

(Video #819) MP 15C – 3 HO Trains #11/24/2017–Ver 17kf

(using Mini-Panel #4) Cab A 1999 Procab= cab 4 // Cab B Cupp Procab= cab 7 // Cab C Keegan= cab 8 // MP#4 – cab 3, MP#5 = cab 11.

- This Video #819 shows the NCE Mini-Panel controlling 3 trains on 1 track (Program 'H' on page 8).
- This file documents the commands used in the Mini-Panel -- for AutoControls.org Video #819.
- The below **“Program H”** is the “main” program that controls 3 trains on 1 track with no turnouts – as shown in the below photo.
- For suggestions how to get started with the NCE Mini-Panel, please see previous **Video #816** and the web page mp.autocontrols.org .
- The separate file **“mp15B-logic-3trains”** shows the “logic diagrams” for these operations. The commands in this file, were developed using the logic diagrams in that file.
- Note we have USED UP all available programming space in the Mini-Panel, except for Input #2 – which could be used to hook up another pushbutton.



Update 11/24/2017:

- This version shows the REVISED commands for 3 train operation using Program “H2” on Page 6, as demonstrated in the Part 2 Video, which is at Vimeo.com __ (not edited yet) _____ .

The only DIFFERENCE:

- In Part 1, the “front most” of the 2 “creeping” locos in the yard is speeded up to cruising speed IMMEDIATELY after the “mainline” loco passes in front of the detector (Program “H”).
- In Part 2, the “creeping” locos are speeded up AFTER the 8 second delay statement finishes. The objective is to make the mainline effectively “longer” by about 8 seconds, by having the “creeping” train creep for an additional 8 seconds (Program “H2”).

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Pg 7: Prog. J: Run 2 Trains: #1216 & #3364 (Using previous Method shown in Video #815 , where 1 Train STOPS)

Pg 8: Prog H: Run All 3 trains: #1216, #051, #3364. This is shown in the original PART 1 video.
(Program “H2” is the “improved” version of Program “H”).

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Summary

Inp	S	Command	Entry	Action
				Configuration Memory
		Default=3, keep		Mem addr 0 = 3 (Cab bus address)
		Default=5 keep		Mem addr 1 = 5 (Debounce timer)
		Default=0, keep		Mem addr 2 = 0 (Format display unknown commds)
		Default=0, chg. To 3		Mem addr 3 = 3 (Continuous memory 3 and above)
		Default=0, chg. To 3		Mem addr 4 = 3 (Disabled inputs 3 and above)
		Default=0, keep		Mem addr 5 = 0 (Interrupting wait commands)
				##===== ENGINE SETTINGS =====##
				Cab: Momentum Multiplier = 1, deaccl = 1 x acc CV3 accel, CV4 decel)
				SPEEDS: Use fastest loco #1217 as the "reference" loco for speeds (slower locos can be easier adjusted to match the fastest loco)
				#051 ATLAS VIRGINIAN TRAINMASTER
				M=0 (use __ sec after crossing RS#16 (instead of default 3))
				Cruise = spd 17, Slow Creep = Spd 6, Fast Creep = Spd 7
				#1216 ROCO D&H SHARKNOSE
				M=1
				Cruise = spd 11, Slow Creep = Spd 3, Fast Creep = Spd 4
				#3364 KATO SF GEEP GP-35
				M=1 F5=strobe, F8=sound
				Cruise = spd 21, Slow Creep = Spd 8, Fast Creep = Spd 11
				##===== COMMAND LIBRARY =====##
1		Delay 1/4 sec: 4	5, 1, 2, 4	Delay 1 second (¼ sec x 4)
2		Delay 4 sec: 2	5, 1, 1, 2	Delay 8 seconds (4 sec x 2)
3		Link to Input: 9	5, 3, 9	Go to Step 9 (magnet/reed switch test)
4		End (Terminate)	5,7,1	Terminate (stop executing commands)
5		nop	5,5,1	No Operation (do nothing, go to next step)
6		>Select Loco: 003	3, 1, 003	Select Loco #3: (need "*" to indicate long adr)
7		Speed Fwd: 10	3, 2, 2, 10	START loco
8		Skip if Inp: 16 Open	5, 6, 2, 16	Skip next command if reed sw. # 16 is open
9		Wait Inp: 16 Ground	5, 2, 1, 16	wait for reed sw. # 16 to be closed (resistance decr)
10		Macro 14	2, 14	Set both turnouts STRAIGHT (macro is in Cmmd. Stn.)
11		Macro 15	2, 15	Set both turnouts CURVED (macro is in Cmmd. Stn.)
		Accy: 7 Norm	1, 7 , 1	Set turnout # 7 STRAIGHT (1 = straight)
		Accy: 10 Rev	1, 10 , 2	Set turnout # 10 CURVED (2 = curved)
		Skip if Inp: 16 Grnd	5, 6, 1, 16	Skip next command if reed sw. # 16 is closed
				Using Input 16 for GO/STOP reed switch (T1)
INPUT COMMAND LOCATIONS - USED for the following "programs":				
				Inp. 1 connects to Start button, Inp. 16 connects to DZ-1008 relay

Spd = 17

Spd = 11

Spd = 21

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Summary

Inp	S	Command	Entry	Action
Use Pushbutton to Input #1, to Start Main Program				
1	1	Link to Input: 17	5, 3, 17	Go to Input # 17 , START Sequence when button pushed
1	2	End (Terminate)	5,7,1	Terminate (stop executing commands)
1	3	End (Terminate)	5,7,1	Terminate (stop executing commands)
1	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
-	-			
2	1	End		(another pushbutton could be connected to Input 2)
2	2	End		
2	3	End		
2	4	End		
##==== Prog. A: Blink LED == ##				
3	1	Accy: 2000 Norm	1, 2000 , 1	Set non-existent turnout # 2000 STRAIGHT (to blink Mini-Panel's LED)
3	2	Delay 1/4 sec: 2	5, 1, 2, 2	Delay 1/2 second (¼ sec x 2)
3	3	Link to Input: 3	5, 3, 3	Go to Input 3 (repeat blinking every ½ second)
3	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
-	-			
##==== Prog. B Test N.O. Reed Switch (Blink LED) ==##				
4	1	Skip if Inp: 16 Open	5, 6, 2, 16	Skip next command if reed sw. # 16 is open
4	2	Accy: 2000 Norm	1, 2000 , 1	Set non-existent turnout # 2000 STRAIGHT (to blink Mini-Panel's LED)
				* If Input 16 is Gnd, commands below will be executed. If not Gnd, will go back to Step 6-1.
4	3	Delay 1/4 sec: 2	5, 1, 2, 2	Delay 1/2 second (¼ sec x 2)
4	4	Link to Input: 4	5, 3, 4	Go to Input 4 (repeat blinking every ½ second)
##==== Prog. C: Run Loco #051 Only ==				
See LOGIC diagram #1 for this mode of operation.				
5	1	>Select Loco: 051	3, 1, 051	Select Loco # 051 : ATLAS VIRGINIAN TRAINMASTER
5	2	Speed Fwd: 22	3, 2, 2, 22 F	START loco Speed 22
5	3	Delay 1/4 sec: 40	5, 1, 2, 40	Delay 10 sec to get hand away from sensor (Step 6-3)
5	4	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait until train crosses detector # 16
-	-			
6	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
6	2	Speed Fwd: 8	3, 2, 2, 8 F	START loco Speed 8 (slow creep)
6	3	Wait Inp: 16 Gnd	5, 2, 1, 16	===== use hand to simulate 2nd train
6	4	Link to Input: 5	5, 3, 5	Go back to Input # 5 and REPEAT sequence
-	-			
##==== Prog. D: Run Loco #1216 Only ==##				
See LOGIC diagram #1 for this mode of operation.				
7	1	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
7	2	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
7	3	Delay 1/4 sec: 40	5, 1, 2, 40	Delay 10 sec to get hand away from sensor (Step 8-3)
7	4	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait until train crosses detector # 16
-	-			
8	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
8	2	Speed Fwd: 8	3, 2, 2, 8 F	START loco Speed 8 (slow creep)
8	3	Wait Inp: 16 Gnd	5, 2, 1, 16	===== use hand to simulate 2nd train
8	4	Link to Input: 7	5, 3, 7	Go back to Input # 7 and REPEAT sequence

Cruising speed

<==SENSOR

Pass sensor
Creep past station

<==REPEAT

Cruising speed

<==SENSOR

Pass sensor
Creep past station

<==REPEAT

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Summary

Inp	S	Command	Entry	Action
<p>The below photo shows the 3 trains used for the Part 2 demo. The "improved" commands for Part 2 are on the following page 6, identified as "Program H2".</p> <p>The commands for the original Part 1 video are on Page 8, identified as "Program H".</p>				



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Inp	S	Command	Entry	Action
##==== Prog H2: Run All 3 trains: #451, #2316, #4020 ==##				
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p>Part i - #451 on Mainline</p> </div> <div style="flex: 1; text-align: center;"> </div> </div>				
17	1	>Select Loco: 4020	3, 1, 4020	Select Loco # 4020 : Kato D&H RS2
17	2	Speed Fwd: 4	3, 2, 2, 4 F	START loco Speed 4
17	3	>Select Loco: 2316	3, 1, 2316	Select Loco # 2316 : Atlas D&H U23B
17	4	Speed Fwd: 5	3, 2, 2, 5 F	START loco Speed 5
18	1	>Select Loco: 451	3, 1, 451	Select Loco # 451 : Kato D&H C424
18	2	Speed Fwd: 18	3, 2, 2, 18 F	START loco Speed 18
18	3	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 451 crosses detector # 16
18	4	Delay 1/4 sec: 36	5, 1, 2, 36	Delay 9 sec to get caboose past sensor (¼ sec x 36)
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p>Part ii - #2316 on Mainline</p> </div> <div style="flex: 1; text-align: center;"> </div> </div>				
19	1	>Select Loco: 451	3, 1, 451	Select Loco # 451 : Kato D&H C424
19	2	Speed Fwd: 7	3, 2, 2, 7 F	START loco Speed 7
19	3	>Select Loco: 4020	3, 1, 4020	Select Loco # 4020 : Kato D&H RS2
19	4	Speed Fwd: 7	3, 2, 2, 7 F	START loco Speed 7
20	1	>Select Loco: 2316	3, 1, 2316	Select Loco # 2316 : Atlas D&H U23B
20	2	Speed Fwd: 9	3, 2, 2, 9 F	START loco Speed 9
20	3	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 2316 crosses detector # 16
20	4	Delay 1/4 sec: 28	5, 1, 2, 28	Delay 7 sec to get caboose past sensor (¼ sec x 28)
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="flex: 1;"> <p>Part iii - #4020 on Mainline</p> </div> <div style="flex: 1; text-align: center;"> </div> </div>				
21	1	>Select Loco: 2316	3, 1, 2316	Select Loco # 2316 : Atlas D&H U23B
21	2	Speed Fwd: 5	3, 2, 2, 5 F	START loco Speed 5
21	3	>Select Loco: 451	3, 1, 451	Select Loco # 451 : Kato D&H C424
21	4	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
22	1	>Select Loco: 4020	3, 1, 4020	Select Loco # 4020 : Kato D&H RS2
22	2	Speed Fwd: 17	3, 2, 2, 17 F	START loco Speed 17
22	3	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 4020 crosses detector # 16
22	4	Delay 1/4 sec: 28	5, 1, 2, 28	Delay 7 sec to get caboose past sensor (¼ sec x 28)
~~~ Check Whether to Repeat or to Stop ~~~				
23	1	Skip if Inp: 1 Open	5, 6, 2, 1	Skip next cmd if SPST switch. # 1 open (Normal: repeat running prog. if switch # 1 is closed)
23	2	Link to Input: 17	5, 3, 17	Go back to Input # 17 and REPEAT sequence ===== Shutdown =====
23	3	>Select Loco: 4020	3, 1, 4020	Select Loco # 4020 : Kato D&H RS2
23	4	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
24	1	>Select Loco: 2316	3, 1, 2316	Select Loco # 2316 : Atlas D&H U23B
24	2	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
24	3	>Select Loco: 451	3, 1, 451	Select Loco # 451 : Kato D&H C424
24	4	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
#451 SC=7, FC=11, Cruise=18 // #2316 SC=5, FC=5, Cruise=9 // #4020 SC=4, FC=6, Cruise=17 (2316 on Spd 4 hardly moves, need 5 min.)				

Summary
LOGIC diagram #5

Slow Creep

Fast Creep

Cruise
<==SENSOR
Pass sensor

Slow Creep

Fast Creep

Cruise
<==SENSOR
Pass sensor

Slow Creep

Fast Creep

Cruise
<==SENSOR
Pass sensor

<==REPEAT

4020 Stops in Yard

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Inp	S	Command	Entry	Action
25	1	End (Terminate)	5,7,1	Terminate (stop executing commands)
25	2	End (Terminate)	5,7,1	Terminate (stop executing commands)
25	3	End (Terminate)	5,7,1	Terminate (stop executing commands)
25	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
		<p>##==== Prog. J: Run 2 Trains: #1216 & #3364 == Using previous Method , where 1 Train STOPS) ("old" method, where trains STOP instead of creeping -as shown in Videos 815, 816 Demo 14, 817, & 818) Initial Conditions: #3364 is sitting at station. See LOGIC diagram #4 for this mode of operation.</p>		
26	1	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
26	2	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
26	3	Wait Inp: 16 Ground	5, 2, 1, 16	===== Wait till # 1216 crosses detector # 16
26	4	>Select Loco: 3364	3, 1, 3364	Select Loco # 3364 : KATO SF gray GP-35 diesel
-	-			
27	1	Speed Fwd: 21	3, 2, 2, 21 F	START loco Speed 21
27	2	Delay 1/4 sec: 76	5, 1, 2, 76	Delay 19 sec. bring # 1216 to station
27	3	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
27	4	Speed Fwd: 0	3, 2, 2, 0 F	STOP 1216 (Speed 0)
-	-			===== (halfway point)
28	1	Wait Inp: 16 Ground	5, 2, 1, 16	===== Wait for # 3364 crosses detector # 16
28	2	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
28	3	Delay 1/4 sec: 80	5, 1, 2, 80	Delay 20 sec. bring # 3364 to station
28	4	>Select Loco: 3364	3, 1, 3364	Select Loco # 3364 : KATO SF gray GP-35 diesel
-	-			
29	1	Speed Fwd: 0	3, 2, 2, 0 F	STOP 3364 (Speed 0)
29	2	Skip if Inp: 1 Open	5, 6, 2, 1	Skip next cmd if SPST switch. # 1 open (repeat if closed)
29	3	Link to Input: 26	5, 3, 26	Go back to Input # 26 and REPEAT Sequence
29	4	nop	5,5,1	
				===== (Shutdown) =====
30	1	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
30	2	Speed Fwd: 0	3, 2, 2, 0 F	STOP 1216 (Speed 0)
30	3	End (Terminate)	5,7,1	Terminate (stop executing commands)
30	4	End (Terminate)	5,7,1	Terminate (stop executing commands)

Summary

Cruise
 <==SENSOR

Cruise
Shark at Station

<==SENSOR
 Cruise

GP35 at Station
 <==SKIP

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Summary

Inp	S	Command	Entry	Action
		Program "H" below, is the program used in the Part 1 video. The "improved" Program "H2" on page 6, is a bit simpler and provides a bit better operation on a small mainline as seen in the video.		
		##==== Prog H: Run All 3 trains: #1216, #051, #3364 ==##		
		See LOGIC diagram #3 for this mode of operation. This is the "featured" program for the video (runs all 3 trains at once)		
17	1	>Select Loco: 051	3, 1, 051	Select Loco # 051 : ATLAS Virginian TRAINMASTER
17	2	Speed Fwd: 17	3, 2, 2, 17 F	START loco Speed 17
17	3	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
17	4	Speed Fwd: 4	3, 2, 2, 4 F	START loco Speed 4
-	-			
18	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
18	2	>Select Loco: 3364	3, 1, 3364	Select Loco # 3364 : KATO SF gray GP-35 diesel
18	3	Speed Fwd: 8	3, 2, 2, 8 F	START loco Speed 8
18	4	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 051 crosses detector # 16
19	1	nop	5,5,1	Select Loco # 3364 : KATO SF gray GP-35 diesel
19	2	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
19	3	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
19	4	Speed Fwd: 11	3, 2, 2, 11 F	START loco Speed 11
-	-			
20	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
20	2	>Select Loco: 051	3, 1, 051	Select Loco # 051 : ATLAS Virginian TRAINMASTER
20	3	Speed Fwd: 6	3, 2, 2, 6 F	START loco Speed 6
20	4	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 1216 crosses detector # 16
-	-			
21	1	nop	5,5,1	Select Loco # 051 : ATLAS Virginian TRAINMASTER
21	2	Speed Fwd: 7	3, 2, 2, 7 F	START loco Speed 7
21	3	>Select Loco: 3364	3, 1, 3364	Select Loco # 3364 : KATO SF gray GP-35 diesel
21	4	Speed Fwd: 21	3, 2, 2, 21 F	START loco Speed 21
-	-			
22	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
22	2	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
22	3	Speed Fwd: 3	3, 2, 2, 3 F	START loco Speed 3
22	4	Wait Inp: 16 Gnd	5, 2, 1, 16	===== Wait till # 3364 crosses detector # 16
23	1	Skip if Inp: 1 Open	5, 6, 2, 1	Skip next cmd if SPST switch. # 1 open (Normal: repeat running prog. if switch # 1 is closed)
23	2	Link to Input: 17	5, 3, 17	Go back to Input # 17 and REPEAT sequence
				===== (Shutdown) =====
23	3	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
23	4	Speed Fwd: 4	3, 2, 2, 4 F	START loco Speed 4
24	1	Delay 1/4 sec: 32	5, 1, 2, 32	Delay 8 sec to get caboose past sensor (¼ sec x 32)
24	2	>Select Loco: 3364	3, 1, 3364	Select Loco # 3364 : KATO SF gray GP-35 diesel
24	3	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
24	4	>Select Loco: 1216	3, 1, 1216	Select Loco # 1216 : ROCO D&H SHARKNOSE
-	-			
25	1	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
25	2	>Select Loco: 051	3, 1, 051	Select Loco # 051 : ATLAS Virginian TRAINMASTER
25	3	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)
25	4	End (Terminate)	5,7,1	Terminate (stop executing commands)

Cruise
Fast Creep
Pass sensor
Slow Creep
<==SENSOR
Fast Creep
Cruise
Pass sensor
Slow Creep
<==SENSOR
Fast Creep
Cruise
Pass sensor
Slow Creep
<==SENSOR
<==REPEAT
Fast Creep
Pass sensor
3364 Stops in Yard