

Main_Program [OB1]

Main_Program Properties

General

Name	Main_Program	Number	1	Type	OB
Language	LAD	Numbering	Manual		

Information

Title	SP7-16	Author		Comment	
Family		Version	0.1	User-defined ID	

Name	Data type	Default value
▼ Temp		
OB1_EV_CLASS	Byte	
OB1_SCAN_1	Byte	
OB1_PRIORITY	Byte	
OB1_OB_NUMBR	Byte	
OB1_RESERVED_1	Byte	
OB1_RESERVED_2	Byte	
OB1_PREV_CYCLE	Int	
OB1_MIN_CYCLE	Int	
OB1_MAX_CYCLE	Int	
OB1_DATE_TIME	Date_And_Time	
Constant		

Network 1: SP7-16

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SP7-16 Part Height Sorter Control with Parallel Branching

Additional internal memory:

Tag Address

Step_1 to Step_11 M0.1 to M1.3 BOOL Step-in-progress bits

Down_Tmr DB1 TON_SFB Times lowering of measuring ram

Bin1_Tmr DB3 TON_SFB Times eject pulse for bin 1

Bin2_Tmr DB4 TON_SFB Times eject pulse for bin 2

Bin3_Tmr DB5 TON_SFB Times eject pulse for bin 3

Bin4_Tmr DB6 TON_SFB Times eject pulse for bin 4

LVDT_Val MD116 REAL LVDT measurement in mm

Height_60 M20.0 BOOL Height in range of 56 - 64

Height_75 M20.1 BOOL Height in range of 71 - 79

Height_90 M20.2 BOOL Height in range of 86 - 94

Height_Other M20.3 BOOL Height in range not one of above

Tmpl MW118 INT Temporary integer

TmpDI MD120 DINT Temporary double integer

TmpR MD124 REAL Temporary real

Ret_Val MW12 WORD Return value from SCALE block

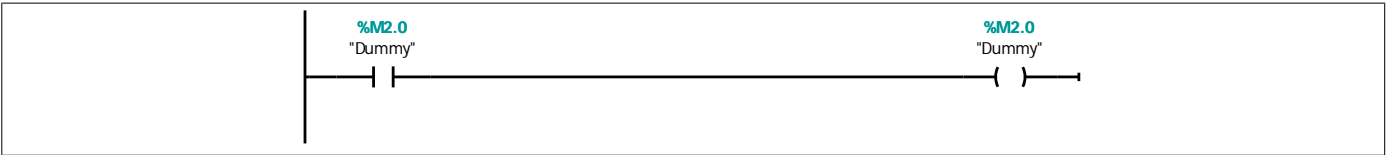
Always_Off M10.0 BOOL Always off bit for SCALE block

Conversion formulas:

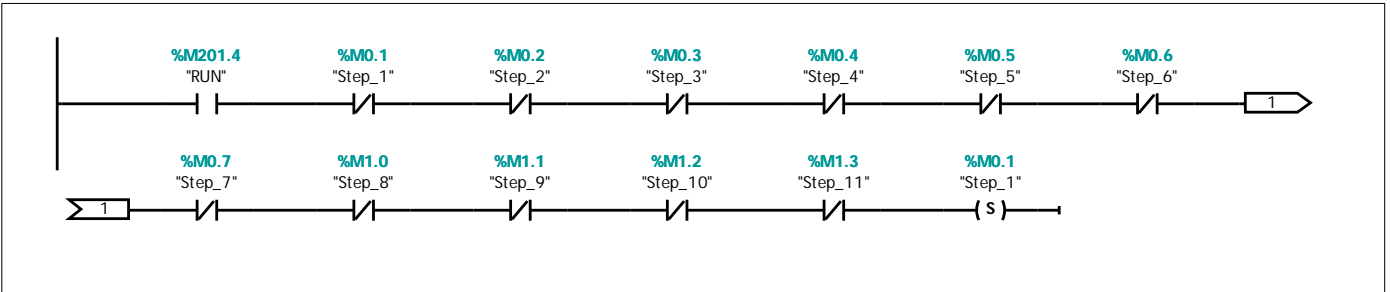
$$UX1_VAL = (UX1_MEAS - 5530) / 22118.0 * (100.0 - 15.0) + 15.0$$

$$LVDT_VAL = (HGT_MEAS - 5530) / 22118.0 * (100.0)$$

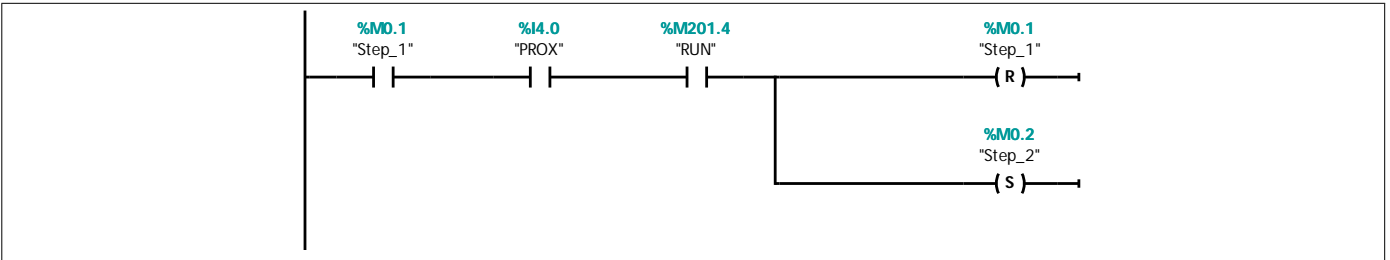
$$HGT_VAL = 150 - LVDT_VAL \text{ (calculated on transition from Step_2 to Step_3)}$$



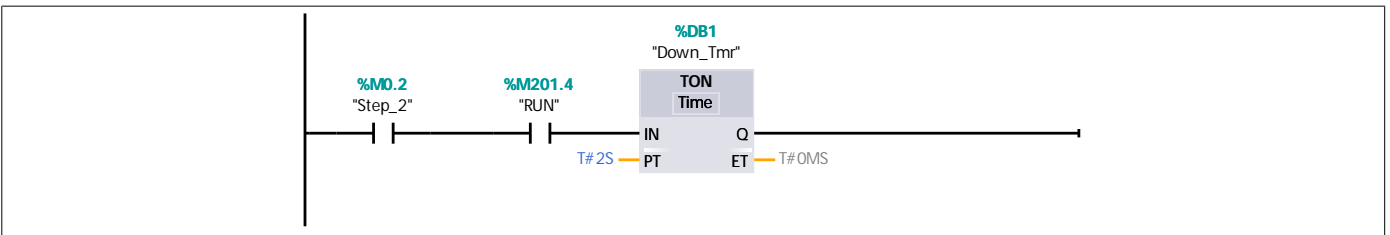
Network 2: Initial Start



Network 3: Step 1 Wait for piece

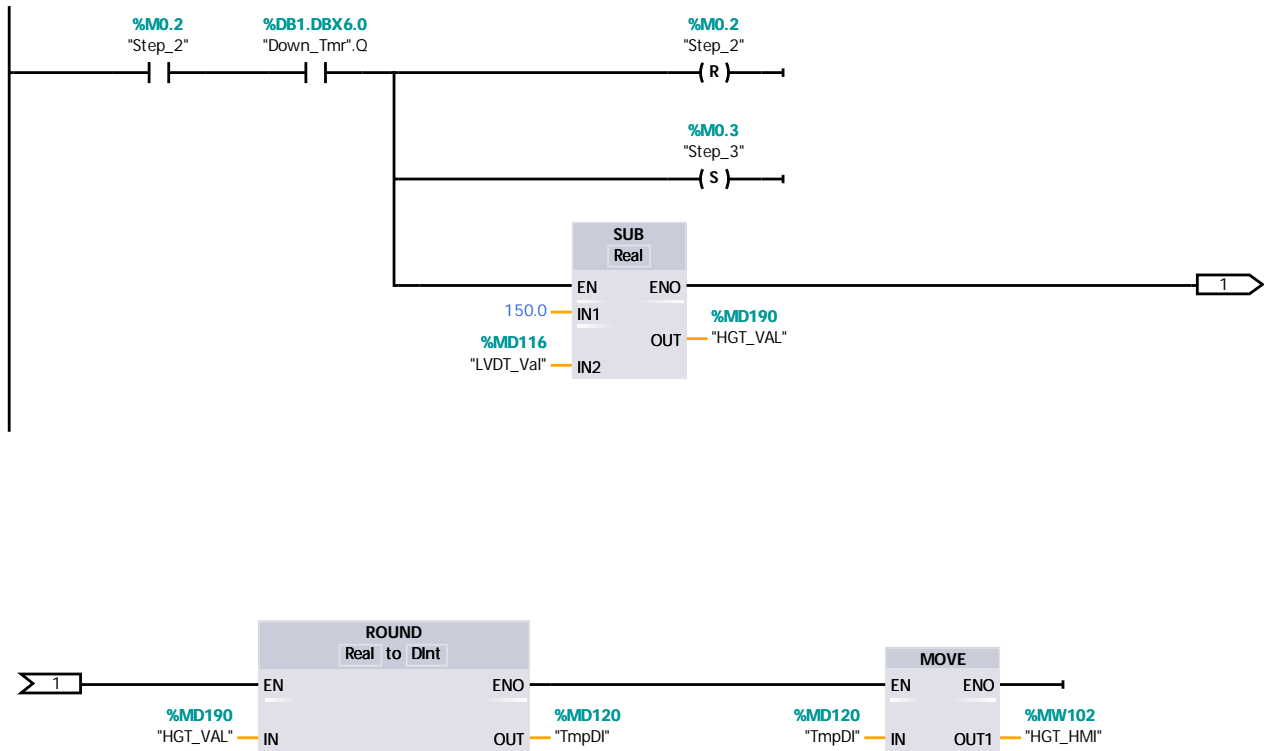


Network 4: Step 2 timer

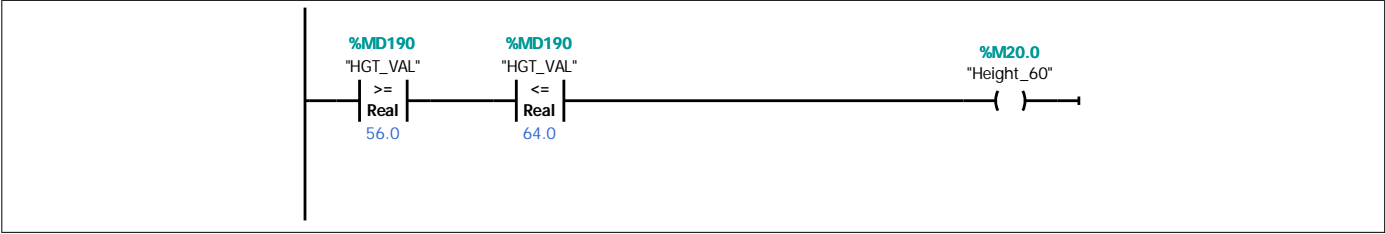


Network 5: Step 2 Move down

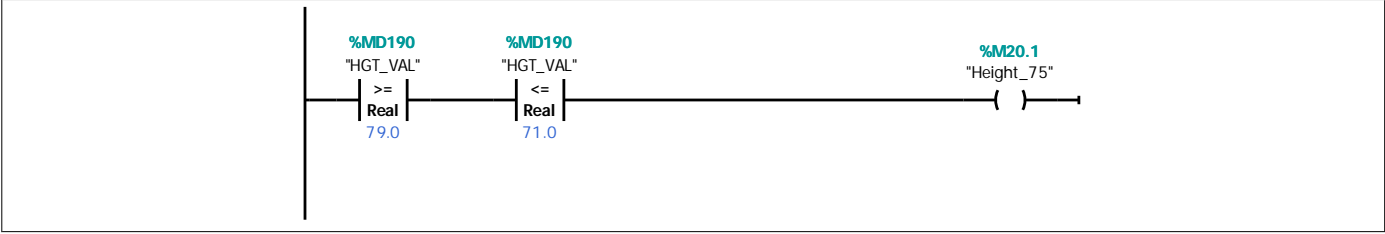
Measure height on transition.
Also convert to integer for display.



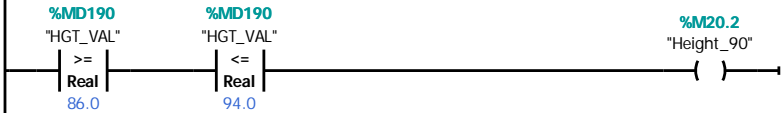
Network 6: Size range for 60 mm part



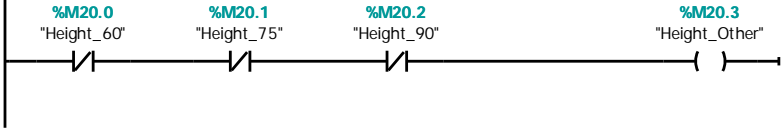
Network 7: Size range for 75 mm part



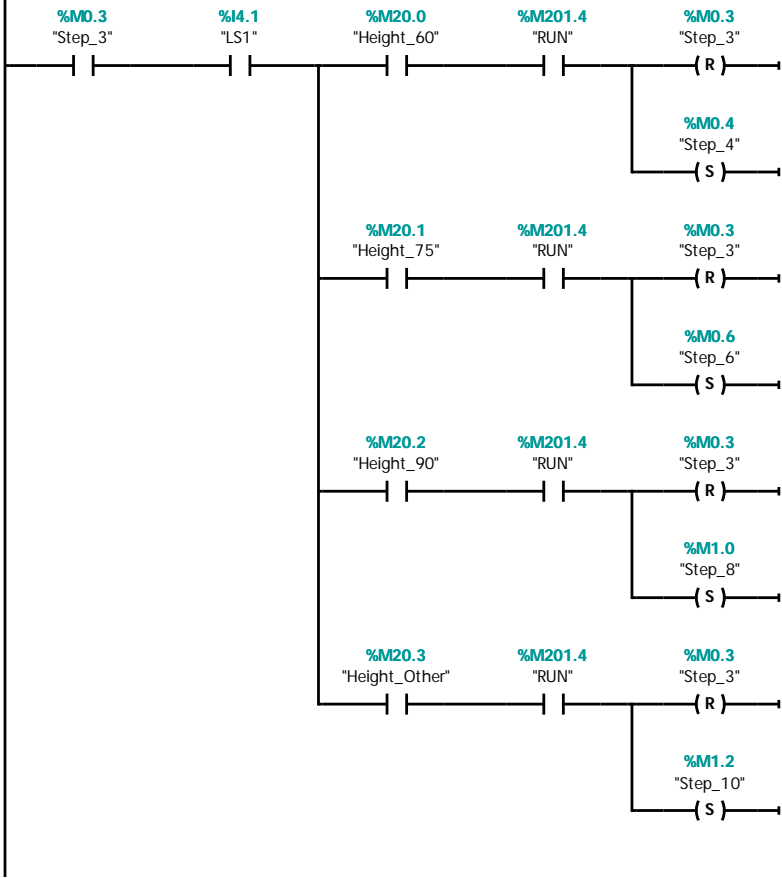
Network 8: Size range for 90 mm part



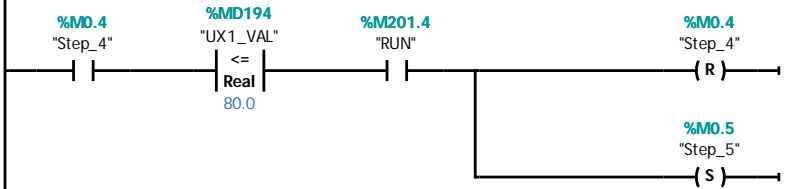
Network 9: Height not in one of above ranges



Network 10: Step 3 Move up



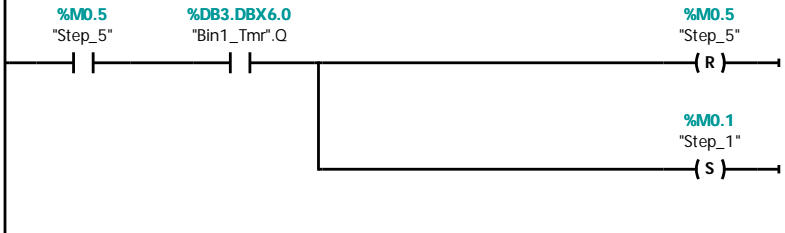
Network 11: Step 4 - Move to bin 1 eject position



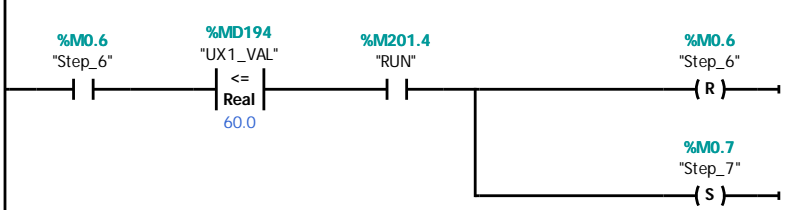
Network 12: Step 5 timer



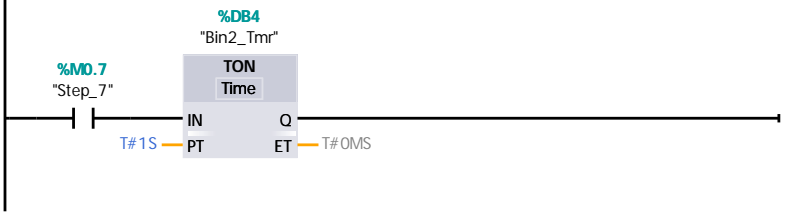
Network 13: Step 5 Eject part into bin 1



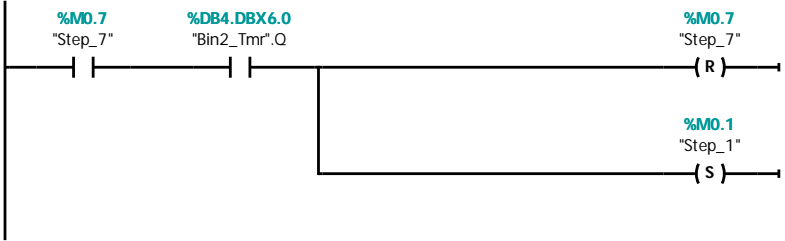
Network 14: Step 6 - Move to bin 2 eject position



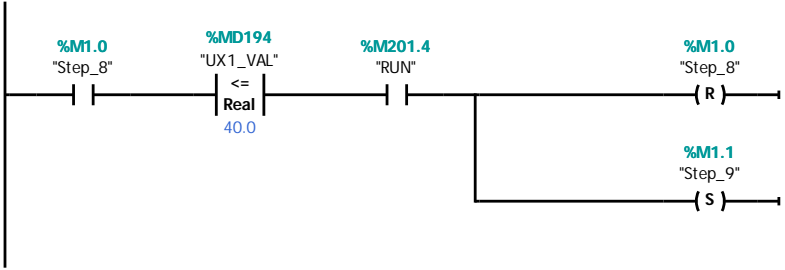
Network 15: Step 7 timer



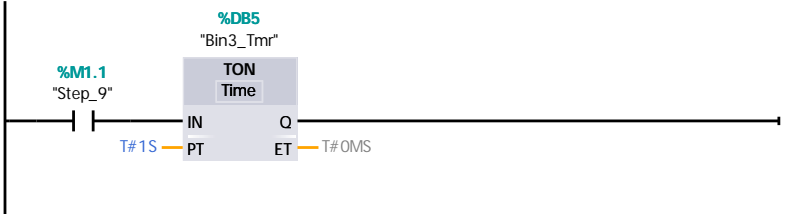
Network 16: Step 7 Eject part into bin 2



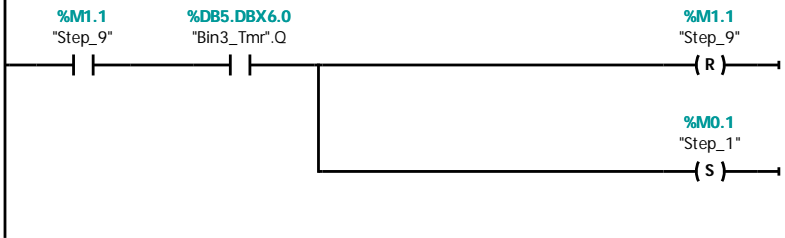
Network 17: Step 8 - Move to bin 3 eject position



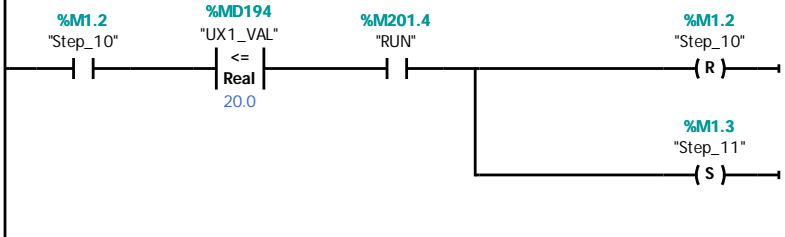
Network 18: Step 9 timer



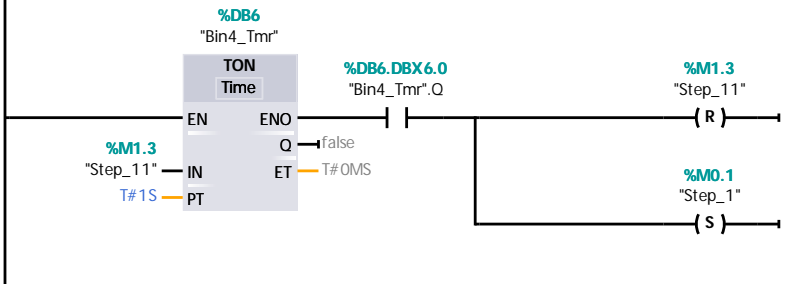
Network 19: Step 9 Eject part into bin 3



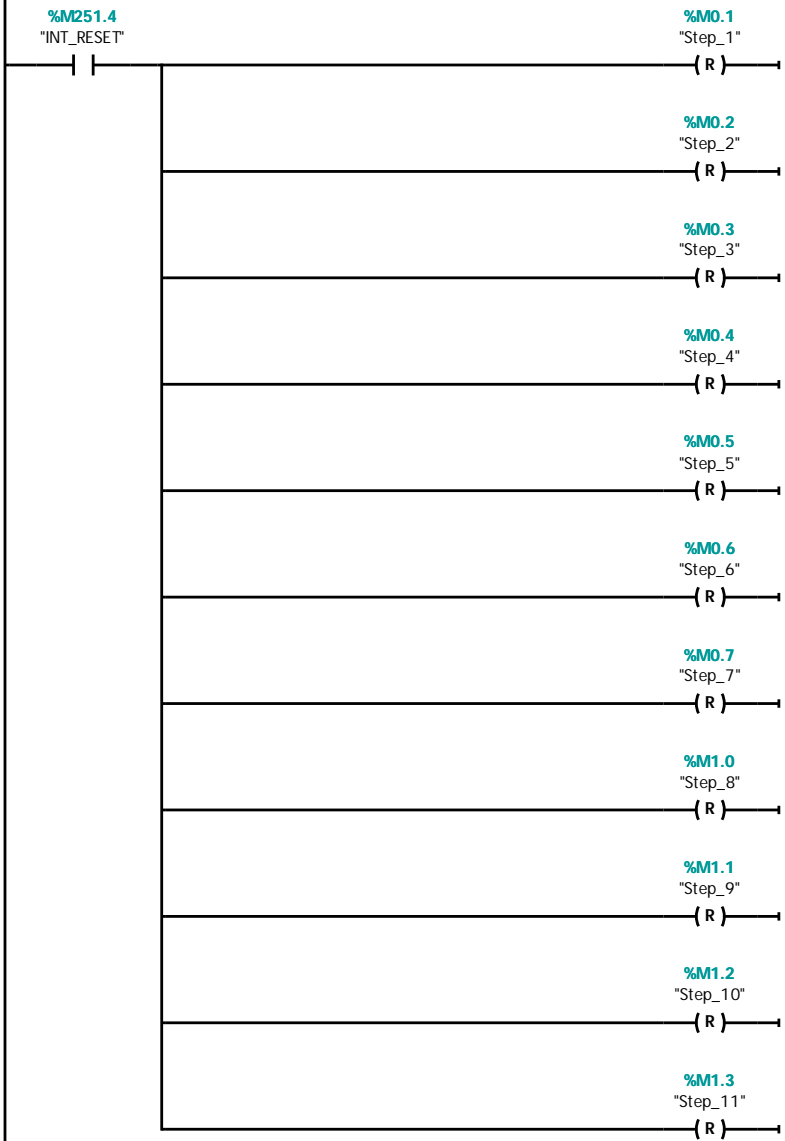
Network 20: Step 10 - Move to bin 4 eject position



Network 21: Step 11 Eject part into bin 4

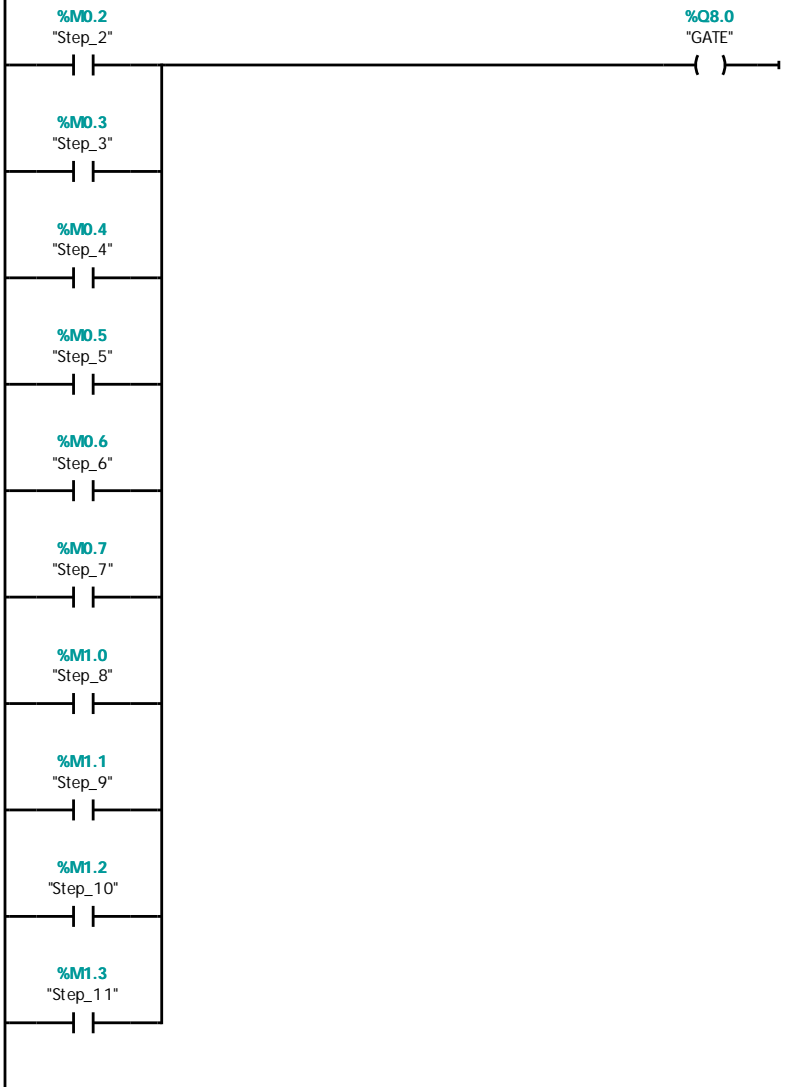


Network 22: Reset



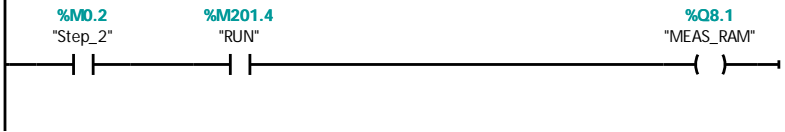
Network 23: Gate

Do not turn off when paused

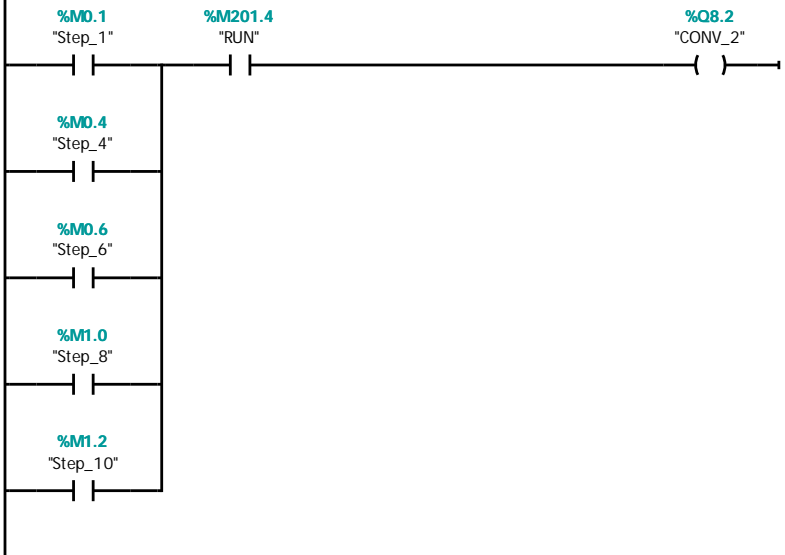


Network 24: Measuring ram

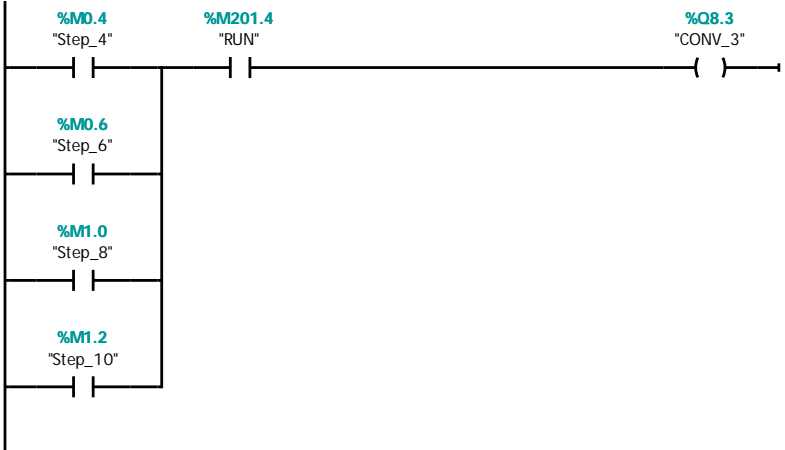
When paused it is off. This is no problem because when paused, timer is reset, so when step is resumed, timing starts over.



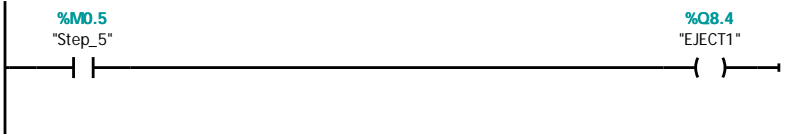
Network 25: Conveyor Controls



Network 26: Main cylinder extension control



Network 27: Eject solenoids - selected on height of part

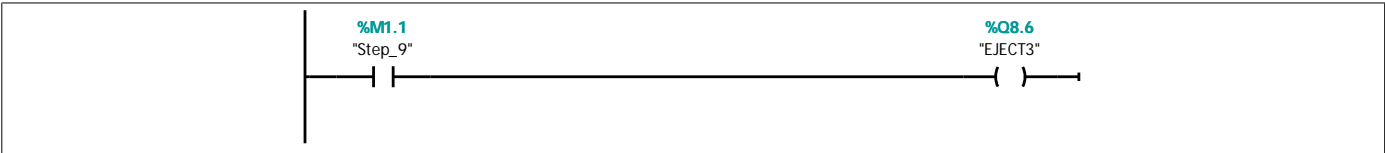


Network 28: On to operate cylinder to eject part onto OUTCONV_2

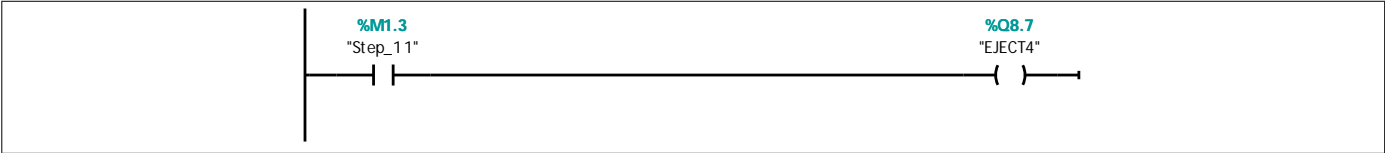
Must remain on when paused.



Network 29: On to operate cylinder to eject part onto OUTCONV_3

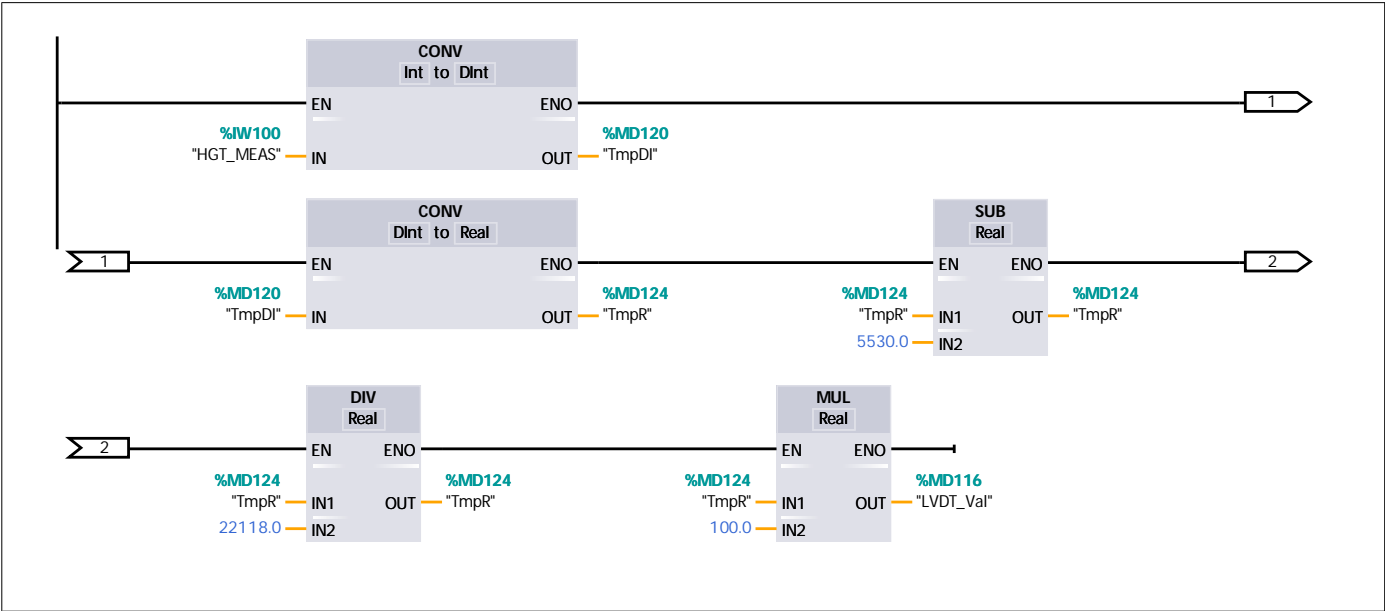


Network 30: On to operate cylinder to eject part onto OUTCONV_4



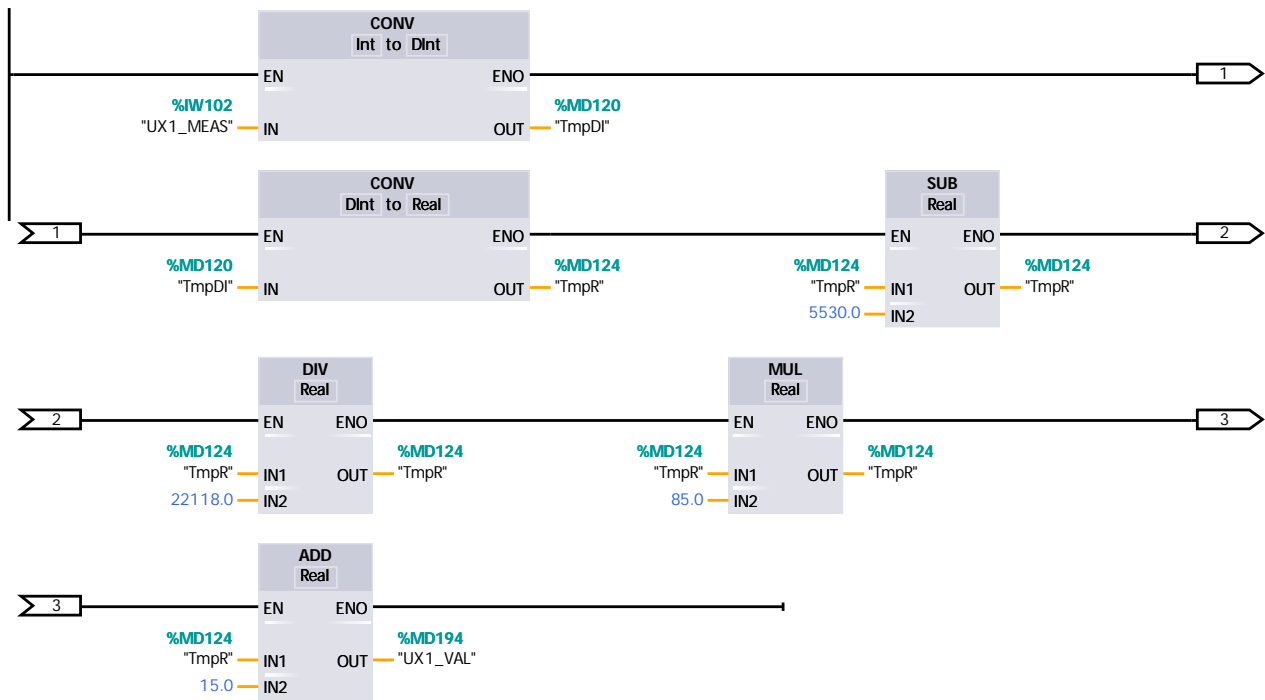
Network 31: Convert LVDT measurement with comp blocks

Convert LVDT measurement to mm.
Uses individual computation blocks.

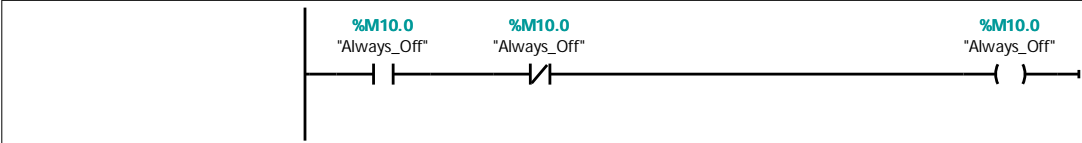


Network 32: Convert UX1 measurement with comp blocks

Convert UX1 measurement to cm.
Uses individual computation blocks.



Network 33: Always Off



Network 34: Convert LVDT and UX1 measurements with SCALE

Convert LVDT and UX1 measurements.
Uses SCALE block. Note that the lo_lim input is 25% lower than zero weight to account for this block assuming the minimum value of the analog in is zero rather than the 5530 (which corresponds to 4 mA).

