No. 32 Automatic Cutting-Off Lathe and Loading Table
Sequence of Operation

General

The Sequence of Operation of the lathe and table is dependent on a combination of mechanical, pneumatic, and electrical controls.

Manual Cycle - Machine Only

Initial conditions. The disconnect switch or circuit breaker is closed, and control transformer is energized. Machine is at end of cycle position with feed lever disengaged, stock stop advanced, and roller stock feed rollers closed. Loading table is fully loaded with work but no work is in machine. Table lifter arms and feed roller selector switches, 1SS (15) and 2SS (17), are set in "off" position.

A. Hand crank lever on cutoff carriage apron is turned counterclockwise, causing cutoff slide to move toward machine spindle.

   1. Collet air valve opens, causing collet to close.

   2. Stock stop is mechanically receded.

B. A mechanical cam controls the cutoff slide travel. As the crank lever is turned farther, the slide moves over the top of the cam and the slide is spring returned to its starting position. As it returns

   1. The stock stop advances.

   2. The collet air valve closes, causing the collet to open.

C. The overhead chamfer attachment is cam operated from the cutoff slide.

Semi-Automatic Cycle - Machine and Table

Initial conditions. Power is on. Machine is at end of cycle position. Cycle selector lever on the cutoff slide is in the "up" position. Table is fully loaded with work but no work is on the table feed rollers.

A. Turning selector switch 2SS (17) to "on" energizes 2 CR (17) (2 LS (17) is closed since no work is on table feed rollers).

1. SOLENOID B (19) IS ENERGIZED.

   A) LIFTER ARMS RISE, PICKING UP ONE PIECE OF WORK.

2. 2 LS (17) OPENS AS WORK ROLLS DOWN LIFTER ARM INCLINES AND STRIKES 2 LS ARM EXTENSION.

   B) SOLENOID B IS DE-ENERGIZED.

      (1) LIFTER ARMS LOWER WORK ON FEED ROLLERS.

B. DEPRESSING AND HOLDING 1 PBL (9) ENERGIZES LOW (9), CAUSING THE MAIN DRIVE MOTOR TO RUN AT LOW SPEED.

B1. DEPRESSING AND HOLDING 1 PBH (7) ENERGIZES HIGH (7), CAUSING THE MAIN DRIVE MOTOR TO RUN AT HIGH SPEED.

C. DEPRESSING AND HOLDING 3 PB (13) ENERGIZES 3 M (13), CAUSING THE ROLLER STOCK FEED ROLLERS IN THE MACHINE AND ON THE TABLE TO ROTATE.

D. DEPRESSING AND HOLDING 2 PB (11) ENERGIZES 2 M (11), CAUSING COOLANT PUMP MOTOR TO RUN.

E. TURNING SELECTOR SWITCH 1 SS (15) TO "AUTO" ENERGIZES 1 CR (15).

1. SOLENOID A (18) ENERGIZES.

   A) FEED ROLLERS ON TABLE RISE TO THE WORK AND FEED ROLLERS IN THE MACHINE CLOSE ON THE WORK, MOVING THE WORK THROUGH THE SPINDLE AND AGAINST THE STOCK STOP.

F. ENGAGING FEED LEVER, STARTS MACHINE CYCLE. CUTOFF SLIDE MOVES TOWARD SPINDLE OPENING COLLET AIR VALVE CAUSING COLLET TO CLOSE AND OPENING 1 LS (15) DE-ENERGIZING 1 CR (15).

1. SOLENOID A (18) DE-ENERGIZES.

   A) FEED ROLLERS ON TABLE DROP DOWN AND FEED ROLLERS IN MACHINE OPEN.

2. WORK IS CUT OFF AND CUTOFF SLIDE RETURNS TO START POSITION.

   A) AIR VALVE CLOSES CAUSING COLLET TO OPEN.

   B) 1 LS (15) CLOSES.

      (1) 1 CR (15) ENERGIZES, SOLENOID A (18) ENERGIZES, AND FEED ROLLERS ON TABLE RISE TO WORK WHILE FEED ROLLERS IN MACHINE CLOSE ON WORK.

3. FEED LEVER AUTOMATICALLY DISENGAGES.

AUTOMATIC CYCLE - MACHINE AND TABLE

INITIAL CONDITIONS. POWER IS ON. MACHINE IS AT END OF CYCLE POSITION. CYCLE SELECTOR SWITCH IS IN "DOWN" POSITION. TABLE IS LOADED WITH WORK AND ONE PIECE OF WORK IS ON TABLE FEED ROLLERS, THROUGH THE SPINDLE AND AGAINST THE STOCK STOP.

A. WHEN THE FEED LEVER IS ENGAGED THE SEQUENCE OF OPERATION LISTED IN SEMI-AUTOMATIC CYCLE F WILL TAKE PLACE, EXCEPT THAT THE FEED LEVER WILL NOT DISENGAGE AND THE CYCLE WILL KEEP AUTOMATICALLY REPEATING UNTIL THE FEED LEVER IS MANUALLY DISENGAGED.

B. AS THE FIRST LENGTH OF WORK IS FED THROUGH THE MACHINE AND THE END GOES PAST 2 LS (17), 2 LS (17) EXTENSION ARM RISES INITIATING THE CYCLE OUTLINED IN SEMI-AUTOMATIC CYCLE A. THUS THE TABLE KEEPS THE MACHINE AUTOMATICALLY LOADED AT ALL TIMES.