



RFID Patrol Management Automatic Lubrication System

**The Best Computerized Maintenance
Management System That Meets Your
Specific Needs In Plant and Equipment
Operation**



Website: www.easylube.com

Hornche Corporation
Leading renovator of single-point lubricators

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Easylube®

Easylube® RFID, the scientific designed automatic lubricator which help to solve bearing lubrication and management problems.

1. SCIENTIFIC CALCULATION –

Re-greasing volume and intervals are calculated using MQL formulation.

2. AUTOMATIC RE-GREASING MECHANISM –

Electromechanical gear set guaranteed greasing work is executed and managed with statistic certainty.

3. RFID PATROL MONITORING SYSTEM –

Establish a system which effectively identify, monitor and solve lubrication inspection and management issue.

4. COMPUTERIZED MANAGEMENT SYSTEM –

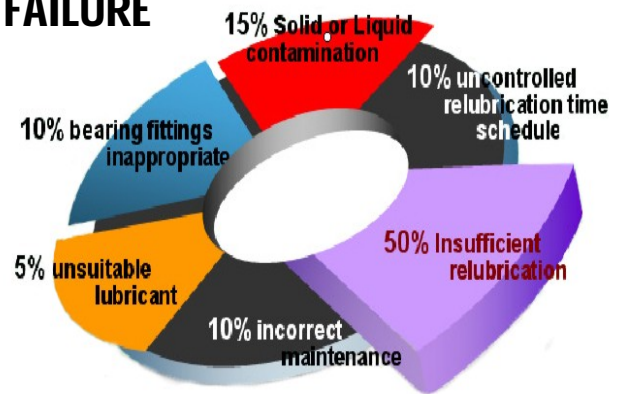
Manage and record each bearing specification, working condition, lubrication and maintenance history.

Most grease-lubricated bearings fail to reach their life expectancy. This is because the procedure is unclear and/or hard to follow. In fact, MQL (Minimum Quantity Lubrication) formulation has the proven processes and procedures in providing the correct “Grease Volume” and “Re-greasing Interval” for optimizing bearing reliability.

Unfortunately, maintenance engineer still relies on the traditional manual greasing which can lead to poor control in greasing pressure, over or under lubrication. To achieve proper lubrication, special attention should be paid on the re-greasing interval and grease volume to ensure lubricating film remains perfectly around the clock. Therefore, the application of exact volume and re-greasing interval from MQL calculation is a must. Proper lubrication is crucial because under lubrication will cause a premature bearing's failure while 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.

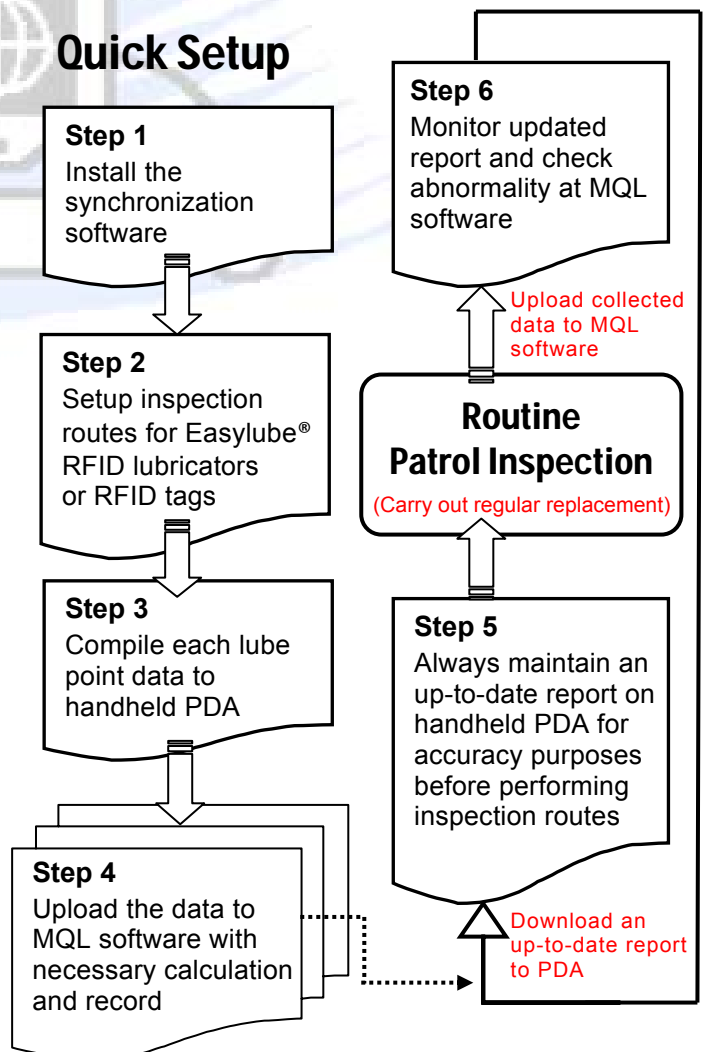
Although this is a common lubrication problem, it can be easily resolved by the latest Easylube® RFID lubricator. The working principle of Easylube® RFID enables each bearing is being managed effectively under MQL formulation. Ball and cylindrical roller bearing used in electric motors are good examples which require MQL formulation.

CAUSES OF PREMATURE BEARING FAILURE



The above statistics show that about 90% of premature bearing failures are results from improper lubrication. With Easylube® RFID, the exact grease volume and re-greasing interval for each bearing can be easily calculated and plan as well as the patrol management system. During routine inspection, each lube point can be clearly identify, monitor and record just by carrying a pocket-size PDA which contained RFID reader and Guardwatch software. It enables real time tracking of bearing to achieve maintenance excellence especially in equipments which are located at isolated, dangerous and negligible area.

Quick Setup



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RFID Patrol Management Kit

Package contents:

1. **Lubrication Management CD (1 piece)**
 - ❖ MQL Software (calculation formula/ PC or NB)
 - ❖ Guardwatch Software (PDA)
2. **USB Smart Lock Key (2 pieces)**

Note: Handheld PDA did not include in the package;
Technical Guidebook depends on availability.



Develop a PM System with MQL Software

There are many choices to make when deciding on a preventive maintenance (PM) system. In some plant it may be beneficial to use only with a spreadsheet, while plant with complicated and sophisticated machinery that work under severe and harsh environment condition may need a complete dedicated system. Setting up a computerized bearing management system with MQL formulation may take a little time to complete initially, but the database which is built will be a great tool to enhance the overall efficiency and effectiveness of maintenance system, reduce maintenance costs and uncontrolled downtime of machinery.

Getting Started

Ensure that you have installed the synchronization software that includes **ActiveSync**, **MQL Software** and **Guardwatch Software**. To get the program started, the following steps need to be implemented:

1. Install Easylube® RFID lubricators or tags and setup inspection routes plan.
2. During inspection route, collect each lube point data with handheld PDA.
3. Upload PDA data to MQL software. Check grease volume and re-greasing interval on each bearing.

Now, Easylube® RFID system is ready to replace labour-intensive manual greasing, remove uncertainty and human errors, especially where equipments are

located in an isolated, scattered, dangerous and negligible area.

MQL Calculation

Performing the right grease volume and re-greasing interval at each bearing are the 2 main keys in maintaining bearing efficiency. Therefore, conducting minimum quantity lubrication (MQL) to each bearing is a must.

The Right Grease Volume

Grease volume control has been a long-standing problem for industry, while simply following OEM recommendations may not be enough. MQL software is the only solution which provides simple and logical calculation to determining grease volume and re-greasing interval to be added.

The Right Greasing Interval

Although the re-greasing interval can be determined by experience, reports and charts, however, over or under lubrication is unavoidable. MQL formulation enables the exact setting of re-greasing intervals by taking into consideration of each bearing specification and actual operating conditions. This makes it so unique in application.

General Bearing Setting

Electric Motor Setting

The exact grease volume and re-greasing intervals for each bearing are 2 fundamental keys required to maintain bearing stability.

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Guardwatch Software

Guardwatch software contains 2 functions, “**Data Registration**” and “**Identification**” The software that downloaded to PDA is used for data collection either from the newly installed Easylube® RFID or RFID tags. It enables uploading of data to MQL software for data registration, and downloading of up-to-date data to PDA before routine inspection. It provides bearing identification and accuracy of data during routine inspection.



Note: Based on individual setting which is planned, MQL software will conduct auto calculation and report on grease balanced during routine inspection. Therefore, downloading of up-to-date data from MQL software to PDA before routine inspection is a must.



RFID Data Recognition

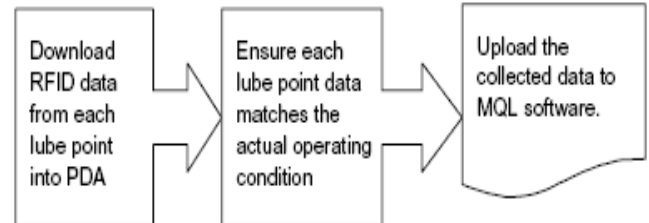
RFID consists of a reader and RFID tag. The reader will transmit radio wave to RFID tag in which each RFID tag will transmit its own data back to reader for individual data acquisition.

The system will first collect data from Easylube® RFID or RFID tag using PDA and register all lubricators by uploading the data to MQL software. After the registration, user will need to download the up-to-date data from MQL software before routine inspection and uses RFID reader to scan RFID tag on each lube point, data from each lubricator will then display on PDA. It enable user to check whether the given information matches the actual operating condition. If data matches, click OK; if not, click REVISE, an Error Report table will appear on PDA. Its real-time tracking capability enables user handles and records all lubrication-related issue promptly which ensure bearing is under the best working condition, thus achieve higher accuracy and effectiveness of routine inspection.

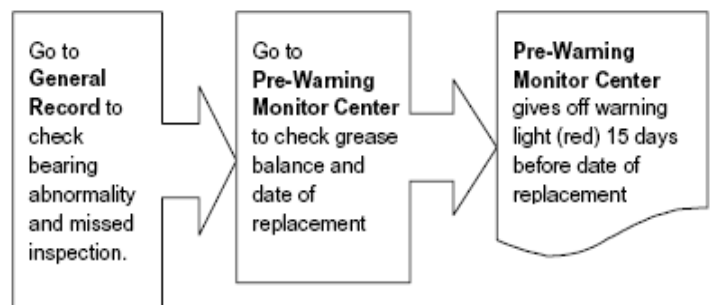
Easylube® RFID Patrol Management System is a powerful tool to enhance on lubrication efficiency. The patented electromechanical mechanism at Easylube® RFID single point lubricator enables total control over grease volume and re-greasing interval. It is easy to operate, economically and suitable to use at any location.

Routine patrol inspection, checking and data recording are crucial in maintenance program. A good maintenance program will stabilize and extend the service life of a bearing while improper lubrication procedures will leads to premature bearing failure which can have a negative impact on production efficiency.

Inspection Route Procedures



Progress Report Procedures



Easylube® RFID Tag

The specific information contained in each RFID tag is similar to an electronic passport, by labeling the tag on each lube point; you can be rest-assured that all bearings in the plant are well managed.

Just label RFID tag on Easylube® lubricator (Classic and Elite models) and it will serve the same function as Easylube® RFID lubricator, the most significant benefit is that no lubrication points will be missed out for inspection.



Dispense Time Setting

MQL software helps to determine the right re-greasing interval and right grease volume on each bearing by taking into consideration of actual operating condition with OEM as baseline.

To prevent premature bearing failure, first, make an attempt to ensure the dispense time setting of Easylube® RFID single-point lubricator is set based on each bearing's MQL formulation. Next, stick on to RFID patrol management system to monitor and manage each bearing status during routine inspection.

Easylube®

Single-Point Automatic Lubricator



Easylube® Guarantees Greasing with Accountability

It is a maintenance-free, cost effective and easy operated device especially designed for MQL formulation. Its reliability and simplicity of dispense setting had earned a reputation in the marketplace. It ensures bearings in good working condition regardless of weather, operation requirement and harsh environment.

Easylube® single-point lubricator provides an adjustable dispense setting of 1 to 12 months. Grease turns to solid soap and loses its lubricity when exposed to constant high pressure force. Easylube® imposes minimum lubrication pressure to maintain grease quality and the patented infra-red control system provides 24-hour continuous monitoring to track feed blockage, grease harden, empty grease cup or low battery. LED warning light will flash to make users aware and take corrective steps on the occurrence.

The cost-effective replacement

Easylube® lubricator consists of an electromechanical gear set, replaceable grease cup and battery. Easylube® product life cycle is 5 years. Its grease cup and battery are made by the world leading manufacturers to ensure stability and reliability, making it suitable for a wide variety of application especially equipments which are located at hard to reach or hazardous location. It is advisable to use only recommended accessories to optimize product performance, reduce grease consumptions, prevent contamination and enjoy quick return on investment.



150 Classic

Easylube® Classic comes with a microchip circuitry **version 4.0**, a motor, an electromechanical gear set, a patented infra-red control system and LED warning light. Its high greasing precision, easy time-setting feature, durability, especially the capability to monitor each greasing condition has built an excellent reputation in the marketplace. The red warning light is vital in lubrication maintenance to alert user to take immediate action against abnormality incident.

Grease Capacity: 150 ml



150 Elite & 250 Elite

Easylube® Elite comes with a microchip circuitry **version 5.0**, a motor, an electromechanical gear set, a patented infra-red control system and a **Bicolor LED warning light**. It is the enhanced design to minimize battery consumption and maximize work stability. Bicolor LED warning light enables users a better visual identification on lubrication status.

This model comes with 2 sizes of grease capacity: 150 ml, 250 ml



150 RFID & 250 RFID

Easylube® RFID is the integration of Easylube® Elite with RFID (radio frequency identification) technology which enable tracking, monitoring and managing of lube points which scattered around the plant through Guardwatch Patrol Management Software.

It simplifies maintenance practice, makes routine inspection more effective and ensured the entire bearings in the plant are well managed which in turn reduce the overall maintenance cost, improve worker safety and increase plant productivity.

Grease Capacity: 150 ml, 250 ml



Easylube®

Industry-wide appropriate category

- Power generation
- Petroleum products
- Iron/Steelmaking
- Heat processing
- Tile/cement manufacturer
- Chemical industry
- Automotive manufacturer
- Glass/textile industry
- Semiconductor/electronics
- Military/government
- Public transportation
- Crematoriums
- Amusement park
- Mining
- Papermaking
- Canning industry
- Rubber/plastics
- Beverages/brewery
- Food processing
- Pharmaceutical factory
- Machinery manufacturer
- Flour mill
- Hospital/hotels
- Waterworks
- Sewage Treatment plant
- Shopping mall

Elements

Electric Motors, Water Pumps, Conveyors, Blowers, Air Handling Units, Air Conditioners, Cooling Towers, Exhaust Fans, Ventilators, Air Compressors, Hoists, Escalators, Lifts, Agitators, kilns...etc, equipments.

Example of applications



Top 4 reasons for dedicated lubrication plan

- ◆ Proactive maintenance has now received worldwide attention as the single most important means of achieving savings unsurpassed by conventional maintenance techniques.
James C. Fitch. P.E.
- ◆ Much of the maintenance in most plants is performed in accordance to guesswork based on an owner's manual as opposed to the machine's true condition and need.
A Forbes Magazine study
- ◆ It is almost certain that equipment is either being over-lubricated or under lubricated, and with most sites, management doesn't know which.
Lubrication Engineer, UNOCAL Corp.
- ◆ 6-7% of the gross national product (240 billion) is required just to repair the damage caused by mechanical wear. Wear occurs as a result of poor lubrication practices.
Massachusetts Institute of Technology

Top 4 reasons for dedicated automatic lubrication

- ◆ A lubrication/contamination control program was implemented plant wide that reduced the cumulative frequency of all tribological failures (from wear & contamination) by 90%.
Nippon Steel
- ◆ A study was done that concluded lubrication system cleanliness extended time between repairs by 20-50 times depending on level of cleanliness.
The British Hydromechanics Research Assn.
- ◆ International Paper reported a 90% reduction in bearing failures in just six months after they implemented a lubrication/contamination control program in their Pine Bluff Paper Mill.
International Paper Company
- ◆ It is generally accepted in the lubrication community that 60% of all mechanical failures are due to inadequate or improper lubrication practices.
Kenneth Bannister, Lubrication for industry

Please consult your nearest Easylube® authorized distributor on product description, application, installation and services. If you encounter any problem during operation, kindly refer to the Troubleshooting Chart which is available to download from Easylube® website at www.easylube.com.

Easylube® DIP switch setting for Dispense Period

Dispense Period Setting (Month)	DIP Switch Levers ON	Time 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 (0.015)	0.694 (0.024)	5.00 (0.176)	8.33 (0.293)	35.00 (1.232)	58.33 (2.054)	150.00 (5.282)	250 (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 (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)

Easylube® Lubricator Specifications

UL Approved in hazardous location	Material Outlet	Model Capacity	Dispense Period Setting	Operating Temp. Range	Output Pressure Range (Exit)	Dimensions (S x D)	Electrical Ratings	Replaceable Grease Cartridge	CE Certificate
Class I Division 2 Group B, C, D Class II Division 2 Group F, G	1/2 " PT (m)	150 ml (5.28 oz)	1 to 12 months Adjustable	-20 to +60°C (-4 to +140°F)	75 - 150 psi (5 - 10 bar) Self-Adjust to grease pressure within pipeline	15.2 x 8.9 cm (6 x 3.5")	P-613B Lithium Battery Pack DC 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 501695430001
		250 ml (8.80 oz)				19 x 10.25 cm (7.48 x 4.04")			



In Conformity to European Norms: Class I, Zone 2, IIB T5; Zone 22, 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.

Troubleshoot – If you encounter any problem during operation, refer to Troubleshooting chart available to download from Easylube website.



WARNING:

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

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.

Advantages

Easylube® RFID, the scientific designed automatic lubricator which help to solve bearing lubrication and management problems.

Easylube® RFID guarantees greasing with accountability.

- ❖ No more uncertainty in greasing volume and re-lubrication interval on each bearing.
- ❖ No more lubrication point is missed check during inspection.
- ❖ No more human errors during regreasing and inspection patrol.
- ❖ Enable easy tracking of bearing root cause.
- ❖ Enable setting up a computerized bearing management system, enhance the efficiency and effectiveness of maintenance practice thus reduce in maintenance cost.

So, let's get started with Easylube® RFID program to remove uncertainty, eliminate human mistakes and improve employee safety, especially where equipments are located in isolated, scattered, dangerous and negligible area.

Don't wait until it's too late, run a trial now and let Easylube do the rest!



Quality Assurance and 100% Customer Satisfaction

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.

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Enjoy some great new benefits with Easylube® Patrol Management software

General Calculation

Operator management	Grease volume
Lube points registration	Relube interval
Lube points identification	MQL of General Bearing
Patrol inspection routes	MQL of Electric Motor
Quicker backup and restore	Dispense rate & setting

Lube point information

RFID data recognition
Bearing specification
MQL indication
Checklist available
Lube quality investigation

Record

Lube point status
Bearing designations
Routine patrol report
Miss patrol report
Error report

Pre-Warning

Conduct correct MQL
Low level of grease
Scheduling of replacement
Abnormal issues

Technical Support

Update software
Online demonstration
Material download
Installation training on site

- **MQL is the key for enhancing bearing performance in order to maintain greasing volume and re-lubrication interval in practice.**

Full-scale total preventive maintenance (TPM)

Easylube single-point lubricator and RFID patrol management software is simple and user-friendly to operate in recording and observing equipment efficiency. Instant action can be adopted with abnormality to improve inspection safety and efficiency, in order to reach TPM required criteria. The MQL software will be industrial maintenance basic management tool.