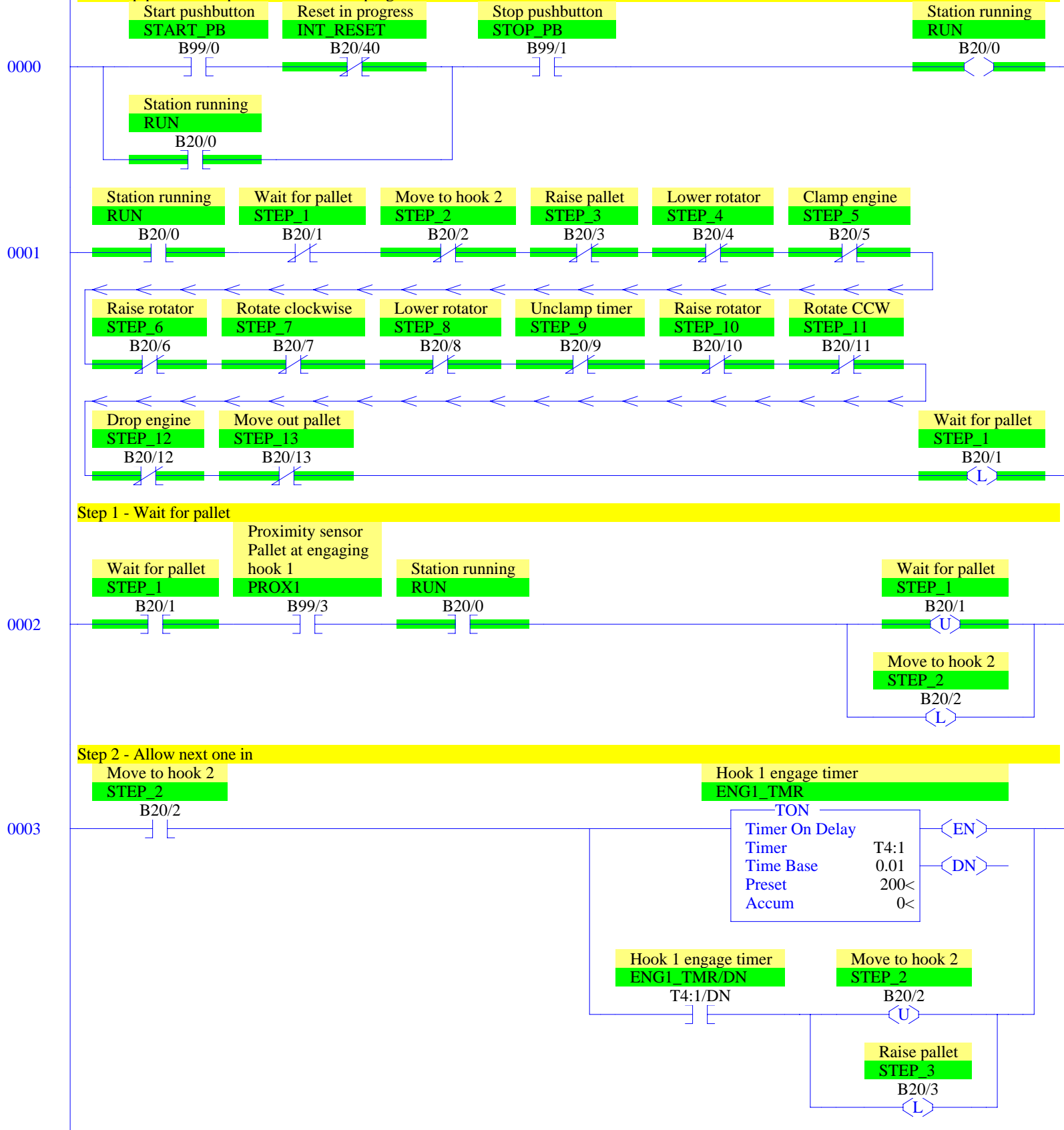
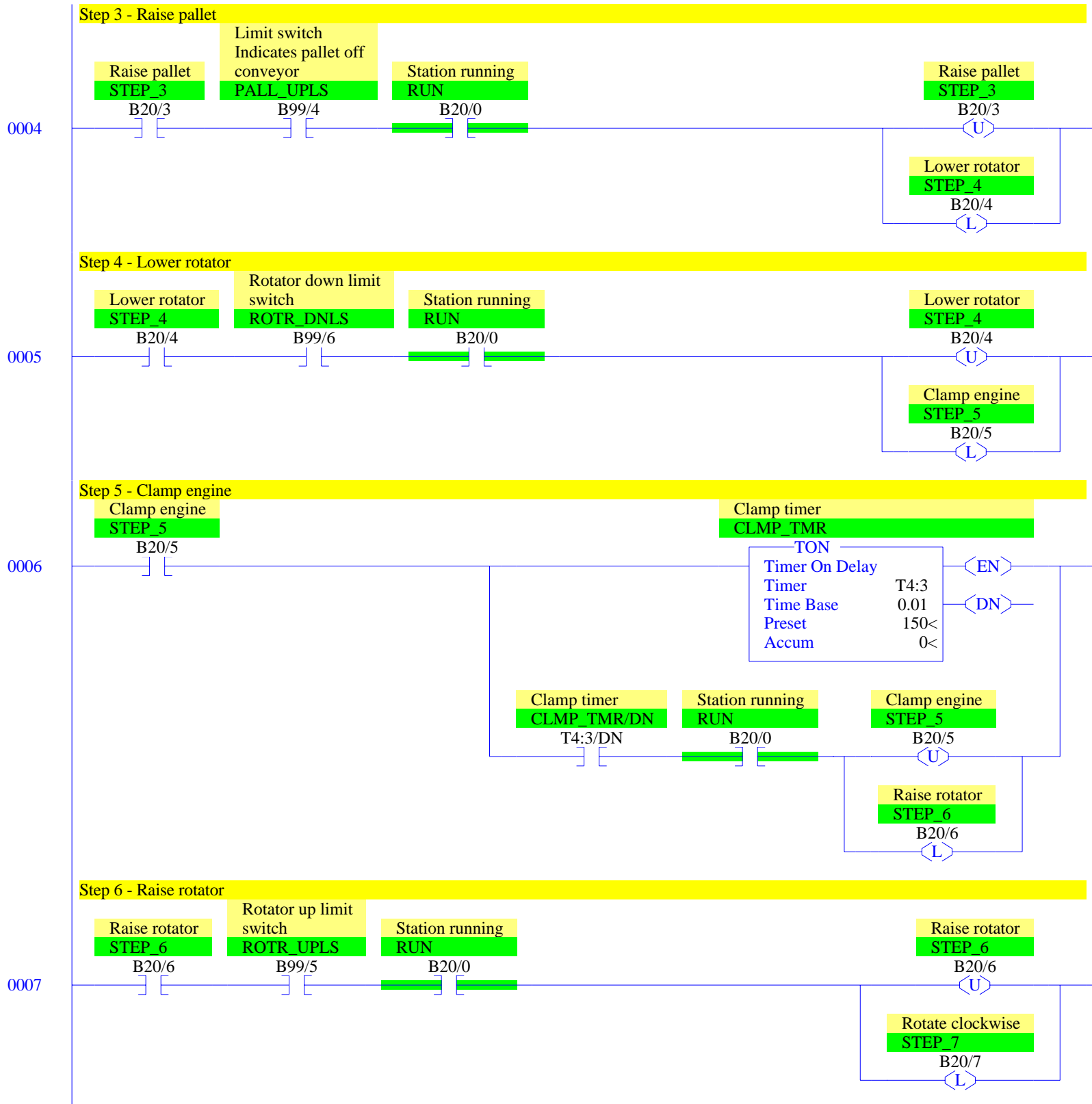


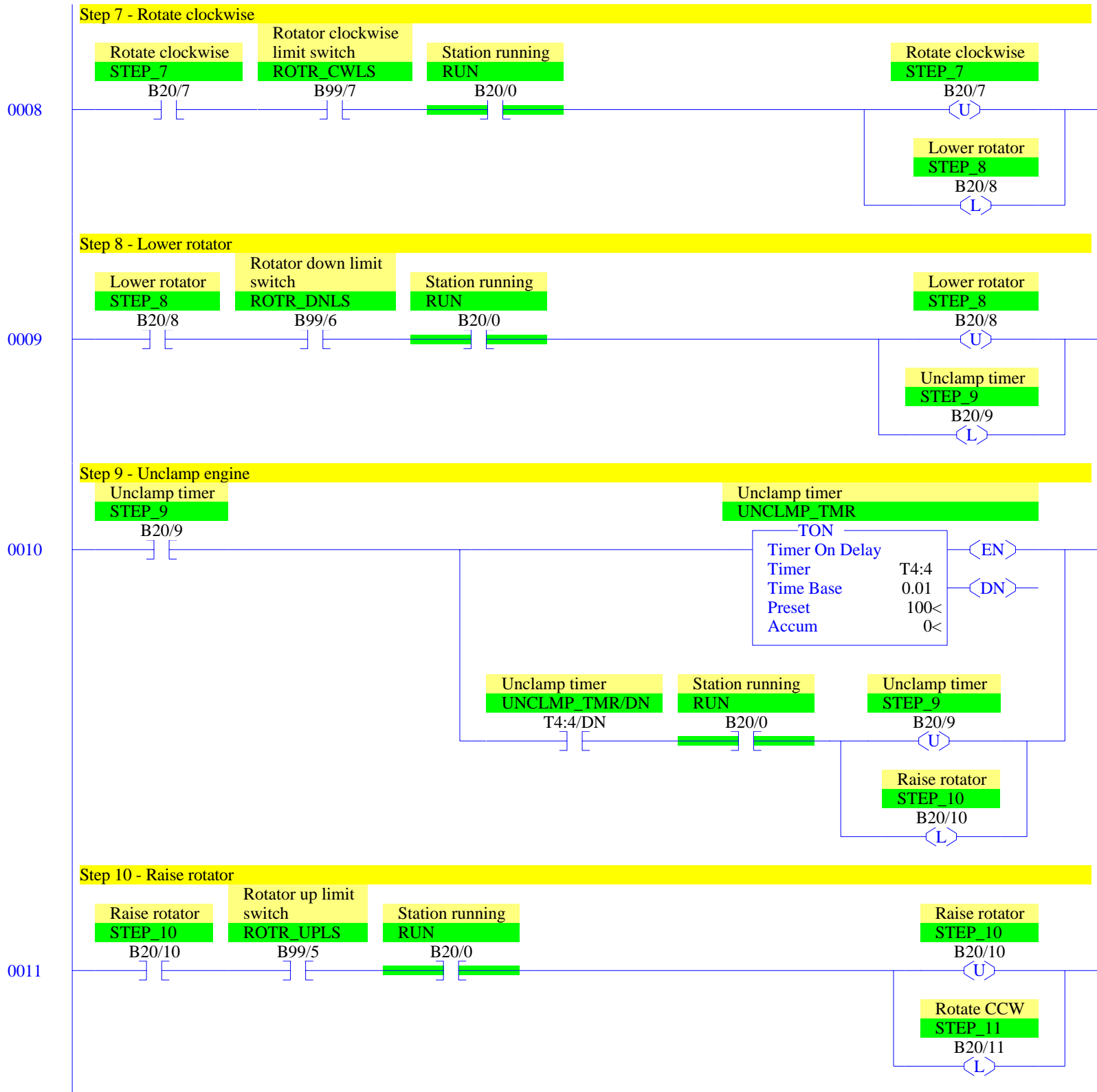
Example 6.5 - Engine Inverter Control with Simulation

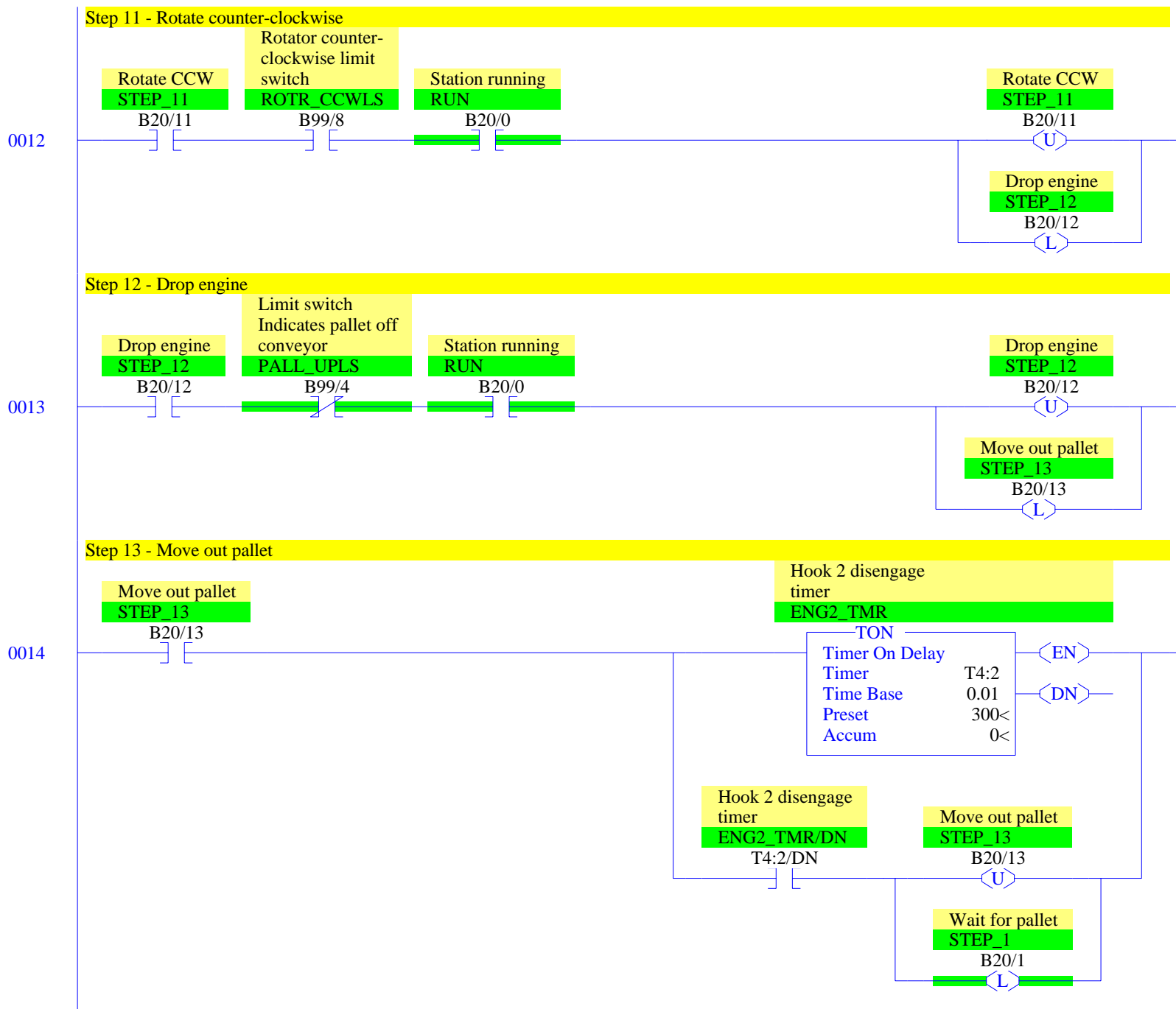
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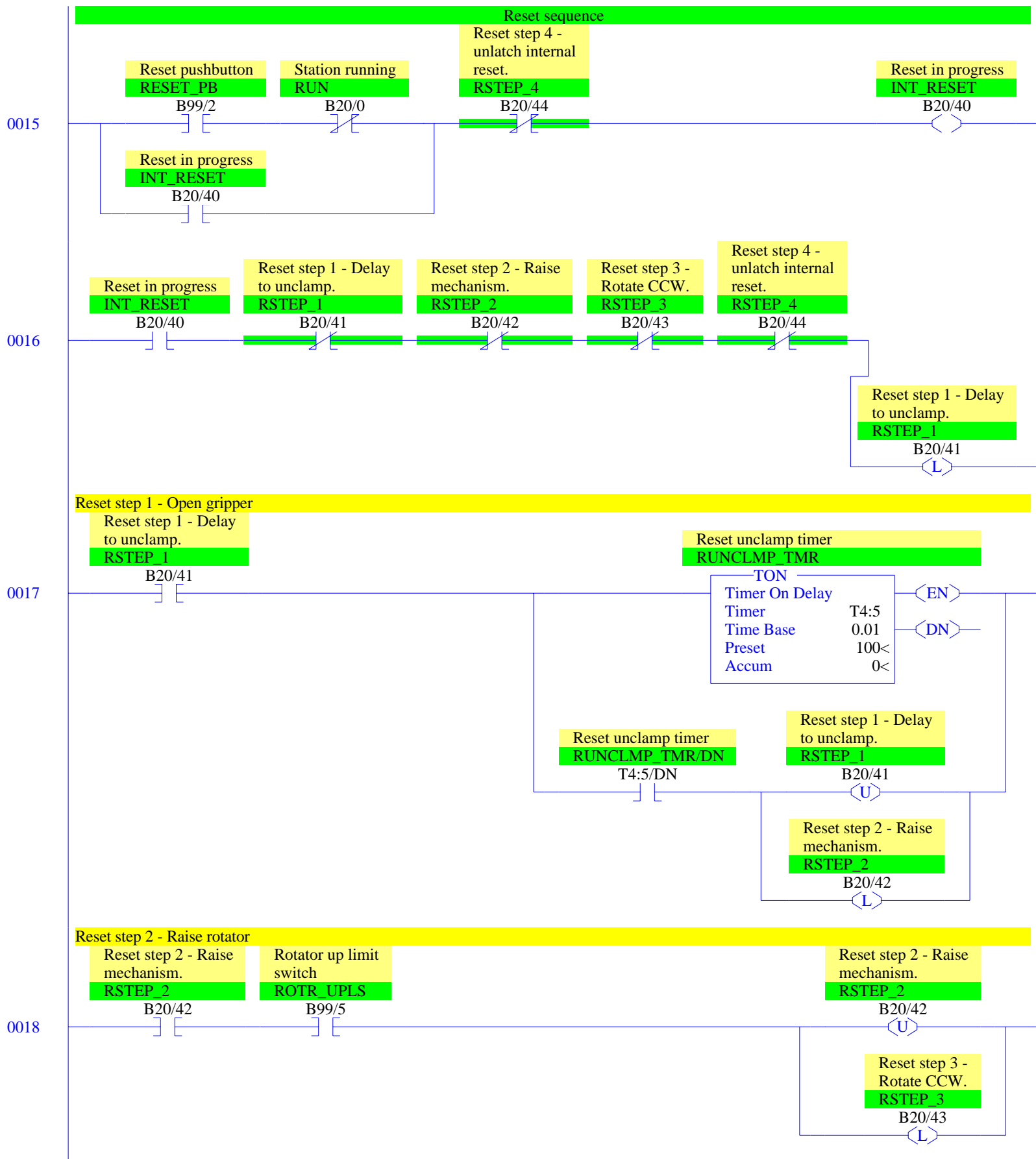
Start/stop/pause. Start prevented if reset in progress.

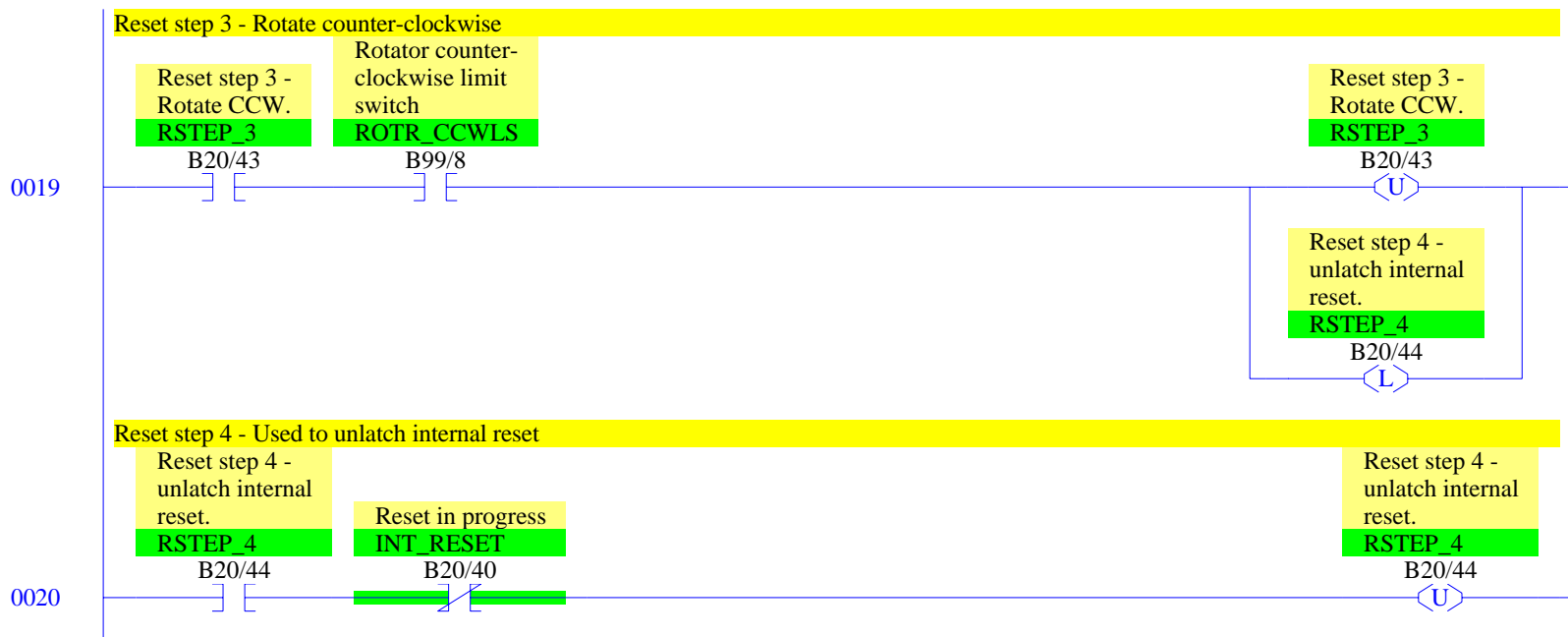












0021

Reset unlatches all normal operation step-in progress bits

Reset in progress

INT_RESET

B20/40

Wait for pallet

STEP_1

B20/1

Move to hook 2

STEP_2

B20/2

Raise pallet

STEP_3

B20/3

Lower rotator

STEP_4

B20/4

Clamp engine

STEP_5

B20/5

Raise rotator

STEP_6

B20/6

Rotate clockwise

STEP_7

B20/7

Lower rotator

STEP_8

B20/8

Unclamp timer

STEP_9

B20/9

Raise rotator

STEP_10

B20/10

Rotate CCW

STEP_11

B20/11

Drop engine

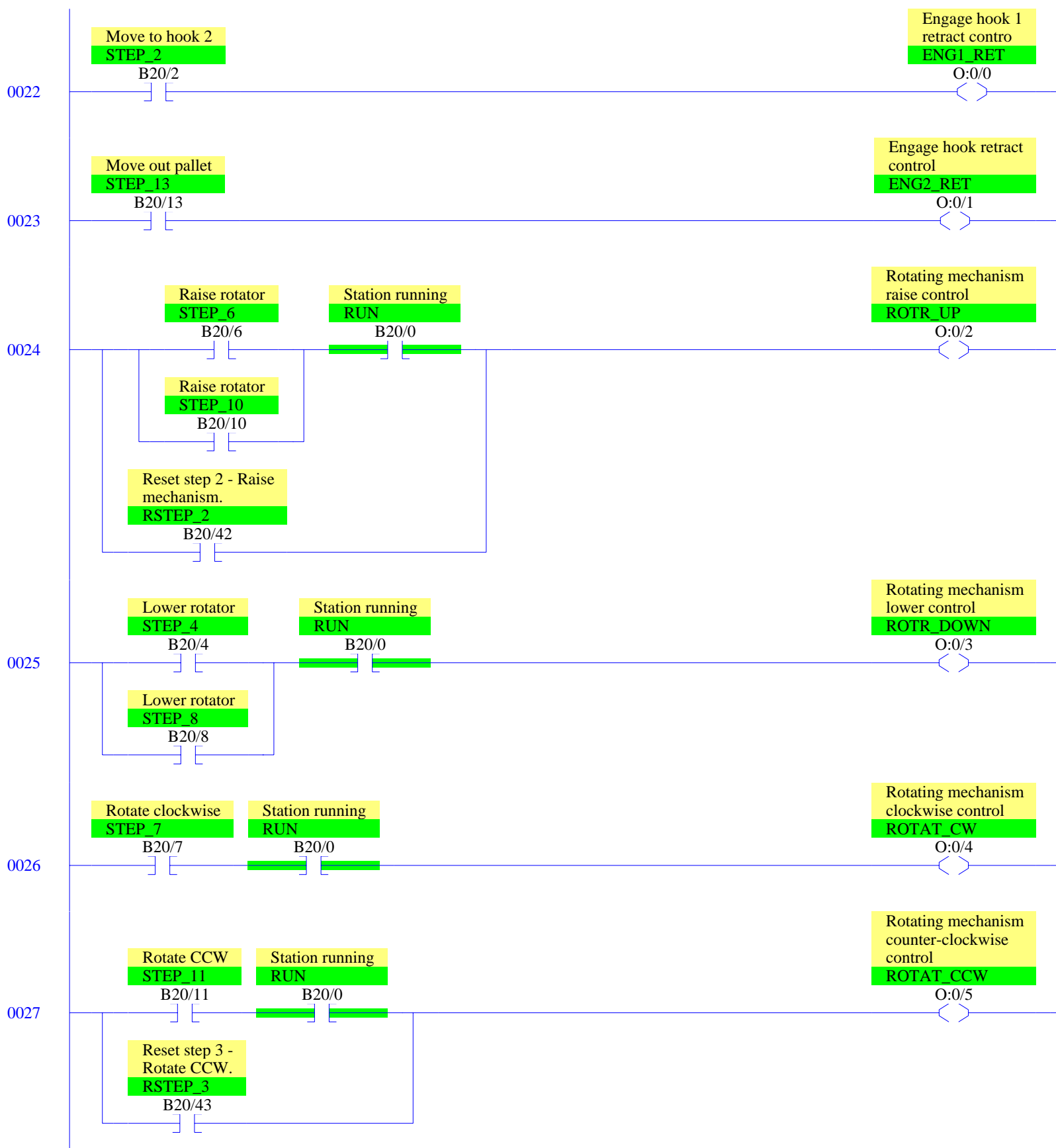
STEP_12

B20/12

Move out pallet

STEP_13

B20/13

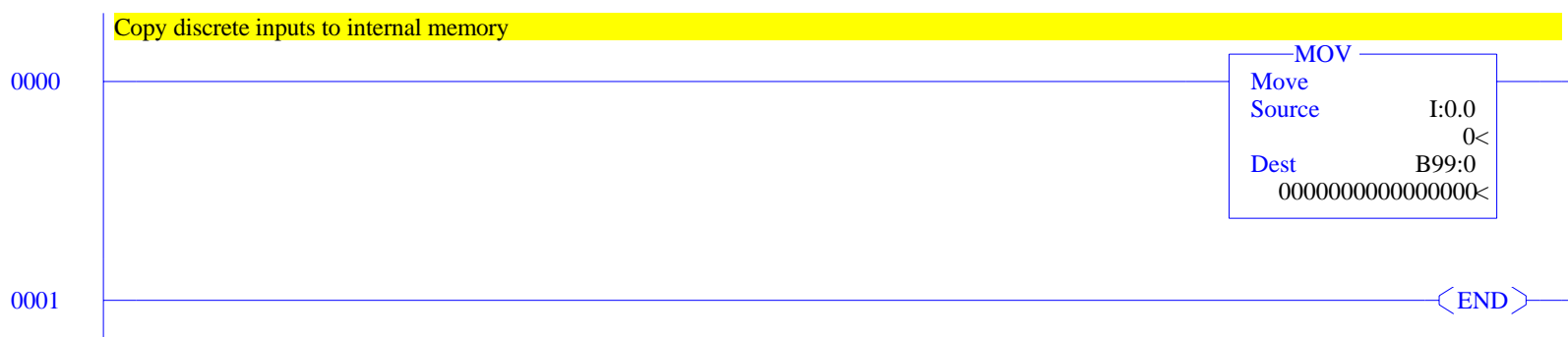






0032

⟨END⟩



Tieback Logic for Simulation

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This version uses RESET_PB to generate first engine. Each subsequent engine appears 5 seconds after second engage hook goes back up.

RESET_PB latches PROX1 so that engine is at first station when run.

Proximity sensor
Pallet at engaging
hook 1
PROX1Reset pushbutton
RESET_PB

B99/2

Station running
RUN

B20/0

B99/3

(L)

PALL_UPLS latched 3 secs after control for cylinder on and unlatched 1 second after control turned off.

Pallet retainer up
and off conveyor
control**PALL_UPCTL**

O:0/7

(L)

TON
Timer On Delay
Timer T100:0
Time Base 0.01
Preset 300<
Accum 0<

(EN)

(DN)

Limit switch
Indicates pallet off
conveyor
PALL_UPLS

B99/4

(L)

T100:0/DN

Pallet retainer up
and off conveyor
control**PALL_UPCTL**

O:0/7

(L)

TON
Timer On Delay
Timer T100:1
Time Base 0.01
Preset 100<
Accum 100<

(EN)

(DN)

Limit switch
Indicates pallet off
conveyor
PALL_UPLS

B99/4

(U)

T100:1/DN

Up/Down limit switches.

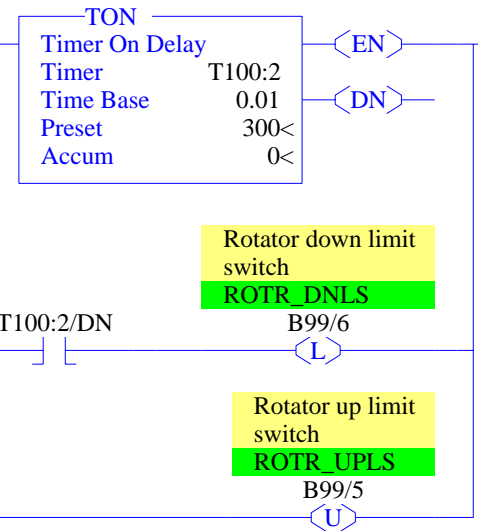
Down LS latched 3 secs after down control active and unlatched immediately when up control active.

Up LS latched 3 secs after up control active and unlatched immediately when down control active.

Rotating mechanism
lower control**ROTR_DOWN**

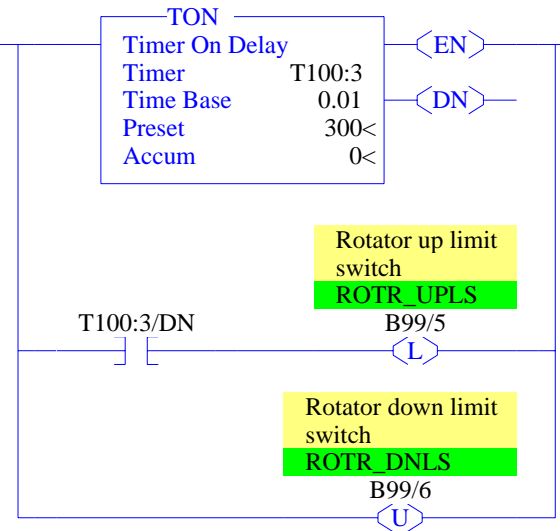
O:0/3

0003

Rotating mechanism
raise control**ROTR_UP**

O:0/2

0004



Clockwise/Counterclockwise limit switches.

CW LS latched 3 secs after CW control active and unlatched immediately when CCW control active.

CCW LS latched 3 secs after CCW control active and unlatched immediately when CW control active.

Rotating mechanism
clockwise control

ROTAT_CW

O:0/4

TON
Timer On Delay
Timer T100:4
Time Base 0.01
Preset 300<
Accum 0<

(EN)

(DN)

Rotator clockwise
limit switch

ROTR_CWLS

T100:4/DN

B99/7

(L)

Rotator counter-
clockwise limit
switch

ROTR_CCWLS

B99/8

(U)

Rotating mechanism
counter-clockwise
control

ROTAT_CCW

O:0/5

TON
Timer On Delay
Timer T100:5
Time Base 0.01
Preset 300<
Accum 0<

(EN)

(DN)

Rotator counter-
clockwise limit
switch

ROTR_CCWLS

T100:5/DN

B99/8

(L)

Rotator clockwise
limit switch

ROTR_CWLS

B99/7

(U)

Generate next engine present by latching PROX1. Each subsequent engine appears 5 seconds after second engage hook goes back up.

Engage hook retract
control

ENG2_RET

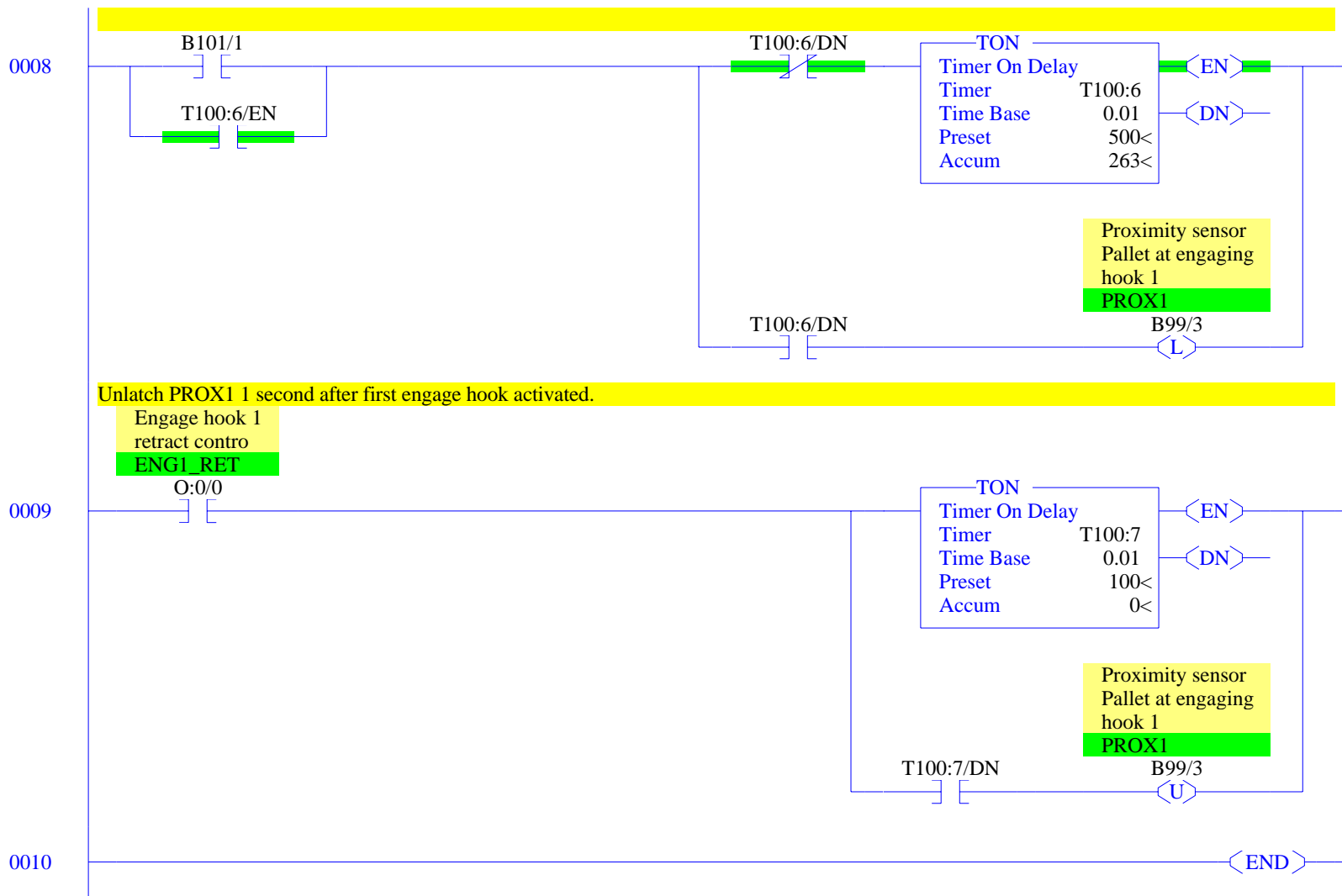
O:0/1

B101/0

[ONS]

B101/1

()



RSLogix 500 Cross Reference Report - Sorted by Address

O:0/0	- {ENGL_RET} Engage hook 1 retract contro
	OTE - File #2 - 22
	XIC - File #100 TIEBACK - 9
O:0/1	- {ENG2_RET} Engage hook retract control
	OTE - File #2 - 23
	XIO - File #100 TIEBACK - 7
O:0/2	- {ROTR_UP} Rotating mechanism raise control
	OTE - File #2 - 24
	XIC - File #100 TIEBACK - 4
O:0/3	- {ROTR_DOWN} Rotating mechanism lower control
	OTE - File #2 - 25
	XIC - File #100 TIEBACK - 3
O:0/4	- {ROTAT_CW} Rotating mechanism clockwise control
	OTE - File #2 - 26
	XIC - File #100 TIEBACK - 5
O:0/5	- {ROTAT_CCW} Rotating mechanism counter-clockwise control
	OTE - File #2 - 27
	XIC - File #100 TIEBACK - 6
O:0/6	- {GRIP_CLOS} Gripper close control
	OTE - File #2 - 28
O:0/7	- {PALL_UPCTL} Pallet retainer up and off conveyor control
	OTE - File #2 - 29
	XIC - File #100 TIEBACK - 1
	XIO - File #100 TIEBACK - 2
I:0.0	- MOV - File #99 DUPLIC_INS - 0
B3/200	- {ENAB_TIE_BACK} Enable tie-back simulation logic
	XIC - File #2 - 30
	XIO - File #2 - 31
T4:1	- {ENGL_TMR} Hook 1 engage timer
	TON - File #2 - 3
T4:1/DN	- XIC - File #2 - 3
T4:2	- {ENG2_TMR} Hook 2 disengage timer
	TON - File #2 - 14
T4:2/DN	- XIC - File #2 - 14
T4:3	- {CLMP_TMR} Clamp timer
	TON - File #2 - 6
T4:3/DN	- XIC - File #2 - 6
T4:4	- {UNCLMP_TMR} Unclamp timer
	TON - File #2 - 10
T4:4/DN	- XIC - File #2 - 10
T4:5	- {RUNCLMP_TMR} Reset unclamp timer
	TON - File #2 - 17
T4:5/DN	- XIC - File #2 - 17
B20/0	- {RUN} Station running
	XIC - File #2 - 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 24, 25
	26, 27
	XIO - File #2 - 15
	File #100 TIEBACK - 0
	XIC - File #2 - 0
	OTE - File #2 - 0
B20/1	- {STEP_1} Wait for pallet
	OTL - File #2 - 1, 14
	OTU - File #2 - 2, 21
	XIC - File #2 - 2
	XIO - File #2 - 1
B20/2	- {STEP_2} Move to hook 2
	OTL - File #2 - 2
	OTU - File #2 - 3, 21
	XIC - File #2 - 3, 22
	XIO - File #2 - 1
B20/3	- {STEP_3} Raise pallet
	OTL - File #2 - 3
	OTU - File #2 - 4, 21
	XIC - File #2 - 4, 29
	XIO - File #2 - 1
B20/4	- {STEP_4} Lower rotator

RSLogix 500 Cross Reference Report - Sorted by Address

	OTL - File #2 - 4
	OTU - File #2 - 5, 21
	XIC - File #2 - 5, 25, 29
	XIO - File #2 - 1
B20/5	- {STEP_5} Clamp engine
	OTL - File #2 - 5
	OTU - File #2 - 6, 21
	XIC - File #2 - 6, 28, 29
	XIO - File #2 - 1
B20/6	- {STEP_6} Raise rotator
	OTL - File #2 - 6
	OTU - File #2 - 7, 21
	XIC - File #2 - 7, 24, 28, 29
	XIO - File #2 - 1
B20/7	- {STEP_7} Rotate clockwise
	OTL - File #2 - 7
	OTU - File #2 - 8, 21
	XIC - File #2 - 8, 26, 28, 29
	XIO - File #2 - 1
B20/8	- {STEP_8} Lower rotator
	OTL - File #2 - 8
	OTU - File #2 - 9, 21
	XIC - File #2 - 9, 25, 28, 29
	XIO - File #2 - 1
B20/9	- {STEP_9} Unclamp timer
	OTL - File #2 - 9
	OTU - File #2 - 10, 21
	XIC - File #2 - 10, 29
	XIO - File #2 - 1
B20/10	- {STEP_10} Raise rotator
	OTL - File #2 - 10
	OTU - File #2 - 11, 21
	XIC - File #2 - 11, 24, 29
	XIO - File #2 - 1
B20/11	- {STEP_11} Rotate CCW
	OTL - File #2 - 11
	OTU - File #2 - 12, 21
	XIC - File #2 - 12, 27, 29
	XIO - File #2 - 1
B20/12	- {STEP_12} Drop engine
	OTL - File #2 - 12
	OTU - File #2 - 13, 21
	XIC - File #2 - 13
	XIO - File #2 - 1
B20/13	- {STEP_13} Move out pallet
	OTL - File #2 - 13
	OTU - File #2 - 14, 21
	XIC - File #2 - 14, 23
	XIO - File #2 - 1
B20/40	- {INT_RESET} Reset in progress
	OTE - File #2 - 15
	XIC - File #2 - 15, 16, 21
	XIO - File #2 - 0, 20
B20/41	- {RSTEP_1} Reset step 1 - Delay to unclamp.
	OTL - File #2 - 16
	OTU - File #2 - 17
	XIC - File #2 - 17
	XIO - File #2 - 16
B20/42	- {RSTEP_2} Reset step 2 - Raise mechanism.
	OTL - File #2 - 17
	OTU - File #2 - 18
	XIC - File #2 - 18, 24
	XIO - File #2 - 16
B20/43	- {RSTEP_3} Reset step 3 - Rotate CCW.
	OTL - File #2 - 18
	OTU - File #2 - 19

RSLogix 500 Cross Reference Report - Sorted by Address

```

XIC - File #2 - 19, 27
XIO - File #2 - 16
B20/44 - {RSTEP_4} Reset step 4 - unlatch internal reset.
OTL - File #2 - 19
OTU - File #2 - 20
XIC - File #2 - 20
XIO - File #2 - 15, 16
B99:0 - MOV - File #99 DUPLIC_INS - 0
B99/0 - {START_PB} Start pushbutton
XIC - File #2 - 0
B99/1 - {STOP_PB} Stop pushbutton
XIC - File #2 - 0
B99/2 - {RESET_PB} Reset pushbutton
XIC - File #2 - 15
File #100 TIEBACK - 0
B99/3 - {PROX1} Proximity sensor Pallet at engaging hook 1
OTL - File #100 TIEBACK - 8
OTU - File #100 TIEBACK - 9
XIC - File #2 - 2
OTL - File #100 TIEBACK - 0
B99/4 - {PALL_UPLS} Limit switch Indicates pallet off conveyor
OTU - File #100 TIEBACK - 2
XIC - File #2 - 4
XIO - File #2 - 13
OTL - File #100 TIEBACK - 1
B99/5 - {ROTR_UPLS} Rotator up limit switch
OTL - File #100 TIEBACK - 4
XIC - File #2 - 7, 11, 18
OTU - File #100 TIEBACK - 3
B99/6 - {ROTR_DNLS} Rotator down limit switch
XIC - File #2 - 5, 9
OTL - File #100 TIEBACK - 3
OTU - File #100 TIEBACK - 4
B99/7 - {ROTR_CWLS} Rotator clockwise limit switch
OTU - File #100 TIEBACK - 6
XIC - File #2 - 8
OTL - File #100 TIEBACK - 5
B99/8 - {ROTR_CCWLS} Rotator counter- clockwise limit switch
OTL - File #100 TIEBACK - 6
XIC - File #2 - 12, 19
OTU - File #100 TIEBACK - 5
T100:0 - TON - File #100 TIEBACK - 1
T100:0/DN - XIC - File #100 TIEBACK - 1
T100:1 - TON - File #100 TIEBACK - 2
T100:1/DN - XIC - File #100 TIEBACK - 2
T100:2 - TON - File #100 TIEBACK - 3
T100:2/DN - XIC - File #100 TIEBACK - 3
T100:3 - TON - File #100 TIEBACK - 4
T100:3/DN - XIC - File #100 TIEBACK - 4
T100:4 - TON - File #100 TIEBACK - 5
T100:4/DN - XIC - File #100 TIEBACK - 5
T100:5 - TON - File #100 TIEBACK - 6
T100:5/DN - XIC - File #100 TIEBACK - 6
T100:6 - TON - File #100 TIEBACK - 8
T100:6/DN - XIC - File #100 TIEBACK - 8
XIO - File #100 TIEBACK - 8
T100:6/EN - XIC - File #100 TIEBACK - 8
T100:7 - TON - File #100 TIEBACK - 9
T100:7/DN - XIC - File #100 TIEBACK - 9
B101/0 - ONS - File #100 TIEBACK - 7
B101/1 - OTE - File #100 TIEBACK - 7
XIC - File #100 TIEBACK - 8
U:99 - JSR - File #2 - 31
U:100 - {TIEBACK}
JSR - File #2 - 30

```