en

Operating manual

Hydraulic excavator
R 934 C - Demolition

from serial number 30 761

Document identification

	ORIGINAL OPERATING MANUAL
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Product identification

Manufacturer:	Liebherr-France SAS
Type:	R 934 C - Demolition
Type no.:	023 / 033 / 1335 / 1337
Conformity:	CE

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1 Product description

1.1 Assembly - overview

This section comprises an overview of the machine and descriptions of the components shown.

1.1.1 Machine with backhoe attachment

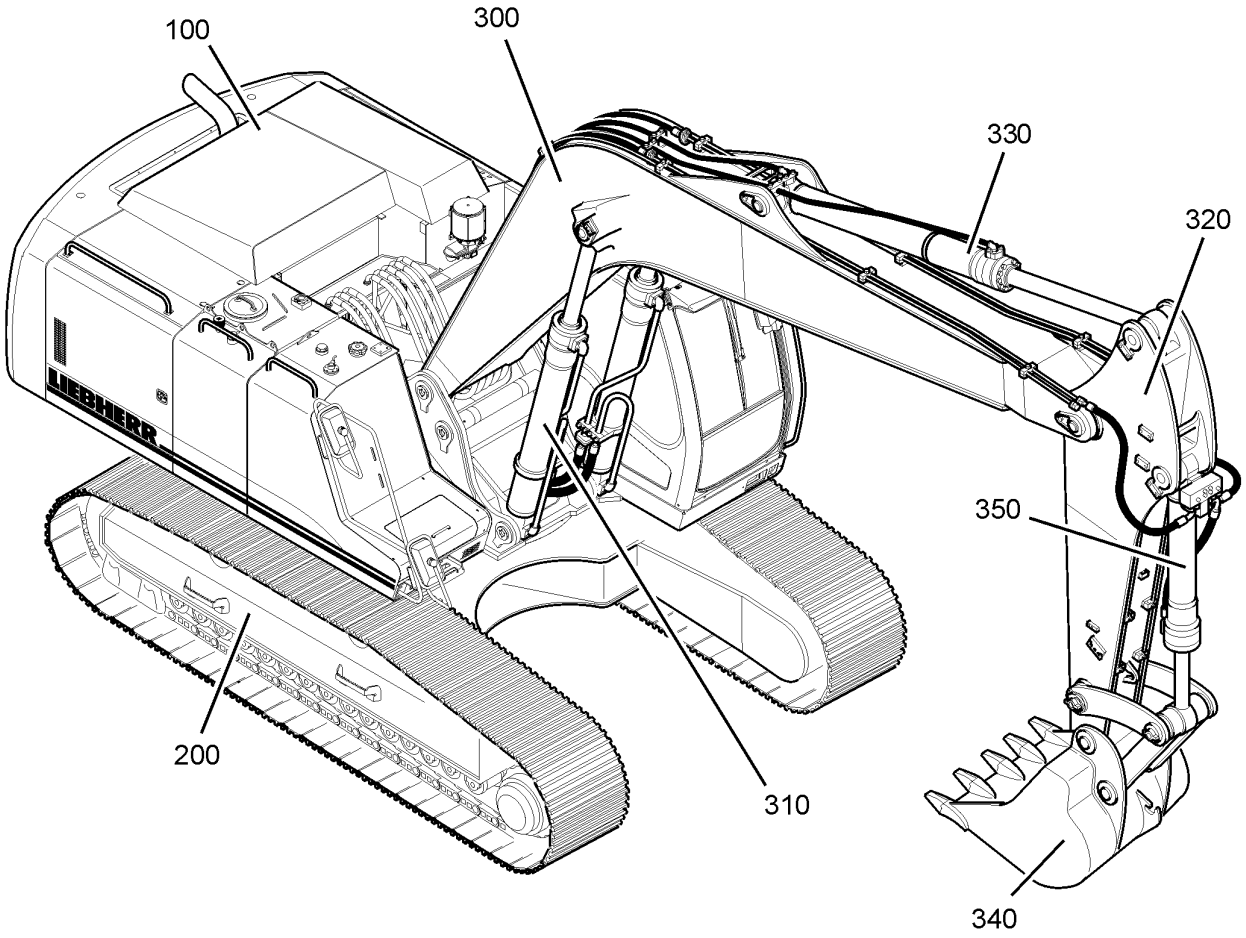


Fig. 1-1 *Machine with backhoe attachment*

100	Uppercarriage	**310**	Boom cylinder	**340**	Bucket
200	Undercarriage	**320**	Stick	**350**	Bucket cylinder
300	Boom	**330**	Stick cylinder		

LFR/en/Edition: 01 / 2015

Performance

Liebherr crawler excavators feature state-of-the-art technology and high-quality workmanship. The most important components of the drive system are all produced by Liebherr and are perfectly coordinated with one another. The engine generation, as further developed for the “C-series”, assures an effective power delivery, a high degree of efficiency, long life expectancy and complies with the emission standard IIIa / Tier 3.

Reliability

High demand for performance and quality is consequently converted into landmark solutions to achieve the highest level of dependability and reliability. Liebherr has over 50 years experience in the production of hydraulic excavators and has an unparalleled competence in design and know-how.

Comfort

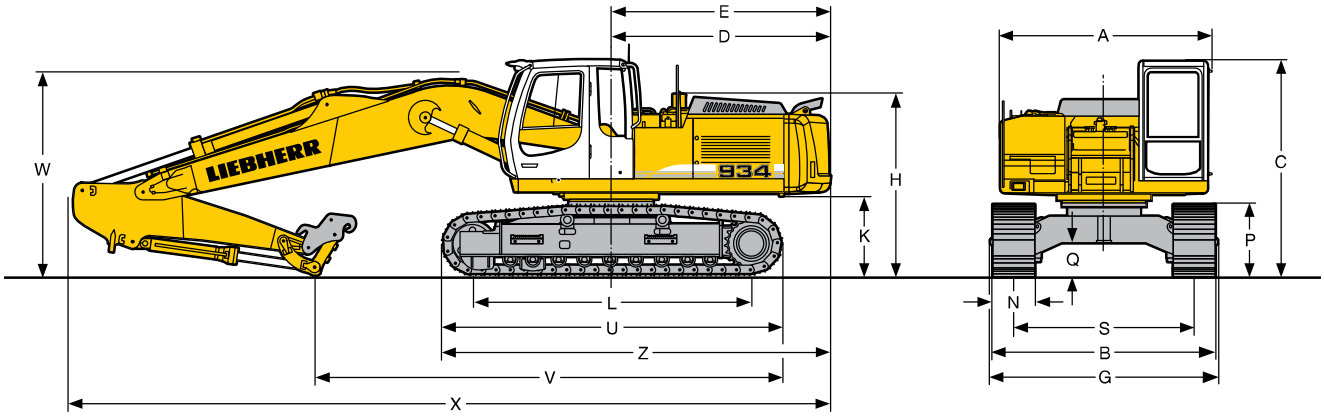
In the operator’s station, the operator can look forward to a comfortable workstation that is designed according to the most up-to-date ergonomically know-how. The standard automatic climate control provides a pleasant working environment in all weather conditions.

Liebherr crawler excavators are particularly service-friendly: Maintenance work is simply and quickly accomplished due to well accessible service points.

Economy

Liebherr crawler excavators stand for maximum productivity. The sensitive excavator controls assure optimal efficiency in the interaction of excavator hydraulics and electronics. A wide selection of attachments, accessory tools and undercarriages with various dimensions provide the correct choice for every application.

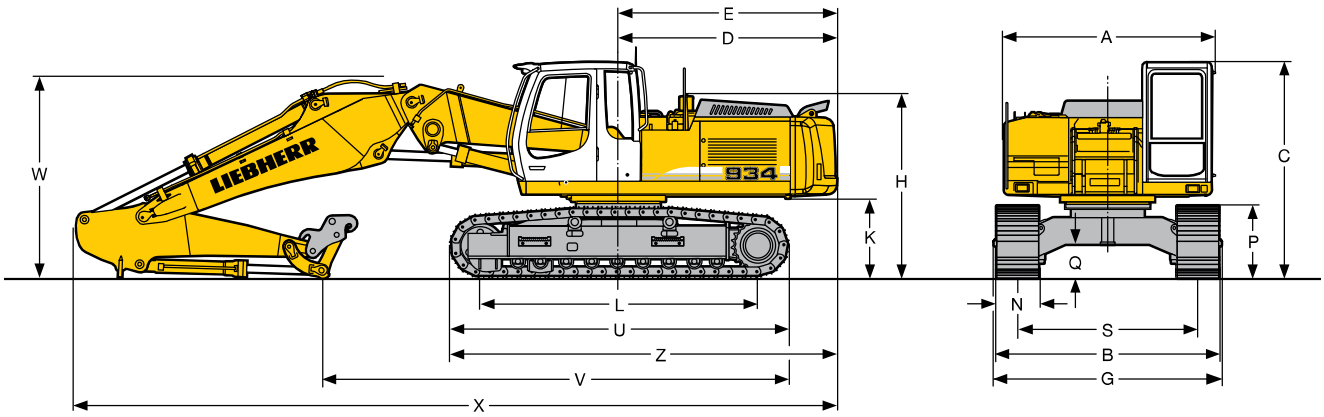
Dimensions



	NLC			mm	LC			mm
A				3,050				3,050
C				3,120				3,120
D				3,145				3,145
E				3,145				3,145
H				2,650				2,650
K				1,155				1,155
L				4,000				4,000
P				1,046				1,046
Q				496				496
U				4,920				4,920
S				2,390				2,590
N	500	600	750		500	600	750	
B	2,958	2,990	3,140		3,158	3,190	3,340	
G	2,976	2,976	3,276		3,176	3,176	3,476	
Z				5,600				5,600

NLC-/LC-Undercarriage

	Stick Length	Goose-neck Boom 6.05 m	Hydr. Adjustable Boom 4.20 m	Hydr. Adjustable Boom 5.20 m	Straight Goose-neck Boom 6.50 m
	m	mm	mm	mm	mm
V	2.00	6,850	7,600	8,600	7,600
	2.50	6,000	6,650	6,750	6,650
	3.10	5,400	6,150	7,250	6,150
	3.90	4,750	5,500	6,600	5,500
W	2.00	3,250	3,250	3,250	3,250
	2.50	3,050	2,950	3,000	2,950
	3.10	3,050	3,000	3,150	3,000
	3.90	3,150	3,200	3,350	3,200
X	2.00	10,600	11,250	12,150	11,250
	2.50	10,450	11,000	12,000	11,000
	3.10	10,450	11,000	12,050	11,000
	3.90	10,500	11,150	12,050	11,150



Lift Capacities

with Hydr. Adjustable Boom 4.20 m and Heavy Counterweight

Stick 2.00 m

Height (m)	Under-carriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC						
9.0	NLC LC		8.9# (8.9#) 8.9# (8.9#)				
7.5	NLC LC		10.1# (10.1#) 10.1# (10.1#)	8.3# (8.7#) 8.7# (8.7#)			
6.0	NLC LC	16.6# (16.6#) 16.6# (16.6#)	11.4# (11.4#) 11.4# (11.4#)	8.2 (8.9#) 8.7 (8.9#)	5.5 (7.5#) 6.0 (7.5#)		
4.5	NLC LC	16.5# (16.5#) 16.5# (16.5#)	11.7# (12.8#) 12.5# (12.8#)	7.9# (9.4#) 8.5 (9.4#)	5.5 (7.6#) 6.0 (7.6#)		
3.0	NLC LC	16.6# (16.6#) 16.6# (16.6#)	11.4 (13.6#) 12.1# (13.6#)	7.7 (9.9#) 8.3 (9.9#)	5.3 (7.7#) 5.8 (7.7#)		
1.5	NLC LC	18.9# (18.9#) 18.9# (18.9#)	11.4# (13.7#) 12.1 (13.7#)	7.7 (9.9#) 8.3# (9.9#)	5.0 (7.7#) 5.5 (7.7#)		
0	NLC LC	20.5 (20.8#) 20.8# (20.8#)	10.9 (13.9#) 12.1 (13.9#)	7.2 (10.0#) 7.9 (10.0#)	4.7 (7.8) 5.2 (7.8#)		
- 1.5	NLC LC	20.1 (22.8#) 22.8# (22.8#)	10.5 (14.3#) 11.6 (14.3#)	6.6 (10.3#) 7.3 (10.3#)	4.5 (7.1#) 4.9 (7.1#)		
- 3.0	NLC LC	20.2 (22.2#) 22.2# (22.2#)	10.2 (14.0#) 11.4 (14.0#)	6.3 (8.8#) 7.0 (8.8#)			
- 4.5	NLC LC	15.0# (15.0#) 15.0# (15.0#)	8.2# (8.2#) 8.2# (8.2#)				
- 6.0	NLC LC						
- 7.5	NLC LC						

Stick 2.50 m

Height (m)	Under-carriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC						
9.0	NLC LC		7.2# (7.2#) 7.2# (7.2#)				
7.5	NLC LC		7.9# (7.9#) 7.9# (7.9#)	7.5# (7.5#) 7.5# (7.5#)			
6.0	NLC LC		10.2# (10.2#) 10.2# (10.2#)	8.4 (8.9#) 8.9# (8.9#)	5.9 (7.5#) 6.4 (7.5#)		
4.5	NLC LC	18.5# (18.5#) 18.5# (18.5#)	12.1 (12.6#) 12.6# (12.6#)	8.2# (9.5#) 8.7 (9.5#)	5.9 (7.7#) 6.4 (7.7#)		
3.0	NLC LC	17.4# (17.4#) 17.4# (17.4#)	11.8 (13.9#) 12.5 (13.9#)	8.0 (10.0#) 8.6 (10.0#)	5.8 (7.9#) 6.3 (7.9#)	3.9 (6.2) 4.3 (6.5#)	
1.5	NLC LC	18.1# (18.1#) 18.1# (18.1#)	11.6# (14.0#) 12.4 (14.0#)	8.0 (10.2#) 8.5 (10.2#)	5.5 (8.0#) 6.0 (8.0#)	3.8 (6.0) 4.1 (6.5#)	
0	NLC LC	20.4# (20.4#) 20.4# (20.4#)	11.4 (14.1#) 12.6 (14.1#)	7.6 (10.2#) 8.3 (10.2#)	5.2 (8.0#) 5.7 (8.0#)	3.6 (5.9) 4.0 (6.0#)	
- 1.5	NLC LC	20.7 (23.1#) 23.1# (23.1#)	10.9 (14.4#) 12.0 (14.4#)	7.2 (10.5#) 7.9 (10.5#)	4.8 (7.9) 5.3 (7.9#)		
- 3.0	NLC LC	20.6 (23.1#) 23.1# (23.1#)	10.7 (14.8#) 11.8 (14.8#)	6.7 (10.0#) 7.4 (10.0#)	4.6 (5.9#) 5.1 (5.9#)		
- 4.5	NLC LC	19.1# (19.1#) 19.1# (19.1#)	10.3 (11.1#) 11.1# (11.1#)	5.8# (5.8#) 5.8# (5.8#)			
- 6.0	NLC LC						
- 7.5	NLC LC						

Stick 3.10 m

Height (m)	Under-carriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC						
9.0	NLC LC			5.3# (5.3#) 5.3# (5.3#)			
7.5	NLC LC			6.2# (6.2#) 6.2# (6.2#)	5.2# (5.2#) 5.2# (5.2#)		
6.0	NLC LC		7.2# (7.2#) 7.2# (7.2#)	7.3# (7.3#) 7.3# (7.3#)	6.0 (6.6#) 6.4 (6.6#)	3.8# (3.8#) 3.8# (3.8#)	
4.5	NLC LC	18.0# (18.0#) 18.0# (18.0#)	11.8# (11.8#) 11.8# (11.8#)	8.2 (9.0#) 8.8 (9.0#)	6.0# (7.4#) 6.4 (7.4#)	4.2 (5.7#) 4.5 (5.7#)	
3.0	NLC LC	17.7# (17.7#) 17.7# (17.7#)	11.8 (13.4#) 12.6 (13.4#)	7.9 (9.7#) 8.5 (9.7#)	5.9 (7.7#) 6.3 (7.7#)	4.1 (6.3) 4.4 (6.4#)	
1.5	NLC LC	17.9# (17.9#) 17.9# (17.9#)	11.6 (13.9#) 12.3# (13.9#)	7.9# (10.1#) 8.3 (10.1#)	5.7 (7.9#) 6.2 (7.9#)	3.9 (6.1) 4.3 (6.4#)	
0	NLC LC	19.6# (19.6#) 19.6# (19.6#)	11.6# (14.0#) 12.4 (14.0#)	7.7 (10.1#) 8.4 (10.1#)	5.3 (7.9#) 5.9 (7.9#)	3.7 (6.0) 4.1 (6.4#)	
- 1.5	NLC LC	20.8 (22.2#) 22.2# (22.2#)	11.0 (14.2#) 12.1 (14.2#)	7.3 (10.2#) 8.0 (10.2#)	5.0 (8.0) 5.5 (8.1#)	3.5 (5.8#) 3.9 (5.8#)	
- 3.0	NLC LC	20.4 (23.2#) 23.2# (23.2#)	10.6 (14.7#) 11.8 (14.7#)	6.8 (10.5#) 7.5 (10.5#)	4.7 (7.2#) 5.1 (7.2#)		
- 4.5	NLC LC	20.6 (22.0#) 22.0# (22.0#)	10.3 (13.3#) 11.4 (13.3#)	6.5 (8.1#) 7.2 (8.1#)			
- 6.0	NLC LC						
- 7.5	NLC LC						

Stick 3.90 m

Height (m)	Under-carriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC			3.6# (3.6#) 3.6# (3.6#)			
9.0	NLC LC			4.6# (4.6#) 4.6# (4.6#)	3.7# (3.7#) 3.7# (3.7#)		
7.5	NLC LC			4.8# (4.8#) 4.8# (4.8#)	4.6# (4.6#) 4.6# (4.6#)	3.0# (3.0#) 3.0# (3.0#)	
6.0	NLC LC			5.4# (5.4#) 5.4# (5.4#)	5.3# (5.3#) 5.3# (5.3#)	4.3 (4.4#) 4.4# (4.4#)	
4.5	NLC LC		7.3# (7.3#) 7.3# (7.3#)	7.0# (7.0#) 7.0# (7.0#)	6.0 (6.4#) 6.3 (6.4#)	4.3 (5.3#) 4.7 (5.3#)	
3.0	NLC LC	18.7# (18.7#) 18.7# (18.7#)	11.9# (12.5#) 12.5# (12.5#)	8.0 (9.2#) 8.5 (9.2#)	5.9 (7.4#) 6.3# (7.4#)	4.3 (6.2#) 4.6 (6.2#)	3.0 (3.5#) 3.3 (3.5#)
1.5	NLC LC	17.7# (17.7#) 17.7# (17.7#)	11.5 (13.7#) 12.3# (13.7#)	7.8 (9.8#) 8.3# (9.8#)	5.8 (7.7#) 6.2 (7.7#)	4.1 (6.2) 4.4# (6.3#)	2.9 (3.9#) 3.2 (3.9#)
0	NLC LC	18.5# (18.5#) 18.5# (18.5#)	11.4 (13.8#) 12.2# (13.8#)	7.8# (10.0#) 8.2 (10.0#)	5.6 (7.7#) 6.1 (7.7#)	3.9 (6.1) 4.3 (6.3#)	2.7 (3.6#) 3.1 (3.6#)
- 1.5	NLC LC	20.7# (20.7#) 20.7# (20.7#)	11.2 (13.9#) 12.4 (13.9#)	7.4 (10.0#) 8.1 (10.0#)	5.2 (7.8#) 5.7# (7.8#)	3.6 (5.8) 4.0 (6.3#)	
- 3.0	NLC LC	20.5 (22.7#) 22.7# (22.7#)	10.6 (14.2#) 11.8 (14.2#)	7.0 (10.3#) 7.7 (10.3#)	4.8 (7.8) 5.3 (7.9#)	3.4 (5.4#) 3.8 (5.4#)	
- 4.5	NLC LC	20.3 (22.9#) 22.9# (22.9#)	10.5 (14.6#) 11.6 (14.6#)	6.6 (10.0#) 7.3 (10.0#)	4.6 (6.4#) 5.0 (6.4#)		
- 6.0	NLC LC	18.2# (18.2#) 18.2# (18.2#)	10.1 (10.6#) 10.6# (10.6#)	5.8# (5.8#) 5.8# (5.8#)			
- 7.5	NLC LC						

The lift capacities on the load hook of the Liebherr quick change adapter 66 without attachment are stated in metric tonnes (t), and can be lifted 360° on firm, level supporting surface. Values quoted in brackets are valid for the undercarriage when in longitudinal position. Capacities are valid for 600 mm wide triple grouser pads with adjusting cylinder in optimal position. Indicated loads are based on ISO 10567 standard and do not exceed 75 % of tipping or 87 % of hydraulic capacity (indicated via #). Maximum load for the quick change adapter's load hook is 12 t. Without quick change adapter the lift capacities will increase by 330 kg/450 kg*, without bucket cylinder, link and lever they increase by an additional 410 kg/590 kg*. Lifting capacity of the excavator is limited by machine stability, hydraulic capacity and maximum permissible load of the load hook.

According to European Standard, EN 474-5: In the European Union excavators have to be equipped with an overload warning device, a load diagram and automatic check valves on the hoist cylinders, when they are used for lifting operations which require the use of lifting accessories.

* capacities only for stick 2.00 m

Lift Capacities

with Main Boom 4.25 m

Stick 2.00 m

Height (m)	Undercarriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC VH-HD						
9.0	NLC LC VH-HD			8.4# (8.4#) 8.4# (8.4#) 8.5# (8.5#)			
7.5	NLC LC VH-HD			8.6 (10.0#) 9.3 (10.0#) 10.0# (10.0#)	5.7 (7.7#) 6.2 (7.7#) 7.8# (7.8#)		
6.0	NLC LC VH-HD		12.7 (14.0#) 14.0# (14.0#) 14.1# (14.1#)	8.0 (10.9#) 8.8 (10.9#) 10.9# (10.9#)	5.5 (9.2#) 6.0 (9.2#) 8.6 (9.2#)		
4.5	NLC LC VH-HD			7.2 (11.8#) 8.0 (11.8#) 11.5 (11.9#)	5.1 (9.2) 5.7 (9.2) 8.2 (9.6#)	3.7 (6.8) 4.1 (6.8) 6.1 (7.6#)	
3.0	NLC LC VH-HD			6.5 (12.3) 7.2 (12.3) 10.7 (12.7#)	4.8 (8.7) 5.3 (8.8) 7.8 (10.0#)	3.6 (6.6) 4.0 (6.6) 5.9 (7.8)	
1.5	NLC LC VH-HD			6.0 (11.7) 6.8 (11.8) 10.3 (13.0#)	4.5 (8.4) 5.0 (8.4) 7.5 (10.0)	3.4 (6.4) 3.8 (6.5) 5.8 (7.7)	
0	NLC LC VH-HD			5.9 (11.6) 6.6 (11.6) 10.1 (12.5#)	4.3 (8.3) 4.8 (8.3) 7.3 (9.8)	3.4 (6.4) 3.8 (6.4) 5.7 (7.6)	
- 1.5	NLC LC VH-HD			6.0 (11.3#) 6.7 (11.3#) 10.2 (11.2#)	4.4 (8.3) 4.9 (8.3) 7.4 (9.0#)		
- 3.0	NLC LC VH-HD						
- 4.5	NLC LC VH-HD						

Stick 2.50 m

Height (m)	Undercarriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC VH-HD						
9.0	NLC LC VH-HD			7.0# (7.0#) 7.0# (7.0#) 7.1# (7.1#)			
7.5	NLC LC VH-HD			7.9# (7.9#) 7.9# (7.9#) 8.0# (8.0#)	6.0 (6.8#) 6.6 (6.8#) 6.9# (6.9#)		
6.0	NLC LC VH-HD		11.2# (11.2#) 11.2# (11.2#) 11.6# (11.6#)	8.5 (9.9#) 9.2 (9.9#) 10.0# (10.0#)	5.8 (8.5#) 6.4 (8.5#) 8.6# (8.6#)	4.2 (4.7#) 4.6 (4.7#) 4.9# (4.9#)	
4.5	NLC LC VH-HD		11.7 (15.9#) 13.0 (15.9#) 16.0# (16.0#)	7.7 (11.8#) 8.5 (11.8#) 11.8# (11.8#)	5.5 (9.5) 6.0 (9.6) 8.5 (9.7#)	4.0 (7.1) 4.4 (7.1) 6.4 (7.3#)	
3.0	NLC LC VH-HD		7.7# (7.7#) 7.7# (7.7#)	7.0 (12.8#) 7.7 (12.8#) 11.2 (12.8#)	5.1 (9.1) 5.6 (9.1) 8.1 (10.2#)	3.9 (6.9) 4.3 (6.9) 6.2 (8.1)	
1.5	NLC LC VH-HD			6.4 (12.2) 7.2 (12.2) 10.7 (13.3#)	4.8 (8.7) 5.3 (8.8) 7.8 (10.3)	3.7 (6.7) 4.1 (6.7) 6.0 (7.9)	
0	NLC LC VH-HD		8.6# (8.6#) 8.6# (8.6#) 8.7# (8.7#)	6.2 (11.9) 6.9 (12.0) 10.4 (13.1#)	4.6 (8.5) 5.1 (8.6) 7.6 (10.1)	3.6 (6.6) 4.0 (6.6) 5.9 (7.8)	
- 1.5	NLC LC VH-HD			6.2 (11.9) 6.9 (12.0) 10.5 (12.1#)	4.6 (8.5) 5.1 (8.5) 7.6 (9.6#)	3.6 (6.6) 4.0 (6.7) 6.0 (7.4#)	
- 3.0	NLC LC VH-HD						
- 4.5	NLC LC VH-HD						

Stick 3.10 m

Height (m)	Undercarriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC VH-HD			4.8# (4.8#) 4.8# (4.8#) 4.9# (4.9#)			
9.0	NLC LC VH-HD				4.7# (4.7#) 4.7# (4.7#) 4.8# (4.8#)		
7.5	NLC LC VH-HD			6.2# (6.2#) 6.2# (6.2#) 6.3# (6.3#)	6.0# (6.0#) 6.0# (6.0#) 6.0# (6.0#)	3.5# (3.5#)	
6.0	NLC LC VH-HD			7.3# (7.3#) 7.3# (7.3#) 7.4# (7.4#)	6.0 (6.9#) 6.5 (6.9#) 7.0# (7.0#)	4.3 (5.5#) 4.7 (5.5#) 5.6# (5.6#)	
4.5	NLC LC VH-HD		12.4 (14.8#) 13.7 (14.8#) 14.9# (14.9#)	8.0 (11.2#) 8.7 (11.2#) 11.2# (11.2#)	5.6 (8.9#) 6.1 (8.9#) 8.7 (9.0#)	4.1 (6.8#) 4.5 (6.8#) 6.5 (6.9#)	
3.0	NLC LC VH-HD		10.6 (15.3#) 11.8 (15.3#) 14.5# (14.5#)	7.2 (12.3#) 7.9 (12.3#) 11.5 (12.3#)	5.2 (9.2) 5.7 (9.2) 8.2 (9.8#)	3.9 (6.9) 4.3 (6.9) 6.2 (8.1)	
1.5	NLC LC VH-HD		8.3# (8.3#) 8.3# (8.3#) 8.2# (8.2#)	6.5 (12.3) 7.3 (12.3) 10.8 (13.1#)	4.8 (8.8) 5.3 (8.8) 7.8 (10.2#)	3.7 (6.7) 4.1 (6.7) 6.0 (7.9)	
0	NLC LC VH-HD		9.2# (9.2#) 9.2# (9.2#) 9.3# (9.3#)	6.2 (11.9) 6.9 (11.9) 10.4 (13.2#)	4.6 (8.5) 5.1 (8.5) 7.6 (10.1)	3.5 (6.5) 3.9 (6.5) 5.9 (7.7)	
- 1.5	NLC LC VH-HD		9.3 (12.3#) 10.5 (12.3#) 12.5# (12.5#)	6.1 (11.8) 6.8 (11.8) 10.3 (12.5#)	4.5 (8.4) 5.0 (8.4) 7.5 (9.9#)	3.5 (6.5) 3.9 (6.5) 5.9 (7.7)	
- 3.0	NLC LC VH-HD				4.5 (8.5) 5.1 (8.5)		
- 4.5	NLC LC VH-HD						

Stick 3.90 m

Height (m)	Undercarriage	Radius of load from centerline of machine (m) 3.0	4.5	6.0	7.5	9.0	10.5
10.5	NLC LC VH-HD						
9.0	NLC LC VH-HD				4.5# (4.5#) 4.5# (4.5#) 3.2# (3.2#)		
7.5	NLC LC VH-HD				4.8# (4.8#) 4.8# (4.8#) 4.5# (4.5#)	4.2# (4.2#) 4.2# (4.2#)	
6.0	NLC LC VH-HD			5.1# (5.1#) 5.1# (5.1#)	5.3# (5.3#) 5.3# (5.3#) 4.8# (4.8#)	4.4 (4.9#) 4.8 (4.9#) 4.2# (4.2#)	2.8# (2.8#) 2.8# (2.8#)
4.5	NLC LC VH-HD		8.3# (8.3#) 8.3# (8.3#)	7.2# (7.2#) 7.2# (7.2#) 5.2# (5.2#)	5.8 (6.5#) 6.3 (6.5#) 5.3# (5.3#)	4.2 (5.7#) 4.6 (5.7#) 4.9# (4.9#)	3.1 (4.0#) 3.4 (4.0#) 2.8# (2.8#)
3.0	NLC LC VH-HD	17.7# (17.7#)	11.4 (15.8#) 12.7 (15.8#) 8.7# (8.7#)	7.5 (11.6#) 8.3 (11.6#) 7.3# (7.3#)	5.3 (9.3#) 5.9 (9.3#) 6.6# (6.6#)	3.9 (7.0#) 4.4 (7.0#) 5.7# (5.7#)	3.0 (4.7#) 3.3 (4.7#) 4.0# (4.0#)
1.5	NLC LC VH-HD		10.0 (11.9#) 11.2 (11.9#) 15.9# (15.9#)	6.7 (12.6) 7.5 (12.6) 11.6# (11.6#)	4.9 (8.9) 5.4 (8.9) 8.4 (9.3#)	3.7 (6.7) 4.1 (6.7) 6.3 (7.0#)	2.9 (5.2#) 3.2 (5.2#) 4.7# (4.7#)
0	NLC LC VH-HD	3.4# (3.4#) 3.4# (3.4#)	9.3 (10.0#) 10.0# (10.0#) 11.7# (11.7#)	6.2 (12.0) 7.0 (12.0) 11.0 (12.6#)	4.6 (8.5) 5.1 (8.6) 7.9 (9.9#)	3.5 (6.5) 3.9 (6.5) 6.0 (7.9)	2.8 (5.2) 3.1 (5.2) 4.8 (5.2#)
- 1.5	NLC LC VH-HD	3.5# (3.5#)	9.1 (11.5#) 10.3 (11.5#) 10.0# (10.0#)	6.0 (11.7) 6.7 (11.7) 10.5 (13.1#)	4.4 (8.3) 4.9 (8.4) 7.6 (10.1)	3.4 (6.4) 3.8 (6.4) 5.8 (7.7)	2.8 (4.0#) 3.1 (4.0#) 4.7 (5.2#)
- 3.0	NLC LC VH-HD		9.3 (14.9#) 10.5 (14.9#) 11.6# (11.6#)	6.0 (11.7) 6.7 (11.7) 10.2 (12.8#)	4.4 (8.3) 4.9 (8.3) 7.4 (9.9)	3.4 (6.4) 3.8 (6.4) 5.7 (7.6)	3.9# (3.9#)
- 4.5	NLC LC VH-HD			10.2 (11.9#)	7.4 (9.3#)	5.8 (7.3#)	

The lift capacities on the load hook of the Liebherr quick change adapter 66 without attachment are stated in metric tonnes (t), and can be lifted 360° on firm, level supporting surface. Values quoted in brackets are valid for the undercarriage when in longitudinal position. Capacities are valid for 600 mm wide triple grouser pads. Indicated loads are based on ISO 10567 standard and do not exceed 75 % of tipping or 87 % of hydraulic capacity (indicated via #). Maximum load for the quick change adapter's load hook is 12 t. Without quick change adapter the lift capacities will increase by 330 kg/450 kg*, without bucket cylinder, link and lever they increase by an additional 410 kg/590 kg*. Lifting capacity of the excavator is limited by machine stability, hydraulic capacity and maximum permissible load of the load hook.

According to European Standard, EN 474-5: In the European Union excavators have to be equipped with an overload warning device, a load diagram and automatic check valves on the hoist cylinders, when they are used for lifting operations which require the use of lifting accessories.

* capacities only for stick 2.00 m

– Stop the engine in accordance with the operating instructions and tilt the safety lever up before leaving the cab.
– Lock the machine, included hoods and compartments, retire every keys and secure the machine against unpermitted use and vandalism.

Safely getting down

– Proceed with the the same precautions to climb up or down onto the machine, as to instal yourself.
– Stop the machine on level, horizontal ground. The upper structure should be positioned with the undercarriage in such a way that the steps and ladders are aligned with each other.
– Open and lock the door. Be sure of it's locking. Take care of weather conditions ! Unfasten the safety belt.
– Position yourself with your face toward the machine when getting out and use three-point support, i.e. two hands and one foot or two feet and one hand must always be in contact with the access system at the same time. Climb down until you can close the doors safely. Always use your hand for control when closing the doors. Lock the door.
– Now climb down to the ground.

Working safely with the machine

– Before you start working, acquaint yourself with the special features of the job site and any special precautions and warning signals. Examples of particular work environments would be on-site or traffic obstructions, the load-carrying capacity of the ground and any requirements to make the job site safe from public use.
– Always maintain a safe distance from overhangs, edges, slopes and unsafe ground.
– Be particularly careful in conditions of reduced visibility and changeable ground conditions.
– Familiarize yourself with the location of power lines on the job site and take particular care when working near them. If necessary, inform the responsible authorities.
– Maintain a safe distance from electrical aerial lines. Do not allow the equipment to come near cables when working near electrical aerial lines. Risk of fatality! Inform yourself about required safety distances.
– The following actions must be carried out in the event of any transfer of electricity:
  • do not move the machine or its equipment,
  • do not leave the driver's cab,
  • warn any personnel in the vicinity not to come close to the excavator and not to touch it,
  • instruct or initiate that someone turns off the voltage.
  • move the machine, if possible, from the danger zone to a sufficient distance,
  • Do not leave the machine until you are absolutely sure that voltage in the line, which had been touched or damaged, has been turned off !
– Before moving the machine, always ensure that any attachments are safely secured.
– When driving onto public roads, paths and squares, observe current traffic regulations and if necessary, ensure that the machine has been made safe as per regulations beforehand.
– Always turn on the lights in conditions of poor visibility or darkness.
– Do not permit any passengers in the machine.

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The remaining work may only be carried out by specialist personnel with appropriate training.

- Replacement parts must correspond to the technical requirements determined by the manufacturer. Original replacement parts are always guaranteed to meet these criteria.
- Always wear safe work clothes when carrying out maintenance work. Avoid the wearing of rings, wrist watches, ties, scarves, open jackets, baggy clothing etc... There is a risk of injury from, for example, getting caught up or being drawn in. Protective goggles, safety helmets, safety shoes and gloves, reflective vests and ear protection etc. are required for specific jobs.
- Do not remain in direct proximity of the diesel engine while the diesel engine is running.
  Persons with pacemakers should not approach within 20 cm of the running diesel engine.
  Do not touch voltage-carrying parts on the electrical connection of the individual solenoid injection pumps (Unit Pumps UP) while the diesel engine is running.
- Do not permit unauthorised persons to approach the machine during maintenance work.
- Cordon off a wide maintenance area if required.
- Inform operational personnel before starting to carry out any special work and repair work. Designate persons in charge of supervision.
- In the absence of any other information in the operating instructions, carry out all maintenance work on the machine on level, firm ground with the working equipment set aside and the engine switched off.
- For some machines, the only one position which enables a secured access to every maintenance locations on the uppercarriage, is when the uppercarriage is aligned with the undercarriage so that the sprockets locate at the back-end. The ladder situated on the undercarriage only corresponds with the uppercarriage's access when the excavator is in this configuration.
- Pull out the ignition key and shut off the main battery switch.
- Always tighten any loose screw connections during maintenance and repair work.
- The mounting bolts of the main components, of the hydraulic hoses and of the counterweight must be replaced after every removal.
- If safety devices have to be dismantled during set-up, maintenance and repair work, they must be immediately reinstalled and checked at the end of the work.
- When carrying out repair work, particularly when working under the machine, hang a "Do not start" warning sign in a clearly visible position on the starting lock. Pull out the start key and shut off the main battery switch.
- Operate combustion motors and fuel operated heaters only in well ventilated areas. Before operating these units, check ventilation.
- In addition, always follow applicable local regulations.

Cleaning

- Clean oil, fuel or care products off the machine before starting maintenance or repair work and pay particular attention to connections and screw fittings.
  Do not use aggressive cleaning products and use lint-free cleaning cloths.
- Do not use aggressive cleaning products or steam jet devices to clean the machine for the first two months after initial set-up of the machine (or after repainting).
- Do not use combustible liquids to clean the machine.
- Before cleaning the machine with water or steam jets (high pressure cleaner) or other cleaning materials:

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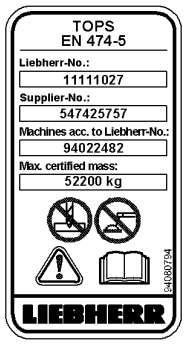
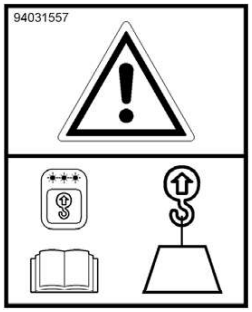
Signs for all countries (except the USA and Canada)	Signs for the USA and Canada	
		**Plate 43 : Tip-over protection structure (TOPS)** **Specifies that modifications or repairs to the tip-over protection structure (TOPS) are prohibited. Refer to the operating manual for further information.**
		**Plate 44: Coolant** Indicates the coolant used in the machine. Refer to the operating manual for further information.
		**Plate 45: Lifting point** The use of lifting points depends on the transport method. See chapter "Transport".
		**Plate 46: Overload warning system activation before lifting** **Activate overload warning system before lifting. Refer to the operating manual for further information.**
		**Plate 47: External start** The operating instructions must be consulted prior to any battery connection.

Caution!
With some specific combinations of optional equipments and/or at customer's wish, the functions may be different.
Always check the functions of special equipments before beginning to work with the machine.

b) optional execution from May 2010:
Joystick levers with proportional mini joystick for additional functions

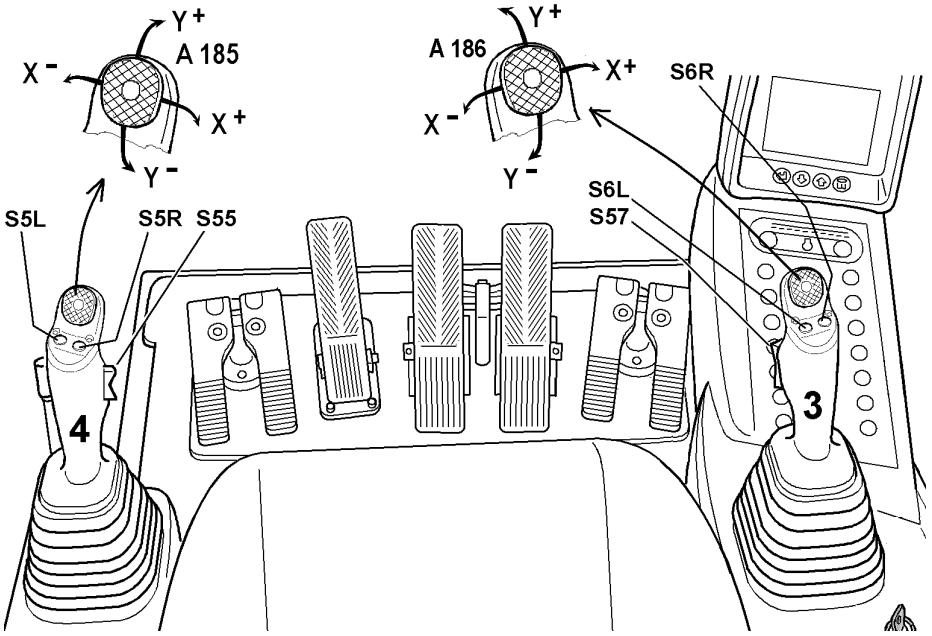


Fig. 3-4 *Control levers with push buttons, switches and mini joysticks*

Button -Switch	Function
Mini joystick **A185** Moved toward **X+**	Rotating device right See in this chapter " control of rotating device (rotating, tilting, locking and unlocking a working tool)".
Mini joystick **A185** Moved toward **X-**	Rotating device left See in this chapter " control of rotating device (rotating, tilting, locking and unlocking a working tool)".
Mini joystick **A185** Moved toward **Y+**	Reserve
Mini joystick **A185** Moved toward **Y-**	Reserve
Mini joystick **A186** Moved toward **X+**	Retraction of the cylinder of anAHS type additional user, actuation of hydraulic hammer.
Mini joystick **A186** Moved toward **X-**	Extension of the cylinder of anAHS type additional user, respec.
Mini joystick **A186** Moved toward **Y+**	Reserve
Mini joystick **A186** Moved toward **Y-**	Reserve
Push button **S5L**	Horn

To change the brightness of the LCD screen:

- ▶ Press at the same time the **Back** key and the arrow key **Up** (brighter) or **Down** (darker).
  - ↳ The brightness will be changed.
  - ↳ When releasing the both keys the set value of the brightness is memorized.

Note
A light sensor built in to the top left of the monitoring screen adapts the illumination on the main screen to the brightness of the environment. The adaptation takes place from the saved brightness value. Illumination will be automatically reduced in conditions of low environmental brightness and inversely.

To change the brightness and the contrast setting to the initial setting:

- ▶ Turn off the ignition.
- ▶ Press and hold the **Up** and **Down** keys simultaneously.
- ▶ Turn on the ignition again.
- ▶ After completion of the automatic display check release the both keys.:
  - ↳ the settings for the brightness and for the contrast of the LCD screen retrieve their initial values set at machine delivery.

3.1.5 Main screen

The main screen appears when the machine has been switched on and remains on display until the screen is changed over to the menu selection screen using the **Menu** key.

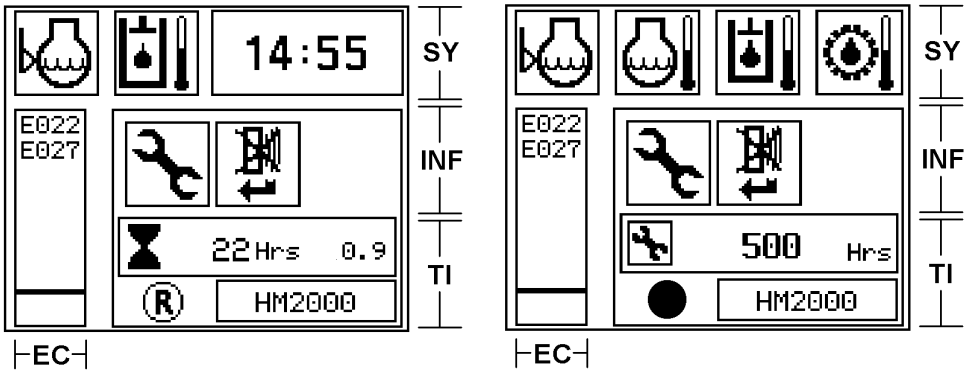


Fig. 3-8 *Main screen - Division into four fields*

EC	Error codes of electrical errors	**SY**	Symbols of operating faults, clock
INF	Information symbols	**TI**	Display of hour meters, flow limitations, ...

Constitution of the main screen

SY field

The upper field of the screen shows the warning symbols for the actual operating faults and also the clock.

To exit the menu:

▶ Press the **Back** key.
  ↳ The sub-menu will be aborted.

Note!
The push button SF **S354** has no function.

Menu "Set Service" - confirmation of the execution of a service work

This menu gives information about the falling due of the next service work and allows to confirm the execution of the service work after it just has been carried out.

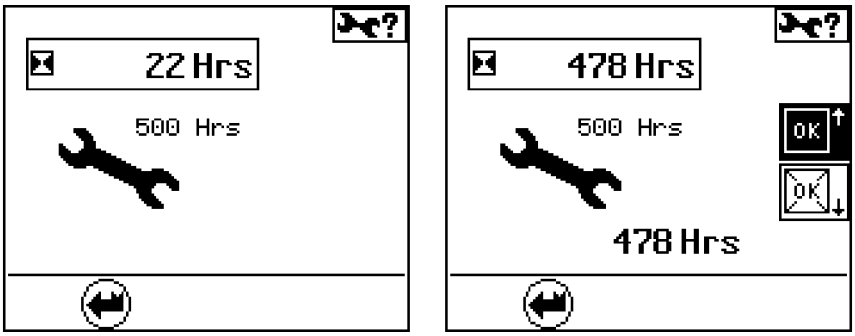


Fig. 3-13 *Menu "Set Service"*

The operating hours of the next service due (in this example, “500 Hrs”) and the current operating hours (“478 Hrs”) are displayed in the menu.

An upcoming service work can be confirmed a maximum of 50 operating hours before the service interval is due.

When this time period has been reached a query will appear to ask whether the service work has been carried out.

❑ If the service work has been carried out.

▶ Press the **Up** arrow key.
  ↳ The choice "OK not crossed out" will be displayed with a black background.

▶ Press the **Menu** key.
  ↳ The current operating hour will be stored as the time for the last carrying out of a recurring service work.
  ↳ The operating hours indicating the next service due will be increased by the duration of a service interval (as an example they augment from 500 to 1000 working hours).

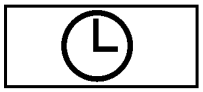
❑ If the service work has not been carried out.

▶ Press the **Back** key.
  ↳ The sub-menu will be aborted.

Menu "Set option" - selection of the flow and pressure limitations

This menu allows to allocate flow and pressure limitation options to external input I1 (choice of the maximum oil flows and system pressure depending on the mounted working tool).

In this menu, the operator can choose between 10 predefined options. For each option a pressure limitation and a flow limitation is assigned. When an option is



Menu "set clock" - Time setting

Via this menu the clock displayed in the upper right corner of the main screen can be set.

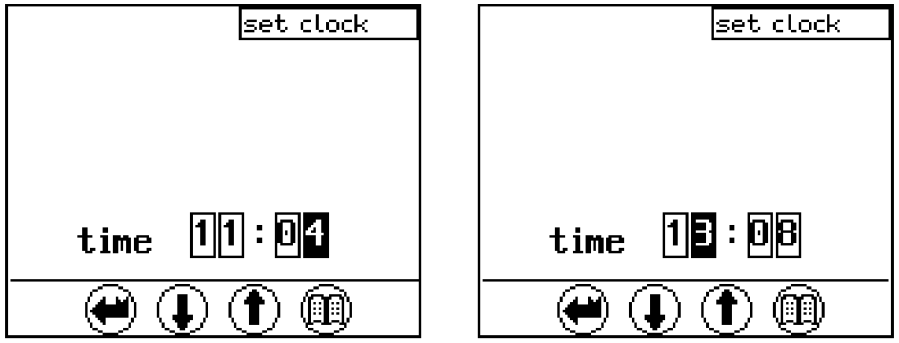


Fig. 3-28 *Setting of the clock*

After function start, the presently set time will appear in the lower section of the screen with the digit completely right inversely displayed (unity digit of the minutes).

- ▶ Press the **UP** or **DOWN** key to adjust the selected digit.
- ▶ Press the **MENU key**:
  - ↳ the immediately more left digit is now inversely displayed.
- ▶ Repeat the procedure until all the digits have been set.
- ▶ Press the **Enter key**:

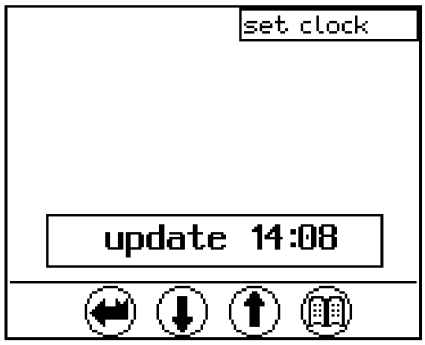


Fig. 3-29 *Confirmation of the storage of the new time*

- ↳ The confirmation message “update xx : xx” will appear momentarily on the screen and the new time is stored.
- ↳ The menu "set clock" is closed and the main menu is displayed on the screen.

Menü "set purge" - Starting the engine in bleeding mode

Note: the menu "set purge" is present since the software version V4.4 of the monitoring display.

Thanks to the menu "set purge", an automatic air bleeding procedure of the high pressure fuel system can be carried out when starting the Diesel engine..
On the machines since software version V4.4 this bleeding procedure controlled via the monitoring display replaces advantageously the mechanical air bleeding achieved while loosening injection lines (see in chapter maintenance the "bleeding of the high pressure fuel system").

Note:
The exhaust temperature must be higher than 250°C for approx. 50% of the overall operating time of the Diesel engine, so to allow the particle filter to work optimal and regenerate itself.

For meaning of the error messages on the display see chapter 4 "Faults and remedies".

3.2 Access and equipment of the cab

3.2.1 Entering or leaving the cab

Climbing up

Caution!
Entering or leaving the cab incorrectly could lead to injury.

- ▶ Proceed with the same attention on exit or entry of the cab, as while climbing the machine.
- ▶ Ensure that the safety lever is always in its highest position when entering or leaving the cab.
- ▶ Always use the handholds provided for the purpose when entering or leaving the machine.
- ▶ Face the machine when getting in or out and always use three-point support, i.e. two hands and one foot or two feet and one hand must always be in contact with the access system at the same time.
- ▶ Do not hold onto the controls to steady yourself.
- ▶ Never jump from the machine.

Cab:

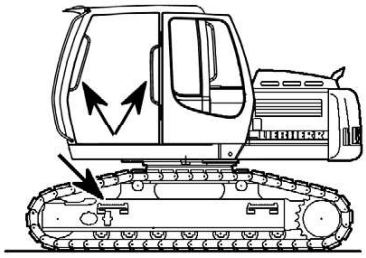


Fig. 3-34 *Climb up using the handholds*

3.2.10 Windscreen wiper

Windscreen wiper

When the ignition is switched on, pressing switch **S14** will activate the windscreen wiper.

- ▶ Press switch.
  - ↳ Intermittent switching
  - ↳ LED I in the switch illuminates.
- ▶ Press switch again.
  - ↳ Continuous operation.
  - ↳ LED C in the switch illuminates.
  - ↳ LED I in the switch goes out.
- ▶ Press switch again.
  - ↳ Windscreen wiper is switched off.
  - ↳ LED C in the switch goes out.

Setting the interval time for the intermittent switching

The interval time can be set when the ignition is on by pressing switch **S14**.

- ❑ Press the switch until the windscreen wiper is switched off (LED I in switch goes out)
- ▶ Press and hold switch.
  - ↳ LED I in the switch flashes.
- ▶ Release the switch when the desired interval time has been reached.
  - ↳ The interval time can be set between 2 and 10 seconds.

Windscreen washing system

When the ignition is switched on, pressing button **S11** will activate the electric windscreen washing system.

- ▶ Press and hold button.
  - ↳ Washing water will be sprayed onto the windscreen through the outlet nozzles.
  - ↳ The windscreen washer runs continuously.
- ▶ Release the button.
  - ↳ Washing water will be stopped.
  - ↳ Windscreen washer will run continuously for approx. another 3 seconds.

Windscreen washing fluid container

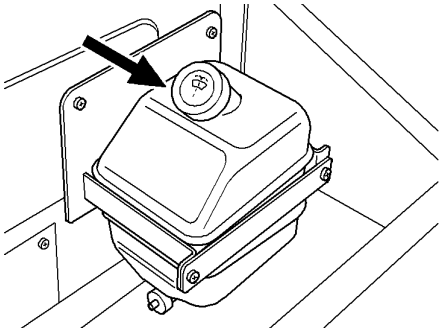


Fig. 3-45 *Windscreen washing fluid container*

The container for the windscreen washing fluid is located at the rear of the cab.

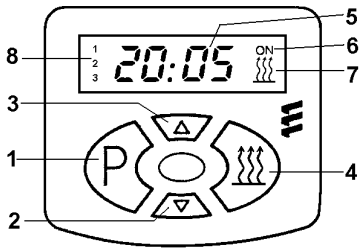
▶ Press the key **1**.
  ↳ The current time is now displayed
  ↳ the colon in the time indication area **5** flashes.

Setting the preset times:

▶ Press the key **1** once, twice or three times to call the preset time "1, 2 or 3".
  ↳ the corresponding preset 5 time is displayed in field **5** of the control module and the number of the preset time is indicated (symbol **8**).

▶ Set the preset time using keys **2** and **3**.

▶ Press the key 4 to activate or to deactivate the selected preset time.
  ↳ when the preset time is activated, the symbol "ON" is displayed.
  ↳ The number "1 , 2 or 3" of the activated preset time is displayed in the symbol field **8**.



1 - Key to activate the setting capabilities
2 - Time setting key backwards
3 - Time setting key forwards
4 - Key ON / OFF
to activate - deactivate the preset time
5 - Current time, preset time and heating time
6 - Symbol for activated preset time
7 - Symbol for heater operation
8 - Symbol for preset time 1, 2 or 3

Operating functions of the Mini-Clock

Switching on the heater:

▶ Press the key **4**.
  ↳ The stanstill heater is on. The symbol 7 and the remaining heating time (in minutes) are displayed on the control module.

Turning off the heater:

▶ Press the key **4**.
  ↳ The heater fan continues running for about 150 seconds (after running).
  ↳ On the control module the symbol 7 disappears and the current time is now displayed.

Continuous operation:

▶ Press the key **3** and keep it depressed, at the same time press the key **4**.
  ↳ the heater will now remain switched on until the key 4 (switching off the heater) is pressed again.

Activating / deactivating the preset time:

▶ Press the key **1** to select the preset time "1, 2 or 3".

▶ Press the key **4** to activate or to deactivate the selected preset time.
  ↳ when the preset time is activated, the symbol "ON" is displayed.
  ↳ The number "1 , 2 or 3" of the activated preset time is displayed.

shorten the diesel engine's cold running phase at low temperatures. This will protect the diesel engine and reduce fuel consumption.

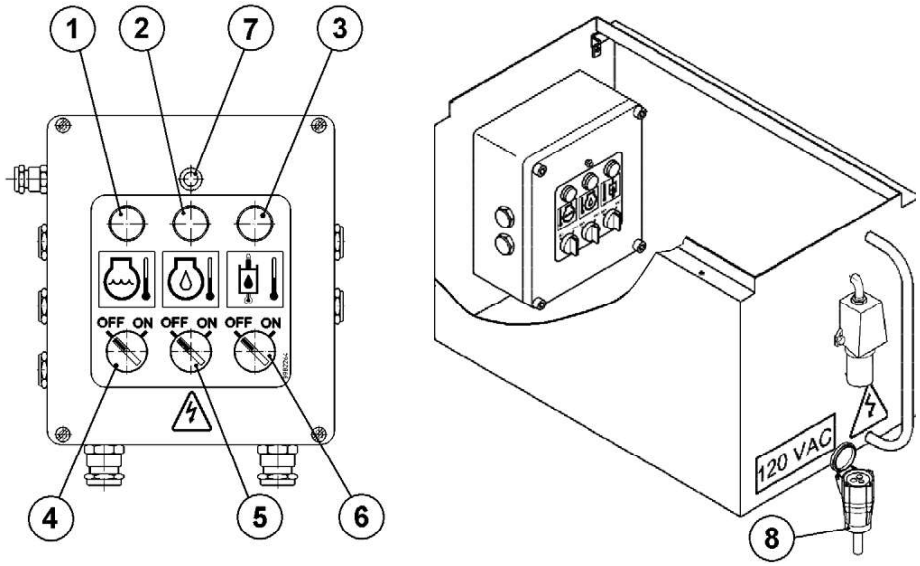


Fig. 3-60 *Coolant / motor oil / hydraulic oil preheating*

1	Coolant preheating indicator light	**5**	On / off toggle switch for engine oil preheating
2	Engine oil preheating indicator light	**6**	On / off toggle switch for hydraulic oil preheating
3	Hydraulic oil preheating indicator light	**7**	fuse
4	On / off toggle switch for coolant preheating	**8**	Power cable

The electrical box for the coolant / engine oil / hydraulic oil preheating is located behind the right-hand side door.

- ▶ Connect power cable **8** to stationary connection (110 - 120 V / 220 - 240 V AC).
- ▶ Tip toggle switch **4**, Coolant / preheating.
  - ↳ The coolant preheating is switched on.
  - ↳ Indicator light **1** illuminates.
- ▶ Tip toggle switch **5**, engine oil preheating.
  - ↳ The engine oil preheating is switched on.
  - ↳ Indicator light **2** illuminates.
- ▶ Tip toggle switch **6** hydraulic oil preheating.
  - ↳ The hydraulic oil preheating is switched on.
  - ↳ Indicator light **3** illuminates
- ▶ After starting the engine, disconnect the power cable **8** on the machine.

The hydraulic swing brake

▶ Let the left joystick **4** move back to neutral position.
  ↳ The hydraulically swing braking of the uppercarriage takes place. In normal working conditions, the braking efficiency is sufficient to bring the uppercarriage to a standstill rapidly.

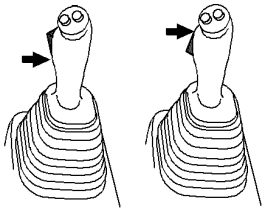
▶ Move the left joystick **4** in the opposite direction.
  ↳ The maximum hydraulic braking action of the uppercarriage is achieved.

The mechanical swing brake

The mechanical brake is a negatively acting multidisc brake which is integrated in the swing gear. It allows to stop the uppercarriage in any desired position (for parking, when working on a slope, ...).

▶ Press the touch **S17**.
  ↳ the red LED beside the touch is lighting.
  ↳ the swing brake is applied.

▶ Press the touch **S17** again.
  ↳ the red LED beside the touch goes out.
  ↳ The swing gear brake is in mode semi-automatic and can now be controlled as follows by the rocker switch **S57**:



▶Tilt down the rocker switch **S57** on the joystick handle,
  ↳the brake is applied when the uppercarriage is at standstill, respectively it applies as soon as the uppercarriage speed gets lower than a limit value.

▶Tilt up the rocker switch **S57,**
  ↳the brake remains released permanently.

Note!
The red LED beside the touch S17 is lighting in any case when the brake is applied. If this light does not go out when the rocker switch S57 is tilted up, the button S17 must first be pushed to pre-select the semi-automatic mode.

Caution!
The brake only applies when the uppercarriage is near standstill and if no swing motion is actuated via the joystick!
In order to stop the uppercarriage when working on a slope, tilt the switch S57 down and reduce the uppercarriage speed by braking with joystick 4.
Move the joystick 4 back to «0» position only after the brake has applied.

Ermergency stop of the uppercarriage swing motion

The swing brake can be applied independently of the uppercarriage RPM by switching the button S17 from position «semi-automatic» into position «applied».

Caution
Perform this braking via button **S17** only exceptionaly, i. e. in emergency cases, since it causes fast abrasion of the brake discs.

Excavator Configuration Number						Reach limit (m)	Max. weight of the tool (To) *
Excavator model-code		Excavator type-code	Attachment -code	Reach limit -code	Offset-code		
3	4	9	8	1	/	8	-
3	4	9	8	2	/	9	-
3	4	9	8	3	/	10	-
3	4	9	9	1	/	8	-
3	4	9	9	2	/	9	-
3	4	9	9	3	/	10	-

Tab. 3-4 *Reach limit code for R934C*

Digit 6 - Offset code

The offset code **6** is a variable taking into consideration all the tolerances in the assembly:

- of the attachment parts
- of the angle sensors

Offset value °	-2,5	-2	-1,5	-1	-0,5	0	0,5	1	1,5	2
Offset code	0	1	2	3	4	5	6	7	8	9

Tab. 3-5 *Offset code*

Example

You are working with a R934C VH-HD machine equipped with the following elements:

- demolition boom: 7,50 m
- intermediate arm: 2,10 m
- demolition stick: 5,20 m with a R922 tool shifting kinematics
- 2,1-tons concrete breaker

With the excavator type and attachment configuration you can determine the first 4 digits of the ECN: 3.4.2.2.

The ECN 3.4.2.2.3.x is the correct choice because the reach limit code 3:

- corresponds to the maximal reach limit of 10 m,
- is suitable for tools with a weight up to 2,5 tons.

The ECNs 3.4.2.2.1.x and 3.4.2.2.2.x are also allowed for this tool but they would unnecessarily reduce the reach limit.

3.4.10 Setting the ECN

▶ Make sure that the ECN is correct when starting your shift.

1	2	3	**4**	**5**	6

Activating the diagnostic mode

❑ Make sure that the key switch **4** is in position *WORK* **2**.

▶ Simultaneously, press keys *CHANGE* **5** and *SELECT* **7** for 2 seconds.
  ↳ The diagnostic mode is activated.
  ↳ The error codes display **6** displays the number "00".
  ↳ The ECN display **1** displays the machine inclination.

Note
With the diagnostic mode, you can display other parameters. These parameters are used by the LIEBHERR customer service for remote troubleshooting.

▶ If a problem occurs, contact the LIEBHERR customer service and report the values of the required parameters.

To select parameter numbers required by the customer service:

▶ Press the key *CHANGE* **5** to increase the parameter number (00 to 99) in display **6** by one unit.
Press the key *SELECT* **7** to decrease the parameter number (00 to 99) in display **6** by one unit.
  ↳ The value corresponding to the displayed parameter is displayed in the ECN display **3**.

Reading the machine inclination

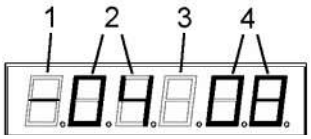


Fig. 3-87 *Reading the machine inclination*

1	Negative (-) or positive ( ) inclination	**2**	Lengthwise inclination (X-axis), in degrees
3	Negative (-) or positive ( ) inclination	**4**	Crosswise inclination (Y-axis), in degrees

The machine inclination is indicated in whole numbers.

The example above shows a lengthwise inclination of -4° and a crosswise inclination of +8°.

Deactivating the diagnostic mode

After approximately 10 minutes:

– The diagnostic mode is switched off automatically.
– The ECN display **1** returns to displaying the ECN.

To deactivate the diagnostic mode manually:

▶ Simultaneously, press keys *CHANGE* **5** and *SELECT* **7** for 2 seconds.

3.4.13 Rotating, tilting, locking and unlocking a working tool

An additional hydraulic circuit must be activated to operate some specific working tools such as:

- a rotating grapple (A),
- a rotating bucket (B),

3.4.19 Special control (option)

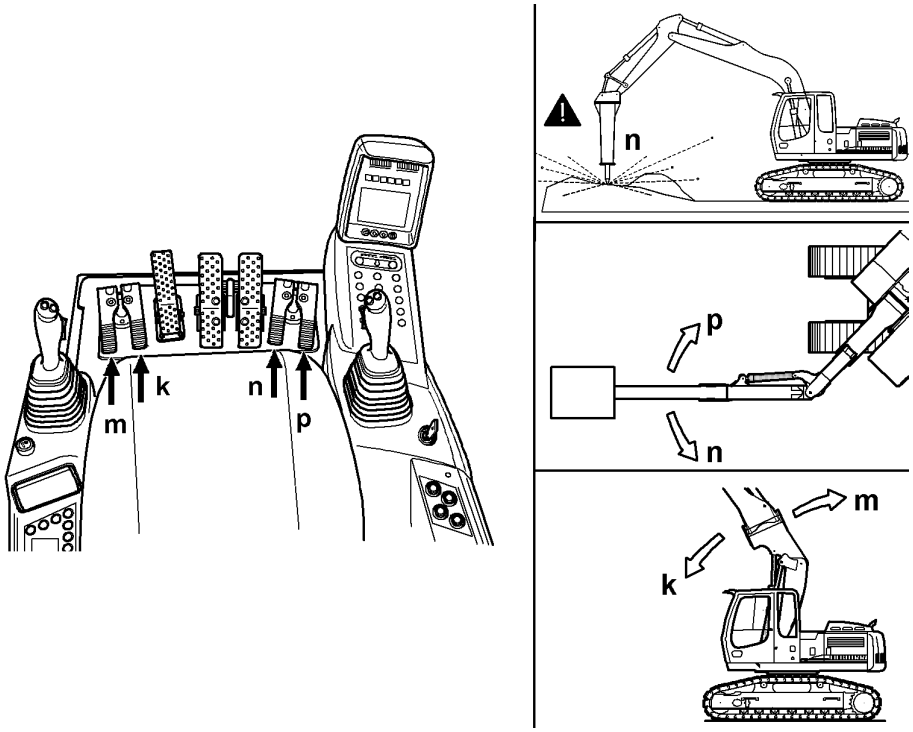


Fig. 3-101 *Special control*

On request, the machine can be equipped with the “Special control” kit. This declare the function “Hydraulic adjusted boom ” to the additional load’s operation **m** and **k, and the function "Activating additional equipment" to the** additional load’s operation **n** and **p.**

The function "Activating hydraulic hammer" is activated using foot pedale **n**.

Note
Requisite : Option AHS12 must be available, and being adjustate. See corresponding chapter.

Caution!
Additional equipment can have several functions. Always check out its functions on each machine starting
Incorrect preselection of the pressure and quantity setting can result in damage to the work tool (eg. hydraulic hammer) or to limited function (eg. boom adjustment cylinder).

3.4.20 Cut-off of attachment movements (option)

The movement cut-off restricts the movements of the boom cylinder or the stick cylinder. It enables:

- preventing repeated stopping over the mechanical buffers.
- restricting the authorized working area (working height, working depth, maximal reach, minimal reach).

Notice !
When the engine is switched automatically into safety operation, the current engine speed is maintained as long as the engine is not shutdown.

Safety operation of the servo control circuits

During normal operation, the servo pressure supply to the swing brake and to the joysticks and pedals is controlled over the electronic circuit of the machine.

While tilting the switch S73 in safety position, this servo pressure supply can be enforced, and is maintained even in case of a trouble in the normal control circuit.

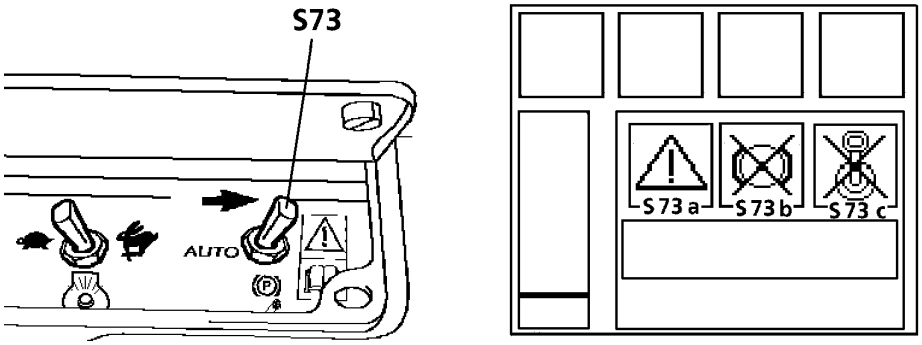


Fig. 3-109 *Safety mode of servo circuits - Safety switch and symbols at the display*

- ▶ Tilt the safety lever down.
- ▶ Commute the switch **S73** into safety position (tilt to the right).
  - ⇘ the three indicator symbols S73a, S73b and S73c appear on the display.
  - ⇘ the joysticks and pedals are supplied with servo pressure.
  - ⇘ the swing brake is released.

Danger!
The safety mode must be turned on only temporarily and in order to move the machine for emergency reasons and when, due to a trouble in the normal control circuit, releasing the swing brake or supplying the pilot controls is hindered.
In safety mode, the swing brake will be released as soon as the ignition key is turned to contact position, and the normal brake control is out of function.

- ▶ Inform all personnel involved in the operation or maintenance of the machine that the safety mode has been turned on and that, by the fact, the control of the swing brake is modified.
- ▶ Locate the trouble which makes the operation in safety mode necessary and get it repaired as quickly as possible.

Note !

- ▶ Even with the switch S73 in safety position, the servo pressure supplying the joysticks and pedals is interrupted when tilting up the safety lever .

3.5.2 Safety operation of the main working pumps

During normal operation of the excavator, the electronic horsepower control continuously adjusts the pumps flow to the pressure level of the working circuits

3.7.8 Using an hydraulic hammer

Please also refer to the operating instructions provided by the manufacturer of the hydraulic hammer.

Danger!
The hydraulic hammer must be selected very carefully. Operating requires increased care and attention.

- ▶ Only use hydraulic hammers approved by LIEBHERR.
  - ↳ The use of a hydraulic hammer not approved by LIEBHERR could damage steel parts or other machine components.
- ▶ Only use the hydraulic hammer to break up rocks, concrete and other breakable objects.
- ▶ To avoid damaging the machine, do not try to break up rocks or concrete by moving the lever on the work equipment or by the hydraulic hammer.
- ▶ Do not use the drop power of the hydraulic hammer to break up rocks or other objects. Do not move objects with the hydraulic hammer. Do not lift the machine when using the hydraulic hammer.
  - ↳ This could damage both the hydraulic hammer and the machine.
- ▶ Do not use the hydraulic hammer to lift objects.
- ▶ Only use the hydraulic hammer in the machine's longitudinal direction.
- ▶ Do not operate the hydraulic hammer in the direction of the machine, since exploding rocks or concrete could damage the machine and / or injure the driver.
- ▶ Close all windows in the cab before working.

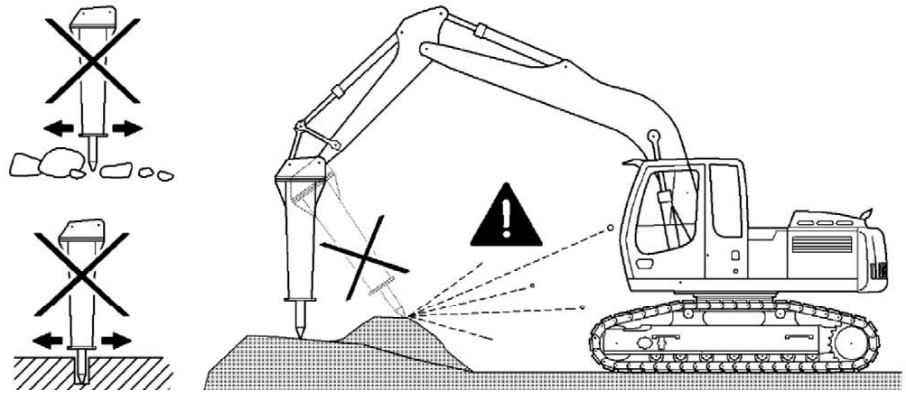


Fig. 3-125 *Hydraulic hammer*

- ❑ The machine must be positioned in the working position on level, solid ground.
- ❑ The stick may not stand vertically.
- ❑ No cylinder may be fully taken in or extended.
- ▶ Do not operate the hydraulic hammer on the same spot continually or for longer than 15 seconds.
  - ↳ Overly continual operation of the hydraulic hammer leads to the hydraulic oil overheating unnecessarily.
- ▶ Change the position of the machine and resume hammering work.

Fault / error	Cause	Solution
Engine starts but stops immediately after or runs irregularly	Fuel tank empty (low pressure in tank)	Fill tank and vent fuel system
	Fuel filter dirty	Clean or change filter and vent fuel system (tank)
	Particularly in winter: too viscous engine oil used	Use engine oil suitable for the outside temperature
	Dry-air filter dirty	Clean or change main filter element
	Air in fuel system	Vent fuel system
	Ventilation in fuel tank obstructed	Clean
	Fuel line bent	Check line and repair if required
Diesel engine emitting grey or black smoke	Dry-air filter dirty	Clean or change filter
Diesel engine continually emitting while smoke (steam)	Water in combustion chamber	Consult customer service
Diesel engine does not reach full speed	Speed adjustment not set to maximum value	Set speed adjustment to maximum value
	Injection system is set incorrectly	Consult customer service
	Dry-air filter dirty	Clean or replace filter
	Bad fuel supply	Clean or change fuel filter, check lines, drain water from tank
Diesel engine becomes too hot	Too little coolant	Fill coolant, check for leaks
	Water pump defective	Repair
	Thermostats do not work	Change thermostats
	Coolant contaminated	Clean coolant
Diesel engine has insufficient oil pressure **Note!** Switch off diesel engine immediately	Oil level too low	Correct oil level
	Oil pressure display faulty	Change oil pressure switch
Diesel engine consumes too much oil	External leak on diesel engine	Retighten screws, replace seals if required
Oil in coolant or coolant in oil		Consult customer service
Unusual noise / sounddevelopment on exhaust side	Exhaust system leaking	Check exhaust system / repair

4.2.2 Hydraulic system

Fault / error	Cause	Solution
Unusual noise / sounddevelopment at hydraulic pumps **Note!** Switch off diesel engine immediately	Shutoff valve on hydraulic tank closed	Open stop cock
	Hydraulic pumps taking in air	Check oil level in hydraulic tank, check intake lines for leaks

LFR/en/Edition: 01 / 2015

F31	7,5 A	Fuse on KI15 - heater and air conditioning system
F33	7,5 A	Fuse on KI15 - control circuit for refuelling pump (optional extra)
F34	15 A	Fuse on KI30 - reserve for options
F35	15 A	Fuse on KI30 - reserve for options
F36	20 A	Fuse on KI30 - power circuit for refuelling pump (optional extra)
F36-2	15 A	Fuse on KI15 - cut off of cylinder movements (option)
F37	20 A	Fuse on KI30 - heater and air conditioning system
F109	50 A	Circuit breaker on KI30 - special equipments and headlights
F110	50 A	Circuit breaker on KI30 - power supply of PLD system
F115	7,5 A	Fuse on KI15 for safety mode
F116	7,5 A	Fuse on KI30 - controller of PLD system
F117	7,5 A	Fuse on KI15 - PLD system
F122	7,5 A	Fuse on KI30 - preheating signal for PLD system
F133	7,5 A	Fuse on KI30 for hydraulic adjustable cab (option)
F253	25 A	Fuse on KI30 for additional headlights on attachment (option)
K10-1		
K56		Relay / Fuel preheating
K66-1		Relay / cut off of cylinder movements (option)
K66-2		Relay / cut off of cylinder movements (option)
K127		Relay / engine RPM adjustment in safety mode
K128		Relay / engine start in safety mode
K288		Relay / terminal 15
K302		Relay / engine preglow
K359		Relay / additional standstill heater
K415	20 A	Relay / additional attachment headlights (option)

4.3.2 A1010 Plate

All other fuses are situated in the left control panel of the operator's standing position.

Danger
Incorrect or bypassed fuses do not offer the machine's operator or the electrical system the required degree of protection.

- ▶ Only use original fuses.
- ▶ Never bypass electrical fuses.

If required, order replacement fuses from LIEBHERR.

Symbol	Description
	For oil change intervals, observe the relevant instructions in the operating manual.
	Medium filling point
	Slewing gear mechanism
	Travel gear mechanism
	Pump distributor gear
	Gearbox or axle, check oil level
	Diesel engine, check oil level
	Hydraulic tank, check oil level
	Lube point
	Lubricate machine
	Perform semi-automatic lubrication cycle

Tab. 5-1 *Key to lubricating chart*

5.5 Lubricants and fluids specification

5.5.1 Diesel fuels

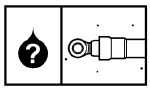
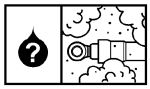
Specification

The diesel fuels must meet the minimum requirements of the fuel specifications outlined below.

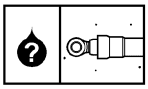
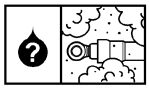
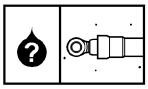
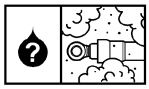
Approved specifications:

- DIN EN 590
- ASTM D 975 (89a) - 1D and 2D

The fuel supplier must submit a fuel certificate (fuel specification, sulphur content, lubricity, cetane number)

Oil sampling / operating conditions	
	Oil sampling in machines operated under **normal operating conditions**
	Oil sampling in machines operated under **extremely dusty conditions**
The oil sampling interval is determined by the actual operating conditions (for more information, see chapter "Dust-intensive applications, reduction of oil contamination").	

Tab. 5-9 *Symbols: Oil sampling depending on operating conditions*

Oil type	Oil sampling			
	Not for use in environmentally sensitive areas (oil analysis optional)		For use in environmentally sensitive areas (oil analysis mandatory)	
				
LIEBHERR mineral oil Liebherr Hydraulic HVI Liebherr Hydraulic Basic 68 Liebherr Hydraulic Basic 100	every 1000 h	every 250 h	- **	- **
Liebherr-PAO* Liebherr Hydraulic Plus Liebherr Hydraulic Plus Arctic	every 1000 h	every 250 h	first at 0 h, then every 1000 h	first at 0 h, then every 250 h
Third-party product - mineral oil	first at 1000 h, then every 500 h	every 250 h	- **	- **
Third-party product - fully saturated synthetic ester	- **	- **	first at 0 h, then every 500 h	first at 0 h, then every 250 h

Tab. 5-10 *Oil sampling depending on operating conditions*

* PAO = polyalphaolefin
** not permissible

- ▶ Pull out the oil separator filter element and dispose of in an environmentally-friendly manner.
- ▶ Insert new oil separator filter element and push in up to the stop.
- ▶ Mount the oil separator sealing cap and tighten by hand to the stop.

5.6.7 Heater flange

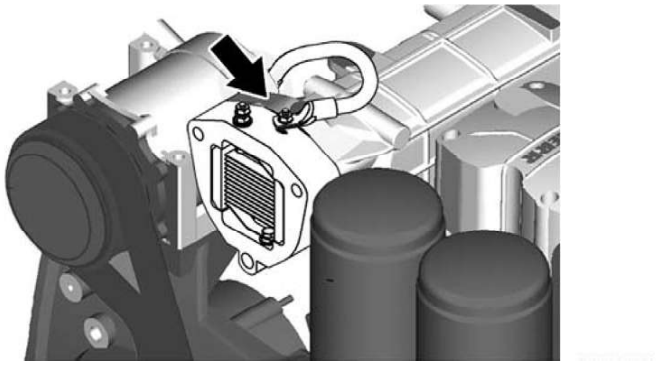


Fig. 5-16 *Heater flange*

- ▶ Switch off battery main switch and disconnect the negative cable from the battery.
- ▶ Disconnect the electrical cable on the heater flange.
- ▶ Connect the ohmmeter to the terminals and check the resistance.
- ▶ If a resistance value of $250^{\pm 10}$ mOhms at 20°C is not reached, the heater flange must be replaced.
- ▶ Reconnect the electrical cable on the heater flange, as well as the negative cable on the battery.

5.6.8 Checking and adjustment of valve clearance

Preparation

- ❑ It must be ensured that:
- – the diesel engine is in the maintenance position,
- – the diesel engine is cooled,
- – a manual engine barring device is on-hand,
- – new seals for the cylinder head cover are on-hand.

Note!

- – Cylinder 1on the flywheel side.
- – Rotational direction on the left-hand side looking at he flywheel.
- – Exhaust valve of the respective cylinder on the flywheeel side.

- ▶ Dismount the cylinder head cover.
- ▶ Mount the manual engine barring device.
- ▶ Turn the crankshaft in the direction of rotation until the cylinder to be adjusted overlaps the opposite valve.

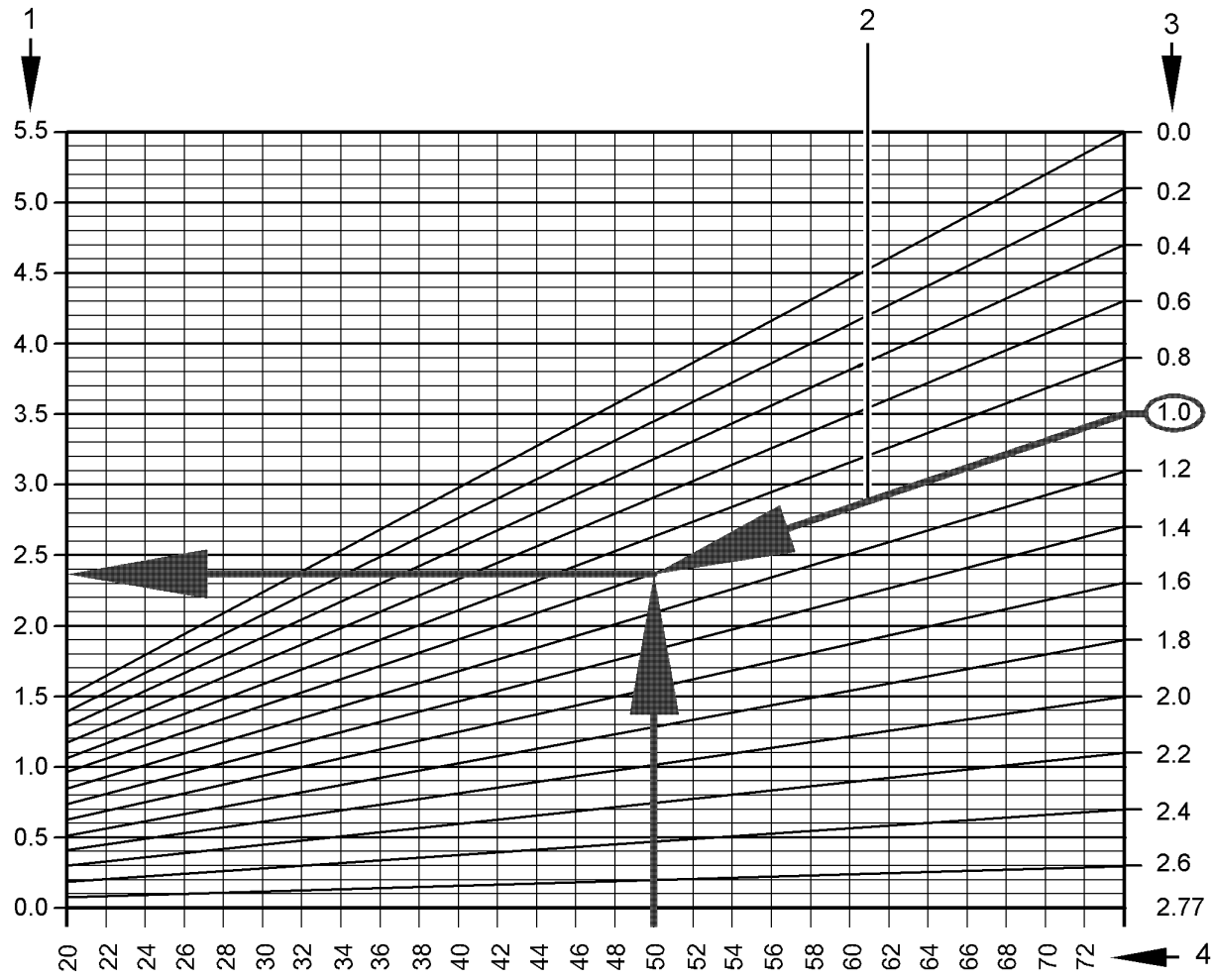


Fig. 5-27 *Determining refill volume - example for 1 % Brix.*

1 Corrosion inhibitor, refill volume in litres

2 Auxiliary line

3 Refractometer value in % Brix

4 Coolant volume in radiator in litres

Determining refill volume - example for 1 % Brix / 50 litres of coolant

Based on the measured value (1 % Brix), follow the auxiliary line **2** from the left bottom corner to the vertical line **4** (coolant volume – 50 litres) and from there horizontally to the left scale. The refill volume **1** is 2.4 litres.

This corresponds to the refill volume of corrosion inhibitor (concentrate) to be added in order to again achieve a value of 2.8 % Brix.

Correcting mixing ratio

❑ Make sure that the necessary refill volume is known.

▶ To correct the mixing ratio, at least the previously determined volume must be drained from the cooling system.

▶ Add the determined volume of corrosion inhibitor.

▶ To achieve the required coolant level, add some of the previously drained coolant.

To bleed the fuel fine filter

- ▶ Loosen the bleeder screw **13** on the filter head and unscrew 2 to 3 turns of thread.
- ▶ Actuate the hand pump **2**.
- ▶ When bubble-free fuel flows out of the bleed screw tighten bleeder screw **13** again.
- ▶ Continue to actuate the hand pump **2** until resistance becomes intense.

To bleed the fuel canal on the crankcase

- ▶ Loosen the bleeder screw **14** on the filter head and unscrew 2 to 3 turns of thread.
- ▶ Actuate the hand pump **2**.
- ▶ When bubble-free fuel flows out of the bleed screw tighten bleeder screw **14** again.
- ▶ Continue to actuate the hand pump **2** until resistance becomes intense.

Bleeding the high pressure fuel system

The bleeding operation of the high pressure fuel system consists in bleeding the air in the injection lines.

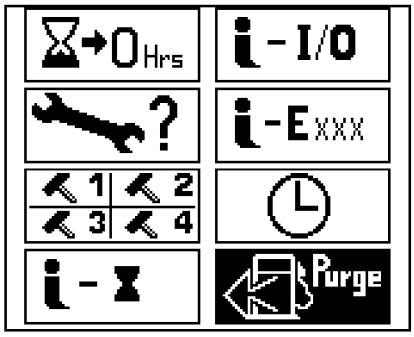
A) Since the software version 36 of the engine control unit

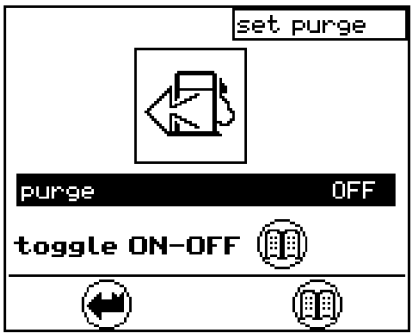
Since the software version 36.0 of the engine control unit and the software version V4.4 of the monitoring display, it is possible to start the engine in bleeding mode.

Notice!
The engine control unit software version can be read on the company nameplate of the engine control unit.

- ▶ Make sure a bleeding of the low pressure fuel system has been correctly carried out.

Select the menu "set purge" at the screen of the display.





- ▶ In the menu "set purge" set the choice "purge" to "ON" using the "menu" touch.
- ▶ Start the Diesel engine

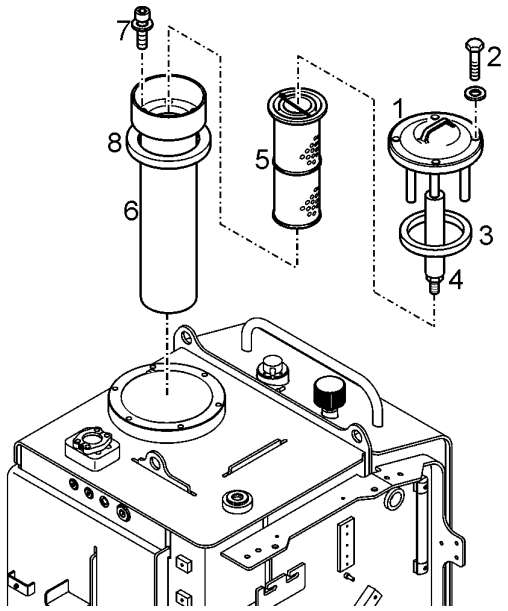


Fig. 5-44 *Return-line filter*

1 Cover
2 Screw
3 Sealing
4 Magnetic rod
5 Filter unit

The magnetic rod **4** of the return-line filter must be cleaned at fixed intervals (see maintenance chart) and the glass fibre filter unit **5** replaced.

Note

▶ When working in heavy dust conditions, please note the special regulations for changing the filter.

To clean the magnetic rod and replace the filter element:

❑ The hydraulic system must be depressurized.

▶ Unscrew the four screws on the filter cover and lift out cover **1** and magnetic rod **4**.

▶ Carefully clean off any dirt sticking to the magnetic rod.

▶ Remove the used filter cartridge **5** on the bracket.

▶ Insert the new filter cartridge on the bracket vertically into the tank and press down lightly. Then lay the clamp to the side on the tank ring.

Caution!

▶ Ensure that the filter cartridge is standing vertical in the tank and that the O-ring **8** is not damaged.

▶ Centre the cover unit on the filter unit **5** and position. When doing this, ensure that the sealing **3** is positioned correctly and is in good condition.

Checking filter contamination

The contamination grade of the bypass oil filter must be checked at the regular intervall indicated in the maintenance chart

- ❑ When checking, the hydraulic oil must be at a temperature of at least 50 °C (operating temperature) and the engine must be running.
- ▶ Read the indication of the pressure gauge.
- ▶ If the pressure exceeds 2.5 bar, change or get changed the filter element at once.

Replacing filter element

- ▶ Switch off the engine.
- ▶ Release the pressure in the hydraulic tank.
- ▶ Open and remove the tightening clamp **2**.
- ▶ Remove the old filter element **4** and collect the oil leaking from the filter in a suitable container.
- ▶ Check the inlet and outlet sections of the bypass oil filter and if necessary clean the inner side of the filter head.
- ▶ Insert a new filter element **4**.
- ▶ Replace the filter housing **3,** replace and tighten the clamp **2**.
- ▶ Start the machine and check the bypass oil filter for leakage.

5.11.13 Return oil filter for hydraulic hammer (option)

In case of use of an hydraulic hammer or a demolition work, it is strongly advised to install an extra return oil filter.

Thanks to this filter, the effectiveness of the hydraulic system filtration is increased.

The return oil filter for hydrailic hammer is close to the fuel tank.

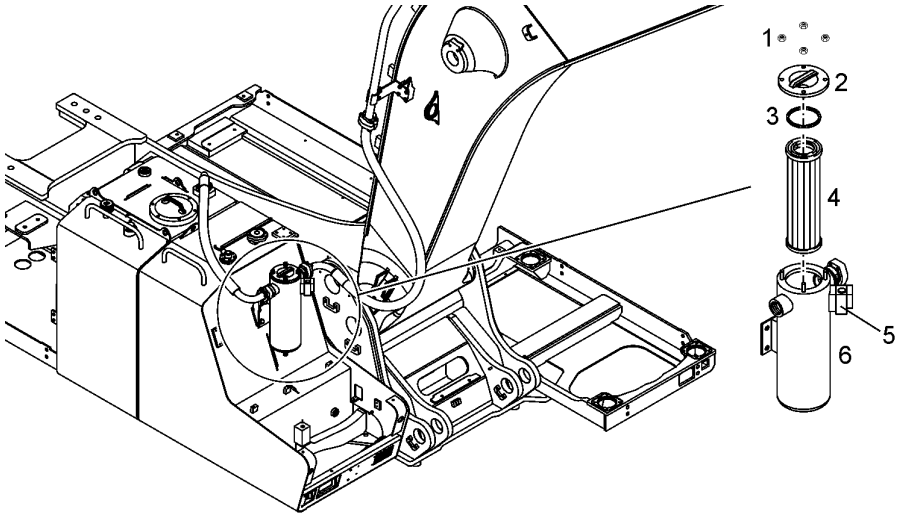


Fig. 5-55 *Return oil filter for hydraulic hammer*

1	Nuts	**3**	Seal kit	**5**	Contamination indicator
2	complete cover	**4**	Filter cartridge	**6**	Filter housing

5.13.3 Retensioning the track

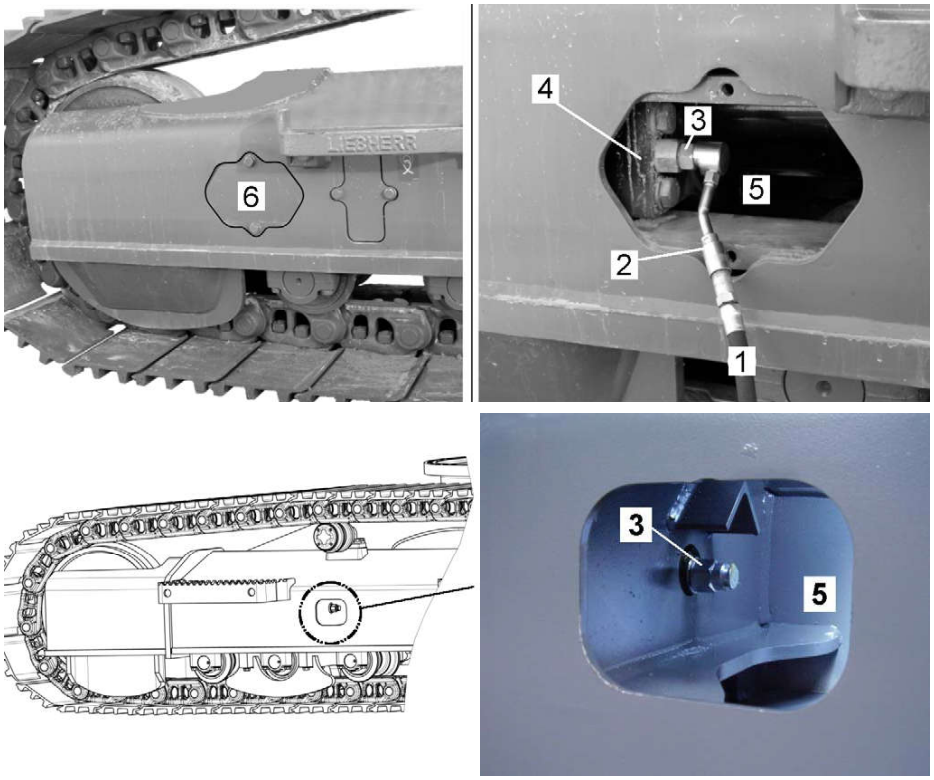


Fig. 5-66 *Retensioning the track*

- ▶ Remove the cover **6 (if mounted)** on the side frame of the undercarriage.
- ▶ Screw high pressure hose **2** onto the manual grease gun **1**.
- ▶ Through the opening in then side frame, connect the high pressure hose **2** to the lubricating nipple **3** of the grease tensioner **4**.
- ▶ Inject grease until the track is sufficiently tensioned.
- ▶ Check the track tension as described above.
- ▶ Remove the grease gun **1**, the pressure hose **2** and reattach the cover **6**.

5.13.4 Releasing the track chain tension

Danger!
Risk of injury due to sudden dropping of the crawler or to a jet of grease under high pressure.

- ▶ Because of the risk of grease jet, always wear protective gloves and glasses when releasing the chain tension
- ▶ When releasing the tension of the chain, keep your head away from the opening **5** in the track side frame. Never touch the grease nipple 3 with your hand but always use an appropiate tool to unscrew or screw it in.

- ▶ Before attempting to release the chain tension, loosen and remove every item which may be stucked in the chain while driving forward and backward or doing as described in the section "Cleaning the track components" thereafter.

Fig. 5-76 *Fresh air filter*

The air flow in the heating / air-conditioning system is reduced when the filters are dirty and this frequently results in the system icing up or shutting down.

– Remove and clean the recirculated and fresh air filter **1**and**3** every 500 operating hours.
– Shorten cleaning intervals when working in heavy dust conditions.
– Do not operate the machine, even briefly, without these filters, since the heat exchanger **6** will otherwise quickly become blocked (see Fig. 5-77).

To clean and change the recirculated and fresh air filters:

▶ Push the backrest of the operator's seat forwards to remove the recirculated air filter **1**.

▶ Open the quick-release fasteners **2** by a quarter turn.

▶ Remove the recirculated air filter **1**.

▶ Remove the deflector **4**.

▶ Remove the fresh air filter **3**.

Note!

▶ Never wash the filter elements with hot water or a steam jet.

▶ If damaged or in a bad condition, replace the filter elements.

▶ Blow out the filter elements **1** and **3** using compressed air or clean in cold or lukewarm water.

5.16.2 Heating system

Carry out the following maintenance work on the heating system each year before the start of the heating period:

– Check the entire coolant circuit for leaks.
– Retighten the connection points for the coolant circuit, the hose connections on the heat exchanger, the seals on the shutoff valves and the hose clamps.

▶ connect the pump to the fitting **21**.

▶ push the whole content of the cartridge into the container **13**.

For indication of ordering number of grease cartridges, refer to subgroup "lubricants specifications".

❑ If the special filling pump **31** or the grease cartridges are not available,

▶ refill the container **13** through the grease fitting **22**, using a grease gun.

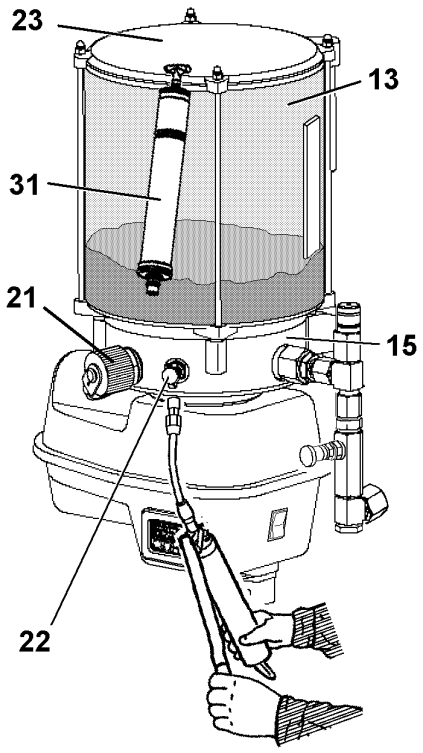


Fig. 5-86 *Refilling the grease container*

13	Grease container	**15**	Grease pump
21	Fitting for filling pump	**22**	Grease fitting
23	Cover	**31**	Filling pump

5.17.7 Changes in the lubrication circuit

Before you make any changes to the lubrication system (for example when changing the attachment configuration), always check with a LIEBHERR mechanic first.

Never remove a line and close off an outlet, which is not being used, or the whole lubrication system would be blocked.

Only plug an outlet after the line has been removed from the distributor and the necessary changes have been achieved at the corresponding distribution elements.

This applies as well for main distributor 4 as for secondary distributors 5.

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5.22 Control and maintenance chart

Caution!
Careful maintenance can only be carried out when the machine is clean. In particular, visual checks such as crack testing are only possible on a clean machine.

▶ Clean the machine before you start maintenance work (see also the chapter “Safe maintenance of the machine”, subheading “Cleaning and crack testing”).

Note
The daily maintenance work of the driver include the check of the proper function of hydraulic, electric and brakes systems before starting operation.
He must alos perform daily a visual check of engine, hydraulic system, gears and track parts for leaks.

Maintenance / inspection at operating hours						**WORK TO BE CARRIED OUT R 934 C - Demolition**		
On delivery	Every 8 - 10	Every 10 -50	At 500, 1500	At 1000, 3000	At 2000, 4000	**By maintenance personnel (machine owner)** ■ First and only interval ● Repeat interval ♦ Special interval every 250 hours	**By authorized specialist personnel** ❑ First and only interval ❍ Repeat interval	**Note**
DIESEL ENGINE AND SPLITTERBOX								
❍	●	●	❍	❍	❍	Check oil level in engine		
❍	●	●	❍	❍	❍	Check oil pressure and coolant temperature during operation		
❍	●	●	❍	❍	❍	Check air filter on maintenance display		
	●	●	❍	❍	❍	Check and drain water separator on fuel filter (or when the corresponding symbol appears on the display)		
	●	●	❍	❍	❍	If mounted, drain regularly the water in the separator of the particles filter system		
		●	❍	❍	❍	Check coolant level		
		●	❍	❍	❍	Drain off water and sediment at fuel tank		
		●	❍	❍	❍	Empty dust discharge valve on air filter (shorten or extend interval as required)		
		●	❍	❍	❍	Check oil level in splitterbox		
			❍	❍	❍	Check and clean cooler and ventilator		
			❍	❍	❍	Check condition of belt for A/C compressor and alternator installation		
			❍	❍	❍	Replace lubricating oil filter cartridge (at least 1 x yearly)		
			❍	❍	❍	Replace engine oil (at least 1 x yearly)		1)
			❍	❍	❍	Replace splitterbox oil		

▶ Install the forward support frame **1**.
See chapter 6: "Installing the support frames".

Installing the rearward support frame

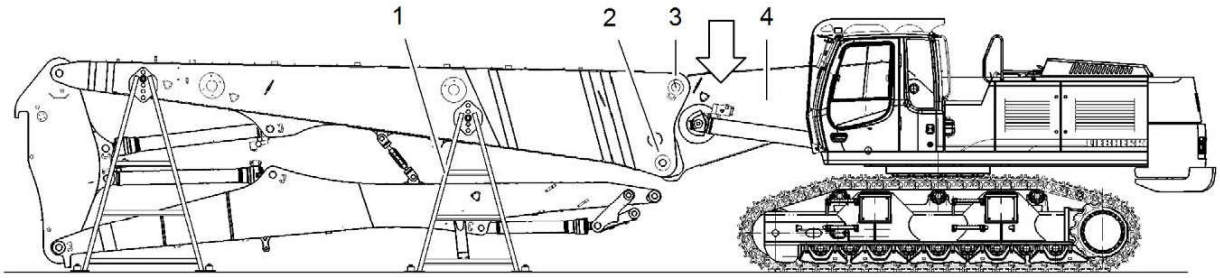

Fig. 6-6 *Installing the rearward support frame*

1 Rearward support frame
2 **Lower pin**
3 Upper pin
4 Basic boom

▶ Remove the lower pin **2**.
or
If the working attachment is equipped with a quick coupler: unlock the quick coupler.
See chapter 6: "Quick coupler for attachment parts".

▶ Install the rearward support frame **1**.

Disconnecting the central lubrication system

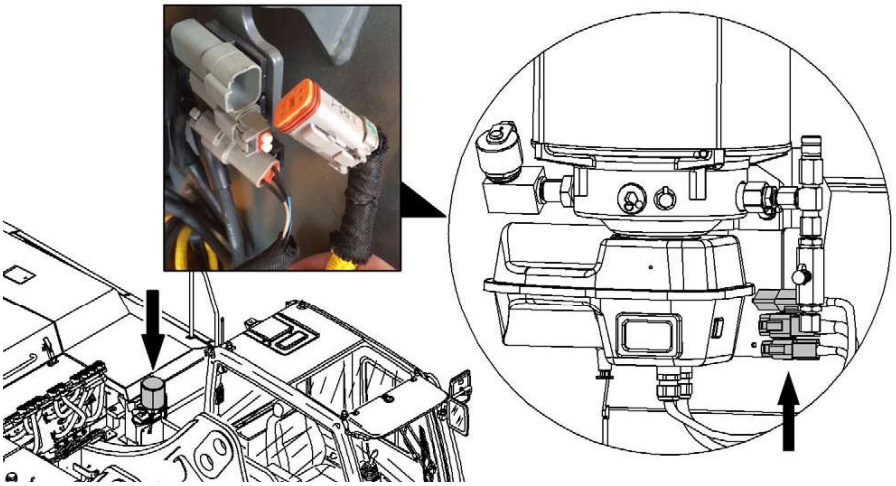

Fig. 6-7 *Disconnecting the central lubrication system*

▶ Disconnect the 4-pole connector of the central lubrication system.

6.1.9 Installation of the backhoe attachment on a storage rack with catwalk

Three persons are necessary to do this procedure:

– one machine operator in the cab
– one person to secure the storage rack on the left side (cab side). This person gives the necessary guiding instructions to the machine operator.
– one person to secure the storage rack on the right side

Connecting the working attachment

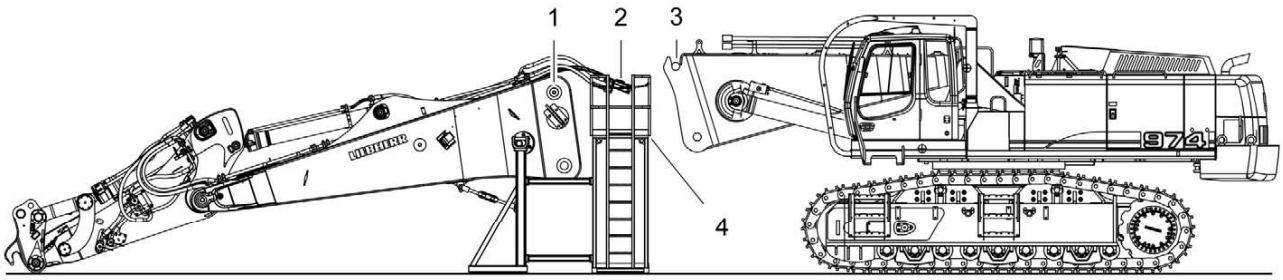

Fig. 6-21 *Connecting the working attachment*

1 Upper pin
2 Quick couplings
3 Hook
4 Catwalk

Make sure that the following conditions are met:

❑ The working attachment and the machine are on level and firm ground.

❑ The uppercarriage is aligned with the undercarriage.

❑ The machine is perfectly aligned with the working attachment.

▶ Lower the basic boom to the stop.

▶ Slowly and carefully move the machine forward to insert the boom in the fork of the basic boom.

▶ Carefully raise the basic boom to insert the upper pin **1** in the hook **3**.

▶ Use the ladder to climb on the catwalk **4**.

▶ Connect all lubrication and hydraulic lines at the quick couplings **2**.
See chapter 6: "Connecting hydraulic hoses with quick couplings".

▶ Connect all the electrical connections.

- ▶ Lift the connecting plates **3** and **2** together with the hoses **17** and **16** up out off the supporting brackets **18** of the plug in boom **1a**.
- ▶ Insert the lower connection plate **3** with the both hydraulic hoses **17** into the support rails **4**.
- ▶ Insert the upper connection plate **2** into the support rails **4** and check for the right position of the plates **3** and **2** in comparison with the support plate **11**.
- ▶ As necessary, reattach the hose clamps **19**.
- ▶ Lower the manoeuvring lever **5** down to horizontal position "**H**" to cause the coupling of the quick change couplings **15**.
- ▶ While pushing the manoeuvring lever **5** down, push the locking rod **6** forward to insert the latching piece **9** into the catch **8**.
- ▶ Reinstall the pin **7**.

6.1.13 Quick coupler for attachment parts (option)

The quick coupler for attachment parts saves time during a change of working attachment:

A quick coupler can be present in the following cases:

- between basic boom and boom
- between basic boom and extension (option)
- between extension and boom (option)
- at an articulated intermediate boom (option)

The locking system ensures a secure fixing of the attachment parts. Besides locking or unlocking the quick coupler, the installation and removal procedures of the working attachment remain the same.

Locking the quick coupler

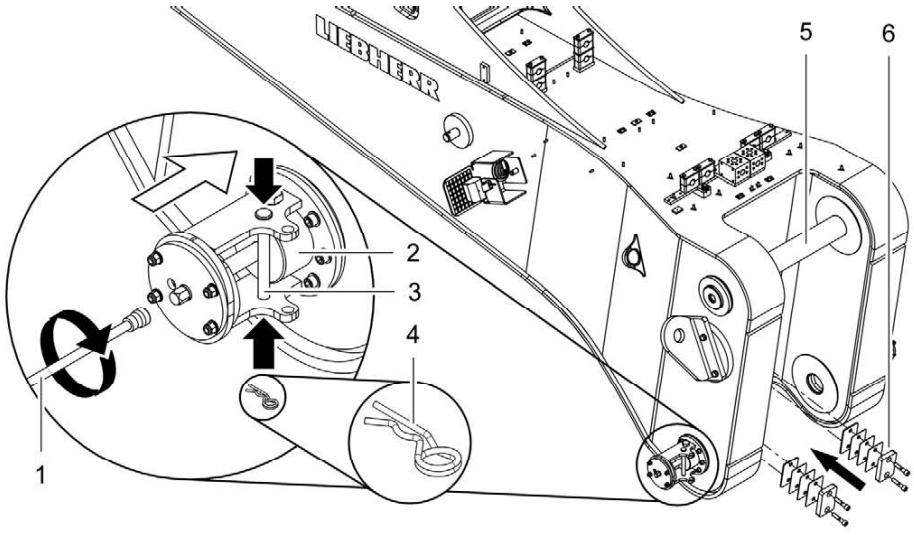

Fig. 6-32 *Locking the quick coupler*

1 Crank

4 Spring plug

Taking up the tool attachment

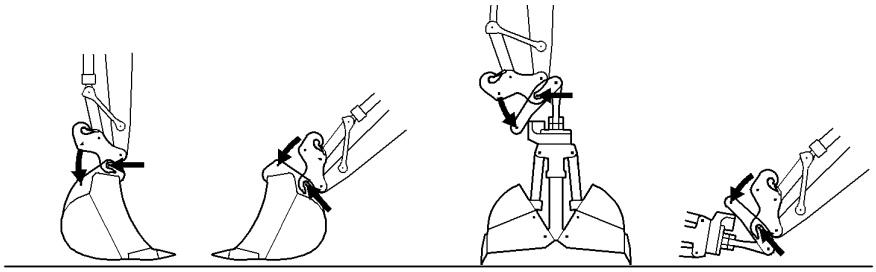

Fig. 6-41 *Taking up the tool attachment*

- ▶ Move the quick-change adapter to pick up the tool attachment using the take-up hook.
- ▶ Raise the tool attachment from the ground.
- ▶ Completely extend the shovel tilting cylinder until the bearing of the tool attachment is at the stop of the quick-change adapter.
  - ↳ The bore holes of the tool attachment and the locking pins of the quick-change adapter must be aligned.

Locking the quick-change adapter

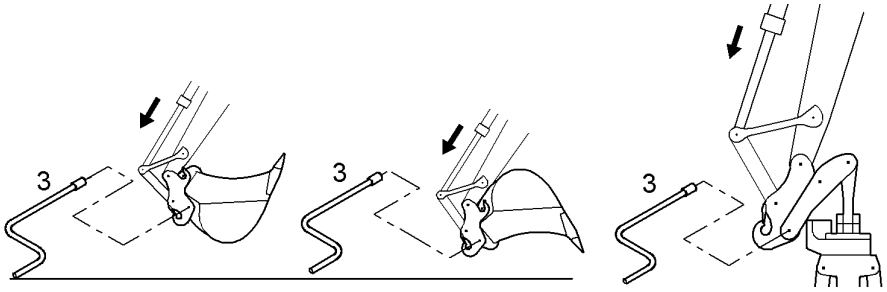

Fig. 6-42 *Locking the quick-change adapter*

Danger!
Falling tool attachment!
Crushing hazard, injuries.

- ▶ Move the safety lever to the upper position.
- ▶ Before approaching, visually check that the locking pins of the quick-change adapter are fully extended in the bore holes of the tool attachment.

- ▶ Insert the crank **3** in the locking pin **1**.
- ▶ Turn clockwise until both locking pins are extended to the stop.
  - ↳ The tool attachment is attached.
- ▶ Screw the locking screw **2** into the locking pin.

Connecting hydraulic or electrical lines

Certain tool attachments have hydraulic and/or electrical lines that must be connected (examples: hammer, grapple).

- ▶ Remove the hydraulic pressure:
  - Switch off the engine.
  - Turn the ignition key into the contact position.
  - Operate the joysticks.

Attaching and dismounting work tools

Attaching and dismounting is carried out as described in the chapter “Hydraulic quick-change adapter”.

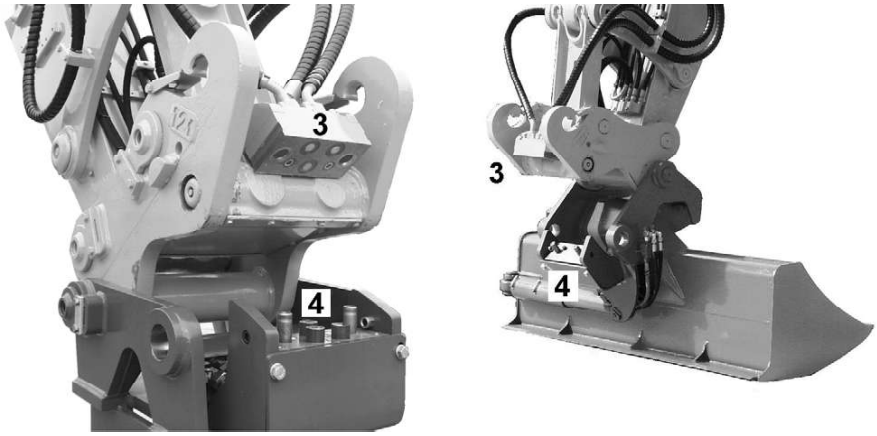

Fig. 6-56 *Connecting LIKUFIX*

Please also note:

- Before attaching, remove the protective coverings on the quick-change adapter **1** and the work tool **2**.
- Always keep hydraulic couplings **3** and **4** clean.
- Perform a visual check for cleanliness before attaching. If necessary, clean all coupling parts and the sealing surfaces with a clean, oil-soaked cloth.
- Connect or separate the hydraulic coupling slowly as with any change of work tool.
- When attaching the quick-change adapter, tilt until the coupling disks are connected as a result of the self weight of the work tool.
- Remove the locking pins.
- If the disks do not connect as a result of self weight, foreign matter (such as stones) may be the cause. In this case, clean all coupling parts to prevent damage occurring when connecting.
- Oil quantity and pressure must be adapted to suit the work device concerned.
- When the work is completed, and particularly before transportation, put the protective coverings **1** and **2** back on.

Attaching LIKUFIX work tools to a quick-change adapter without LIKUFIX

It is possible to attach a work tool with a LIKUFIX hydraulic coupling to a machine with a quick-change adapter (mechanical or hydraulic) at any time.

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