TECHNI/TIPS

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LEADERS IN LUBRICANTS NUMBER 37

CENTRALIZED AUTOMATIC LUBRICATION SYSTEMS

Equipment maintenance, especially lubrication, is becoming increasingly more important in the industrial plant. Individual pieces of equipment are much more complex and expensive. The constantly increasing capital expenditures for new equipment are shifting an increasing amount of the responsibility for wear protection to the designer. One way that many designers have solved complex lubrication problems is to use centralized lubrication systems.

While automatic centralized systems are expensive, they may be quite cheap when compared to extra dollars in labor to apply a dollar's worth of lubricant.

Some of the advantages of centralized systems are:

- **Correct lubrication**
- **Continuous operation**
- **Reduced repairs and longer equipment life**
- **Increased production**
- **No contamination of lubricant or manufactured product**
- **Reduced operating costs**
- **Reduction of injury hazards**
- **No overlooking inaccessible or inconvenient lubrication points**

Experience has proven that the most reliable procedure for lubricating a bearing surface is to apply small, metered amounts of lubricant to that surface at regular intervals. The application must be consistent with these factors:

- **Size of the bearing**
- **Rpm at which the equipment is operating**
- **Load and thrust specifications of the bearing**
- **Duration of performance demanded by the particular production cycle involved**
- **Type of seal**

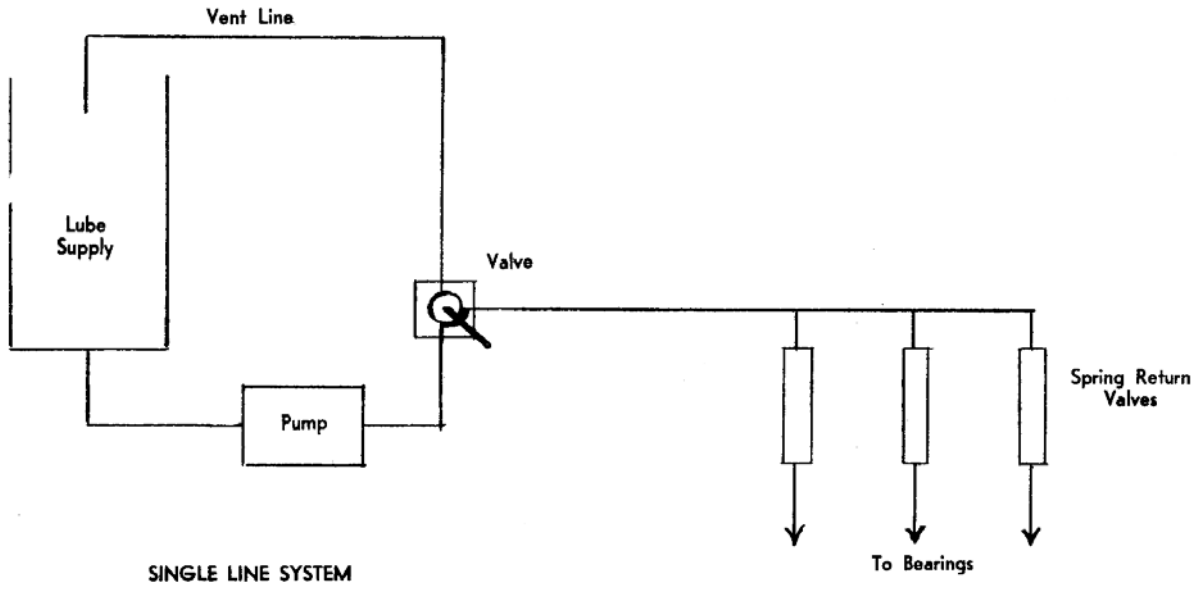
A centralized system takes the human element out of lubrication. A pump feeds lubricant from a reservoir through supply lines to valves that inject a measured amount into each bearing. This is the basic system, but most include timers, failure indicators and other refinements.

There are basically five types of systems:

SINGLE LINE WITH SPRING RETURN VALVES

This system can be equipped with indicators and adjustments at each valve. With the pump operating and the three-way valve in charging position, pressure in the line forces the piston in the measuring line to discharge the lubricant ahead of it into the bearing point. Pumping is continued until all valves have discharged. This is indicated by a poppet stem or pressure gauge.

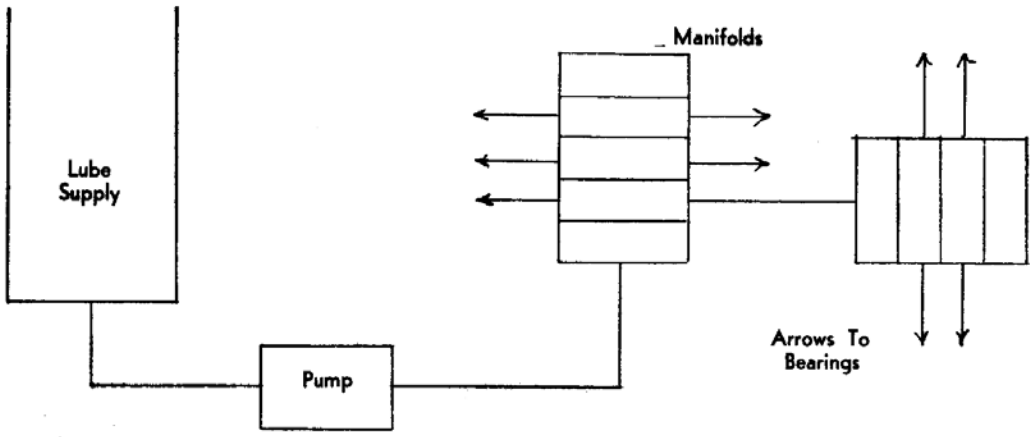
To recycle, the hand lever of the three-way valve is turned 90° and the system exhausted through the relief line. This causes the springs in the measuring valves to return the pistons for recharging.



SINGLE LINE SYSTEM

PROGRESSIVE NONREVERSING

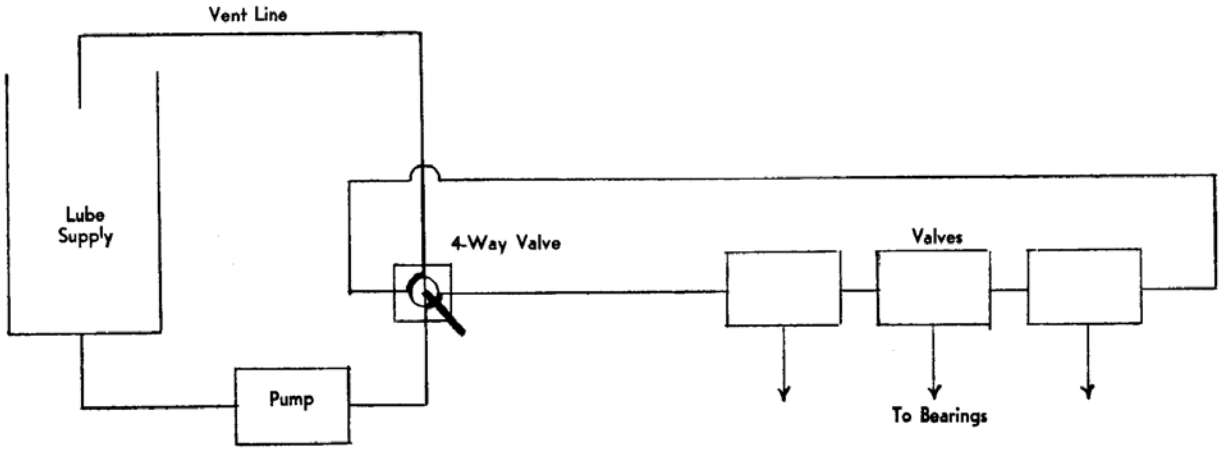
This system has slide valves and divides the pump displacement into several bearing outlets. These valves are progressive and nonadjustable with a system indicator usually located at the pump. When the pump operates, lubricant is brought from the reservoir to the measuring valves. The valves are continuous cycling as long as there is flow from the pump.



PROGRESSIVE NONREVERSING SYSTEM

PROGRESSIVE REVERSIBLE FLOW

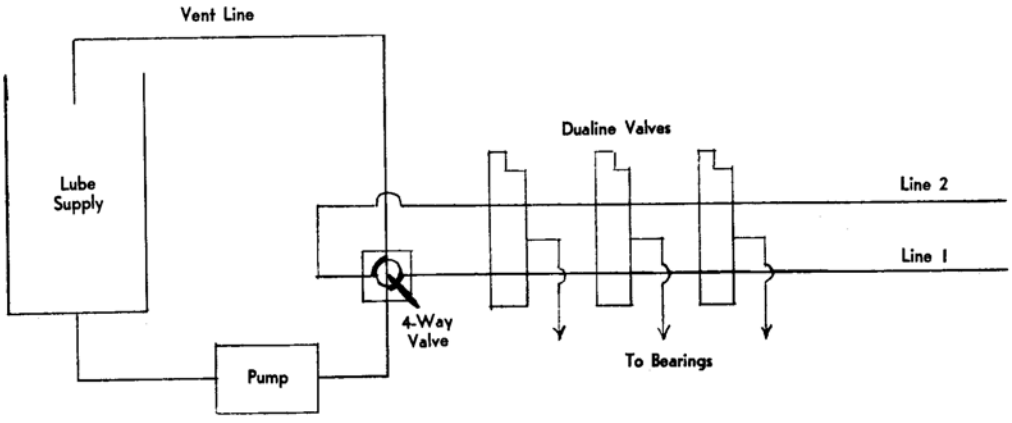
This system employs a loop with measuring valves that have three line connections. Lubricants are directed to each measuring valve through one inlet. Pumping is continued until all measuring valves have operated and the flow of lubricant has returned by the four-way valve where an indicator shows a completed cycle.



PROGRESSIVE REVERSING SYSTEM

DUAL LINE

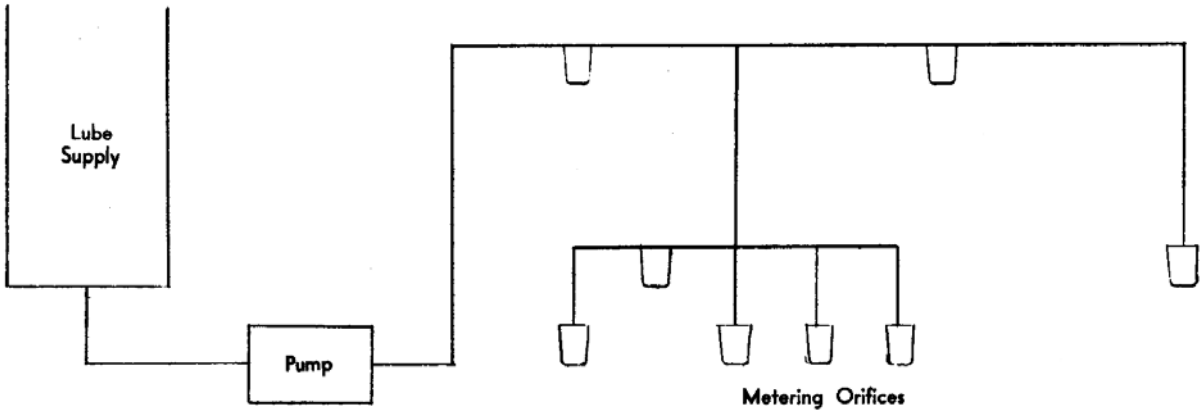
This system alternates the pressure between two main supply lines. The measuring valves operate independently and offer indication and adjustment for each bearing. When the pump is operated with the four-way valve supplying the first line, the lubricant goes from the reservoir to the top inlet of the measuring valve. To recycle, the four-way valve is shifted 90°, directing flow through the second main, which supplies lubricant to the bottom inlet of the measuring valve.



DUAL LINE SYSTEM

SINGLE LINE ORIFICE METERING

This system supplies a number of bearing points, each equipped with a fixed orifice. The number of bearing points can be varied to the extent that the pump displacement can be increased or decreased. However, there is no adjustment at the orifices. Pressure gauges can be located at various junctions.



SINGLE LINE ORIFICE METERING SYSTEM

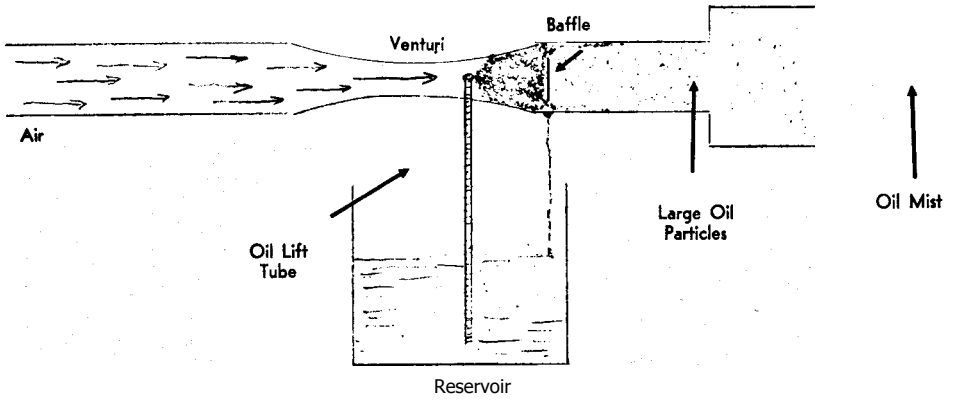
All of these systems can handle either oil or grease with the exception of the last one. The single line orifice metering system will handle oil only.

OIL MIST SYSTEM

The oil mist system is entirely different from the ones discussed previously. A venturi picks up and atomizes the lubricant, which is generally a light oil. A baffle removes the larger droplets and gentle air pressure carries the oil mist stream to the bearing. Inasmuch as the particle size is in the micron range, there is limited condensation in the piping system.

At the bearing, an orifice reclassifies the mist into larger droplets that pass into the bearing. The air coming through the tubing tends to keep the bearing cool, and the slightly increased pressure in the bearing keeps out dirt and dust.

Some systems heat the oil in order to atomize it easier, other systems do not. These units are very efficient and use very small quantities of oil.



TYPICAL AIR-MIST SYSTEM

There are many standard types of automatic lubricating systems, but each application is a special job in that a lubrication system must be tailored to the particular equipment. This assures an overall efficiency that could not be obtained otherwise.

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