



# **AIR / OIL LUBRICATION**

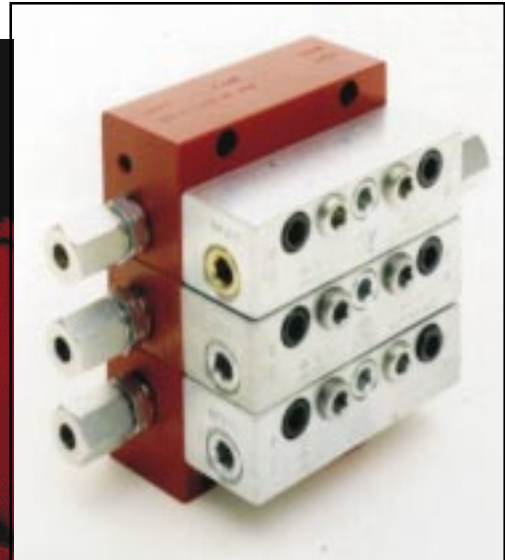
**“The Solution To Reducing Lubricant  
Usage While Increasing Productivity”**

***DropsA's Patented  
“RED BASE”***

***Air / Oil Mixing Valve...***

***STEEL MILL APPLICATIONS:***

- ROLLING MILLS***
- GUIDES***
- LOOPERS***
- CAMS***
- SPINDLES***
- RUN OUT TABLES***
- ROLLER BEARINGS***
- STRAIGHTNERS***





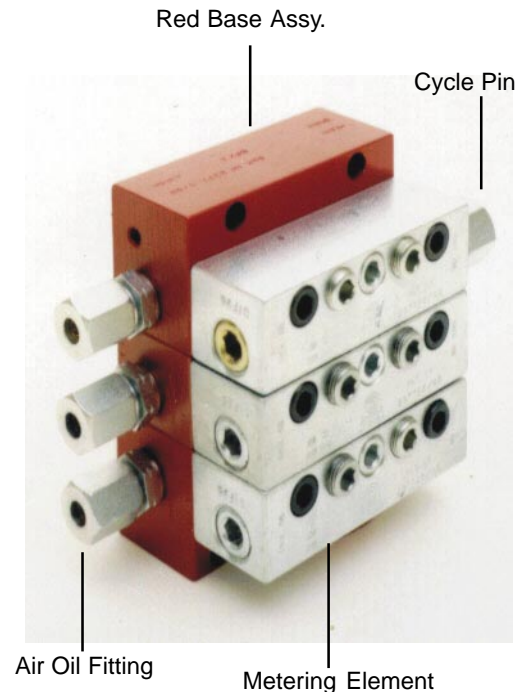
## "Air Oil" Lubrication Systems

Centralized Lubrication Engineers  
and Component Manufacturers Since 1946

DropsA  
"Air Oil"  
Red Base

### Advantages of DropsA "Air Oil" Lubrication

- **Significant Reduction of Lubricant Cost**
- **Lowers Operating Costs**
- **Environmentally Friendly-Reduces Waste**
- **Increases Bearing & Machinery Life**
- **Increased Output & Production UpTime**
- **Reduced Energy Costs**
- **Reduced Housekeeping Costs**
- **Lower Maintenance**
- **Prevents Bearing Contamination**
- **Cooling of Lubricated Parts**
- **Accuracy of Delivery**
- **Full Monitoring Capabilities**
- **Modular Concept-Reduces Parts Inventory**
- **Spray, Mist or Droplet Application**
- **Easy to Install**
- **System can be a Few Points or Hundreds**
- **Proven Patented Design in use Worldwide**



### DropsA "Air Oil" System Component Features:

The DropsA Two-Line Pressurized Header System has only Two Lines coming from the Pump feeding Modular Dual-Line Valves (at each Bearing Zone). These Valves work independent of each other and feed a DropsA Series Progressive System consisting of Master Feeder and Four Secondary Air/Oil "Red-Base" Assemblies located at each Zone. Because each Dual-Line Feeder Valve works independent of the others, its operation can be monitored, providing True Zone Diagnostics. If an Air/Oil "Red-Base" Feeder Valve fails to cycle, the Cycle Switch Monitoring the Piston Movement in the Dual-Line Feeder Valve will signal the Controller of a Lubrication Fault. This condition can be displayed by the Controller to indicate exactly which Zone is not being lubricated. A Signal can also be sent to a remote PC Control.

The DropsA "Red-Base" Series Progressive Air/Oil Distributor Positively Injects an Exact amount of Oil, under pressure, into each Bearing Air/Oil Supply Line. Each Bearing receives the proper amount of lubrication and can be independently monitored.

The DropsA Dual-Line Valves and "Red-Base" Valves all contain Visual Cycle Indicator Devices which allow for quick and easy inspection of successful system operation. The DropsA System Monitors a Pressure Switch in both Main Oil Lines and warns you of a Oil Line Break.

The DropsA System is easy to install and allows for easy addition of Air/Oil Lubrication Zones to future Mill Stands. Spindles, Etc..

Experience has shown that the DropsA System and Components are typically less expensive than other systems to Purchase, Repair or Replace.

All DropsA Dual-Line and "Red-Base" Assemblies are of Modular Construction which allows for easy changing of Piston Elements without disconnections of Piping lines. This feature provides the Ultimate In Design Flexibility.

The DropsA System does not need valves for turning On or Off each Mill Stand Air/Oil Lubrication Zone upon removal of the Bearing or Mill Stand. The Dual-Line Valve automatically stops dispensing oil when the Mill Stand is not present and the Controller will disregard Monitoring that Zone.

DropsA Filters are available in a wide variety of filtering media and provide a means to collect contaminants before they enter the distributors.



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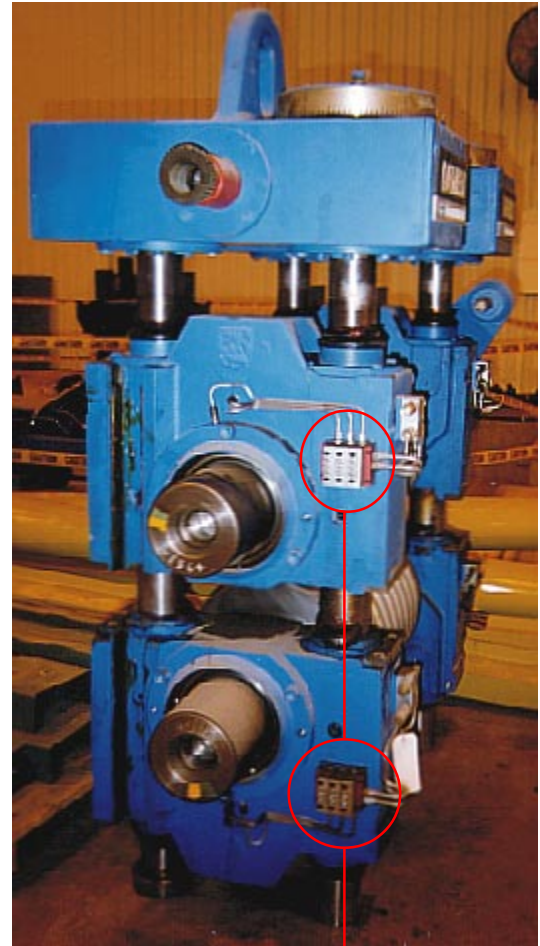
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### Description of DropsA "Air Oil" System

There are two types of oil distribution systems in use; Dual-Line and Series Progressive. Each system has its advantages but neither of the two systems alone will give the oil system the protection of monitoring, visible warning of failure and quick fault detection that a combined Dual-Line/Progressive system gives.

The typical system as designed by DropsA would include:

- Two Motorized Oil Pumps (one main & one stand-by), Relief Valve, Oil Reversing Valve, Pressure Gauge, Low Level Switch, Oil Heater, Oil Thermostat, Oil Filter, and a 132 Gallon L-Shaped Reservoir.
- Two lines running the length of the Mill Stands, each ending with an Electric Pressure Switch for broken line detection.
- Primary DropsA Dual-Line Distributor Valve near each Mill Stand connected to the two lines coming from the pump. Each with a visual cycle indication stem and electrical cycle switches.
- DropsA Master SMX Progressive Metering Oil Distributors which are connected to the output line from the Modular Dual-Line distributors located at each Mill Stand. The master SMX Oil Distributor feeds the Secondary Modular Progressive "Red-Base" air/oil distributors at each Mill Stand. The "Red-Base" distributors feed all Bearings with precise quantities of oil introduced to a continuous air supply which will be filtered and monitored for low air pressure.
- A Controller which will activate the lubrication cycle and monitor the;  
(a) Main Line Oil Pressure (b) each individual Dual-Line Cycle Switch for proper air/oil dispensing (c) low Reservoir Level (d) low Air Pressure.



"Red-Base" Air/Oil  
Distributors



Large Oil Pump Package Supplied on  
Recent Air/Oil Installation



DropsA Modular Dual-Line Feeder



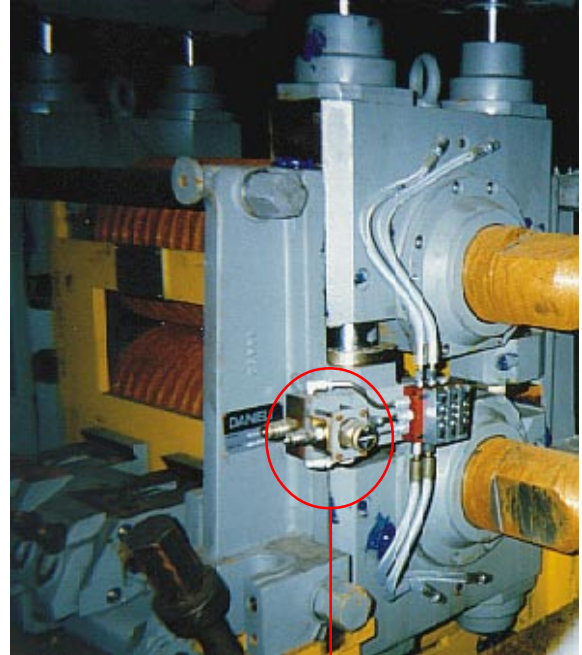
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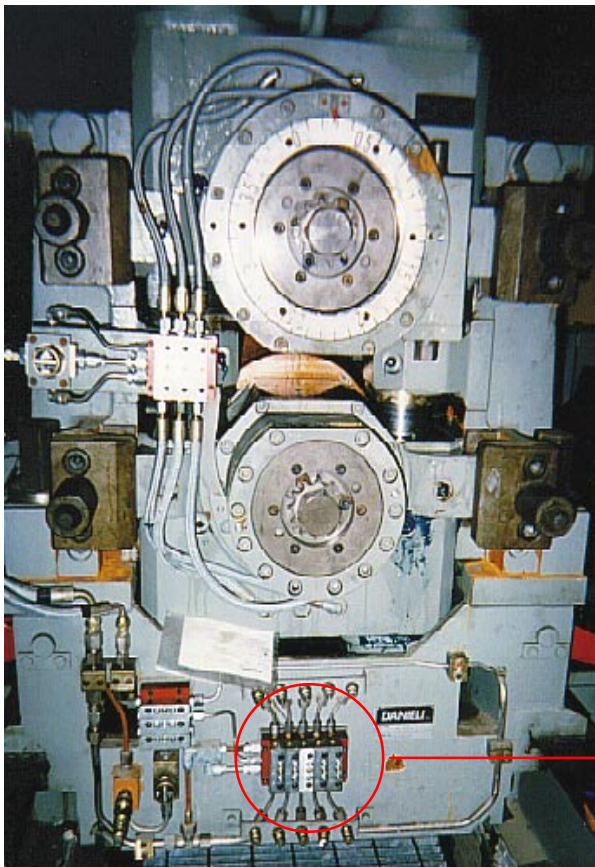
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### Areas for “Air Oil” Lubrication Application

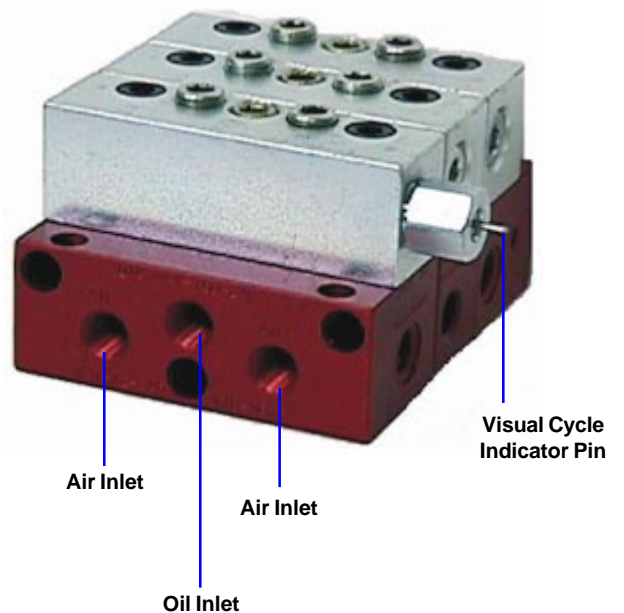
- Lubrication of high speed rotating elements, where a steady distribution of small quantities of oil is required between the moving elements, where the oil film tends to be carried off by the high centrifuge power.
- Lubrication of machinery parts working at high temperature where the lubricant tends to be dried or burned.
- Spray lubrication on chains and gears.
- Lubrication of slides and ways that require a thin film of oil over the entire surface.
- Lubrication of bearings which need protection from dust infiltration, water or other damaging substances. Mixed air flow creates a slight over pressure inside the bearing, which prevents the ingress of pollutants.
- Lubrication of points which cannot be reached by traditional lubrication systems.



DropsA High Pressure In-Line Filter At Air/Oil Feeder Inlet



“Red-Base” Secondary Feeder



Air Inlet

Air Inlet

Oil Inlet

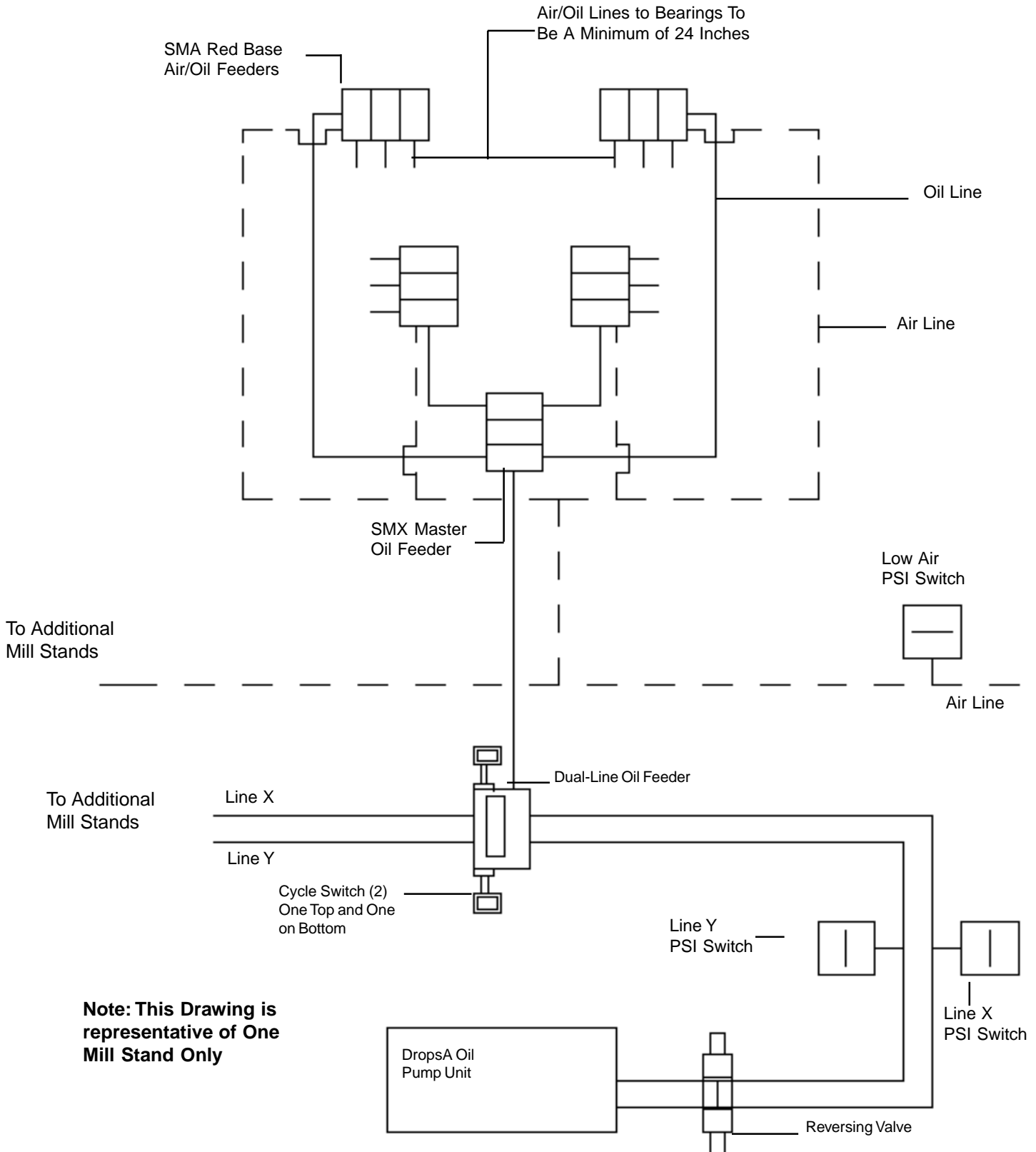
Visual Cycle Indicator Pin



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**\*\* Typical System Schematic, See Next Page for System Operation Sequence...**



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### DropsA “Air Oil” System Sequence

A Controller will supply a control signal to the selected DropsA pump initiating the lubrication cycle every 6 minutes. This will send the pump oil supply to line Y and cause a build-up of pressure which will actuate the Dual-line distributor pistons at each mill stand to stroke up. This can be visually monitored by it's indicator stem and electrically monitored with cycle switch “Y” mounted in each dual-line turret.

The Dual-line distributor supplies the DropsA master progressive oil distributor which in turn supplies the DropsA “Red-base” Progressive distributor with oil which is proportioned by pistons. Each piston moves in series and injects a exact amount of oil into a air supply which is also supplied to the “Red-base” assembly. The oil is then carried by the air through a minimum of 24 inches of tubing to the bearing points.

Because each piston moves in series and is dependent on the movement of the previous piston, we can monitor a successful “Red-base” cycle back at the controller by checking the status of the cycle switch mounted on each dual-line assembly feeding the master and “Red-base” secondary air/oil blocks.

When all the Dual-line pistons have shifted up, pressure will rise to the setting of the line Y end-of-line pressure switch which will signal the controller that the main line Y is not broken and to electrically shift the reversing valve located at the pump outlet. This completes a half cycle of the DropsA system. Oil will then begin to be directed to line X.

Pressure will begin to rise in line X causing the piston in each Dual-line distributor to move down. This can be visually monitored by it's indicator stem and electrically monitored with cycle switch “X” mounted opposite the dualline turret. This movement will cause oil to be sent to the inlet of each DropsA master oil distributor which will proportion the oil to the “Red-base” distributors. The oil will then move the “Red-base” pistons in series, once again causing oil to be injected into the air/oil tube to the bearings.

Once all the Dual-line pistons are shifted down, pressure will increase to the setting of the line X end-of-line pressure switch which will signal the controller that the main line X is not broken, and that the system has successfully completed it's cycle so turn the pump motor off.

The controller should have the capability of monitoring the following:

- (a) Low oil level in reservoir.
- (b) Low air pressure in the individual air lines to each “Red-base” distributor.
- (c) Stability of pressure in line Y. (no broken line)
- (d) Stability of pressure in line X. (no broken line)
- (e) Successful air/oil lubrication cycle of each “Red-base” distributor.

In addition, the controller should provide a way to initiate a manual cycle of the system.

# DropsA Air/Oil Lubrication

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