

The revolution originates from disappointment

'Clarity is key to change'



 **Easylube**® RFID
Patrol Management System
Single-Point Automatic Lubricator

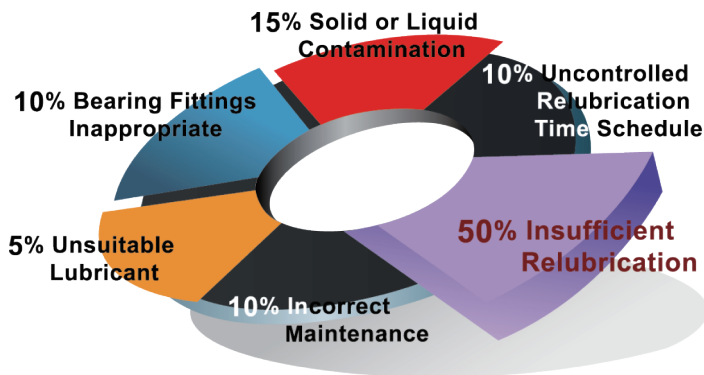
Website: www.easylube.com



Hornche Corporation

Leading innovator of single-point automatic lubricator

Causes of Premature Bearing Failure

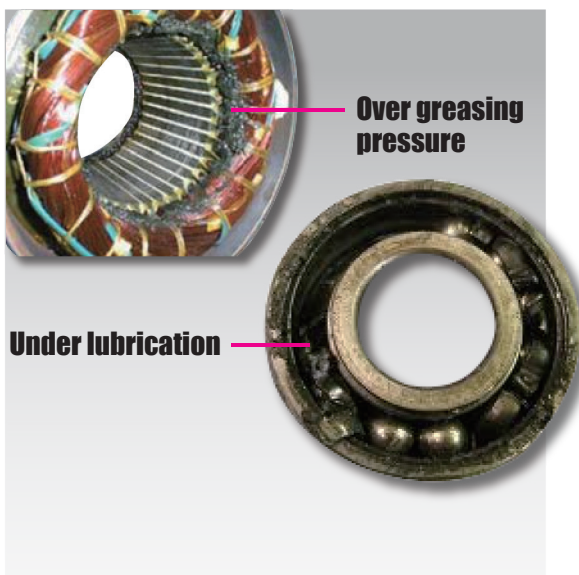


Most grease-lubricated bearings fail to reach their life expectancy. It is because that the re-lubrication procedure is unclear and/or hard to follow.



In fact, MQL (Minimum Quantity Lubrication) formulation has the proven processes and procedures in providing the correct "Grease Volume" and "Re-Lubrication Interval" for optimizing bearing reliability. Unfortunately, maintenance technicians still do NOT realize this issue which will lead to poor control in greasing pressure, over or under lubrication.

Proper lubrication is crucial because under lubrication will cause a premature bearing's failure; On the other hand, over greasing will lead to catastrophic failure to the bearing (grease churning and overheating) which eventually damage the electromotor coils and windings.



Take the Guesswork Out of Bearing Lubrication

The maturity level of a maintenance program (corrective, preventive, predictive, etc.) will dictate the skill and knowledge level required for personnel involving in lubrication-related activities.

In order to achieve optimum reliability and maximum benefits from a lubrication program, several factors need to be taken into account. These factors are summarized by the well-known five "R"s of lubrication:

- The Right lubricant ¹
- In the Right volume ²
- At the Right point ³
- At the Right interval ⁴
- With the Right method ⁵

Start effective lubrication program by simply using Easylube® Patrol Management System and Single-Point Automatic Lubricator with RFID technology.

One Complete Solution

Easylube®



Step 1. MQL Formulation

Grease volume and Re-lubrication interval are calculated by using MQL formulation.



Step 2. Install Easylube® Automatic Lubricator

Setting period is decided by MQL formulation with each bearing in various operation conditions.



Step 3. Setup Easylube® RFID Tag for Patrol Monitoring

Lubricator's performance inspection is according to each point's dispensing rate under MQL demand. It effectively identifies monitors and records whenever doing routine patrol.



Step 4. Computerized Management by Easylube® PMS



Patrol Management System

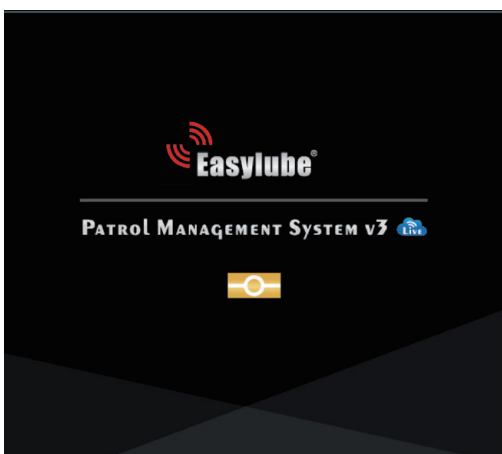


The Right Point³ with the Right method⁵

There are many advantages in using automatic lubrication systems, such as reducing waste and risk of bearing failure, free labor and force behind these safety to be improved.

Refers to best practices, where tagged with RFID technology will lead you approach to the Right point for maintenance management, work orders, condition monitoring, inspection and simply report to solve uncertainty issues in lubrication-related activities.

Maintenance Costs Influenced by Lubrication-Related Activities



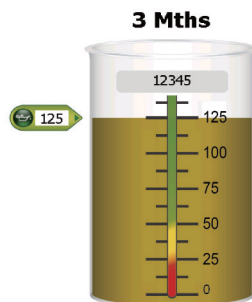
Setting up a computerized patrol management system with RFID may take a little time initially, but the database which is built will be a great tool to enhance the overall efficiency and effectiveness of maintenance system, reduce maintenance costs and uncontrolled downtime of machinery.

MQL Calculation

Performing the right grease volume and re-greasing interval at each bearing are 2 main keys in maintaining bearing efficiency. Therefore, conducting Minimum Quantity Lubrication (MQL) to each bearing condition is a vital part.

The Right Volume²

Controlling grease volume has been a long-standing problem for industry. Simply follow OEM recommendations may not be enough. MQL calculation is the only solution which provides simple and logical formulation to determine grease volume and re-greasing interval to be added.



1~12 mth



2~24 hr

The Right Interval⁴

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

General Bearing Setting

Electric Motor Setting

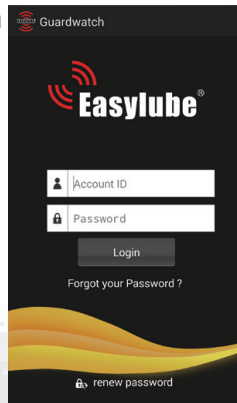
Now, Easylube® RFID-PMS is ready to replace labour-intensive manual greasing, remove uncertainty and human errors, especially where equipments are located in isolated, scattered, dangerous and negligible areas.

The Right Point ³ **Easylube®** RFID Tag

Most grease-lubricated points are supposed to be tagged with a "RFID tag" for Patrol Monitoring. It will enable each lube point to be managed effectively under MQL demand.

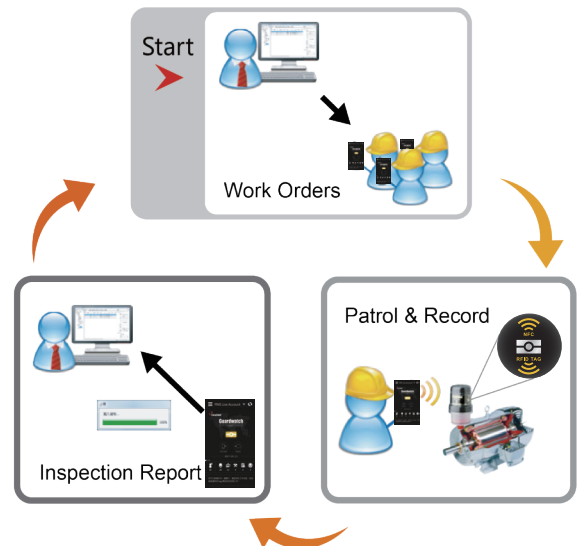


The purpose of routine inspection is to strictly check grease digestion on-site from its dispensing rate of lubrication system which should completely perform according to a setting period of quantification. Hence maintenance technicians have to identify an irregularity in running by Listen, Feel and Look such as an important part in the preventive lubrication maintenance process.



The "RFID tags" probably can be read by NFC-enabled devices as a hand-held unit PDA or Smartphone that Easylube® Guardwatch program could available work in its operation system. It's more suitable for maintenance technicians to have a great effect upon the future of both patrol serving with condition monitoring management.

Inspection Route Procedures

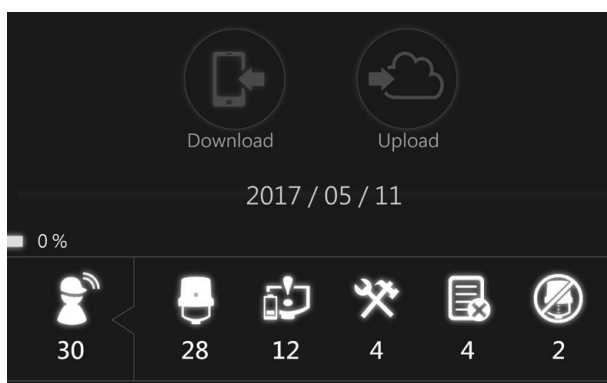


The Guardwatch will provide a mobile communications facility by NFC-enabled devices, this technique enables technicians to download up-to-date work orders from assignment, and to upload mission reports/records back to PMS when he/she accomplish their mission.

The Guardwatch enables maintenance technicians to handle, identify and record all lubrication-related issue promptly which ensure bearing to be under the best working condition, thus achieve higher greasing accuracy and effectiveness of routine inspection.

The Right method ⁵ **Easylube®** Guardwatch

The Guardwatch patrol system offering five(5) assignment of work orders for maintenance team as Routine inspection patrol, Replacement, Trouble-shoot, Error report and System suspend or to restart while to be displayed in the window to help maintenance team to simply accomplish their on-site mission in success.



Easylube® is easy to operate, economically and suitable to use at any location



Dispense Time Setting

MQL calculation helps determine the right re-greasing interval and right grease volume for 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® single-point automatic lubricator is set based on each bearing's MQL formulation. Next, stick on tag to Easylube® PMS and the Guardwatch to monitor and manage each lube point's status during routine inspection.

The Right method ⁵

Easylube®

Single-Point Automatic Lubricator

It is a maintenance-free, cost effective and easy operated device especially designed for MQL formulation. Its reliability and simplicity of dispense setting has 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. Easylube® imposes minimum lubrication pressure to maintain grease quality also avoid oil seal failure. The patented infra-red control system provides 24-hour continuous monitoring to track feed blockage, LED warning light flashes to alert users to be aware and take corrective steps on the occurrence.

The Right lubricant ¹



A Cost-effective Replacement

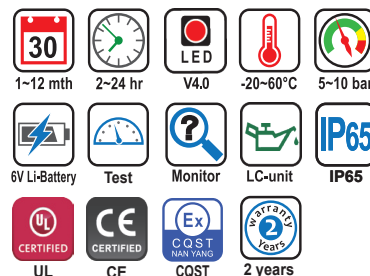
The idea of expendable materials is a cost-effective replaceable grease cup and battery only, while the expected serving life of Easylube® lubricator is more than 5 years. It inspires the stability and reliability feature for the reuse, also ensures it's suitable for a wide variety of application especially 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.

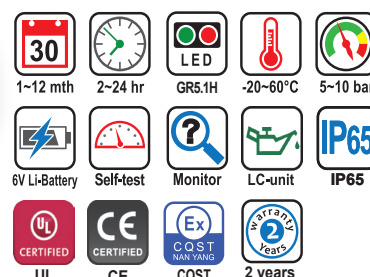


Easylube® Guarantees Greasing with Accountability

150 Classic



60 & 150 & 250 Elite



60 & 150 & 250 RFID



Disposable only for battery pack and empty grease cartridge !

What Industries Will Benefit

- Power generation
- Petroleum products
- Iron/Steelmaking
- Heat processing
- Tile/cement factory
- Chemical industry
- Automotive factory
- 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

If You Use Any of These Machines, Apply **Easylube®** Now...

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.

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)		
			60	150	250	60	150	250	60	150	250	60	150	250
1	1	2	0.167 (0.006)	0.417 (0.015)	0.694 (0.024)	2 (0.070)	5.00 (0.176)	8.33 (0.293)	14.00 (0.493)	35.00 (1.232)	58.33 (2.054)	60.00 (2.112)	150.00 (5.282)	250 (8.803)
2	2	4				1.00 (0.035)	2.50 (0.088)	4.16 (0.147)	7.00 (0.246)	17.50 (0.616)	29.16 (1.027)	30.00 (1.056)	75.00 (2.641)	125 (4.401)
3	1 and 2	6				0.67 (0.023)	1.67 (0.059)	2.77 (0.098)	4.67 (0.164)	11.67 (0.411)	19.44 (0.685)	20.00 (0.704)	50.00 (1.761)	83.33 (2.934)
4	4	8				0.50 (0.018)	1.25 (0.044)	2.08 (0.073)	3.50 (0.123)	8.75 (0.308)	14.58 (0.513)	15.00 (0.528)	37.50 (1.320)	62.50 (2.201)
5	1 and 4	10				0.40 (0.014)	1.00 (0.035)	1.66 (0.059)	2.80 (0.099)	7.00 (0.247)	11.66 (0.411)	12.00 (0.422)	30.00 (1.056)	50.00 (1.761)
6	2 and 4	12				0.33 (0.012)	0.83 (0.029)	1.38 (0.049)	2.33 (0.082)	5.83 (0.205)	9.72 (0.342)	10.00 (0.352)	25.00 (0.880)	41.66 (1.467)
7	1 and 2 and 4	14				0.29 (0.010)	0.71 (0.025)	1.19 (0.042)	2.00 (0.070)	5.00 (0.176)	8.33 (0.293)	8.57 (0.302)	21.43 (0.755)	35.71 (1.257)
8	8	16				0.25 (0.009)	0.63 (0.022)	1.04 (0.037)	1.75 (0.062)	4.38 (0.154)	7.29 (0.257)	7.50 (0.264)	18.75 (0.660)	31.25 (1.100)
9	1 and 8	18				0.22 (0.008)	0.56 (0.020)	0.90 (0.032)	1.56 (0.055)	3.89 (0.137)	6.48 (0.228)	6.67 (0.235)	16.67 (0.587)	27.77 (0.978)
10	2 and 8	20				0.20 (0.007)	0.50 (0.018)	0.92 (0.029)	1.40 (0.049)	3.50 (0.123)	5.83 (0.205)	6.00 (0.211)	15.00 (0.528)	25.00 (0.880)
11	1 and 2 and 8	22				0.18 (0.006)	0.45 (0.016)	0.75 (0.026)	1.27 (0.045)	3.18 (0.112)	5.30 (0.187)	5.45 (0.192)	13.64 (0.480)	22.72 (0.800)
12	4 and 8	24				0.17 (0.006)	0.42 (0.015)	0.69 (0.024)	1.17 (0.041)	2.92 (0.103)	4.86 (0.171)	5.00 (0.176)	12.50 (0.440)	20.83 (0.733)

Easylube® Lubricator Specifications

UL Approved in hazardous location	Material Outlet	Dispensing Grease Volume	Dispense Period Setting	Operating Temp. Range	Output Pressure (Exit cup)	Dimensions (HxD)	Electrical Ratings	Replaceable Grease Cartridge	CE Certificate	CNEx Certificate
Class I, Div. 2 Group B, C, D Class II, Div. 2 Group F, G	1/2"PT (M)	60ml	1 to 12 months Adjustable	-20 to +60°C (-4 to +140°F)	75-150 psi (5-10 bar) Adaptive output pressure control by back pressure	13.9 x 8.9 cm (5.47 x 3.5")	DC 6 Volt Lithium Battery Pack P-613A 1600 mAh or P-613B 1400mAh	1000 High Performance	EC Council Directive 2004/108/EC TÜV Registration No. AE5016 95430001	CQST approved in hazardous locations: Ex iclBT5 Gc ExicD22 T95 Cer.No.: CNEx13.3279X
Class I, Zone 2 Group IIB T5; Zone 22, T5		150ml				16.3 x 8.9 cm (6.4 x 3.5")		1500 Multi-Purpose		
File E218441		250ml				19.6 x 10.2 cm (7.7 x 4")		2000 Heavy-Duty 5000 Food Grade or DIY filled with grease by your selection		

NOTE: The Certificate Confirmation of Level Marking in Hazardous Location as described in the FUS Procedure, and covered in UL File E218441. Lubricant Flash Point Clarification for the Lubricant Dispensers for Hazardous Location which in this category are only to be used with lubricants and greases with flash points greater than 200°F (93°C). **Remark: The technical specifications are subject to the manufacturer change without notification.**



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 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.



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.



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

Advantages

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

- No more uncertainty in greasing volume and re-lubrication interval on each bearing.
- No more lubrication point is missed for 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 start Easylube® RFID program to remove uncertainty, eliminate human mistakes and improve employee safety, especially which equipments are located in isolated, scattered, dangerous and negligible area.

The Right method ⁵

Enjoy some great new benefits with

Easylube® Patrol Management System



General

Operator management
Lube points registration
Lube points identification
Patrol inspection routes
Quicker backup and restore



Calculation

Grease volume
Relube interval
MQL of General Bearing
MQL of Electric Motor
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 monitors

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



Technical Support

Software Update
Online Demonstration
Material Download
Trouble Shooting



ON-SITE work orders

Conduct on-site feedback
Routine inspection patrol
Replacement

Trouble-shoot
Error report
System suspend/restart

Don't wait until it's too late, run a trial now...!



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.

Manufacturer

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