



U.S. Patent
No. 5,182,720

Model 84530
SYSTEM SENTRY™
Series "B"

LR 60891

IND. CONT. EQ.

LUBE & SENSOR CONTROLLER - OWNER/OPERATOR MANUAL

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It is the responsibility of the Owner/Operator to properly use and maintain this equipment.


The Instructions and Warnings contained in this manual shall be read and understood by the Owner/Operator prior to operating this equipment.

It is the responsibility of the Owner/Operator to maintain the legibility of all Warning and Instruction labels.


The Owner/Operator shall retain this manual for future reference to important Warnings, Operating and Maintenance Instructions.

SPECIFICATIONS

Input Voltage	120 VAC 50/60 Hz 230 VAC 50/60 Hz 24 VDC
Current Consumption	200 MA at 120 VAC (less load) 105 MA at 230 VAC (less load) 800 MA at 24 VDC (less load)
External Pump Load	360VA Pilot Duty Rating at 120/230 VAC
External Alarm Load	5 amps at 24 VDC
Ampacity for Switches connected to Terminal Strip B...	8 MA at 15 VDC
Maximum Sensor Current	45 MA at 15 VDC
Enclosure	Nema 12 enclosure
Net Weight	10 lbs.
Controller Temperature Range	10° F to 130° F (LCD limited)
Lubricant Temperature Range for Sensors	32° F to 145° F
Minimum Amount of Lubricant Delivery to Sensor004 cubic inches (32° F to 125° F) .008 cubic inches (125° F to 145° F)
Minimum Amount of Time between Lube Events	30 seconds

 **WARNING**

Electrical shock hazard.
Turn off and lock out power
before opening enclosure.

 **WARNING**

Do Not subject sensor
bodies to pressure greater
than 6,000 PSIG.

DESCRIPTION

When programmed as a Lube & Sensor Controller, Model 84530 will verify delivery of lubricant into a bearing and also have control of your lubrication system. **Please refer to the Centro-Matic or Modular Lube Manuals for information on Lube Programming.**

The Sensor Controller can only detect faults which occur between the sensor (located in the delivery line at the bearing lube inlet) and the flow source. Continuous flow or no flow during the delivery cycle are both signaled as a fault by this system. A minimum of 30 seconds between the end of one flow to the beginning of the next flow is required for detection. The scan time (amount of time that the sensors are scanned for lube flow) is the amount of pumping time determined by the Lube Controller plus 30 seconds.

Sensors will function at any pressure up to 6,000 PSIG. The temperature of the material which is to be delivered past the sensors must be between 32° F to 145° F for effective operation of the system. Viton seals and checks in the sensors allow their use in systems distributing synthetic lubricants as well as petroleum based lubricants. **For reliable operation, sensors can only be used with Model 84530.**

When power is turned on to the Controller and a Lube cycle is immediately initiated, a sensor fault may occur due to the sensors not having enough time to warm. It is recommended that the Delay Alarm be set at 2 in order to prevent a nuisance alarm.

Due to the numerous options available, the customer can field program the controller to match the system requirements.

Programming is easily accomplished by following a user friendly menu displayed on the LCD and pressing the active buttons beneath the display. An internal jumper pin provides security against unauthorized programming. All programmed parameters are automatically stored in a nonvolatile memory. A Review Screen can be easily activated to display what has been programmed. Programmed values can be changed whenever necessary.

There are three lights on the enclosure door to indicate the status of the system.

Green - Power On **Amber** - Pump On **Red** - Alarm

If an alarm occurs, the cause of the alarm will appear on the LCD. Turning off power to the controller when in alarm will always initiate a lube cycle when turned back on.

The LCD is capable of displaying the following messages:

- Time or Counts left until next lube cycle.
- Amount of time system has been lubricating.
- Will indicate if in a Standby Mode.
- Controller Reset Failure Alarm
- Low Level Alarm
- High Pressure Switch Alarm
- Solenoid Failure Alarm
- Vent Pressure Switch Alarm
- Number of times each bearing has received lube.
- Indicates what sensor did not receive lube.
- Indicates what sensor has a broken wire.
- Indicates what sensor has a shorted wire.

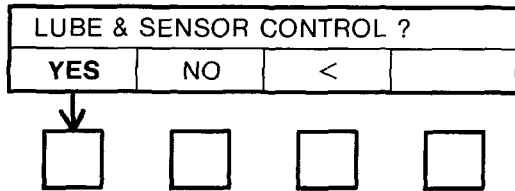


One Lincoln Way
St. Louis, Missouri 63120-1578
(314) 679-4200

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5) Determines if this is a Lube & Sensor controller.



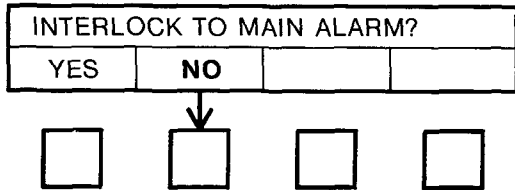
YES - The controller will function as both a Lube & Sensor controller (refer to Centro-Matic or Modular Lube Manuals for information on Lube programming).

NO - Sensor controller only (refer to Sensor Controller - Internal Scan or Sensor Controller - External Scan Manuals).

< - Previous screen

Press button under "YES".

6) Option for "No Lube Flow" Sensor Alarm.



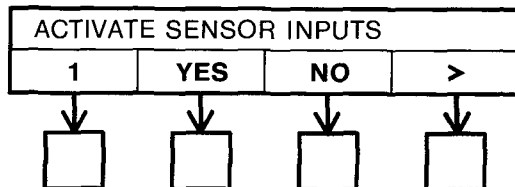
YES - Will follow the program option set in Lube programming Step 7 "ALARM LOCKOUT" (refer to Centro-Matic or Modular Lube Manuals)

NO - System continues to operate with the following conditions:

An alarm message will alternate with the lube screen
Alarm relay contact will not change.
Red light on enclosure door will turn on

Press button under "NO".

7) Activates sensor inputs one thru sixteen.



Pressing the first button will increment the number above it by one.

First Button - Determines sensor input number, 1 thru 16.

YES - Pressing this button indicates that a sensor is connected to the sensor terminals that correspond with the sensor input number above the first button (see Field Connections).

NO - Pressing this button indicates that a sensor will not be connected to the sensor terminals that correspond with the sensor input number above the first button (see Field Connections). **All sensor inputs that are not used must be set to "NO".**

> - Next screen.

Press first button until a 1 appears.

Then press button under "YES".

Press first button until a 2 appears.

Then press button under "NO".

Press first button until a 3 appears.

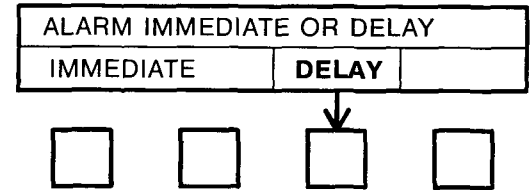
Then press button under "YES".

Repeat for sensor inputs 4 thru 16

pressing button under "NO" for each input.

Press button under ">".

8) Option of delaying a sensor alarm. The delay prevents nuisance alarms due to air entrapment in the lube lines and allows sensors to warm when first turning power on to the controller. It is recommended that the Delay Alarm be set to 2.



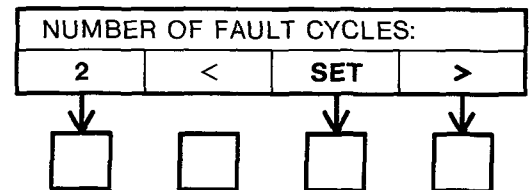
IMMEDIATE - The controller will recognize a sensor alarm immediately. Same as setting the Delay Alarm to 1

DELAY - When a sensor alarm occurs the controller will mask it and increment the Delay Alarm Counter by one per lube cycle. Once the preset number for the Delay Alarm Counter has been reached then an alarm will occur.

The Delay Alarm Counter is reset after all of the sensors have received lube

Press button under "DELAY".

9) Determines the number of fault cycles (maximum of 99) that can occur before an alarm.



First Button - Increments the number of fault cycles by one.

< - Decrements the number of fault cycles by one.

SET - Stores the number of fault cycles displayed on screen.

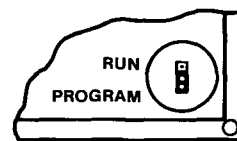
> - Next screen.

Press first button until a "2" appears.

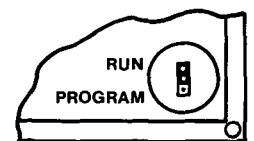
Press button under "SET".

Press button under ">".

10) When programming is complete, set internal jumper pin to the Run position. **WARNING: Turn power off before opening enclosure door to move jumper pin.**



JUMPER IN "PROGRAM" POSITION



JUMPER IN "RUN" POSITION

RUN MODE

To access the Run Mode the internal jumper must be in the Run position. **WARNING: Turn power off before opening enclosure door to move jumper pin.**

If no pushbuttons are pressed within 30 seconds, while in the Main Menu options, the controller will enter the RUN MODE

The following screens can appear when in the Run Mode Refer to the Centro-Matic or Modular Lube Manuals for Lube run screens that can appear.

Main Menu Options.

MAIN MENU PLEASE SELECT			
SETUP	REVIEW	RUN	



SETUP - All programming options are available in the Setup Menu.

REVIEW - Can review all system parameters that have been programmed in the Setup Menu

RUN - Controller will function as it was programmed in the Setup Menu

Indicates the number of lube events that have taken place at each sensor. Example screen below shows that 20 lube events have taken place at sensor number 1. There are sixteen separate counters, one for each sensor. When lube passes the sensor its corresponding counter will increment by one. **When turning power on to the controller, the sensors will warm and the counters may increment by one.**

# OF LUBE EVENTS:		20	
MANUAL	RESET	<	SNSR 1



MANUAL - Pressing the corresponding button will initiate a lube cycle.

RESET - Pressing the corresponding button will reset all sensor counters to zero.

< - Previous screen.

SNSR 1 - Pressing the corresponding button will display the active sensors in ascending order. At the same time, line one will indicate the number of lube events for the corresponding sensor on line two.

ALARM MESSAGES:

The following alarm messages can appear if an alarm condition occurs Refer to Centro-Matic or Modular Lube Manuals for Lube alarm messages.

Indicates that the sensor number appearing did not receive lubricant. Alarm relay contact will change over and red light on door will turn on

NO LUBE FLOW SENSOR:		1	
MANUAL		NEXT	SENSOR



MANUAL - Will appear if programmed. Pressing the corresponding button will initiate a lube cycle.

NEXT - Indicates that there is more than one alarm message Pressing the corresponding button will display the next alarm message.

SENSOR - Pressing the corresponding button will cause the sensor number on line one to increment to the next sensor with the same fault.

Indicates that the wire running to the sensor number appearing has opened. Red light on door turns on.

BROKEN WIRE SENSOR:		1	
MANUAL		NEXT	SENSOR



MANUAL - Will appear if programmed. Pressing the corresponding button will initiate a lube cycle.

NEXT - Indicates that there is more than one alarm message. Pressing the corresponding button will display the next alarm message

SENSOR - Pressing the corresponding button will cause the sensor number on line one to increment to the next sensor with the same fault

Indicates that the wire running to the sensor number appearing has shorted. Red light on door turns on.

SHORTED WIRE SENSOR:		1	
MANUAL		NEXT	SENSOR



MANUAL - Will appear if programmed. Pressing the corresponding button will initiate a lube cycle

NEXT - Indicates that there is more than one alarm message. Pressing the corresponding button will display the next alarm message.

SENSOR - Pressing the corresponding button will cause the sensor number on line one to increment to the next sensor with the same fault.

SENSOR INSTALLATION

1 Install male threaded port of Flow Sensor in lube inlet of bearing served

NOTE: Flow sensor body contains a check valve, **Do Not Install Backwards.** Lube flow is from 1/8" NPTF Female port to 1/8" NPTF Male port

2 Connect lube line to 1/8" NPTF Female port of flow sensor body

3 Mount 84602 Junction Box at a central location to flow sensors

4 Mount the System Sentry in a convenient location with the LCD and system status lights in full view

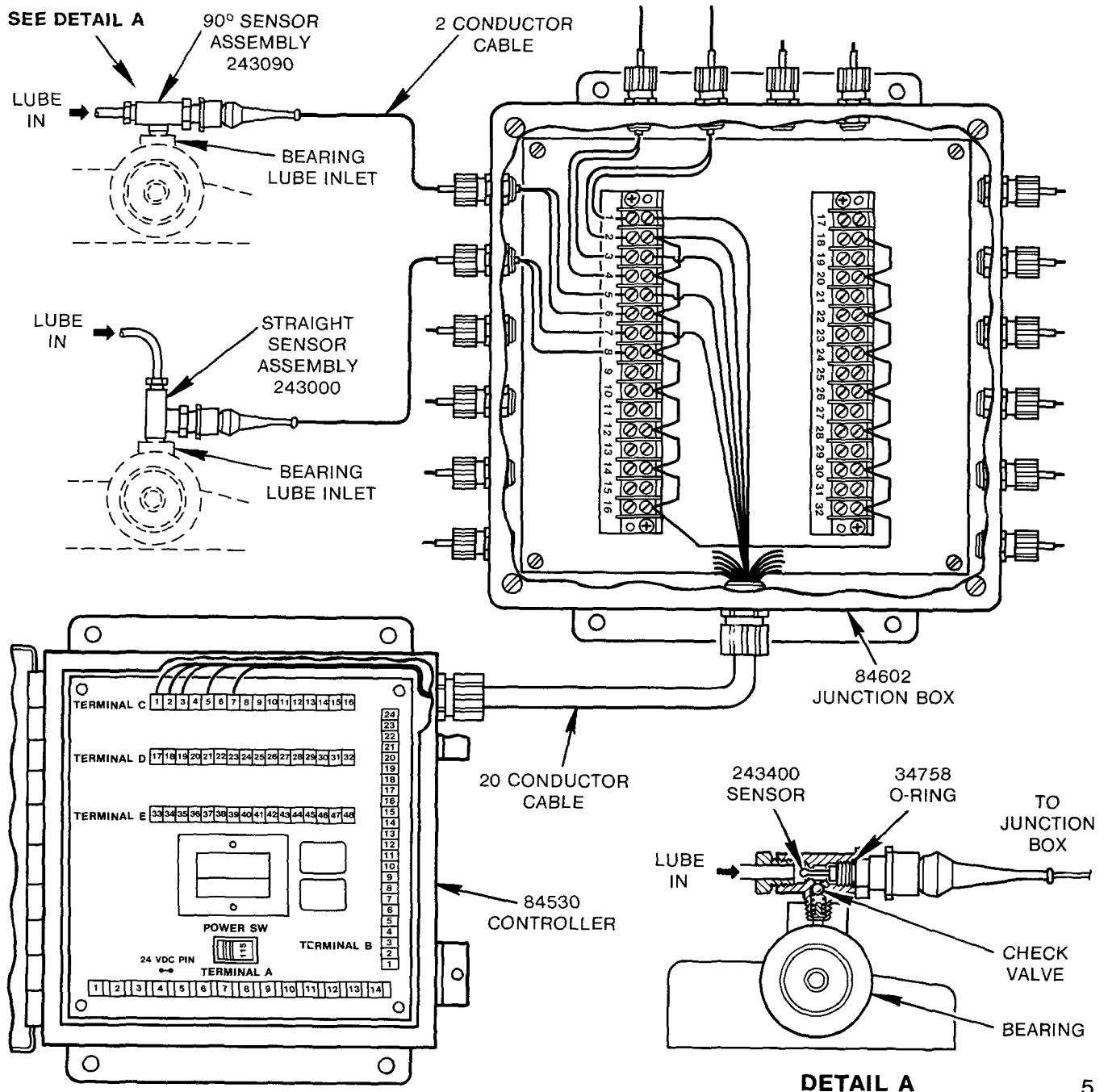
5 Connect two conductor sensor wire from first sensor to Terminals 1 & 2, from second sensor to Terminals 3 & 4, etc in the junction box. The numbers on the two terminal strips in the junction box correspond with the numbers on Terminal Strips C & D in the 84530 System Sentry (see Field Connections)

6 On both sets of terminal strips, the two in the junction box and Terminal Strips C & D in Model 84530, the even numbered terminals have been jumped together. This will allow one wire from the twenty conductor cable to act as a common for all of the sensors used

Connect one conductor, from the twenty conductor cable, to an even numbered terminal in the junction box. Connect the other end to an even numbered terminal on Terminal Strips C & D in Model 84530.

Use one conductor, from the twenty conductor cable, for each sensor installed. Connect one end of the conductor to the odd numbered terminal, in the junction box, that the sensor is connected to. Connect the other end of the conductor to the corresponding number located on Terminal Strips C & D in Model 84530.

NOTE: If an 84602 Junction Box is not used the two conductor sensor wire can be wired directly to Model 84530 (see Field Connections)



FIELD CONNECTIONS (Refer To Figure 1)

TERMINAL STRIP A - HIGH VOLTAGE

Incoming Power Source - Terminals 1 & 2.

Connect the black wire to Terminal 1. Terminals 1 and 7 are connected together internally on Terminal Strip A.

Connect the neutral or white wire to Terminal 2. Terminals 2, 9 and 12 are connected together internally.

120 VAC 50/60 Hz. - **Must set power switch to 120 VAC.**
 230 VAC 50/60 Hz. - **Must set power switch to 230 VAC.**

External Pump Load - Terminals 8 & 9.

360VA Pilot Duty Rating at 120/230 VAC,
 5 amps at 24 VDC.

External Alarm Load - Can be used two ways.

1. Terminals 10 & 11 - N.O. Contact.
2. Using the Controller Line Voltage at Terminals 1 & 2 (see Figure 2).
 - a) Jumper wire between Terminals 7 & 10.
 - b) Connect alarm load to Terminals 11 & 12.

360VA Pilot Duty Rating at 120/230 VAC,
 5 amps at 24 VDC.

TERMINAL STRIP B - LOW VOLTAGE

Refer to the **Centro-Matic or Modular Lube Manuals** for connecting system switches to Terminal Strip B.

24 VDC Power - Controller can operate from 24 VDC instead of 120/230 VAC (see Figure 3).

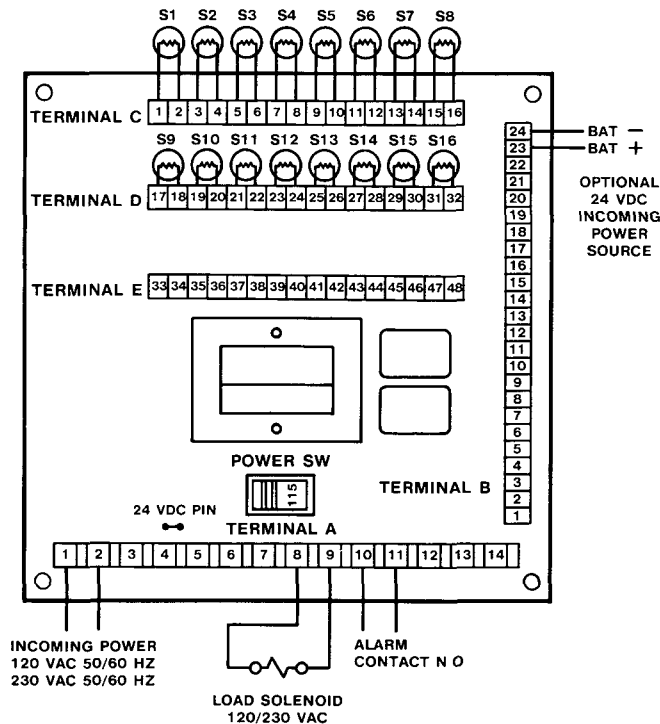
1. **Cut 24 VDC pin on power supply board.**
2. Power In: Connect Battery Positive Voltage at Terminal 23. Connect Battery Negative Voltage at Terminal 24.
3. Power for Load & Alarm relay contacts: Connect Battery Positive Voltage at **Terminal 1 on Terminal Strip A.** Connect Battery Negative Voltage at **Terminal 2 on Terminal Strip A.**

TERMINAL STRIP C - Sensors 1 thru 8, Terminals 1 thru 16

- Sensor 1** - Terminals 1 & 2.
- Sensor 2** - Terminals 3 & 4.
- Sensor 3** - Terminals 5 & 6.
- Sensor 4** - Terminals 7 & 8.
- Sensor 5** - Terminals 9 & 10.
- Sensor 6** - Terminals 11 & 12.
- Sensor 7** - Terminals 13 & 14.
- Sensor 8** - Terminals 15 & 16.

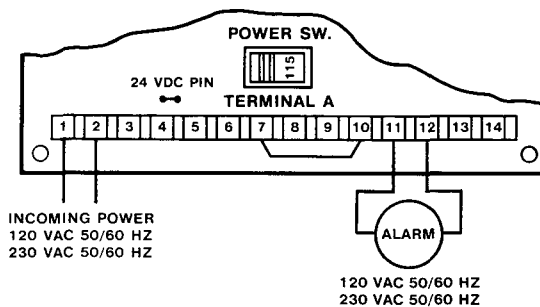
TERMINAL STRIP D - Sensors 9 thru 16, Terminals 17 thru 32

- Sensor 9** - Terminals 17 & 18.
- Sensor 10** - Terminals 19 & 20.
- Sensor 11** - Terminals 21 & 22.
- Sensor 12** - Terminals 23 & 24.
- Sensor 13** - Terminals 25 & 26.
- Sensor 14** - Terminals 27 & 28.
- Sensor 15** - Terminals 29 & 30.
- Sensor 16** - Terminals 31 & 32.



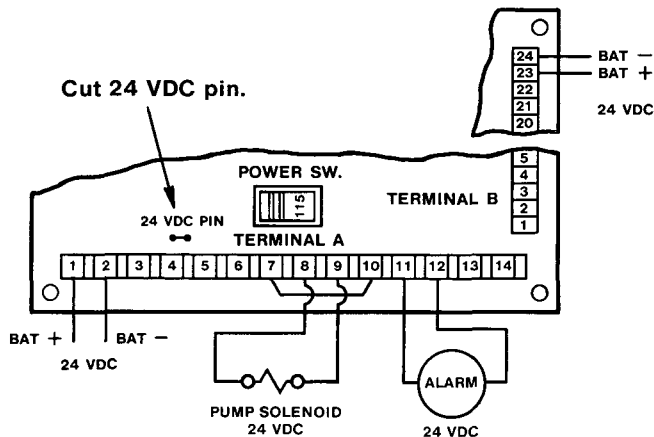
FIELD CONNECTIONS

Figure 1



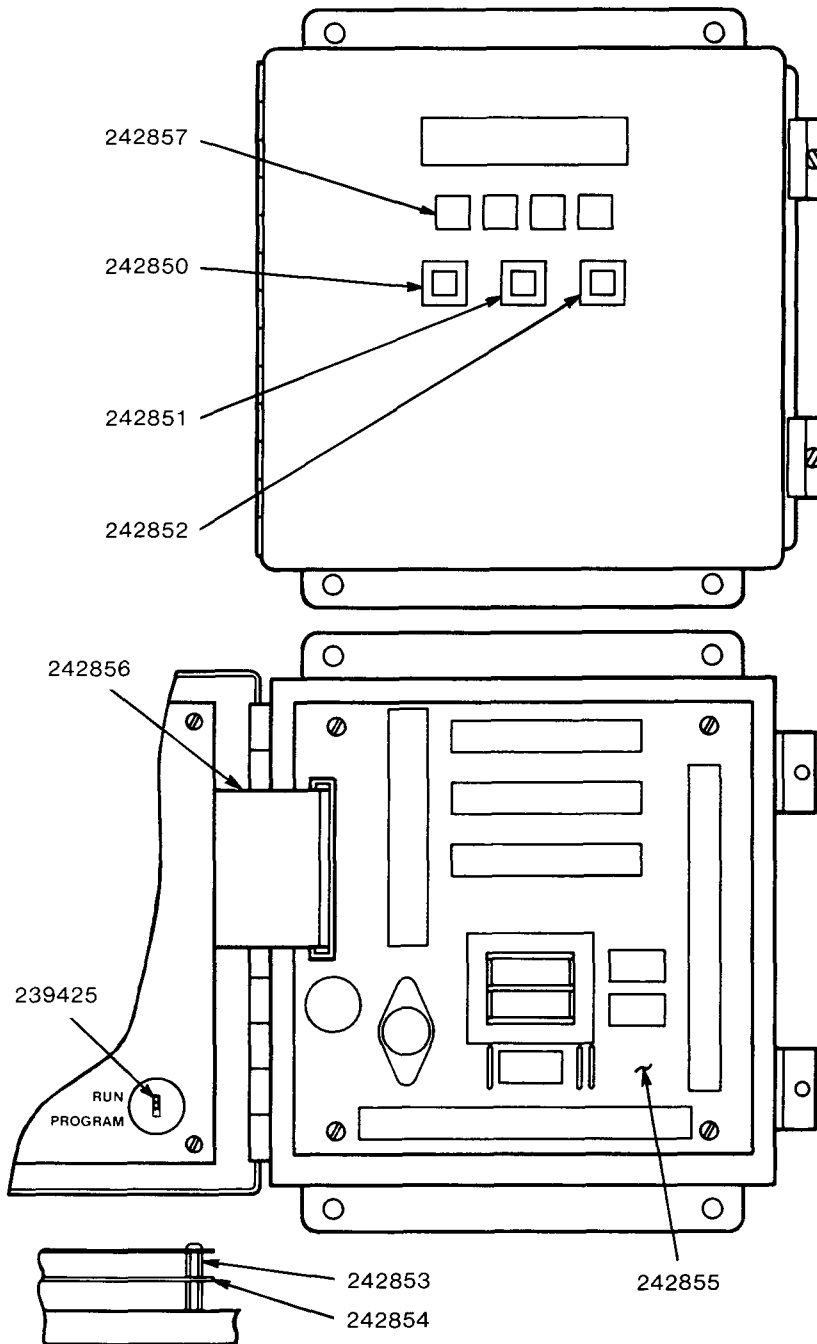
CONTROLLER LINE VOLTAGE FOR ALARM LOAD

Figure 2



24 VDC CONNECTIONS

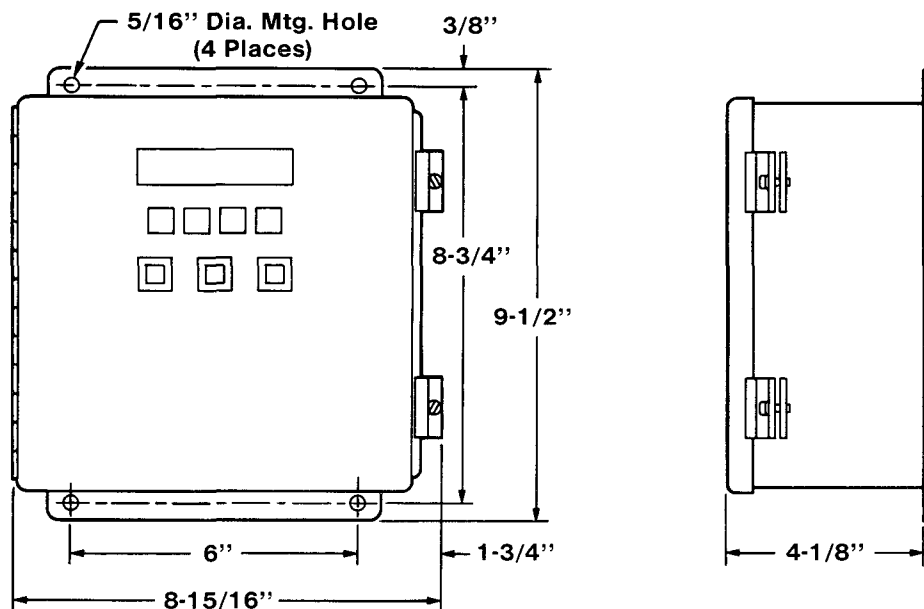
Figure 3



SERVICE PARTS

Part	Qty.	Description
34758	1	O-ring
239425	1	Jumper Shunt (strip of ten)
242850	1	Green L.E.D., Green Lens & Chrome Bezel
242851	1	Amber L.E.D., Amber Lens & Chrome Bezel
242852	1	Red L.E.D., Red Lens & Chrome Bezel
242853	4	Standoff & Screw
242854	1	Processor Board Assembly
242855	1	Power Supply Board Assembly
242856	1	Ribbon Cable Assembly
242857	1	Seal for Switches
243400	1	Sensor & O-ring
350264	1	Straight Sensor Body
350265	1	90° Sensor Body
Stainless Steel Service Parts		
237747	1	90° S.S. Sensor Body
237748	1	Straight S.S. Sensor Body
244041	1	S.S. Sensor and O-ring

DIMENSIONS



SYSTEM ACCESSORIES

Part	Qty.	Description
84602	1	Junction Box Assembly (Mounting Dimensions 10.75" x 6")
243000	1	Straight Sensor Assembly (body & sensor)
243010	10 ft.	2 Conductor Sensor Wire w/connector, terminal & boot
243020	20 ft.	2 Conductor Sensor Wire w/connector, terminal & boot
243030	30 ft.	2 Conductor Sensor Wire w/connector, terminal & boot
243090	1	90° Sensor Assembly (body & sensor)
243100	100 ft.	2 Conductor Sensor Wire
243500	1	Terminal Kit (boot, connector & terminals)
243600	1	Hand Tool to crimp terminals
244020	20 ft.	20 Conductor Control Wire
244100	100 ft.	20 Conductor Control Wire
Stainless Steel System Accessories		
244040	1	Straight S.S. Sensor Assembly (body & sensor w/male water-tight connector)
244090	1	90° S.S. Sensor Assembly (body & sensor w/male water-tight connector)
244205	100 ft.	Cable for S.S. Sensor w/female water-tight connector on one end

NOTE: Stainless Steel Sensors and Bodies are made from 316 material.

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.