

Valve Leak Check Station Control

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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

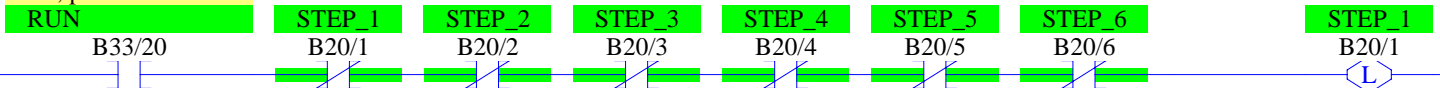
Conversion formulas

$$HD_HGT = ((HGT_MEAS - 6241) / 24965) * (150 - 75) + 75$$

$$VLV_PRES = ((PRES_MEAS - 6241) / 24965) * (100)$$

Initial start.

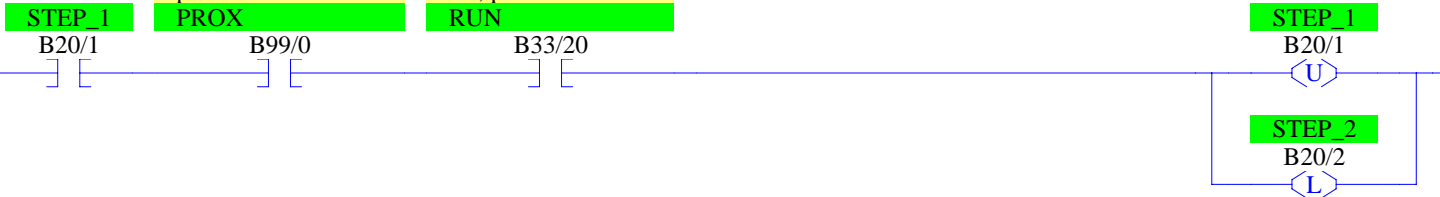
When on, allow pressure check station to run. When off, pause.



Step 1. Wait for valve.

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

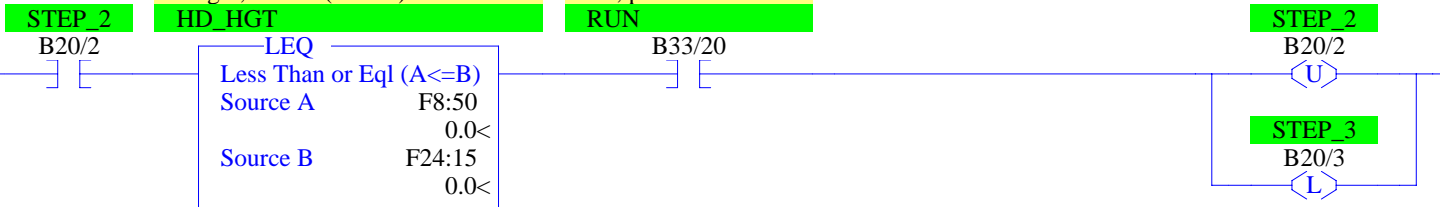
When on, allow pressure check station to run. When off, pause.



Step 2. Head down.

Pressurizing head height, in mm (REAL)

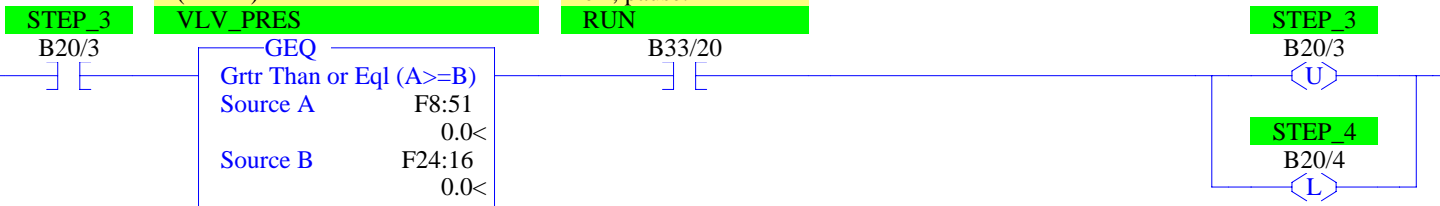
When on, allow pressure check station to run. When off, pause.

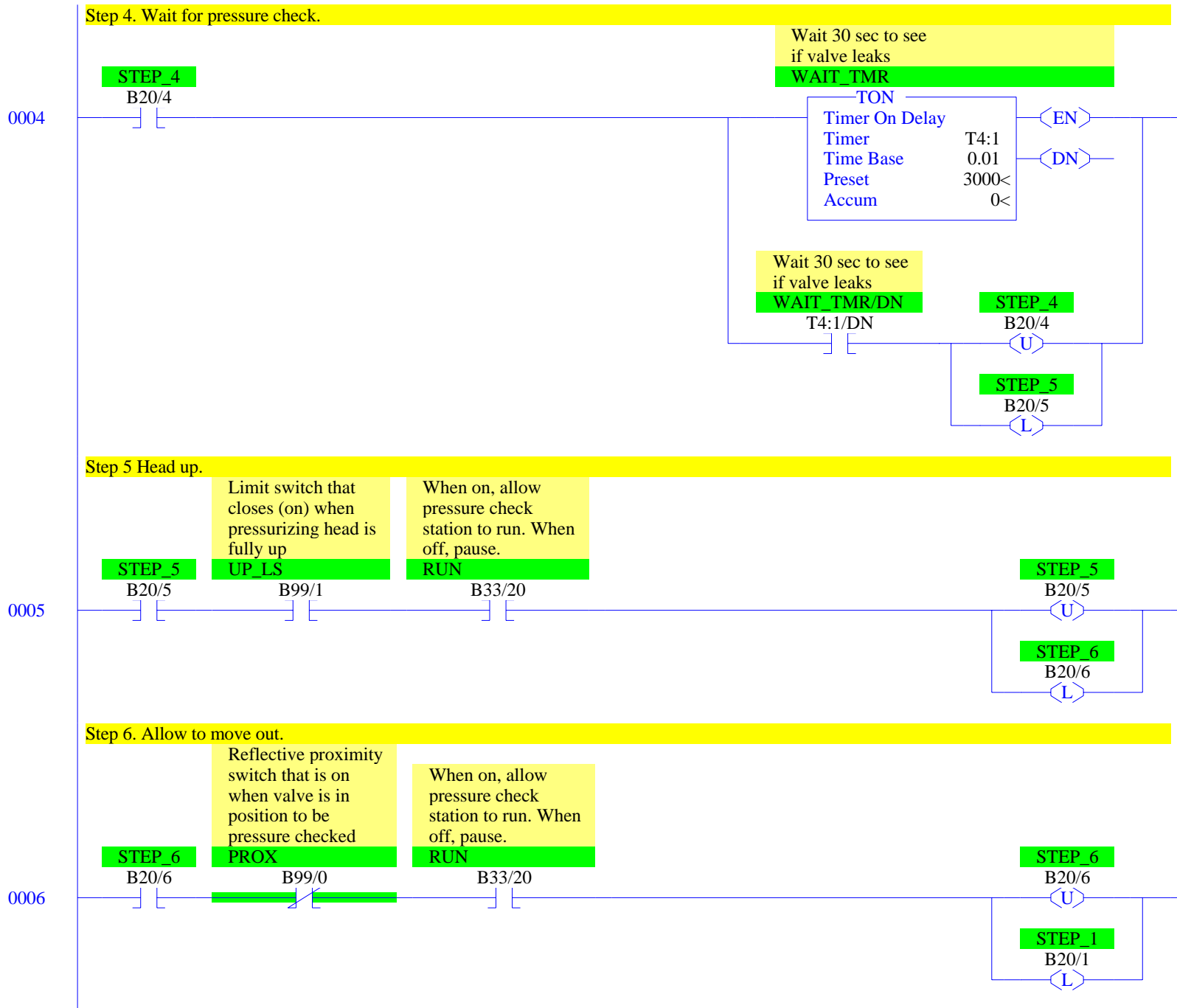


Step 3. Pressurize.

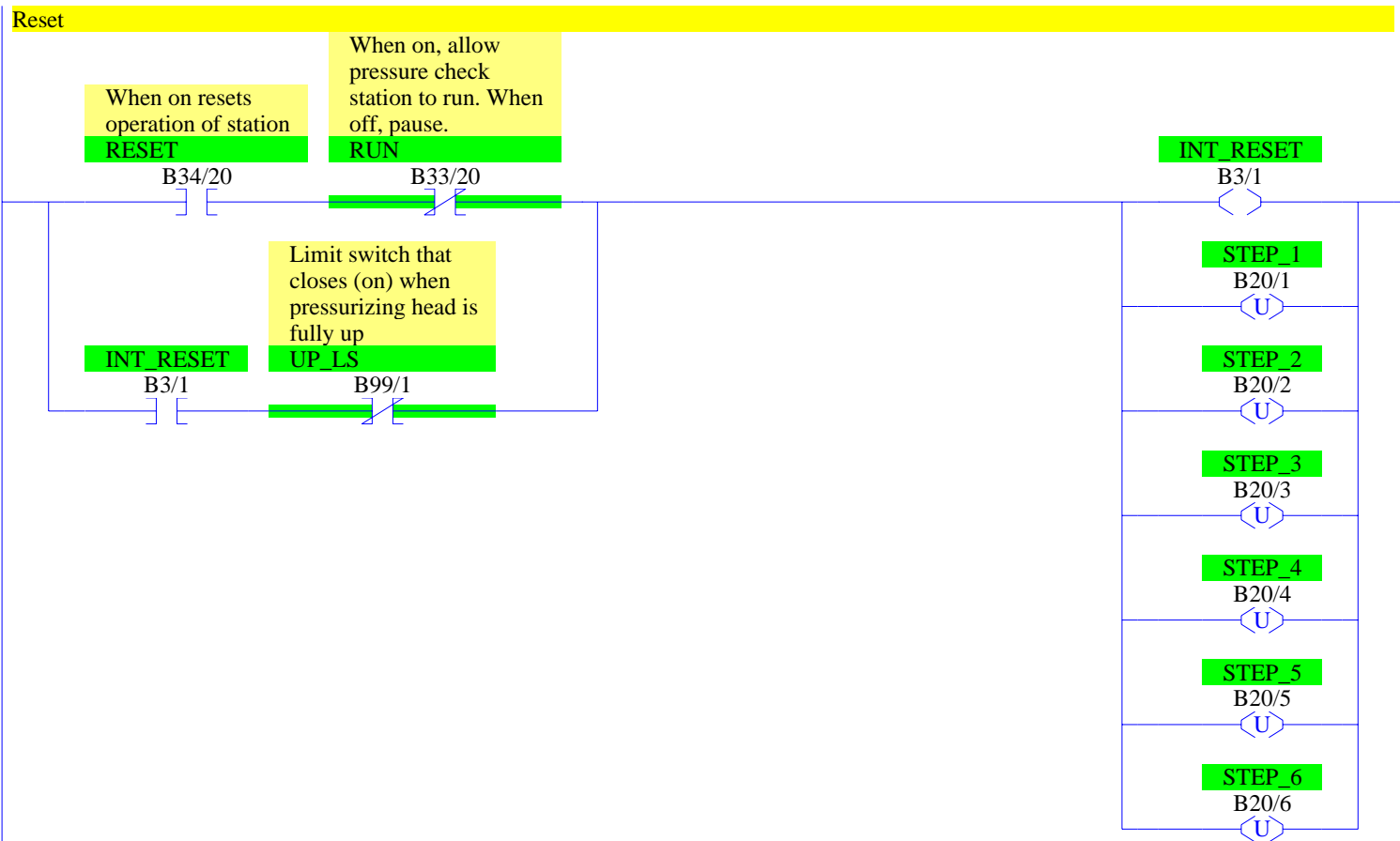
Pressure, in psi (REAL)

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

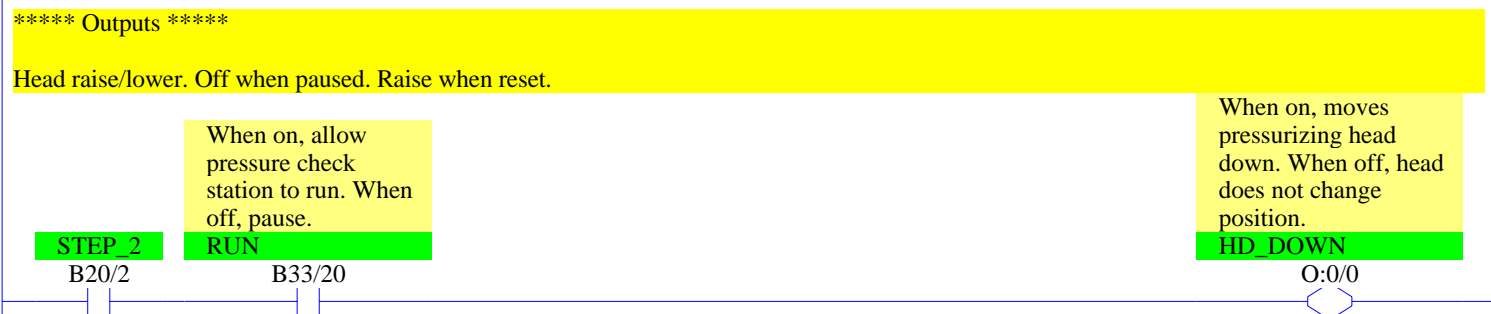




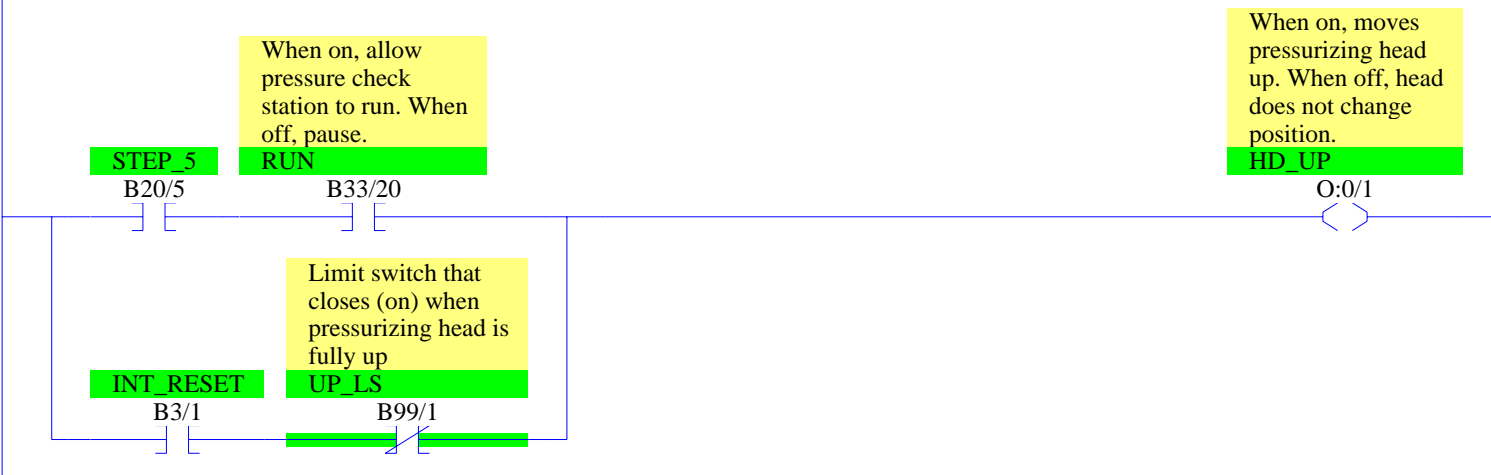
0007

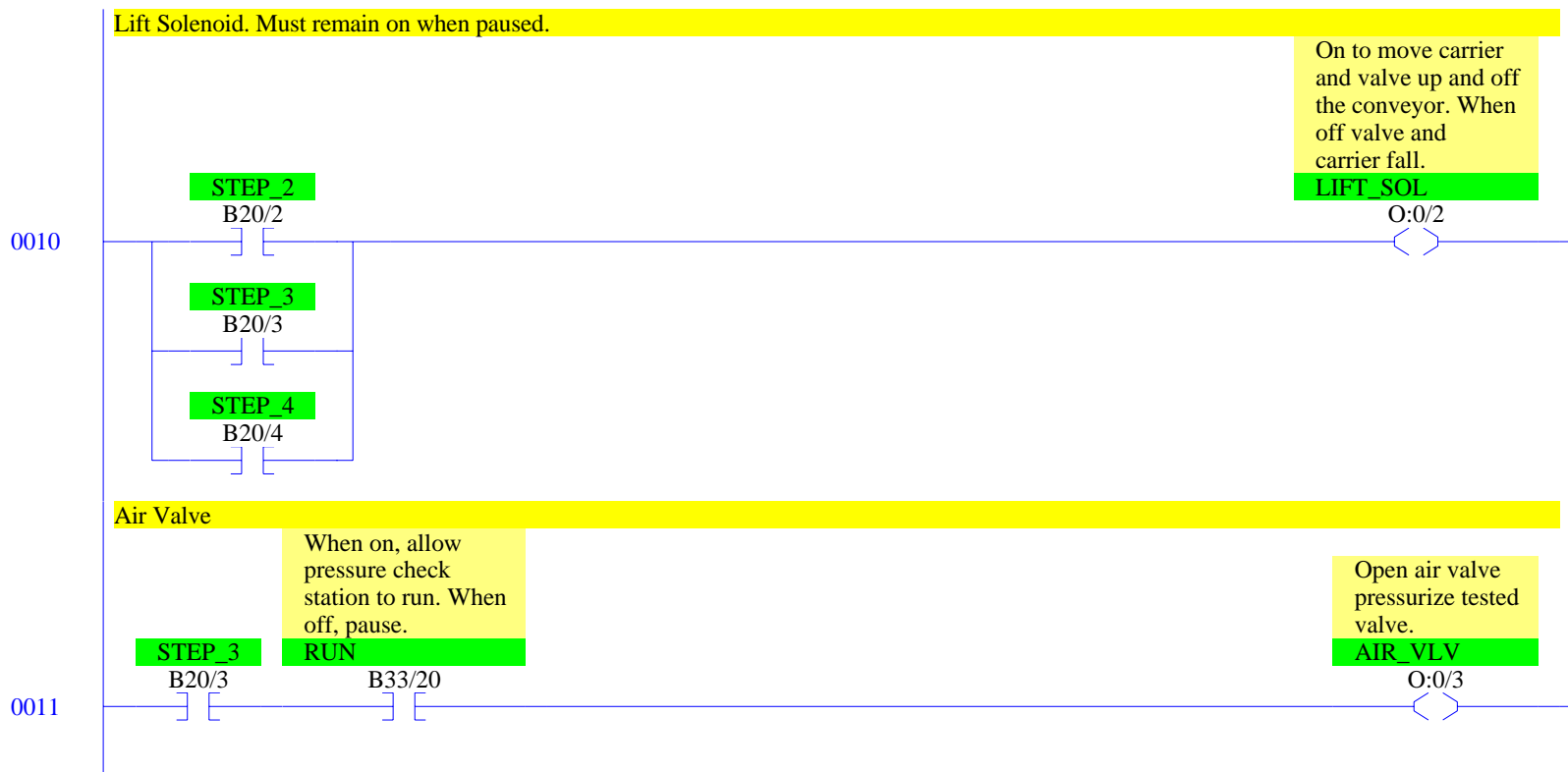


0008



0009





Calculate Height of Head

SUB

Subtract

Source A B99:1

0000000000000000<

Source B 6241.0

6241.0<

Dest F8:0

0.0<

DIV

Divide

Source A F8:0

0.0<

Source B 24965.0

24965.0<

Dest F8:0

0.0<

MUL

Multiply

Source A F8:0

0.0<

Source B 75.0

75.0<

Dest F8:0

0.0<

Pressurizing head
height, in mm (REAL)

HD_HGT

ADD

Add

Source A F8:0

0.0<

Source B 75.0

75.0<

Dest F8:50

0.0<

0012

0013

Calculate Pressure in psi

SUB
Subtract
Source A B99:2
0000000000000000<
Source B 6241.0
6241.0<
Dest F8:0
0.0<

DIV
Divide
Source A F8:0
0.0<
Source B 24965.0
24965.0<
Dest F8:0
0.0<

Pressure, in psi
(REAL)

VLV_PRES

MUL
Multiply
Source A F8:0
0.0<
Source B 100.0
100.0<
Dest F8:51
0.0<

Check valve pressure, if falling latch reject bit.

Check pressure for
comparison

VLV_PRES_CHECK

STEP_4

B20/4

SUB
Subtract
Source A F24:16
0.0<
Source B 0.1
0.1<
Dest F8:124
0.0<

Pressure, in psi
(REAL)

VLV_PRES

Set if valve is to
be rejected because
it will not hold
pressure.

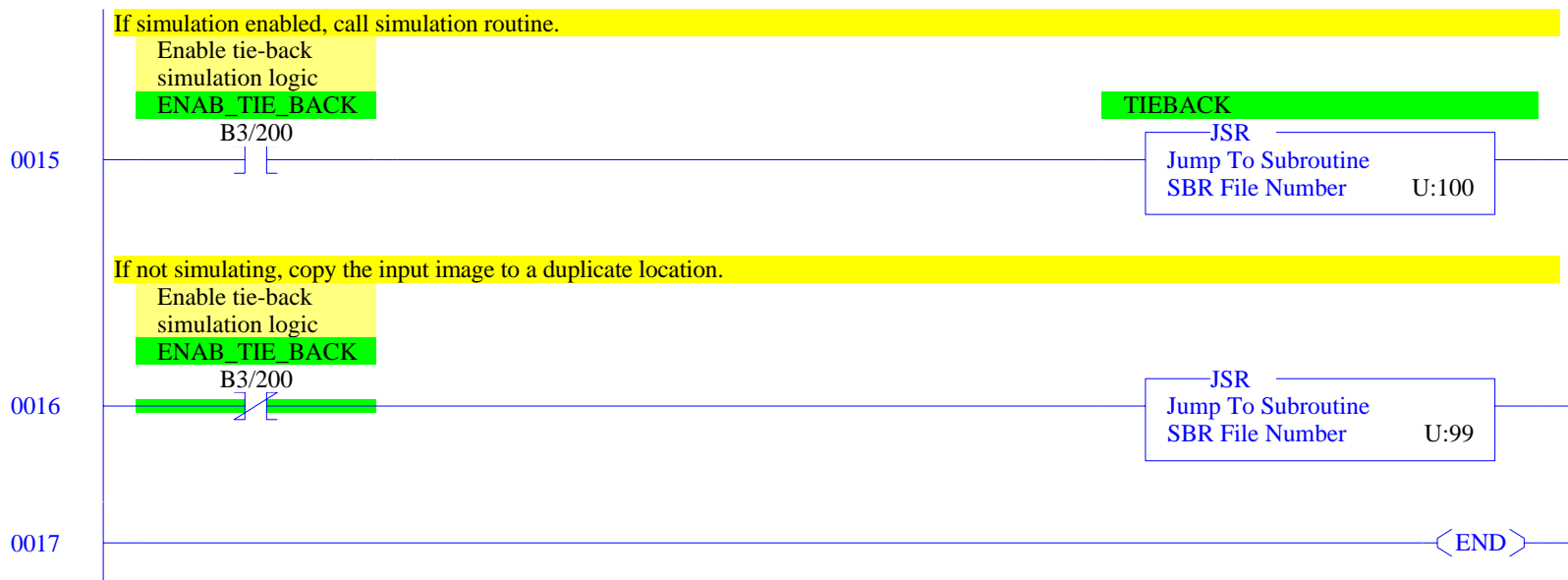
STAT20_REJ

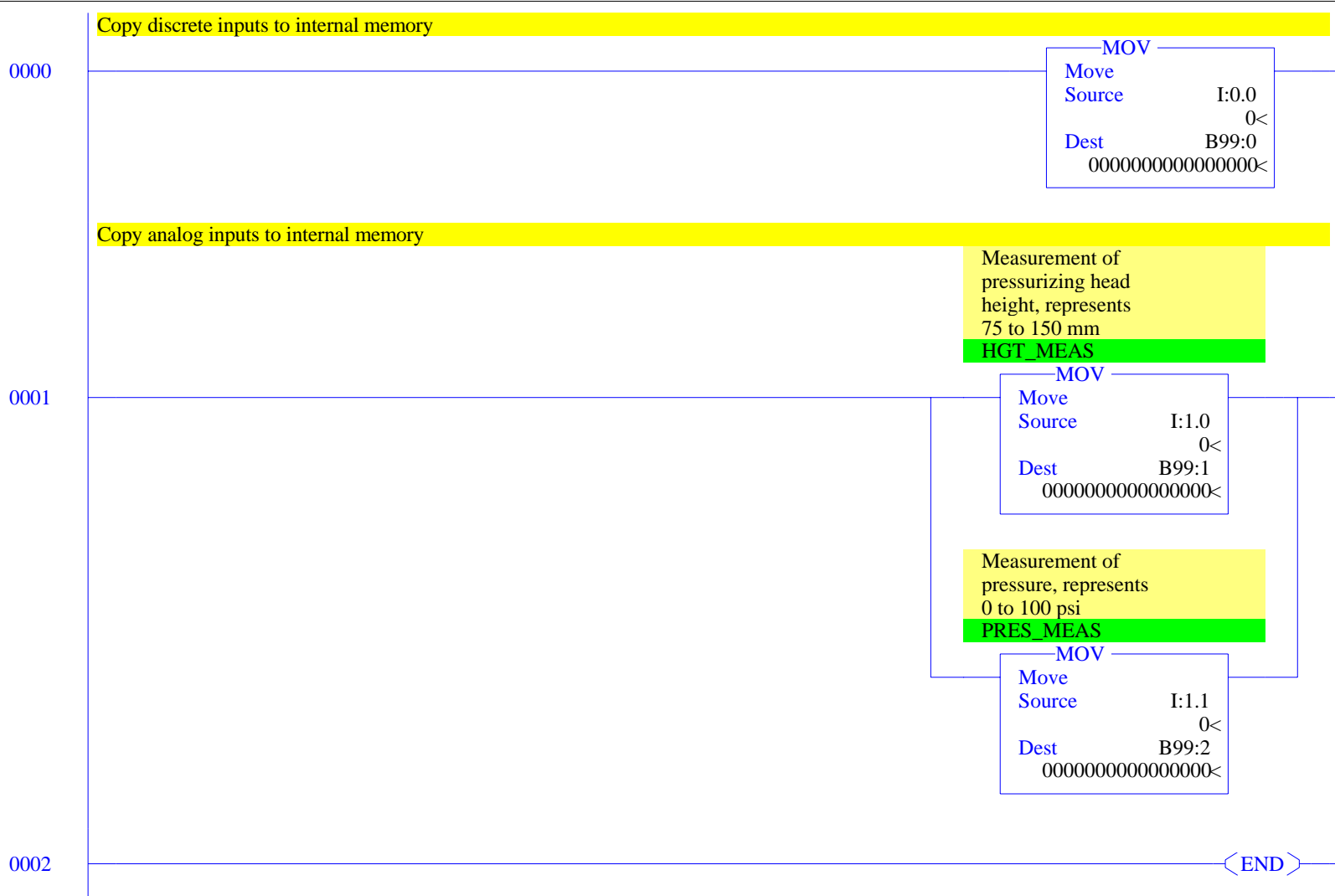
LES
Less Than (A<B)
Source A F8:51
0.0<
Source B F8:124
0.0<

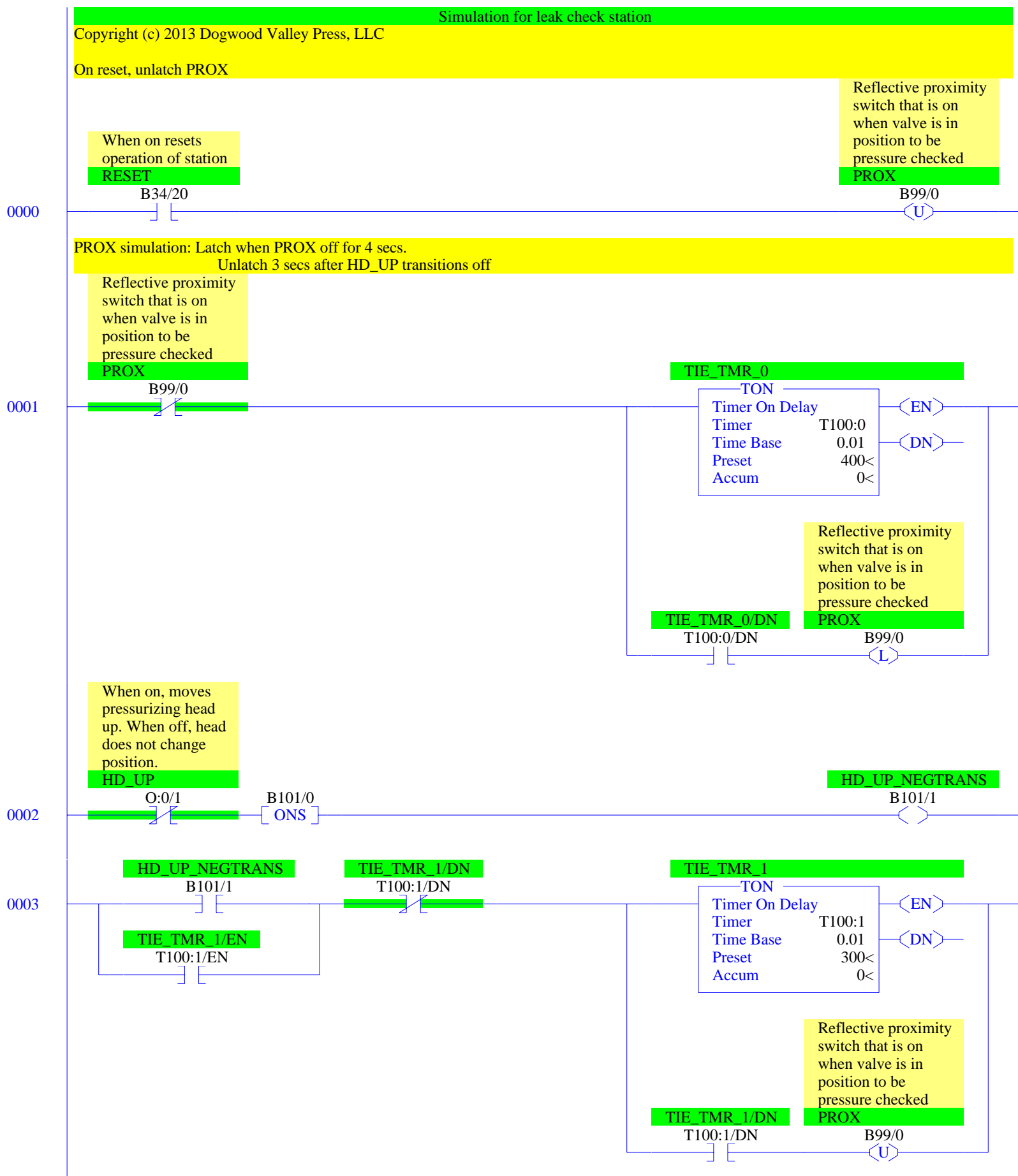
B21/20

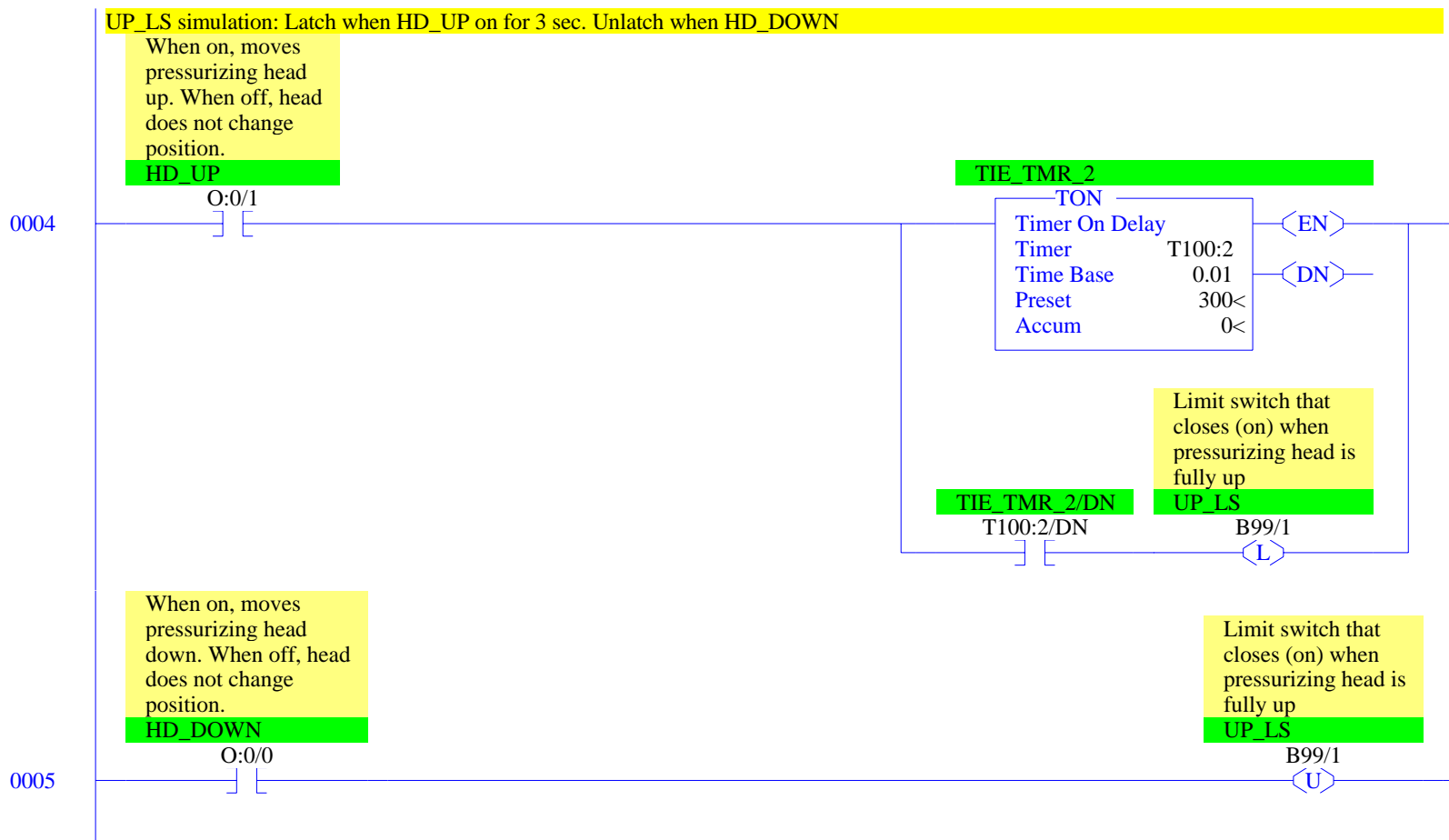
(L)

0014









HGT_MEAS Simulation: When HD_DOWN, decrement every 50 ms by 24965/80, meaning it goes from high to low in 4 sec. Also make sure no less than 6241.

When HD_UP increment every 50 ms by 24965/40 meaning it goes to high in at most 2 sec, and then make sure not larger than 31206

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

HD_DOWN

O:0/0

TIE_TMR_4/DN

T100:4/DN

TIE_TMR_4

TON

Timer On Delay

Timer

T100:4

Time Base

0.01

Preset

5<

Accum

0<

EN

DN

TIE_TMR_4/DN

T100:4/DN

DIV

Divide

Source A

F8:1

24965.0<

Source B

80.0

80.0<

Dest

F8:0

0.0<

Measurement of
pressurizing head
height, represents
75 to 150 mm

HGT_MEAS

SUB

Subtract

Source A

B99:1

0000000000000000<

Source B

F8:0

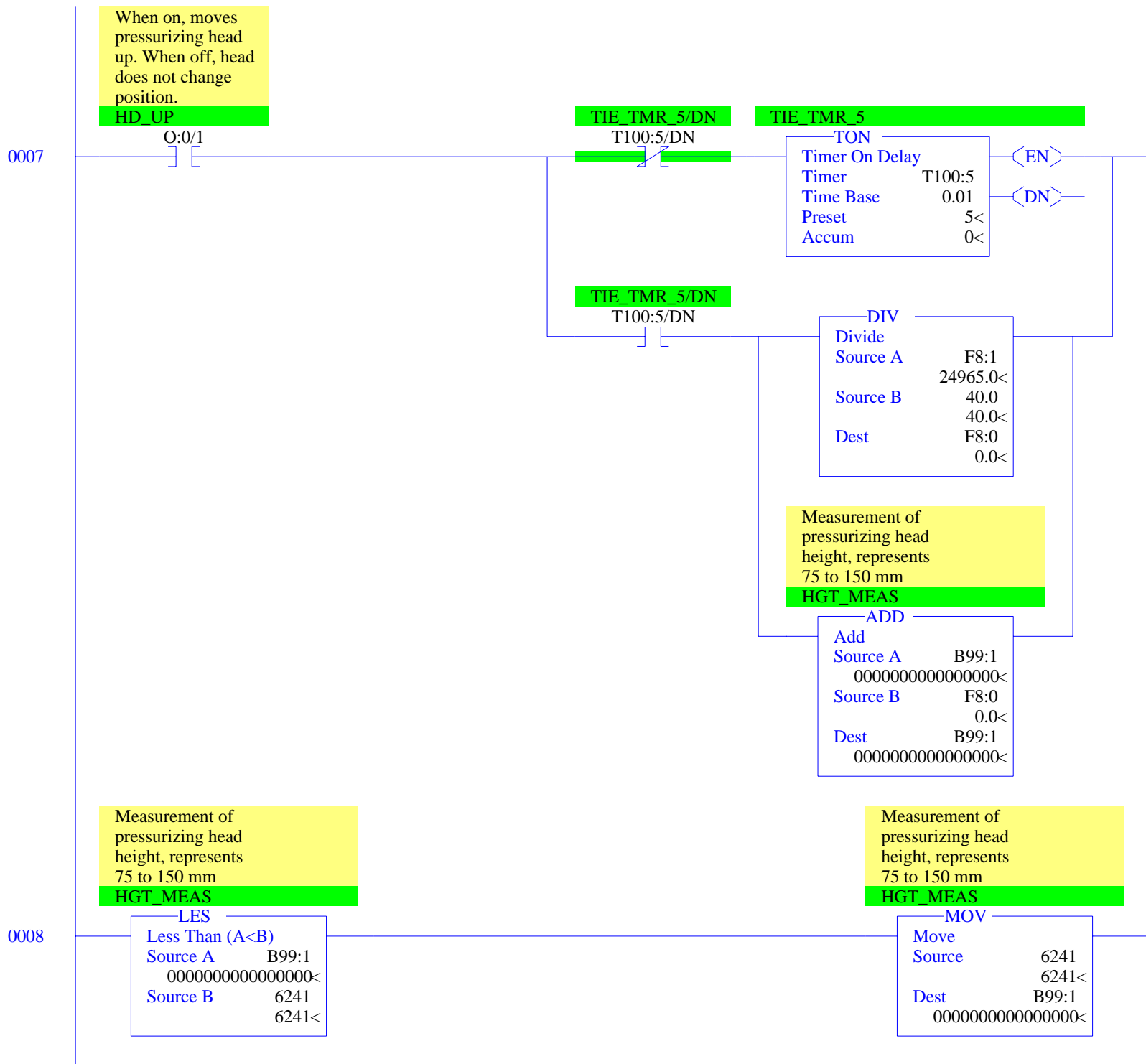
0.0<

Dest

B99:1

0000000000000000<

0006



0009

Limit switch that
closes (on) when
pressurizing head is
fully up

UP_LS

B99:1

Measurement of
pressurizing head
height, represents
75 to 150 mm

HGT_MEAS**GRT**

Greater Than (A>B)

Source A B99:1

0000000000000000<

Source B 31206

31206<

Measurement of
pressurizing head
height, represents
75 to 150 mm

HGT_MEAS**MOV**

Move

Source 31206

31206<

Dest B99:1

0000000000000000<

PRESS_MEAS Simulation: When AIR_VLV, increment every 50 ms by 13107/80, meaning it goes from low to high in 4 sec.

When AIR_VLV off, decrement every 2 sec by 2 meaning a slow leak, and then make sure not less than 3277.

HD_UP also resets it.

Open air valve
pressurize tested
valve.

AIR_VLV

O:0/3

0010

TIE_TMR_6/DN

T100:6/DN

TIE_TMR_6**TON**

Timer On Delay

Timer T100:6

Time Base 0.01

Preset 5<

Accum 0<

EN

DN

TIE_TMR_6/DN

T100:6/DN

DIV

Divide

Source A F8:1

24965.0<

Source B 80.0

80.0<

Dest F8:0

0.0<

Measurement of
pressure, represents
0 to 100 psi

PRES_MEAS**ADD**

Add

Source A B99:2

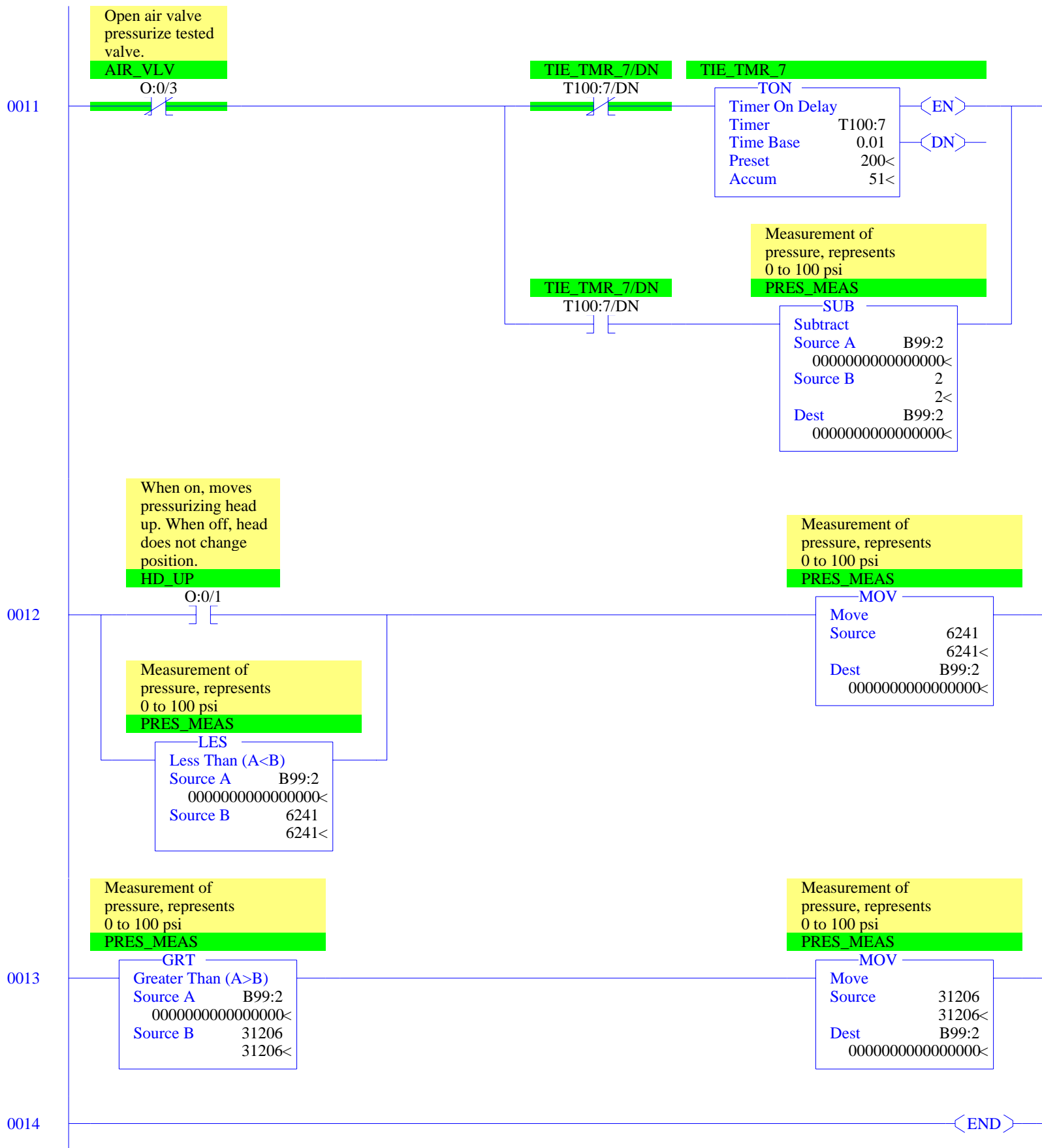
0000000000000000<

Source B F8:0

0.0<

Dest B99:2

0000000000000000<



RSLogix 500 Cross Reference Report - Sorted by Address

O:0/0	- {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:0/1	- {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:0/2	- {LIFT_SOL} On to move carrier and valve up and off the conveyor. When off valve and carrier stop. OTE - File #2 - 10
O:0/3	- {AIR_VLV} Open air valve pressurize tested valve. OTE - File #2 - 11 XIC - File #100 TIEBACK - 10 XIO - File #100 TIEBACK - 11
I:0.0	- MOV - File #99 DUPLIC_INS - 0
I:1.0	- MOV - File #99 DUPLIC_INS - 1
I:1.1	- MOV - File #99 DUPLIC_INS - 1
B3/1	- {INT_RESET} OTE - File #2 - 7 XIC - File #2 - 7, 9
B3/200	- {ENAB_TIE_BACK} Enable tie-back simulation logic XIC - File #2 - 15 XIO - File #2 - 16
T4:1	- {WAIT_TMR} Wait 30 sec to see if valve leaks TON - File #2 - 4
T4:1/DN	- XIC - File #2 - 4
F8:0	- ADD - File #2 - 12 File #100 TIEBACK - 7, 10 SUB - File #2 - 12, 13 File #100 TIEBACK - 6 MUL - File #2 - 12, 13 DIV - File #2 - 12, 13 File #100 TIEBACK - 6, 7, 10
F8:1	- {RANGE_ANALOG_IN} DIV - File #100 TIEBACK - 6, 7, 10
F8:50	- {HD_HGT} Pressurizing head height, in mm (REAL) ADD - File #2 - 12 LEQ - File #2 - 2
F8:51	- {VLV_PRES} Pressure, in psi (REAL) MUL - File #2 - 13 GEQ - File #2 - 3 LES - File #2 - 14
F8:124	- {VLV_PRES_CHECK} Check pressure for comparison SUB - 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
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

RSLogix 500 Cross Reference Report - Sorted by Address

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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
      LEQ - File #2 - 2
F24:16 - {DES_PRES} Desired test pressure, in psi (REAL)
      SUB - 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
B99:0 - MOV - File #99 DUPLIC_INS - 0
B99/0 - {PROX} Reflective proximity switch that is on when valve is in position to be pressu
      OTL - File #100 TIEBACK - 1
      OTU - File #100 TIEBACK - 0, 3
      XIC - File #2 - 1
      XIO - File #2 - 6
      File #100 TIEBACK - 1
B99/1 - {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
B99:1 - {HGT_MEAS} Measurement of pressurizing head height, represents 75 to 150 mm
      MOV - File #99 DUPLIC_INS - 1
      File #100 TIEBACK - 8, 9
      ADD - File #100 TIEBACK - 7
      SUB - File #2 - 12
      File #100 TIEBACK - 6
      GRT - File #100 TIEBACK - 9
      LES - File #100 TIEBACK - 8
B99:2 - {PRES_MEAS} Measurement of pressure, represents 0 to 100 psi
      MOV - File #99 DUPLIC_INS - 1
      File #100 TIEBACK - 12, 13
      ADD - File #100 TIEBACK - 10
      SUB - File #2 - 13
      File #100 TIEBACK - 11
      GRT - File #100 TIEBACK - 13
      LES - File #100 TIEBACK - 12
T100:0 - {TIE_TMR_0}
      TON - File #100 TIEBACK - 1
T100:0/DN - XIC - File #100 TIEBACK - 1
T100:1 - {TIE_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 - {TIE_TMR_2}
      TON - File #100 TIEBACK - 4
T100:2/DN - XIC - File #100 TIEBACK - 4
T100:4 - {TIE_TMR_4}
      TON - File #100 TIEBACK - 6
T100:4/DN - XIC - File #100 TIEBACK - 6
      XIO - File #100 TIEBACK - 6
T100:5 - {TIE_TMR_5}

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RSLogix 500 Cross Reference Report - Sorted by Address

	TON - File #100 TIEBACK - 7
T100:5/DN	- XIC - File #100 TIEBACK - 7
	XIO - File #100 TIEBACK - 7
T100:6	- {TIE_TMR_6}
	TON - File #100 TIEBACK - 10
T100:6/DN	- XIC - File #100 TIEBACK - 10
	XIO - File #100 TIEBACK - 10
T100:7	- {TIE_TMR_7}
	TON - File #100 TIEBACK - 11
T100:7/DN	- XIC - File #100 TIEBACK - 11
	XIO - File #100 TIEBACK - 11
B101/0	- ONS - File #100 TIEBACK - 2
B101/1	- {HD_UP_NEGTRANS}
	OTE - File #100 TIEBACK - 2
	XIC - File #100 TIEBACK - 3
U:99	- JSR - File #2 - 16
U:100	- {TIEBACK}
	JSR - File #2 - 15