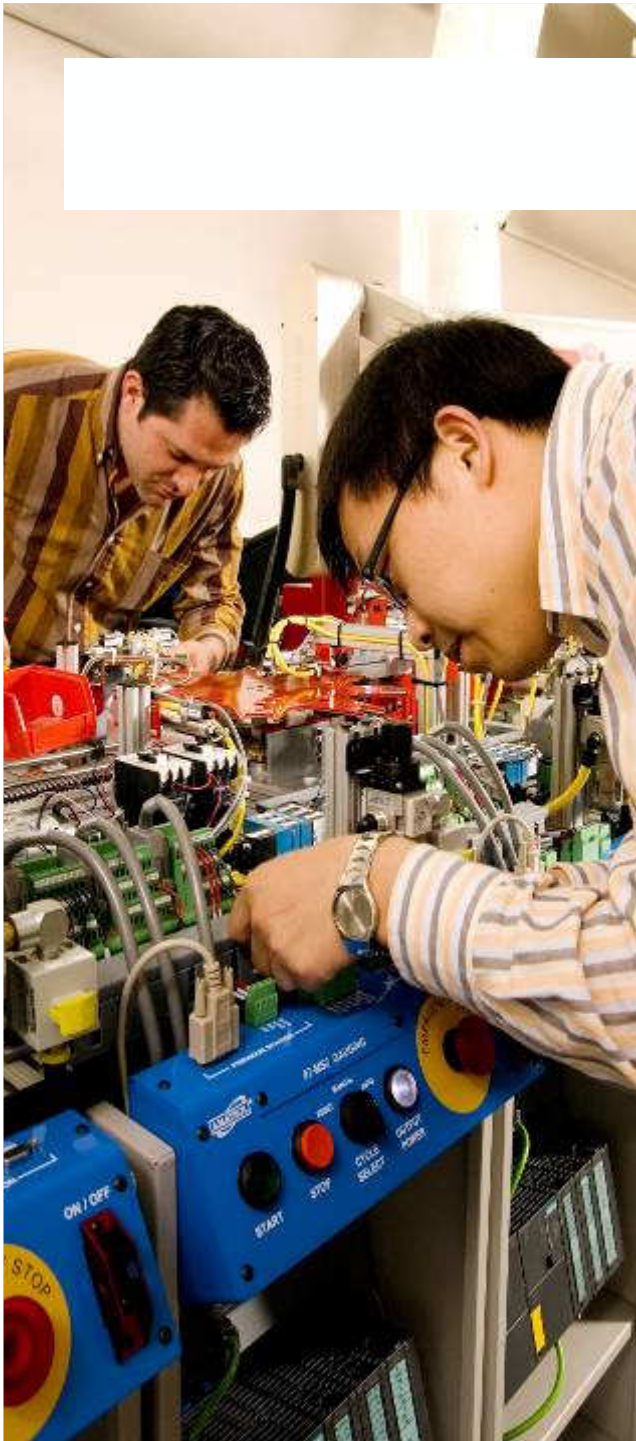


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# Siemens Mechatronic Systems Certification Program

## Displacement-Step Diagram

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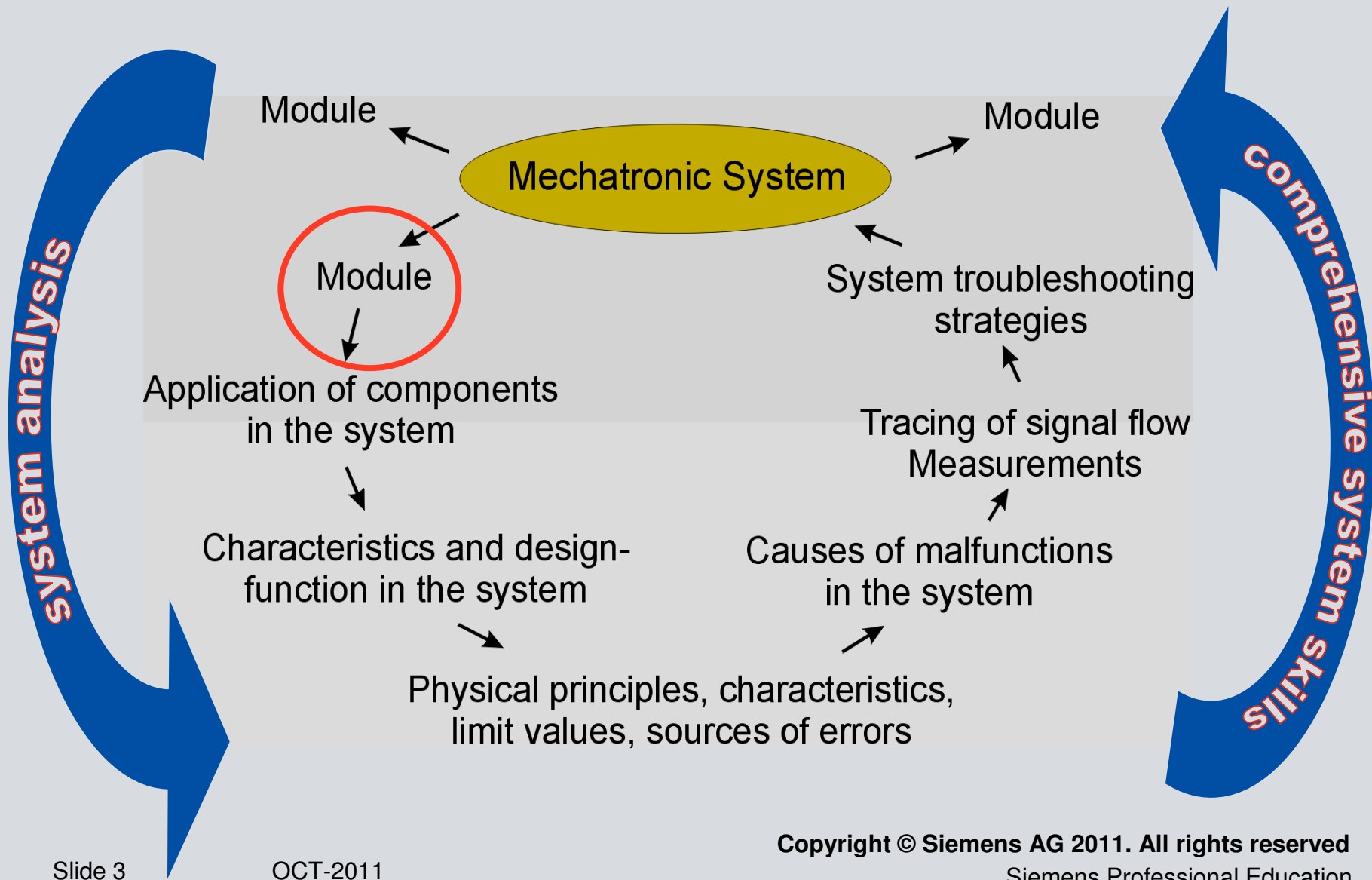
A Siemens Certified Mechatronic Systems Assistant will function as a well-grounded machine operator in a complex system, with responsibility for efficient operation of the equipment with minimal down-times.

He or she will be able to:

- Localize malfunctions, identify causes and sources of malfunctions, correct malfunctions where possible ...
- Read and understand the technical documents, reports and outlines specific to the system and subsystems ...

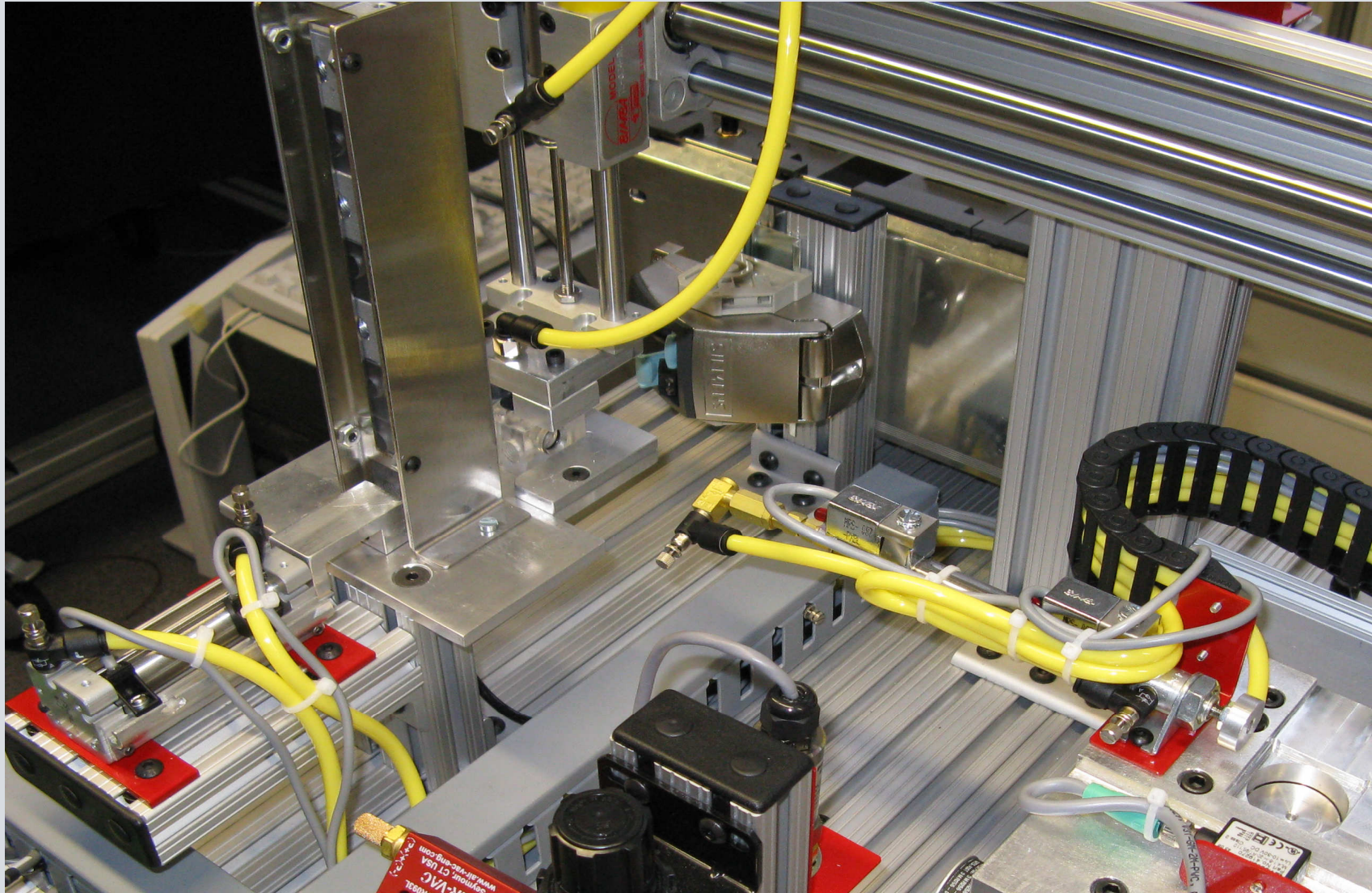
# SYSTEM APPROACH

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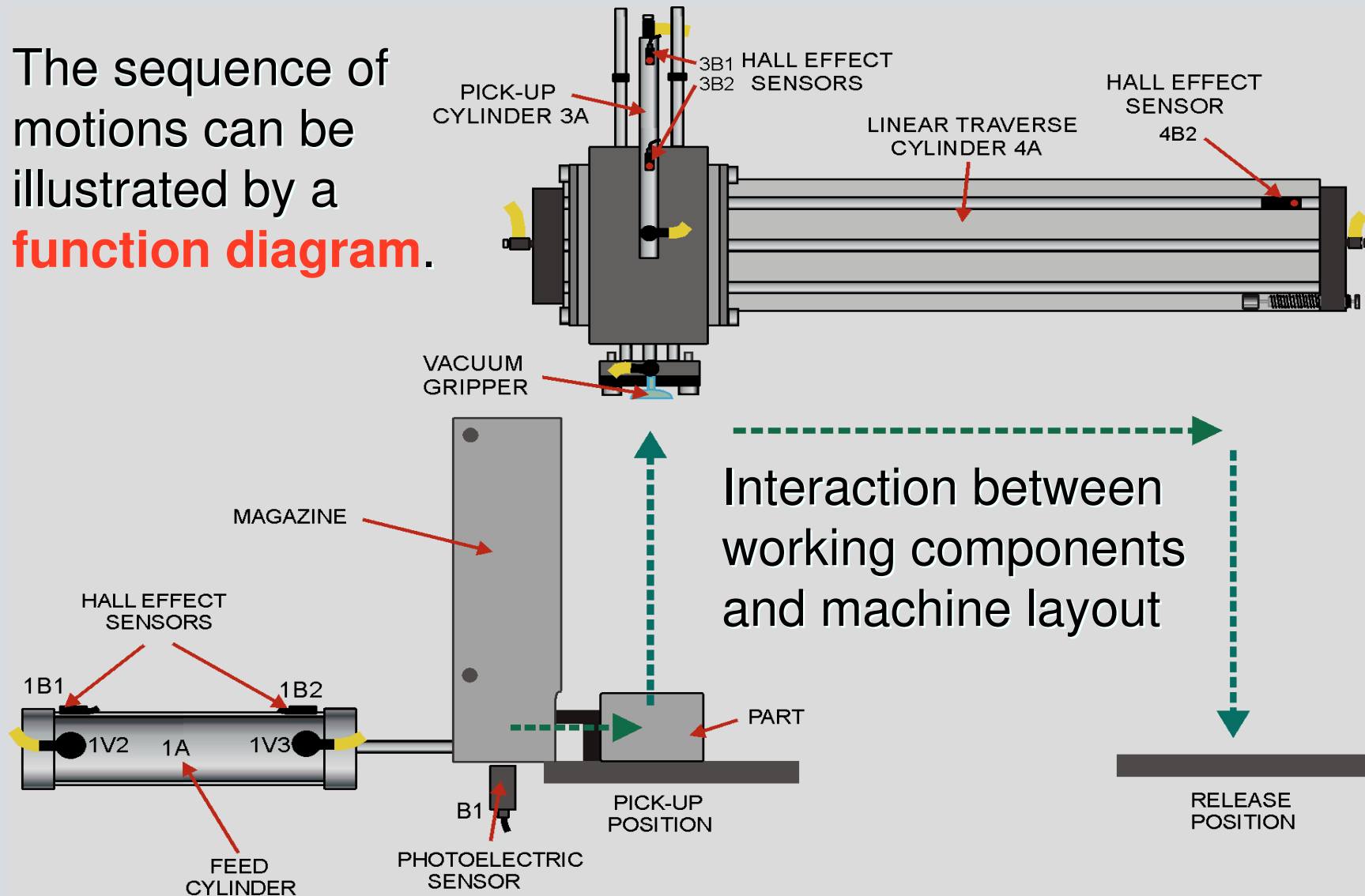
# PICK AND PLACE FEEDING STATION

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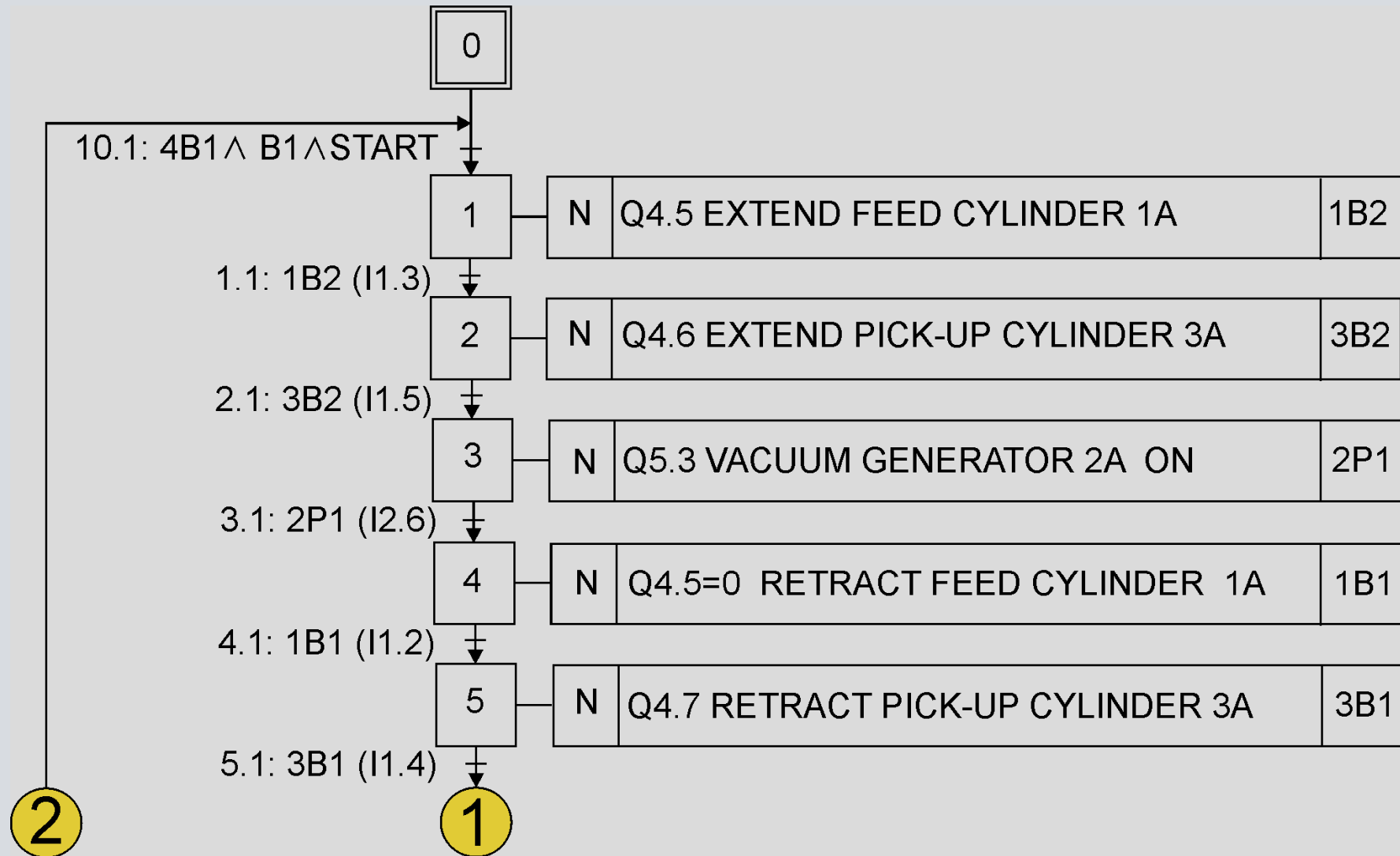


# FUNCTION DIAGRAM

The sequence of motions can be illustrated by a **function diagram**.

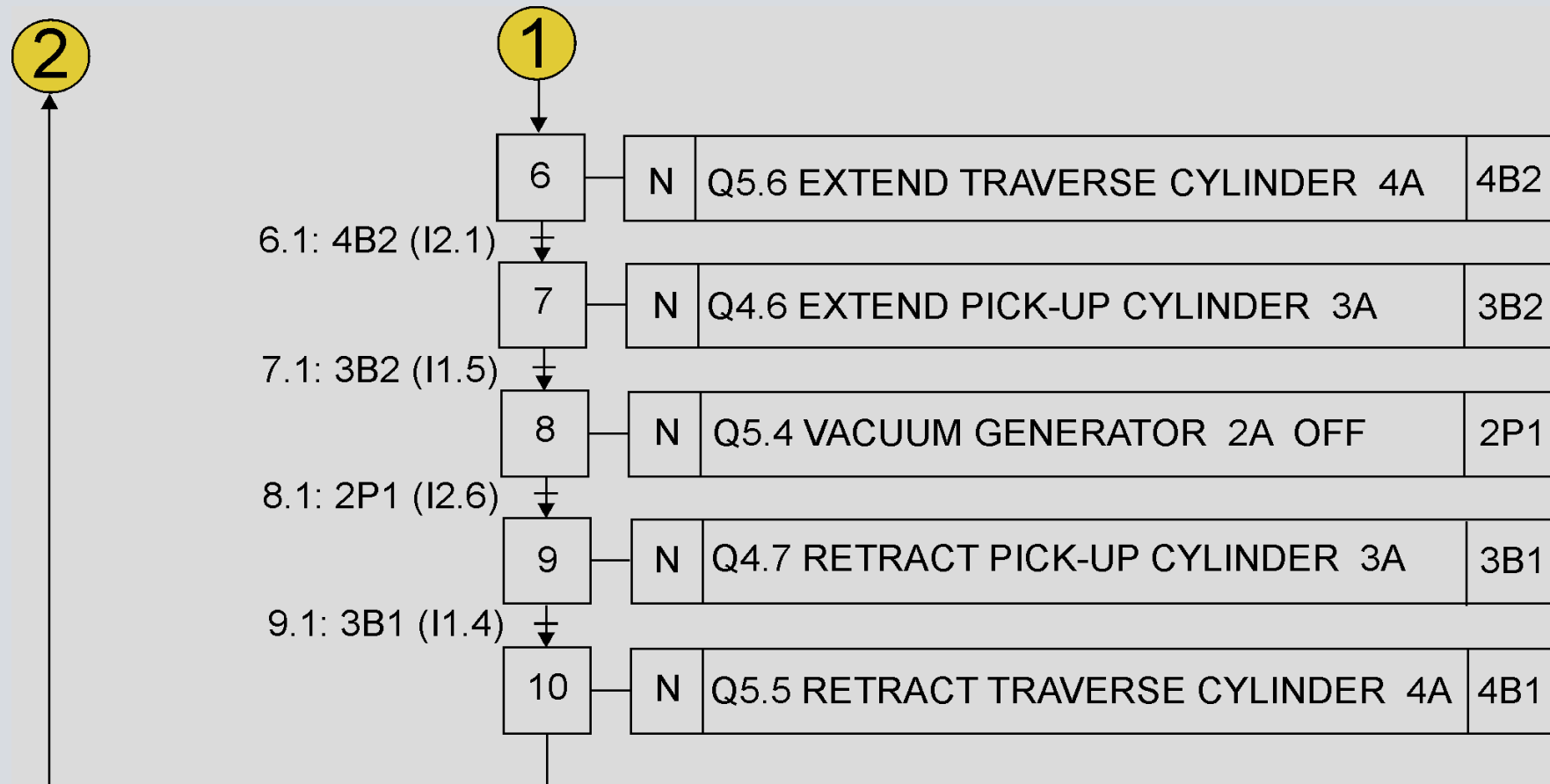


# FUNCTION CHART



# FUNCTION CHART

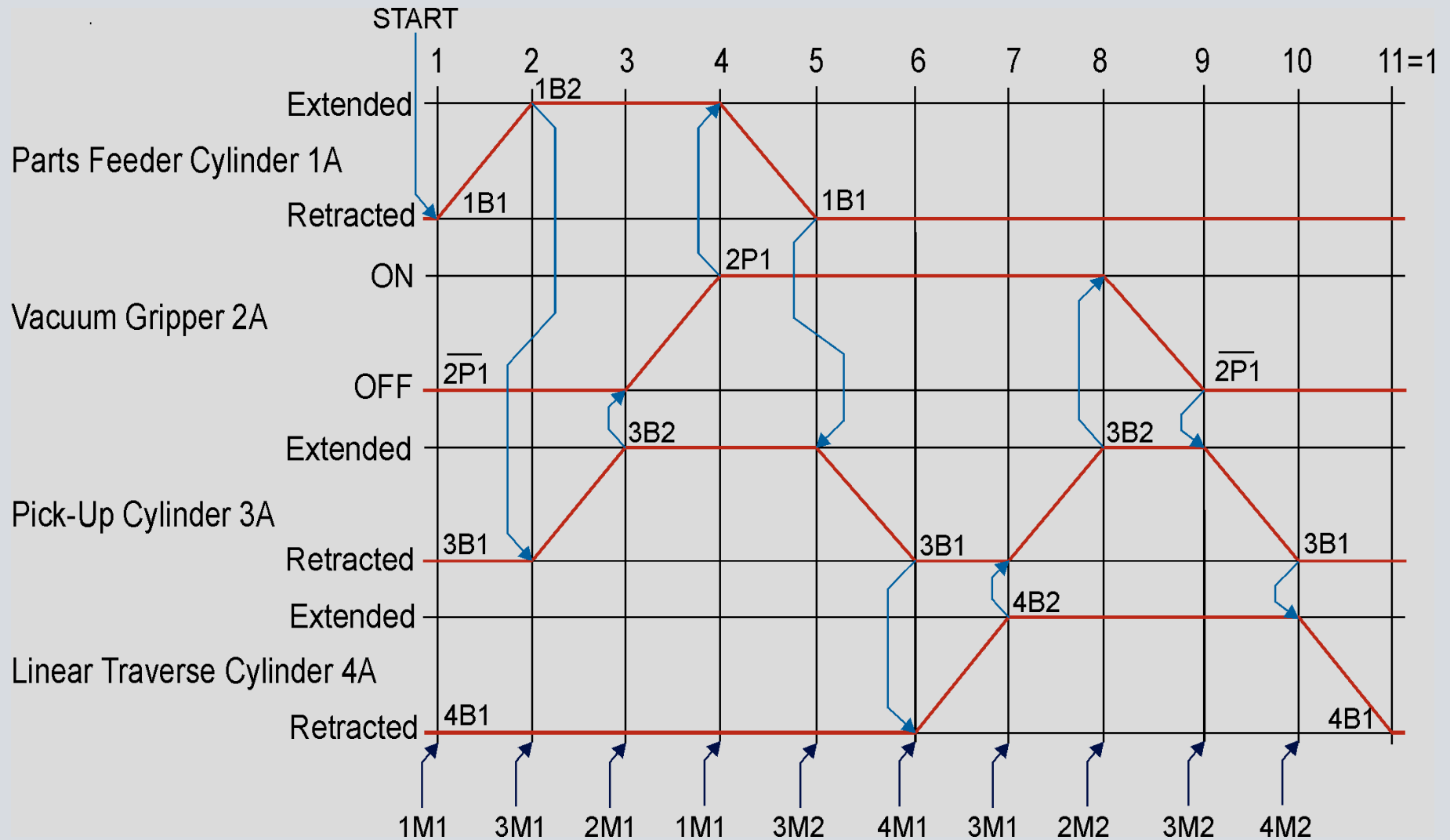
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Disadvantage: Movement pattern of the cylinder drives is not graphically represented.

# DISPLACEMENT-STEP DIAGRAM

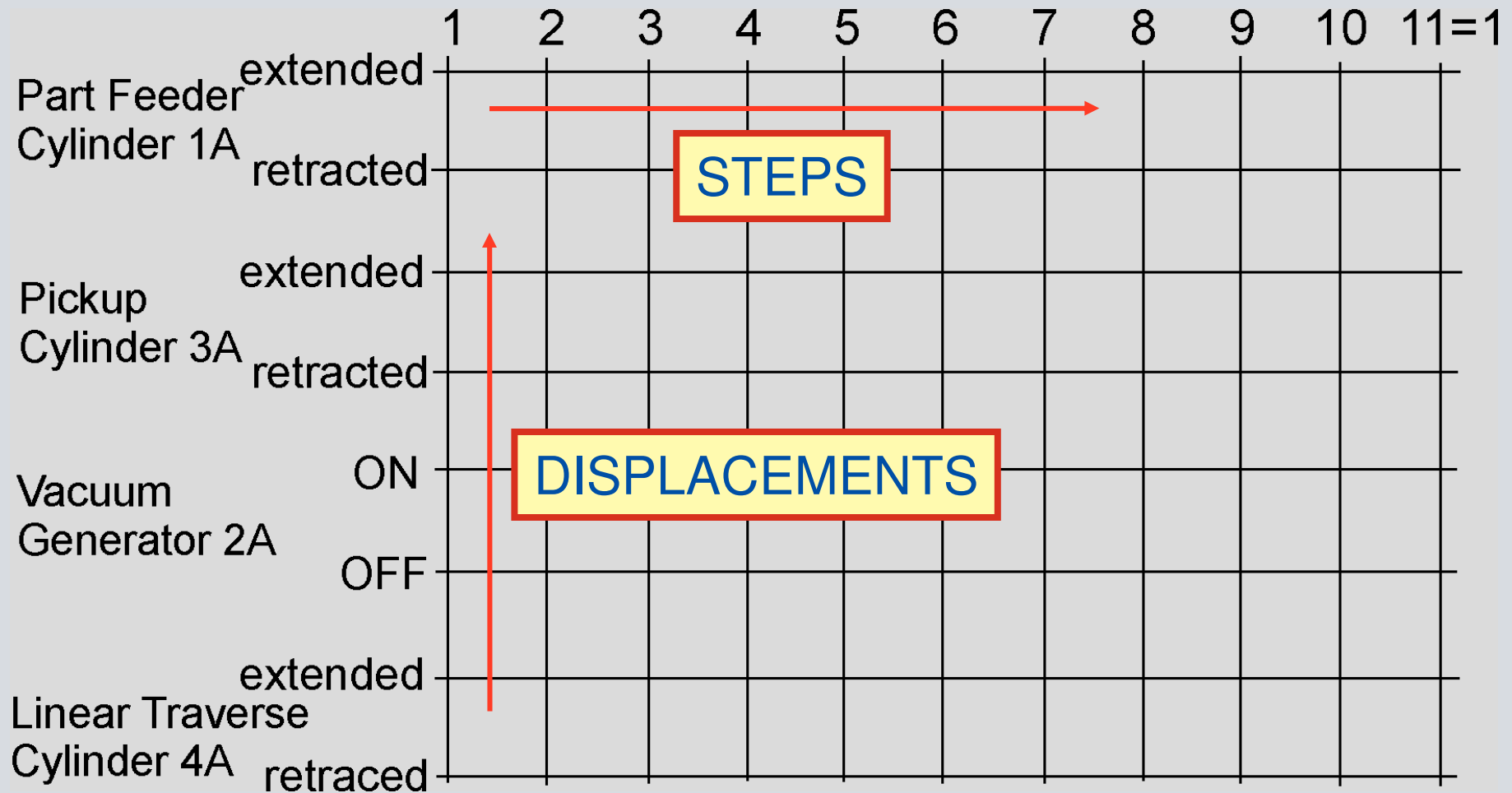
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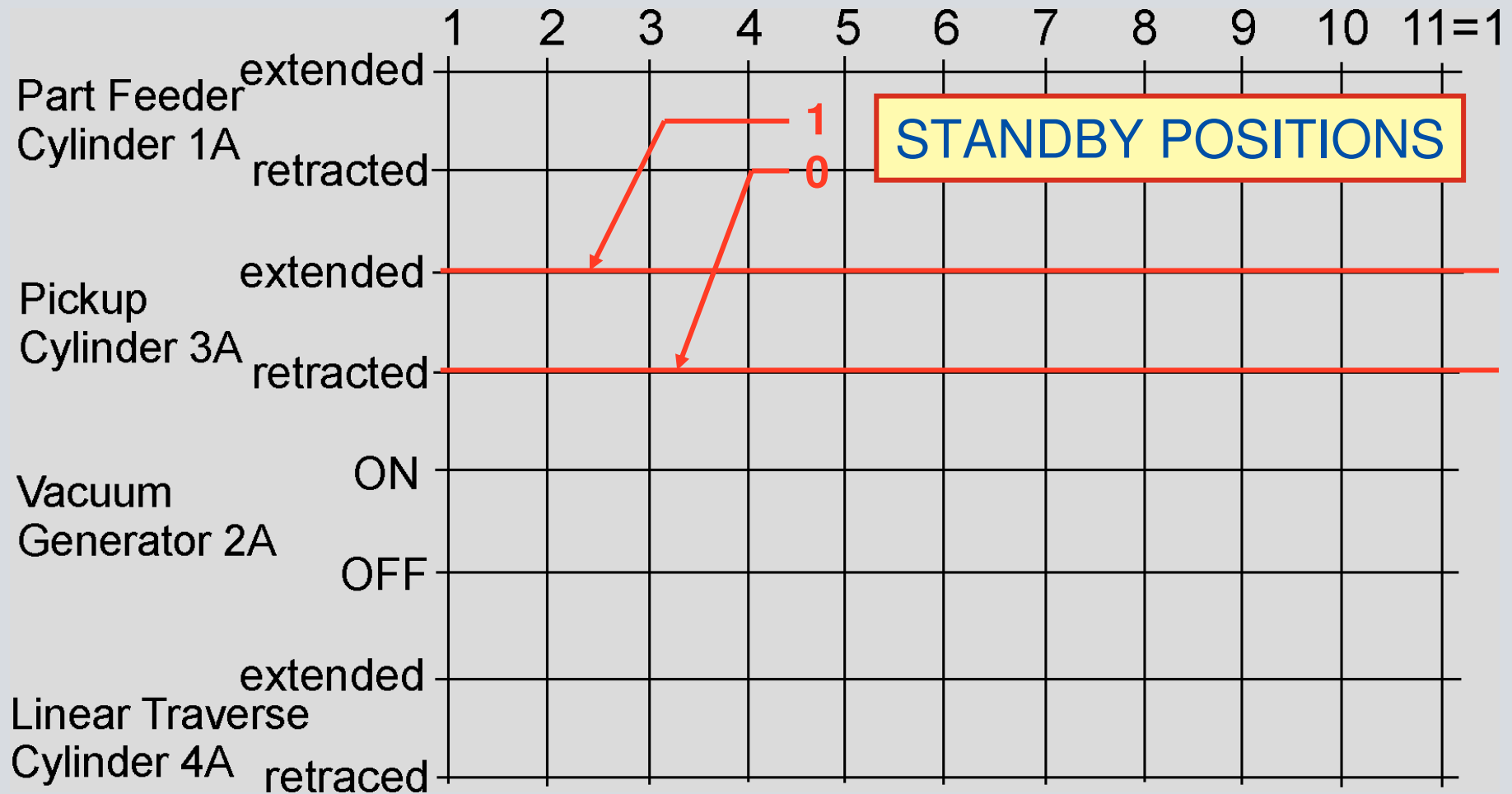
# DISPLACEMENT-STEP DIAGRAM

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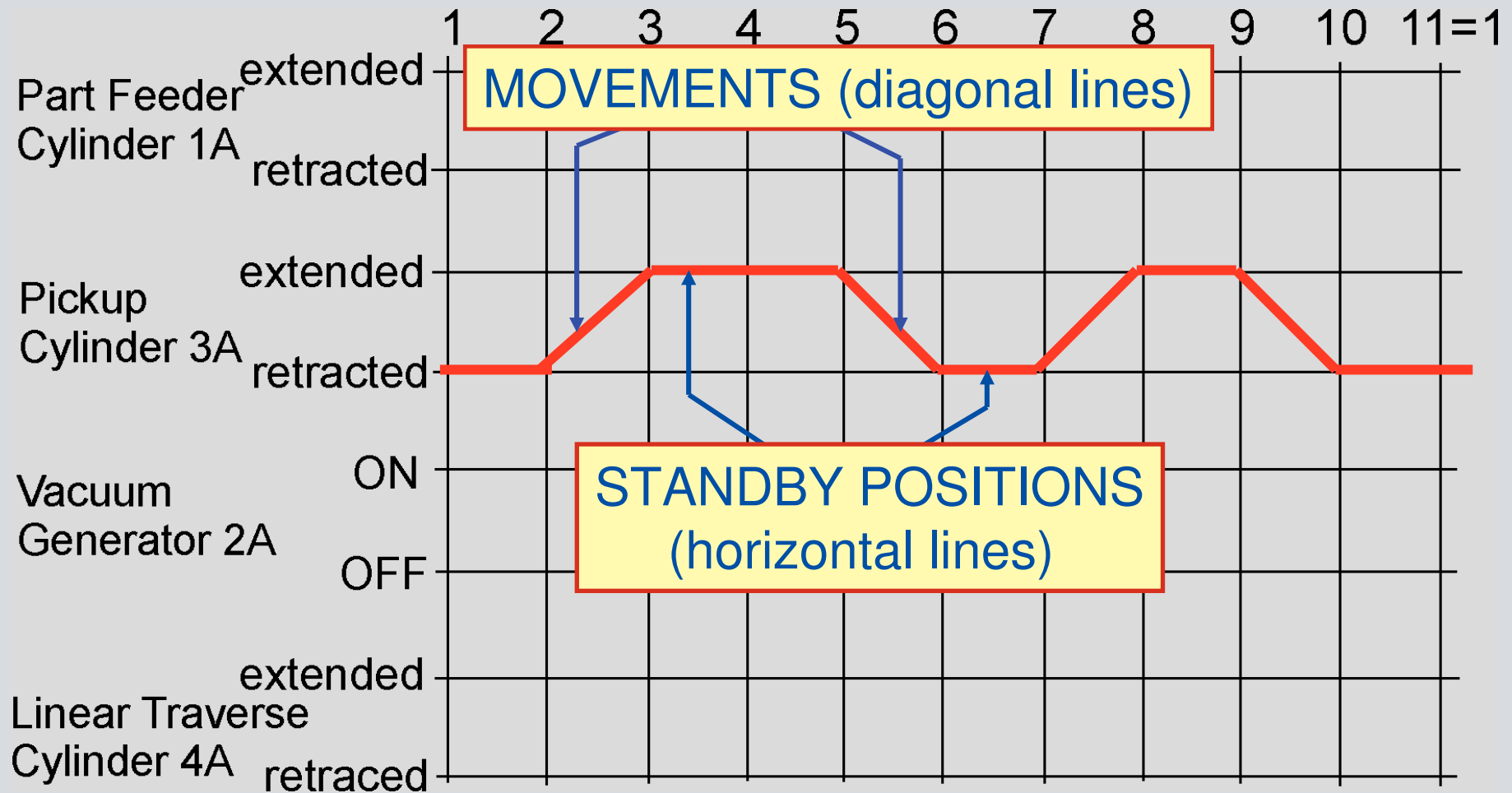
# DISPLACEMENT-STEP DIAGRAM

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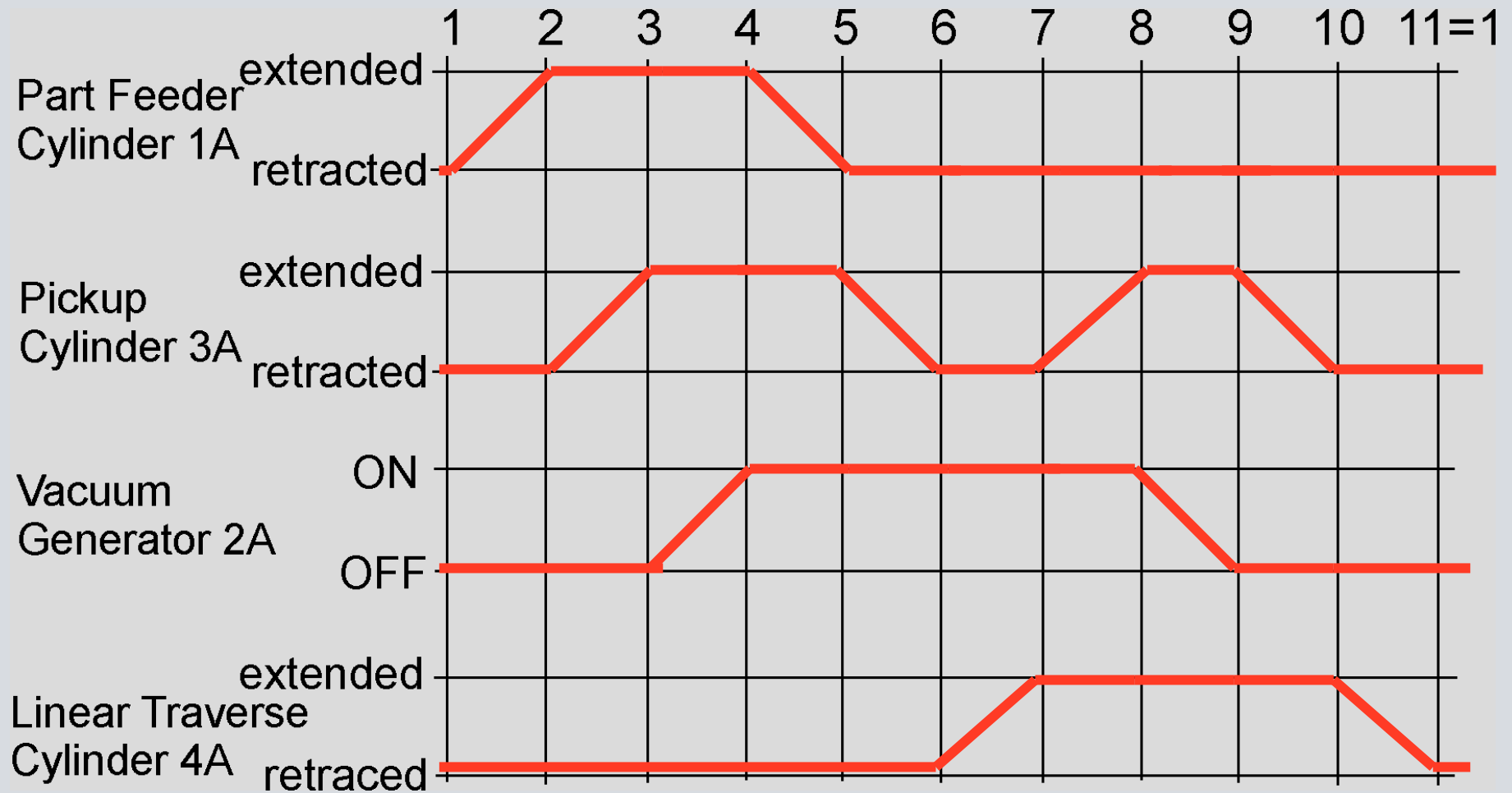
# DISPLACEMENT-STEP DIAGRAM

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# DISPLACEMENT-STEP DIAGRAM

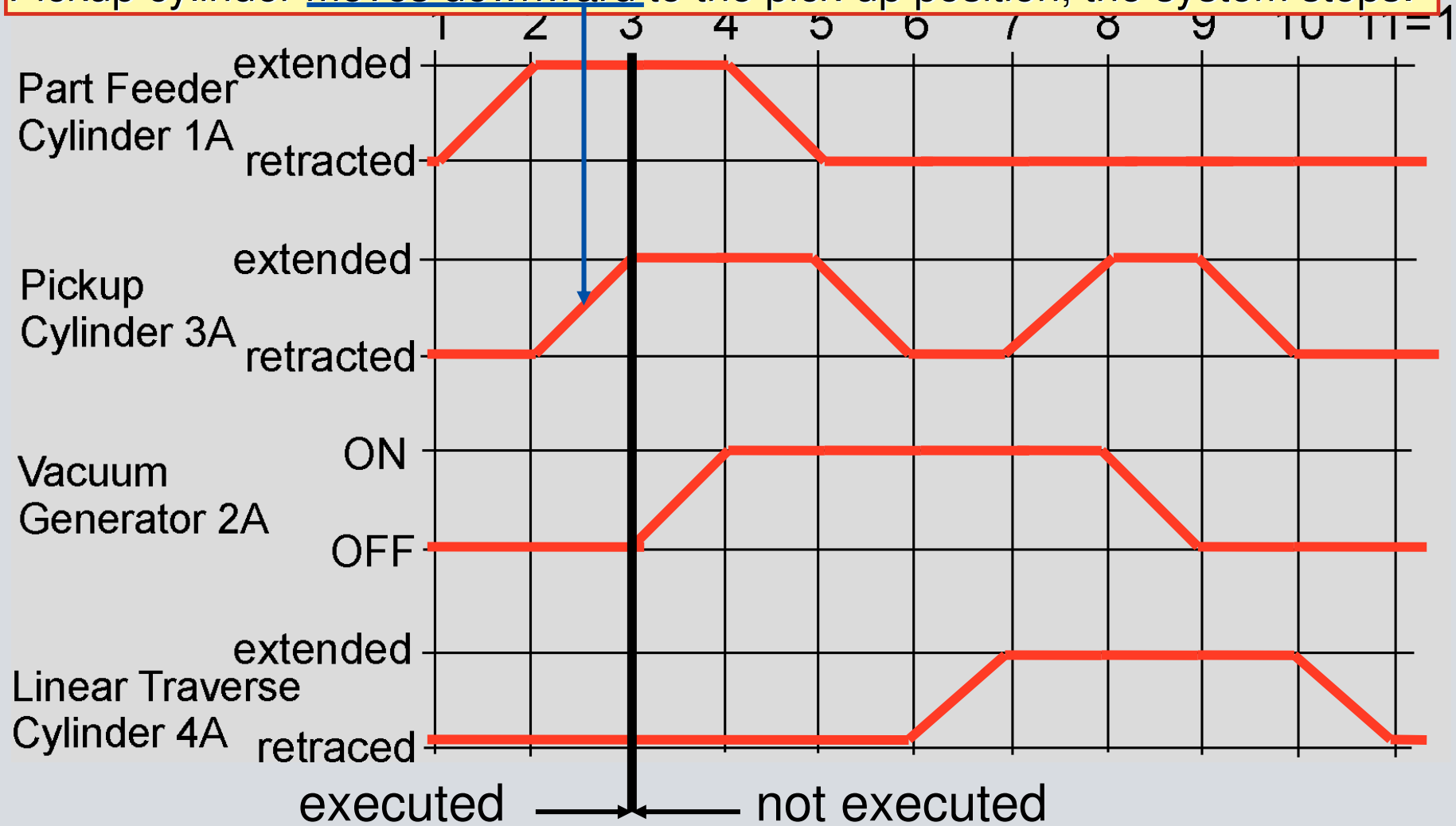
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# ERROR SITUATION

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Pickup cylinder moves downward to the pick-up position, the system stops.



# DISPLACEMENT-STEP DIAGRAM

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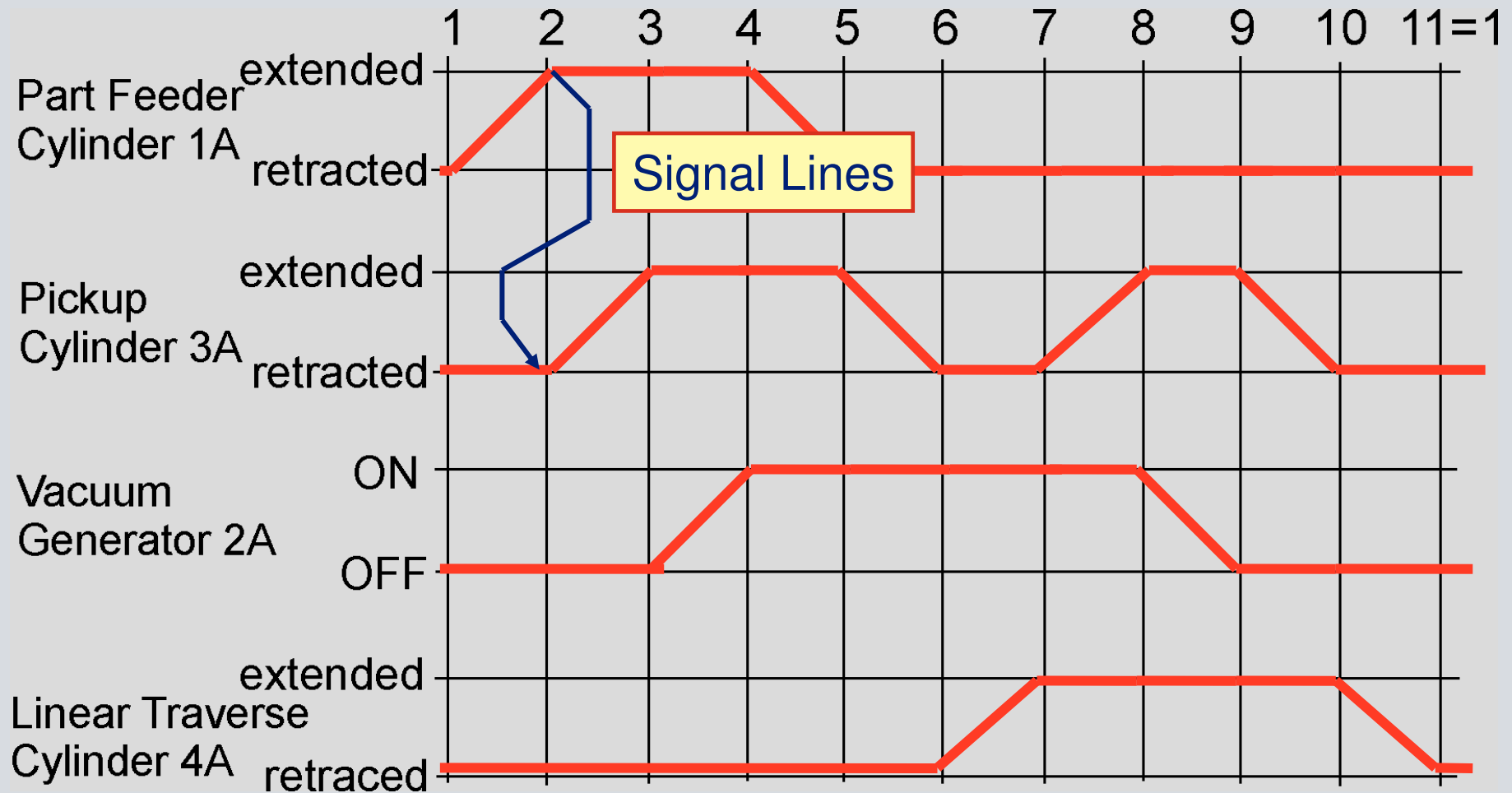
To run a specific system step, both a sensor and an actuator are involved.



Input or Output Error?

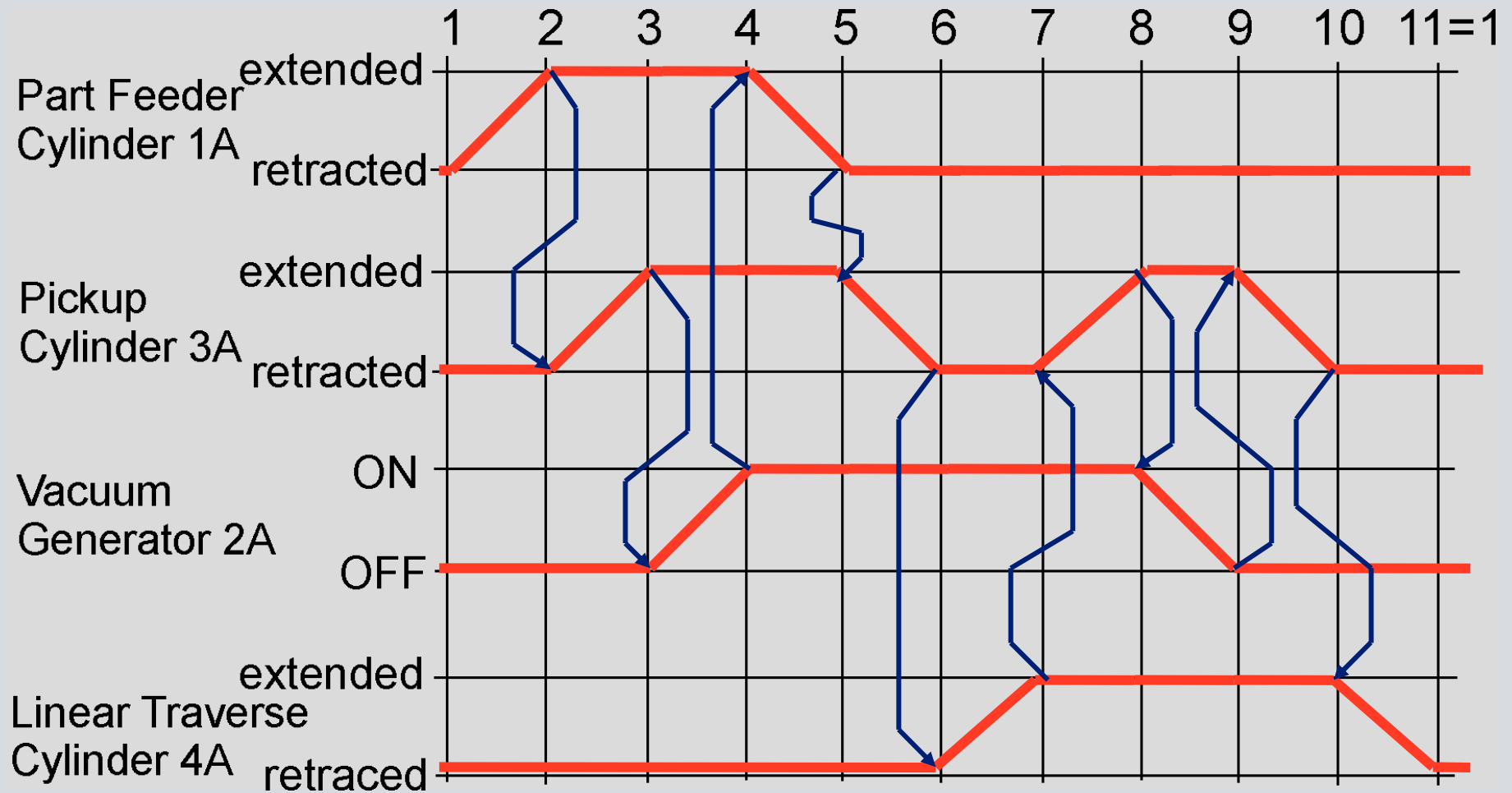
# DISPLACEMENT-STEP DIAGRAM

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# DISPLACEMENT-STEP DIAGRAM

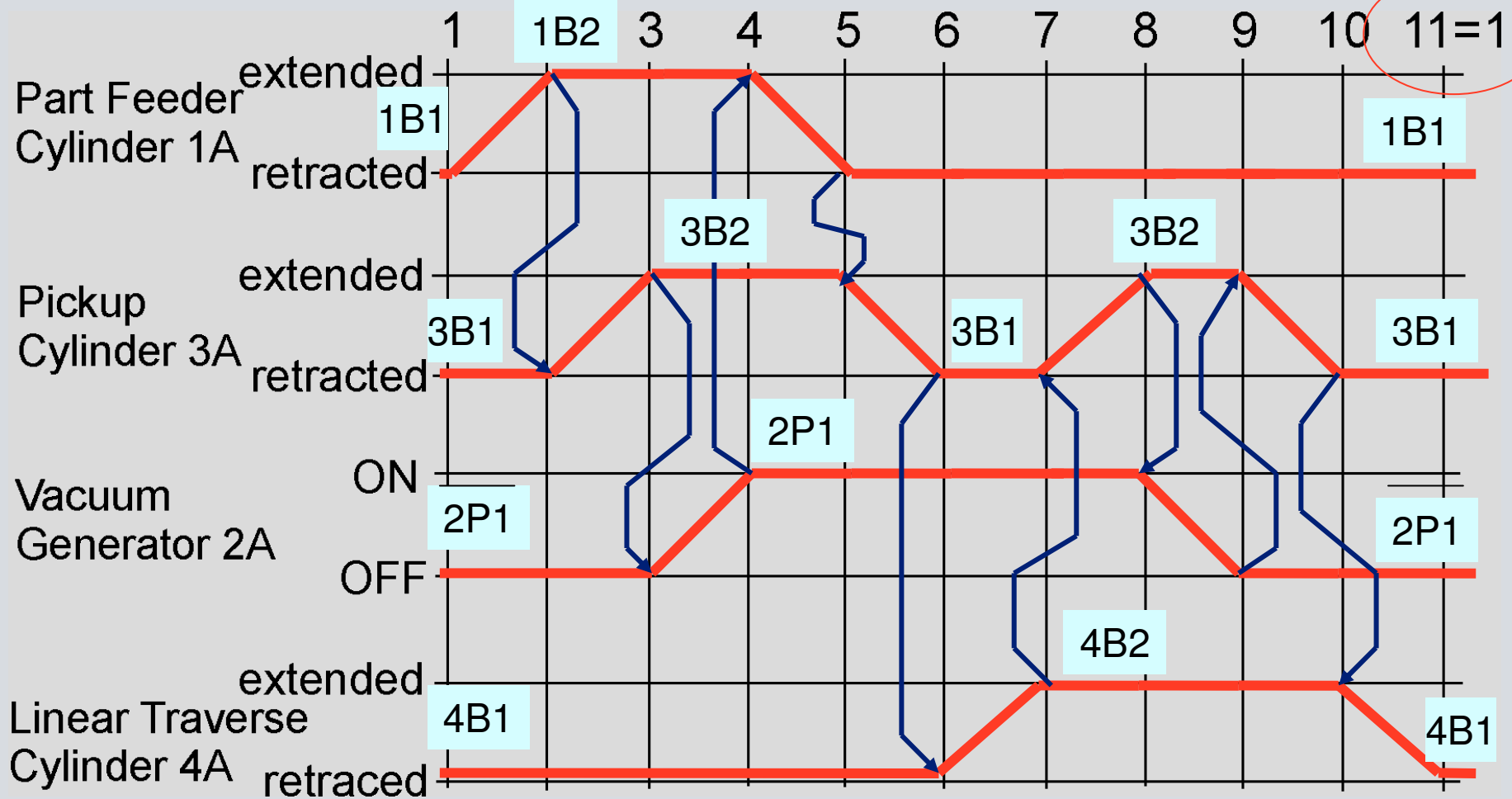
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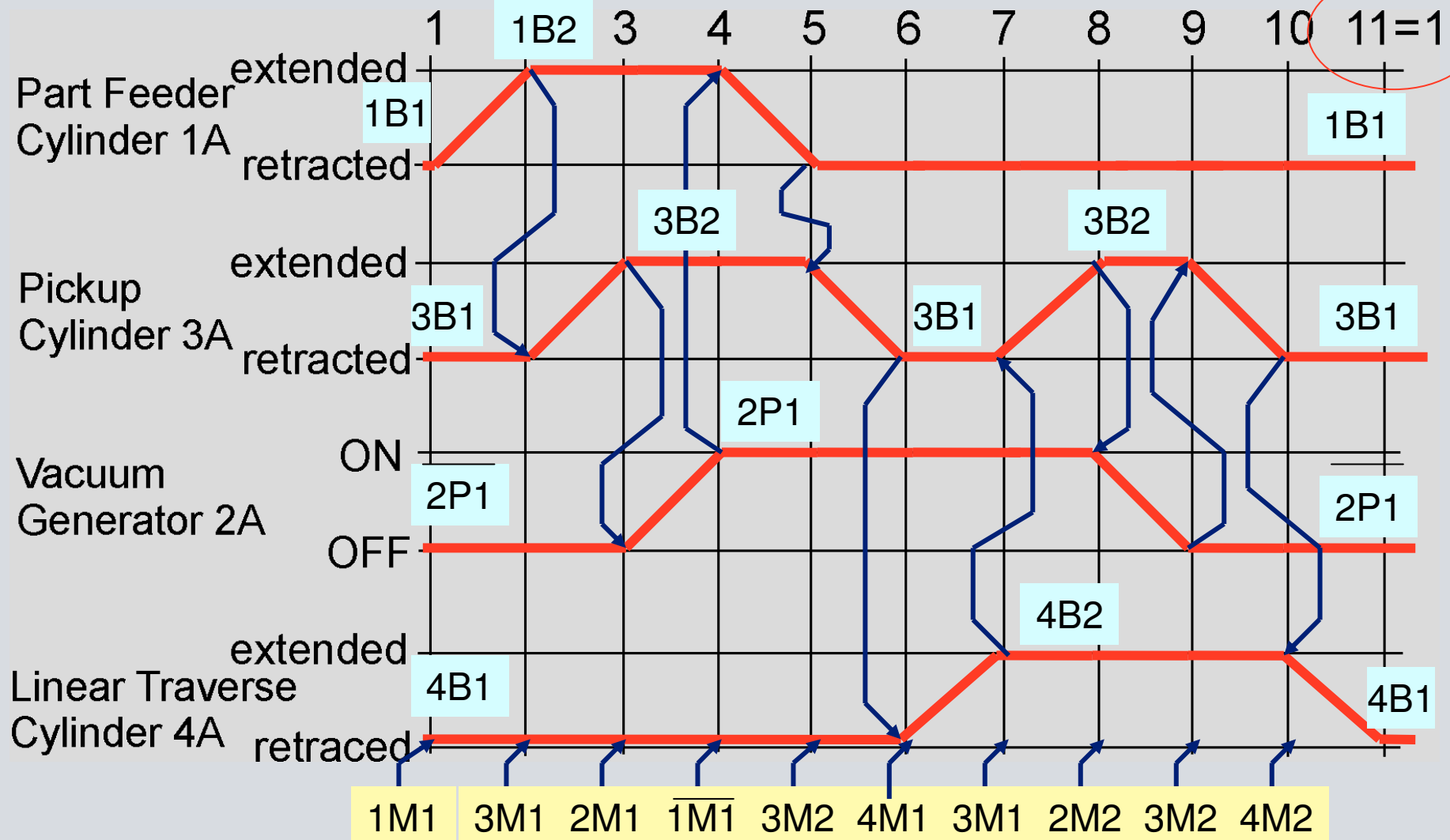
# DISPLACEMENT-STEP DIAGRAM

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# DISPLACEMENT-STEP DIAGRAM

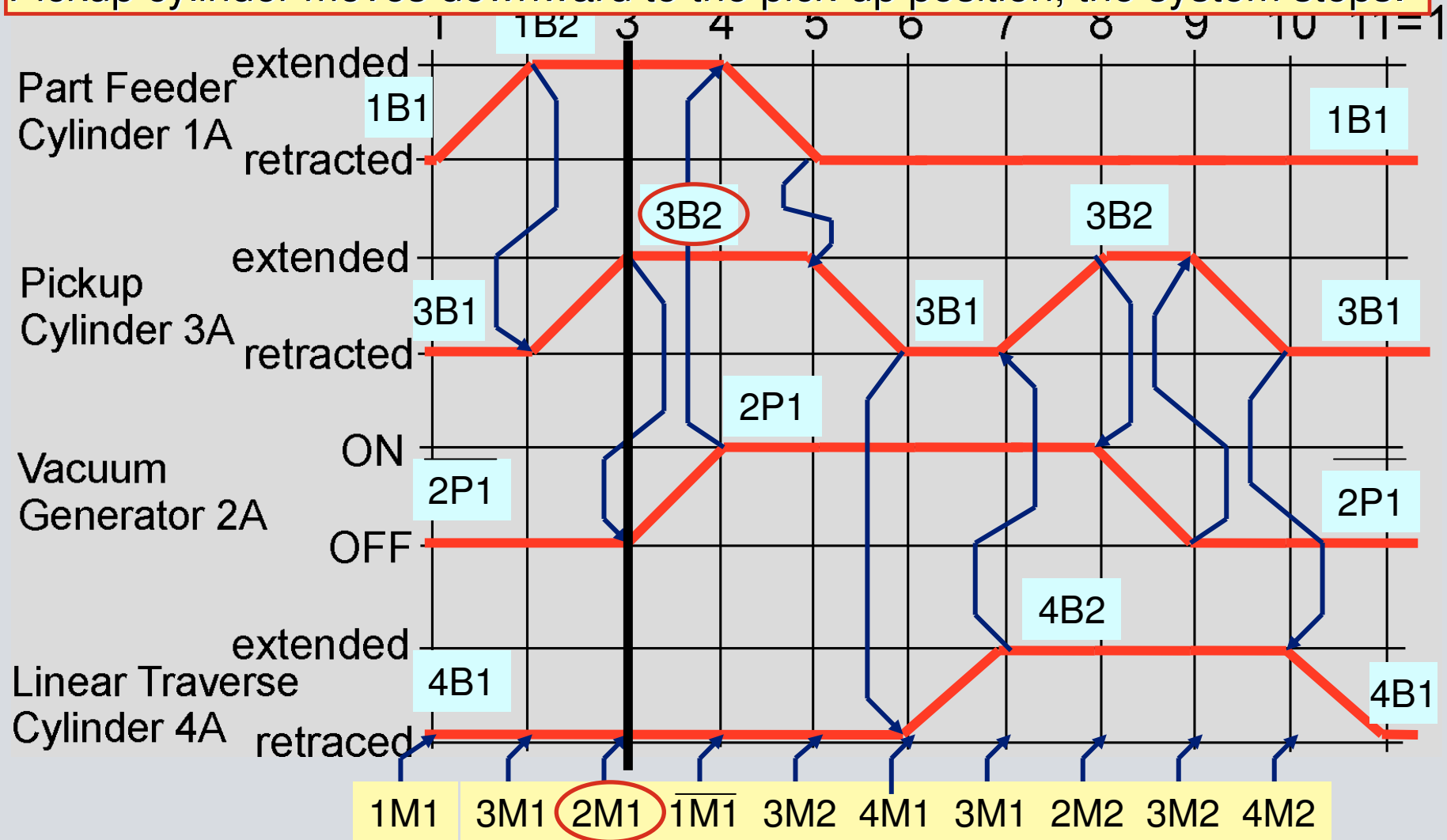
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# DISPLACEMENT-STEP DIAGRAM

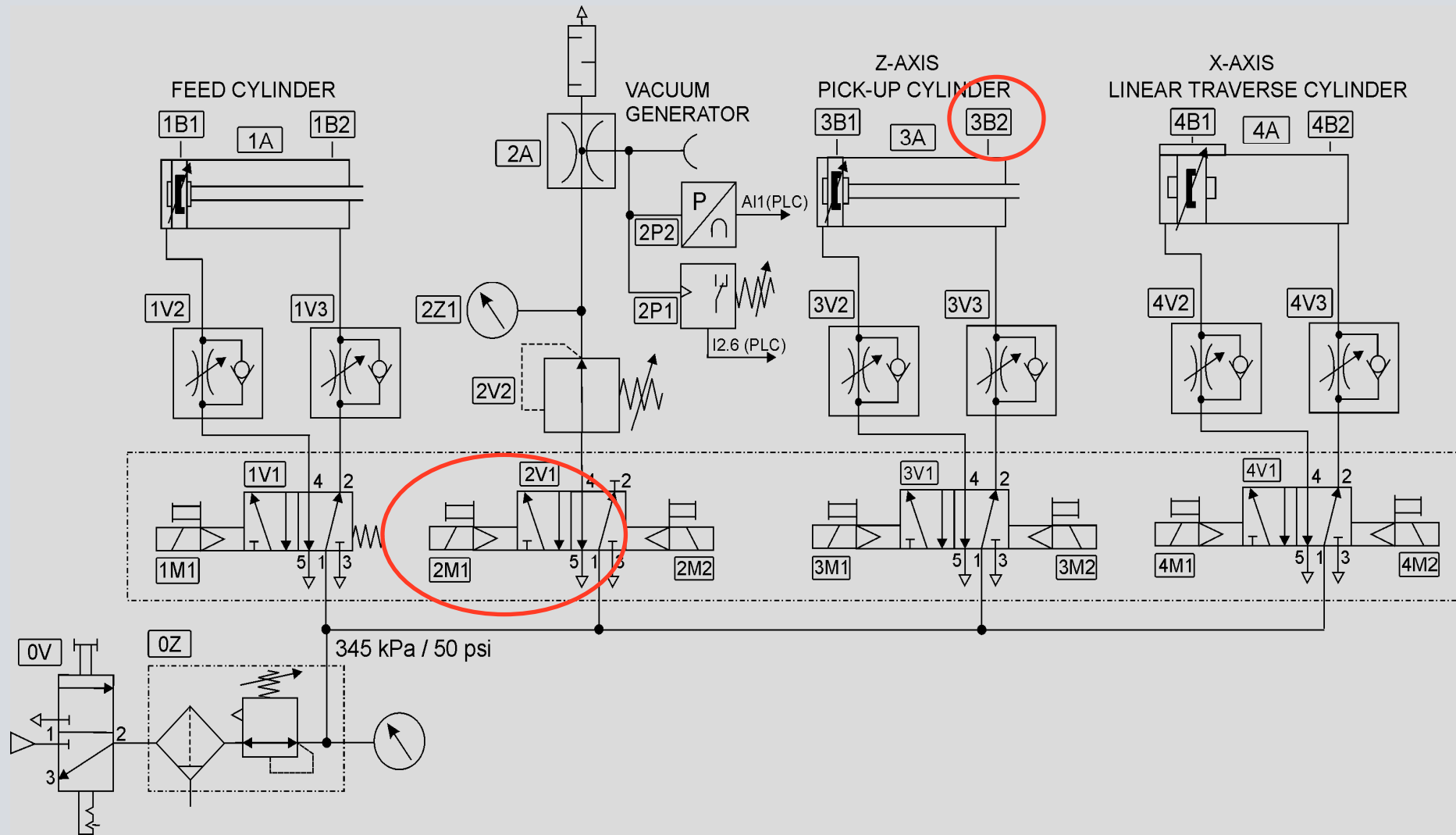
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Pickup cylinder moves downward to the pick-up position, the system stops.



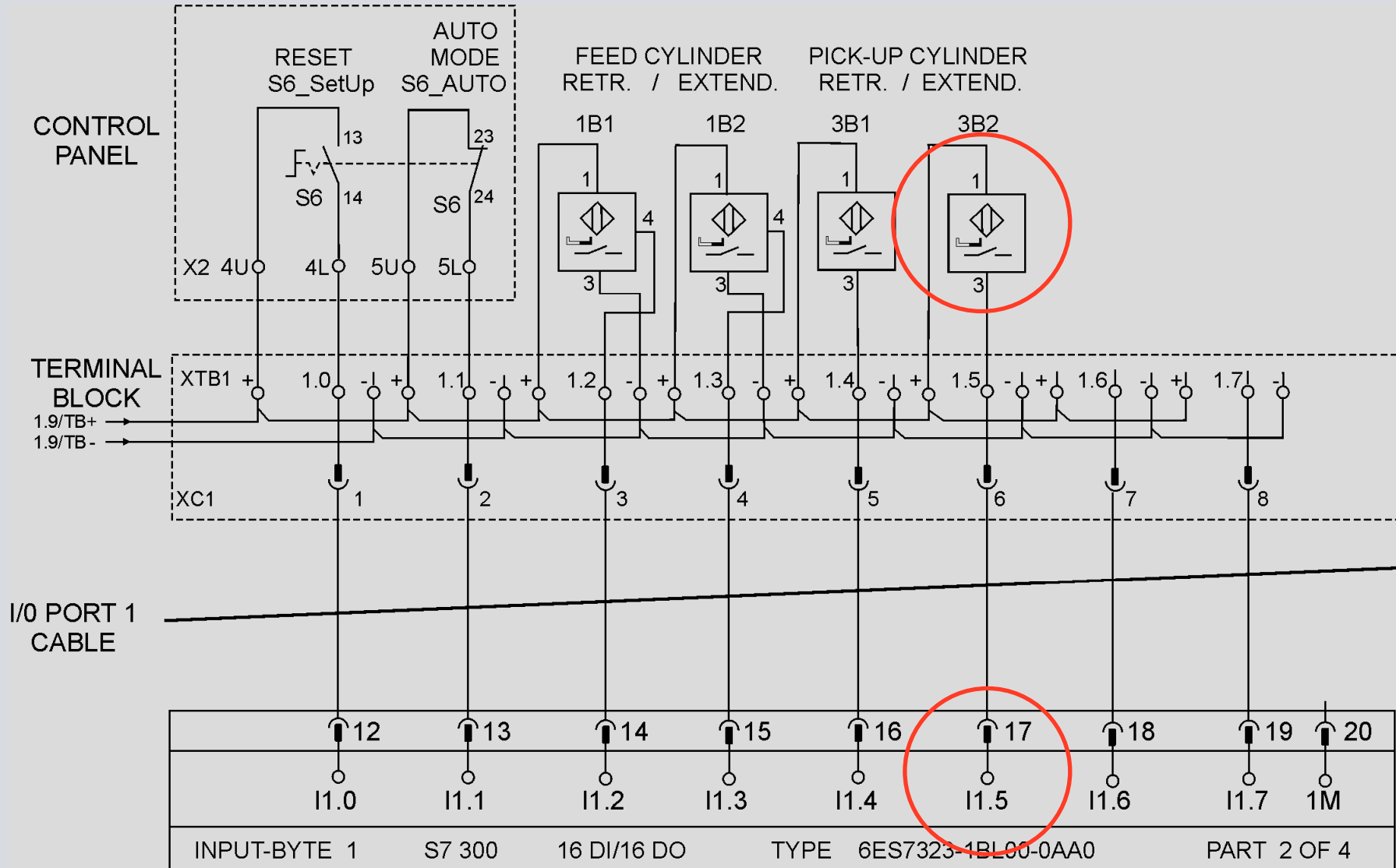
# PNEUMATIC CIRCUIT DIAGRAM

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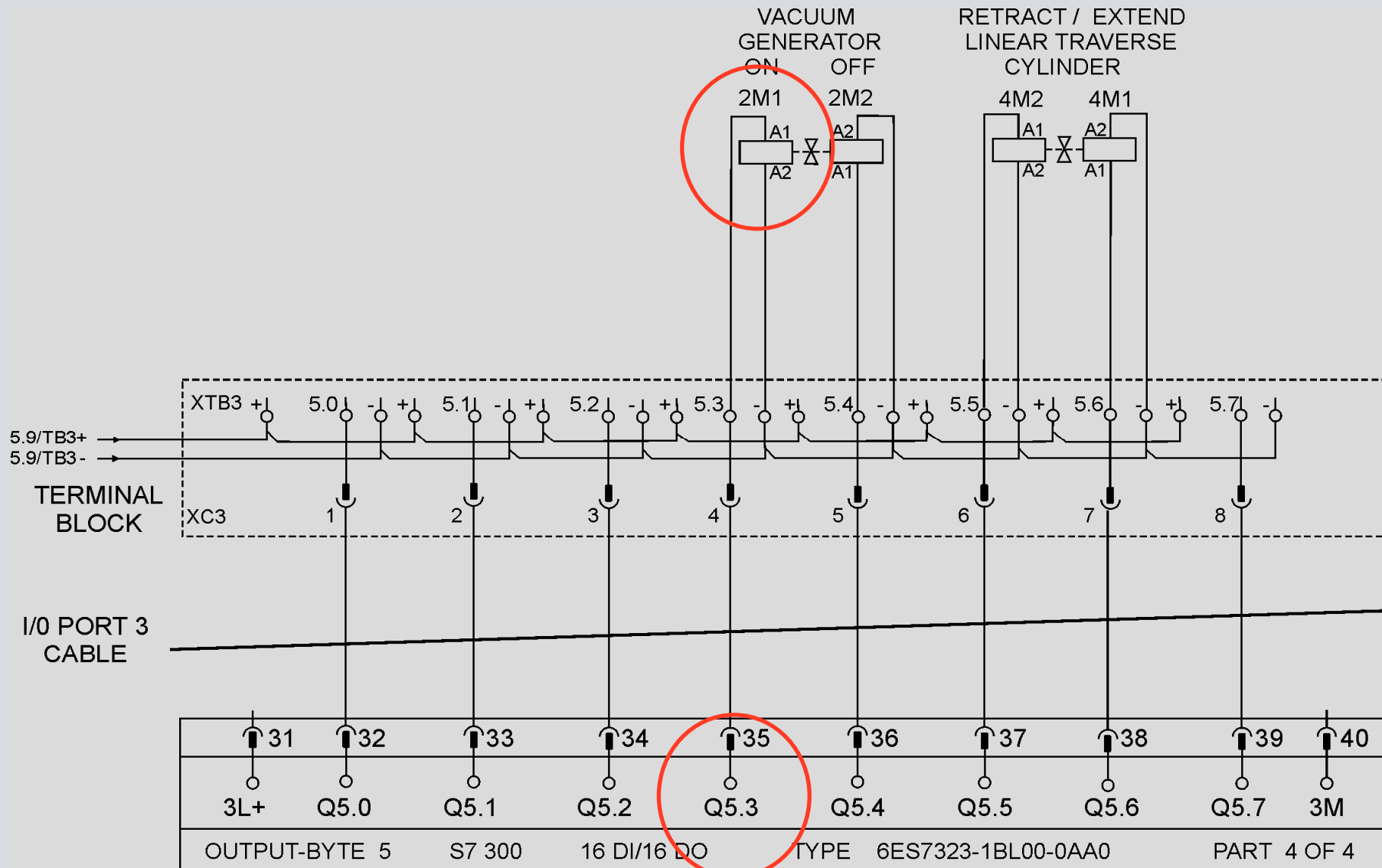
# WIRING DIAGRAM

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# WIRING DIAGRAM

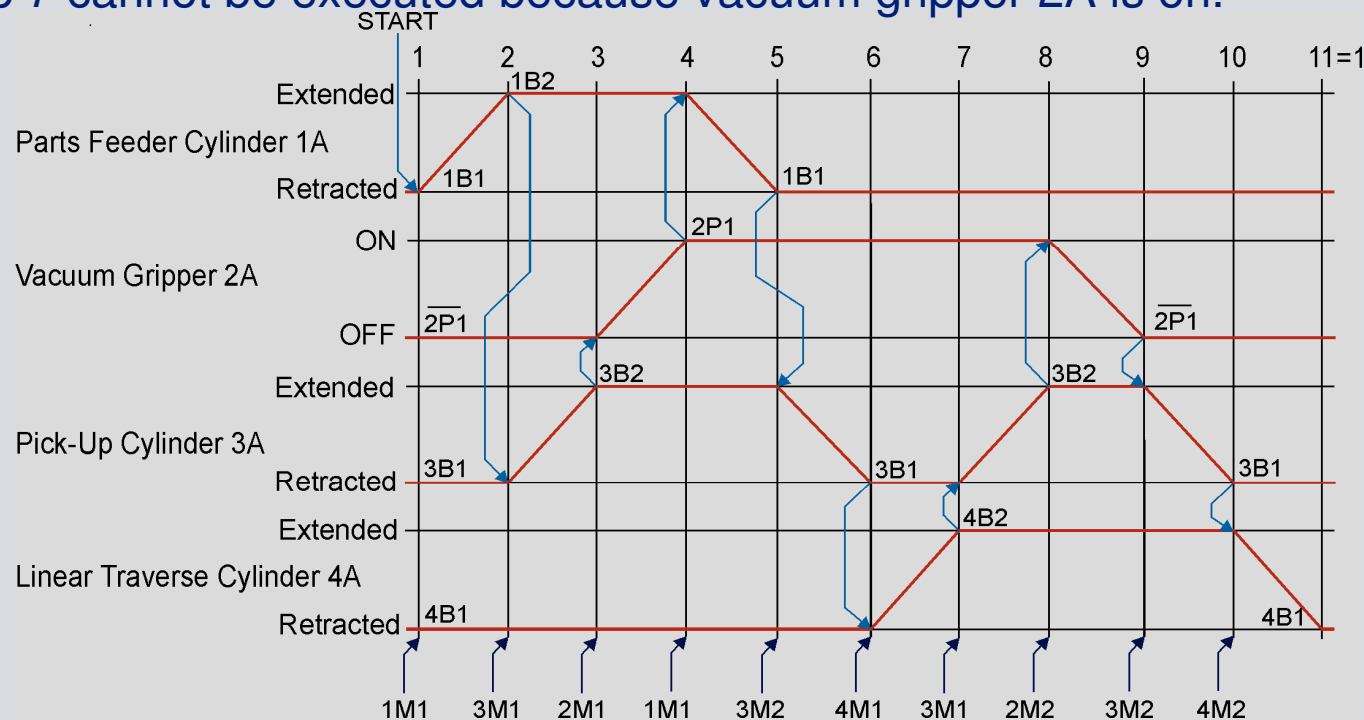
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# TEST QUESTION

A displacement-step diagram of a pick and place feeding station is shown below. The linear traverse cylinder 4A extends and then the system stops. Which statement about the error situation is correct?

- A The system does not execute step 6.
- B Sensor 4B2 is not triggered to execute the next step.
- C Solenoid 4M1 must be energized to execute step 7.
- D Step 7 cannot be executed because vacuum gripper 2A is on.



# TEST QUESTION

A displacement-step diagram of a gauging station is shown below. The transfer cylinder 1A extends but does not retract. Which of the following components is possibly involved in this error situation?

- A Sensor 1B1
- B Sensor 1B2
- C Limit switch 4S2
- D Sensor 3B1
- E Limit switch 4S1

