1.2 DIVISION OF THE BINDER

Part 1:
Operation Manual

Part 2:
Lubrication- and Maintenance Manual

Part 3:
Excavator Assembly Manual. Technical Data Booklet. Service Literature for the Power Unit (Diesel Engine or Electric Motor) and for Special Equipment. Electrical- and Hydraulic Diagrams.

Refer to the table of contents for details.

Read the Manuals before You Start the Engine.

Before operating the machine, familiarize yourself with its instruments and controls.

Observe the instructions in these manuals for:

- your Personal SAFETY
- Operating SAFETY, and
- READY and EFFICIENT PERFORMANCE of your KOMATSU Excavator.

Periodic preventive inspections and maintenance are the surest means of keeping the machine in proper working order. Prompt detection and correction of minor irregularities, and immediate replacement of worn out or broken parts will prevent failures and avoid expenses.

Replace damaged graphics and symbols.

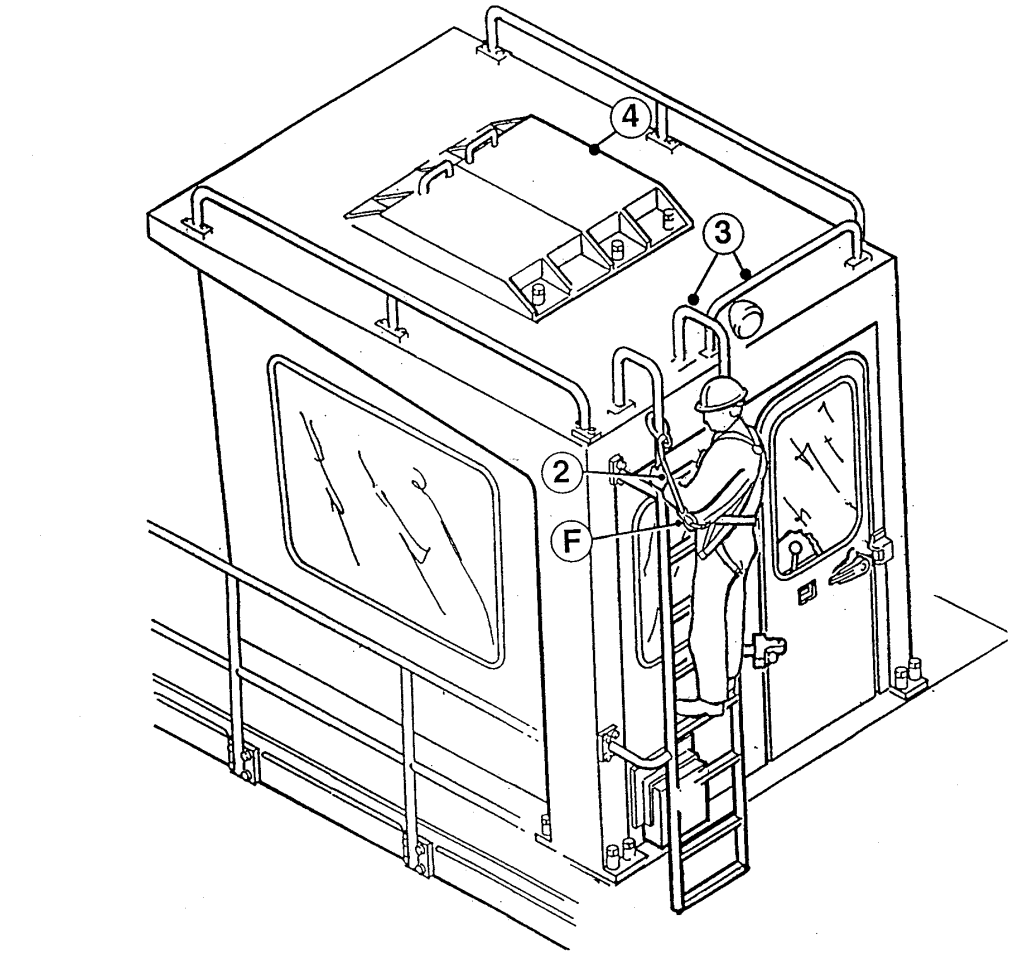
Observe safety precautions to prevent injury and damage.

If you have any questions concerning this literature please contact

Komatsu Mining Germany GmbH

Service Information
Department 8151.40
P.O. Box 18 03 61
D - 40570 Düsseldorf
GERMANY

- The fastening of loads and the instructing of crane operators should be entrusted to experienced persons only. The marshaller giving the instructions must be within sight or sound of the operator.
- For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms. Never use machine parts as a climbing aid. Wear a safety harness when carrying out maintenance work at greater heights.
  Keep all handles, steps, handrails, platforms, landings and ladders free from dirt, snow and ice.
- Clean the machine, especially connections and threaded unions, of any traces of oil, fuel or preservatives before carrying out maintenance/repair. Never use aggressive detergents. Use lint-free cleaning rags.
- Before cleaning the machine with water, steam jet (high-pressure cleaning) or detergents, cover or tape up all openings which - for safety and functional reasons - must be protected against water, steam or detergent penetration. Special care must be taken with electric motors and switchgear cabinets.
- Ensure during cleaning of the machine that the temperature sensors of the fire-warning and fire-fighting systems do not come into contact with hot cleaning agents as this might activate the fire-fighting system.
- After cleaning, remove all covers and tapes applied for that purpose.
- After cleaning, examine all fuel, lubricant, and hydraulic fluid lines for leaks, loose connections, chafe marks and damage. Any defects found must be rectified without delay.
- Always tighten any screwed connections that have been loosened during maintenance and repair.
- Any safety devices removed for set-up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work.
- Ensure that all consumables and replaced parts are disposed of safely and with minimum environmental impact.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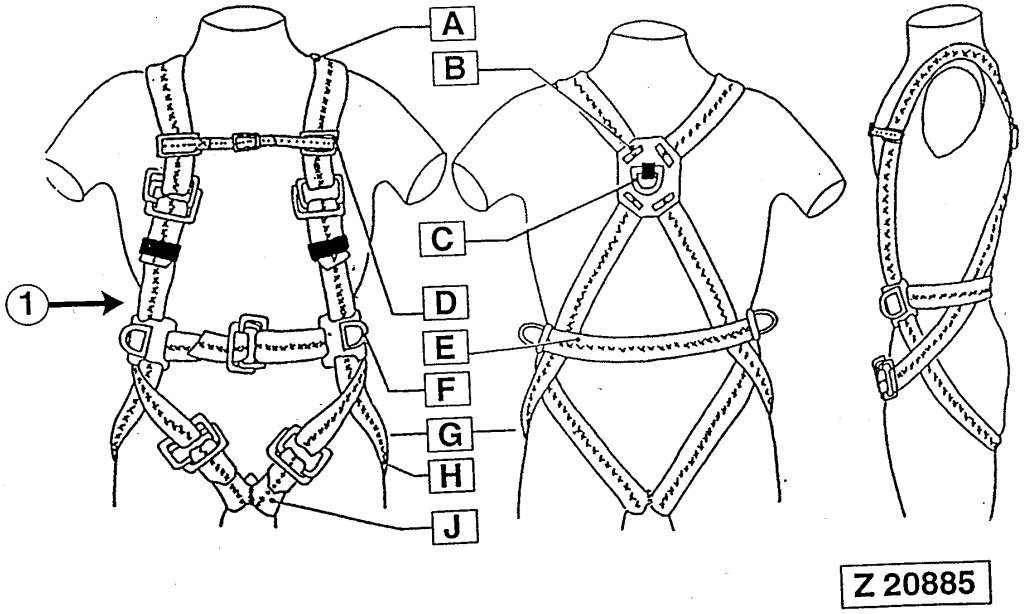
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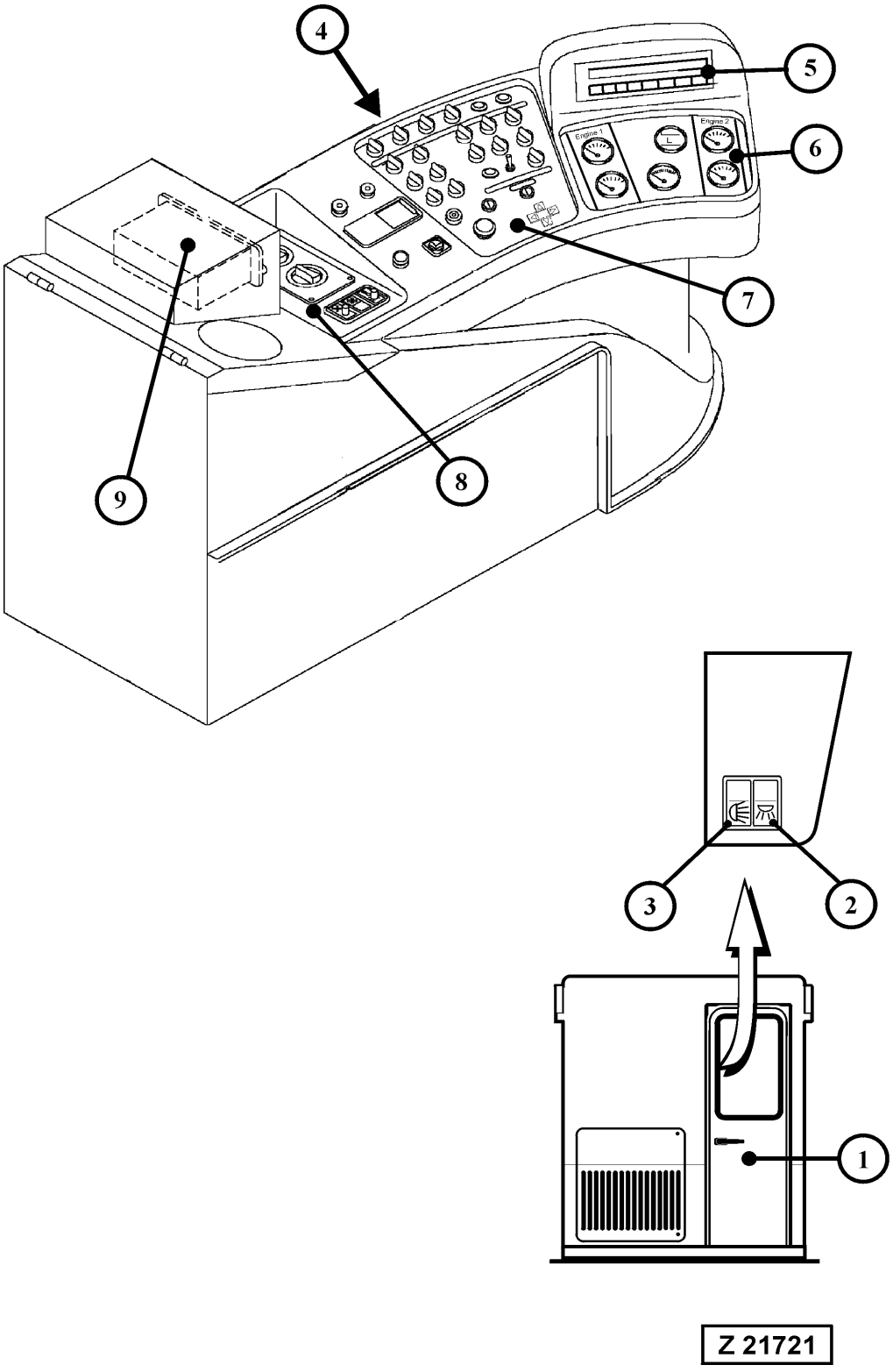
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Z 21721

Automatic Display of Messages on Screen (A), illust. Z21730

The messages of the ECS system are divided into three main categories as follows:

Category I:

Information messages indicating an operating condition, e.g. ”# Slew Parking Brake Applied” or a present maintenance interval message.

How to act:

- These information messages are self-explanatory.
- Press the ”RET” key (9) twice for returning to basic display.

Category II:

Fault messages without automatic shut-down of the unit. These messages indicating a deviation from normal operating condition.

How to act:

- Immediate shut-down of the unit is not necessary.
- Inform the responsible Service Staff about the fault message.
- Press the ”RET” key (9) twice for returning to basic display.

Category III:

Fault messages resulting in an automatic shut-down of the unit. These messages indicating a serious failure.

How to act:

- Press the ”RET” key (9) twice for returning to basic display.
- Re-start of the unit can be tried. If the fault still exists, the unit will not start or automatic shut-down will happen again.

Emergency By-pass switch for the ECS- Shut-down Function.

The unit is equipped with an Emergency By-pass Switch for the ECS-system. This switch is located on the ”X2” switch board in the cab base compartment and marked with **”S27”.** The location of the switch is shown on page 185. If an automatic shut-down of the Excavator happens, with a dangerous situation for man or machine, which needs the Excavator to be operable to overcome the dangerous situation, actuate this switch to override the shut-down function of the system and to enable a restart of the engines.

As soon as the immediate situation of danger is over, shut down the unit. Correct the fault that caused the shut down and re-set the Emergency By-pass switch.

2.0 Service Functions and Menu Control

Menu Control operated with Key Switch (C) and Key Group (D), illust. Z21730

The menu controls are structured hierarchically. The highest-level menu is designated ”LEVEL 0” and is accessed by depressing the ”RET” key (9). All lower-level menus have consecutively higher numbers up to ”LEVEL 5”, see Menu Control Charts I - V on the following pages and are accessed by depressing the ”QUI” key (10). In menu levels (1 and 2), the menu options (main groups) can be selected horizontally, without having to return to the higher menu level. In menu levels (3 and 4), the menu options (sub groups) are horizontally only accessible within their main groups.

When entering a menu level, always the L.H. main- or sub group will be displayed first. By pressing key (12), all other main groups in the selected level in the R.H. direction can be called up. For returning to the starting group (main or sub group) press key (11).

The Menu Control Charts on the following pages show the structure and contents of each system level. The interconnection of the main groups through all system levels is also shown.

Menu Control with Key Switch (C) and Key Group (D)

Legend for illust. (Z 21730)

(C) Key operated switch for enabling setting of operational Data in main group **SERVICE** and for access to the **INPUT-OUTPUT** levels.

(D) Key group with 4 keys for **menu control** of Service Functions and INPUTS-OUTPUTS.

(9) Return Key - function:
Return to previous level of INPUTS-OUTPUTS or Service function. ►

(10) QUI Key - functions:
Used for access to the lower level. ►
Acknowledgement of carried out Maintenance
Calling up of current Truck counter reading and lubrication system cycle counter readings
Acknowledgement of inputs and setting of new oil viscosity

(11) ”0” Key - functions:
Selection of horizontal menu items within the respective service or INPUT-OUTPUT level in the L.H. direction
Selection of the oil viscosity for hydraulic system or PTO gear
Change of condition of outputs (0-1).

(12) ”1” Key - function:
Same function as key (11), but in the R.H. selection direction.

Level 3: Service / SETTINGS

- 3 - Settings * PTO-GEAR - OIL VISCOSITY *
- 3 - Settings * HYDRAULIC - OIL VISCOSITY *
- 3 - Settings * CENTRAL LUBRICATION SYSTEM *
- 3 - Settings * SLEW RING GEAR LUBE SYSTEM *
- 3 - Settings * DATE : *
- 3 - Settings * TIME : *
- 3 - Settings * OPERATING HOURS h : *
- 3 - Settings * PROTOCOL CANCEL *
- 3 - Settings * STATISTICS CANCEL *

Level 4: Service / Settings / PTO-GEAR - OIL VISCOSITY

- 4 - Input of oil viscosity OPERATE KEY SWITCH
|||- 4 - Input of oil viscosity ||QUI new: present:

Level 4: Service / Settings / HYDRAULIC - OIL VISCOSITY

- 4 - Input of oil viscosity OPERATE KEY SWITCH
|||- 4 - Input of oil viscosity ||QUI new: present:

Fault No. 1238: (1241)

$h: Shutdown through maintenance safety switch S58.

Help:

Maintenance safety switch S58 in machinery house actuated.
- Find cause

Fault No. 1244: (1247)

$h: Faulty monitor channel for level central lube system.

Help:

Level sensor B108 shows inadmissible values.
- Check monitor channel and sensor.

Fault No. 1250: (1253)

$h: Bucket motion switched off due to lubrication system failure

Help:

Automatic lubrication suspended for 4 hours.
- Perform manually actuated lubrication.
- Repair lubrication system.

Fault No. 1256: (1259)

$h: Faulty switch hydraulic oil level or lack of hydraulic oil

Help:

Stop the engines.
- Check level sensor B4 and B50.
- Check hydraulic oil level.

Fault No. 1262: (1265)

$h: Lack of hydraulic oil !
Fill up hydraulic oil !

Help:

Hydraulic oil level too low.
- Fill up hydraulic oil.

Fault No. 1268: (1271)

$h: Faulty monitor channel for level swing ring gear-lube system.

Help:

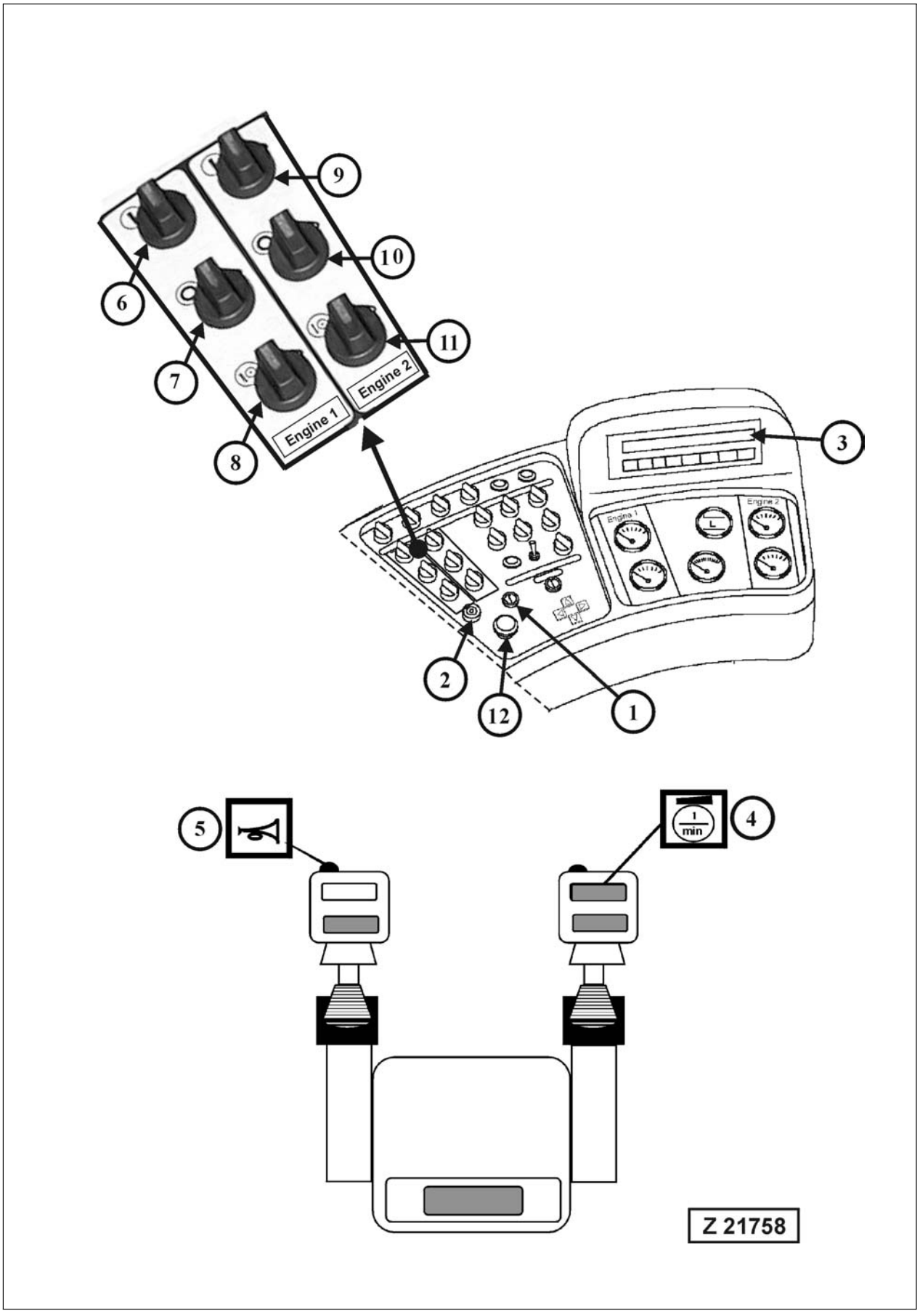
Level sensor B109 shows inadmissible values.
- Check monitor channel and sensor.

Fault No. 1274: (1277)

$h: Problems pump control.

Help:

Problem in the pump control.
- If the fault further exist, inform service.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Z 21758

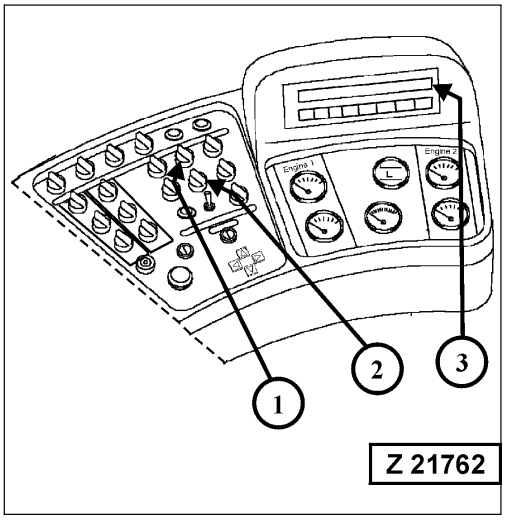
SWING CIRCLE LUBRICATION SYSTEM ”SLS”

Repairs on the swing circle lubrication system with the Engine running or with the Engine OFF and Main Switch Key in ON position

If repairs under the above conditions have been carried out it is necessary to reset the control circuit of the lubrication system by actuating the rotary switch (2), illust. (Z 21762) for a full lube cycle.

If this manually actuated lube cycle is not being carried out, the fault message ”LUBE SYSTEM FAILURE” will remain on the ECS display (3).

Resetting of the lube system control circuit can also be done by shutting down the engine and switching OFF the main switch key.



NOTICE
For more information regarding inspection, trouble shooting and maintenance of the lubrication system, refer to the separate manual LUBRICATION SYSTEMS in part 3 of this binder.

ADJUSTMENTS OF THE SWING CIRCLE-LUBRICATION SYSTEM

The following adjustments can be made in the service menu of the ECS system:

Level 4: Service Menu / Settings

- *PAUSE TIME
- *MONITORING TIME
- *PRESSURE RELIEF TIME
- *LUBE CYCLE COUNTER

Refer to section "ELECTRONIC MONITORING AND CONTROL SYSTEM ECS" for description of adjustment procedure.

4.3 FUEL AND LUBRICANTS

Point of Lubrication	Lubricant	Ambient Temperature °C	Viscosity Grades		Quality Grades DIN/API
Engines	Refer to ENGINE OPERATION AND MAINTENANCE MANUAL for Specifications of Engine Oil, Coolant and Fuel.				
Hydraulic System	Hydraulic oil “HLP or “HLPD” with ZINC anti-wear additives *1)	- 25 to + 15	22	-	DIN-51524 T.2 - HLP
		-15 to + 25	32	or 32 - 68	
		-10 to + 30	46		
		- 5 to + 35	68		
		+ 5 to + 50	100	-	
Travel gears and Swing machineries	Hydraulic oil "HLP”	- 40 to + 10	HLP T32		DIN 51524. T.2 - HLP
	Gear oil ”CLP” *2)	-15 to + 50	CLP 220		DIN 51517 3 - CLP
Brake housings and Motor adapter housings of Swing machineries and Travel Gears	Engine oil	all	SAE 10		
	or Hydraulic oil		HLP 22 or HLP 32		DIN 51524T.2 - HLP
PTO’s (Pump distributor gears)	Hydraulic oil ”HLP”	- 40 to + 10	HLP T32		DIN 51524. T.2 - HLP
	Gear oil ”CLP” *2)	-15 to + 50	CLP 150		DIN 51517 3 - CLP
Fan bearing housings of Radiators and Hydraulic oil coolers	Gear oil ”CLP”	all	CLP 150		DIN 51517 3 - CLP

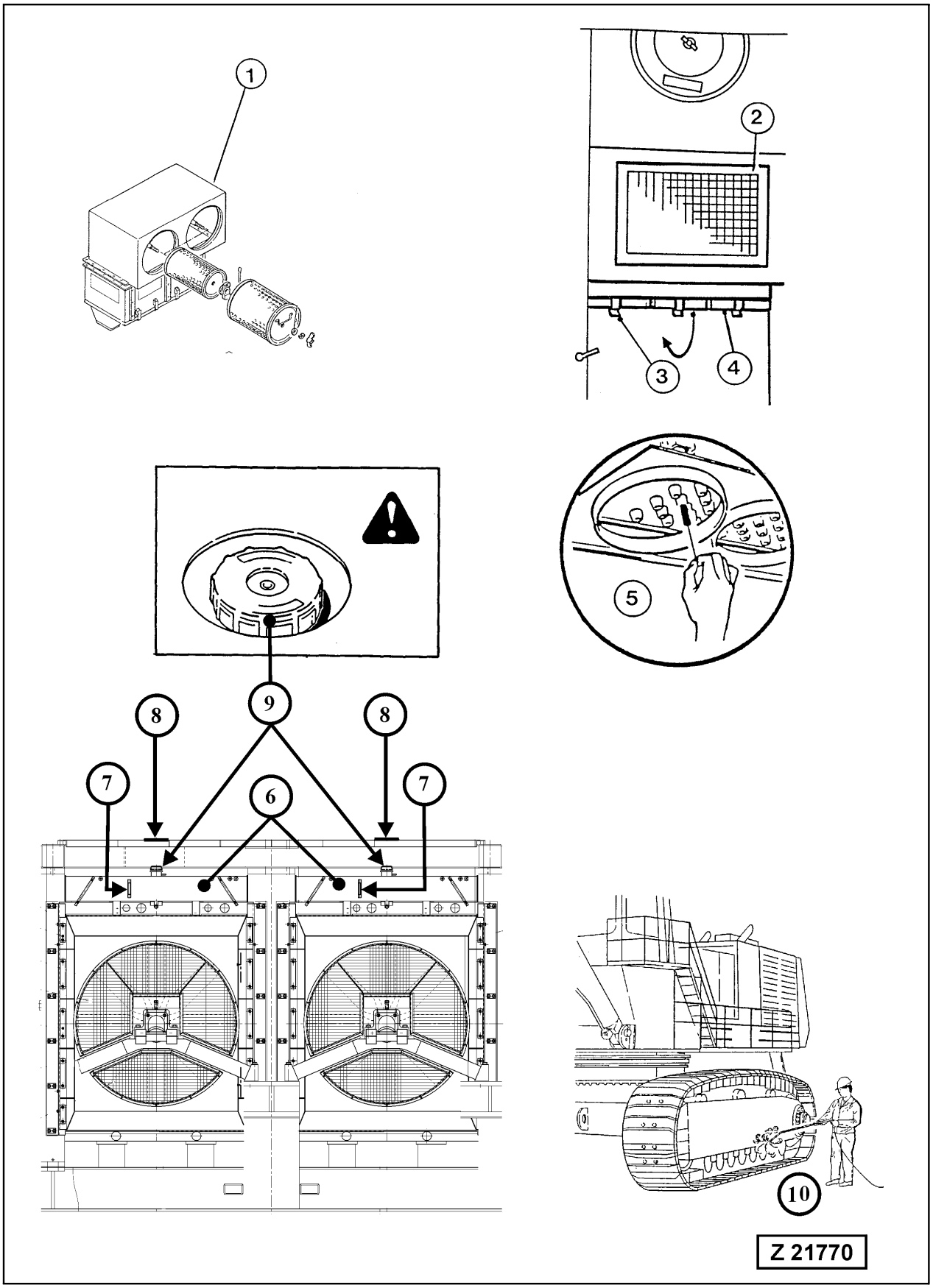
NOTICE

- ***1) DO NOT mix ZINC-FREE Hydraulic oils with Hydraulic oils containing Zinc.**
  DO NOT mix Mineral Hydraulic oils with Synthetic Hydraulic oils.
  Mixing of the above oils, will reduce anti wear properties and oxidation stability of the oil. Quick plugging of the oil filters in the hydraulic system will occur.

- ***2) Refer to the chart ”Gear Oils” in part 3 of this binder for the released gear oil qualities and viscosity grades.**

REMARK

The lubricating instructions in this book refer to the recommended grade specifications. Damages caused by using lubricants other than specified are not covered by the manufacturer’s warranty.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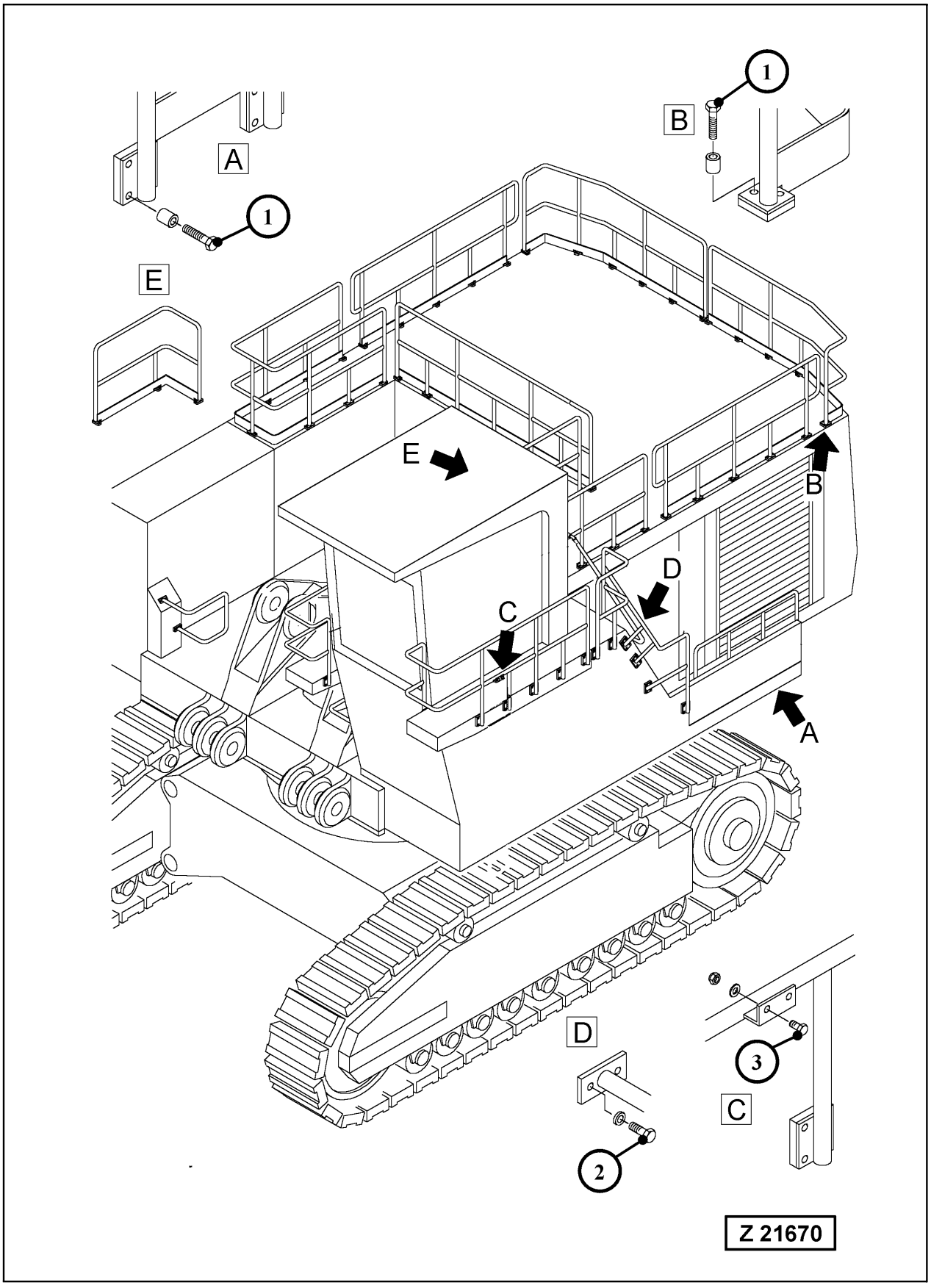
Z 21770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Z 21670

High-Strength Bolt Connections (continued)

Check condition and fastening of railings (01/02) and of steps (03, 04, 05 and 23).
See details (A - D) for mounting parts arrangement.

Legend for illust. Z 20619

(A)	Mounting assembly for steps (03) to steel pipe, version I
(B)	Mounting assembly for railing posts to steps (03)
(C)	Mounting assembly for steps (03) to boom welded brackets
(D)	Mounting assembly for steps (03) to steel pipe, version II

4.13 EVERY 2000 OPERATING HOURS OR YEARLY