

THE SEQUENCE MODULAR BLOCKS FOR THE AUTOMATISED PROCESSES COMMAND – PART 2

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Abstract: The present paper demonstrates that the sequential modulator block is a very flexible solution in case of the automatic manufacturing, especially when it is about the simultaneous operations applied to the same working machine. The presented example explains the way in which command via sequential modular blocks could be used for the indexing of a rotating transfer machine, that allows to make three operation simultaneously: to mould, to drill and to mark.

The command via the sequence modular block is a good solution for the simultaneously operation in automatic manufacturing. In our paper there is presented an example about a rotating transfer machine for automatic simultaneous operations for the same machine. Each operation is made to a specified work gauge, the transfer from a gauge to another being made automatically (see figure 1).

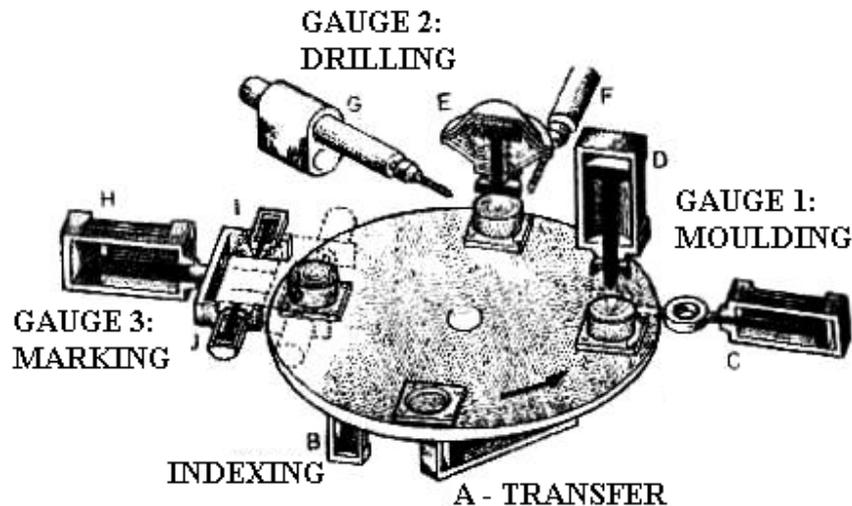


Figure 1: The rotating transfer machine [1]

The cycle for the automatic manufacturing corresponding to each probe is presented in the figure below.

The rotating transfer machine is equipped with a high number of gauges; that invokes a high number of pneumatic cylinders. The cycles performed for N parallel lines are the main characteristics of this type of machines.

The presented transferring machine is semi – automatic, having three working gauges. When the user discharges the manufactured probe and loads the machine with a new probe submitted to be manufacture, provides the cycle for its automatic running.

The realized starting modes are: automatic or cycle by cycle, with emergency STOP – established by the operator or to command separately of each from the three working gauges, from the control desk, due to the regulator.

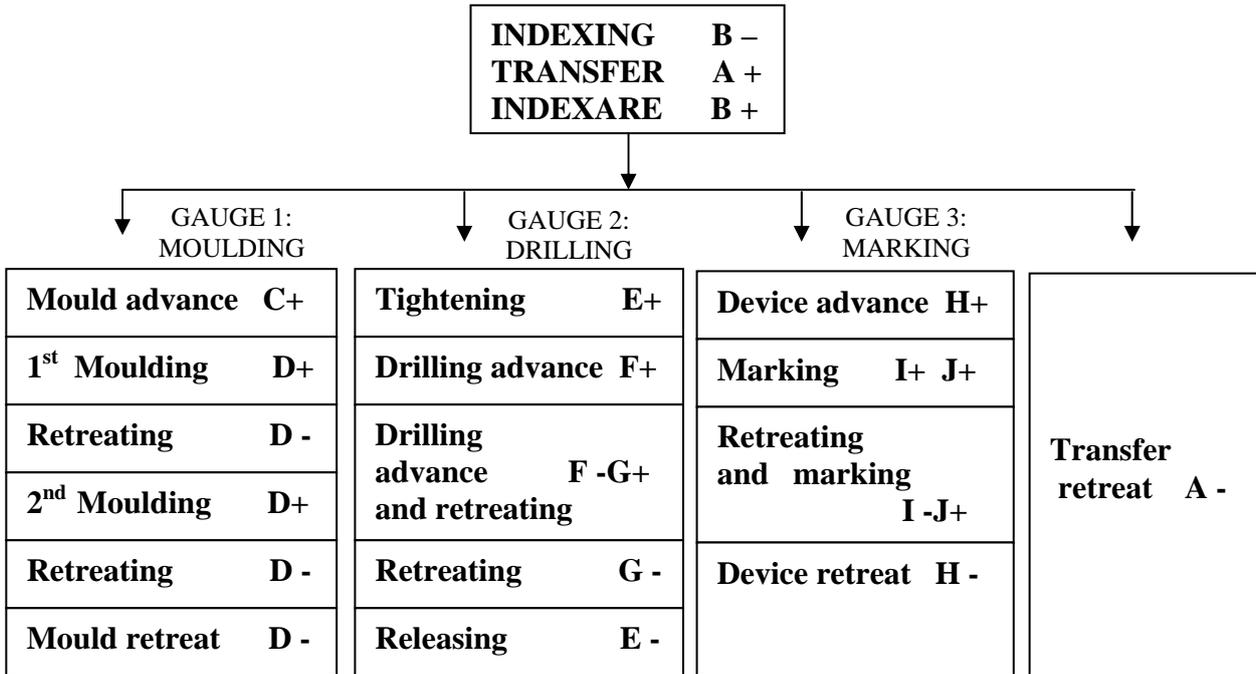


Figure 2: The cycle algorithm for the automatic manufacturing per one probe

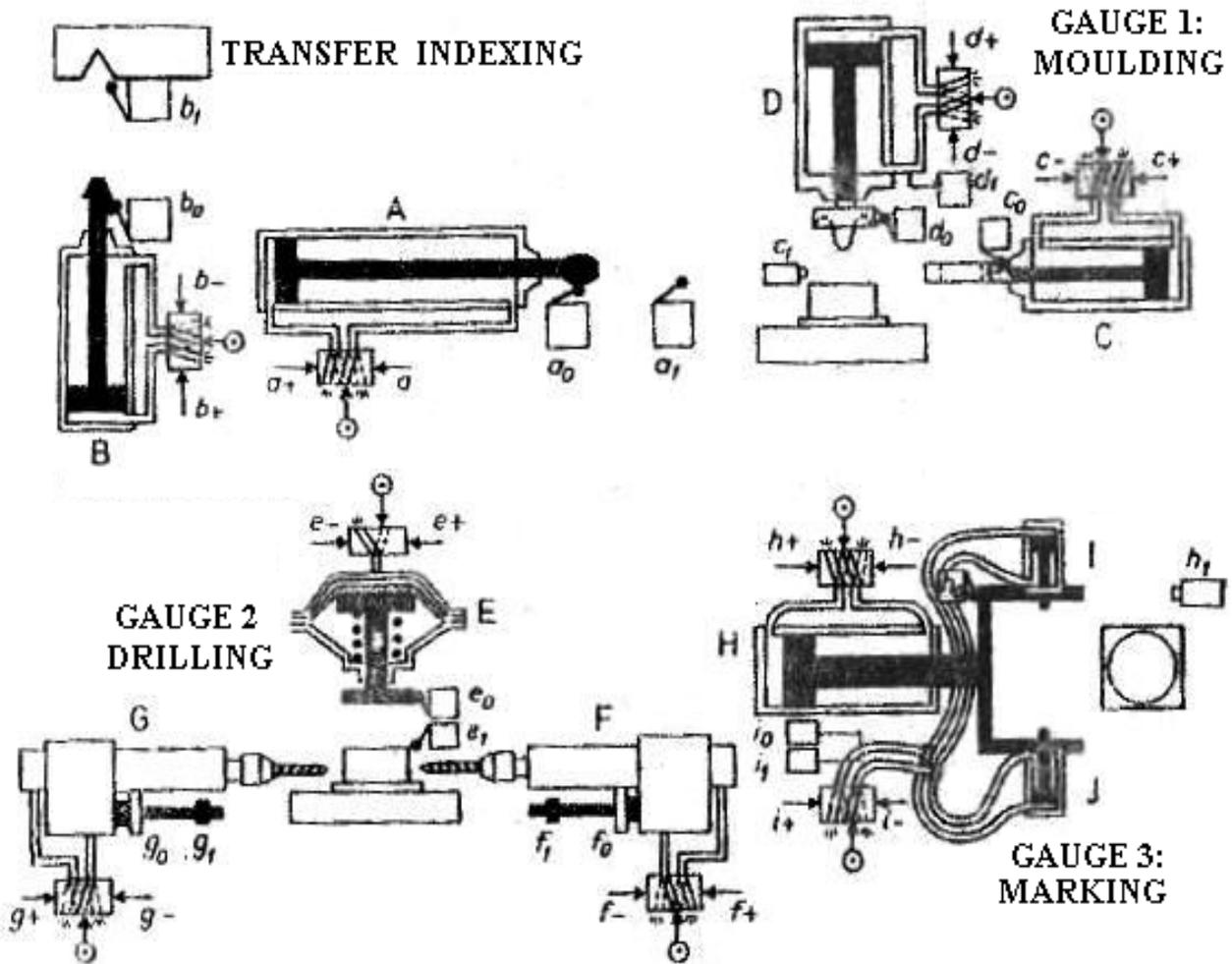


Figure2: The sensors ordering scheme for each required phase per one cycle [3]

The sensors ordering scheme is realized so that for each cylinder correspond mechanical commanded sensors. For the drilling units G and F, the upper limit range sensors are integrated as adjustable stoppers [2].

The command scheme (figure 3) presents the modular block as a main block for re the reverse indexing, transfer and indexing and other three secondary parallel lines, corresponding to the three working gauges, simultaneous with the transfer cylinder A in the initial position.

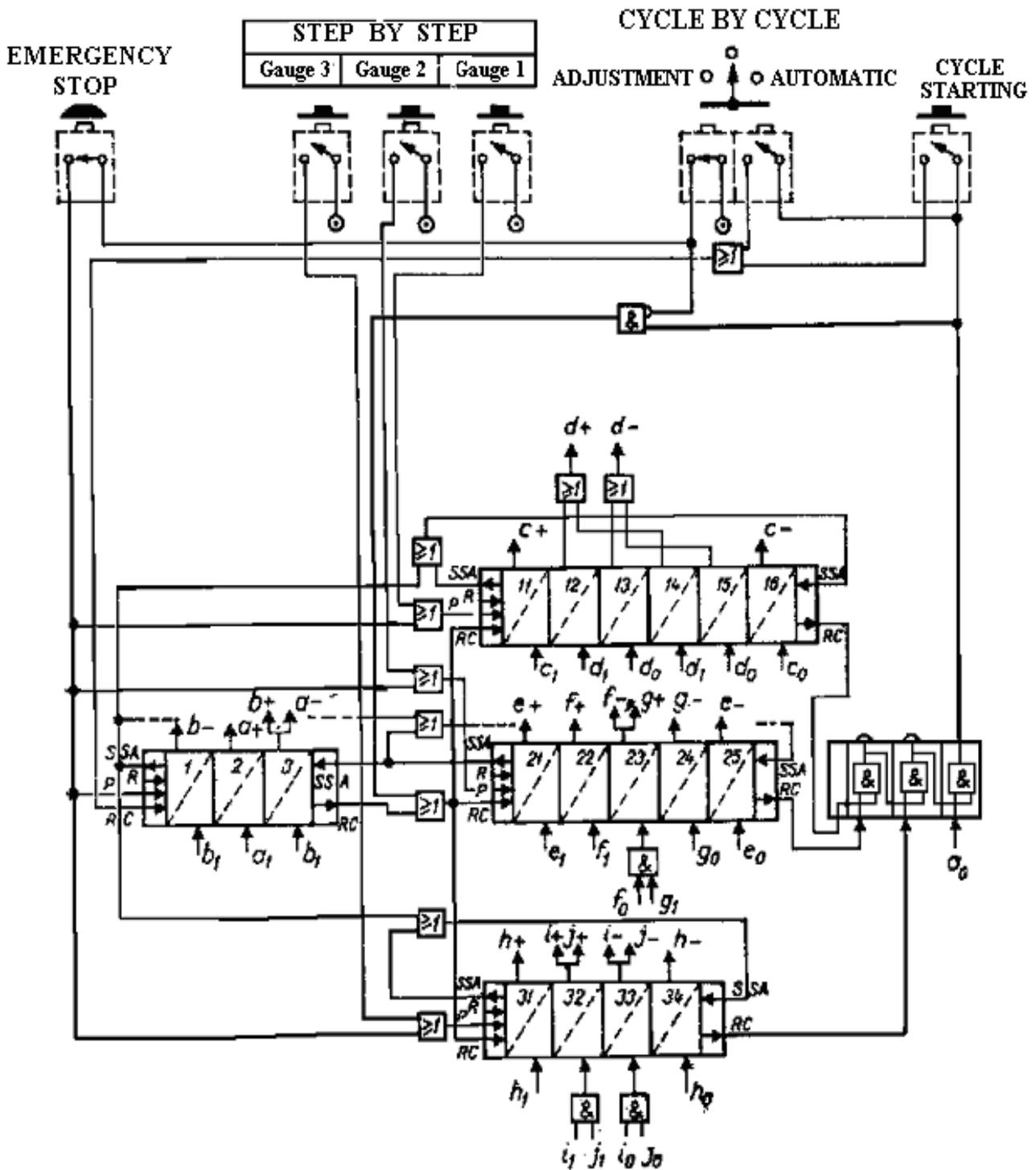


Figure 3: The block modular command scheme for the automatic process

The emergency STOP is realized by the interrupting of the supplying pressure P of the modular blocks, the cycle reloading being made from the phase when the STOP occurred.

The reloading of a new cycle is made in case of manual command of the micro-switch *CYCLE STARTING*.

References

[1] Ionescu, E – *Echipamente pneumatice și hidraulice de automatizare – vol I. Pneumatica*, Ed. Universității din Brașov, 1983;

[2] Ionescu, E; Braun, B – *Automatizări pneuonice*, Reprografia Univ. TRANSILVANIA Brașov, 2007;

[3] Radcenco, V; Ionescu, E – *Calculul și proiectarea elementelor și schemelor pneumatice de automatizare*, Ed. Tehnică, București, 1985;