τα προϊόντα που είναι αρμόδιοι και τις υπηρεσίες σέρβις αναφέρεται στην ιστοσελίδα της DEUTZ <http://www.deutz.com>

Διατηρούμε το δικαίωμα, να προβαίνουμε σε τεχνικές αλλαγές επί των απεικονίσεων, και ενδείξεων αυτού του καταλόγου ανταλλακτικών, εφόσον οι αλλαγές αυτές αποβλέπουν σε βελτίωση των κινητήρων. Η ανατύπωση και η αντιγραφή κάθε είδους, έστω και κατά μέρος, του καταλόγου ανταλλακτικών επιτρέπονται μόνο μετά από έγγραφη έγκρισή μας.

Sayın müşterimiz

DEUTZ motorları, geniş bir kullanım alanı için geliştirilmiştir. Bunun yanın sıra geniş varyasyon teklifleri ile çeşitli özel gereksinimlerin yerine getirilmesi sağlanmaktadır.

Sahip olduğunuz motor, bağlı olduğu kullanım amacı ile donatılmış olup, yedek parça listesinde gösterilmiş olan tüm eleman ve parçalar motorunuzda mevcut değildir.

Gösterilmiş olan grafikler tüm ayrıntıları içermemesine rağmen, motorunuz için önemli olan yedek parça kolayca tespit edilebilir. Pozisyon, yapı grubu ve motor numarası üzerinden her halukârda, motorunuz ile ilgili doğru yedek parça tespit edilebilir.

Bu yedek parça siparişinde, ihtiyacınız olan yedek parçayı en kısa zamanda, güvenilir ve son değişiklik tipinde teslim edebilmemiz için sipariş bilgilerini (bakınız sonraki örnek grafiklere) dikkate alınız.

Sormak istediğiniz sorular olduğunda bize her zaman başvurabilirsiniz.

DEUTZ AG

Sipariş bilgileri

Orijinal DEUTZ yedek parça siparişlerinde aşağıdaki bilgilerin belirtilmesi gereklidir:

- Motor-No.

- Kod No.

- Adet

Dokümantasyon yapısı

Yedek parça listesindeki şekiller ve çizimler motor gruplarına göre ayrılmıştır.

Kod No. 06/59, yapı grubundan (örn. 06) ve pozisyonundan (örn. 59) oluşmaktadır.

Sembol açıklamaları

-06- Yapı grubu numarası (örneğin 06)

000 Değişim rakamı (örneğin 000)

A Bağlantı sembolü
Daima en az çiftli olarak yer alır
(Örneğin A-A, B-B, C-C, vs.)

SERVİS

Arıza durumlarında ve yedek parça konularında bilgi edinmek için yetkili servislerimize başvurunuz. Eğitimli kalifiye personelimiz, orijinal DEUTZ parçaları kullanarak tamir çalışmalarını yerine getireceklerdir.

DEUTZ'un en yakınınızdaki temsilcileri, onların ürün yetkileri ve servis hizmetleri hakkında genel bilgileri DEUTZ'un Internet sayfasından öğrenebilirsiniz

<http://www.deutz.com>

Yedek parça listesinde gösterilen şekillerde ve teknik bilgilerinde, motorların geliştirilmesi için gerekli olan değişiklik yapma hakkı saklıdır. Firmamızın yazılı izni olmaksızın, kısmen de olsa her türlü çoğaltmakve kopyalamak yasaktır.

Уважаемый заказчик!

Двигатели марки DEUTZ предназначены для широкого круга применения. При этом богатый выбор предлагаемых вариантов обеспечивает выполнение самых разнообразных требований заказчика.

Ваш двигатель оборудован в соответствии с его конкретным назначением, поэтому на нем установлены не все узлы и детали, описанные в настоящем перечне запасных частей.

Несмотря на то, что на большинстве схем показаны не все подробности, на них четко указаны различия отдельных вариантов, чтобы можно было легко найти запасные части, необходимые для конкретного двигателя. Нужную деталь всегда можно определить по номеру позиции, узла и двигателя.

При заказе запасных частей соблюдайте наши указания (см. приведенные далее примеры заказов), чтобы мы могли быстро и надежно доставить вам необходимые детали выполненные с учетом всех внесенных в конструкцию изменений.

Мы всегда готовы ответить на все ваши вопросы.

С уважением, компания

DEUTZ AG

Данные для заказа

Для заказа фирменных запасных частей DEUTZ необходимы следующие данные:

- номер двигателя
- идентификационный номер
- количество

Структура документации

Таблицы со схемами в этом перечне запасных частей упорядочены по узлам двигателя.

Идентификационный номер 06/59 состоит из номера узла (например 06) и позиции (например 59).

Условные обозначения

- Номер узла (например 06)
- Код изменения (например 000)
- Обозначение соединения всегда используется как минимум парно (например, A-A, B-B, C-C и т. д.)

СЕРВИС

По вопросам устранения неисправностей и приобретения запасных частей обращайтесь в наши сервисные представительства. В случае выхода двигателя из строя наш обученный персонал позаботится о быстром и квалифицированном ремонте с использованием фирменных запасных частей DEUTZ.

Общие сведения о партнерах фирмы DEUTZ в вашем регионе, предлагаемых ими изделиях и сервисном обслуживании вы можете найти на веб-сайте фирмы DEUTZ.

<http://www.deutz.com>

Приведенные в этом перечне запасных частей иллюстрации и данные могут отличаться от реального оборудования из-за технических усовершенствований двигателей. Полная или частичная перепечатка и размножение в любой форме возможны только с письменного разрешения изготовителя.

الخدمة

في حالات الأعطال أو للاستفسار عن قطع الغيار الرجاء الاتصال بوكالتنا المسؤولين عن الخدمة. إن موظفينا المتخصصين والمدربين يؤمنون في حالات الأعطال حلولاً خبيرة وسريعة ويستعملون قطع دويتس الأصلية.

إذا أردتم معرفة عنوان وكيل دويتس القريب منكم وما هو مسؤول عنه من منتجات وما يمكنه تقديمه من خدمات، الرجاء مراجعة العنوان الإلكتروني التالي : <http://www.deutz.com>

التعليمات الخاصة بالطلبات

عند طلب قطع دويتس الأصلية يجب إعطاء المعلومات التالية

- رقم المحرك
- رقم القطعة
- عدد القطع

ترتيب الوثيقة

صور القطع في لائحة قطع الغيار هذه مرتبة حسب فئة المحرك.

يشير رقم القطعة 06/59 مثلاً إلى الفئة (06) وإلى الموضوع (59)

شرح الرموز

رقم مجموعة قطع الغيار (06 مثلاً)
رقم التغيير (000 مثلاً)

رمز التوصيل يكون دائماً مزدوجاً
(مثلاً أ - أ ، ب - ب ، ج - ج ، إلخ...)

أيها الزبون الكريم

جرى تطوير محركات دويتس لتلبي الحاجة في الكثير من وجهات الاستعمال. وروعي عن طريق تشكيلة متنوعة واسعة النطاق، ضمان تلبية المتطلبات الخاصة لكل قطاع.

محرك مجهز بشكل مناسب للتركيب، ولكن لا يعني ذلك أن القطع والمكونات المدرجة في لائحة قطع الغيار هذه مركبة كلها في المحرك.

وعلى الرغم من أن الرسوم البيانية لا تتطابق كلياً مع جميع التفاصيل، يسهل التفريق بين جميع فئات المحركات، بحيث يمكنك بلا صعوبة إيجاد القطعة اللازمة لمحركك. ويوجد في كل حالة تعليمات دقيقة عن كل قطعة غيار وأرقام موضعها والمجموعة التي تنتمي إليها والمحرك الخاص بها.

عند إعداد طلبية قطع الغيار، الرجاء التقيد بالتعليمات الخاصة بالطلبات (أنظر إلى المثال في البيان التالي) وذلك لتمكيننا من تسليم سريع وموثوق به للقطع المطلوبة والمنتجة بحسب أحدث المعايير التقنية.

نحن تحت تصرفك عن طيب خاطر إذا أردت أي استشارة أو استفسار.
مع تحيات
شركة دويتس ش. م.

تحتفظ شركة دويتس بحق اللجوء إلى تغييرات تقنية تختلف عما ورد في لائحة قطع الغيار هذه، ولكنها ضرورية لتحسين المحركات. يحظر، ولو لمقاطع، الطبع والتصوير والنسخ مهما كان نوعه بدون موافقة خطية مسبقة من الشركة.

Szanowny kliencie

Chłodzone cieczą silniki marki DEUTZ zostały opracowane dla szerokiego zakresu zastosowania. Bogata oferta różnych wariantów zapewnia możliwość spełnienia wymagań specjalnych w poszczególnych przypadkach.

Państwa silnik wyposażony jest odpowiednio do danego zastosowania, oznacza to, że nie wszystkie części i komponenty z niniejszej listy części zamiennych zostały zamontowane w Państwa silniku.

Mimo, że załączone rysunki nie zawierają wielu szczegółów, poszczególne warianty pozwalają się wyraźnie rozróżnić i znalezienie istotnych części zamiennych dla Państwa silnika nie sprawi trudności. Poszukiwana część zamienna może być w każdym przypadku bezbłędnie znaleziona na podstawie numeru pozycji, numeru podzespołu i numeru silnika.

Przy zamawianiu części zamiennych prosimy przestrzegać naszych wskazówek do zamówienia (patrz objaśnienia symboli). Zapewniamy nam to możliwość szybkiego i niezawodnego dostarczenia potrzebnych części zamiennych z każdorazowym uwzględnieniem ostatnio wprowadzonych zmian.

Na zapytania Państwa zawsze z przyjemnością udzielimy odpowiedzi.

Z poważaniem

DEUTZ AG

Dane zamówieniowe

Przy zamawianiu oryginalnych części zamiennych marki DEUTZ należy podać następujące dane:

- Numer silnika
- Numer identyfikacyjny
- Ilość

Układ dokumentacji

Tabele zawierające rysunki części zamiennych są uszeregowane według podzespołów silnika.

Numer identyfikacyjny 06/59 składa się z podzespołu (np. 06) i z pozycji (np. 59).

Objaśnienia symboli

-06- Numer podzespołu (np. 06)

000 Cyfra zmiany (np. 000)

A Symbol połączenia
Występuje zwykle co najmniej parami (np. A-A, B-B, C-C itd.)

Serwis

W przypadkach zakłóceń eksploatacyjnych oraz w sprawach części zamiennych prosimy zwrócić się do jednego z naszych przedstawicielstw serwisowych. W przypadku usterek nasi przeszkoleni specjaliści zapewnią Państwu szybką i fachową naprawę z użyciem oryginalnych części zamiennych marki DEUTZ.

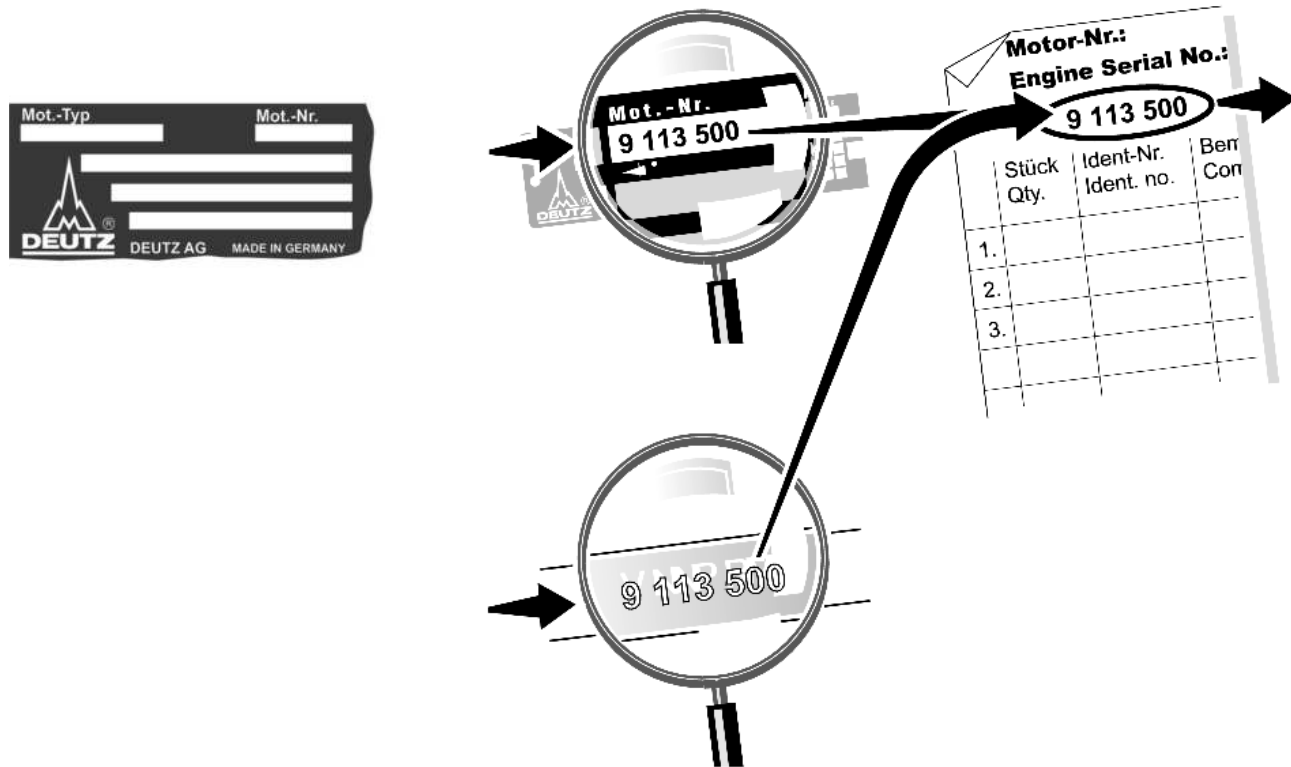
Zestawienie obejmujące partnerów handlowych Deutz w Państwa pobliżu, ich zakres odpowiedzialności za produkt i wykonywane czynności serwisowe znajdują się na stronie internetowej DEUTZ.

<http://www.deutz.com>

Zastrzega się prawo do modyfikacji technicznej rysunków i danych zawartych w liście części zamiennych, mających na celu usprawnienie silników. Przedruk i powielanie dokumentacji w jakikolwiek sposób, także w postaci wyciągów, wymaga naszej pisemnej zgody.

Service

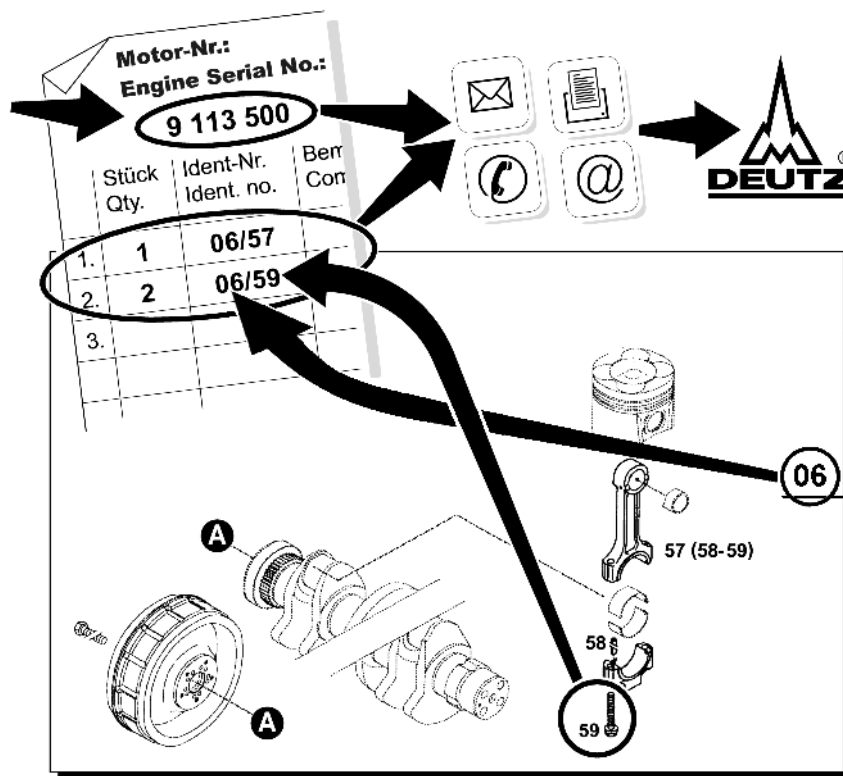
Beispiel/Example



Beispiel/Example

--	--	--	--	--	--	--	--

Motor-Nr.:	de
Engine Serial No.:	en
Numéro du moteur:	fr
N.º de motor:	es
Número do motor:	pt
Numero del motore:	it
Motornummer:	nl
Motornummer:	sv
Motornummer:	da
Moottorinnumero:	fi
Motornummer:	no
Αριθμός κινητήρα:	el
Motor numarası:	tr
Номер двигателя:	ru
رقم المحرك	ar
Numer silnika:	pl



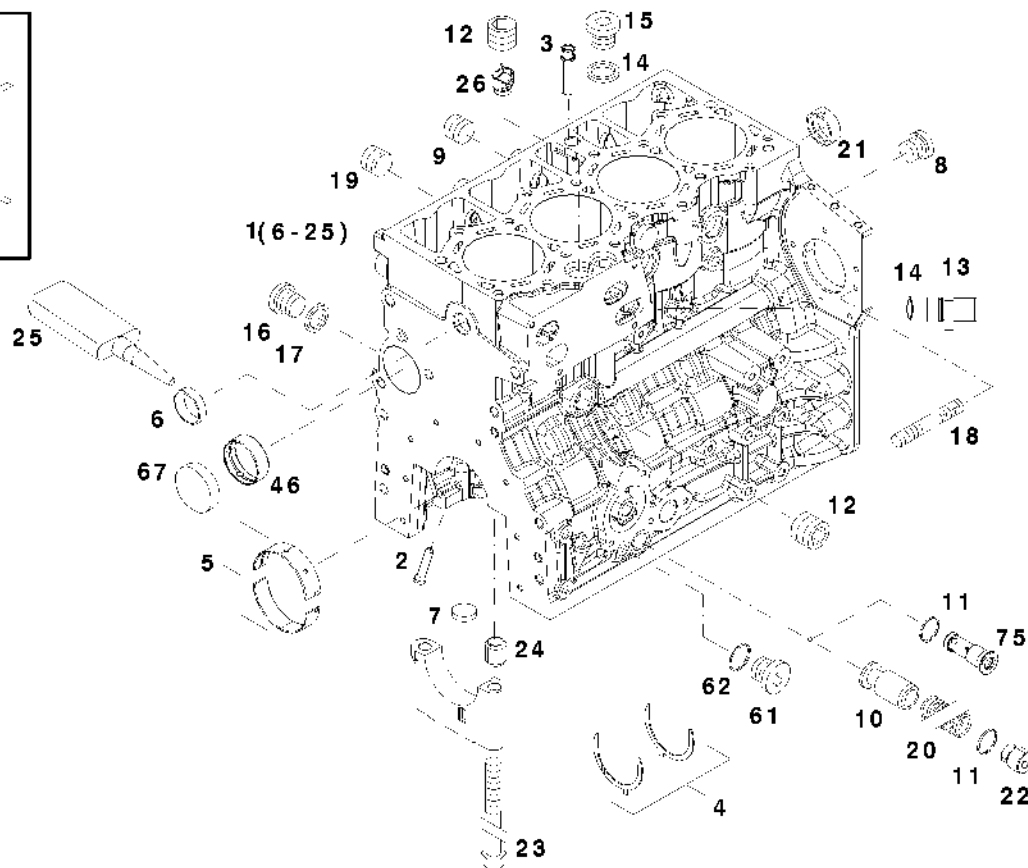
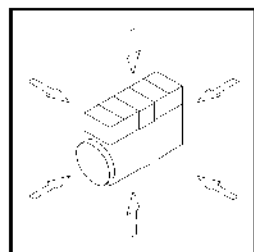


Zylinderkurbelgehäuse
Engine block
Bloc-moteur
Bloque de cilindros

Referenznr.:

0169-01-0510 3300

002

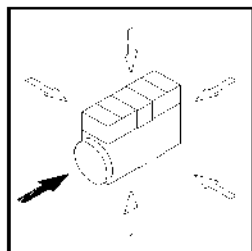




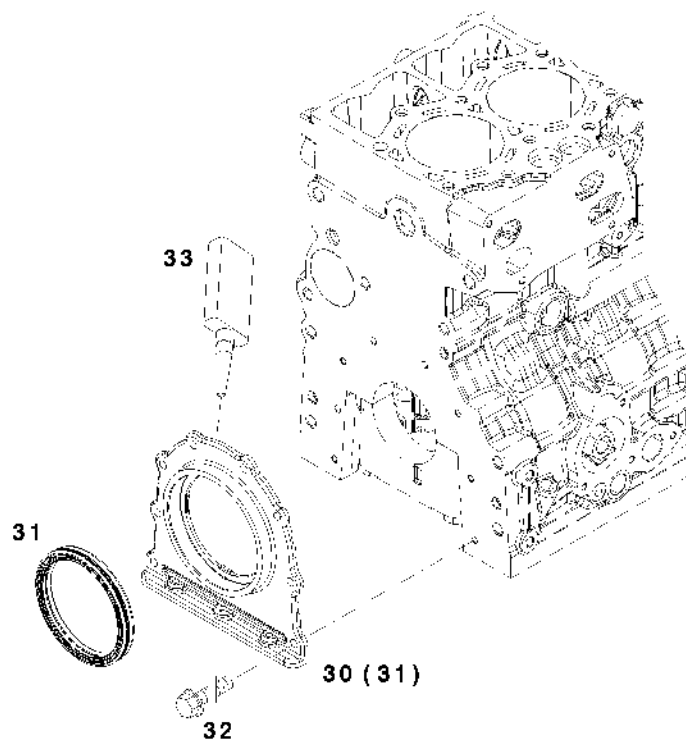
Hinterer Deckel
Rear end cover
Couvercle arriere
Tapa trasera

Referenznr. :

0169-01- 0510 3301



001

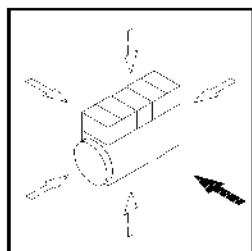




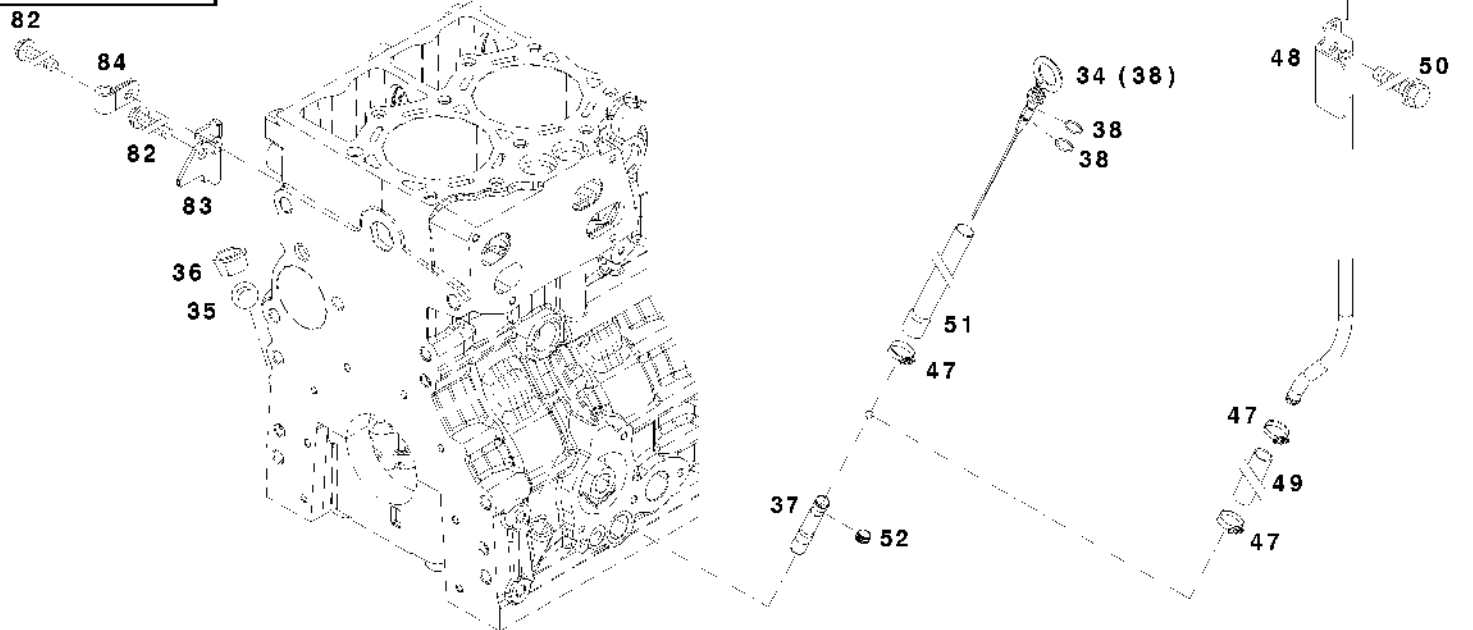
Ölmesstab
Dipstick
Jauge de profondeur
Sonda de aceite

Referenznr. :

0169-01- 0510 3302



002

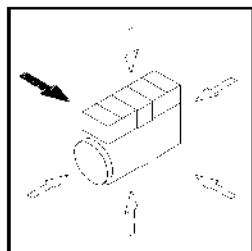




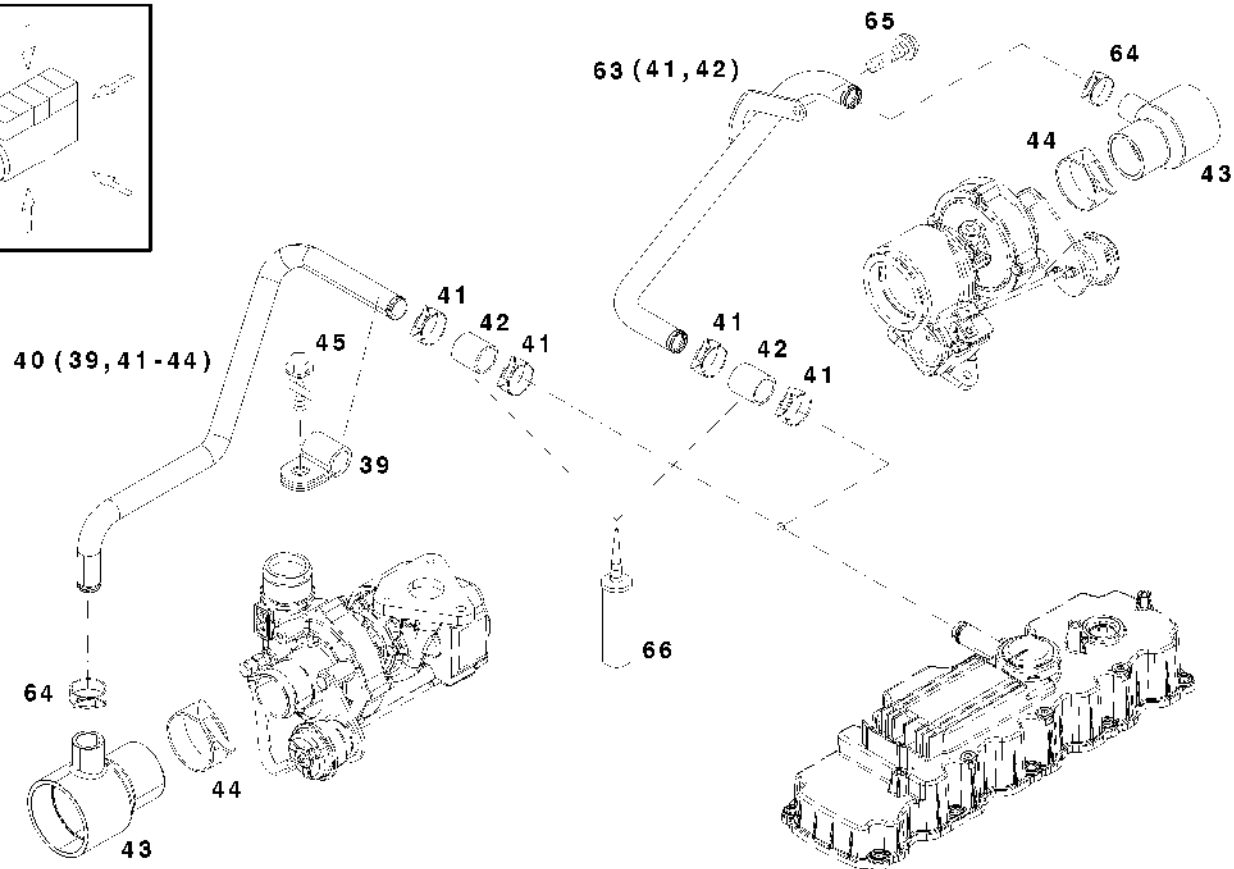
Entlüftungsleitung
Breather line
Conduite de la desaeration
Tuberia desaireacion

Referenznr.:

0169-01- 0510 3326



001

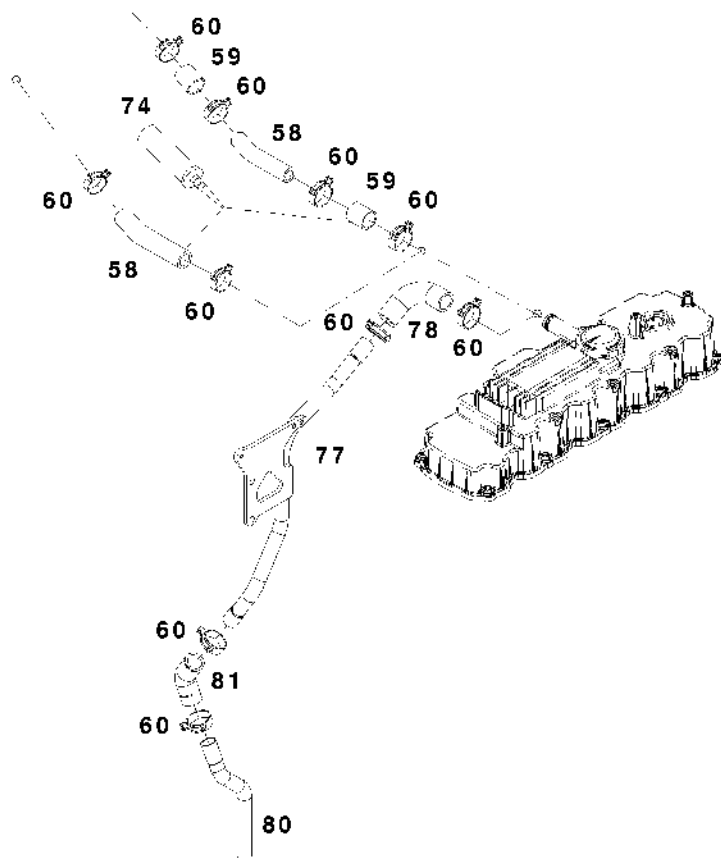
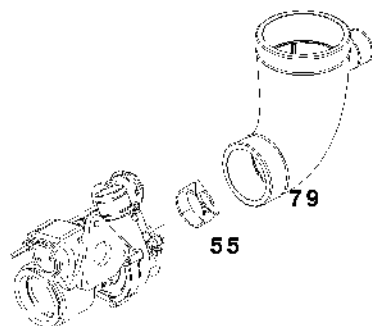
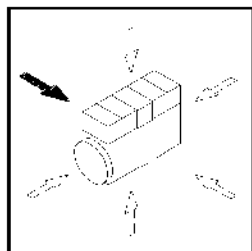




Entlüftungsleitung
Breather line
Conduite de la desaeration
Tuberia desaireacion

Referenznr.:

0169-01- 0510 3356



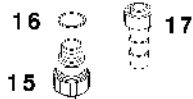
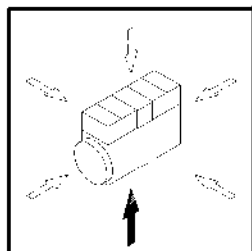
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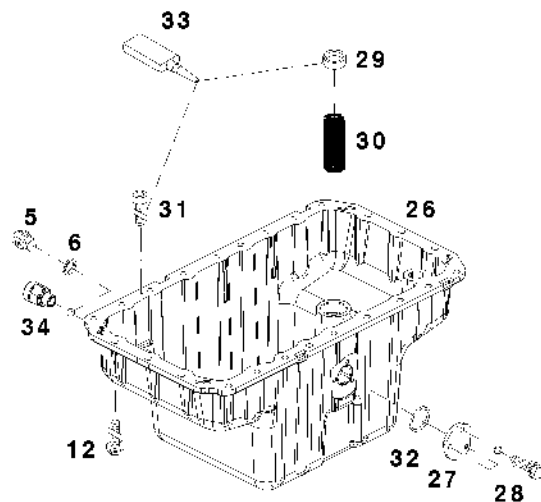
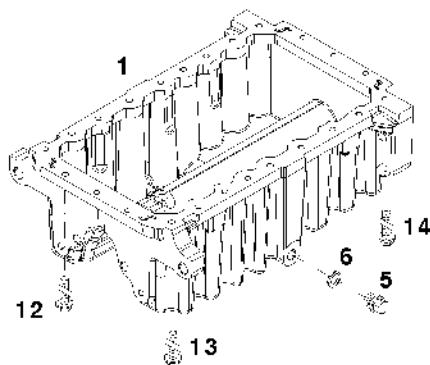
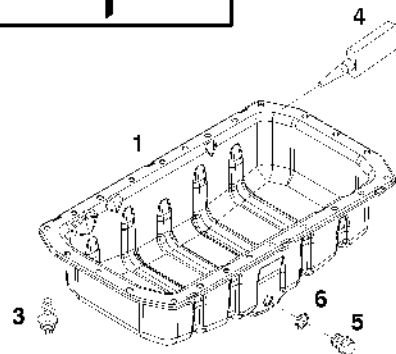
Ölwanne
Oil pan
Carter a huile
Carter de aceite

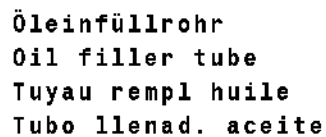
Referenznr.:

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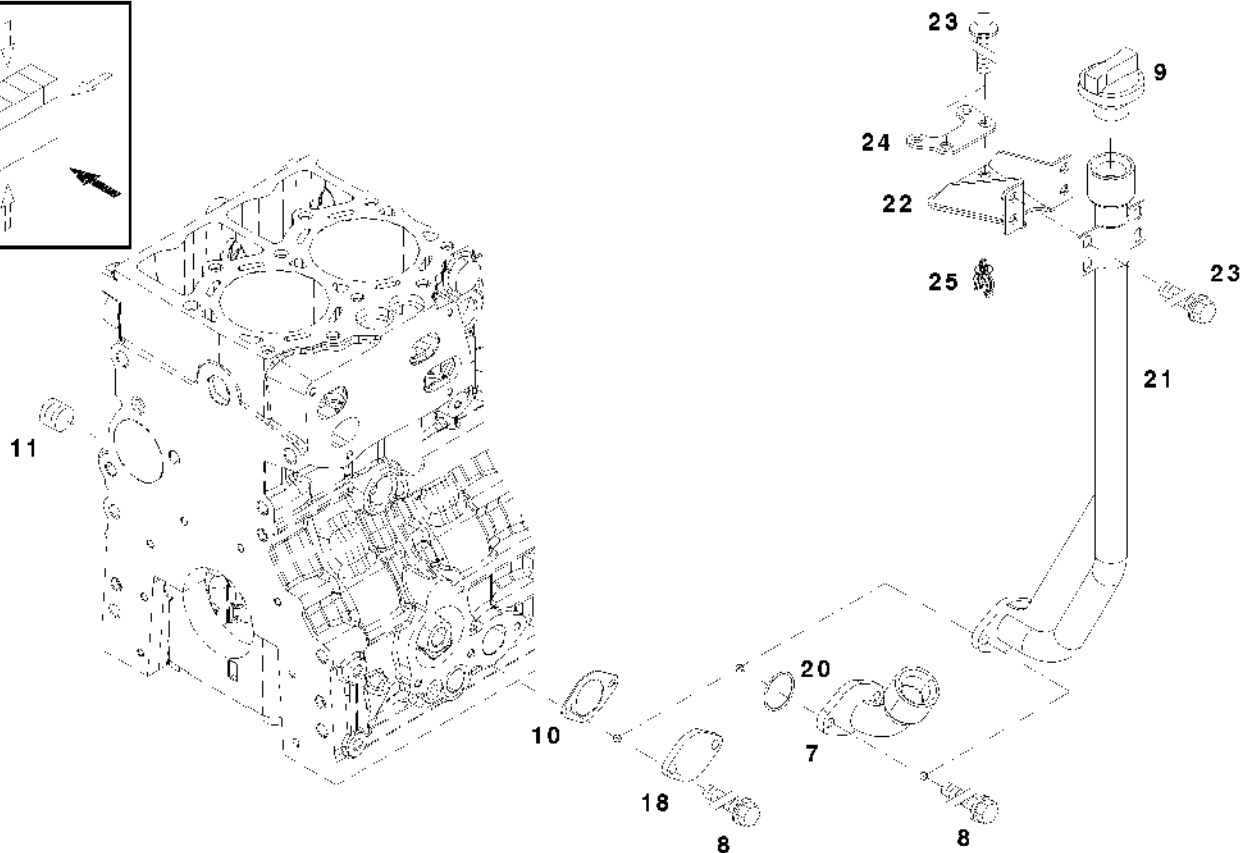
002

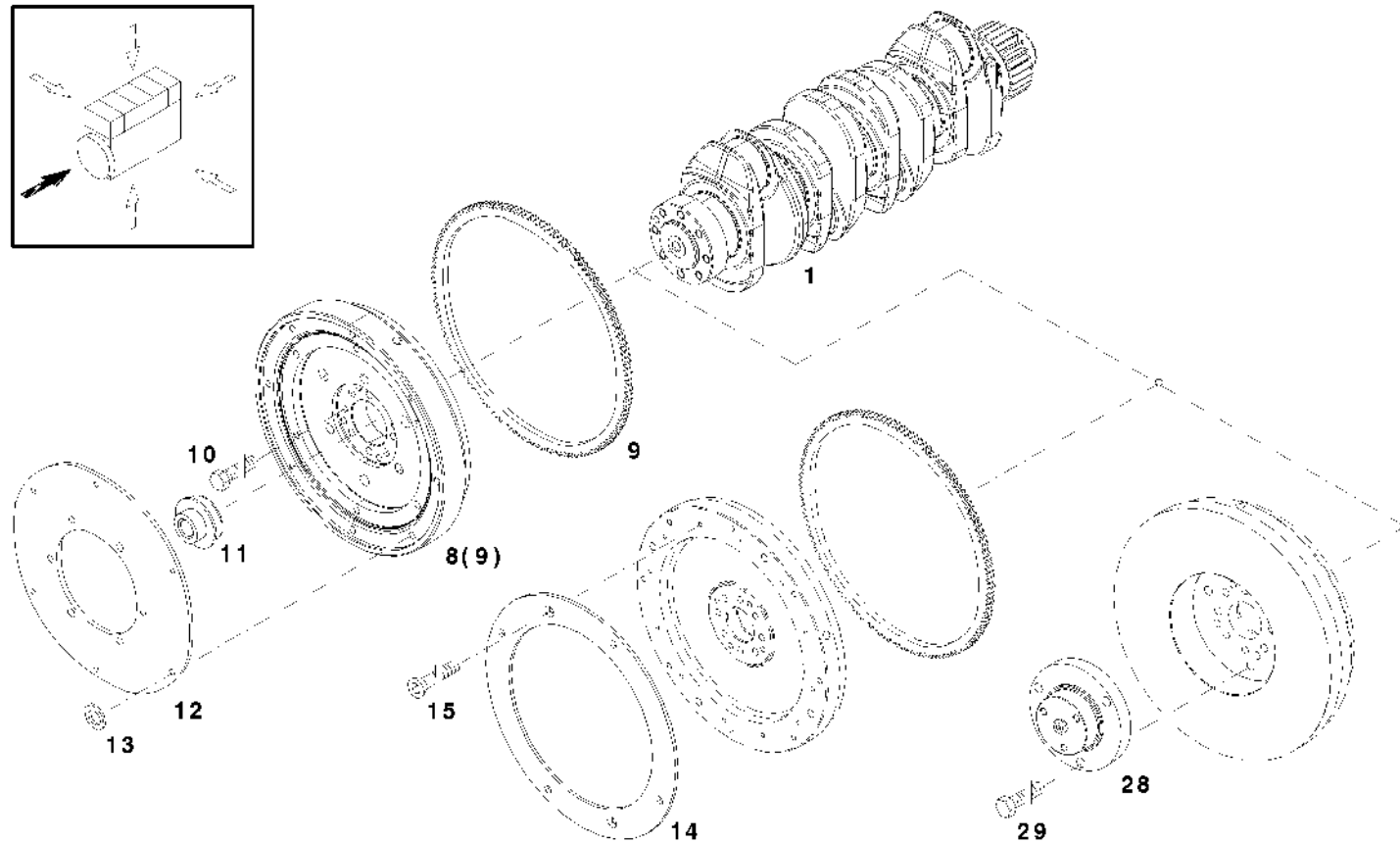
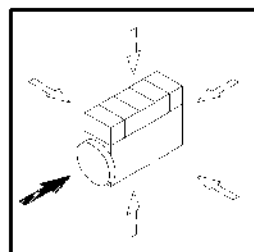




Referenznr.:

0169-02- 0510 3304

001 

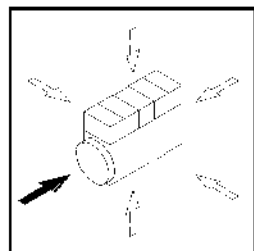




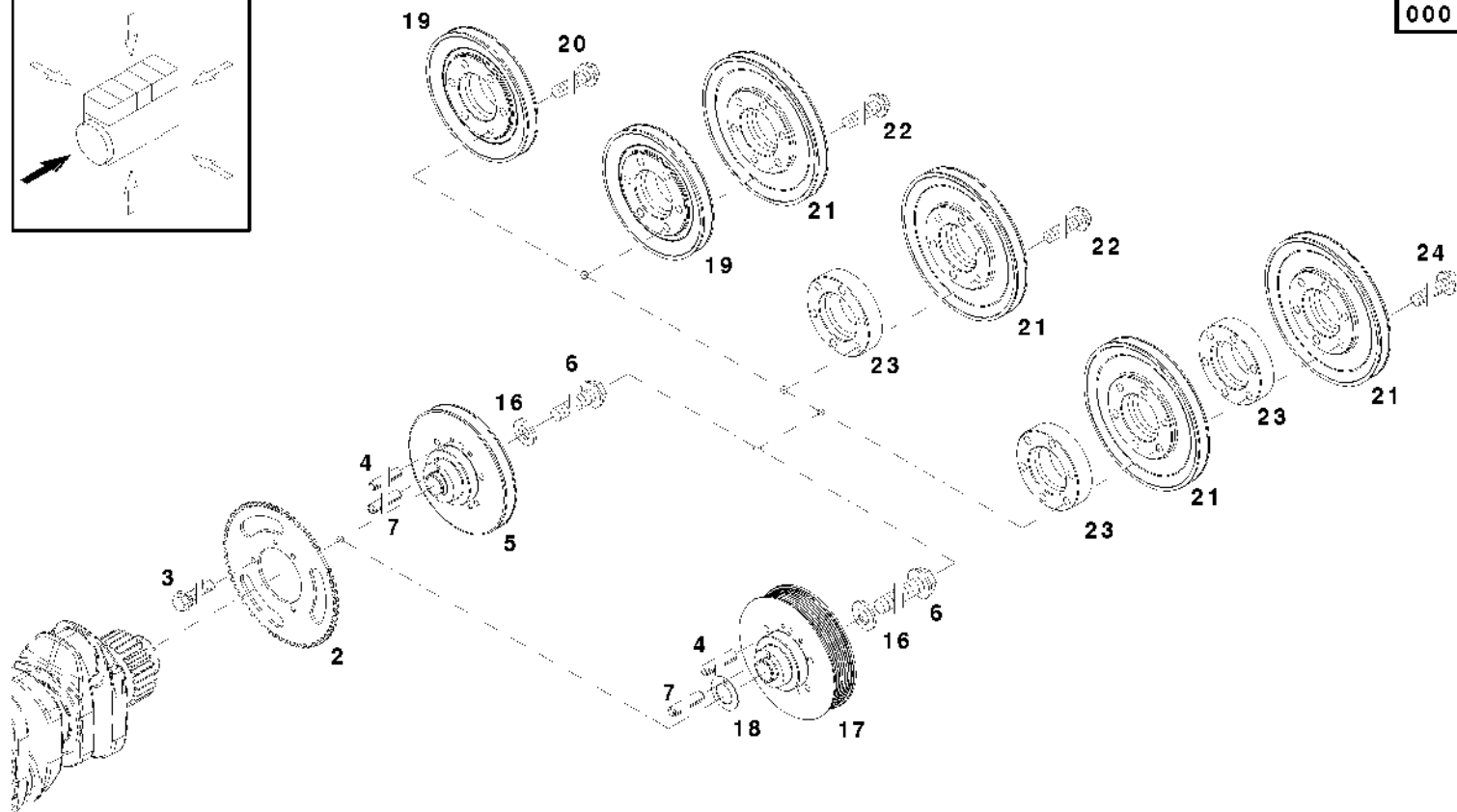
Triebwerksteile
Components of the main running gear
Equipage mobile
Piezas tren alternat

Referenznr.:

0169-05- 0510 3357



000

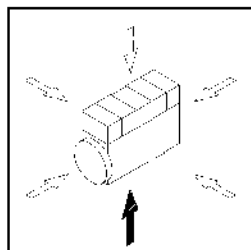




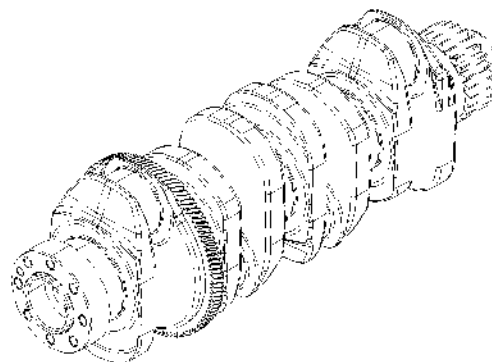
Massenausgleichsgetriebe
Dynamic balancer
Equilibreur dynamique
Equilibrador masa

Referenznr. :

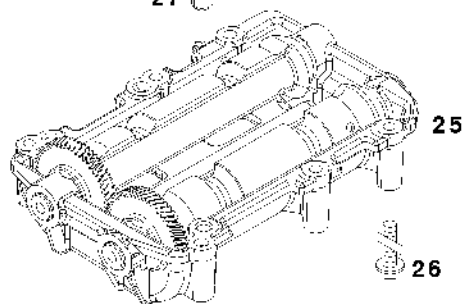
0169-05- 0510 3358



000



27



25

26

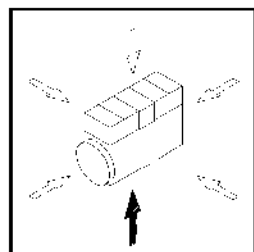
26



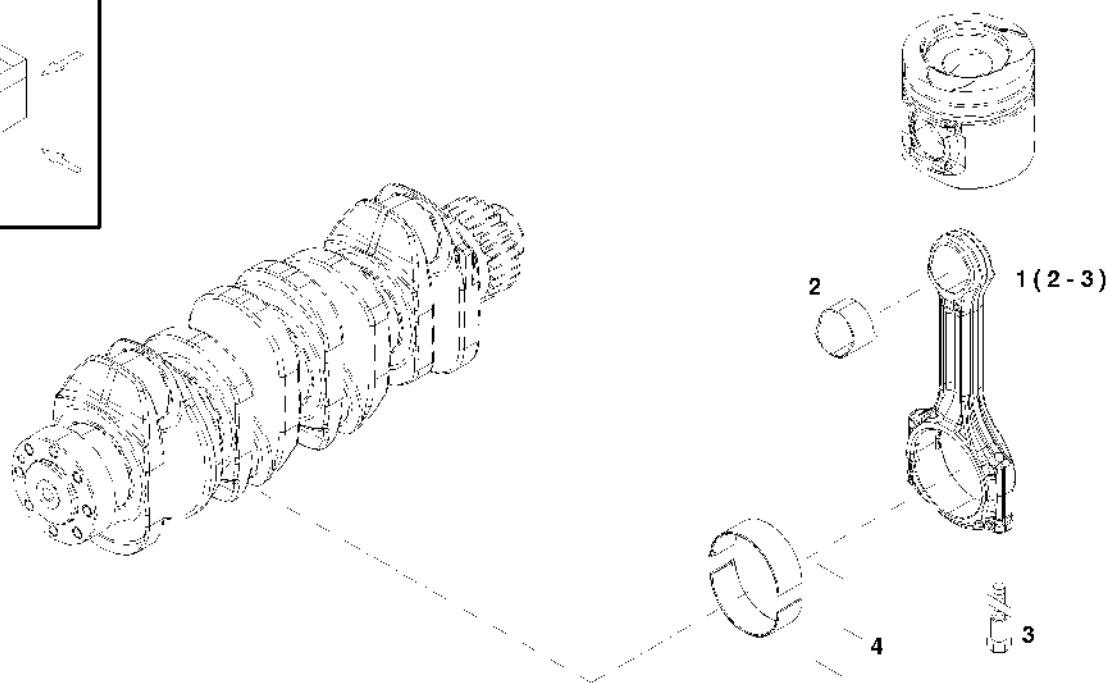
Pleuelstange
Connecting rod
Bielle
Biela

Referenznr.:

0169-06- 0510 3306



001

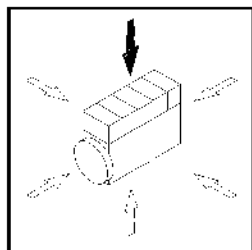




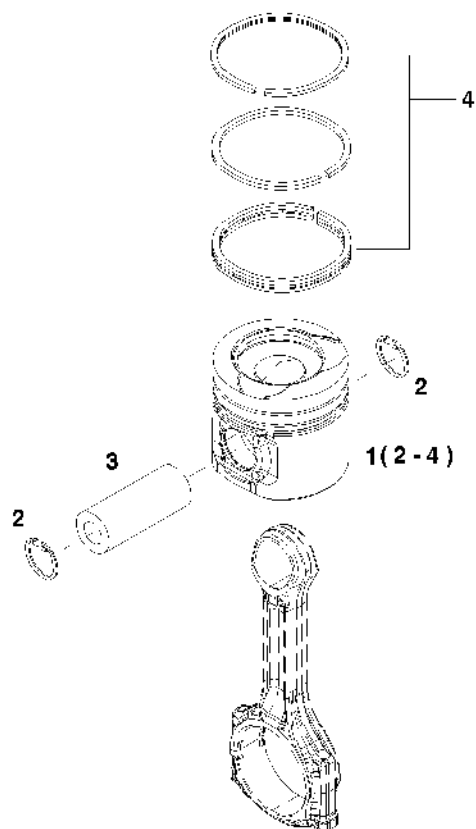
Kolben
Piston
Piston
Piston

Referenznr. :

0169-07- 0510 3307



001

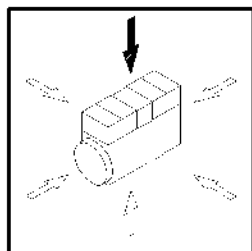




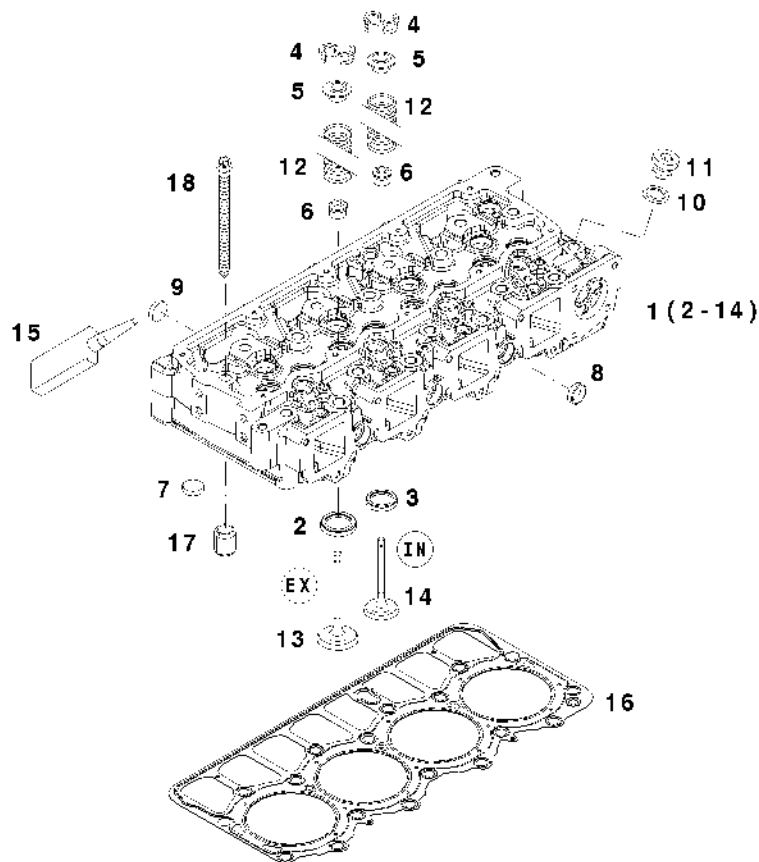
Zylinderkopf
Cylinder head
Culasse
Culata

Referenznr.:

0169-08-0510 3308



001

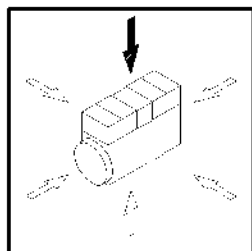




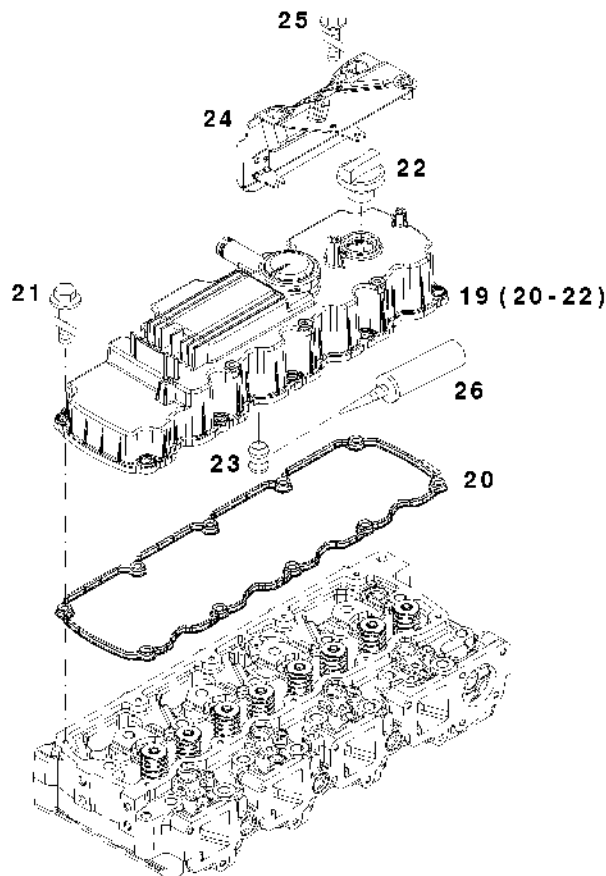
Zylinderkopfhaube
Mechanical valve cover
Capot de culbuteur
Tapa de balancines

Referenznr.:

0169-08- 0510 3336



001



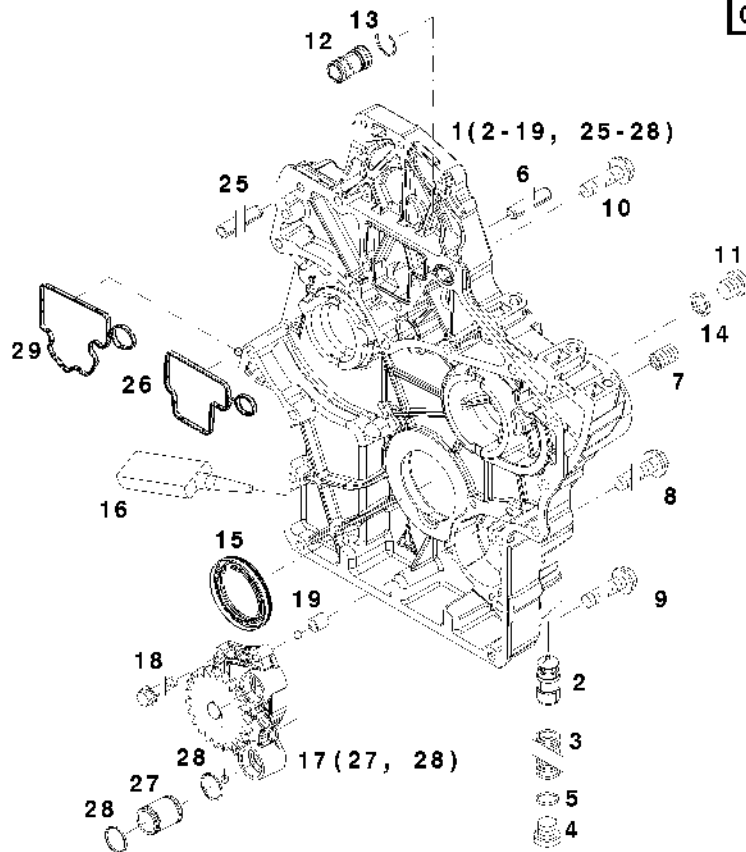
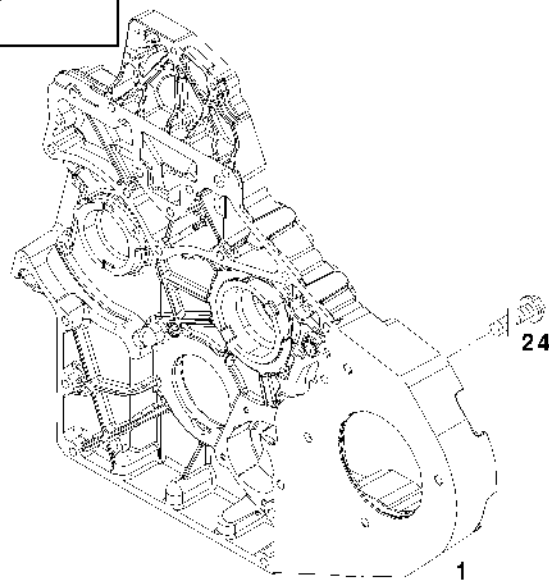
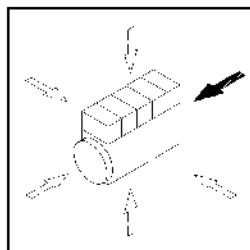


Räderkasten
Gearcase
Boîte d'engrenages
Caja de engranajes

Referenznr.:

0169-09-0510 3309

001

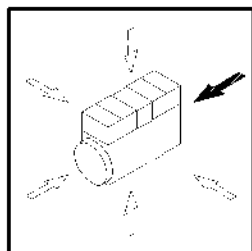




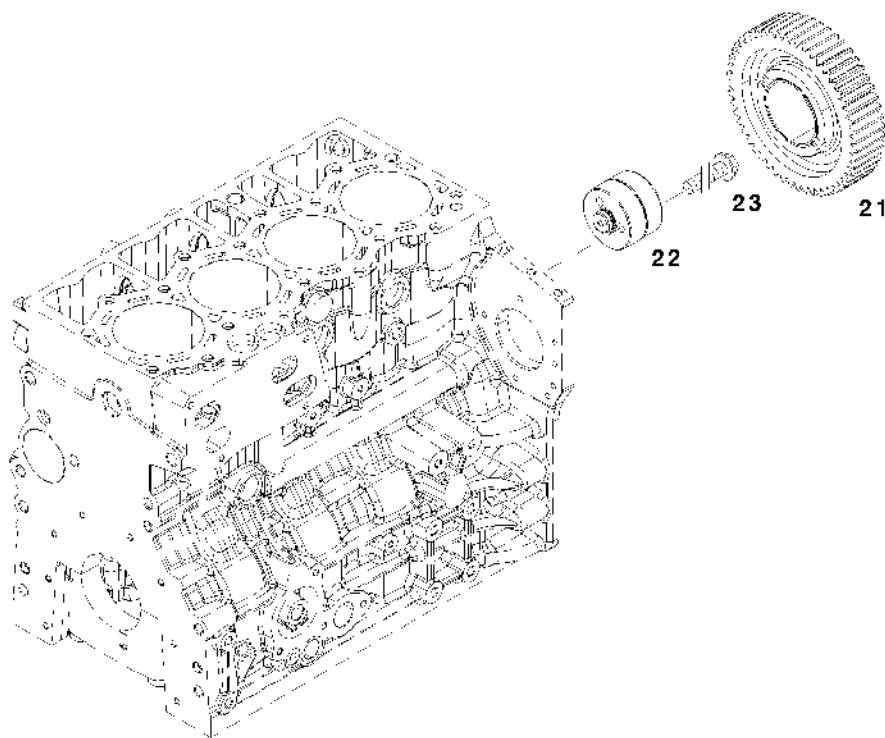
Zwischenrad
Idler gear
Roue intermediaire
Engranaje intermedio

Referenznr.:

0169-09- 0510 3310



001

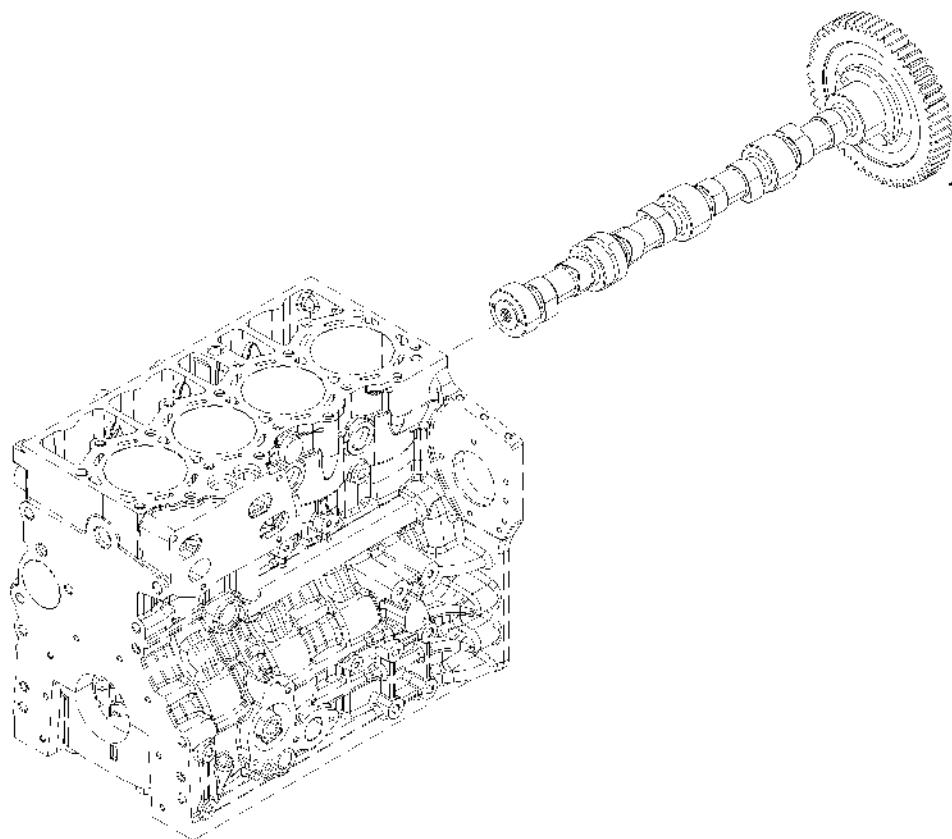
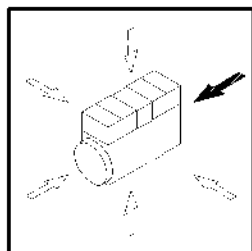




Nockenwelle
Camshaft
Arbre a cames
Arbol de levas

Referenznr. :

0169-10- 0510 3311



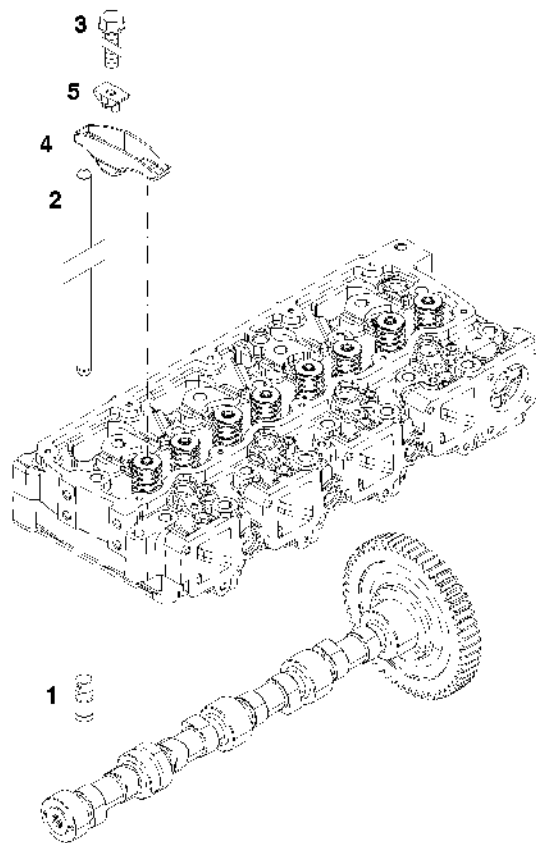
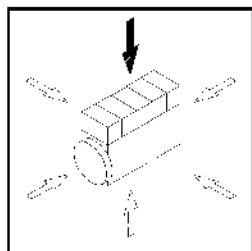
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Steuerungsteile
Valve drive
Pieces de distribution
Piezas de distribucion

Referenznr. :

0169-11- 0510 3312



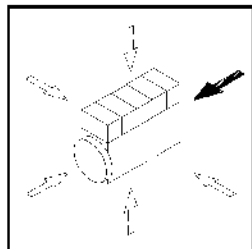
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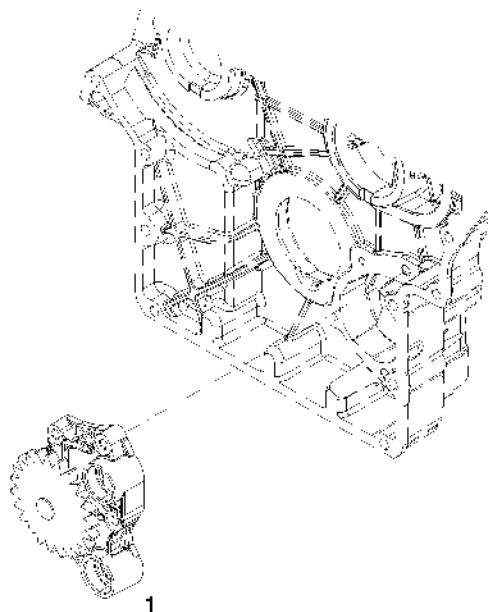
Schmierölpumpe
Lubricating oil pump
Pompe de lubrification
Bomba de aceite de lubricacion

Referenznr.:

0169-14- 0510 3313



002



For details look to BG09 Gearcase

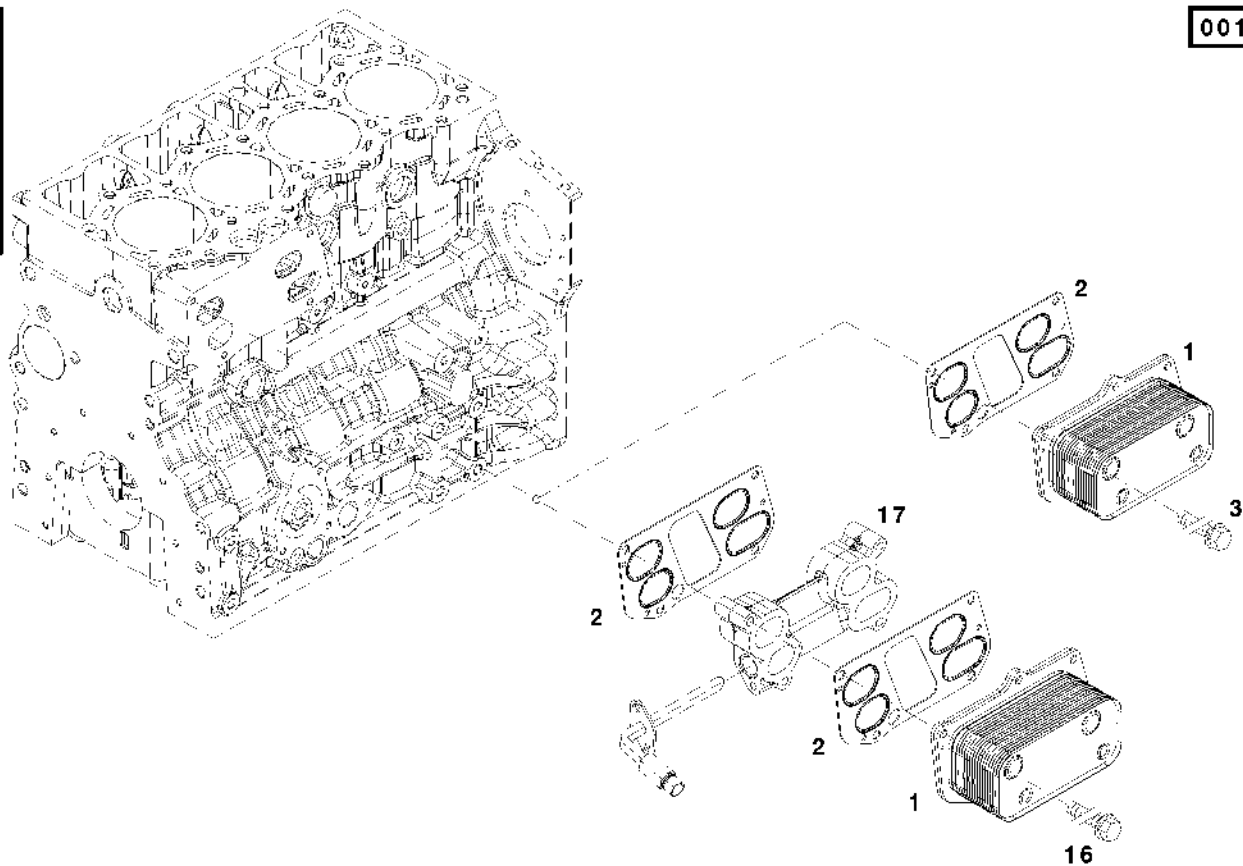
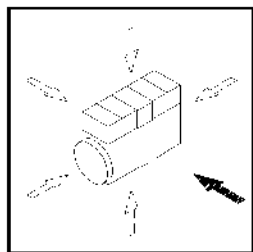


Ölkühler
Oil cooler
Refroidisseur d'huile
Enfriador d. aceite

Referenznr.:

0169-15- 0510 3314

001



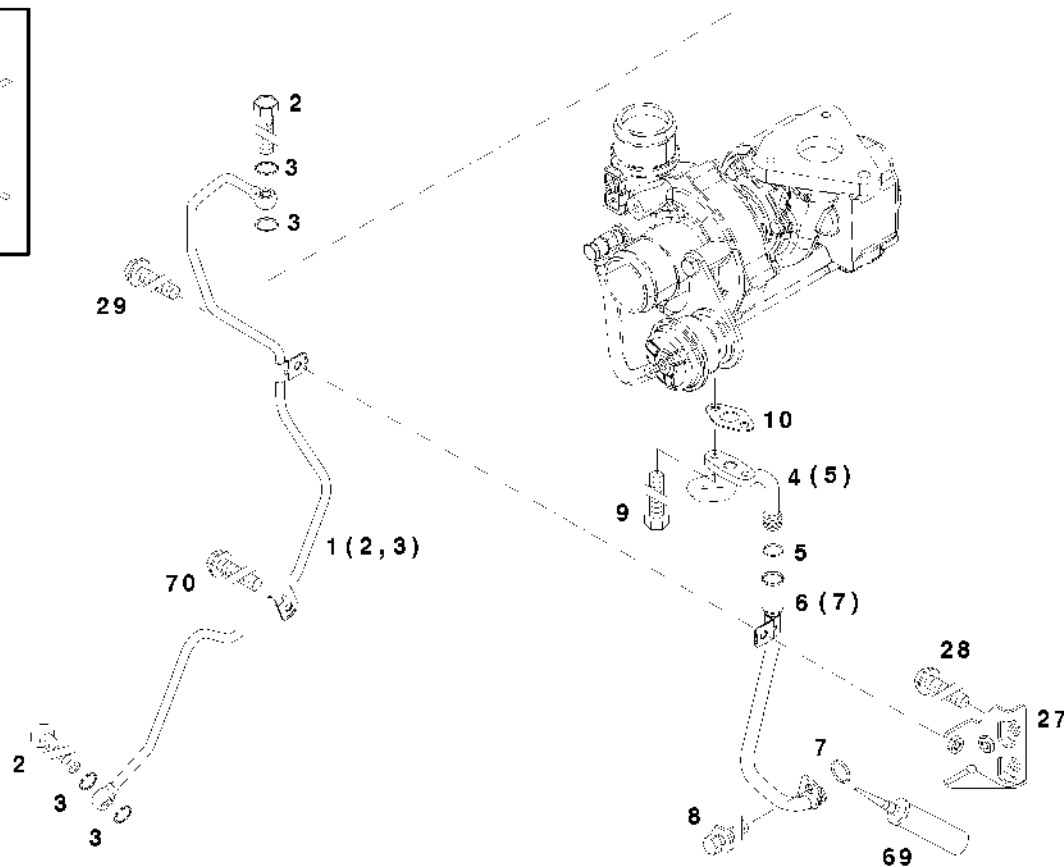
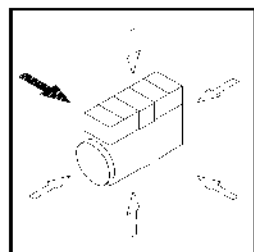


Schmierölleitung
Lubricating oil line
Conduite a huile de lubrification
Tuberia de aceite de lubricacion

Referenznr.:

0169-16- 0510 3316

001

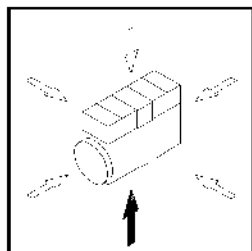




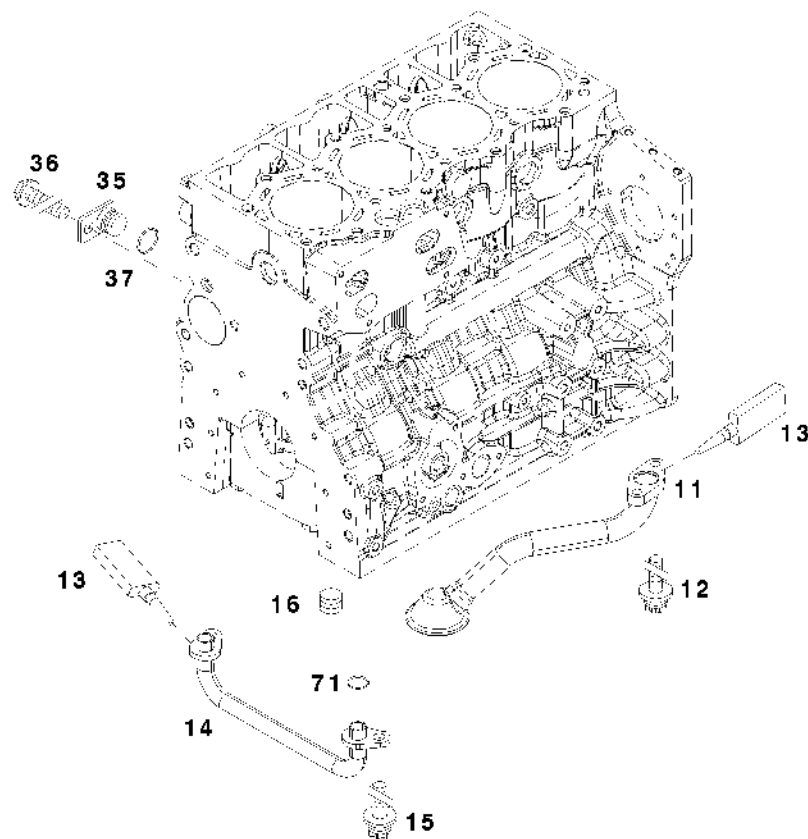
Ölsaugleitung
Oil suction line
Cond aspir d'huile
Tuber. aspir. aceite

Referenznr. :

0169-16- 0510 3319



002

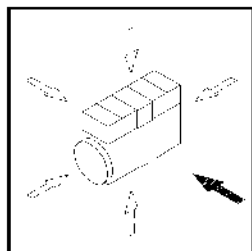




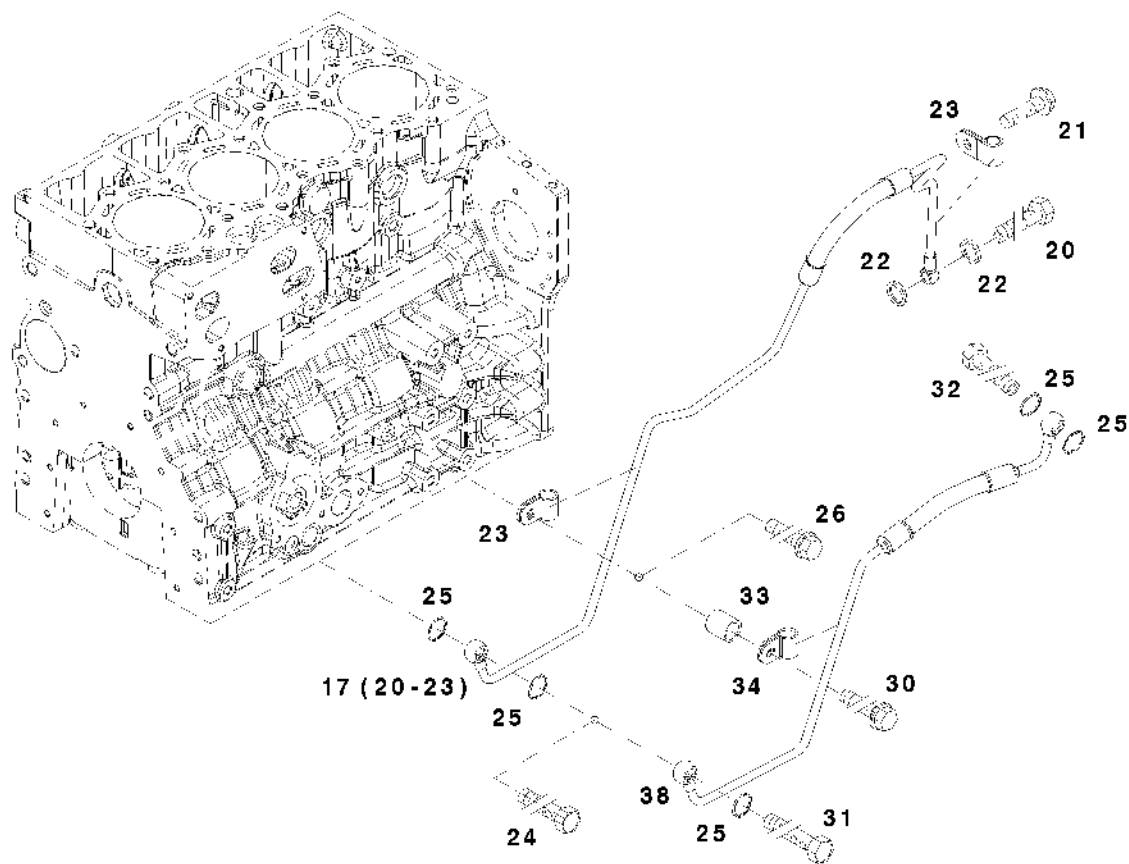
Ölleitung
Oil line
Conduite d'huile
Tuberia de aceite

Referenznr. :

0169-16- 0510 3342



001

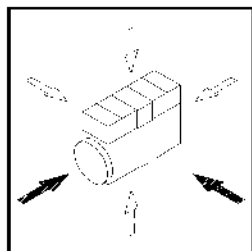




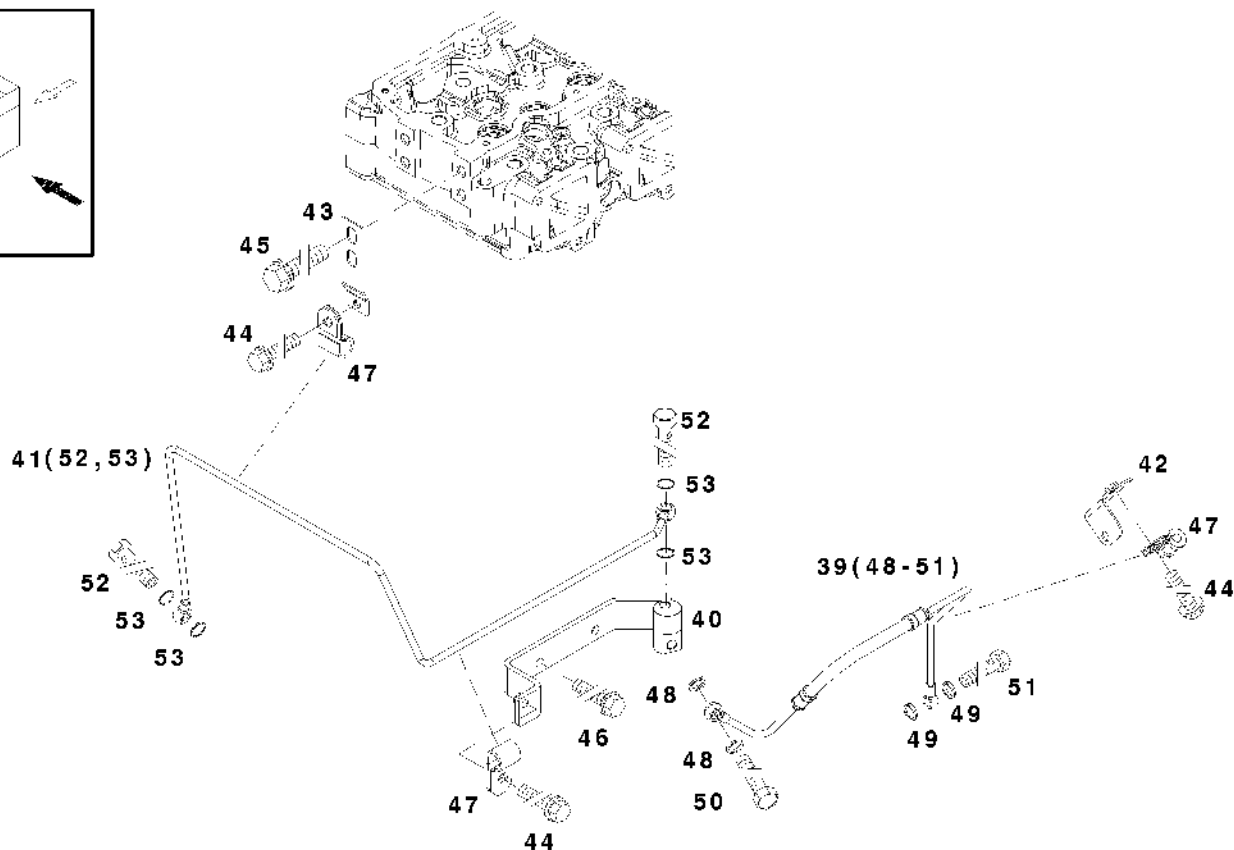
Ölleitung
Oil line
Conduite d'huile
Tuberia de aceite

Referenznr.:

0169-16- 0510 3354



000

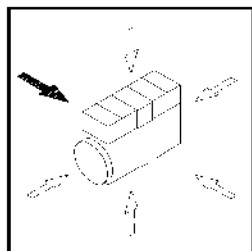




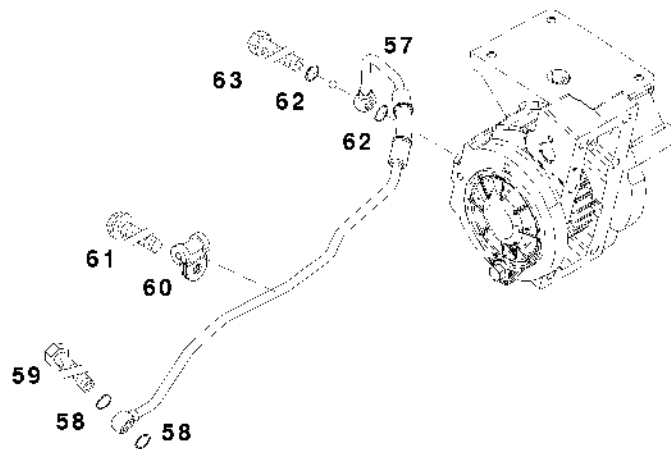
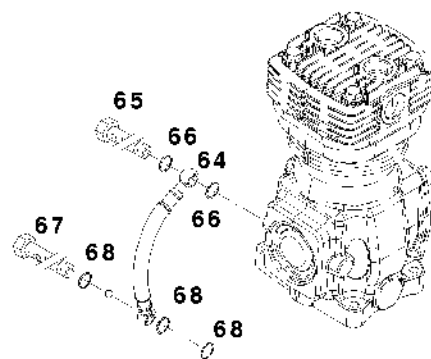
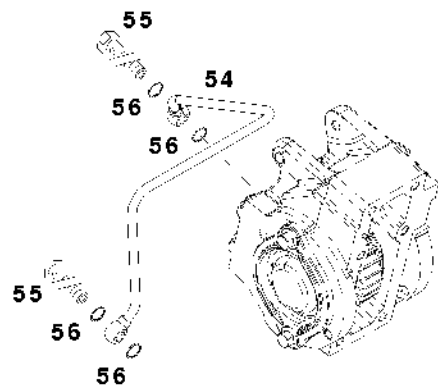
Schmierölleitung
Lubricating oil line
Conduite a huile de lubrification
Tuberia de aceite de lubricacion

Referenznr.:

0169-16- 0510 3359



000

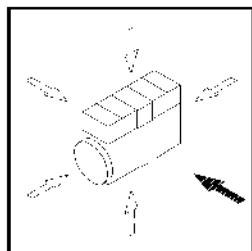




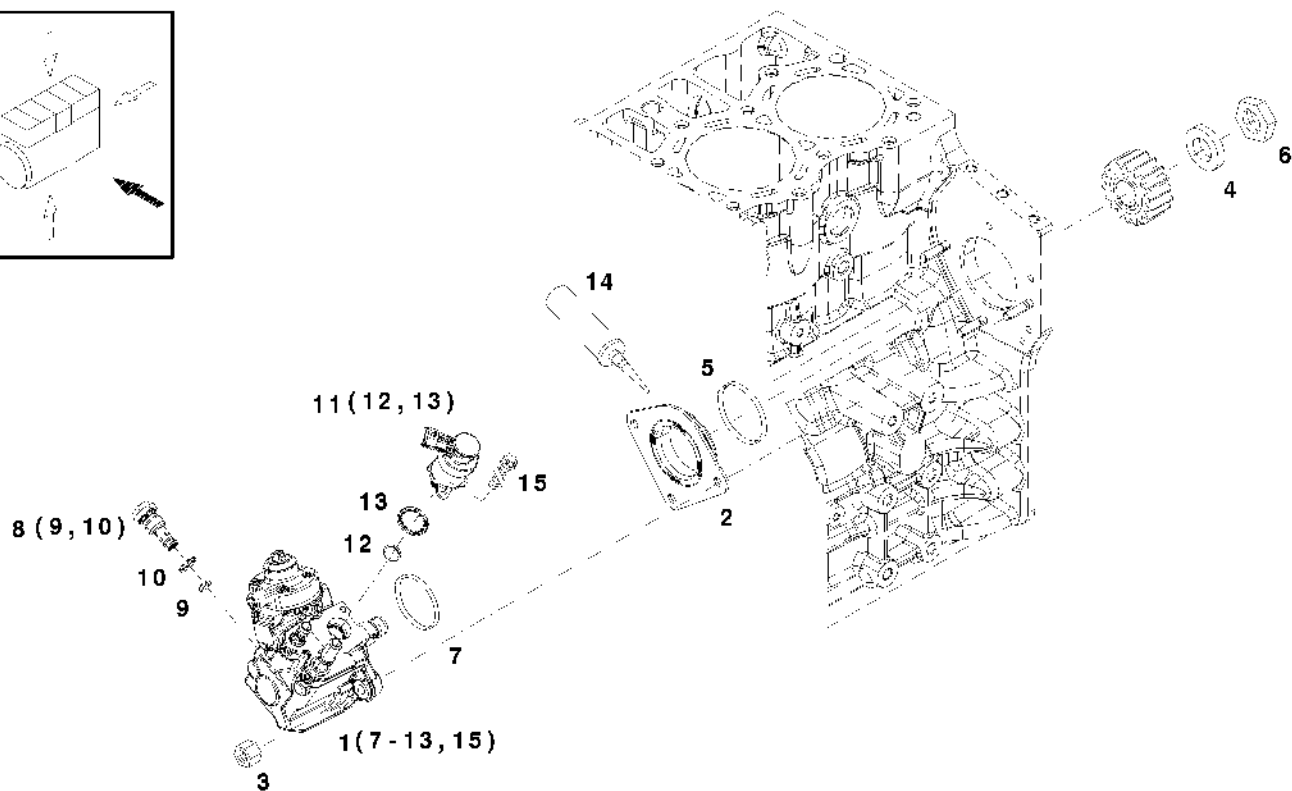
Einspritzpumpe
Fuel injection pump
Pompe d'injection
Bomba de inyeccion

Referenznr.:

0169-17- 0510 3317



002

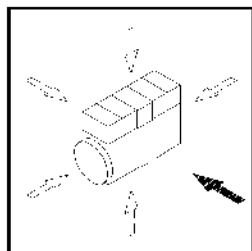




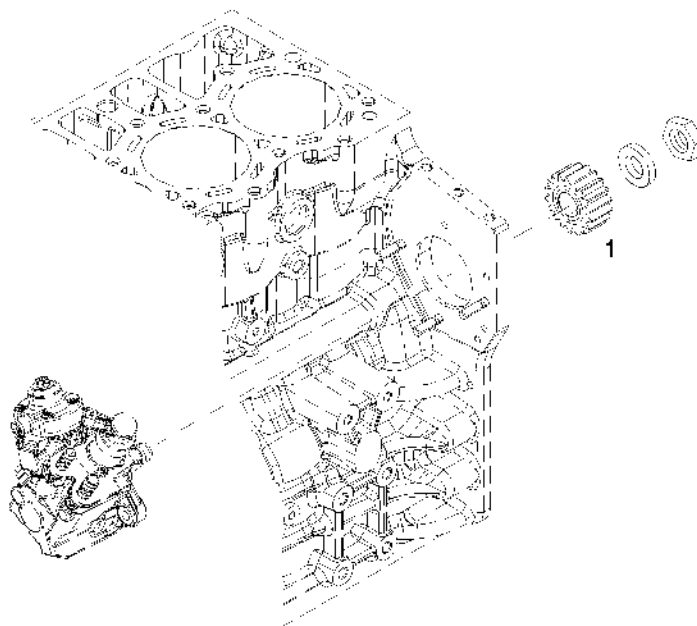
Einspritzpumpenantrieb
Fuel injection pump drive
Entrainement de Pompe d'injection
Accto. de Bomba de inyeccion

Referenznr.:

0169-18- 0510 3318



000

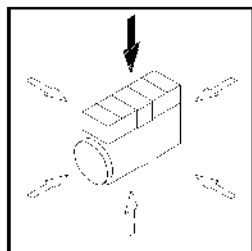




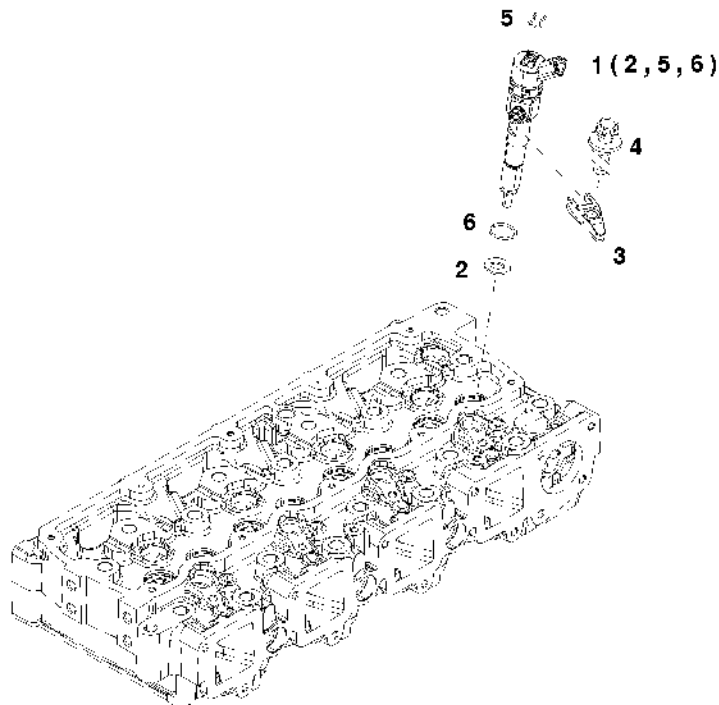
Einspritzventil
Fuel injector
Porte-injecteur de combustible complet
Injector

Referenznr. :

0169-19- 0510 3320



001



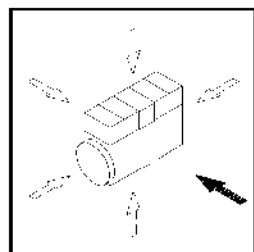


Kraftstofffilter
Fuel filter
Filtre a combustible
Filtro de combustible

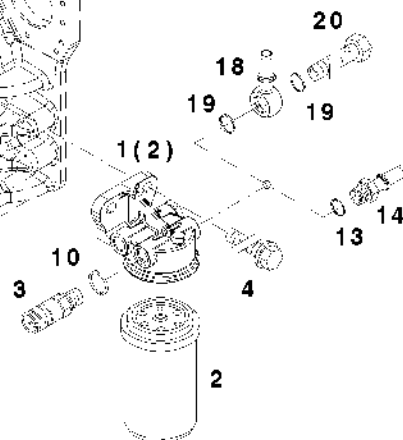
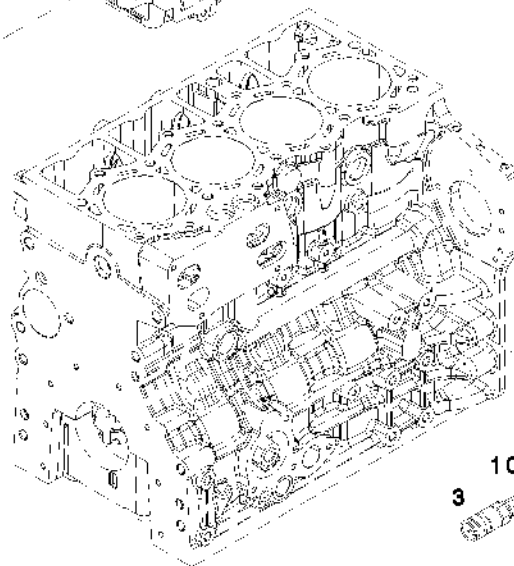
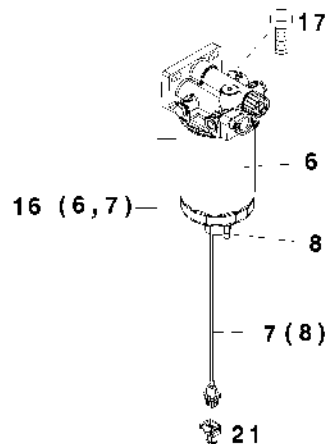
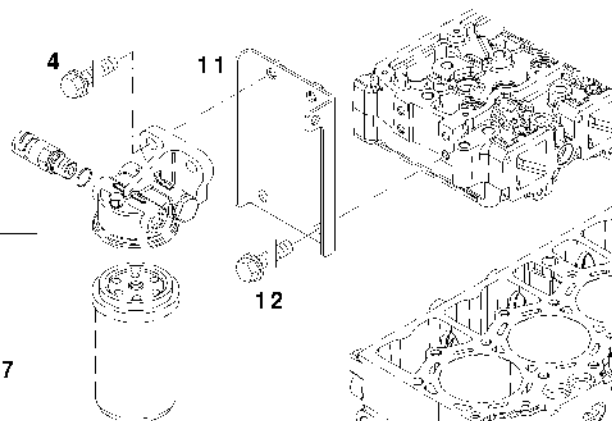
Referenznr.:

0169-20- 0510 3321

002



5 (6-8, 16, 17)

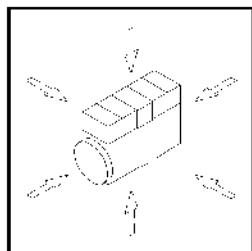




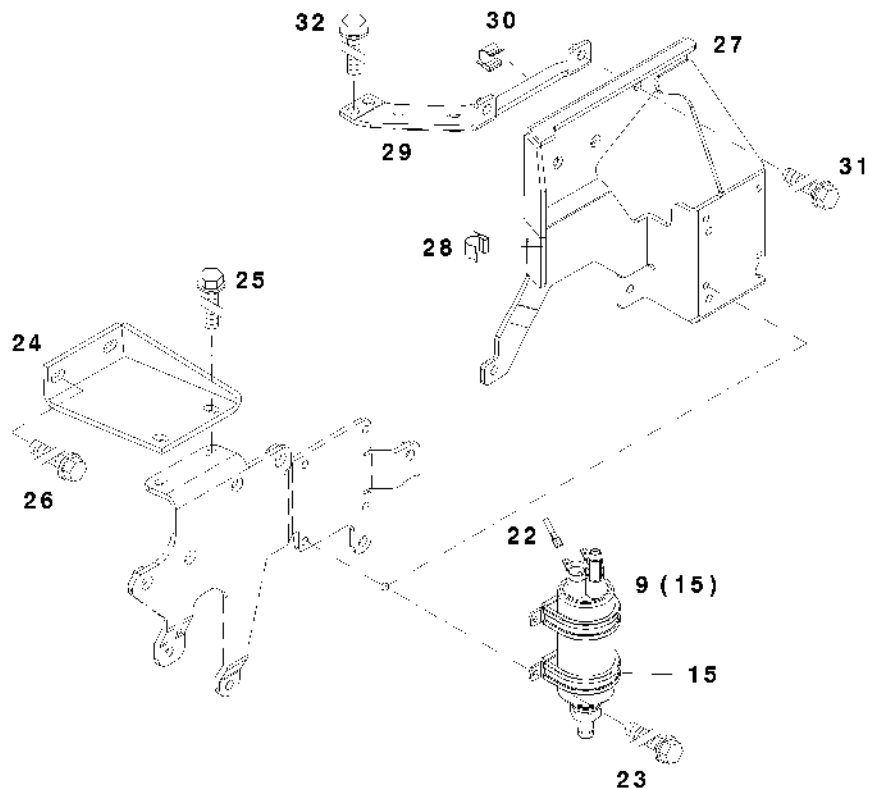
Kraftstoff-Förderpumpe
Fuel supply pump
Pompe d'alimentation de combustible
Bomba de alimentacion de combustible

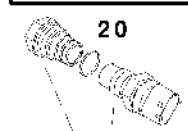
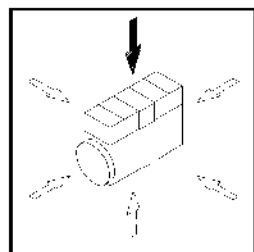
Referenznr. :

0169-20- 0510 3337



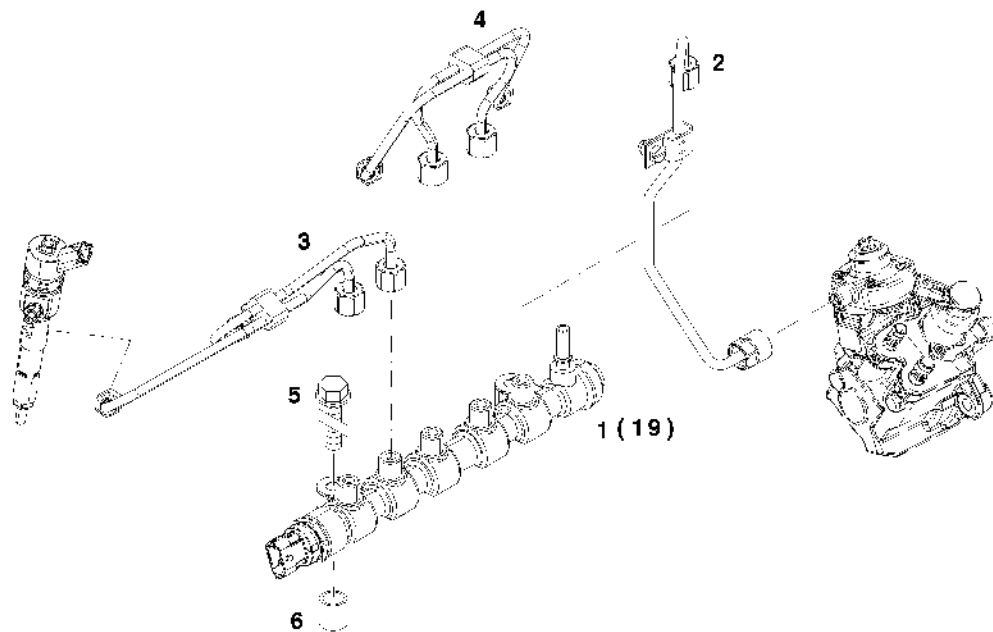
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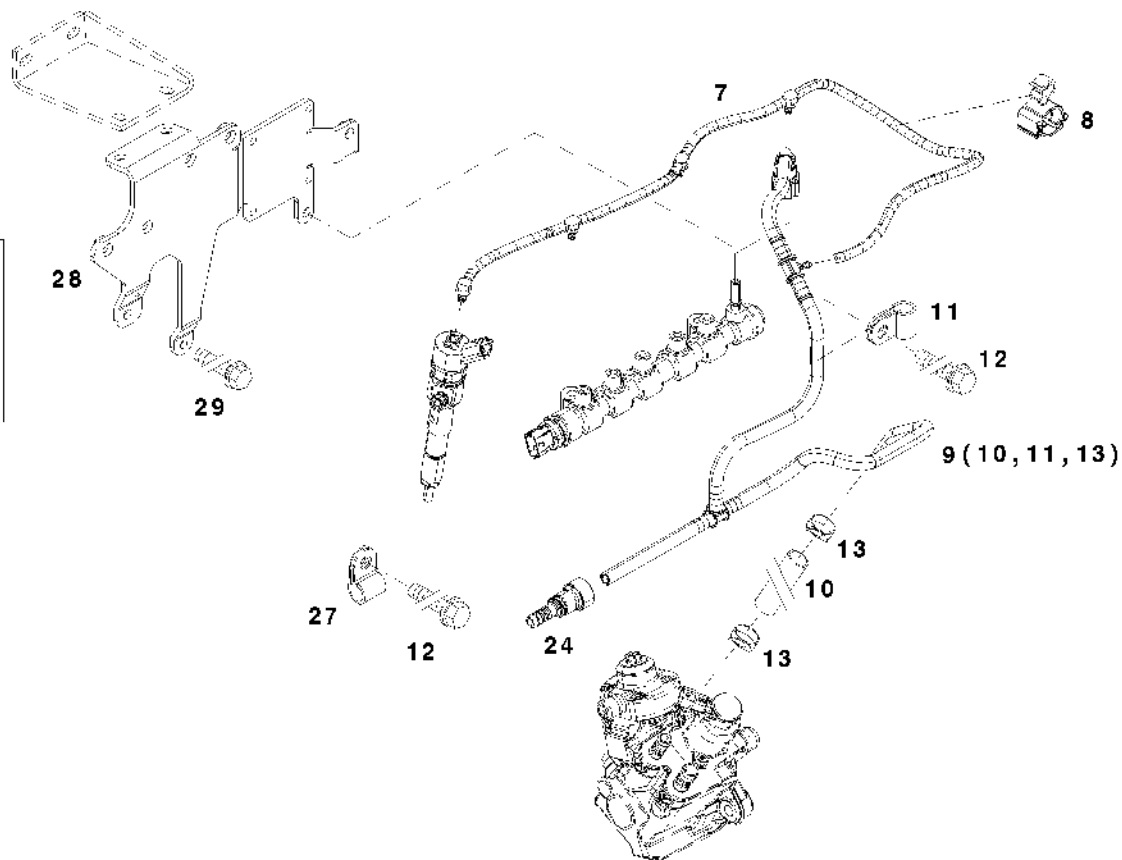
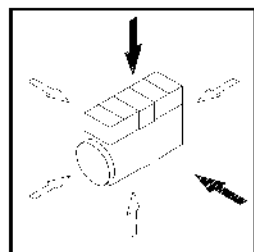




21

19 (20)



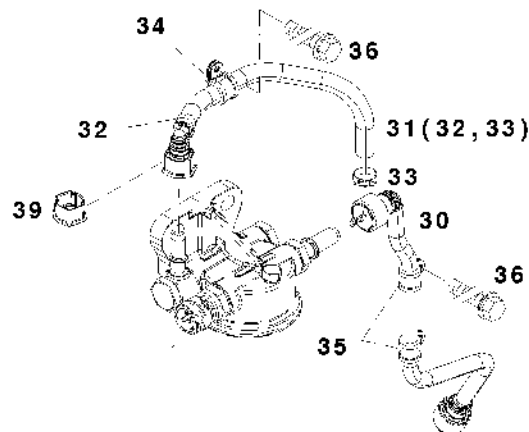
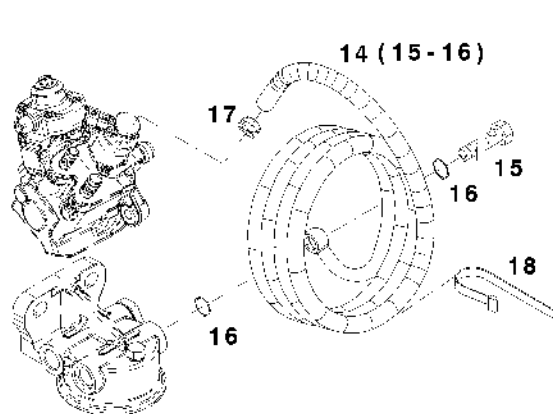
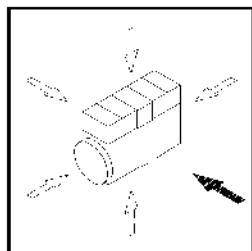




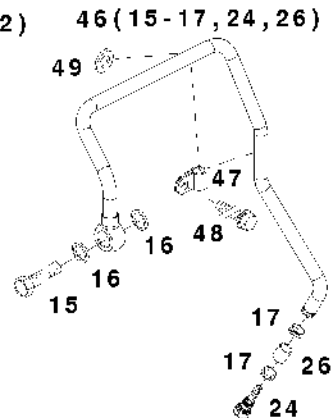
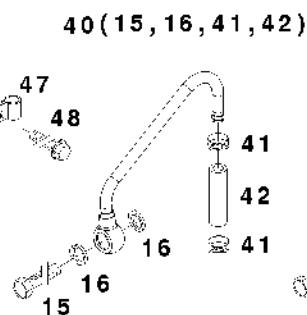
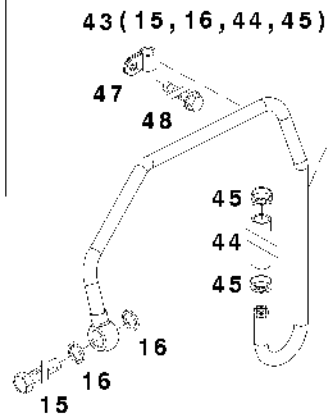
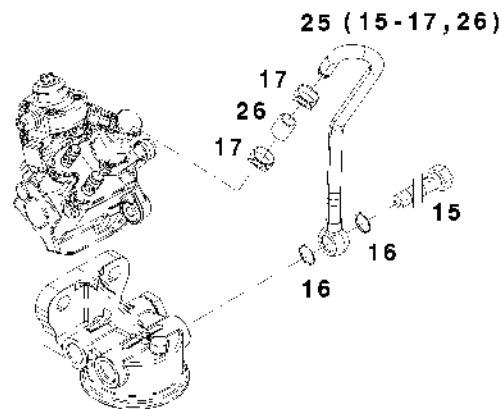
Kraftstoffleitung
Fuel line
Conduite a combustible
Tuberia de combustible

Referenznr.:

0169-21- 0510 3324



002

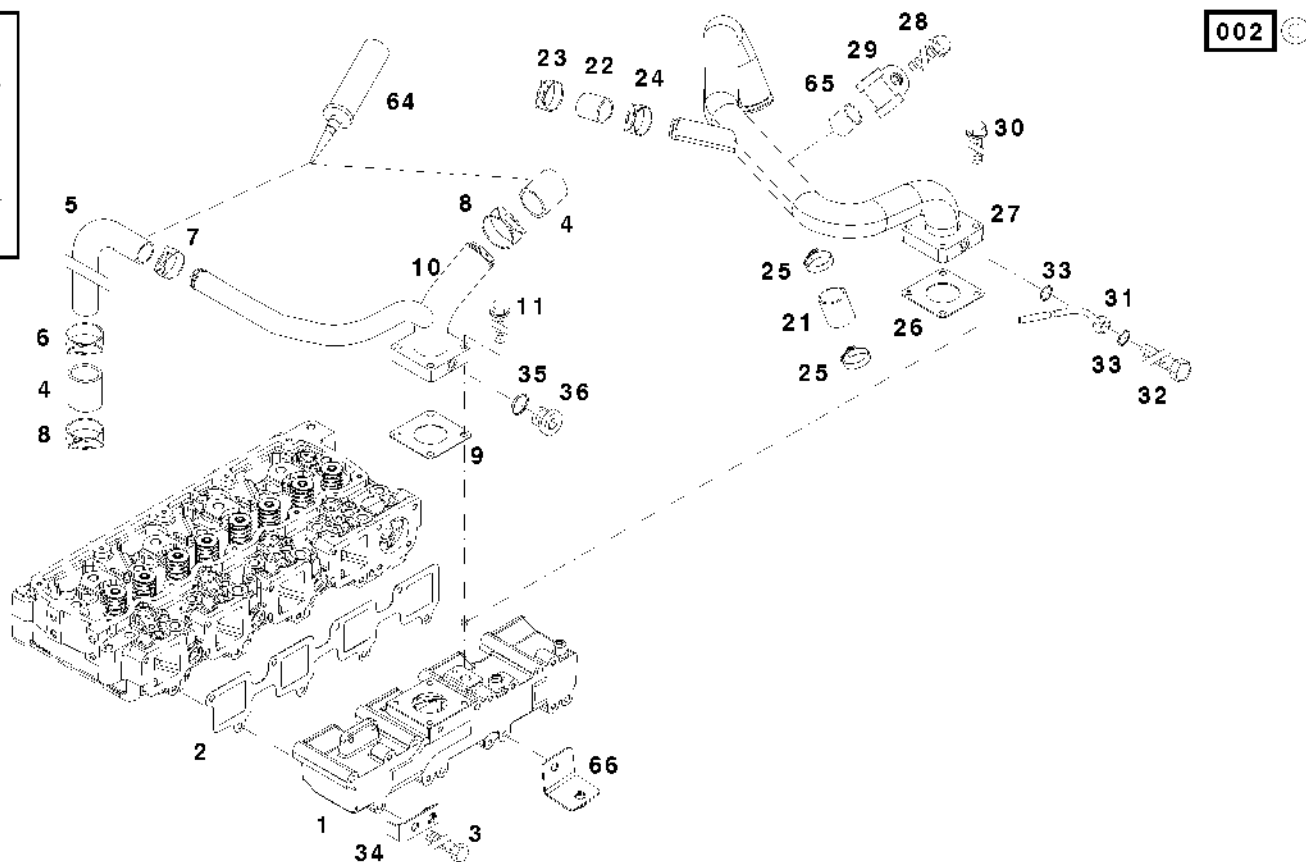
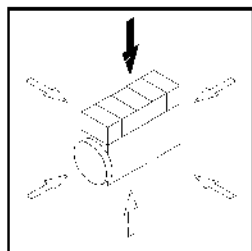




Ladeluftleitung
Charge air pipe
Tubulure d'air de suralimentation
Tuberia de aire de sobrealimentacion

Referenznr.:

0169-22- 0510 3325



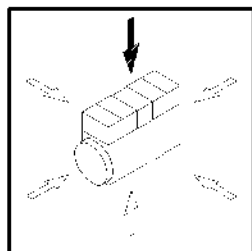
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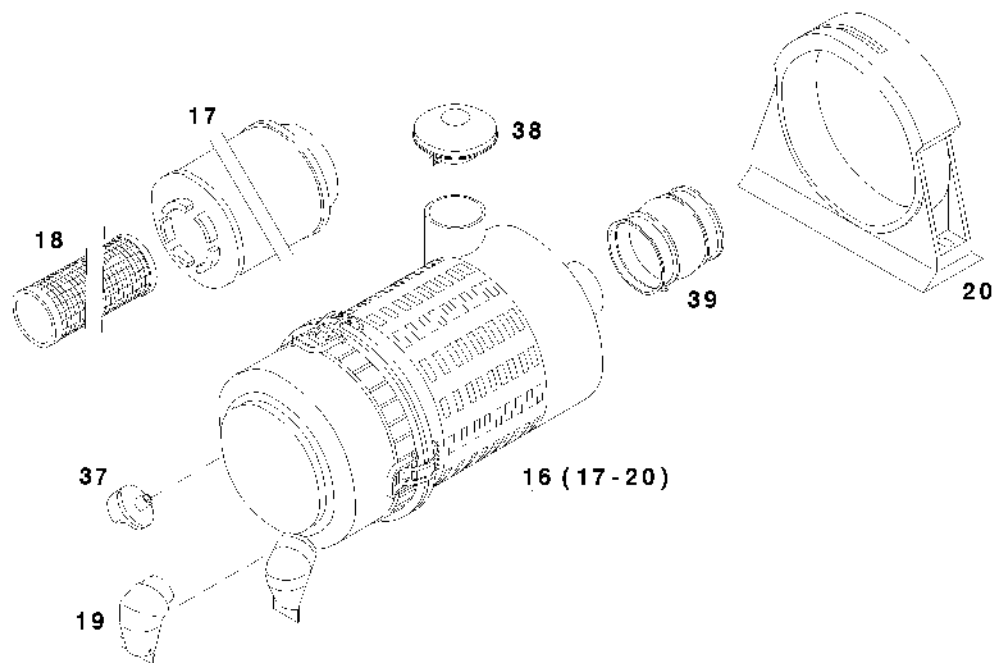
Luftfilter
Air filter
Filtre a air
Filtro de aire

Referenznr.:

0169-22- 0510 3353



001

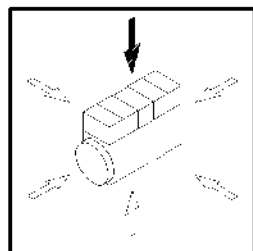




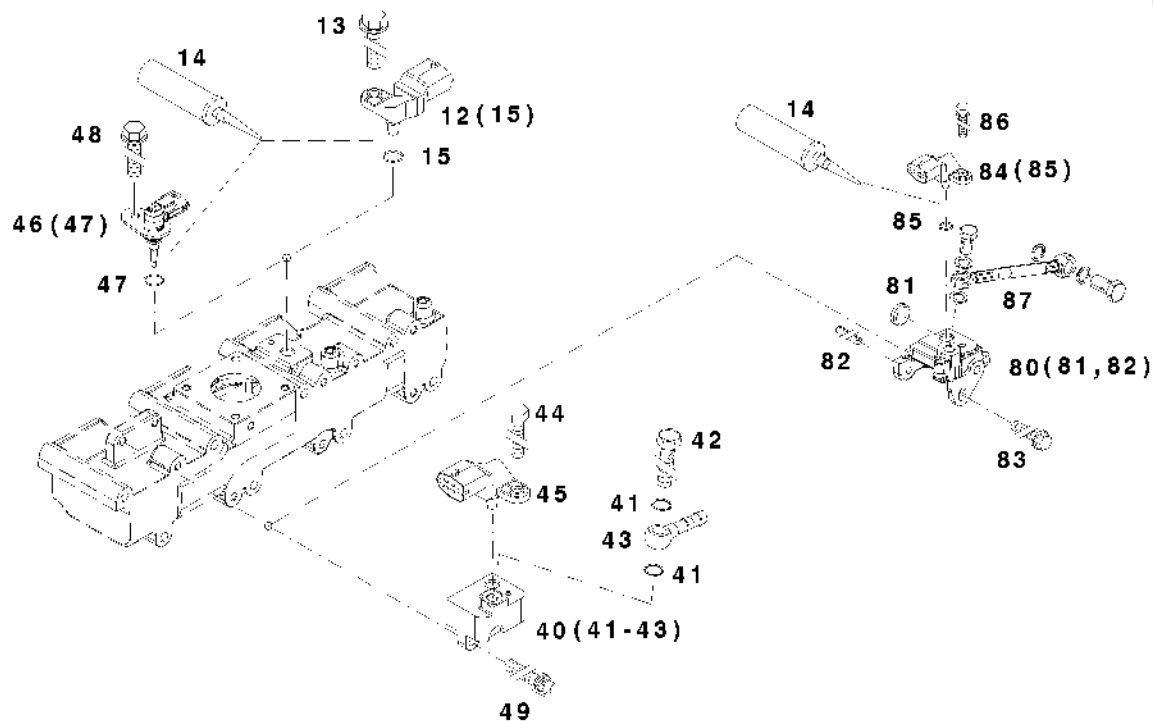
Sensor
Sensor
Sensor
Sensor

Referenznr. :

0169-22- 0510 3360



001

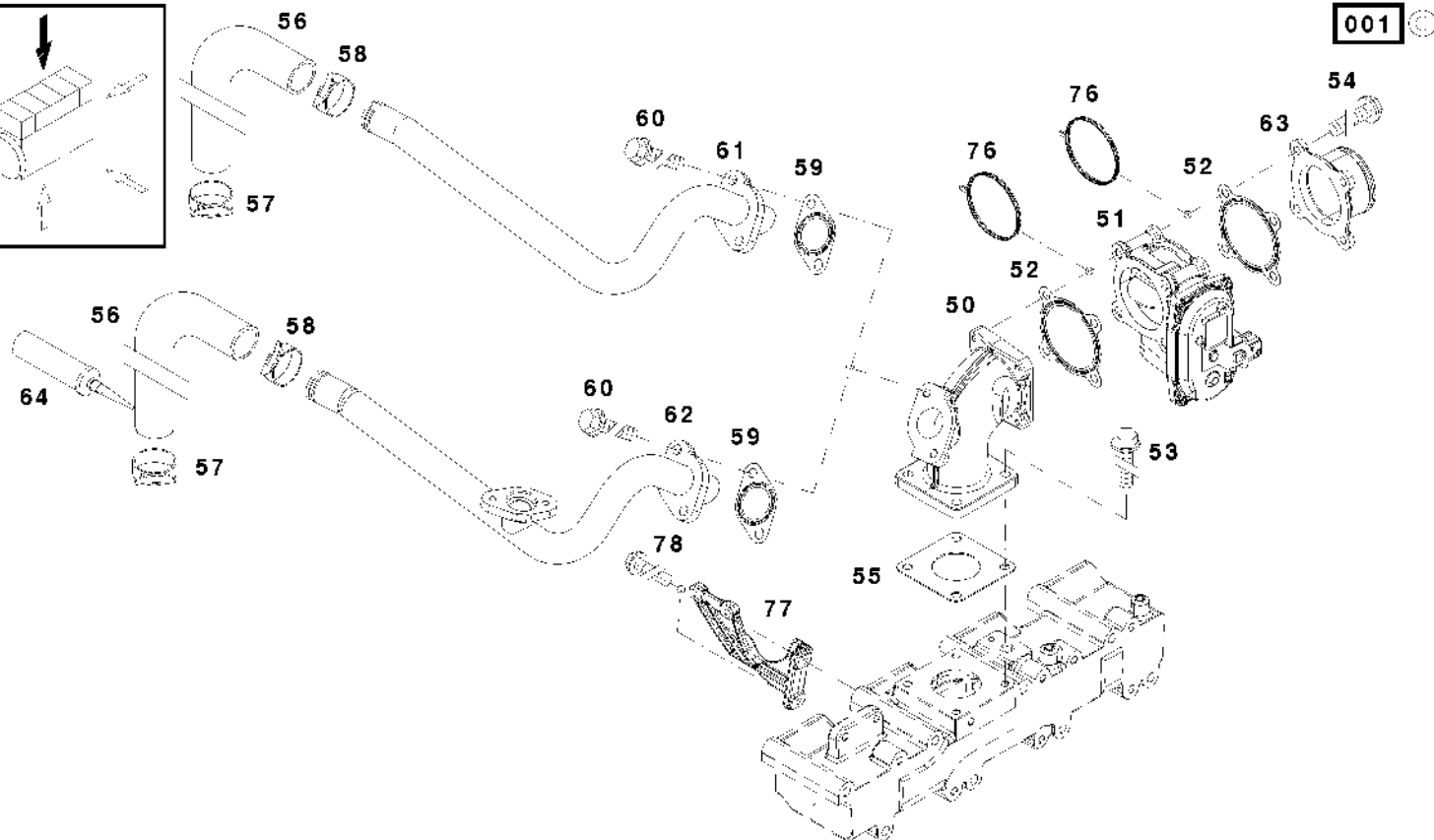
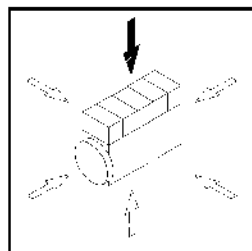




Ladeluftleitung
Charge air pipe
Tubulure d'air de suralimentation
Tuberia de aire de sobrealimentacion

Referenznr.:

0169-22- 0510 3361

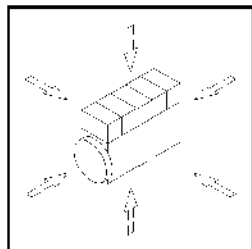




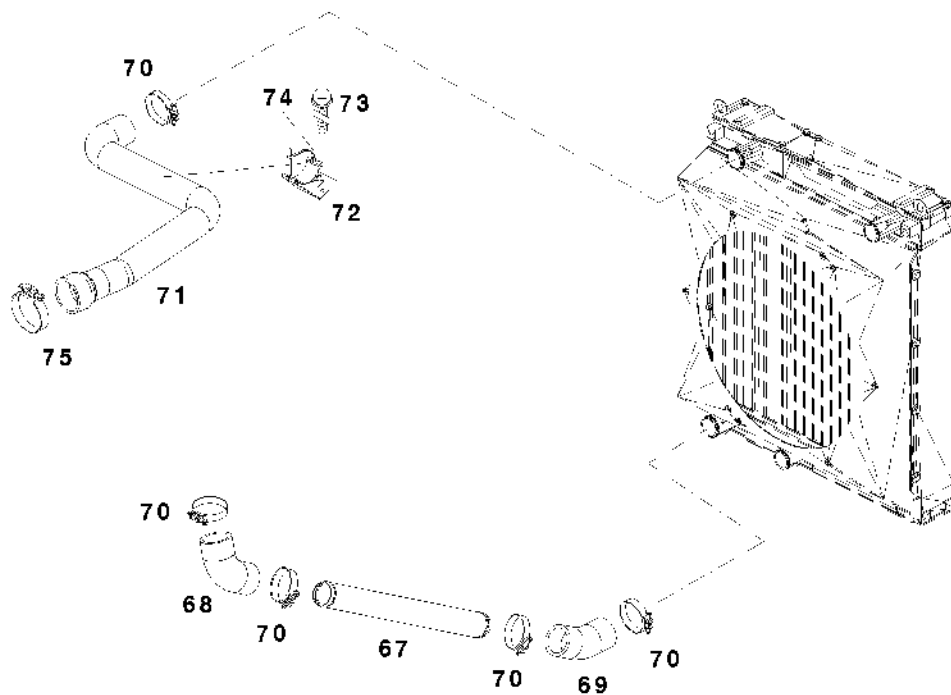
Ladeluftleitung
Charge air pipe
Tubulure d'air de suralimentation
Tuberia de aire de sobrealimentacion

Referenznr.:

0169-22- 0510 3386



000

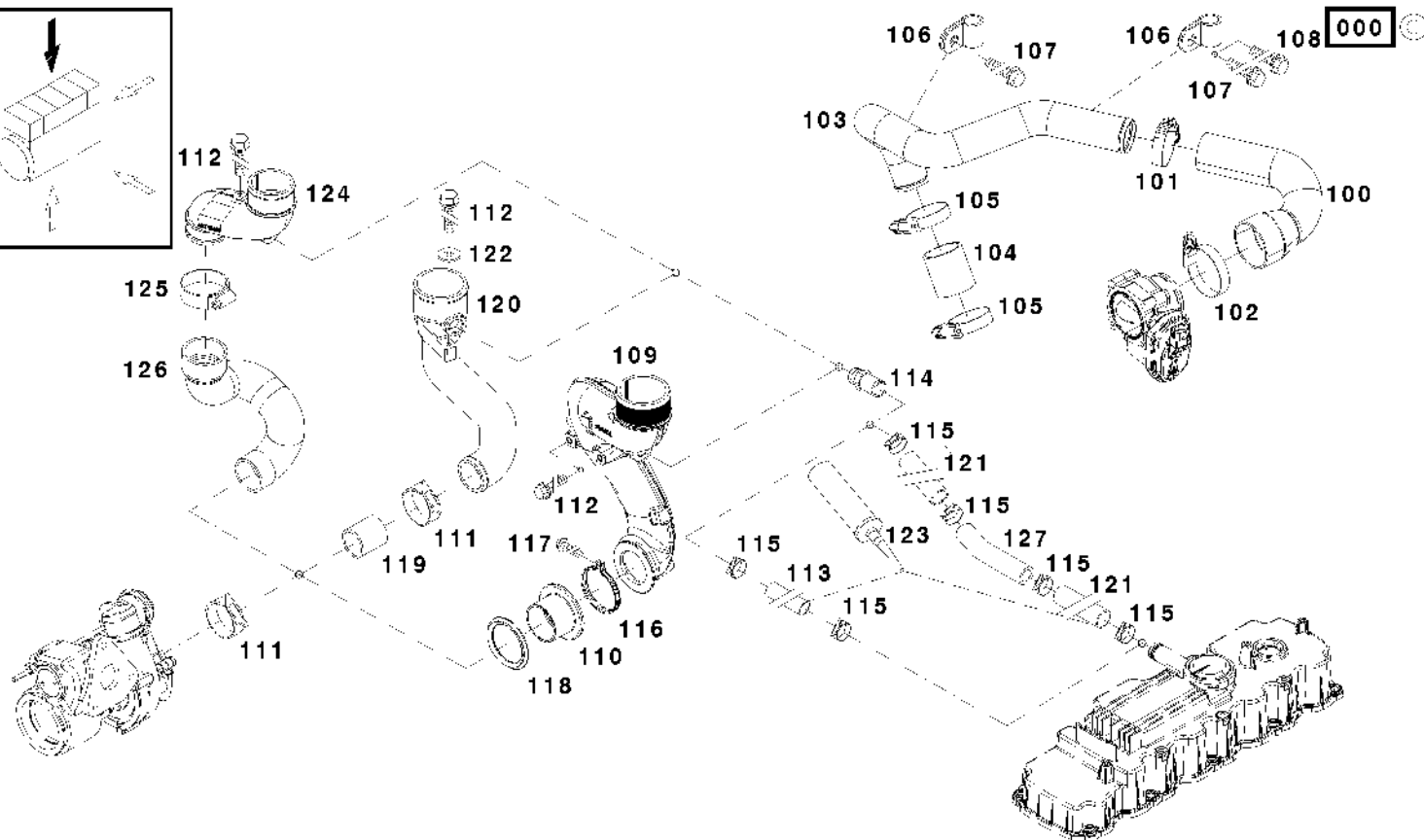
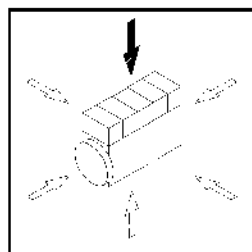




Ladeluftleitung
Charge air pipe
Tubulure d'air de suralimentation
Tuberia de aire de sobrealimentacion

Referenznr.:

0169-22- 0510 3389



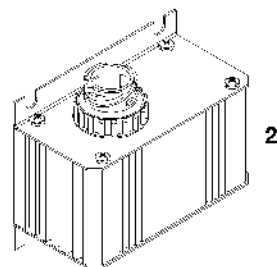
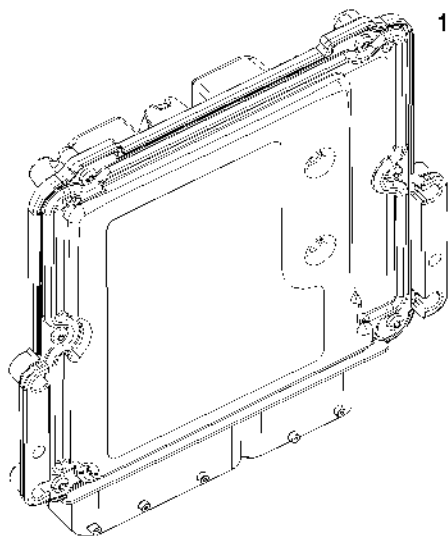
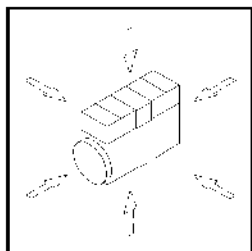


Steuergerät
Control unit
Distributeur
Aparato de mando

Referenznr.:

0169-27- 0510 3327

001



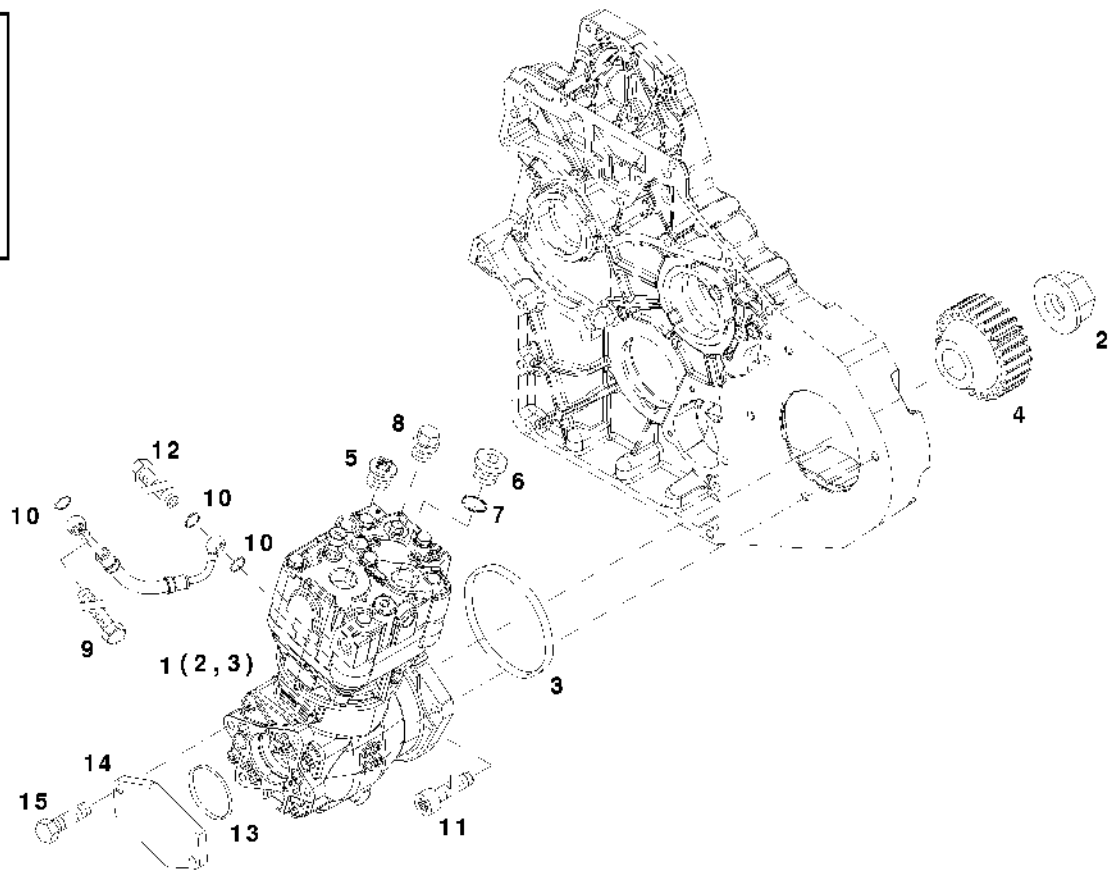
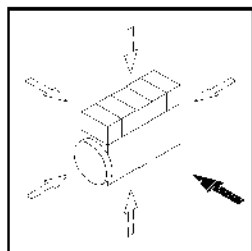


Kompressor
Compressor
Compresseur
Compresor

Referenznr.:

0169-33-0510 3355

000

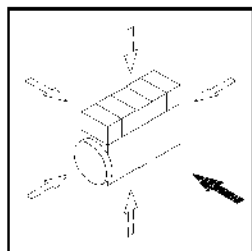




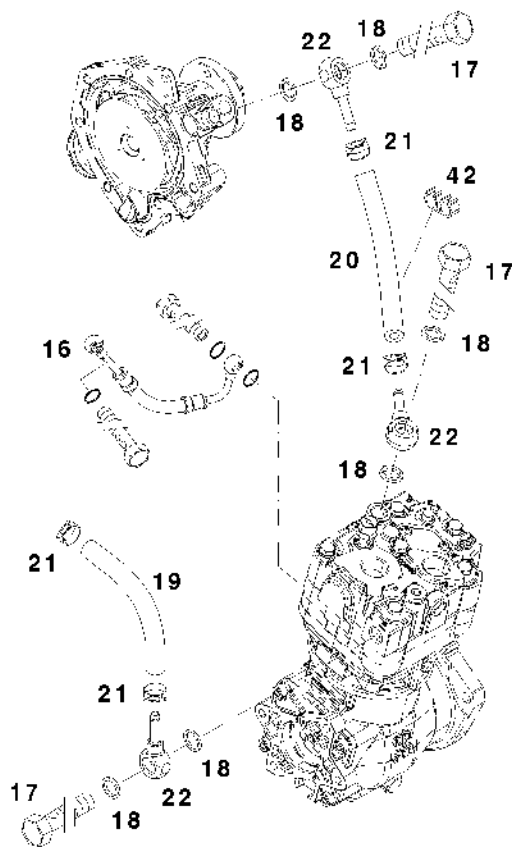
Kühlmittleitung
Coolant pipe
Conduite
Tuberia de medio refrigerante

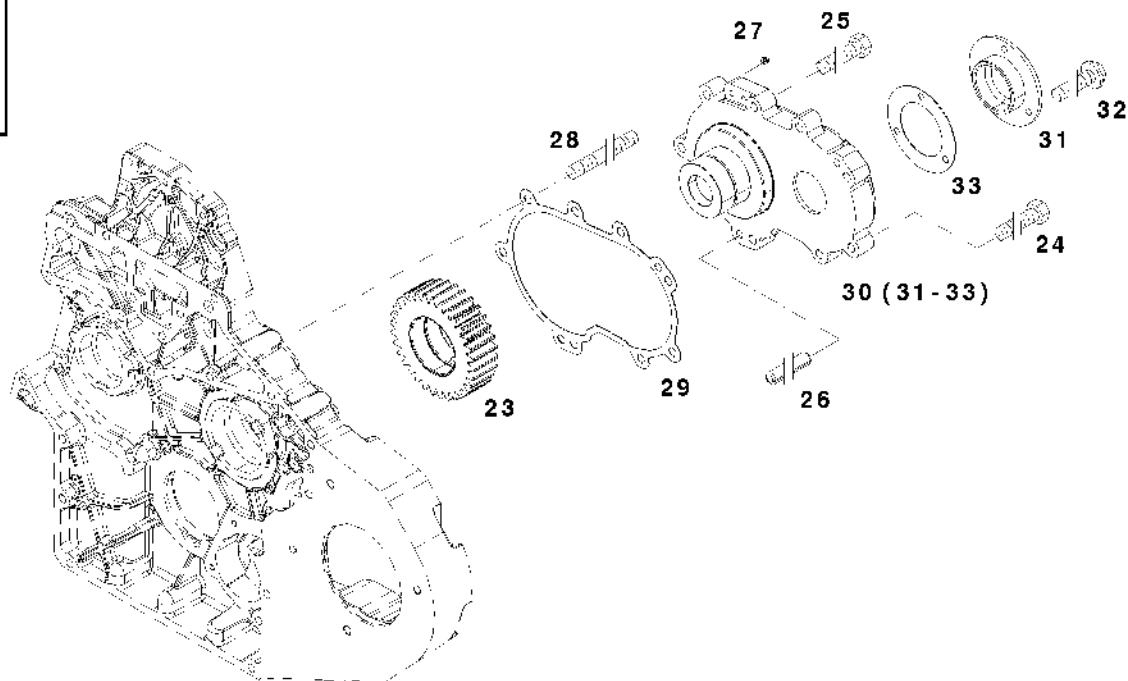
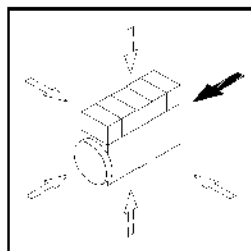
Referenznr.:

0169-33-0510 3362



001



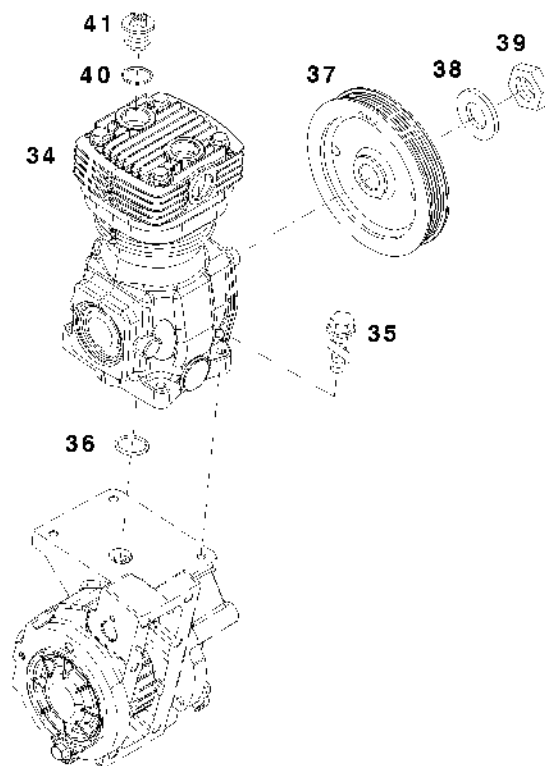
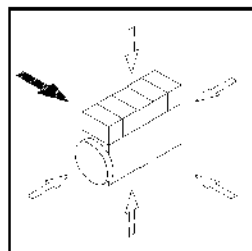




Kompressor
Compressor
Compresseur
Compresor

Referenznr. :

0169-33-0510 3364



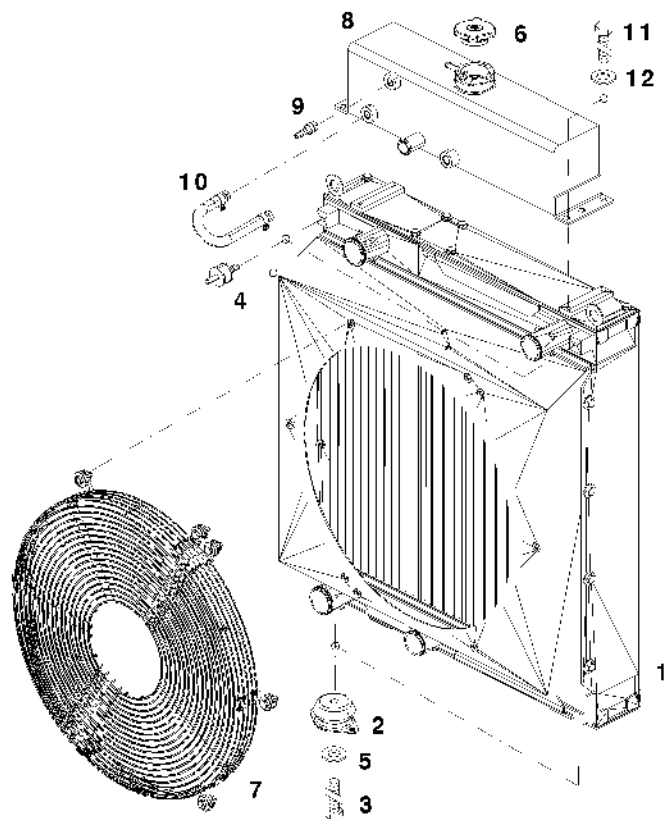
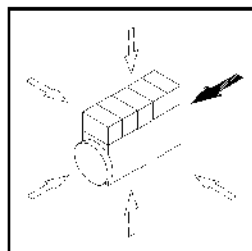
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Kühlanlage
Cooling system
Installation de refrigeration
Sistema de refrigeracion

Referenznr.:

0169-36- 0510 3385



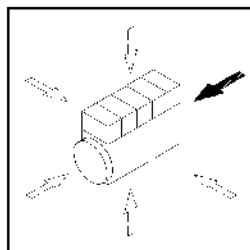
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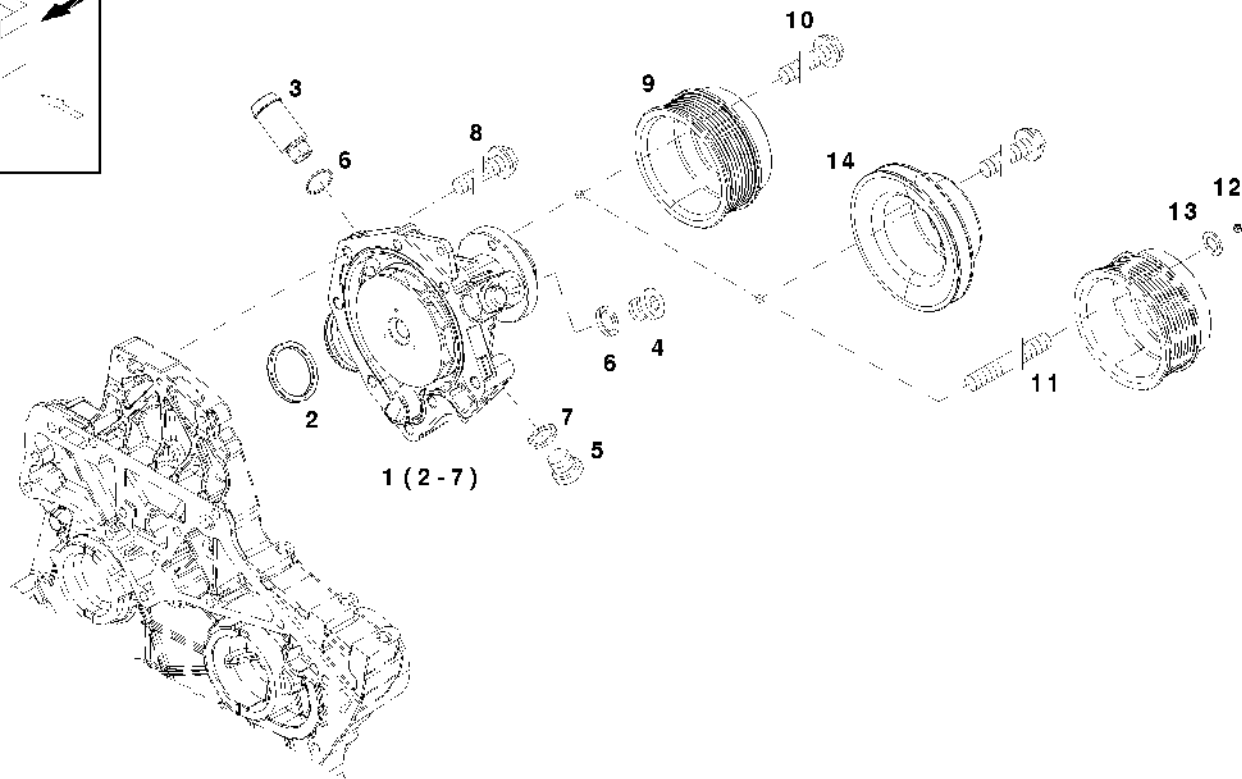
Kühlmittelpumpe
Collant pump
Pompe refrigerant
Bomba de refrigeracion

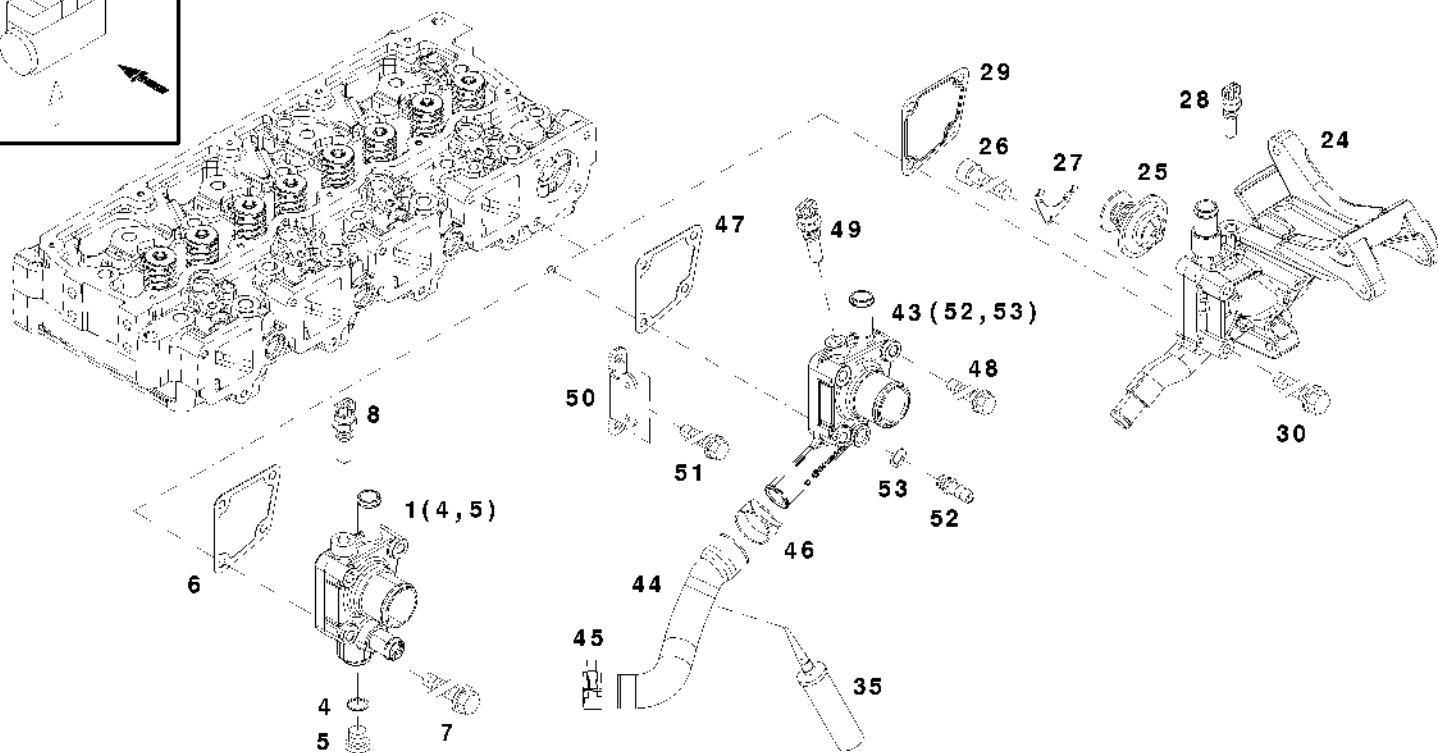
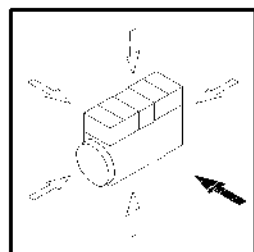
Referenznr.:

0169-37- 0510 3328



001



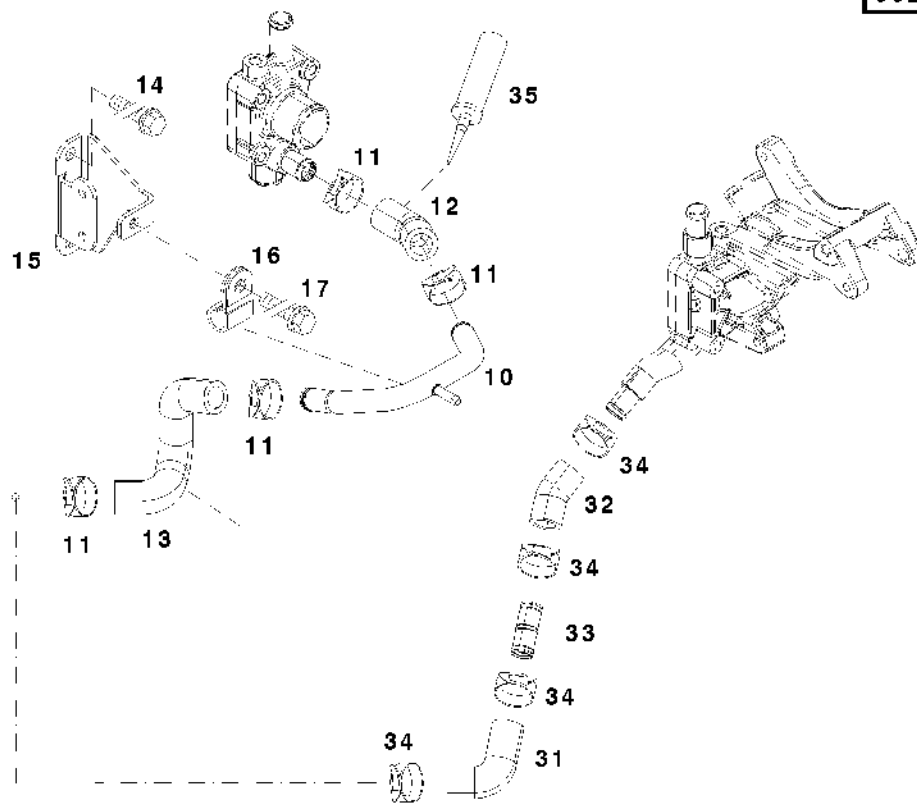
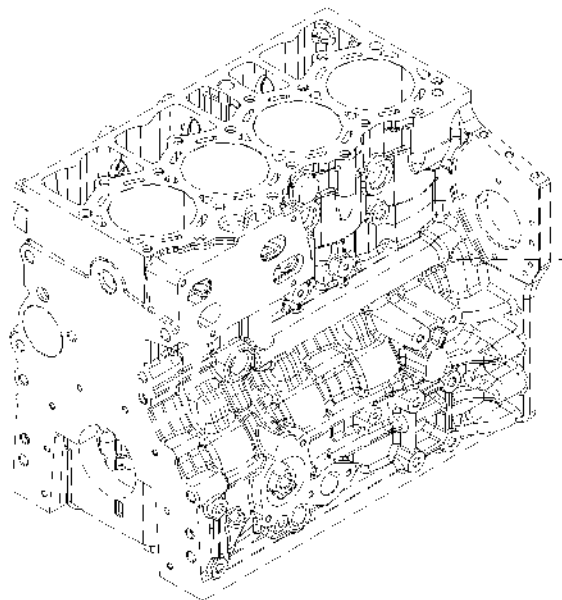
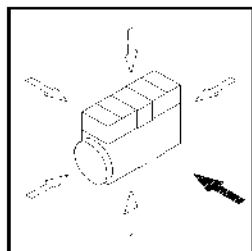




Kühlmittleitung
Coolant pipe
Conduite
Tuberia de medio refrigerante

Referenznr.:

0169-38- 0510 3330



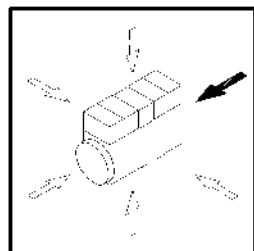
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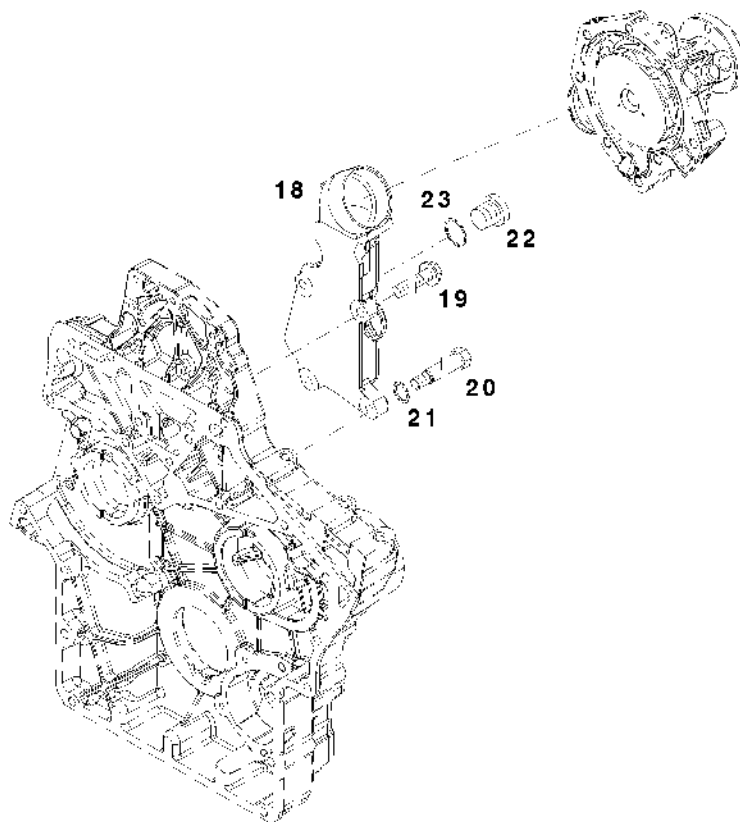
Kühlwasserleitung
Cooling water line
Conduite d'eau de refroidissement
Tuberia de agua refrigerante

Referenznr.:

0169-38- 0510 3331



002

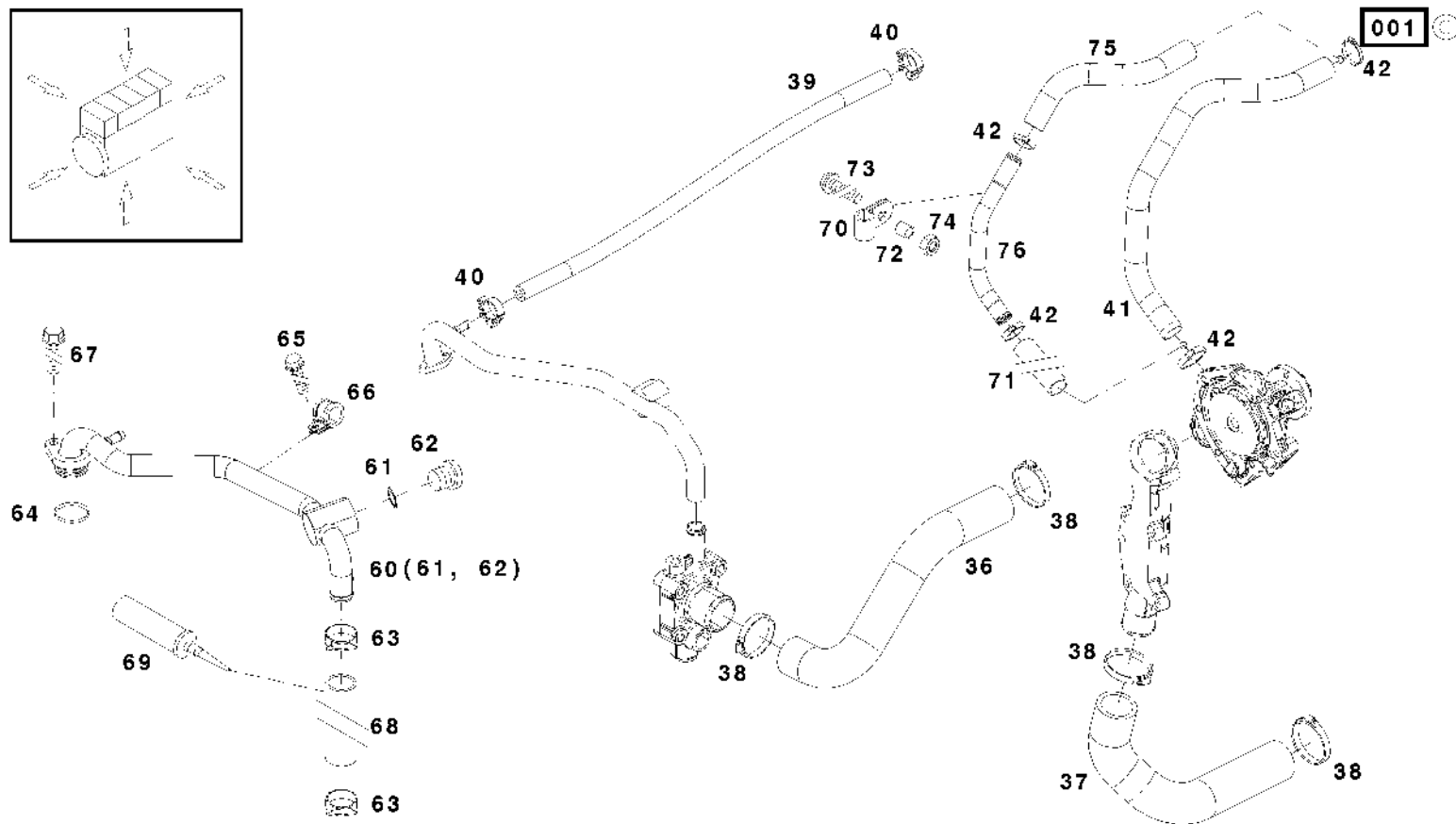
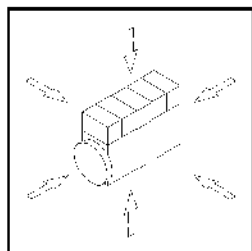




Kühlmittleitung
Coolant pipe
Conduite
Tuberia de medio refrigerante

Referenznr. :

0169-38- 0510 3387

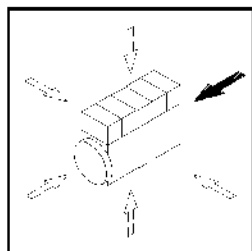




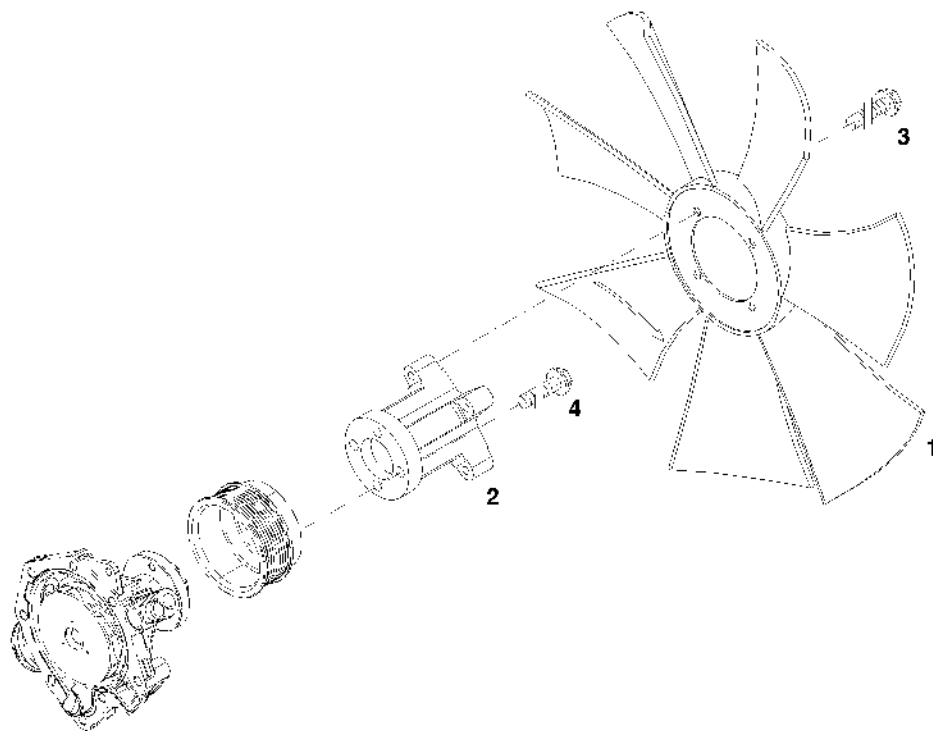
Lüfter
Fan
Ventilateur
Ventilador

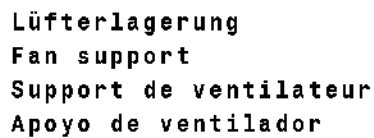
Referenznr.:

0169-39- 0510 3365



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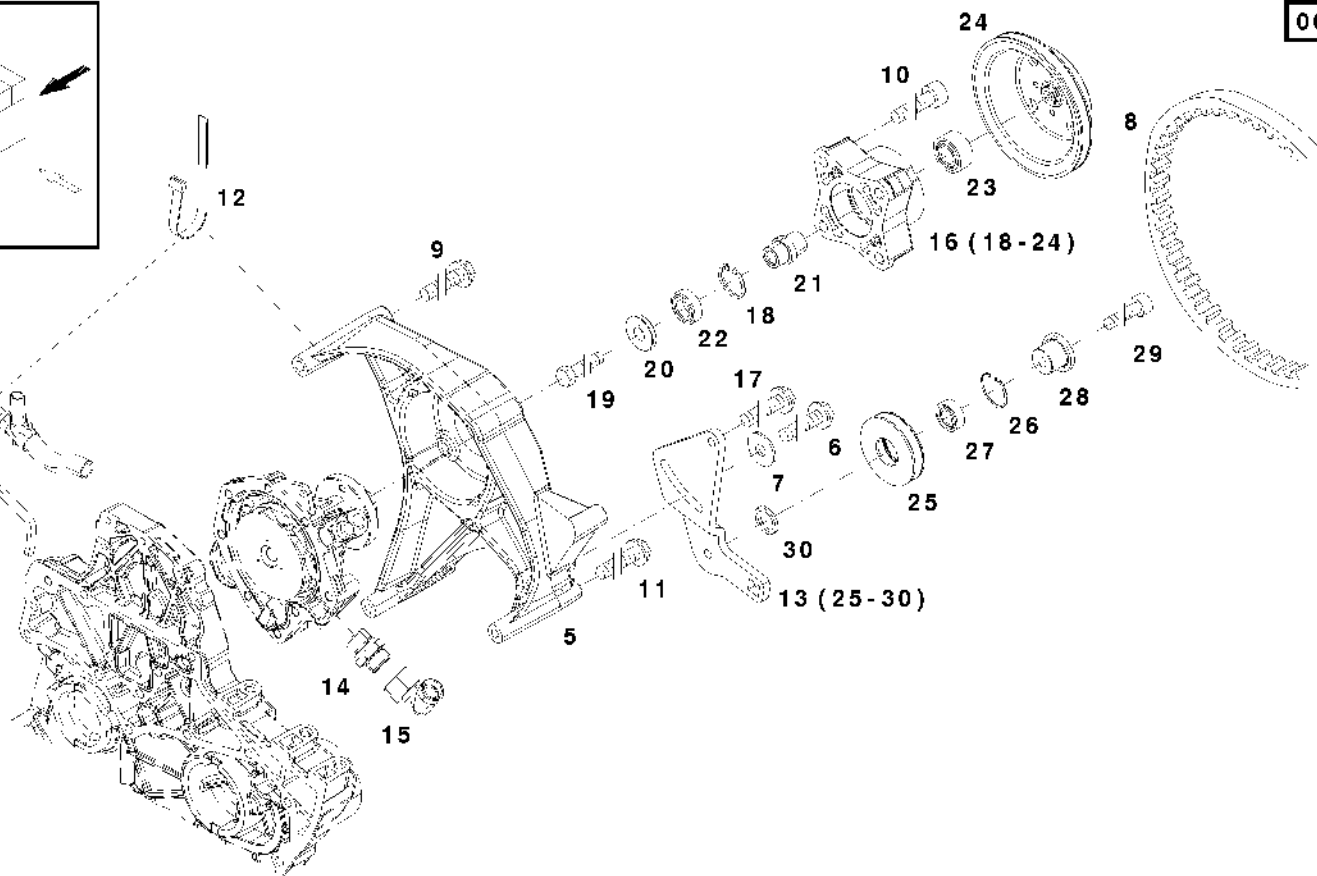




Referenznr.:

0169(-39-) 0510 3366

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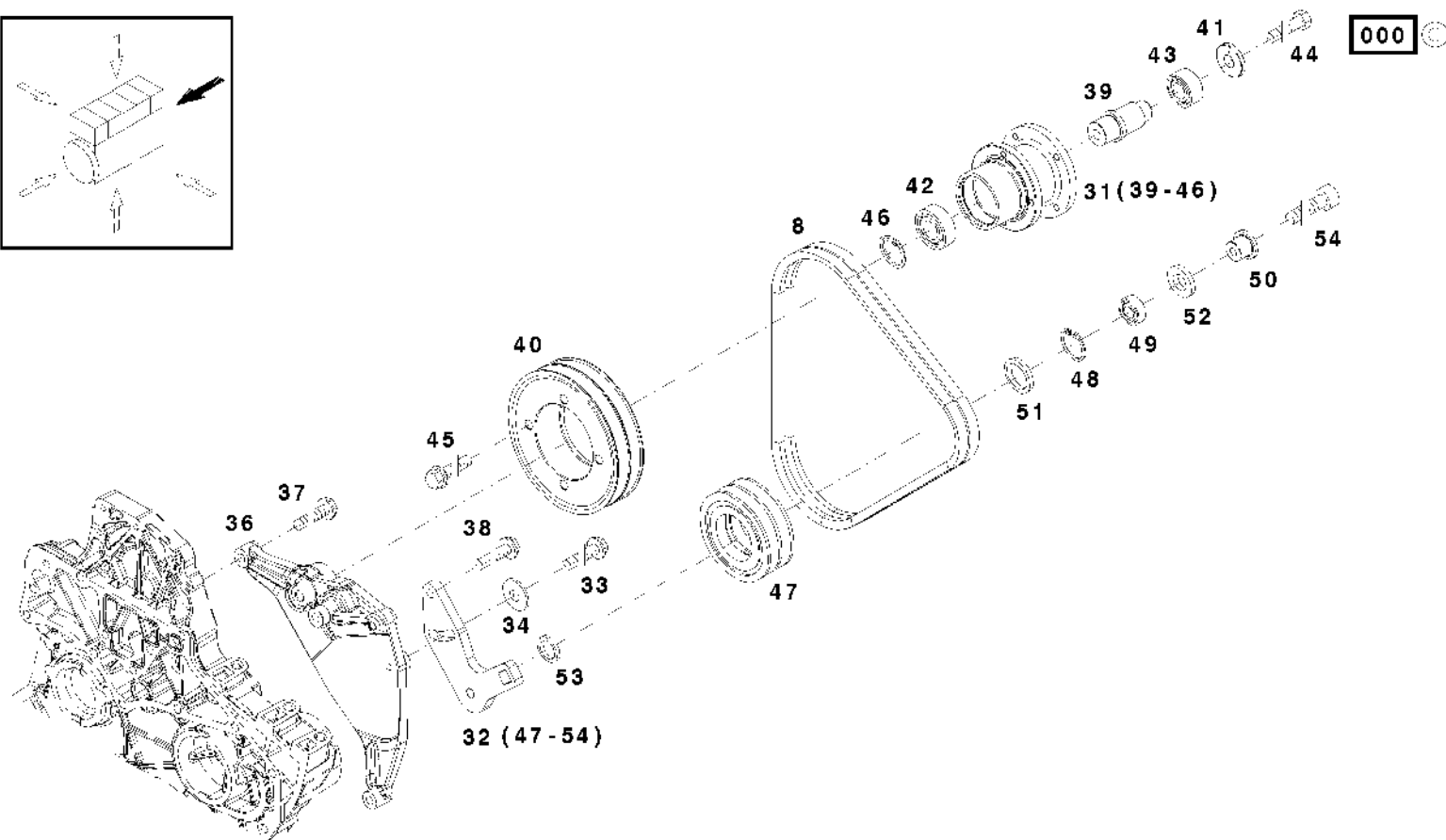
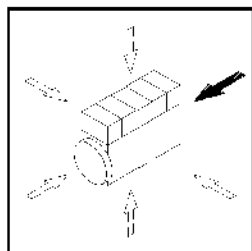




Lüfterlagerung
Fan support
Support de ventilateur
Apoyo de ventilador

Referenznr. :

0169-39- 0510 3388

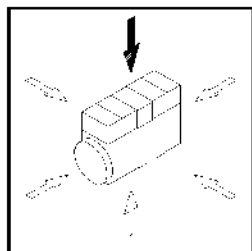




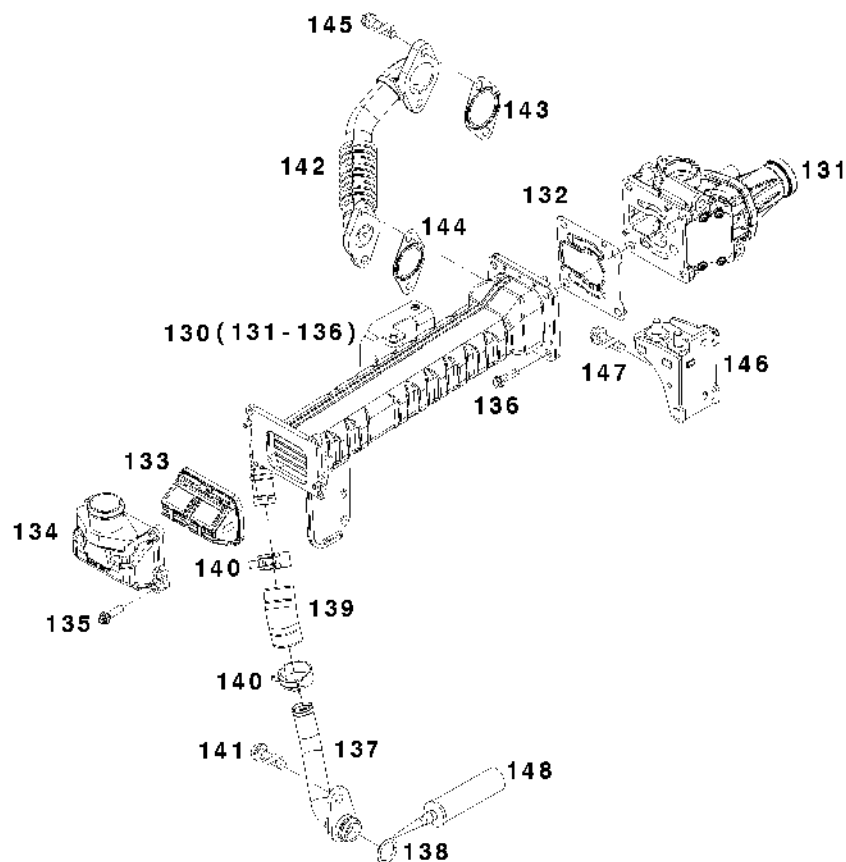
AGR-Modul
AGR-module
AGR-module
AGR-modulo

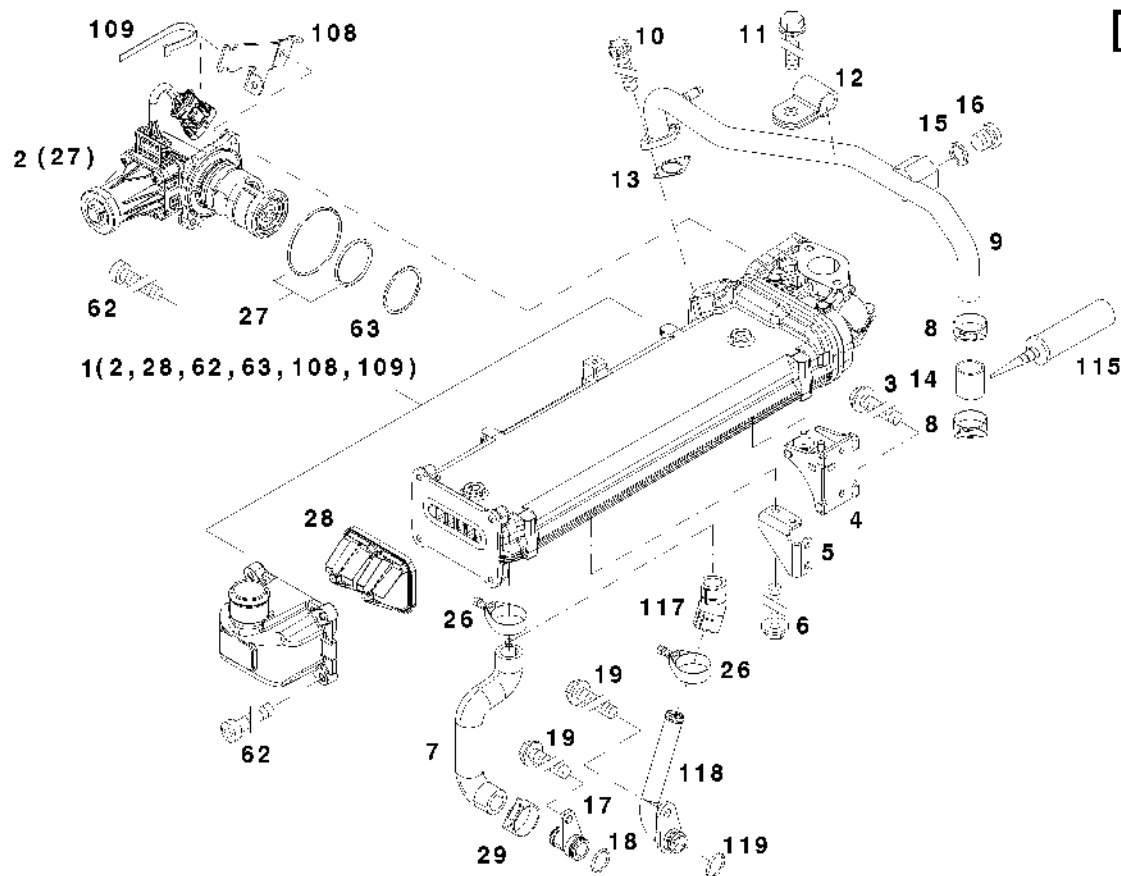
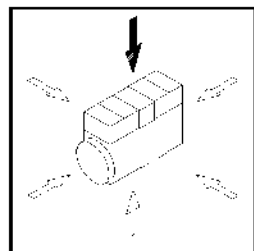
Referenznr. :

0169-41-0510 3379



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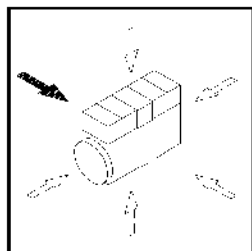




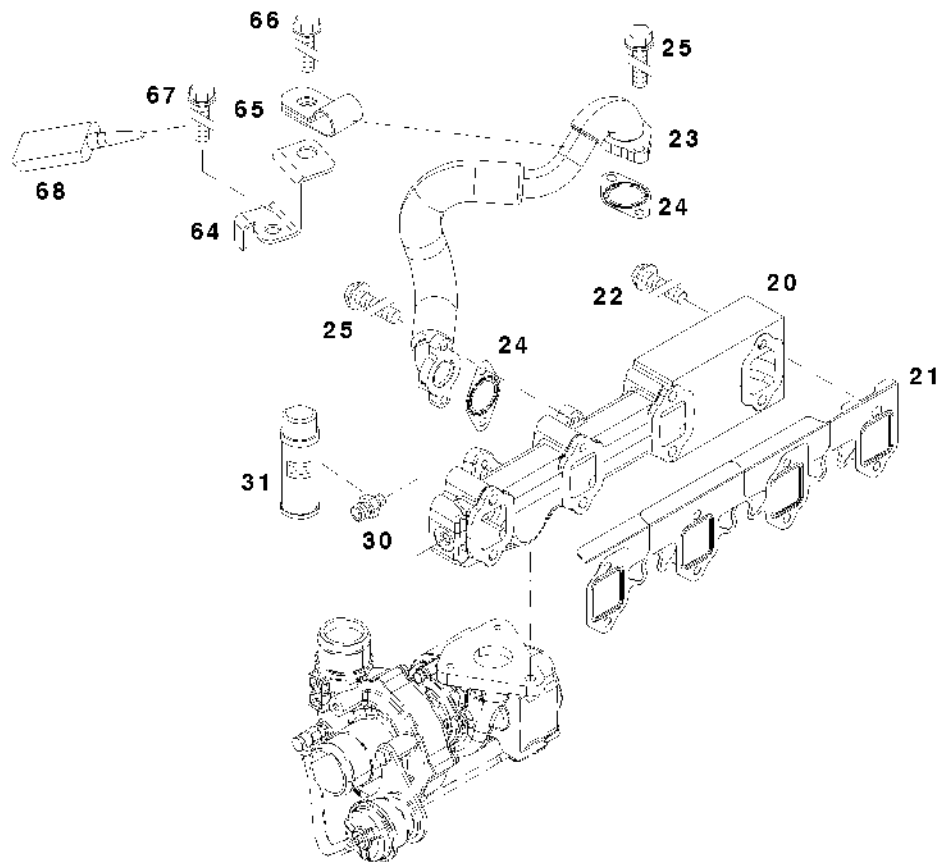
Abgasleitung
Exhaust pipe
Tubulure d'echappement
Tuberia de escape

Referenznr.:

0169-41-0510 3333



001

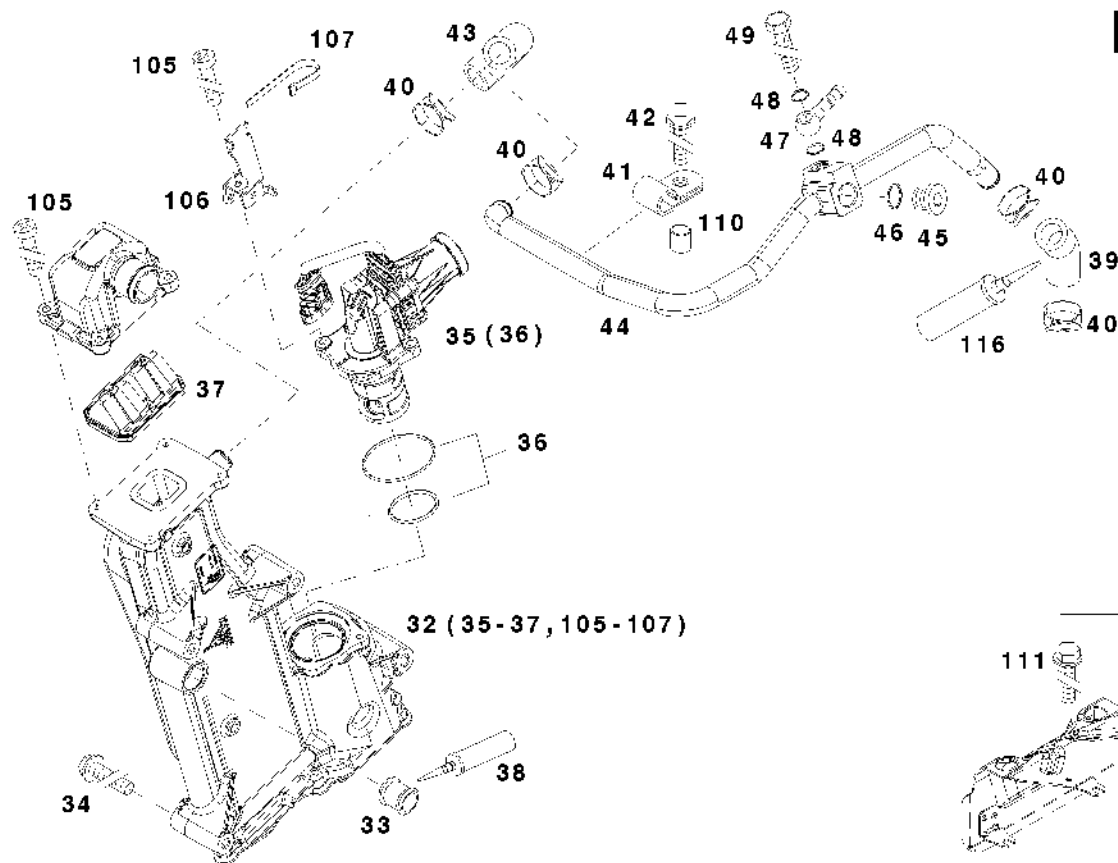
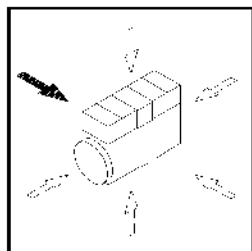




AGR-Modul
AGR-module
AGR-module
AGR-modulo

Referenznr.:

0169-41-0510 3367



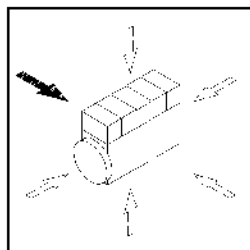
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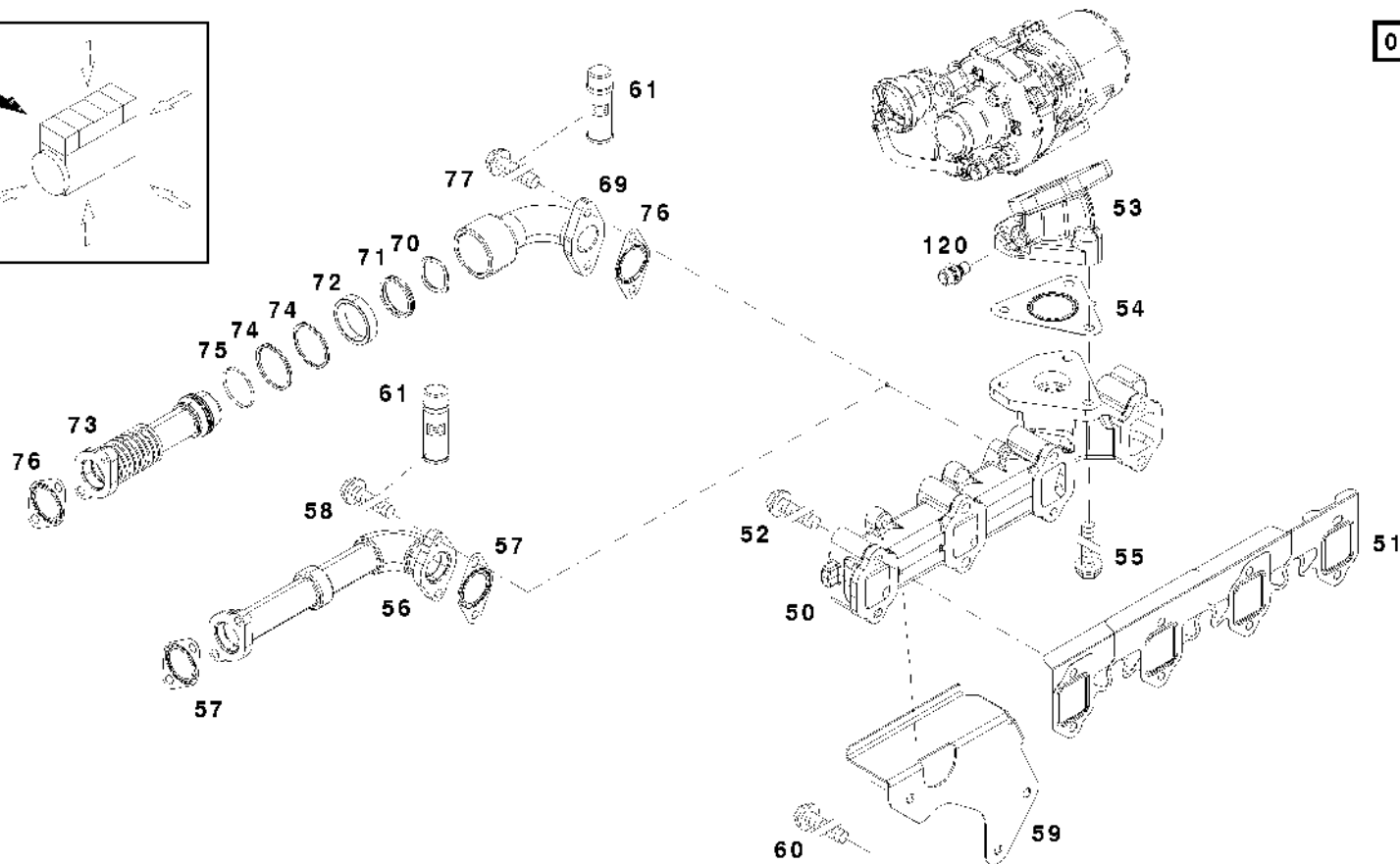
Abgasleitung
Exhaust pipe
Tubulure d'échappement
Tuberia de escape

Referenznr. :

0169-41-0510 3368



001

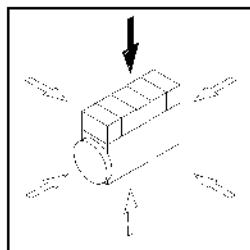




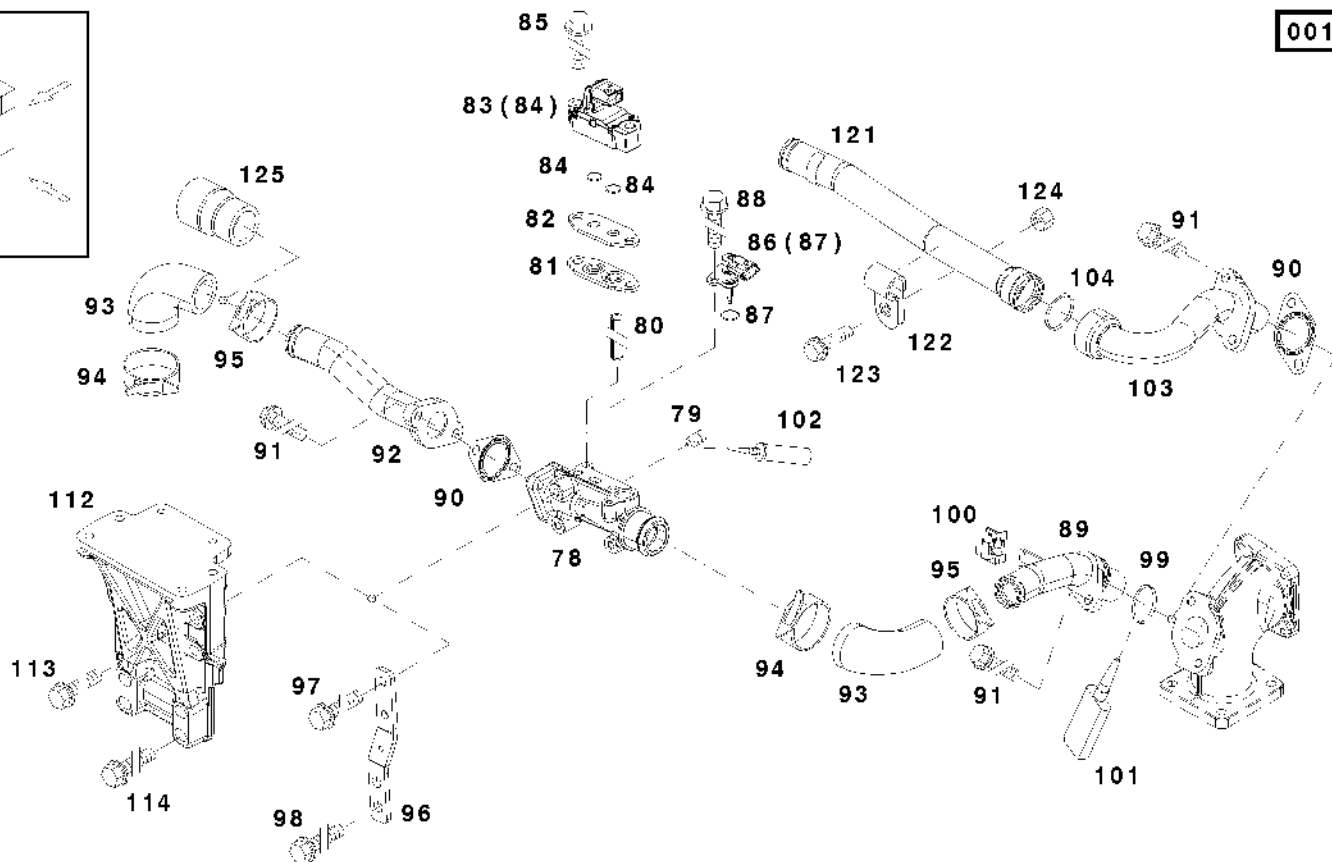
Abgasleitung
Exhaust pipe
Tubulure d'échappement
Tuberia de escape

Referenznr.:

0169-41-0510 3373



001

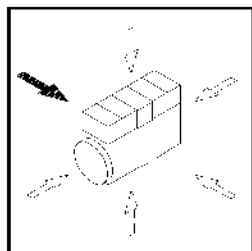




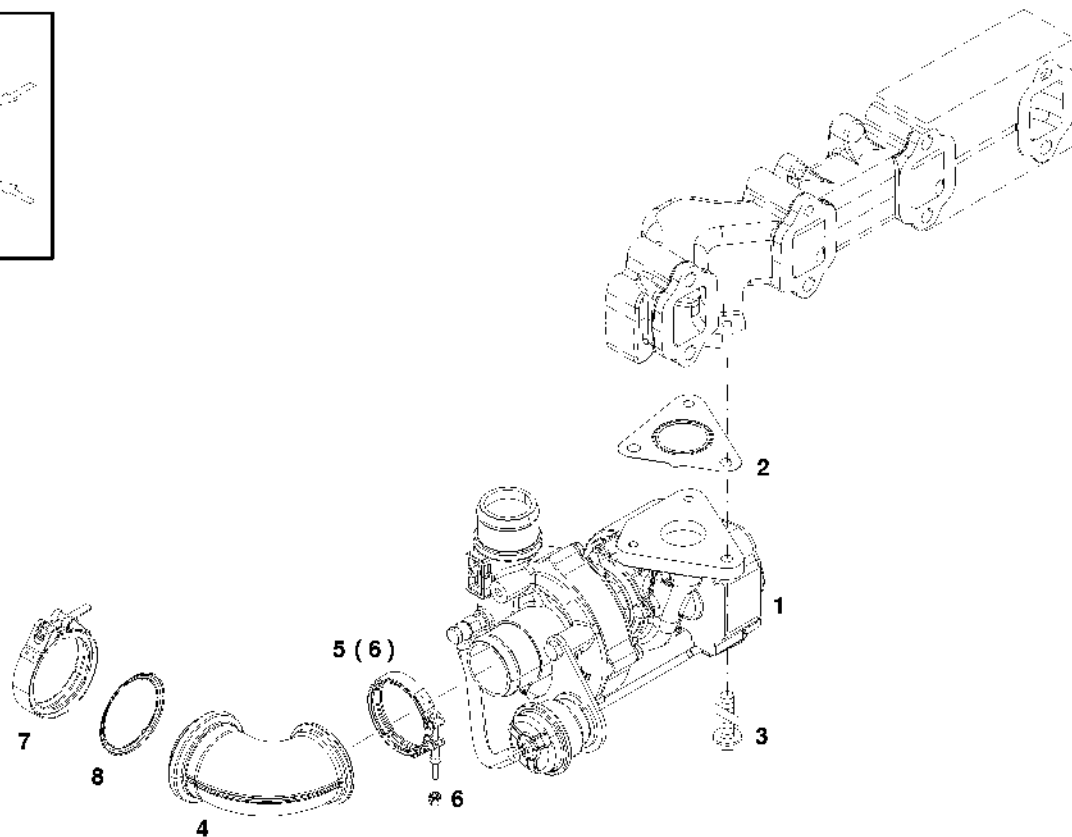
Abgasturbolader
Turbocharger
Turbocompresseur
Turbo

Referenznr. :

0169-43- 0510 3334



002

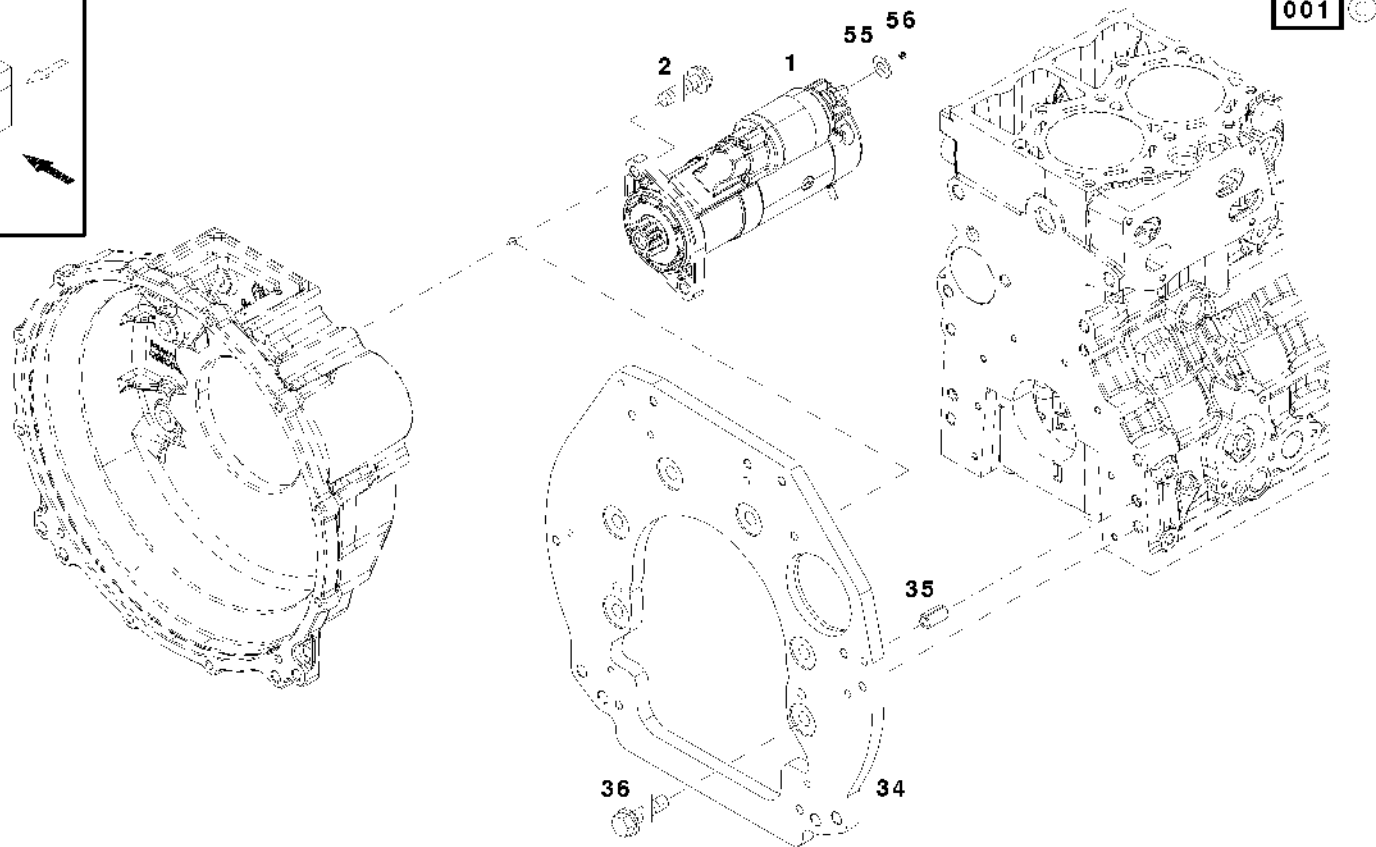
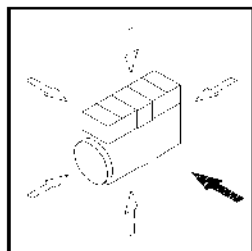




Starter
Starter
Demarreur
Arrancador

Referenznr.:

0169-44- 0510 3335

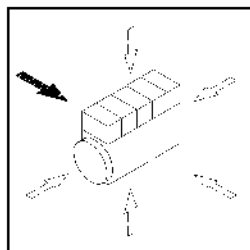




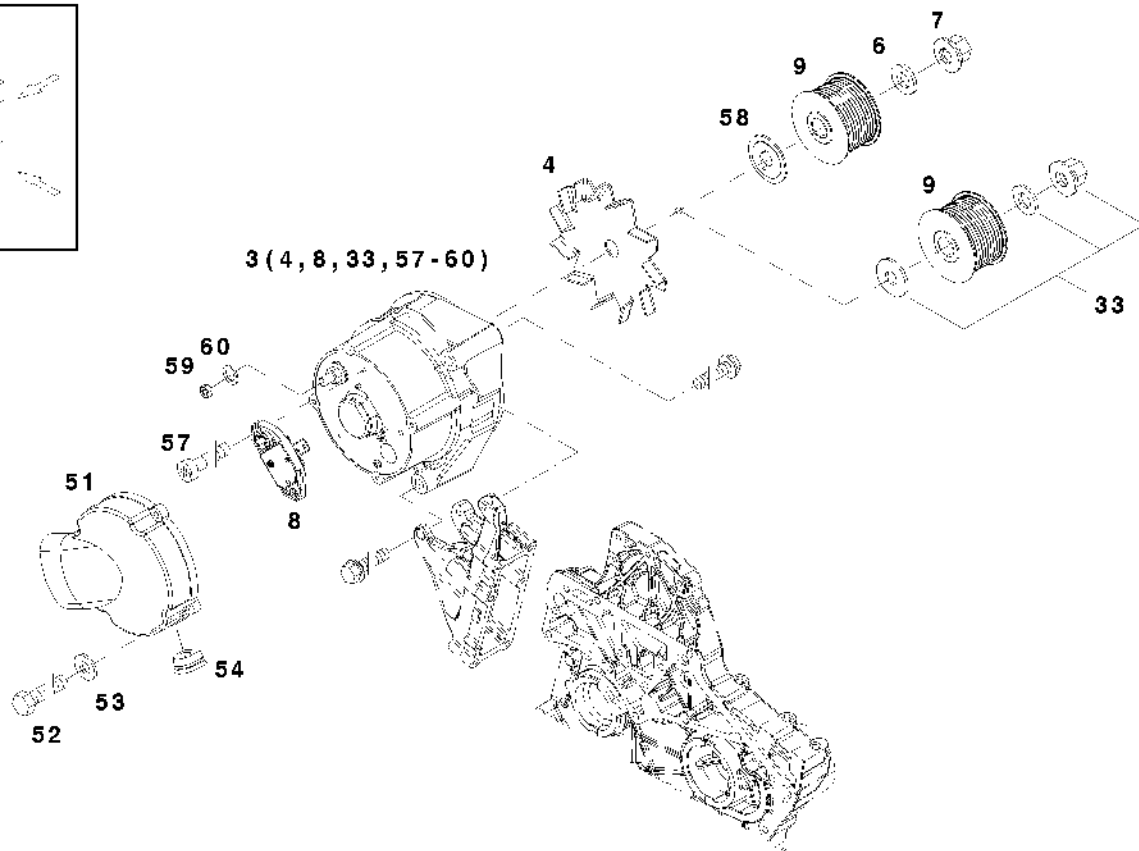
Generator
Generator
Generatrice
Generador

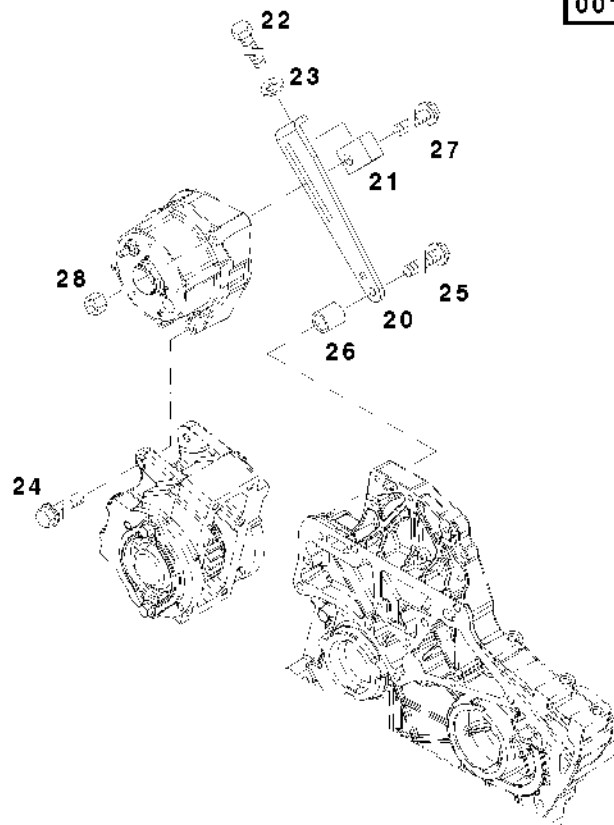
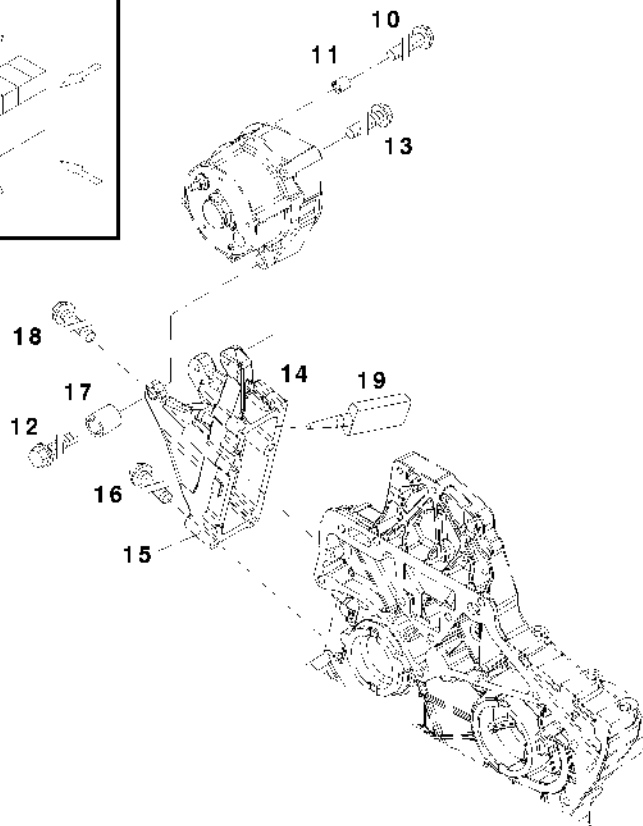
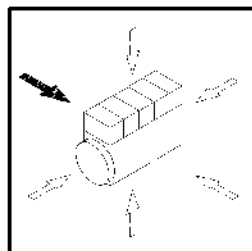
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0169-44- 0510 3338



002



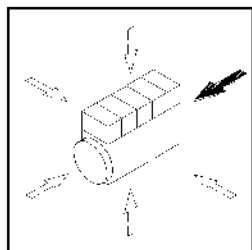




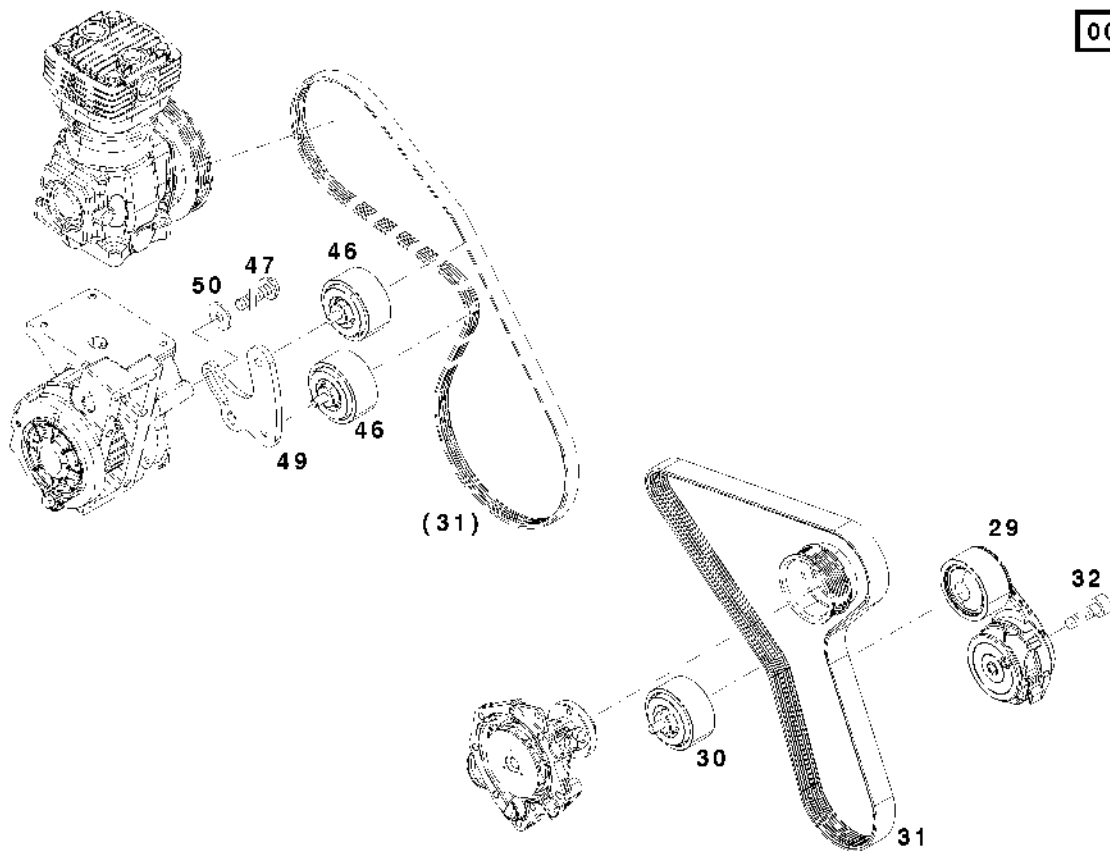
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V-belt
Courroie trapezoid
Correa trapezoidal

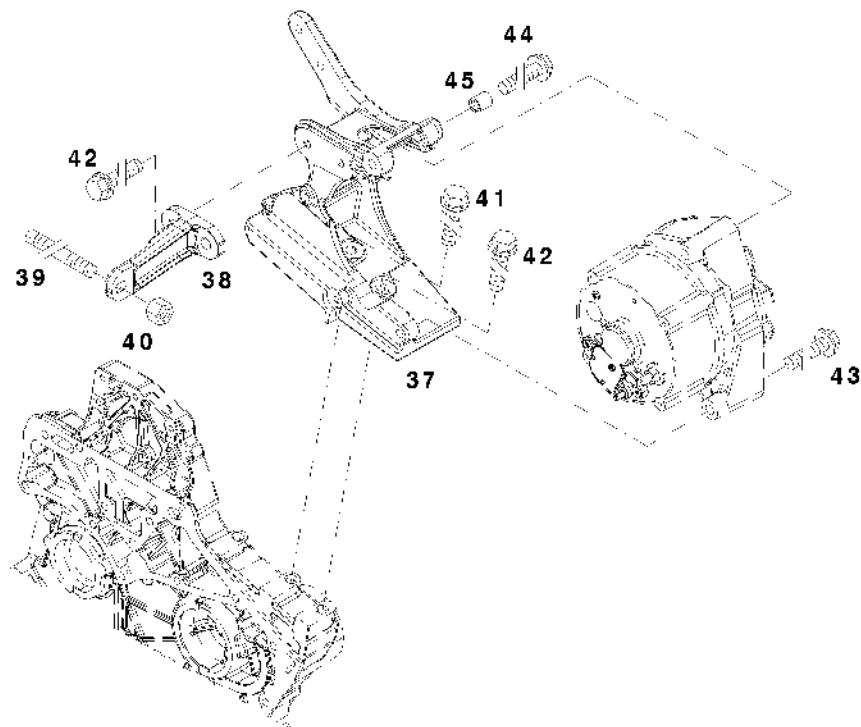
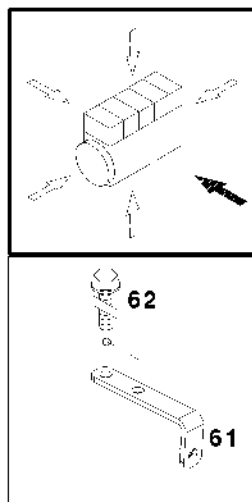
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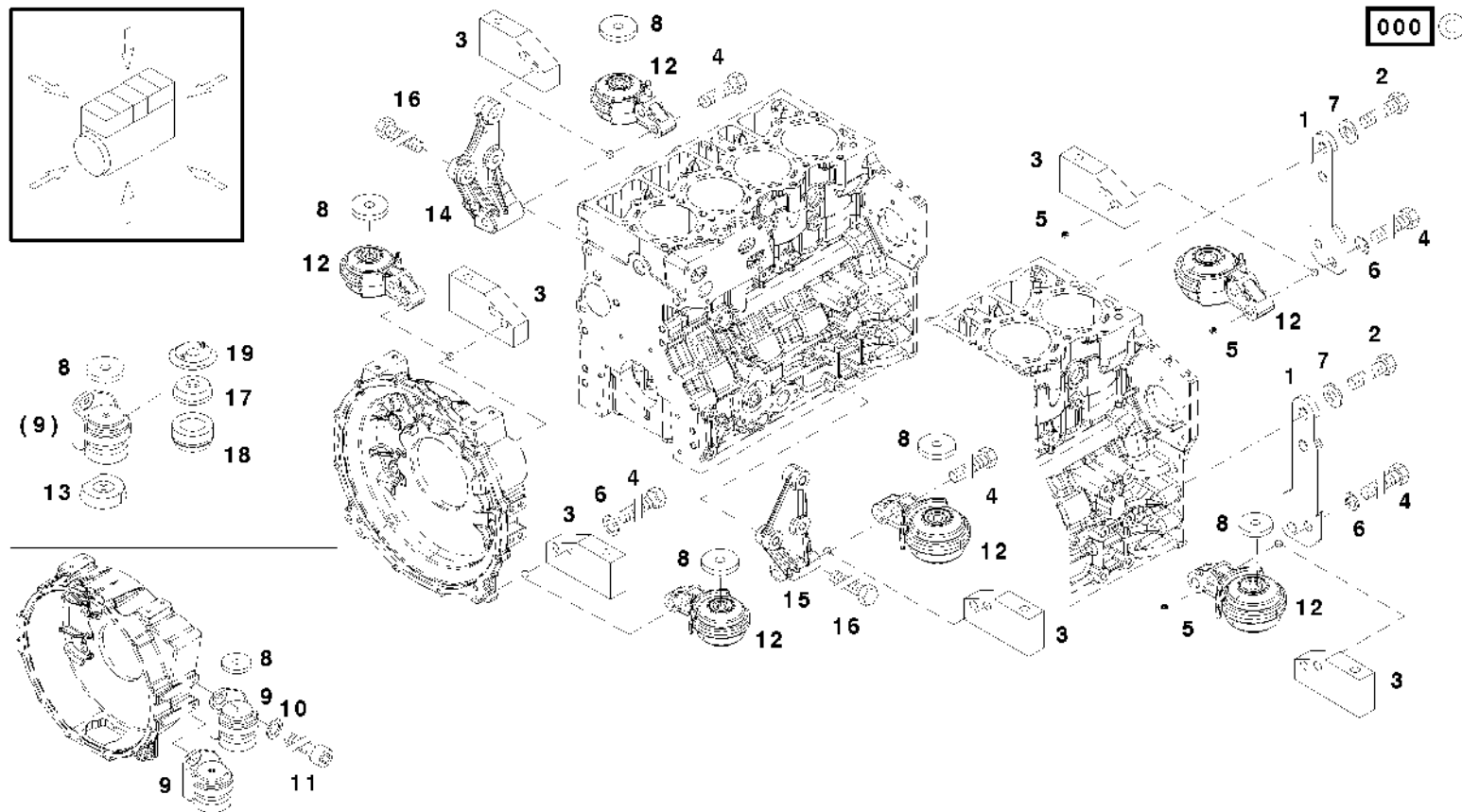
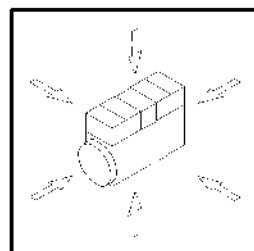
0169-44-0510 3350

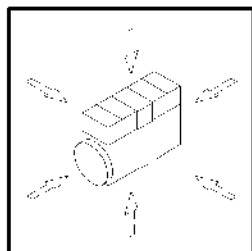


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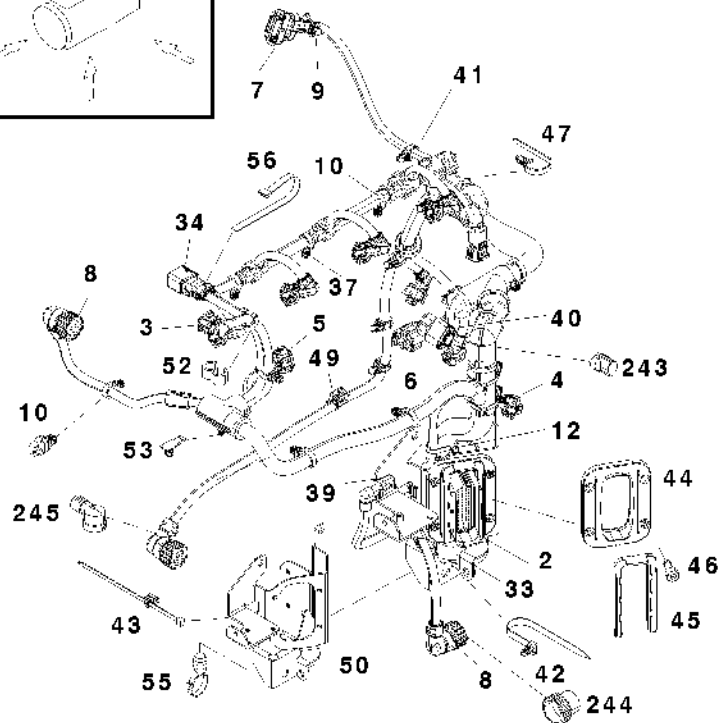




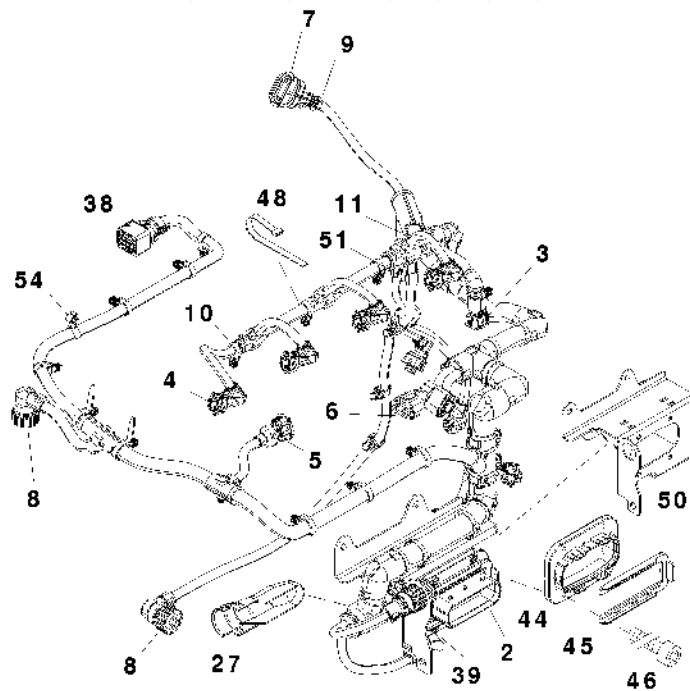


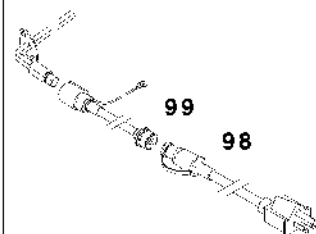
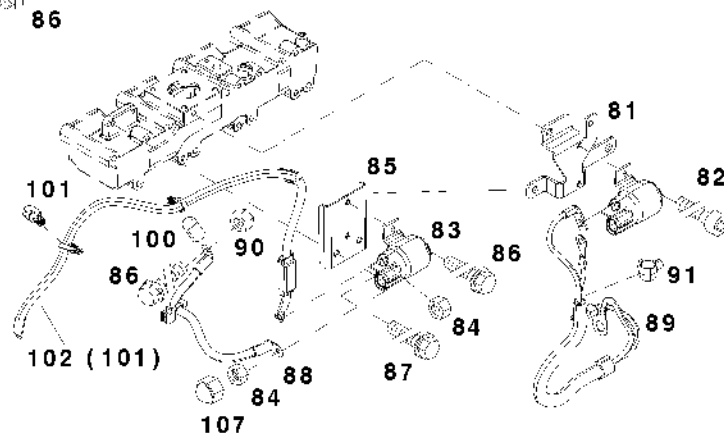
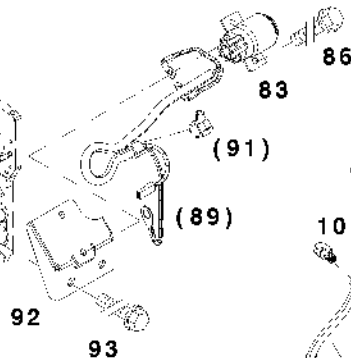
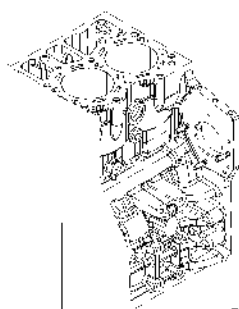
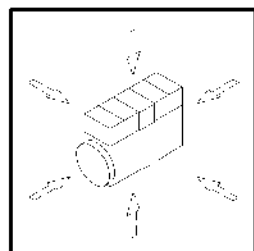


1 (2-10, 12, 27, 33, 37-50, 53, 56, 24



1 (2-12, 38-40, 43-46, 50, 51, 53, 54)



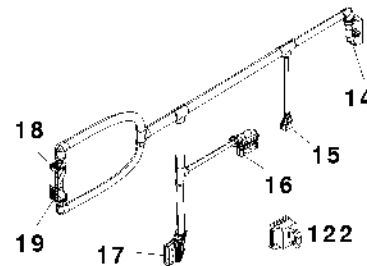
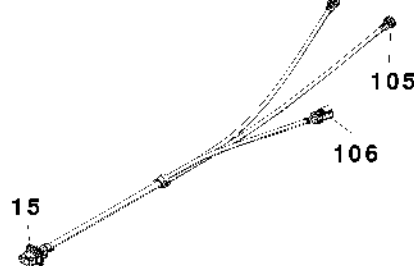
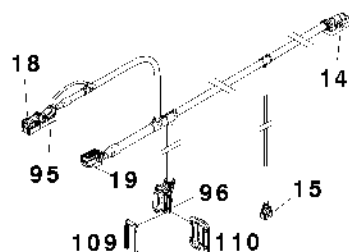
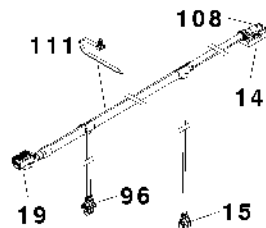


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13 (14 - 19, 108, 122)

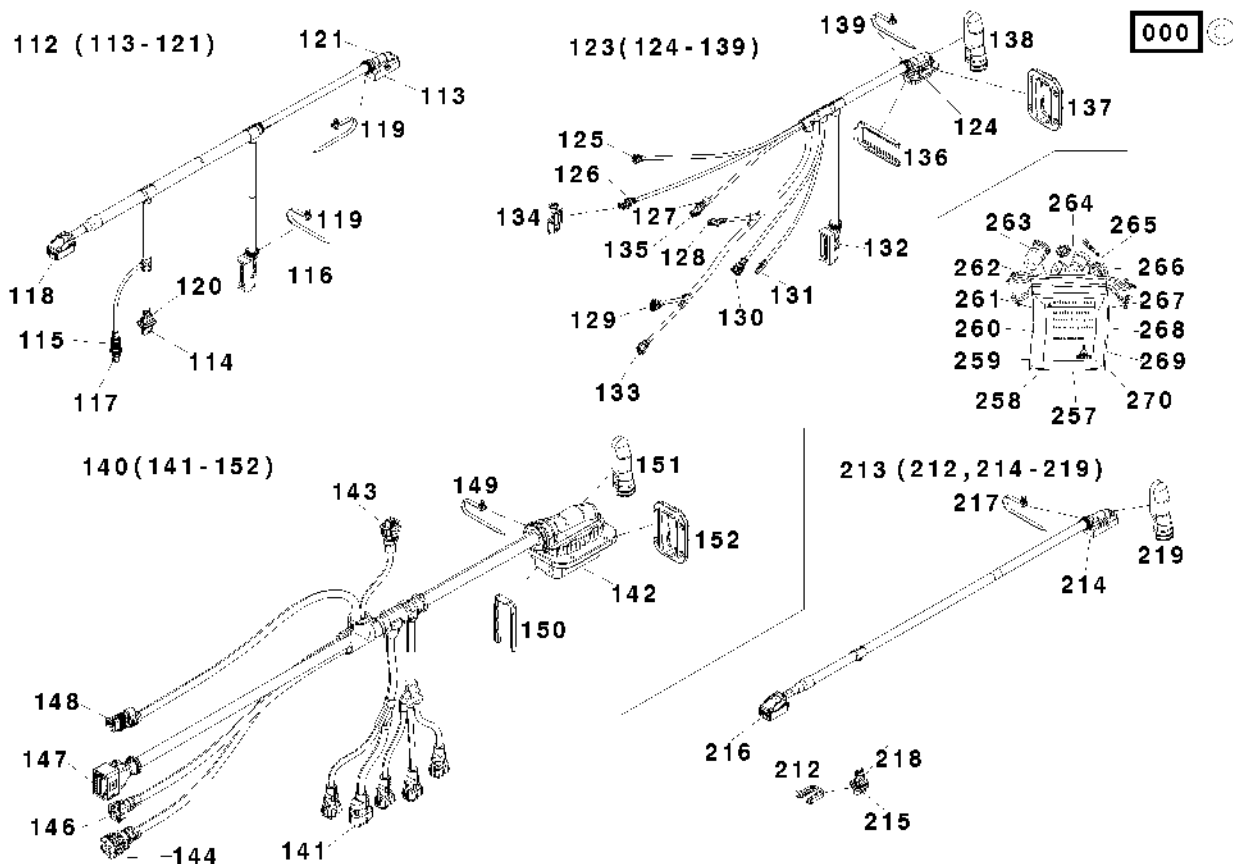
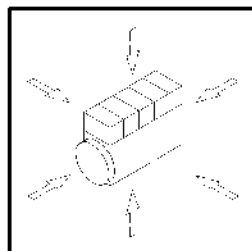




Verbindungsleitung
Connecting pipe
Conduit de jonction
Tuberia de union

Referenznr.:

0169-48- 0510 3377

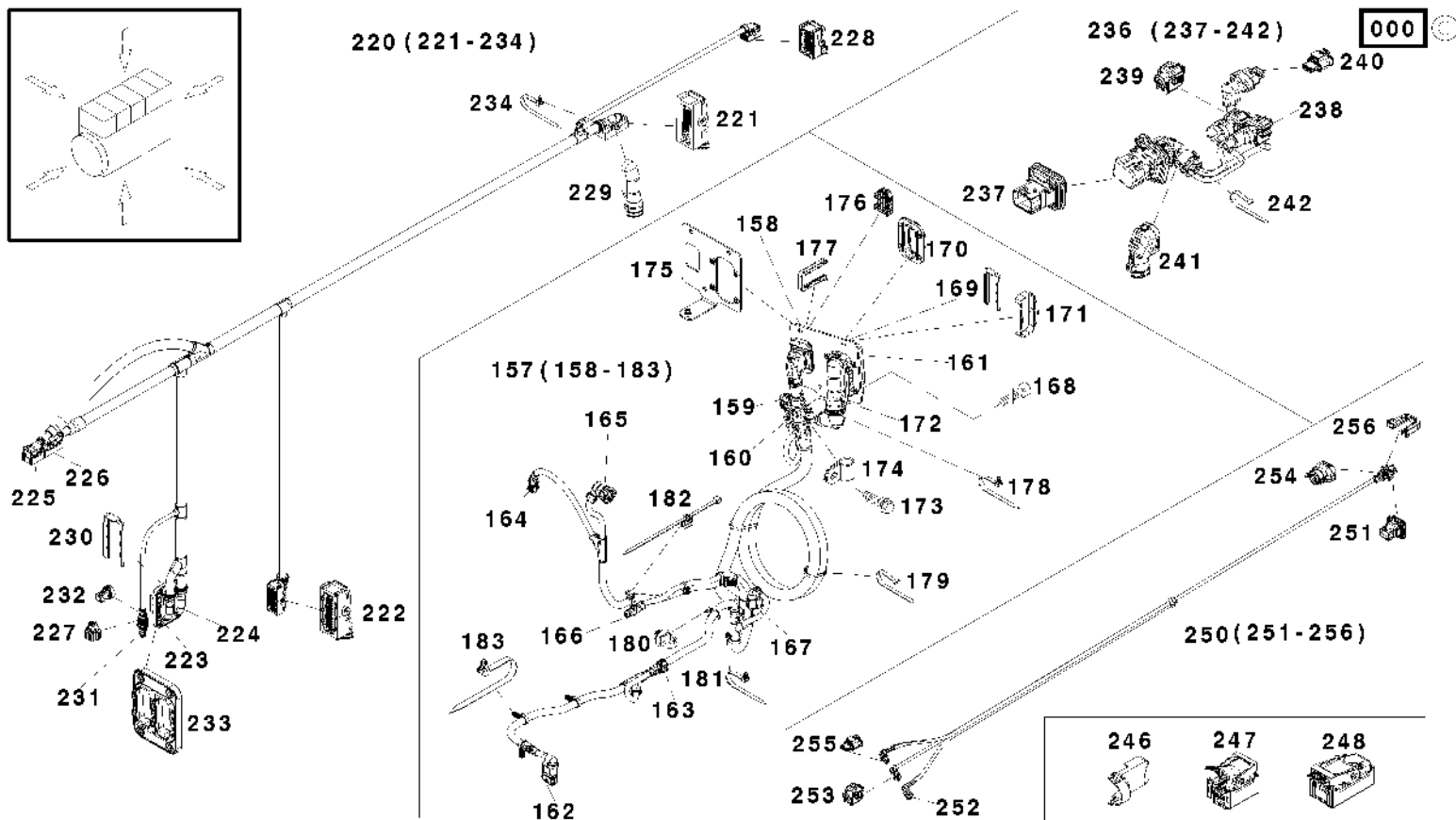
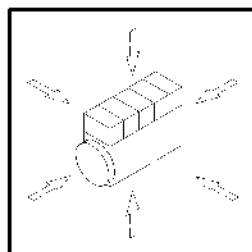




Verbindungsleitung
Connecting pipe
Conduit de jonction
Tuberia de union

Referenznr.:

0169-48- 0510 3391

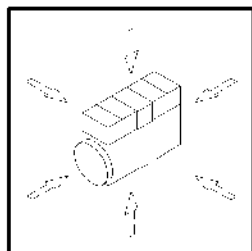




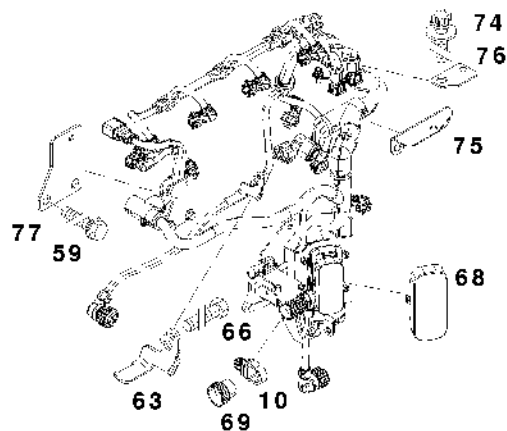
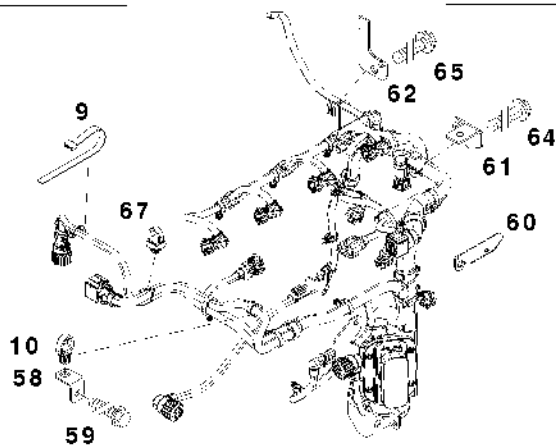
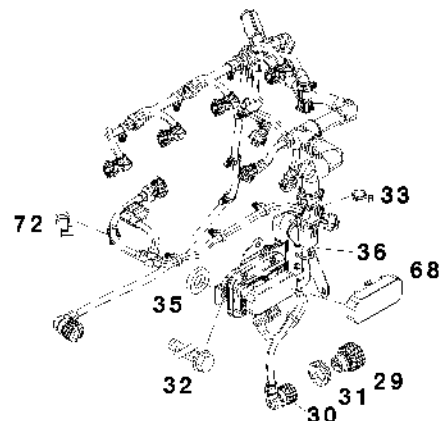
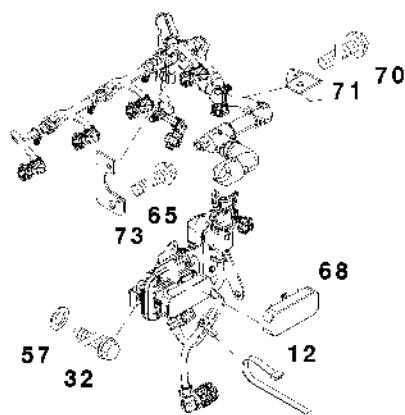
Befestigungsteile
Fastenings
Pièces de fixation
Piezas de sujecion

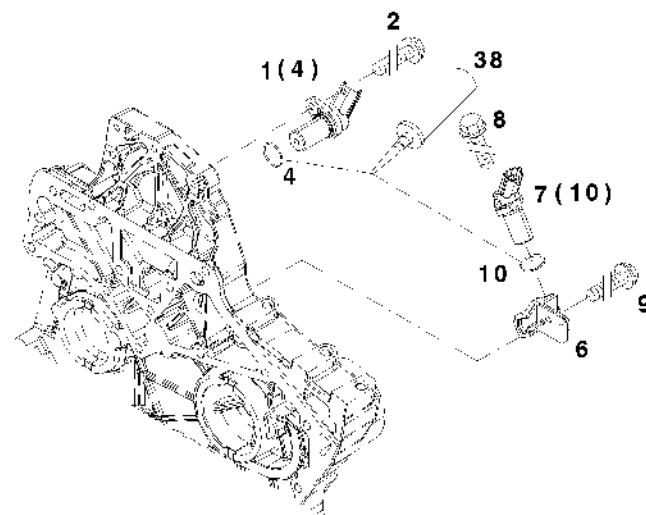
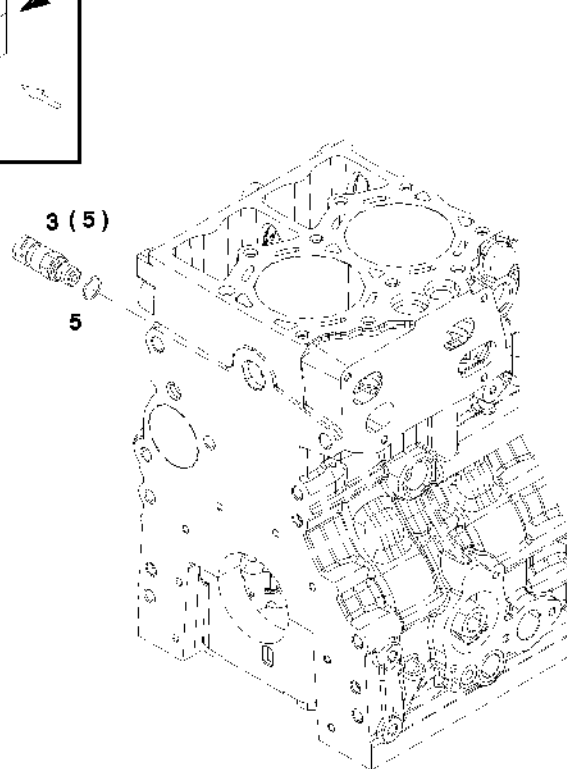
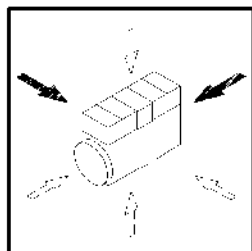
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0169-48- 0510 3376



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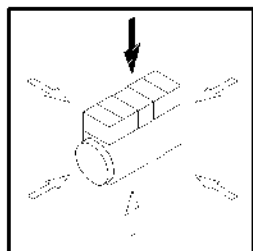




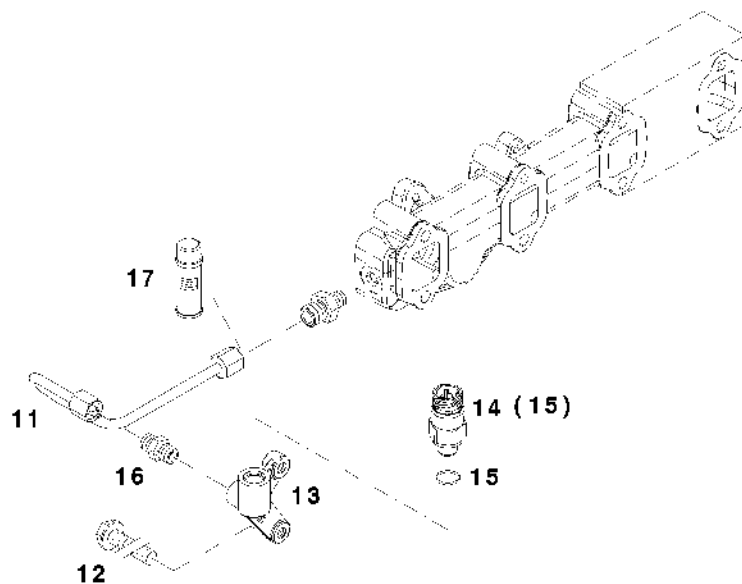
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Sensor
Sensor
Sensor

Referenznr. :

0169-51-0510 3370



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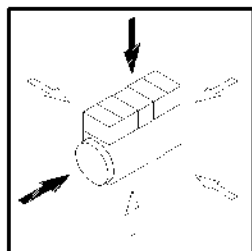




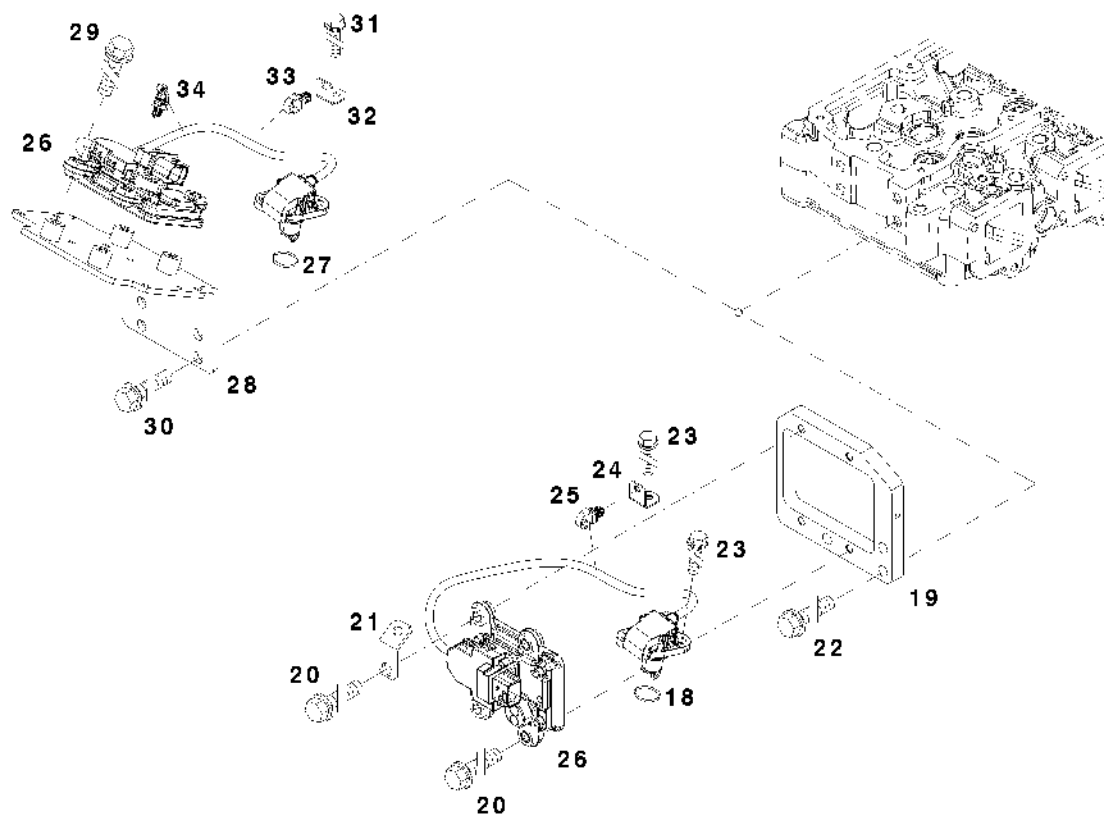
Sensor
Sensor
Sensor
Sensor

Referenznr. :

0169-51- 0510 3371



000

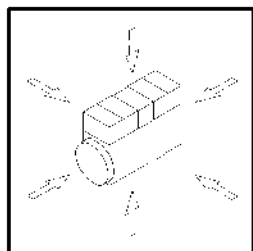




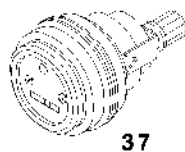
Messgeräte
Test units
Instruments de mesure
Aparatos medicion

Referenznr. :

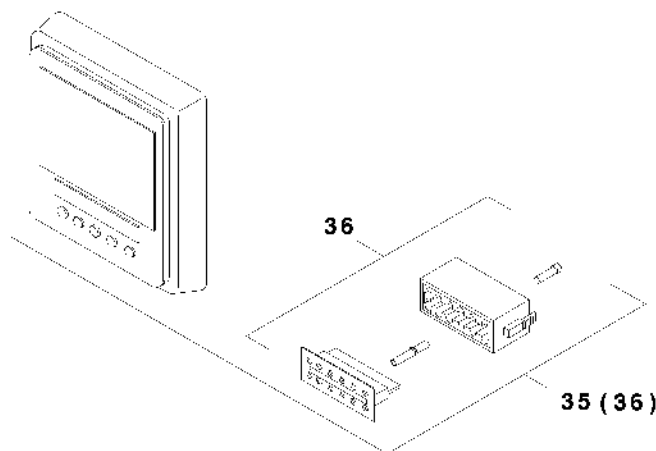
0169-51- 0510 3372



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37

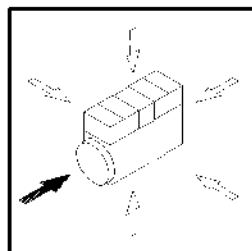




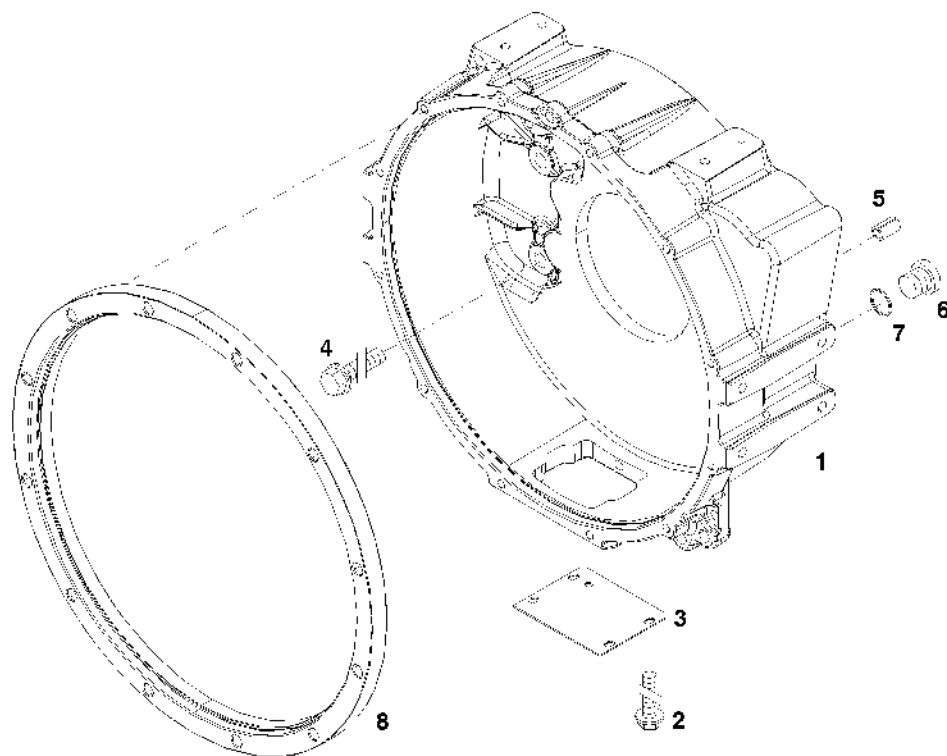
Schwungradgehäuse
Flywheel housing
Carter de volant de moteur
Caja del volante

Referenznr.:

0169-52- 0510 3344



001



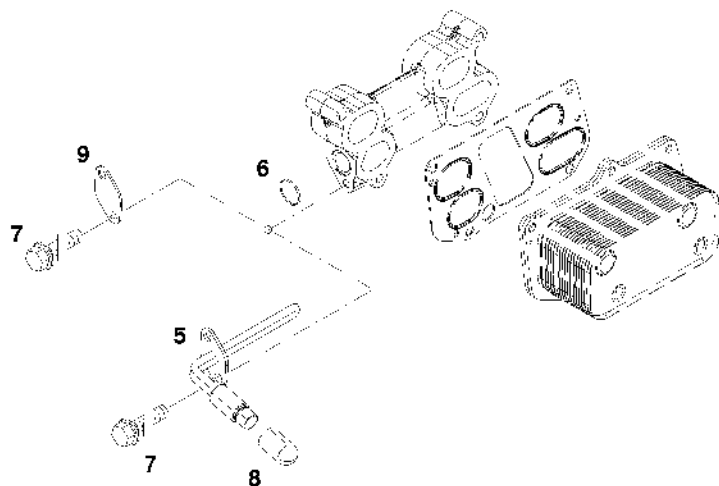
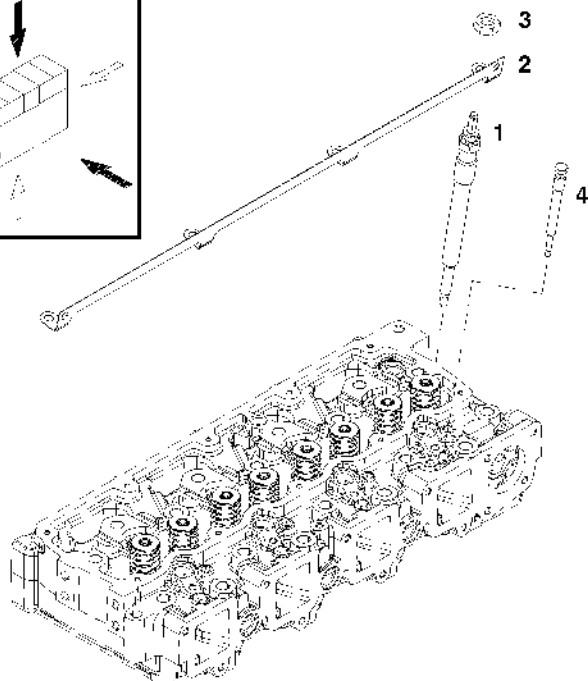
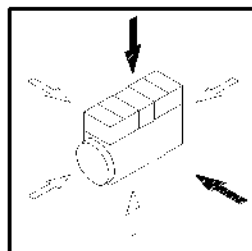


Starthilfe
Starting aid
Artification au demarrage
Ayuda de arranque

Referenznr.:

0169-63- 0510 3345

002 



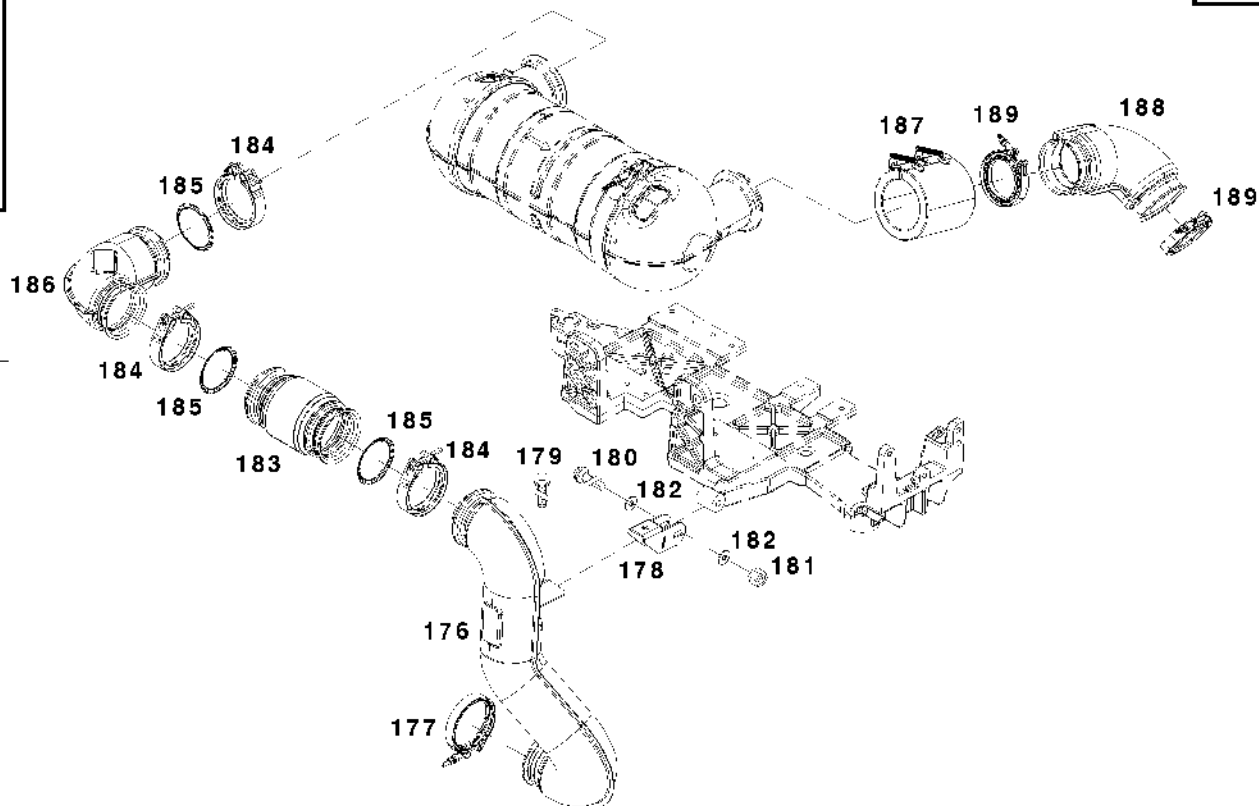
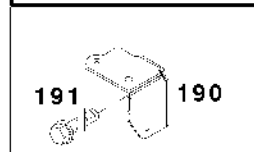
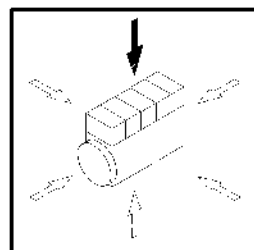


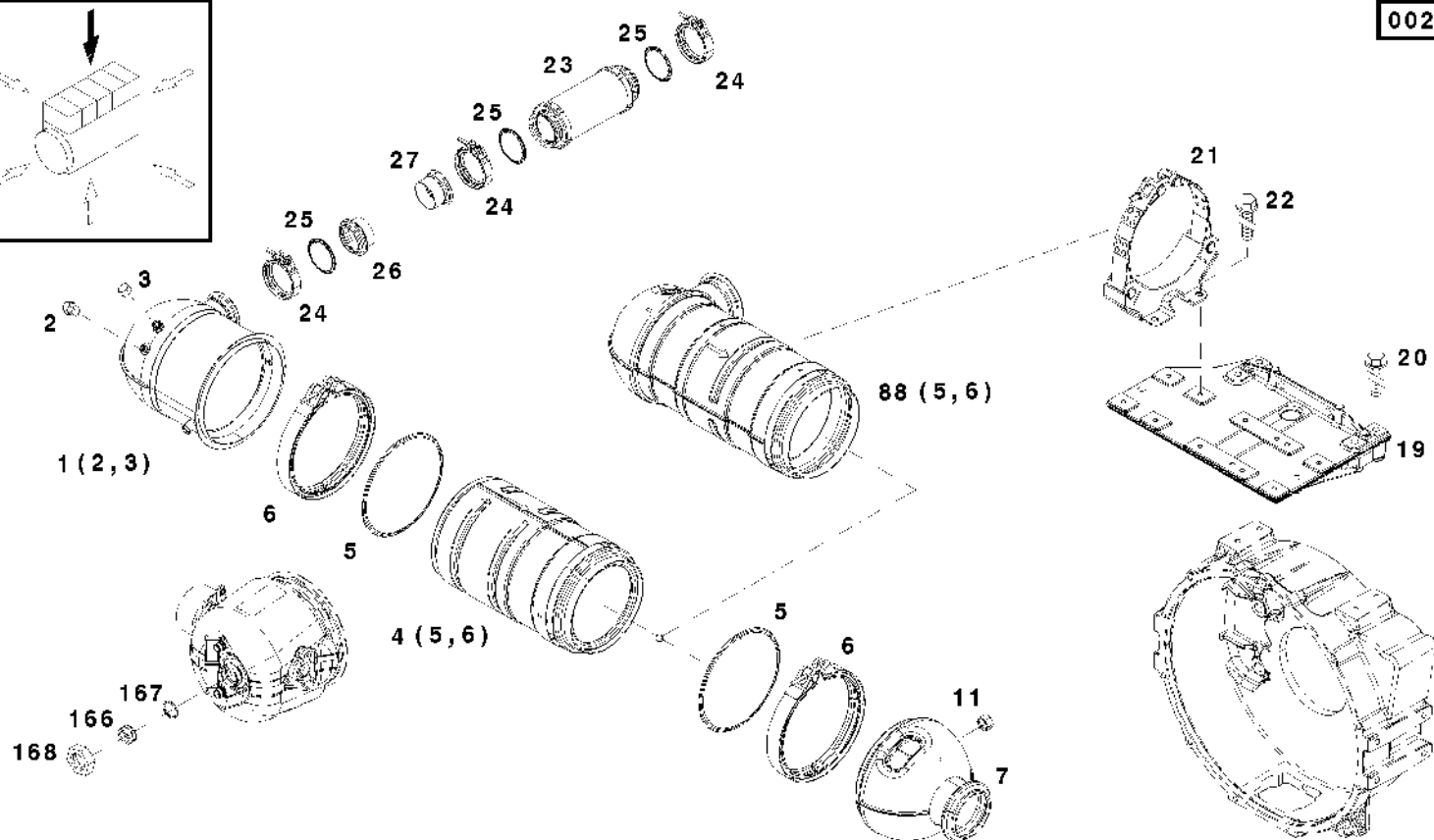
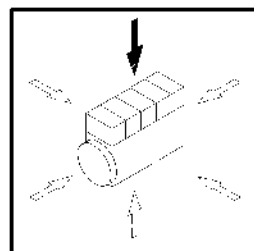
Partikelfilter
Particulate filter
Filtre a particule
Filtro d. particula

Referenznr. :

0169-71- 0510 3378

000



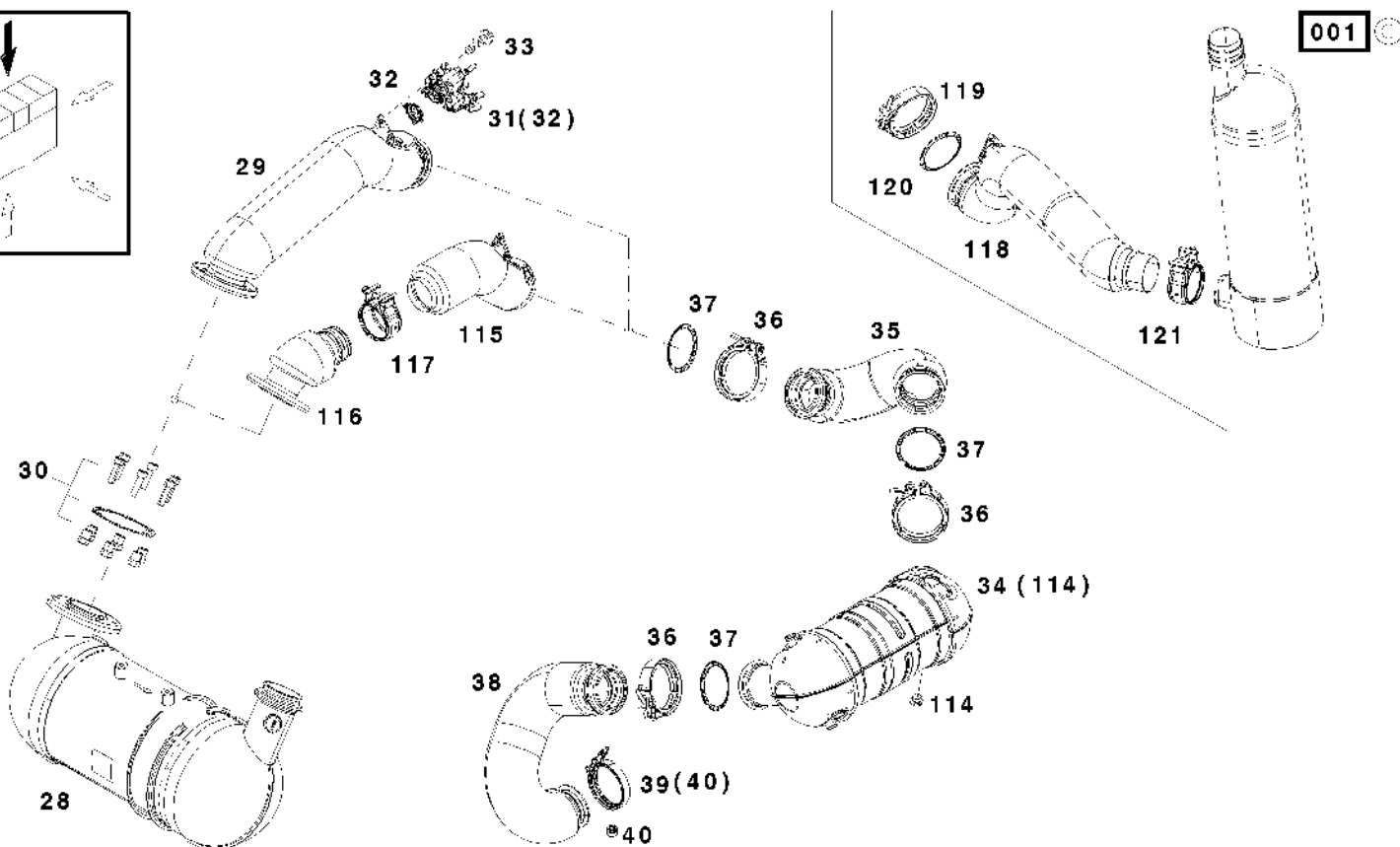
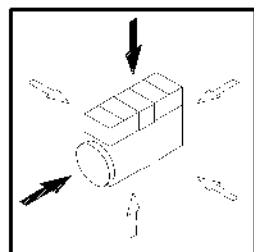




Katalysator
Catalytic converter
Catalyseur
Catalizador

Referenznr.:

0169-71-0510 3380

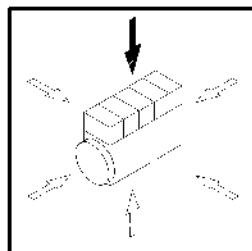




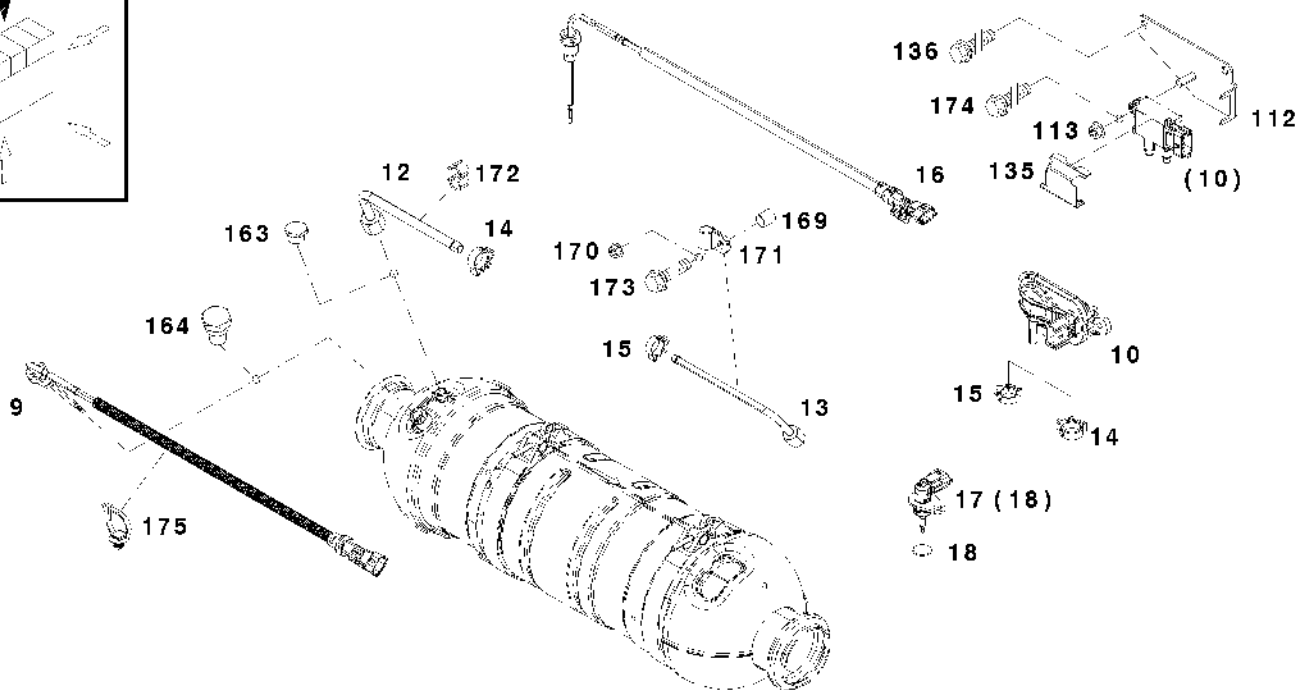
Geberanbau
Transmitter mount.
Montage de capteur
Transmisor compl.

Referenznr.:

0169-71- 0510 3347



002

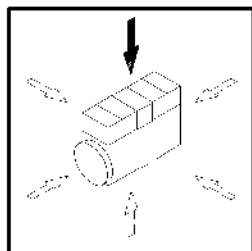




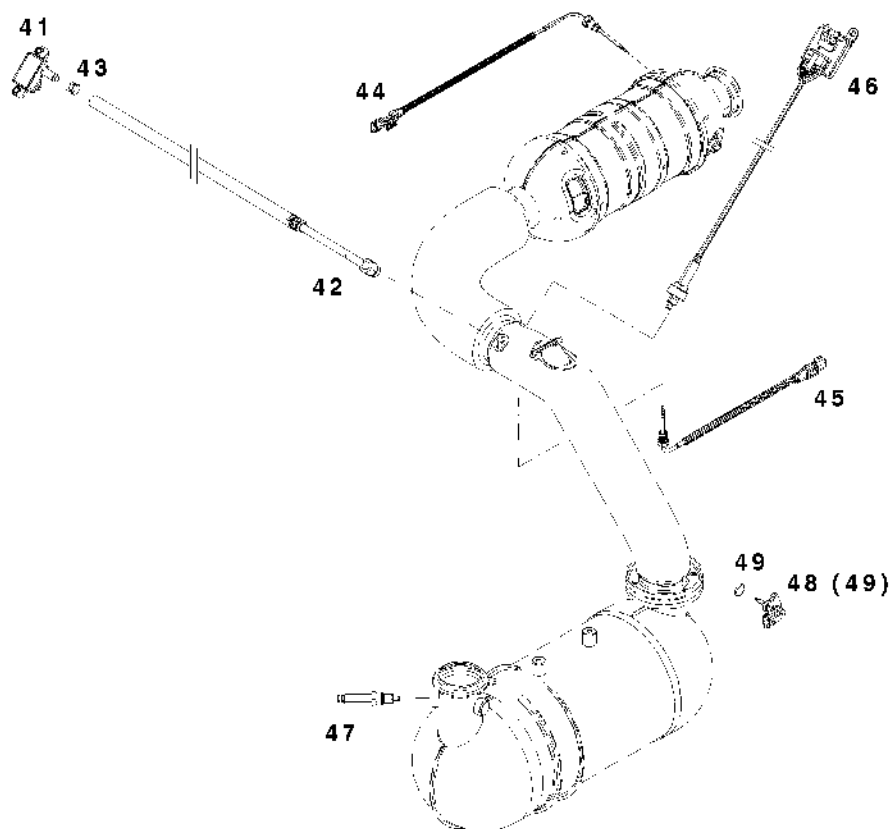
Geberanbau
Transmitter mount.
Montage de capteur
Transmisior compl.

Referenznr.:

0169-71- 0510 3381



000

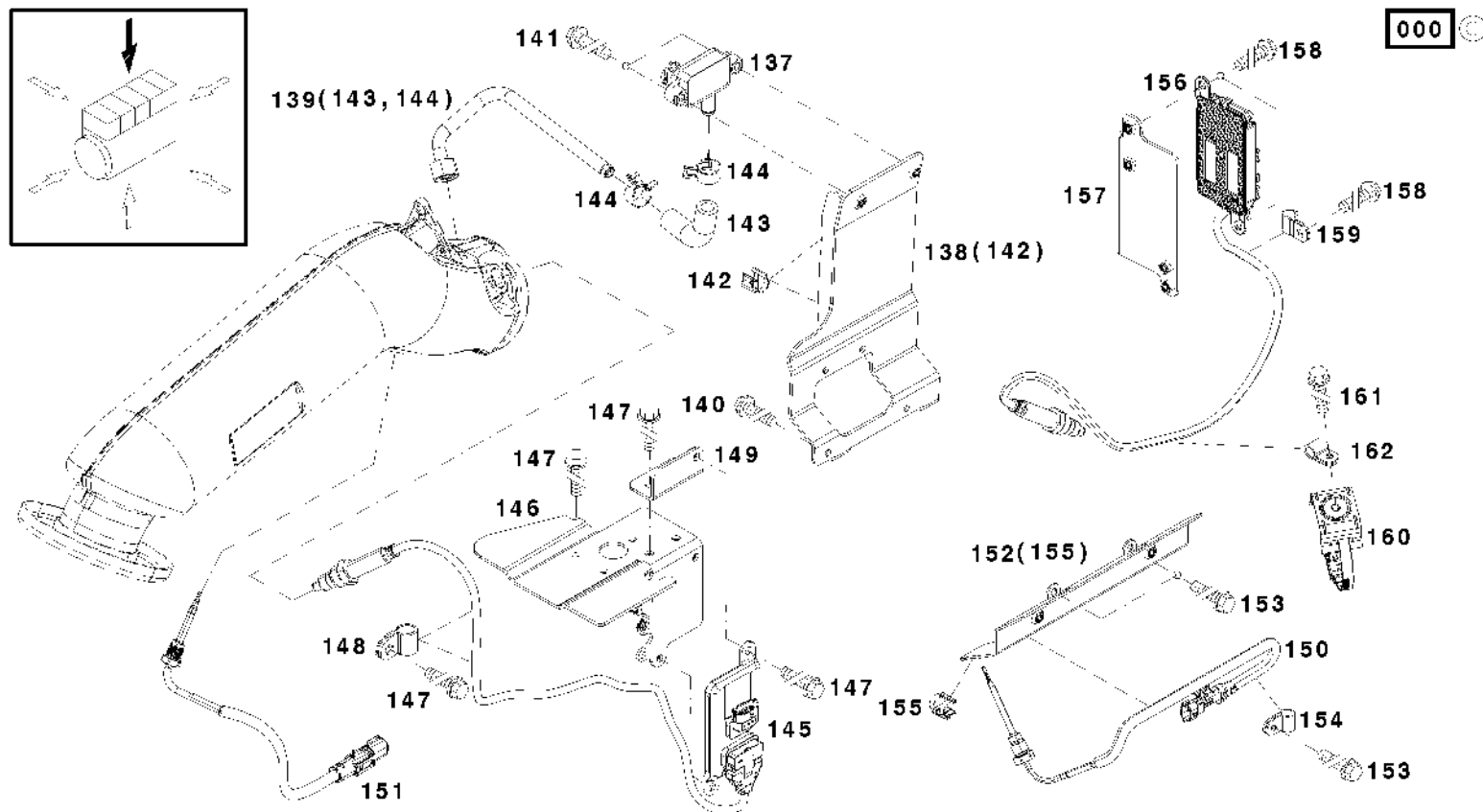
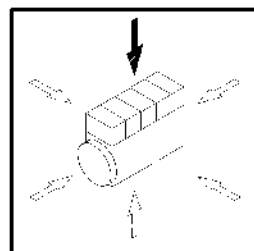


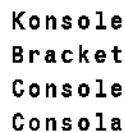


Geberanbau
Transmitter mount.
Montage de capteur
Transmisor compl.

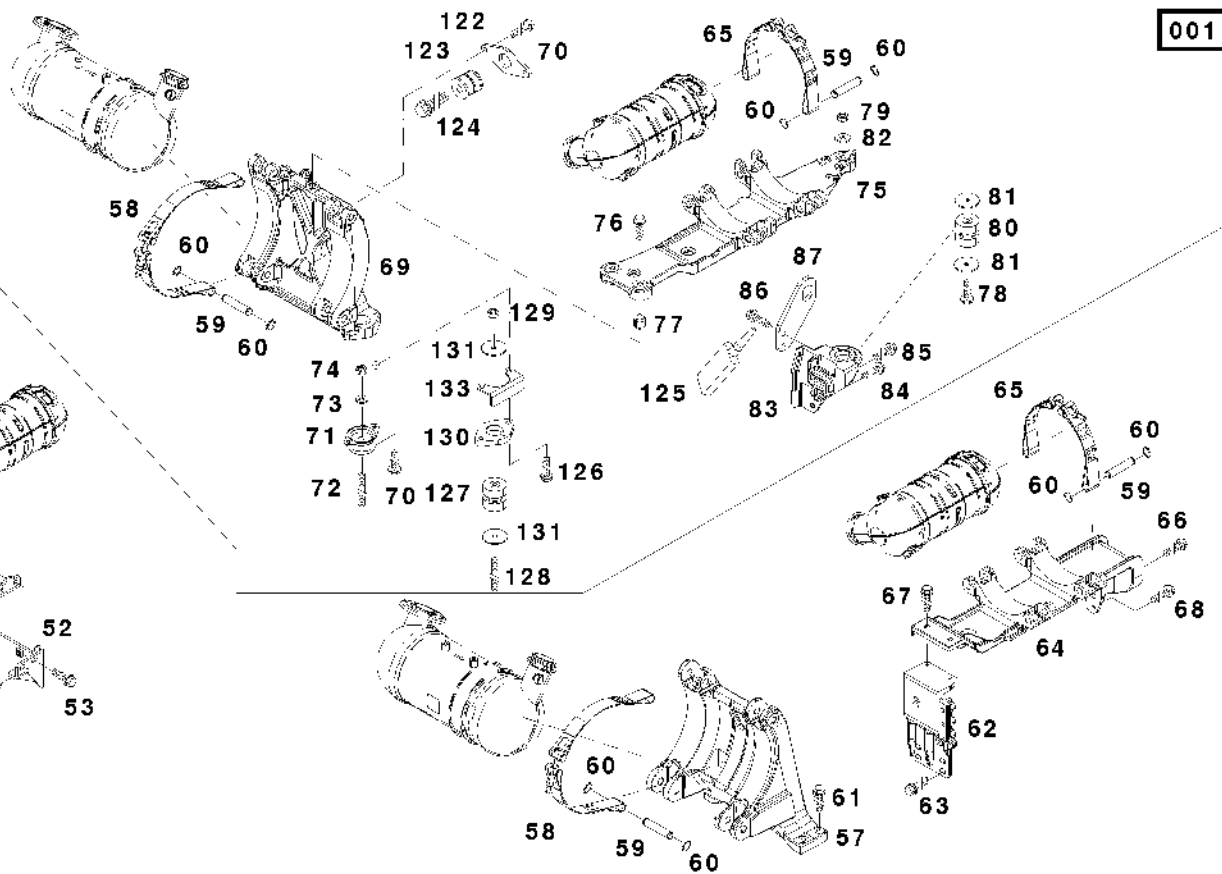
Referenznr.:

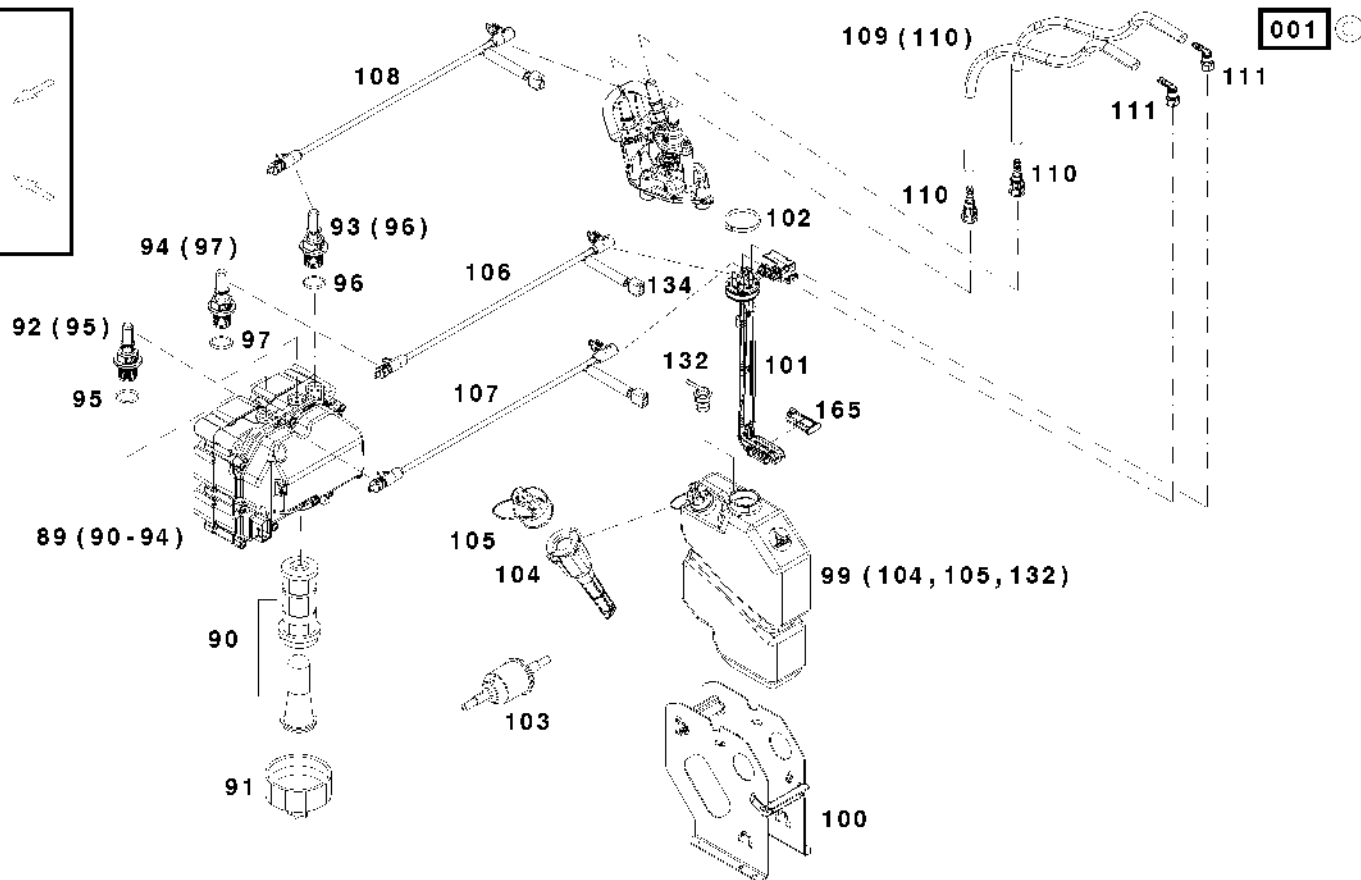
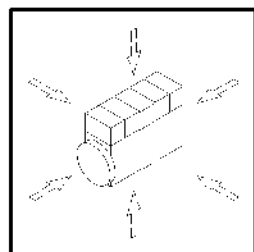
0169-**71**- 0510 3384





0169(71-) 0510 3382





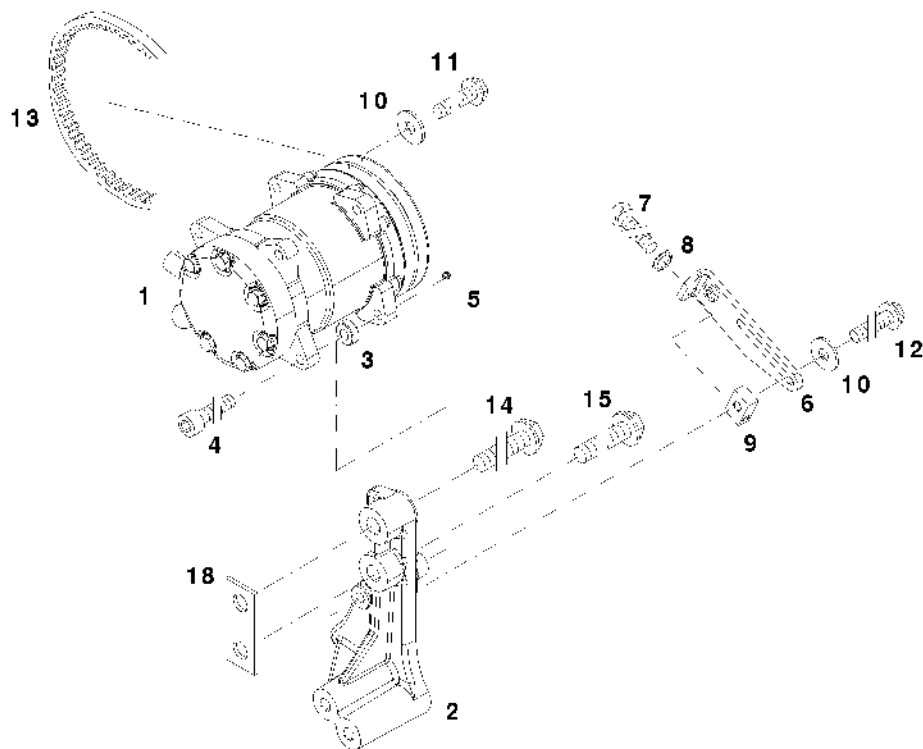
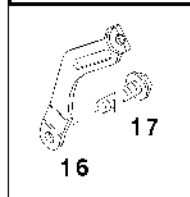
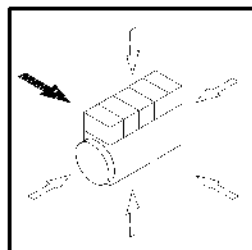


Kältemittelverdichter
Refrigerant compressor
Compresseur a' fluide frigorigue
Compresor de refrigerante

Referenznr. :

0169-82- 0510 3352

002

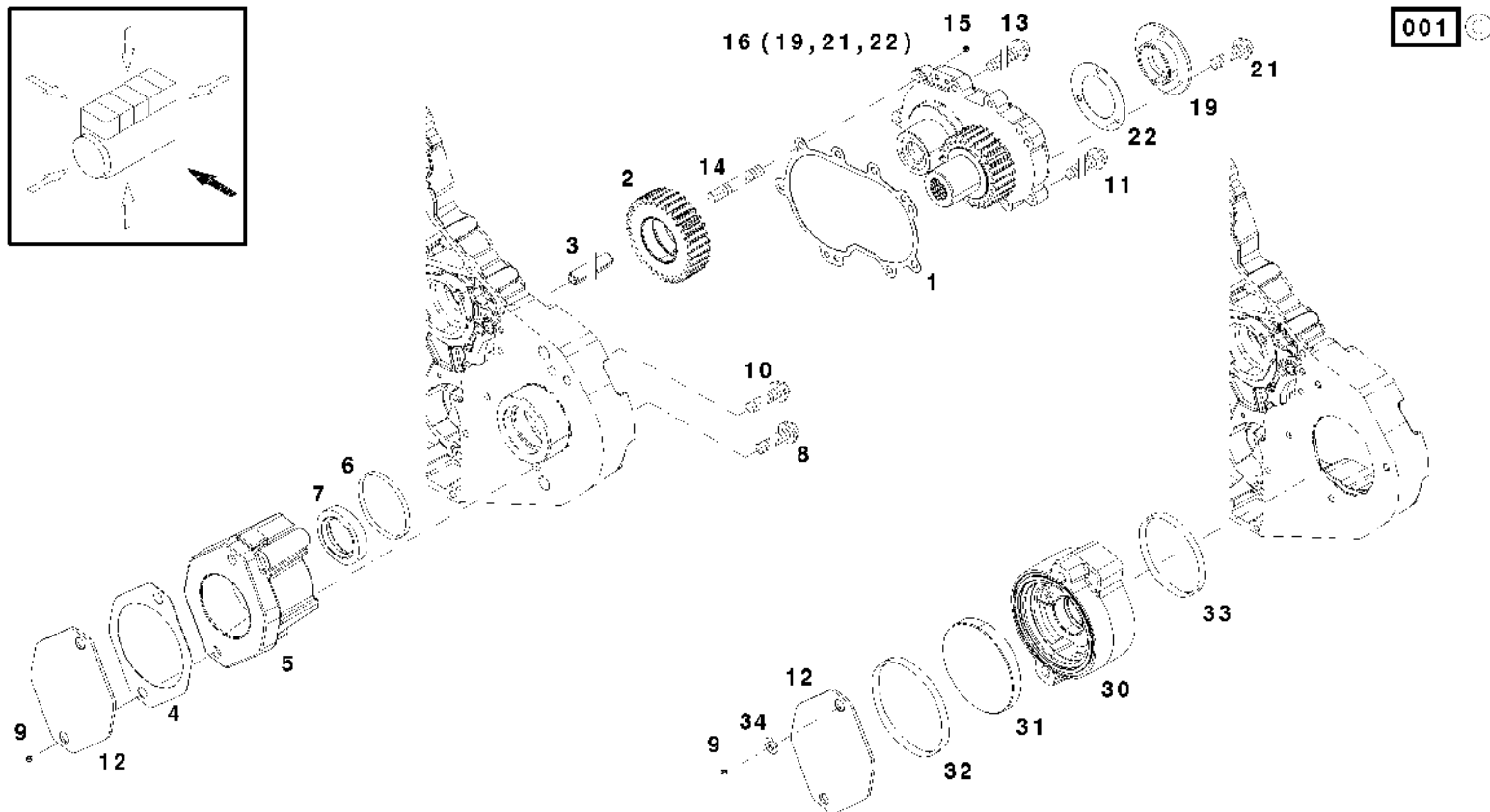
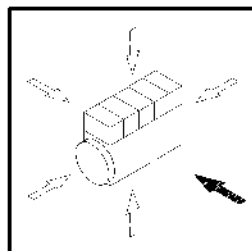




Hydropumpenantrieb
Hydro pump drive
Commande de pompe hydraulique
Accionamiento de bomba hidraulica

Referenznr.:

0169-83- 0510 3348



001

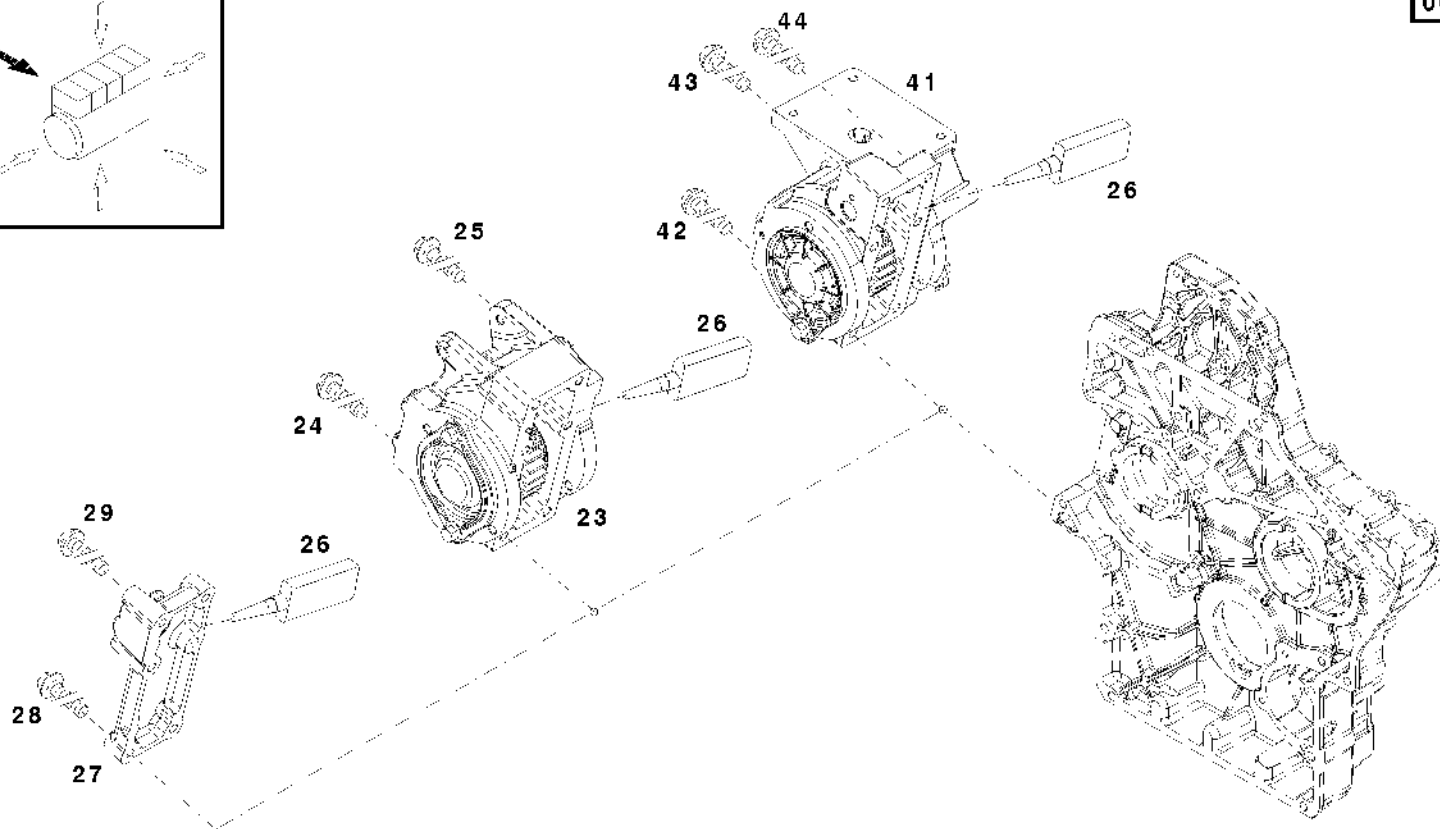
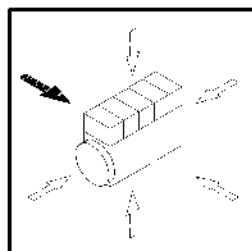


Hydropumpenantrieb
Hydro pump drive
Commande de pompe hydraulique
Accionamiento de bomba hidraulica

Referenznr.:

0169-83-0510 3349

002

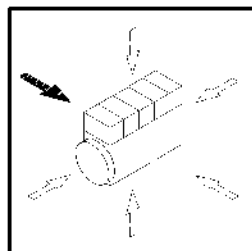




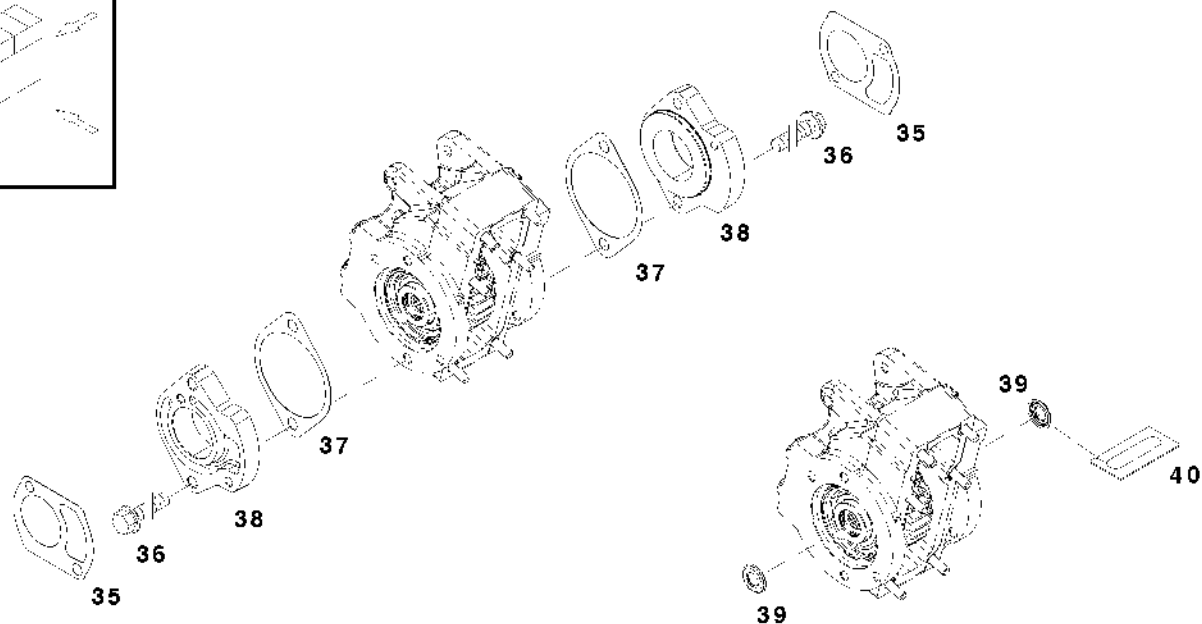
Hydropumpenantrieb
Hydro pump drive
Commande de pompe hydraulique
Accionamiento de bomba hidraulica

Referenznr.:

0169-83- 0510 3374



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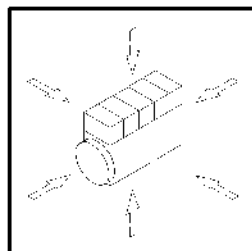





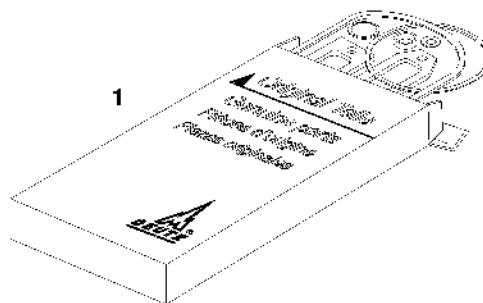
Dichtungssatz
Gasket set
Jeu de joints
Juego de juntas

Referenznr. :

0169-90- 0510 3375



000 



DEUTZ Operating Fluids



DEUTZ Oil Rodon 10W40 low SAPS (DQC III-10 LA)	
5 L	-
20 L	0101 7976
209 L	0101 7977

DEUTZ Oel TLX-10W40FE (DQC III-10)	
5 L	0101 6335
20 L	0101 6336
209 L	0101 6337

DEUTZ Cooling System Conditioner	
5 L	0101 1490
20 L	0101 6416
210 L	1221 1500

DEUTZ Oel DQC4-5W30-UHP (DQC IV-10)	
5 L	-
20 L	0101 7849
209 L	0101 7850



The engine company.

DEUTZ AG

Service Information Systems

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eMail: info@deutz.com

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Order No.: 0312 5448

User Manual

DEUTZ® Engine Display

English Edition



The engine company.

DEUTZ® Engine Display

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i- Document Changes

Revision	Date	Chapter	Author	Changes
0.1	30.10.2019	-	Yüksekkaya	Draft is created
0.2	04.05.2021	Multiple	Yüksekkaya	Multiple
1.0	11.05.2021	Multiple	Leier	From draft to completion – V1.0
1.1	14.05.2021	1	Leier	Modified text
	21.05.2021	4, 6	Leier	Comparison of display functions and technical drawing added
1.2	10.06.2021	Multiple	Leier	New chapter 6 added: Troubleshooting, Chapter numbers changed: (7->8; 8->9; 9->10)
	10.06.2021	5.2.3	Leier	Corrected text: wrong button number
	10.06.2021	Multiple	Leier	Modified text
	10.06.2021	5.8	Leier	Table 4 corrected: Reduction Levels and Reasons
	10.06.2021	8	Leier	Information added
1.3	28.06.2021	3.1	Leier	Exchange Assembly view
1.4	27.07.2021	5.2.4.3	Geueke	Image adjustment and text enhancement
	27.07.2021	5.4.2	Geueke	Subchapter "Reset oil change interval" inserted
1.5	27.08.2021	7.1	Geueke	Inserted new lamp-symbols (MIL and leakage-lamp)
1.6	15.02.2021	5.2.5	Geueke	Measured data page now includes a measured data table with symbols and measured value descriptions
1.7	31.03.2021	Multiple	Geueke	Configuration mode of the main screen
1.8	04.08.2022	8	Leier	Rewrite: Software Update via SerDia
	04.08.2022	4	Leier	General description: Actualize table "display features"
	04.08.2022	7.1.7	Leier	Delete HC-Cleaning lamp
	04.08.2022	7.2	Leier	Symbol description: Add hint and symbols, correct some symbols descriptions and add SPN-numbers.
	04.08.2022	3.2	Leier	Add Chapter "Configuration"
	05.08.2022	5.9	Leier	Corrected display texts of power reduction
1.9	30.09.2022	Many	Leier	Small corrections
1.10	01.03.2023	5.3.1.	Leier	Text correction: Acoustic warning signal via internal buzzer
	01.03.2023	ii-	Leier	Additions to the foreword
	25.04.2023	7, 8	Geueke	Added new EDEUTZ chapter "Operation instructions - EDEUTZ" and "Lamps and symbols description - EDEUTZ"
	25.04.2023	Multiple	Geueke	Rearranged chapters to fit new EDEUTZ-chapters in overall structure
	--	10	Geueke	Change of the update process
	20.06.2023	Multiple	Leier	ii Contents added to preface 4.2 Chapter added: Display functions for all systems 5.2.2 Diagnostic window: contents added 5.2.4.1 Chinese language selection added 5.5 Measured value selection also possible for tachometers 5.7 Section added: Dynamic menu bar 5.8 Signal range evaluation: CAN signal raw values in table added 6.2 Symbol description of measured values added 9 Troubleshooting: Supplements 10.4 Release 1.5.0.0 added to table

				Formatting of figures changed
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The DEUTZ AG reserves changes to this user manual.

ii- Foreword

New Display

A new Display has been developed to increase the usability of Deutz systems with Deutz displays. It is compatible with all current Deutz machines that have an electronic engine control with activated CAN bus. It is called DEUTZ® Engine Display. It shows relevant measurement values and diagnostics of DEUTZ engine and aftertreatments and is compliant with today's and future Human Machine Interface requirements.

The display meets the HMI requirements demanded by Deutz. Specific requirements for an HMI for diesel engines include among other things:

- Show DEF level on the main page.
- Show warning lights with symbols: Diagnostic lamp, SCR lamp / EAT Inducement lamp, DPF lamp, high temperature lamp, ash lamp.
- Show power reduction and cause.

The DEUTZ® Engine Display can be updated via SerDia to benefit from new languages, bugfixes and functional extensions.

The new DEUTZ® Engine Display can replace existing DEUTZ Electronic Display easily, due to its Plug & Play capability in size (same installation space) and connection (identical wiring and pin assignment).

For more information see Deutz Technical Product Information: TPI 0199-51-0812.

Document Improvement

Our aim is to continuously optimize the contents of this document, whereby practical experience from the circle of readers is very valuable. So, if you want any changes, extensions or improvements made, please notify us accordingly (E-Mail: Application.de@deutz.com). We will examine all messages carefully and publish new editions of this document as soon as its content is changed.

Thank you in advance for your kind support.

1 Document Introduction

This document is to contain all the information necessary for installing and using the new DEUTZ® Engine Display (DED).

Please read these instructions fully before the installation and use.

This document assumes knowledge of other Deutz documents:

- Deutz CAN specifications
- Deutz connection diagram / equipment harness
- Assembly Instructions and Installation Guidelines for DEUTZ Exhaust Aftertreatment Systems (chapter Customer Interface EAT system – HMI)

2 Technical Data

The Technical Drawing you can see in chapter 11. The European Declaration of Conformity you can see in chapter 12.

Table 1: Technical Data

SPECIFICATION	VALUE
Dimensions	131 mm x 100 mm x 37 mm
Installation height	21 mm
Weight	260g
Display	5.0" TFT LCD
Resolution / Ratio	800 x 480 24-bit / 16:9
Backlighting	Up to 1000cd/m ² (50.000 hr lifetime)
Operating voltage	6 - 32 VDC (nom. 12VDC and 24VDC)
Max. current consumption	1.4 A at 12VDC (of which 0.5 A for digital output)
Communication	CAN SAE J1939 interface with 250 kbit/s
Digital Output	Low side driver up to 500 mA for ext. alarm
Protection	IP67
El. protection	Inverse polarity, Load dump
Acoustic alarm	80 dB at 3,1 kHz
Connection Integrated	Deutsch plug 12-pole DT04-12PA with gold contacts
Expected connector	DT06-12SA Wedgelock W12S with gold contacts
Housing	PC/ABS plastic material in black
Buttons	Illuminated buttons with tactile feedback

ENVIRONMENTAL RESISTANCE	
Operating temperature	-30 °C to 80 °C
Storage temperature	-40 °C to 85 °C
Thermal shock	IEC 60068-2-14 Na (-35°C (1h) to +80°C (1h), 20 cycles)
Single shock	IEC 60068-2-27 (50g, 11ms, 10times)
Random vibration	IEC 60068-2-64 (16h/axis)
Free fall	to IEC 60068-2-32 (1m, concrete floor)
Durability	1000h 40% - 90% humidity
Temperature change	IEC 60068-2-14 Nb (+25°C (9h) ramp up (3h) to +55°C (90% humidity), ramp down (3h), 6 cycles)
Temperature hot cold	IEC 60068-2-2 (+80°C (72h) and -30°C)
Chemical resistance	ISO16750-5 (brake cleaner, car shampoo, Diesel, ethanol, coolant)
Salt spray	IEC 60068-2-11
Sunlight	ISO 4892-2+A1 (4x84h)
EMC REQUIREMENTS	
Emission narrow broadband	EN 61000-6-3
Immunity to ESD	EN 61000-4-2 to EN 61000-4-5
Conducted Emission	ISO7637-2 (12 V and 24 V system)
Conducted Immunity on Supply Lines	ISO7637-2 (12 V and 24 V system)
Conducted Immunity except Supply Lines	ISO7637-3 (12 V and 24 V system)
EN13309	compliant
EN ISO 14982	compliant

3 Installation, Configuration and Compatibility

3.1 Installation

The connection socket of the DEUTZ® Engine Display is of the type of Deutsch DT04 12 PA with gold contacts. The required mating plug is a Deutsch DT06 12SA with gold contacts and Wedgelock W12S. The HDT-48-00 tool from Deutsch company can be used to crimp the cables

The supply voltage must be from 6 to 32V. Its max. power can be up to 16 W.

It is communicating via CAN SAE J1939 with DEUTZ engine ECUs. For details see Deutz CAN specifications. The CAN connection of the display does not contain a terminating resistor. Depending on the CAN topology, a terminating resistor may be required. For more information see connection diagram / equipment harness from DEUTZ engine.

This Display can be updated via SerDia to benefit from new languages, bugfixes and functional extensions. This is only possible if pins M and F of connector X22.2 (it is an ITT Cannon connector 12 pol female housing) are properly connected to the customer CAN (see connection diagram / equipment harness).

3.1.1 Instrument Panel Installation

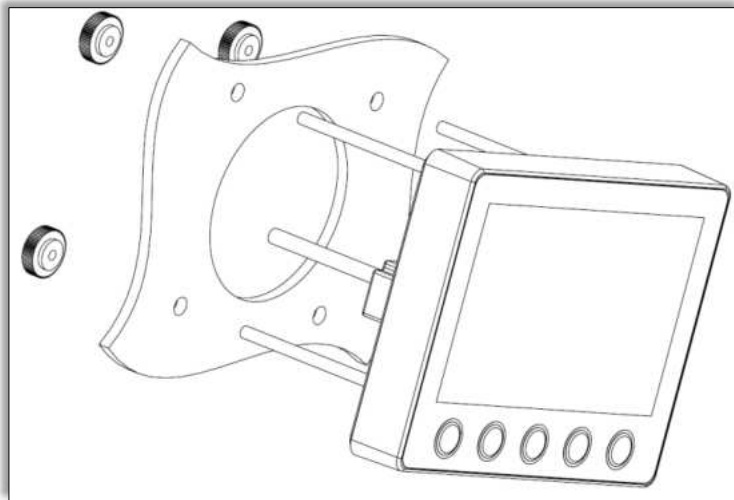


Fig. 1: Assembly view

The Displays are supplied by DEUTZ completely with plug, fastening material and installation template.

Choose suitable location for the installation. Please ensure sufficient clearance behind the Display for the plug connections so that the cables are not kinked unnecessarily. Make sure that cables are sufficiently long to enable the device to be removed for maintenance purposes. Ensure sufficient air circulation behind the Display so that resultant heat can be dissipated. The

installation is carried out as shown in Fig. 1. Use the included template to cut a hole for the device rear and drill four holes $\varnothing 4.3 \text{ mm}$ (0.170") for the threaded bolts.

Screw the four threaded bolts into the rear of the housing. If required, longer screws of dimension M4 can also be used (not in scope of supply).

Connect the cable to the rear of the device.

Move the device into position and secure it by tightening the knurled nuts on the threaded bolts.

3.1.2 Connection

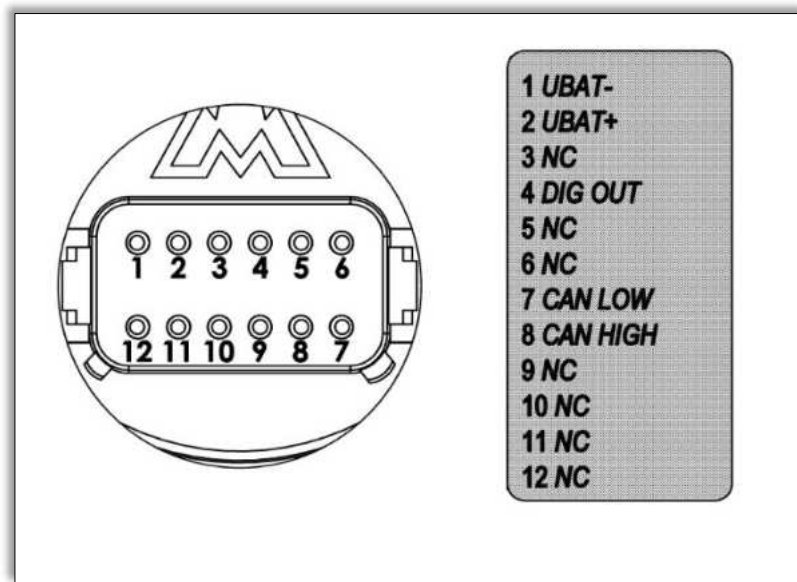


Fig. 2: Connector Layout

3.2 Configuration

3.2.1 Settings

Every user of the display has the option of making configurations in the display. This includes:

- Choice of language
- Selection of the unit system
- Selection of the display brightness
- De- and activation of the buzzer and digital output
- Selection of the measured values on the main output fields on the main page

The selection is saved permanently.

3.2.2 Additional measurements

The scope and number of readings are determined by the display itself depending on the control unit, engine type and type of EAT system. In addition, the display can also show the following measured values:

- Hydraulic Oil Temperature // SPN: 1638
- Hydraulic Oil Pressure // SPN: 1762
- Diesel Tank Level // SPN: 96
- Vehicle Speed (Wheel Based) // SPN: 84
- Vehicle Speed (Navigation Based) // SPN: 517

These measured values are not sent by the engine control unit but can still be shown on the display if they are sent from another source (e. g. the vehicle control unit) on the CAN bus. The specification of these CAN signals can be viewed via the SPN number in the J1939 standard.

3.3 Compatibility

The display supports all current Deutz engines as well as cooperation engines and electric drive systems.

The engines produced in the past with the designation T4i (Tier 4 interim) are not compatible with the display.

4 General Description

The DEUTZ® Engine Display is a compact, robust, and integral module which enables the user to request and display engine data. The device uses an industrial standard CAN bus protocol for this to enable connection to the engine via an SAE J1939 CAN data link. For further information on available CAN messages, please refer to CAN Specification of DEUTZ®.

The DEUTZ® Engine Display enables a highly flexible and intuitive human-machine interface. A graphic menu structure is connected to the function buttons in the visualization area of the display with easy-to-understand symbols that indicates the current function of the buttons.

The DEUTZ® Engine Display is used to display engine system values and error entries. The display enables the standstill regeneration/refresh to be released. Also, the EOL test can be carried out. It also contains an internal buzzer and a digital output for an external warning signal.

The application of the display includes two main sub-applications. The diesel application part is displayed as soon as the display detects a connected diesel control unit. If an EDEUTZ control unit is detected, the display automatically switches to the EDEUTZ-specific application. Detection is based on specific CAN signals and cannot be influenced manually. The two sub-applications are described separately below.

4.1 Feature overview for combustion

Some of the display features described in this document have been developed for specific engines or engine generations. The following Table 2 is a comparison:

Table 2: Display features vs ECU families

Display-Features vs. ECU families	EMR5	EMR4	EMR3	EMR2	EMR_LPG	EMR_L1
Main features						
Displaying engine data: measured values	X	X	X	X	X	X
Signal evaluation (Error/Not available)	X	X	X	X	X	X
Display of the engine information	X	X	X	X	X	X
Display of the DEUTZ Engine Display information	X	X	X	X	X	X
Settings (Language, Unit system, Brightness, Buzzer/DO)	X	X	X	X	X	X
Favorite signals selectable on main screen	X	X	X	X	X	X
Error features						
Error: Output of the error memory: active and passive errors	X	X	X	X	X	X
Error: Deletion of passive errors	X	X	X	X		X
Error: Acoustic warning signal and external alarm	X	X	X	X	X	X
Error: Detection and display of CAN loss	X	X	X	X	X	X
Lamps: Error lamp	X	X	X	X	X	X
Lamps: DPF lamp	X	X				X
Lamps: SCR warning lamp / EAT inducement lamp	X	X				X
Lamps: High temperature lamp	X	X				X
Lamps: Ash lamp	X	X				X
Lamps: Gas leakage					X	
Lamps: Malfunction indicator lamp					X	
Lamps: Preheat lamp	X	X	X		X	X
Lamps: HC Cleaning lamp						X
EAT features						
EAT: Scheme of the installed exhaust system	X	X				X
EAT: Display of the DEF tank level in the main screen, if SCR available	X	X				X
EAT: Display of power reduction	X	X				X
EAT: Regeneration process	X	X				X
Service features						
Service: EOL-Test (check of the EAT functionality)	X	X				
Service: Resetting oil service interval						X

4.2 Display functions for all drive systems

4.2.1 Buzzer and alarm output

The DEUTZ® Engine Display has an integrated buzzer and an alarm output, also referred to in this document only as digital output. These are activated and warn the operator when a fault occurs. The pin number of the external alarm output (DIG OUT, Low Side Switch) can be seen in Fig. 2. When activated, this pin has the same voltage as the display supply voltage.

The buzzer and the external alarm output can be deactivated under Configuration, see section 5.2.4.6 or also section 7.2.5.4.

4.2.2 User guidance through button lamps

For an improved user experience, only the key that can or must be pressed is illuminated. In Fig. 3, for example, an important piece of information is confirmed with key three. Therefore, only key three is illuminated.

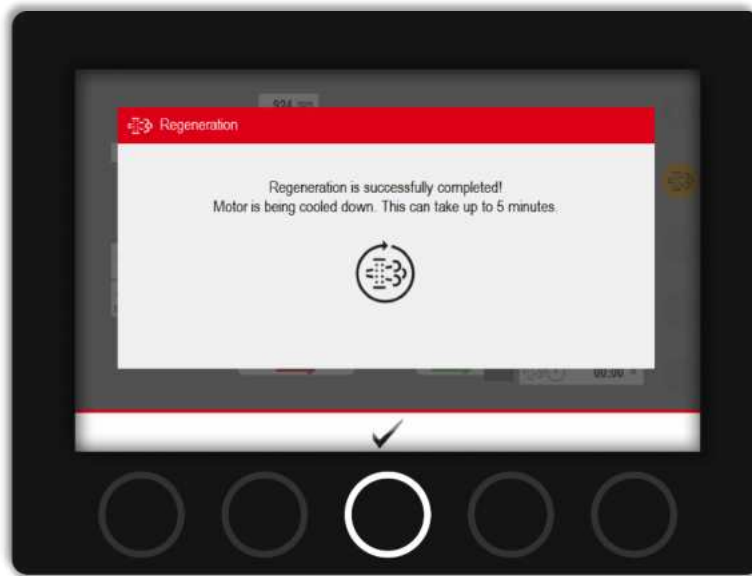


Fig. 3: User guidance through button lamps

5 Operation Instructions - Combustion

Note: All available measuring value displays shown as examples in this documentation depend on the engine control unit connected to the display, the engine control unit configuration and its software status! To illustrate the options of the DEUTZ® Engine Display, it is assumed in this documentation that the CAN message required for a definite display functionality is available.

5.1 General

The DEUTZ® Engine Display executes a series of steps to initiate itself. During this phase the boot picture as in Fig. 4 shown. After this the main screen will be shown (Fig. 5).



Fig. 4: Boot picture

5.2 Screens

5.2.1 Main Screen

On this screen engine speed, engine coolant temperature, oil pressure, fuel consumption, battery voltage and pedal position are shown. Depending on exhaust aftertreatment system either oil pressure or DEF level is shown via the third gauge (Fig. 6).



Fig. 5: Main screen with oil pressure



Fig. 6: Main screen with urea level

On main screen there are five buttons available (Fig. 7). The first element indicates the main screen and is inactive on this screen. The second button switches the display to diagnostic screen. Exhaust after treatment screen will be shown if button three is pressed. The fourth button brings the setting screen. Selected engine measurement data is available on measurement screen, which is accessible via the fifth button from main screen.

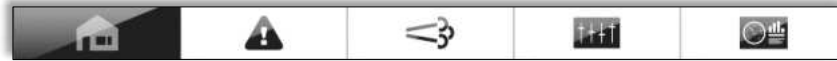


Fig. 7: Main screen menu buttons

5.2.2 Diagnostic Screen


Diagnostic screen works under two different modes, namely active errors and passive errors and displays only the errors of the engine control unit with the source address 0₁₆. (For EMRL1 controllers also the errors with source address 3D₁₆.) Active error diagnostic screen is the default mode for this screen. Error codes are listed here with their descriptions (Fig. 8). The topmost error text displayed is the last error entry in the DM1 CAN message and is usually the most recent error. In the upper right corner the total number of errors is indicated. If there is no error to display, screen shows a text indicating this.

Error Page		Active Errors			3
Error Description		SPN	FMI	OC	
1	Engine - Oil level - Data below normal operational range (Most severe level)	98	1	1	
2	Engine - Fuel filter differential pressure - Voltage above normal or shorted to high source	16	3	1	
3	Engine - Oil pressure sensor - Bad intelligent device or component	100	12	3	

Fig. 8: Active error diagnostic screen with active errors

This screen has four buttons. The first button switches the screen to main screen. The second and the third buttons are to navigate through active errors. The fifth button switches to passive error page.

Passive error diagnostic screen for passive errors is structured exactly like the window for active errors and lists the errors that are stored in the engine control unit and are no longer active. When this screen is active, there are five buttons active (Fig. 9).

 Error Page

Passive Errors

Error Description	SPN	FMI	OC
1 Engine - Oil pressure sensor-Data erratic intermittent or incorrect	100	2	1








Fig. 9: Passive error diagnostic screen with passive error

All buttons except the button four have the same functionality as for active error diagnostic screen. Button four opens a dialog screen for deleting the passive errors (Fig. 10).

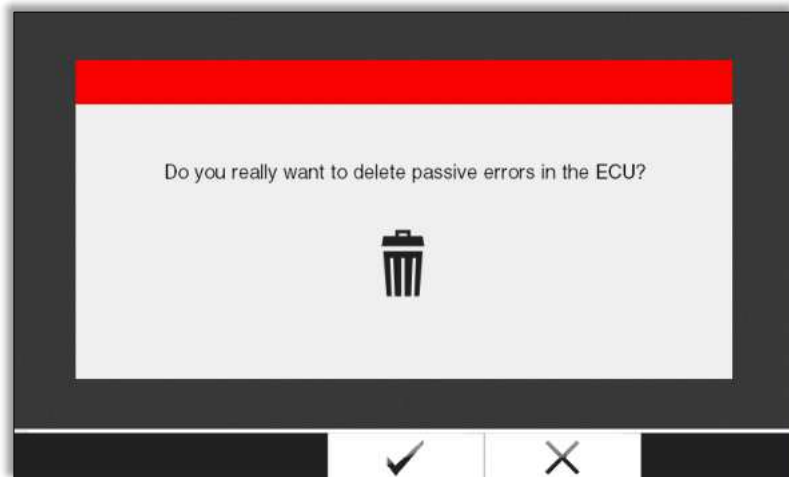


Fig. 10: Dialog Screen to Delete Passive Errors

The CAN Frame Diagnostic Data Clear (DM3) will be sent if button three is pressed. The screen will be closed following the transmission of the message. Button four closes the screen immediately without sending the DM3 message. Please note that a deletion of the passive errors is only possible if passive errors are present. For some engines, deleting the passive errors is only possible when the engine is not running.

5.2.3 Exhaust Aftertreatment Screen

Exhaust after treatment (EAT) screen shows a schematic depiction of the exhaust system. If EAT system is available, the existing components are shown with key data. The system information is acquired via CAN bus at start.

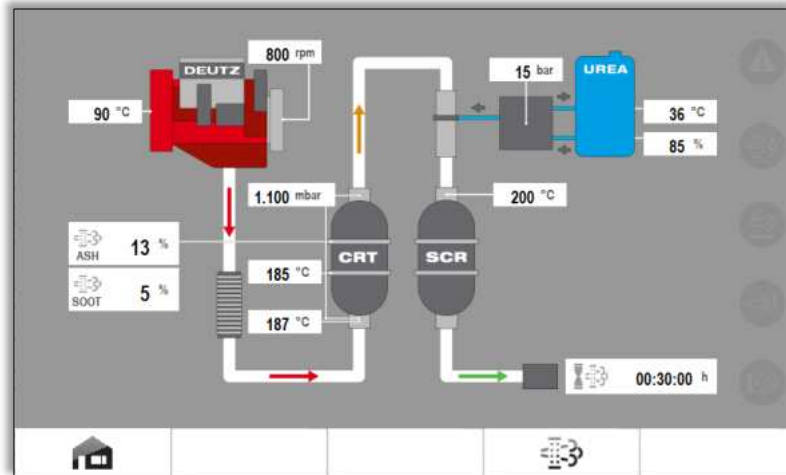


Fig. 11: EAT Screen as no regeneration running

The button layout contains two buttons. The layout of the menu changes according to the regeneration state. As the regeneration is not running, the button actions are as follows: the first button opens the main screen. The fourth button opens regeneration dialog screen.

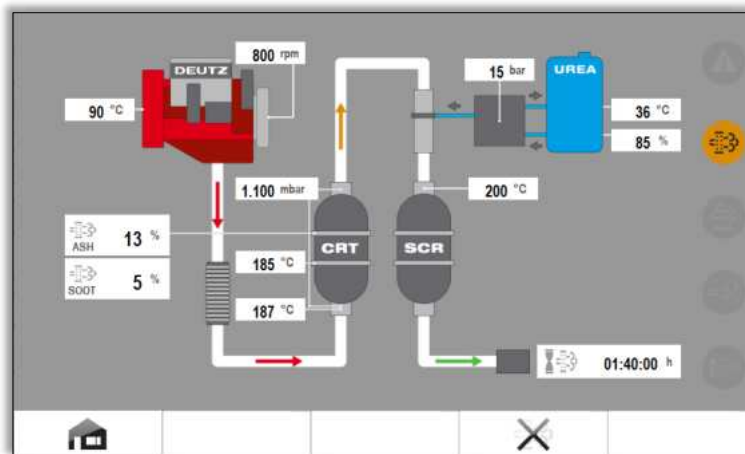


Fig. 12: EAT Screen as regeneration running

In case of a running regeneration, button four opens regeneration dialog screen with the possibility to abort it, when pressed. The other buttons remain unchanged.

5.2.4 Setting Screen

On setting screen, there are various settings and customization options for the customer. The customer can choose the language, and units. Some services such as EOL Test can be started via submenu in setting screen if it is available for the engine type. Software and motor information can be read, and brightness of the screen can be adjusted.

The settings are saved permanently.

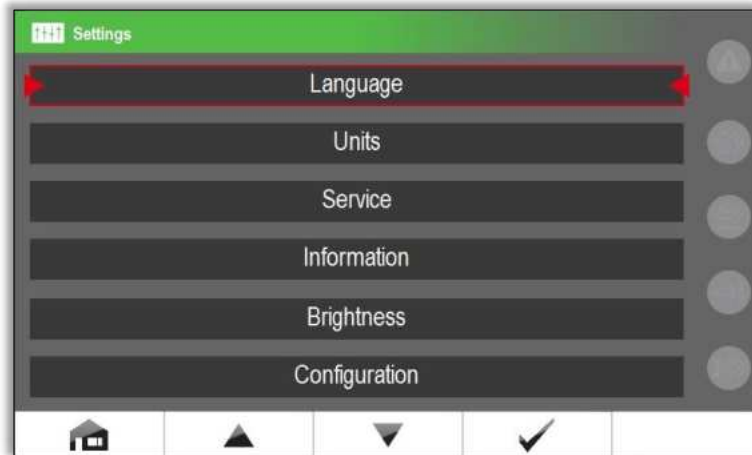


Fig. 13: Setting Screen

5.2.4.1 Language

The display language can be changed from language menu. The available languages are German, English, Spanish, French, Italian, Dutch, Russian, Swedish, Japanese and Chinese. More languages can be added. The active language selection is highlighted in green. Buttons two and three are to navigate to the desired language. Button four is to apply the language. The first button navigates back to the upper menu.



Fig. 14: Language selection

5.2.4.2 Units

Deutz Engine Display can show the measurement values both in metric and United States customary units. By default, the metric units are active. Buttons two and three are to navigate between the options. Button four is to apply the desired change. (Fig. 15)



Fig. 15: Unit Selection

5.2.4.3 Service

Under service menu there are several options. The first option is to open end of line test (EOL-Test) page, where the test can be initiated and observed. For more information about EOL-Test see chapter 5.4.1. With the help of the second option, the oil change interval for EMR-L1 ECUs can be reset to the maximum duration. For more information about resetting oil service interval see chapter 5.4.1. Further options are possible in the future.

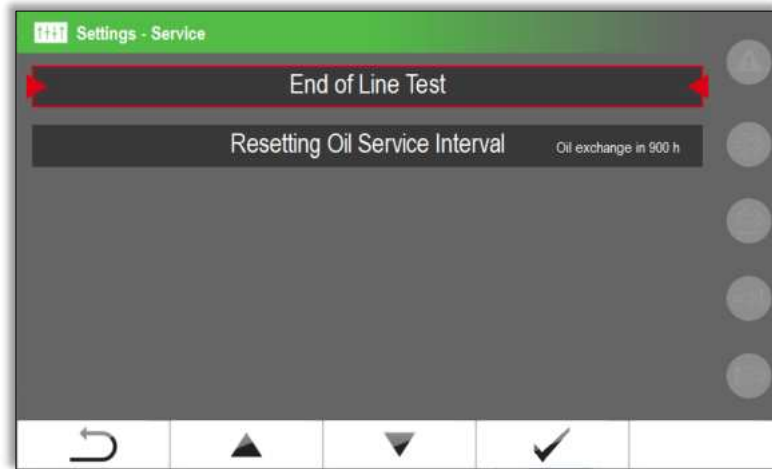


Fig. 16: Services

5.2.4.4 Information

There are two submenu elements on information page (Fig. 17).

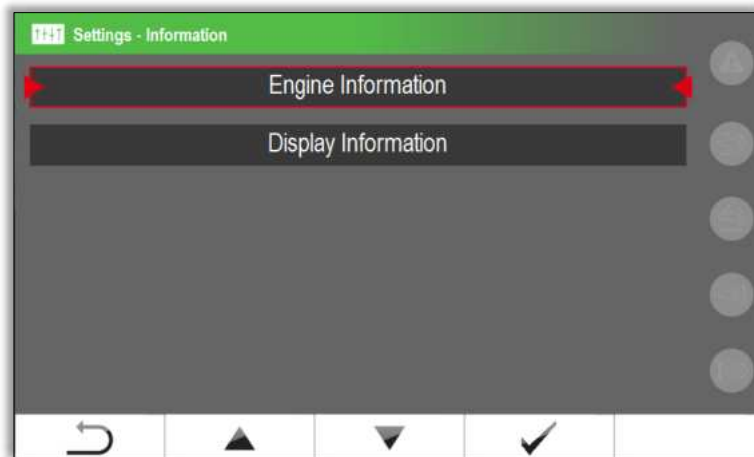


Fig. 17: Information Page

The first element, Engine Information provides information on software version of ECU, engine type and serial number of the engine (Fig. 18).



Fig. 18: Engine Information

The second element, Display Information provides information on production date of the display, software version of the display, language database version of the display, operating hours of the display and serial number of the display as in Fig. 19.

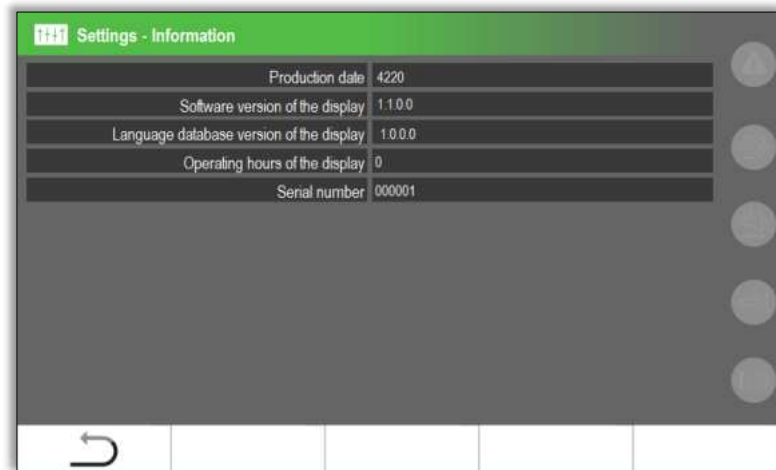


Fig. 19: Display Information

5.2.4.5 Brightness

There are three buttons available on this screen (Fig. 20). The first button switches to setting screen. The other buttons “up” & “down” are to adjust the brightness. The brightness adjustment can be carried out in multiple steps.

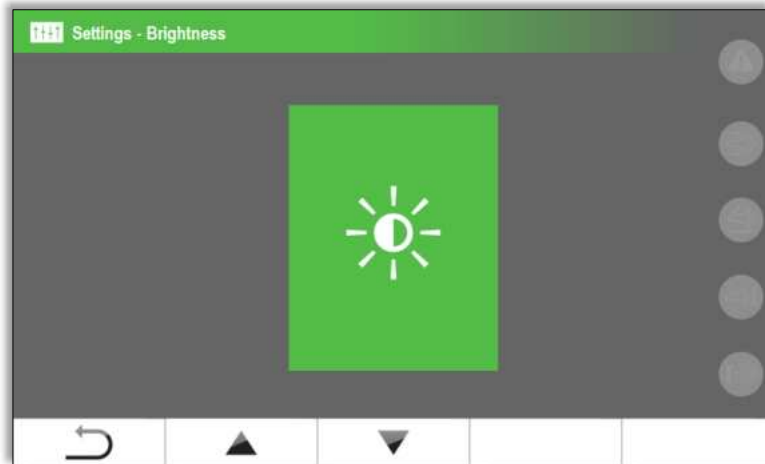


Fig. 20: Brightness Setting

5.2.4.6 Configuration

There are two submenu items on Configuration Page. The first element is to activate/deactivate the buzzer of the display. The buzzer is deactivated if the indicator is gray (Fig. 22). The buzzer is activated if the indicator is green (Fig. 21).

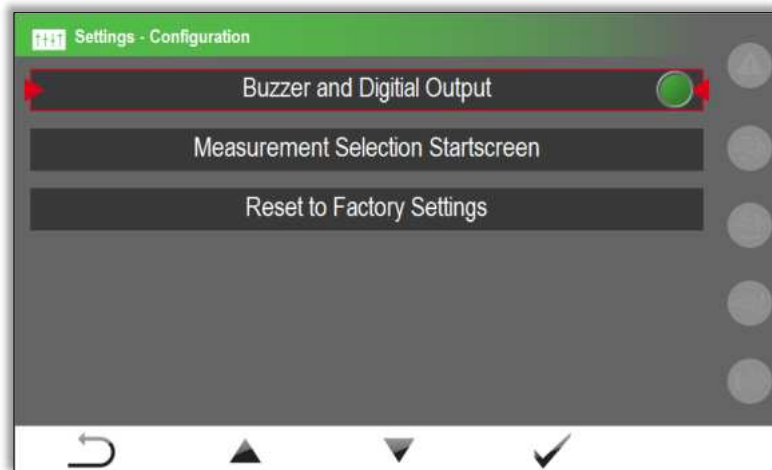


Fig. 21: Configuration – Buzzer Active

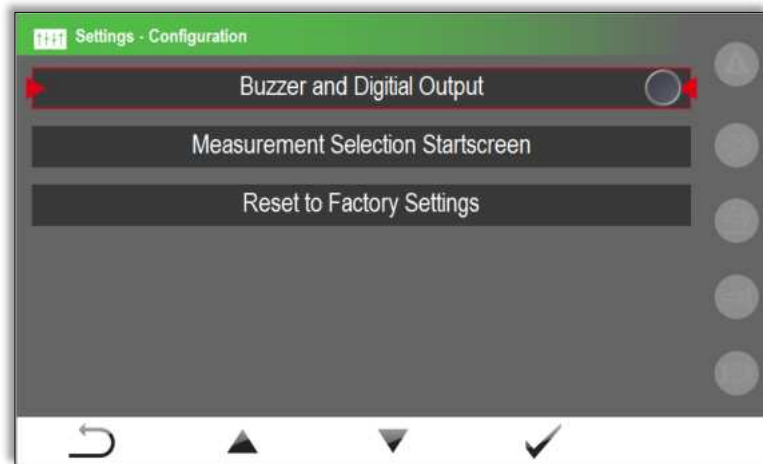


Fig. 22 Configuration – Buzzer Inactive

The second submenu item leads to the configuration mode of the main screen. The configuration of the main screen is only possible with an active CAN connection. A further description of this mode is given in chapter 5.5.

The third element provides a reset to factory settings. The approval of the user is needed as in Fig. 23.

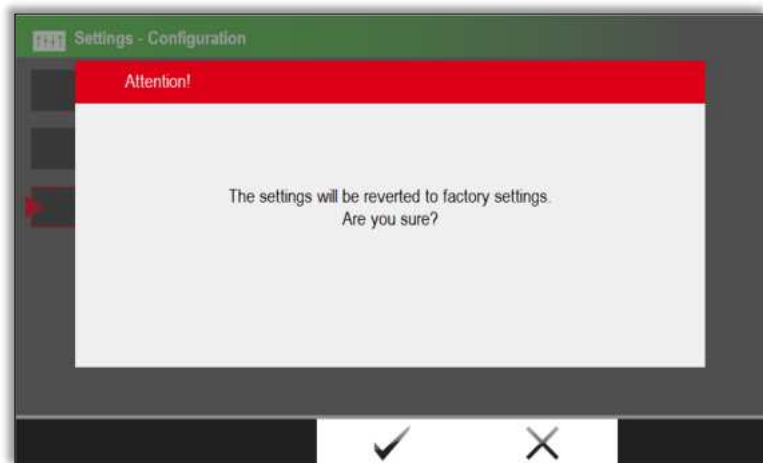
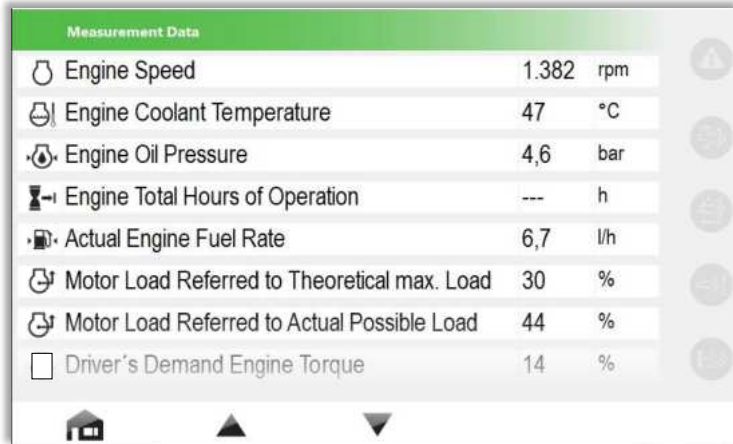


Fig. 23: Back to Factory Settings

When approved, the settings that are changed by the user will be reset to their default values. These include amongst other things language setting, units, buzzer, brightness, measurement selection on startscreen and eventually future options. The software version of the display will not be affected.

5.2.5 Measurement Screen

The DEUTZ® Engine Display can show selected measurement values. These values are listed in chapter 0. The screen has three buttons.











Measurement Data		
	Engine Speed	1,382 rpm
	Engine Coolant Temperature	47 °C
	Engine Oil Pressure	4,6 bar
	Engine Total Hours of Operation	--- h
	Actual Engine Fuel Rate	6,7 l/h
	Motor Load Referred to Theoretical max. Load	30 %
	Motor Load Referred to Actual Possible Load	44 %
	Driver's Demand Engine Torque	14 %

Fig. 24: Measurement Screen 1

The first button switches to the main screen. Button 2 and 3 can be used to navigate through the signal list.

The measured value table includes essential measured values, which are always displayed even if the signal indicates "---" or "N/A", and optional measured values, which are only shown in the table if they are active on the CAN bus and do not transmit "N/A". Table 5 shows which measured values are essential.

5.3 Dialog Screens

The DEUTZ® Engine Display shows popup dialog screens under certain conditions. In this chapter these are briefly explained.

5.3.1 Error Dialog Screen

If a new error is detected, the DEUTZ® Engine Display sets an acoustic warning via an internal buzzer and a visual warning via a dialog screen. As soon as the buzzer turned on, the dialog screen can be visible on the display. This screen has only one button as in Fig. 25, which turns off the buzzer. Further information on the new error can be found in diagnostic screen.

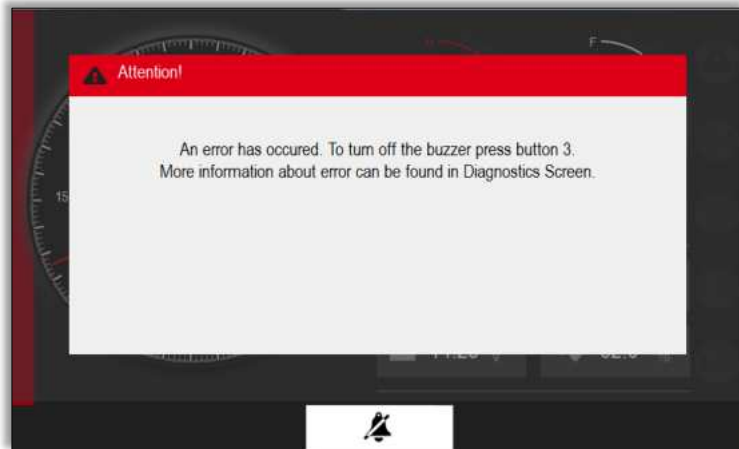


Fig. 25: Error dialog screen

Please also see the section Buzzer and Alarm Output on chapter 5.2.4.6.

5.3.2 Regeneration Dialog Screen

The regeneration process is described in chapter 5.10.

5.4 Services (EOL Test, oil change interval)

5.4.1 EOL Test

For certain motor specifications, the text "Not Available" is displayed when this option is selected. Otherwise, the customer sees the exhaust system page with EOL icon. On this page End of Line Test can be requested.

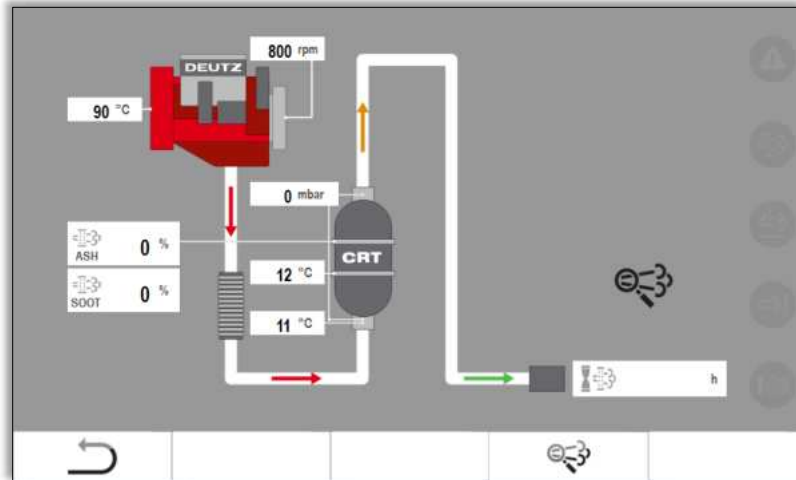


Fig. 26: End of Line Test Screen

The request for end of line test can be sent via button four on the end of line test screen. As the customer presses this button a pop-up screen will be shown, so that the action can be confirmed.

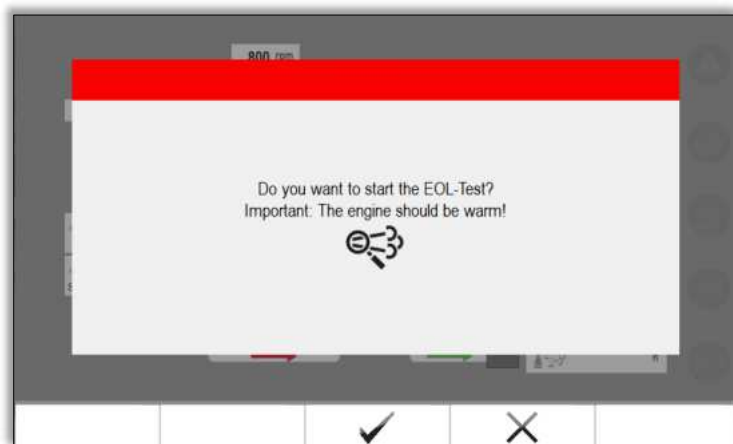


Fig. 27: Confirmation of End of Line Test

As the action is confirmed, the test request will be sent.



Fig. 28: Sending EOL Test Request

If the preconditions are satisfied, EOL Test will be initiated. The customer can observe the measurement values on the EOL Test screen.

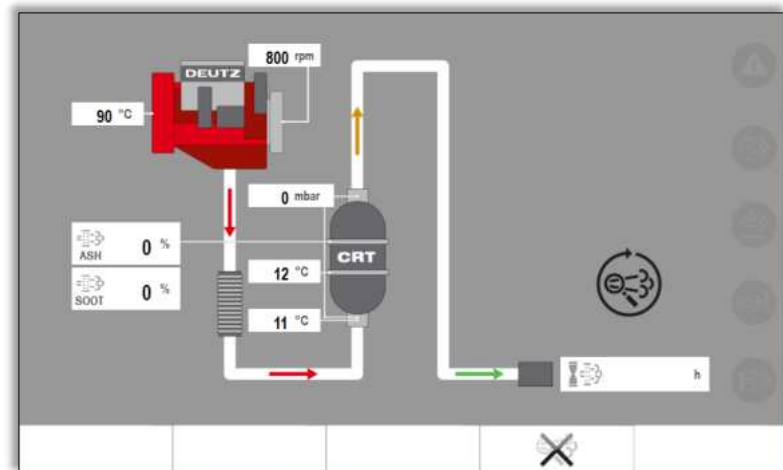


Fig. 29: EOL Test is running

If any precondition is not satisfied before the test or violated during the test, the test progress will be interrupted, and a stop request will be automatically sent. The customer will be informed by the pop-up screen.

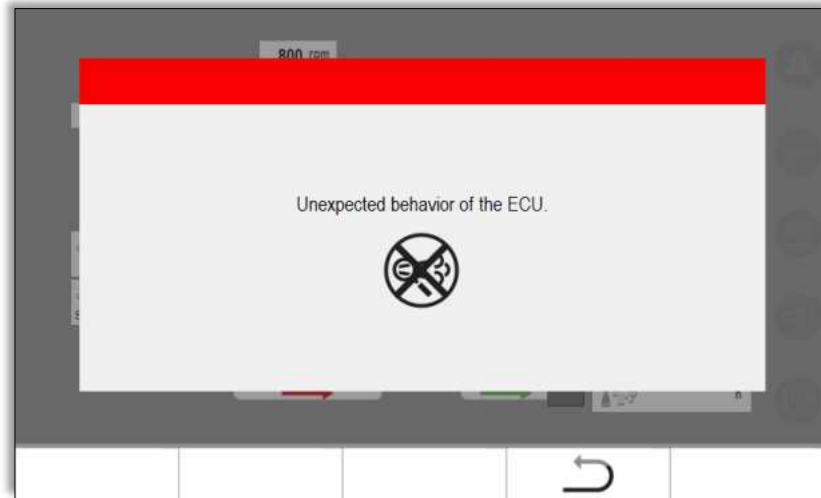


Fig. 30: Test could not be initiated or cancelled due to unexpected behavior

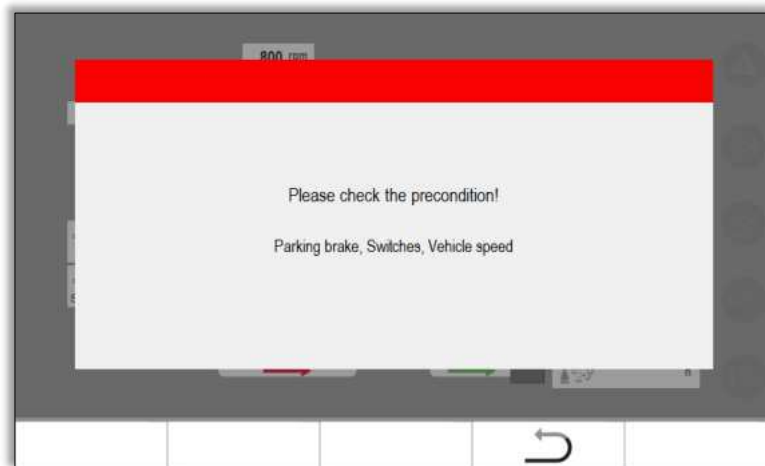


Fig. 31: Test cannot be initiated due to preconditions

EOL Test can be cancelled on the screen in Fig. 29 by pressing button four. The cancellation request will be sent immediately.

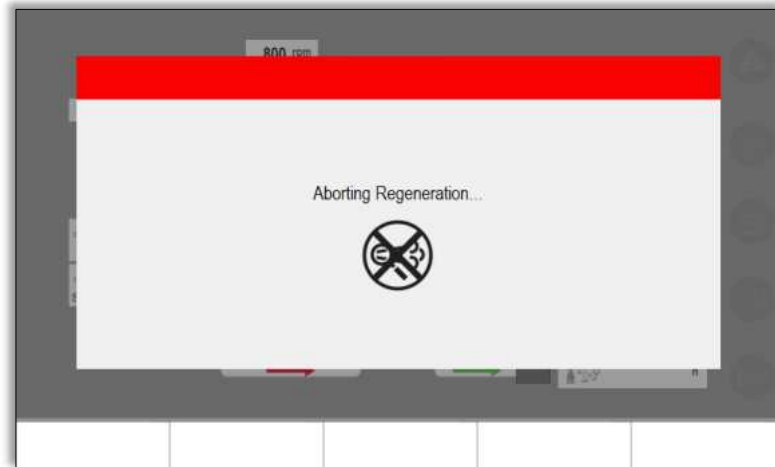


Fig. 32: Aborting Regeneration

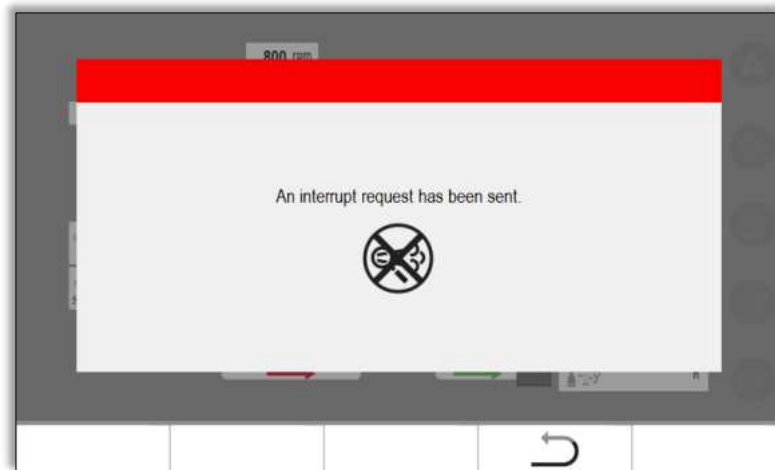


Fig. 33: EOL Test and regeneration are cancelled

If the EOL Test is successfully completed, the customer will be notified with pop-up screen as below.



Fig. 34: EOL Test Successful

5.4.2 Resetting the oil change interval

For certain engine specifications, selecting this option will display the text "Not available" and the button will also be grayed out. In addition, the remaining duration until the next oil exchange is displayed on the button.

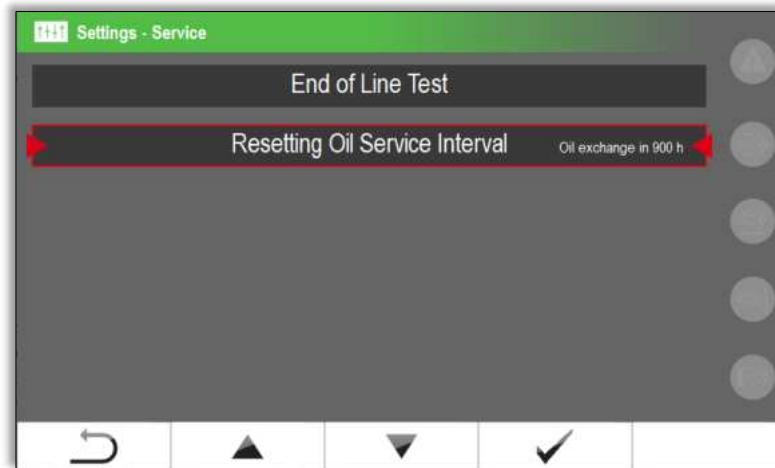


Fig. 35: Service-Menu

If the "Resetting Oil Service Interval"-option is selected, the reset of the interval must be confirmed in a dialog box (Fig. 36).

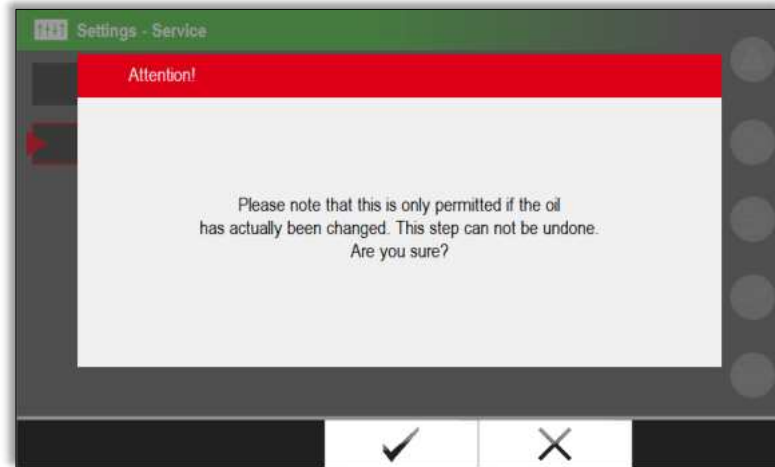


Fig. 36: Dialog box

As soon as the query has been confirmed, the oil change interval is reset, and the remaining time display is updated. In addition, the successful execution of the function is displayed via an info window.

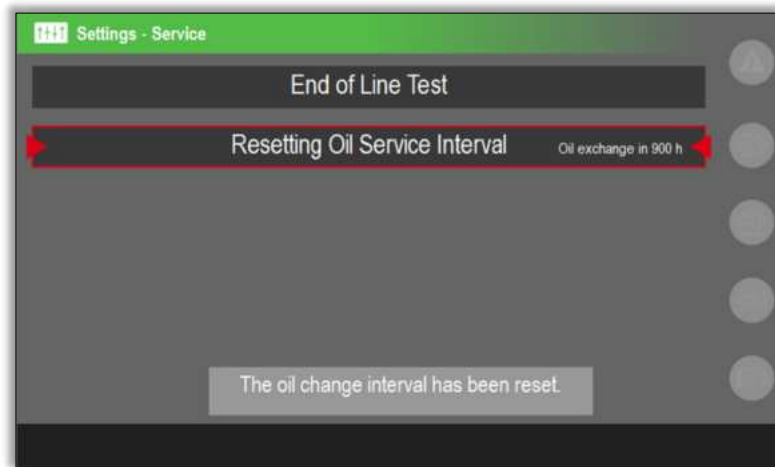


Fig. 37: Reset of the oil change interval successful

5.5 Configuration mode main screen

The configuration mode can be called up via the settings and the submenu item "Configuration" as described in chapter 5.2.4.6. Prerequisite for the setting of the main screen is an active CAN connection.

In the first step, Button 2 can be used to navigate between the output elements of the main screen that are to be configured.



Fig. 38: Selection mode of output elements

Confirming the selection with button 4 opens a list with all currently available and selectable measuring signals on the CAN bus. The currently assigned signal is highlighted in green in the list. With the help of button 2 and 3 it is possible to navigate through the signal list. Button 4 can be used to assign the currently selected signal to the selected output field.

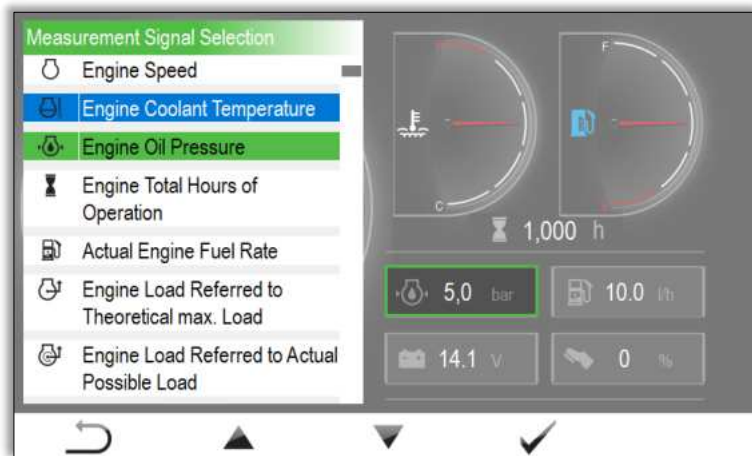


Fig. 39: Assignable signals

The successful assignment is indicated by user feedback at the top of the display. In addition, the correct assignment can be seen from the changed symbol / unit and the displayed measuring signal. The configuration is then permanently stored, so that the set configuration is recalled and displayed at subsequent display starts. The default main screen configuration can be restored by resetting to factory settings.

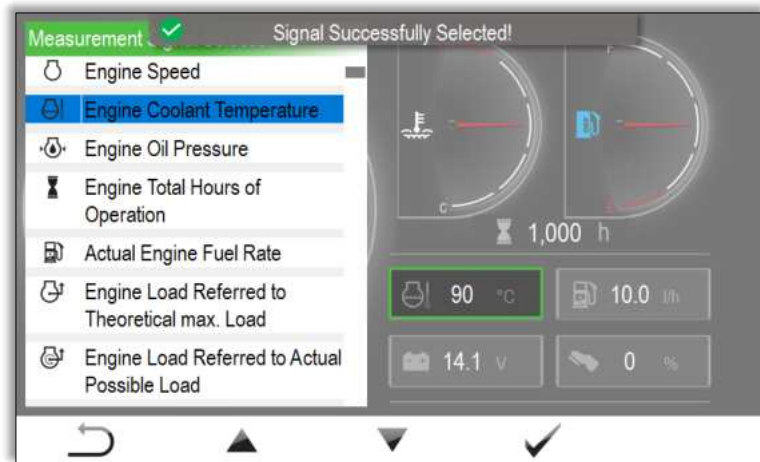


Fig. 40: User feedback after successful assignment

A different measured value can also be assigned to each of the three tachometer elements. The following signals can be placed on the small speedometers (depending on availability): Diesel level, Engine speed, Vehicle speed (navigation-based), Vehicle speed (wheel-based), DEF level, Engine oil pressure or Engine cooling temperature.

On the main tachometer, the following signals can be assigned (depending on availability): Engine speed, Vehicle speed (navigation-based) or Vehicle speed (wheel-based).

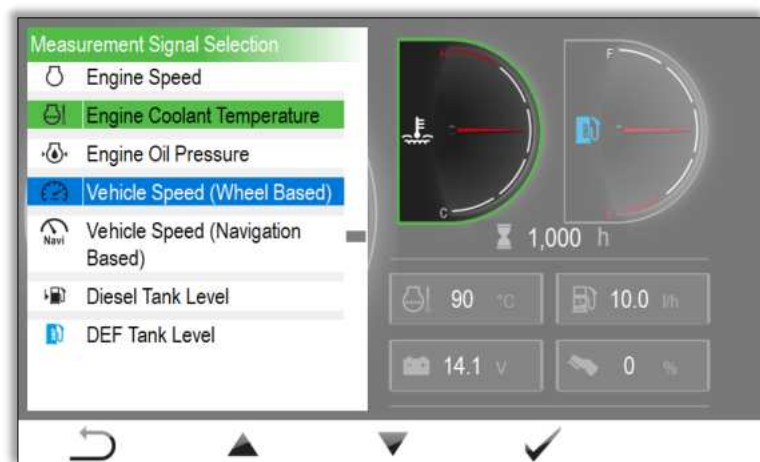


Abb. 41: Assignable signals for small tachometers

5.6 No CAN connection

DEUTZ® Engine Display monitors constantly the reception status of a few critical CAN Frames, namely DM1, EEC1, EEC2 and VEP1. The display will show a dialog screen as in Fig. 42, if none of these frames are received within their timeouts.

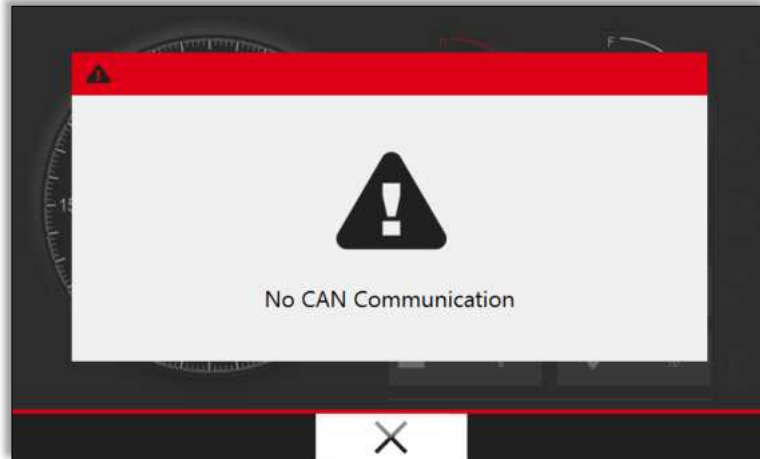


Fig. 42: Dialog screen No CAN Communication

This dialog can be closed by pressing button three.

5.7 Dynamic menu bar

In addition to displaying the various menu buttons in the different windows, the menu bar also serves as an indicator display for present engine errors. The normal condition here is always that the menu keys all have the same hue.

If there is an active error, this is indicated not only by the warning lamp in the main window, but also by the red coloring of the menu button 2 (for the diagnostic page).

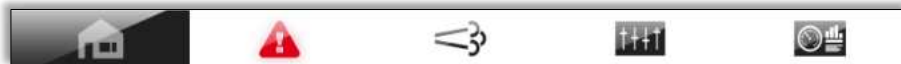






Fig. 43: Main screen menu bar with active error

5.8 Signal Evaluation

If a signal is in range of “error” or “not available” according to J1939 CAN Standard, it will be shown accordingly on the display. In case of no reception of the signal, three dashes will be shown. For further information please refer to Table 3.

Table 3: Signal Evaluation

Description	Example	CAN-Signal Rohwerte
Normal Operating Value	 7,0 bar	1 Byte: 0 ₁₆ to FD ₁₆ 2 Byte: 0 ₁₆ to FDFF ₁₆
Error indicator	 ERR bar	1 Byte: FE ₁₆ 2 Byte: FE00 ₁₆ to FEFF ₁₆
Not Available	 N/A bar	1 Byte: FF ₁₆ 2 Byte: FF00 ₁₆ to FDFF ₁₆
No Reception	 -- bar	---

5.9 Inducement Information Bar

The information bar is shown under the tachometer when the DEF level is lower than 15 % or if there is another NCD or PCD inducement reason.



Fig. 44: Inducement Information bar

Reduction levels and their reasons are given in Table 4.

Table 4: Reduction Levels and Reasons

DEF warning level	Text
0	'No Text'
Level 1	Warning
Level 2	Torque reduction ahead
Level 3: Derating Step 1	Torque reduction active
Level 4	Torque and speed reduction ahead
Level 5: Derating Step 2	Torque and speed reduction active
Temporary Override of Inducement	Temporary override of inducement

Reason	Text
No	No text
DEF tank level low	DEF level low
NOx emissions poor due to SCR system defective, diluted Adblue, EGR not OK	NOx reduction not OK
Attempted manipulation (e.g., pulling off the sensor)	NCD tampering
Attempted manipulation (e.g., pulling off the sensor)	PCD tampering

5.10 Regeneration Process

Regeneration notifications are displayed by regeneration dialog screen. There are namely four cases where regeneration dialog screen is to be shown. These can be listed as: user request, system request, inhibited regeneration and completed regeneration.

5.10.1 System Request

Depending on the filter load, the engine control unit can notify the bus participants about the regeneration need. If such a notification is received, the DEUTZ® Engine Display will initiate the regeneration dialog screen as shown in Fig. 45.

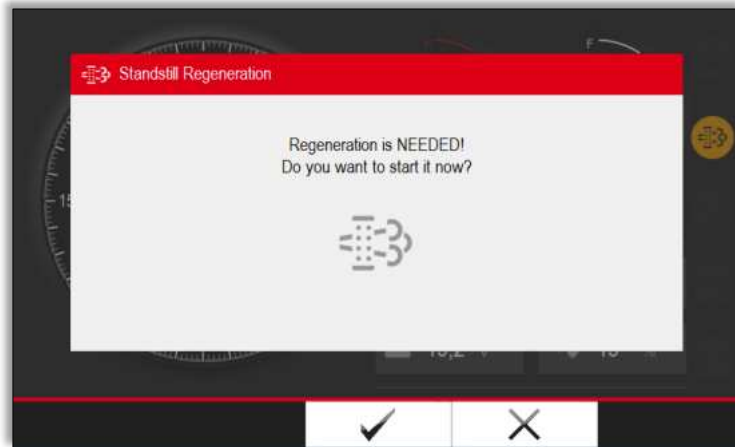


Fig. 45: System request

The user can ignore this by clicking button four or try to initiate the regeneration immediately by pressing button three.

5.10.2 User Request

Regeneration start and abort requests can be sent upon user demand if there is an ongoing regeneration or there is an ignored system request. To do that, regeneration dialog screen should be opened via EAT Screen (Fig. 11 & Fig. 12). Depending on the regeneration state (i. e., no ongoing regeneration or regeneration active), the dialog screen will show an appropriate text for approval of the request.

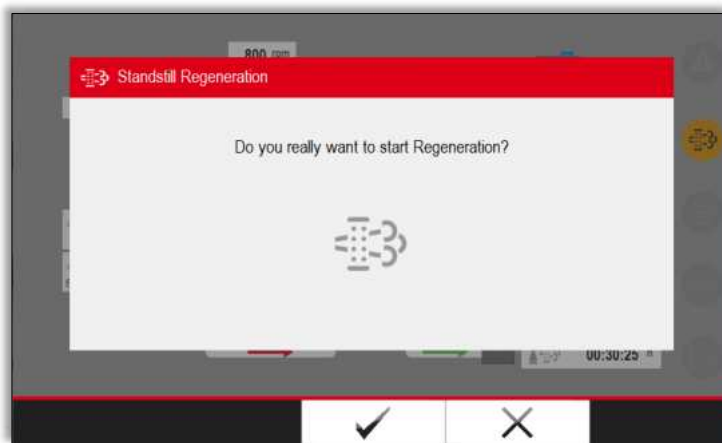


Fig. 46: User request to start regeneration

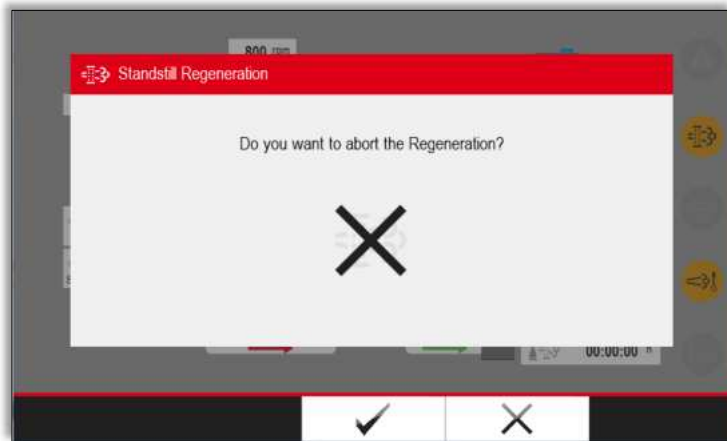


Fig. 47: User request to abort regeneration

As the user approves the request, the display will send CM1 CAN message with appropriate content. During this period the user will be informed about the progress via regeneration dialog screen. During this stage the buttons are inactive.

5.10.3 Inhibited Regeneration

In case of not satisfying the preconditions for regeneration after a regeneration request or during a regeneration process, regeneration dialog screen will be shown with active and passive inhibitors as in Fig. 48.

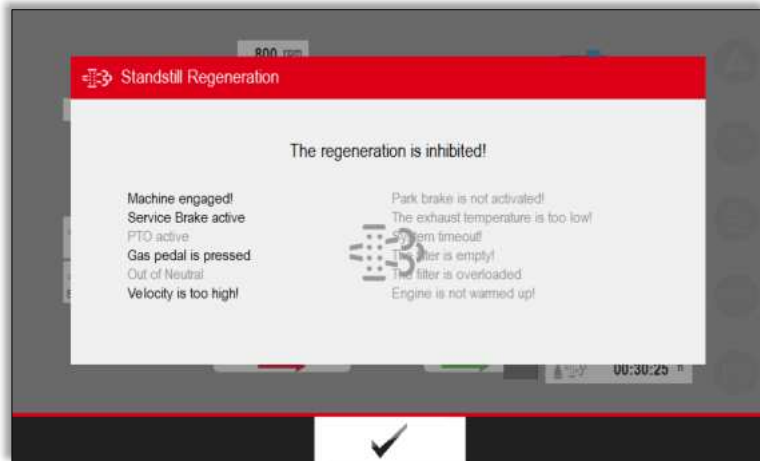


Fig. 48: Inhibited regeneration

As seen in Fig. 48, the active inhibitors are pronounced with darker letters. The passive inhibitors are shown to inform the user with lighter letters. To close the screen, button three must be pressed.

5.10.4 Completed Regeneration

As soon as the regeneration complete flag is set by the engine control unit, the DEUTZ® Engine Display initiates the regeneration dialog screen. This closes if the button three is pressed.

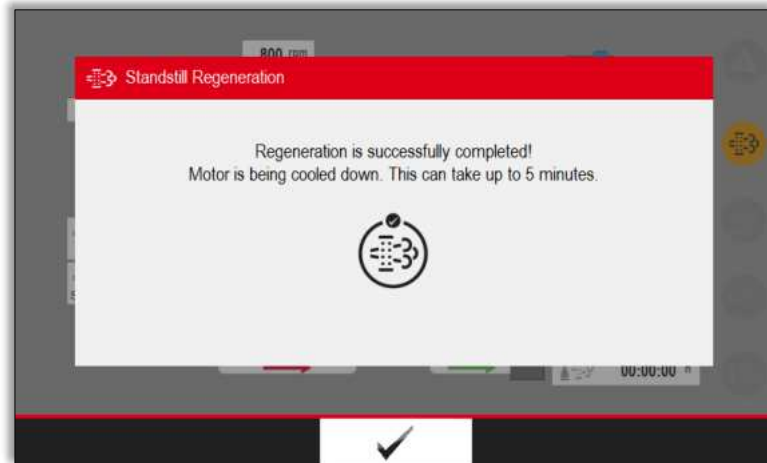


Fig. 49: Completed regeneration

6 Lamps and symbols description - Diesel

6.1 Lamps description

The DEUTZ® Engine Displays utilizes warning lamps. These lamps are aligned on the right of the frame.



Fig. 50: The lamps

6.1.1 Error lamp / Amber warning lamp / Red stop lamp

In case of any engine errors the general error lamp of the engine will be activated. Whenever the error lamp (e. g. Fig. 51) is active a fault code is stored in the error memory. No system reactions like power reduction can become active without error lamp.



Fig. 51: Red Stop Lamp

Two different states are possible:

- Solid on in yellow/orange: Errors that allow continuing engine operation with minor restrictions.
- Blinking in red: Errors that cause an engine shut down or shut down request.

Emission related errors of the EAT system will also be displayed with the diagnostic lamp.

6.1.2 Diesel particulate filter lamp

The Diesel particulate filter (DPF) lamp (e.g., as in Fig. 52) is a multifunctional lamp for standstill regeneration request and active standstill regeneration. The following states for the Diesel particulate filter lamp are possible:

- Off: No regeneration active, no regeneration request active
- On: Regeneration active
- Slow blinking (0.5 Hz): Regeneration required. Operator can start regeneration if the machine is in safe conditions, the engine is stationary, warmed up and the SCR system is ready for normal operation.
- Fast blinking (3 Hz): Regeneration required. Service tool needed to start Regeneration.

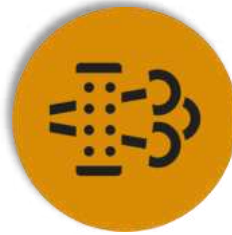


Fig. 52: Diesel particulate filter lamp

If the operator tries to release a regeneration with the push button, but the regeneration is inhibited for any reason (e.g., too low coolant temperature), the lamp will be switched off for 2 seconds before starting the blinking mode again. This provides a confirmation to the operator that the push button was accepted.

6.1.3 SCR warning lamp / EAT inducement lamp

The SCR warning lamp / EAT inducement lamp is used in case of any error in the SCR-system. A flashing SCR lamp is reserved for tank level monitoring. The symbol is shown in Fig. 53.



Fig. 53: SCR lamp

6.1.4 High temperature lamp

High temperature lamp will be shown during an ongoing regeneration. The lamp (Fig. 54) will also be activated if the engine exhaust temperature exceeds a threshold in normal operation mode.



Fig. 54: High temperature lamp

6.1.5 Ash lamp

This lamp (Fig. 55) indicates DPF maintenance request due to ash load of the DPF.



Fig. 55: Ash lamp

6.1.6 Preheat lamp

The symbol (Fig. 56) is shown when the glow plug is active. Note that due to the system, the preheating lamp is only active when the engine is started. If it is important to see the preheat lamp, you must start the display before the engine ECU.

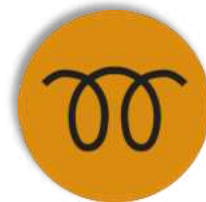


Fig. 56: Preheat lamp

6.1.7 MIL lamp

This lamp (Fig. 57) is necessary for US applications (emissions). This lamp is only available for DEUTZ LPG engines.



Fig. 57: MIL lamp

6.1.8 Leakage lamp

This error lamp (Fig. 58) is displayed when the leakage diagnosis is active or latched. This lamp is only available for DEUTZ LPG engines.



Fig. 58: Leakage lamp







6.2 Symbols description





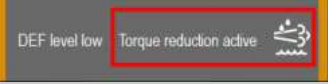







This is a listing of all possible metrics. The scope and number of measured values displayed are determined by the display itself depending on the control unit, engine type and type of EAT system. So, it may happen that your system does not need all measured values. These are then also not displayed.











Hint to following measured values: Hydraulic Temperature, Hydraulic Pressure, Fuel Level, Vehicle Speed (wheel-based), Vehicle Speed (navigation-based) → These measured values are not sent by the engine control unit but can still be shown on the display if they come from another source (e. g., the vehicle control unit).












Engines with EMR_LPG, EMR3 and EMR2 control units only have a selection of the measured values listed here.











Table 5: Symbols description

#	essential	Description	Symbol	Remark	SPN	Related CAN Signal
2	---	Amber warning lamp			624	DM1 [1.3-1.4]
3	---	Protect lamp / red stop lamp			987 623	DM1 [1.1-1.2] DM1 [1.5-1.6]
4	---	Diesel particulate filter lamp			3697	DPFC1 [1.1-1.3]
5	---	SCR warning Lamp / EAT inducement Lamp		For gasoline engines with EMR_LPG-ECUs: There is no signal.	N/A	STOUT [3.1-3.3]
6	---	Exhaust system high temperature lamp		For gasoline engines with EMR_LPG-ECUs: There is no signal.	3698	DPFC1 [7.3-7.5]
7	---	Ash lamp		For engines with EMR_L1- and gasoline engines with EMR_LPG-ECUs:	N/A	DPF Test Monitor [3.3-3.4]

8	---	Preheat lamp		For gasoline engines with EMR_LPG-ECUs: There is no signal.	N/A 1081	STOUT [8.5-8.6] For engines with EMR_L1-ECUs: SHUTDN [4.1-4.2]
9	---	MIL lamp		This signal is only for engines with EMR_LPG-ECUs.	N/A	DM1 [1.7-1.8]
10	---	Leakage lamp		This signal is only for engines with EMR_LPG-ECUs.	N/A	Monitoring of gas leakage [1.5-1.6]
11	---	Aftertreatment NCD/PCD – inducement severity			5246 N/A	AT1T1I1 [6.6-6.8] PCD1 [1.1-1.3]
12	---	Aftertreatment NCD/PCD – inducement reason			N/A N/A	EPA3 [1.1-1.3] PCD1 [1.4-1.7]
13	✓	Engine Oil Pressure			100	EFL/P1 [4]
14	✓	Engine Fuel Rate			183	LFE [1-2]
15		Battery Potential		For engines with EMR4, EMR3 and EMR2 ECUs: There is no signal.	168	VEP [5-6]
16		Battery Potential at Ignition Lock Input Signal of the ECU		For engines with EMR_L1-ECUs: There is no signal.	158	VEP [7-8]
17		Accelerator Position Pedal 1		For gasoline engines with EMR_LPG-ECUs: 0% is always displayed.	91	EEC2 [2]
18	✓	Engine Speed			190	EEC1 [4-5]
19	✓	Engine Coolant Temperature			110	ET1 [1]

20	✓	Motor Load Referred to Theoretical max. Load		This torque relates to the maximum torque of the roof curve.	513	EEC1 [3]
21	✓	Engine Load Referred to Actual Possible Load		This torque refers to the speed-dependent maximum torque of the roof curve. It	92	EEC2 [3]
22	✓	Driver's Demand Engine Torque			512	EEC1 [2]
23	✓	Engine Coolant Level >95%=Okay; <5%=too low		The Engine Coolant Level sensor works as a switch. The level will be sent either as 0% or 100%.	111	EFL/P1 [8]
24	✓	Engine Intake Manifold Pressure			102	IC1 [2]
25	✓	Engine Intake Manifold Temperature			105	IC1 [3]
26		Temperature of Combustion Byproducts Leaving the engine		Only for engines with EMR4 ECUs	173	IC1 [6-7]
27		Engine Air Filter Differential Pressure		On engines WITH EGR this value is only valid above coolant temperatures above 65°C: <ul style="list-style-type: none"> • 0 kPa Air filter is ok (switch is not closed) • >10 kPa Air filter needs 	107	IC1 [5]
28		Engine Fuel Delivery Pressure		For gasoline engines with EMR_LPG-ECUs: Signal cannot be shown.	94	EFL/P1 [1]
29		Engine Total Fuel Used			250	LFC1 [5-8]

30	✓	Barometric Pressure			108	AMB [1]
31		Hydraulic Oil Temperature		This signal does not come from the Deutz engine control unit	1638	VF [1]
32		Hydraulic Oil Pressure		This signal does not come from the Deutz engine control unit	1762	HPG [1-2]
33		Exhaust Gas Temperature SCR Intake			3241	AT1IG2 [1-2]
34		Exhaust Gas Temperature DOC Intake			4765	A1DOC [1-2]
35		Exhaust Gas Temperature DOC Outlet			4766	A1DOC [3-4]
36		Differential Pressure DPF		For engines with EMR_L1-ECUs: This signal means the differential pressure of the SCR filter.	3251	AT1IMG [5-6]
37		DPF Soot Load			3719	AT1S [1]
38		DPF Ash Load			3720	AT1S [2]
39	✓	Engine Total Hours of Operation			247	HOURS [1-4]
40		DEF Tank Level			1761	AT1T1I1 [1]

41		Diesel Tank Level		This signal does not come from the Deutz engine control unit.	96	DD1 [2]
42		Time Until Next Oil Exchange		Only for engines with EMR_L1 ECUs	519026	OE [1-2]
43		Vehicle Speed (Wheel Based)		This signal does not come from the Deutz engine control unit. Not possible for	84	CCVS1 [2-3]
44		Vehicle Speed (Navigation Based)		This signal does not come from the Deutz engine control unit.	517	VDS [3-4]
45		DEF Tank Temperature			3031	AT1T1I1 [2]
46		DEF Doser Pressure			4331	A1SCRDSI1 [1-2]
47		Second DEF Doser Pressure			4384	A2SCRDSI1 [1-2]
48		Time Since Last Active Regeneration			3721	AT1S [3-6]
49		Remaining Standstill Regeneration Time			N/A	DPF Test Monitor [5]
50		Engine Oil Level		Only for engines with EMR_L1 ECUs	98	EFL/P1 [3]

7 Operation Instructions - EDEUTZ

Note: All available measuring value displays shown as examples in this documentation depend on the engine control unit connected to the display, the engine control unit configuration and its software status! To illustrate the options of the DEUTZ® Engine Display, it is assumed in this documentation that the CAN message required for a definite display functionality is available.

7.1 General

The DEUTZ® Engine Display executes a series of steps to initiate itself. During this phase the boot picture as in Fig. 59 shown. After this the main screen will be shown (Fig.59).



Fig. 59: Startbildschirm

7.2 Screens

7.2.1 Main screen

This screen displays the motor speed, state of charge of the high-voltage battery (HVB), system status, relative power display and the gearbox setting. Depending on the drive system present (drive, work or split drive), the layout of the main window automatically adapts to display all relevant measurement data and statuses.



Fig. 60: Main screen for EDEUTZ Drive systems



Fig. 61: Main screen for EDEUTZ Split systems (drive + work system)

The power display in the main window shows the power of three different system states (Fig. 62).

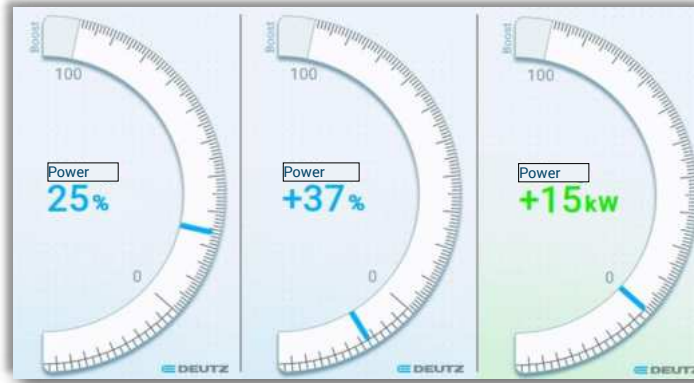


Fig. 62: Comparison of power output right gauge

Normal operation - power output

If power is delivered during operation, the tachometer pointer moves in the range above the zero line and the relative power is output via the digital display (cf. left column in Fig. 62).

Recuperation – power input

If the system recovers or the battery is charged briefly during operation, the gauge needle is in the area below the zero line. Here the relative power is output and additionally marked with a "+" (cf. center column in Fig. 62).

Charging mode - power input

If the system is charged externally and the charging mode is active, the gauge needle is at the zero line and the absolute charging power of the system is displayed (cf. right column in Fig. 62).

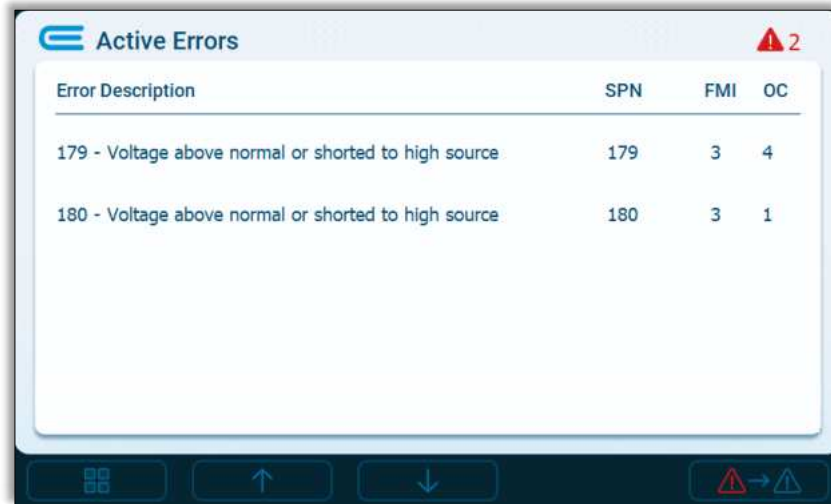
Five buttons are available in the main window (Fig. 63). The first element displays the main window. Clicking button 1 changes the appearance of the EDEUTZ application (more information in chapter 7.2.5.4). The second key switches the display to the diagnostics window. The "System overview" window is displayed when the third key is pressed. The fourth key leads to the measured value window. Settings are available in the settings window, which can be accessed via the fifth key.



Fig. 63: Main screen menu buttons

7.2.2 Diagnostic screen

The diagnostics window works in two different modes, the display of active errors and passive errors. The diagnosis window for active errors is the default mode for this window. Here error codes are listed with their descriptions (Fig. 64). If no error is active, this is indicated by a corresponding note on the diagnostics page (Fig. 65).



The screenshot shows the 'Active Errors' window. At the top left is a blue icon and the text 'Active Errors'. At the top right is a red triangle icon with the number '2'. Below this is a table with four columns: 'Error Description', 'SPN', 'FMI', and 'OC'. The table contains two rows of data. At the bottom of the window is a dark blue bar with several icons: a grid icon, an up arrow, a down arrow, and a red triangle icon with a right arrow.

Error Description	SPN	FMI	OC
179 - Voltage above normal or shorted to high source	179	3	4
180 - Voltage above normal or shorted to high source	180	3	1

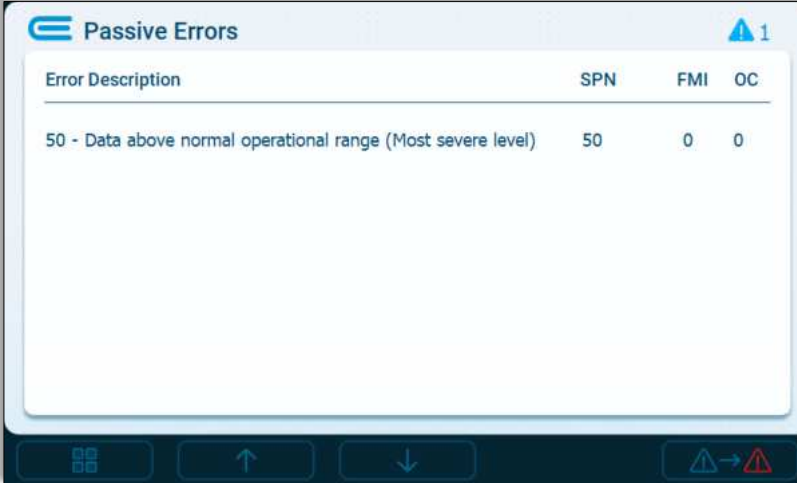
Fig. 64: Active error diagnosis window with two active errors



Fig. 65: Active error diagnosis window without active errors

This screen has four buttons. The first button switches the screen to the main window. The second and third buttons are used to navigate through the error list. The fifth button switches to the passive error page.

The diagnostic screen for passive errors lists the errors that are stored in the engine control unit and are currently not active (Fig. 66).



The image shows a diagnostic screen titled "Passive Errors". It features a table with four columns: "Error Description", "SPN", "FMI", and "OC". There is a single row of data in the table. At the bottom of the screen, there is a navigation bar with four buttons: a grid icon, an up arrow, a down arrow, and a triangle icon with a right arrow.

Error Description	SPN	FMI	OC
50 - Data above normal operational range (Most severe level)	50	0	0

Fig. 66: Passive error diagnosis window with passive errors

7.2.3 System overview screen

The system overview screen displays a schematic representation of the existing powertrain topology. This displays the existing components with important measurement values and status of the powertrain system (e. g. consisting of the high-voltage and low-voltage battery, various rectifiers or inverters, and the motors). The system informations are acquired via CAN bus at startup. Example system overview displays for a traction drive system and a split system are shown in Fig. 67 and Fig. 68.

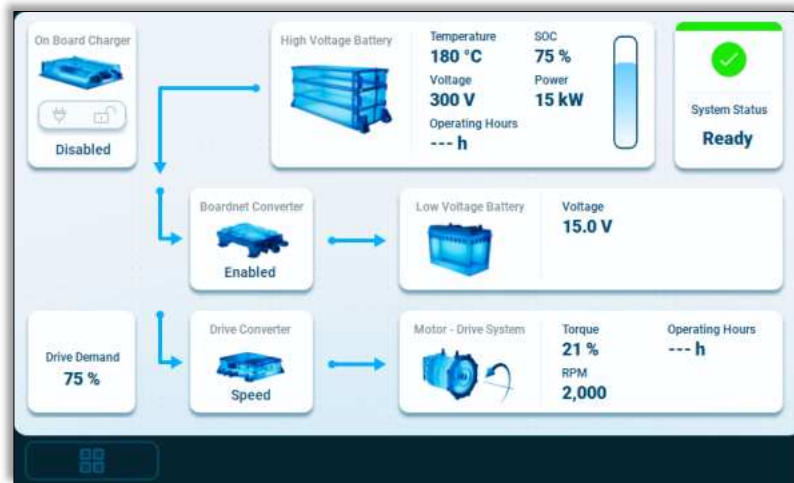


Fig. 67: System overview screen of a travel drive in normal operation

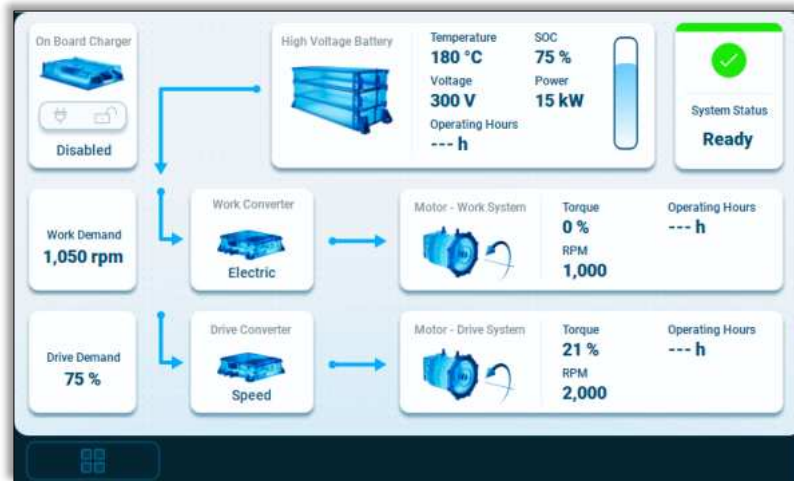


Fig. 68: System overview screen of a split drive in normal operation

In addition to the display of relevant measured values and statuses, error states are also displayed. If one of the components is in error state, a corresponding text is displayed in the status field and the field of the component is framed in red. A blue frame on the other hand symbolizes the loss of the CAN connection to the respective component. Examples for both cases are shown in the following figure (Fig. 69).

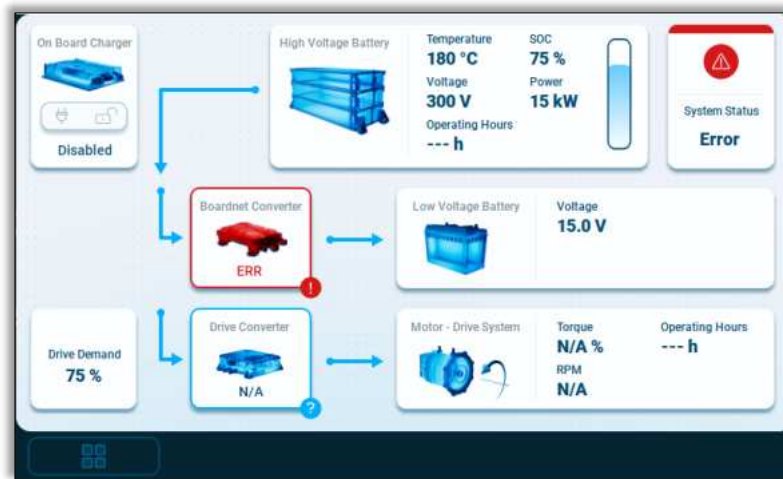


Fig. 69: System overview screen with errors

Furthermore, the charging process of the system is also indicated via green frames as well as via the adaptation of the arrow direction for schematic visualization of the current flow direction.

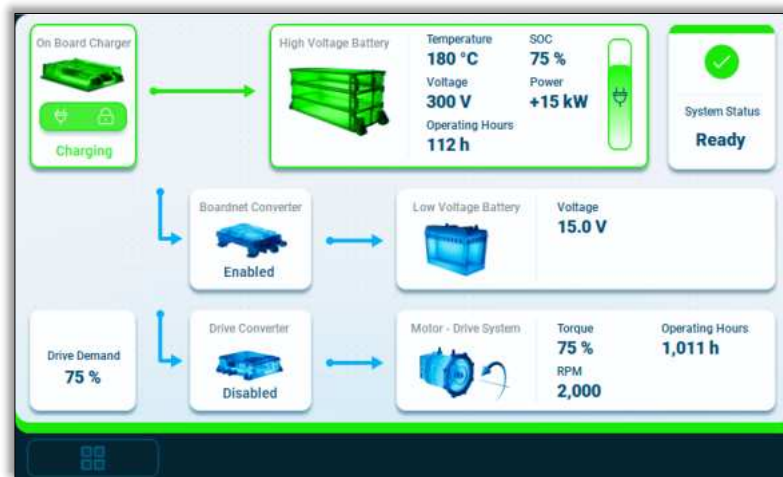



Fig. 70: System overview with loading process

7.2.4 Measurement screen

The DEUTZ® Engine Display can show selected measured values. A list and detailed description of these symbols and corresponding descriptions can be found in chapter 0. The measurement screen has three buttons.









Measurement Description	Value
 High voltage battery current	50 A
 State of charge of the high voltage battery	75 %
 High voltage battery temperature	180 °C
 Global state EDEUTZ system	Ready
 High voltage system above 60V	ERR
 Global LV-charge state	Buck

Fig. 71: Measurement screen

The first key switches back to the main window. The second and third keys are used to navigate through the measured value table.

The measurement value table includes essential measurement values, which are always displayed even if the signal indicates "---" or "N/A", and optional measurement values, which are only displayed in the table if they are active on the CAN bus and do not transmit "N/A". Table 6 shows whether a measured value is essential.

7.2.5 Settings screen

In the settings window there are various settings and customization options for the user. He can select the language and the units. Display and system information can be read, and the brightness of the screen can be adjusted. The settings consist of the higher-level menu structure on the left side and the submenus on the right side of the display. At the beginning, one navigates through the superordinate menu. By clicking on one of the main tabs, the selector then jumps to navigate through submenus.

7.2.5.1 Language

The display language can be changed via the language menu (Fig. 72). The available languages are German, English, Spanish, French, Italian, Dutch, Russian, Swedish, Japanese and Chinese. More languages can be updated. The active language selection is marked with the checkmark icon. Use keys two and three to navigate to the desired language. Key four is used to select the currently selected language. The first key navigates back to the main menu.



Fig. 72: Language selection

7.2.5.2 Information

The upper area of the information display, Display Information, provides data on the production date, software version, language database version, operating hours, and serial number of the display (Fig. 73). The lower area of the information page shows system information, such as the detected system topology or the software ID of the connected ECU.

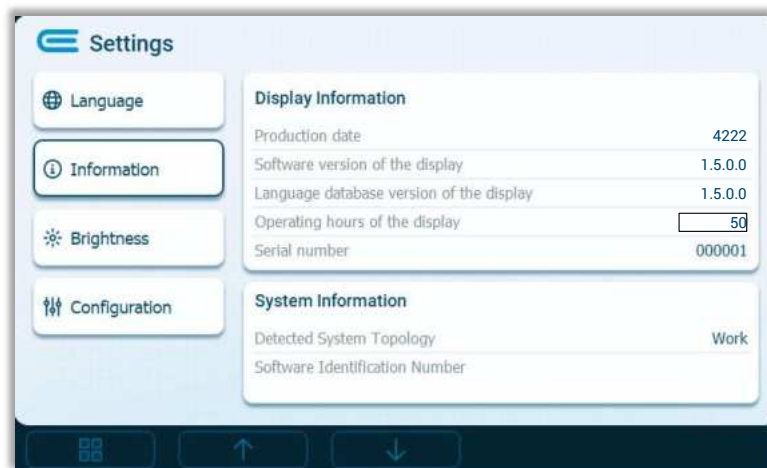


Fig. 73: Information screen

7.2.5.3 Brightness

Three buttons are available in this screen (Fig. 74). The first key switches back to the main menu. The other keys "up" & "down" are used to adjust the brightness. The brightness can be adjusted in several steps.

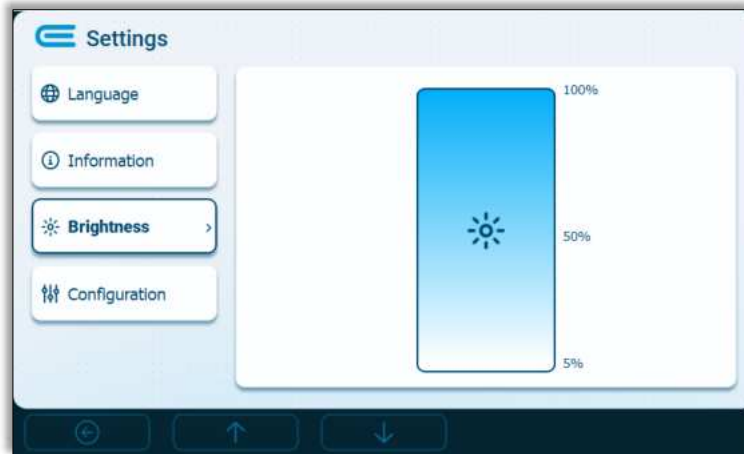


Fig. 74: Brightness setting

7.2.5.4 Configuration

Settings can be adjusted in the configuration settings. The first selection point is for activating/deactivating the buzzer and digital output. An activated/deactivated buzzer is indicated via the blue bordered symbol (Fig. 75).

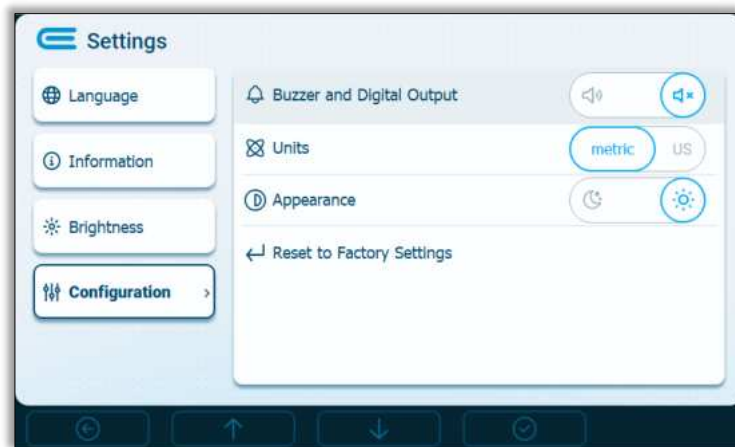


Fig. 75: Configuration settings

The "Units" item can be used to customize the display of the unit system for the entire application. In addition to metric units (set by default), the units can also be displayed in the US system.

The "Appearance" configuration item can be used to customize the appearance of the entire EDEUTZ application. In addition to the default bright display mode, it is possible to switch to the dark mode. The appearance is automatically transferred to all pages and is permanently saved (Fig. 76). It can be additionally changed via button 1 on the main screen.



Fig. 76: Dark mode on main screen

The "Reset to factory settings" item resets the settings changed by the user to their default values. These include language setting, units, buzzer, brightness, appearance and future options. The software version of the display remains unaffected.

7.3 Dialog screens

The DEUTZ® Engine Display shows pop up dialog screens under certain conditions. In this chapter these are briefly explained.

7.3.1 Error Dialog Screen

If a new error is detected, the DEUTZ® Engine Display sets an acoustic warning via an internal buzzer and a visual warning via a dialog screen. As soon as the buzzer turned on, the dialog screen can be visible on the display. This screen has only one button as in Fig. 77, which turns off the buzzer. Further information on the new error can be found in diagnostic screen.

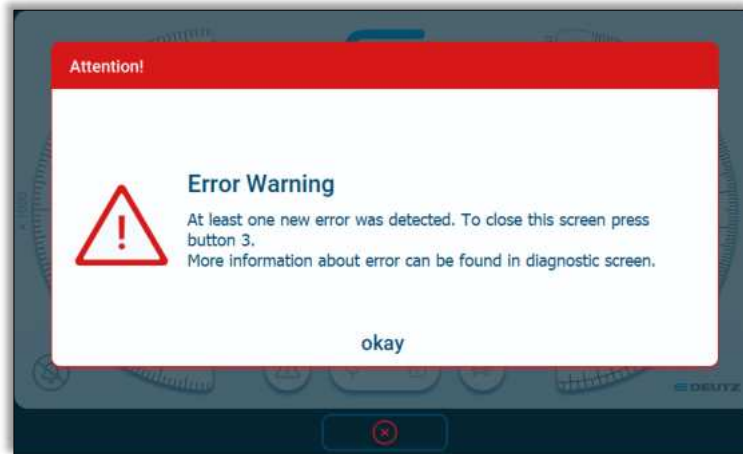


Fig. 77: Error dialog screen

7.4 No CAN connection

Deutz Engine Display monitors constantly the reception status of three critical CAN Frames, namely DM1, Veh_BattData1, Veh_DrvFeedback1 and Veh_WrkFeedback1. The display will show a dialog screen as in Fig. 78 if none of these frames are received within their timeout.

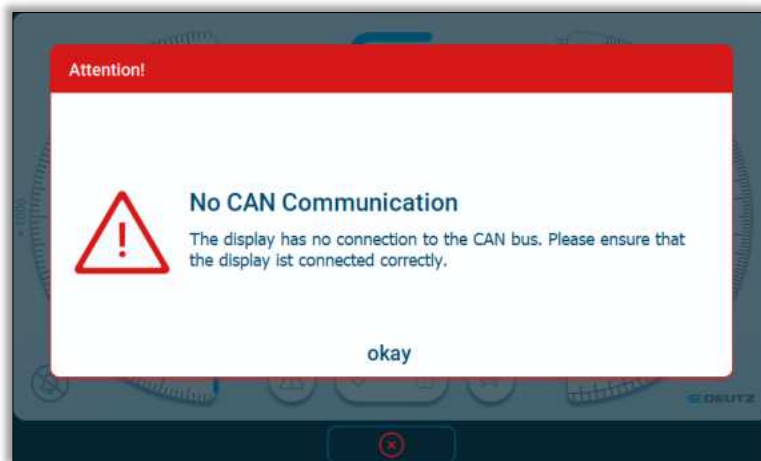


Fig. 78: Dialog screen No CAN Communication

This dialog can be closed by pressing button three.

7.5 Dynamic menu bar

In addition to displaying the various menu buttons in the different windows, the menu bar also serves as an indicator display for various statuses of the system. The normal condition here is always that the menu buttons are enclosed by a light blue frame (Fig. 79)



Fig. 79: Main screen menu buttons normal operation

If there is an active error, this is indicated not only by the warning lamp in the main window, but also by the red color of the diagnostic page. (Fig. 80).



Fig. 80: Main screen menu buttons with active error

If one of the connected components shows an error status (status = "Error"), the menu symbol of the system overview page is colored red (Fig. 81).



Fig. 81: Main screen menu buttons with error state

7.6 Status bar

The status bar is located on all windows of the EDEUTZ application and serves as a global indicator for an active red warning lamp or the charging status. That is: if the red warning lamp is active, the red status bar is displayed on all pages (vgl. Fig. 82). Similarly, the green status bar is displayed as soon as the system is in charging state (vgl. Fig. 83).

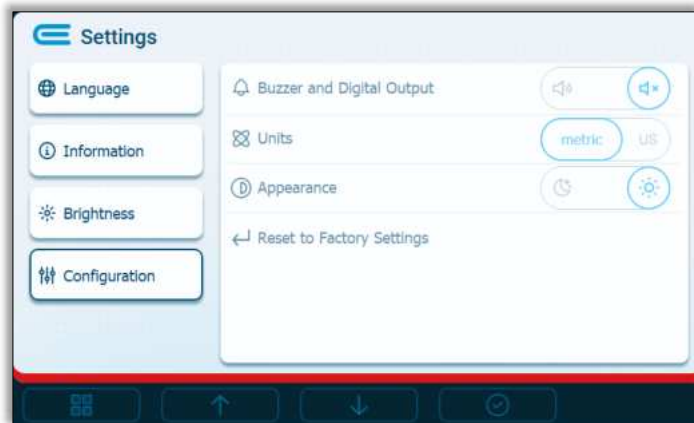


Fig. 82: Example red status bar in the settings window

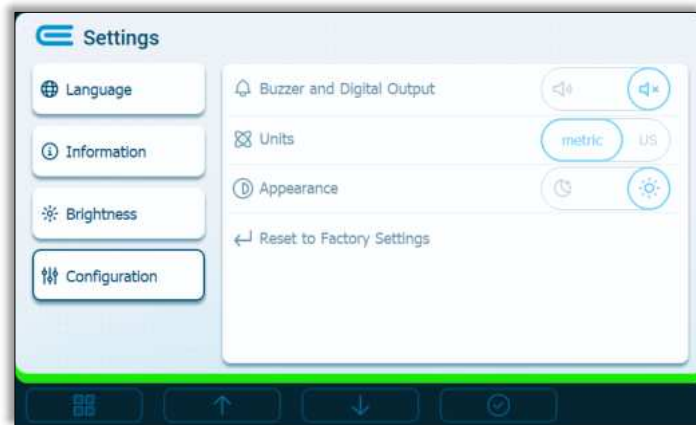


Fig. 83: Example green status bar in the settings window

8 Lamps and symbols description - EDEUTZ

8.1 Lamps description

The DEUTZ® Engine Display is equipped with warning lamps. These lamps are displayed centrally on the main page above the menu bar (cf. Fig. 84).



Fig. 84: Lamp indicator

8.1.1 Error lamp / Amber warning lamp / Red stop lamp

In case of any engine errors the general error lamp of the engine will be activated. Whenever the error lamp (e. g. Fig. 85) is active a fault code is stored in the error memory. No system reactions like power reduction can become active without error lamp.



Fig. 85: Red stop lamp

Two different states are possible:

- Solid on in yellow/orange: Errors that allow continuing engine operation with minor restrictions.
- Blinking in red: Errors that cause an engine shut down or shut down request.

8.1.2 Plug / charging lamp

The composed plug and charging lamp indicate the current status of a connected charging plug and the charging status. If only the plug lamp is lit, this means that the plug is inserted in the charging socket (cf. Fig. 86).

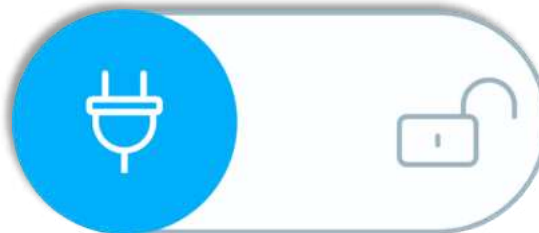


Fig. 86: Plug / charge lamp: State charge plug plugged in

If the entire lamp (plug plus locking lamp cf. Fig. 87) lights up, then the connected charging plug is locked.



Fig. 87: Plug / charge lamp: State charging plug inserted and locked

A green lit lamp symbolizes the active charging process (Fig. 88).



Fig. 88: Plug / charge lamp: State charging process active

8.1.3 Power limitation lamp

An illuminated power limit lamp (Fig. 89) indicates that the system can only call up part of the maximum possible power at the present time.
























Fig. 89: Power limitation lamp





8.2 Symbols description

Table 6: Symbols description EDEUTZ

#	essential	Description	Symbol	Remark	SPN	Related CAN Signal
1	---	Amber warning lamp			624	DM1 [1.3-1.4]
2	---	Red stop lamp			987 and 623	DM1 [1.1-1.2 und 1.5-1.6]
3	---	Plug lamp			N/A	VehGridConnStatus [3.1-3.2]
4	---	Lock lamp			N/A	VehGridConnStatus [3.3-3.5]
5	---	Charging lamp			N/A	VehChrgFdbk [1.1-1.4]
6	---	Power limitation lamp			N/A	VehBattDat2 [5-6]
7		Drive system - speed electric motor			N/A	VehDrvFdbk1 [4-5]
9		Drive system – converter state			N/A	VehDrvFdbk1 [6.1-6.4]
10		Drive system – Relative torque electric motor			N/A	VehDrvFdbk1 [2.5-3.8]
11		Drive system - relative torque setpoint			N/A	VehDrvDem1 [2.5-3.8]

12		Drive system – Available generating torque			N/A	VehDrvFdbk2 [4.5-5.8]
13		Drive system – Available motoring torque			N/A	VehDrvFdbk2 [3.1-4.4]
14		High voltage battery – Charging state			N/A	VehChrgFdbk [1.1-1.4]
15	✓	12V battery – Charging state			N/A	VehLVSpdyDat [3.1-3.3]
16	✓	Global system state			N/A	VehSysDat1 [2.5-2.8]
17	✓	High voltage battery – Current			N/A	VehBattDat1 [5-6]
18	✓	High voltage battery – State of charge			N/A	VehBattDat1 [4]
19		High voltage battery – Power			N/A	= VehBattDat1 [5-6] * VehBattDat1 [7-8] / 1000
20	✓	High voltage battery – Battery temperature			N/A	VehBattDat1 [3]
21		High voltage battery – Voltage			N/A	VehBattDat1 [7-8]
22		High voltage bus - Current			N/A	VehSysDat1 [2]

23		High voltage bus – Interlock state			N/A	VehSysDat1 [3.1-3.2]
24	✓	High voltage bus – HV safe state			N/A	VehSysDat1 [3.3-3.4]
25	✓	High voltage bus - Voltage			N/A	VehSysDat1 [7-8]
26	✓	Coolant temperature - low temperature circuit (HV battery)			N/A	VehThermMnmtDat [3]
27	✓	12V battery - Voltage			N/A	VehLVSpdyDat [4.1-5.2]
28	✓	Coolant temperature - Medium temperature circuit			N/A	VehThermMnmtDat [2]
29	✓	Drive system – Operation hours			N/A	VehOpHours [5-8]
30	✓	Work system – Operation hours			N/A	VehOpHours [9-12]
31		High voltage battery – Remaining charging time			N/A	VehChrgFdbk [1.5-2]
32		Work system - speed electric motor			N/A	VehWrkFdbk1 [5-6]

33		Work system - speed electric motor setpoint			N/A	VehWrkDem [4-5]
34		Work system – converter state			N/A	VehWrkFdbk1 [7.1-7.3]
35		Work system – Torque			N/A	VehWrkFdbk1 [3.1-4.4]
36		Drive system – Available generating torque			N/A	VehWrkFdbk2 [3.1 - 4.4]

9 Troubleshooting

If you observe a malfunction, we recommend a complete software update with the DEUTZ diagnostic tool SerDia (Chapter 10). If this malfunction persists, please contact your applicator assigned by Deutz. The malfunction is then analyzed immediately.

It is a great help if you look up the serial number and the software version number of the display and pass them on. Both can be found under Settings - Information - Display information (see also chapter 5.2.4.4).

If it is a faulty signal or faulty interaction with the ECU, a recording of the J1939 CAN bus will probably be necessary for an exact analysis.

10 Software Update via SerDia

The DEUTZ® Engine Display can be updated via the DEUTZ diagnostic tool SerDia to benefit from new languages, bug fixes and feature enhancements. An update to the current software is recommended. Here is the short version:

1. Switch on ignition, connect DeCom and start SerDia 4.0.
2. Start Display Updater (SerDia 4.0 -> Applications -> "Display Updater").
3. Wait until display is recognized and connection is established.
4. Select update scope ("Full software update" is recommended).
5. Start update (button: "Start update").
6. After completion, the display restarts automatically.

10.1 Preconditions

With a display installed in the vehicle, a software update is only possible if the diagnostic socket on the device is fully equipped. (The full assembly is a general requirement from Deutz to the vehicle manufacturer. For the software update of the display, pins M and F of the diagnostic socket must be properly connected to the customer CAN. The display is also connected to the customer CAN. The diagnostic socket is plug X22.2 from the DEUTZ circuit diagram of the device-side wiring. It's an ITT Cannon male 12-pin female connector.)

10.2 Detailed procedure of display software update

The Display Updater offers two options for the update, namely: "Full Software Update" and "Language Pack Update". The "Full Software Update" performs a full software update including the "Language Pack Update". The display is up to date after this update. The "Language package update" only updates texts, namely error and corrected display texts. It also adds new languages if any have been added. However, a complete software update is recommended.

A software update preserves the operating hours of the display and the settings of the display.

The complete software update usually takes between 30 and 60 minutes. Depending on the bus communication load and the performance of the computer, it may take longer.

Do not interrupt the power supply of the display during the flash process.

1. Switch on the vehicle ignition.
2. Connect the SerDia-DeCom with the computer and on the motor side with the diagnostic socket. (An ITT Cannon connector with 12-pin socket - connector X22.2 in the wiring diagram).
3. Start the DEUTZ diagnostic tool SerDia on your computer.
4. Navigate to the "Applications" and select the "Display Updater" (Fig. 90). The updater is then started. A new window appears after a few seconds.
5. The updater will now automatically search for a display. Wait until all necessary information has been read out (Fig. 91).

- a. If a display has been detected, the possible update options are automatically displayed (Fig. 92). The following options are possible:
 - i. The display is already up to date and no update is required
 - ii. Complete software update
 - iii. Language package update
 - iv. Image update required
 - b. If the display does not respond successfully, a message appears: "No display found!"
In this case, check the hardware setup and please observe the "Notes" and "Prerequisites" in this chapter. Select "Try again!" to start the search process again.
6. "Complete software update".
With a complete software update, the "language package" is automatically included. With this update you will receive all new functionalities and bug fixes. A complete software update is recommended. The duration of this update process depends largely on the load of the connected bus system and on the version of the display to be updated.
7. "Language package update".
If you want to add only one language or get an update of the error texts, select "Language Pack Update". This update takes only a few minutes.
8. "Image update required" (For software versions < 1.3.0.0).
An important system update is available for your display. This cannot be done via SerDia, but only via a 'Display-to-Display-via-CAN' update.
Please contact the technical customer service for this and for further coordination and open a ticket in the DTS (Deutz Ticket System).
9. After selecting one of the update packages, you will be redirected to a summary page. It is essential to follow the instructions and notes described here. Use the "back" button to navigate back to the update selection. The "Start update" button starts the update process automatically (Fig. 93). The display switches off for the duration of this process and only shows a static image.
Important: The update process must not be stopped or interrupted.
10. After successful completion of the update, the terminal switches on again automatically. The updater can be terminated

10.3 Hints

Displays with a software version lower than 1.3.0.0 (viewing the software version is described in Chapter 5.2.4.4) cannot be updated via SerDia. These displays have a serial number less than 001000 and require a "display-to-display-via-CAN update". To do this, please contact the technical customer service and open a ticket in the DTS system (Deutz Ticket System).

SerDia may not be able to recognize displays with software version 1.0.1.0. With these displays, the display may only be started if it has previously been connected to a CAN participant. The background is the functioning of the CAN driver, which only registers the display with the CAN if it can "speak" with another CAN participant when it starts.

10.4 Important Updates

Table 7: Change Log

Date	Version no.	New
01.07.2023	1.5.0.0	<ul style="list-style-type: none"> ❖ The display brightness can no longer be set until 0%. ❖ Chinese can now be set as language. ❖ Other values for the speedometer elements can now be set on the main page (favorite selection). ❖ Navigation is now supported by dynamic key illumination. ❖ A slight correction of the color display ensures a better contrast ratio. ❖ EDEUTZ systems are now fully supported. ❖ The wheel-based vehicle speed can now be displayed for all engines (CCVS1, SPN 84). ❖ Many minor bugs have been fixed and improvements made.
01.07.2022	1.4.0.0	<p>The viewing of the measurements has been improved significantly:</p> <ul style="list-style-type: none"> ❖ Only existing values are now displayed on the measured data page. ❖ Each measurement now has a description. ❖ On the main page, other values from the measurement data can now be set (favorite selection). ❖ The vehicle speed can now be displayed (VDS, SPN 517). <p>Some errors have been fixed:</p> <ul style="list-style-type: none"> ❖ Now the reason for a power reduction is also displayed when the SCR tank level drops below 10%. ❖ The display brightness can no longer be set until 0%. ❖ The display values are now shown stable and without dropouts.
01.11.2021	1.3.0.0	<ul style="list-style-type: none"> ❖ Reduced start time below 12 sec. ❖ Compatibility for all engines with EMR3 and EMR2 ECUs ❖ Compatibility for TCD18.0 ❖ EOL Test via CAN-Message: Service Receive Message ❖ New lamps (MIL, Gas Leakage) for gasoline engines ❖ Scheme of the installed exhaust system for engines with EMR_L1 ECU ❖ Resetting oil service interval for engines with EMR_L1 ECU ❖ Display power reduction: Add PCD Inducement ❖ Allow ECU start after display start with full display functions ❖ The measured value 'Engine Fuel Delivery Pressure' now works
01.04.2021	1.1.0.0	<ul style="list-style-type: none"> ❖ Compatibility for engines with EMR4 ❖ Signal range evaluation (error / not available) ❖ Display of engine information ❖ Allow display start before CAN connection. ❖ Now the Diesel Tank Level, Hydraulic Öl Temperature and Hydraulic Öl Pressure can be displayed.

10.5 Pictures

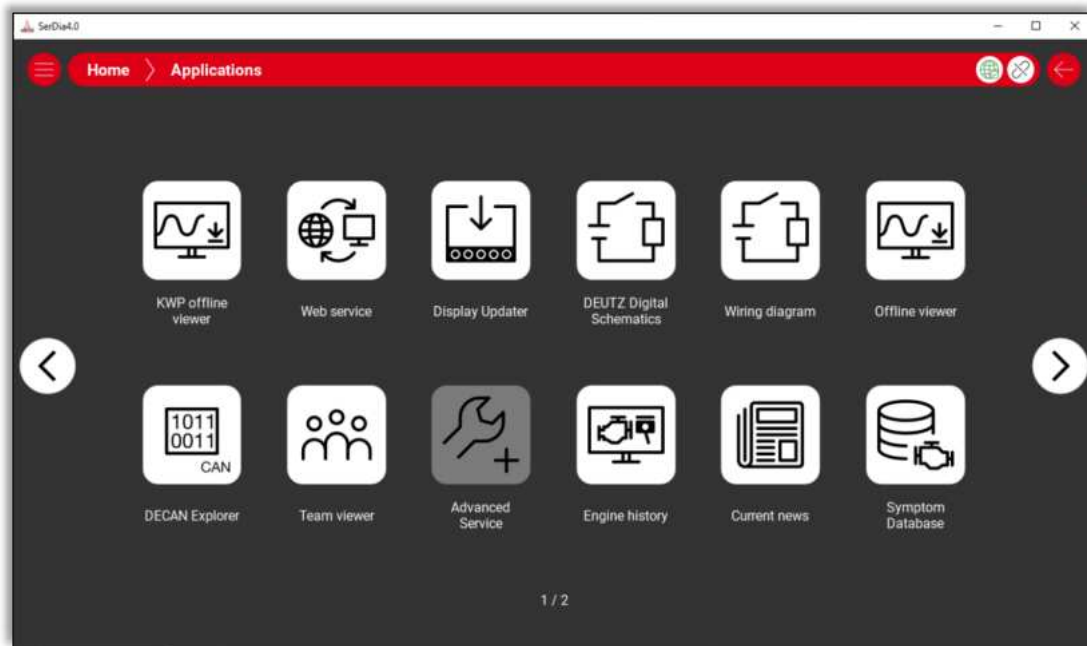


Fig. 90: SerDia 4.0 Application, Display Updater

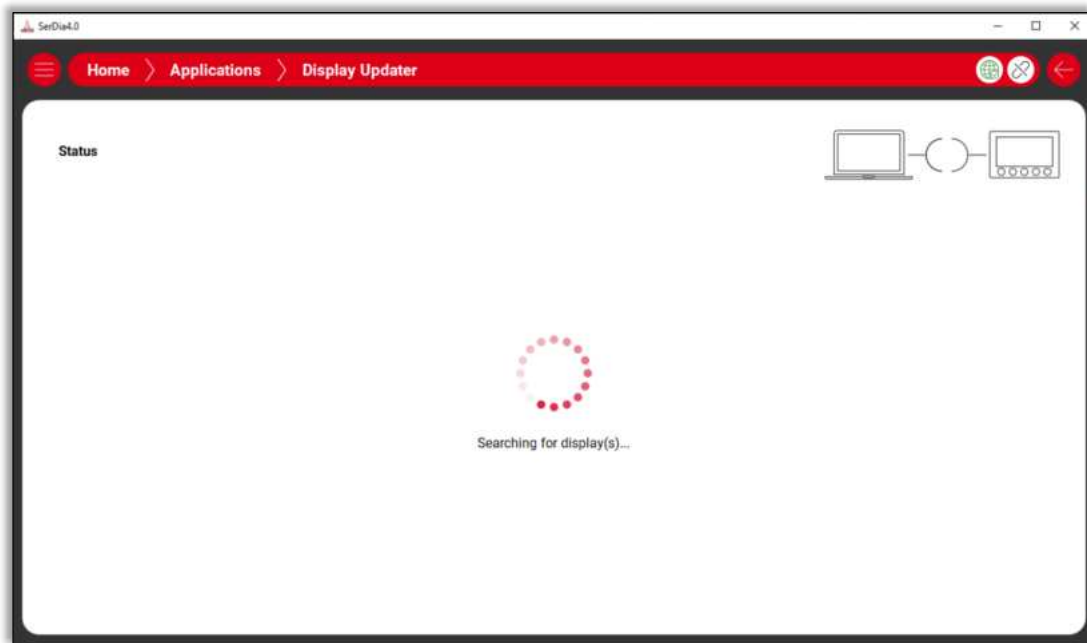


Fig. 91: Display detection

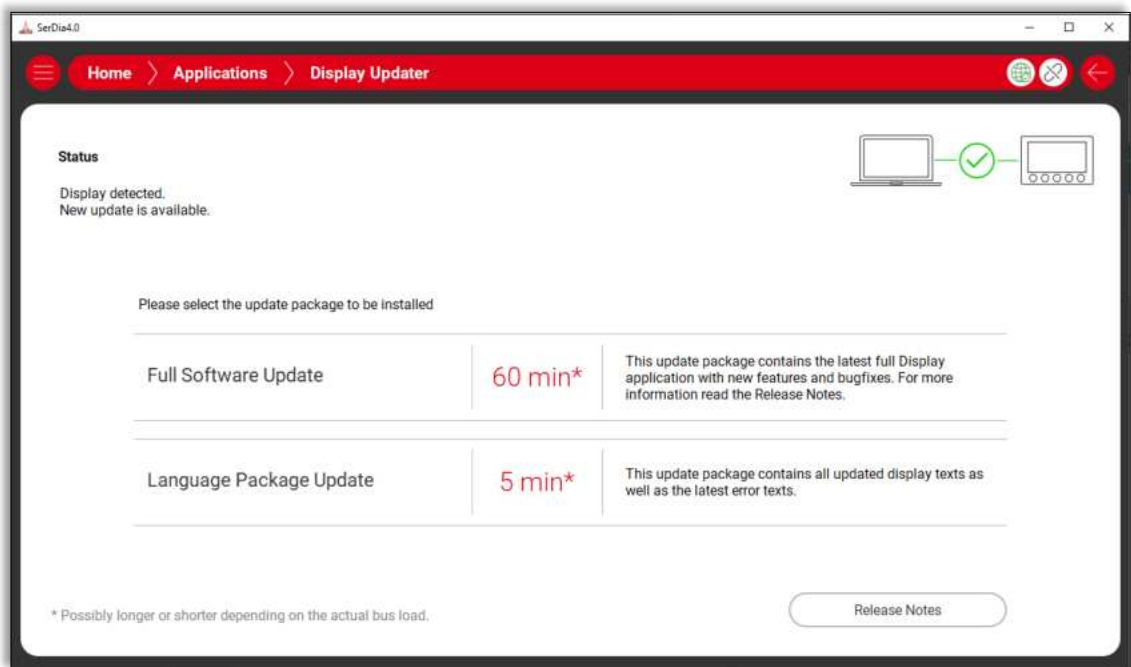


Fig. 92: Update options

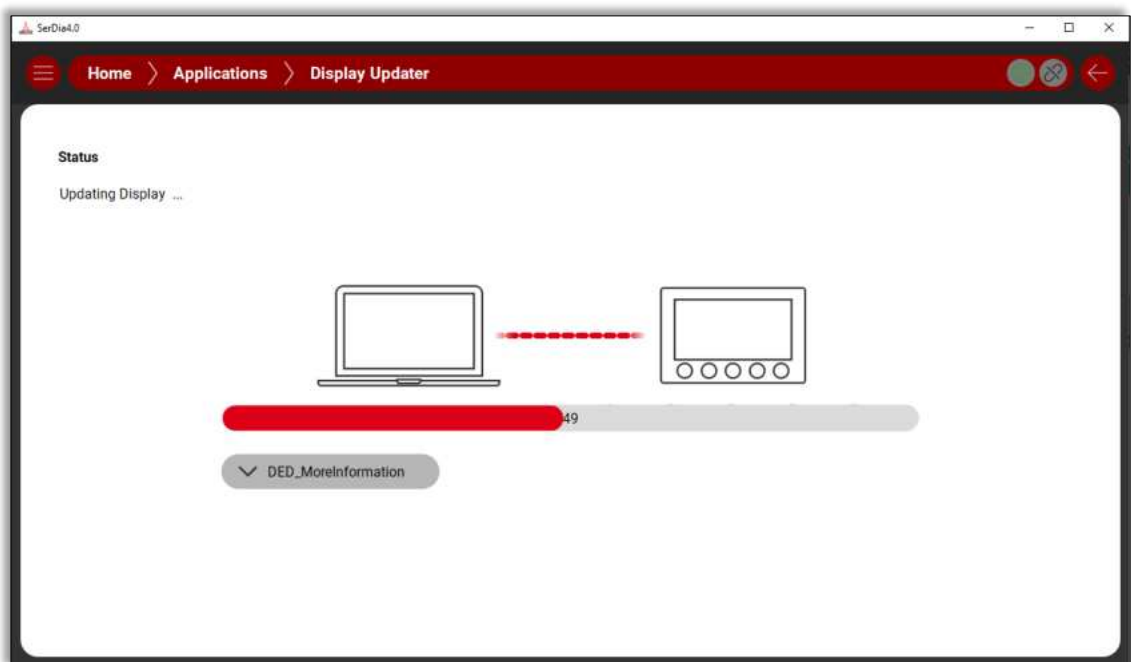


Fig. 93: Update process

11 Technical Drawing

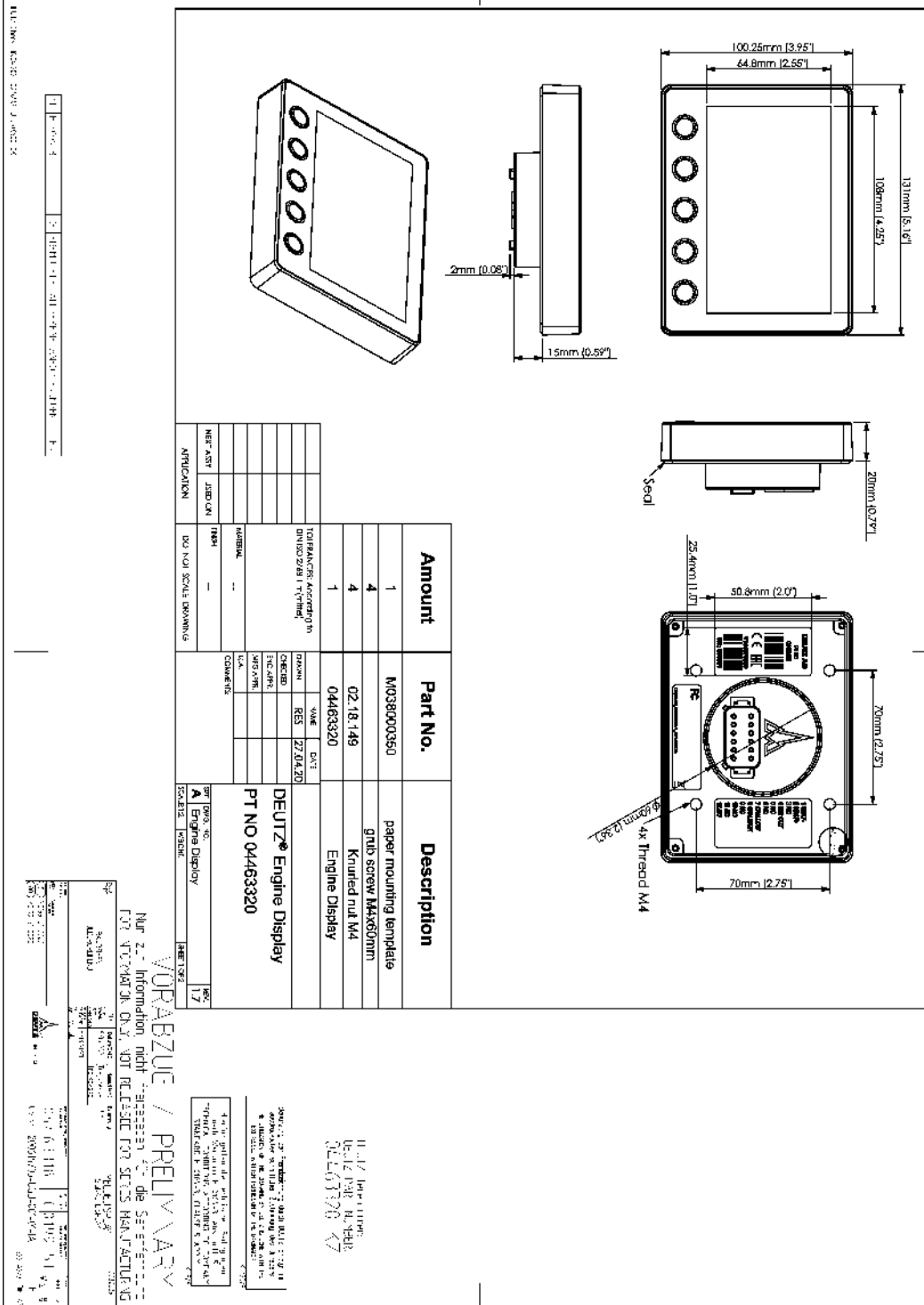


Fig. 94: Technical drawing page 1



12 European Declaration of Conformity



EU-Konformitätserklärung European Declaration of Conformity



Hiermit erklären wir, dass das Produkt
We herewith declare that the product

Produktname

V966370300 Deutz Engine Display (Deutz PN 04463320)

**mit den Vorschriften folgender Europäischen Richtlinien
übereinstimmt:**

complies with the requirements of the following European directives

EMV-Richtlinie	2014/30/EU	EMC-directive	2014/30/EU
Niederspannungsrichtlinie	2014/35/EU	Low Voltage Directive	2014/35/EC
RoHS-Richtlinie	2011/65/EU	ROHS-directive	2011/65/EC

Hersteller:

manufacturer:

Sontheim Industrie Elektronik GmbH
Georg-Krug-Straße 2
D-87437 Kempten / Germany

Kempten, 23.02.2021

Sontheim Industrie Elektronik GmbH

Fig. 96: European Declaration of Conformity



The engine company.

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Application Engineering

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