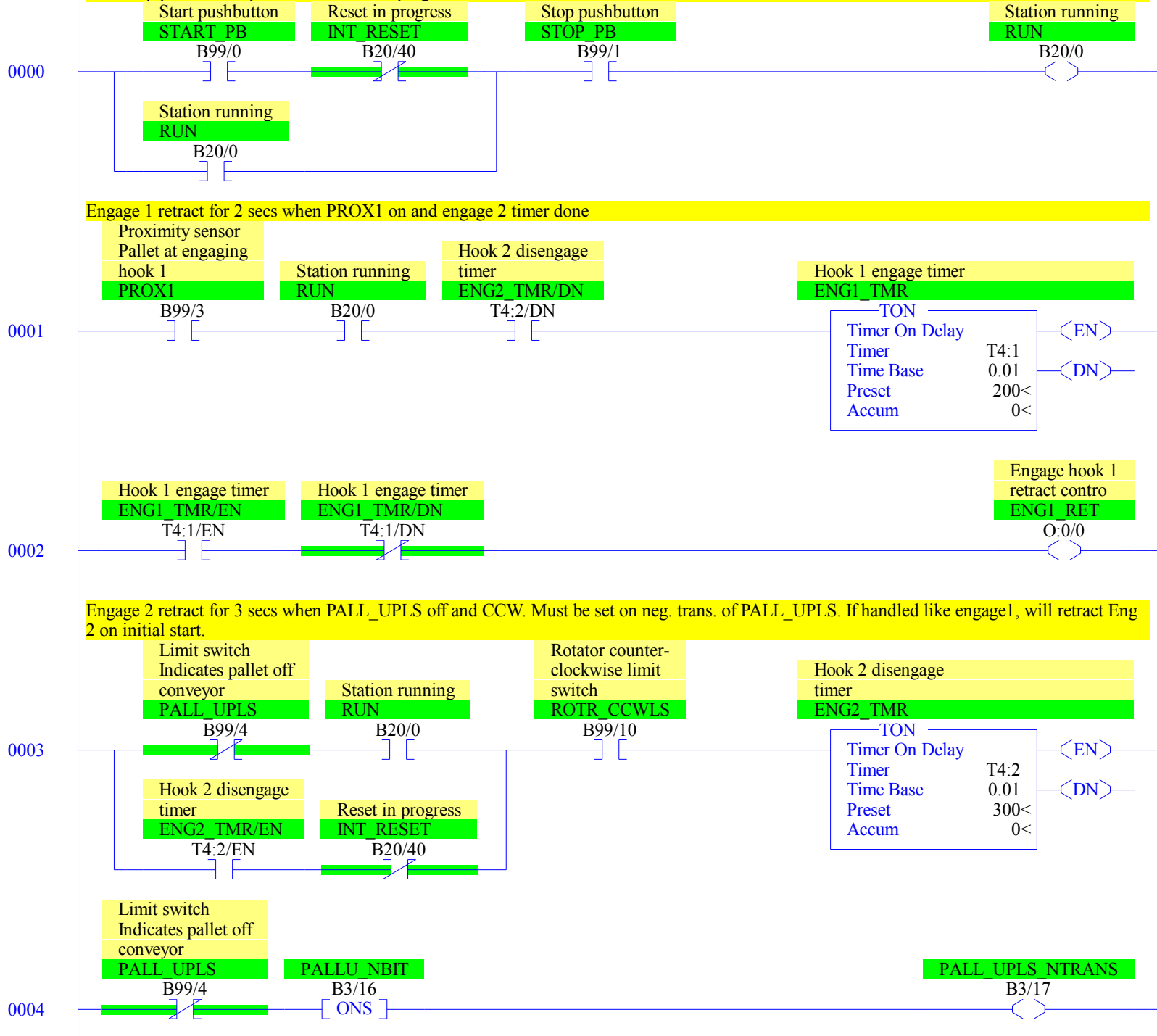
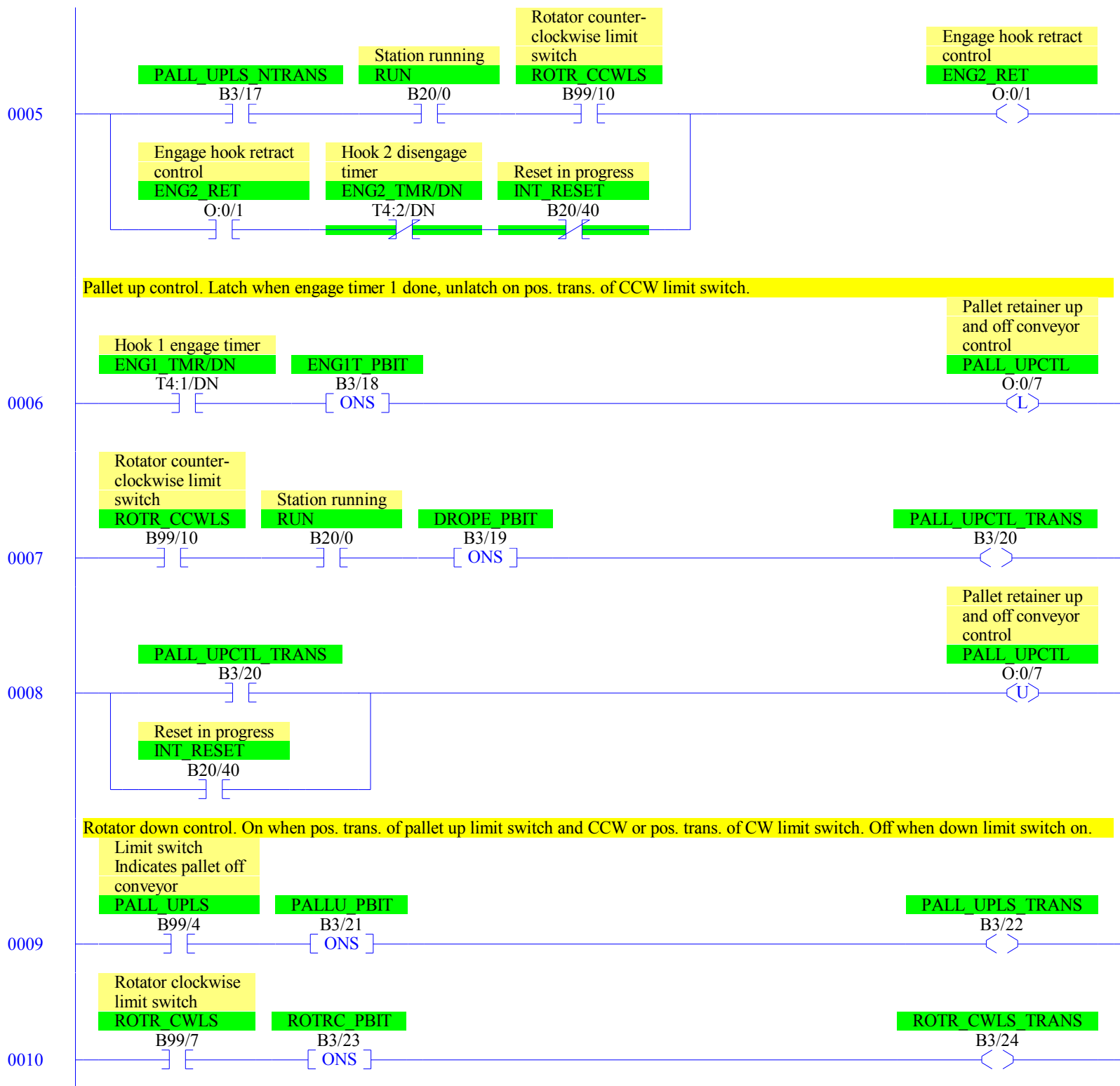


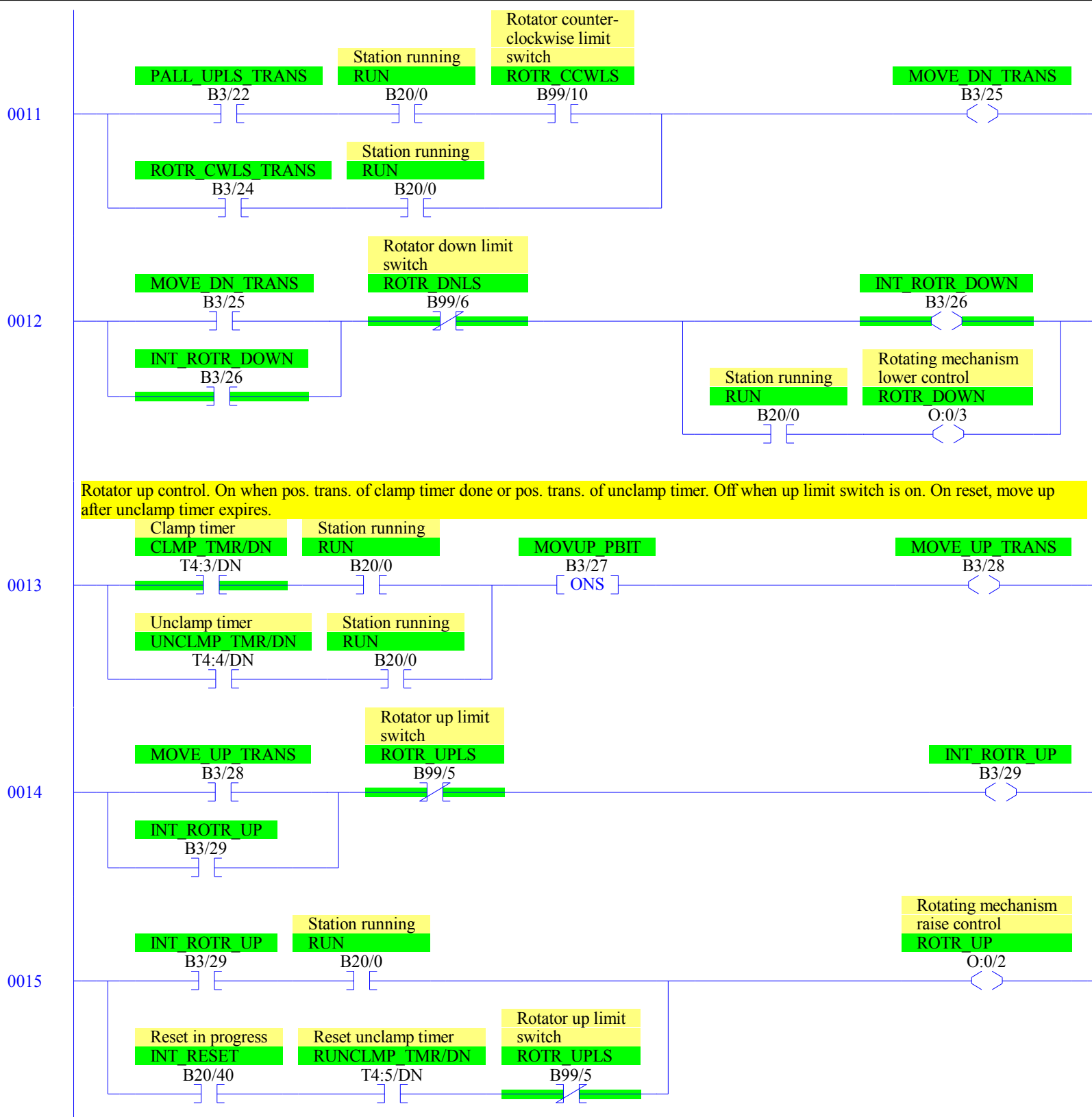
Example 9.4 - Engine Inverter Control - Unstructured Sequence with Simulation

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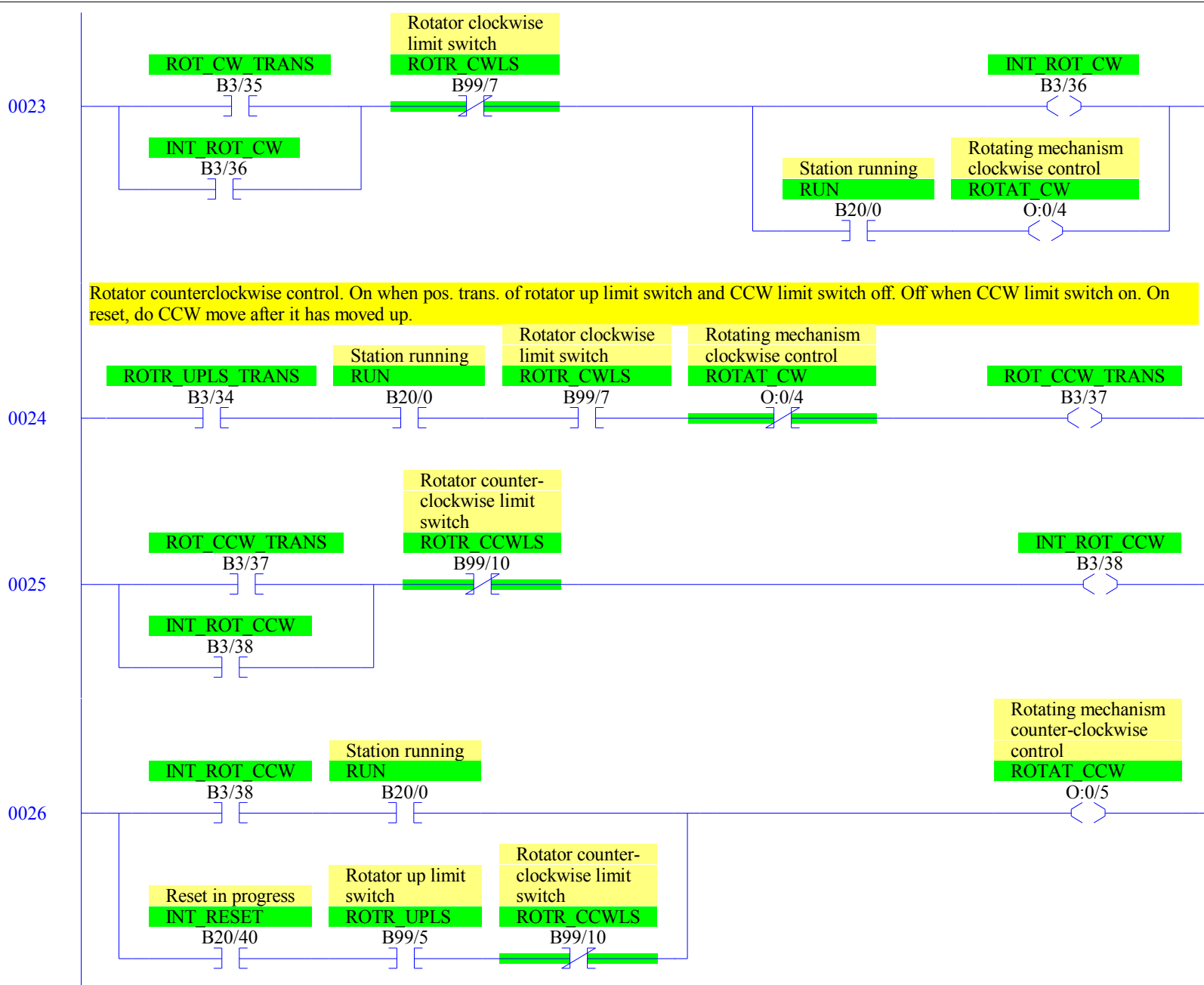
Start/stop/pause. Start prevented if reset in progress.

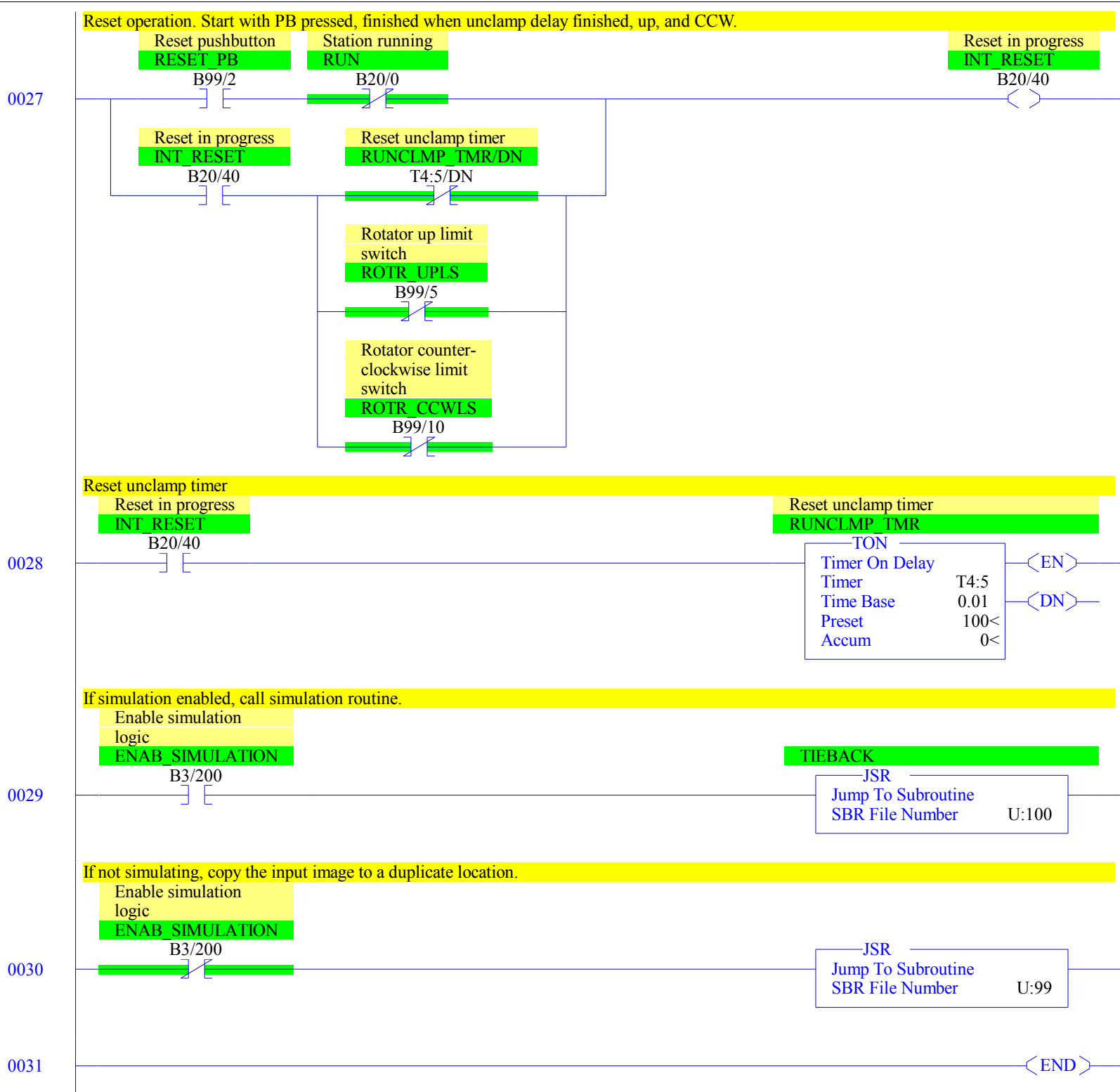




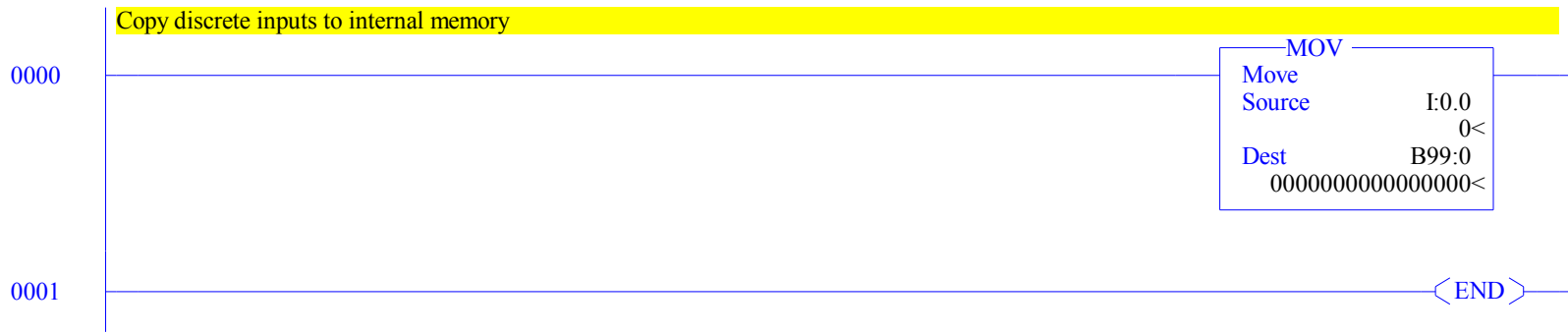








LAD 99 - DUPLIC_INS --- Total Rungs in File = 2

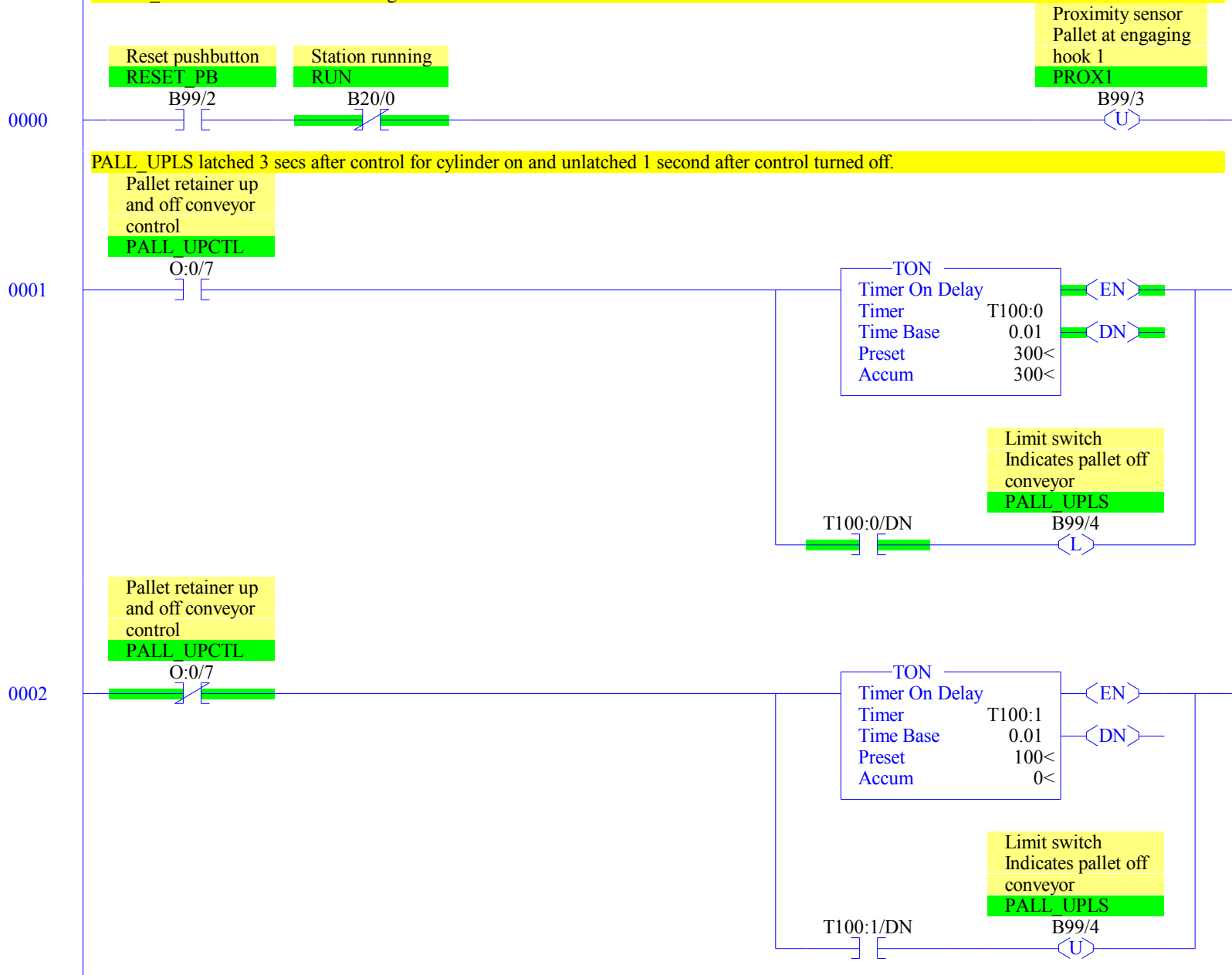


Tieback Logic for Simulation

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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.



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.

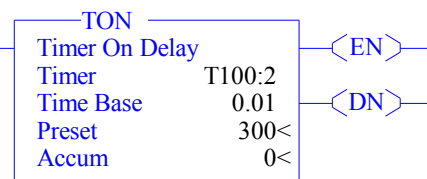
Rotating mechanism

lower control

ROTR_DOWN

O:0/3

0003



Rotator down limit
switch

ROTR_DNLS

T100:2/DN

B99/6

<L>

Rotator up limit
switch

ROTR_UPLS

B99/5

<U>

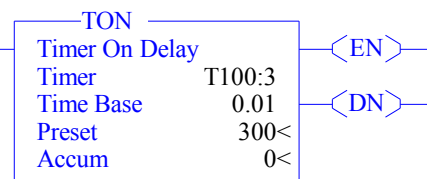
Rotating mechanism

raise control

ROTR_UP

O:0/2

0004



Rotator up limit
switch

ROTR_UPLS

T100:3/DN

B99/5

<L>

Rotator down limit
switch

ROTR_DNLS

B99/6

<U>

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<

Rotator clockwise
limit switch

ROTR_CWLS

T100:4/DN

B99/7

Rotator counter-
clockwise limit
switch

ROTR_CCWLS

B99/10

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<

Rotator counter-
clockwise limit
switch

ROTR_CCWLS

T100:5/DN

B99/10

Rotator clockwise
limit switch

ROTR_CWLS

B99/7

Simulate Pallet Prox

Latch it on 6 seconds after one has left the station.

Latch it off 3 second after new one retained.

Station running

RUN

B20/0

Engage hook retract
control

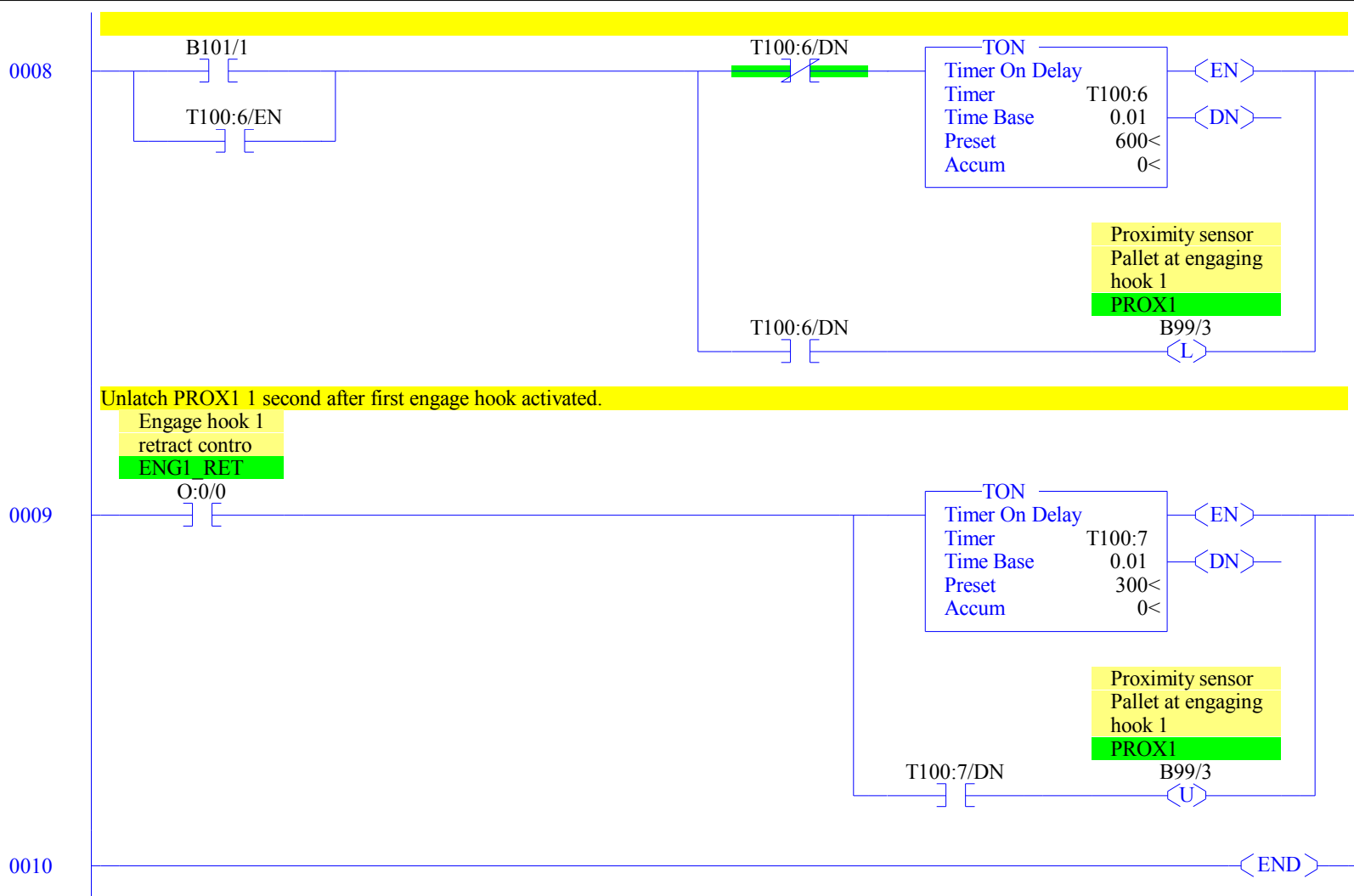
ENG2_RET

O:0/1

B101/0

[ONS]

B101/1



RSLogix 500 Cross Reference Report - Sorted by Address

O:0/0	- {ENG1_RET} Engage hook 1 retract contro
	OTE - File #2 - 2
	XIC - File #100 SIMULATION - 9
O:0/1	- {ENG2_RET} Engage hook retract control
	OTE - File #2 - 5
	XIC - File #2 - 5
	XIO - File #100 SIMULATION - 7
O:0/2	- {ROTR_UP} Rotating mechanism raise control
	OTE - File #2 - 15
	XIC - File #100 SIMULATION - 4
O:0/3	- {ROTR_DOWN} Rotating mechanism lower control
	OTE - File #2 - 12
	XIC - File #100 SIMULATION - 3
O:0/4	- {ROTAT_CW} Rotating mechanism clockwise control
	OTE - File #2 - 23
	XIC - File #100 SIMULATION - 5
	XIO - File #2 - 24
O:0/5	- {ROTAT_CCW} Rotating mechanism counter-clockwise control
	OTE - File #2 - 26
	XIC - File #100 SIMULATION - 6
	XIO - File #2 - 22
O:0/6	- {GRIP_CLOS} Gripper close control
	OTL - File #2 - 16
	OTU - File #2 - 18
	XIC - File #2 - 19
	XIO - File #2 - 20
O:0/7	- {PALL_UPCTL} Pallet retainer up and off conveyor control
	OTL - File #2 - 6
	OTU - File #2 - 8
	XIC - File #100 SIMULATION - 1
	XIO - File #100 SIMULATION - 2
I:0.0	- MOV - File #99 DUPLIC_INS - 0
B3/16	- {PALLU_NBIT}
	ONS - File #2 - 4
B3/17	- {PALL_UPLS_NTRANS}
	OTE - File #2 - 4
	XIC - File #2 - 5
B3/18	- {ENG1T_PBIT}
	ONS - File #2 - 6
B3/19	- {DROPE_PBIT}
	ONS - File #2 - 7
B3/20	- {PALL_UPCTL_TRANS}
	OTE - File #2 - 7
	XIC - File #2 - 8
B3/21	- {PALLU_PBIT}
	ONS - File #2 - 9
B3/22	- {PALL_UPLS_TRANS}
	OTE - File #2 - 9
	XIC - File #2 - 11
B3/23	- {ROTRC_PBIT}
	ONS - File #2 - 10
B3/24	- {ROTR_CWLS_TRANS}
	OTE - File #2 - 10
	XIC - File #2 - 11
B3/25	- {MOVE_DN_TRANS}
	OTE - File #2 - 11
	XIC - File #2 - 12
B3/26	- {INT_ROTRO_DOWN}
	OTE - File #2 - 12
	XIC - File #2 - 12
B3/27	- {MOVUP_PBIT}
	ONS - File #2 - 13
B3/28	- {MOVE_UP_TRANS}
	OTE - File #2 - 13
	XIC - File #2 - 14
B3/29	- {INT_ROTRO_UP}

RSLogix 500 Cross Reference Report - Sorted by Address

```

B3/30      OTE - File #2 - 14
           XIC - File #2 - 14, 15
           - {GRIPC_PBIT}
B3/31      ONS - File #2 - 16
           - {GRIPO_PBIT}
           ONS - File #2 - 17
B3/32      - {OPEN_GRIP_TRANS}
           OTE - File #2 - 17
           XIC - File #2 - 18
B3/33      - {ROTU_PBIT}
           ONS - File #2 - 21
B3/34      - {ROTR_UPLS_TRANS}
           OTE - File #2 - 21
           XIC - File #2 - 22, 24
B3/35      - {ROT_CW_TRANS}
           OTE - File #2 - 22
           XIC - File #2 - 23
B3/36      - {INT_ROT_CW}
           OTE - File #2 - 23
           XIC - File #2 - 23
B3/37      - {ROT_CCW_TRANS}
           OTE - File #2 - 24
           XIC - File #2 - 25
B3/38      - {INT_ROT_CCW}
           OTE - File #2 - 25
           XIC - File #2 - 25, 26
B3/200     - {ENAB_SIMULATION} Enable simulation logic
           XIC - File #2 - 29
           XIO - File #2 - 30
T4:1       - {ENG1_TMR} Hook 1 engage timer
           TON - File #2 - 1
T4:1/DN    - XIC - File #2 - 6
           XIO - File #2 - 2
T4:1/EN    - XIC - File #2 - 2
T4:2       - {ENG2_TMR} Hook 2 disengage timer
           TON - File #2 - 3
T4:2/DN    - XIC - File #2 - 1
           XIO - File #2 - 5
T4:2/EN    - XIC - File #2 - 3
T4:3       - {CLMP_TMR} Clamp timer
           TON - File #2 - 19
T4:3/DN    - XIC - File #2 - 13
T4:4       - {UNCLMP_TMR} Unclamp timer
           TON - File #2 - 20
T4:4/DN    - XIC - File #2 - 13
T4:5       - {RUNCLMP_TMR} Reset unclamp timer
           TON - File #2 - 28
T4:5/DN    - XIC - File #2 - 15
           XIO - File #2 - 27
B20/0      - {RUN} Station running
           OTE - File #2 - 0
           XIC - File #2 - 0, 1, 3, 5, 7, 11, 12, 13, 15, 16, 17, 22, 23
           24, 26
           File #100 SIMULATION - 7
           XIO - File #2 - 27
           File #100 SIMULATION - 0
B20/40     - {INT_RESET} Reset in progress
           OTE - File #2 - 27
           XIC - File #2 - 8, 15, 18, 26, 27, 28
           XIO - File #2 - 0, 3, 5
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

```

RSLogix 500 Cross Reference Report - Sorted by Address

```

XIC - File #2 - 27
      File #100 SIMULATION - 0
B99/3 - {PROX1} Proximity sensor Pallet at engaging hook 1
      OTL - File #100 SIMULATION - 8
      OTU - File #100 SIMULATION - 0, 9
      XIC - File #2 - 1
B99/4 - {PALL_UPLS} Limit switch Indicates pallet off conveyor
      OTL - File #100 SIMULATION - 1
      OTU - File #100 SIMULATION - 2
      XIC - File #2 - 9
      XIO - File #2 - 3, 4
B99/5 - {ROTR_UPLS} Rotator up limit switch
      OTL - File #100 SIMULATION - 4
      OTU - File #100 SIMULATION - 3
      XIC - File #2 - 21, 26
      XIO - File #2 - 14, 15, 27
B99/6 - {ROTR_DNLS} Rotator down limit switch
      OTL - File #100 SIMULATION - 3
      OTU - File #100 SIMULATION - 4
      XIC - File #2 - 16, 17
      XIO - File #2 - 12
B99/7 - {ROTR_CWLS} Rotator clockwise limit switch
      OTL - File #100 SIMULATION - 5
      OTU - File #100 SIMULATION - 6
      XIC - File #2 - 10, 17, 24
      XIO - File #2 - 23
B99/10 - {ROTR_CCWLS} Rotator counter- clockwise limit switch
      OTL - File #100 SIMULATION - 6
      OTU - File #100 SIMULATION - 5
      XIC - File #2 - 3, 5, 7, 11, 16, 22
      XIO - File #2 - 25, 26, 27
T100:0 - TON - File #100 SIMULATION - 1
T100:0/DN - XIC - File #100 SIMULATION - 1
T100:1 - TON - File #100 SIMULATION - 2
T100:1/DN - XIC - File #100 SIMULATION - 2
T100:2 - TON - File #100 SIMULATION - 3
T100:2/DN - XIC - File #100 SIMULATION - 3
T100:3 - TON - File #100 SIMULATION - 4
T100:3/DN - XIC - File #100 SIMULATION - 4
T100:4 - TON - File #100 SIMULATION - 5
T100:4/DN - XIC - File #100 SIMULATION - 5
T100:5 - TON - File #100 SIMULATION - 6
T100:5/DN - XIC - File #100 SIMULATION - 6
T100:6 - TON - File #100 SIMULATION - 8
T100:6/DN - XIC - File #100 SIMULATION - 8
      XIO - File #100 SIMULATION - 8
T100:6/EN - XIC - File #100 SIMULATION - 8
T100:7 - TON - File #100 SIMULATION - 9
T100:7/DN - XIC - File #100 SIMULATION - 9
B101/0 - ONS - File #100 SIMULATION - 7
B101/1 - OTE - File #100 SIMULATION - 7
      XIC - File #100 SIMULATION - 8
U:99 - JSR - File #2 - 30
U:100 - {TIEBACK}
      JSR - File #2 - 29

```