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FORM
 DOC#: PM-T-013
 March, 2005

PULSARLUBE M



- ▶ LOW BATTERY POWER
- ▶ LOW GREASE LEVEL
- ▶ BACKPRESSURE SENSING CAPABILITY
- ▶ DAYS SINCE CYCLE COMPLETION
- ▶ DAYS AFTER BACKPRESSURE SENSING
- ▶ DISPENSING TEST

Operating Principle



PULSARLUBE USA, INC.

Pulsarlube USA, Inc
ISO9001 Registered, Single Point Lubricator Company



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E-Brochure for Pulsarlube M unit

Pulsarlube - M

Electromechanical Automatic Single-Point Lubricator

The single point lubricator (SPL) is an automatic lubrication method widely used in modern manufacturing operation. Since their introduction more than 50 years ago, SPLs have undergone an extensive improvement process. Original spring type lubricators (old compression grease cup) were replaced by gas charged automatic lubricators, and battery-operated electromechanical lubricators are now replacing gas charged lubricators. These new SPLs offer more and more flexibility and reliability than their predecessors have. Here are the benefits and advantages of electromechanically operated SPL over traditional gas charged model.

Pulsarlube M, one of the most sophisticated electromechanical SPL is designed to ensure reliable lubrication and cut lubrication cost by an advanced electronic control mechanism. It consists of a vertical feed pump, motor/gear set, and Microprocessor control system, which makes outstanding operating pressure available (20Kg-f/cm², 280psi, Typical). The lubricant is supplied in either 125cc or 250cc Pulsarlube grease pouches, which are replaceable along with an Pulsarlube battery pack. Pulsarlube M offers 6 optional dispensing rates from 1/2(Half) to 12(Twelve) months in a single unit.

Features

Environment friendly

Replaceable 125 or 250cc Grease pouch
Customized Battery Pack (4.5V Alkaline)
Easy Disposal

User friendly

Compact & Convenient Design
Simple Operation
Easy to read Large LCD
Precise Lubrication - Easy Maintenance
Cost competitive by multi use up to 8 points
(Using progressive divider blocks)

Equipment friendly

Precise and Reliable Lubrication
High operating pressure (20Kg-f/cm², 280psi, Typical)
Weight balanced Design
Break-free 3/8" Brass fitting
Wide Operating temp from -15 to 60 °C (5 to 140°F)
Long-term reliability
Appropriate Grease capacity

Replaceable Service Pack

Pulsarlube M is designed to last through many years of use. Over the years this can add up to substantial savings over the cost of manual lubrication and disposable one time use lubricators (mostly traditional gas charged products), while providing assurance of the highest quality of lubrication achievable. Pulsarlube M Service pack consists of grease pouch (125cc or 250cc), a battery pack (4.5V Alkaline), and disposable dust cover.



*Note: Pulsarlube M grease pouch and battery pack **must** always be changed at the same time. It is mandatory to ensure the reliable operation of unit.*

Remote Installation

Pulsarlube M unit has excellent remote installation capability while traditional gas charged SPL suffers. Sometimes space restrictions will not allow a direct mount, angle mount or extension mount. In other circumstances, small fittings may not be suited to direct mounting due to thread weight limitations. It is also true there are many applications where access is hazardous or inconvenient, contamination or harsh environments present. Where this occurs, the use of remote mount is required.

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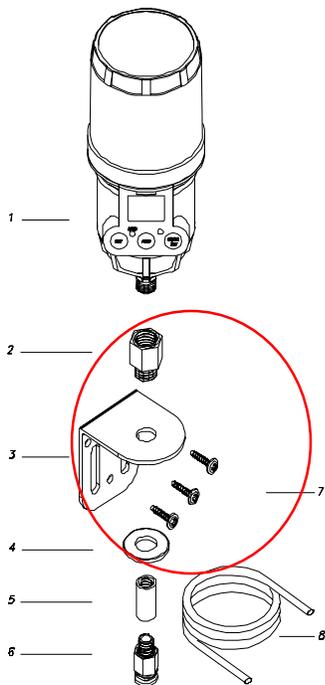
It is **ALWAYS** preferable to minimize the length of remote mounting. Pulsarlube M units should be mounted as close to the bearing point as possible.

Remote Installation Kit consists of:

1. Pulsarlube M Unit (125 or 250cc)
- 2-4, 7. Mounting Bracket Assembly (Red circled)
5. Pipe connector (1/4" or 1/8" M)
6. Tube Fittings (at both ends)
8. Nylon Tubing 6mm O.D. (Pre-filled)



*Refer to figure 1: Remote Installation of Pulsarlube M unit

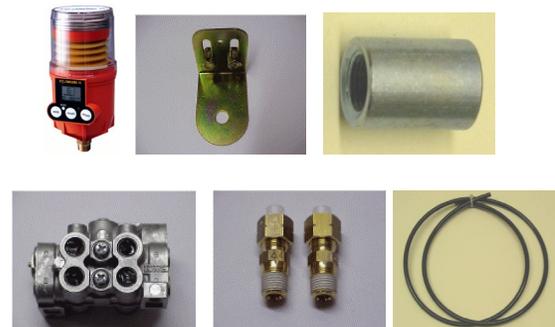


Multi-point Use

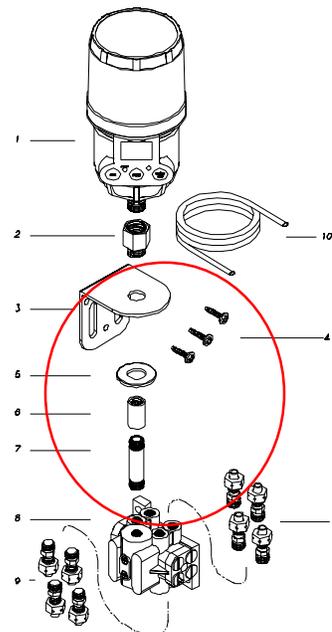
For applications where many lube points existing in close proximity, Pulsarlube M can be used as automatic lubrication system of up to 8 points using progressive divider block.

System Elements:

1. Pulsarlube M Unit (125 or 250cc)
- 2-6. Mounting Bracket Assembly (Red circled)
7. Pipe connector (1/4" or 1/8" M)
8. Progressive Divider Block (4 to 8 ports)
9. Tube Fittings (at both ends)
10. Nylon Tubing 6mm O.D. (Pre-filled)



*Refer to figure 2: Multi-point use of Pulsarlube M unit using Progressive Divider Block (up to 8 ports)





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General Guideline

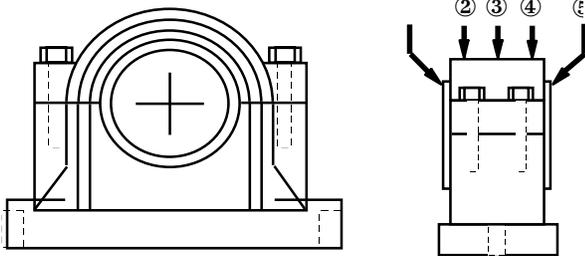
1. Keep in close proximity to lube points
2. All elements should be pre-filled with same or compatible grease prior to installation
3. Recommend using NLGI #1 grease for Multi point use

Typical Application

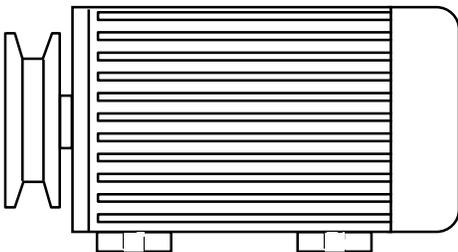
● Bearings

Typical lube points for SPL are:

1. Taconite seal lubricant feed point
2. Housing, bearing & seal lubricant feed point
3. Bearing central lubricant feed point
4. Housing, bearing & seal lubricant feed point
5. Taconite seal lubricant feed point

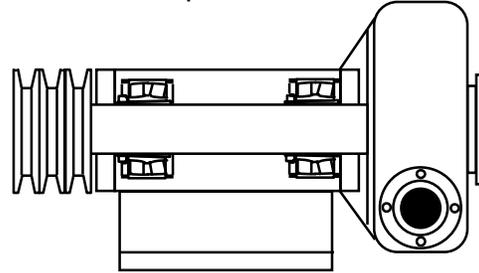


● Electric Motors



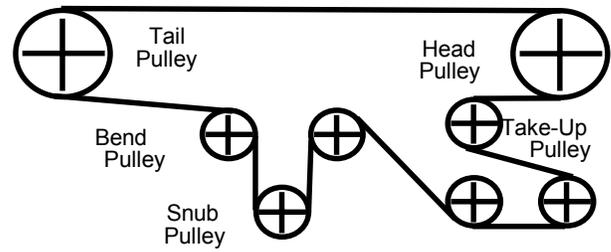
Electric motor lubrication is ideally suited to the SPL concept. However, electric motor bearings are lubricated less frequently than other bearing types. Over lubrication can result in greater problems than under lubrication. When Pulsarlube M unit is used on electric motors, ensure to follow manufacturers' recommendation and that the bearing housing has a grease vent port.

● Pumps



Pumps are one of the most common applications for SPL. They are subject to high water, chemical and corrosive material contamination. It is mandatory to maintain the constant flow of grease to seal out contaminants. If the seal can be effectively lubricated and purged by use of Pulsarlube M, the bearing failures and maintenance budget can be dramatically reduced.

● Conveyors



Typical conveyor system

Conveyors are widely used in cement, mining, food/beverage, and brewery industry. They are key elements to keep the high productivity and efficiency of manufacturing operation and subject to heavy dust/dirt, high water, chemical and other corrosive material contamination. Pulsarlube M unit is typically fitted to the bearing housings to lubricate bearings.

The typical arrangement is;
 One bearing and two seals per drive side housing.
 One bearing and one seal per non driven housing.
 (Housings are generally fitted with labyrinth or taconite type seals.)



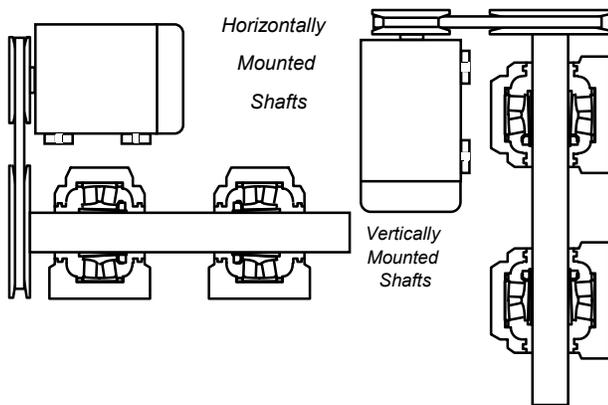
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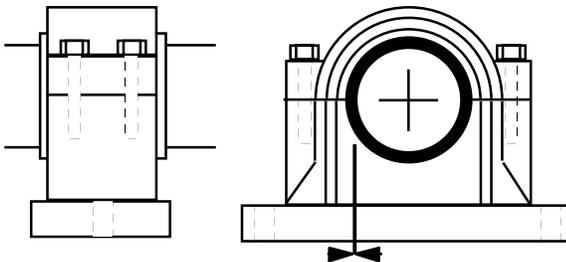
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● Agitators & Shafts

Mainly, Agitators are for vertically mounted shafts to manufacturing, process and storage tanks. In the pulp and paper industry, they are for horizontally mounted shafts to drive paddles. Pulsarlube M units are fitted to the bearing housings to lubricate the bearings. Applications can be subject to high water, chemical and corrosive material contamination. Pulsarlube M provides a constant flow of grease to seal out contaminants.



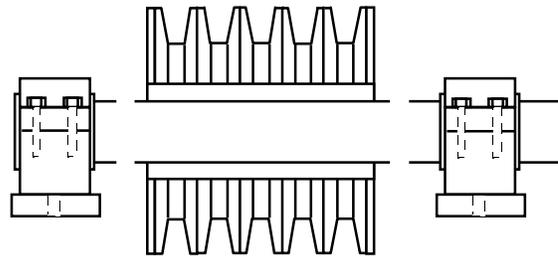
● Journals(Plain Bearings)



Plain bearings operate on a total loss system. They are typically used on auger shafts, gear support shafts or for power transmission. Applications can be subject to heavy load, high water, chemical and corrosive material contamination.

When Pulsarlube M unit is used, please consider that Journal bearings usually require a higher lubricant volume than anti friction bearings of the same diameter.

● Sheaves



Sheave applications are diverse and can include wire rope applications in Mining equipments, Elevators, Cranes, Hoists, and Cable belts etc. The working environment to these applications can have access restrictions and heavily contaminated environments. Pulsarlube M unit is used to lubricate sheave support bearings and also to apply lubricant to wire ropes.

Typical Applications (Summary)

Elements

- Pumps
- Electric Motors
- Conveyors
- Blowers
- Air Makeup units
- Air Conditioners
- Fans
- Cranes, Hoists, Loaders, Stackers
- Escalators, Elevators, Lifts
- Agitators
- Furnaces, Ovens
- Cable Ways

Industry

- Iron/Steelmaking
- Automotives
- Mining (Open Pit/Underground)
- Cement
- Petrochemical
- Oil/Ore Refinery
- Heavy Industry
- Ships
- Electronics/Semiconductor/LCD etc.
- Food/Beverage
- Brewery
- Pulp/Paper
- Textile & All kinds of Production Equipments



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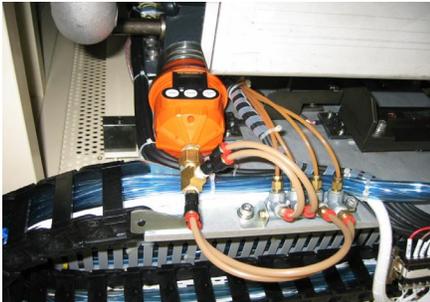
Non-manufacturing Applications

- Airports
- Metros
- Bridges
- Shipyards
- Hotels, Shopping Malls
- High Story Buildings
- Waste Water Treatment Facilities
- Sewage Treatment Facilities
- City Water Treatment Facilities
- Resorts

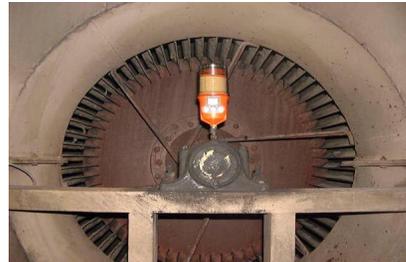


Motor Bearing in Cooling Tower (Amusement Park)

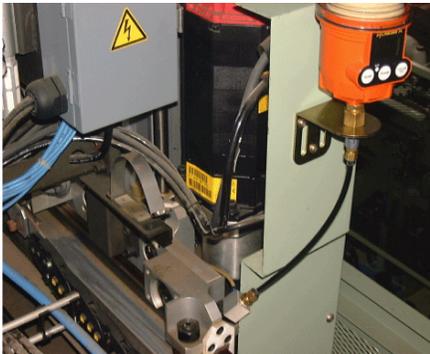
Pulsarlube M units in the field



Clean Room Lubrication in Semiconductor Plant



Blower Bearing in Cooling Tower (Amusement Park)



Gantry Loaders in Automatic Transmission Plant for Hyundai Motor Company-Remotely Installed



Air Makeup units-Remotely Installed



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Electric Wire Making Plant

Installation

Understanding Backpressure

The pressure generated is a response to resistance to flow presented to the unit. The most common back pressure causes are:

Accumulation of deposits in bearings or passages

- Seals that will not permit flow
- Lubricant feed ports between the unit and the bearing
- Fittings with small feed passages
- Line pressure losses in remote mount installations

While impractical to do anything about the design of the bearing arrangement, Pulsarlube M units should be mounted as close to the bearing point as possible. The shorter the distance the grease is required to travel, the less back pressure presented by the feed passage. **IF IN DOUBT**, test backpressure with grease gun connected to pressure gauge prior to installation. This testing also makes sure to fill the grease passage with same or compatible grease.

Mounting Pulsarlube M unit

Direct Straight Mount

The most common and preferable method of connection is a direct straight mount using adaptors (reducers). Most grease nipples use a 1/4" or 1/8" thread. Where space restrictions allow, mount the unit using one or both of these adaptors.

Direct Angle Mount

Sometimes the space restrictions of the application will not allow a direct straight mount. Where this occurs, the use of a 45° or 90° fitting may allow the unit to be direct mounted. When using these angle fittings, ensure that the total length of the mount is not excessive. Particularly avoid long distances when direct mounting using reducers with a thread size of less than 1/4".

Direct Mount + Extensions

Sometimes space restrictions will not allow a direct straight mount or angle mount. Where this occurs, the use of the 45° or 90° fittings with the extension tube may allow the unit to be direct mounted. When using these angle fittings, ensure that the total length of the mount is not excessive. Particularly avoid long distances when direct mounting using reducers with a thread size of less than 1/4".

Remote Installation

Sometimes space restrictions will not allow a direct straight mount, angle mount or extension mount. In other circumstances, small fittings may not be suited to direct mounting due to thread weight limitations. It is always preferable to limit the total length of the mount as short as possible.

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