

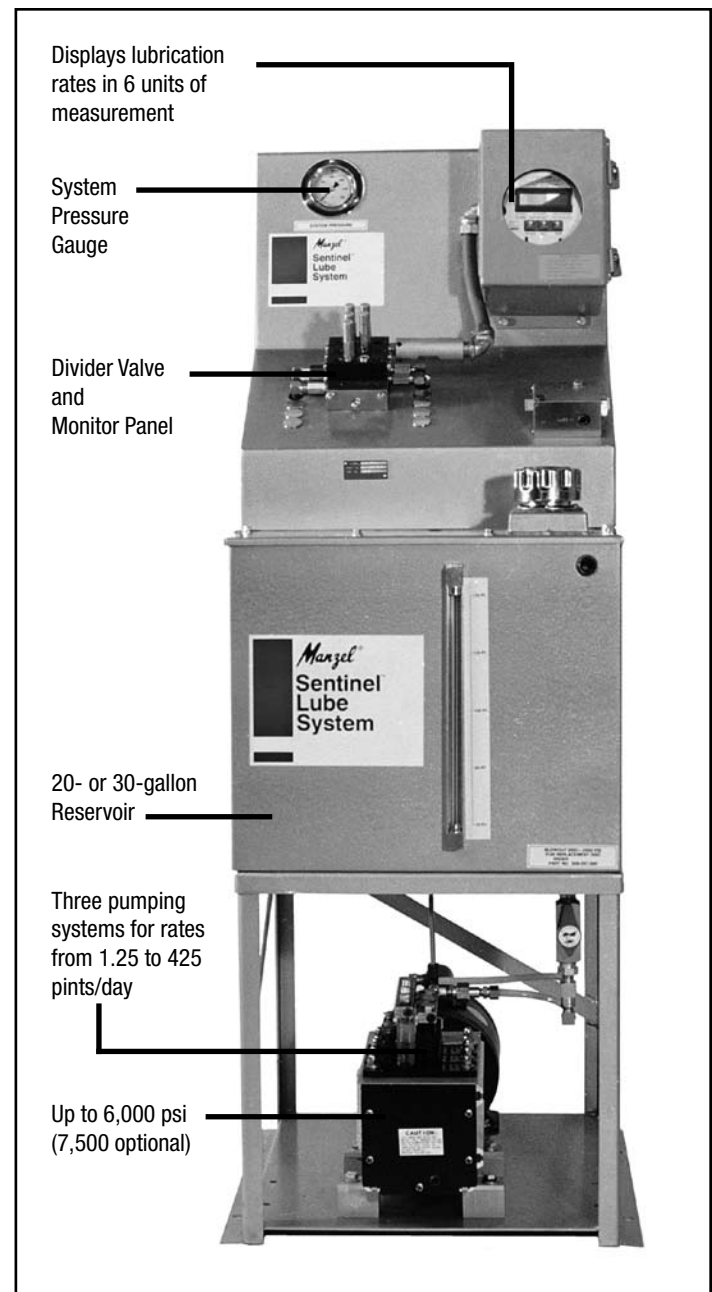
Manzel® Automatic Lubrication For Reciprocating Air Compressors



New Sentinel™ System prevents the oiling problems behind 4 out of 5 compressor rebuilds.

Field reports indicate that about eighty percent of all compressor failures and rebuilds are caused by improper lubrication. Over-oiling creates carbon build-up on valves and heads, air leaks, lower efficiency, higher costs. Eventually, the unit needs premature maintenance shutdown or costly repairs. In the worst cases, the accumulation of excess oil detonates, causing catastrophic failure. Now, Graco's Sentinel™ Lubemation® System replaces manual adjustment of dozens of individual pumps with electronic accuracy and microprocessor dependability.

- **Automatic microprocessor control** continuously monitors system pressure and lubrication rate.
- **Fail-safe alarm and shutdown** are relay-triggered before low or no-flow condition causes damage.
- **Single, central adjustment** ends the need to keep multiple pumps in synchronized adjustment.
- **Positive displacement lubrication** meters precisely, with accuracy to ± 0.1 drop/minute.
- **Series-progressive (Divider Valve) design** instantly identifies lube line blockage or flow stoppage.
- **Box lubricator simplicity** reduces moving parts, increases reliability.
- **Totally self-contained unit** includes reservoir, pump, motor, divider valve, monitor, proximity switch, filtration and instrumentation.
- **Upgrade to automatic in a few hours** using new or existing tubing.
- **Dispenses, detects and protects—automatically**
The Sentinel™ System was engineered to gain the advantages of the best of **three** worlds, to use the best features of three proven technologies.



Complete Sentinel™ System

Sentinel™ building block #1 – The reliability and economy of a terminating, single-line, box lubricator system.

For many years, this was the traditional approach to lubricating a reciprocating air compressor. One suction pump and one feed line are used for each lube point. The volume of oil delivered to each point is accurate since the flow depends on the displacement of the pump. It is a simple system, with few moving parts, and low cost. We designed these positive features into the Sentinel™ System.

Output variations minimized

However, on any multi-point application, it is extremely difficult to manually adjust the large number of pumps involved, and to ensure that the proper delivery rate is maintained, shift-to shift and week after week. In addition, it is not practical to monitor each lube point, electronically on pump-to-point systems.

The pump-to-point approach depends upon the reliability of each individual pump. In the Sentinel™ System, we have incorporated a box lubricator that is designed to take advantage of each pump's mid-range output. Output to each point is maintained by the series progressive divider valve.

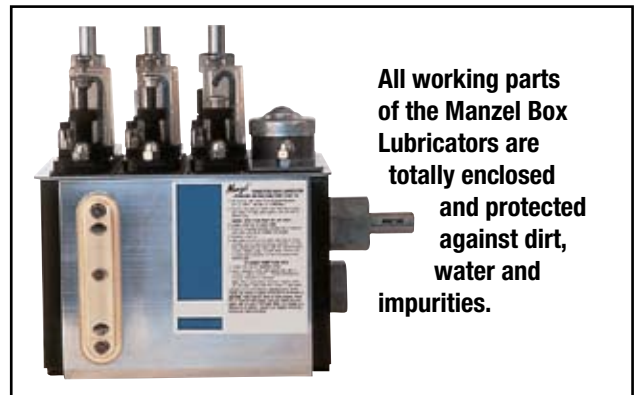
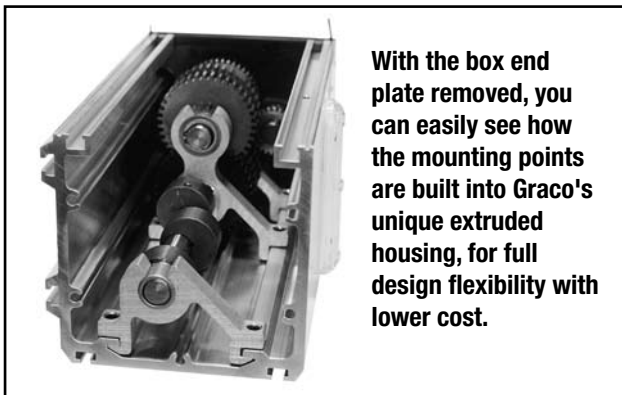
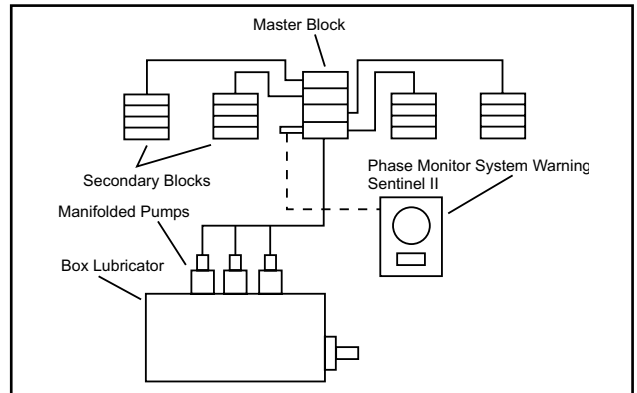
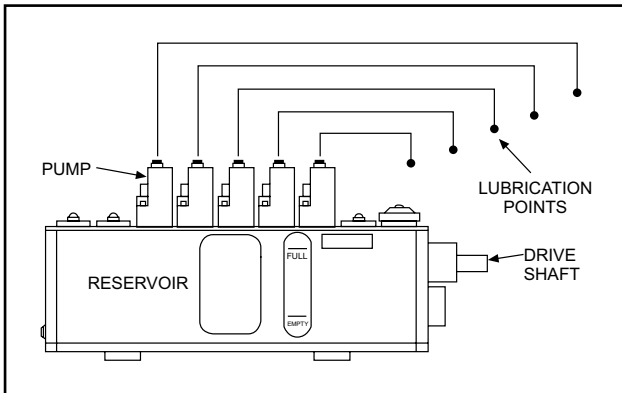
The Sentinel™ System was designed to combine the economy of box lubrication with the accuracy and central control of a series-progressive system.

Sentinel™ building block #2 – The simple, central adjustment of a series-progressive system.

Developed in response to the ever-growing numbers of compressors, points, and pumps, the series-progressive approach uses the combined output of the box lubricator to supply a network of divider valves. While retaining the central source idea of the box lubricator, these valves divide the oil into precisely proportional amounts for supply to each specific lube point. This allows a single adjustment to set the delivery rate for an entire compressor. This centralized control and precise metering are key features of the Graco Sentinel™ System.

Built-in protection

Another advantage of the divider valve concept is that all of the pistons in every valve in the system are sequentially linked. The stroke of one piston triggers the next. Any blockage or stoppage causes an **instant reaction** within the system. A deficient line cannot go unnoticed. This built-in default function was a natural link to our third technology: electronic control.



Sentinel™ building block #3 – Microprocessor monitoring for expanded data access and control.

The Sentinel™ System adds state-of-the-art microprocessor capability to the proven performance of the divider valve and box lubricator.

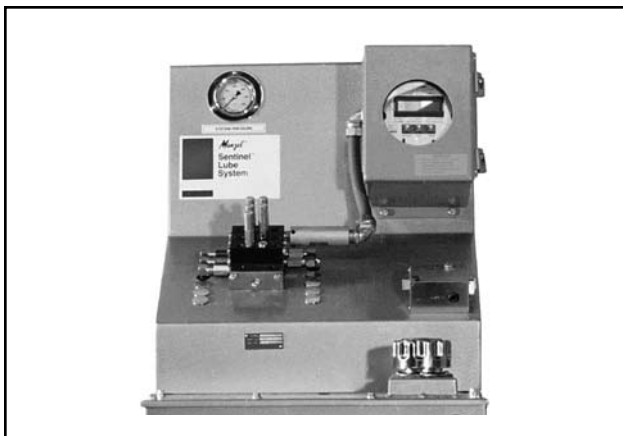
The result is a self-contained unit that delivers, records, monitors, and displays the lubrication cycle, and automatically triggers alarm and/or shutdown in the event of a low-flow or no-flow condition.

A built-in proximity switch signals the cycle time for the divider valve. Sent to the central monitor, this data is available in three forms:

1. **Instantaneous:** which measures the last cycle time only, and is ideal for setting up or adjusting the system.
2. **Average:** which samples the last ten cycles then averages them for a more representative figure.
3. **Totalized:** which is the accumulated total number of cycles for a given time period which you select.



Monitor



Panel

You can install fail-safe Sentinel™ protection in a half-day.

Because the Sentinel™ automatic system uses aspects of existing manual set-ups, installation is as simple as:

1. Run the wiring for motor and monitor
2. Connect tube fittings, using new or existing tubing.
3. Turn the system on.

All electric components are also available with explosion-proof options, including a magnetic Safety Set® switchbank for the monitor that permits activation of the buttons without removing the cover.

User friendly operation

There's no need to perform calculations and conversions. Simply adjust the lubricator until the digital display shows the per-day rate that you want. The unit processes the flow, along with the cycle time data from the proximity switch and correlates it all into a lube rate readout. The readout is in your choice of six different units of measurement: pints, liters, gallons, etc.

Two-level monitoring

The Sentinel™ System's dual-channel design allows two master divider valves to be monitored simultaneously. In applications where only one divider valve is required, the monitor can be configured to designate one channel as an alarm point and the other as a shutdown point, giving you a second level of control and protection.

A totally self-contained, stand-alone system.

- Simple, three-push-button controls
- All electric components available with explosion-proof options
- No-math setting: simply adjust pump until display shows desired output.

Unequaled customer support.

Self-contained and separable

The basic unit includes everything necessary: Reservoir, Lubricator (rated to the application), Motor, High-Pressure Filter, Divider Valve (matched to the application), Monitor, Proximity Switch, System Pressure Gauge, and Relief Valve. For added flexibility, the panel can be separated from the reservoir/pump assembly.

Innovative engineering and worldwide distribution

Graco's Sentinel™ Lubemation® System offers a wide range of options and accessories that allows you to match the lube system to your application.

In a three-year comparison test with pump-to-point lubrication, conducted by one of our customers in public power, savings with the Sentinel™ System concept achieved cost payback in less than a year.

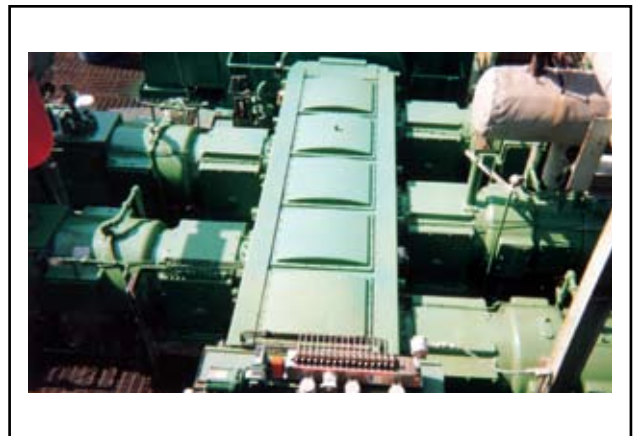
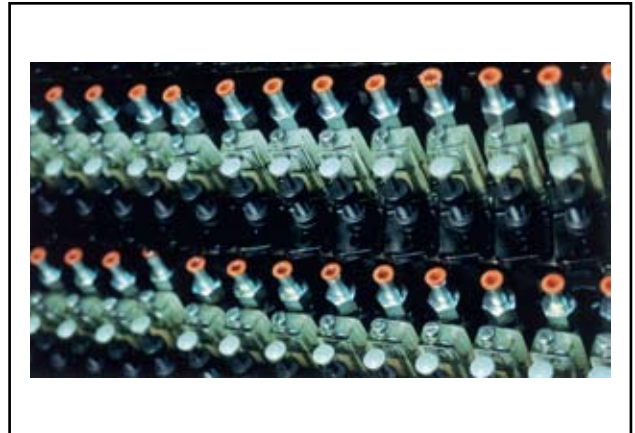
Graco provides the industry's best support with full inventory and worldwide network of over 100 distributors.

Whatever your need in lubrication system components, our distribution network can fill it. Each distributor has a staff of factory-trained specialists to give you fast, efficient applications and service assistance.

This network is backed up by Graco design and applications engineers who are in the field to work closely on your requirements. Our customer product training schools, conducted by these engineers, are well-known for their practical value, and are available for your assistance.

If it compresses air, we lubricate it.

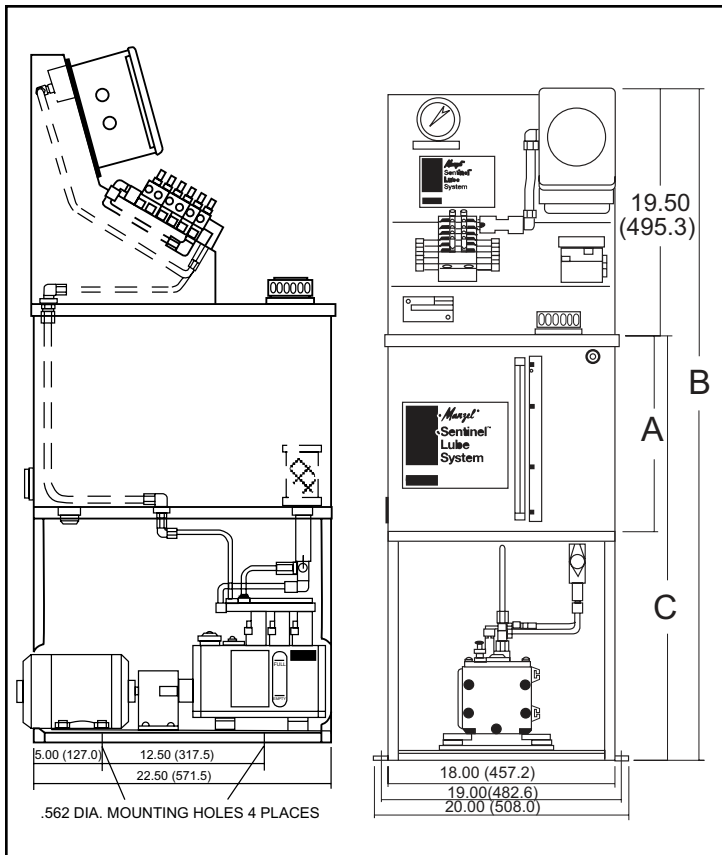
Whether you're installing new equipment or upgrading existing units, we'll help you reduce maintenance cost with the fail-safe protection of automatic lubrication.



Self-contained and separable

The basic unit includes everything necessary: Reservoir, Lubricator (rated to the application), Motor, High-Pressure Filter, Divider Valve (matched to the application), Monitor, Proximity Switch, System Pressure Gauge, and Relief Valve. For added flexibility, the panel can be separated from the reservoir/pump assembly.

SPECIFICATIONS	
Material (basic)	Steel
Seals	Viton
Max Working Pressure	
Standard	6000 psi
Option	7500 psi
Flow Rate (24 hr day)	1.25 pints – 425 pints
Weight	250 lbs empty



Capacity	Dimensions in (mm)		
	A	B	C
20 gal	15.5 (393.7)	53.0 (1346.2)	33.5 (850.9)
30 gal	22.0 (558.8)	59.5 (1511.3)	40.0 (1016.0)

Look to GRACO, INC.

For assistance in applying this automatic, fail-safe protection to your compressors, call on Graco at 1-800-USA-LUBE (1-800-872-5823) or fax 1-800-533-9656

MONITOR: See Bulletin L14701

DIVIDER VALVES: See Bulletin L10103

FILTER: See Bulletin L15200

LUBRICATORS:

Manzel® Model 55 - See Bulletin L51040

Trabon® LubeMaster® - See Bulletin L12715

Trabon® MVB Pump - See Bulletin L12506

PROXIMITY SWITCHES: See Bulletin L15600

All written and visual data contained in this document are based on the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Contact us today!

To receive product information or talk with a Graco representative, call 800-533-9655 or visit us online at www.graco.com.

