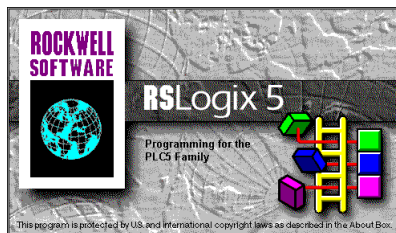


## TEST BENCH FOUR



## Test Bench Four

### Processor Information

---

Processor Type: PLC5/15                      B              G              6912

Processor Name: TB4

Total Memory Used: 5620 WORDS

Program Files: 12

Data Files: 81

## Test Bench Four

### I/O Configuration Overview

---

#### TB4

##### Chassis 1

Rack: 0  
Size: 8 Slot Chassis  
Addressing Mode: 1 Slot

<u>Slot</u>	<u>Module Type</u>	<u>Module Description</u>
0	1771-IBD	10-30v DC 16pt Input
1	1771-OBDO	10-60v DC 16pt Output
2		
3		
4	1771-IFE	12 Bit Analog Input (or IFE/A)
5		
6	1771-IFE	12 Bit Analog Input (or IFE/A)
7	1771-OFE	12 Bit Analog Output

## Test Bench Four

### Revision History

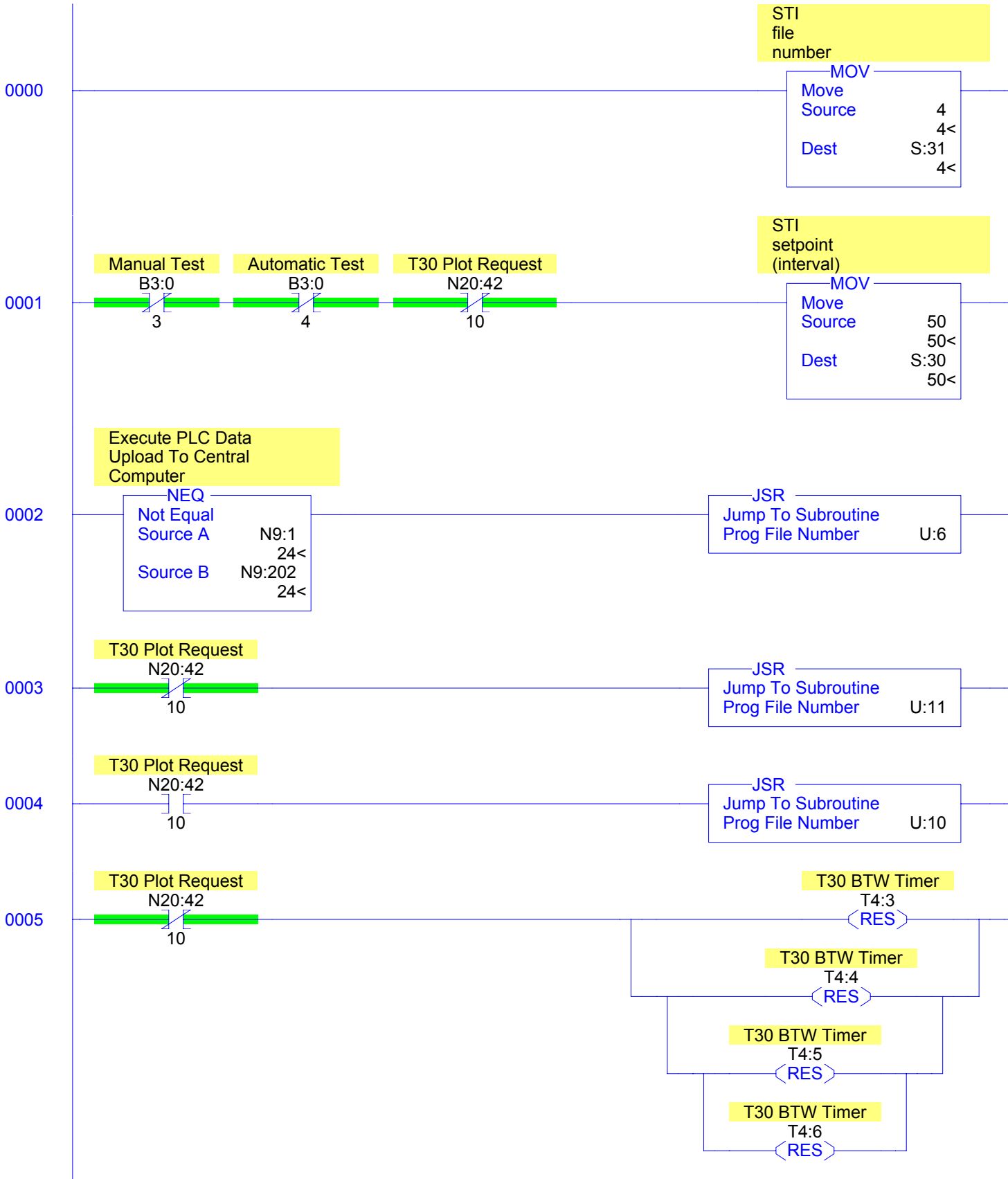
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Rev.	Num	Rev.	Note
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0			Entered Discriptions -Phil 28 July 04
---	--	--	--

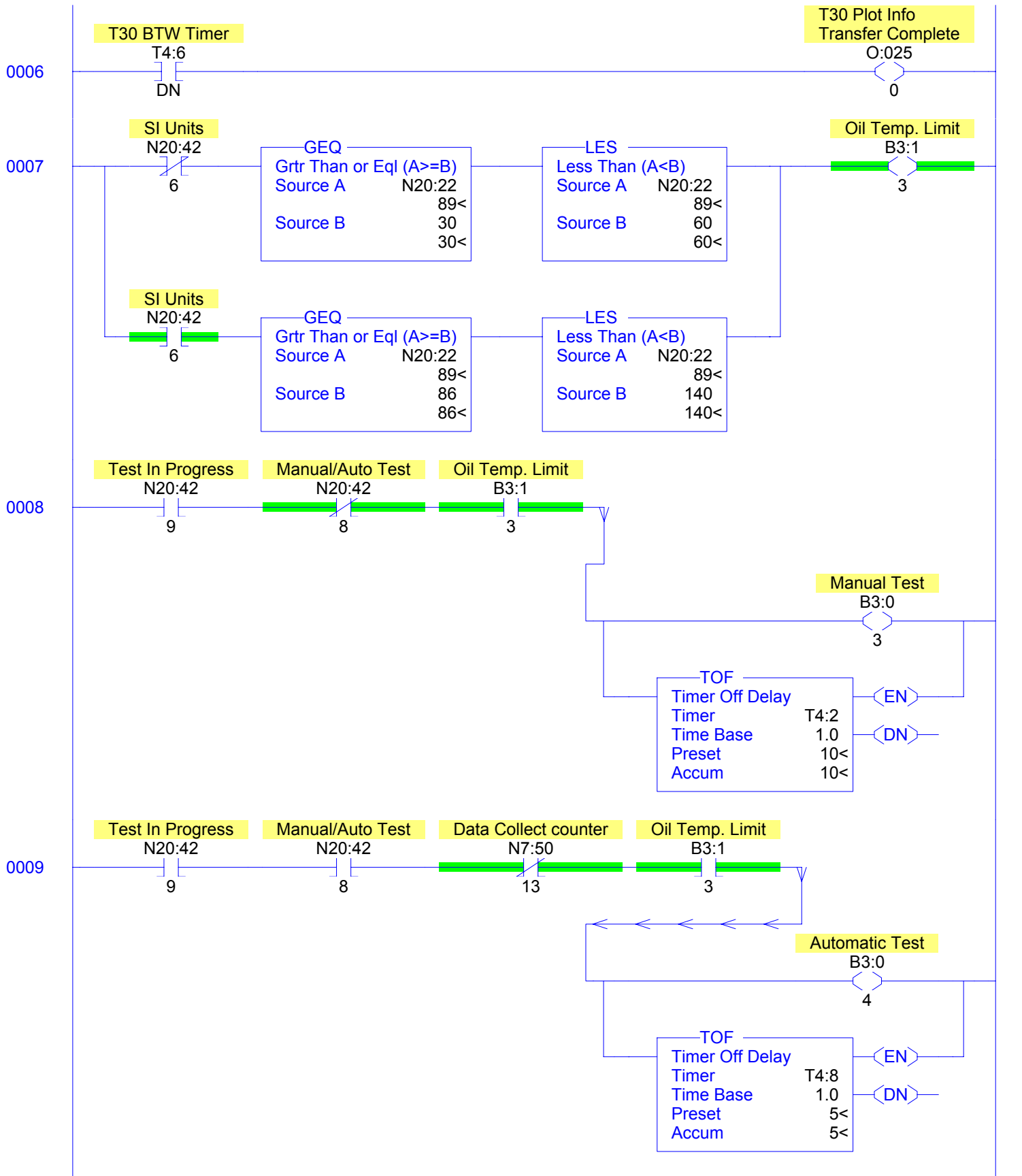
Test Bench Four

LAD 2 - MAIN\_PROG --- Total Rungs in File = 22



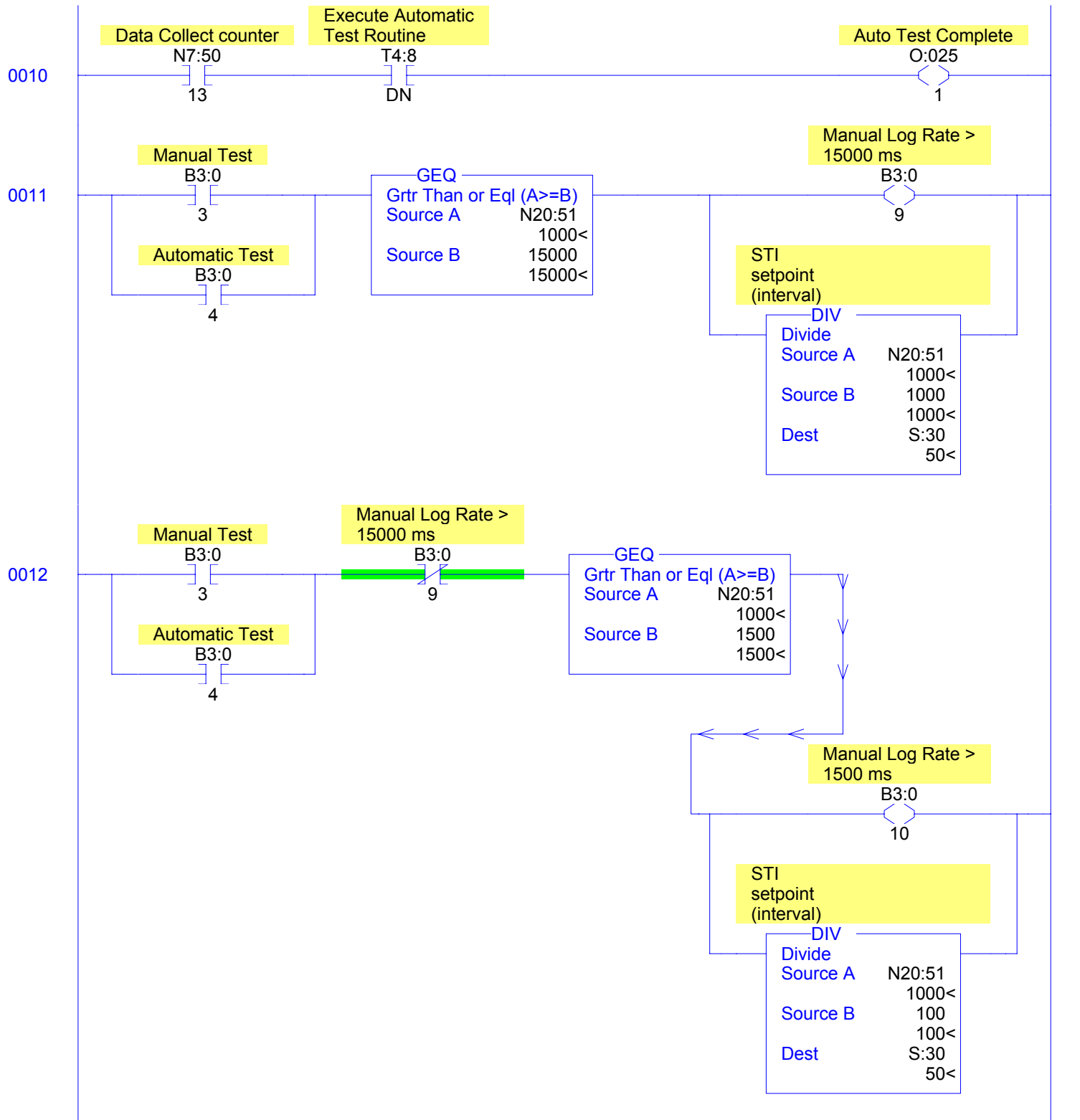
# Test Bench Four

LAD 2 - MAIN\_PROG --- Total Rungs in File = 22



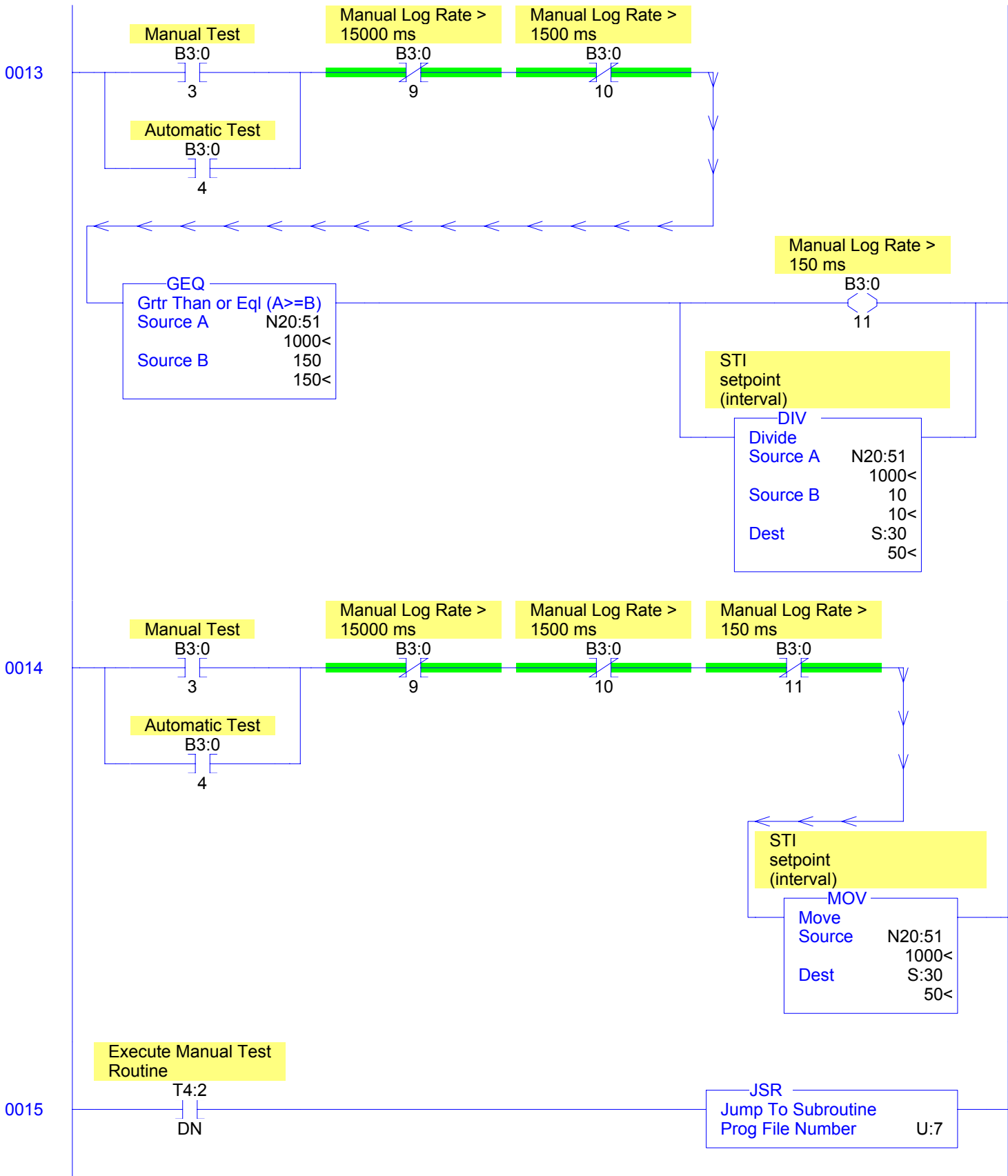
# Test Bench Four

LAD 2 - MAIN\_PROG --- Total Rungs in File = 22



Test Bench Four

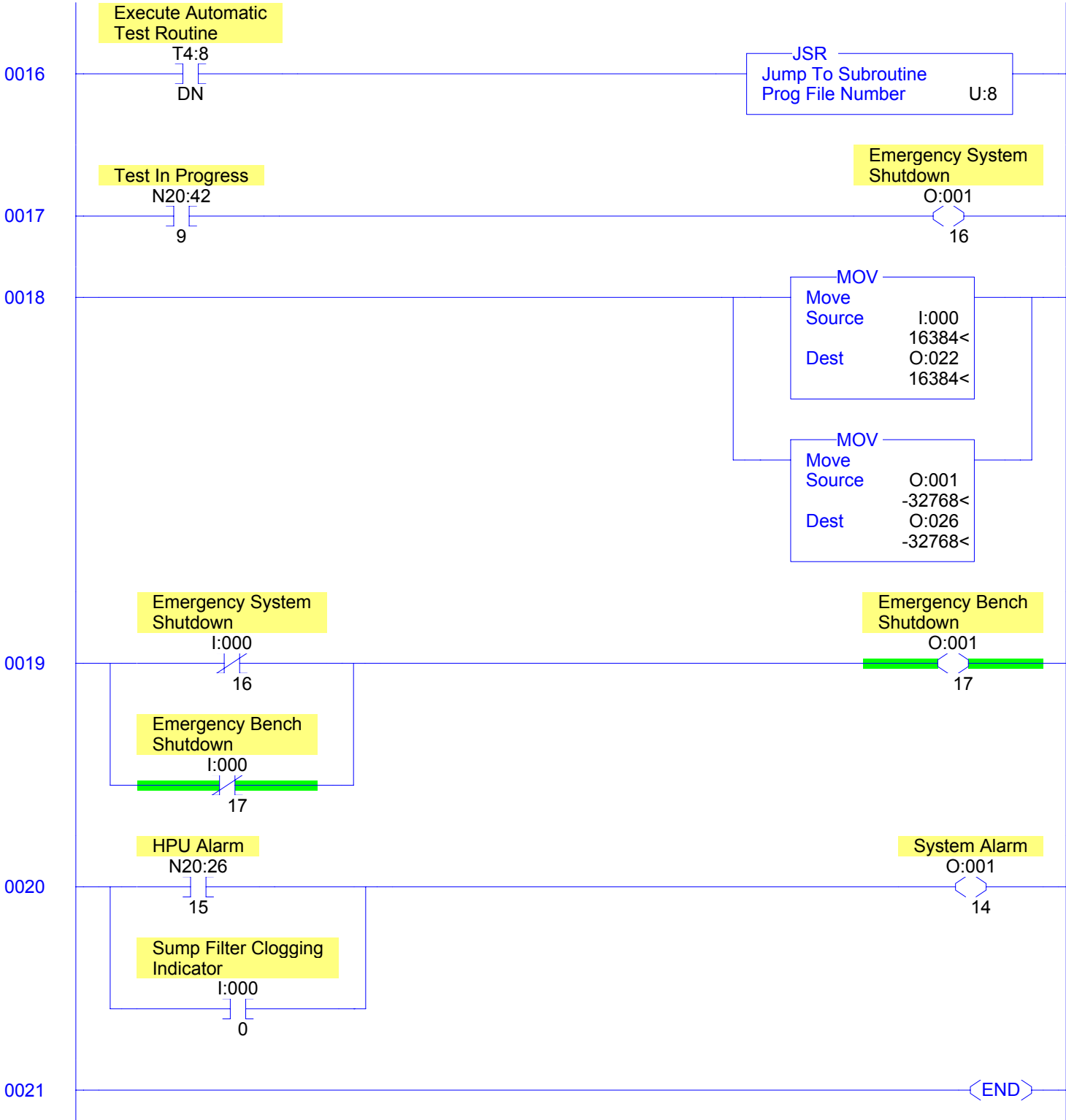
LAD 2 - MAIN\_PROG --- Total Rungs in File = 22





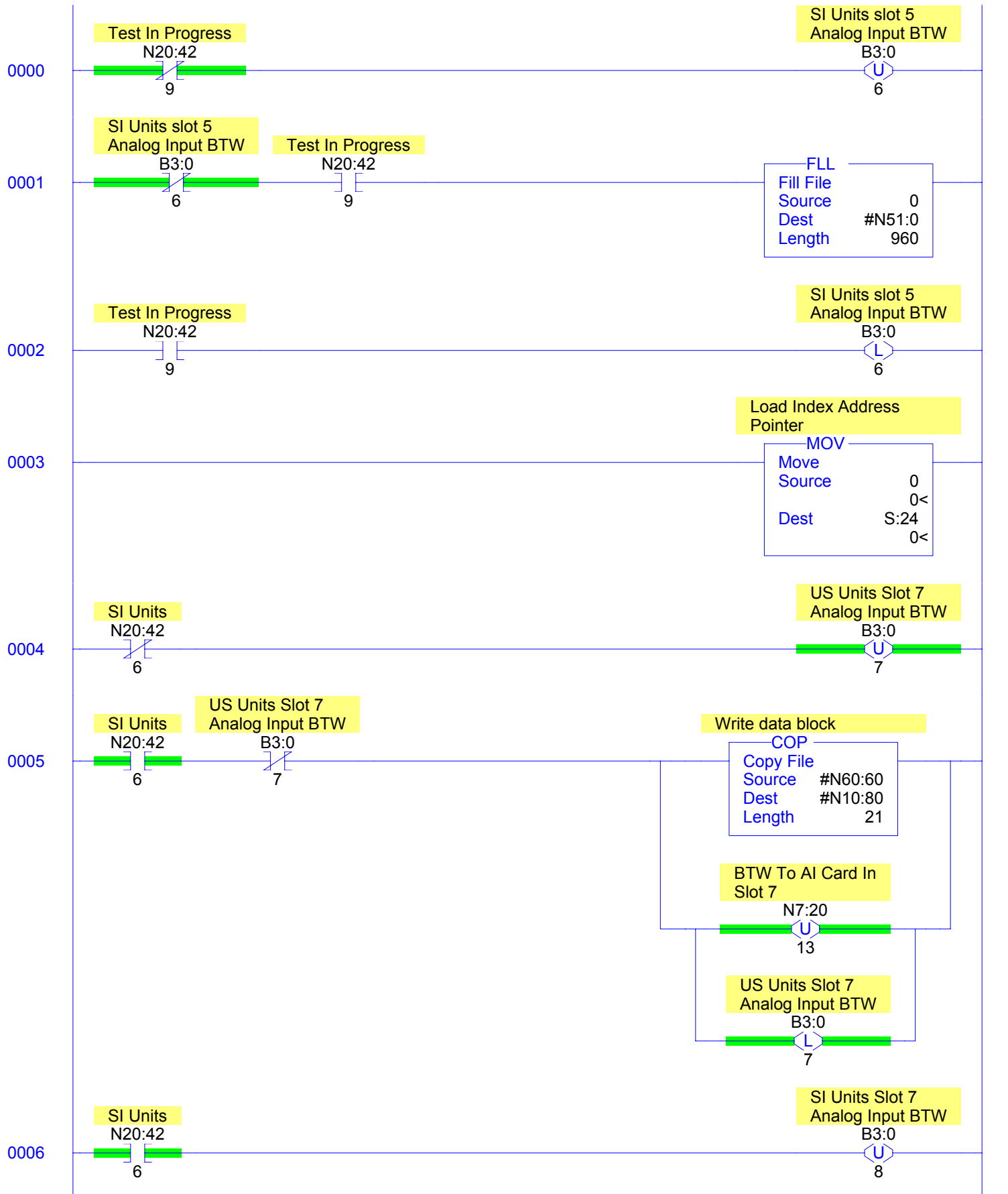
Test Bench Four

LAD 2 - MAIN\_PROG --- Total Rungs in File = 22



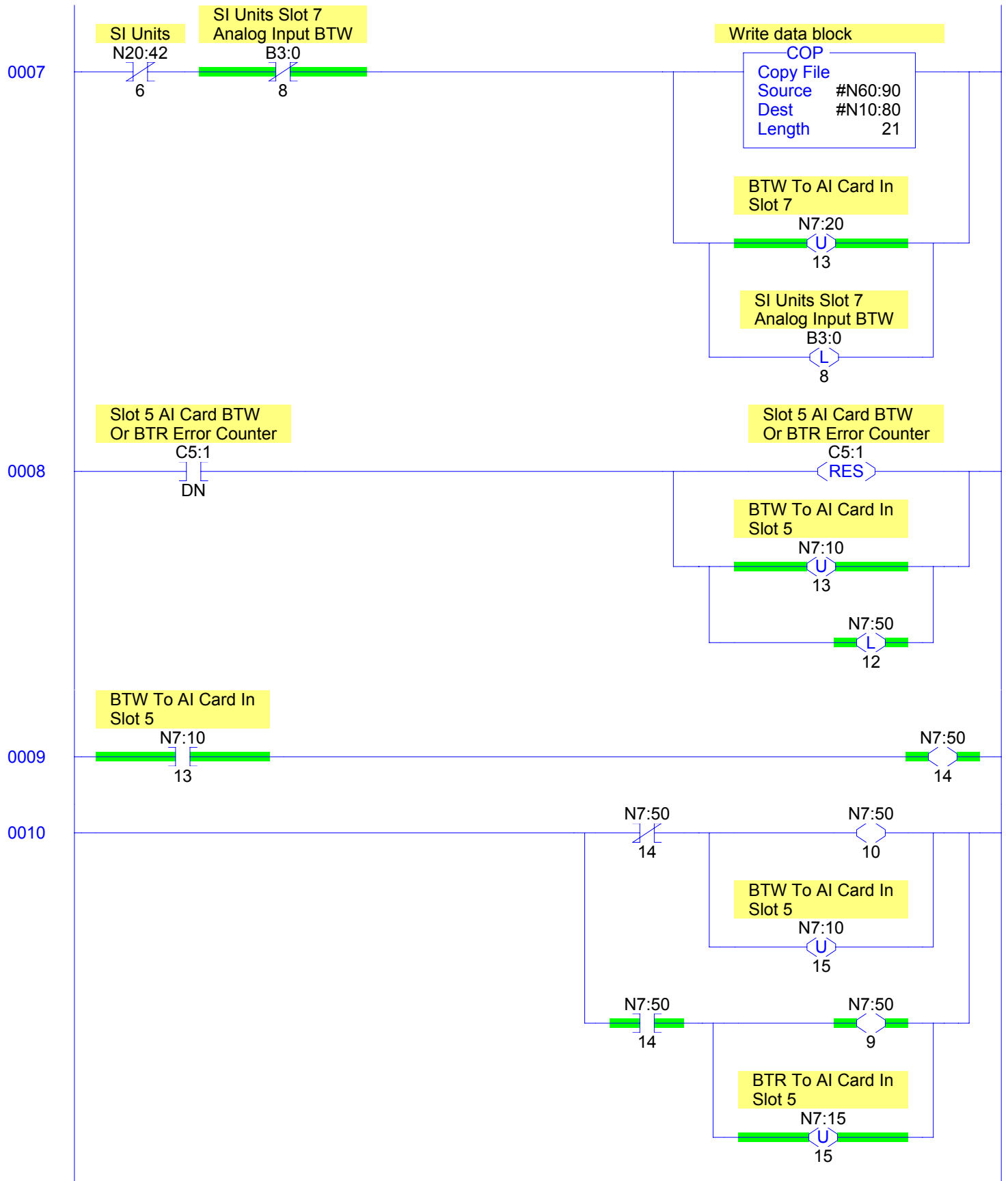
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



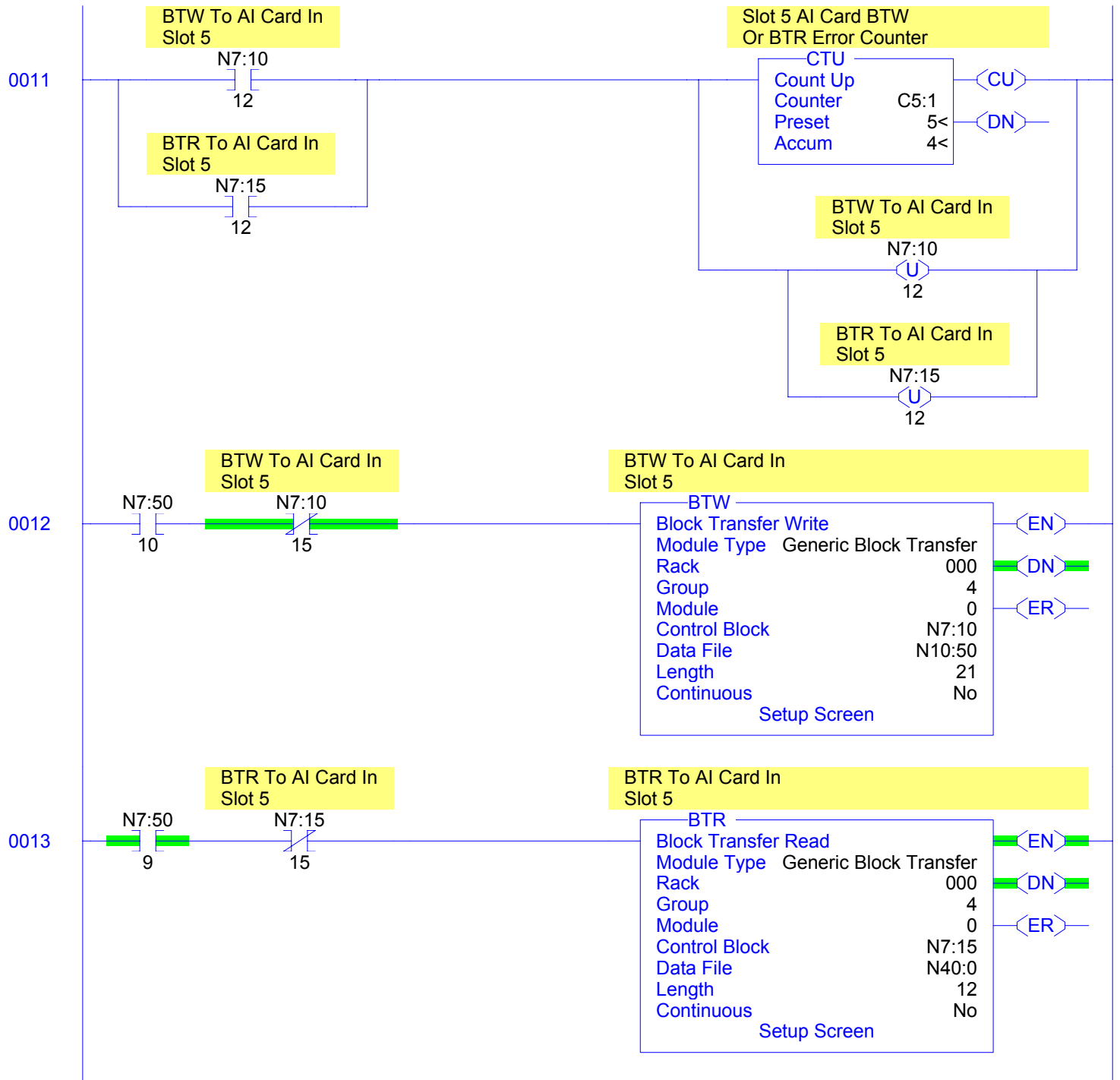
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



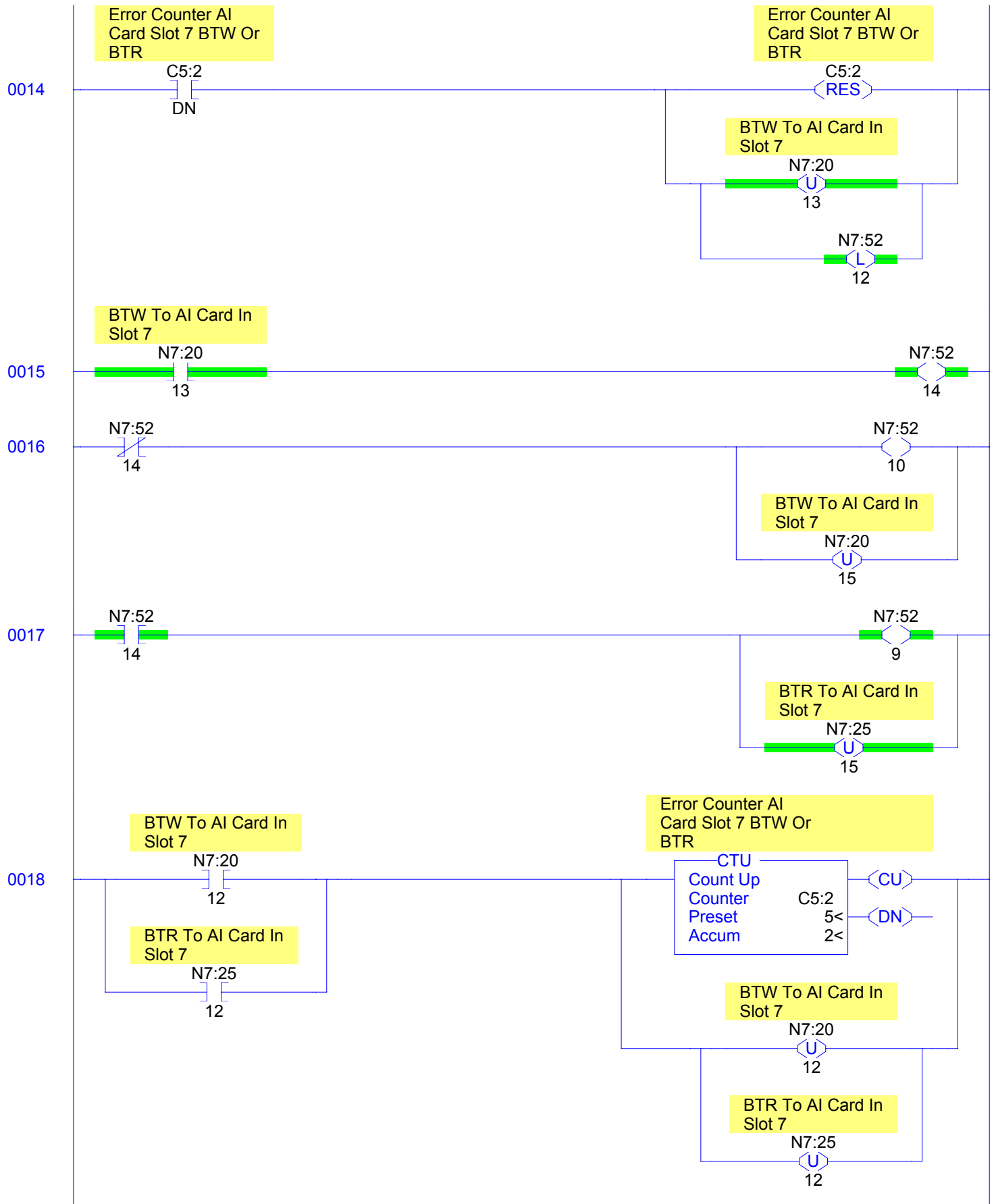
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



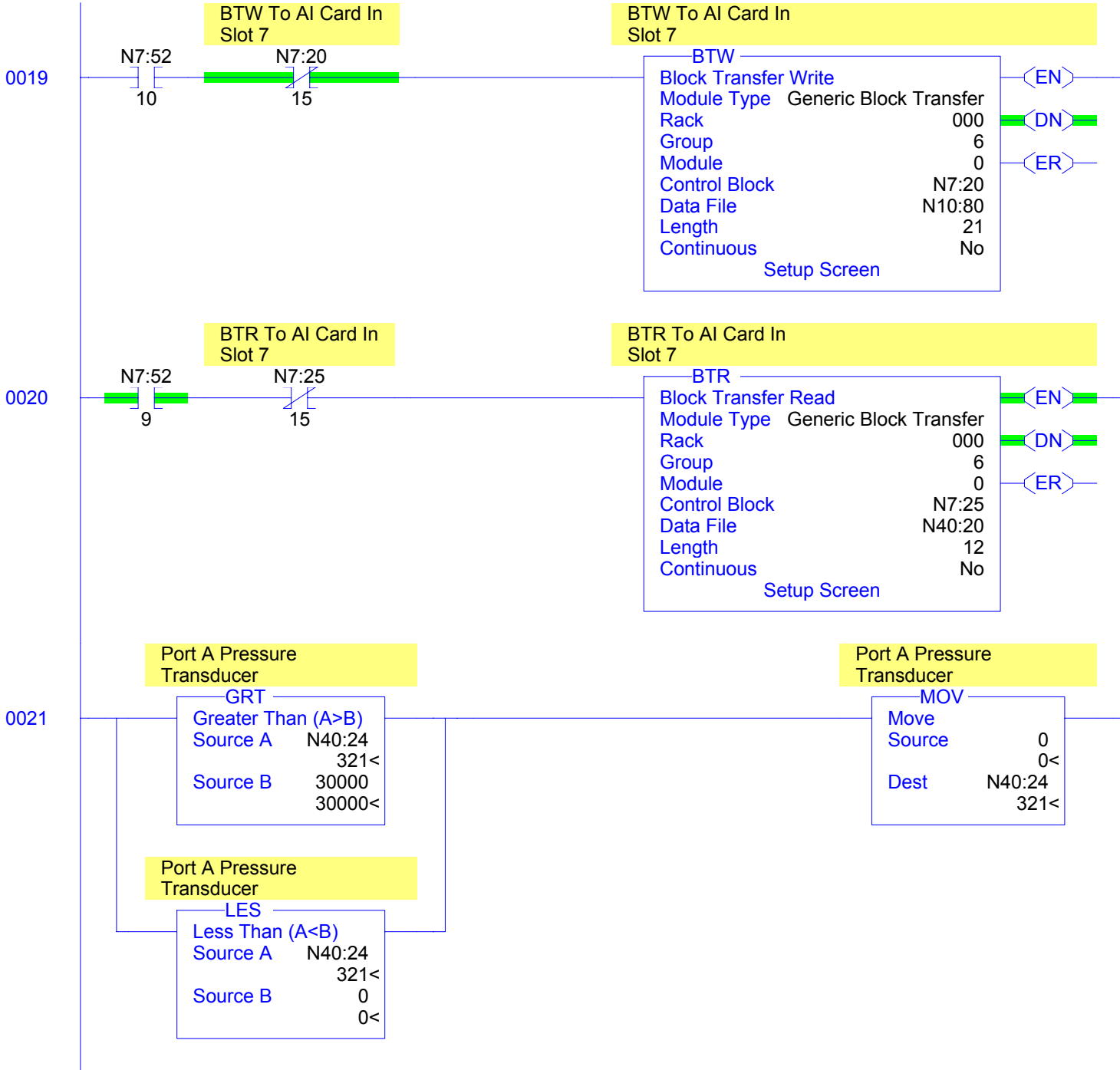
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



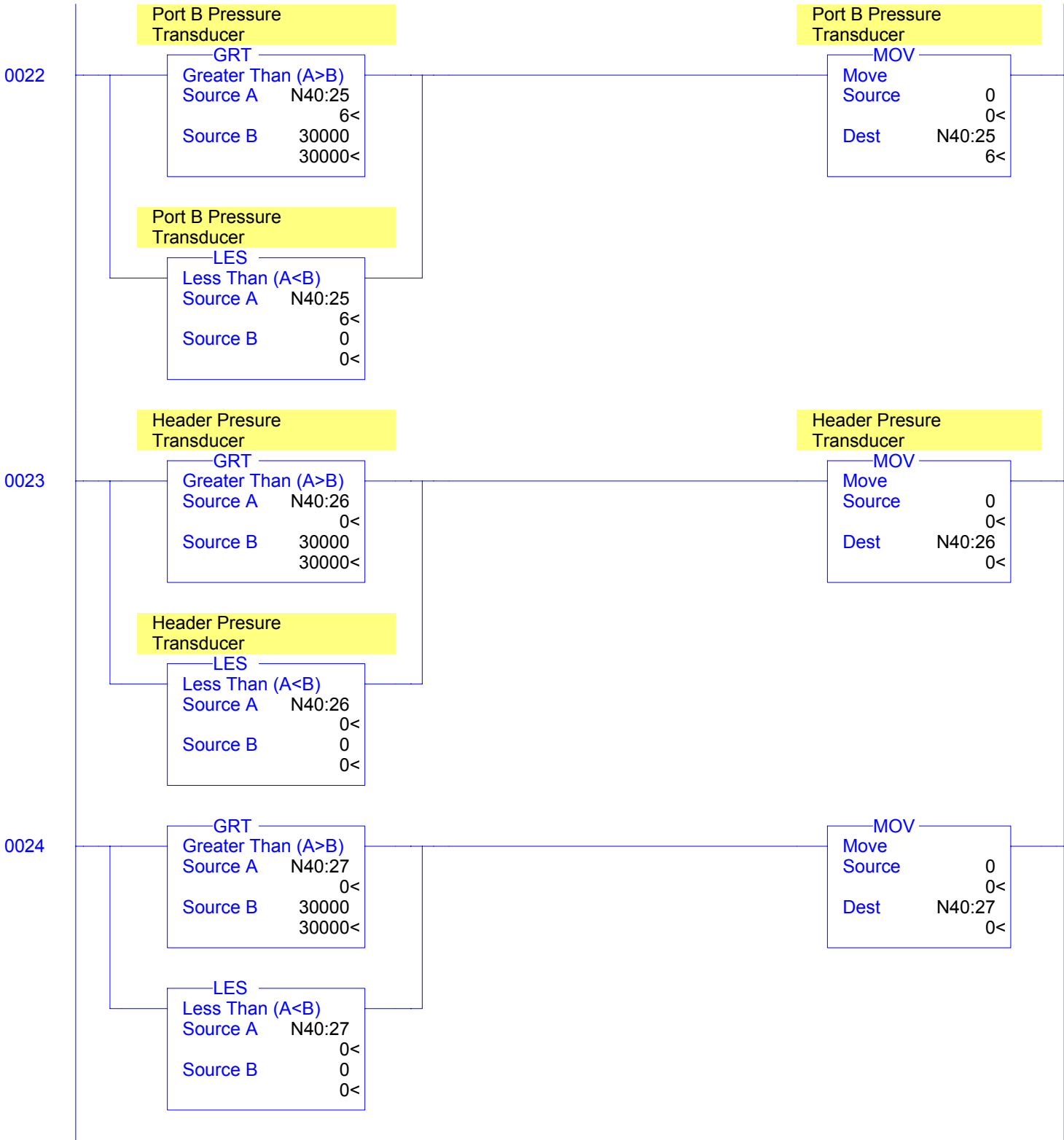
Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



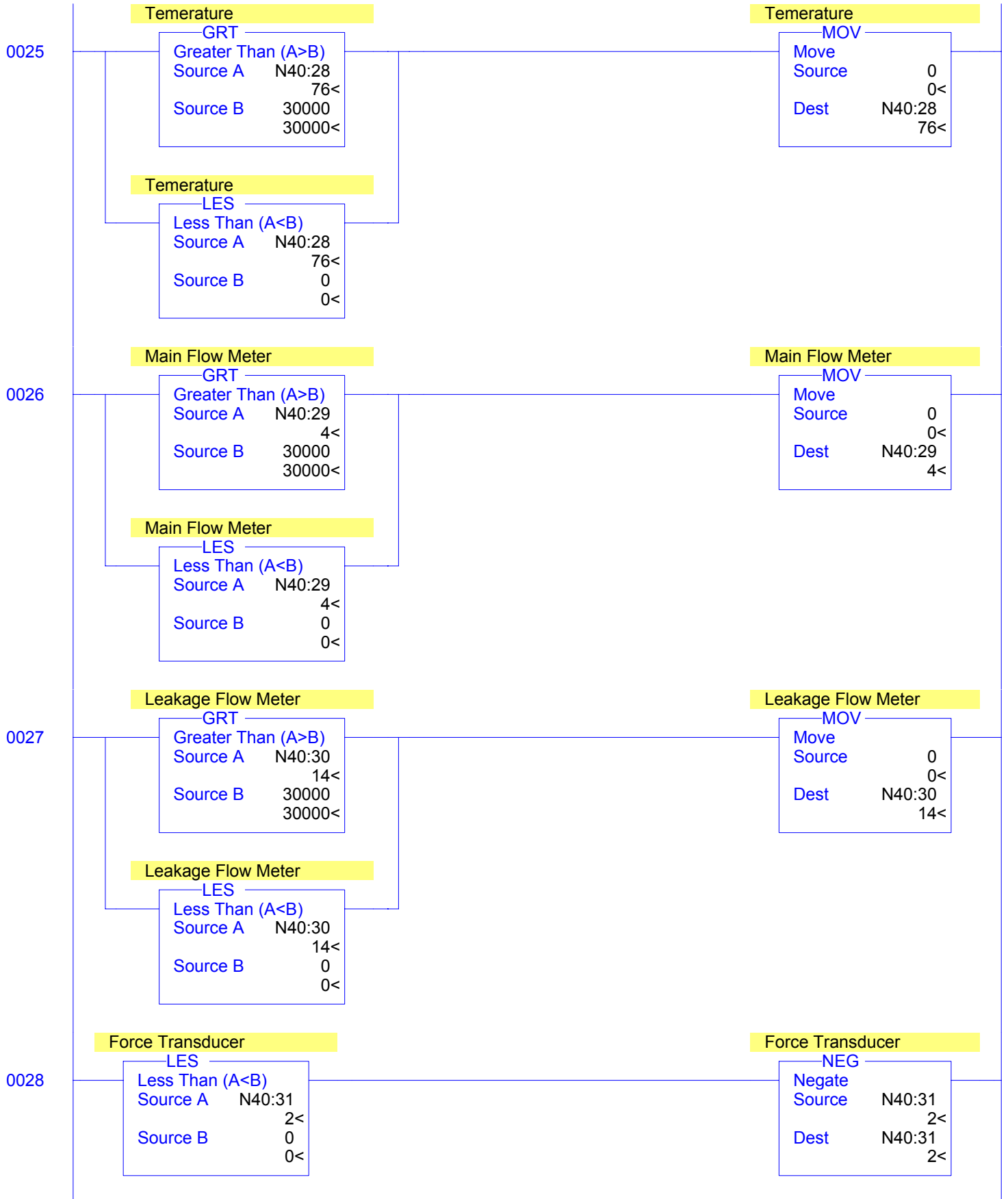
Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



# Test Bench Four

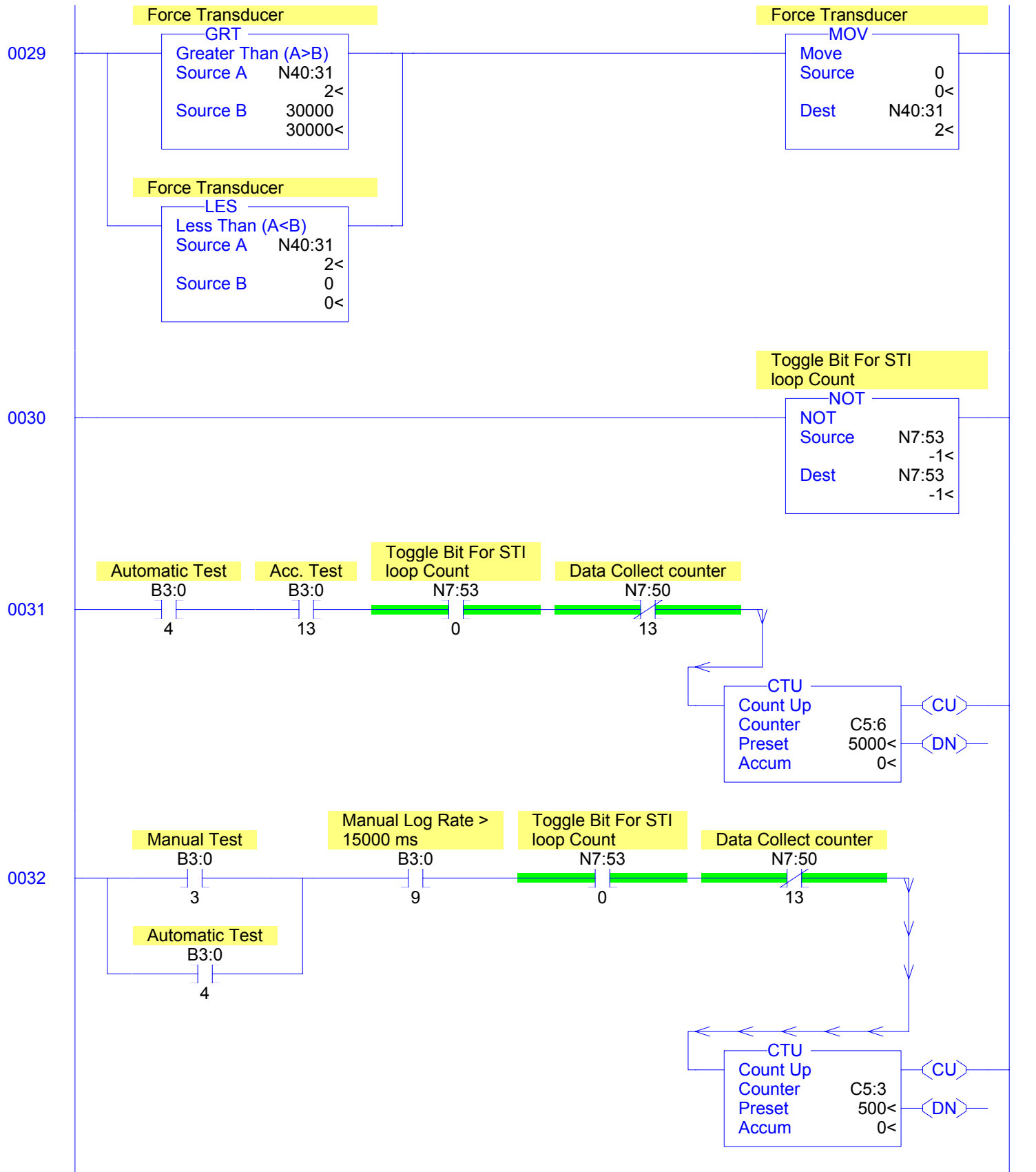
LAD 4 - ANALOG\_INT --- Total Rungs in File = 46





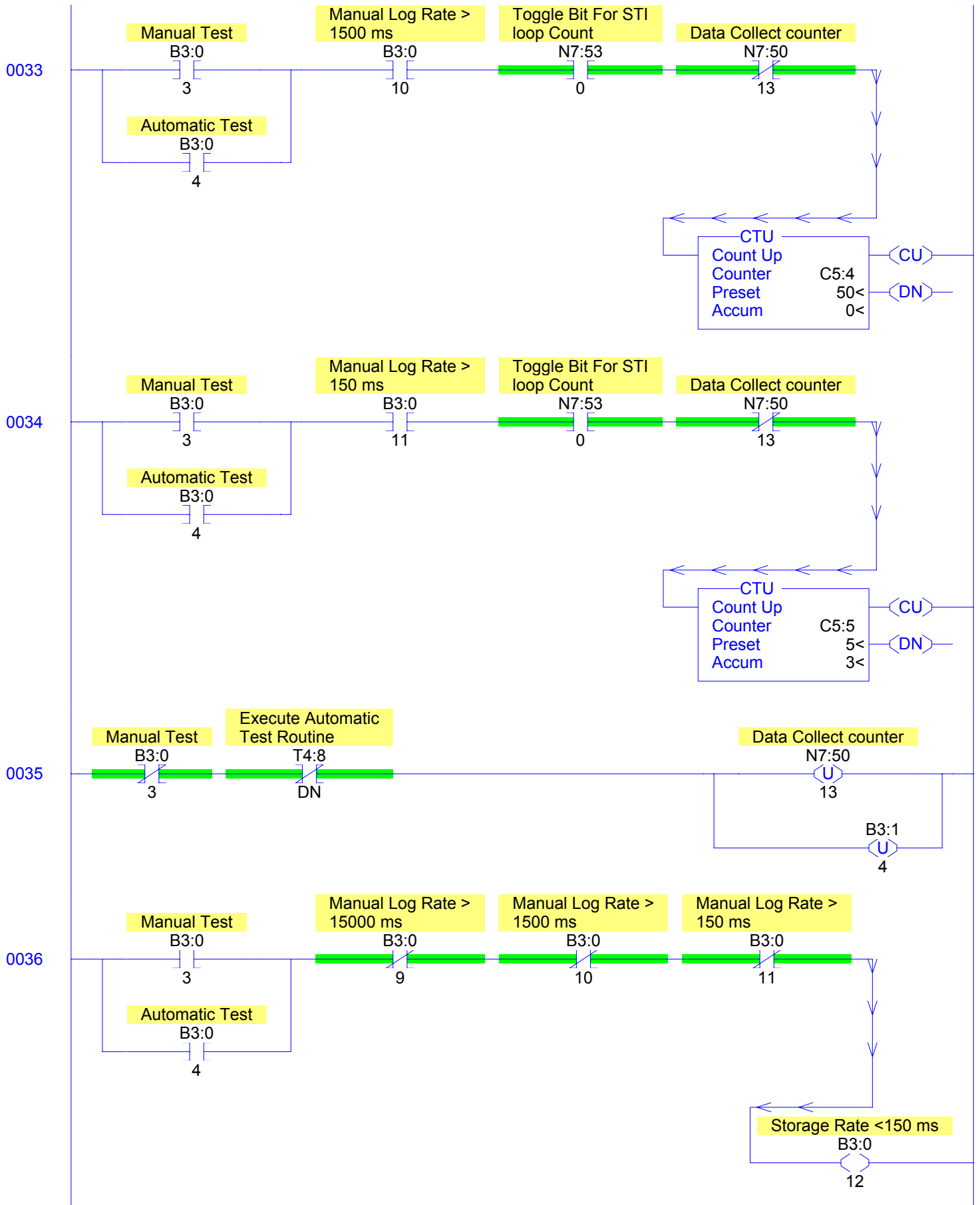
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



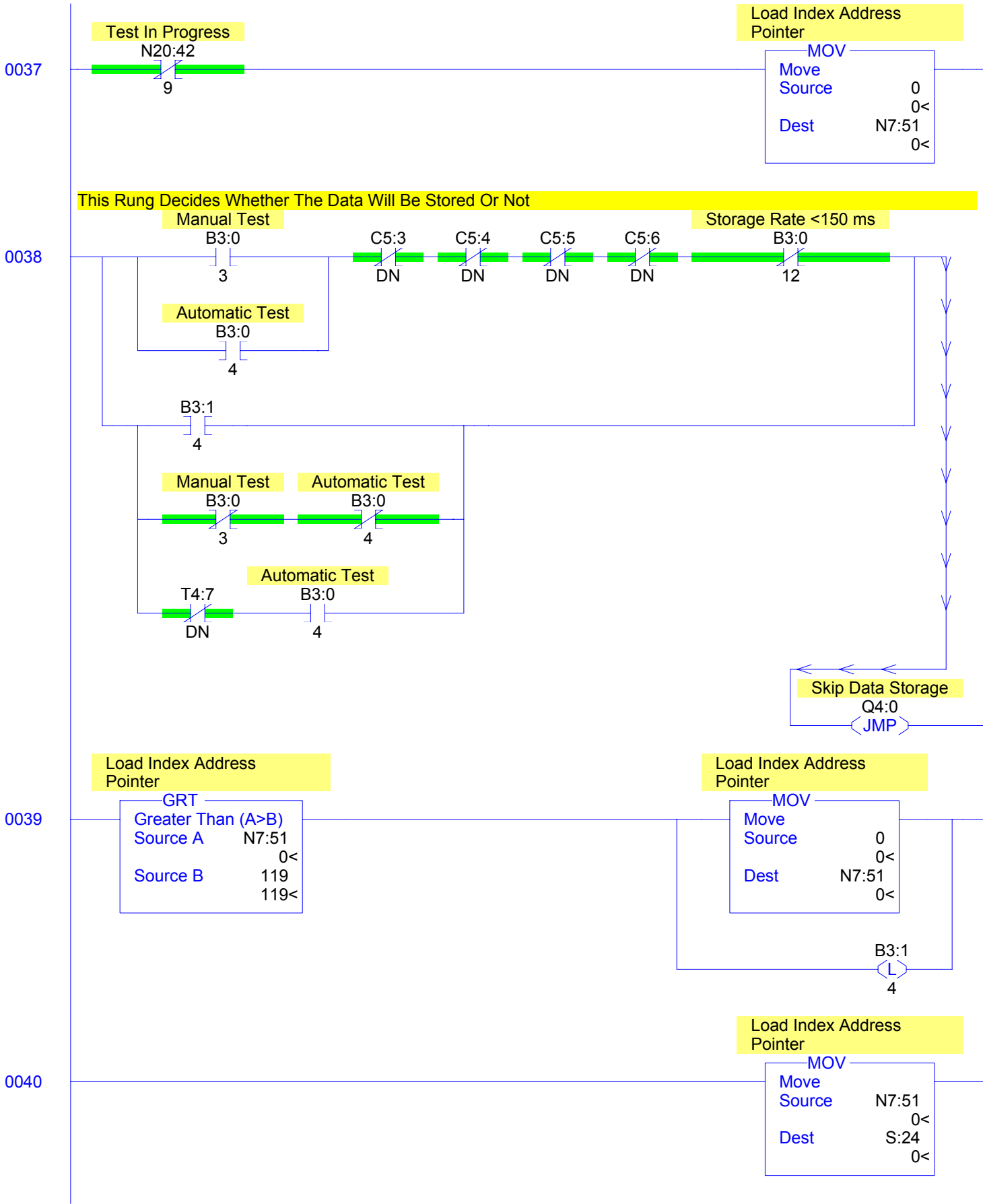
# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



# Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46

0041

MOV  
Move  
Source N40:24  
321<  
Dest #N51:0  
334<

MOV  
Move  
Source N40:25  
6<  
Dest #N51:120  
5<

MOV  
Move  
Source N40:26  
0<  
Dest #N51:240  
0<

MOV  
Move  
Source N40:27  
0<  
Dest #N51:360  
0<

MOV  
Move  
Source N40:28  
76<  
Dest #N51:480  
72<

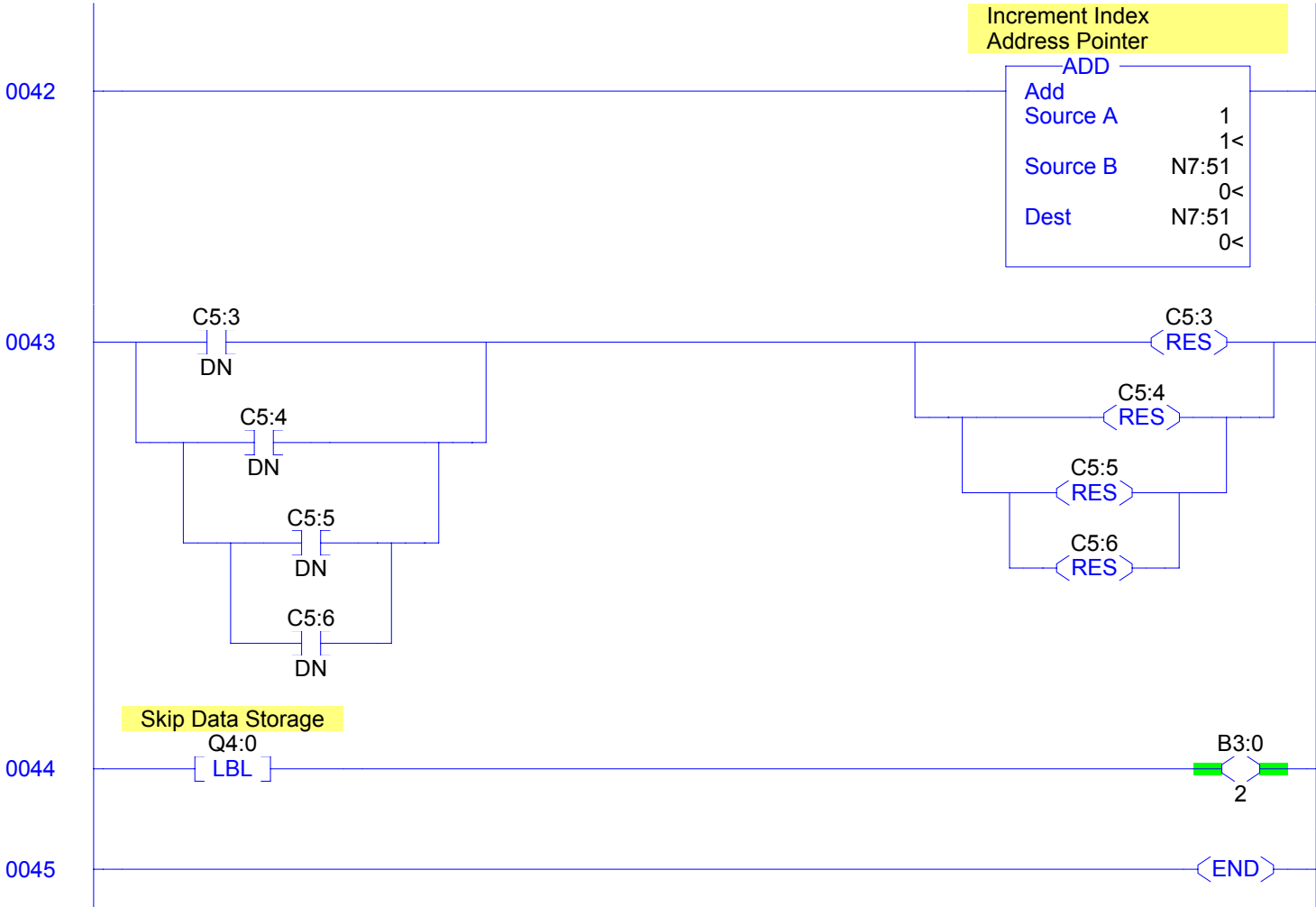
MOV  
Move  
Source N40:29  
4<  
Dest #N51:600  
4<

MOV  
Move  
Source N40:30  
14<  
Dest #N51:720  
9<

MOV  
Move  
Source N40:31  
2<  
Dest #N51:840  
2<

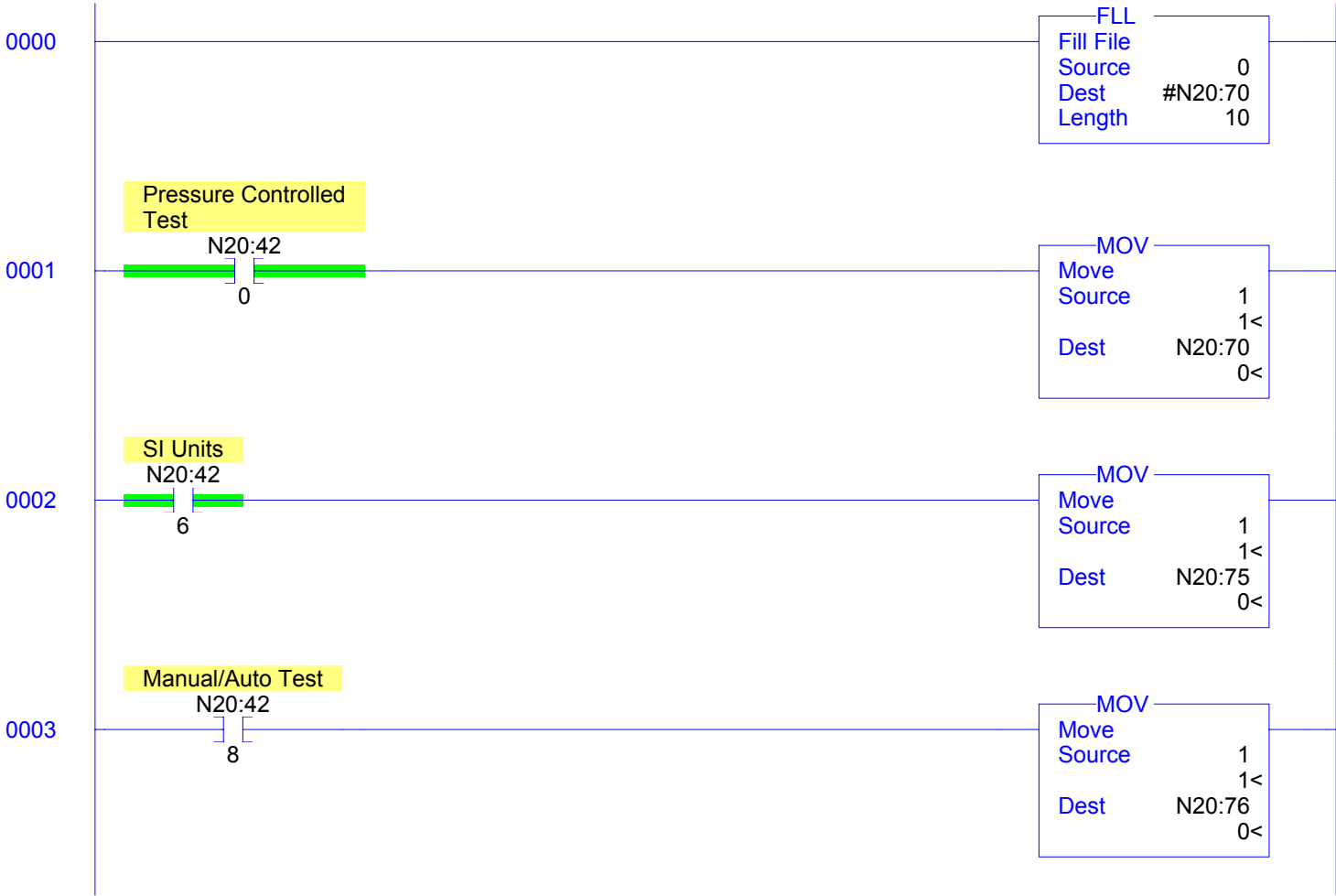
Test Bench Four

LAD 4 - ANALOG\_INT --- Total Rungs in File = 46



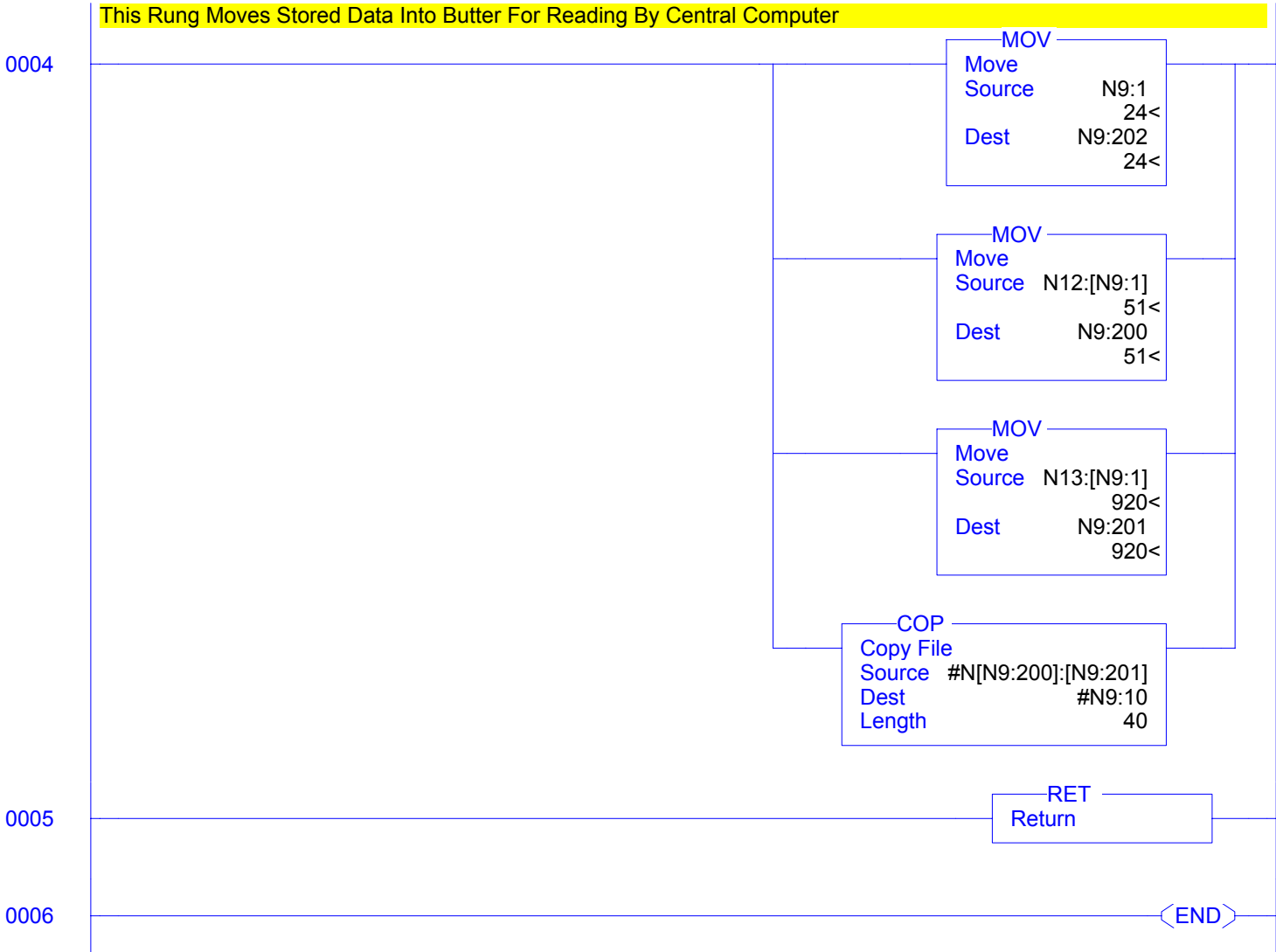
Test Bench Four

LAD 6 - FASTUPLOAD --- Total Rungs in File = 7



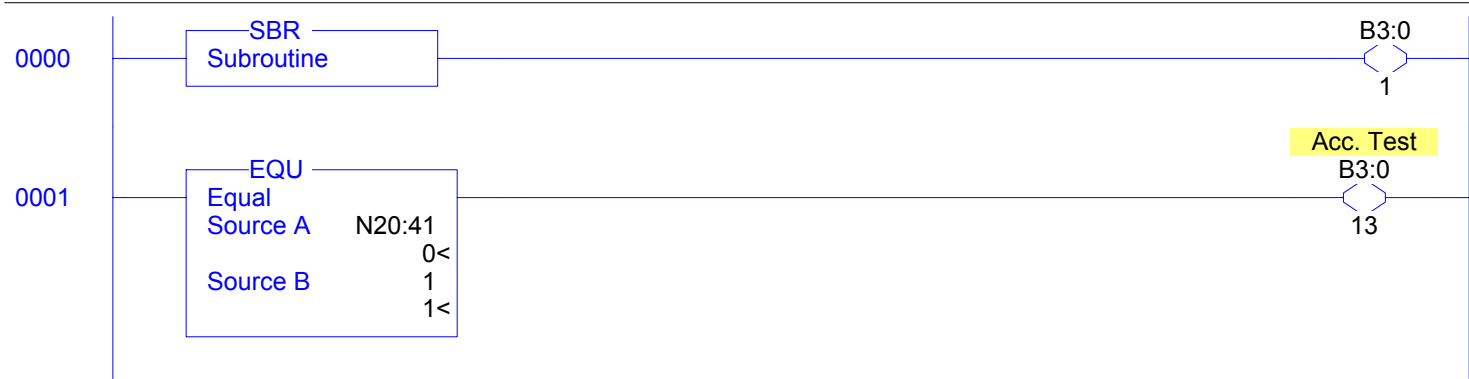
Test Bench Four

LAD 6 - FASTUPLOAD --- Total Rungs in File = 7



Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16





Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16

This Rung Calculates The Flow Rate For The Cylinder Extend

0002

NEQ  
Not Equal  
Source A N20:41  
Source B

MUL  
Multiply  
Source A N20:46  
Source B N20:46  
Dest F8:0

MUL  
Multiply  
Source A F8:0  
Source B 7.85E-006  
Dest F8:1

EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A F8:1  
Source B N20:44  
Dest F8:2

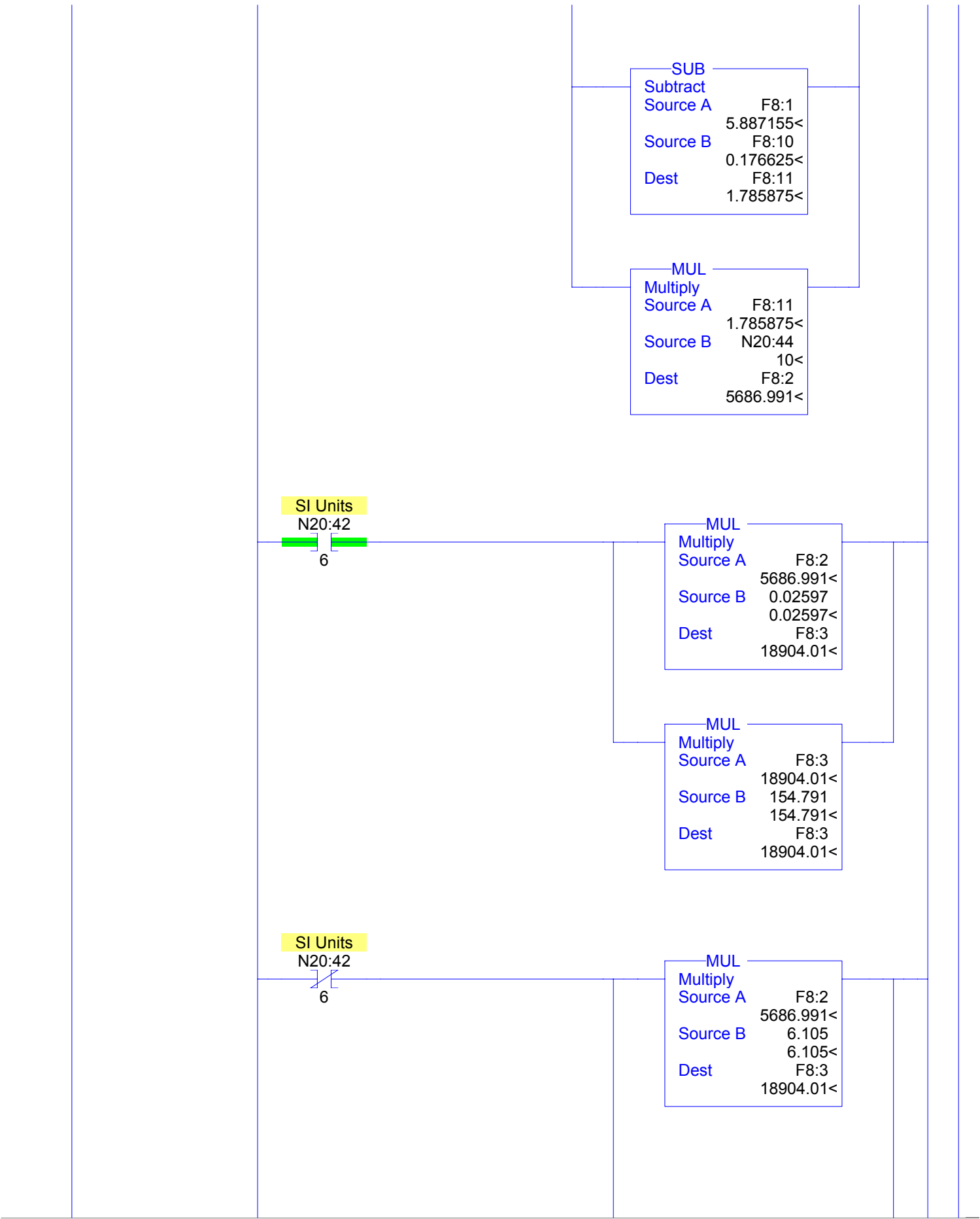
EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A N20:50  
Source B N20:50  
Dest F8:9

MUL  
Multiply  
Source A F8:9  
Source B 7.85E-006  
Dest F8:10

Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16



Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16

MUL

Multiply

Source A      F8:3  
                 18904.01<

Source B      40.95  
                 40.95<

Dest            F8:3  
                 18904.01<

MUL

Multiply

Source A      F8:3  
                 18904.01<

Source B      0.8  
                 0.8<

Dest            F8:3  
                 18904.01<

ADD

Add

Source A      F8:3  
                 18904.01<

Source B      615.0  
                 615.0<

Dest            F8:3  
                 18904.01<

Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16

This Rung Calculates The Flow Rate For The Cylinder Retract

0003

NEQ  
Not Equal  
Source A N20:41  
Source B

EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A N20:48  
Source B N20:48  
Dest F8:4

EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A N20:49  
Source B N20:49  
Dest F8:4

MUL  
Multiply  
Source A F8:4  
Source B 7.85E-006  
Dest F8:5

SUB  
Subtract  
Source A F8:1  
Source B F8:5  
Dest F8:6

MUL  
Multiply  
Source A F8:6  
Source B N20:44  
Dest F8:7

Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16

SI Units  
N20:42  
6

MUL  
Multiply  
Source A F8:7  
5275.313<  
Source B 0.02597  
0.02597<  
Dest F8:8  
17580.08<

MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 154.791  
154.791<  
Dest F8:8  
17580.08<

SI Units  
N20:42  
6

MUL  
Multiply  
Source A F8:7  
5275.313<  
Source B 6.105  
6.105<  
Dest F8:8  
17580.08<

MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 40.95  
40.95<  
Dest F8:8  
17580.08<

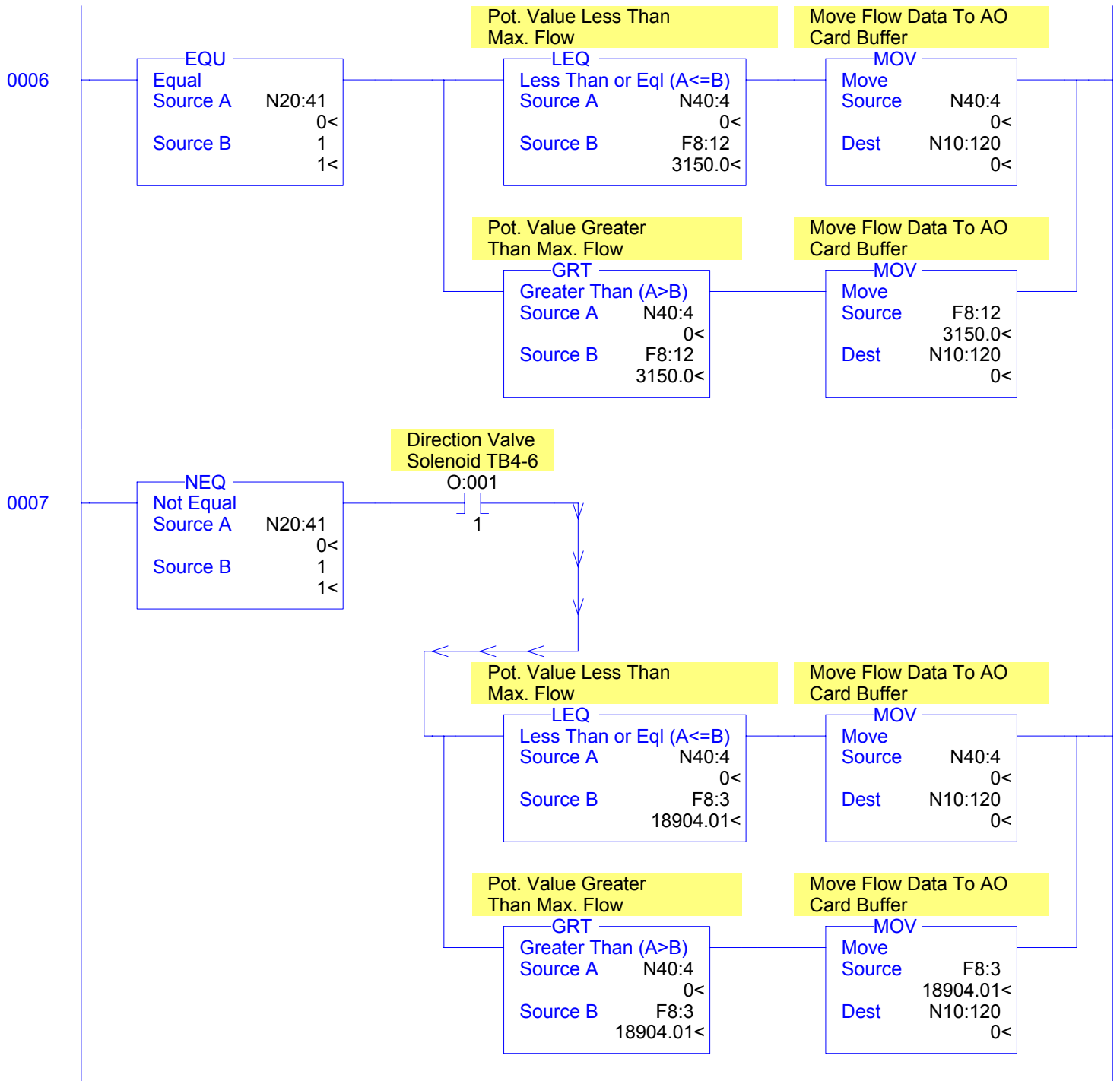
MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 0.8  
0.8<  
Dest F8:8  
17580.08<

LAD 7 - MAN\_TEST --- Total Rungs in File = 16



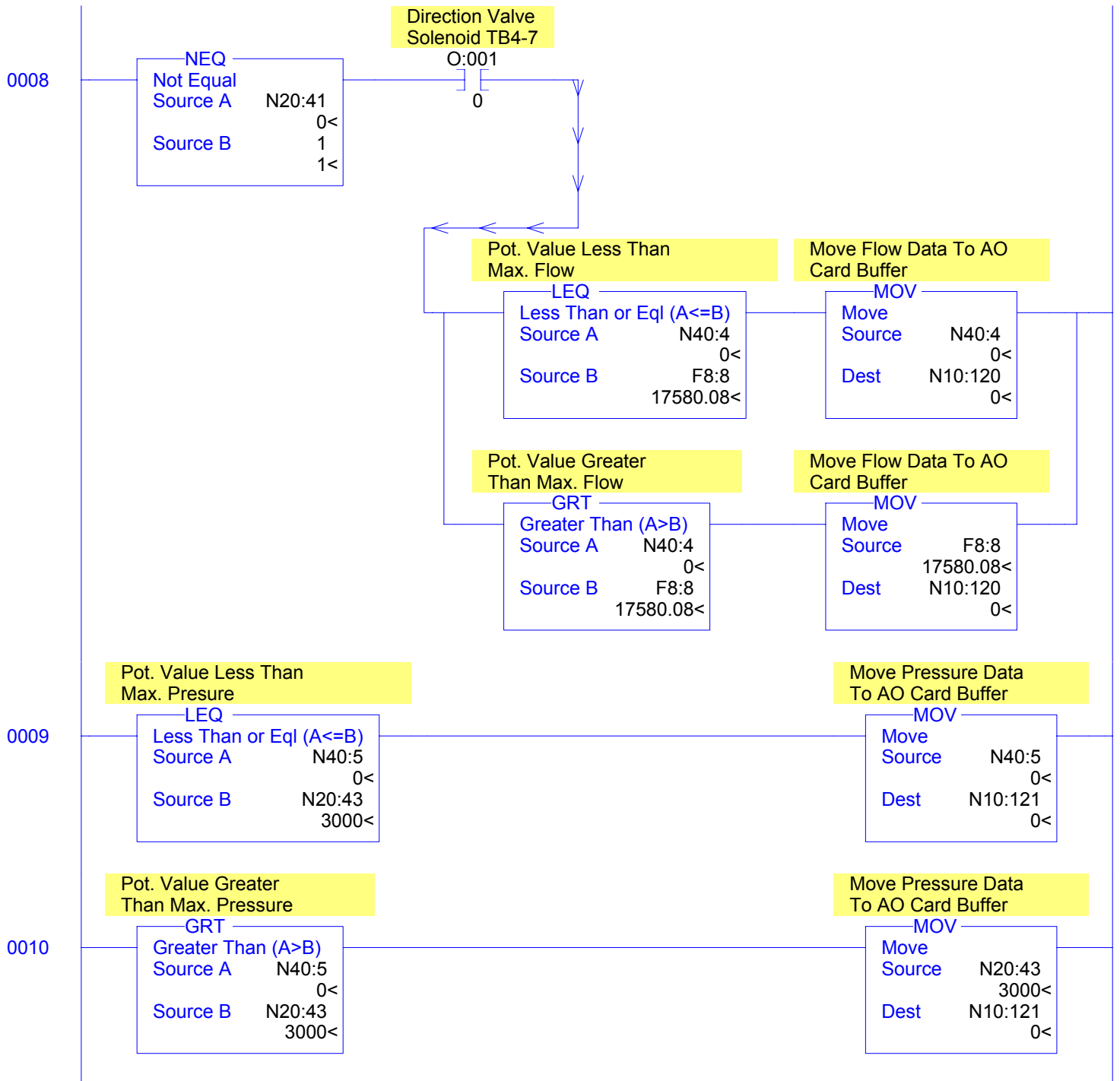
# Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16



# Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16





Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16

0011

Move AO Config.  
Info. To Buffer

MOV  
Move  
Source        -32688  
              -32688<  
Dest        N10:124  
              -32688<

MOV  
Move  
Source        0  
              0<  
Dest        N10:125  
              0<

MOV  
Move  
Source        4095  
              4095<  
Dest        N10:126  
              4095<

MOV  
Move  
Source        0  
              0<  
Dest        N10:127  
              0<

MOV  
Move  
Source        5000  
              5000<  
Dest        N10:128  
              5000<

0012

Direction Valve  
Solenoid TB4-7

O:001

0

Direction Valve  
Solenoid TB4-6

O:001

1

Move Flow Data To AO  
Card Buffer

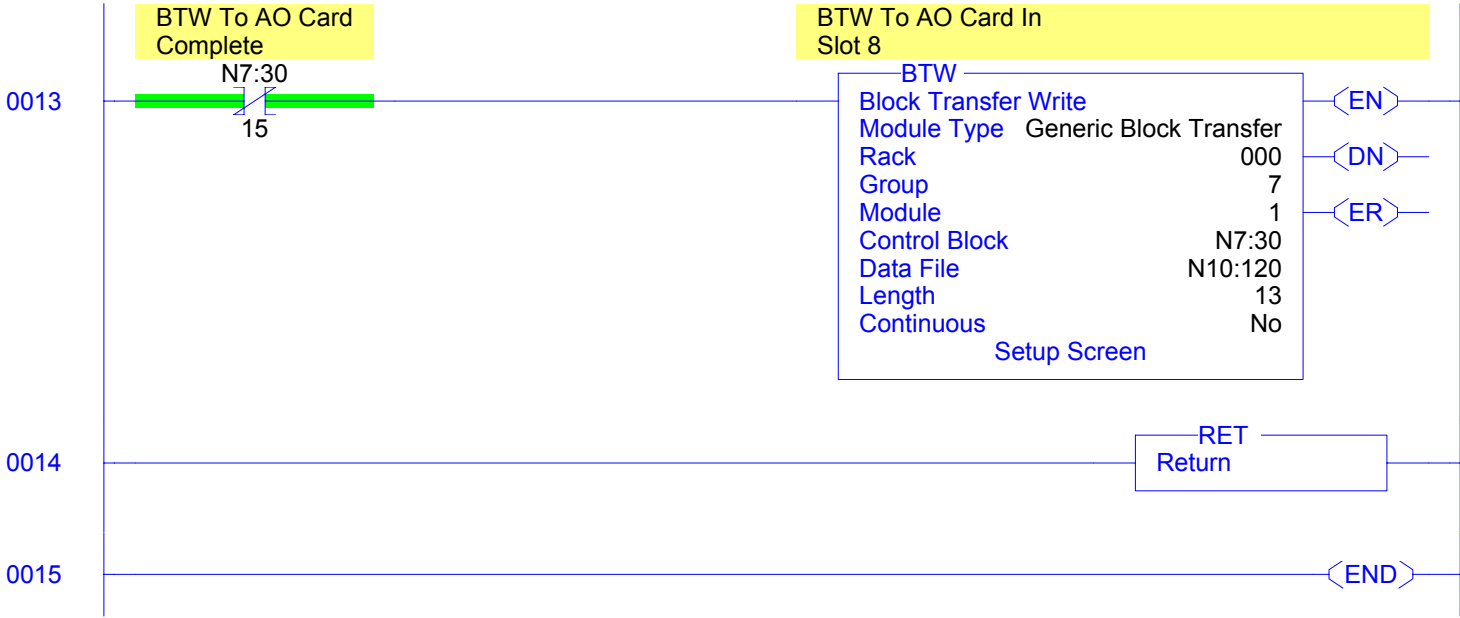
MUL  
Multiply  
Source A    N10:120  
              0<  
Source B        0.8  
              0.8<  
Dest        N10:120  
              0<

Move Flow Data To AO  
Card Buffer

ADD  
Add  
Source A    N10:120  
              0<  
Source B        615  
              615<  
Dest        N10:120  
              0<

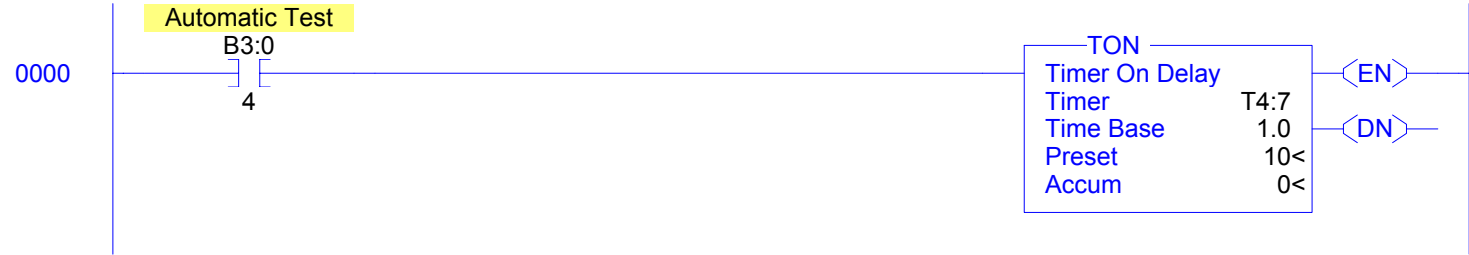
Test Bench Four

LAD 7 - MAN\_TEST --- Total Rungs in File = 16



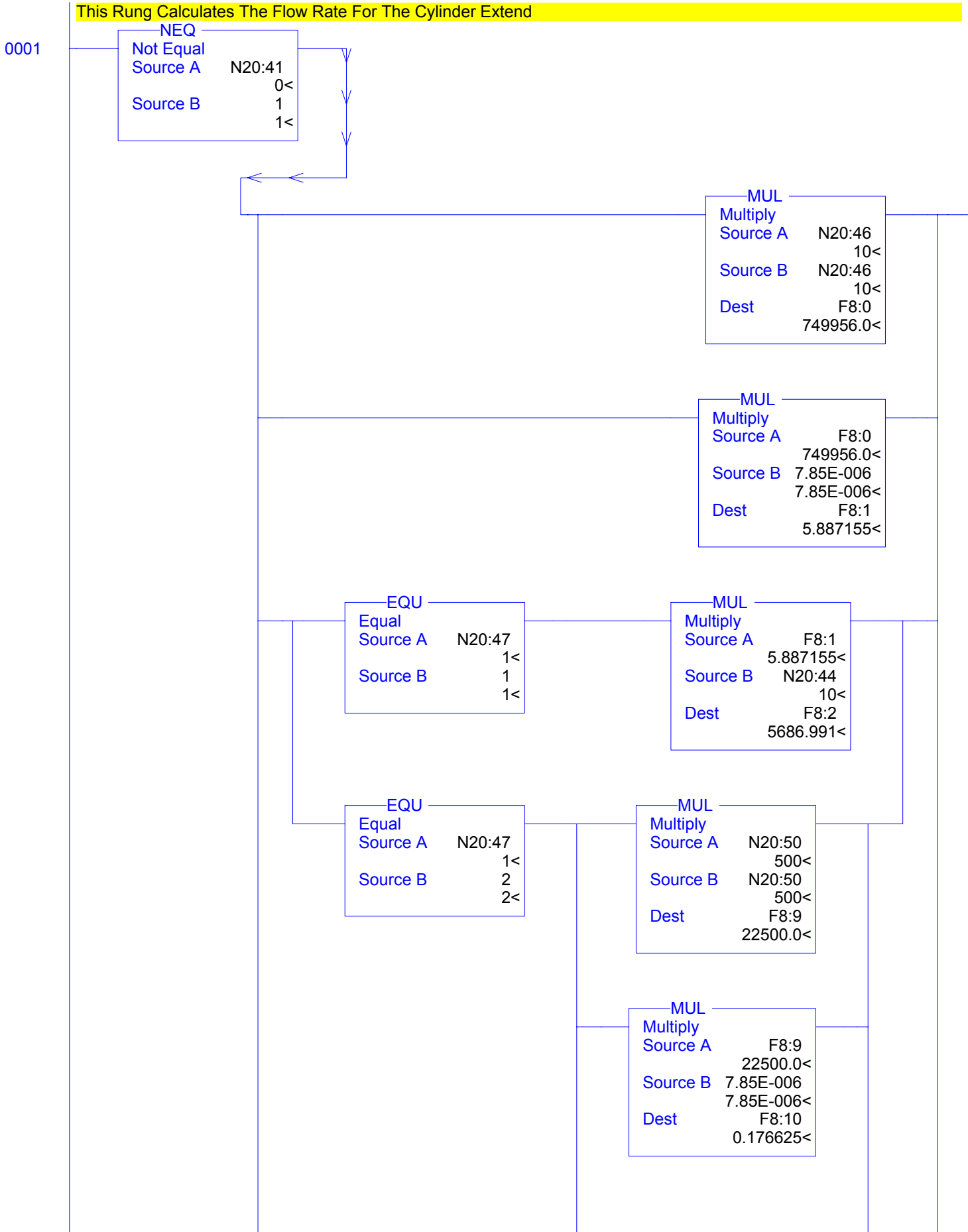
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



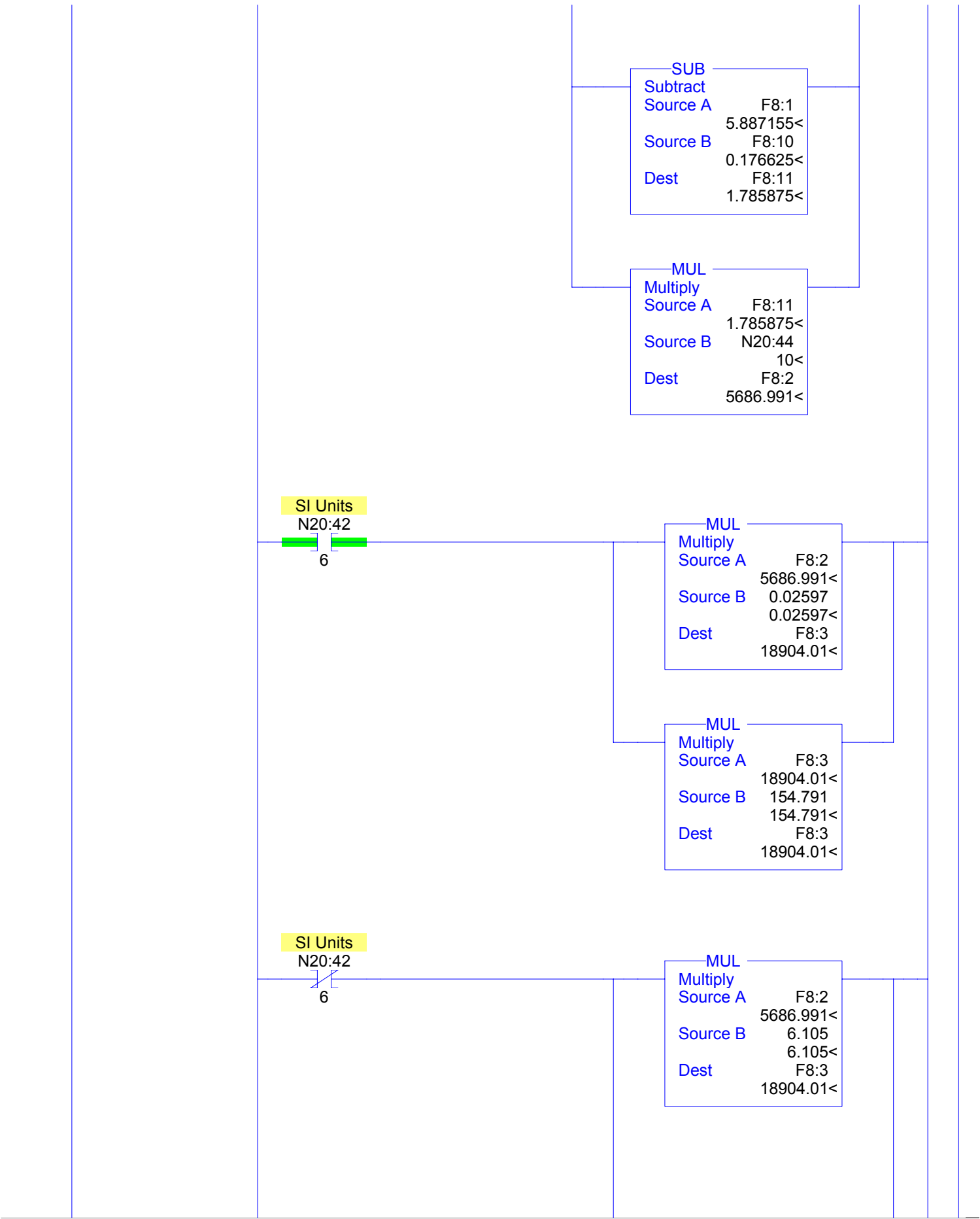
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27

MUL

Multiply

Source A      F8:3  
                 18904.01<

Source B      40.95  
                 40.95<

Dest            F8:3  
                 18904.01<

MUL

Multiply

Source A      F8:3  
                 18904.01<

Source B      0.8  
                 0.8<

Dest            F8:3  
                 18904.01<

ADD

Add

Source A      F8:3  
                 18904.01<

Source B      615.0  
                 615.0<

Dest            F8:3  
                 18904.01<

Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27

This Rung Calculates The Flow Rate For The Cylinder Retract

0002

NEQ  
Not Equal  
Source A N20:41  
Source B

EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A N20:48  
Source B N20:48  
Dest F8:4

EQU  
Equal  
Source A N20:47  
Source B

MUL  
Multiply  
Source A N20:49  
Source B N20:49  
Dest F8:4

MUL  
Multiply  
Source A F8:4  
Source B 7.85E-006  
Dest F8:5

SUB  
Subtract  
Source A F8:1  
Source B F8:5  
Dest F8:6

MUL  
Multiply  
Source A F8:6  
Source B N20:44  
Dest F8:7

Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27

SI Units  
N20:42  
6

MUL  
Multiply  
Source A F8:7  
5275.313<  
Source B 0.02597  
0.02597<  
Dest F8:8  
17580.08<

MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 154.791  
154.791<  
Dest F8:8  
17580.08<

SI Units  
N20:42  
6

MUL  
Multiply  
Source A F8:7  
5275.313<  
Source B 6.105  
6.105<  
Dest F8:8  
17580.08<

MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 40.95  
40.95<  
Dest F8:8  
17580.08<

MUL  
Multiply  
Source A F8:8  
17580.08<  
Source B 0.8  
0.8<  
Dest F8:8  
17580.08<



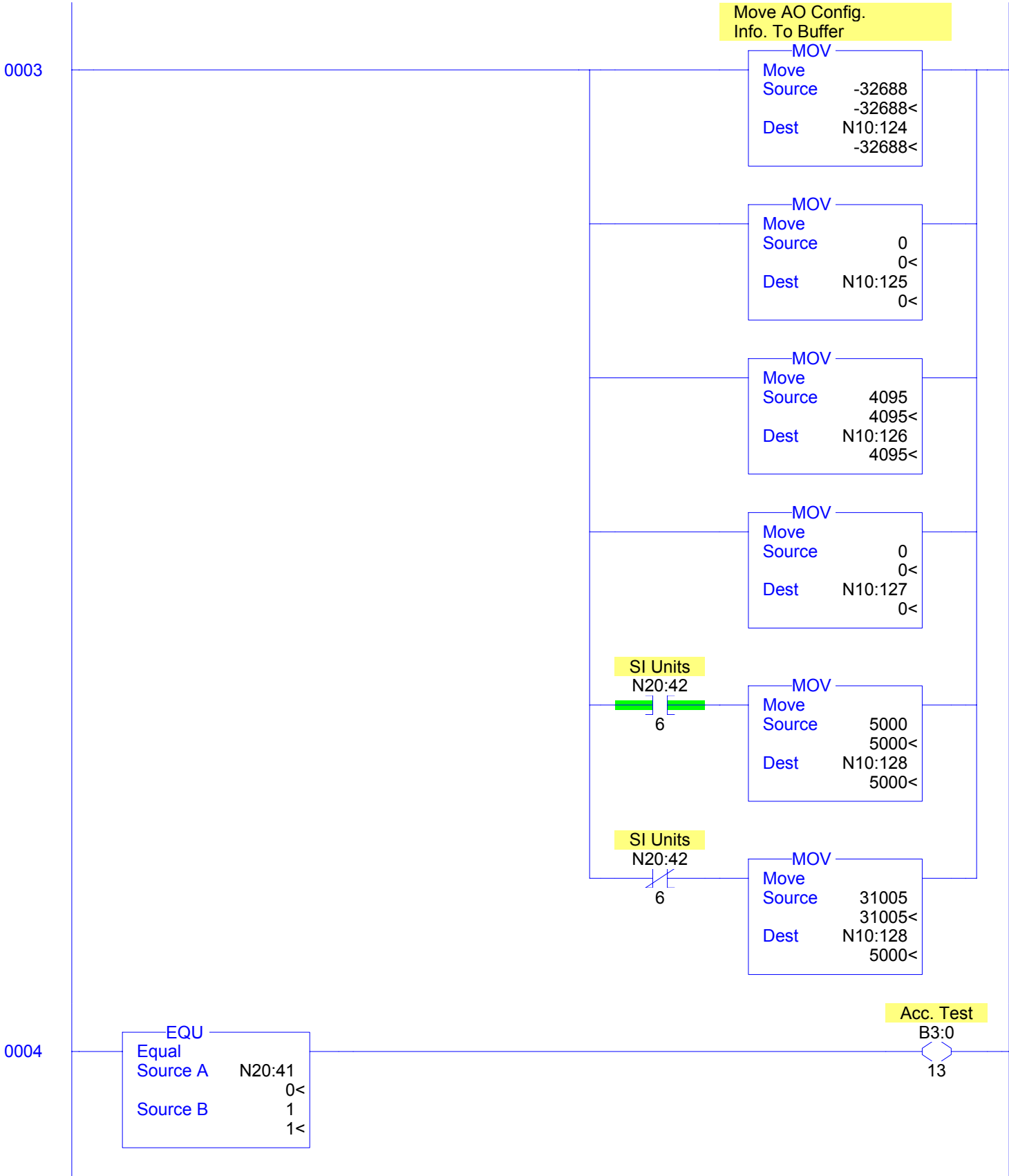
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27

ADD	
Add	
Source A	F8:8
	17580.08<
Source B	615.0
	615.0<
Dest	F8:8
	17580.08<

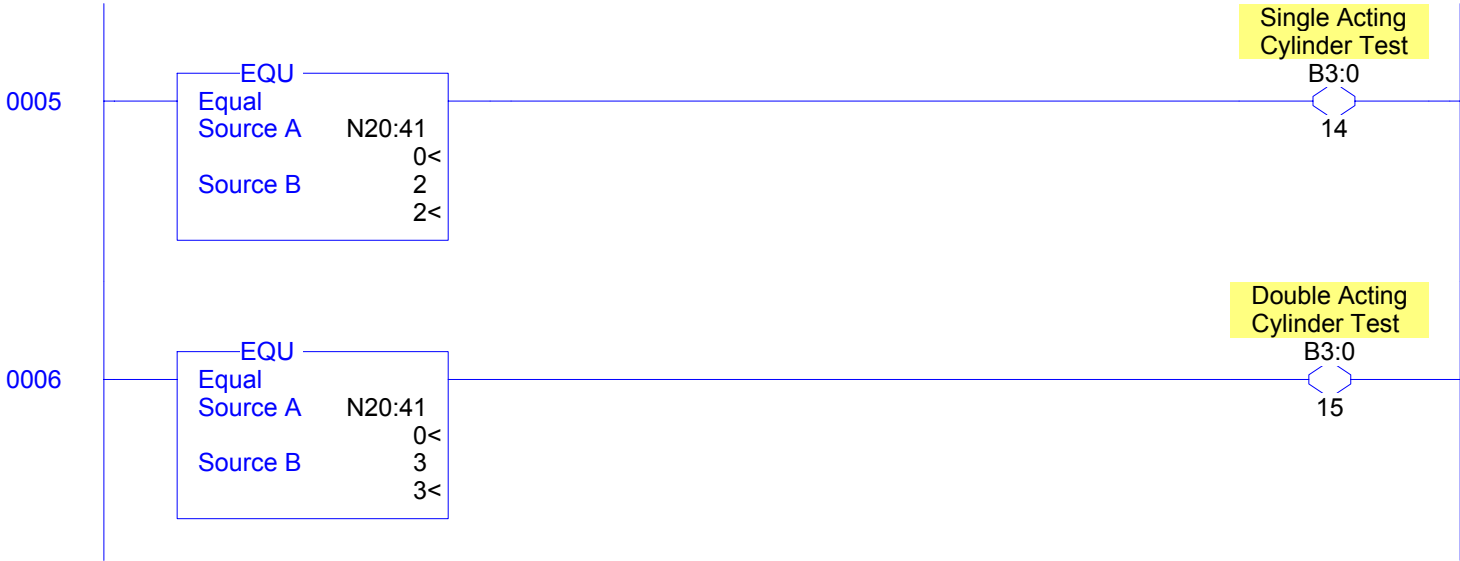
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



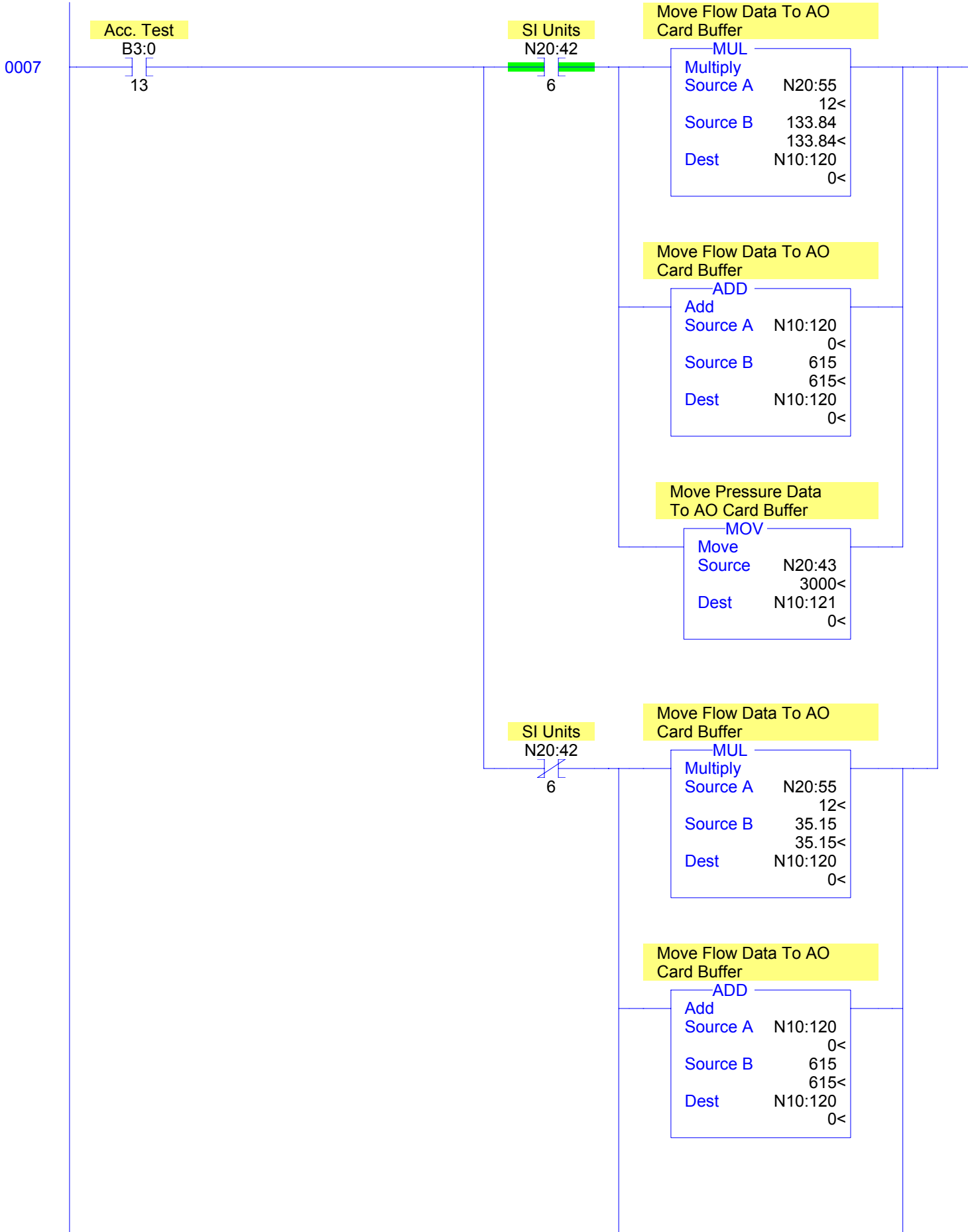
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



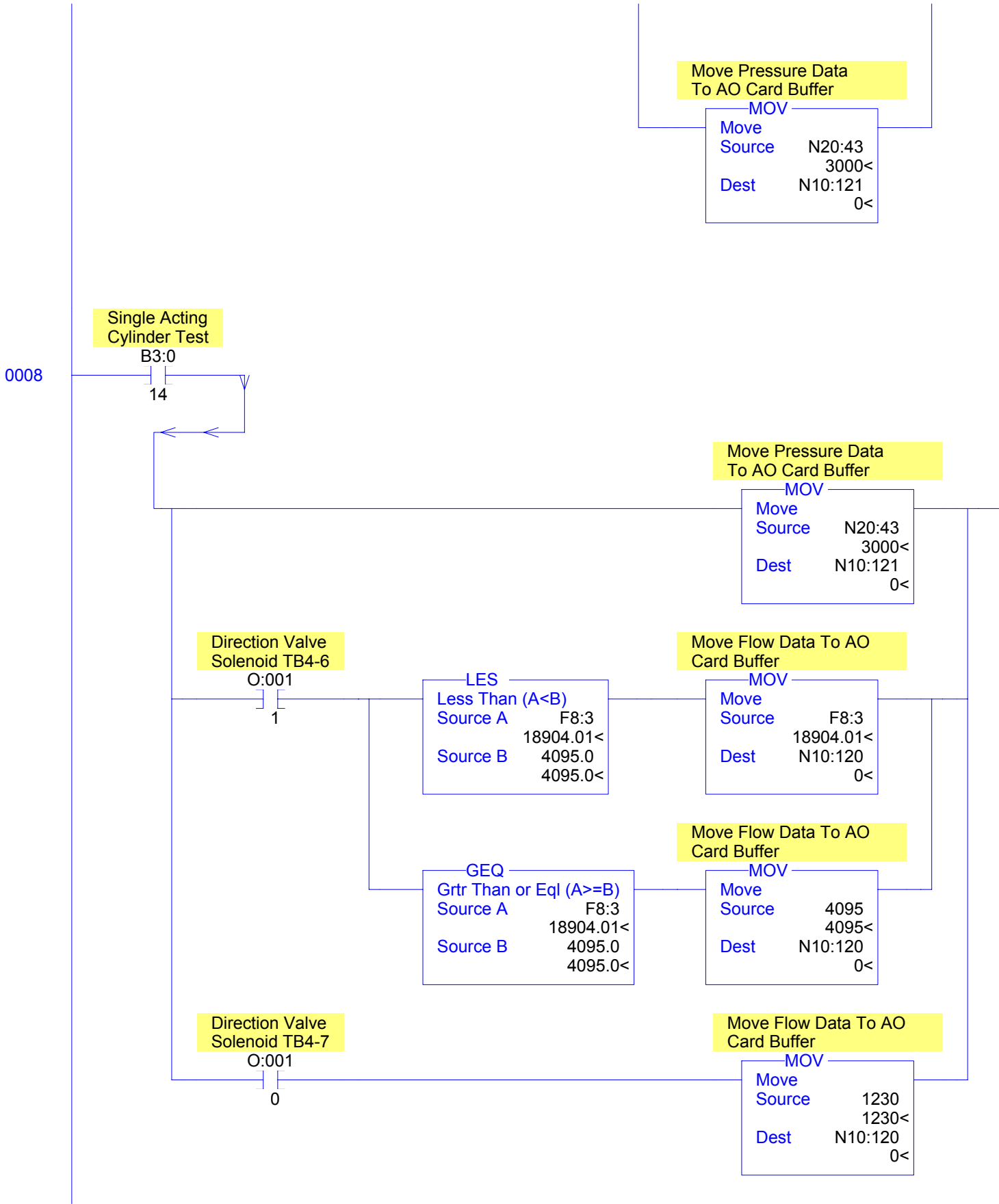
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



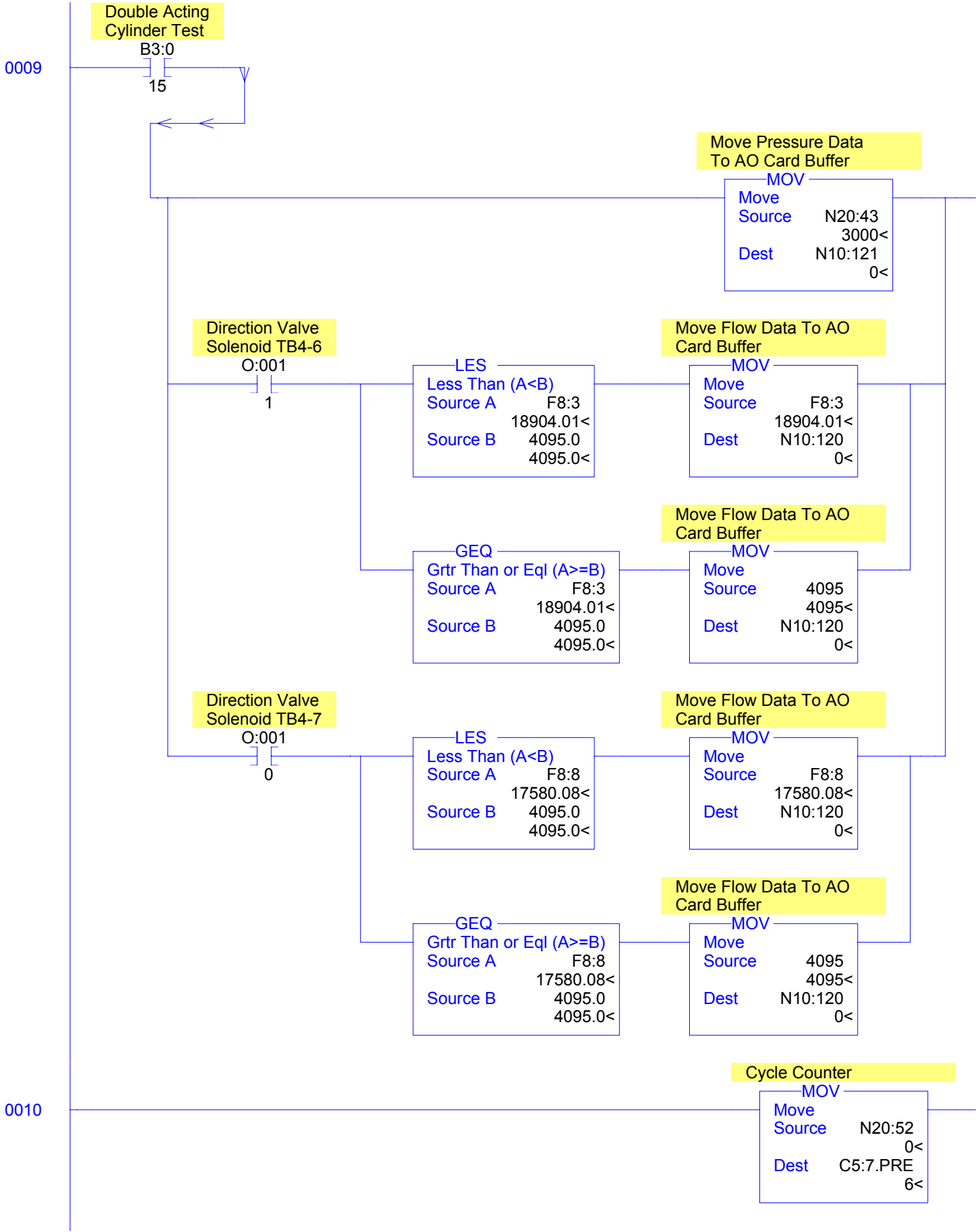
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



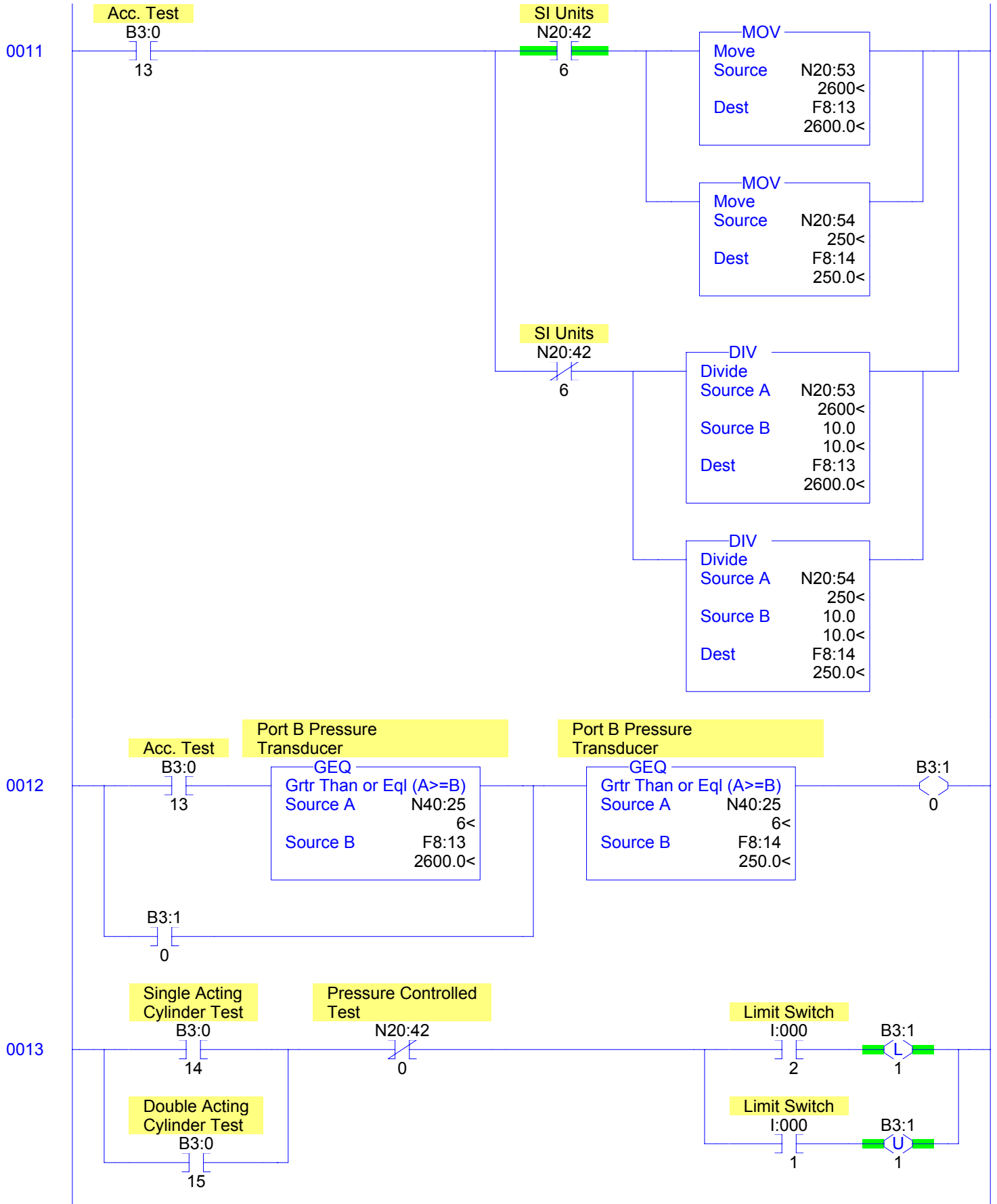
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



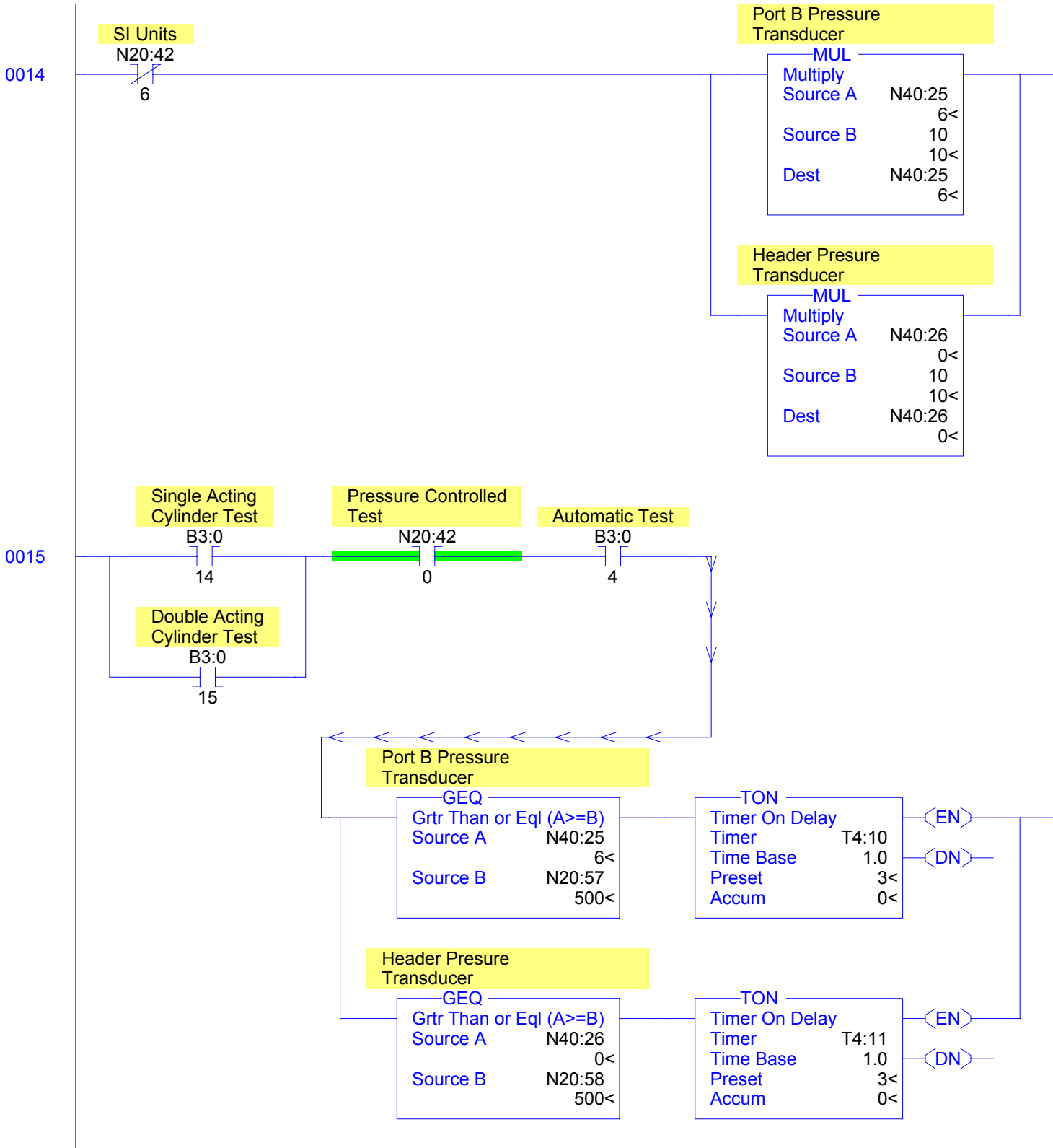
# Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



Test Bench Four

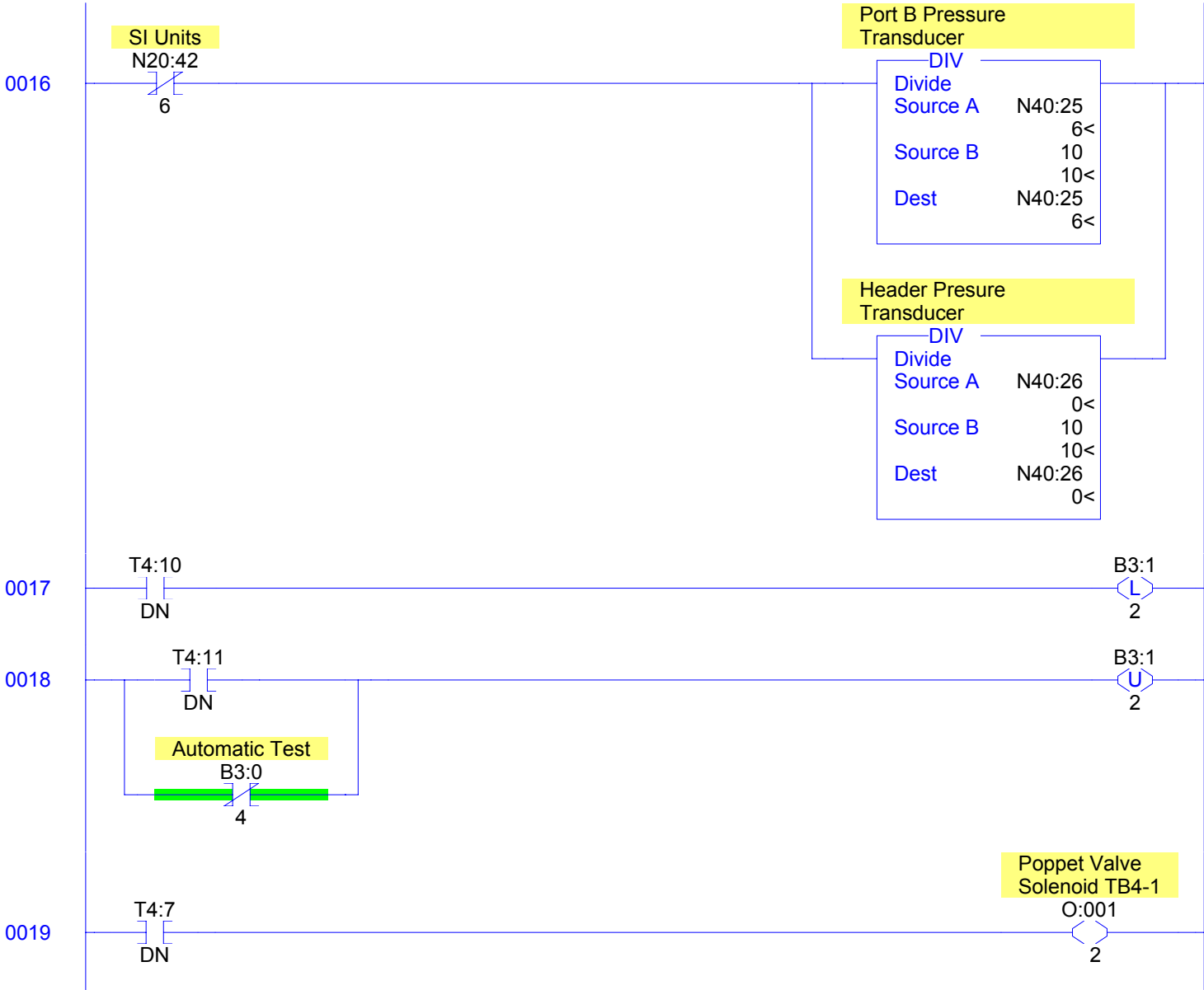
LAD 8 - AUTO\_TEST --- Total Rungs in File = 27





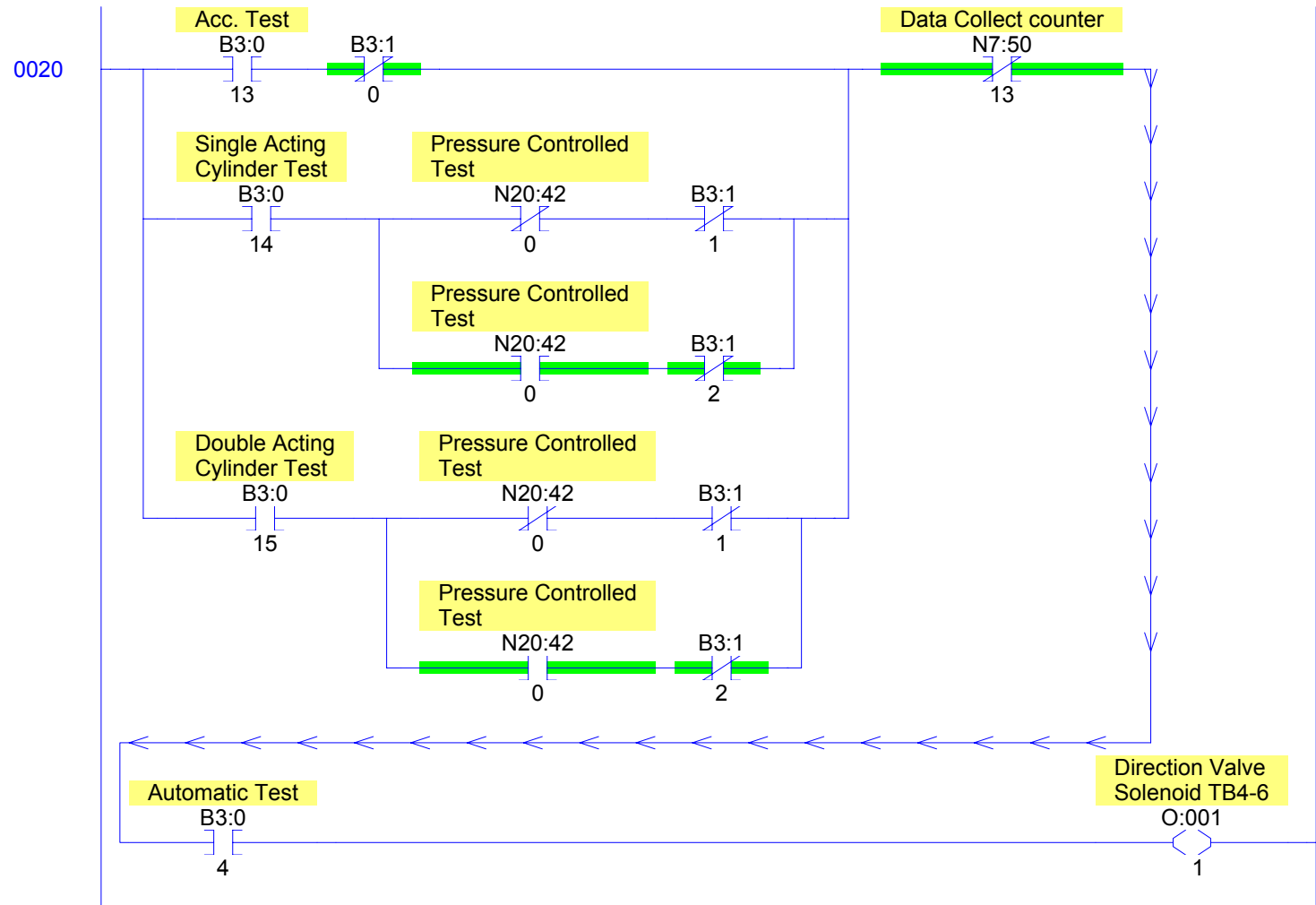
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



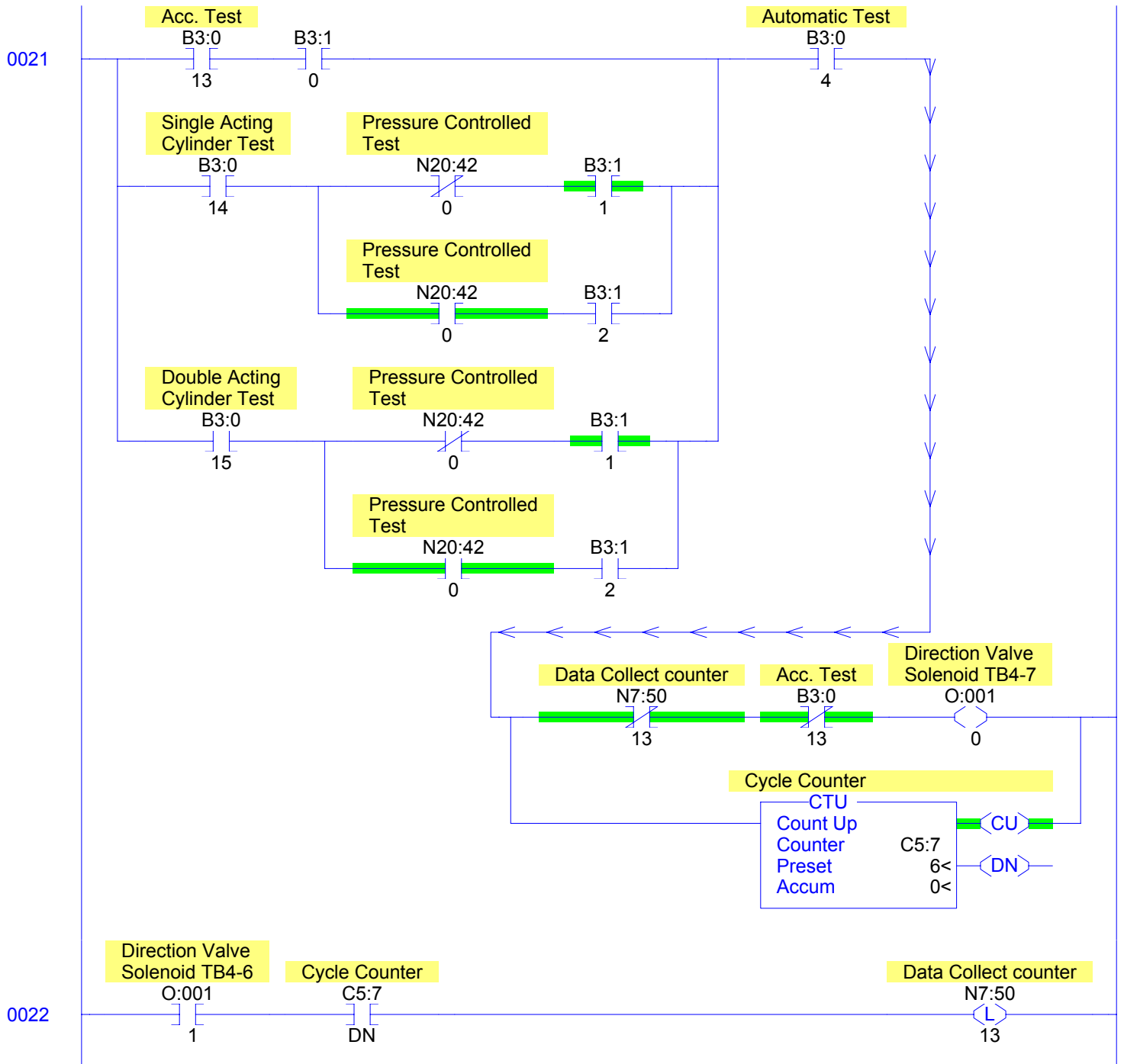
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



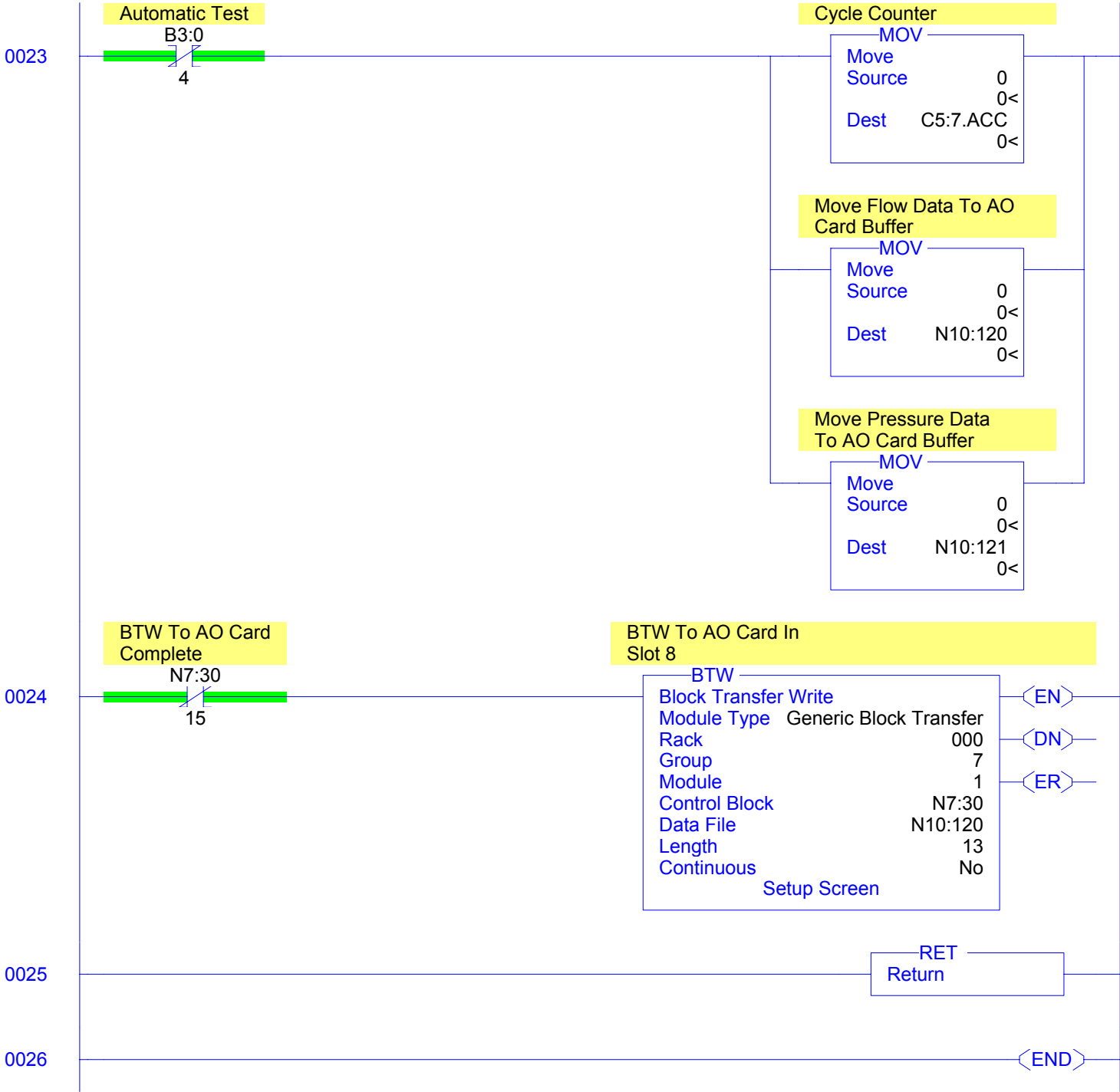
# Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



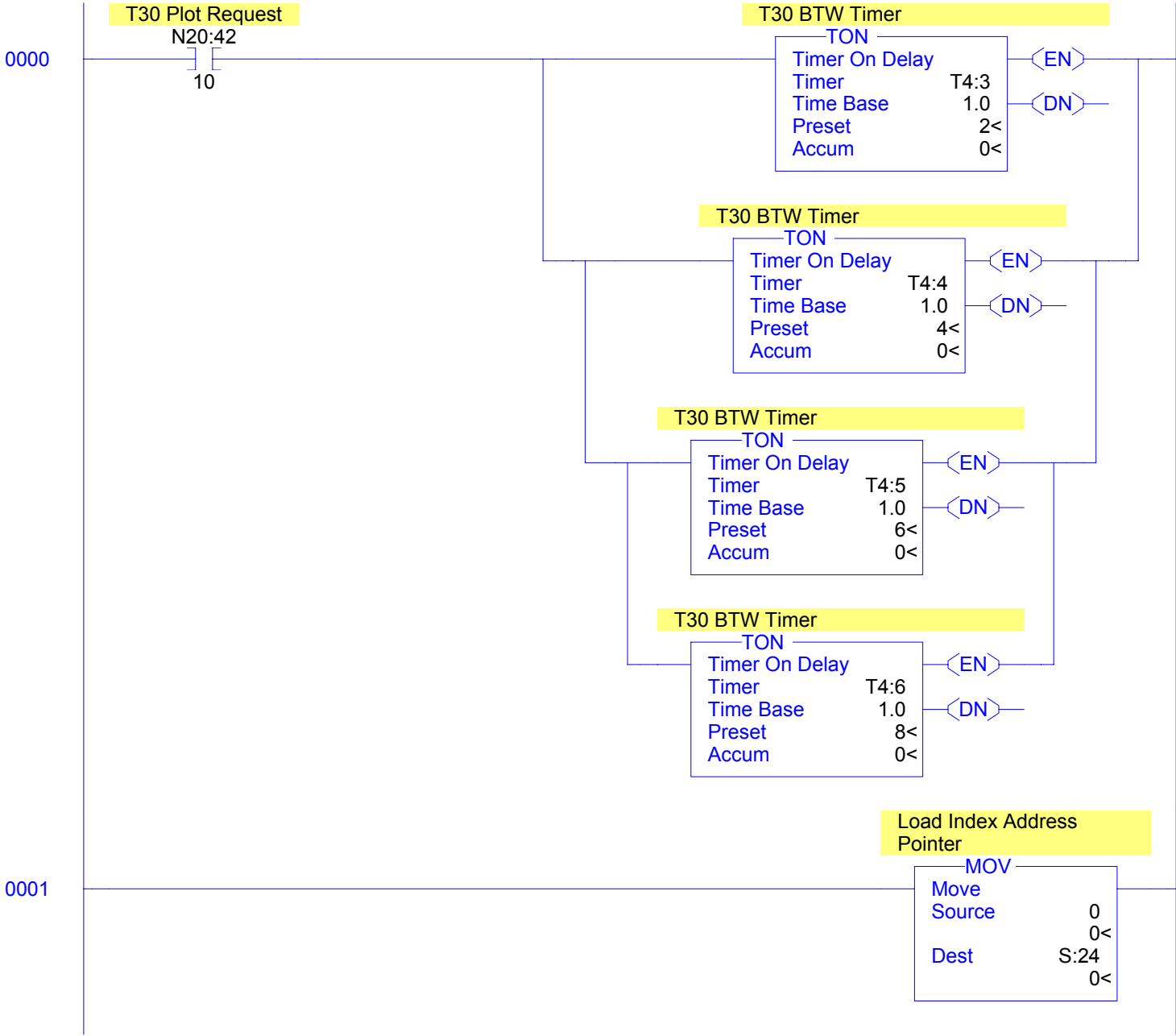
Test Bench Four

LAD 8 - AUTO\_TEST --- Total Rungs in File = 27



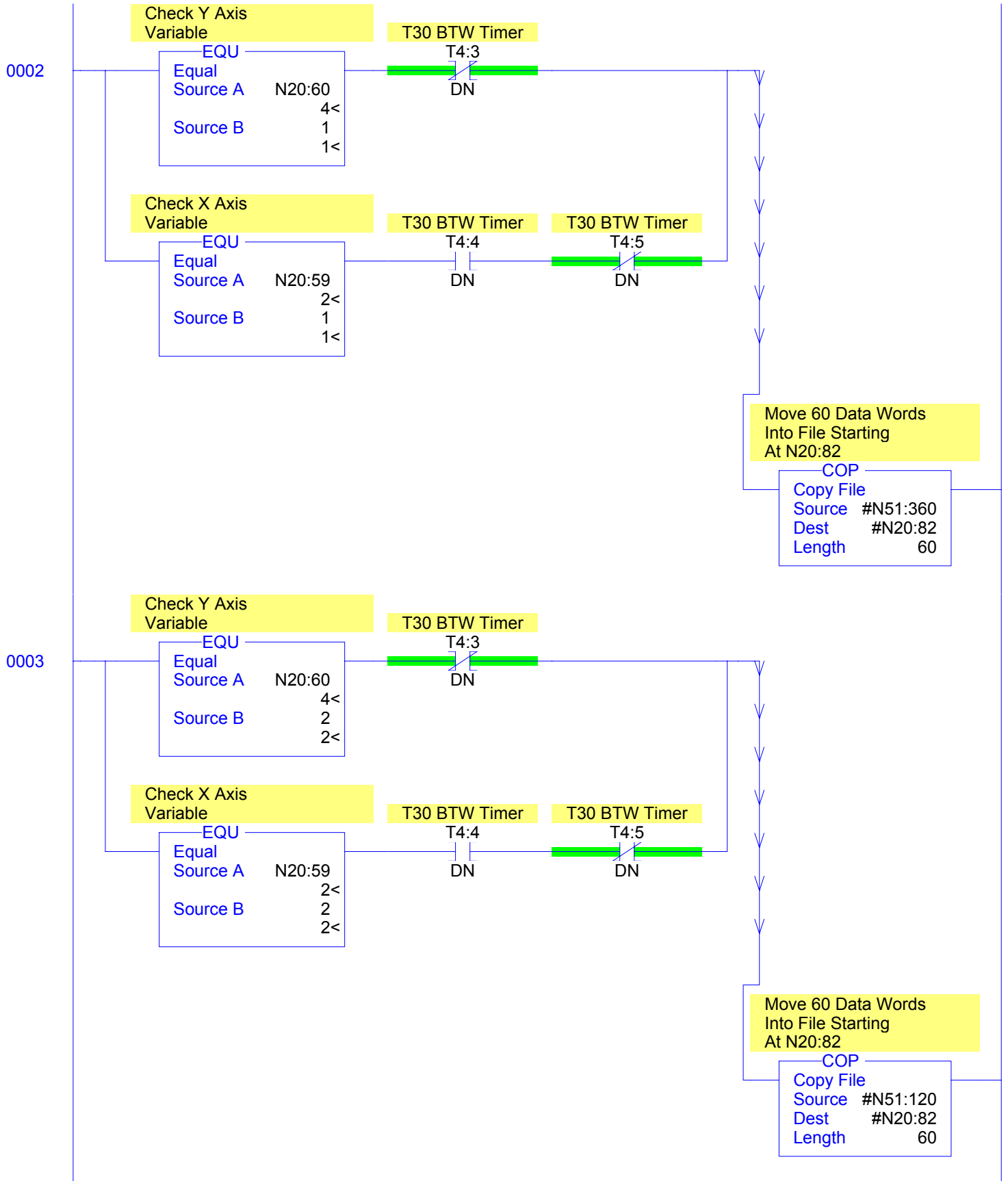
Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



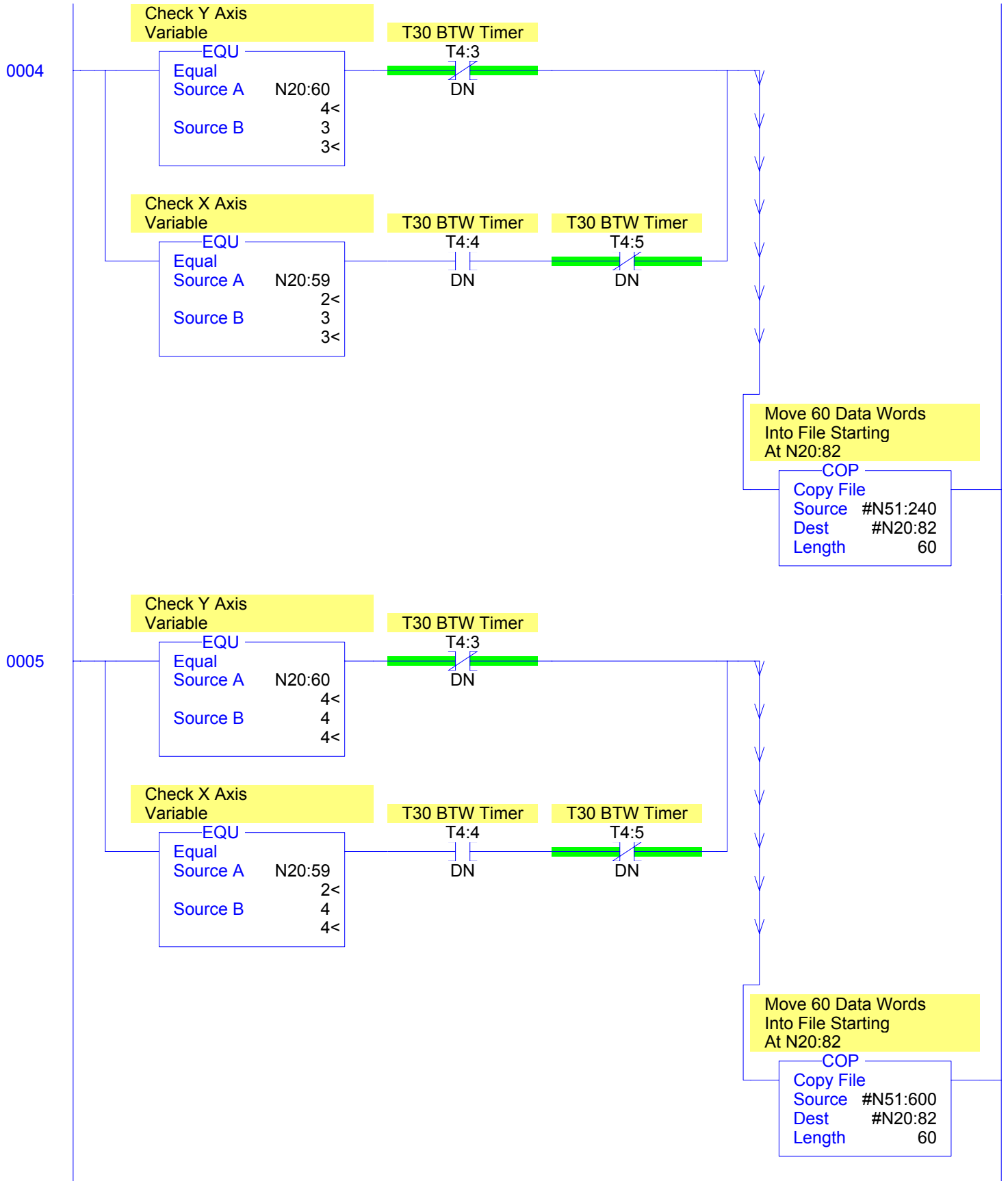
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



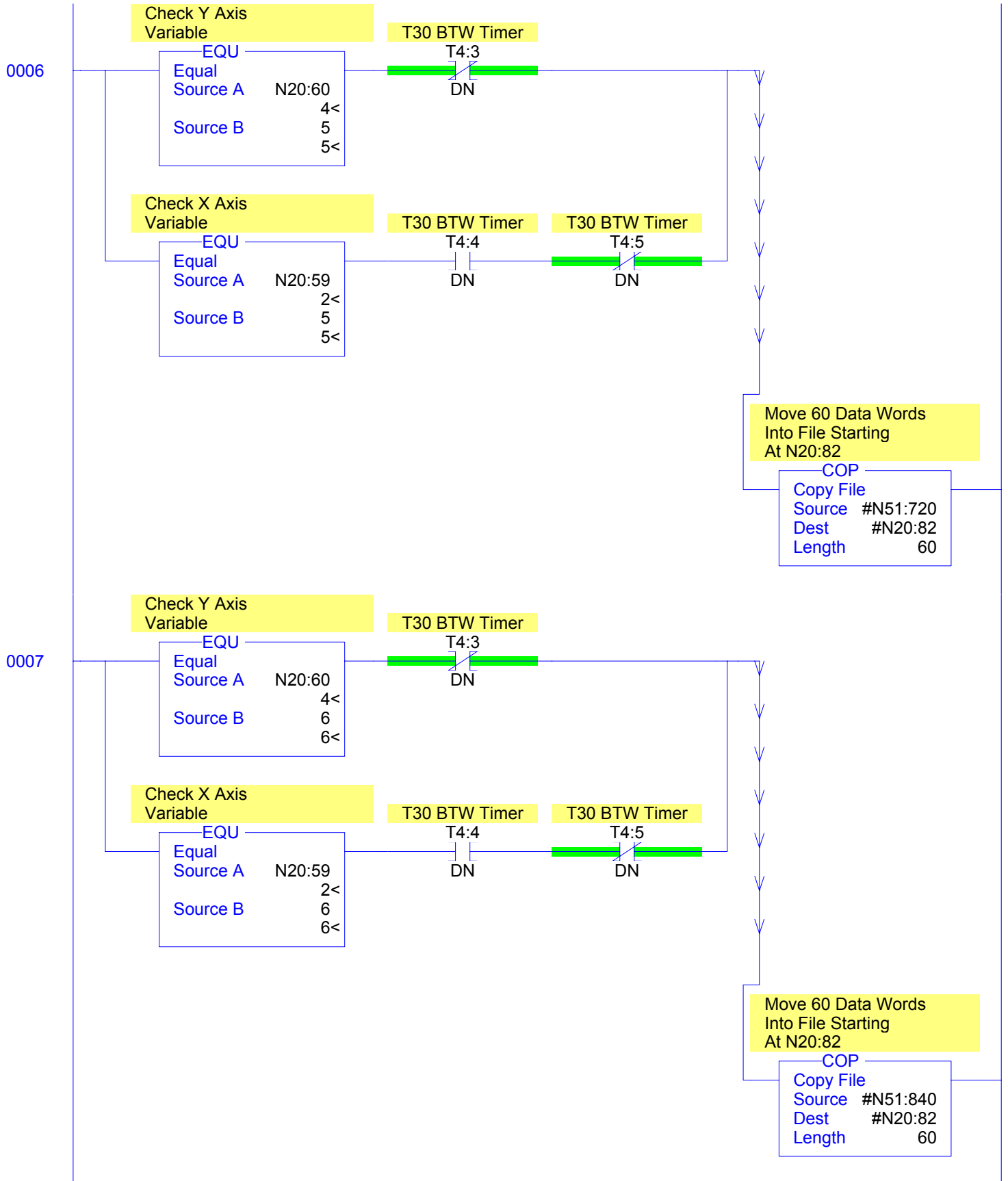
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



# Test Bench Four

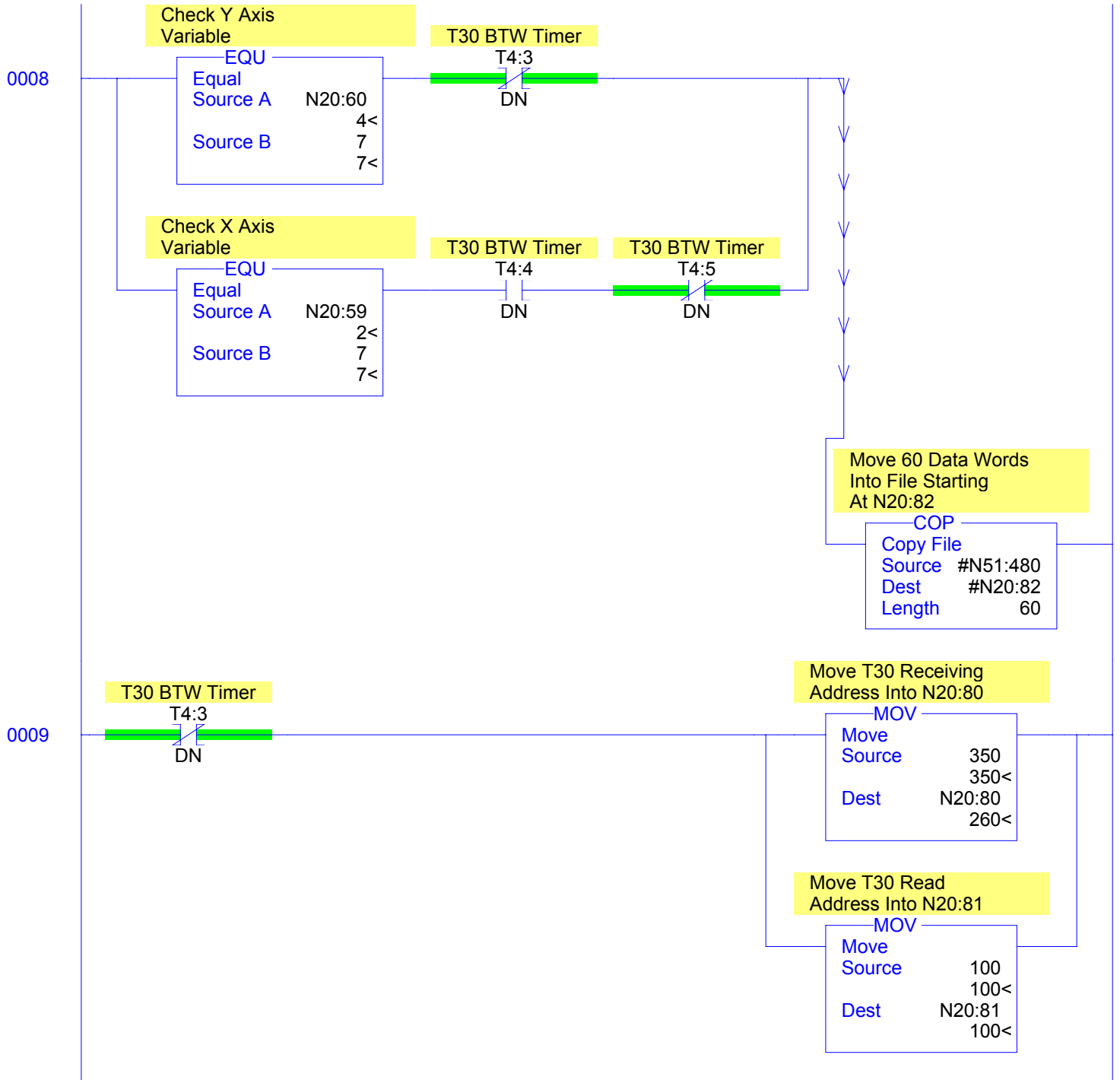
LAD 10 - T30\_PLOT --- Total Rungs in File = 25





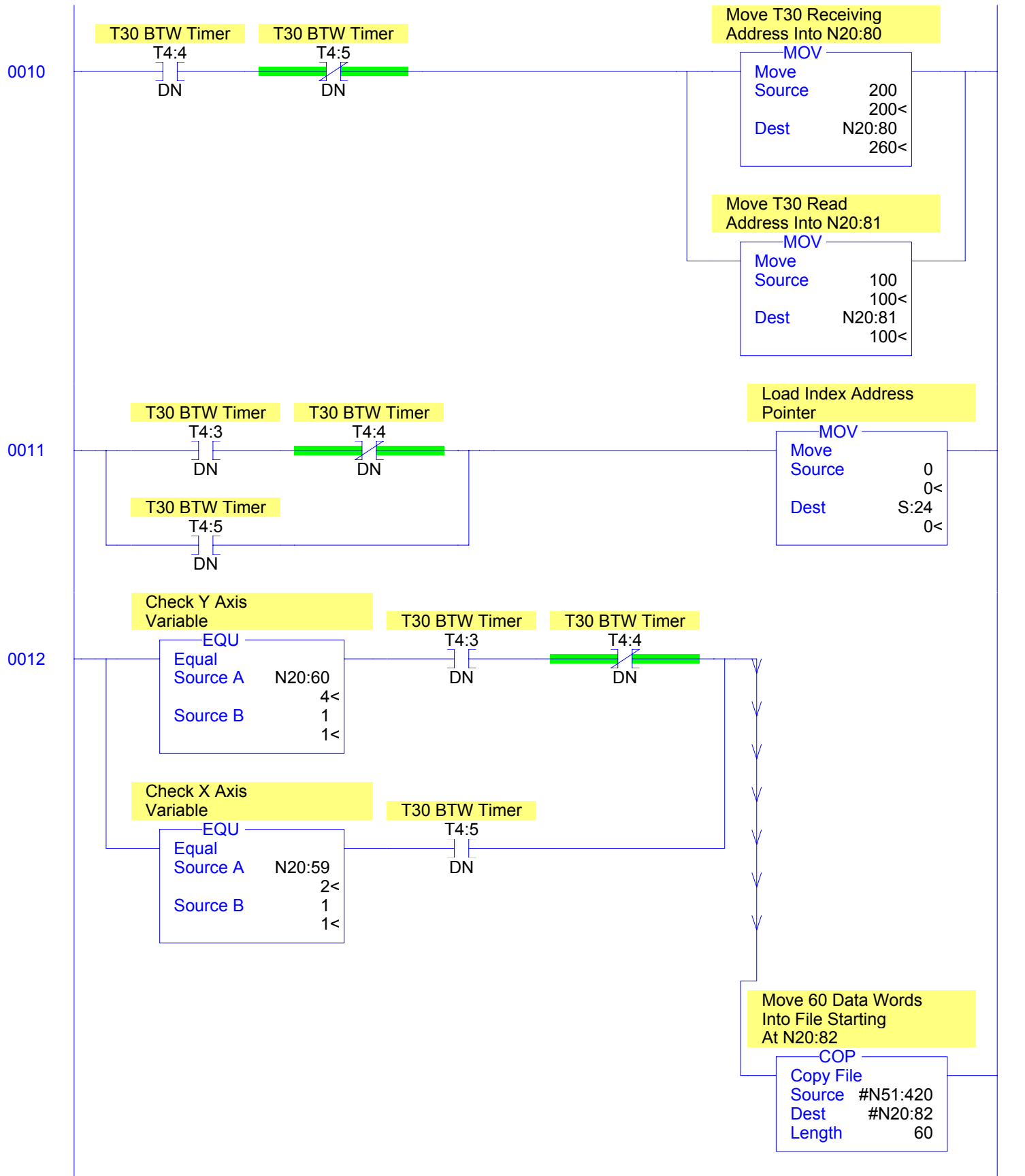
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



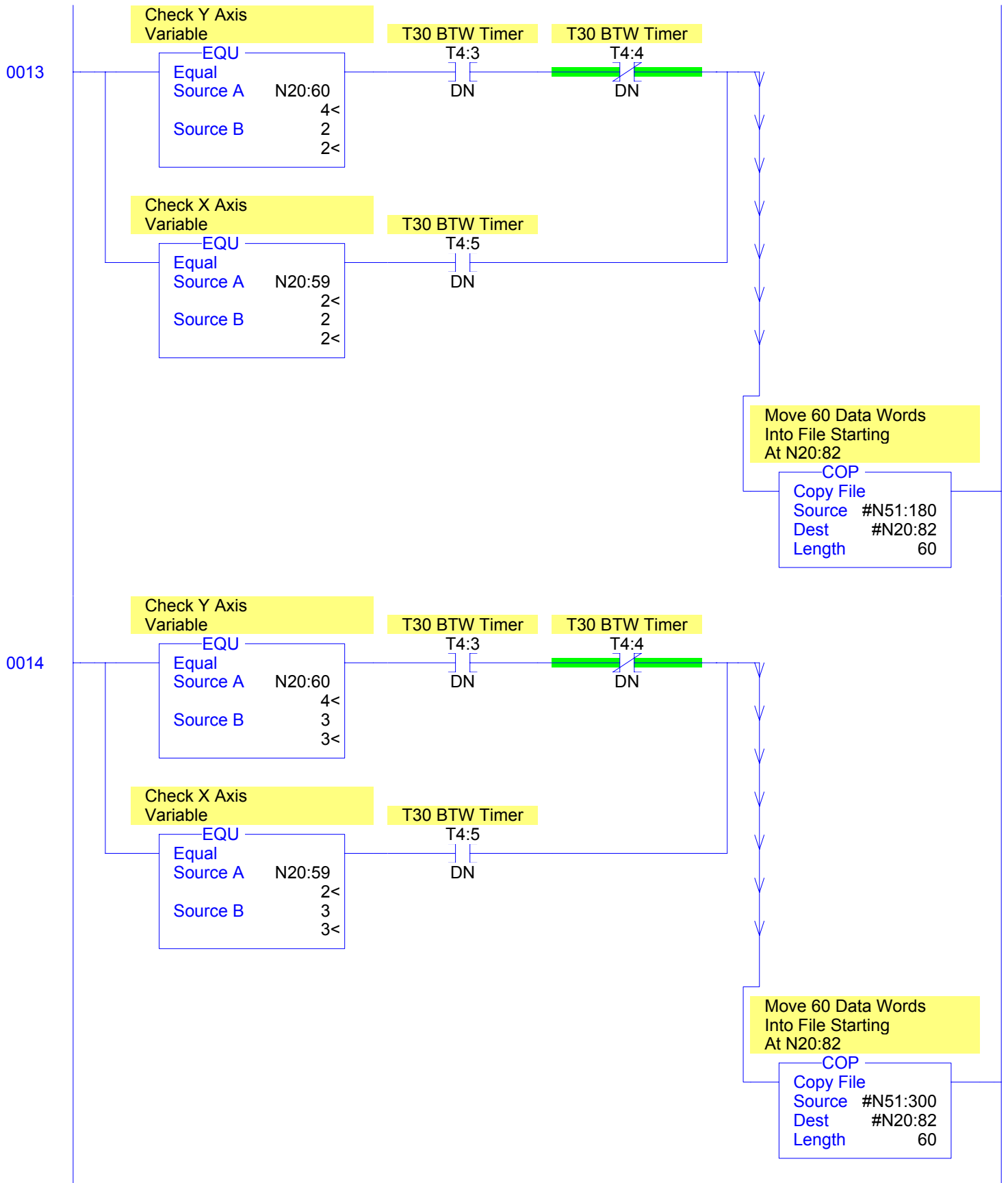
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



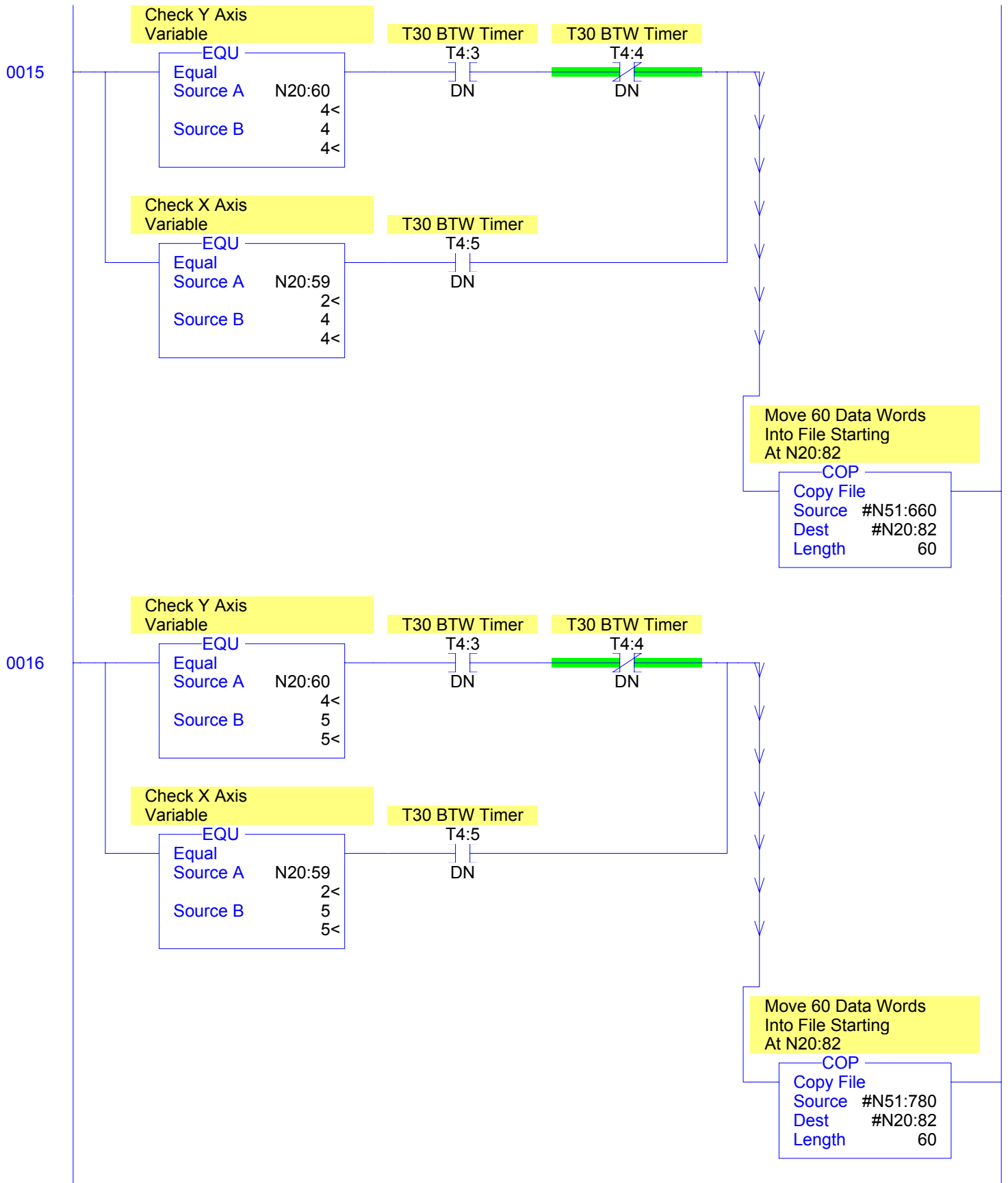
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



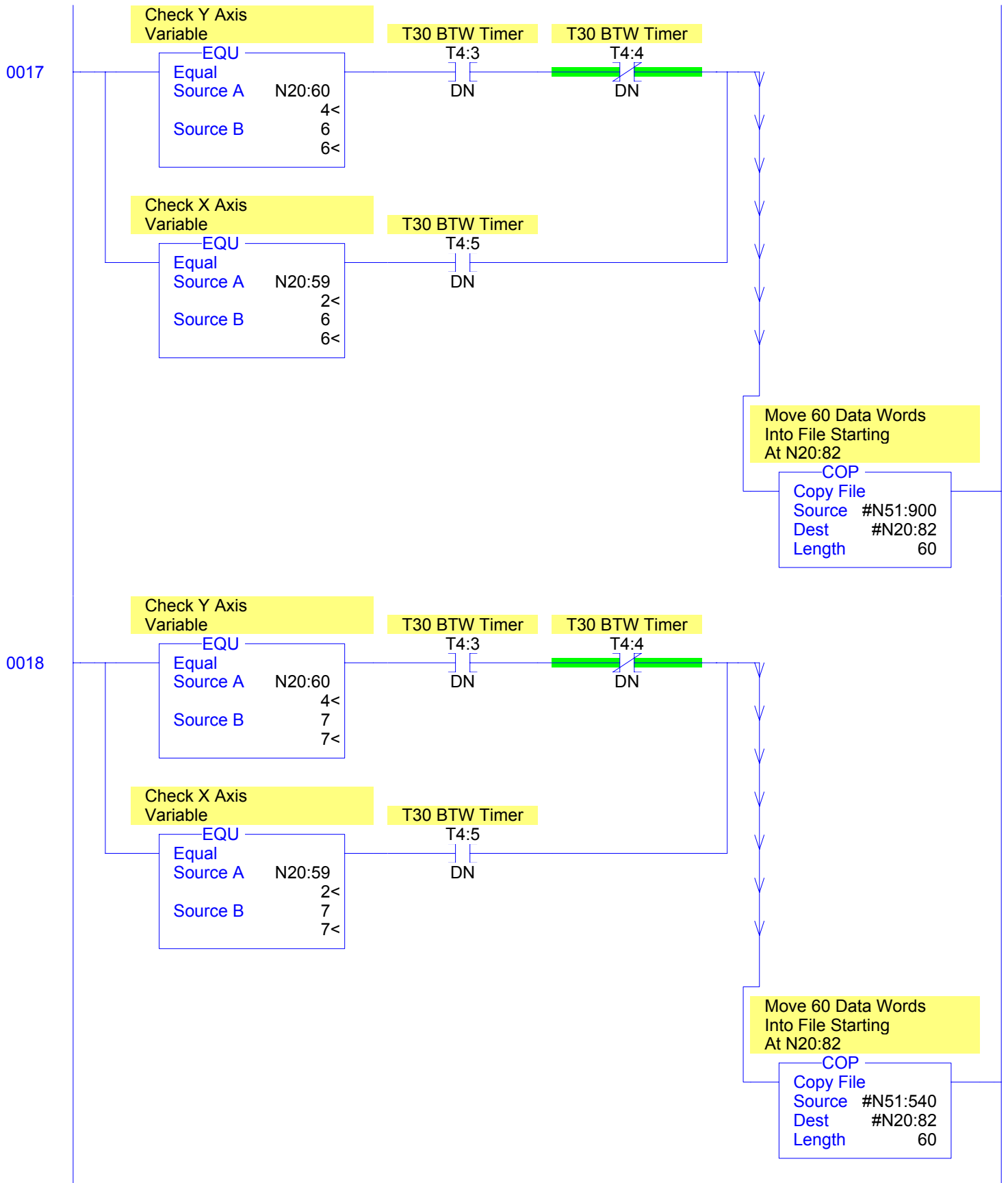
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



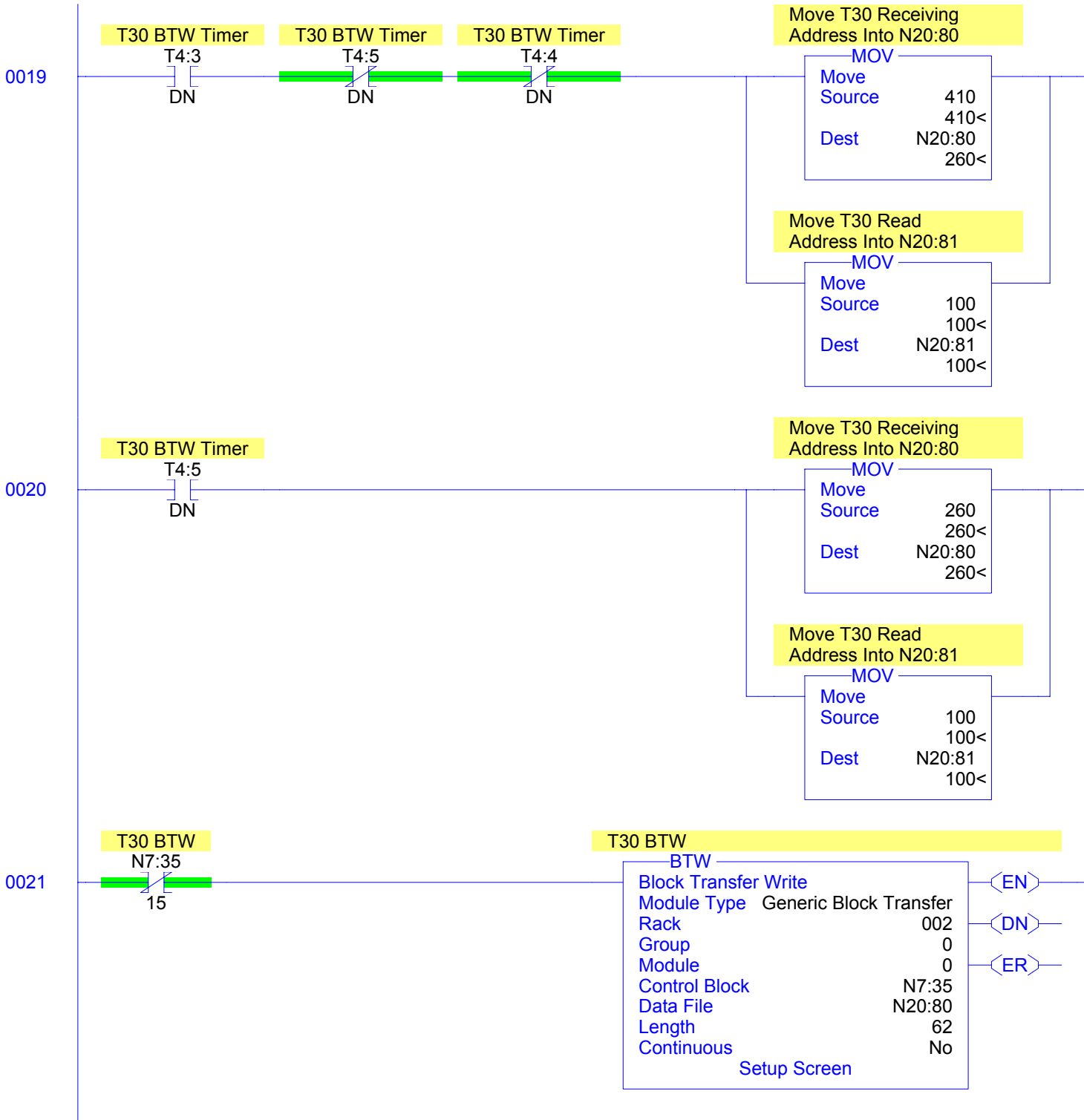
# Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



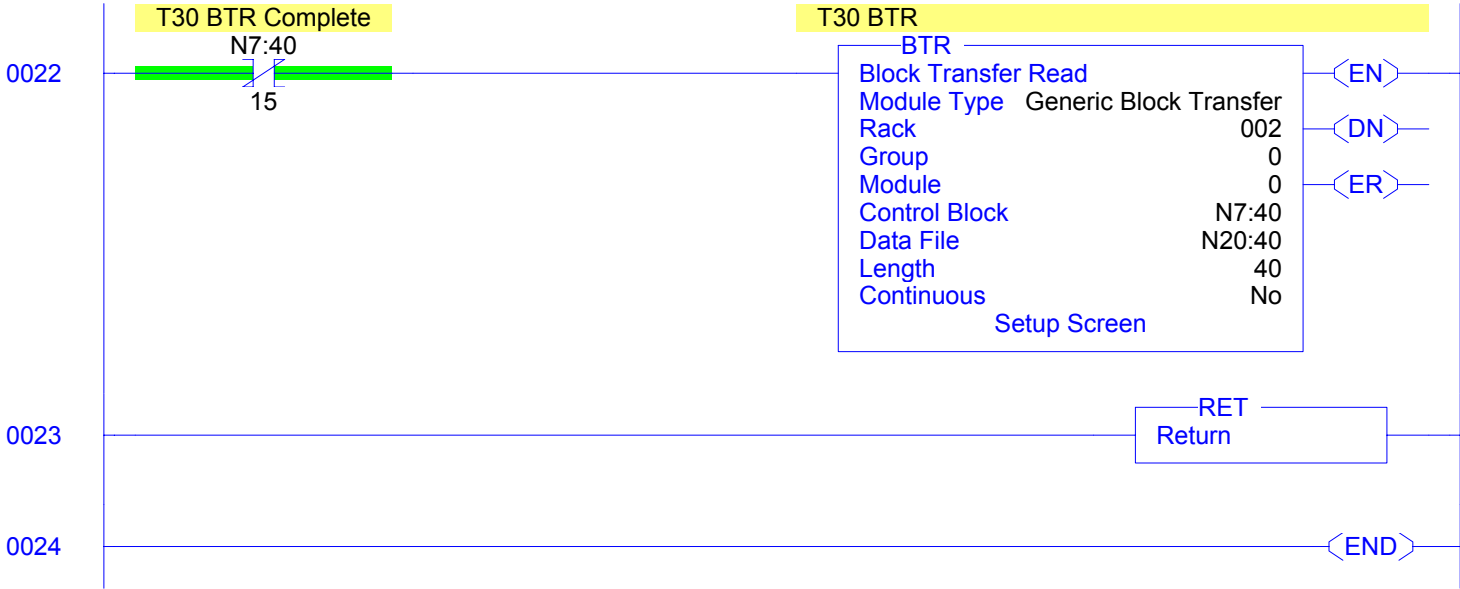
Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



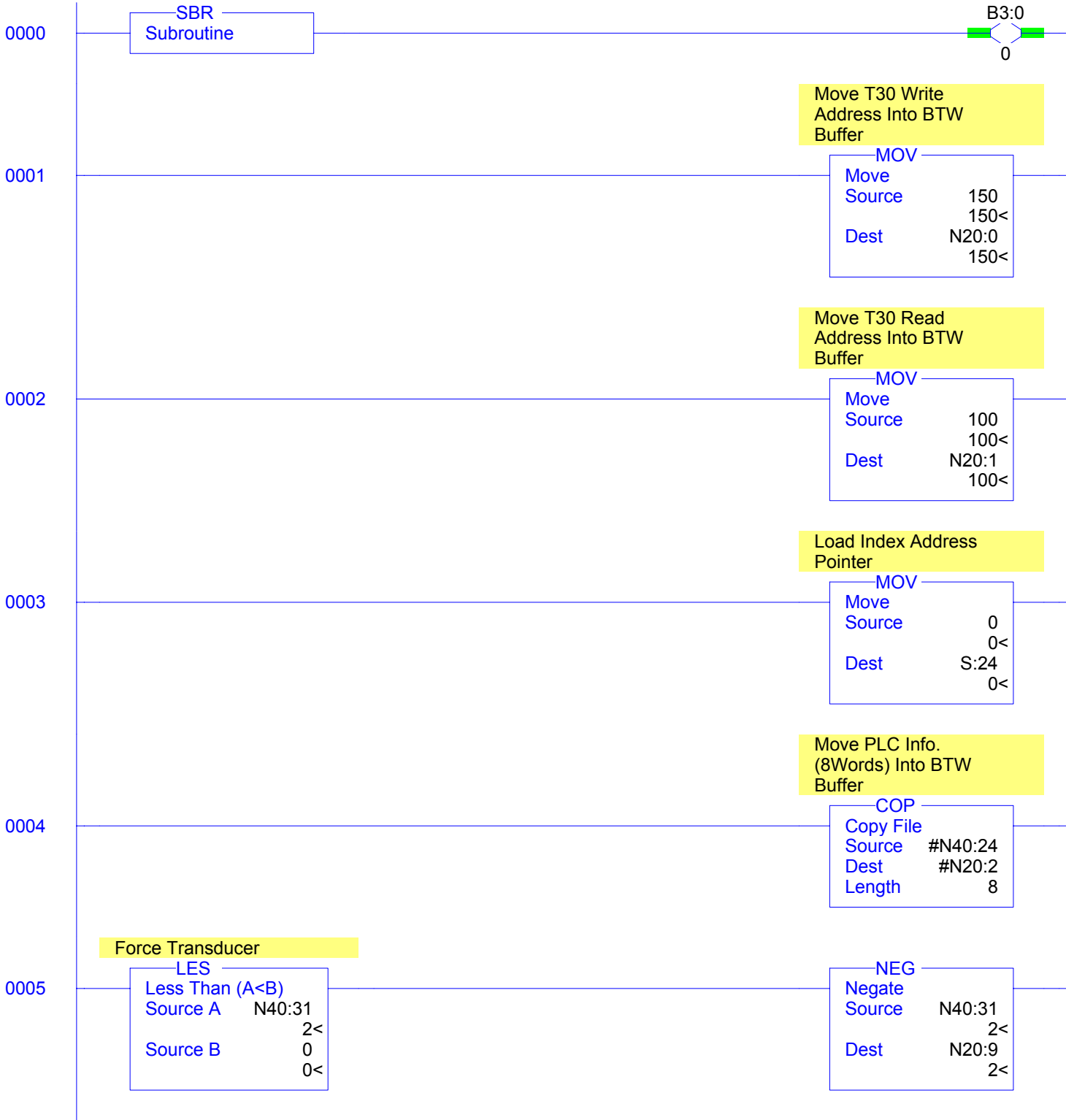
Test Bench Four

LAD 10 - T30\_PLOT --- Total Rungs in File = 25



Test Bench Four

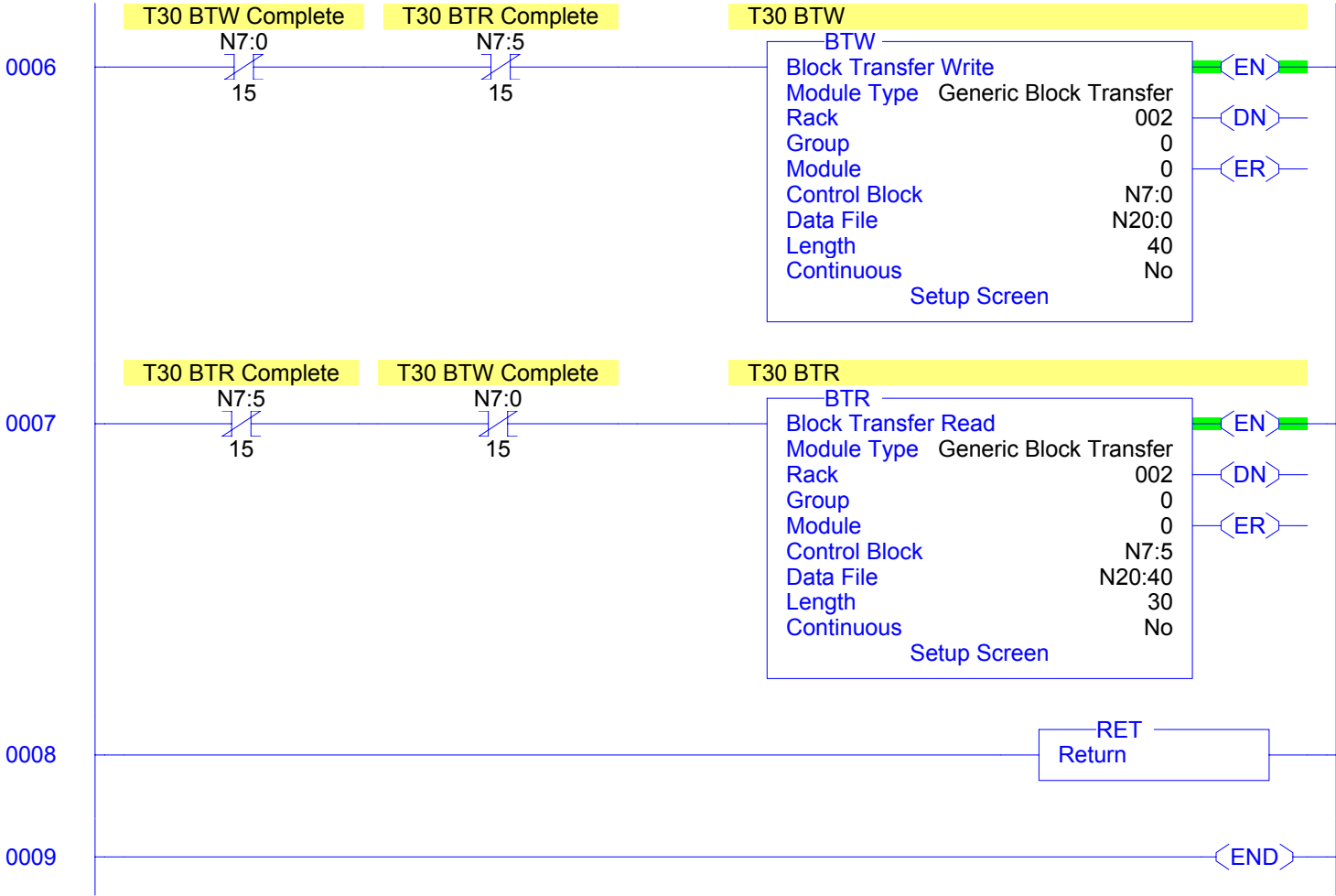
LAD 11 - T30\_BLK\_TR --- Total Rungs in File = 10





Test Bench Four

LAD 11 - T30\_BLK\_TR --- Total Rungs in File = 10



# Test Bench Four

File T4

Offset	EN	TT	DN	BASE	PRE	ACC	(Symbol)	Description
T4:0	0	0	0	1.0 sec	2	0		
T4:1	0	0	0	1.0 sec	10	0		
T4:2	0	0	0	1.0 sec	10	10		
T4:3	0	0	0	1.0 sec	2	0	T30 BTW Timer	
T4:4	0	0	0	1.0 sec	4	0	T30 BTW Timer	
T4:5	0	0	0	1.0 sec	6	0	T30 BTW Timer	
T4:6	0	0	0	1.0 sec	8	0	T30 BTW Timer	
T4:7	0	0	0	1.0 sec	10	0		
T4:8	0	0	0	1.0 sec	5	5		
T4:9	0	0	0	1.0 sec	10	0		
T4:10	0	0	0	1.0 sec	3	0		
T4:11	0	0	0	1.0 sec	3	0		
T4:12	0	0	0	.01 sec	0	0		
T4:13	0	0	0	.01 sec	0	0		
T4:14	0	0	0	.01 sec	0	0		
T4:15	0	0	0	.01 sec	0	0		
T4:16	0	0	0	.01 sec	0	0		
T4:17	0	0	0	.01 sec	0	0		
T4:18	0	0	0	.01 sec	0	0		
T4:19	0	0	0	.01 sec	0	0		
T4:20	0	0	0	.01 sec	2000	0		
T4:21	1	1	0	.01 sec	100	68		

Test Bench Four

File C5

Offset	CU	CD	DN	OV	UN	PRE	ACC	(Symbol)	Description
C5:0	0	0	0	0	0	999	67		
C5:1	0	0	0	0	0	5	4	Slot 5 AI Card BTW Or BTR Error Counter	
C5:2	0	0	0	0	0	5	2	Error Counter AI Card Slot 7 BTW Or BTR	
C5:3	0	0	0	0	0	500	0		
C5:4	0	0	0	0	0	50	0		
C5:5	0	0	0	0	0	5	3		
C5:6	0	0	0	0	0	5000	0		
C5:7	1	0	0	0	0	6	0	Cycle Counter	

Test Bench Four

File F8

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Offset	0	1	2	3	4
F8:0	749956	5.887155	5686.991	18904.01	54289
F8:5	0.4261687	5.460986	5275.313	17580.08	22500
F8:10	0.176625	1.785875	3150	2600	250

## Test Bench Four

### Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
B3:0/3			Manual Test			
B3:0/4			Automatic Test			
B3:0/6			SI Units slot 5 Analog Input BTW			
B3:0/7			US Units Slot 7 Analog Input BTW			
B3:0/8			SI Units Slot 7 Analog Input BTW			
B3:0/9			Manual Log Rate > 15000 ms			
B3:0/10			Manual Log Rate > 1500 ms			
B3:0/11			Manual Log Rate > 150 ms			
B3:0/12			Storage Rate <150 ms			
B3:0/13			Acc. Test			
B3:0/14			Single Acting Cylinder Test			
B3:0/15			Double Acting Cylinder Test			
B3:1/3			Oil Temp. Limit			
C5:1			Slot 5 AI Card BTW Or BTR Error Counter			
C5:2			Error Counter AI Card Slot 7 BTW Or BTR			
C5:7			Cycle Counter			
F8:12						
I0001:0000			Transfer PLC Slot 1 Info. To T30			
I:000/0			Sump Filter Clogging Indicator			
I:000/1			Limit Switch			
I:000/2			Limit Switch			
I:000/3			Selector Switch (Extend)			
I:000/4			Selector Switch (Retract)			
I:000/16			Emergency System Shutdown			
I:000/17			Emergency Bench Shutdown			
N7:0			T30 BTW			
N7:0/15			T30 BTW Complete			
N7:5			T30 BTR			
N7:5/15			T30 BTR Complete			
N7:10			BTW To AI Card In Slot 5			
N7:15			BTR To AI Card In Slot 5			
N7:20			BTW To AI Card In Slot 7			
N7:25			BTR To AI Card In Slot 7			
N7:30			BTW To AO Card In Slot 8			
N7:30/15			BTW To AO Card Complete			
N7:35			T30 BTW			
N7:40			T30 BTR			
N7:40/15			T30 BTR Complete			
N7:50/13			Data Collect counter			
N7:51			Load Index Address Pointer			
N7:53			Toggle Bit For STI loop Count			
N9:1			Execute PLC Data Upload To Central Computer			
N10:50			Write data block			
N10:80			Write data block			
N10:120			Move Flow Data To AO Card Buffer			
N10:121						
N10:124			Move AO Config. Info. To Buffer			
N20:0			BTW Buffer			
N20:1			BTW Buffer			
N20:2			BTW Buffer			
N20:26/15			HPU Alarm			
N20:42/0			Pressure Controlled Test			
N20:42/6			SI Units			
N20:42/8			Manual/Auto Test			
N20:42/9			Test In Progress			
N20:42/10			T30 Plot Request			
N20:59						
N20:60			Check Y Axis Variable			
N20:80						
N20:81						
N20:82			Move 60 Data Words Into File Starting At N20:82			
N40:0			Read data block			
N40:0/0			Power up bit			
N40:4			Pot. Value Less Than Max. Flow			
N40:5			Pressure Potentiometer			
N40:20			Read data block			
N40:20/0			Power up bit			
N40:24			Port A Pressure Transducer			
N40:25			Port B Pressure Transducer			
N40:26			Header Pressure Transducer			
N40:27						
N40:28			Temperature			
N40:29			Main Flow Meter			
N40:30			Leakage Flow Meter			
N40:31			Force Transducer			
N51:360						
O0000:0001			Transfer TB1 Slot 4 Info. To T30			
O:001/0			Direction Valve Solenoid TB4-7			
O:001/1			Direction Valve Solenoid TB4-6			
O:001/2			Poppet Valve Solenoid TB4-1			

## Test Bench Four

### Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
O:001/3						
O:001/14			System Alarm			
O:001/15						
O:001/16			Emergency System Shutdown			
O:001/17			Emergency Bench Shutdown			
O:025/0			T30 Plot Info Transfer Complete			
O:025/1			Auto Test Complete			
Q4:0			Skip Data Storage			
S:0/0			Processor arithmetic carry flag			
S:0/1			Processor arithmetic underflow/ overflow flag			
S:0/2			Processor arithmetic zero flag			
S:0/3			Processor arithmetic sign flag			
S:1/0			Bad RAM CHECKSUM at power up			
S:1/1			PLC-5 in RUN mode			
S:1/2			PLC-5 in TEST mode			
S:1/3			PLC-5 in PROG mode			
S:1/4			PLC-5 is burning an EEPROM			
S:1/5			Download- ing in progress			
S:1/6			Test edits enabled			
S:1/7			Mode switch in REMOTE			
S:1/8			Forces enabled			
S:1/9			Forces present			
S:1/10			EEPROM success- fully Burned			
S:1/11			Perform- ing online program- ming			
S:1/12			Processor is in DEBUG mode			
S:1/13			User program CHECKSUM done			
S:1/14			Last scan of ladder or SFC step			
S:1/15			First scan of ladder or SFC step			
S:7/0			Rack 0 Faulted			
S:7/1			Rack 1 Faulted			
S:7/2			Rack 2 Faulted			
S:7/3			Rack 3 Faulted			
S:7/4			Rack 4 Faulted			
S:7/5			Rack 5 Faulted			
S:7/6			Rack 6 Faulted			
S:7/7			Rack 7 Faulted			
S:7/8			Block Xfer queue to rack 0 is full			
S:7/9			Block Xfer queue to rack 1 is full			
S:7/10			Block Xfer queue to rack 2 is full			
S:7/11			Block Xfer queue to rack 3 is full			
S:7/12			Block Xfer queue to rack 4 is full			
S:7/13			Block Xfer queue to rack 5 is full			
S:7/14			Block Xfer queue to rack 6 is full			
S:7/15			Block Xfer queue to rack 7 is full			
S:8			Last program scan time ladder & SFC			
S:9			Maximum program scan time ladder & SFC			
S:10/0			Battery is bad or missing			
S:10/1			DH+ active node table changed			
S:10/2			STI overlap			
S:10/3			EEPROM trans- ferred			
S:10/4			Edits prevent SFC continuing			
S:10/5			Invalid I/O status file			
S:10/6			Memory cartridge battery low			
S:10/7			No more command blocks exist			
S:10/9			No MCP was configured to run			
S:10/10			MCP not allowed			
S:10/11			PII word number isn't in local rack			
S:10/12			User PII routine overlap			
S:10/13			No command block exists to get PII			
S:10/14			Arithmetic overflow occurred			
S:10/15			SFC lingering action overlap			
S:11/0			Bad program file			
S:11/1			Bad address in ladder program			
S:11/2			Programmer error			
S:11/3			SFC Fault			
S:11/4			Program assembly error			
S:11/5			Powerup protection fault			
S:11/6			Error not defined			
S:11/7			User generated fault			
S:11/8			Watchdog timer fault			
S:11/9			Bad system config- uration			
S:11/10			Hardware Error			
S:11/11			MCP file does not exist or is not ladder			
S:11/12			PII file does not exist or is not ladder			
S:11/13			STI file does not exist or is not ladder			
S:11/14			Fault file does not exist or is not ladder			
S:11/15			Non ladder file			
S:12			Fault Code			
S:13			Program file where fault occurred			
S:14			Rung number where fault occurred			

## Test Bench Four

### Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
S:16			I/O status file			
S:17/0			Queue full between local and remote I/O			
S:17/1			Queue full servicing channel 1A			
S:17/2			Queue full servicing channel 1B			
S:17/3			Queue full servicing channel 2A			
S:17/4			Queue full servicing channel 2B			
S:17/5			No modem on serial port			
S:17/6			Remote I/O is greater than image size			
S:17/8			ASCII instruct- ion error			
S:17/9			Duplicate node address			
S:18			Real time clock YEAR			
S:19			Real time clock MONTH			
S:20			Real time clock DAY			
S:21			Real time clock HOUR			
S:22			Real time clock MINUTE			
S:23			Real time clock SECOND			
S:24			Indexed Addressing Offset			
S:25			Adapter Image File			
S:26/0			SFC Restart/ Continue			
S:26/1			Start-up protect- ion after power loss			
S:26/2			Local rack is 1 if set or 0 if bit = 0			
S:26/3			Complement Rack Mode			
S:27/0			Rack 0 Inhibit			
S:27/1			Rack 1 Inhibit			
S:27/2			Rack 2 Inhibit			
S:27/3			Rack 3 Inhibit			
S:27/4			Rack 4 Inhibit			
S:27/5			Rack 5 Inhibit			
S:27/6			Rack 6 Inhibit			
S:27/7			Rack 7 Inhibit			
S:27/8			Rack 0 Reset			
S:27/9			Rack 1 Reset			
S:27/10			Rack 2 Reset			
S:27/11			Rack 3 Reset			
S:27/12			Rack 4 Reset			
S:27/13			Rack 5 Reset			
S:27/14			Rack 6 Reset			
S:27/15			Rack 7 Reset			
S:28			Watchdog Timer Setpoint			
S:29			Fault routine file number			
S:30			STI setpoint (interval)			
S:31			STI file number			
S:32/0			Rack 10 Faulted			
S:32/1			Rack 11 Faulted			
S:32/2			Rack 12 Faulted			
S:32/3			Rack 13 Faulted			
S:32/4			Rack 14 Faulted			
S:32/5			Rack 15 Faulted			
S:32/6			Rack 16 Faulted			
S:32/7			Rack 17 Faulted			
S:32/8			Block Xfer queue to rack 10 is full			
S:32/9			Block Xfer queue to rack 11 is full			
S:32/10			Block Xfer queue to rack 12 is full			
S:32/11			Block Xfer queue to rack 13 is full			
S:32/12			Block Xfer queue to rack 14 is full			
S:32/13			Block Xfer queue to rack 15 is full			
S:32/14			Block Xfer queue to rack 16 is full			
S:32/15			Block Xfer queue to rack 17 is full			
S:33/0			Rack 10 Inhibit			
S:33/1			Rack 11 Inhibit			
S:33/2			Rack 12 Inhibit			
S:33/3			Rack 13 Inhibit			
S:33/4			Rack 14 Inhibit			
S:33/5			Rack 15 Inhibit			
S:33/6			Rack 16 Inhibit			
S:33/7			Rack 17 Inhibit			
S:33/8			Rack 10 Reset			
S:33/9			Rack 11 Reset			
S:33/10			Rack 12 Reset			
S:33/11			Rack 13 Reset			
S:33/12			Rack 14 Reset			
S:33/13			Rack 15 Reset			
S:33/14			Rack 16 Reset			
S:33/15			Rack 17 Reset			
S:34/0			Rack 20 Faulted			
S:34/1			Rack 21 Faulted			
S:34/2			Rack 22 Faulted			
S:34/3			Rack 23 Faulted			
S:34/4			Rack 24 Faulted			
S:34/5			Rack 25 Faulted			

## Test Bench Four

### Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
S:34/6			Rack 26 Faulted			
S:34/7			Rack 27 Faulted			
S:34/8			Block Xfer queue to rack 20 is full			
S:34/9			Block Xfer queue to rack 21 is full			
S:34/10			Block Xfer queue to rack 22 is full			
S:34/11			Block Xfer queue to rack 23 is full			
S:34/12			Block Xfer queue to rack 24 is full			
S:34/13			Block Xfer queue to rack 25 is full			
S:34/14			Block Xfer queue to rack 26 is full			
S:34/15			Block Xfer queue to rack 27 is full			
S:35/0			Rack 20 Inhibit			
S:35/1			Rack 21 Inhibit			
S:35/2			Rack 22 Inhibit			
S:35/3			Rack 23 Inhibit			
S:35/4			Rack 24 Inhibit			
S:35/5			Rack 25 Inhibit			
S:35/6			Rack 26 Inhibit			
S:35/7			Rack 27 Inhibit			
S:35/8			Rack 20 Reset			
S:35/9			Rack 21 Reset			
S:35/10			Rack 22 Reset			
S:35/11			Rack 23 Reset			
S:35/12			Rack 24 Reset			
S:35/13			Rack 25 Reset			
S:35/14			Rack 26 Reset			
S:35/15			Rack 27 Reset			
S:46			PII file number			
S:47			PII module group to examine			
S:48			PII bit mask			
S:48/0			PII Module Bit 1=Monitor 0=Ignore			
S:49			PII compare value			
S:49/0			PII Bit 1=false to true, 0= true to false			
S:50			PII down count			
S:51			PII return mask			
S:52			PII accum- ulator			
S:53			STI last scan time			
S:54			STI max scan time			
S:55			PII last scan time			
S:56			PII max scan time			
S:79/0			Main control program A disable bit			
S:79/1			Main control program B disable bit			
S:79/2			Main control program C disable bit			
S:79/3			Main control program D disable bit			
S:79/4			Main control program E disable bit			
S:79/5			Main control program F disable bit			
S:79/6			Main control program G disable bit			
S:79/7			Main control program H disable bit			
S:79/8			Main control program I disable bit			
S:79/9			Main control program J disable bit			
S:79/10			Main control program K disable bit			
S:79/11			Main control program L disable bit			
S:79/12			Main control program M disable bit			
S:79/13			Main control program N disable bit			
S:79/14			Main control program O disable bit			
S:79/15			Main control program P disable bit			
S:80			Main control program A file number			
S:81			Program A scan time			
S:82			Program A maximum scan time			
S:83			Main control program B file number			
S:84			Program B scan time			
S:85			Program B maximum scan time			
S:86			Main control program C file number			
S:87			Program C scan time			
S:88			Program C maximum scan time			
S:89			Main control program D file number			
S:90			Program D scan time			
S:91			Program D maximum scan time			
S:92			Main control program E file number			
S:93			Program E scan time			
S:94			Program E maximum scan time			
S:95			Main control program F file number			
S:96			Program F scan time			
S:97			Program F maximum scan time			
S:98			Main control program G file number			
S:99			Program G scan time			
S:100			Program G maximum scan time			
S:101			Main control program H file number			
S:102			Program H scan time			
S:103			Program H maximum scan time			
S:104			Main control program I file number			



## Test Bench Four

### Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
S:105			Program I scan time			
S:106			Program I maximum scan time			
S:107			Main control program J file number			
S:108			Program J scan time			
S:109			Program J maximum scan time			
S:110			Main control program K file number			
S:111			Program K scan time			
S:112			Program K maximum scan time			
S:113			Main control program L file number			
S:114			Program L scan time			
S:115			Program L maximum scan time			
S:116			Main control program M file number			
S:117			Program M scan time			
S:118			Program M maximum scan time			
S:119			Main control program N file number			
S:120			Program N scan time			
S:121			Program N maximum scan time			
S:122			Main control program O file number			
S:123			Program O scan time			
S:124			Program O maximum scan time			
S:125			Main control program P file number			
S:126			Program P scan time			
S:127			Program P maximum scan time			
T4:2/DN			Execute Manual Test Routine			
T4:3			T30 BTW Timer			
T4:4			T30 BTW Timer			
T4:5			T30 BTW Timer			
T4:6			T30 BTW Timer			
T4:8/DN			Execute Automatic Test Routine			

## Test Bench Four

### Instruction Comment Database

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Address	Instruction	Description
N7:51	ADD	Increment Index Address Pointer
N10:121	MOV	Move Pressure Data To AO Card Buffer
N20:0	MOV	Move T30 Write Address Into BTW Buffer
N20:1	MOV	Move T30 Read Address Into BTW Buffer
N20:2	COP	Move PLC Info. (8Words) Into BTW Buffer
N20:59	EQU	Check X Axis Variable
N20:80	MOV	Move T30 Receiving Address Into N20:80
N20:81	MOV	Move T30 Read Address Into N20:81
N40:4	GRT	Pot. Value Greater Than Max. Flow
N40:5	LEQ	Pot. Value Less Than Max. Pressure
N40:5	GRT	Pot. Value Greater Than Max. Pressure
S:24	MOV	Load Index Address Pointer