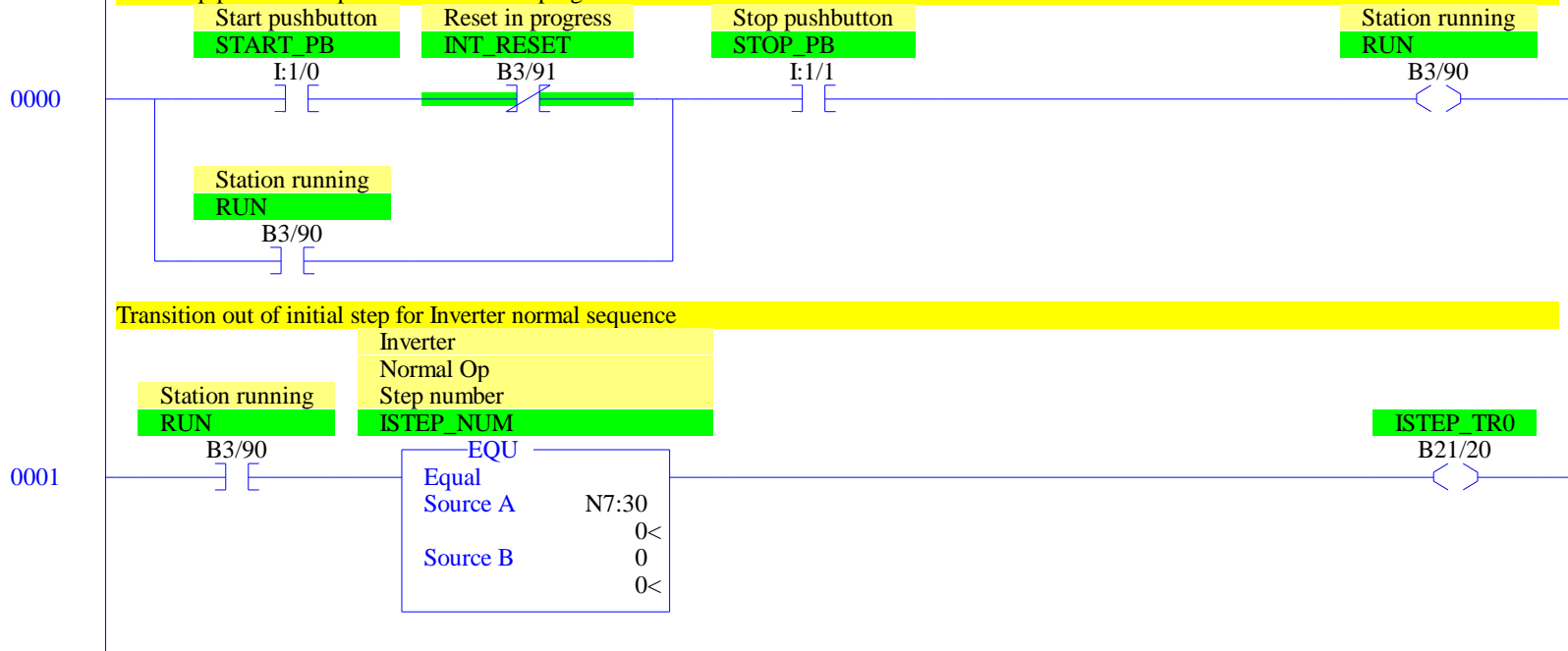
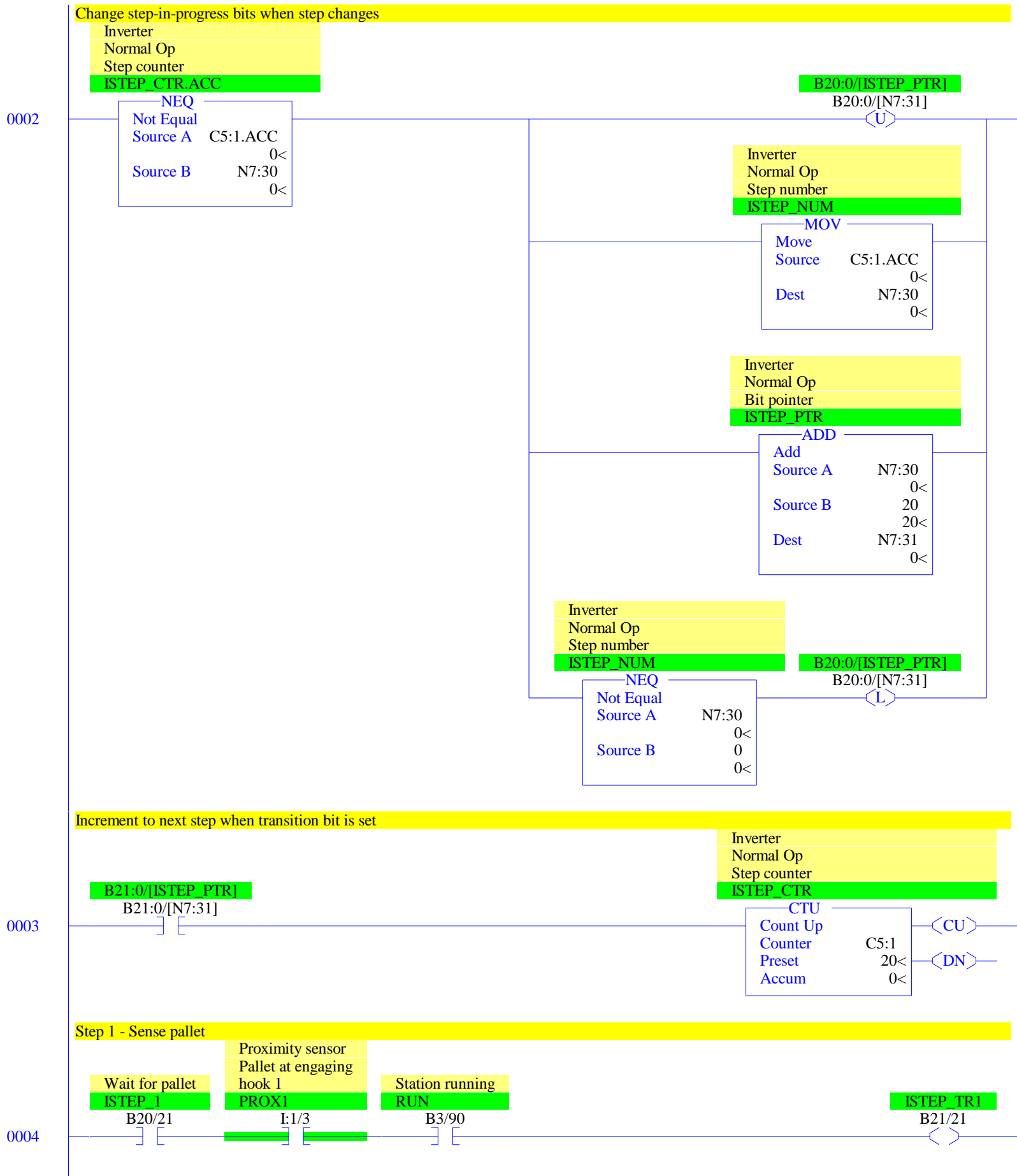


Example 9.2 - Engine Inverter Control with counter-based sequence & simulation

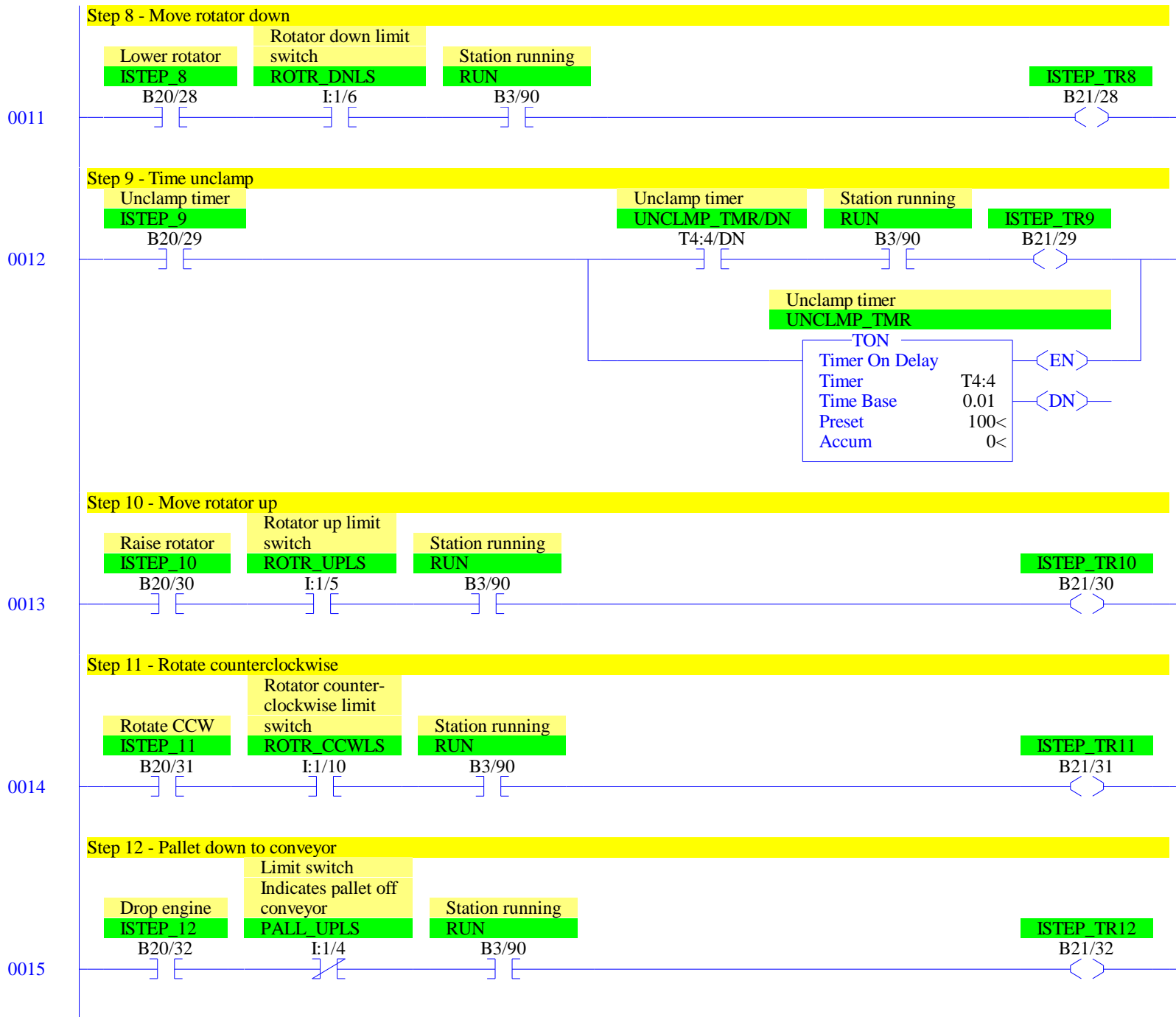
Copyright (c) 2023 Dogwood Valley Press, LLC

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









0016

Step 13 - Time move out of pallet

Move out pallet

ISTEP_13

B20/33

Hook 2 disengage
timer

ENG2_TMR/DN

T4:2/DN

Inverter

Normal Op

Step counter

ISTEP_CTR.ACC

ISTEP_CTR.ACC

MOV

Move

Source

1

1<

Dest

C5:1.ACC

0<

Hook 2 disengage
timer

ENG2_TMR

TON

Timer On Delay

Timer

T4:2

Time Base

0.01

Preset

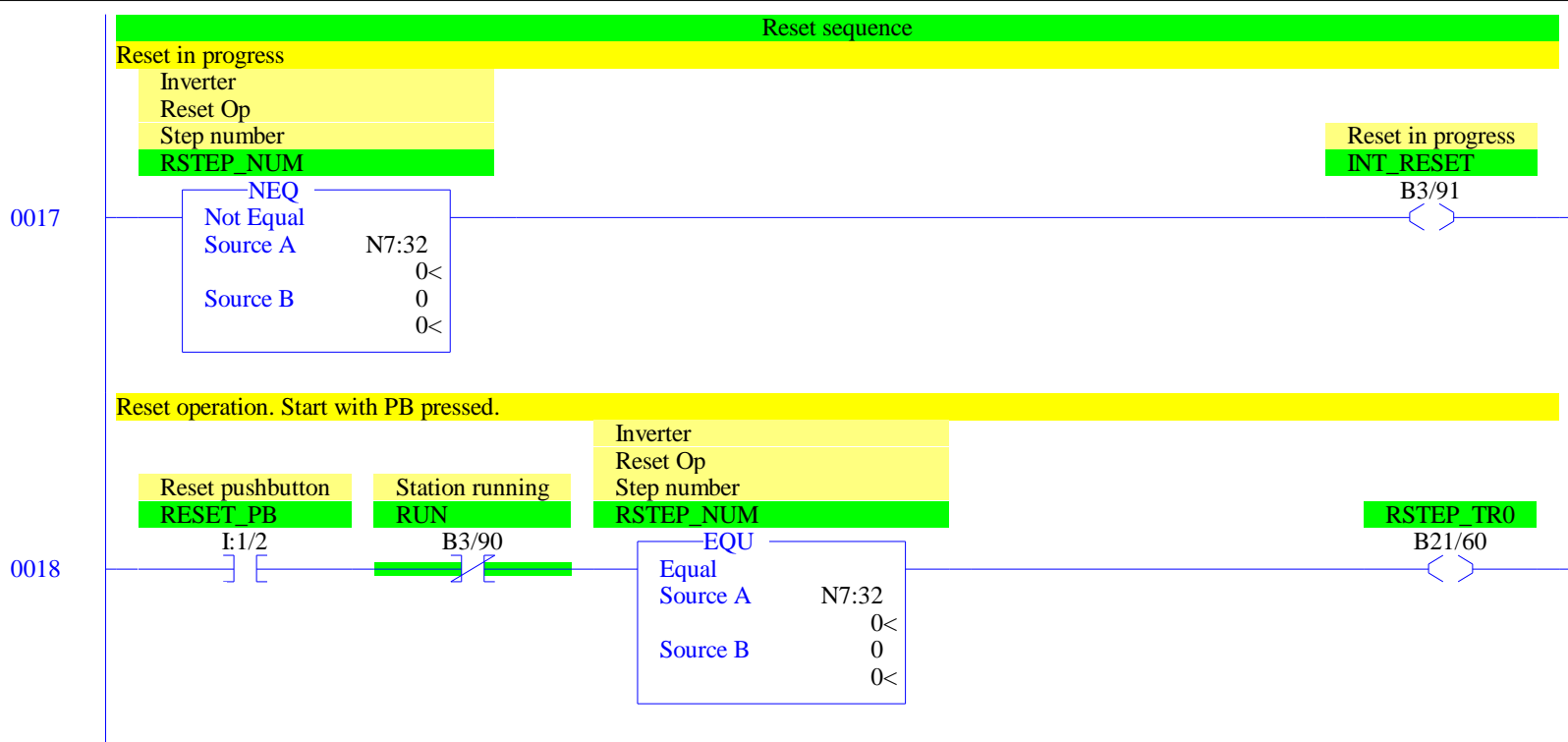
300<

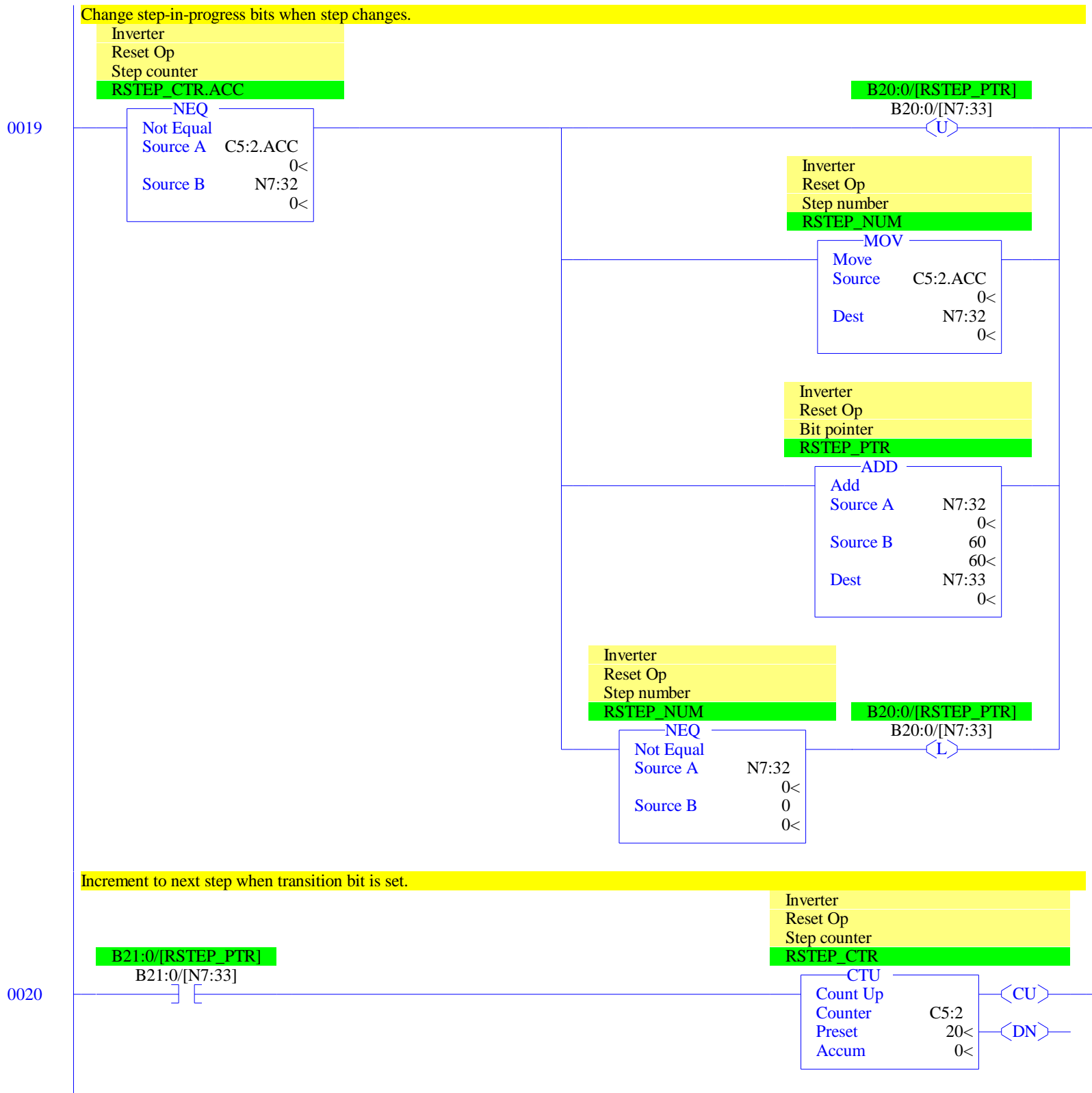
Accum

0<

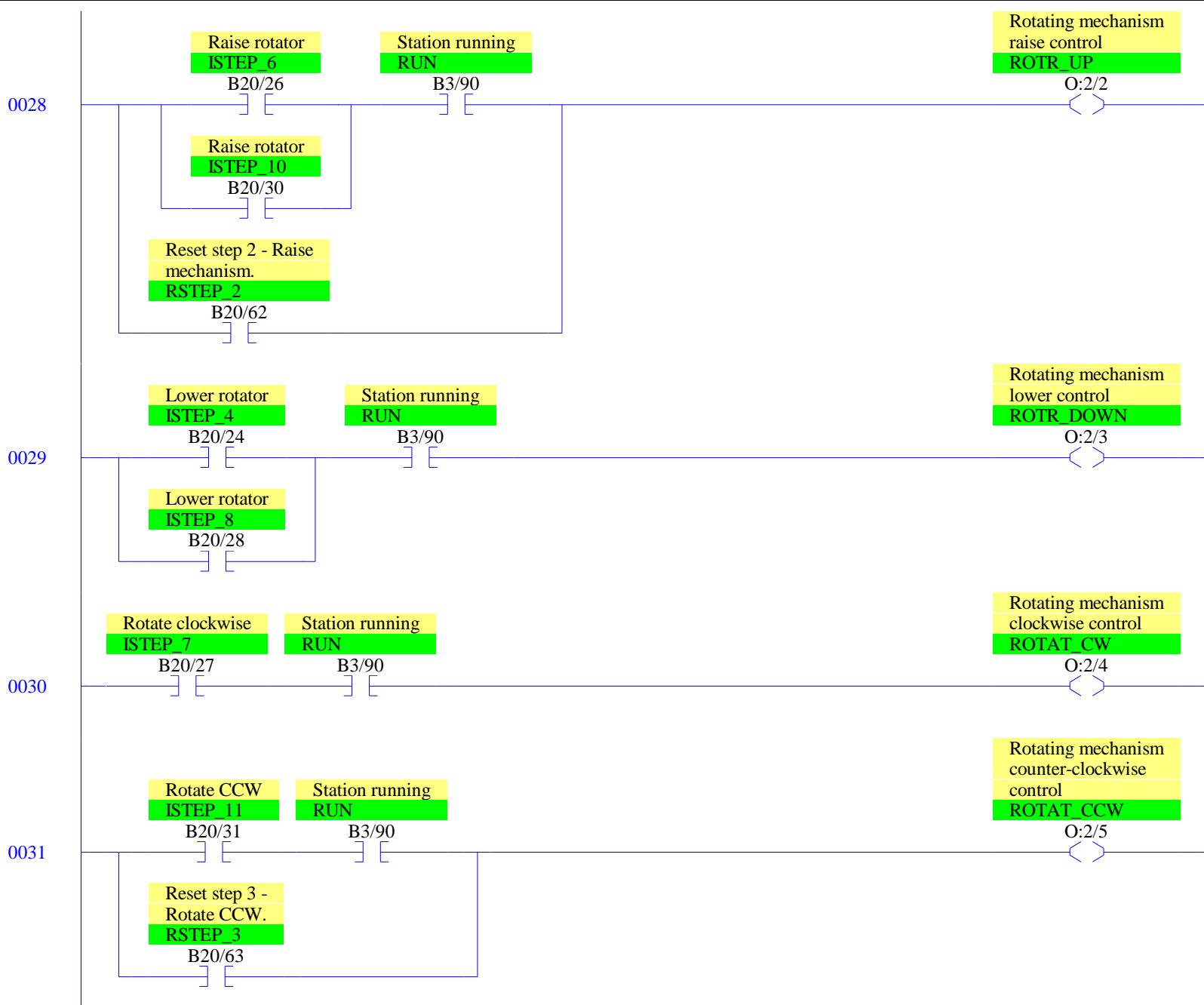
<EN>

<DN>

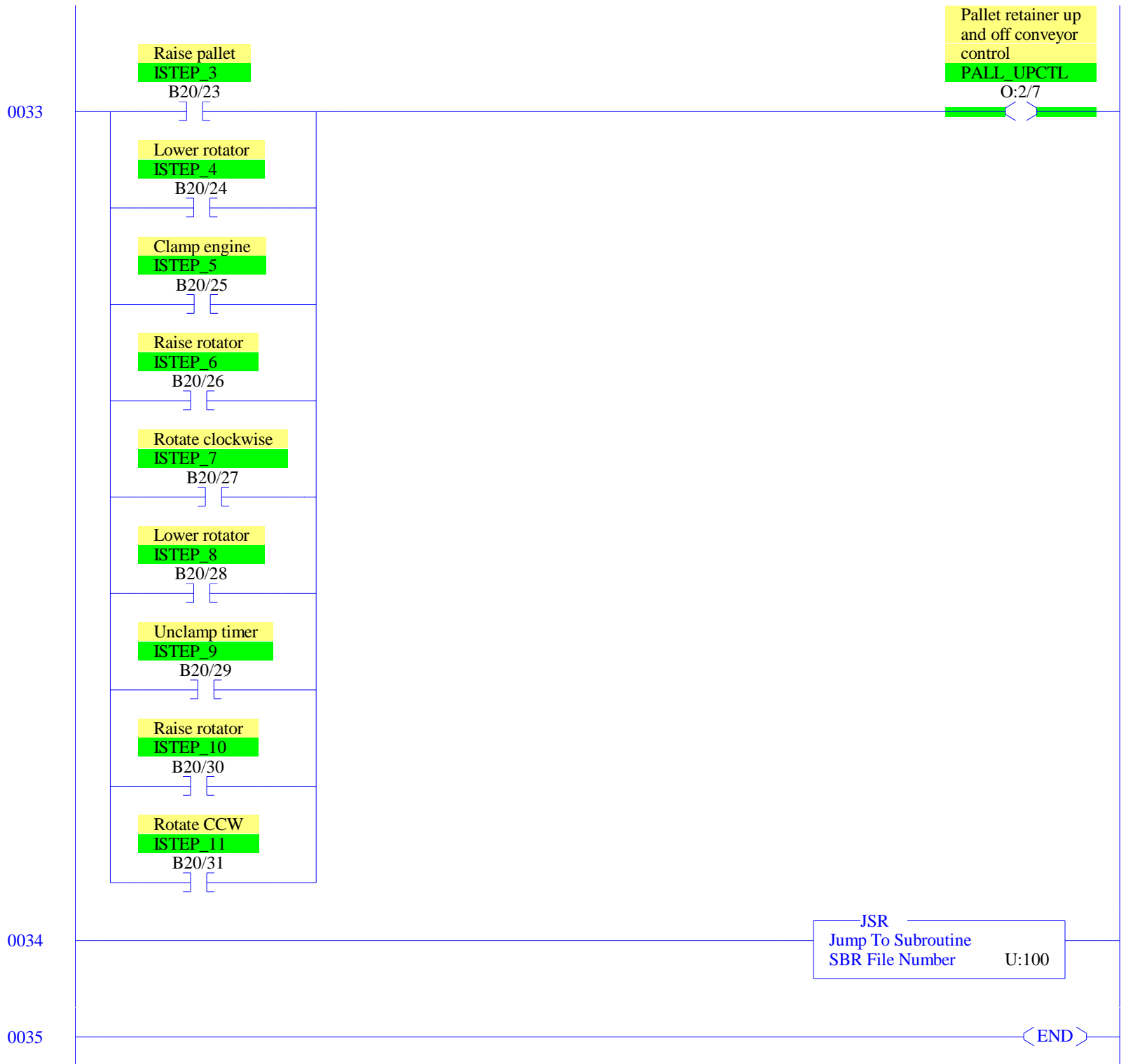










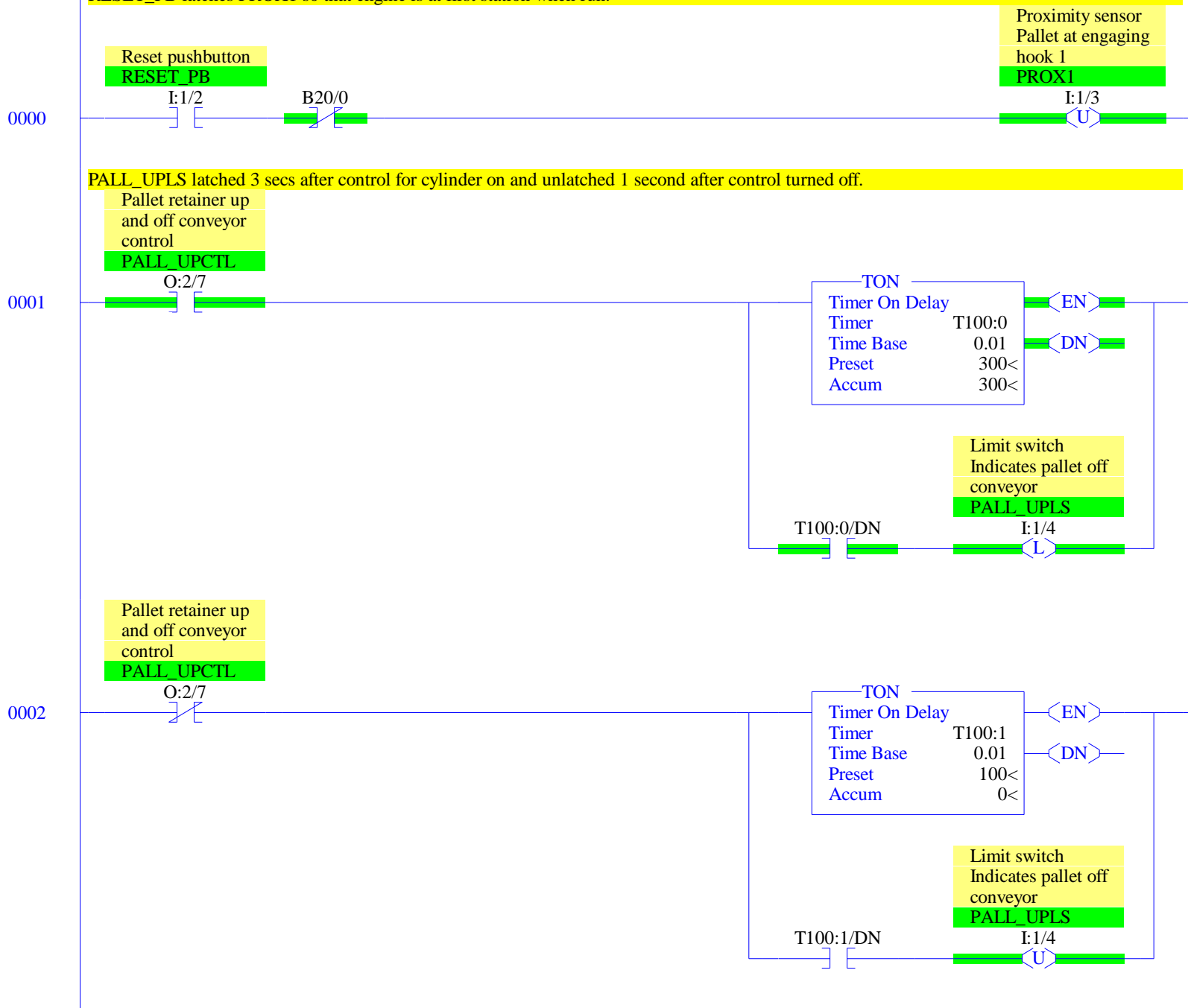


Simulation of engine inverter

Copyright (c) 2013 Dogwood Valley Press, LLC

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.

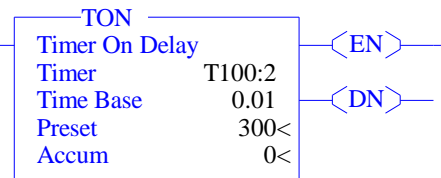
Rotating mechanism

lower control

ROTR_DOWN

O:2/3

0003

Rotator down limit
switch

ROTR_DNLS

T100:2/DN

I:1/6

<L>

Rotator up limit
switch

ROTR_UPLS

I:1/5

<U>

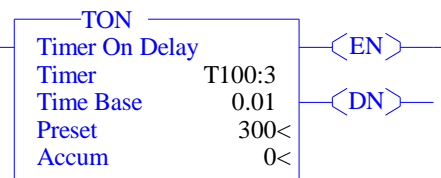
Rotating mechanism

raise control

ROTR_UP

O:2/2

0004

Rotator up limit
switch

ROTR_UPLS

T100:3/DN

I:1/5

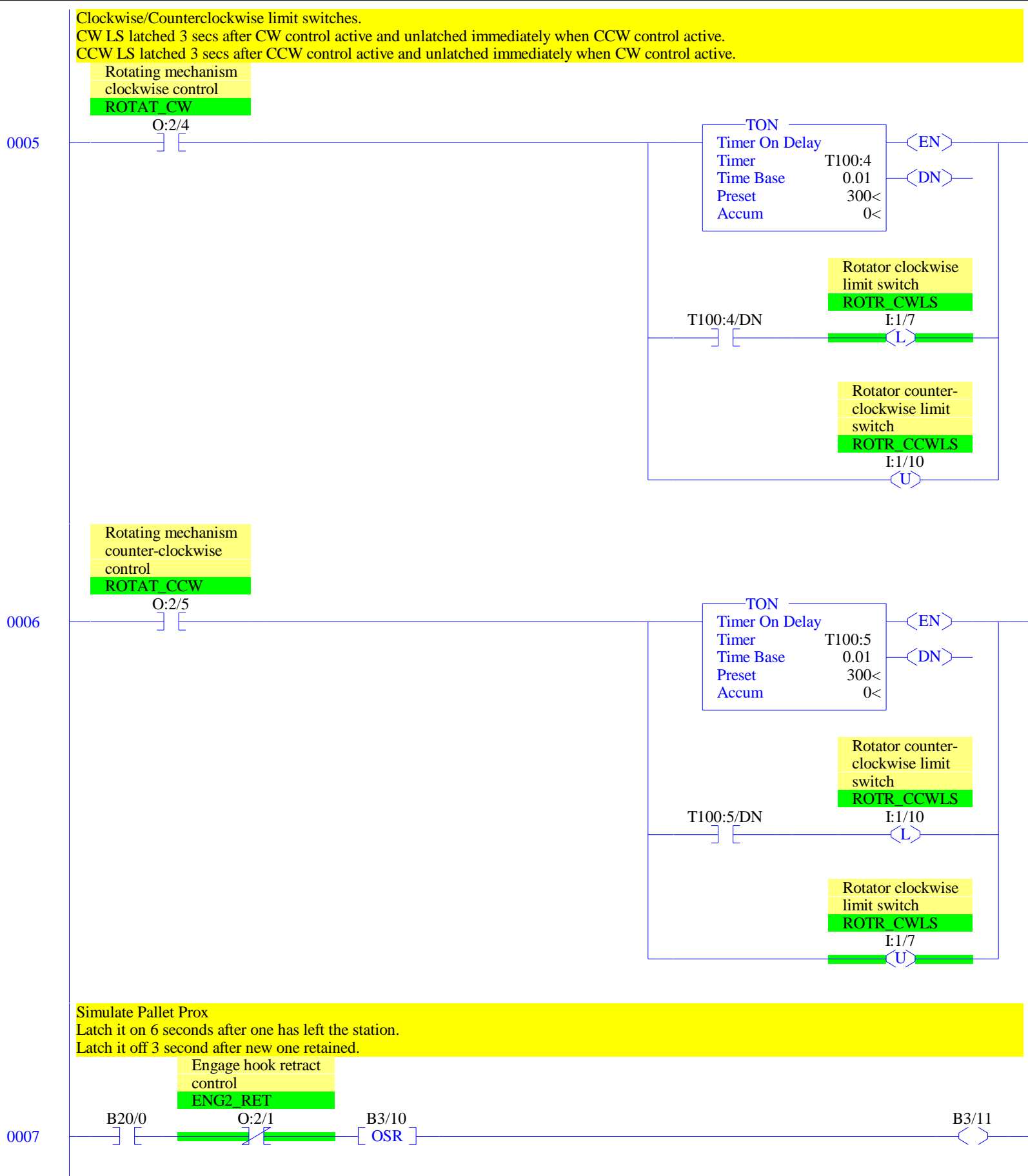
<L>

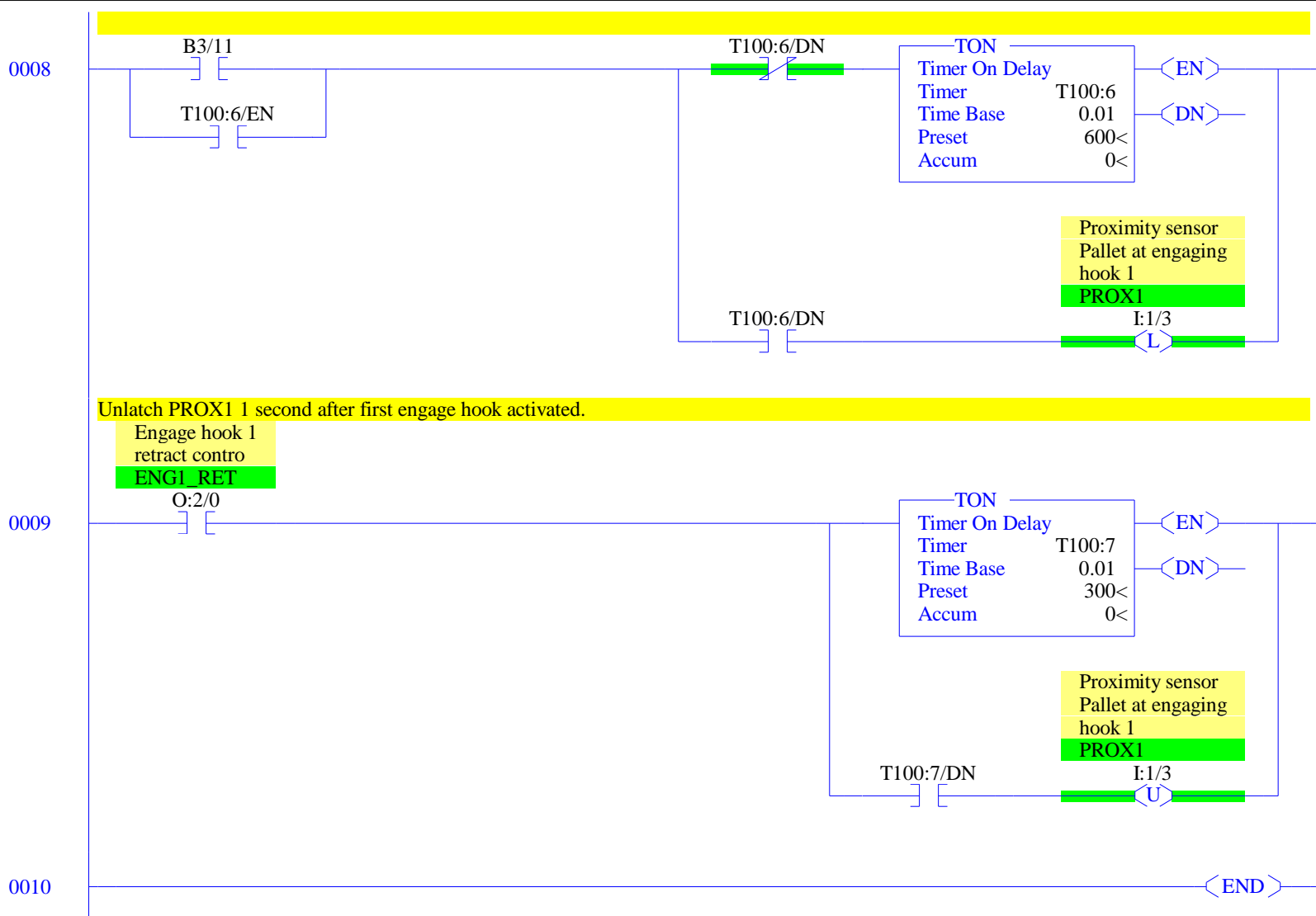
Rotator down limit
switch

ROTR_DNLS

I:1/6

<U>





RSLogix 500 Cross Reference Report - Sorted by Address

O:2/0	- {ENG1_RET} Engage hook 1 retract contro
	OTE - File #2 - 26
	XIC - File #100 SIMULATION - 9
O:2/1	- {ENG2_RET} Engage hook retract control
	OTE - File #2 - 27
	XIO - File #100 SIMULATION - 7
O:2/2	- {ROTR_UP} Rotating mechanism raise control
	OTE - File #2 - 28
	XIC - File #100 SIMULATION - 4
O:2/3	- {ROTR_DOWN} Rotating mechanism lower control
	OTE - File #2 - 29
	XIC - File #100 SIMULATION - 3
O:2/4	- {ROTAT_CW} Rotating mechanism clockwise control
	OTE - File #2 - 30
	XIC - File #100 SIMULATION - 5
O:2/5	- {ROTAT_CCW} Rotating mechanism counter-clockwise control
	OTE - File #2 - 31
	XIC - File #100 SIMULATION - 6
O:2/6	- {GRIP_CLOS} Gripper close control
	OTE - File #2 - 32
O:2/7	- {PALL_UPCTL} Pallet retainer up and off conveyor control
	OTE - File #2 - 33
	XIC - File #100 SIMULATION - 1
	XIO - File #100 SIMULATION - 2
I:1/0	- {START_PB} Start pushbutton
	XIC - File #2 - 0
I:1/1	- {STOP_PB} Stop pushbutton
	XIC - File #2 - 0
I:1/2	- {RESET_PB} Reset pushbutton
	XIC - File #2 - 18
	File #100 SIMULATION - 0
I:1/3	- {PROX1} Proximity sensor Pallet at engaging hook 1
	OTL - File #100 SIMULATION - 8
	OTU - File #100 SIMULATION - 0, 9
	XIC - File #2 - 4
I:1/4	- {PALL_UPLS} Limit switch Indicates pallet off conveyor
	OTL - File #100 SIMULATION - 1
	OTU - File #100 SIMULATION - 2
	XIC - File #2 - 6
	XIO - File #2 - 15
I:1/5	- {ROTR_UPLS} Rotator up limit switch
	OTL - File #100 SIMULATION - 4
	OTU - File #100 SIMULATION - 3
	XIC - File #2 - 9, 13, 22
I:1/6	- {ROTR_DNLS} Rotator down limit switch
	OTL - File #100 SIMULATION - 3
	OTU - File #100 SIMULATION - 4
	XIC - File #2 - 7, 11
I:1/7	- {ROTR_CWLS} Rotator clockwise limit switch
	OTL - File #100 SIMULATION - 5
	OTU - File #100 SIMULATION - 6
	XIC - File #2 - 10
I:1/10	- {ROTR_CCWLS} Rotator counter- clockwise limit switch
	OTL - File #100 SIMULATION - 6
	OTU - File #100 SIMULATION - 5
	XIC - File #2 - 14, 23
B3:0/10	- OSR - File #100 SIMULATION - 7
B3:0/11	- OTE - File #100 SIMULATION - 7
	XIC - File #100 SIMULATION - 8
B3:5/10	- {RUN} Station running
	OTE - File #2 - 0
	XIC - File #2 - 0, 1, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
	28, 29, 30, 31
	XIO - File #2 - 18
B3:5/11	- {INT_RESET} Reset in progress
	OTE - File #2 - 17

RSLogix 500 Cross Reference Report - Sorted by Address

```

T4:1      - XIC - File #2 - 25
           - XIO - File #2 - 0
           - {ENG1_TMR} Hook 1 engage timer
           - TON - File #2 - 5
T4:1/DN   - XIC - File #2 - 5
T4:2      - {ENG2_TMR} Hook 2 disengage timer
           - TON - File #2 - 16
T4:2/DN   - XIC - File #2 - 16
T4:3      - {CLMP_TMR} Clamp timer
           - TON - File #2 - 8
T4:3/DN   - XIC - File #2 - 8
T4:4      - {UNCLMP_TMR} Unclamp timer
           - TON - File #2 - 12
T4:4/DN   - XIC - File #2 - 12
T4:5      - {RUNCLMP_TMR} Reset unclamp timer
           - TON - File #2 - 21
T4:5/DN   - XIC - File #2 - 21
C5:1      - {ISTEP_CTR} Inverter Normal Op Step counter
           - CTU - File #2 - 3
           - RES - File #2 - 25
C5:1.ACC  - MOV - File #2 - 2, 16
           - NEQ - File #2 - 2
C5:2      - {RSTEP_CTR} Inverter Reset Op Step counter
           - CTU - File #2 - 20
           - RES - File #2 - 24
C5:2.ACC  - MOV - File #2 - 19
           - NEQ - File #2 - 19
N7:30     - {ISTEP_NUM} Inverter Normal Op Step number
           - MOV - File #2 - 2
           - ADD - File #2 - 2
           - EQU - File #2 - 1
           - NEQ - File #2 - 2
N7:31     - {ISTEP_PTR} Inverter Normal Op Bit pointer
           - ADD - File #2 - 2
           - OTL - File #2 - 2
           - OTU - File #2 - 2
           - XIC - File #2 - 3
N7:32     - {RSTEP_NUM} Inverter Reset Op Step number
           - MOV - File #2 - 19
           - ADD - File #2 - 19
           - EQU - File #2 - 18
           - NEQ - File #2 - 17, 19
N7:33     - {RSTEP_PTR} Inverter Reset Op Bit pointer
           - ADD - File #2 - 19
           - OTL - File #2 - 19
           - OTU - File #2 - 19
           - XIC - File #2 - 20
B20:0/0   - XIC - File #100 SIMULATION - 7
           - XIO - File #100 SIMULATION - 0
B20:0/[N7:31] - OTL - File #2 - 2
           - OTU - File #2 - 2
B20:0/[N7:33] - OTL - File #2 - 19
           - OTU - File #2 - 19
B20:1/5   - {ISTEP_1} Wait for pallet
           - XIC - File #2 - 4
B20:1/6   - {ISTEP_2} Move to hook 2
           - XIC - File #2 - 5, 26
B20:1/7   - {ISTEP_3} Raise pallet
           - XIC - File #2 - 6, 33
B20:1/8   - {ISTEP_4} Lower rotator
           - XIC - File #2 - 7, 29, 33
B20:1/9   - {ISTEP_5} Clamp engine
           - XIC - File #2 - 8, 32, 33
B20:1/10  - {ISTEP_6} Raise rotator
           - XIC - File #2 - 9, 28, 32, 33
B20:1/11  - {ISTEP_7} Rotate clockwise

```

RSLogix 500 Cross Reference Report - Sorted by Address

	XIC - File #2 - 10, 30, 32, 33
B20:1/12	- {ISTEP_8} Lower rotator
	XIC - File #2 - 11, 29, 32, 33
B20:1/13	- {ISTEP_9} Unclamp timer
	XIC - File #2 - 12, 33
B20:1/14	- {ISTEP_10} Raise rotator
	XIC - File #2 - 13, 28, 33
B20:1/15	- {ISTEP_11} Rotate CCW
	XIC - File #2 - 14, 31, 33
B20:2/0	- {ISTEP_12} Drop engine
	XIC - File #2 - 15
B20:2/1	- {ISTEP_13} Move out pallet
	XIC - File #2 - 16, 27
B20:3/13	- {RSTEP_1} Reset step 1 - Delay to unclamp.
	XIC - File #2 - 21
B20:3/14	- {RSTEP_2} Reset step 2 - Raise mechanism.
	XIC - File #2 - 22, 28
B20:3/15	- {RSTEP_3} Reset step 3 - Rotate CCW.
	XIC - File #2 - 23, 31
B20:4/0	- {RSTEP_4} Reset step 4 - unlatch internal reset.
	XIC - File #2 - 24
B21:0/[N7:31]	- XIC - File #2 - 3
B21:0/[N7:33]	- XIC - File #2 - 20
B21:1/4	- {ISTEP_TR0}
	OTE - File #2 - 1
B21:1/5	- {ISTEP_TR1}
	OTE - File #2 - 4
B21:1/6	- {ISTEP_TR2}
	OTE - File #2 - 5
B21:1/7	- {ISTEP_TR3}
	OTE - File #2 - 6
B21:1/8	- {ISTEP_TR4}
	OTE - File #2 - 7
B21:1/9	- {ISTEP_TR5}
	OTE - File #2 - 8
B21:1/10	- {ISTEP_TR6}
	OTE - File #2 - 9
B21:1/11	- {ISTEP_TR7}
	OTE - File #2 - 10
B21:1/12	- {ISTEP_TR8}
	OTE - File #2 - 11
B21:1/13	- {ISTEP_TR9}
	OTE - File #2 - 12
B21:1/14	- {ISTEP_TR10}
	OTE - File #2 - 13
B21:1/15	- {ISTEP_TR11}
	OTE - File #2 - 14
B21:2/0	- {ISTEP_TR12}
	OTE - File #2 - 15
B21:3/12	- {RSTEP_TR0}
	OTE - File #2 - 18
B21:3/13	- {RSTEP_TR1}
	OTE - File #2 - 21
B21:3/14	- {RSTEP_TR2}
	OTE - File #2 - 22
B21:3/15	- {RSTEP_TR3}
	OTE - File #2 - 23
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

RSLogix 500 Cross Reference Report - Sorted by Address

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
U:100	- JSR - File #2 - 34