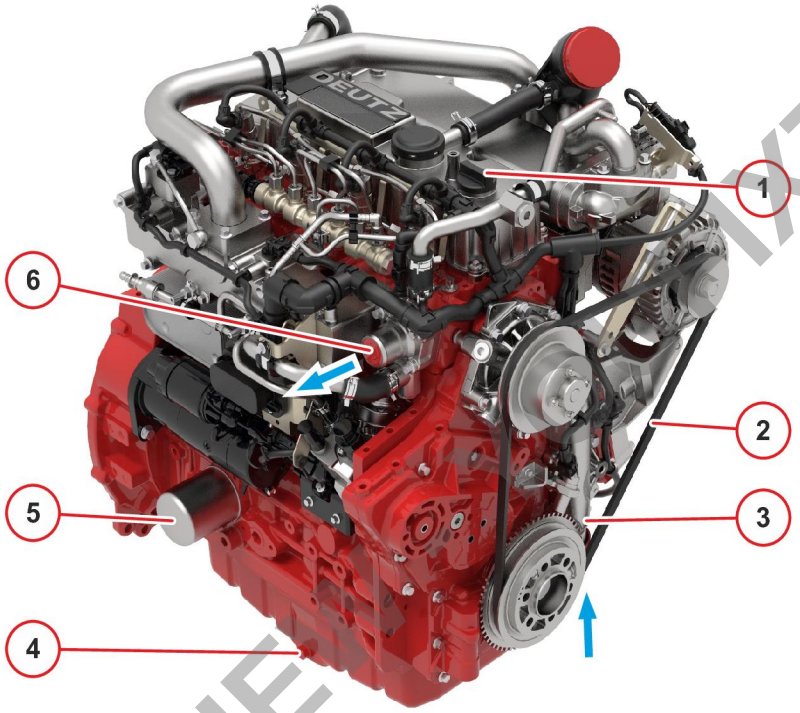


TD 3.6 L4

Industrial engine

View from right (example)

1 Lube oil filling
2 V-belts
3 Coolant inlet
4 Lubricating oil drain plug
5 Lube oil spare filter
6 Coolant outlet

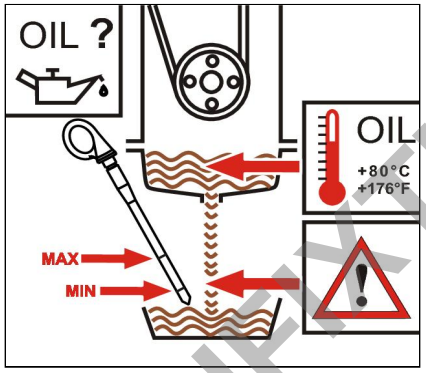
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Regulations for working on the lubricating oil system

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

- 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 44
  - Filling quantity 78
- 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

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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

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02.52.31 Technical data

DRIVE MOTOR Tier 4 final

Engine type	Dimension	Description
Manufacturer:		Deutz
Type:		TCD 3.6 L4 (Tier4 final)
Method of operation		Four-stroke diesel engine
Charge		Exhaust turbocharger with charge air cooling

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Technical data

SERVICE PARTS See spare parts catalog

FLUID CAPACITIES

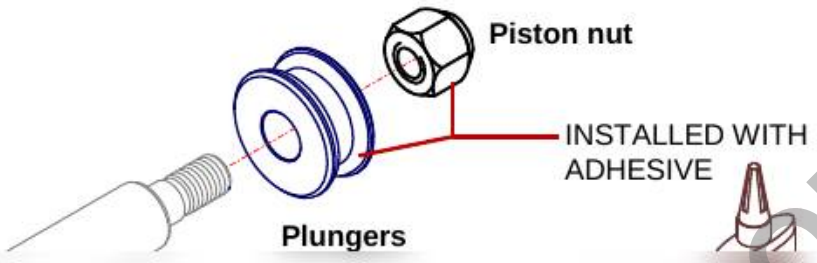
Designation	Liters approx.	Description
Fuel tank	160	Diesel

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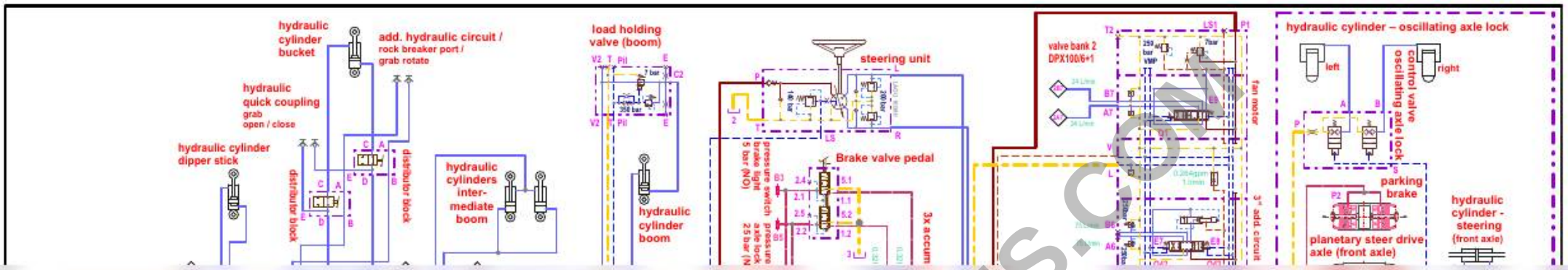
1.500.01 Tightening torques for pistons or piston nuts



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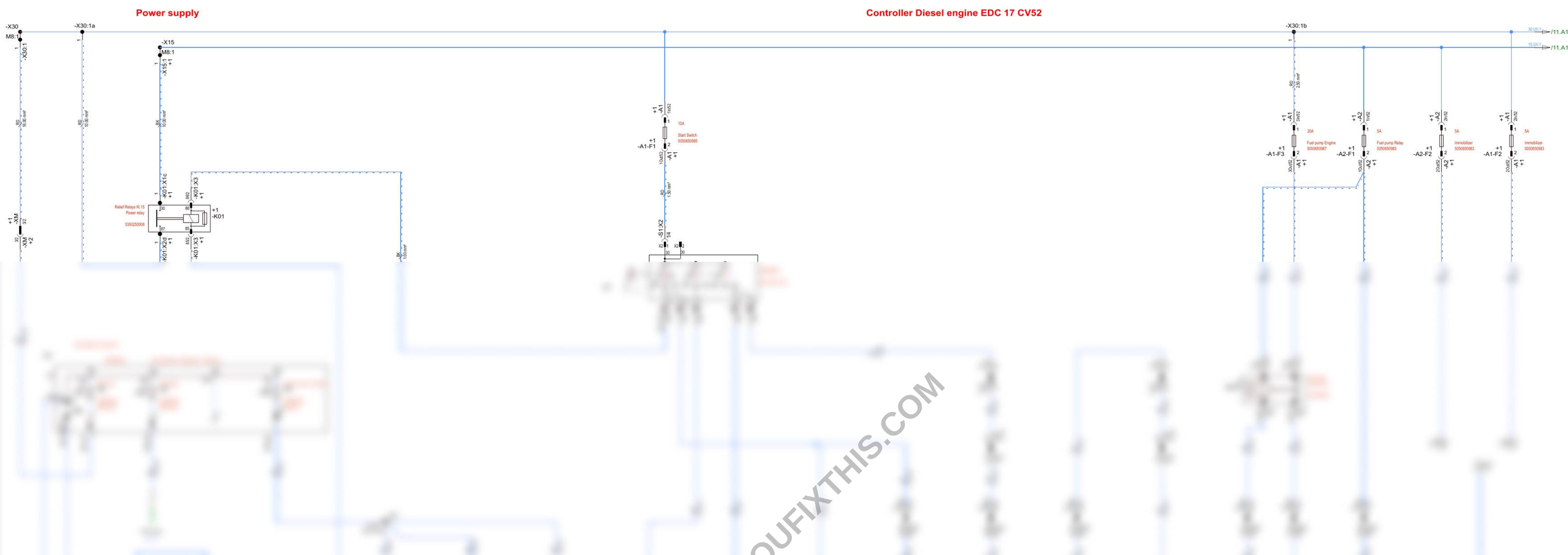
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07.52.60 Structural diagram, diesel engine control unit

HMI = **H**uman **M**achine **I**nterface
= Display (combi-tool)



Right armrest



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09.52.11 Keypad operation



1 Function button with symbol for function
2 LED (status indicator)
3 Number block (numeric input - *E.g. for immobilizer PIN code*)
4 ENTER (confirm - *save* program)
5 Dot 'period' (delete number entry - *delete entered numbers*)

1	Working headlamps forwards	2	Working headlamps Rear (optional)	3	Flashing beacon (optional)
4	Windscreen wipe	5	Washer wiper	6	Automatic heating and air-conditioning *)
7	Heater fan *)	8	Increase inside cab temperature *)	9	Lower inside cab temperature *)
	Working hydraulics activation	0	Fast movement		Overload warning activation *)

The machine is operated primarily via the keypad.
Depending on the function, the corresponding button must be operated once or several times.

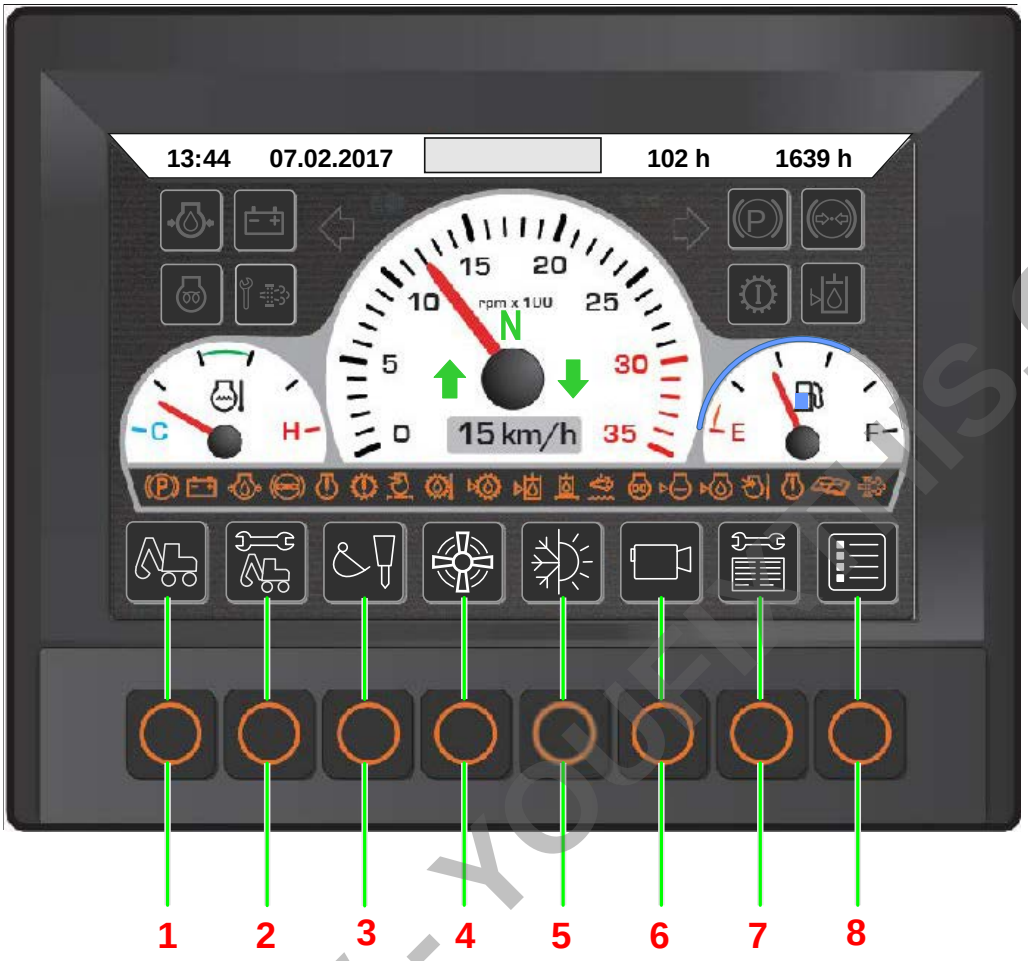
*) The corresponding screen is displayed when these functions are operated.

(Description: See also operating instructions).

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Instructions for using the combo-tool (display)

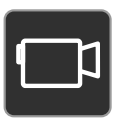
Main menu



Display
Main view

Submenu icons

Pos.	Symbol	Designation
1		Submenu Machine functions
3		Submenu Machine calibration
5		Submenu Air-conditioning control
7		Submenu, diagnosis

Pos.	Symbol	Designation
2		Submenu Machine options
4		Submenu, fan control
6		Submenu, rear view camera
8		Submenu Display basic settings

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DTC Code (Hex)	DTC Type	SPN-Value	Failure type	Function/Module	Number	Description
622A01	C (communication)	207361	FMI=2--DATA ERRATIC, INTERMITTENT OR INCORRECT	HMI	1	No communication to the HMI (Display or dashboard)
732A01	C (communication)	207361	FMI=19--RECEIVED NETWORK DATA IN ERROR	HMI	1	I/O-failure on HMI (Display or dashboard)
623201	C (communication)	209409	FMI=2--DATA ERRATIC, INTERMITTENT OR INCORRECT	Keypad	1	No communication to the keypad
733201	C (communication)	209409	FMI=19--RECEIVED NETWORK DATA IN ERROR	Keypad	1	I/O-failure on keypad
621D01	C (communication)	204033	FMI=2--DATA ERRATIC, INTERMITTENT OR INCORRECT	ECU	1	No communication to the ECU (engine control unit)
731D01	C (communication)	204033	FMI=19--RECEIVED NETWORK DATA IN ERROR	ECU	1	I/O-failure on the ECU (engine control unit)
620201	C (communication)	197121	FMI=2--DATA ERRATIC, INTERMITTENT OR INCORRECT	ACU	1	No communication to the ACU (Air condition and climate control unit)
730201	C (communication)	197121	FMI=19--RECEIVED NETWORK DATA IN ERROR	ACU	1	I/O-failure on the ACU (Air condition and climate control unit)

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Troubleshooting A10 VO DFLR/DFSR

Troubleshooting	Cause	Remedy
Hydraulic pressure at **control valve 1** too low; only about 100 - 150 bar.	Hole (7) in the top piston of the power controller (2) (Δp controller) blocked.	Unscrew the adjusting device of the power controller (2), without modifying the controller setting. Do not lose the springs/spring plates; unscrew plugs (10) and push out piston (9); clean hole (7). Ensure correct location of the parts during assembly.
No hydraulic pressure present at **control valve 1**; only standby pressure. Pump does not swing out.	Piston (8) of the load-sensing controller (3) is pushed toward the springs and is firmly clamped by foreign particles / thermal distortion.	Unscrew the adjusting device of the load-sensing controller (3), without modifying the controller setting. Do not lose the springs/spring plates; unscrew plugs (10) and push out piston (8); remove particles. Let some oil flow out to flush out and particles. In the event of jamming due to thermal distortion, the entire controller must be renovated and configured. *See 5.52.51 page 02.* Note the position of the orifice (11); if need be, this can be levered out with a screwdriver. Pos. (13).
No hydraulic pressure present at **control valve 1**; only standby pressure. Pump does not swing out.	Plug (12) has come loose. Connection from LS to tank is open.	Plug (12) is in the spring chamber of the standby controller (3). Remove adjusting device of the standby controller (3). Screw the plug (12) back in with a 2 mm Allen wrench. Attach adjusting device (3).
Work movements sluggish/slow.	Standby controller (3) / Δp controller (2) set too low.	Set controller (2) / (3). *See 5.51.51 page 02.*
Work movements rough, too quick.	Standby controller (3) / Δp controller (2) set too high.	Set controller (2) / (3). *See 05.52.51 page 03.*

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Grip Options - Joystick

Functional description: Grip option - Joystick on right hand side

Pin assignment –S23:X1#2

Deutsch DT04 8PA



Item	Description	Function

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08.52.21 Measurement protocol

Description	Desired value		Measurement tolerance	Remark
VALVE BANK-1	***Pressures in bar***			
SX 14 max. **LS pressure relief valve**	280		+ 10	At full throttle and oil temperature of at least 60° C
Secondary pressures	***out***	***in***		
Articulated boom (TPA)	300	300	+ 10	*Hydraulic Cylinder*
Intermediate boom (TPA)	150	300	+ 10	*Hydraulic Cylinder*

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Travel hydraulics setting instructions

Attention
Before checking and/or adjusting the travel drive and working hydraulics,
the speeds of the diesel engine must be measured and – if necessary – adjusted.

1. Measuring and adjusting the feed pressure.
(= pilot pressure of the working hydraulics)

- Open the engine hood

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List of Contents

01 General

02 Technical Data

03 Diesel Engine

04 Hydraulics

05 Setting Instructions

06 Function Description

07 Electrics

08 Maintenance

09 Operation

10 Options

11 Repair Instructions

12 Diagnosis / Tools

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Service Manual

B95W

SERIAL-NO.: from **TL09540104** to **TL0954XXXX**

Issue Date: 01/09/2019
Language: English (en)
Issue Number: 04
Original Instructions

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1.200.01. Safety and accident prevention

1 Introductory remarks

Read the operating instructions thoroughly and follow the notes on safe operation before starting up the earth-moving machine.

National safety regulations - e.g. the Accident Prevention Regulations, "Earth-Moving Machinery" (VBG 40) and "Vehicles" (VBG 12) in the Federal Republic of Germany - must also be complied with when operating the earth-moving machine.

In addition to the operating instructions, legal regulations governing road safety and accident prevention measures must also be observed. Such requirements could also apply with respect to the handling of hazardous goods or the wearing of personal safety gear, for example.

Furthermore, safety requirements governing work in particular locations (tunnels, adits, quarries, pontoons, contaminated areas, etc.) must likewise be observed.

2 Intended use

The earth-moving machine with standard bucket equipment is intended solely for work which is suitable for the function of the machine and its work attachments.

Such work involves loosening, taking up, transporting and dumping soil, rock, or other materials as well as loading these materials on trucks, conveyor belts, or other means of transport, when the transport of the material is normally done by positioning the earth-moving machine.

The assembly of special work attachments – such as multi-purpose bucket, side-dump bucket, broom, fork lift attachment, etc. – makes corresponding applications possible.
Any usage above and beyond that specified here – e.g. the transport of persons or the usage of the lift equipment as a work platform – is regarded as improper use. The supplier cannot be held responsible for any damage resulting from improper use. The risk is borne by the user alone.

Strict compliance with the operating and maintenance instructions and the performance of maintenance work, as well as adherence to the maintenance intervals is also part of intended use.

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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

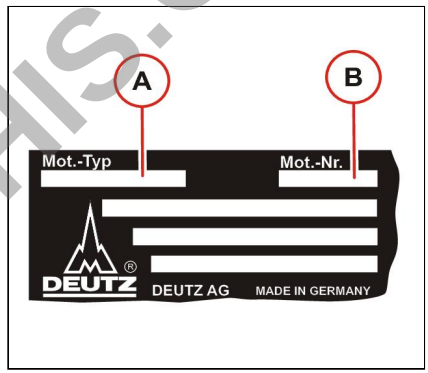
Emissions legislation

The engine and the corresponding EAT system (**E**xhaust **A**fter **T**reatment) 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

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).



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.

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1.100.01. Introduction / user notice

The individual assemblies of the manufacturer machine program and the functions of and adjustments to the installed units are described in this service manual.

The hydraulics and electrics diagrams and sectional representations combined with the operating instructions and spare parts list should make maintenance and repair work easier.

Descriptions of work procedures and assembly steps were consciously omitted, because big repairs are generally performed by qualified and experienced workshop personnel, who are masters at this routine work.

Safety and cleanliness at the workstation is the highest priority when performing repairs. Using tools in perfect condition and generally replacing sealing components during each repair should be a matter of course.

Provided no special values are specified, screw connections are to be fastened with the usual tightening torques.

This service manual has been issued by the customer service department with the aim of jointly improving the servicing of manufacturer machines. The service messages we send out for information can serve as a supplement.

We keep this manual up to date with continuous additions.

This document may be copied and transmitted to third parties neither wholly nor in excerpts without our consent.

The division of the main groups can be seen in the table of contents.

The accident prevention regulations of the responsible employer's liability insurance association are to be strictly observed.

Attentiveness when performing repairs is the best way of preventing accidents.
We therefore recommend studying the relevant instructions concerning the intended repair in detail.

Maintenance and repair work on machines in the field may only begin once the work equipment has been placed on the ground, the engine is turned off, the machine is secured against rolling away, and the hydraulic system has been relieved of pressure.

If repair work is performed by qualified personnel in the workshop, the relevant accident prevention regulations apply here too.

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- Read and observe the information in this documentation. You will avoid accidents, retain the manufacturer's warranty and possess a fully functional and ready to operate engine.
- This engine is built exclusively for purpose according to the scope of delivery - defined by the equipment manufacturer (use for the intended purpose). Any use above and beyond this is considered improper use. The manufacturer will not be liable 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 repaired by persons who are familiar with this and are aware of the risks involved.
- Make sure that this documentation is available to everyone involved in the operation, maintenance and repair and that they have understood the contents.
- Failure to observe this documentation may lead to malfunctions and engine damage as well as injury to persons for which the manufacturer will not accept any liability.
- Prerequisite for proper maintenance and repair is the availability of all the necessary equipment, conventional and special tools and their perfect condition.
- Engine parts such as springs, clamps, elastic retaining rings etc. pose an increased risk of injury when handled incorrectly.
- The pertinent rules for the prevention of accidents and other generally recognised health and safety regulations must be observed.
- Maximum economy, reliability and long life is only guaranteed when using DEUTZ original parts.
- Repair of the engine must correspond to its use for the intended purpose. Only parts released by the manufacturer for the respective purpose may be used for conversion work. Unauthorised modifications to the engine exclude manufacturer liability for resulting damages. Failure to observe this will void the warranty!
- The engines made by DEUTZ are developed for a wide range of applications. A wide range of variants ensures that the respective special requirements are met.
- The engine is equipped according to the installation case, i.e. not all the parts and components described in this documentation are installed in your engine necessarily.
- We have done our best to highlight the differences so that you can easily find the operating, maintenance and repair instructions relevant to your engine.

We are at your service for any questions you may have in this matter.

Your DEUTZ AG

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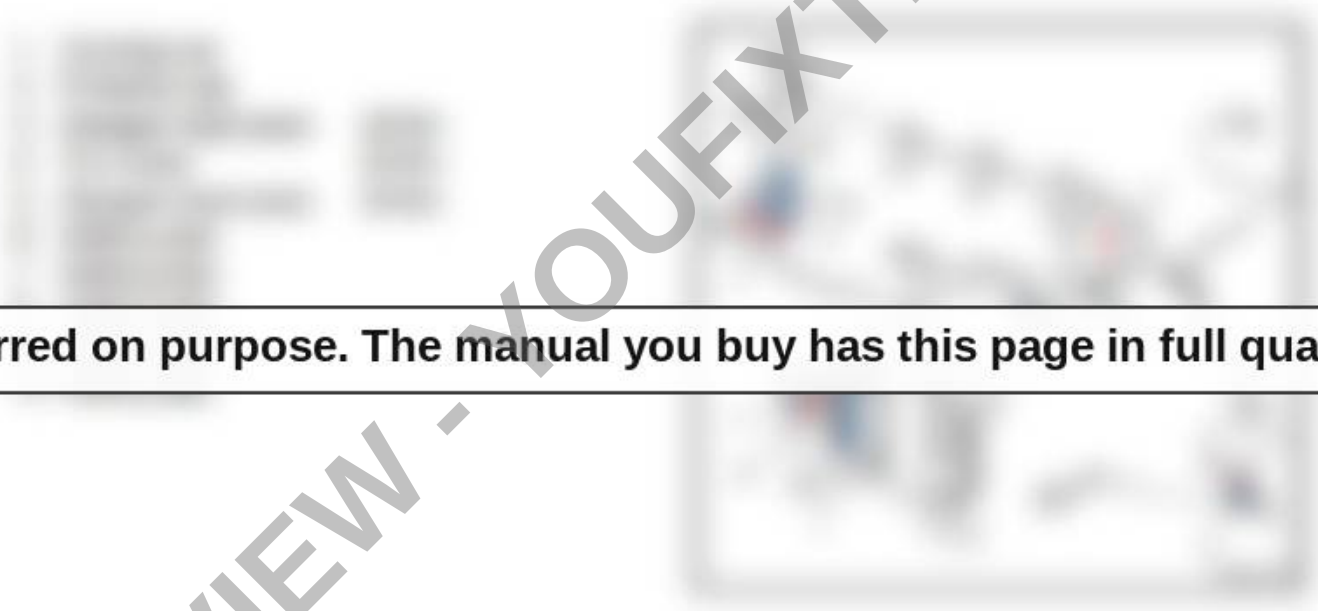
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Fastening parts

Standard tools

– Safety information / User information

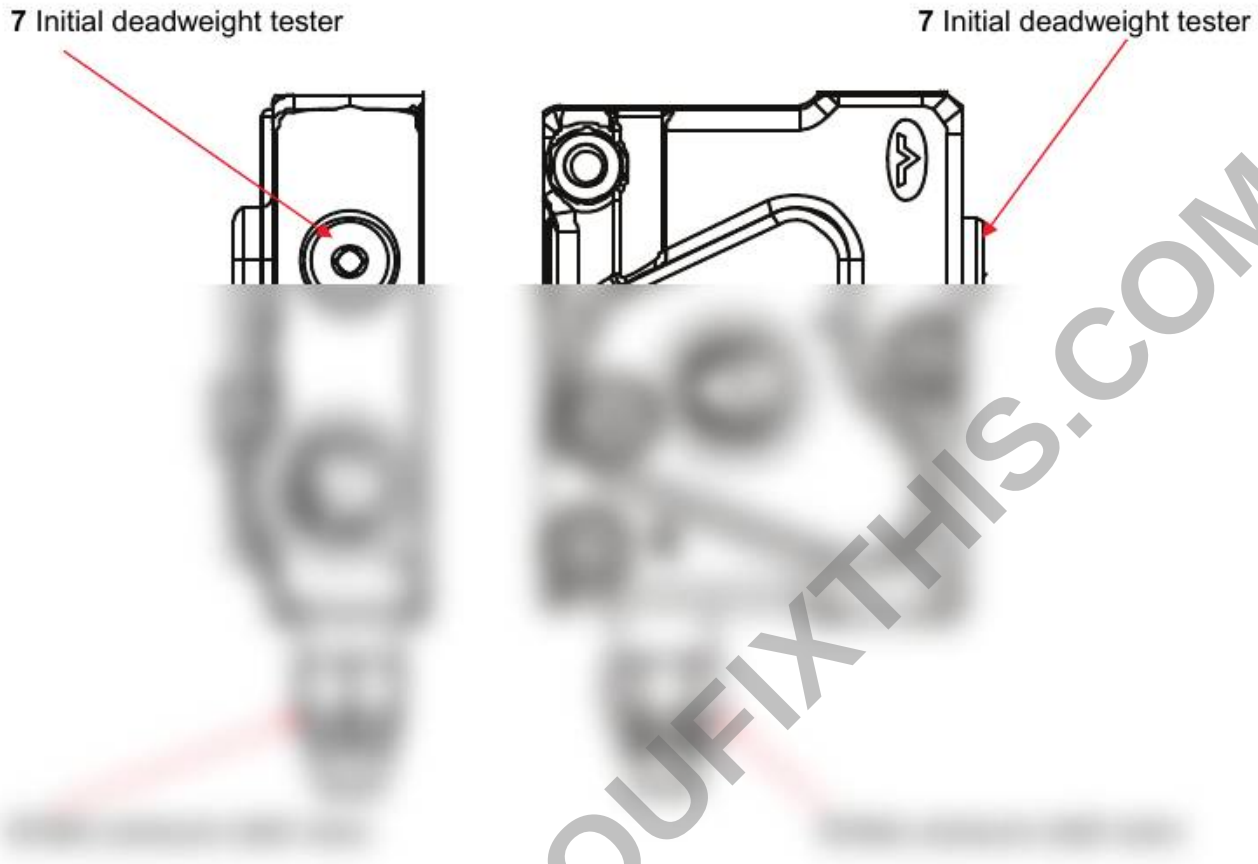


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Intake element



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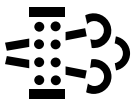


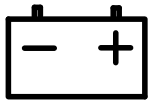
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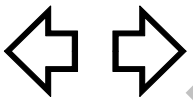
Instructions for using the combo-tool (display)

Engine monitoring icons

Symbol	Designation
	Engine oil pressure *Color: Red*
	Pre-heating *Color: Yellow*
	Engine diagnostics *Color: : Flashing red*
	Engine diagnostics *Color: Flashing yellow*
	Coolant level *Color: Flashing yellow*
	Particle filter regeneration *Color: Flashing yellow*

Symbol	Designation
	Battery charge indicator *Color: Red*
	Condensed water in the fuel filter *Color: Flashing yellow*
	Particle filter AdBlue (optional) *Color: Flashing yellow*
	Air filter maintenance *Color: : Flashing red*
	Ash lamp (optional) *Color: Flashing yellow*

Machine monitoring icons

Symbol	Designation
	Direction indicator *Color: green*
	Travel direction forward/reverse *Color: green*
	High beam *Color: Blue*
	Parking brake (Parking brake) *Color: Red*
	Hydraulic oil level *Color: : Flashing red*
	Transmission neutral *Color: : Flashing red*

Symbol	Designation
	Direction indicator lamp Trailer *color: green*
	Neutral Position Travel direction *color: green*
	Accumulator pressure *Color: Red*
	Hydraulic filter *Color: Flashing red*
	Transmission travel speed 1 *Color: green*
	Transmission travel speed 2 *Color: green*

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