

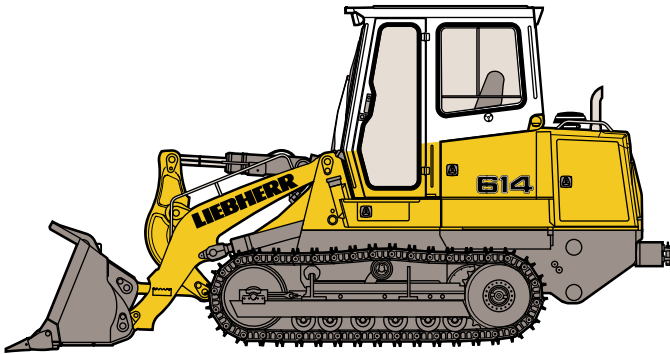
LIEBHERR

Service Manual

Crawler Loaders SERIES **4** Litronic

LR 614

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Datum Edition Date		LR 614 F/N xxx-6358→
02 07	General	Blatt Page Feuille 1.0.00.01

For your information

This manual contains technical data, descriptions of design and function, repair and adjustment guidelines as well as numerous drawings, functional views and illustrations

LIEBHERR - crawler dozers (PR), crawler loaders (LR) or pipelayers (RL).

This manual should simplify competent customer service of our products, does however, not replace expert and qualified training and an attendance of our factory schools.

Information which is in trade considered basic knowledge is not included. Operation and spare parts information can be found in separate manuals.

The manual will be updated as necessary when changes occur in series.



Note!

This sign marks special important notes in the manual.

During the activities on the machine, accident prevention regulations and safety guidelines must be strictly observed.

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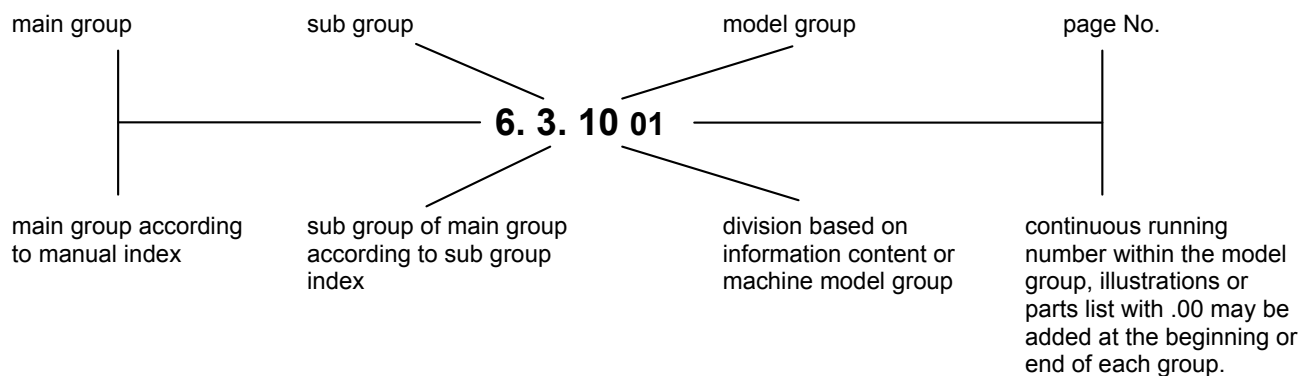
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We reserve the right to make changes of technical details on the machine in comparison to the information and drawings in this manual.

Printed and published by
LIEBHERR-Werk Telfs GmbH., Service -Training Department.

Explanation of structure (page numbers)

In order to find specific information and add supplements more easily, the following numbering system is being used:



We hope that with the enclosed information we have taken yet another step to improve the service on the LIEBHERR - crawler dozers, crawler loaders and pipelayers.

LIEBHERR-Werk Telfs GmbH.
Technical Documentation

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Safety guidelines

Prior to and during the performance of tests, adjustments and repairs, the following safety guidelines must be followed:

- Any type of work may only be performed by **qualified trained personnel** or under the supervision and responsibility of such personnel.
 Qualified trained personnel are persons, who – based on specialized training and experience – have sufficient knowledge in the general area of earthmoving machinery and the specific technology of our machines. They must also have knowledge of all applicable laws and general work protection regulations, guidelines and generally approved rules concerning technology and be able to evaluate if earthmoving equipment is safe to operate and if the necessary work can be performed without endangering themselves or third persons.
- Never operate a machine with a raised cab/ operator's platform! The machine may only be operated with a lowered and secured cab / operator's platform!
- Always adhere to the adjustment values noted in LIEBHERR documentation when performing adjustment work.
- When delivering the machine, the operating personnel must be trained using the currently valid operating manual. The safety guidelines in that manual must be particularly observed.
- These safety guidelines must also be observed when performing testing, adjustment or repair work. However, there are special repair and/ or inspection tasks, which require different procedures than specified in the safety guidelines. In such cases, qualified personnel or individuals performing the work under the supervision of such personnel should assure that additional safety precautions necessary to insure the safety of those involved in the repair and/ or third parties are taken. The decision to carry out this measures can only be made by qualified expert personnel. Such examples of repair and/ or maintenance include, but are not limited to the following:
 - Opening of the side engine compartment doors with the Diesel engine running to carry out tests and / or adjustments.
 In these cases, it should be assured that the side doors are properly secured for the complete duration of the work to prevent them from closing unexpectedly and / or inadvertently. Avoid body contact with turning and / or heated parts! Wear only tight clothing (for example no scarves, no ties, no wide sleeves, etc.)
 - Starting the Diesel engine with the cab tilted, as well as actuating the travel drive with properly raised machine for adjustment, repair and diagnostics purposes. In these cases, before starting the engine, it must be ensured that the cab support as well as the support under the machine and the required ground clearance of the track chains has been checked.

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1. **Safety notes in this manual**

In the description of tasks, which can pose a danger to man or machine, the following safety precautions are described in this manual.

They are defined with the following notes:



Danger!

Warns that certain working procedures could result in death or serious injury if proper precautions are not taken.



Warning!

Warns that certain working procedures could result in serious injury if certain precautions are not taken.



Caution!

Warns that certain working procedures could result in personal injury or damage to the machine if certain precautions are not taken.

In addition to these instructions, you must follow additional safety regulations and guidelines!

In addition, the following must be observed:

- the safety regulations applicable at the jobsite.
- federal, state and local laws governing „travel on public roads“.
- any guidelines issued by trade and professional associations.

2. Safety guidelines in this operating manual

The detailed descriptions to the following safety guidelines are noted in the operating instructions of your machine and must be strictly observed.

- 1 General safety guidelines
- 2 Crushing and burn prevention
- 3 Fire and explosion prevention
- 4 Machine start up safety
- 5 Engine start up safety
- 6 Machine operating safety
- 7 Machine parking safety
- 8 Machine transporting safety
- 9 Machine towing safety
- 10 Machine maintenance safety
- 11 Machine welding safety
- 12 Safety guidelines to be observed when working on the attachment
- 13 Safety guidelines to be observed when loading the machine with a crane
- 14 Safe maintenance of hydraulic hoses and lines
- 15 Safety guidelines for maintenance work on the machine with hydro accumulators
- 16 Roll over protection (ROPS) and falling object protection (FOPS)
- 17 Attachments and components
- 18 Protection from vibration

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Service Items

Notes for the **disposition** of service fluids and filter:

- Service fluids may not be discharged into the ground, drainage system or waterways.
- Different service fluids and filters should be collected and disposed of in separate containers.
- Do not use containers, which previously held food items or drinks - to prevent danger of mix-ups.
- Dispose of these items in an environmentally friendly manner according to applicable guidelines and regulations. Observe all state, local and national regulations.
- Do not use old or incorrectly stored service fluids and filters, dispose of them properly.

1. **Service fluids for Diesel engines with turbo chargers**

1.1. Engine lube oil

Engine lube oils must meet a certain quality and a certain viscosity, depending on their use and ambient temperatures. Problem-free operation can only be ensured only if the requirements for both areas are met.

1.1.1 Oil quality

To meet the technical demands, only highly alloyed lube oils are used in modern Diesel engines. They consists of high-quality base oils, mixed with additives. These additives provide the required properties for these oils.

For LIEBHERR Diesel engines with turbo chargers, oils of the following specifications are approved, the higher quality oils are preferred:

API - classification : CF-4, CG-4, CH-4, CI-4,
(American Petroleum Institute)

ACEA (CCMC) - classification : E2 (D4), E3 (D5), E4, E5
(Association des Constructeurs Européens de l'Automobile)

Note: For older machines / Diesel engines, if still in use, engine oils according to the lower specification as noted in the original operation manuals may be used. However, we recommend the use of these new oils, since the service life of the engine can be extended significantly by using these higher quality oils. The originally noted oil and filter change intervals may be extended.

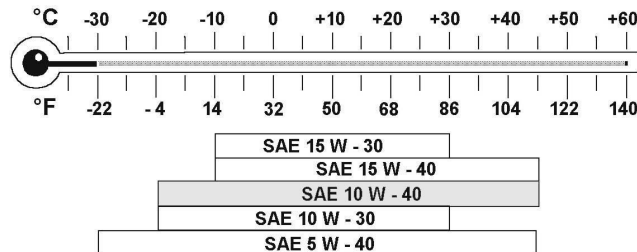
1.1.2 Oil viscosity

Z In addition to the quality, the oil must also provide a certain viscosity the selection is made according to the SAE - classification (Society of Automotive Engineers).

The determining factor for the correct selection of the SAE classification is the ambient temperature. In most regions, SAE 10W-40 is recommended (see chart below).

If the viscosity is too high, starting problems can occur, if it is too low, the lubrication efficiency can be endangered, both factors can lead to increased engine wear.

The temperature ranges shown in the following chart are guidelines and may be exceeded or fallen below for a short time.



For the operation in extreme climate zones, such as in arctic regions, special guidelines apply and are available from the manufacturer.

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