Easylube®

RFID Patrol Management Automatic Lubrication System

Quick Setup

USER MANUAL

For V1.0 Trial Version

Easylube®

January 2011 rev.

Description

Determining the exact time for relubrication and the actual lubricant needed for each bearing are 2 principal skills required by lubrication technicians in maintaining bearings efficiency. Proper lubrication is a crucial task when bearing is under lubricated which will cause premature bearing failure, on the other hand, over-greasing will lead to catastrophic failure to the bearing (grease churning and overheating) which eventually damage the motor coils and windings.

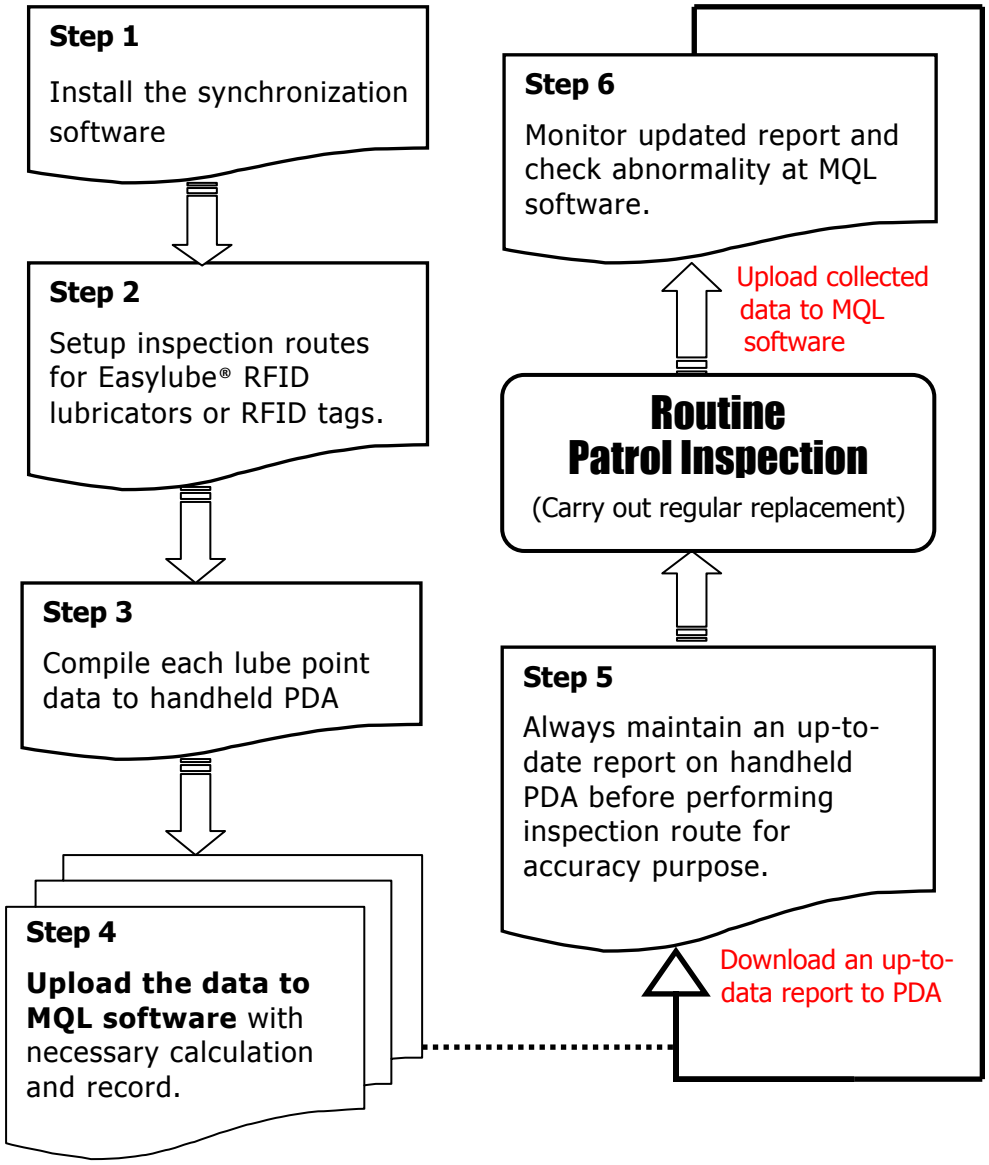
Although this is a common lubrication problem, it can be easily resolved by latest Easylube® RFID micro-computer lubricator. With Easylube RFID, the exact greasing volume and re-greasing intervals for each bearing can be easily calculated and managed by Easylube MQL software. In addition, the Easylube RFID system can track, monitor and alert user for lubrication-related issues during routine inspection thus enhances the efficiency and effectiveness of maintenance practice.

Easylube RFID is user-friendly, very economical and can easily be installed at any location; especially support equipments are located in isolated, scattered, dangerous and negligible area. Creating the RFID identification system helps lubrication technicians to eliminate potential human errors and improve employee safety.

As the result, TPM initiative becomes more approachable. By making this simple change, tracking of larger maintenance issues can be easily obtained.

Quick Setup

Here are six easy steps to get the process set up.



Minimum requirements for synchronization and general use with a PC or NB:

- Microsoft **Windows XP OS** (V1.0 trial version)
- Microsoft **Outlook** 2000 or later
- Microsoft **Internet Explorer** 4.01 SP1 or later
- Microsoft **Office** 2007, 2003, 2000, XP or later
- Microsoft **ActiveSync** 4.5 or later (for PC; included on HP iPAQ Getting Started CD)
- 12 to 65 MB hard disk
- 2 pcs of USB port
- CD-ROM/DVD drive
- VGA-capable monitor
- Keyboard and Mouse

Minimum requirements for RFID Patrol Management Program and general use with a PC or NB:

- Easylube **MQL Software** with calculation Formula V1.0 or later (for PC; included on Easylube Patrol Management Kit Getting Started CD)
- Easylube **Guardwatch Software** V1.0 or later (for PDA; included on Easylube Patrol Management Kit Getting Started CD)
- 2 pcs of Easylube **Smart Lock**
- Easylube RWD145B-EL RFID reader
- Easylube RFID lubricators or RFID microchip tag

Standard Operating Procedure (SOP) of RFID Patrol Management Program:

Page

Lubricator Installation Guide

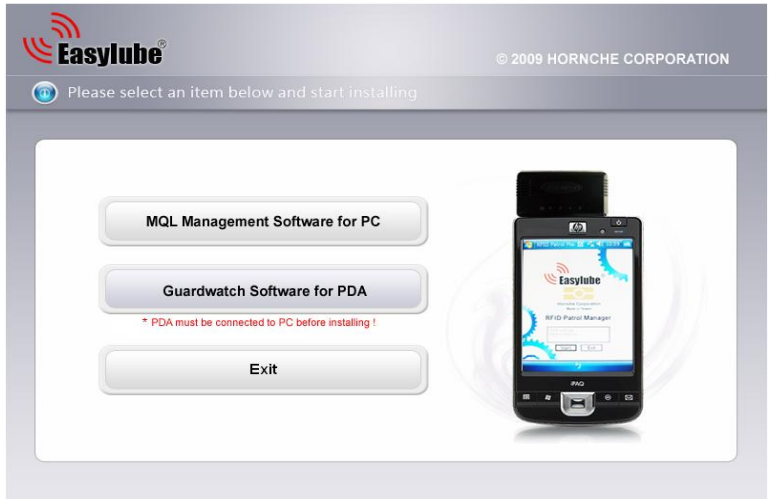
STEP 1 Software install

Ensure that you have installed the synchronization software - ActiveSync, MQL software and Guardwatch software as following steps indicated:

❶ At first, insert HP iPAQ Getting Started CD into CD-Drive and then install "**ActiveSync**" **BEFORE** connecting your HP iPAQ to the computer.

❸ Second, insert Easylube Getting Started CD into CD-Drive and then install "**MQL Software**" to the computer.

❸ Following, connect your HP iPAQ to the computer, and follow the screen instructions of PC & HP iPAQ both, STEP BY STEP to complete the installation of "**Guardwatch Software**" to the HP iPAQ.



NOTE: If your HP iPAQ disconnected from the computer, change HP iPAQ connection from "USB to PC". Reinstall and start again.

STEP 2 Inspection route setup

Setup inspection route through install Easylube RFID lubricators or label RFID microchip tag to the existing Easylube lubricators.

❶ Please follow the attached "**Lubricator installation guide**" (on page 12) to installed lubricator. In the meantime, set an initial re-grease period as required for each Easylube RFID lubricators at specified lube points.

NOTE: To assist you with determining the right setting of re-grease period for your specific application, after lube point data is uploading to MQL software, use **MQL Calculation formula** (a simple computerized relubrication calculation program) which helps you decide which period setting is right for you.

Or

❸ If you had existing Easylube 150B, Classic or Elite lubricators in the plant, all you need to do is to label the RFID tag on Easylube lubricator's **main body**.

An obvious benefit is that no lubrication points will be missed out and all lubrication related problems will be attended to promptly regardless of location and difficulty.

STEP 3 Transmit lube point data using PDA

Collect all lubrication point data to HP iPAQ by taking into consideration of actual operating environment as following steps:

❶ Turn on your HP iPAQ, go to **START**, click "**Guardwatch® Software**" to get the program started.

*First time users: go to **PROGRAM**, click "**RFID Patrol Manager**" to get the program started.

❸ Plug in Easylube® RWD145B-EL RFID reader into HP iPAQ, **COM1 is plug in** will appear on screen.

❸ Click **START** button, **COM1 opened** will appear on screen. Your HP iPAQ is now ready for data entry.

❹ Sense Easylube® Reader to each Easylube® RFID tag systematically; On event if lube point data is not yet input, the **REGISTER** button will appear on screen.

❺ Click **REGISTER** button, **Registration table** will appear on screen (Fig.1), fill in lube point information as required.

NOTE: If relube instruction is not available on site; please fill in "0" to indicate none, after lube point data uploading into MQL software the validity data to be supplemented into calculation table as required.

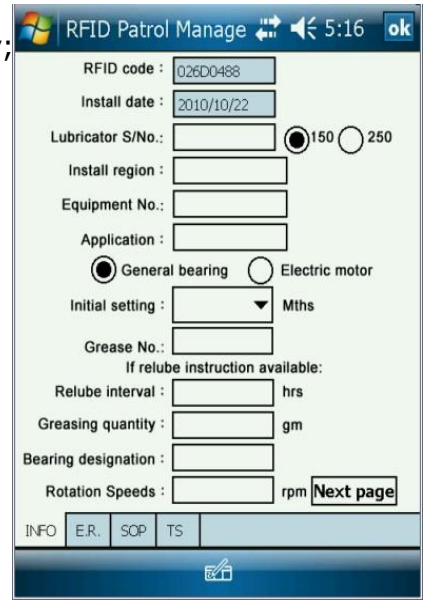


Fig. 1

❻ Next, click **NEXT PAGE** button, **Bearing Operating Conditions table** will appear on screen (Fig.2). Select bearing working conditions as required.

NOTE: Please provide all of the information needed to enhance the effectiveness and efficiency for inspection routes.

❼ Step by step collect each lube point data to HP iPAQ by considering of actual operating condition requested.

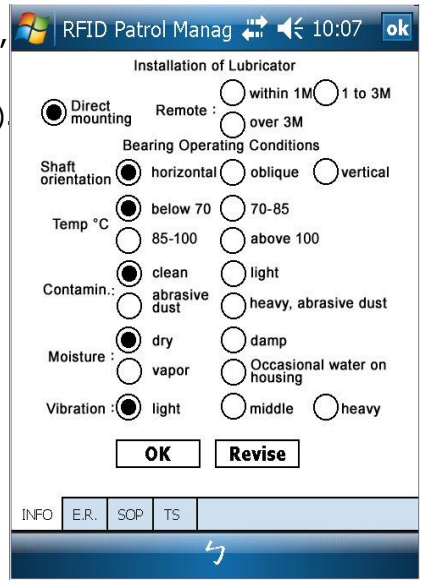


Fig. 2

STEP 4 Transfer PDA data to MQL software

Upload the collected information from HP iPAQ to MQL software and complete all of the information requested.

❶ Before running the MQL software, plug-in "**Smart Lock**" into the USB connector and click **Shortcut** on the desktop.

NOTE: The MQL software comes with 2 "Smart Lock" keys. The purpose is to maintain an accuracy of data during updating, changing and modifying for data protection.

❸ For initial setup; click shortcut of MQL Management Software on screen, go to **System** ICON (Fig.3) and click **User Set Up**. User set up table will appear on screen, follow the instructions and fill in the blanks as requested including User and Supplier information.

❸ Connect your HP iPAQ to the computer, go to **System** ICON (Fig.3) and click **DB TRANSFER**; DATA Transfer processing table will appear on screen, follow the instructions on the screen to complete uploading of data.

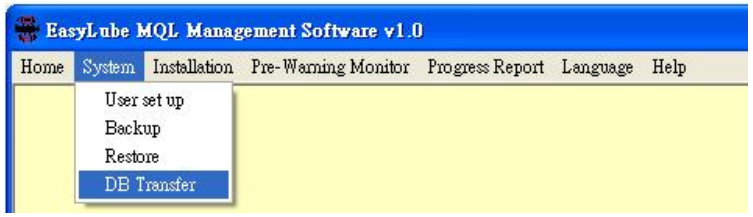


Fig.3

The **SYSTEM** ICON (Fig.3) included:

User set up – for record of User and Supplier information; click REVISE to modify the original info, and click ENTER to complete revision.

Backup – for file backup; Save will appear automatically when exit the software, asking the file to be backed up.

Restore – for restore the backed up file; click restore and the existing file window will appear, select the file and click open to restore it.

DB Transfer – for upload the collected data to MQL software of PC or download an up-to-date report to Guardwatch Software of PDA.

❹ Next, go to **Installation** ICON, and click **Registration** (Fig.4).

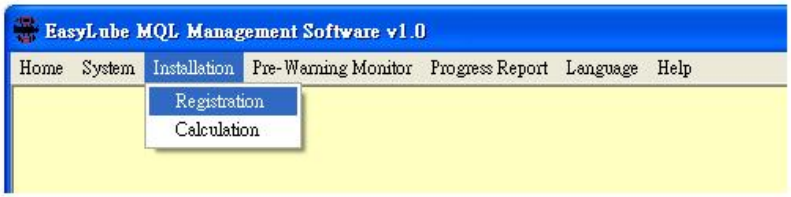


Fig.4

The **INSTALLATION** ICON (Fig.4) included:

Registration – Click each targeted lube point on the table; the uploading information will appear on screen. The initial data is transferred from HP iPAQ; click **REVISE** to amend the initial data, and click **ENTER** to complete revision.

Calculation – Click **Calculation** (Fig.4) into MQL calculation program; or go to **Registration** click each targeted lube point on the table (the single information will appear on screen) and then click **GO** button for calculation, revise or review record.

Register Procedure:

Follow register procedure to complete all individual data by new input or amendment.

❶ Click each targeted lube point on the table; the uploading information will appear on screen, and click **REVISE** for filling new data or amending previous data.

❷ Make sure that all individual information is validity accordingly to established data for each lube points.

❸ Click **GO** button for MQL calculation.(Refer to page 8)

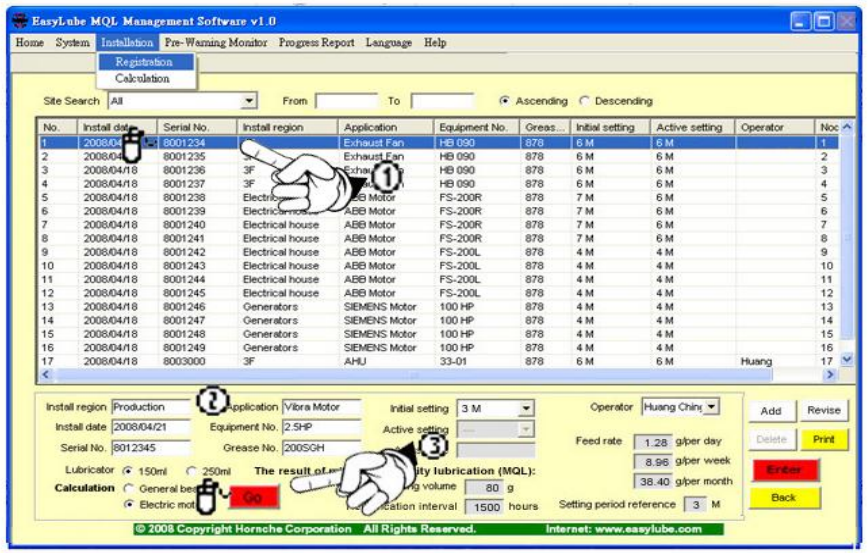


Fig.5

REMARK:

Usage of MQL calculation, please refer to page 8. After calculation is completed; the program will retrieve your calculated records for review, then go back to **REGISTRATION** page, click **REVISE** to amend the initial data, and click **ENTER** to complete revision.

The description of **REGISTRATION** content window (Fig.5)

Install region	A location where the lubricator is installed.
Install date	The date of lubricator is installed.
Serial No.	Lubricator serial number.
Application	The name of equipment which lubricator is to be installed to.
Equipment No.	Assign number to the equipment.
Grease No.	Grease specs number being used by the auto lubricator.
Initial setting	The initial setting is uploading from HP iPAQ before MQL calculation to put into practice.
Active setting	The active setting will appear automatically through calculated computation according your application.
Adjust date	The program will retrieve your calculated date for review.
RFID code	The RFID code will be retrieved from HP iPAQ
Operator	Select the operator who is in charge of the updating. (from registration member in user set up)
MQL	This MQL provide expert advices on relubrication volume and interval for best lubrication procedure.
Grease Feed Rate	The grease feed rate and lubricator's recommended setting period (months) will appear automatically through computer calculation according to your application.
Setting period reference	

MQL (Minimum Quantity Lubrication) Calculation

NOTE : To assist you with determining the right amount of grease for each specific application, use MQL Calculation formula, a simple relubrication calculation program will help you decide which period setting is right for bearing. Make sure that each bearing data and actual working conditions are given correctly.

❶ Base on the given data, MQL software will start conducting auto calculation on Minimum Quantity Lubrication (MQL) and lubrication intervals.

❷ Input bearing data as requested; then select the grease replenishing way, the MQL program will automatically calculate the specific bearing's **Regreasing Volume**.

❸ Then select the bearing type, rotation speed and actual working condition (Fig.6), the MQL program will automatically calculate the actual **Relubrication Interval**.

NOTE: The relube interval will change accordingly to the options that you've made.

❹ **Lubricator Feed Rate** and **Setting Period** will appear on screen. When it is confirmed; click **RESET** at first and then click **ENTER** to complete MQL calculation. (The program will Return to Registration page automatically)

❺ Back to the Registration page; follow the instruction to **Active Setting**, select **Operator** and make sure all information provided is correct, click **REVISE** at first and then click **ENTER** to complete data registration.

NOTE:

If any data is rewritten; you have to click **RESET** or **REVISE** at first, and then click **ENTER** to complete data registration.

REMARK:

As more advanced greases are being developed to overcome harsh working conditions such as for high temperature, wet or high vibration, the adjustments of relubrication interval can be alter according to each bearing operating conditions.

OEM pre-filled grease cartridge is recommended not only guarantees grease quality and product performance optimization, but also enables great reduction in grease consumption and overall maintenance costs. Please consult your local Easylube® agent for further information.

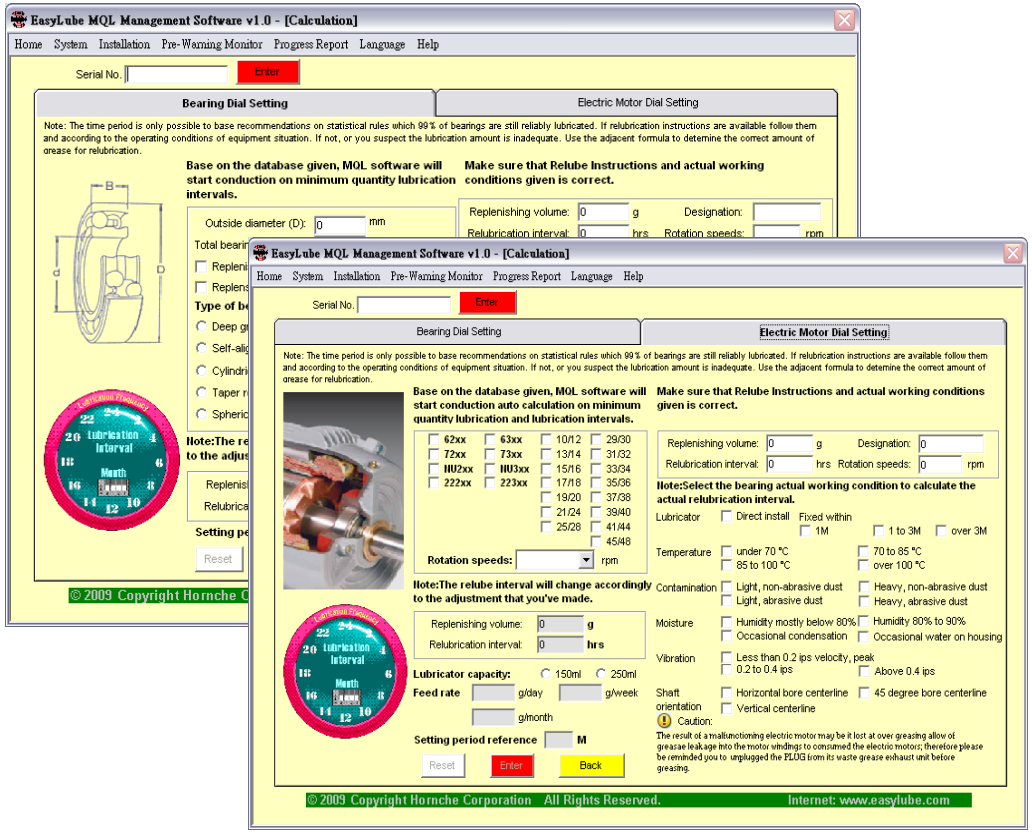


Fig.6

STEP 5 Keep an up-to-data report to PDA

To ensure the efficiency and effectiveness for routine inspection, always maintain an up-to-date report to your HP iPAQ before performing inspection route.

❶ Before performing inspection route, connect your HP iPAQ to the computer and click **SHORTCUT** of MQL software on the desktop.

❷ Go to **System** (Fig.7), click **DB Transfer** button.

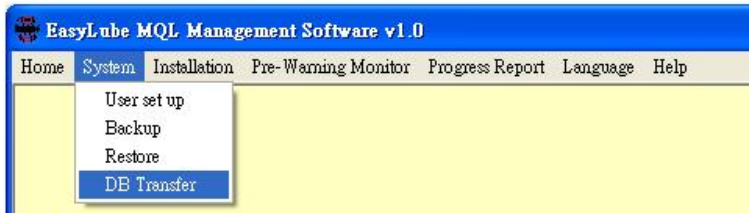


Fig.7

❸ Click **DOWNLOAD**, the program will automatically complete the downloading of an up-to-date data to Guardwatch Software of HP iPAQ.

This RFID system is user-friendly designed for easy access to data from each lube point through a pocked-size PDA and track possible problems during routine inspection patrol.

Routine Inspection Patrol

During a routine inspection patrol, lubrication technician will only need to bring along the handheld PDA.

Follow the steps:

❶ On a routine inspection patrol, use Easylube® Reader to touch a mark  at main body of lubricator for scan RFID tag with. The specific lube point data will appear on screen (Fig.8).

❷ Match all given information with the actual operating condition. If information is matched, choice a name of patrol person and then click **OK** button proceed to next step.

❸ If data was not matched, click **Error Report** button, the record table will appear (Fig.9) for you to write down the abnormality.

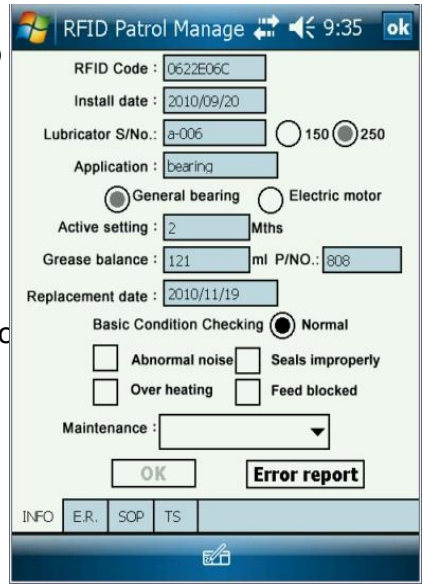


Fig. 8

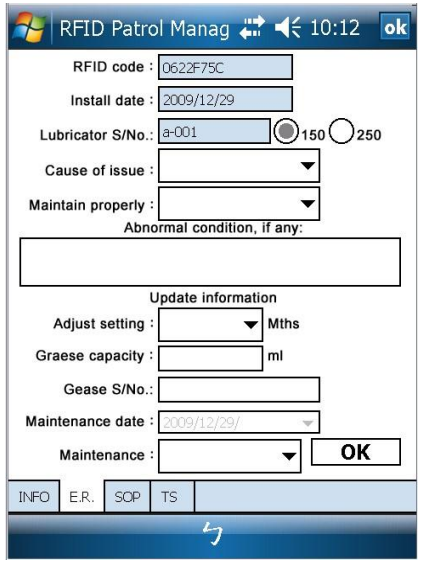


Fig. 9

IMPORTANT:

If Easylube® RFID lubricator period setting or grease balance doesn't matched with the current quantitative data, please validate of those figures conditioned to active lubricator unit.

Besides keeps a record of the abnormality as required.

STEP 6 Inspection Route Report

NOTE: The conduct of routine inspection and downloading of RFID data from each lube point is important and must be accomplished. It enables real-time tracking of bearing conditions and maintenance issues.

Upload the collected report to MQL software after inspection patrol.

❶ After inspection patrol, connect your HP iPAQ to the computer. Go to **System**, click **DB transfer** button (Fig.7).

❷ Click **Upload**, the program will automatically uploading all the collected data to MQL software.

❸ Next, click **Progress Report** button (Fig.10).

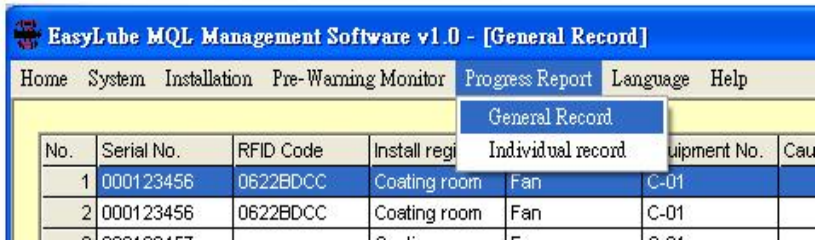


Fig. 10

RECOMMENDATION:

To allow smooth operation, it's advisable to separate person in-charge into two groups. Patrol officer will solely in-charge of downloading of RFID data from each lube point; whereas software operator will hold "Smart Lock" keys and conduct uploading/downloading the report.

Progress Report:

When data uploading is completed, the data is automatically transferred to General Record. Therefore, the software operator will then examine the inspection route report as following steps:

❶ Go to **Progress Report**, click **General Record** (Fig.11) and check **Error Report** and **Miss Out**. If there is no lubricator missed out and all bearing are in good working condition, the program will automatically transfer the inspection route report to **Individual Record**.

❷ If there had any bearing abnormality occurred, the program will automatically list out the abnormality at **Error Report** or **Miss Out**. (Fig.11).

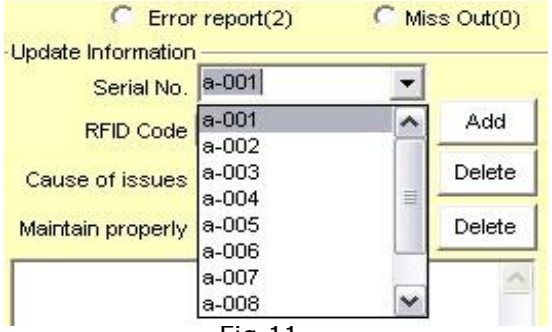


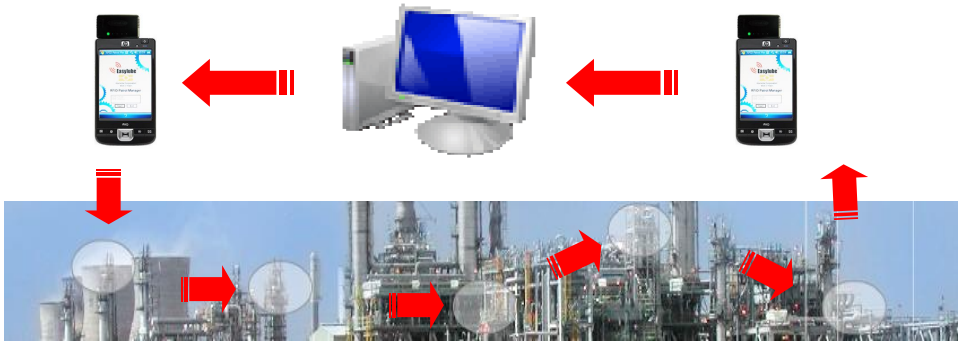
Fig.11

Click **Error Report** (quantity) –
The system is already revealed that error units at side; after you to pick a lubricator serial number, concerning the **Abnormal Statement** will to reveal for your proof.

Click **Miss Out** (quantity) –
The system is already revealed that Miss Out patrol units at side; after you to pick a lubricator serial number, it will list out detail information in which the lube point has been missed out.

* Click **ENTER** after the reveal.

IMPORTANT:
Patrol officer shall return to the miss out lube points to complete the unfinished patrol ASAP. Return to Step 6 uploading the miss report to MQL software.



Inspection Route Procedures

Download each RFID lube point data into PDA from MQL system.

Ensure each lube point data matches the actual operating condition.

Upload the collected data to MQL software.

Progress Report Procedures

Go to **General Record** to check bearing abnormality and missed inspection.

Go to **Pre-Warning Monitor Center** to check grease balance and date of replacement

Pre-Warning Monitor Center gives off warning light (red) 15 days before replacement date.

Pre-Warning Monitor Center

Routine Inspection – The system will automatically display the data for all the lubrication locations and provide the checklist of the **Balance of Consumption** and **Estimated Replenishment Date**, which based on the period setting time of each lubrication condition; under normal condition, the Grease Warning Light will remain GREEN ●.

- **Site Search –** Topper column provide site search function. Pull down the selection and tick Ascending or Descending, the computer will execute your request for review.
- **Statistic Report –** Use the simple sorting by Estimated Replenishment Date before printing; click **PRINT** to print out the Consumption Statistic Report and arrange for procurement tasks.
- **Inspection Tour Card –** Use the simple sorting by Install Region before printing; click **PRINT** to print out the Inspection Tour Card for routine inspection patrol.

IMPORTANT:

The program will automatically issue **Low Grease Level Warning** 15 days beforehand, the RED light warning ● will be automatically indicated and the warning time will be recorded.

With Easylube RFID you can develop a proper lubrication plan and help you to avoid unplanned machine downtime.

- Get expert advice on best lubrication procedures through calculate relubrication volume and intervals.
- Create RFID identification system; ensure each lube point data matches the actual operating condition.
- Easy manage all lubrication data by checking list and lubrication performance history.

Easylube® RFID guarantees greasing with 100% accountability.

Lubricator Installation Guide

IMPORTANT: Please follow below installation guide step-by-step to assure Easylube operate successfully and kindly refer to the Troubleshooting Chart if you encounter any problem during operation.

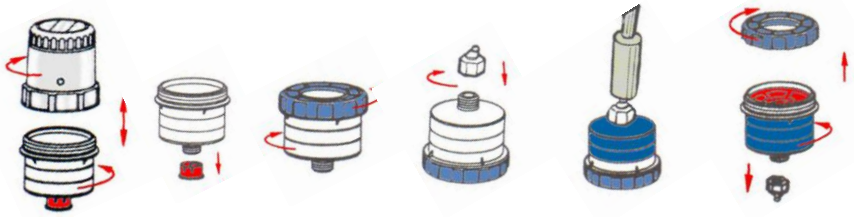
Step 1. Preparation / Maintenance

- This lubricator consists of a **Prefilled Grease Cup** that is a replacement Grease Cartridge designed for refilling at the end of the chosen setting. At first, remove this Prefilled Grease Cup and battery pack from its system connection.

IMPORTANT:
Use only recommended accessories to optimize product performance, reduce grease consumption, prevent contamination and enjoy quick return on investment.

- **Method of do-it-yourself (DIY):**
With any purchase of empty grease cup and refilling kit, please follow the below instructions to conduct grease refilling on the grease cup.

CAUTION:
Use only recommended grease with a grease gun. Do not attempt to fill the cup manually as air may trap within grease and causes blockage or inaccurate feed volume.



Step 2. Position the Press Plate

IMPORTANT: Always follow instructions to replace grease cartridge during refilling process.

❶ Turn the **Press Plate** clockwise until it is seated at the top.

❷ Next, follow the instruction label; rotate the **Press Plate** counterclockwise to the initial working position.

❸ Screw the **Prefilled Grease Cup** into the lubricator body and make sure it is clamp down on the lubricator body. Under normal circumstances, the **Press Plate** will contact **Red Piston** of the cup; a small amount of grease will be discharge at the outlet.

WARNING:
Fail to contact the **Press Plate** to **Red Piston** will cause the press plate turns freely without pressing the piston and result in no grease output.

Step 3. Test Easylube before installation

Easylube lubricator is equipped with Self-Test mode in which enables user to test the lubricator before use.

NOTE: Elite and RFID model lubricator has its auto-test for confirming the correct installation; therefore if you apply above two models, please simply follow step 4.

❶ Remove the top cover and battery. Set 4 DIP (Dual Inline Package) switches to **ON** position using a smal screwdriver or ball pen.

❷ Put the battery back to initiate START; during TEST mode, Easylube will automatically rotate and press the red piston downward every 7 to 8 seconds, a small amount of grease will be discharged.

IMPORTANT:
If the **Red Indicator Light** flashes continuously during operation (dispensing, Test Mode, etc), user should aware that possible causes may occur:

- Feed blockage or excessive pressure within the bearing.
- Grease cup empty.
- Battery low.

Please refer to Table 5 Trouble-Shooting Chart.

Step 4. Set/Change the Dispense Period

The lubricator can be set to any of 12 (months) dispensing periods and each setting will dispense the accurate amount of grease at the desired time. Please refer to **Table 1**.

❶ First, remove the battery pack from the lubricator.

❷ Set DIP switches to desired dispensing period to initial **ON**.

❸ Put the battery back to initiate **START**.

❹ Tighten the top cover.

IMPORTANT:
Always remember to remove the battery for at least 15 seconds (clearing CPU memory setting) whenever dispensing period is changed.

Step 5. Start the Lubricator

❶ After completing the TEST mode, remove the battery. Set DIP switches to **ON** position to the required dispensing period. (Refer to **Table 1**).

❷ Put the battery back into easylube body to initial start. Tighten the top cover.

❸ LED indicator light will auto blink for 5 seconds to activate grease dispense reading mode.

❹ When LED indicator light goes off, it indicates that the lubricator is functioning in working mode.

IMPORTANT:
If the **Red Indicator Light** flashes continuously during any operation (dispensing, Test Mode, etc), user should aware that possible causes may occur:

- Feed blockage or excessive pressure within the bearing.
- Grease cup empty.
- Battery low.

Please refer to Table 5 Trouble-Shooting Chart.

Identification

Make remarks on the top cover label:

- Dispensing period
- Date of installation
- Lubricant used

NOTE: Please use pencil for easy rewritten purpose.

Step 6. Installation

PREPARATION WORK

IMPORTANT:
Make sure that the existing lubricant in bearing is compatible with the grease in the pre-filled grease cup.

❶ Before installation, feed fresh grease into bearing until the old grease was completely removed.

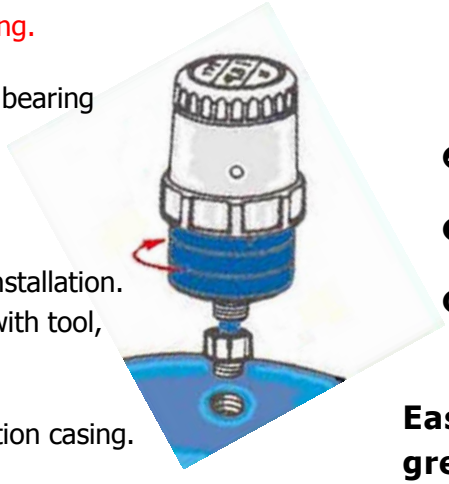
❷ This purging process must be operated slowly at low pressure with a grease gun. Observe where the old grease exists from the bearing? Press harder on grease gun only when purging process is blocked.

Direct Mounting

CAUTION:

Use mounting bracket only on working condition as bellow stated:

- ♦ Ambient temperature exceeds 140°F (60°C).
- ♦ Grease nipple's thread is 6mm, 1/16" or less.
- ♦ Difficult to access area during grease refilling.



❶ Clean grease nipple, then remove it from bearing housing.

❷ Refer to **Table 3** to select thread type.

❸ Apply seal tape at all connectors during installation. Connect the adapter to bearing housing with tool, then lock the lubricator.

❹ Cover the lubricator with provided protection casing.

Remote Mounting

CAUTION:

- ♦ Do not install the lubricator at ambient temperature is exceeding 140°F (60°C) or 15 feet (4.6 m) away from the lubrication point.
- ♦ Keep the tube length and bends to the minimum.
- ♦ P-405F mounting bracket and PU tube are suitable for most application. But if the bearing surface temperature is exceeding 122°F (50°C), then P-406F and copper pipe are needed.

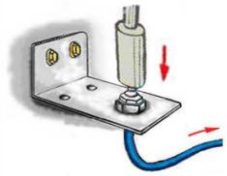
❶ Install the mounting bracket firmly to a appropriate site.
► **P-506C + P-405F or P-406F**

❷ Clean grease nipple, then remove it from bearing housing. Select thread type (**Table 3**).

❸ Apply seal tape at all connectors. Connect tube to bearing housing with tool, then connect the tube from the bearing housing to mounting bracket.

❹ Feed fresh grease from tube into bearing.

❺ Lock the lubricator at the mounting bracket.



❻ Cover the lubricator with provided protection casing.

Easylube® RFID lubricator guarantees greasing with 100% accountability.

Table 1. DIP switch setting for Dispense Period

Dispense Period Setting **(Month)**	**DIP Switch Levers On**	Period Span Between Dispense Cycles **(Hrs)**	Amount/Cycle ml (oz)		Amount/Day ml (oz)		Amount/Week ml (oz)		Amount/Month ml (oz)	
			150	250	150	250	150	250	150	250
1	**1**	2	0.417 ml (0.015 oz)	0.694 ml (0.024 oz)	5.00 (0.176)	8.33 (0.293)	35.00 (1.232)	58.33 (2.054)	150.00 (5.282)	250.00 (8.803)
2	**2**	4			2.50 (0.088)	4.16 (0.147)	17.50 (0.616)	29.16 (1.027)	75.00 (2.641)	125.00 (4.401)
3	**1 and 2**	6			1.67 (0.059)	2.77 (0.098)	11.67 (0.411)	19.44 (0.685)	50.00 (1.761)	83.33 (2.934)
4	**4**	8			1.25 (0.044)	2.08 (0.073)	8.75 (0.308)	14.58 (0.513)	37.50 (1.320)	62.50 (2.201)
5	**1 and 4**	10			1.00 (0.035)	1.66 (0.059)	7.00 (0.247)	11.66 (0.411)	30.00 (1.056)	50.00 (1.761)
6	**2 and 4**	12			0.83 (0.029)	1.38 (0.049)	5.83 (0.205)	9.72 (0.342)	25.00 (0.880)	41.66 (1.467)
7	**1 and 2 and 4**	14			0.71 (0.025)	1.19 (0.042)	5.00 (0.176)	8.33 (0.293)	21.43 (0.755)	35.71 (1.257)
8	**8**	16			0.63 (0.022)	1.04 (0.037)	4.38 (0.154)	7.29 (0.257)	18.75 (0.660)	31.25 (1.100)
9	**1 and 8**	18			0.56 (0.020)	0.92 (0.032)	3.89 (0.137)	6.48 (0.228)	16.67 (0.587)	27.77 (0.978)
10	**2 and 8**	20			0.50 (0.018)	0.83 (0.029)	3.50 (0.123)	5.83 (0.205)	15.00 (0.528)	25.00 (0.880)
11	**1 and 2 and 8**	22			0.45 (0.016)	0.75 (0.026)	3.18 (0.112)	5.30 (0.187)	13.64 (0.480)	22.72 (0.800)
12	**4 and 8**	24			0.42 (0.015)	0.69 (0.024)	2.92 (0.103)	4.86 (0.171)	12.50 (0.440)	20.83 (0.733)

MQL calculation –

Performing the right dispensing of grease and re-greasing intervals at each bearing are the 2 main keys to maintaining bearing efficiency. Therefore, please apply minimum volume to lubrication (MQL) by strictly formula that calculate each bearing requirement. If the machine comes with OEM lubrication recommendation, follow the OEM guideline, then take further steps to set actual bearing operating conditions.

Dispense Period Setting –

The Pre-Warning Monitor Center of MQL software will conduct precise calculation on grease consumption and the refilling date for each lubricator.

NOTE: Please follow dispense period setting strictly for each bearing based on MQL requirement to optimize bearing performance.

Table 2. Easylube Lubricator Specifications

Lubricator Model	**UL** Approved in hazardous location	Material Outlet	Capacity	Dispense Period Setting	Operating Temperature Range	Operating Pressure Range	Dimensions (Stature x Diameter)	Electrical Ratings	Replaceable Grease Cartridge	**CE** Certificate
150 Classic **150 Elite** **150 RFID**	Class I Division 2 Group B, C, D Class II Division 2 Group F, G Certificate # E218441	1/2 " PT (m)	150 ml (c.c.) (5.28 oz)	Adjustable; 1 to 12 months (see Table 1) With Patented Pre-Warning System and LED indicator	-20 to 60° C (-4 to 140° F)	75 - 150 psi (5 - 10 bar) Self-Adjustable on balance output pressure within the pipeline	15.2 x 8.9 cm (6 x 3.5")	**P-613B** Lithium Battery Pack 6 Volt CR-P2	**2218** Versatility **1000** SHC synthetic **8318** FDA grade or DIY filled with grease your choice	EC Council Directive 2004/180/ EC TÜV registration No. AE 50169543 0001
250 Elite **250 RFID**			250 ml (c.c.) (8.80 oz)				19 x 10.25 cm (7.48 x 4.04")			

Certificate # DEMKO 11 **ATEX** 1009108X for use in Class I, Zone 2, Ex nA nL IIB T5.

IMPORTANT:

Low temperature Limitation – this is the lowest temperature at which the lubricator (motor) in operation. Other factors which may need to take into consideration are grease viscosity, grease operating temperature, especially grease pumpability.

Warning:

Please comply with the local environmental protection laws to recycle or dispose the replacements (grease cup or battery case). Do not burn or puncture the battery as toxic vapors could be released and caused injury and environmental pollution.

Replacement Usage –

- To guarantee product performance, grease cup and battery are required to be replaced at every end of dispensing period. When **RED indicator light flashes**, maintenance technician has to check immediately whether it is feed blockage, grease empty or battery low.
- Use only recommended accessories to optimize product performance, reduce grease consumptions, prevent contamination and enjoy quick return on investment.

IMPORTANT:

If you encounter any problem during operation, refer to Table 5 Troubleshooting Chart to solve problems.

Table 3. Accessories for Direct Mounting

Part No.	Description	Part No.	Description
P-403S	Straight Adapter 1/2"(F) x 3/8"(M)	P-403A	45° angle Adapter 1/2"(F) x 3/8"(M)
P-402S	Straight Adapter 1/2"(F) x 1/4"(M)	P-402A	45° angle Adapter 1/2"(F) x 1/4"(M)
P-401S	Straight Adapter 1/2"(F) x 1/8"(M)	P-401A	45° angle Adapter 1/2"(F) x 1/8"(M)
P-410S	Straight Adapter 1/2"(F) x 10 mm(M)	P-410A	45° angle Adapter 1/2"(F) x 10 mm(M)
P-408S	Straight Adapter 1/2"(F) x 8 mm(M)	P-408A	45° angle Adapter 1/2"(F) x 8 mm(M)

Connectors

MM-111	Extendable pole 1/8"(M/M) x 29mm L	FF-101	Straight Connector 1/8"(F/F)
MM-121	Extendable pole 1/8"(M/M), 58mm L	FF-191	90° angle Connector 1/8"(F/F)
MM-131	Extendable pole 1/8"(M/M), 89mm L		

(M)：Male Thread Joint　(F)：Female Thread Joint

Oil Lubrication Guideline

For oil lubrication, the lubricator must be located right below the lubrication point level. Or, use oil throttle or check valve at grease cup output to prevent oil leakage.

Table 4. Accessories for Remote Mounting

PU Tube - Normal condition

P-506C	Mounting Clip	**P-508U**	PU Tube, ∅ 5 x 8 mm 100 meters per roll
P-405F	Mounting Bracket		
P-502U	Straight Connector 1/4"(M)	P-592U	90° angle Connector 1/4"(M)
P-501U	Straight Connector 1/8"(M)	P-591U	90° angle Connector 1/8"(M)
P-500U	Straight Connector 1/16"(M)	P-590U	90° angle Connector 1/16"(M)
P-108S	Straight Adapter 1/8"(F) x 8 mm(M)	P-208A	45° angle Adapter 1/4"(F) x 8 mm(M)
P-106S	Straight Adapter 1/8"(F) x 6 mm(M)	P-106A	45° angle Adapter 1/8"(F) x 6 mm(M)

Copper Pipe - High Temp. condition

P-506C	Mounting Clip	**P-608H**	Copper Pipe, ∅ 6 x 0.8 mm 50 meters per roll
P-406F	Mounting Bracket		
P-603H	Straight Connector 3/8"(M)	P-693H	90° angle Connector 3/8"(M)
P-602H	Straight Connector 1/4"(M)	P-692H	90° angle Connector 1/4"(M)
P-601H	Straight Connector 1/8"(M)	P-691H	90° angle Connector 1/8"(M)
P-108S	Straight Adapter 1/8"(F) x 8 mm(M)	P-201A	45° angle Adapter 1/4"(F) x 1/8"(M)
P-106S	Straight Adapter 1/8"(F) x 6 mm(M)	P-208A	45° angle Adapter 1/4"(F) x 8 mm(M)

Table 5. Troubleshooting Chart

Indications	Possible Problems	Solution
Red indicator light flashes	• Incorrect Operation	• Refer to instructions of Lubricator Installation Guide step by step, and refer to the STEP 3 test the lubricator before use.
	• **Grease Cup empty**	• Replace new battery and pre-filled grease cup.
	• **Feed blockage,** back pressure exceeds 75 psi (5.2 bar) or tube is not completely purged	• Purge the bearing and tube slowly with a grease gun until blockage is released. Make sure that the old grease is completely purged out from bearing housing. • Use test apparatus to measure back pressure. Keep lube length and bends to the minimum.
	• Grease get harden, thin off or oil separation	• Switch to Easylube recommended grease. • Follow MQL calculation to set dispense period.
	• Battery low	• New battery must be used with each replacement of pre-filled grease cup.

Indications	Possible Problems	Solution
Lubricator does not dispense	• **Battery low**	• Warning light consumes battery; Verify battery output voltage, it should exceed 6.0V. • Do not use battery repeatedly.
	• **Press plate** is not correctly positioned	• Refer to the STEP 2; Check press plate position and make sure that it is in contact with the red piston at the grease cup. • Test the lubricator before use.
	• Incorrect type of grease.	• Use only Easylube recommended grease.
	• Incorrect settings	• Reset dispensing period and conduct TEST mode.

Quality Assurance and 100% Customer Protection

HORNCHE Corporation provides **Two-Year** warranty (from the date of delivery) to all Easylube users that purchased from HORNCHE's authorized distributors.

This product is fully supported by HORNCHE's International Service Centre. During warranty period, any defective unit will be replaced at HORNCHE's authorized distributors.

Please contact service@easylube.com for more information.

Manufacturer:

HORNCHE CORPORATION Taiwan