

OWNERS MANUAL

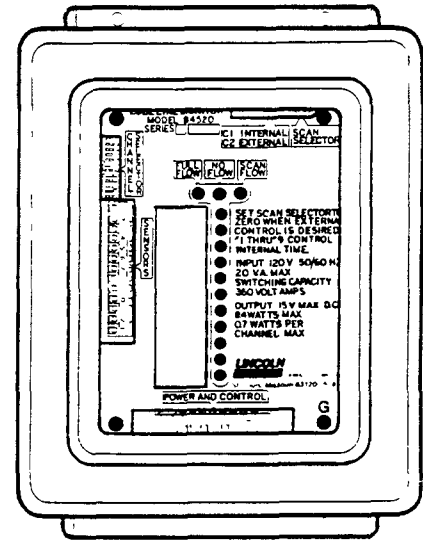
IT IS THE RESPONSIBILITY OF THE OWNER AND/OR OPERATOR TO PROPERLY USE AND MAINTAIN THIS EQUIPMENT. CAREFULLY READ AND UNDERSTAND THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL BEFORE OPERATING THIS EQUIPMENT.

If the operator is not fluent in English, the instructions and warnings shall be read and discussed in the operator's native language, making sure the operator comprehends the contents.

This equipment complies with OSHA Standards where applicable.

SPECIFICATIONS

- Power Requirements: 115 Volts A.C., 12 Volt Amps (Optional 24 V.D.C., 10 Watts)
- Vibration and Shock Tolerance: 3G (Max.)
- Temperature: 32°F to 160°F (Lubricant Temperature)
- Environment: All Except Hazardous Areas
- Switching Capacity: 3 Amp at 120 V.A.C., 30 V.D.C.
- Internal Scan Control: 3.2 Hours Maximum, 90 Seconds Minimum
- External Scan Control: No Maximum Limit, 15 Seconds Minimum
- Sensors: Measures a minimum of .004 cu. in. intermittent lubricant delivery.



84520

WARNING	CAUTION
<p>Shock hazard. Turn power off before servicing.</p>	<ol style="list-style-type: none"> 1. Follow local electrical codes concerning equipment grounding. Use slotted, Hex Head, green colored terminal for connecting grounding connector. 2. DO NOT subject sensor bodies to pressure greater than 6,000 PSIG.

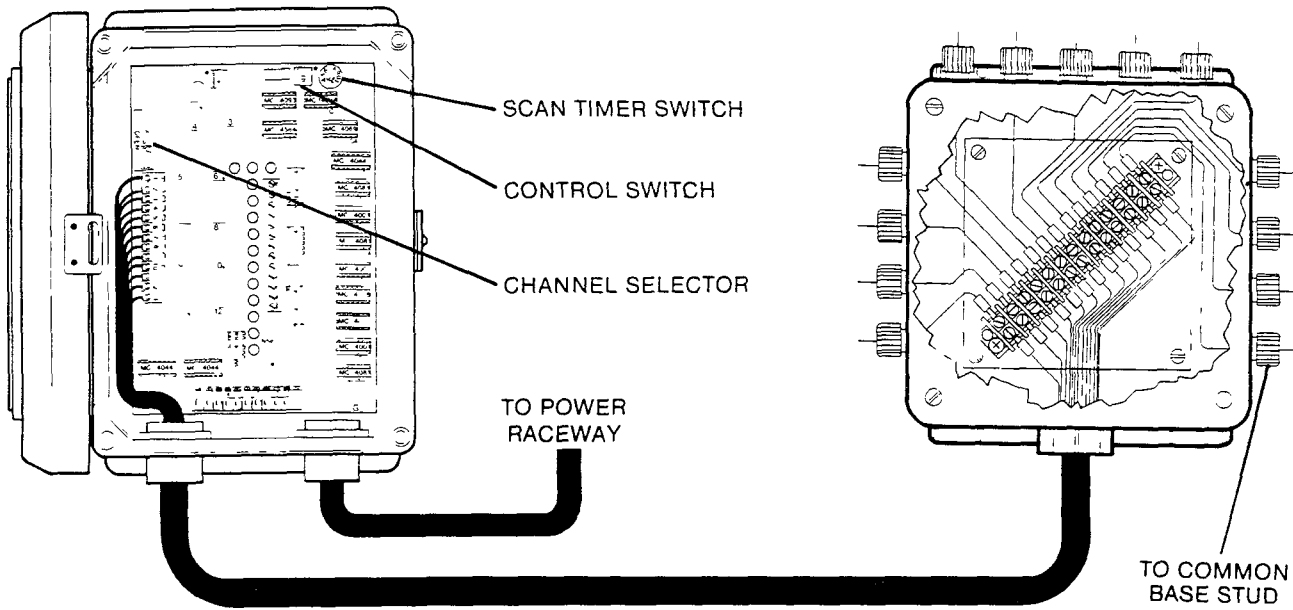
CONTENTS

CONTENTS	PAGE
Safety Instructions	1
Application and Description	2
General Dimensions and Operation	3
Installation	4
Integrated Circuit Locator and Electrical Characteristics	6
Service Parts and Troubleshooting	7
Warranty	8

This manual contains **IMPORTANT WARNINGS** and **INSTRUCTIONS** READ AND RETAIN FOR REFERENCE

84520 MONITOR

84539 JUNCTION BOX ASSEMBLY



APPLICATION

The 84520 Twelve Point Lube Line Monitor is designed to verify delivery of lubricant into a bearing. For small volume flows .008 cu. in. or less per delivery, a 15 second period between end of one flow to start of next flow is required. **Continuous flow or no flow** during delivery cycle are both signaled as a fault by this system.

The sensor fitting is to be positioned in the delivery line at the point where the lubricant enters the bearing inlet. The monitor can only detect faults which occur between the sensor and the flow source. Sensors will function at any pressure up to 6,000 PSI (414 bar)

The system can be used for detection of flow from one to twelve points. Any channel which is not connected to a sensor can be bypassed by closing the selector switch numbered the same as that channel

In addition to an on board signal indicating a fault, there are available relay contacts for use in controlling machine operations or electrical signals located remote from the monitor.

Lincoln sensors are available with bodies fabricated from zinc plated carbon steel or #316 stainless steel for use in corrosive atmospheres. Viton seals and checks in sensors allow their use in systems distributing synthetic lubricants as well as petroleum based lubricants.

The temperature of the material which is to be delivered past the Lincoln sensors must be between 32°F (0°C) and 160°F (71°C) for effective operation of the system

DESCRIPTION

The Lube Line Monitor and Junction Box are housed in a fiberglass enclosure. The monitor enclosure has a clear polycarbonate window in its hinged cover to protect logic circuits along with status indicating light emitting diodes (LED).

A green LED is used to indicate system is powered and no fault has been detected. A yellow LED is used to indicate system is in the act of scanning the sensors for verification of flow. Twelve red LEDs, one for each channel, are used to indicate a failure to detect flow during a scan and to indicate in which channel the fault was detected

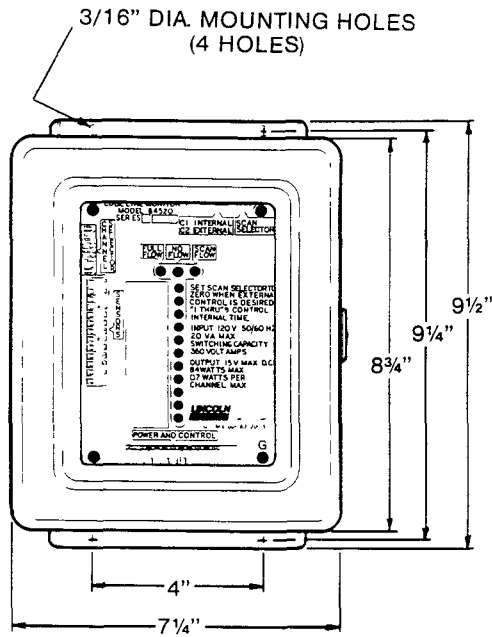
The enclosure is recognized as NEMA type 3S, 4X, 6P, and 13 consequently it is suitable for use in all environments **except** those that are potentially explosive. Two 1/2" conduit threaded hubs are provided

OPERATION

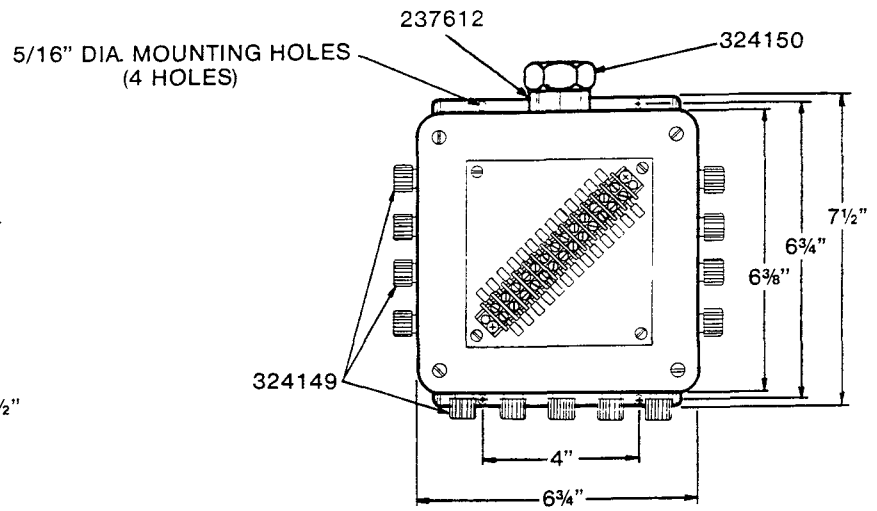
The monitor can use either its "on board" internal scan timer or an external lubricant system control to establish the period within which lube is expected to flow (identified as the "**Scan Period**"). Using the on board scan timer, a period longer than the time from the start of one lube event until the start of the next is selected. See chart (below) for scan time settings.

Setting	Scan Time
1	15 Minutes
2	45 Minutes
3	105 Minutes
4	225 Minutes
5	47 Minutes
6	15 Hours
7	3.2 Hours
8	Not Used
9	Not Used
0	External

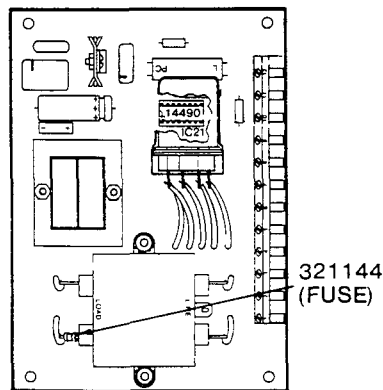
GENERAL DIMENSIONS



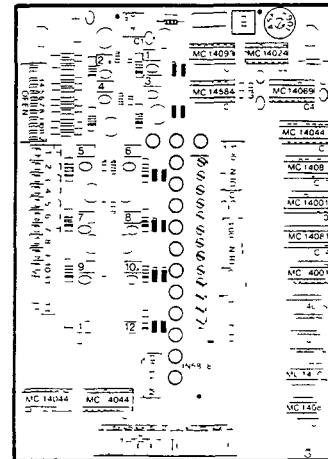
84520 LUBE LINE MONITOR
Overall Depth 5 1/4"



84539 JUNCTION BOX ASSEMBLY
Overall Depth 4-15/16"



237719 POWER BOARD ASSEMBLY



237698 UPPER BOARD ASSEMBLY

EXAMPLE (Internal Scan):

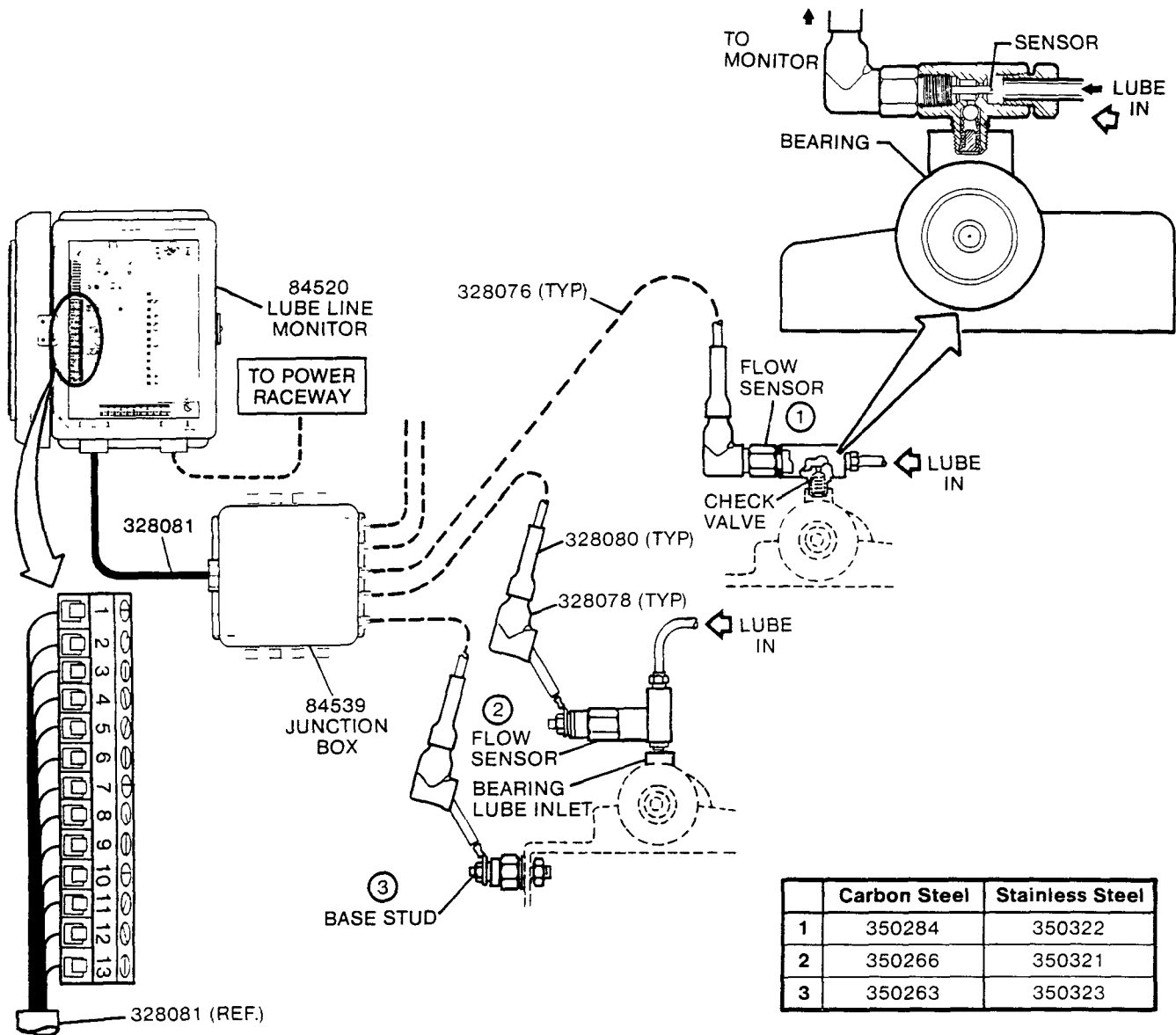
The controller pulses system solenoid for 30 seconds every 15 minutes. Therefore select scan timer switch #4 (22.5 minutes).

Using the external Lubrication System Control to define the scan period, there is no maximum limit on the length of the **scan period**, however no fault indication can take place until the conclusion of the scan period.

EXAMPLE (External Scan):

The controller of the lube system calls for start of lube event and at the same time starts the scan period. The controller of the lube system stops the lube event and at the same time it terminates the scan period. At the end of the scan period a failure to flow in any channel during that period activates the fault signal. The next scan begins at start of next lube event and ends at completion of the lube event. All channels are scanned simultaneously.

A failure to flow is indicated by the lighting of one or more red lights and the de-energizing of the fault relay. All red lights which are lit indicate that this channel has had no flow. The red light will stay lit and the relay will remain de-energized until a flow takes place or until power is turned off and then restored. A flow will de-energize red light and energize the relay at any time whether or not a scan is in process. When fault relay is de-energized the green light will be off.



INSTALLATION

1. Determine location of sensors and install Flow Sensors in lube inlets of bearings served.

Note: Flow sensor body contains check valve, **Do Not Install Backwards**. Lube flow is from 1/8" N.P.T.F. female port to 1/8" N.P.T.F. male port.

2. Connect lube line to 1/8" N.P.T.F. female port of flow sensor body.
3. Secure Common Base Stud to base or frame of machine to be lubricated.



CAUTION

Electrical continuity must be maintained between all flow sensor bodies and Common Base Stud. Electrical isolation of bearings requires use of more than one base stud. Common Base Stud must be securely fastened in existing or new 1/4" diameter hole on machine frame.

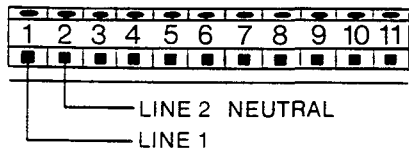
To avoid potential problems caused by electrical noise DO NOT use machine ground.

4. Mount junction box at a central location to flow sensors.
5. Cut from single conductor cable (328076) lengths sufficient to reach from junction box to each flow sensor and Common Base Stud. Route wires from junction box to flow sensors and Common Base Stud.
6. Cut heat shrink tubing (328080) into, 1 1/2" lengths.
7. Slide length of Heat Shrink Tubing and Sensor Boot(328078) onto each wire.
8. Strip ends of wires and crimp on Wire Terminals.
9. Fasten wire terminals to flow sensors and Common Base Stud.

10. Slide sensor boots into place and seal with heat shrink tubing.
11. Insert wires from flow sensors and wire from Common Base Stud through cord connectors (324149) on junction box.
12. Tighten cord connectors to form seal.
13. Strip ends of wires and crimp on Wire Terminals.
14. Connect wire from first sensor to terminal 1, from second sensor to terminal 2, etc. in junction box.
15. Connect wire from Common Base Stud to terminal 13 in junction box.
16. Mount Lube Line Monitor in a convenient location with system status indicator lamps in full view.
17. Install Cord Connector (324150) to the lube line monitor.
18. Route a length of Multiple Conductor Cable (328081) from lube line monitor to junction box. Cable should be routed carefully in order to prevent damage.
19. Insert cable through cord connectors in junction box and monitor, then tighten to form seal.
20. At junction box, strip ends of wires and crimp on Wire Terminals.
21. Connect wires to terminal in junction box.
22. Strip ends of wires in monitor and connect to corresponding terminals on sensor terminal block. Wire from terminal 13 in junction box must be connected to terminal 13 in monitor.

POWER CONNECTIONS

23. Wiring to power and control terminal board connect line 1 to terminal 1 and line 2 to terminal 2 from AC power source 90 to 135 volts 50 to 60 hertz.



MONITOR SETTINGS

24. Scan Periods - **Important: Scan period must exceed time between lube cycle.**

INTERNAL SCAN

- A. Set control switch to C1 position. (See Figure 1).
- B. Select scan period from chart below.
- C. Set scan timer switch accordingly (1 thru 7). White dot on switch indicates setting. (See Figure 1).

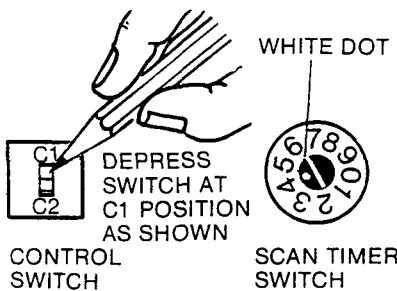


FIGURE 1

Setting	Scan Time
1	1.5 Minutes
2	4.5 Minutes
3	10.5 Minutes
4	22.5 Minutes
5	47 Minutes
6	1.5 Hours
7	3.2 Hours
8	Not Used
9	Not Used
0	External

Example: The controller pulses system solenoid for 30 seconds every 15 minutes. Therefore select scan timer switch #4 (22.5 minutes).

EXTERNAL SCAN

- A. Set control switch to C2 position. (See Figure 2).
- B. Set scan timer switch to ZERO position. White dot on switch indicates setting. (See Figure 2).
- C. Connect leads from 120VAC lubrication system solenoid to terminals 3 and 4.* (See Figure 3)

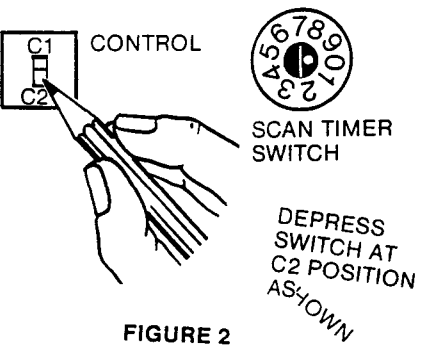


FIGURE 2

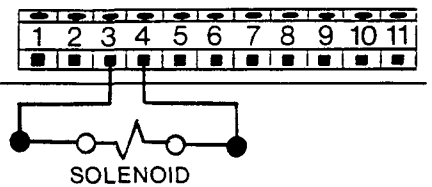


FIGURE 3

Example: The controller of the lube system calls for start of lube event and at the same time starts the scan period. The controller of the lube system stops the lube event and at the same time it terminates the scan period. At the end of the scan period a failure to flow in any channel during that period activates the fault signal.

25. **Channel Selector Switch** - for each sensor that is connected to the terminal strip there is a corresponding numbered channel selector switch. To activate sensor set channel selector switch to the open position. For any unused terminals 1 thru 12 close corresponding channel selector switch. (See Figure 4).

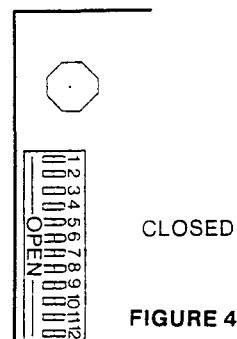
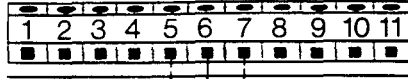


FIGURE 4

OPTIONS

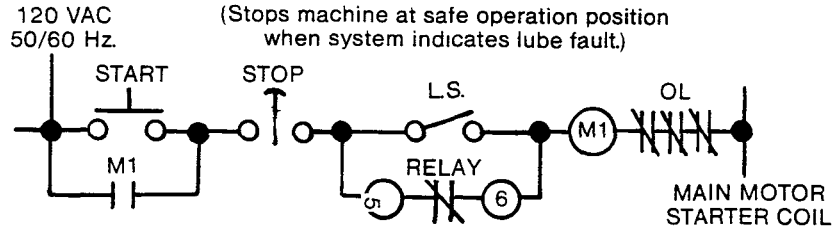
FAULT RELAY CONNECTIONS

Terminal 5 is the common terminal. Terminal 6 is open on fault or power interruption and is closed with no fault and power on. Terminal 7 is closed on fault or power interruption and is open with no fault and power on.



COMMON-----
 POWER ON AND NO FAULT
 D.C. SOURCE
 -----OPEN

OPTIONAL INTERLOCK INTO MAIN CONTROL

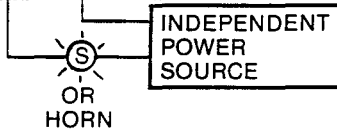


(Stops machine at safe operation position when system indicates lube fault)

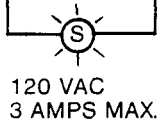
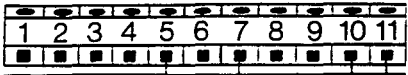
MAIN MACHINE CONTROL

M1 - MACHINE MOTOR
 OL - OVERLOAD RELAY
 L.S. - LIMIT SWITCH OPENS WHEN MACHINE IS IN SAFE STOPPING POSITION.

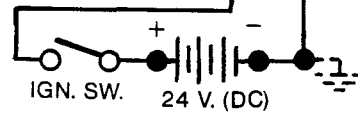
TYPICAL REMOTE SIGNALING



TYPICAL REMOTE SIGNALING USING ON BOARD POWER.



BASIC WIRING DIAGRAM FOR 24 VDC POWER



WIRING TO TERMINAL 9 CAN BE THROUGH CHASSIS

TROUBLESHOOTING

Symptom	Other Symptom	Possible Cause	Correction
No green LED	No yellow or red LED	1. No power to monitor 2. Fuse blown 3. Defective board	1. Restore power 2. Replace 321144 fuse 3. Replace 237719 power board
	All other functions O.K.	1. Defective board	1. Replace 237698 upper board
No yellow LED	Green LED only lights	1. Incorrect switch set 2. When external scan is used, check power to term 3 & 4 3. Defective board ¹	1. Re-set switches (see Monitor Settings) 2. Follow instructions for external scan connections 3. Replace 237698 upper board
	All other functions O.K.	1. Defective board	1. Replace 237698 upper board
One or more red LEDs light with scan start	All other channels work satisfactory	1. Defective board	1. Replace 237698 upper board
One or more red LEDs do not light when its channel has faulted	All other channels work O.K. and alarm relay works O.K.	1. Defective board	1. Replace 237698 upper board
Does not indicate fault with no flow, no red LEDs light	Green LED stays lit, yellow LED is on during scan	1. Power line interference 2. Defective board	1. Change to filtered power source 2. Replace 237698 upper board
Red LED with flow	Lube is flowing and all lines are connected and not broken	1. Defective sensor 2. Broken sensor wire 3. Defective board	1. Replace sensor (voltage between sensor terminal and #13 terminal is to be 11 to 4 volts and must change 1/2 V. with flow) 2. Check continuity of wire, replace if necessary 3. Replace 237698 upperboard
Some channels do not indicate fault with "no flow"	All other channels are normal and alarm relay works O.K.	1. Channel selector switch closed 2. Defective board	1. Open channel selector switch 2. Replace 237698 upper board
Alarm relay does not operate when red LED lights	Circuits between 5 & 6 stay open whether power is on or off	1. Defective board	1. Replace 237719 power board
	Circuit between 5 & 6 closed with power turned on	1. Defective board	1. Replace 237698 upper board

SERVICE PARTS

Part	Description	Part	Description
237612	Conduit hub	321144	0.3 amp fuse
237698	Upper circuit board assembly	324149	Cord connector
237719	Power circuit board assembly	324150	Cord connector

SYSTEM ACCESSORIES

Part	Description	Part	Description
84539	Junction box assembly	350263	Base stud assembly
328076	Sensor wire (100 ft. single conductor)	350266	Straight sensor assembly
328078	Sensor boot	350284	90° sensor assembly
328080	Heat shrink tubing (6 in)	350321	Straight sensor assembly (stainless steel)
328081	Control wire (100 ft. multiple conductor)	350322	90° sensor assembly (stainless steel)
		350323	Base stud assembly (stainless steel)

LINCOLN LUBRICATING EQUIPMENT LIMITED WARRANTY

Lincoln, a division of McNeil (Ohio) Corp., a subsidiary of Pentair, Inc., warrants that lubrication equipment, materials dispensing equipment and other related equipment manufactured by it will be free from defects in material and workmanship during the one (1) year following the date of purchase. If equipment proves to be defective during this warranty period, it will be repaired or replaced without charge, provided that factory examination indicates the equipment to be defective. To obtain repair or replacement, it must be shipped, transportation charges prepaid, with proof of date of purchase to a Lincoln authorized Warranty and Service Center, within the one (1) year following the date of purchase.

This warranty is extended to the original retail purchaser only. This warranty does not apply to equipment damaged from accident, overload, abuse, misuse, negligence, faulty installation or abrasive or corrosive materials, or to equipment repaired or altered by anyone not authorized by Lincoln to repair or alter the equipment. This warranty applies only to equipment installed and operated according to the recommendations of Lincoln or its authorized field personnel. No other express warranty applies to lubrication equipment, materials dispensing equipment, and other related equipment manufactured by Lincoln.

ANY IMPLIED WARRANTIES applicable to lubrication equipment, materials dispensing equipment, and other related equipment manufactured by Lincoln INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WILL LAST ONLY FOR ONE (1) YEAR FROM THE DATE OF PURCHASE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

In no event shall Lincoln be liable for incidental or consequential damages. The liability of Lincoln on any claim for loss or damage arising out of the sale, resale, or use of lubrication equipment, materials dispensing equipment, and other related equipment shall in no event exceed the purchase price. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES. SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE

————— RETAIN THIS INFORMATION FOR FUTURE REFERENCE —————

When ordering replacement parts, list: Part Number, Description, Model Number, and Series Letter.

LINCOLN provides a Distributor Network that stocks equipment and replacement parts.