

PARTS & SERVICE NEWS

REF NO.

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DATE

December 4, 2003

(C)

Page 1 of 26

SUBJECT: Replacing of the VHMS – Controller on PC4000-6

PURPOSE: To expound on the steps for replacing the existing VHMS controller with new one and the latter's setting

APPLICATION: PC4000-6

FAILURE CODE: DA00Z9

DESCRIPTION:

1. Introduction
2. Part number
3. Precautions for Controller Replacement
4. Appendix
5. VHMS initial setting check sheet

1. Introduction

PC4000 are equipped with a VHMS controller as part of their standard specifications. The VHMS controller is a device to control the CGC display and to record the history of machine operation.

The VHMS controller is constantly powered direct by a battery and its function is to compile and record the day's operation in the VHMS memory, after the engine is switched off, while checking data consistency with the record up to the previous day. This work takes a certain amount of time, i.e. approx. 10 seconds. For this reason, cautions have to be taken in advance, when disconnecting the power to the VHMS. Such disconnection usually takes place with machines equipped with a battery isolator and a turbo-timer, when switching off the engine for emergency, right after the turbo timer has been set in operation, or when the battery terminal is disconnected immediately after switching off the starting switch, say for welding. In such case, the compilation and write-in work in the VHMS memory is interrupted, resulting in the controller program being damaged and the initial screen remaining in the CGC display unchanged.

Hence be sure to provide an interval of more than **3 minutes** after the engine is switched off and before disconnecting all the electric circuits.

This Parts and Service News describes the procedures for you to follow when replacing the existing VHMS controller with a new one.

2. Part No.

Part No.	Part Name
89200040	Controller

3. Precautions for Controller Replacement

3.1 Before starting with the replacement

A. Download the VHMS data, if possible.

First download the data on failure history in the existing VHMS controller that have been stored up to that moment, since they will likely be lost by the replacement. Next send them to WebCare.

B Disconnect the normal VHMS power source.

- i) Terminate the normal power supply by turning off the ignition key.
- ii) Maintain constant power supply for the controller at least for more than two minutes.
- iii) Then terminate constant power supply for the controller by disconnecting the power source.

3.2 Procedures for replacement and setting of VHMS system and actions after replacement

A. Precautions for replacement:

Replace the existing VHMS system with new one, taking care that no excessive force or shock is applied to the main body, the harness, etc.

Relative to the VHMS connectors, disconnect CN1 first and connect it last, since it serves as a power supply cable, too.

B. Controller setting after replacement

When a VHMS controller is replaced, data setting has to be done anew. Make correct setting, referring to the instructions on the following pages. Items to be newly set.

No.	Settings	Page
1	Operator: USER ID; Truck counter	4; 5
2	Service: Machine model; Serial No. (Machine)	6; 7
3	Engine model; Serial No. (Engine)	8; 9
4	Maintenance Acknowledgement	10; 11
5	Central Lubrication System	12; 13
6	Swing Lubrication System	14; 15
7	Language; Operating Hours; Date	16; 17
8	Time; GMT Ref.	18; 19
9	Hydraulic Oil Viscosity; Gear Oil Viscosity	20; 21
10	Message ON/OFF; PLC-automatic ON/OFF	22; 23
11	Shut-Down ON/OFF	24; 25

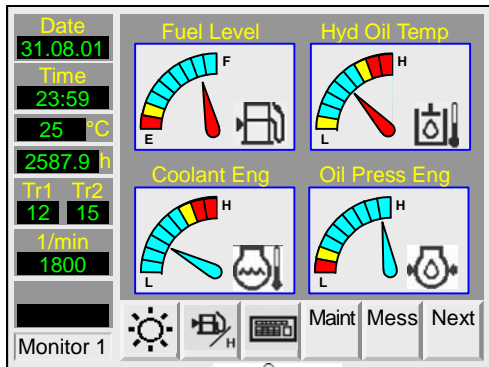
C. Disposal of replaced VHMS controller

Return the replaced VHMS controller to the KMG Service Department, in accordance with its request for return of fault parts. When returning the controller, be sure to attach a tag to it, declaring that it is the VHMS controller replaced under this Parts and Service News.

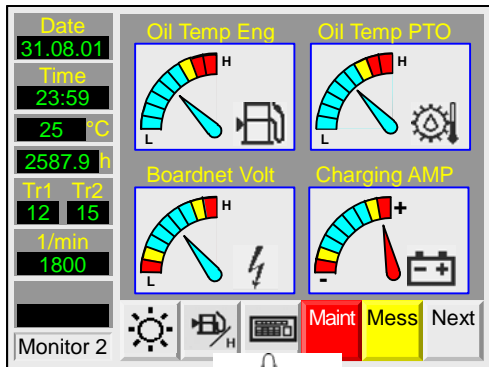
Also the attached form "VHMS initial setting check sheet" has to be send to KMG-Service Department.

4. Appendix

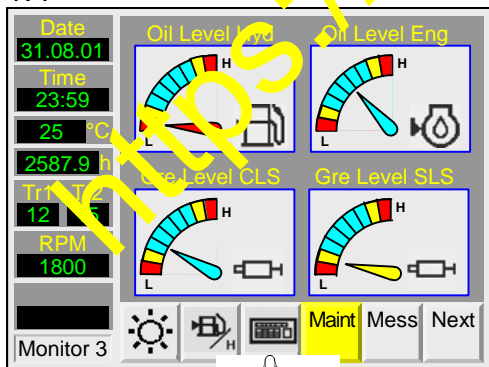
1.2



1.3

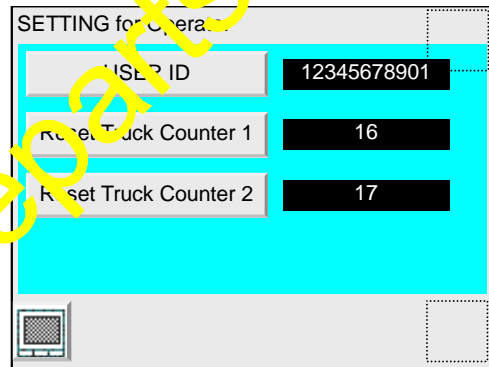


1.4



Operator Menu	
0.0	Initialization
1.1	Information
Machine Conditions:	
1.2	Monitor1 Standard monitor
1.3	Monitor2 Expansion monitor
1.4	Monitor3 Expansion monitor
1.2.1	Screen Adjustment
1.2.2	Consumption
1.2.3	Operator ID
1.2.4	Maintenance Monitor
1.2.5	Current Messages

1.2.3

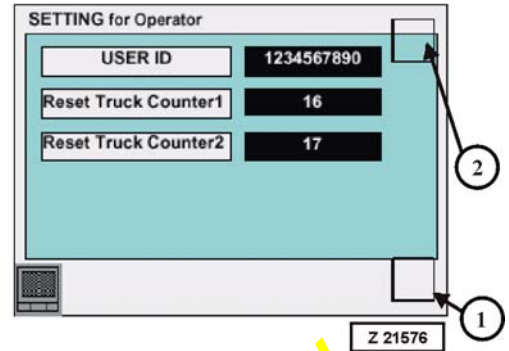


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14.1.7 Settings for Operator, Screen (No. 1.2.3)

See illust. (Z 21576)

When the button -Settings for Operator is pressed, the screen No. 1.2.3 is displayed.

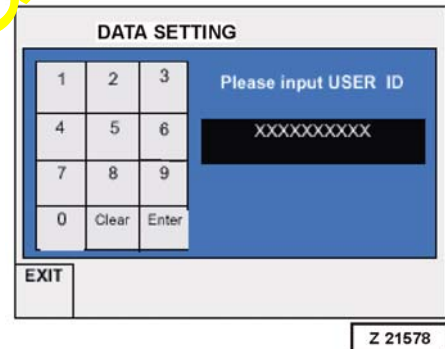


- There are two hidden touch switches on the SETTING for Operator screen, see (1) and (2) illust. (Z 21576). These switches are used by service personnel for entering the Service Menu. To enter the Service Menu, first press the lower button (1) and then the upper button(2).

Entry of the Operator identification number

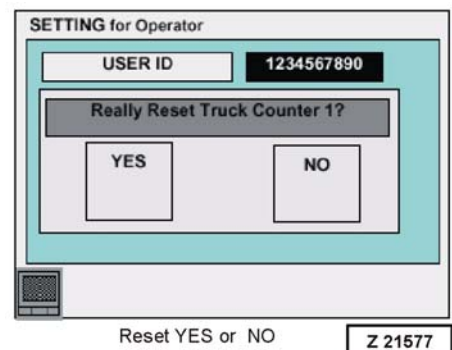
(USER ID button):

In the selection menu for settings (1.2.3) appears on the right side of the button "USER ID" the actual eleven-digit Operator identification number. The use of the button "USER ID" branches into the setting mode for the Operator identification number, see illust. (Z 21578). Without prior entry, 0 is predetermined as identification number. To distinguish Operators, it is possible to enter a eleven-digit Operator identification number. To this effect, the Clear-button puts the cursor onto the first position (left side). Data entry may be started via the number buttons. If eleven numbers were entered each further entry will be ignored. Using the Enter-button the identification number will be taken over and branched back to the selection menu (1.2.3).

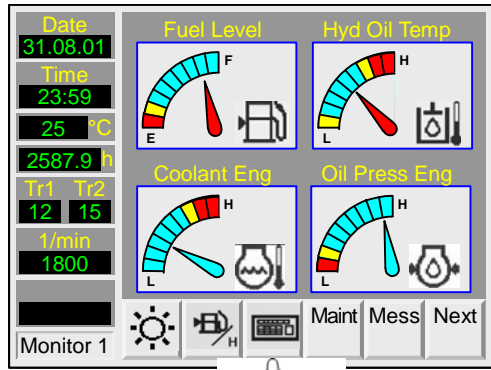


Resetting the Truck Counter:

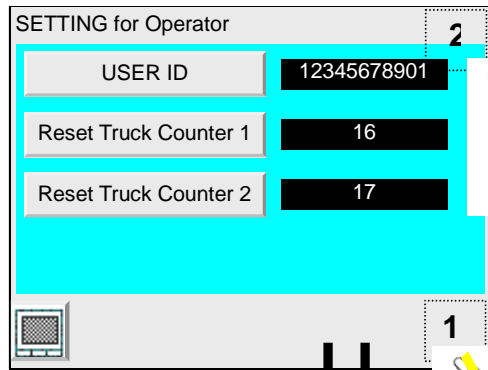
Press the button "Reset Truck Counter 1" the display changes to "YES – NO" decision screen, picture (Z 21577). When pressing the "YES" button the counter 1 will be reset to zero. Truck counter 2 is reset in the same way.



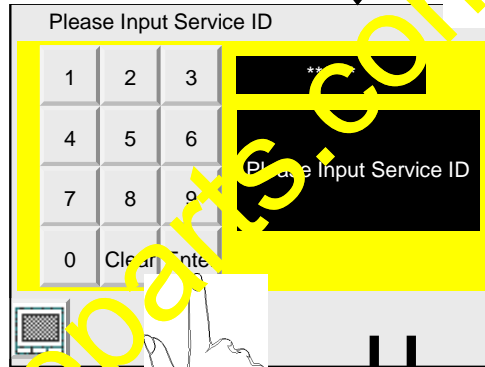
1.2



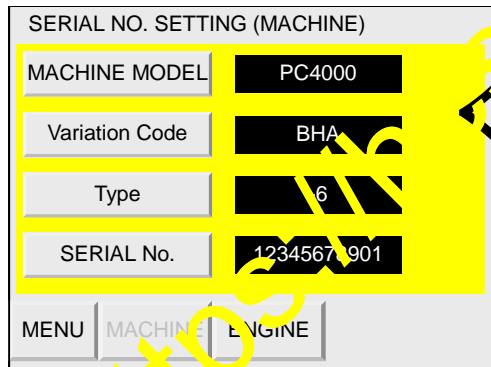
1.2.3



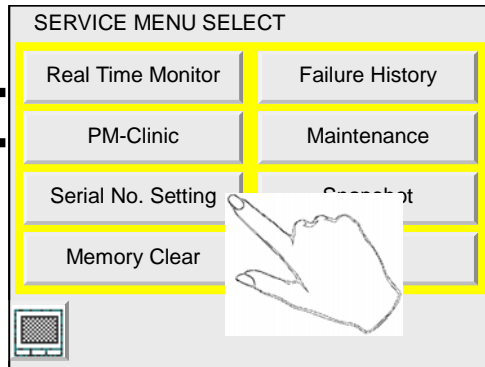
2.0



4.3.1

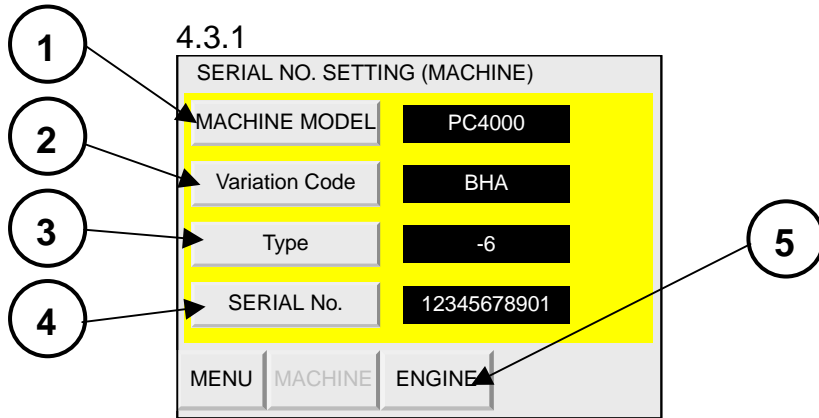


3.1

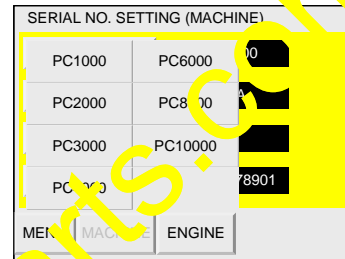


<http://www.repairparts.com/>

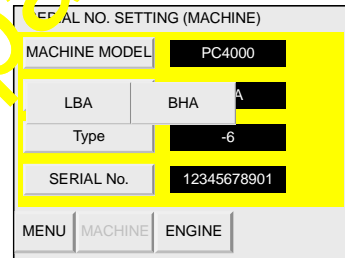
14.2.6 Serial No. Setting (No. 4.3.1) Machine



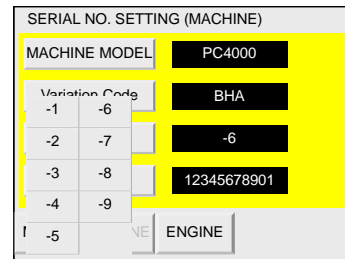
- (1) Machine model setup button:
When you press this button,
the model name selection menu appears.



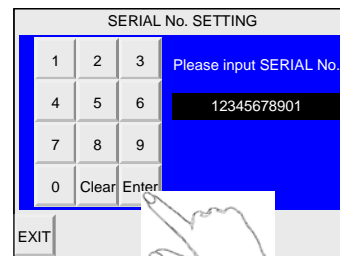
- (2) Variation code setup button:
When you press this button,
the LBA and BHA selection menu appears.



- (3) Type setup button:
When you press this button,
the type selection menu appears.

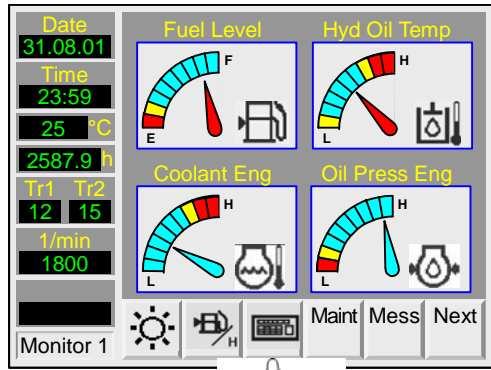


- (4) Serial number setup switch:
Press this switch to set the serial number.

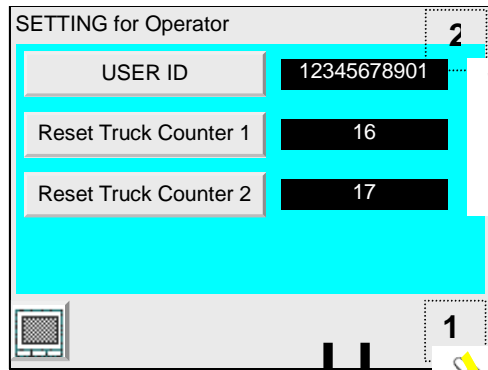


- (5) Engine serial number setup switch:
Press this switch to change the display to the engine serial number setup screen.

1.2



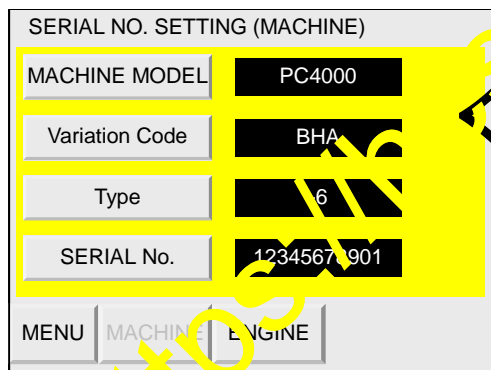
1.2.3



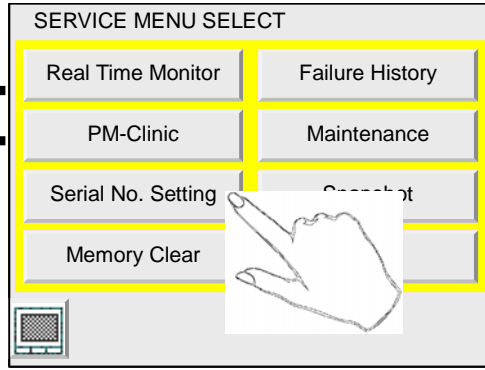
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4.3.1

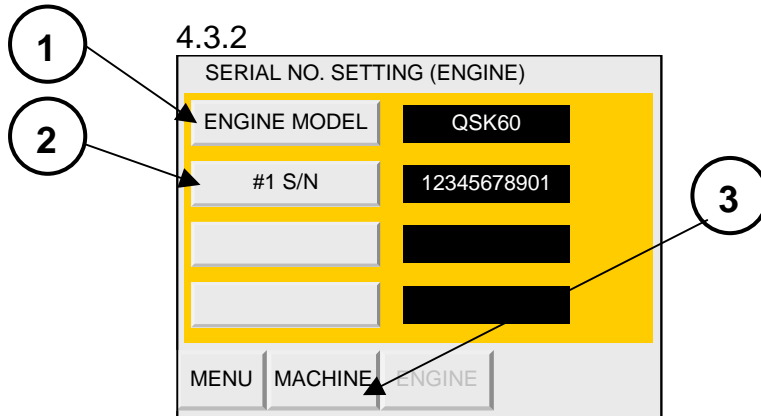


3.1

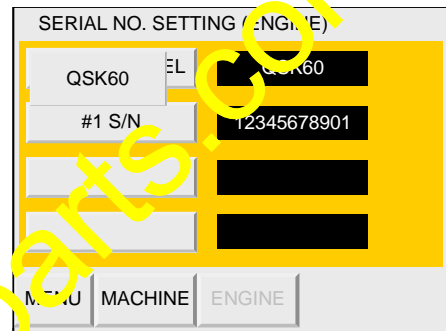


<http://www.repairparts.com/>

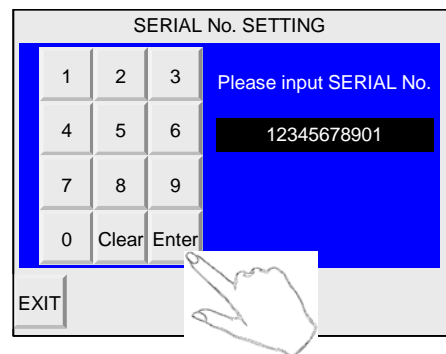
14.2.6 Serial No. Setting (No. 4.3.2) Machine



- (1) Engine model setup button:
When you press this button,
selectable engine models are displayed.
Select a desired one.

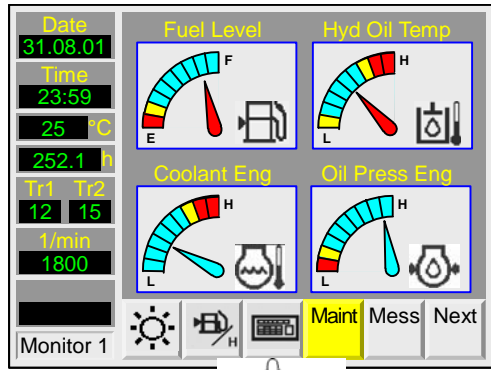


- (2) Serial number setup button:
Press this button and then set the serial number in the screen below.

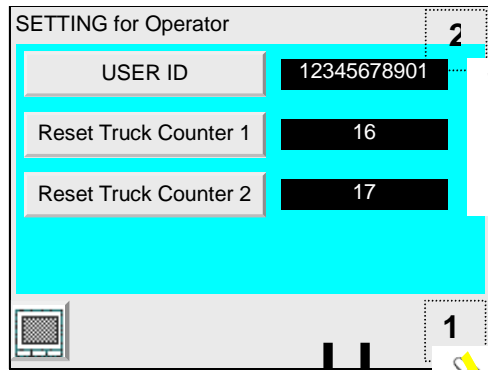


- (3) Machine serial number setup switch:
Press this switch to change the display to the machine serial number setup screen.

1.2



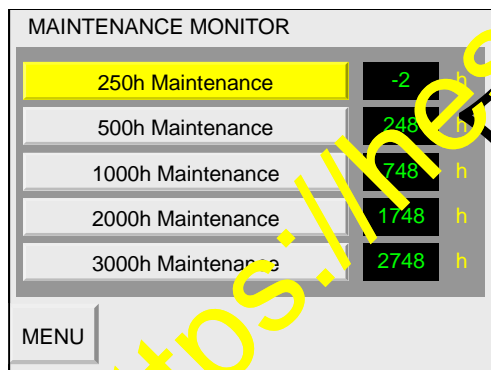
1.2.3



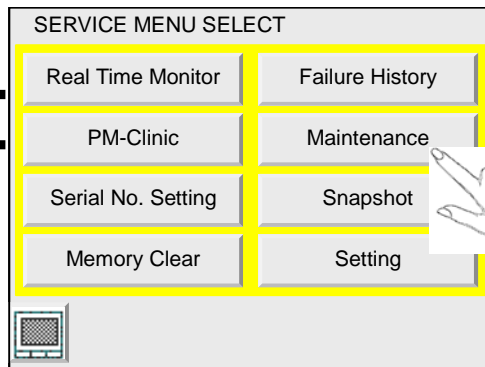
2.0



4.5



3.1



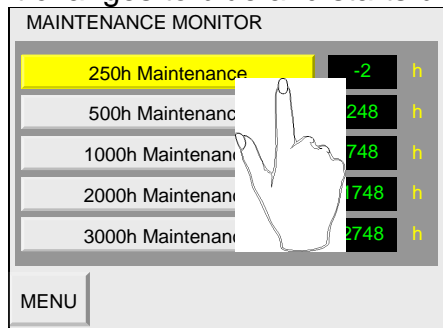
<https://www.inespareparts.com/>

14.2.8 Maintenance Monitor (No. 4.5 – 4.5.1) Maintenance Acknowledgement

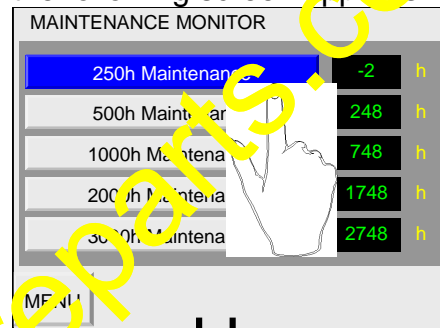
Maintenance confirmation through Service Personnel

Maintenance indicated with yellow or red background color should be confirmed through Service Personnel in the Service Menu subsequent to the execution of the maintenance. With the confirmation the actual value maintenance number is increased by 1. Thus, the length of the maintenance cycle is added to the display value and the gray color will appear in the maintenance display. The button in the Service Menu used for maintenance confirmation then turns gray instead of yellow and is then without any function. The confirmation of the maintenance is then stored. Example: 250h Maintenance is required (yellow), service meter reading is 252 Hours.

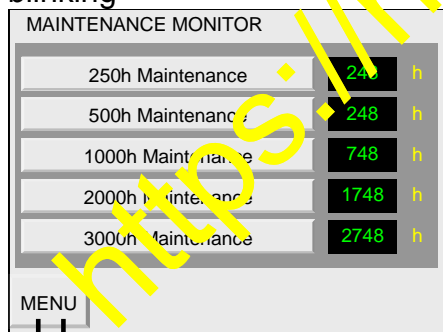
When you select the yellow button, again, it changes to blue and starts blinking.



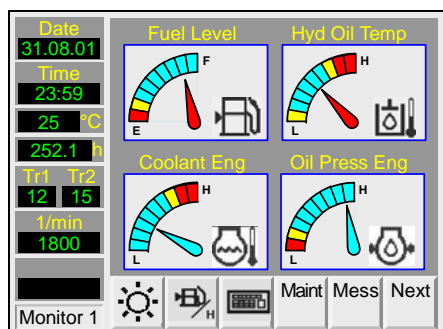
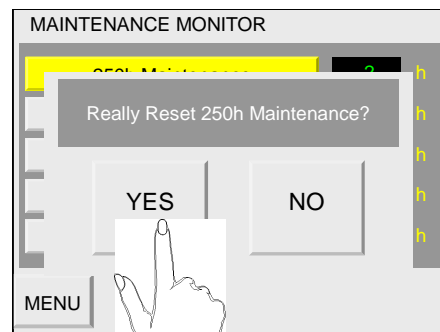
When you press the blinking button the following screen appears.



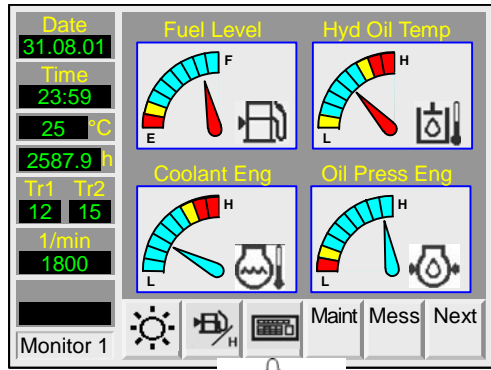
If the display color changes from yellow to grey, also the "MAINT" color button changes to grey blinking



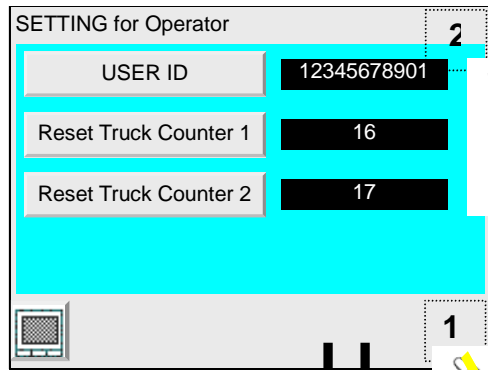
When you press the YES button, the changes back to grey and stops blinking



1.2



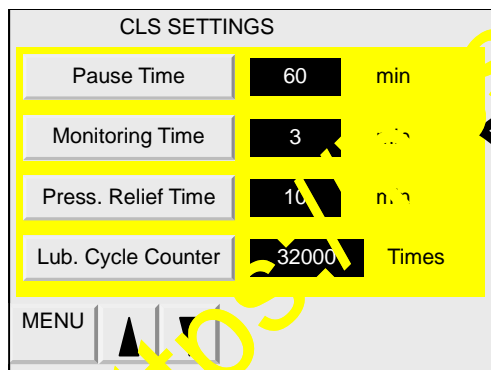
1.2.3



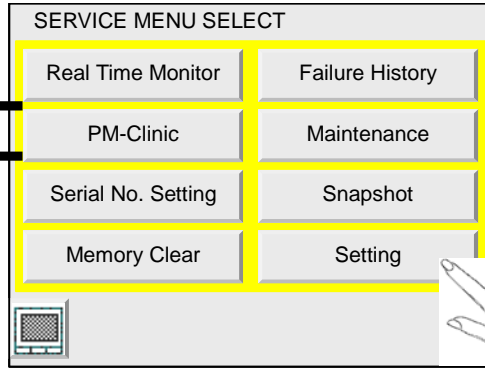
2.0



4.8.1



3.1



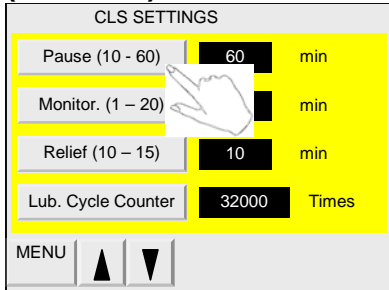
<http://www.spareparts.com/>

14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

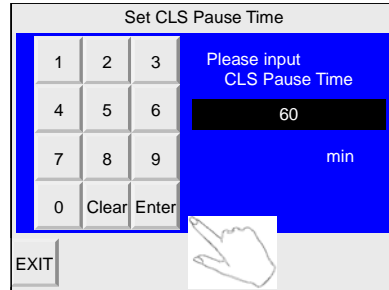
Central Lubrication System CLS

(No. 4.8.1)

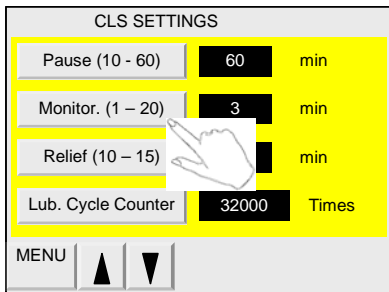
Only an integer can be entered as a numerical value.
Decimal numbers cannot be entered.



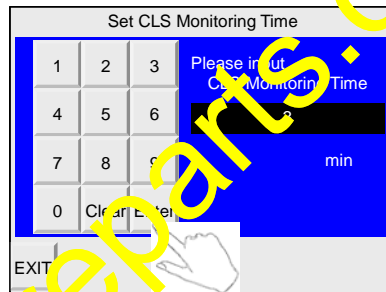
Pause Time setting button:



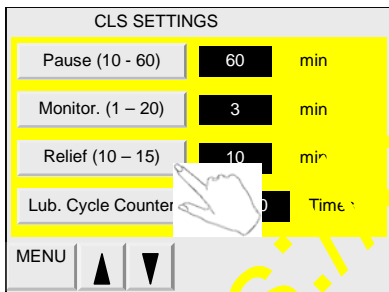
Enter the time depending on the operating conditions.
Only values between 10 and 60 minutes can be entered.



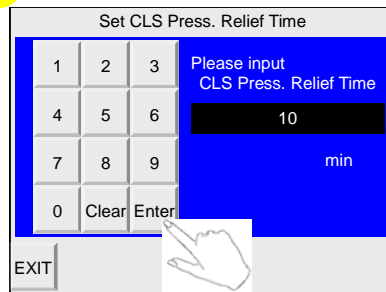
Monitoring Time setting button:



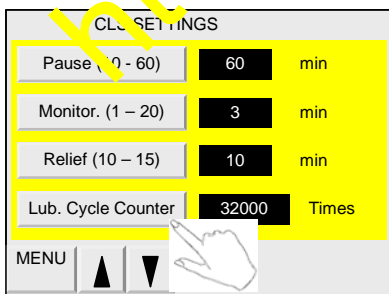
Enter the time depending on the operating conditions.
Only values between 1 and 20 minutes can be entered.



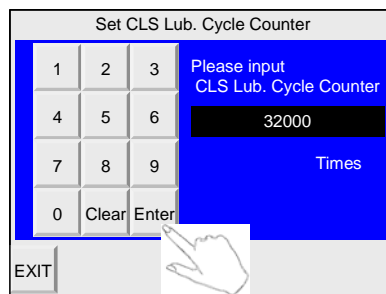
Pressure Relief setting button:



Enter the time depending on the operating conditions.
Only values between 10 and 15 minutes can be entered.

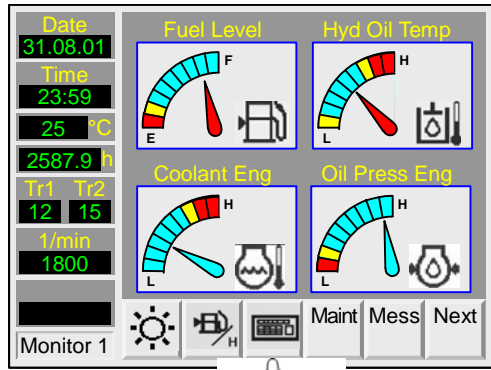


Lub. Cycle Counter setting button:

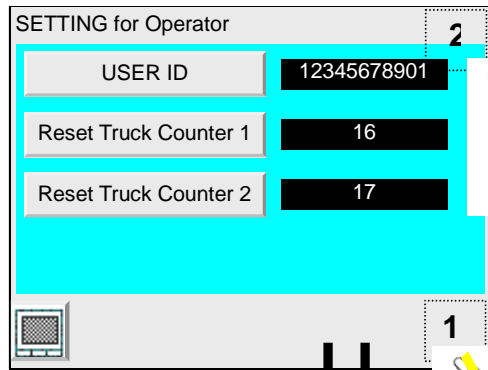


It is recommendable to keep the counter reading over the live time of the machine.
If necessary enter the number of the last download.

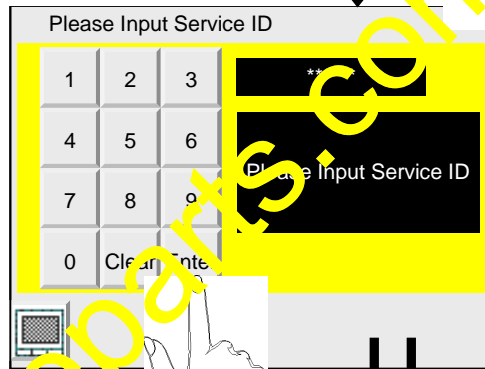
1.2



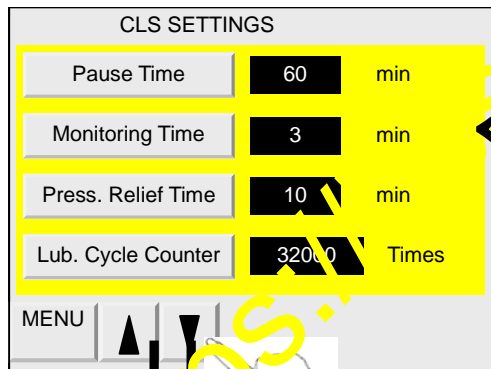
1.2.3



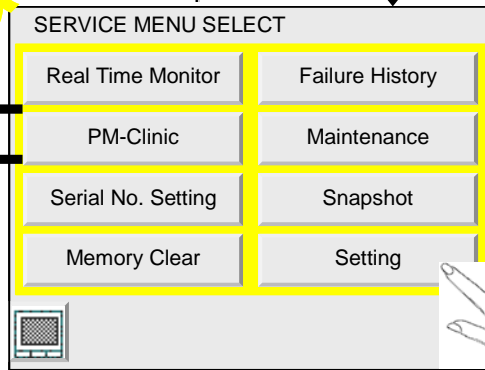
2.0



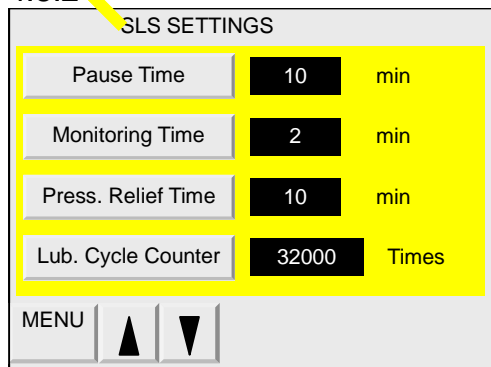
4.8.1



3.1



4.8.2



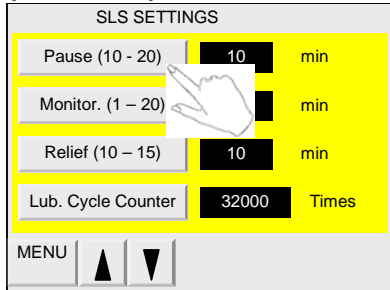
<http://www.repairparts.com/>

14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

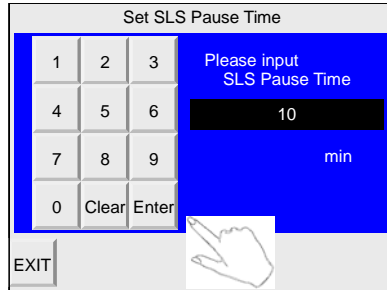
Swing Lubrication System SLS

(No. 4.8.2)

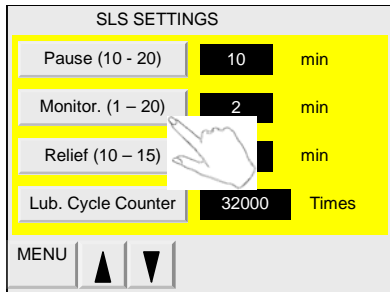
Only an integer can be entered as a numerical value.
Decimal numbers cannot be entered.



Pause Time setting button:



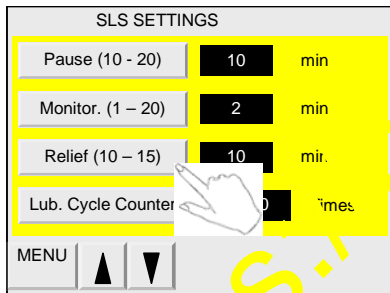
Enter the time depending on the operating conditions.
Only values between 10 and 20 minutes can be entered.



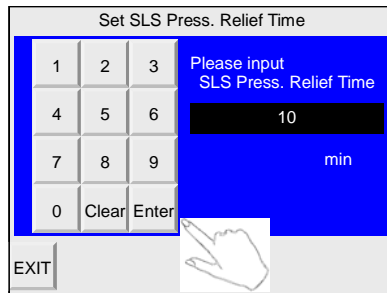
Monitoring Time setting button:



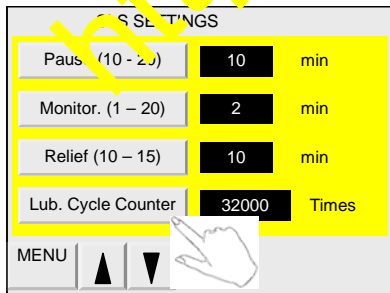
Enter the time depending on the operating conditions.
Only values between 1 and 20 minutes can be entered.



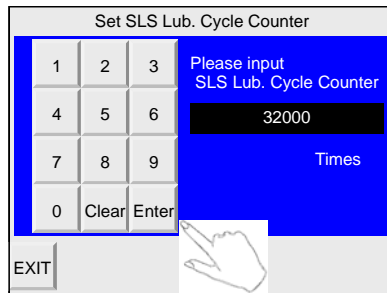
Pressure Relief setting button:



Enter the time depending on the operating conditions.
Only values between 10 and 15 minutes can be entered.

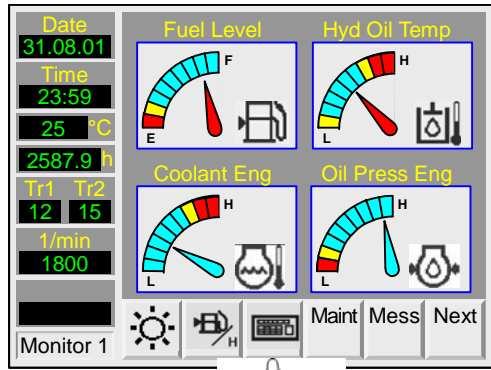


Lub. Cycle Counter setting button:

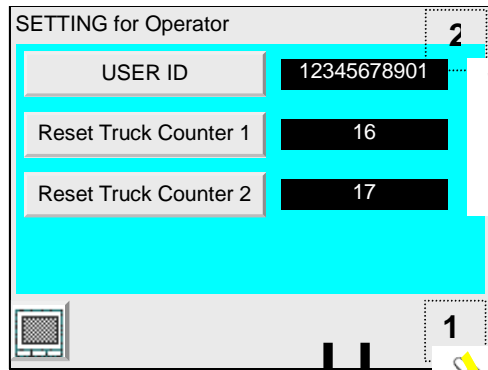


It is recommendable to keep the counter reading over
the live time of the machine.
If necessary enter the number of the last download.

1.2



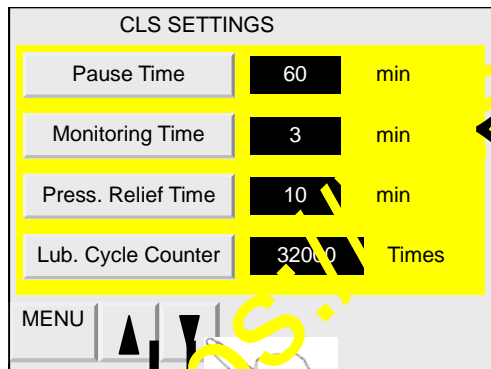
1.2.3



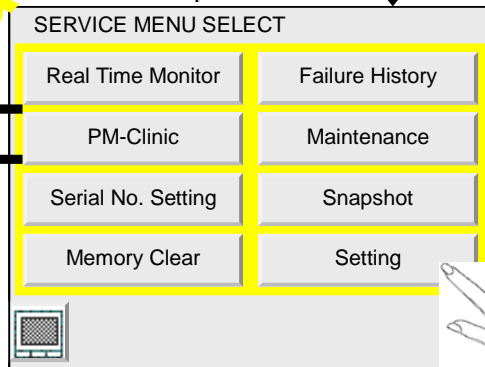
2.0



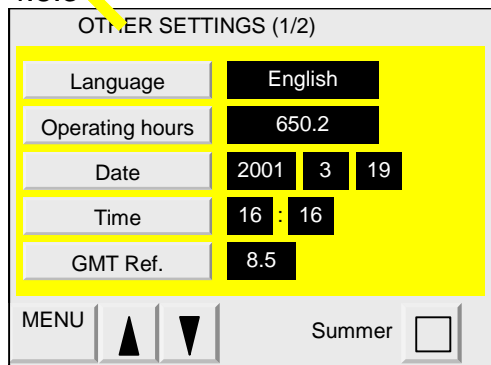
4.8.1



3.1

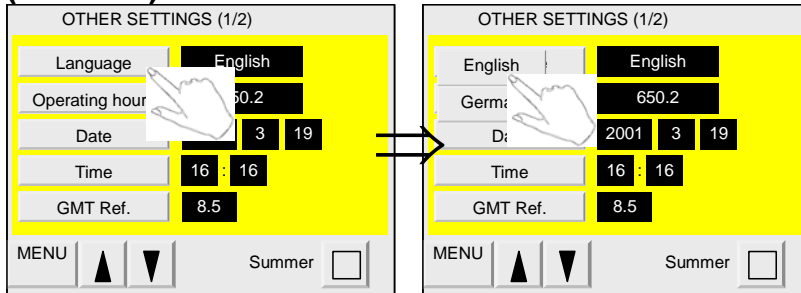


4.8.3



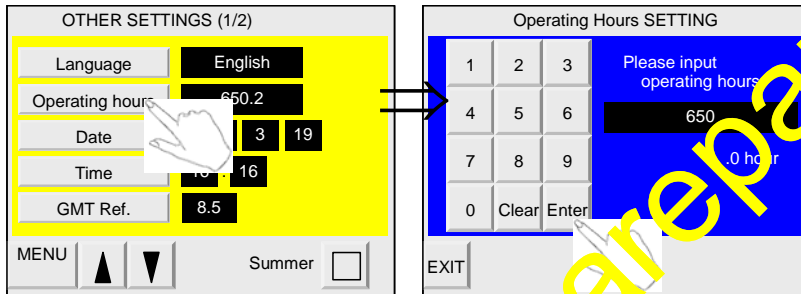
14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

Other Settings 1/2
(No. 4.8.3)



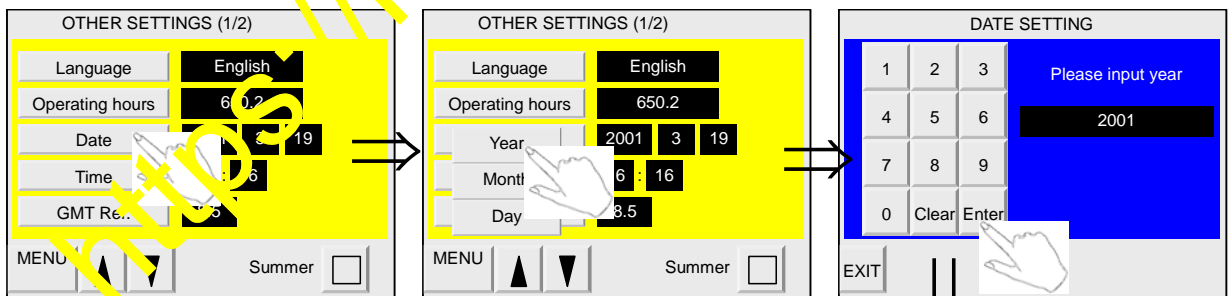
Language selector button: When the language menu appears, select a desired language.

The CGC is reset on a software basis. The screen disappears and then the software is restarted from the opening screen.

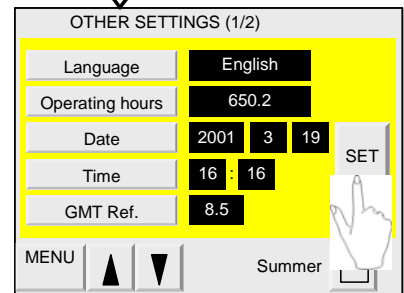


SMR setting button: Only an integer can be entered as a numerical value. Decimal numbers cannot be entered.

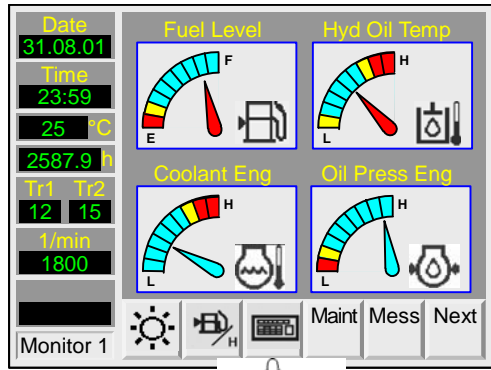
Set the service meter only while the engine is stopped.



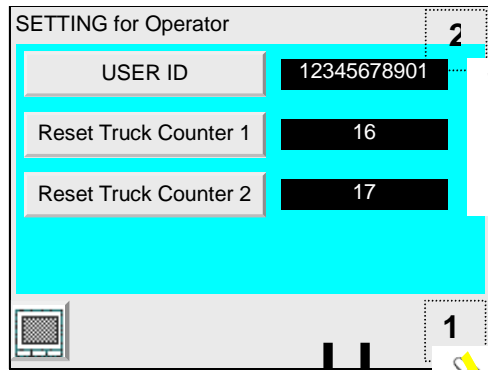
For all DATE SETTINGS, i.e. Year Month and Day it is necessary to confirm the new settings by using the SET button.



1.2



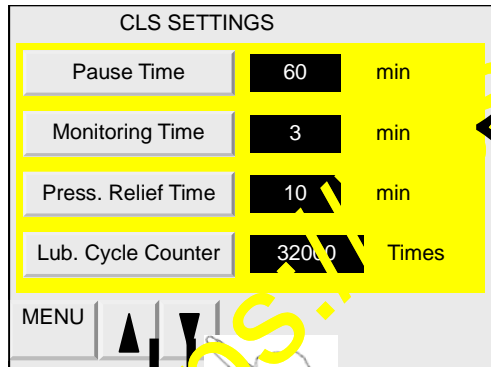
1.2.3



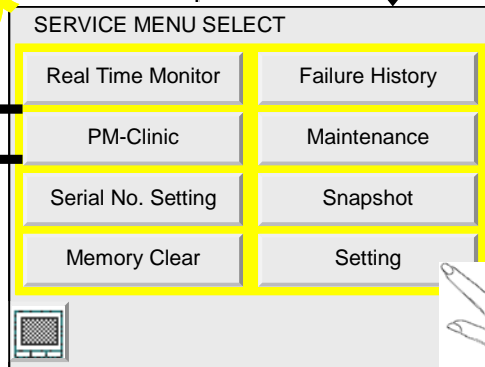
2.0



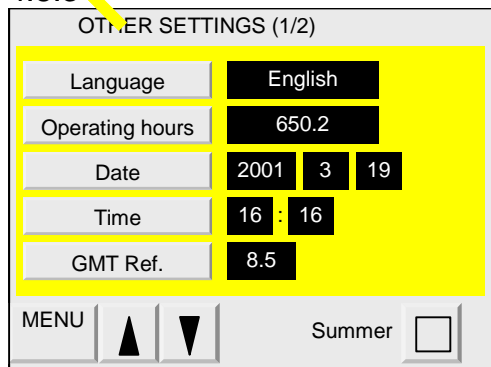
4.8.1



3.1

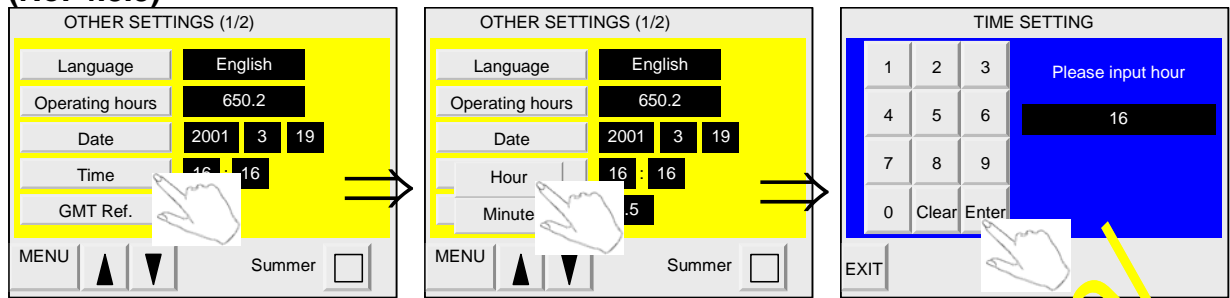


4.8.3

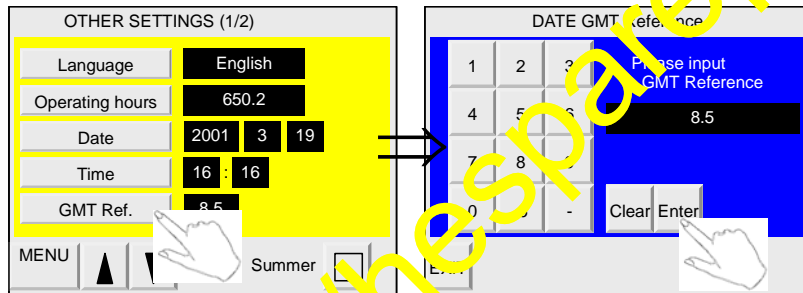
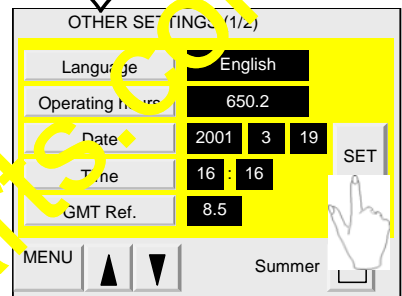


14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

Other Settings 1/2
(No. 4.8.3)

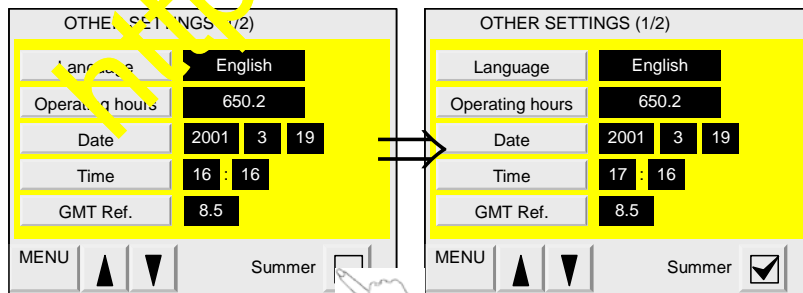


For all TIME SETTINGS, i.e. Hour and Minute it is necessary to confirm the new settings by using the SET button.



Time difference entry button:

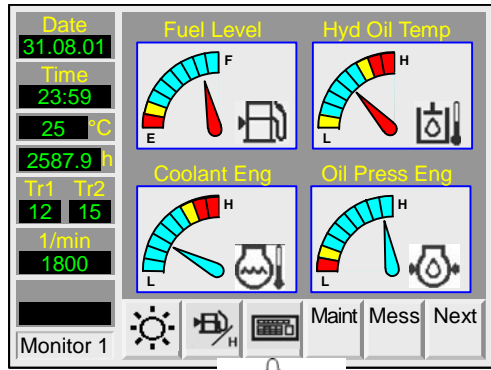
To set the local time difference (from the international standard time) in the VHMS controller, press the GMT Ref.-button and then enter time with the combination of the numeric keypad and the 0.5h setting.



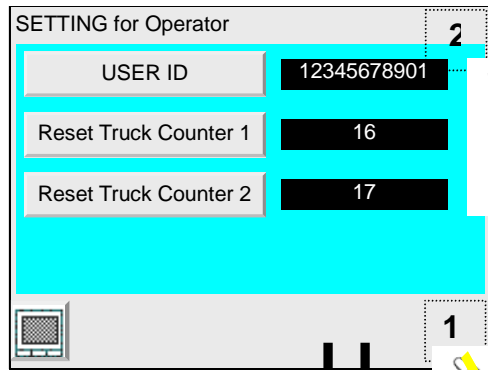
Summer time setup switch:

When pressed, a check mark appears and the time increases by 1 hour.

1.2



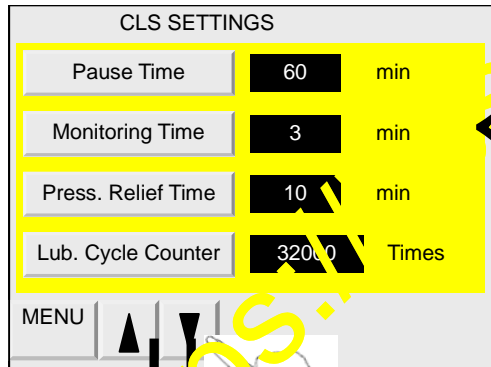
1.2.3



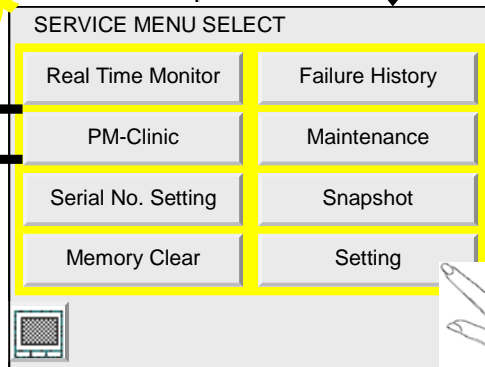
2.0



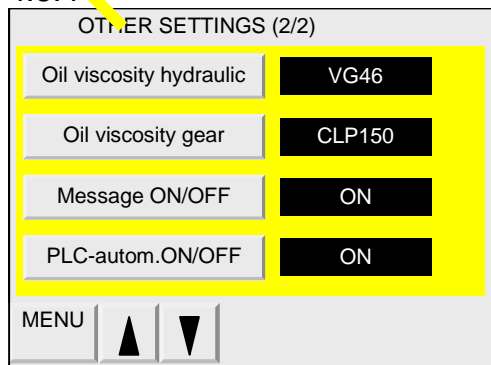
4.8.1



3.1

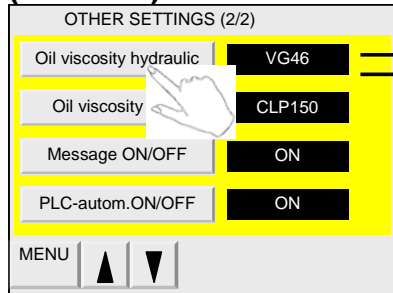


4.8.4

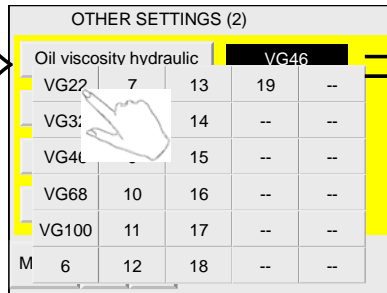


14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

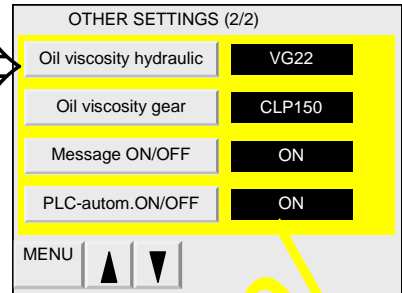
Other Settings 2/2
(No. 4.8.4)



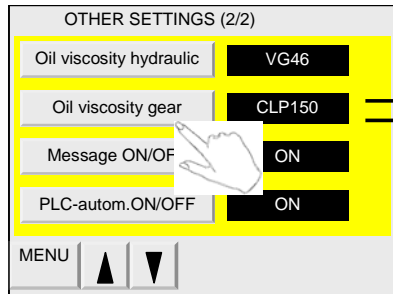
Hydraulic oil selector button:
now



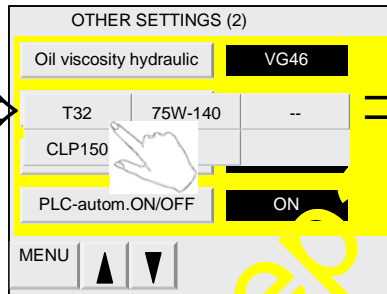
When the selection menu appears,
select the required hydraulic oil.



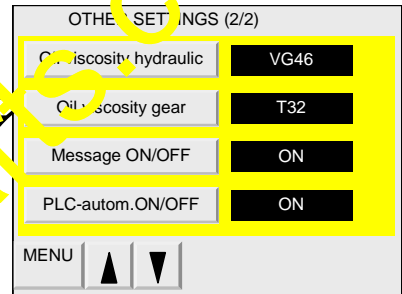
The selected hydraulic oil is
displayed.



PTO - gear oil selector button:



When the selection menu appears,
select the required gear oil.



The selected gear oil is now
displayed.

Select the required oil out of the table from the specific flowchart.

Temperatur Hydrauliköl temperature hydraulic oil													
Temperatur in °C temperature in °C	Viskosität nach ISO viscosity grade according to ISO												
	VG22	VG28	VG32	VG46	VG68	VG100	Harmony HVI 36	MOBIL DTE 16M	ESSO HE46	PANOLIN SYNTH 46	Shell Donax Dexron ATF	Biohyd SE-5 46	DEA Econa E46
TypNr. / type no.	1	2	3	4	5	6	7	8	9	10	11	12	12
T1 (1000 cSt)	-20	-14	-6	0	5	-22	-6	-16	-14	-22	-12	-15	-15
T2 (100 cSt)	9	16	25	32	39	14	32	22	22	15	23	23	23
T3 (30 cSt)	22	41	50	58	67	44	62	54	52	46	51	55	55
T4 (10 cSt -5°C)	51	69	79	85	85	80	85	85	85	82	85	85	85

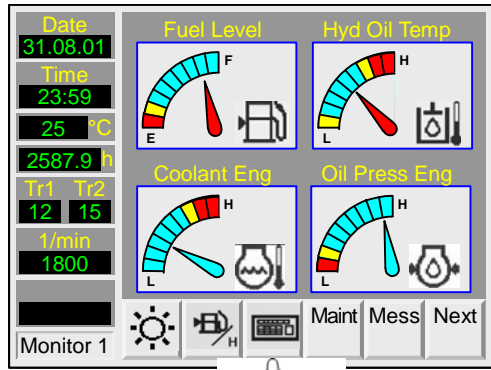
Temperatur Hydrauliköl temperature hydraulic oil										
Temperatur in °C temperature in °C	Viskosität nach ISO viscosity grade according to ISO									
	SUNVIS H/O 32	KAJO HEES 46	Shell Tellus Arctic Oil L32	PUINTOLUBRIC 822-300	AeroShell Fluid 4/41	Shell Tellus Oil T15	Shell Tellus Oil T46	.	.	.
TypNr. / type no.	13	14	15	16	17	18	19	.	.	.
T1 (1000 cSt)	-25	-15	-39	-14	-60	-27	-10	.	.	.
T2 (100 cSt)	12	23	-1	30	-20	-3	23	.	.	.
T3 (30 cSt)	42	55	38	67	6	21	53	.	.	.
T4 (10 cSt -5°C)	78	85	85	85	49	49	85	.	.	.

Temperatur Getriebeöl (TG) temperature gear oil (TG)			
Ölsorte nach ISO kind of oil according to ISO			
Temperatur in °C temperature in °C	T32	CLP150	Hypoid Oil 75W-140
TypNr. / type no.	1	2	3
TG	60	95	95

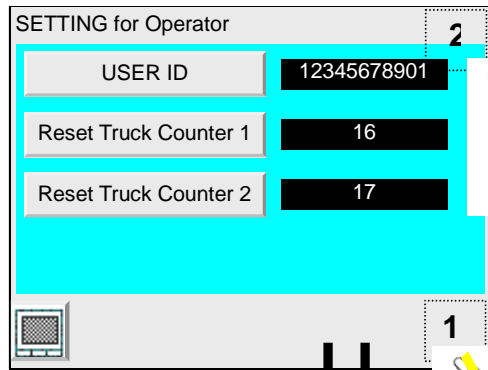
Tabellen, Definitionen tables, definitions		Typ Ident.-Nr. F. AM-Nr. Name Datum	
PC4000-6		E5705	
Ident.-Nr.:		Format Blatt/Blätter	
915 277 40 c		A3 05/ .	

Datum	Name	Computererstellte Zeichnung (CAD)	Bau Nr.:
11-JUL-01	Sanders/Thermann		08153
Ablaufdiagramm Flowchart		KOMATSU MINING GERMANY	
Copyright reserved (Schutzvermerk DIN 34 beachten)			

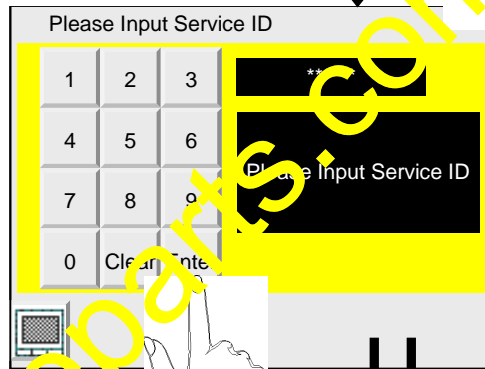
1.2



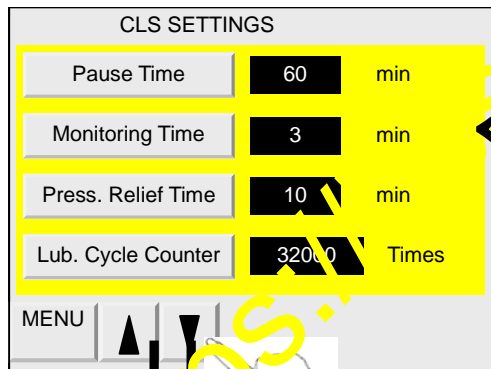
1.2.3



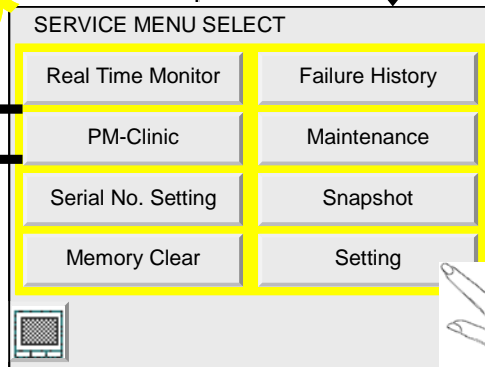
2.0



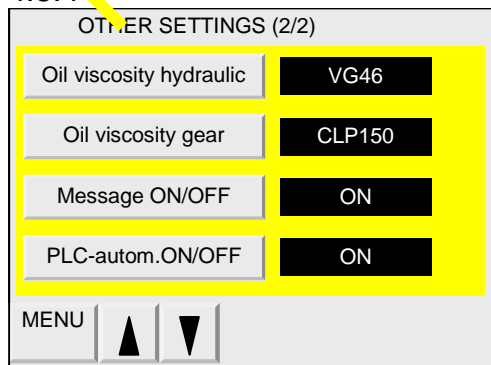
4.8.1



3.1



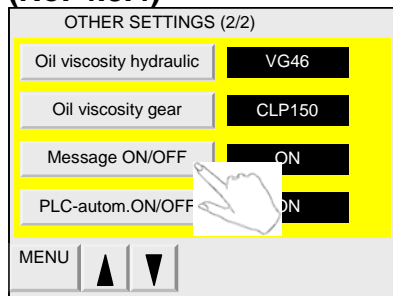
4.8.4



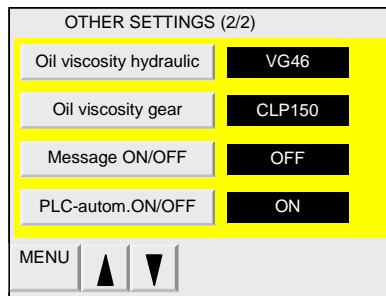
<http://www.repairparts.com/>

14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

Other Settings 2/2
(No. 4.8.4)



Message ON/OFF selector button:

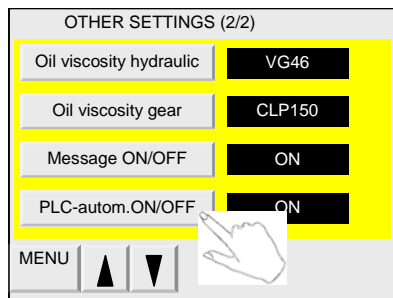


When pressed the display changes from ON to OFF or vice versa.

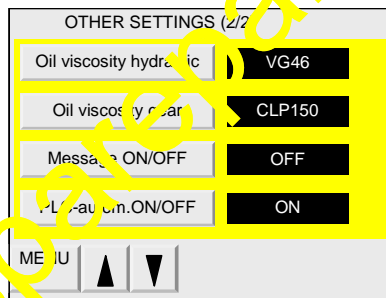
Messages ON/OFF

With the button "Messages ON/OFF" is shut down only the automatic display of actual messages for service purposes. In this case, setting works are not interrupted by accidentally occurred messages and the memory will not be filled with messages caused by testing operations. Control and monitoring functions remain active.

Each operation of the button "Messages ON/OFF" is saved in the service memory, invisible for the operator.



PLC-autom. ON/OFF selector button:



When pressed the display changes from ON to OFF or vice versa.

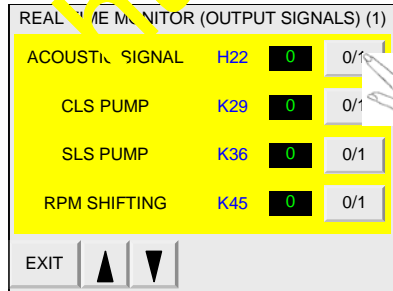
PLC-autom. ON/OFF.

With the button "PLC-autom. ON/OFF" it is possible to shut down all control and monitoring functions of the PLC. The PLC does not evaluate any entry signals and does not change any exit signals. With the menu pictures 5.10.1 "REAL TIME MONITOR (OUTPUT SIGNALS) (1)" up to 5.10.6 "REAL TIME MONITOR (OUTPUT SIGNALS) (6)" it is then possible to shut on and off any exit for service purposes without a warning interference.

Each operation of the button "PLC-autom. ON/OFF" is saved in the service memory, invisible for the operator.

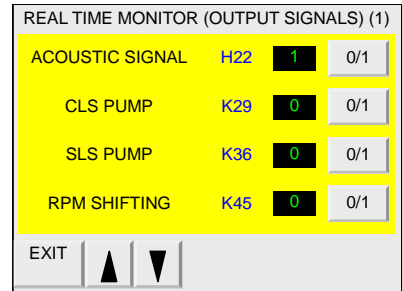
Example

5.10.1



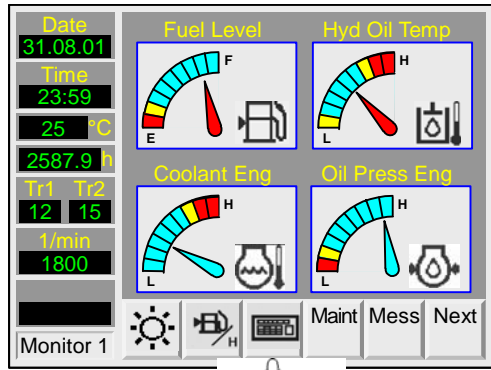
Output Signal 0/1 selector button:

When pressed the display changes from 0 to 1 and the

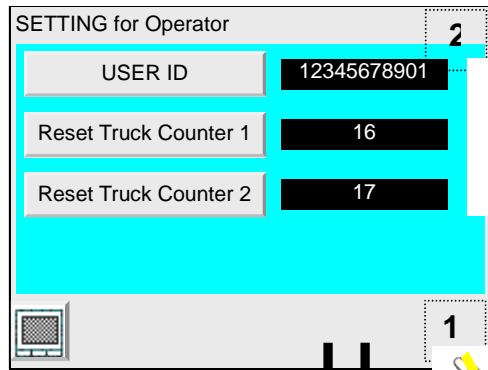


- With the function PLC-AUTOM. (evaluation) switched OFF all monitoring and control functions of the PLC are inoperative.

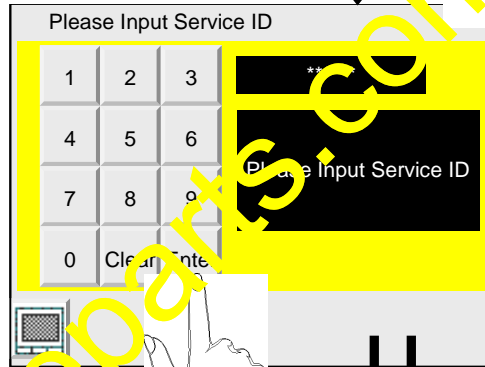
1.2



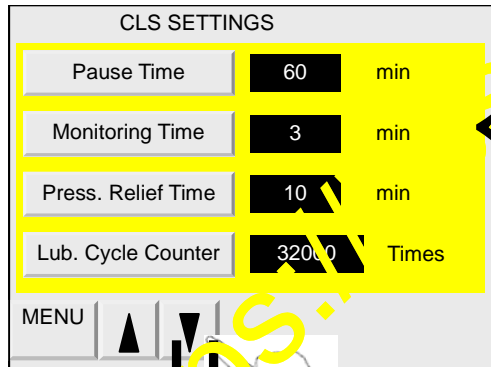
1.2.3



2.0

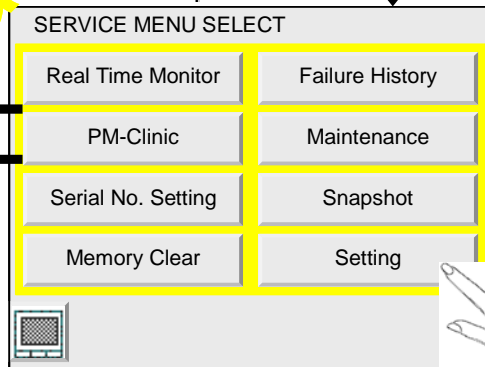


4.8.1

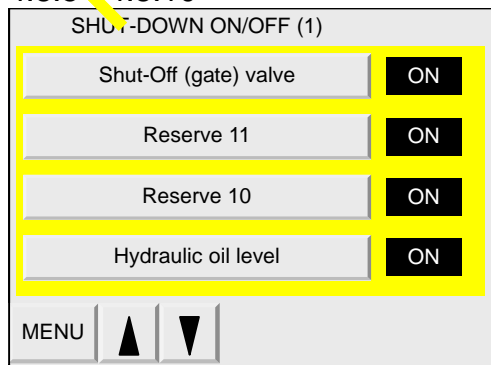


4X - 9X

3.1



4.8.5 - 4.8.10



14.2.11 Settings (No. 4.8.1 – No. 4.8.10)

Shut Down ON / OFF (No. 4.8.5 - 4.8.10)

For purposes of initial start-up and repair each Shutdown may be closed down individually. The shutdown remains without any time limit.

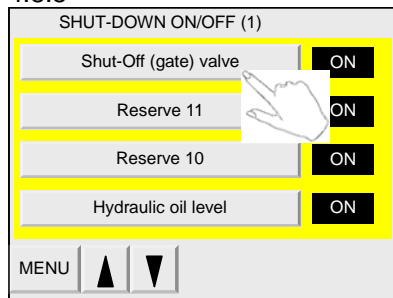
With the operation of the button the logical state of the respective Flag in the interface changes to the PLC.

With the Flag set, the PLC will not activate the shutdown. However, there will result a shutdown message.

Each operation of the button is saved in the service memory invisible for the operator.

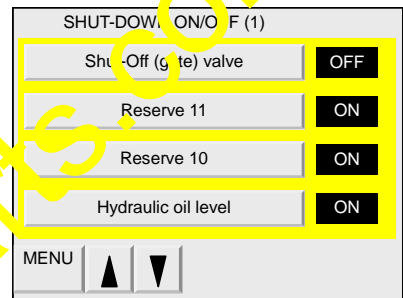
Example:

4.8.5

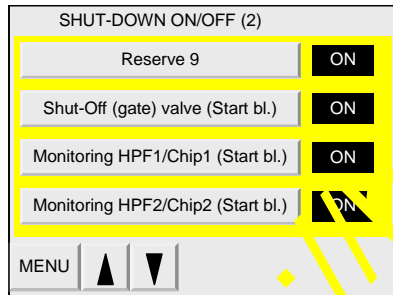


Shut-Down ON/OFF selector button:

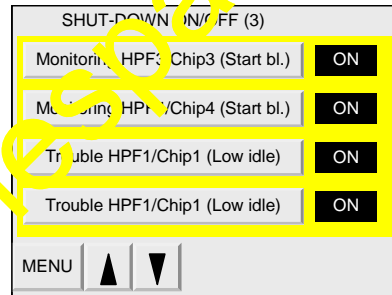
When pressed the display changes



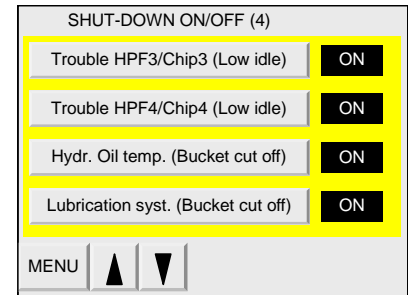
4.8.6



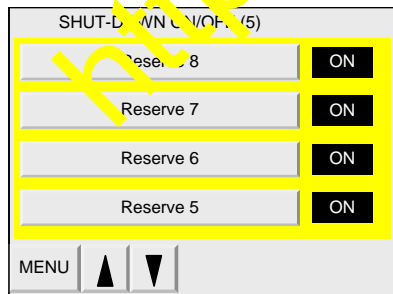
4.8.7



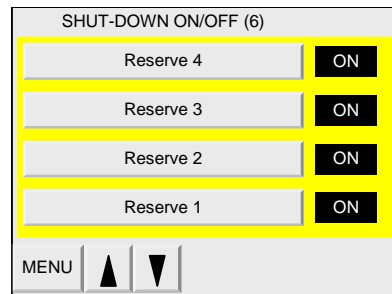
4.8.8



4.8.9



4.8.10



5. VHMS initial setting check sheet

In case you replace the VHMS controller, you require to conduct the VHMS controller setting. In order to avoid miss setting, please check setting item with this sheet and report it to VHMS / WebCARE support center and KMG by FAX or e-mail.

This check sheet will be used when we receive the data downloaded by New VHMS controller in WebCARE, in order to check the download data if the setting has been done correctly or not. If the check sheet is not received by Komatsu, the download data will not be entered in WebCARE system.

Checking item

Setting date		
Distributor & Branch		
Subsidiary		
Person in charge		
Model name		
Serial no.		
SMR (Hour meter reading)		
Engine Serial No.		
PTO Serial No.		
Download date & time (by watch)	Before replacement	
	After replacement	
Reference No. (FC No. or Claim No.)		

Please send the downloads (from old VHMS controller if possible and from new VHMS controller) to the following e-mail addresses:

1. webcare@komatsu.co.jp
2. ralf.hohaus@komatsu-mining.de