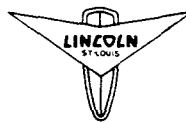


SOLID-STATE CONTROL

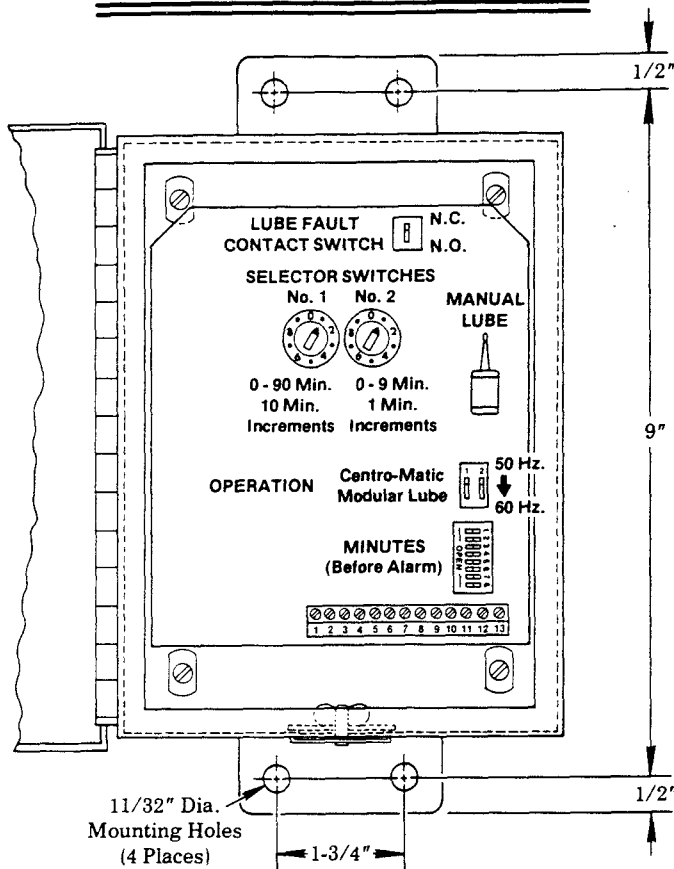
FOR CENTRO-MATIC OR
MODULAR LUBE APPLICATION



Model 84500-300
LISTED - U.L. 38H9 IND. CONT. EQ.

Series "C"

FOR CENTRO-MATIC SYSTEMS



WIRE CONNECTIONS

Power Source - Terminals 1 & 2 (105 VAC - 128 VAC, 50 Hz or 60 Hz).

Remote Pushbutton Switch (Momentary N.O.) - Terminals 4 & 5.

Pressure Switch - Terminal 6 - Normally Open, Terminal 8 - Common.

Pump or Load Device - Terminals 9 & 10. Max. load 120 VAC at 4 amps.

External Alarm Signaling Device - Non-committed lube fault circuit for machine interlock or alarm signal. **Independent Power Source:** Terminals 11 & 12. Independent line voltage is connected to terminal 12. The other side of independent line voltage is connected to alarm signaling device. The other side of alarm signaling device is connected to terminal 11. Max. alarm load 240 VAC at 4 amps. **Internal Power Source:** Alarm signaling device between terminals 11 & 13 with a jumper from terminal 3 to 12. Max. alarm load 120 VAC at 4 amps. Lube Fault Contact Switch determines Normally Closed or Normally Open circuit. Push switch up for N.C. circuit, down for N.O. circuit.

Normally Closed circuit opens on lube fault or power interruption to control. When power is turned on alarm signaling device will remain energized unless control goes into alarm. Alarm device will then turn off and remain off. Red L.E.D. will turn on only when control goes into alarm.

Normally Open circuit closes on lube fault. When power is turned on, alarm signaling device will remain de-energized unless control goes into alarm. Alarm device will then turn on and remain on. Red L.E.D. will turn on only when control goes into alarm.

PRE-LUBE

With power "turn on", the first lube cycle is initiated. Subsequent lube cycles occur per setting of Selector Switches.

LIGHTS - L.E.D.

Green light indicates power is on.
Amber light indicates lube cycle in progress.
Red light indicates alarm condition.

OVERALL DIMENSIONS

Width (including door latch) - 6-7/16"
Depth (including lights & door lock) - 5-1/2"

CONTROL PANEL SETTINGS

The following control panel internal settings must be made to fit customer's needs.

50 Hz or 60 Hz Operation - Operation Rocker Switch #2 in position shown by arrow is for 60 Hz operation. Operation Rocker Switch #2 opposite arrow is for 50 Hz operation.

Auto-Reciprocating Pumps or Single-Acting Pumps - For continuous "on" load push Operation Rocker Switch #1 opposite arrow.

Time Between Lube Cycles - The time interval between lube cycles is determined by the setting of the two Selector Switches. Selector Switch #1 is adjustable from 0 to 90 minutes in 10 minute increments. Selector Switch #2 is adjustable from 0 to 9 minutes in 1 minute increments. **EXAMPLE:** Selector Switch #1 is set on 6 and Selector Switch #2 is set on 5. The time between lube cycles will be 65 minutes. After initiating a lube cycle, the time clock will not start timing out (toward next cycle) until sufficient pressure has built up in system to activate pressure switch and pressure vents releasing pressure switch.

Alarm Time Selection - Alarm setting should be approx. 2 minutes longer than pumping time. The Rocker Alarm Switch **must** have one switch closed between 1 & 8 (representing minutes). **IMPORTANT: Control will not operate properly if none of the rocker switches are closed or more than one rocker switch is closed.** If lube cycle is not completed within this alarm setting, system will go into alarm causing Red L.E.D. to light and pump to stop. **NOTE:** Power must be disconnected or Manual Lube Switch actuated to reset control during an alarm condition.

MANUAL LUBE

Pushing the Manual Lube Switch (inside enclosure) will initiate a lube cycle. Clock will begin timing toward next lube cycle after pressure switch is activated and released.

TRIAC OUTPUT

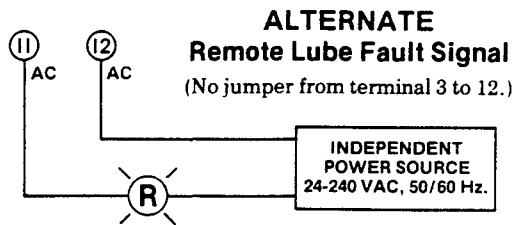
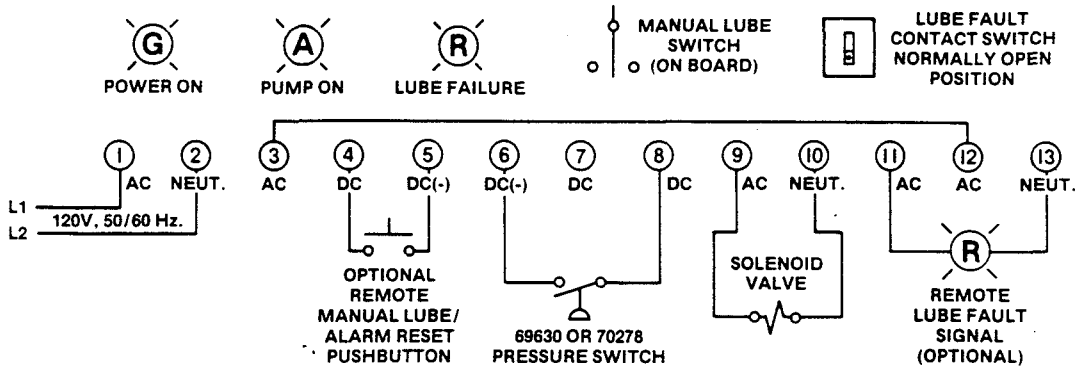
When used as input to Electronic Process Controllers, a 2500 ohm 10 watt resistor must be connected between Terminal 11 and Neutral circuit.

LINCOLN McNEIL CORPORATION
A DIVISION OF
One Lincoln Way, St. Louis, MO 63120 (314) 679-4200

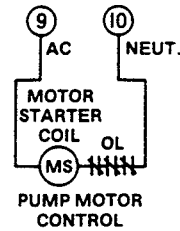
SECTION - C8
PAGE - 195C

WIRING DIAGRAMS FOR CENTRO-MATIC SYSTEMS

BASIC WIRING DIAGRAM w/ Air Operated Pump



w/ Electrically Operated Pump



NOTES:

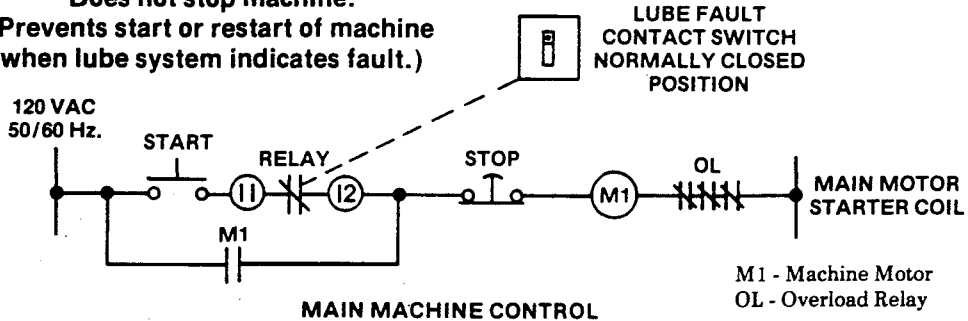
- 1) Numbers in circles represent corresponding numbers on terminal strip inside control enclosure.
- 2) Connect 2,500 ohm, 10 watt resistor between Terminal 11 and NEUT. when this Triac output is fed into an input of an Electronic Process Control.

MS - Motor Starter
OL - Overload Relay

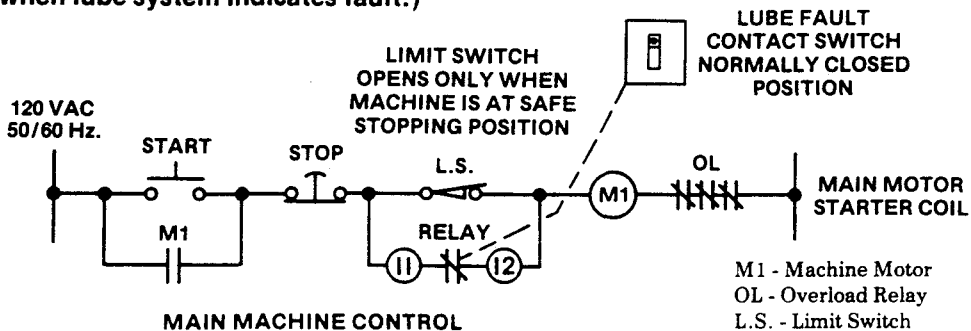
VARIATIONS FROM BASIC WIRING DIAGRAM

INTERLOCK ALARM

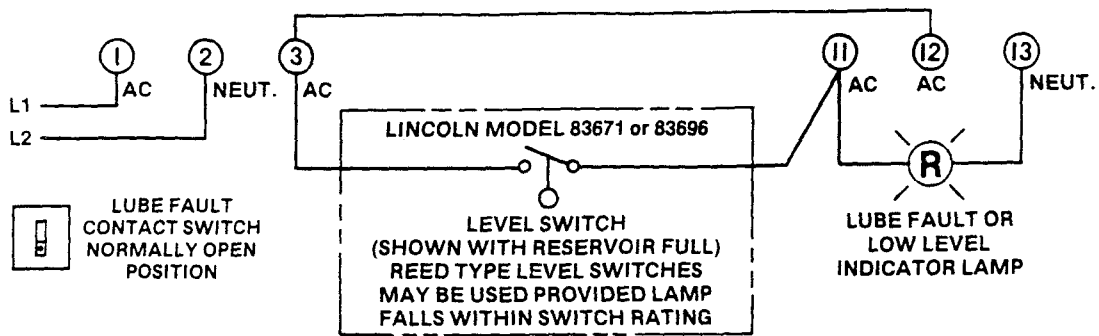
**Does not stop machine.
(Prevents start or restart of machine
when lube system indicates fault.)**



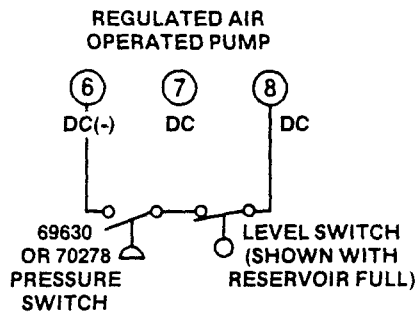
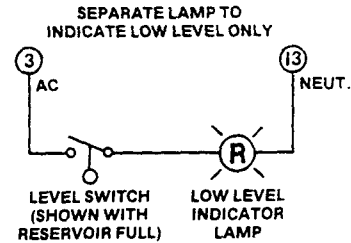
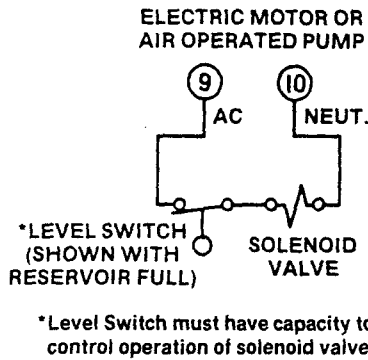
**INTERLOCK INTO MAIN CONTROL
(Stops machine at safe operating position
when lube system indicates fault.)**



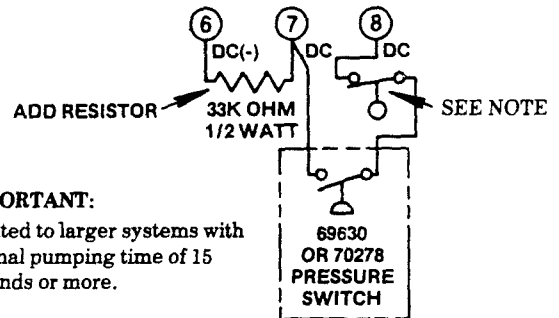
LEVEL SWITCH TO INDICATE LUBE FAULT OR LOW LEVEL
(Low level does not stop subsequent lube events.)



LEVEL SWITCH TO ACTUATE LOW LEVEL ALARM
(Stops all subsequent lube events.)



FAILURE TO VENT ALARM
(Regulated Air Operated Pump)

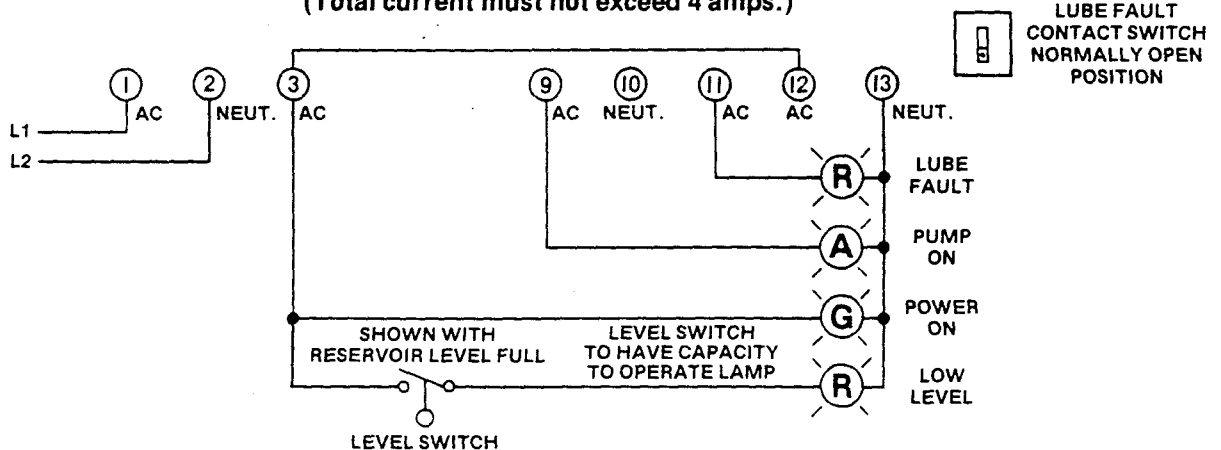


IMPORTANT:
Limited to larger systems with normal pumping time of 15 seconds or more.

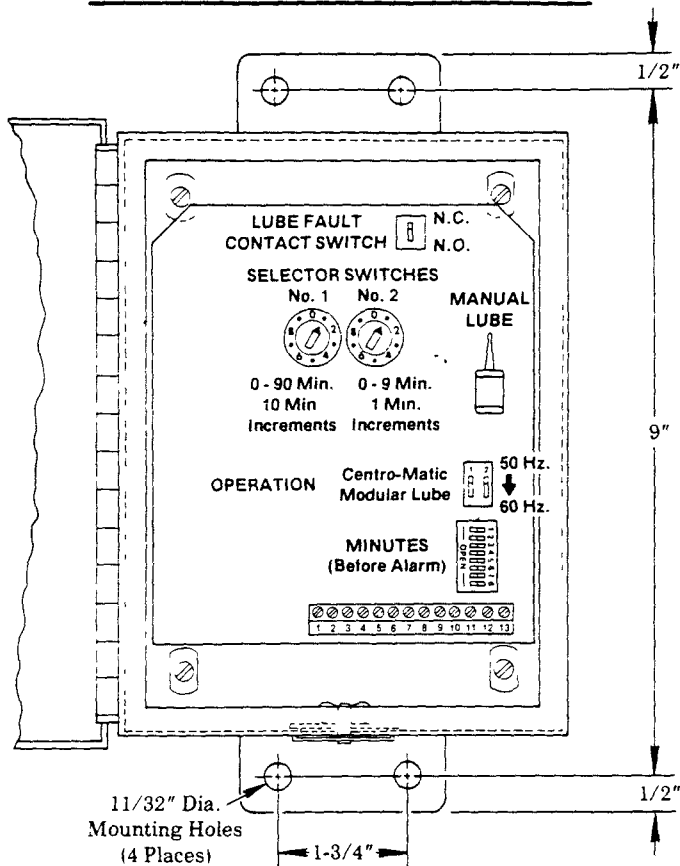
If lubrication system pressure fails to vent and lubrication cycle is not completed, time clock will start timing out toward next lubrication cycle. When timer initiates next lube cycle, pump will stall, lube cycle will not be completed within alarm time setting and control will go into alarm.

NOTE: Insert level switch in line between pressure switch and terminal 8 if low level is to actuate alarm and stop all subsequent lube cycles. (Level switch is shown with reservoir full.)

REMOTE SYSTEM STATUS INDICATING LAMP CONNECTIONS
(Total current must not exceed 4 amps.)



FOR MODULAR LUBE SYSTEMS



WIRE CONNECTIONS

Power Source - Terminals 1 & 2 (105 VAC - 128 VAC, 50 Hz or 60 Hz).

Remote Pushbutton Switch (Momentary N O) - Terminals 4 & 5

Divider Valve Cycle Switch - Terminal 6 - Normally Open, Terminal 7 - Common, Terminal 8 - Normally Closed.

Pump or Load Device - Terminals 9 & 10. Max. load 120 VAC at 4 amps

External Alarm Signaling Device - Non-committed lube fault circuit for machine interlock or alarm signal. **Independent Power Source:** Terminals 11 & 12. Independent line voltage is connected to terminal 12. The other side of independent line voltage is connected to alarm signaling device. The other side of alarm signaling device is connected to terminal 11. Max. alarm load 240 VAC at 4 amps **Internal Power Source:** Alarm signaling device between terminals 11 & 13 with a jumper from terminal 3 to 12. Max. alarm load 120 VAC at 4 amps. Lube Fault Contact Switch determines Normally Closed or Normally Open circuit. Push switch up for N C circuit, down for N O. circuit.

Normally Closed circuit opens on lube fault or power interruption to control. When power is turned on, alarm signaling device will remain energized unless control goes into alarm. Alarm device will then turn off and remain off. Red L.E.D. will turn on only when control goes into alarm.

Normally Open circuit closes on lube fault. When power is turned on, alarm signaling device will remain de-energized unless control goes into alarm. Alarm device will then turn on and remain on. Red L.E.D. will turn on only when control goes into alarm.

PRE-LUBE

With power "turn on", the first lube cycle is initiated. Subsequent lube cycles occur per setting of Selector Switches.

LIGHTS - L.E.D.

Green light indicates power is on
Amber light indicates lube cycle in progress
Red light indicates alarm condition.

OVERALL DIMENSIONS

Width (including door latch) - 6-7/16"

Depth (including lights & door lock) - 5-1/2"

CONTROL PANEL SETTINGS

The following control panel internal settings must be made to fit customer's needs.

50 Hz or 60 Hz Operation - Operation Rocker Switch #2 in position shown by arrow is for 60 Hz operation. Operation Rocker Switch #2 opposite arrow is for 50 Hz operation.

Auto-Reciprocating Pumps - Operation Rocker Switch #1 in opposite direction of arrow for continuous "on" load.

Single-Acting Pumps - Operation Rocker Switch #1 in direction of arrow for "pulsating" load (6 sec. on & 6 sec. off) during lubrication cycle.

Time Between Lube Cycles - The time interval between lube cycles is determined by the setting of the two Selector Switches. Selector Switch #1 is adjustable from 0 to 90 minutes in 10 minute increments. Selector Switch #2 is adjustable from 0 to 9 minutes in 1 minute increments. **EXAMPLE:** Selector Switch #1 is set on 6 and Selector Switch #2 is set on 5. The time between lube cycles will be 65 minutes. After initiating a lube cycle, the time clock will not start timing out (toward next cycle) until lubricant is dispensed and divider valve cycle switch is actuated and then returns to initial position.

Alarm Time Selection - Alarm setting should be approx. 2 minutes longer than pumping time. The Rocker Alarm Switch **must** have one switch closed between 1 & 8 (representing minutes). **IMPORTANT: Control will not operate properly if none of the rocker switches are closed or more than one rocker switch is closed.** If lube cycle is not completed within this alarm setting, system will go into alarm causing Red L.E.D. to light and pump to stop. **NOTE:** Power must be disconnected or Manual Lube Switch actuated to reset control during an alarm condition.

MANUAL LUBE

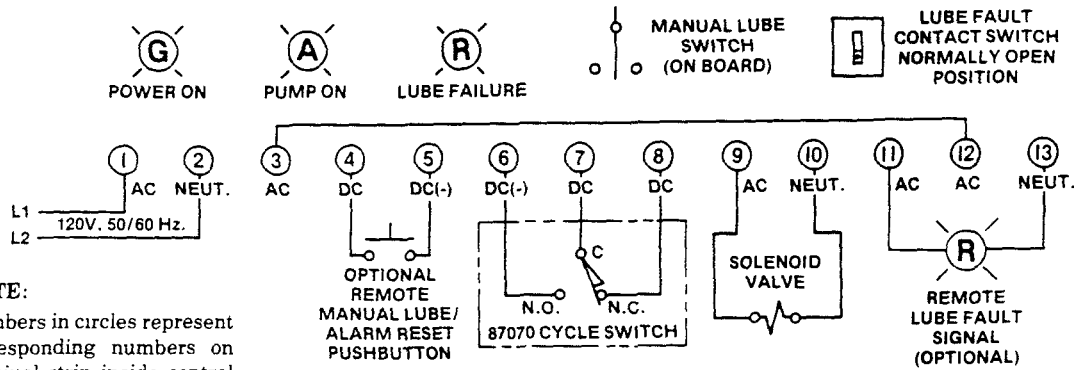
Pushing the Manual Lube switch (inside enclosure) will initiate a lube cycle. Clock will begin timing toward next lube cycle after divider valve cycle switch is activated and returns to initial position.

TRIAC OUTPUT

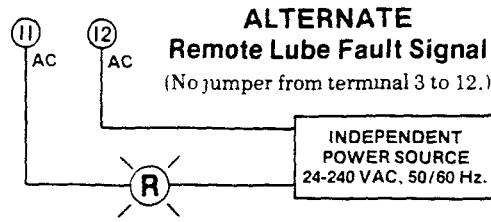
When used as input to Electronic Process Controllers, a 2500 ohm 10 watt resistor must be connected between Terminal 11 and Neutral circuit.

WIRING DIAGRAMS FOR MODULAR LUBE SYSTEMS

BASIC WIRING DIAGRAM w/ Air Operated Pump



NOTE:
Numbers in circles represent corresponding numbers on terminal strip inside control enclosure.



Operation Rocker Sw. #1 "Up".

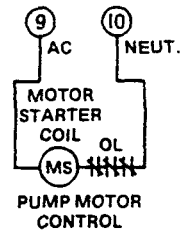
- 1) Auto-reciprocating and electric motor driven pumps.
- 2) Solenoid valve allowing lubricant from a pressurized lube source to an individual system.

Operation Rocker Sw. #1 "Down". (Pulsing solenoid air valve.)

- 1) Single acting pump, spring return, use 3-way valve.
- 2) Single acting pump, air return, use 4-way valve

NOTE: Connect 2,500 ohm, 10 watt resistor between Terminal 11 and NEUT. when this output is fed into an input of an Electronic Process Control.

w/ Electrically Operated Pump Operation Rocker Sw. #1 "Up".



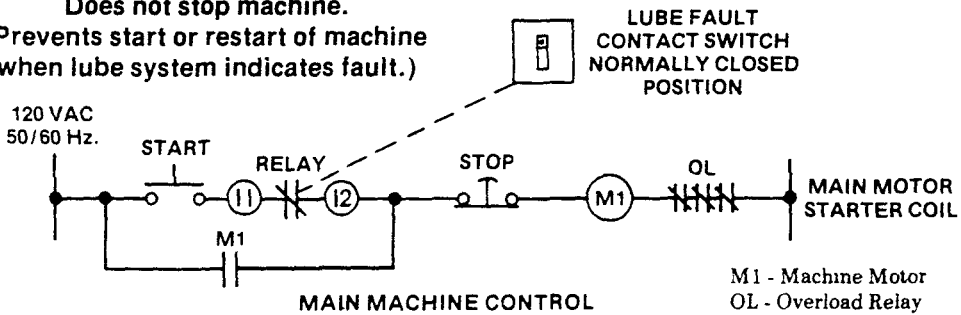
MS - Motor Starter
OL - Overload Relay

VARIATIONS FROM BASIC WIRING DIAGRAM

INTERLOCK ALARM

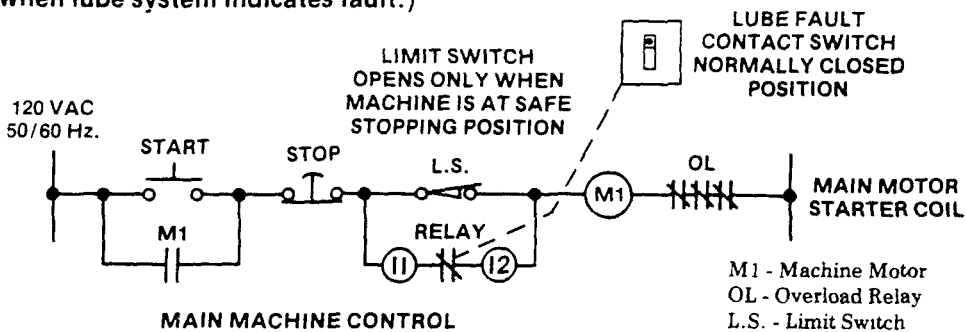
Does not stop machine.

(Prevents start or restart of machine when lube system indicates fault.)



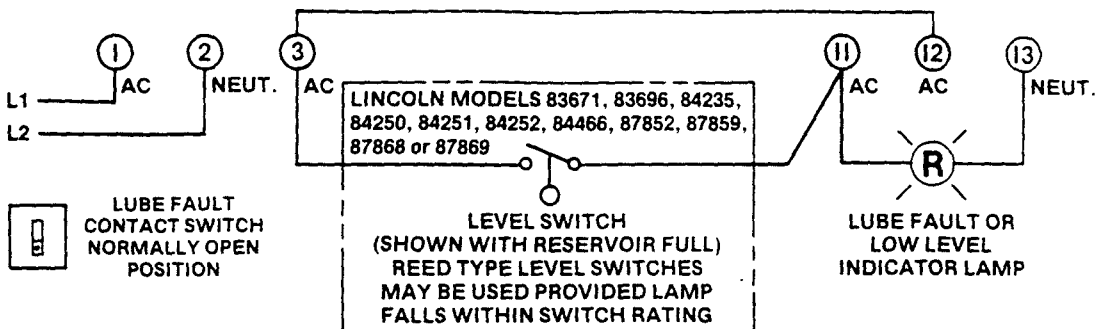
INTERLOCK INTO MAIN CONTROL

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

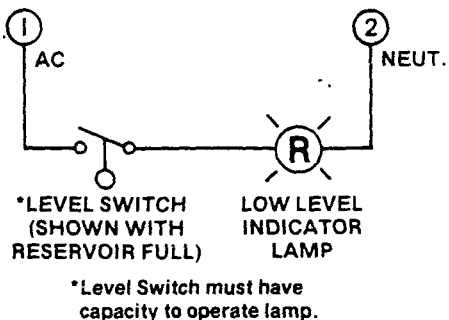


LEVEL SWITCH TO INDICATE LUBE FAULT OR LOW LEVEL

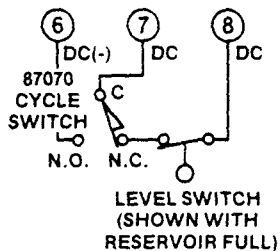
(Low level does not stop subsequent lube events.)



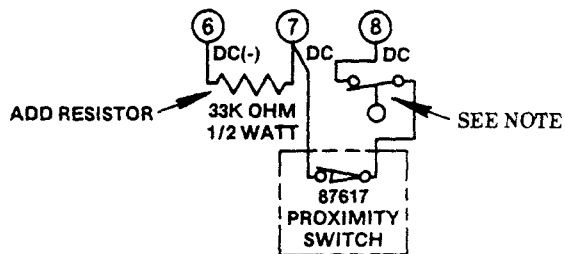
SEPARATE LAMP TO INDICATE LOW LEVEL ONLY



LEVEL SWITCH TO ACTUATE LOW LEVEL ALARM (Stops all subsequent lube events.)



TWO WIRE CONNECTION FOR 87617 PROXIMITY SWITCH

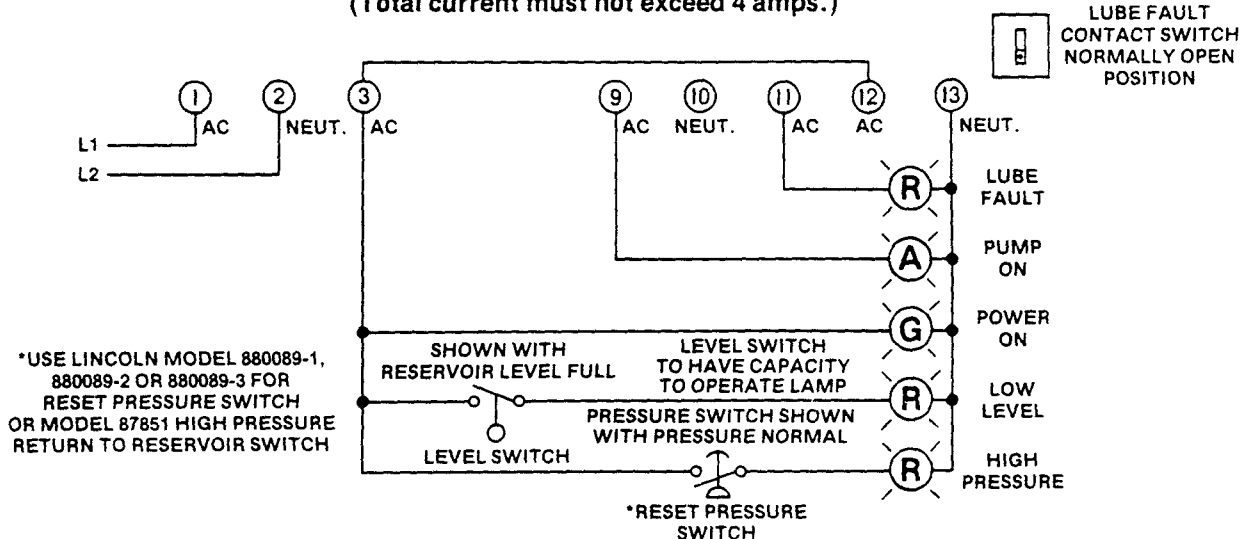


Eliminates three wire connection for 87070 Cycle Switch so that 87617 Proximity Switch can be used when preferred. **IMPORTANT:** Limited to larger systems with normal pumping time of 15 seconds or more.

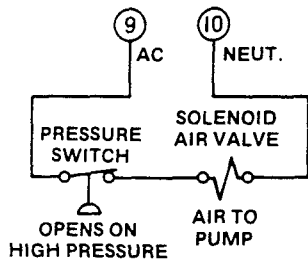
NOTE: Insert level switch in line between proximity switch and terminal 8 if low level is to actuate alarm and stop all subsequent lube cycles. (Level switch is shown with reservoir full.)

REMOTE SYSTEM STATUS INDICATING LAMP CONNECTIONS

(Total current must not exceed 4 amps.)



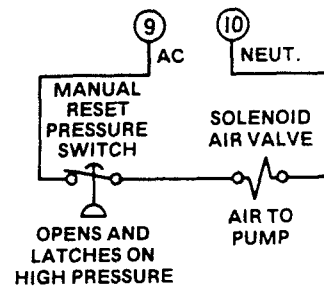
HIGH PRESSURE DETECTION SYSTEM (Preferred Method)



Install Model 69630 or 70278 Pressure Switch in line between terminal 9 and solenoid air valve to detect high pressure and prevent system damage (including blowout of rupture disc). When high pressure activates pressure switch, pump stops and control goes into alarm. If high pressure is not maintained, switch will reset and system will perform normally. If high pressure is maintained long enough for control timer to time out, control will remain in alarm.

IMPORTANT: Pressure switch setting must be less than pressure rating of system performance indicators.

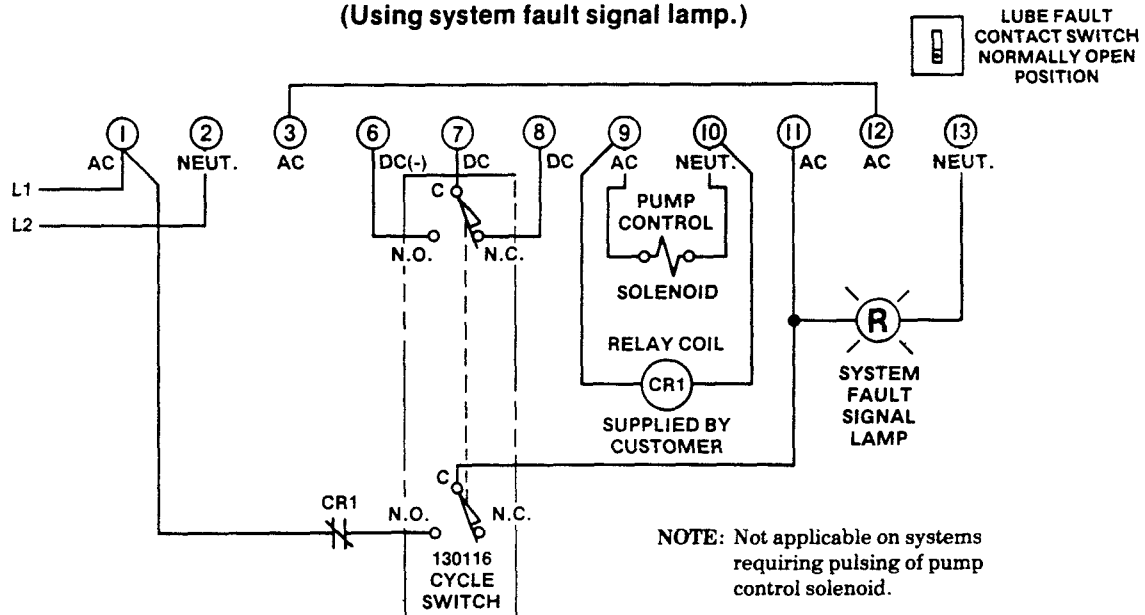
HIGH PRESSURE DETECTION SYSTEM (Alternate Method)



Install Model 880089-1, -2, -3 Pressure Switch or 87851 High Pressure Return To Reservoir in line between terminal 9 and solenoid air valve to detect high pressure and prevent system damage (including blowout of rupture disc). When high pressure activates pressure switch, pump stops and control goes into alarm. Pressure switch must be manually reset before resetting control to resume normal operation.

IMPORTANT: Pressure switch setting must be less than pressure rating of system performance indicators.

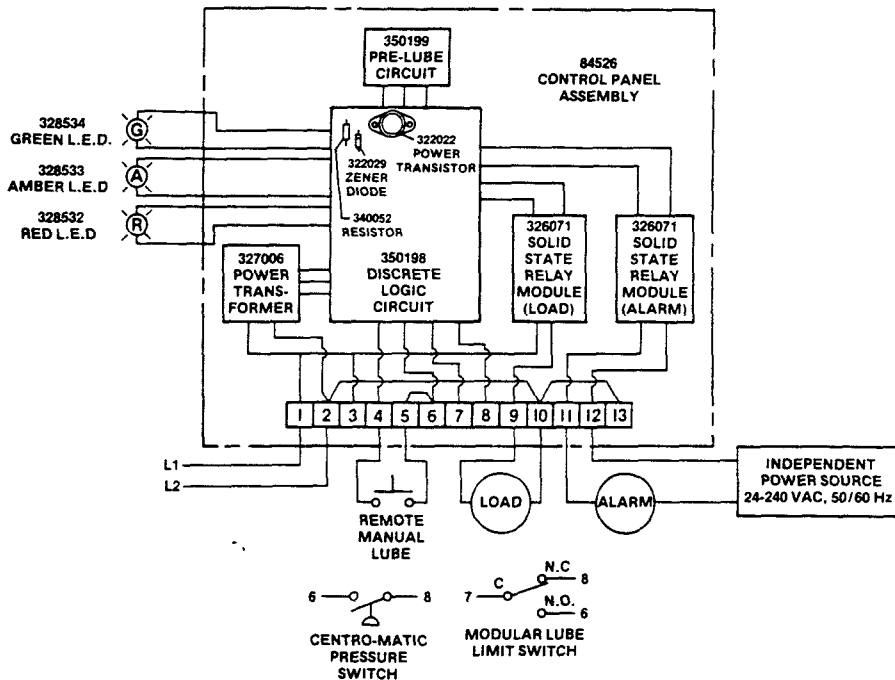
SOLENOID FAILURE ALARM (Using system fault signal lamp.)



NOTE: Not applicable on systems requiring pulsing of pump control solenoid.

This circuit can be used to monitor either an air solenoid valve supplying an auto-reciprocating pump, or an 82237-1 Hydraulic Solenoid Valve serving a zoned system from a pressurized lube source.

A solenoid valve failure is indicated by lubricant flowing through the divider valve system and operating the 130116 Cycle Switch while the control is timing toward the next lube cycle.



TROUBLE SHOOTING GUIDE

| PROBLEM | CORRECTION | PROBLEM | CORRECTION |
|--|---|---|---|
| I. No Green Light. A Lube event normal 1 Green L E D defective 2 Wire broken to green L E D B Lube event does not take place 1 Power off to control 2. 350199 Pre-Lube Circuit defective 3 Power transformer defective 4 2000 microfarad capacitor broken loose a 340052 Resistor (120 ohm) heat damaged b 322029 Zener Diode damaged 5 322022 Transistor (2N3713) defective 6 Damaged or broken wiring | Replace green L E D Repair wire Turn on power (check line fuse) Replace pre-lube circuit Replace transformer Reconnect or replace capacitor Caused by disconnection of capacitor Replace both elements Replace transistor Repair wiring | V. No Pre-Lube - No Timed Lube Event. A No amber L E D 1 Operates when manual lever is actuated 2 Pump operates but no amber L.E.D when manual lube lever is actuated 3 Does not operate when manual lube lever is actuated B Amber L E D operates 1 Alarm circuits are energized a No red L E D b Red L E D lights and amber L E D goes out 2 Alarm circuits are not energized a No red L E D b Red L E D lights and amber L E.D. goes out | Replace 350198 and 350199 Circuit Boards Replace 350198, 350199 and amber L.E.D Replace 350198 Circuit Board Check for broken wires Replace red L E D Replace 326071 Load Module Check for broken wires Replace 326071 Load and Alarm Modules and red L.E D Replace 326071 Load and Alarm Modules |
| II. No Pre-Lube. A Timed lube event normal 1 Wiring to pre-lube module broken 2. 350199 Pre-Lube Circuit defective. | Repair wiring Replace pre-lube circuit | VI. Pump Turns On But Does Not Stop When Cycle Or Pressure Switch Is Actuated. A Alarm circuits are activated B Alarm circuits are not activated 1 No red L E D 2 Red L E D turns on | Replace 326071 Load Module Check for broken wires Replace 350198 Circuit Board Replace 326071 Alarm Module |
| III. No Amber Lamp During Pump Operation. A. Lube event normal 1 Amber L.E.D. defective 2. Broken wire to amber L E.D. | Replace amber L.E D Repair wire | VII. Alarm Circuits Are Activated Immediately On Power Turn On. A Red L E D on B No red L E D | Check lube fault contact switch for proper position, N.C or N O per system requirement Replace 350198 Circuit Board Replace 326071 Alarm Module |
| IV. Pre-Lube Normal. A No subsequent timed lube event | Replace 350198 Circuit Board | | |

FOR EMERGENCY FIELD REPAIR OF 350198 OR 350199 CIRCUIT BOARDS CONTACT THE LINCOLN FACTORY SERVICE DEPARTMENT.

Servicing of this unit should be done only by a qualified electronics technician or engineer trained in handling solid state equipment. **WARNING:** Use proper tools when removing or replacing integrated circuits on the 350198 Circuit Board. When soldering or removing components on the 350198 or 350199 Circuit Boards always use a heat sink to prevent damage to other components.