

Part Height Sorter Control

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Additional internal memory:

Symbol	Address	
STEP_1 to STEP_5	B20/1 to B20/5	Step-in-progress bits
DOWN_TMR	T4:1	Times lowering of measuring ram
EJECT_TMR	T4:2	Times eject pulse
LVDT_VAL	F8:1	LVDT measurement in mm
TMP_INT	N7:1	Needed to convert height into BCD
TMP_BCD	N9:1	BCD conversion result
HEIGHT_60	B3/21	Height in range of 56 - 64
HEIGHT_75	B3/22	Height in range of 71 - 79
HEIGHT_90	B3/23	Height in range of 86 - 94
HEIGHT_OTHER	B3/24	Height in range not covered above

Conversion formulas

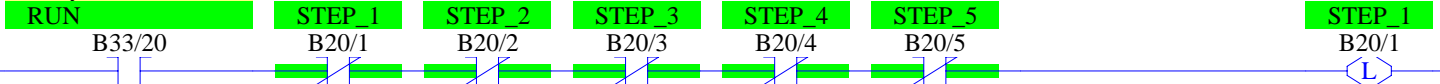
$$UX1_VAL = ((UX1_MEAS - 3277) / 13107) * (100 - 15) + 15$$

$$LVDT_VAL = ((HGT_MEAS - 3277) / 13107) * 100$$

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

Initial start.

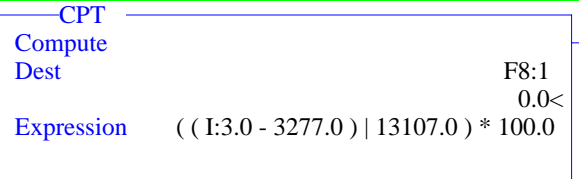
When on, allow
station to run. When
off, pause.



Conversion of LVDT reading to height in mm.

LVDT value converted
to 0 - 100 mm

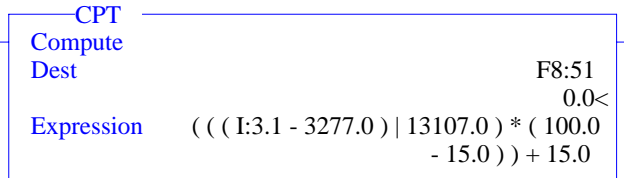
LVDT_VAL



Conversion of distance reading to distance in cm.

Distance, in cm

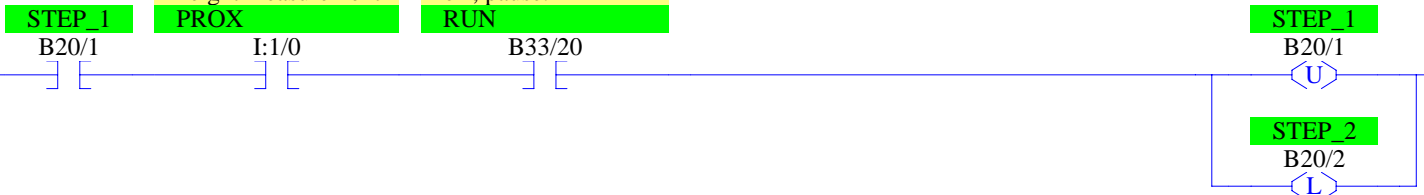
UX1_VAL



Step 1. Wait for part in measure position.

Proximity sensor
that is on when part
is in position for
height measurement

When on, allow
station to run. When
off, pause.



0004

Step 2. Move Down. Measure height on transition.

STEP_2

B20/2

When on, allow
station to run. When
off, pause.

RUN

B33/20

Time extension of
measuring ram, 2 sec

DOWN_TMR

TON
Timer On Delay
Timer
Time Base
Preset
Accum

T4:1

0.01

200<

0<

EN

DN

Time extension of
measuring ram, 2 sec

DOWN_TMR/DN

T4:1/DN

STEP_2

B20/2

U

STEP_3

B20/3

L

Part height, in mm
(REAL)

HGT_VAL

CPT
Compute
Dest

F8:50

0.0<

Expression 150.0 - F8:1

Needed to convert
height into BCD

TMP_INT

MOV

Move
Source

F8:50

0.0<

Dest

N7:1

0<

Needed to convert
height into BCD

TMP_INT

TOD

To BCD
Source

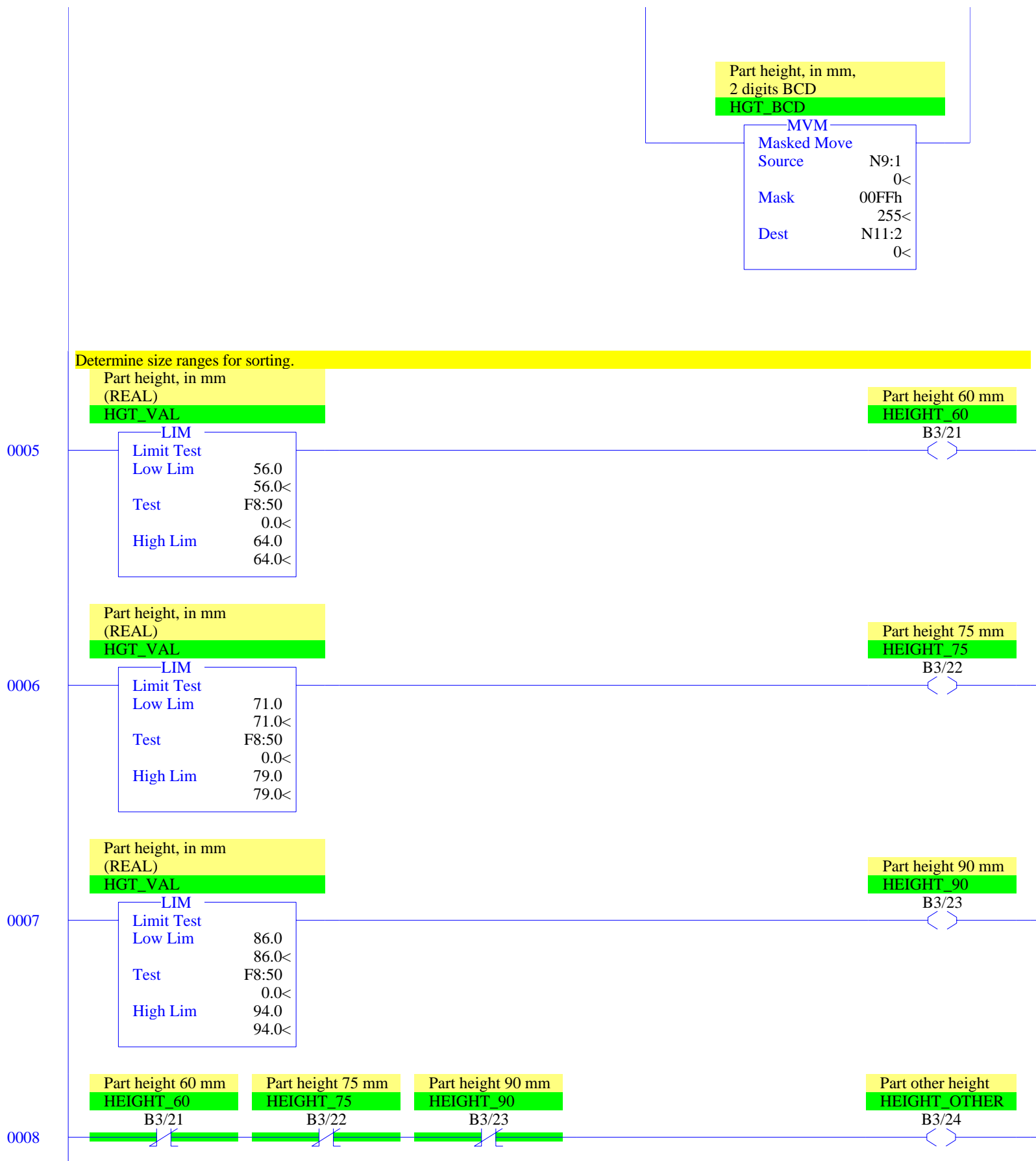
N7:1

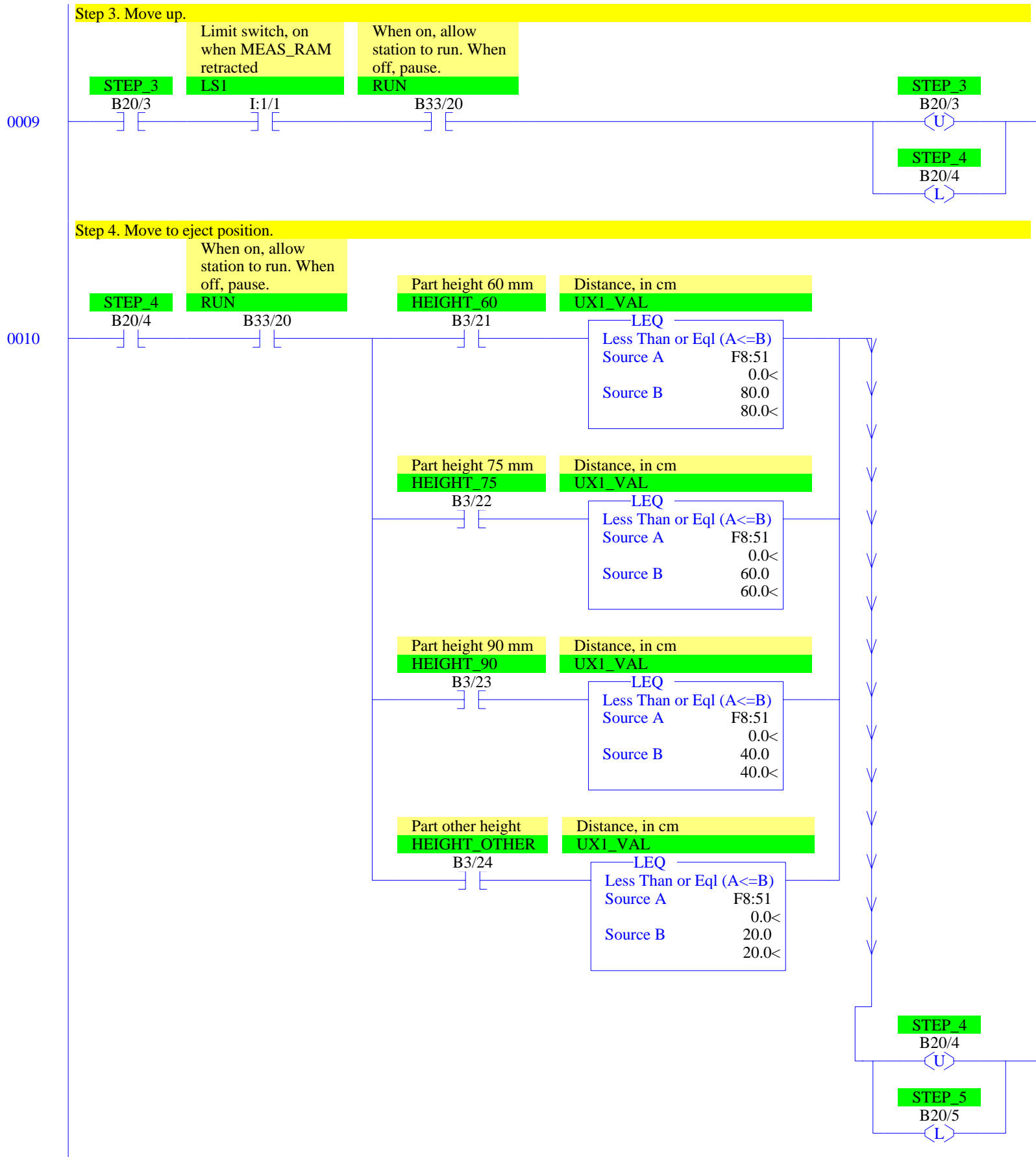
0<

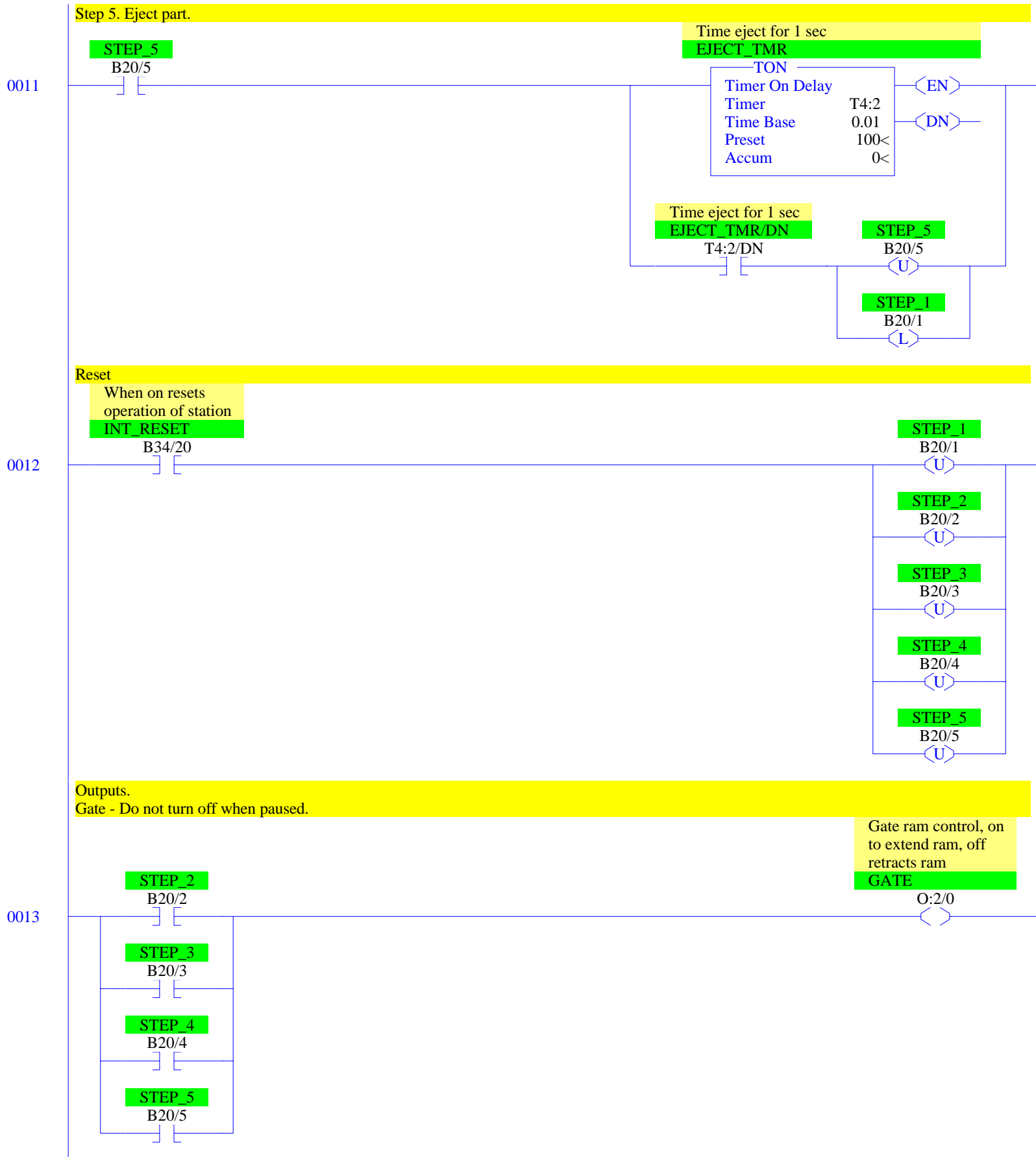
Dest

N9:1

0000h<









RSLogix 500 Cross Reference Report - Sorted by Address

O:2/0	- {GATE} Gate ram control, on to extend ram, off retracts ram OTE - File #2 - 13
O:2/1	- {MEAS_RAM} Measuring ram control, on to extend ram, off retracts ram OTE - File #2 - 14
O:2/2	- {CONV_2} Short conveyor motor control, on to run conveyor belt OTE - File #2 - 15
O:2/3	- {CONV_3} Eject conveyor motor control, on to run conveyor belt OTE - File #2 - 16
O:2/4	- {EJECT1} On to operate cylinder to eject part onto OUTCONV1 OTE - File #2 - 17
O:2/5	- {EJECT2} On to operate cylinder to eject part onto OUTCONV2 OTE - File #2 - 18
O:2/6	- {EJECT3} On to operate cylinder to eject part onto OUTCONV3 OTE - File #2 - 19
O:2/7	- {EJECT4} On to operate cylinder to eject part onto OUTCONV4 OTE - File #2 - 20
I:1/0	- {PROX} Proximity sensor that is on when part is in position for height measurement XIC - File #2 - 3
I:1/1	- {LS1} Limit switch, on when MEAS_RAM retracted XIC - File #2 - 9
I:3.0	- {HGT_MEAS} LVDT length measurement, represents 0-100 mm CPT - File #2 - 1
I:3.1	- {UX1_MEAS} Distance sensor raw measurement, represents 15 - 100 cm CPT - File #2 - 2
B3/21	- {HEIGHT_60} Part height 60 mm OTE - File #2 - 5 XIC - File #2 - 10, 17 XIO - File #2 - 8
B3/22	- {HEIGHT_75} Part height 75 mm OTE - File #2 - 6 XIC - File #2 - 10, 18 XIO - File #2 - 8
B3/23	- {HEIGHT_90} Part height 90 mm OTE - File #2 - 7 XIC - File #2 - 10, 19 XIO - File #2 - 8
B3/24	- {HEIGHT_OTHER} Part other height OTE - File #2 - 8 XIC - File #2 - 10, 20
T4:1	- {DOWN_TMR} Time extension of measuring ram, 2 sec TON - File #2 - 4
T4:1/DN	- XIC - File #2 - 4
T4:2	- {EJECT_TMR} Time eject for 1 sec TON - File #2 - 11
T4:2/DN	- XIC - File #2 - 11
N7:1	- {TMP_INT} Needed to convert height into BCD TOD - File #2 - 4 MOV - File #2 - 4
F8:1	- {LVDT_VAL} LVDT value converted to 0 - 100 mm CPT - File #2 - 1, 4
F8:50	- {HGT_VAL} Part height, in mm (REAL) MOV - File #2 - 4 CPT - File #2 - 4 LIM - File #2 - 5, 6, 7
F8:51	- {UX1_VAL} Distance, in cm CPT - File #2 - 2 LEQ - File #2 - 10
N9:1	- {TMP_BCD} TOD - File #2 - 4 MVM - File #2 - 4
N11:2	- {HGT_BCD} Part height, in mm, 2 digits BCD MVM - File #2 - 4
B20/1	- {STEP_1} OTL - File #2 - 0, 11 OTU - File #2 - 3, 12 XIC - File #2 - 3, 15

RSLogix 500 Cross Reference Report - Sorted by Address

B20/2	XIO - File #2 - 0
	- {STEP_2}
	OTL - File #2 - 3
	OTU - File #2 - 4, 12
	XIC - File #2 - 4, 13, 14
	XIO - File #2 - 0
B20/3	- {STEP_3}
	OTL - File #2 - 4
	OTU - File #2 - 9, 12
	XIC - File #2 - 9, 13
	XIO - File #2 - 0
B20/4	- {STEP_4}
	OTL - File #2 - 9
	OTU - File #2 - 10, 12
	XIC - File #2 - 10, 13, 15, 16
	XIO - File #2 - 0
B20/5	- {STEP_5}
	OTL - File #2 - 10
	OTU - File #2 - 11, 12
	XIC - File #2 - 11, 13, 17, 18, 19, 20
	XIO - File #2 - 0
B33/20	- {RUN} When on, allow station to run. When off, pause.
	XIC - File #2 - 0, 3, 4, 9, 10, 14, 15, 16
B34/20	- {INT_RESET} When on resets operation of station
	XIC - File #2 - 12