

Instructions for Use



Computerised Manual Lubrication System

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1 INTRODUCTION

1.1 Description

LubeRight[®] is a computerised manual lubrication system which offers the following advantages over traditional manual lubrication:

- It enables an exact dosage to each lubrication point, according to the recommendations of the bearing manufacturers. An integrated measuring device measures every amount of grease being fed to the lubrication point.
- It verifies each dosage for every lubrication point.
- It tracks historical lubrication activity for individual lubrication points.

All lubrication points are equipped with a transponder. The chip holds a unique identification number which is read by the grease meter. The grease meter display the name of the lubrication point and how much grease it is planned for. All grease amounts applied are registered and, at the end of the day, when the information is transferred from the grease meter to a PC, all forgotten lubrication points will show up. All lubrication performed will be stored in the PC with information on lubrication amounts and the date when the lubrication was performed.

1.2 Components

1.2.1 Grease Meter

Art. no. 0102400



Digital grease meter with antenna for communication with lubrication nipples. The grease meter has a contact for connection to a PC.

Data

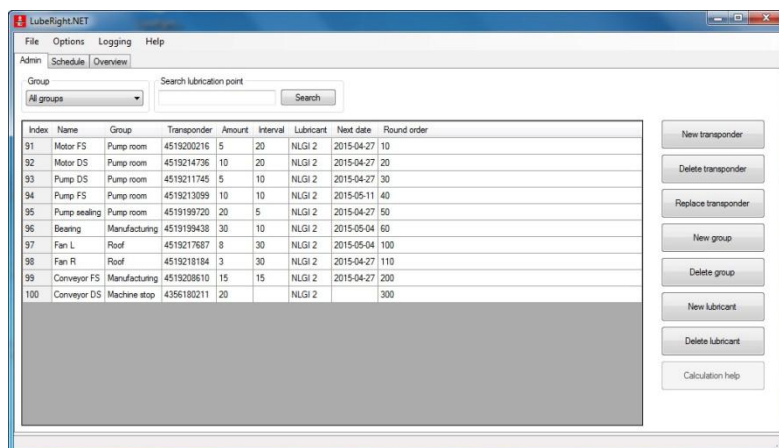
Max. pressure	70 MPa
Grease connection	int. ISO-G1/8
Weight	0.8 kg
Hose length	400 mm
Flow range	0-1000 cm ³ /min.
Accuracy	+/- 3 % up to 30 MPa
Protection	IP54
Temp. range	-20 °C - +40 °C

The grease meter is equipped with a total counter. The grease meter can be calibrated and can show the grease amounts in cm³, gram, oz. or fl. oz.

The display of the grease meter is equipped with a backlight for use in dark working environments.

1.2.2 Computer Program

Art. No. 0102398



The computer program is used to plan and follow up lubrication.

1.2.3 Lubrication Nipple with Transponder

Art. No. 0102397



The transponder has a unique number that the grease meter identifies.

Lubrication nipple, stiffening plate and locking ring in acid proof steel, transponder in epoxy.

Type of lubrication nipple in accordance with DIN71412

Connection thread: ISO-G1/8

Temperature range: -40 °C to +85 °C

Protection: IP66

Weight: 20 g

2 USE

The LubeRight system consists of two main parts, the grease meter and a PC-based administration program. This chapter describes how the entire LubeRight system should be used and how the grease meter and computer program work together.

2.1 LubeRight Software

2.1.1 Program Settings

When the program is started for the first time, two settings should be considered.

2.1.1.1 Years of lubrication data

The program plans lubrication for 1 or 2 years at a time, depending on this setting. Unless you have a lubrication point that has its first lubrication date more than a year away select 1 year. The program extends the schedule with a week for each week that passes.

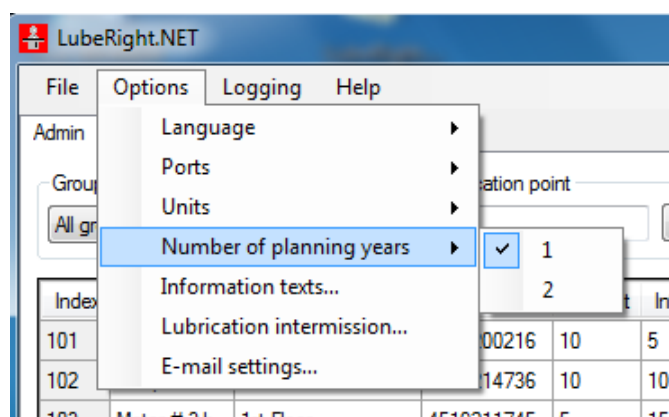


Figure 1, Choice of number of planning years

2.1.1.2 Language

The program has some language alternatives beside English.

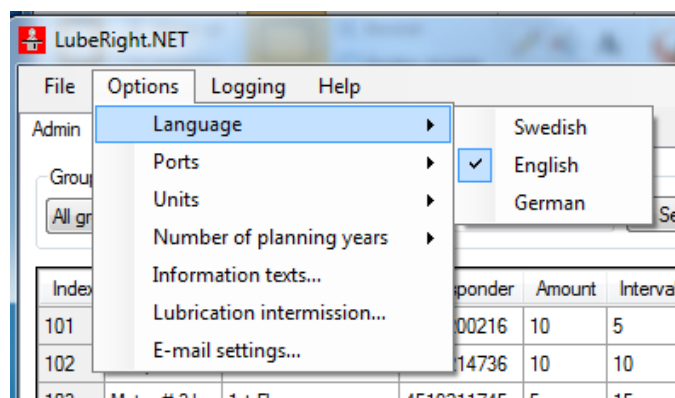


Figure 2, Settings under Options

2.1.1.3 Units

Under Options>Units there are four units to choose from: cm³, fl.oz., gram and oz. Since the grease meter measure volume the mass is a calculated amount from that volume. We use the density of 0.87 g/cm³ (54 lb/ft³) to calculate the mass from the measured volume.

2.1.2 User Interface

The user interface of the LubeRight program consists of three different tabs. The first tab is Administration, where new lubrication points are administered and installed. The second tab is Schedule, where the lubrication points that are soon to be lubricated are displayed and lubrication data is transferred between the grease meter and the PC program. The third tab is Overview, which contains all lubrication data both planned and done.

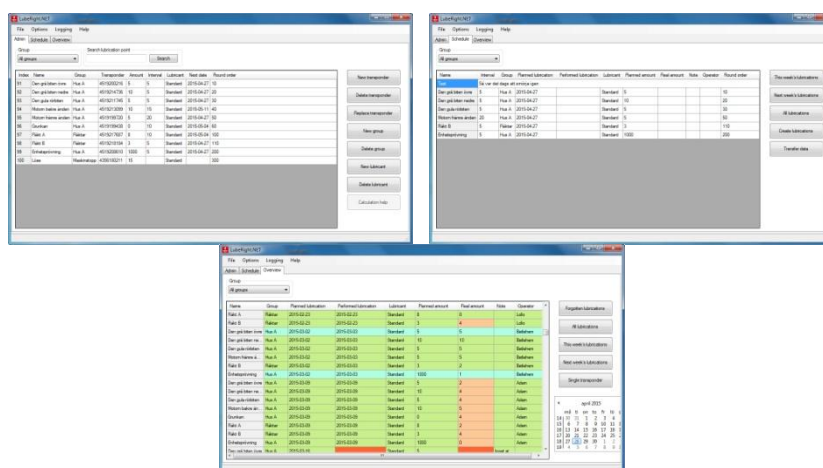


Figure 3, The three tabs that provide different functionality

2.1.3 Administration

In Administration, you set up your lubrication points and specify the lubricant quantity, lubrication interval and other data on the lubrication points.

The Administration tab consists of a grid in which all lubrication point data is presented, eight buttons for various tasks and functions for searching for lubrication points and sorting lubrication points in predetermined lubrication groups.

The screenshot shows the 'Administration' window of the LubeRight.NET software. The window has a menu bar with 'File', 'Options', 'Logging', and 'Help'. Below the menu bar are tabs for 'Admin', 'Schedule', and 'Overview', with 'Admin' currently selected. On the left, there is a 'Group' dropdown menu set to 'All groups' and a 'Search lubrication point' text box with a 'Search' button. The main area contains a table with 10 columns: Index, Name, Group, Transponder, Amount, Interval, Lubricant, Next date, and Round order. The table lists 10 lubrication points. To the right of the table are several buttons: 'New transponder', 'Delete transponder', 'Replace transponder', 'New group', 'Delete group', 'New lubricant', 'Delete lubricant', and 'Calculation help'.

Index	Name	Group	Transponder	Amount	Interval	Lubricant	Next date	Round order
91	Motor FS	Pump room	4519200216	5	20	NLGI 2	2015-04-27	10
92	Motor DS	Pump room	4519214736	10	20	NLGI 2	2015-04-27	20
93	Pump DS	Pump room	4519211745	5	10	NLGI 2	2015-04-27	30
94	Pump FS	Pump room	4519213099	10	10	NLGI 2	2015-05-11	40
95	Pump sealing	Pump room	4519199720	20	5	NLGI 2	2015-04-27	50
96	Bearing	Manufacturing	4519199438	30	10	NLGI 2	2015-05-04	60
97	Fan L	Roof	4519217687	8	30	NLGI 2	2015-05-04	100
98	Fan R	Roof	4519218184	3	30	NLGI 2	2015-04-27	110
99	Conveyor FS	Manufacturing	4519208610	15	15	NLGI 2	2015-04-27	200
100	Conveyor DS	Machine stop	4356180211	20		NLGI 2		300

Figure 4, Administration

- Index** Each lubrication point is given an index number on registration. The number cannot be changed and is used mainly to number the transponders in connection with registration so that the right transponder is placed on the right lubrication point.
- Name** The lubrication point's name is specified here.
- Group** This is changed by clicking the box and entering an appropriate name.
The group to which the lubrication point belongs.
This is changed by clicking the box and selecting the appropriate group from the list.

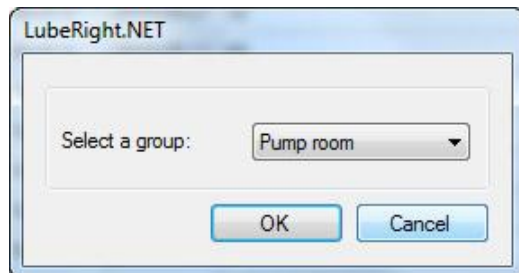


Figure 5, Group selection

- Transponder** How to enter a new group is explained in section 2.1.3.1.
Each transponder's unique identification number. The number cannot be changed.
- Amount** The lubricant quantity to be supplied to the lubrication point each time lubrication takes place. The unit is selected under the Options menu, see section 2.1.1.3.
This is changed by clicking the box and entering the appropriate amount.
When specifying a value of -1 instead of a positive value, any lubricant amount is accepted and becomes green. +0 is shown on the display in the grease meter for this lubrication point.
- Interval** How often the lubrication point is to be lubricated. It is specified in weekdays. The program use a five day week, Saturdays and Sundays are not used for lubrication. If a lubrication point is to be lubricated once a month, then an interval of 20 days is to be entered (4 weeks x 5 days = 20 days).
When you click the box to change the interval, you also have to specify the date of the first lubrication.

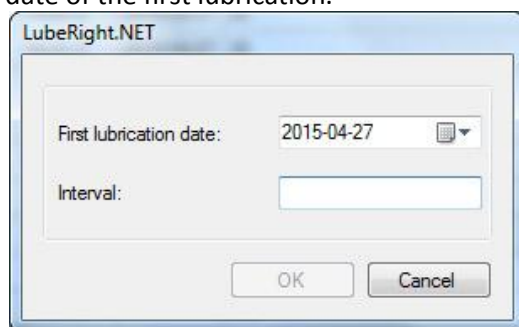


Figure 6, Changing the interval

Lubricant

The lubrication point's lubricant.

This is changed by clicking the box and selecting the appropriate lubricant from the list.

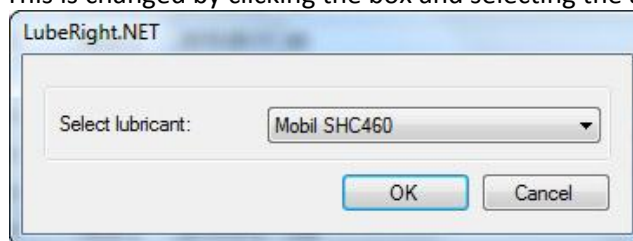


Figure 7, Lubricant selection

Next date

How to enter a new lubricant is explained in section 2.1.3.3.

Shows the date when the lubrication point shall be lubricated next time. The information is updated at each program start.

Round order

This number determines the order in which the lubrication points are sorted in the lubrication schedule, i.e. the order in which the lubrication points are to be lubricated.

Letters cannot be used.

Initial zeros are ignored by the program.

2.1.3.1 Add a New Group

When lubrication data is transferred to the grease meter, you can choose just to transfer a selected group. A group is usually an area that is lubricated at the same time. If you have an area that is lubricated at the same time but with two different types of grease, this area must be divided into two groups in order to be able to transfer lubrication data with the different types of grease separately to different grease meters.

To add a new group, press the "New group" button. The dialog box shown in Figure 8 below is then opened.

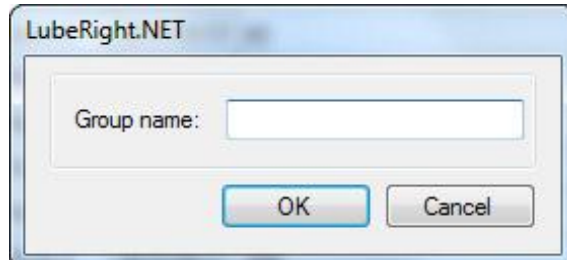


Figure 8, Add new group

Enter the new group name and press "OK", or "Cancel" to cancel.

2.1.3.2 Delete a Group

To remove a group, press the "Delete group" button. The dialog box shown in Figure 9 below is then opened.

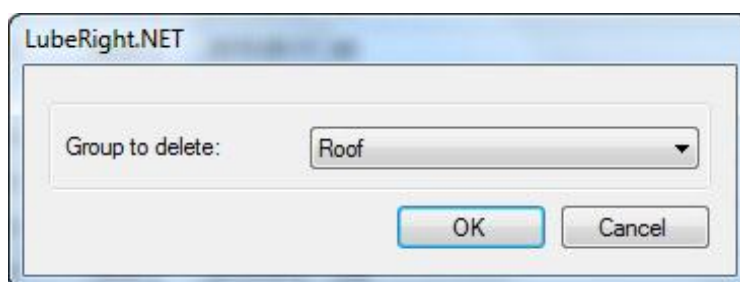


Figure 9, Remove group

Select the group you want to remove and press "OK", or "Cancel" to cancel.

2.1.3.3 Add a New Lubricant

Press the “New lubricant” button to add a new lubricant. The dialog box shown in Figure 10 below is then opened.

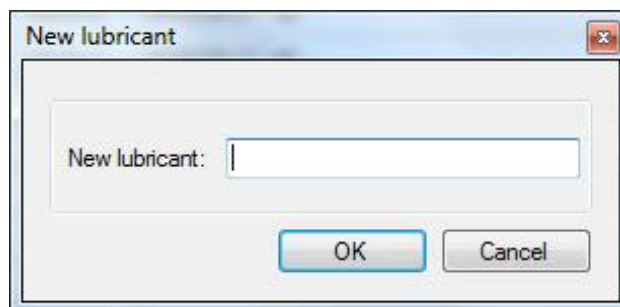


Figure 10, Add lubricant

Enter the new lubricant’s name and press “OK”, or “Cancel” to cancel.

2.1.3.4 Delete a Lubricant

Press the “Delete lubricant” button to remove a lubricant. The dialog box shown in Figure 11 below is then opened.

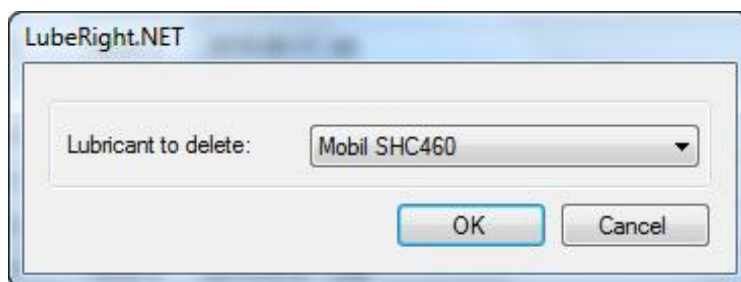


Figure 11, Remove lubricant

Select the lubricant you want to remove and press “OK”, or “Cancel” to cancel.

2.1.3.5 Search for Lubrication Points

To search for a lubrication point, enter part of the name of the lubrication point in the search box and press the “Find” button. The lubrication point or points matching your search is highlighted.

2.1.3.6 Installation of a New Lubrication Point

When a new lubrication point (i.e. a new transponder) is installed in the computer program, the grease meter must be connected to the PC.



Figure 12, Connecting the communication cable

Connect the grease meter to a free USB port on the PC.

Press the on button on the grease meter, the button furthest to the left. When connected to the PC the text “PC CONNECTED” is displayed as shown in Figure 13 below.



Figure 13, “PC CONNECTED” is displayed during communication with the computer program

Press the “New transponder” button. The dialog box shown in Figure 14 with the text “Waiting for transponder” is then opened, which means that the system is waiting for the user to place the transponder to be registered against the grease meter’s lubrication connection or press “Cancel” to cancel.

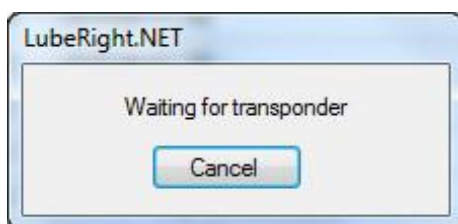


Figure 14, Waiting for incoming transponder ID

If the program cannot communicate with the grease meter, the dialog shown in Figure 15 below is displayed. In this case, check that the grease meter is properly connected to the PC.

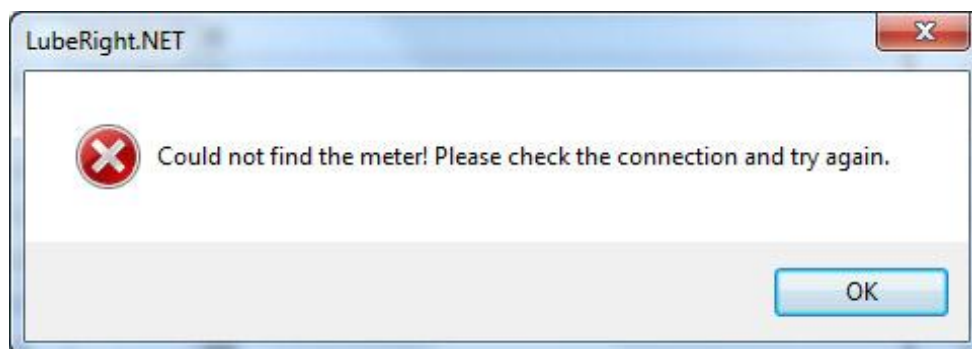
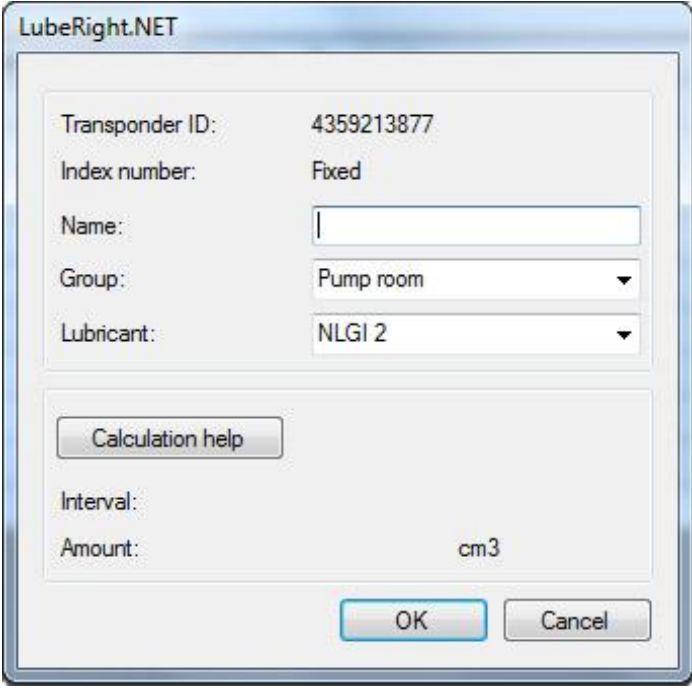


Figure 15, Communication error

If the system has read a transponder, the dialog box below is opened (Figure 16).



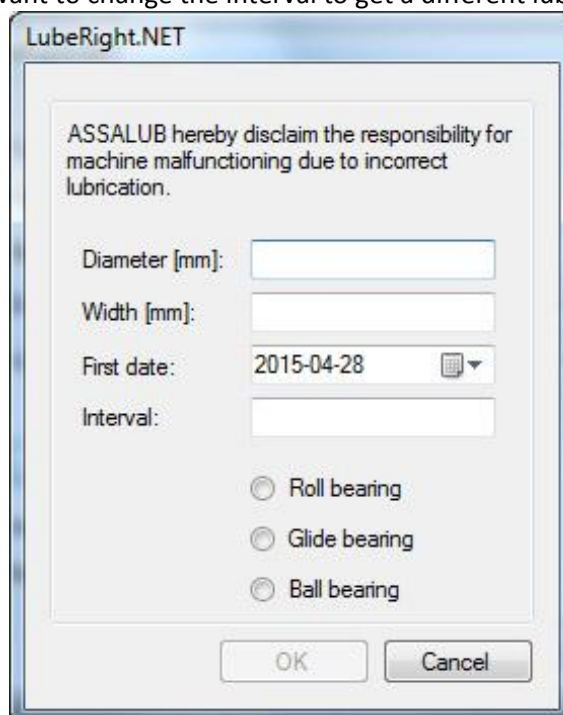
The dialog box, titled "LubeRight.NET", contains the following fields and controls:

- Transponder ID: 4359213877
- Index number: Fixed
- Name:
- Group: Pump room (dropdown menu)
- Lubricant: NLGI 2 (dropdown menu)
- Calculation help button
- Interval:
- Amount: cm3
- OK button
- Cancel button

Figure 16, Properties of lubrication point

In this dialog box, the user should enter information on the name of the lubrication point, the group to which it belongs and the lubricant. Then press OK. The lubrication point is then added to the list of lubrication points and you can subsequently add the lubricant quantity, lubrication interval and round order.

If you need help calculating the lubricant quantity, press the “Calculation help” button. A dialog box is then opened (Figure 17). Enter the external diameter and total width of the bearing, the date of first lubrication, the lubrication interval and choose type of bearing. When you press OK, the calculated lubricant quantity and the interval selected are displayed. You can press the “Calculation help” button again if you want to change the interval to get a different lubricant quantity.



The screenshot shows a dialog box titled "LubeRight.NET". Inside, there is a disclaimer: "ASSALUB hereby disclaim the responsibility for machine malfunctioning due to incorrect lubrication." Below this, there are input fields for "Diameter [mm]:", "Width [mm]:", "First date:" (with a calendar icon and the date "2015-04-28"), and "Interval:". At the bottom, there are three radio buttons for "Roll bearing", "Glide bearing", and "Ball bearing". At the very bottom are "OK" and "Cancel" buttons.

Figure 17, Calculation help

The calculation help makes a suggestion for the suitable quantity of grease to use for each lubrication point, calculated on the lubrication interval selected. The program only takes the dimensions and type of the bearing into consideration. The suitable lubrication interval depends on a number of factors, for example temperature, RPM and bearing type. SKF has an advanced calculation program for grease lubrication that calculates the quantity of grease and lubrication interval. The program can be run from: <http://www.mapro.skf.com/dialset/>

You can also get calculation help after the lubrication point has been registered. Select a lubrication point and press the “Calculation help” button.

2.1.3.7 Check points

Lubrication points that have 0 as lubricant amount shall only be connected without lubricating to be accepted and green. This can be used for oil level control in gear boxes for instance.

2.1.3.8 Remove a Lubrication Point

To remove a lubrication point, place the cursor in the row of the point to be removed in the grid and press the “Remove transponder” button. The dialog box shown in Figure 18 is then opened.

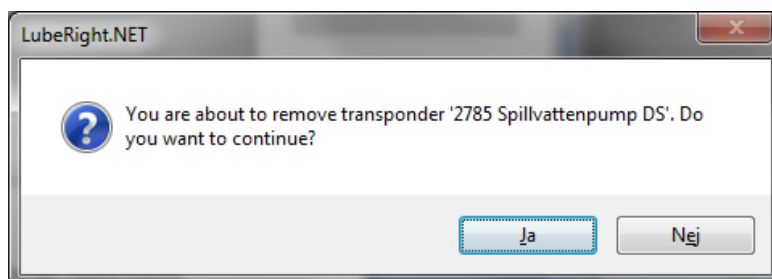


Figure 18, Remove transponder

Select “OK” if you want to remove the lubrication point or “Cancel” if you want to cancel. If a lubrication point is removed, the information on lubrication performed previously still remains.

2.1.3.9 Replace transponder

To replace a transponder, place the cursor in the row of the transponder to be replaced in the grid and press the “Replace transponder” button. The dialog box shown in Figure 19 is then opened.

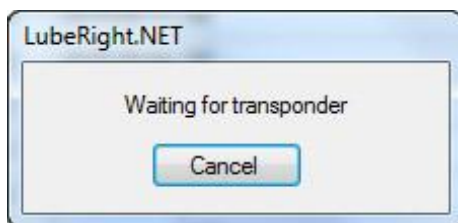


Figure 19, Waiting for incoming transponder ID

Check that the grease meter is connected to the PC and that it is turned on. Hold the new transponder in front of the grease meters nozzle. The replacement is then ready.

2.1.3.10 Sorting Functions

The program also allows all columns in the grid to be sorted in ascending or descending order. To sort the grid by a column, press the grey column header once for the column you want to sort. The column is then sorted in descending order. Press again and the grid is sorted in ascending order.

2.1.3.11 Information Texts

Information texts are texts that can be inserted between the lubrication points to provide information in the lubrication schedule on, for example, where the lubrication is to start, when to switch to a different floor or oil level checks. The information texts are linked to the round order numbers and come immediately before the round number selected in the lubrication schedule. The information texts are registered by selecting information texts under the Options menu, see Figure 20.

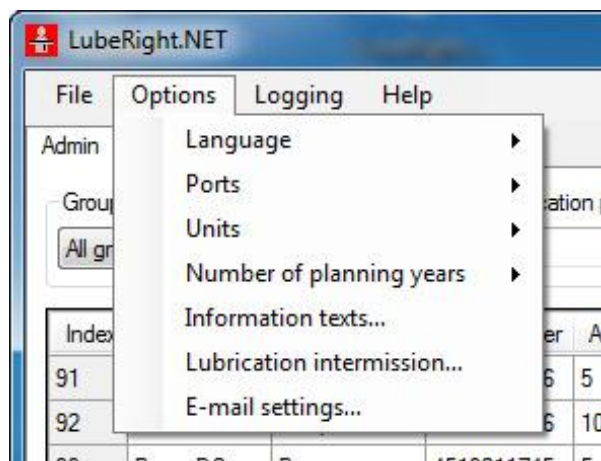


Figure 20, Options pull-down menu

The dialog box shown in Figure 21 appears.

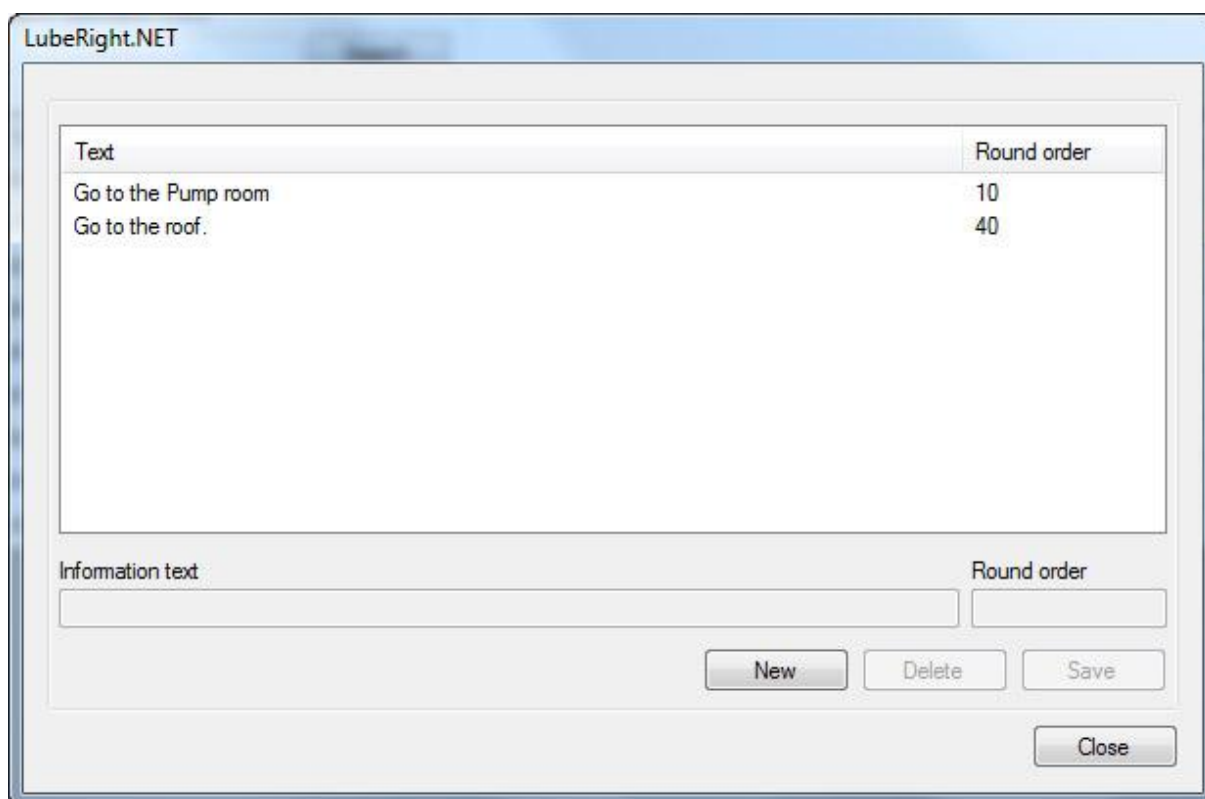


Figure 21, Information texts

2.1.3.11.1 New Information Text

To add a new information text, press the “New” button. Enter the desired information text and the round order number for the lubrication point, in front of which the information text is to be displayed, and press the “Save” button.

2.1.3.11.2 Remove Information Text

To delete an information text, select the information text and press the “Delete” button.

2.1.3.11.3 Edit Information Text

Click on the text you want to edit. The text then appears in the lower boxes and you can edit both text and round order there. Press the “Save” button when you are done editing.

Exit the editing of the information texts by pressing the “Close” button.

2.1.3.12 Lubrication Intermission

Lubrication delay can be specified per group. The planned lubrication during the interval of time selected for the lubrication intermission is postponed until after the time selected.

Lubrication intermission is specified by selecting “Lubrication intermission...” under the Options menu, see Figure 22.

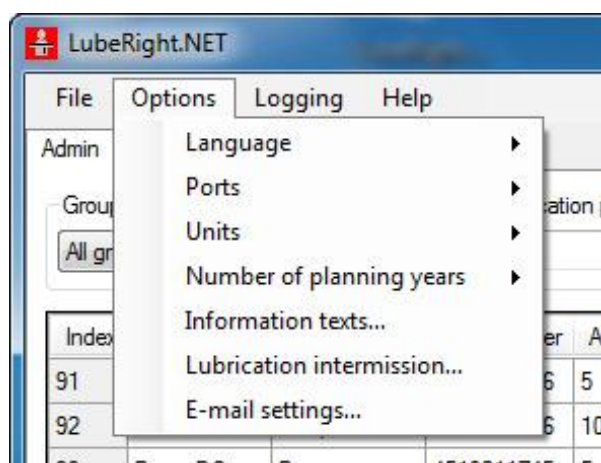


Figure 22, Options pull-down menu

The dialog box shown in Figure 23 appears.

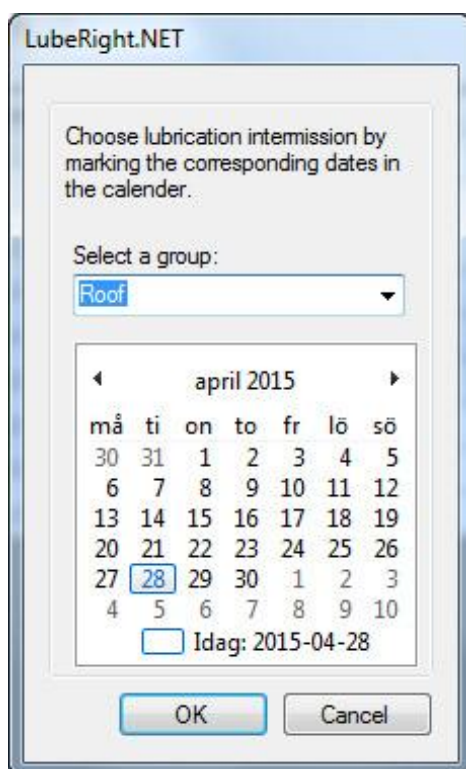


Figure 23, Lubrication delay

Select the group to which the lubrication intermission is to be applied. Select the period required for the lubrication delay by clicking and dragging with the mouse or click on the first date hold down the shift key and use the arrow keys to locate the end date. Then select "OK" to confirm or "Cancel" to cancel.

If you want a lubrication intermission for a period of several months, select the lubrication intermission for one month at a time.

If you want a lubrication intermission for just one lubrication point, change the next lubrication date for that specific lubrication point, see section 2.1.3.

2.1.4 Schedule

Figure 24 below shows the schedule tab.

The schedule tab consists of a grid in which the names, groups and dates, etc. of the lubrication points are presented. To the right of the grid are five buttons with which it is possible to transfer lubrication data to and from the grease meter and select how many lubrication points shall be displayed by time period. At the top of the display is functionality that allows you to sort lubrications by predetermined lubrication groups. If you want to add a comment about a lubrication point, it is possible to write directly in the "Note" field in the grid.

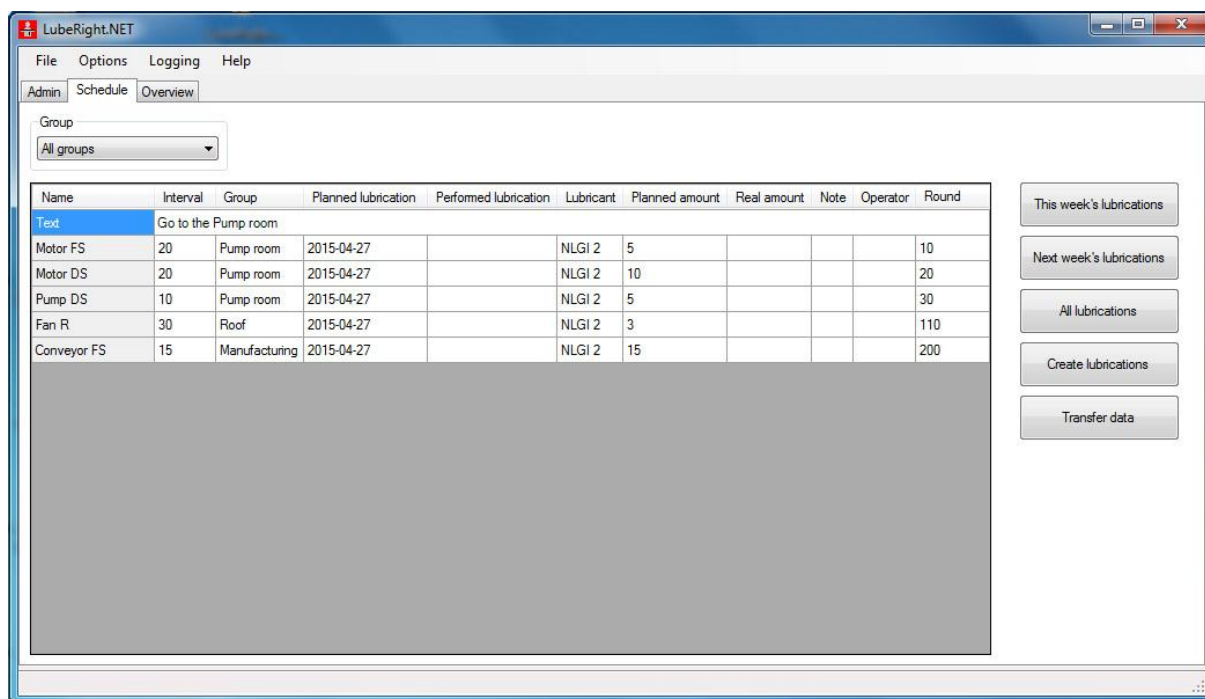


Figure 24, Schedule tab

<i>Name</i>	The name of the lubrication point.
<i>Interval</i>	The interval in Weekdays between planned lubrications.
<i>Group</i>	The group to which the lubrication point belongs.
<i>Planned lubrication</i>	The date on which lubrication is to take place. The lubrication can take place on any of the days in the week for which the lubrication was planned.
<i>Performed lubrication</i>	After lubrication has been performed, the date on which lubrication was performed is displayed in this field. If the lubrication was performed within the correct interval of time, the cell is highlighted green. If the lubrication was performed too late, the column is highlighted red.
<i>Lubricant</i>	The lubrication point's lubricant.
<i>Planned amount</i>	The lubricant amount planned.

Real amount

After lubrication has been performed; the lubricant quantity used to lubricate the lubrication point is displayed in this field. If the lubricant quantity is equal to the quantity planned +/-10 %, the column is highlighted green. If the lubricant quantity deviates by more than 10 % from the quantity planned, the column is highlighted red.

Note

You can write comments on the lubrication in this field.

Operator

Name of the person who performed the lubrication.

Round order

This number determines the order in which the lubrication points are sorted. The lubrication points are always sorted in round order in the Schedule tab.

2.1.4.1 Display Options

The buttons to the right of the grid in Figure 24 are used to transfer lubrication data between the grease meter and the program and to select the interval for which lubrications are to be displayed. The buttons “This week’s lubrications”, “Next week’s lubrications” and “All lubrications” are available for selection. Normal use is “This week’s lubrications”. “Next week’s lubrications” is normally used for when there will be no person available to lubricate the following week.

In the box where you select the group, you can choose to display information on a single group or all groups.

2.1.4.2 Transfer of Lubrication Data to and from the Grease Meter

For the transfer of lubrication data between the PC and the grease meter, the grease meter must be connected to the PC.



Figure 25, Connecting the communication cable

Press the on button on the grease meter, the button furthest to the left. During communication between the computer program and the grease meter, the text “PC CONNECTED” is displayed as shown in Figure 26 below.



Figure 26, “PC CONNECTED” is displayed during communication with the computer program

Then press the “Transfer data” button. Data is transferred from the Grease Meter to the PC and from the PC to the Grease Meter with the same button.

A dialog box in which the grease meter operator must be entered is opened, see Figure 27. Enter the name of the person who performed the lubrication and press OK.

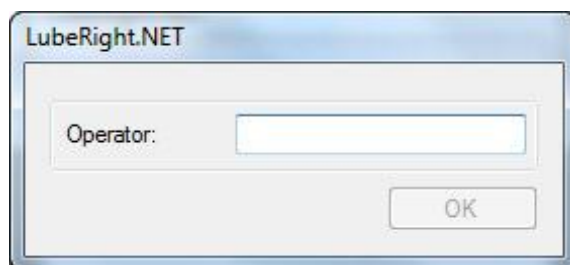


Figure 27, Operator of the grease meter

A dialog box that states the status of the transfer between the program and the grease meter appear, see Figure 28. The program first transfer any performed lubrications, if any, from the grease meter to the program and then it transfer any planned lubrications, if any, from the program to the grease meter. When all transfers are done the dialog box closes. The lubrication gun is now ready for use for a lubrication round.

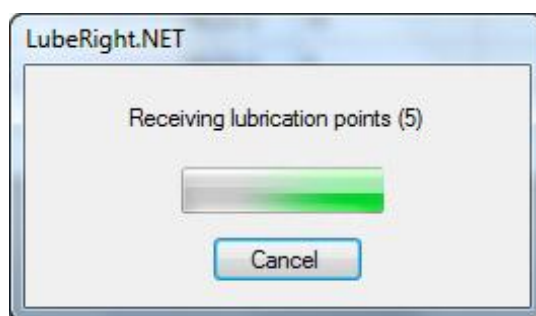


Figure 28, Receiving data from LubeRight

If a lubrication point has been correctly lubricated, it will be highlighted green in the grid. If a point is missed, it is highlighted red. Highlighting is also used to indicate whether a point has been lubricated with too little or too much grease, or whether a point has been lubricated at the incorrect time, see more under section 2.1.6.

2.1.4.3 Lubrication of next week's lubrication points

It is possible to lubricate next week's lubrication points. Press the button "Next week's lubrications" to see which lubrications that are planned for next week. Then press the "Transfer data" button. The next week's lubrications are then transferred to the grease meter. Note that the lubrications will be registered as too early performed and will be red in the performed lubrication date column.

2.1.4.4 Create lubrications

There may be lubrication points for which it is impossible to plan the lubrications in advance. It might only be possible to access the lubrication points when the machine is stopped. There is a function in LubeRight that makes it possible to manually create lubrications. These lubrication points are registered normally but no intervals are stated. The lubrication points shall also belong to one group, for example, "machine stop". Click "Create lubrications" button choose group and date when the lubrication shall take place.

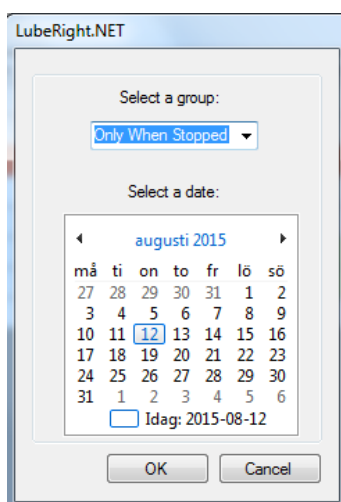


Figure 29, Create a lubrication

2.1.4.5 Lubrication

First transfer this week's lubrications to the grease meter. Then remove the communication cable from the grease meter. The display now displays the name for the next lubrication point or it displays the first information text.

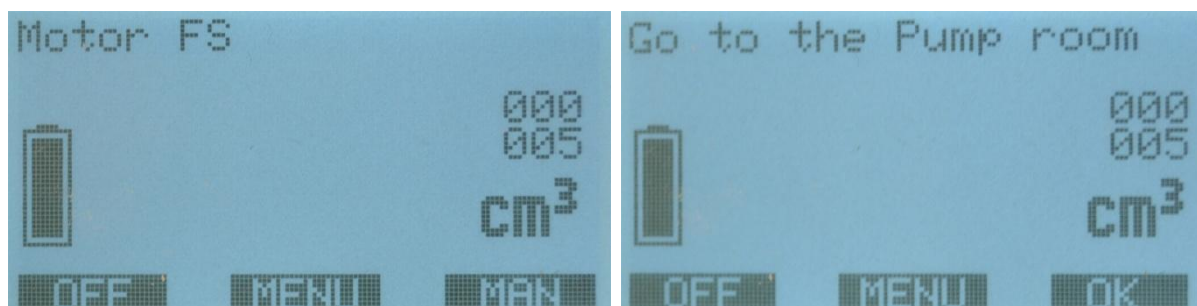


Figure 30, Display after startup (Lubrication Point to the left and Information Text to the right)

If an information text appears on the display click the rightmost button under “OK” to remove the text when you read it. Then the connected lubrication point appears instead. Connect the grease meter’s lubrication connection to the lubrication point. The grease meter identifies the transponder of the lubrication point selected and the lubricant quantity planned is displayed in the display. The user starts to lubricate and the value in the display is counted down. When you reach zero the backlight begin to flash. If you choose to lubricate more than planned, a plus sign appears in front of the value and the value begins to be counted up instead. This is to show that you have lubricated more than planned. The display may look like this:



Figure 31, Lubricated with more than the quantity planned

The value remains for four seconds after lubrication has been finished and then the unit switches to show the next planned lubrication point or the next information text. If the user lubricates a point that is not one of that day’s lubrication points, it will state “UNPLANNED LUBRICATION” at the top of the display and the value “0.0” will be displayed as the amount to lubricate. If you still lubricate the point it will be registered as an extra lubrication in the program.

When the lubrication round has been finished, connect the grease meter to the PC again so that it is possible to download lubrication data from the grease meter to the PC, see section 2.1.4.2. When the data has been transferred, the user can add information about the lubrication points in the “Note” field.

2.1.4.6 Stopped Machine

If you come to a machine that is temporarily stopped and therefore does not require lubrication, connect the grease meter’s lubrication connection to the lubrication point as usual but do not lubricate it. The lubrication point is then registered as a stopped machine and will be included the next time lubrication data is transferred to the grease meter. A stopped machine is indicated in the schedule by the lubricant quantity 0 being highlighted green. When the lubrication point is then lubricated, it is highlighted blue in the schedule = unplanned lubrication.

2.1.5 Overview

The Overview tab, see Figure 32, contains the same information as the Schedule tab. The overview tab contains all planned and lubricated points.

Name	Group	Planned lubrication	Performed lubrication	Lubricant	Planned amount	Real amount	Note	Operator	Rour
Pump # 02	1st Floor	2015-06-09	2015-06-09	Mobil SHC600	10	9		Jane	50
Pump # 01	1st Floor	2015-06-09	2015-06-09	Mobil SHC600	10	9		Jane	60
Pump # 01	1st Floor	2015-06-16	2015-06-15	Mobil SHC600	10	9		Jane	60
Motor # ...	Only Wh...	2015-06-16	2015-06-15	Mobil SHC600	0	0		Jane	1010
Motor # 13	Roof	2015-06-23	2015-06-29	Mobil SHC600	5	5		John	10
Pump # 02	1st Floor	2015-06-23	2015-06-29	Mobil SHC600	10	9		John	50
Pump # 01	1st Floor	2015-06-23	2015-06-22	Mobil SHC600	10	9		Jane	60
Motor # ...	2nd Floor	2015-06-30	2015-06-29	Mobil SHC600	5	5		John	20
Motor # ...	1st Floor	2015-06-30	2015-06-29	Mobil SHC600	5	5		John	40
Pump # 01	1st Floor	2015-06-30	2015-06-29	Mobil SHC600	10	9		John	60
Motor # 13	Roof	2015-07-07	2015-07-13	Mobil SHC600	5	5		John	10
Pump # 11	2nd Floor	2015-07-07	2015-07-13	Mobil SHC600	10	9		John	30
Pump # 02	1st Floor	2015-07-07	2015-07-13	Mobil SHC600	10	10		John	50
Pump # 01	1st Floor	2015-07-07	2015-07-06	Mobil SHC600	10	18		John	60
Pump # 01	1st Floor	2015-07-14	2015-07-13	Mobil SHC600	10	10		John	60
Pump # 11	2nd Floor		2015-07-20	Mobil SHC600	10	10		Jane	30
Motor # 13	Roof	2015-07-21		Mobil SHC600	5				10
Motor # ...	2nd Floor	2015-07-21	2015-07-20	Mobil SHC600	5	5		Jane	20
Motor # ...	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	5	5		Jane	40
Pump # 02	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	10	10		Jane	50
Pump # 01	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	10	9		Jane	60
Pump # 01	1st Floor	2015-07-28	2015-07-27	Mobil SHC600	10	9		John	60
Motor # 13	Roof	2015-08-04	2015-08-03	Mobil SHC600	5	5		Bill	10
Pump # 11	2nd Floor	2015-08-04		Mobil SHC600	10				30
Pump # 02	1st Floor	2015-08-04	2015-08-03	Mobil SHC600	10	0		Bill	50
Pump # 01	1st Floor	2015-08-04	2015-08-03	Mobil SHC600	10	0		Bill	60
Motor # ...	2nd Floor	2015-08-11		Mobil SHC600	5				20
Motor # ...	1st Floor	2015-08-11		Mobil SHC600	5				40

Figure 32, Overview

Using the calendar function to the right, it is possible to choose to look at which lubrications are to take place on a certain day in the future. There is also a button for just displaying forgotten lubrication points. In the box where you select the group, you can choose to display information on a single group or all groups.

You can see all lubrications for one lubrication point by pressing “Single transponder” and choose index number.

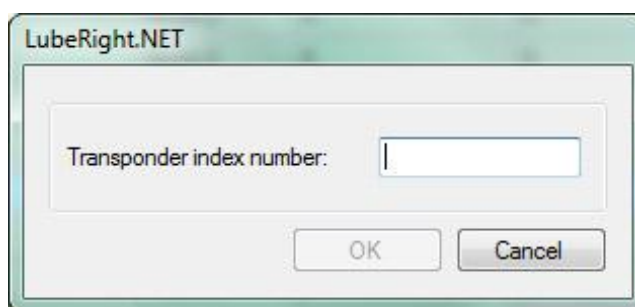


Figure 33, Single transponder

2.1.6 Lubrication Status

In the Schedule and Overview tabs, it is easy to see the status of each lubrication point, see Figure 34 below.

Name	Group	Planned lubrication	Performed lubrication	Lubricant	Planned amount	Real amount	Note	Operator	Flour
Pump # 02	1st Floor	2015-06-09	2015-06-09	Mobil SHC600	10	9		Jane	50
Pump # 01	1st Floor	2015-06-09	2015-06-09	Mobil SHC600	10	9		Jane	60
Pump # 01	1st Floor	2015-06-16	2015-06-15	Mobil SHC600	10	9		Jane	60
Motor # ...	Only Wh...	2015-06-16	2015-06-15	Mobil SHC600	0	0		Jane	1010
Motor # 13	Roof	2015-06-23	2015-06-29	Mobil SHC600	5	5		John	10
Pump # 02	1st Floor	2015-06-23	2015-06-29	Mobil SHC600	10	9		John	50
Pump # 01	1st Floor	2015-06-23	2015-06-22	Mobil SHC600	10	9		Jane	60
Motor # ...	2nd Floor	2015-06-30	2015-06-29	Mobil SHC600	5	5		John	20
Motor # ...	1st Floor	2015-06-30	2015-06-29	Mobil SHC600	5	5		John	40
Pump # 01	1st Floor	2015-06-30	2015-06-29	Mobil SHC600	10	9		John	60
Motor # 13	Roof	2015-07-07	2015-07-13	Mobil SHC600	5	5		John	10
Pump # 11	2nd Floor	2015-07-07	2015-07-13	Mobil SHC600	10	9		John	30
Pump # 02	1st Floor	2015-07-07	2015-07-13	Mobil SHC600	10	10		John	50
Pump # 01	1st Floor	2015-07-07	2015-07-06	Mobil SHC600	10	18		John	60
Pump # 01	1st Floor	2015-07-14	2015-07-13	Mobil SHC600	10	10		John	60
Pump # 11	2nd Floor	2015-07-20	2015-07-20	Mobil SHC600	10	10		Jane	30
Motor # 13	Roof	2015-07-21	2015-07-20	Mobil SHC600	5				10
Motor # ...	2nd Floor	2015-07-21	2015-07-20	Mobil SHC600	5	5		Jane	20
Motor # ...	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	5	5		Jane	40
Pump # 02	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	10	10		Jane	50
Pump # 01	1st Floor	2015-07-21	2015-07-20	Mobil SHC600	10	9		Jane	60
Pump # 01	1st Floor	2015-07-28	2015-07-27	Mobil SHC600	10	9		John	60
Motor # 13	Roof	2015-08-04	2015-08-03	Mobil SHC600	5	5		Bill	10
Pump # 11	2nd Floor	2015-08-04	2015-08-03	Mobil SHC600	10				30
Pump # 02	1st Floor	2015-08-04	2015-08-03	Mobil SHC600	10	0		Bill	50
Pump # 01	1st Floor	2015-08-04	2015-08-03	Mobil SHC600	10	0		Bill	60
Motor # ...	2nd Floor	2015-08-11		Mobil SHC600	5				20
Motor # ...	1st Floor	2015-08-11		Mobil SHC600	5				40

Figure 34, Overview

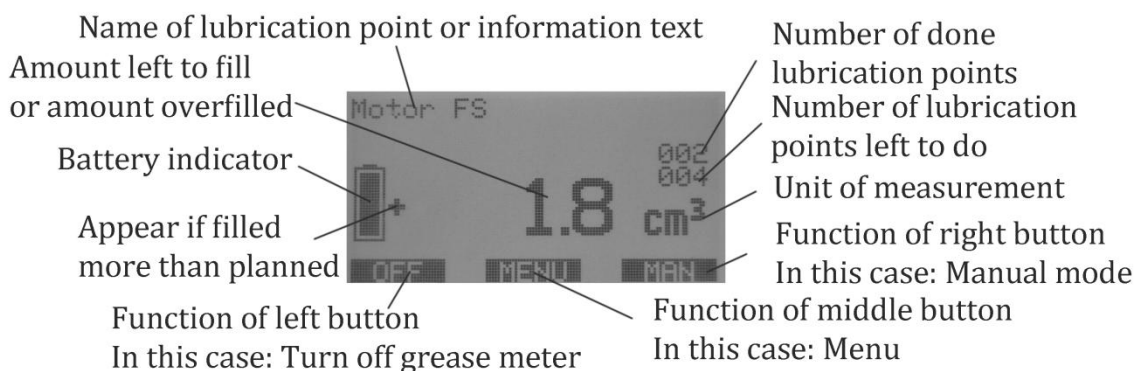
1. When the entire row is highlighted green, it means that lubrication was performed correctly.
2. When the entire row is highlighted blue, it means that the lubrication took place later than planned on account of machine stoppages.
3. If the lubrication date is highlighted red, it means that the lubrication took place too late or too early
4. If the lubricant quantity is highlighted red, it means that the actual lubricant quantity deviated by more than 10 % from the quantity planned.
5. When the entire row is highlighted blue and “Planned lubrication” is empty, it means that a lubrication point was lubricated although this was not planned.

6. When "Lubrication performed" and "Real amount" are highlighted red, it means that the lubrication was not performed before the next planned lubrication time occurred. The lubrication is forgotten forever.
7. When the entire row is highlighted red, it means that the lubrication has not been performed yet although the time for the planned lubrication has passed.
8. When the "Real amount" is 0 and highlighted green and the rest of the row is white, it means that the machine was not operating and the lubricator acknowledged this by connecting the grease meter but not lubricating. The lubrication is still in the meter and will be included the next time lubrication data is transferred to the grease meter.

2.1.7 Printouts

It is possible to print the information in the three tabs. Select the tab first: Administration, Schedule or Overview. Using the buttons to the right, select what is to be displayed, this week's points, all points, etc. Select the group to be displayed as well, or select all groups. Then select File, Print. The information selected and displayed on the screen is printed, including the information that is reached via the scroll bars. You can also choose to preview the printout before printing it by pressing File, Print Preview.

2.2 Grease Meter



2.2.1 Lubrication

Lubrication of lubrication points that are registered in the system and have a transponder is explained in section 2.1.4.5.

It is also possible to use the grease meter for standard lubrication nipples. Press the ON/OFF button furthest to the left on the grease meter. The display lights up and the following information is displayed:

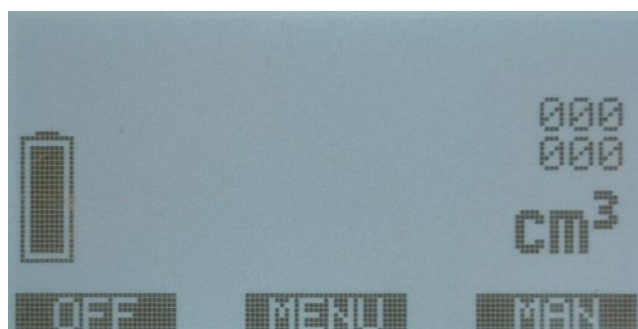


Figure 35, Display after startup

Press the button under “MAN”. The grease meter is then ready for measurement and the display is as follows:

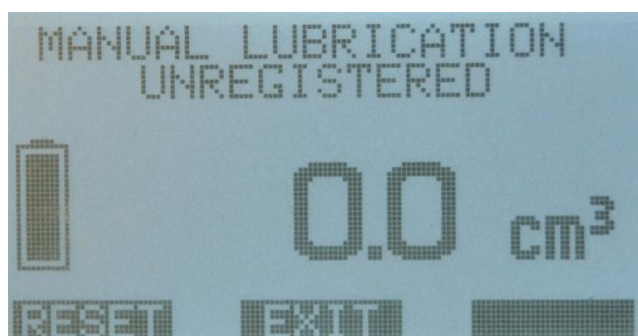


Figure 36, Standard grease measurement

The meter then only measures the grease passing through it.

2.2.2 Menu

The middle button is often the button to reach the Menu. The text in the display shows what the buttons do in each instance. The menu shows all options and highlights the one that is chosen, see Figure 37. The two rightmost buttons are used to move the highlight and the left to choose that option.

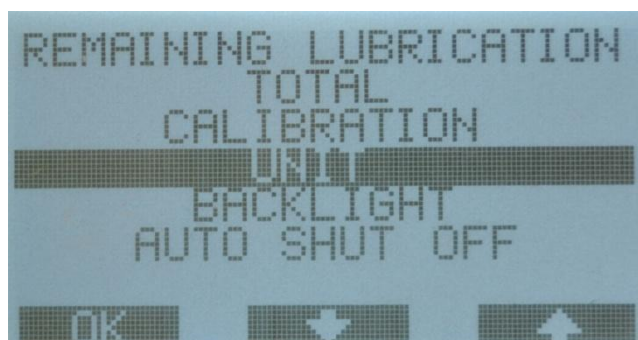


Figure 37, Menu choices

2.2.3 Remaining lubrication

The lubrication points not yet lubricated can be listed by choosing “REMAINING LUBRICATION” in the menu display. All the remaining lubrication points are then listed in round order. Three lubrication points are visible on the display and there are arrows for moving up and down in the list. See Figure 38 below.

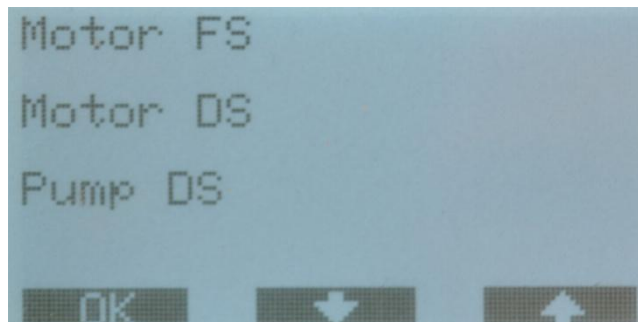


Figure 38, Remaining lubrications

2.2.4 Total Quantity Display

Enter menu selection on the grease meter by pressing the button under “MENU”. Use the arrows to go up or down in the menu and select the TOTAL menu by pressing OK when TOTAL is highlighted. The following information is displayed:



Figure 39, Total quantity display

The total quantity of grease that has passed through the meter since it was taken into use is displayed in the unit TONNE with 3 decimal places, in this case 3 kg. The total measurement cannot be zero-set. When the measurement reaches 999 TONNES, the measurement starts from 0 again. To exit this menu, press “OK”.

2.2.5 Calibration

Start by calculating the extent by which the grease meter is measuring incorrectly.

Error = actual quantity/quantity displayed

Example:

The grease measured weighs 500 gram.

The grease meter displays 495 gram.

Error = $500/495 = 1.01 = +1\%$

If the grease meter is displaying too little, it must be calibrated +.

If the grease meter is displaying too much, it must be calibrated –.

In this case, the grease meter must be calibrated +1 %.

Enter menu selection on the grease meter by pressing the button under “MENU”. Use the arrows to go up or down in the menu and select CALIBRATION by pressing OK when CALIBRATION is highlighted. The following information is displayed:

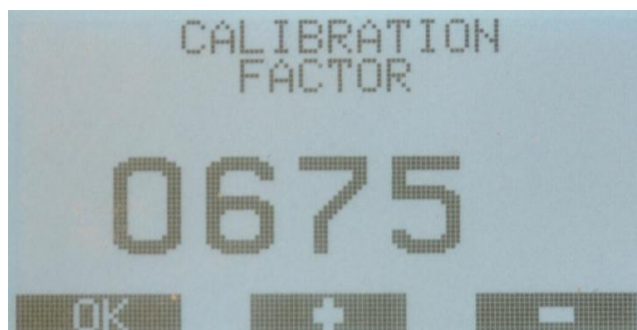


Figure 40, Calibration of the lubrication gun

Now take the error value, 1.01 in our example above, and multiply it with the value shown on the grease meter.

New value = $1.01 \times 675 = 682$

Press + (middle button) until the display match your desired value, then press the left button “OK”.

Then the grease meter display the old value, the new value and asks you to verify that you want to change the setting, see Figure 41 below. Unless you press the “YES” button the old value will stand.

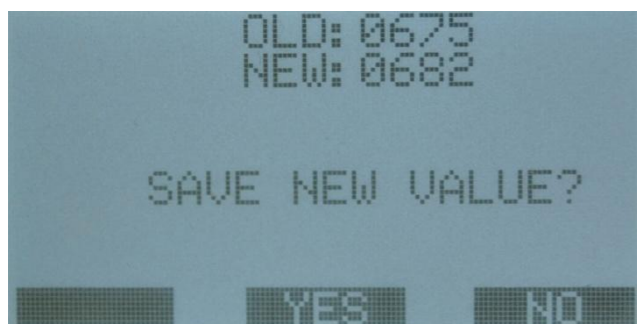


Figure 41, Saving new calibration value

In a correctly functioning meter, the calibration factor must not exceed 750.

2.2.6 Change Unit of Measurement

Enter menu selection on the grease meter by pressing the button under “MENU”. Use the arrows to go up or down in the menu and select the UNIT menu by pressing OK when UNIT is highlighted. The following information is displayed:



Figure 42, Change unit.

Change to the unit you want to display by pressing the arrows. Confirm your selection by pressing “OK”. The units that can be displayed are cm^3 , gram, fl.oz and oz.

2.2.7 Backlight

If the backlight is not necessary or wanted select “BACKLIGHT” from the menu. The choice is between to have the backlight “ON” or “OFF”, see Figure 43 below.

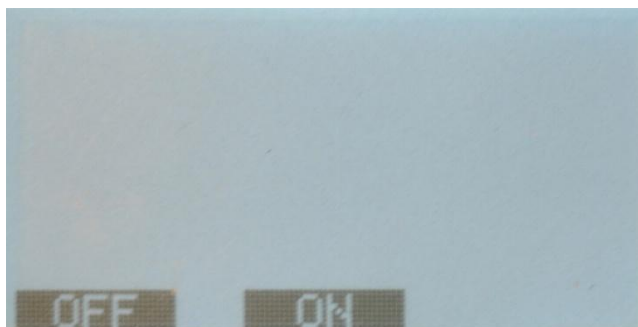


Figure 43, Backlight on or off

2.2.8 Auto Shut Off

The grease meter can be set to different auto shut off times. When the grease meter has not recorded any activity for the set amount of time it will shut off.

To select the auto shut off time select "AUTO SHUT OFF" in the menu display. The choices are 1, 5 and 15 minutes or to have it not to auto shut off at all. It will always shut off when the battery capacity is low.

If you do not want to change the setting and do not know what it was choose "EXIT" and press "OK".

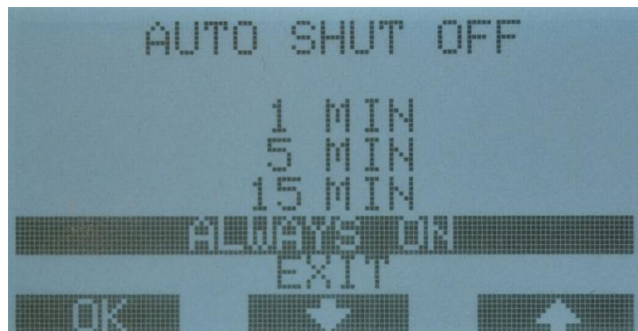


Figure 44, Auto shut off options

2.2.9 Battery Symbol

The battery symbol shows the remaining battery capacity. A fully charged battery lasts up to 12 hours. When the capacity is really low the grease meter shuts down even if the setting is "Always on". Charging the battery of the grease meter from empty to full takes about 7 hours. The grease meter shuts off after a while when battery is fully loaded and still connected to the PC.



Figure 45, The charge of the battery is low

3 DECLARATION OF CONFORMITY**EU DECLARATION OF CONFORMITY**

We, Assalub AB,
Prästängsvägen 15, SE-597 30 Åtvidaberg, Sweden,
declare that the:

GREASE METER
Version: LubeRight MK II
Art. No. 0102510

is designed and manufactured in accordance with

EUROPEAN EMC DIRECTIVE 2004/108/EC

as outlined in the harmonized Norms

Emission: EN 61000-6-3:2007

Immunity: EN 61000-6-2:2005, EN 61000-4-2, -3, -8

Åtvidaberg, January 20, 2015



Kim Funck
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