Revolution Originates from Disappointment

‘Clarity is Key to Change’

Easylube® RFID

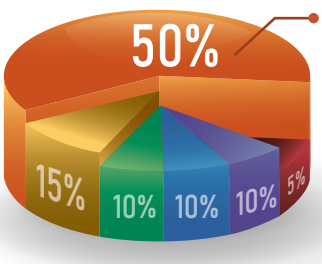
Total Patrol Management System
Single-Point Automatic Lubricator

PRODUCT LIABILITY INSURANCE
Hotains
$1,000,000

HORNCHE CORPORATION

Leading innovator of single-point automatic lubricator

Causes of Premature Bearing Failure

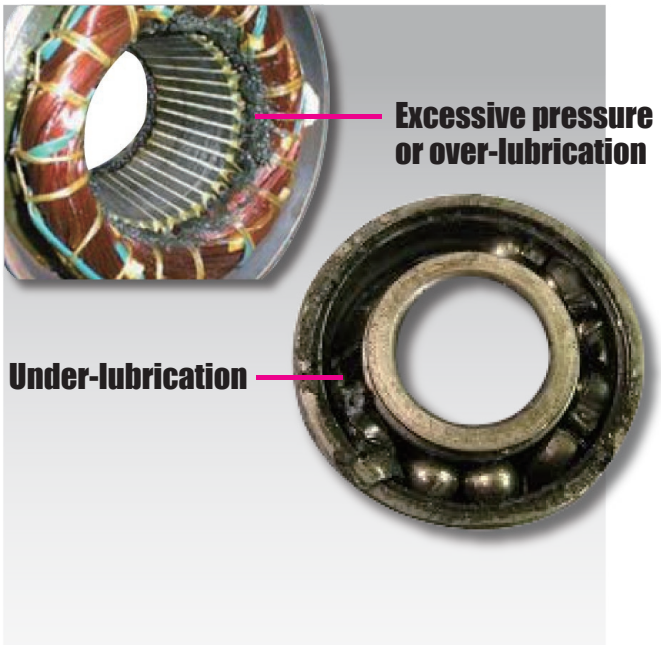


50% **Insufficient Relubrication**
15% Solid or Liquid Contamination
10% Inappropriate Bearing Fittings
10% Uncontrolled Relubrication Schedule
10% Incorrect Maintenance
5% Unsuitable Lubricant

Most grease-lubricated bearings fail to reach their expected lifespan due to unclear or difficult-to-follow re-lubrication procedures.

In fact, Minimum Quantity Lubrication (MQL) provides proven processes and procedures to determine the correct grease volume and re-greasing intervals, optimizing bearing reliability. However, many maintenance technicians remain unaware of this issue, leading to poor control of greasing pressure and resulting in over-lubrication or under-lubrication.

Proper lubrication is essential to ensure the longevity and performance of bearings. Under-lubrication can lead to premature bearing failure, while over-greasing can cause catastrophic damage. Excess grease can result in churning and overheating, which may ultimately damage the electro motor coils and windings.



Remove the Guesswork from Bearing Lubrication

The maturity level of a maintenance program—whether corrective, preventive, or predictive—determines the skill and knowledge required for personnel involved in lubrication-related activities.

To achieve optimal reliability and maximize the benefits of a lubrication program, several factors must be considered. These factors are summarized in the well-known Five "R"s of Lubrication:

- The Right Lubricant [1]
- At the Right Point [3]
- With the Right Method [5]
- In the Right Volume [2]
- At the Right Interval [4]

Start an effective lubrication program by using the Easylube® Total Patrol Management System and the 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

The setting period is determined by the MQL formulation for each bearing under various operating conditions.

Step 3. Setup Easylube® RFID Tag for Patrol Monitoring

The lubricator's performance is inspected based on each point's dispensing rate under MQL requirements, effectively identifying, monitoring, and recording during routine patrols.

Step 4. Computerized Management with Easylube® TPMS

Understanding is the key to transformation. By implementing the Easylube® Total Management Patrol System (TPMS), we began a revolution, immediately benefiting from the advantages of computerized information operations and technological support. This enables the management of lubrication standards, reduces maintenance costs, enhances operational safety, achieves preventive maintenance, and improves the plant's operational efficiency.

Easylube®

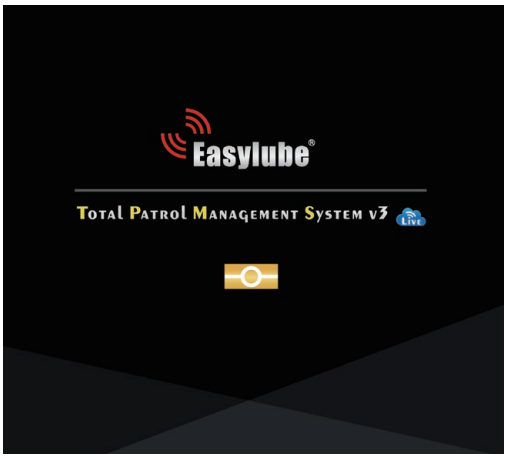
Total Patrol Management System

The Right Point [3] with the Right Method [5]

Using automatic lubrication systems offers many advantages, such as reducing waste and the risk of bearing failure, as well as improving safety and labor efficiency.

By following best practices and using RFID technology, you can easily target the right points for maintenance management, work orders, condition monitoring, inspections, and reporting, helping to resolve uncertainties in lubrication-related activities.

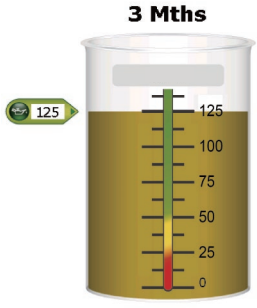
Maintenance Costs Affected by Lubrication Related Activities



Setting up a computerized Total Patrol Management System with RFID may take some time initially, but the resulting database will be a valuable tool to enhance the efficiency and effectiveness of the maintenance system, reduce costs, and minimize uncontrolled downtime of machinery.

MQL Calculation

Applying the correct grease volume and re-greasing interval for each bearing are key factors in maintaining bearing efficiency. Therefore, implementing Minimum Quantity Lubrication (MQL) based on each bearing's condition is essential.



The Right Volume [2]

Controlling grease volume has been a long-standing challenge in the industry. Simply following OEM recommendations may not be sufficient. MQL calculation is the only solution that offers a simple and logical formulation to determine the appropriate grease volume and re-greasing interval.

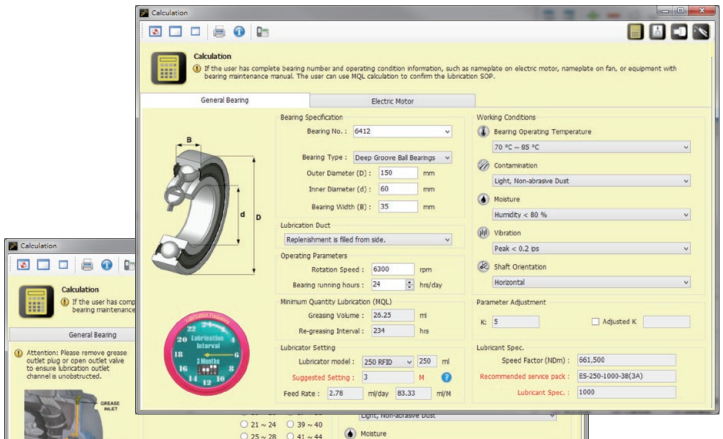
1~12 mths

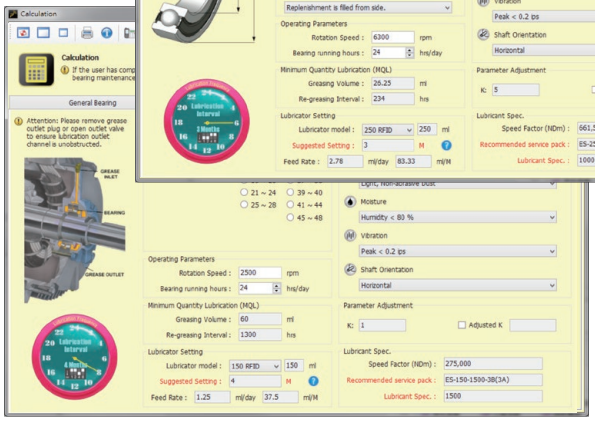
2~24 hrs

The Right Interval [4]

Although re-greasing intervals can be estimated based on experience, reports, and charts, over or under-lubrication remains unavoidable. The MQL formulation ensures precise re-greasing intervals by considering each bearing's specifications and actual operating conditions, making it highly practical and effective in application.

General Bearing Setting





Electric Motor Setting

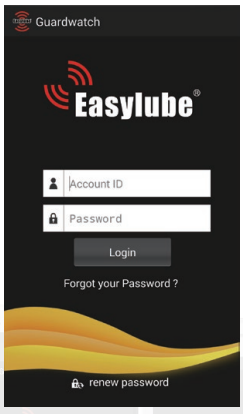
Now, you can use the Easylube® Total Management Patrol System to help resolve past uncertainties in lubrication, eliminating human errors and safety risks. This is especially beneficial for machinery installed in remote areas, hazardous zones, or locations often overlooked, ensuring proper lubrication management.

The Right Point 3

Easylube® RFID Tag

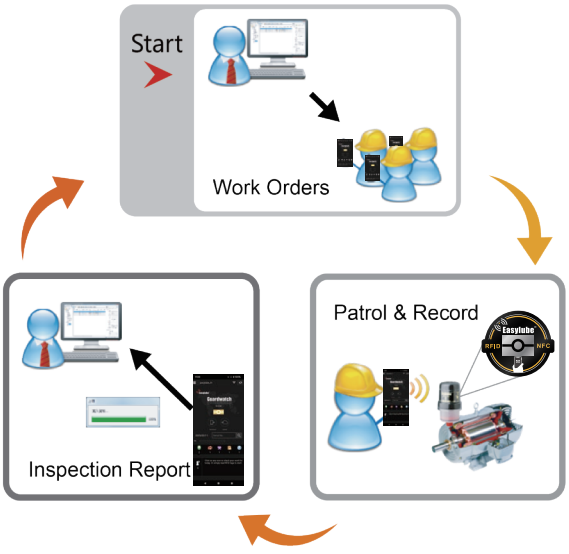
Most grease-lubricated points should be tagged with an RFID tag for patrol monitoring. This will enable each lubrication point to be effectively managed according to MQL requirements.

The purpose of routine inspection is to closely monitor grease distribution on-site by checking the dispensing rate of the lubrication system to ensure it operates within the set period. Therefore, maintenance technicians must identify any irregularities by listening, feeling, and observing, which are key steps in the preventive lubrication maintenance process.



RFID tags can be read by NFC-enabled devices, that are compatible with the Easylube® Guardwatch APP. This makes it more convenient for maintenance technicians, enhancing the future of patrol services and condition monitoring management.

Inspection Route Guidelines



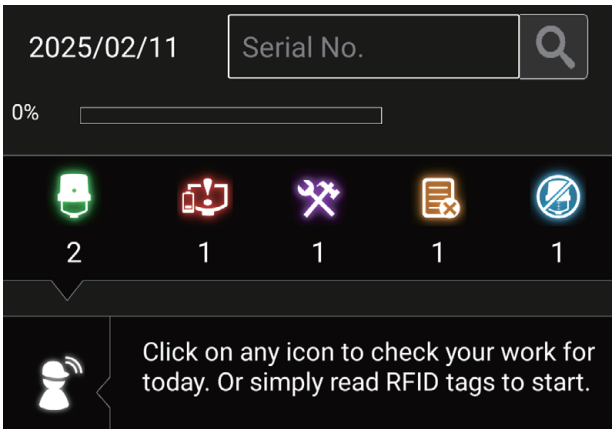
Guardwatch provides mobile communication capabilities through NFC-enabled devices, allowing technicians to download up-to-date work orders and upload mission reports/records to the TPMS upon completing their tasks.

Guardwatch enables maintenance technicians to promptly handle, identify, and record all lubrication-related issues, ensuring bearings operate under optimal conditions. This leads to higher greasing accuracy and improved effectiveness of routine inspections.

The Right Method 5

Easylube® Guardwatch

The Guardwatch patrol system offers five types of work orders for the maintenance team: Routine Patrol Inspection, Consumables Replacement, Troubleshooting, Error Report, and System Suspension or Restart. These work orders enable the maintenance team to efficiently carry out their on-site tasks.



Easylube® is easy to operate, cost-effective, and suitable for use in any location

Dispense Period Setting

The MQL calculation determines the optimal re-greasing interval and grease volume for each bearing, considering actual operating conditions while using the OEM specifications as a baseline.

To prevent premature bearing failure, ensure that the dispense Period setting of the Easylube® single-point automatic lubricator is configured according to each bearing's MQL formulation. Then, use RFID tags to mark lubrication points for patrol inspection and monitoring. Simply scan the RFID tags with a smart device to carry out tasks.

Easylube®

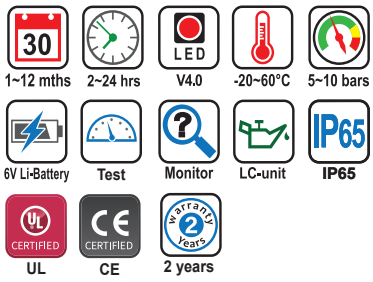
Single-Point Automatic Lubricator

Easylube® single-point lubricator is a maintenance-free, cost-effective, and easy-to-operate device specifically designed for MQL formulation. Its reliable dispensing settings and simplicity have earned it a strong reputation in the market. It ensures bearings remain in good working condition, regardless of weather, operational requirements, or harsh environments.

Easylube® single-point lubricator offers an adjustable dispense setting ranging from 1 to 12 months. It maintains minimal lubrication pressure to preserve grease quality and prevent oil seal failure. The patented infrared control system provides 24-hour continuous monitoring to detect feed blockages, with an LED warning light flashing to alert users to take corrective action environments.

Easylube® Guarantees Greasing with Accountability

150 Classic

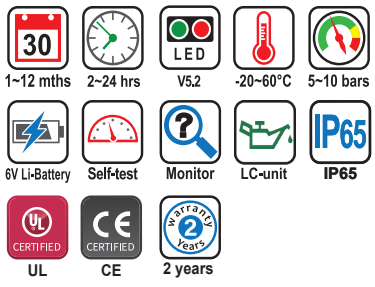


The Right Lubricant 1

A Cost-effective Replacement

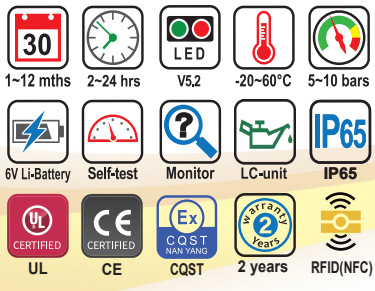
The consumables include cost-effective, replaceable components such as the grease cup and battery, while the Easylube® lubricator has an expected service life of over 5 years. This design ensures stability and reliability for repeated use, making it ideal for a variety of applications, particularly for equipment in hard-to-access or hazardous locations.

60 & 150 & 250 Elite



It is advisable to use only the recommended accessories to optimize product performance, minimize grease consumption, prevent contamination, and ensure a quick return on investment.

60 & 150 & 250 RFID



Which Industries Will Benefit

- Power Generation
- Petroleum Products
- Steelmaking
- Heat Processing
- Tile/Cement Factory
- Chemical Industry
- Automotive Manufacturing
- Glass/Textile Industry
- Semiconductor/Electronics
- Military/Government
- Public Transportation
- Crematoriums
- Amusement Park
- Mining
- Papermaking
- Canning Industry
- Rubber/Plastics
- Beverages/Brewery
- Food Processing
- Pharmaceutical Manufacturing
- Machinery Manufacturing
- Flour Mill
- Hospitals/Hotels
- Waterworks
- Sewage Treatment Plants
- 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, and other equipment.

Example of Applications

Top 4 Reasons for a 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 Implementing 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 for product details, applications, installation, and services. If you experience any issues during operation, please refer to the Troubleshooting Chart.

Easylube® DIP Switch Settings for Dispensing Period

Dispensing Period Setting **(Month)**	**DIP Switch Levers ON**	Time Span Between Dispensing Cycles **(Hrs)**	Volume / Cycle ml (oz)			Volume / Day ml (oz)			Volume / Week ml (oz)			Volume / 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)	0.83 (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 for Hazardous Location	Grease Outlet	Dispensing Grease Volume	Dispensing Period Settings	Operating Temp.	Outlet Pressure	Dimensions (HxD)	Electrical Ratings	Replaceable Grease Cartridge	**CE** Certificate	**CNEx** Certificate
Class I, Division 2, Groups A, B, C and D Hazardous Locations UL E218441	1/2"PT (M)	60 ml 150 ml 250 ml	1 to 12 months	-20 to +60°C (-4 to + 140°F)	75-150 psi (5-10 bars) Adaptive output pressure control through back pressure	13.9 x 8.9 cm (5.47 x 3.5") 16.3 x 8.9 cm (6.4 x 3.5") 19.6 x 10.2 cm (7.7 x 4")	DC 6 Volt CR-P2 Lithium Battery Pack UL-certified MH60515 P-613A P-613B	1000 High Speed 1500 Multi-Purpose 2000 High Efficiency 5000 Food Grade or DIY Empty Cup	VTMWH2206000309 HEA/2022 VTMWH2206000310 HEA/2022 TERF2206000807ER TESA2206000150ES 23-01-QAC-130	**CQST** CNEx23.5766X (150 RFID、250 RFID) Ex ic IIB T5 Gc

NOTE: These lubricators should only be used with lubricants and greases that have a flash point exceeding 200°F (93°C).
Remark: The technical specifications are subject to change by the manufacturer without prior notice.

IMPORTANT

Low Temperature Limitation – This refers to the lowest temperature at which the lubricator (motor) can operate. Other factors to consider include grease viscosity, operating temperature, and especially grease pumpability.

WARNING

Please adhere to local environmental protection laws when recycling or disposing of replacements, such as grease cups or battery cases. Avoid burning or puncturing the battery, as this can release toxic vapors, leading to potential injury and environmental harm.

※ When using in hazardous areas, pay attention to the warnings on the product label and follow the operating guidelines.

※ The surface of this equipment may accumulate static charges. Appropriate measures must be taken to prevent static hazards.

Replacement Usage

To ensure optimal product performance, the grease cup and battery must be replaced at the end of each dispensing period. When the RED indicator light flashes, the maintenance technician should urgently check for feed blockages, empty grease, or low battery levels.

Oil Lubrication Guideline

For oil lubrication, the lubricator should be positioned below the lubrication point. Alternatively, use an oil throttle or check valve at the grease cup outlet to prevent oil leakage.

Advantages

Easylube® RFID is a scientifically designed automatic lubricator that helps to solve bearing lubrication and management problems.

- Eliminate uncertainty in greasing volume and re-lubrication intervals for each bearing.
- Ensure no lubrication points are missed during inspections.
- Minimize human errors during re-greasing and inspection patrols.
- Facilitate easy tracking of bearing root causes.
- Enable the implementation of a computerized bearing management system, enhancing maintenance efficiency and effectiveness while reducing costs.

Comprehensive Preventive Maintenance

Start the Easylube® RFID program today to eliminate uncertainty, prevent human errors, and improve employee safety. Especially for equipment located in isolated, scattered, hazardous, or hard-to-access areas.

The Right Method [5]

Experience exceptional benefits with

Easylube® Total Patrol Management System

General
Manage Operators
Manage Lubrication Points
Easy Lubrication Process
Plan Patrol Inspection Routes
Easy Backup and Restoration

Calculation
Grease Volume
Re-lubrication Interval
MQL of General Bearing
MQL of Electric Motor
Grease Dispensing Settings

Lubrication Point
Bearing Specification
Lubrication Information
Inspection Checklist
RFID Data Logging
Quality Assessment

Records
Lubrication Status
Bearing Conditions
Patrol Inspection Report
Inspection Schedules
Abnormality

Pre-Warning
Grease Level
Consumables Replacement
Abnormal Back Pressure
Inspection Plans

Technical Support
Software Update
Online Demonstration
Troubleshooting
Documents Downloading

ON-SITE Work Orders
On-site Evaluations
Routine Patrol Inspection
Consumable Replacement
Troubleshooting
Malfunction Reports
System Suspension/Reboot

Quality Assurance and 100% Customer Satisfaction

HORNCHE CORPORATION offers a Two-Year Warranty (from the date of delivery) for all Easylube® products purchased through **HORNCHE**'s authorized distributors.

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

For more information, please contact service@easylube.com.

ISO 9001 Certified Manufacturer
R&D, Manufacturing, Sales
HORNCHE CORPORATION

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Authorized Distributor

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