



## DIGITAL COMPRESSOR MONITORS

### PRODUCT DESCRIPTION

MONITORS AND TRACKS DIVIDER VALVE OPERATION OF LUBRICATION SYSTEMS

MONITOR CONTINUOUSLY ANALYZES DIVIDER VALVES AND PERFORMS A SHUT DOWN IF THERE IS A PROBLEM, PREVENTING DAMAGE

PROGRAMMABLE RANGES FROM 20 SEC. TO 4 MIN. & 30 SEC.

MONITOR AUTOMATICALLY SCROLLS AND DISPLAYS CYCLE TIME, FLOW RATE, TOTAL STROKES, ALARM STATUS, AND TOTAL SYSTEM RUN TIME

AVAILABLE IN 120VAC OR 24VDC @ .040A & "AA" BATTERY POWERED

BATTERY POWERED MONITORS HAVE A LIFE EXPECTANCY OF 5-10 YEARS AND COME EQUIPPED WITH A LOW BATTERY ALARM INDICATOR.

MONITORS ARE AVAILABLE WITH OR WITHOUT EXPLOSION PROOF HOUSINGS FOR HAZARDOUS CONDITIONS

### BENEFITS & FEATURES

SINGLE AND DUAL ZONE MONITORS

EXTERNAL POWER NOT REQUIRED, BATTERY POWERED OPTIONS AVAILABLE

LONG BATTERY LIFE

EXPLOSION PROOF ENCLOSURES

PROGRAMMABLE ALARM & SHUTDOWN PROTECTION PROTECTS COMPRESSORS FROM DAMAGE DUE TO LOSS OF LUBRICATION

DIGITAL LCD DISPLAY

FAILSAFE - OPEN AND CLOSED MODES

## READY FOR IMMEDIATE SHIPMENT

MADE IN



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FUNCTIONAL ILLUSTRATION

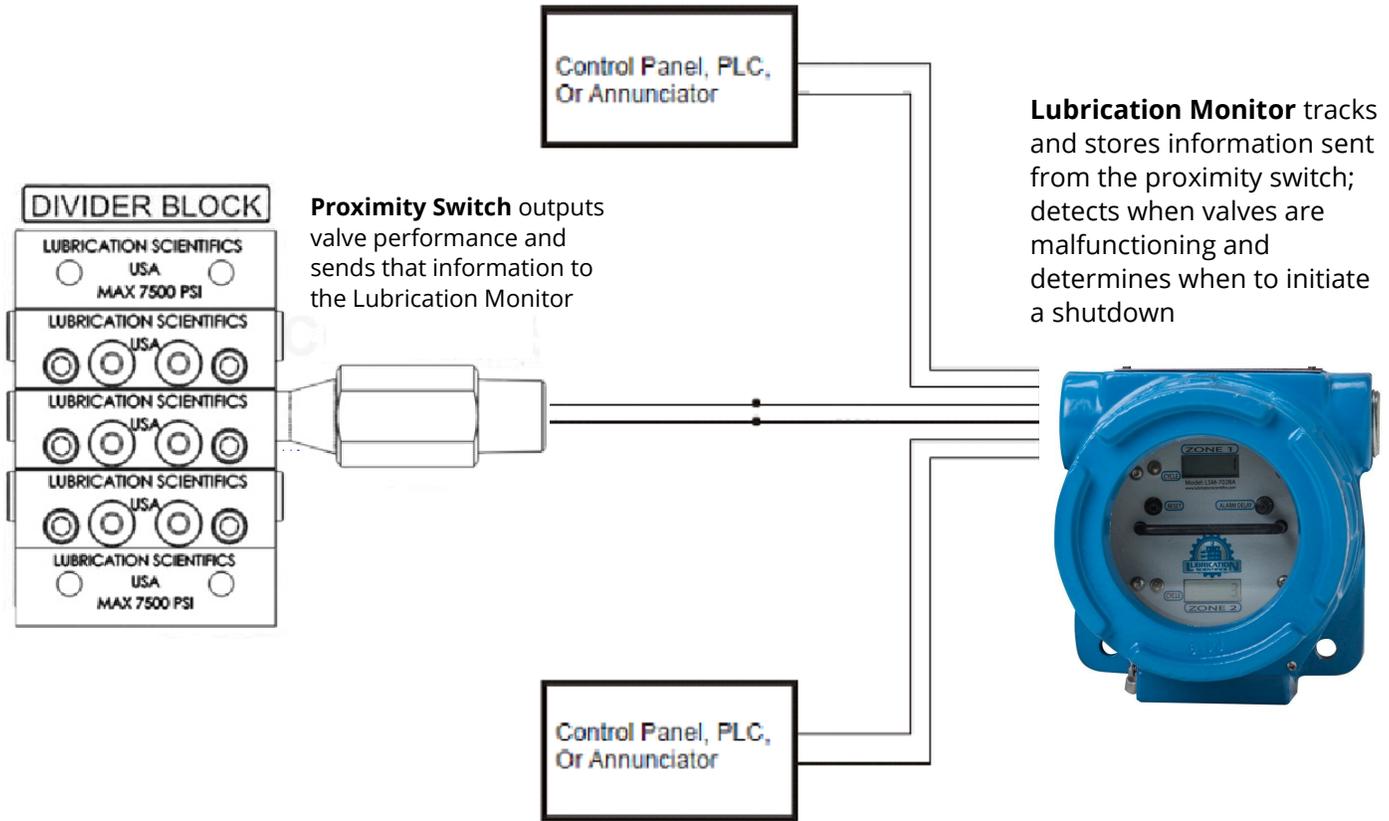


ILLUSTRATION DESCRIPTION

During a lube event, the lubrication monitor is constantly analyzing the performance of the lubrication system by way of the proximity switch. It tracks the following data: cycle time, flow rate, piston strokes, alarm status, and total system run time.

During a lube event where the proximity switch isn't detecting piston movement, an alarm is triggered from the Lubrication monitor for a set amount of time.

Once the alarm time expires, the lubrication monitor will then proceed to shut down the compressor before any damage can be incurred by a lack of lubrication.

## LSM-601-AC & LSM-602-AC SERIES: MONITOR SPECIFICATIONS

### LSM-601AC SINGLE ZONE MONITOR

|                   |   |   |
|-------------------|---|---|
| ENCLOSURE         | EXPLOSION PROOF CLASS I DIV I GROUPS A,B,C,D  |  |
| POWER             | 120VAC OR 24VDC @ .040 amps   |   |
| ALARM SWITCH      | FORM C CONTACT 120VAC @ 5 amps  |   |
| ALARM TIME        | PROGRAMMABLE: -3 - 250 seconds  |   |
| TEMPERATURE RANGE | 0 - 150 DEGREES f (-32 - 70 DEGREES C)  |   |
| WARRANTY          | 1 YEAR  |   |
| DISPLAY           | CYCLE TIME (sec), FLOW RATE (pints/day), TOTAL STROKES, TOTAL SYSTEM RUN TIME (hours) |   |
| MEMORY            | LAST 100 CYCLES   |   |
| PROXIMITY SWITCH  | 1 PROXIMITY SWITCH REQUIRED - REFER TO BULLETIN LSM003                                |   |

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### LSM-602AC DUAL ZONE MONITOR

|                   |   |   |
|-------------------|---|---|
| ENCLOSURE         | EXPLOSION PROOF CLASS I DIV I GROUPS A,B,C,D  |  |
| POWER             | 120VAC OR 24VDC @ .040 amps   |   |
| ALARM SWITCH      | FORM C CONTACT 120VAC @ 5 amps  |   |
| ALARM TIME        | PROGRAMMABLE: -3 - 250 seconds  |   |
| TEMPERATURE RANGE | -20 to 185 DEGREES f (-28 to 85 DEGREES C)  |   |
| WARRANTY          | 1 YEAR  |   |
| DISPLAY           | CYCLE TIME (sec), FLOW RATE (pints/day), TOTAL STROKES, TOTAL SYSTEM RUN TIME (hours) |   |
| MEMORY            | LAST 100 CYCLES PER ZONE  |   |
| PROXIMITY SWITCH  | 2 PROXIMITY SWITCH REQUIRED - REFER TO BULLETIN LSM003                                |   |

## LSM-701BA & LSM-702BA SERIES: MONITOR SPECIFICATIONS

### LSM-701BA SINGLE ZONE MONITOR

|                   |  |
|-------------------|--|
| ENCLOSURE         | EXPLOSION PROOF, CLASS I DIV I GROUPS A,B,C,D            |
| POWER             | 2 "AA" 1.5V BATTERIES - REGULAR OR ALKALINE BATTERIES OK |
| ALARM SWITCH      | 10VA/120VAC/240 VDC                                      |
| ALARM TIME        | PROGRAMMABLE: -20 - 270 seconds                          |
| TEMPERATURE RANGE | -40- 170 DEGREES F                                       |
| WARRANTY          | 2 YEARS  |
| DISPLAY/STROKES   | 0-99999  |
| MEMORY            | LAST 100 CYCLES  |
| PROXIMITY SWITCH  | 1 PROXIMITY SWITCH REQUIRED - REFER TO BULLETIN LSM003   |



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### LSM-702BA DUAL ZONE MONITOR

|                   |  |
|-------------------|--|
| ENCLOSURE         | EXPLOSION PROOF, CLASS I DIV I GROUPS A,B,C,D          |
| POWER             | 2 "AA" 1.5V BATTERIES                                  |
| ALARM SWITCH      | 10VA/120VAC/240 VDC                                    |
| ALARM TIME        | PROGRAMMABLE: -20 - 270 seconds                        |
| TEMPERATURE RANGE | -40- 170 DEGREES F                                     |
| WARRANTY          | 2 YEARS  |
| DISPLAY/STROKES   | 0-99999  |
| MEMORY            | LAST 100 CYCLES PER ZONE                               |
| PROXIMITY SWITCH  | 2 PROXIMITY SWITCH REQUIRED - REFER TO BULLETIN LSM003 |



**ORDERING INFORMATION & PART NUMBERS**

**COMPRESSOR MONITORS**

| <b>STANDARD PACK: 1 EACH</b>              |                              |                    |
|---|------------------------------|--------------------|
| <b>COMPRESSOR MONITOR—NO ENCLOSURE</b>    |                              | <b>PART NUMBER</b> |
| DIGITAL LUBRICATION MONITOR W/O ENCLOSURE | SINGLE ZONE, AC POWERED      | LSM-601AC          |
| DIGITAL LUBRICATION MONITOR W/O ENCLOSURE | DUAL ZONE, AC POWERED        | LSM-602AC          |
| DIGITAL LUBRICATION MONITOR W/O ENCLOSURE | BATTERY POWERED, SINGLE ZONE | LSM-701BA          |
| DIGITAL LUBRICATION MONITOR W/O ENCLOSURE | BATTERY POWERED, DUAL ZONE   | LSM-702BA          |

**Note:** Refer to bulletin LSM003 for proximity switch specifications and ordering information.

| <b>STANDARD PACK: 1 EACH</b>                             |                              |                    |
|--|------------------------------|--------------------|
| <b>COMPRESSOR MONITOR—WITH EXPLOSION PROOF ENCLOSURE</b> |                              | <b>PART NUMBER</b> |
| DIGITAL LUBRICATION MONITOR W/ ENCLOSURE                 | SINGLE ZONE, AC POWERED      | LSM-601AC-XPE      |
| DIGITAL LUBRICATION MONITOR W/ ENCLOSURE                 | DUAL ZONE, AC POWERED        | LSM-602AC-XPE      |
| DIGITAL LUBRICATION MONITOR W/ ENCLOSURE                 | BATTERY POWERED, SINGLE ZONE | LSM-701BA-XPE      |
| DIGITAL LUBRICATION MONITOR W/ ENCLOSURE                 | BATTERY POWERED, DUAL ZONE   | LSM-702BA-XPE      |

**Note:** Refer to bulletin LSM003 for proximity switch specifications and ordering information.

**LSM-601AC-XPE / LSM-602AC-XPE MODELS**



**LSM-701BA-XPE / LSM-702BA-XPE MODELS**



DUAL ZONE MONITOR (Zone #1/Zone #2)

MONITORS AND RECORDS OPERATION OF DIVIDER BLOCK LUBRICATION SYSTEMS



LSM-601/602-AC

SPECIFICATIONS

- Enclosure.....Compliant with Class I Division I Groups A, B, C, D
- Power.....120VAC or 24VDC@.040 amps
- Alarm Switch .....Form C Contact 120 VAC @ 5 amps N.O. COM. N.C.
- Alarm Time.....Programmable - 3 sec to 250 seconds
- Temperature Range.....0 to +150 F (-32 to +70 C)
- Warranty.....1 Year
- Display.....Cycle Time(Sec), Flow Rate(Pints/Day), Total Strokes,  
Alarm Status, Total System Run Time(Hours)
- Memory.....100 Cycle times Zone #2, 100 Cycle times Zone #1
- Proximity Switch.....2 included, Class I Div I Grps A, B, C, D

**DISPLAY:** Automatically scrolls between Pints/Day, Cycle Time, Total Strokes, System Run Time.

Pressing **(INC.)** Will lock display at the present function.

Pressing the **(EXIT)** will release the scroll lock and return to automatic.

DISPLAY FUNCTIONS:

**Pints/Day ZONE#1 and ZONE #2**

- Z1 XXX.X P/D Pints/Day Zone #1
- Z2 XXX.X P/D Pints/Day Zone #2

**Cycle time ZONE#1**

- Z1 XXX.X SEC Cycle time in seconds
- PREV. XXX.X Previous Cycle time for Zone#1

**Cycle time ZONE #2**

- Z2 XXX.X SEC Cycle time in seconds
- PREV. XXX.X Previous Cycle time for Zone#2

**Total strokes ZONE#1 and ZONE #2**

- Z1 XXXXXX STK Total Strokes Zone#1
- Z2 XXXXXX STK Total Strokes Zone #2

**Total run time in hours**

000000.000

DESCRIPTION

The LSM-602AC is a microprocessor based dual mode monitor for the display and control of progressive in-line lubrication systems. Proximity switches mounted to the divider block system for Zone #1 and Zone #2 signals the LSM-602AC each cycle. The time between cycles is displayed on the LCD readout as time into the current cycle as well as the time for the previous cycle. Each 10 seconds the display changes to show the flow rate in pints/day, cycle time, total strokes, and system run time for both Zone #1 and Zone #2. If the time between cycles exceeds the programmed alarm time an alarm signal is activated. The last 100 cycle times for the Zone #1 and Zone #2 lubrication systems are stored in permanent memory and can be read out via local control of program buttons.

## MONITOR DISASSEMBLY INSTRUCTIONS

FOR WIRING AND BOARD ACCESS

FOR MODELS: LSM-601/602/701/702 MODELS

**TOOLS NEEDED:** 1/16" ALLEN WRENCH AND SMALL FLAT HEAD SCREWDRIVER

### DISASSEMBLY OF MONITOR FOR WIRING ACCESS

**STEP 1:** REMOVE SET SCREW ON MONITOR HOUSING.

**STEP 2:** REMOVE THE EXPLOSION PROOF LID FROM THE MONITOR BODY BY UNSCREWING COUNTERCLOCKWISE. UNSEATING MAY BE DIFFICULT DUE TO O-RING SEAL.

**STEP 3:** REMOVE THE DIGITAL DISPLAY PANEL FROM THE HOUSING BODY. REMOVE USING THE BLACK HANDLES. PULLING STRAIGHT OUT MAY BE DIFFICULT, PULL FROM ONE SIDE AT A TIME LITTLE BY LITTLE UNTIL THE DISPLAY IS ABLE TO WIGGLE FREE.

ONCE THE DISPLAY IS OFF, YOU WILL NOW HAVE ACCESS TO THE BOARD FOR WIRING. USE THE DIAGRAMS ON THE FOLLOWING PAGES FOR PINOUTS AND WIRING.

### REASSEMBLING THE MONITOR

**STEP 1:** MAKE SURE ALL WIRING IS OUT OF THE WAY OF THE BANANA PLUGS. ENSURE ALL EXPOSED WIRE IS PROTECTED FROM SHORTING .

**STEP 2:** HOLDING THE BLACK HANDLES, LINE UP THE DISPLAY SO THAT THE HORIZONTAL LINE OF THE SCREEN IS PARALLEL TO THE TOP OF THE MONITOR. SLOWLY PRESS THE DISPLAY EVENLY AND DOWNWARD INTO THE BODY. YOU SHOULD BE ABLE TO **FEEL** THE PLUGS GUIDING INTO THE CORRESPONDING CONNECTORS. IF THE DISPLAY FEELS TO BE PROPERLY ALIGNED, CONTINUE TO PRESS DOWNWARD UNTIL YOU FEEL THE DISPLAY BOTTOM OUT. THE BLACK HANDLES SHOULD SIT JUST ABOVE THE TOP OF THE BODY THREADS.

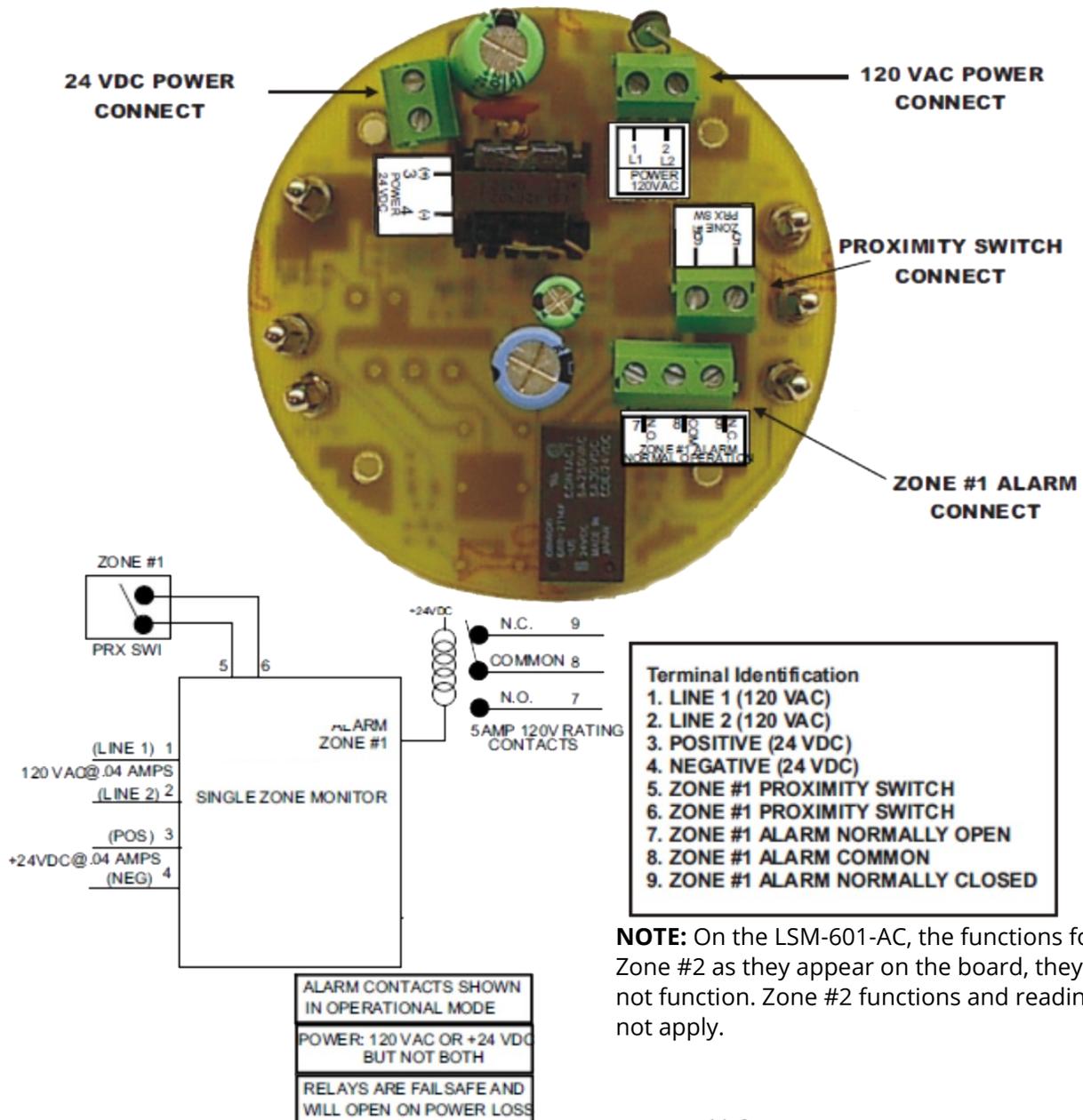
**STEP 3:** SCREW THE LID ON UNTIL THE LID IS FLUSH WITH THE BODY. SCREW IN THE SET SCREW TO SECURE.



WIRE DIAGRAMS FOR LSM-601-AC MODEL



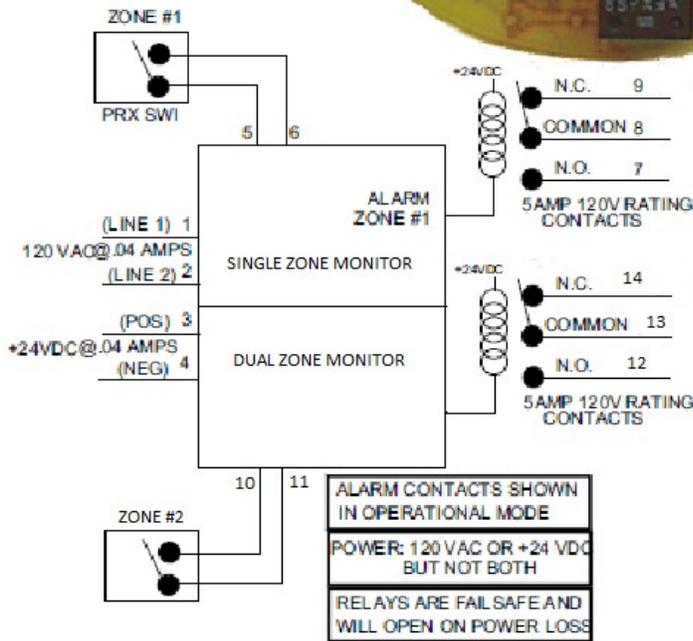
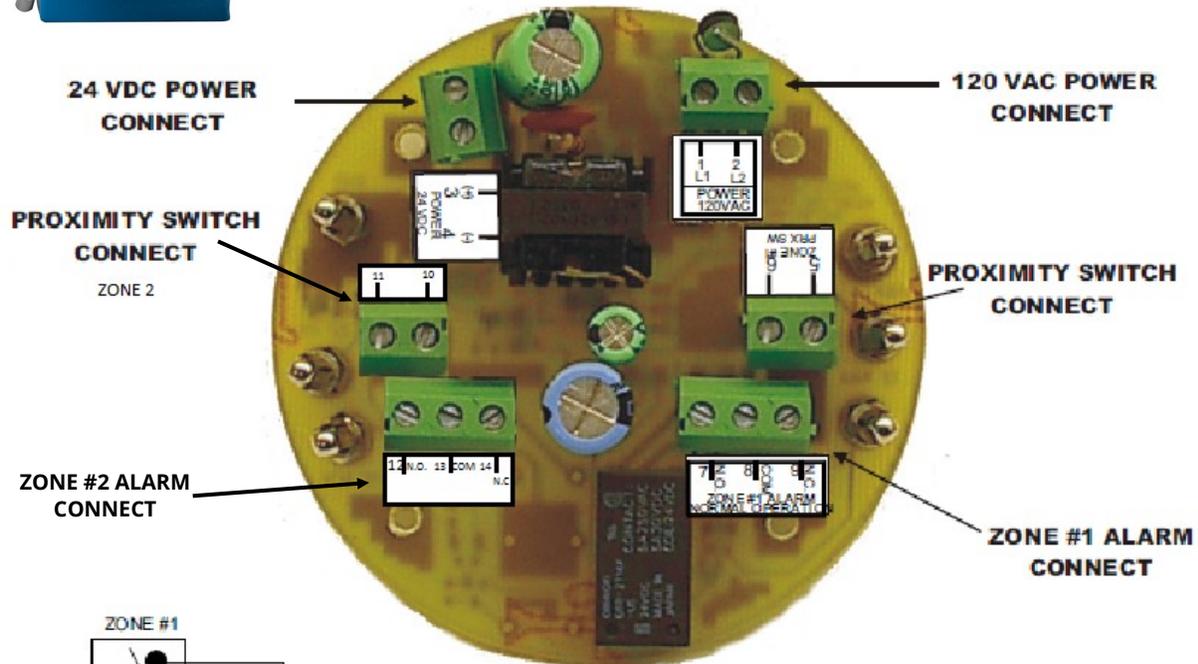
SINGLE ZONE MONITOR (Zone #1)  
WIRING



WIRE DIAGRAMS FOR LSM-602-AC MODEL



DUAL ZONE MONITOR (ZONE #1/ZONE #2)  
WIRING DIAGRAM



TERMINAL IDENTIFICATION

1. LINE 1 (120 VAC)
2. LINE 2 (120 VAC)
3. POSITIVE (24 VDC)
4. NEGATIVE (24 VDC)
5. ZONE #1 PROXIMITY SWITCH
6. ZONE #1 PROXIMITY SWITCH
7. ZONE #1 ALARM NORMALLY OPEN
8. ZONE #1 ALARM COMMON
9. ZONE #1 ALARM NORMALLY CLOSED
10. ZONE #2 PROXIMITY SWITCH
11. ZONE #2 PROXIMITY SWITCH
12. ZONE #2 ALARM NORMALLY OPEN
13. ZONE #2 ALARM COMMON
14. ZONE #2 ALARM NORMALLY CLOSED

ALARM CONTACTS SHOWN  
IN OPERATIONAL MODE  
POWER: 120 VAC OR +24 VDC  
BUT NOT BOTH  
RELAYS ARE FAILSAFE AND  
WILL OPEN ON POWER LOSS

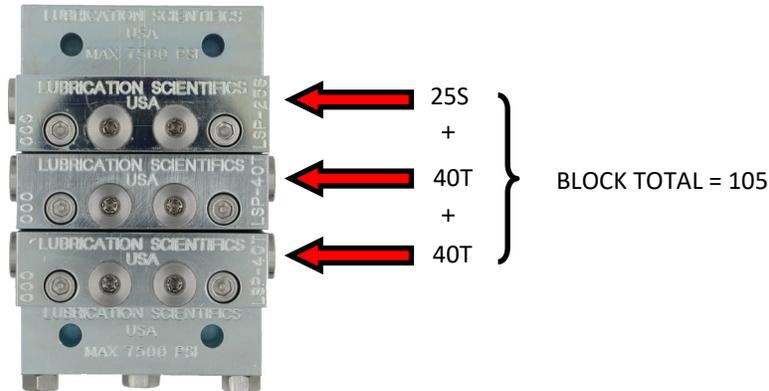
## PROGRAMING INSTRUCTIONS FOR LSM-602-AC MODEL

**TO SCROLL BETWEEN FUNCTIONS:** PRESS AND HOLD "PRG" USE THE INC OR DEC BUTTONS TO SCROLL BETWEEN FUNCTIONS.

PRESSING THE "EXIT" BUTTON WILL RETURN TO THE NORMAL SCAN.

**FIRST STEP** WILL BE TO ENTER THE BLOCK TOTALS FOR EACH ZONE (BLK TOTL). ADD UP THE VALUES STAMPED ON THE FACE OF EACH DIVIDER BLOCK FOR THAT ZONE.

EX. IF YOU HAVE 3 VALVES VALUED AT 25S, 40T, & 40T. THE TOTAL BLOCK VALUE WOULD BE 105. SEE BELOW.



| FUNCTION SELECTION        | PROGRAMMABLE PARAMETERS      | USE BUTTONS TO SET |
|---------------------------|------------------------------|--------------------|
| ZONE #1 BLOCK TOTAL       | 18-144 BLK TOTL              | INC OR DEC         |
| ZONE #2 BLOCK TOTAL       | 18-144 BLK TOTL              | INC OR DEC         |
| ZONE #1 ALARM             | 3-250 SECONDS                | INC OR DEC         |
| ZONE #2 ALARM             | 3-250 SECONDS                | INC OR DEC         |
| ZONE #1 CYCLE TIME MEMORY | TO VIEW LAST 100 CYCLE TIMES | INC OR DEC         |
| ZONE #2 CYCLE TIME MEMORY | TO VIEW LAST 100 CYCLE TIMES | INC OR DEC         |

## DISPLAY

**AUTOMATICALLY SCROLLS BETWEEN:** PINTS/DAY, CYCLE TIME, TOTAL STROKES, AND SYSTEM RUN TIME.

PRESSING "INC" WILL LOCK THE DISPLAY AT THE PRESENT FUNCTION.

PRESSING "EXIT" WILL RELEASE THE SCROLL LOCK AND RETURN TO AUTOMATIC SCROLL

THE FOUR BUTTONS ARE USED TO CHANGE THE SETUP PARAMETERS

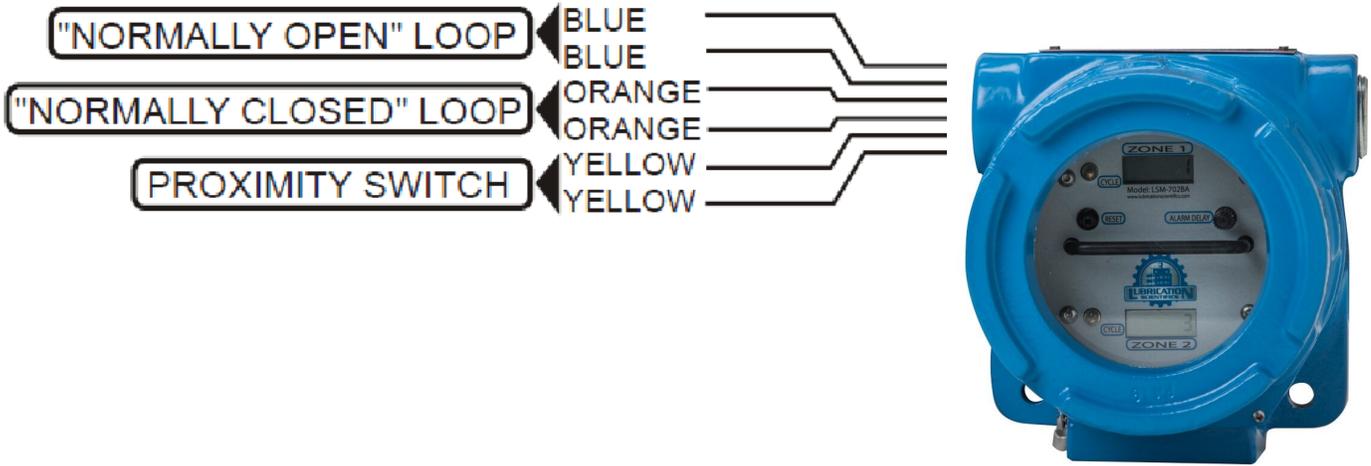
PROGRAM MENU ITEMS ARE ASSESSED BY PRESSING THE "PRG" BUTTON

PRESSING THE "PRG" + "EXT" OR "PRG" + "INC" AT THE SAME TIME WILL ACCESS THE OTHER MENU ITEMS.

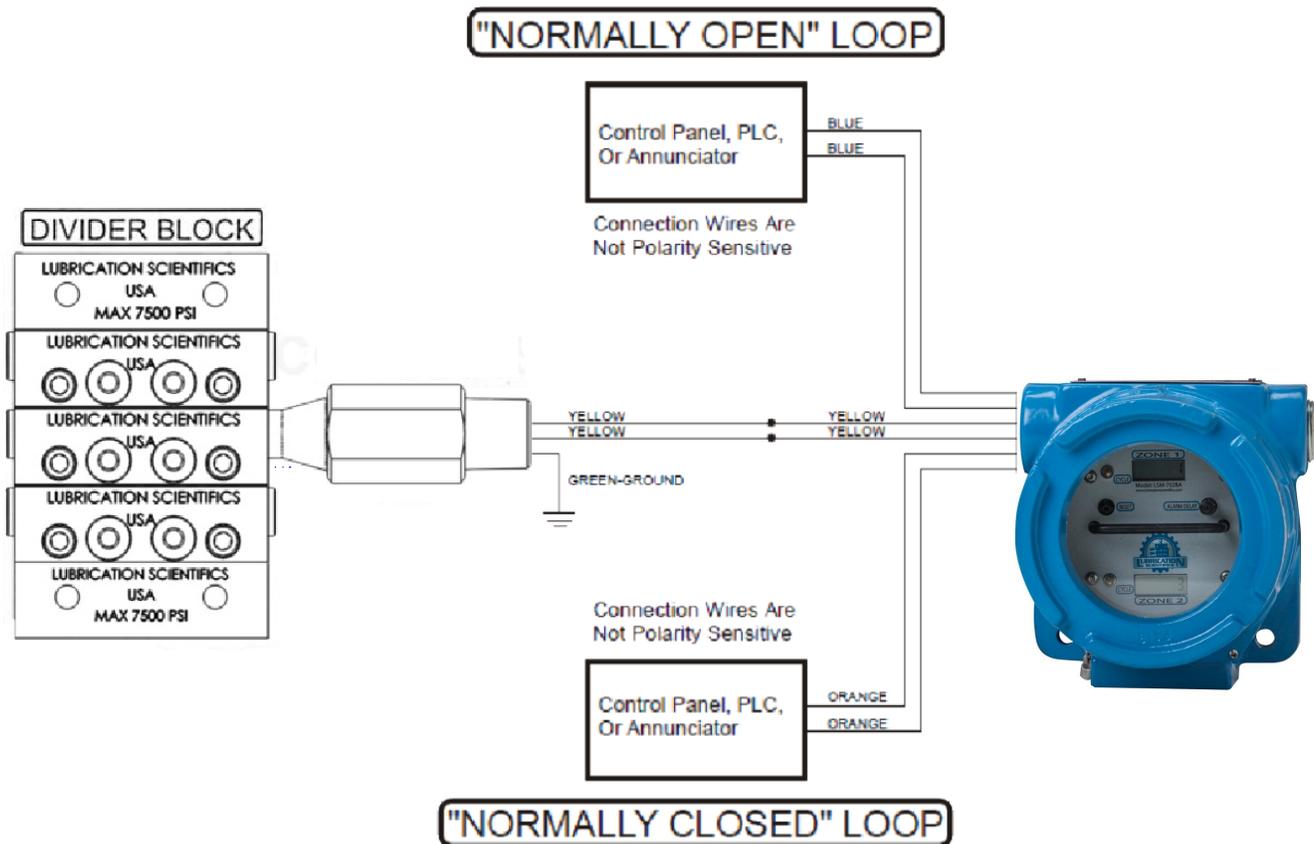
HOLDING THE "PRG" AND "EXT" BUTTONS WILL SCROLL SLOWLY THEN RAPIDLY IF HELD DOWN

THE "EXIT" BUTTON WILL RETURN TO THE DISPLAY PRG IF PRESSED AT ANYTIME

WIRE DIAGRAM FOR LSM-701-BA MODEL

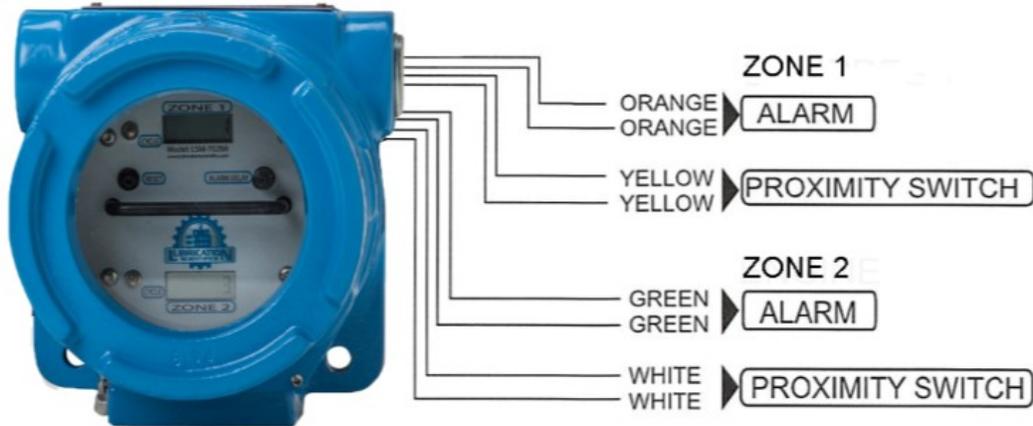


WIRING DIAGRAM FOR "OPEN LOOP OR CLOSED LOOP" OPERATION



# Digital Lubrication Monitor

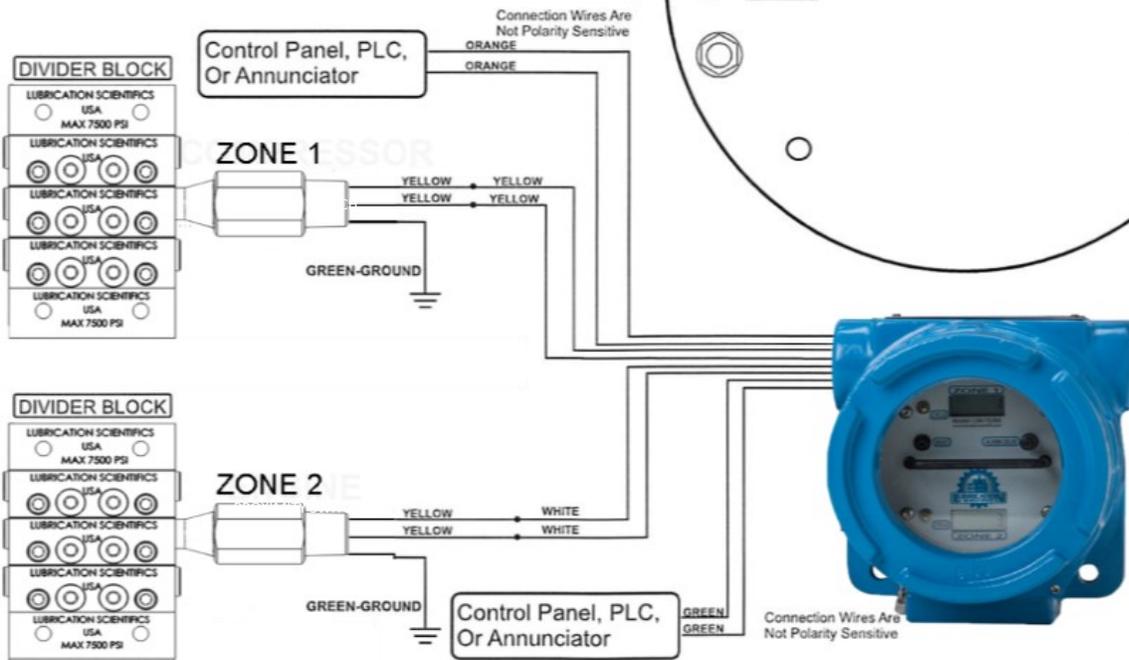
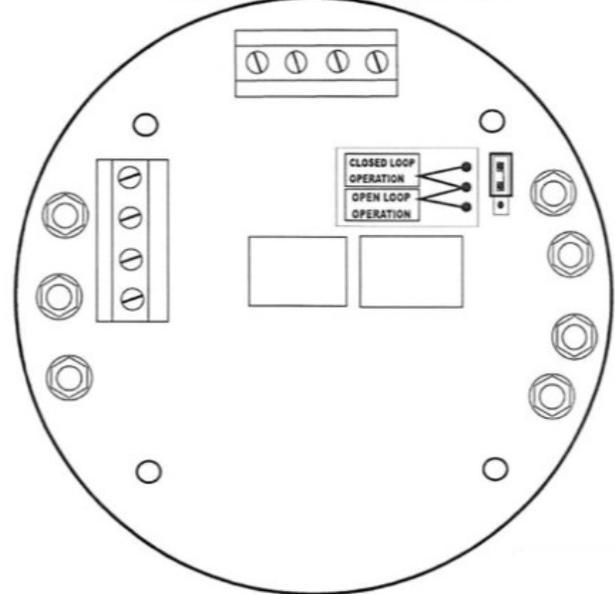
WIRING INSTRUCTIONS  
PART# LSM-702BA-XPE



WIRING DIAGRAM FOR "CLOSED LOOP OR OPEN LOOP" OPERATION

Note: Unit is preset for closed loop operation. For open loop operation jumper on lower circuit board must be moved to open loop position.

LOWER CIRCUIT BOARD



## PROGRAMMING INSTRUCTIONS FOR LSM-701BA AND LSM-702BA MODELS

### PROGRAMMING INSTRUCTIONS:

**TO VIEW ALARM TIME:** PRESS AND HOLD THE "RESET" BUTTON UNTIL ALARM TIME IS SHOWN.

NOTE: KEEPING THE RESET BUTTON DEPRESSED WILL RESET THE CYCLE INDICATOR TO 0

**RESETTING THE CYCLE INDICATOR:** PRESS AND HOLD THE "RESET" BUTTON UNTIL THE CYCLE INDICATOR COUNT SHOWS 0 AND FLASHES THE ALARM TIME AT ONE SECOND INTERVALS.

**ADJUSTING THE ALARM TIME:** HOLD THE "RESET" TIMER AND TURN THE "ALARM DELAY" KNOB TO THE DESIRED SECONDS INTERVAL.

NOTE: YOU CAN ADJUST THE ALARM DELAY WITHOUT RESETTING THE CYCLE INDICATOR TO 0. WHEN HOLDING RESET, JUST ADJUST THE "ALARM DELAY" THEN DEPRESS THE "RESET" BUTTON

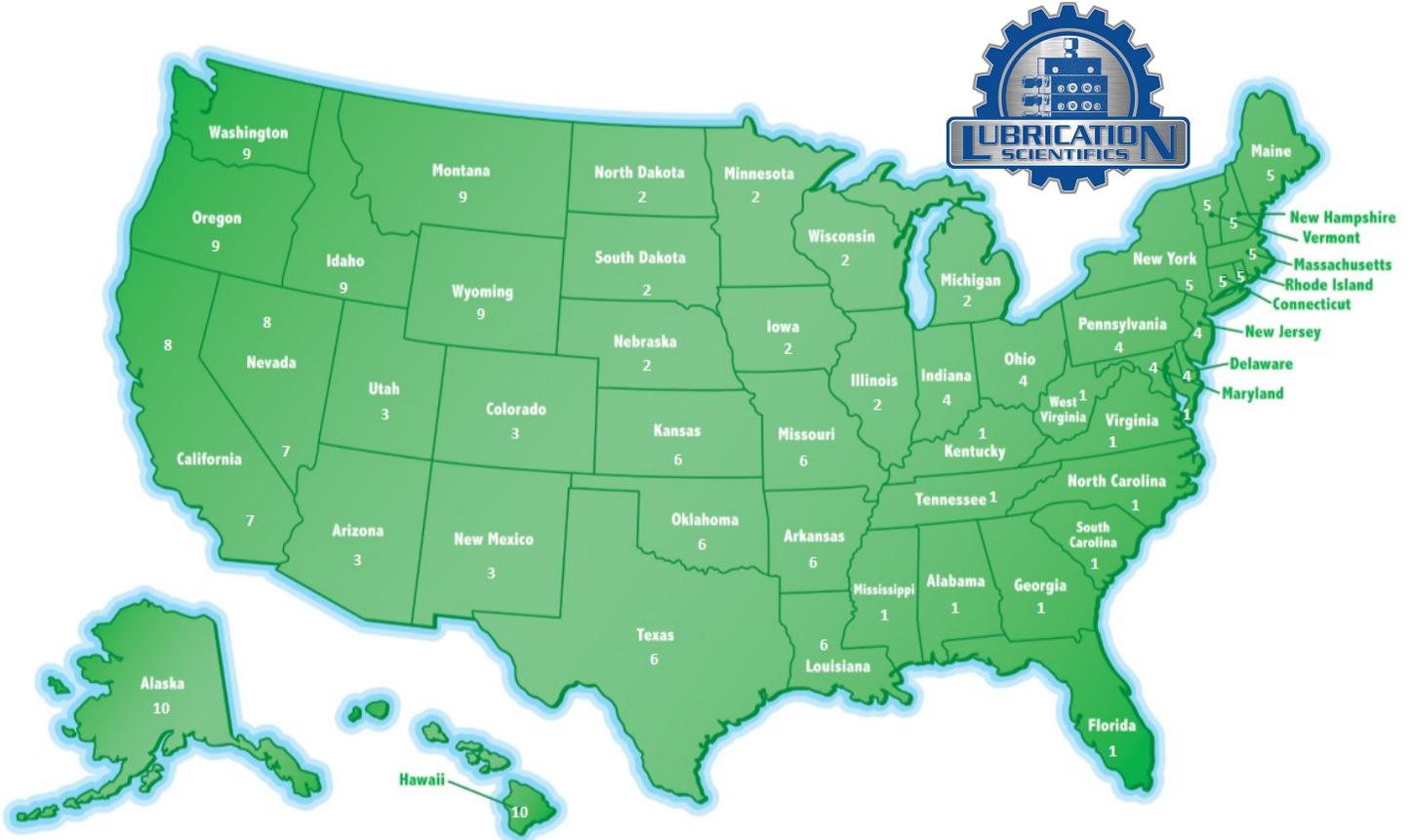
#### OTHER NOTES:

- THE ALARM TIME IS NOT AFFECTED BY TEMPERATURE CHANGE.
- THE LSM-701 & 702 MODELS ARE A BIPOLAR DEVICE. IT IS NOT NECESSARY TO DETERMINE THE POLARITY OF THE WIRES COMING FROM THE ANNUNCIATOR, PLC, OR OTHER TYPES OF SHUTDOWN CONTROLLERS BECAUSE THE CLOSED AND OPEN LOOP ALARM CIRCUITS ARE A BIPOLAR DEVICE.



CONTACT US

IN THE USA, FIND YOUR STATE IN THE MAP BELOW, LOOK FOR THE REGION ID NUMBER AND FIND THAT NUMBER IN THE CONTACT INFORMATION CHART.



CONTACT INFORMATION CHART

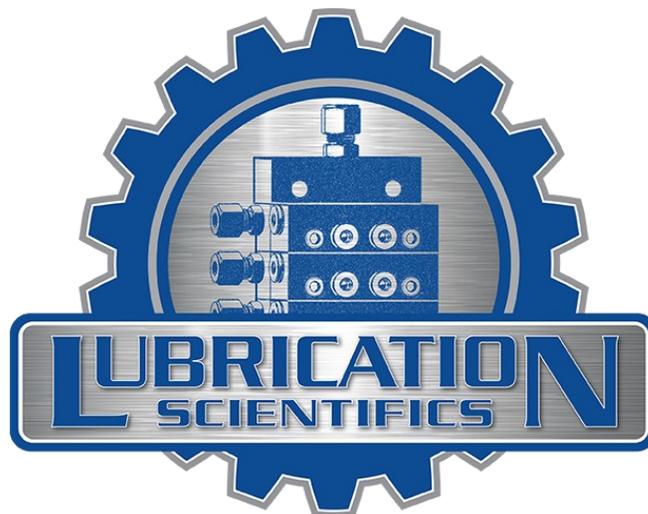
|    |   |                              |                                    |
|----|---|------------------------------|------------------------------------|
| 1  | Call Factory Direct - 877-452-0157  |                              |                                    |
| 2  | David Donahue<br>Cell: 414-507-9513<br>Email: d.donahue@lubricationscientifics.com  | Outside of the United States | Call Factory Direct - 877-452-0157 |
| 3  | Bernie Sauve + El Paso Texas<br>Cell: 210-702-9930<br>Email: bernie@lubricationscientifics.com  |                              |                                    |
| 4  | Andy Kromer<br>Cell: 440-364-4721<br>Email: aklub@lubricationscientifics.com  |                              |                                    |
| 5  | Call Factory Direct - 877-452-0157  |                              |                                    |
| 6  | Cory Walker<br>Cell: 832-585-7065<br>Email: c.walker@lubricationscientifics.com   |                              |                                    |
| 7  | Richard Hanley - <b>California</b> - Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, San Diego and Imperial Counties.<br><b>Nevada</b> - Clark County.<br>Cell: 714-625-5539<br>Email: rth@lubricationscientifics.com |                              |                                    |
| 8  | <b>California</b> - All Counties not covered by Richard.<br><b>Nevada</b> - All Counties except Clark County.<br>Call Factory Direct - 877-452-0157   |                              |                                    |
| 9  | Call Factory Direct - 877-452-0157  |                              |                                    |
| 10 | Call Factory Direct - 877-452-0157  |                              |                                    |

**Customer Service (877-452-0157)**

- ◆ Order status & order entry
- ◆ Pricing inquiries
- ◆ Part number look-ups
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- ◆ Shipment assistance
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- ◆ Product information, specifications, literature
- ◆ Locate sales reps and distributors
- ◆ Operator & Repair manuals
- ◆ Distributer Information
- ◆ Place orders and check current pricing
- ◆ Product Pricing



LUBRICATION SCIENTIFICS, LLC

17651 ARMSTRONG AVE.

IRVINE, CA 92614

UNITED STATES OF AMERICA

TOLL FREE TEL: (877) 452-0157, LOCAL TEL: (714) 557-0664, FAX: (714) 546-4564

**WWW.LUBRICATIONSCIENTIFICS.COM**