



**SEQUENCE OF OPERATION**

- MACHINE OPERATIONS:**
- A. PRESS "MOTOR START" PUSH-BUTTON "2PB". MOTORS START.
  - B. SELECT SPINDLE SPEED BY TURNING SELECTOR SWITCH "1SS" TO "INC", ENERGIZING "3SOL", TO INCREASE OR TO "DEC" ENERGIZING "4SOL", TO DECREASE SETTING.
  - C. WITH CORRECT SPINDLE DIRECTION SELECTED, LIMIT SWITCH "1LS" IS ACTUATED. PRESS, "SPINDLE START" PUSH-BUTTON "4PB", ENERGIZING RELAY "1CR" WHICH ENERGIZES "1SOL". SPINDLE STARTS AND PRESSURE SWITCH "1PS" IS ACTUATED. "1PS" ENERGIZES "1TR" AND AFTER A TIME DELAY "2SOL" IS ENERGIZED, PERMITTING MOVEMENT OF MACHINE ELEMENTS AT SELECTED FEED RATES.
  - D. PRESSING "SPINDLE STOP" PUSH-BUTTON "3PB" STOPS SPINDLE AND FEED MOVEMENTS SIMULTANEOUSLY.

**LUBRICATION OPERATIONS:**

- A. PRESSURE SWITCH "2PS" IS CLOSED.
  1. TIMER "2TR" CLUTCH IS ENERGIZED WHEN MOTORS START.
  2. CONTACT "2TR1" CLOSSES AND ENERGIZES TIMER MOTOR "MTR", STARTING LUBE TIMING PERIOD.
  3. CONTACT "2TR3" CLOSSES AND ENERGIZES TIMER "3TR".
- B. TIMER "2TR" TIMES OUT.
  1. CONTACT "2TR1" OPENS, DE-ENERGIZING TIMER MOTOR "MTR".
  2. CONTACT "2TR2" CLOSSES, ENERGIZING "5SOL".
  3. CONTACT "2TR3" OPENS, DE-ENERGIZING TIMER "3TR".
  4. LUBRICATION PRESSURE ACTUATES PRESSURE SWITCH "2PS", DE-ENERGIZING AND RESETTING TIME "2TR". CONTACTS "2TR1", "2TR2" AND "2TR3" OPEN.
  5. CONTACT "2TR2" OPENING, DE-ENERGIZES "5SOL".
- C. REDUCED LUBRICATION PRESSURE DE-ACTUATES PRESSURE SWITCH "2PS" AND SEQUENCE REPEATS.

**SWITCH OPERATION**

- 1LS (016) ACTUATED BY SPINDLE DIRECTION LEVER ENGAGED
- 1PS (019) OPERATED WHEN SPINDLE CLUTCH ENGAGED
- 2PS (024) OPERATED BY NORMAL LUBE PRESSURE
- 1FS (027) OPERATED BY ADEQUATE LUBE SUPPLY

DESIGNER:  
 EDIT CONTROL DIAGRAM TO BE PROJECT-SPECIFIC.  
 CONSULT LANL ESM. COMPLETE TITLEBLOCK  
 AS REQUIRED PER LANL DRAFTING MANUAL.

DESIGNER NOTE:  
 REFER TO ESM CHAPTER 8,  
 I&C, APPENDIX H.

**PRIORITY DRAWING**

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
<b>ADTS - ENGINEERING DIVISION</b>									
<b>ENGINEERING STANDARDS MANUAL</b>					DRAWN R. PEARSON				
MACHINE X SCHEMATIC DIAGRAM					DESIGN M. CLEMMONS				
					CHECKED R. TROUT				
BLDG TA-X					DATE 5-31-05				
					SUBMITTED				
DISCIPLINE POC: MEL BURNETT					APPROVED FOR RELEASE STANDARDS MANAGER: TOBIN ORUCH				
CLASSIFICATION U REVIEWER TOBIN ORUCH DATE SHEET 1 OF 1 PROJECT ID DRAWING NO									
<b>CHAPTER 8</b>					<b>E-6050</b>				
REV 0									

**SCHEMATIC DIAGRAM**  
 SCALE: NONE