

Valve Leak Check Station Control - With Simulation

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Additional internal memory:

Symbol	Address	
INT_RESET	B3/1	Internal reset
STEP_1 to STEP_6	B20/1 to B20/6	Step-in-progress bits
WAIT_TMR	T4:1	Times leak test

Conversion formulas

$$HD_HGT = ((HGT_MEAS - 3277) / 13107) * (150 - 75) + 75$$

$$VLV_PRES = ((PRES_MEAS - 3277) / 13107) * (100)$$

Initial start.

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

RUN

B33/20

STEP_1

STEP_2

STEP_3

STEP_4

STEP_5

STEP_6

STEP_1

B20/1

B20/2

B20/3

B20/4

B20/5

B20/6

B20/1

(L)

Step 1. Wait for valve.

Reflective proximity
switch that is on
when valve is in
position to be
pressure checked

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

STEP_1

B20/1

PROX

I:1/0

B33/20

STEP_1

B20/1

(U)

STEP_2

B20/2

(L)

Step 2. Head down.

Pressurizing head
height, in mm (REAL)

HD_HGT

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

STEP_2

B20/2

LEQ

Less Than or Eq (A<=B)
Source A F8:50
150.0<
Source B F24:15
100.0<

B33/20

STEP_2

B20/2

(U)

STEP_3

B20/3

(L)

Step 3. Pressurize.

Pressure, in psi
(REAL)

VLV_PRES

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

STEP_3

B20/3

GEQ

Grtr Than or Eq (A>=B)
Source A F8:51
0.0<
Source B F24:16
60.0<

B33/20

STEP_3

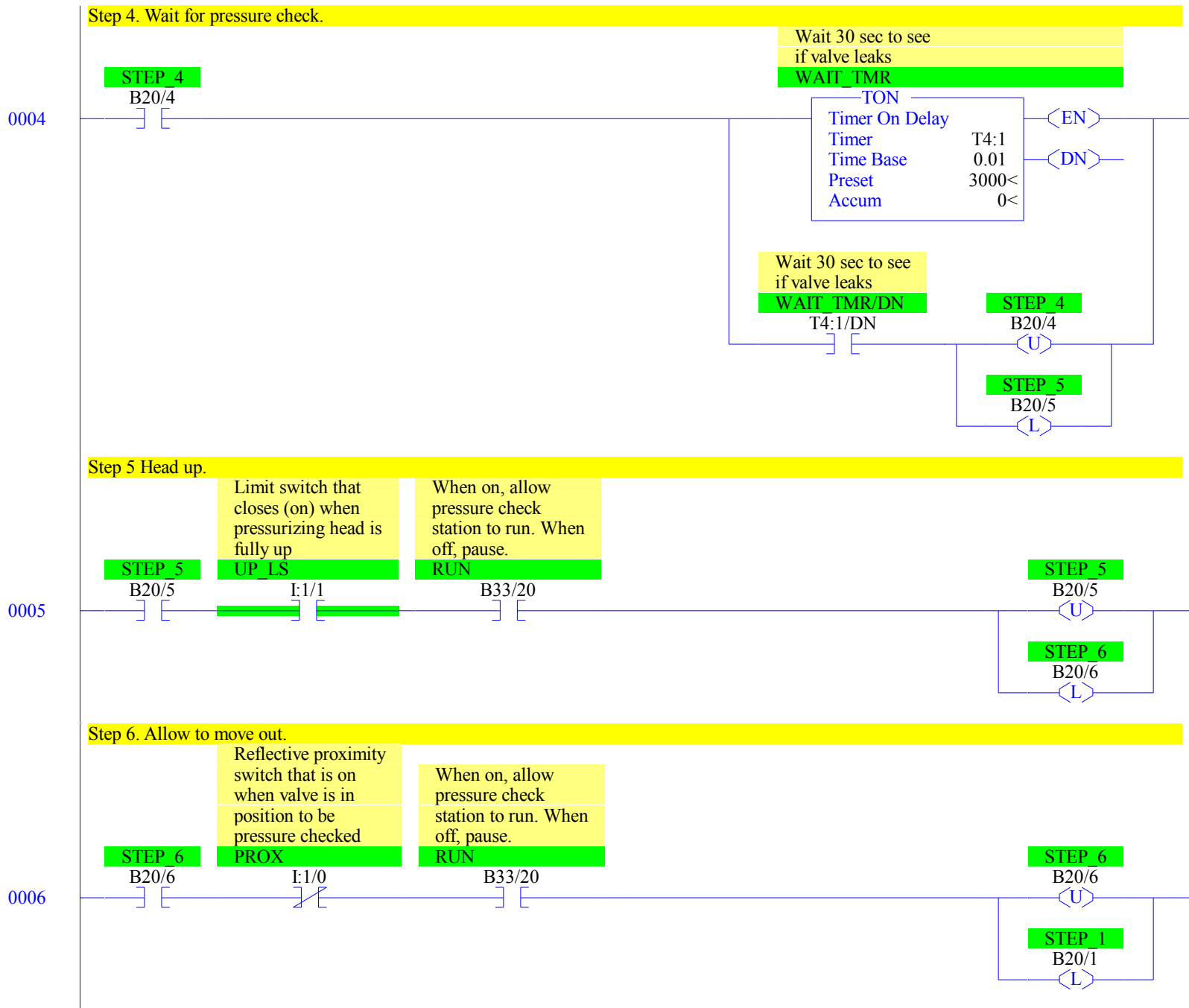
B20/3

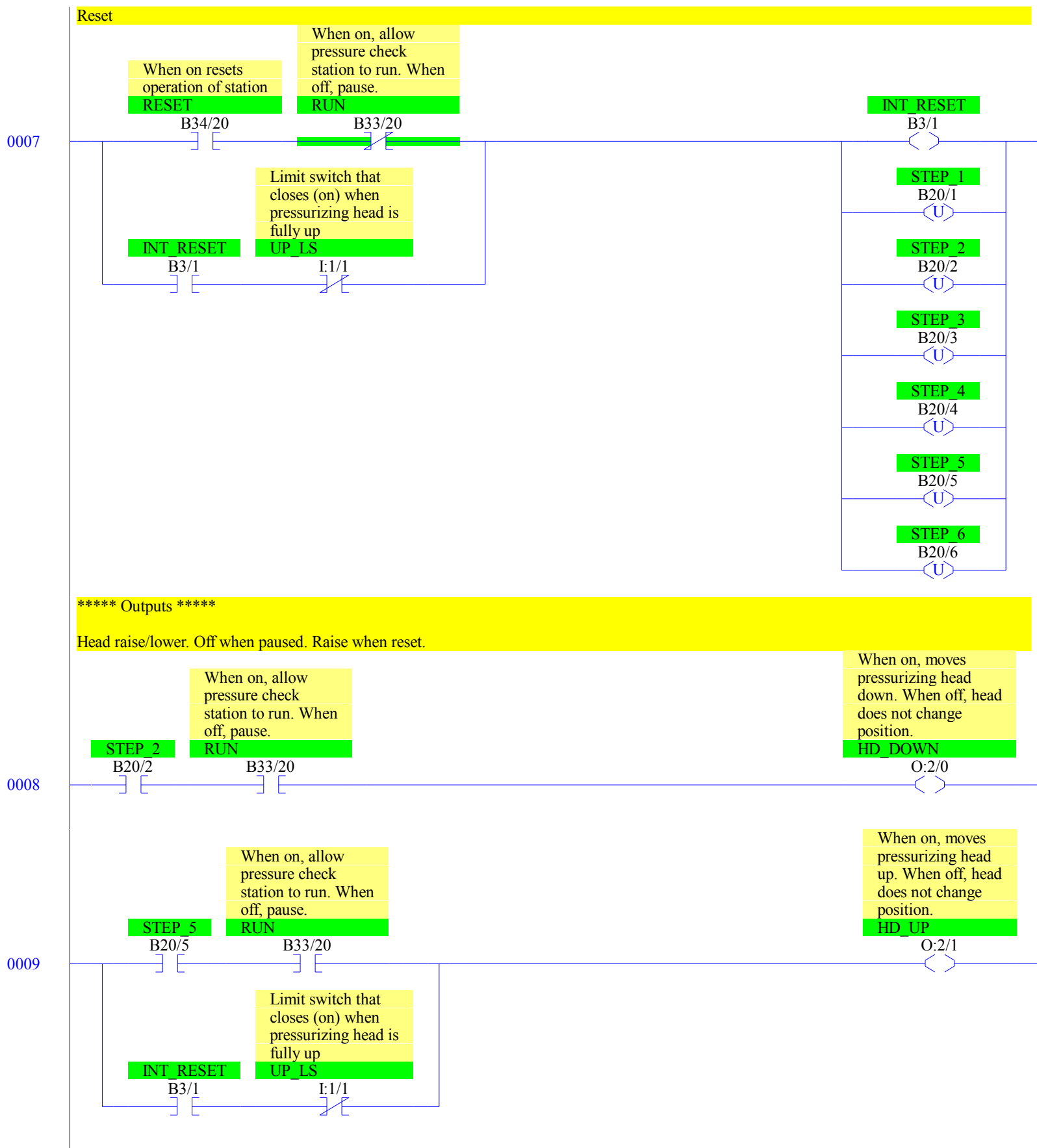
(U)

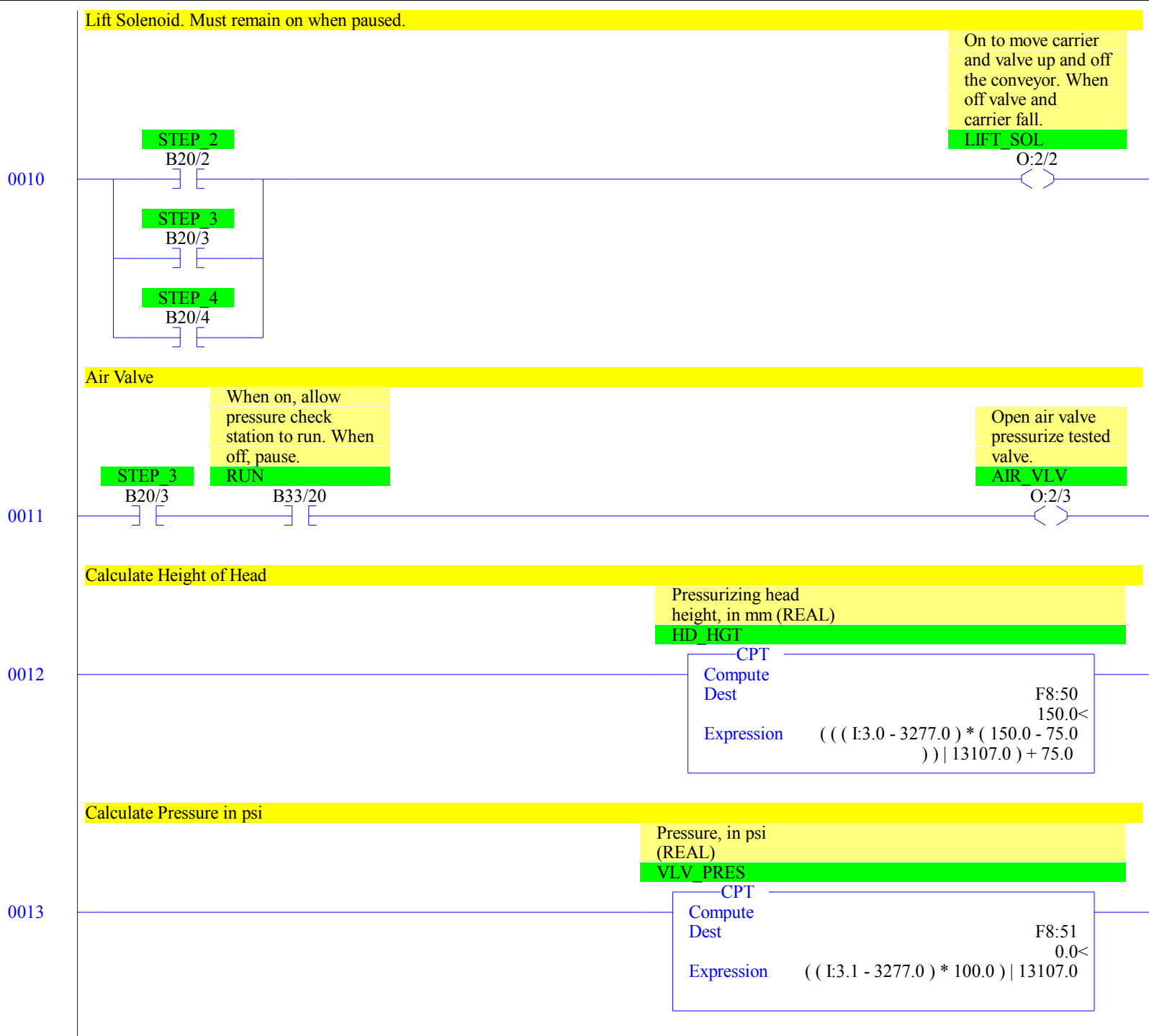
STEP_4

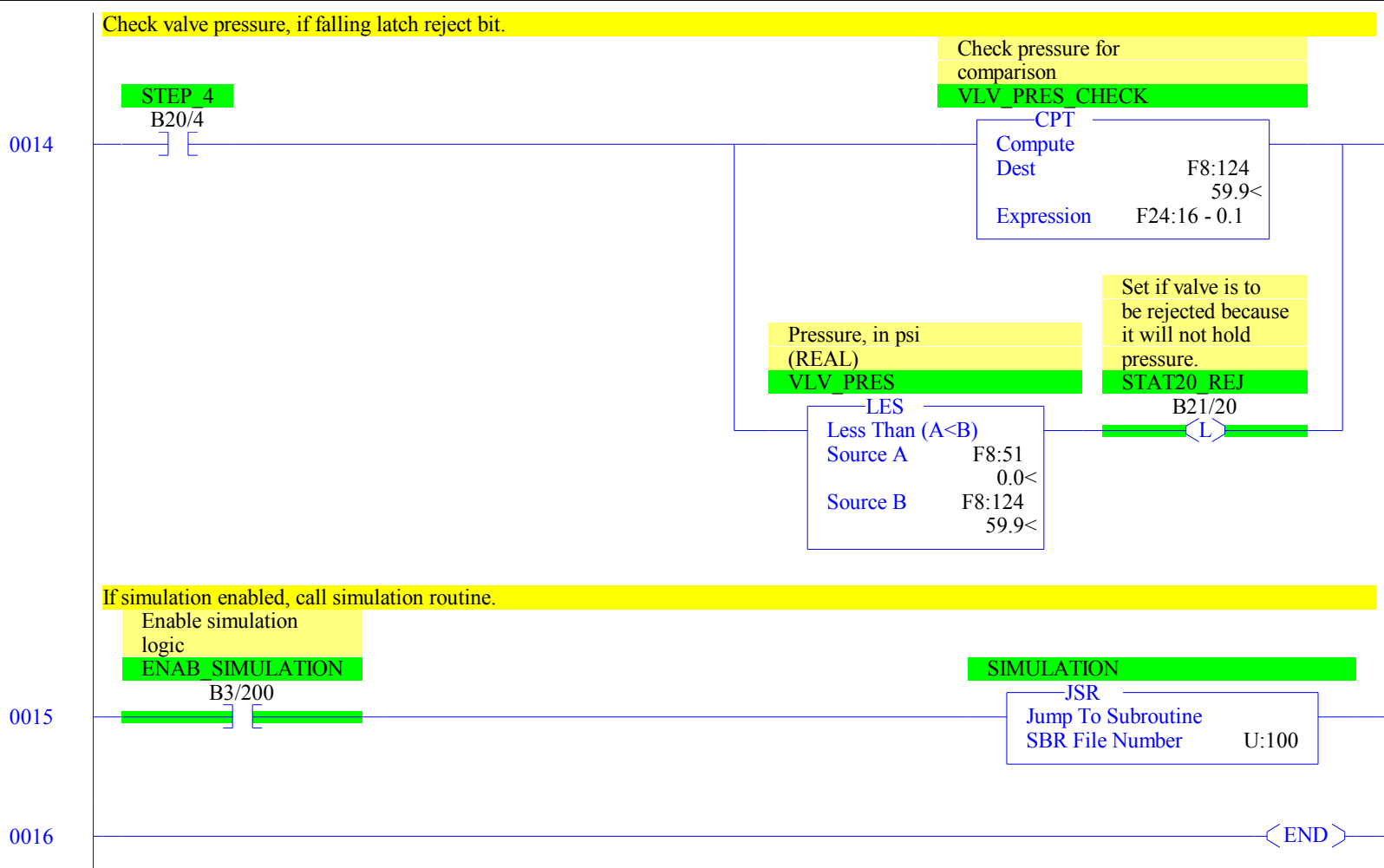
B20/4

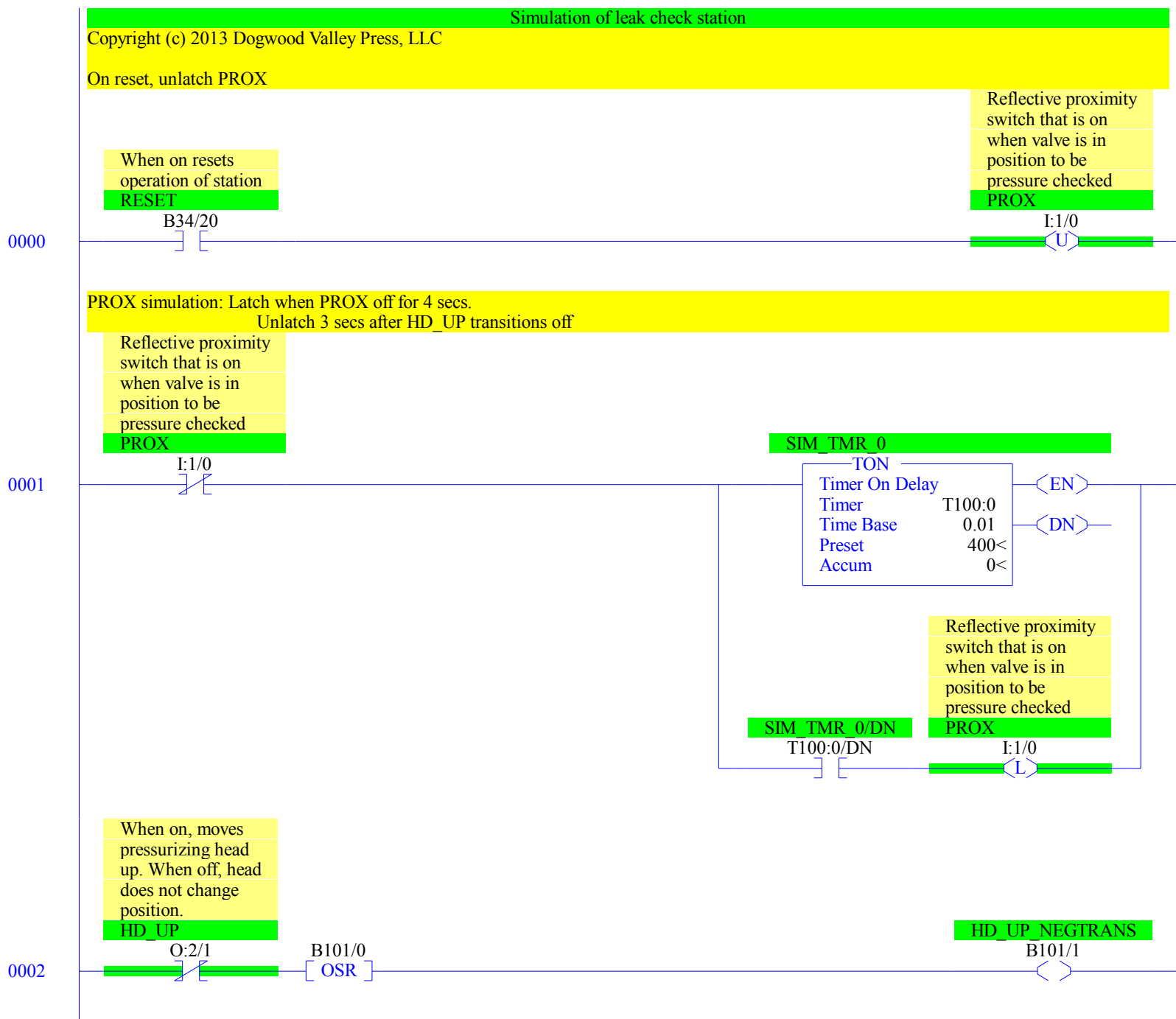
(L)

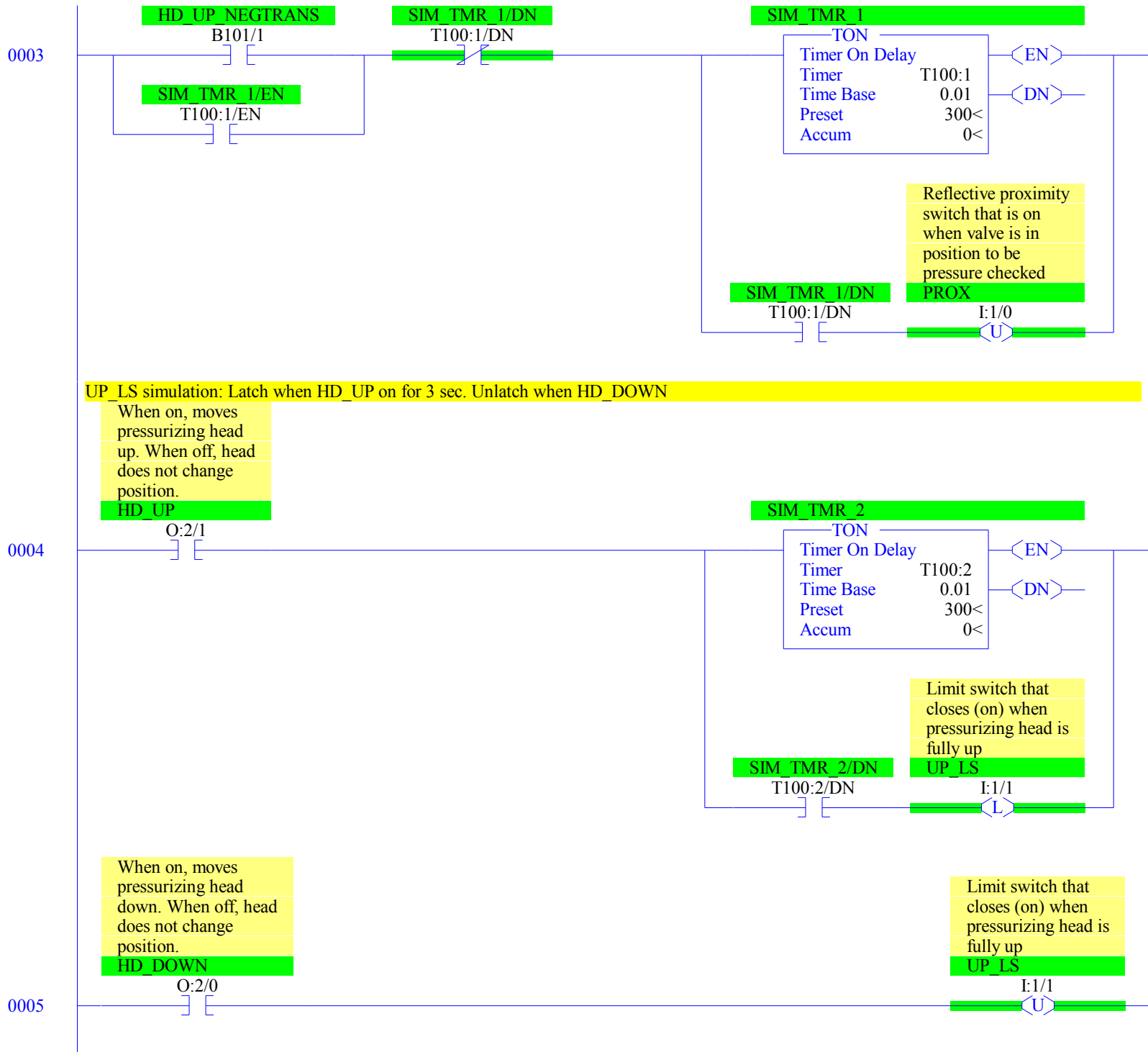












HGT_MEAS Simulation: When HD_DOWN, decrement every 50 ms by 13107/80, meaning it goes from high to low in 4 sec. Also make sure no less than 3277.

When HD_UP increment every 50 ms by 13107/40 meaning it goes to high in at most 2 sec, and then make sure not larger than 16384

When on, moves
pressurizing head
down. When off, head
does not change
position.

HD_DOWN

O:2/0

SIM_TMR_4/DN

T100:4/DN

SIM_TMR_4

TON

Timer On Delay

Timer

Time Base

Preset

Accum

T100:4

0.01

5<

0<

<EN>

<DN>

Measurement of
pressurizing head
height, represents
75 to 150 mm

SIM_TMR_4/DN

T100:4/DN

CPT

Compute

Dest

I:3.0

16384<

Expression $I:3.0 - (13107.0 \mid 80.0)$

When on, moves
pressurizing head
up. When off, head
does not change
position.

HD_UP

O:2/1

SIM_TMR_5/DN

T100:5/DN

SIM_TMR_5

TON

Timer On Delay

Timer

Time Base

Preset

Accum

T100:5

0.01

5<

0<

<EN>

<DN>

Measurement of
pressurizing head
height, represents
75 to 150 mm

SIM_TMR_5/DN

T100:5/DN

CPT

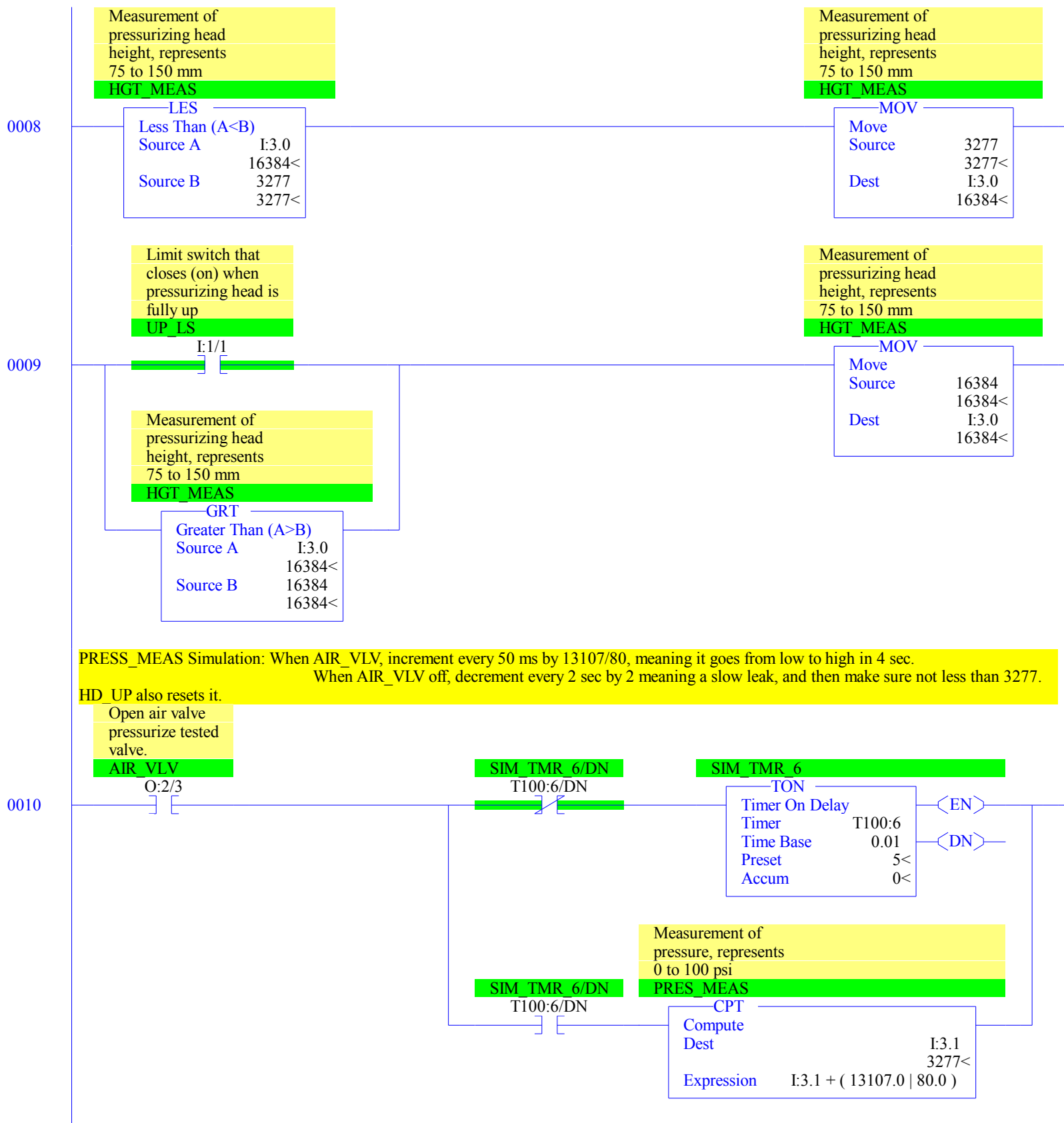
Compute

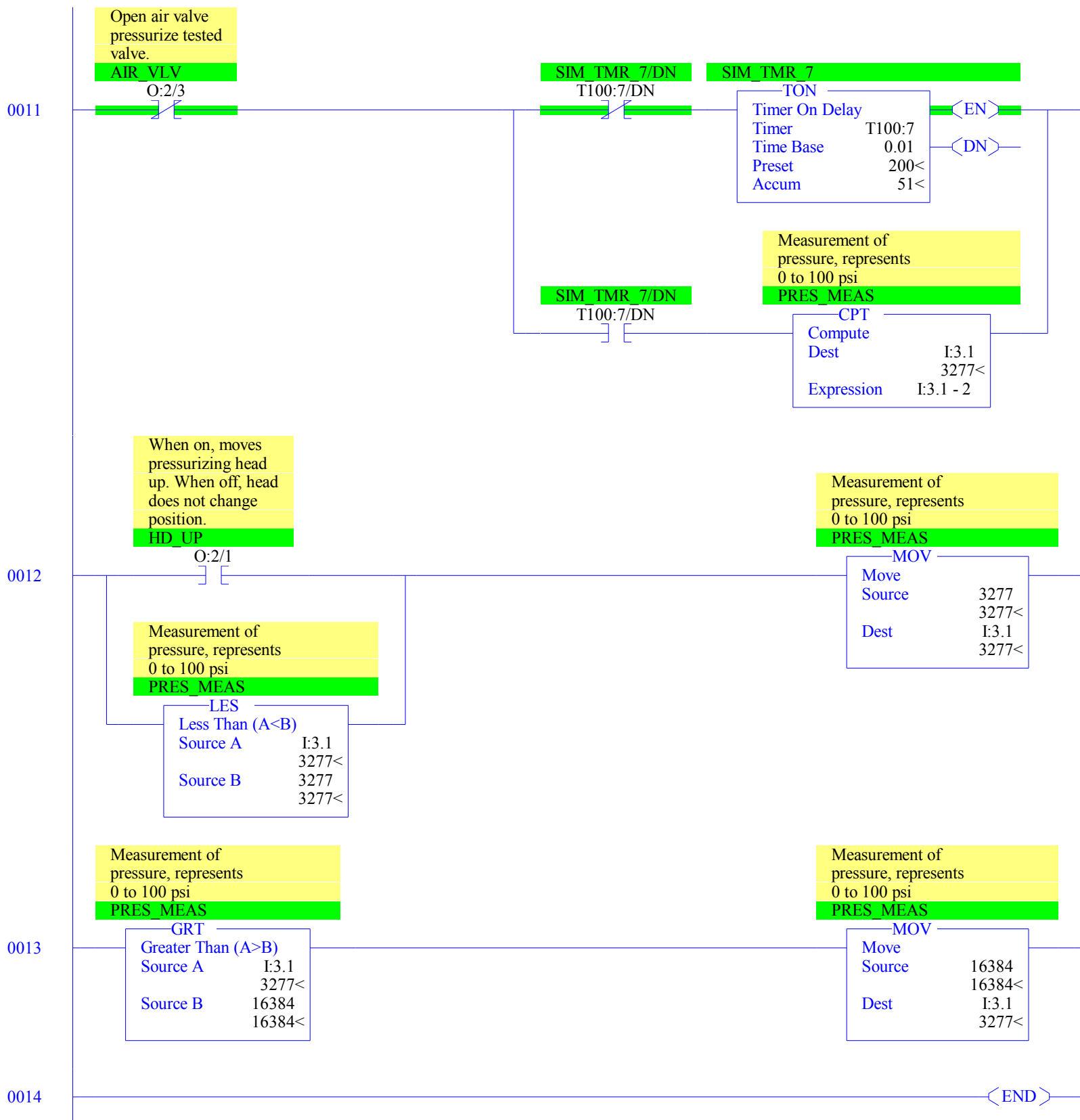
Dest

I:3.0

16384<

Expression $I:3.0 + (13107.0 \mid 40.0)$





RSLogix 500 Cross Reference Report - Sorted by Address

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O:2/0      - {HD_DOWN} When on, moves pressurizing head down. When off,
             head does not change position.
             OTE - File #2 - 8
             XIC - File #100 TIEBACK - 5, 6
O:2/1      - {HD_UP} When on, moves pressurizing head up. When off, head
             does not change position.
             OTE - File #2 - 9
             XIC - File #100 TIEBACK - 4, 7, 12
             XIO - File #100 TIEBACK - 2
O:2/2      - {LIFT_SOL} On to move carrier and valve up and off the
             conveyor. When off valve and carrier fall.
             OTE - File #2 - 10
O:2/3      - {AIR_VLV} Open air valve pressurize tested valve.
             OTE - File #2 - 11
             XIC - File #100 TIEBACK - 10
             XIO - File #100 TIEBACK - 11
I:1/0      - {PROX} Reflective proximity switch that is on when valve is
             in position to be pressure checked
             OTL - File #100 TIEBACK - 1
             OTU - File #100 TIEBACK - 0, 3
             XIC - File #2 - 1
             XIO - File #2 - 6
             File #100 TIEBACK - 1
I:1/1      - {UP_LS} Limit switch that closes (on) when pressurizing head
             is fully up
             OTL - File #100 TIEBACK - 4
             OTU - File #100 TIEBACK - 5
             XIC - File #2 - 5
             File #100 TIEBACK - 9
             XIO - File #2 - 7, 9
I:3.0      - {HGT_MEAS} Measurement of pressurizing head height,
             represents 75 to 150 mm
             MOV - File #100 TIEBACK - 8, 9
             CPT - File #2 - 12
             File #100 TIEBACK - 6, 7
             GRT - File #100 TIEBACK - 9
             LES - File #100 TIEBACK - 8
I:3.1      - {PRES_MEAS} Measurement of pressure, represents 0 to 100 psi
             MOV - File #100 TIEBACK - 12, 13
             CPT - File #2 - 13
             File #100 TIEBACK - 10, 11
             GRT - File #100 TIEBACK - 13
             LES - File #100 TIEBACK - 12
B3/1       - {INT RESET}
             OTE - File #2 - 7
             XIC - File #2 - 7, 9
B3/200     - {ENAB_SIMULATION} Enable simulation logic
             XIC - File #2 - 15
T4:1       - {WAIT_TMR} Wait 30 sec to see if valve leaks
             TON - File #2 - 4
T4:1/DN    - XIC - File #2 - 4
F8:50      - {HD_HGT} Pressurizing head height, in mm (REAL)
             CPT - File #2 - 12
             LEQ - File #2 - 2
F8:51      - {VLV_PRES} Pressure, in psi (REAL)
             CPT - File #2 - 13
             GEQ - File #2 - 3
             LES - File #2 - 14
F8:124     - {VLV_PRES_CHECK} Check pressure for comparison
             CPT - File #2 - 14
             LES - File #2 - 14
B20/1      - {STEP 1}
             OTL - File #2 - 0, 6
             OTU - File #2 - 1, 7
             XIC - File #2 - 1
             XIO - File #2 - 0

```

RSLogix 500 Cross Reference Report - Sorted by Address

```

B20/2      - {STEP_2}
            OTL - File #2 - 1
            OTU - File #2 - 2, 7
            XIC - File #2 - 2, 8, 10
            XIO - File #2 - 0

B20/3      - {STEP_3}
            OTL - File #2 - 2
            OTU - File #2 - 3, 7
            XIC - File #2 - 3, 10, 11
            XIO - File #2 - 0

B20/4      - {STEP_4}
            OTL - File #2 - 3
            OTU - File #2 - 4, 7
            XIC - File #2 - 4, 10, 14
            XIO - File #2 - 0

B20/5      - {STEP_5}
            OTL - File #2 - 4
            OTU - File #2 - 5, 7
            XIC - File #2 - 5, 9
            XIO - File #2 - 0

B20/6      - {STEP_6}
            OTL - File #2 - 5
            OTU - File #2 - 6, 7
            XIC - File #2 - 6
            XIO - File #2 - 0

B21/20     - {STAT20_REJ} Set if valve is to be rejected because it will
            not hold pressure.
            OTL - File #2 - 14

F24:15     - {VLV_HGT} Height of valve, desired height of pressurizing
            head to do pressure check (REAL)
            LEQ - File #2 - 2

F24:16     - {DES_PRES} Desired test pressure, in psi (REAL)
            CPT - File #2 - 14
            GEQ - File #2 - 3

B33/20     - {RUN} When on, allow pressure check station to run. When
            off, pause.
            XIC - File #2 - 0, 1, 2, 3, 5, 6, 8, 9, 11
            XIO - File #2 - 7

B34/20     - {RESET} When on resets operation of station
            XIC - File #2 - 7
            File #100 TIEBACK - 0

T100:0     - {SIM_TMR_0}
            TON - File #100 TIEBACK - 1

T100:0/DN  - XIC - File #100 TIEBACK - 1

T100:1     - {SIM_TMR_1}
            TON - File #100 TIEBACK - 3

T100:1/DN  - XIC - File #100 TIEBACK - 3
            XIO - File #100 TIEBACK - 3

T100:1/EN  - XIC - File #100 TIEBACK - 3

T100:2     - {SIM_TMR_2}
            TON - File #100 TIEBACK - 4

T100:2/DN  - XIC - File #100 TIEBACK - 4

T100:4     - {SIM_TMR_4}
            TON - File #100 TIEBACK - 6

T100:4/DN  - XIC - File #100 TIEBACK - 6
            XIO - File #100 TIEBACK - 6

T100:5     - {SIM_TMR_5}
            TON - File #100 TIEBACK - 7

T100:5/DN  - XIC - File #100 TIEBACK - 7
            XIO - File #100 TIEBACK - 7

T100:6     - {SIM_TMR_6}
            TON - File #100 TIEBACK - 10

T100:6/DN  - XIC - File #100 TIEBACK - 10
            XIO - File #100 TIEBACK - 10

T100:7     - {SIM_TMR_7}
            TON - File #100 TIEBACK - 11

```

RSLogix 500 Cross Reference Report - Sorted by Address

T100:7/DN	- XIC - File #100 TIEBACK - 11
	XIO - File #100 TIEBACK - 11
B101/0	- OSR - File #100 TIEBACK - 2
B101/1	- {HD_UP_NEGTRANS}
	OTE - File #100 TIEBACK - 2
	XIC - File #100 TIEBACK - 3
U:100	- {SIMULATION}
	JSR - File #2 - 15