Pt. 2 – Configuration

Fig. 1 – Mini-Panel Modes

- **–OPERATE** Mode   (inputs WILL respond to pushbuttons, if inputs not disabled)

- **–PROGRAM** Mode   (need ProCab plugged into Programming jack)
  (or PowerCab)
  |---**1 SETUP**
  | |---1 INPUT (enter commands) (most time here)
  | |---**2 CONFIGURATION** (address, memory setup)
  | (Enter Addr=0 to return to default settings -> Addr=3, all 'END' cmds)
  |----**2 REVIEW**
  |----**3 TEST** (inputs WILL NOT respond to pushbuttons)

Fig. 2 – Mini-Panel
Configuration Memory Settings

Inp	S	Command	Entry	Action
				Configuration Memory
		Default=3, keep		Mem addr 0 = **3 (Cab bus address)**
				(MUST be Adr 3 when used with PowerCab)
				(Enter Addr=0 to return to default settings)
		Default=5 keep		Mem addr 1 = 5 (Debounce timer)
		Default=0, keep		Mem addr 2 = 0 (Format display unknown cmds)
		Def.=0, chg. To **4**		Mem adr 3 = **4** (**Continuous memory 4** & above)
		Def.=0, chg. To **4**		Mem addr 4 = **4** (**Disabled inputs 4** and above)
		Default=0, keep		Mem addr 5 = 0 (Interrupting wait commands)
		6 & above not used		Mem addr 6

Fig. 3 – Non-Continuous Memory

(Controlled by Configuration Memory Address 3)

Input	Step			Non Continuous Memory (default, Adr 3 = 0)
1	1	Command A		With "Non-Continuous" Memory, only 4 commands will execute (corresponding to the 4 steps of Input 1), stopping with "Command D". The next command in the next input will NOT be executed without a "LINK" command. An "End" command is not needed.
1	2	Command B		
1	3	Command C		
1	4	Command D		
2	1	Command 1		
2	2	Command 2		
2	3	Command 3		With "Non-Continuous" Memory, only 4 commands will execute (corresponding to the 4 steps of an Input).
2	4	**Link to Input 3**		
–	–			
3	1	Command 4		
3	2	Command 5		To execute more steps, a "Link to Input xx" commands must be used.
3	3	Command 6		
3	4	**Link to Input 4**		
–	–			In this example, the routine starting at 2–1 and ending at 5–4 will continuously repeat – with a "LINK" command needed at the end of EACH input, to continue executing commands at the next input.
4	1	Command 7		
4	2	Command 8		
4	3	Command 9		
4	4	**Link to Input 5**		
–	–			
5	1	Command 10		
5	2	Command 11		
5	3	Command 12		
5	4	**Link to Input 2**		

memory continues to Input 30

Fig. 4 –   Continuous Memory

- Continuous Memory

Input	Step			
1	1	Command A		With "Continuous" Memory, an "**End**" command must be used to stop execution.
1	2	Command B		
1	3	Command C		
1	4	**End**		
–	–			
2	1	Command 1	←	With "Continuous" Memory, commands execute one after another, until they encounter a "**Link**" or an "**End**" command.
2	2	Command 2		
2	3	Command 3		
2	4	Command 4		
–	–			In this example, the routine starting at 2–1 and ending at 5–1 will continuously repeat – with a "LINK" command needed only at the end.
3	1	Command 5		
3	2	Command 6		
3	3	Command 7		
3	4	Command 8		
–	–			
4	1	Command 9		
4	2	Command 10		
4	3	Command 11		
4	4	Command 12		
–	–			
5	1	**Link to Input 2**		
5	2	Nop (do nothing)		
5	3	Nop (do nothing)		
5	4	Nop (do nothing)		

Fig. 5 – Disabled Inputs

(Controlled by Configuration Memory Address 4)

1	1	Command A
1	2	Command B
1	3	Command C
1	4	Command D
–	–	
2	1	Command E
2	2	Command F
2	3	Command G
2	4	Command H
–	–	
3	1	Command I
3	2	Command J
3	3	Command K
3	4	Command L
–		
4	1	Command 1
4	2	Command 2
4	3	Command 3
4	4	Command 4
–	–	
5	1	Command 5
5	2	Command 6
5	3	Command 7
5	4	Command 8
–	–	
6	1	Command 9
6	2	Command 10
6	3	Command 11
6	4	Command 12
–	–	
7	1	Command 13
7	2	Command 14
7	3	Command 15
7	4	Command 8
–	–	
8	1	Command 9
8	2	Command 10
8	3	Command 11
8	4	Link to Input 4

Enabled

Disabled

memory continues to Input 30

(default, Config. Adr 4 = 0 -> all inputs enabled
we will set Config. Adr 4 = 4)

Enabled Inputs

Disabled Inputs

Example - IF Inputs 4 and above are disabled:

• When in "idle" state, Mini-Panel continually "POLLS" inputs 1 thru 3.
• Inputs 4 thru 30 are NOT polled.

• Example:
  • If a button connected to Input 3 is pushed (or reed switch is closed).
    (grounded), the commands for Input 3 will be executed.
  • But if a button is connected to Input 4, 5, 6 or higher,
    the Mini-Panel will ignore that button.

Notes:
• Disabled Inputs 4 -30 will be examined ONLY at the time
  they are queried by a command, such as
  "WAIT INPUT 9 = GND" or "SKIP IF INPUT 16 OPEN".

• If the Mini-Panel is being operated in **Test Mode** (part of Program
  mode), NONE of the inputs will be polled.

Fig. 7 – Menu Navigation Chart
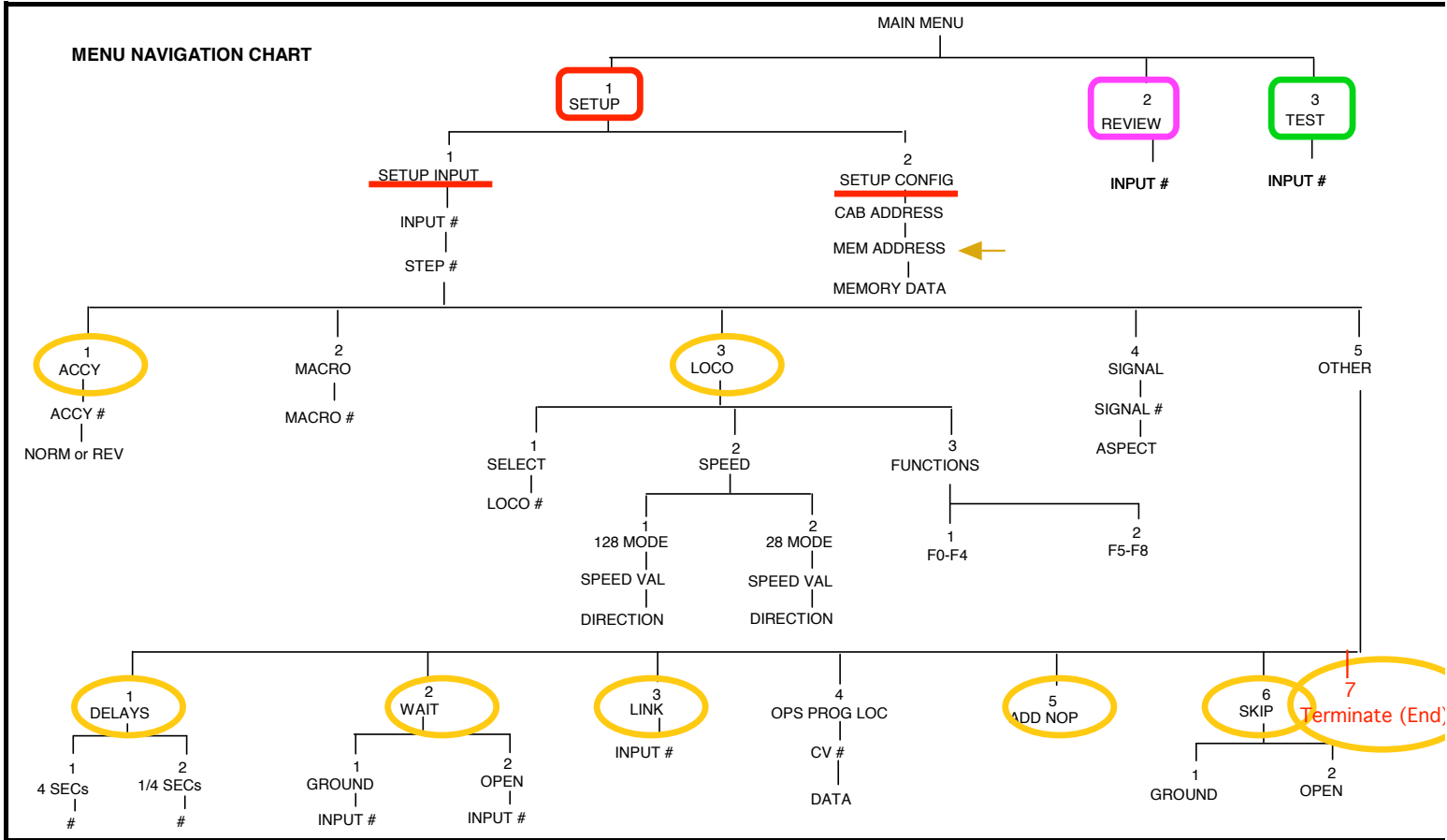
(This is page 6 of the NCE MP Tech. Ref. manual)

MENU NAVIGATION CHART

MAIN MENU

- 1 SETUP
  - 1 SETUP INPUT
    - INPUT #
    - STEP #
  - 2 SETUP CONFIG
    - CAB ADDRESS
    - MEM ADDRESS ←
    - MEMORY DATA
- 2 REVIEW — INPUT #
- 3 TEST — INPUT #

- 1 ACCY
  - ACCY #
  - NORM or REV
- 2 MACRO
  - MACRO #
- 3 LOCO
  - 1 SELECT
    - LOCO #
  - 2 SPEED
    - 1 128 MODE
      - SPEED VAL
      - DIRECTION
    - 2 28 MODE
      - SPEED VAL
      - DIRECTION
  - 3 FUNCTIONS
    - 1 F0-F4
    - 2 F5-F8
- 4 SIGNAL
  - SIGNAL #
  - ASPECT
- 5 OTHER

- 1 DELAYS
  - 1 4 SECs — #
  - 2 1/4 SECs — #
- 2 WAIT
  - 1 GROUND — INPUT #
  - 2 OPEN — INPUT #
- 3 LINK
  - INPUT #
- 4 OPS PROG LOC
  - CV #
  - DATA
- 5 ADD NOP
- 6 SKIP
  - 1 GROUND
  - 2 OPEN
- 7 Terminate (End)

Fig. 8 – Command Library

cmd	Command	Entry	Action
1	Accy: 7 Norm	1, 7, 1	Set turnout # 7 STRAIGHT (1 = straight)
2	Accy: 10 Rev	1, 10, 2	Set turnout # 10 CURVED (2 = curved)
3	Delay 1/4 sec: 4	5, 1, 2, 4	Delay 1 second (¼ sec x 4)
4	Delay 4 sec: 2	5, 1, 1, 2	Delay 8 seconds (4 sec x 2)
5	End (Terminate)	5,7,1	Terminate (stop executing commands)
6	Link to Input: 9	5, 3, 9	Go to Input 9 (go back and repeat sequence)
7	nop	5,5,1	No Operation (do nothing, go to next step)
8	>Select Loco: 003	3, 1, 003	Select Loco #3: (need "*" to indicate long adr)
9	. Speed Fwd: 10	3, 2, 2, 10 F	START loco
10	Skip if Inp:16 Grnd	5, 6, 1, 16	Skip next command if reed sw. #16 is closed
11	Skip if Inp: 16 Open	5, 6, 2, 16	Skip next command if reed sw. #16 is open
12	Wait Inp: 16 Ground	5, 2, 1, 16	wait till reed sw. #16 closed (resistance decr)
13	Wait Inp: 16 Open	5, 2, 2, 16	wait till reed button. #16 released
14	Macro 14	2, 14	Set both turnouts STRAIGHT (macro in Cmd. Stn.)
15	Macro 15	2, 15	Set both turnouts CURVED (macro in Cmmd. Stn.)

Pt. 3 – Blink LED

		Demo 1 – Send Dummy Accy. Cmd (to blink LED) (test mode)		
		* We can cause the LED to blink repeatedly, by repeatedly sending a command. * (It is not necessary that the device being "commanded" must be hooked up.)		
4	1	Accy: **2000** Norm	1, **2000**, 1	Set non-existent turnout # **2000** STRAIGHT (to blink Mini-Panel's LED)
4	2	Delay 1/4 sec: **4**	5, 1, 2, **4**	Delay 1 second (¼ sec x **4**)
4	3	Link to Input: **4**	5, 3, **4**	Go to Input **4** (repeat blinking every second)
4	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
–	–			Note that it never gets to most of these Terminate commands, because of the 'Link' cmd.

Red clr=v

		Demo 2 – Use Pushbutton #1 & Demo 1 (Input 1, RUN mode)		
		* Use RUN Mode. A pushbutton can be connected to Input 1, which will link to input 4 to start the blinking of the LED. * CHANGE: We're using normal "Run" mode instead of "Program" mode.		

Inp	S	Command	Entry	Action
1	1	Link to Input: **4**	5, 3, **4**	Go to Input #**4** and START Sequence (when
1	2			pushbutton #1 is closed)
1	3			
1	4			
4	1	Accy: **2000** Norm	1, **2000**, 1	Set non-existent turnout # **2000** STRAIGHT (to blink Mini-Panel's LED)
4	2	Delay 1/4 sec: **2**	5, 1, 2, **2**	Delay 1/2 second (¼ sec x **2**)
4	3	Link to Input: **4**	5, 3, **4**	Go to Input **4** (repeat blinking every ½ second)
4	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
–	–			Note that it never gets to most of these Terminate commands, because of the 'Link' cmd.

Fig. 9 – Power Cab

Using Mini Panel with just the Power Cab

ariable

For operations, remove jumper and plug
Power Cab into normal connector and
turn power off and back on.

Power Cab

LOC:1234 12:25:05
FWD: 000 - - - - - - -
NCE *Power* CAB

Mini Panel

Pin 1

CAB BUS   Jumper   SETUP

PCP Panel

LOC:1234 12:25:05
FWD: 000 - - - - - - -
NCE *Power* CAB
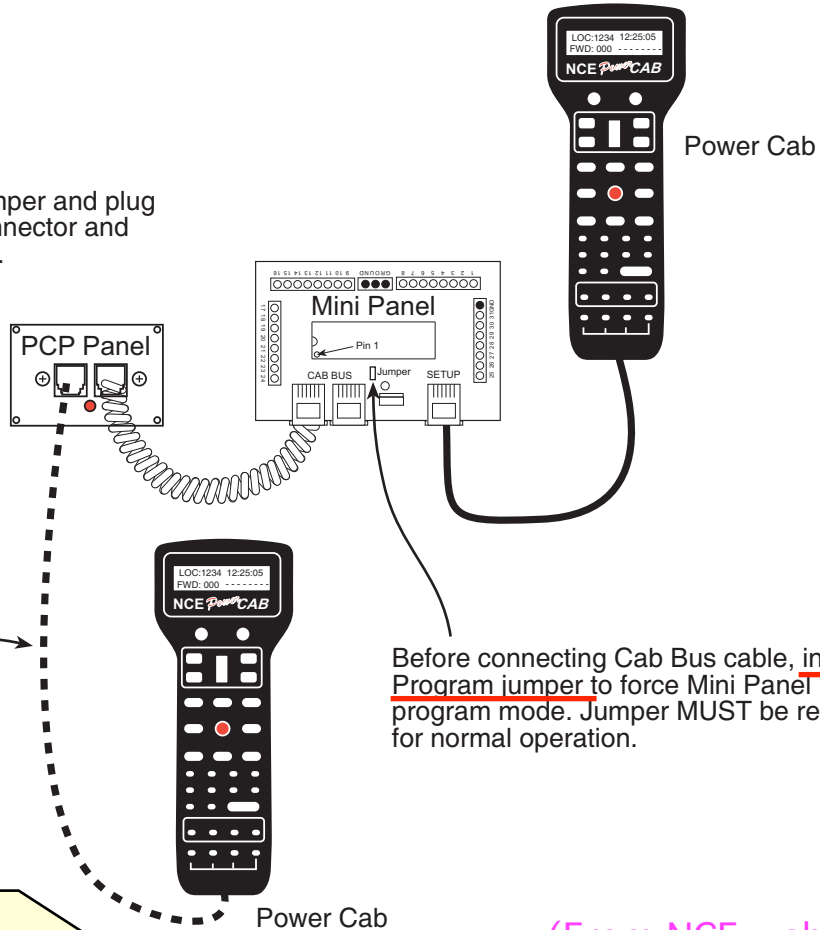
Before connecting Cab Bus cable, install
Program jumper to force Mini Panel into
program mode. Jumper MUST be removed
for normal operation.

Power Cab

(From NCE website)

Observations & Problems:

OPERATIONS MODE:
• LED will blink when 'Demo 2' is executed.

PROGRAMMING MODE:
• Can review & program commands w/Power Cab, when Mini-Panel is in programming mode.

• However, LED will NOT blink when "Reset" button is pushed.
• LED will NOT blink when 'Demo 2' is executed in 'Test' (Programming) mode.
• Also, trains will not be run in 'Test' mode.

Recommendation: Power Cab works better if you have a Pro Cab to use in Programming jack,
  so Power Cab can remain hooked up in 'normal' command station mode.

		Demo 3 – Gnd Input 16 to Blink LED (use Wait cmd & pushbn)		
		* We can make the LED start blinking, by grounding Input 16 – using a pushbutton to simulate a reed switch being grounded. * We'll use the "Wait" command (wait until Ground). * CHANGE: We're checking an INPUT to trigger the routine.		
5	1	Wait Inp: **16** Ground	5, 2, 1, **16**	wait till reed sw. #**16** closed (resistance decr)
5	2	Accy: **2000** Norm	1, **2000**, **1**	Set non-existent turnout # **2000** STRAIGHT (to blink Mini-Panel's LED)
5	3	Delay 1/4 sec: **2**	5, 1, 2, **2**	Delay 1/2 second (¼ sec x **2**)
5	4	Link to Input: **5**	5, 3, **5**	Go to Input **5** (repeat blinking every second)

Inp	S	**Demo 4 – Gnd Input 16 to Blink LED (use Skip cmd & pushbtn)**		
		* This accomplishes the same effect as previous Demo 3using the same pushbutton, except we are using the "Skip" command instead of the "Wait" command. * CHANGE: We're using the "Skip" command.		
6	1	Skip if Inp:**16** Open	5, 6, 2, **16**	Skip next command if reed sw. #**16** is open
6	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 5-1.
6	3	Delay 1/4 sec: **2**	5, 1, 2, **2**	Delay 1/2 second (¼ sec x **2**)
6	4	Link to Input: **6**	5, 3, **6**	Go to Input **6** (repeat blinking every second)

Inp	S	**Demo 7 – Start Loco (keeps running)**		
		* This simple routine starts up the loco and leaves it running. * We'll have to turn off the command station to stop the loco, since there is no other way to stop it.		
7	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP-35 diesel
7	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**
7	3	End (Terminate)	5,7,1	Terminate (stop executing commands)
7	4	End (Terminate)	5,7,1	Terminate (stop executing commands)

Pt. 4 – Run Loco

Demo 8 – Start Loco, Run, Stop

This routine starts up the loco, runs it for 10 seconds, then stops it.
* CHANGE: It stops the loco.

Inp	S			
7	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel
7	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**
7	3	Delay 1/4 sec: **40**	5, 1, 2, **40**	Delay 10 second (¼ sec x **40**)
7	4	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)
8	1	End (Terminate)	5,7,1	Terminate (stop executing commands)

Demo 9 – Turn on lights/strobe/sound (inp. 2); turn them off (Inp. 3)

Inp	S			
		The next 4 commands turn **ON** the loco's headlights, rooftop strobe light, & sound.		
2	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel
2	2	F0–F4: 0––––	3, 3, 1 [0]	headlights on (F0)
2	3	F5–F8: 5–––	3, 3, 2 [5]	Strobe on (F5), sound on (audio mute F8 off)
2	4	End (Terminate)	5,7,1	Terminate (stop executing commands)
–	–			
		The next 4 commands turn **OFF** the loco's headlights, rooftop strobe light, & sound.		
3	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel
3	2	F0–F4: –––––	3, 3, 1 [ ]	headlights off (F0 OFF)
3	3	F5–F8: –––8	3, 3, 2 [8]	sound off (audio mute F8 on)
3	4	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)
–	–			

Recall back in Section G, we "**Set Configuration Memory**":
- We enabled '**Continuous Memory**" for Inputs 4 and above.
  - This means Inputs 1–3 have non–continuous memory.
  - This means routines in Inputs 1–3 don't need an 'End' Command.
- We disabled inputs 4 and above.
  - This means Inputs 1–3 are "enabled" (will be polled by MP),
    and can be used for pushbuttons.

(Note: I don't normally use the Mini–Panel for turning on functions,
    I usually just use a 2nd cab plugged into the cab bus.)

Demo 10 – Start Loco, Run, Stop – then REPEAT

(Reuse command space from prevous demo.)
* CHANGE: It starts and stops the loco REPEATEDLY.
* We have to use the Reset button (while loco is stopped) to stop execution.

Inp	S				
7	1	>Select Loco: 3364	3, 1, 3364	Select Loco #3364: Kato SF gray GP-35 diesel	
7	2	Speed Fwd: 16	3, 2, 2, 16 F	START loco Speed 16	
7	3	Delay 1/4 sec: 40	5, 1, 2, 40	Delay 10 second (¼ sec x 40)	Run for 10 sec
7	4	Speed Fwd: 0	3, 2, 2, 0 F	STOP loco (Speed 0)	
–	–				
8	1	Delay 1/4 sec: 24	5, 1, 2, 24	Delay 6 second (¼ sec x 24)	Park for 6 sec
8	2	Link to Input: 7	5, 3, 7	Go to Input 7 (go back and repeat sequence)	
8	3	End (Terminate)	5,7,1	Terminate (stop executing commands)	
8	4	End (Terminate)	5,7,1	Terminate (stop executing commands)	

Pt. 5 – Run Loco using Reed Switch

Demo 11 – Install & Test Reed Switch

- Use "blink" routine from Demo 4 (Input 6).
- Roll car with magnet on bottom over top of reed switch, and
  verify the LED on MP blinks, which verifies magnet is closing reed switch.

Demo 4 – Gnd Input 16 to Blink LED (use Skip cmd & pushbtn)

* This accomplishes the same effect as previous Demo 3, using the same pushbutton,
   except we are using the "Skip" command instead of the "Wait" command.
* CHANGE: We're using the "Skip" command.

Inp	S			
6	1	Skip if Inp:16 Open	5, 6, 2, 16	Skip next command if reed sw. #16 is open
6	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.
6	3	Delay 1/4 sec: 2	5, 1, 2, 2	Delay 1/2 second (¼ sec x 2)
6	4	Link to Input: 6	5, 3, 6	Go to Input 6 (repeat blinking every second)

Demo 12 – Start Loco, Run, Stop; REPEAT – Using Reed Switch

Inp	S				
–	–	* The routine starts and stops the loco repeatedly. CHANGE: It stops the loco right after it crosses the reed switch. * We still have to use the Reset button (while loco is stopped) to stop execution. • Note we could simulate a reed switch with wires between GND and Terminal 16 • The "Accy 2000" cmd at 10-4 "consumes" an extra input; could be eliminated.			
Inp	S				
10	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
10	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**	
10	3	Delay 1/4 sec: **40**	5, 1, 2, **40**	Delay1=10 sec (¼ sec x **40**) (Cruise for 10 sec)	Control mult. laps
				Chg delay to 50 sec (200x1/4) to make 2 laps	(35 sec/lap)
10	4	Accy: **2000** Norm	1, **2000**, 1	Set turnout #**2000** Straight (blink MP's LED when	'Delay' ends
–	–				
11	1	Wait Inp: **16** Ground	5, 2, 1, **16**	wait till reed sw. #**16** closed (resistance decr)	Look for reed switch
11	2	nop	5,5,1	No Operation (do nothing, go to next step)	Use this line next demo
11	3	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)	STOP
11	4	Delay 1/4 sec: **24**	5, 1, 2, **24**	Delay3 = 6 second (¼ sec x **24**)	Park for 6 sec
–	–				
12	1	Link to Input: **10**	5, 3, **10**	Go to Input **10** (go back and repeat sequence)	
12	2	End (Terminate)	5,7,1	Terminate (stop executing commands)	
12	3	End (Terminate)	5,7,1	Terminate (stop executing commands)	
12	4	End (Terminate)	5,7,1	Terminate (stop executing commands)	

Demo 13 – Start Loco, Run, Stop; REPEAT – Use Delay at Step 11-3

Modify above cmds

Inp	S				
–	–	(Reuse command space {Inputs 10–12} from previous demo.) * The routine starts and stops the loco repeatedly, but adds a "Delay" command at Step 11-3. * CHANGE: It stops the loco further "downstream" from the reed switch.				Same
Inp	S				
10	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
10	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**	
10	3	Delay 1/4 sec: **40**	5, 1, 2, **40**	Delay1=10 sec (¼ sec x **40**) (Cruise for 10 sec)	Control mult. laps
				Chg delay to 50 sec (200x1/4) to make 2 laps	(35 sec/lap)
10	4	Accy: **2000** Norm	1, **2000**, 1	Set turnout #**2000** Straight (blink MP's LED when	Blink 'Delay' ends
–	–				
11	1	Wait Inp: **16** Ground	5, 2, 1, **16**	wait till reed sw. #**16** closed (resistance decr)	Look for reed switch
11	2	Accy: **2000** Norm	1, **2000**, 1	Set turnout #**2000** Straight (blink MP's LED when	Blink reed sw.
11	3	Delay 1/4 sec: **48**	5, 1, 2, **48**	Delay2 = **12** sec. bring #3364 to station	<–Park more downstrear
				The above delay allows us adjust where the loco stops, without repositioning the reed switch.	Added delay
11	4	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)	STOP
–	–				
12	1	Delay 1/4 sec: **24**	5, 1, 2, **24**	Delay3 = 6 second (¼ sec x **24**)	Park for 6 sec
12	2	Link to Input: **10**	5, 3, **10**	Go to Input **10** (go back and repeat sequence)	
12	3	End (Terminate)	5,7,1	Terminate (stop executing commands)	
12	4	End (Terminate)	5,7,1	Terminate (stop executing commands)	

|		Demo 14 – Run 2 Trains			

* These are almost the same set of commands used in previous Video #815 showing 2 trains running on 1 mainline using just 1 reed switch. The difference is that 'Skip' & 'Delay' commands used in Video #815 to add extra delay using a SPST switch have been eliminated, since this mainline is too short to add the extra delay.
* You can use the commands in the previous Demo 13 to adjust the trains' stopping distances individually,
  before you run both of them at the same time.

| Inp	S				
13	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	(startup)
13	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**	(startup)
13	3	Wait Inp: **16** Ground	5, 2, 1, **16**	Wait to reach reed sw. #**16**	<==SENSOR
13	4	>Select Loco: **1216**	3, 1, **1216**	Select Loco #**1216**: D&H Sharknose Diesel	
–	–				
14	1	Speed Fwd: **7**	3, 2, 2, **7** F	START loco Speed **7**	**Shark Lv Station**
14	2	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
14	3	Delay 1/4 sec: **48**	5, 1, 2, **48**	Delay **12** sec. bring #**3364** to station	
14	4	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0) (Stop GP–35 at station)	**Geep at Station**
–	–				
		=============== Part 2 - halfway point in sequence) ====================			
15	1	Wait Inp: **16** Ground	5, 2, 1, **16**	Wait to reach reed sw. #**16**	<==SENSOR
15	2	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
15	3	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**	**Geep Lv Station**
15	4	>Select Loco: **1216**	3, 1, **1216**	Select Loco #**1216**: D&H Sharknose Diesel	
–	–				
16	1	Delay 1/4 sec: **50**	5, 1, 2, **50**	Delay **12-1/2** sec. bring #**1216** to station	
16	2	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0) (Stop Sharknose at station)	**Shark at Station**
16	3	Link to Input: **13**	5, 3, **13**	Go back to Input #**13** and REPEAT Sequence	
16	4	End (Terminate)	5,7,1	Terminate (stop executing commands)	
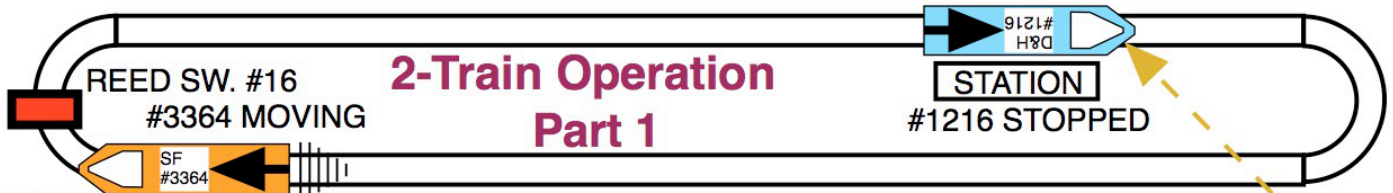
PART 1:
Initial Conditions: Blue loco stopped at Station, orange loco is travelling on mainline, upstream of the reed switch.
• The Blue loco is STOPPED, and WAITS until the Orange loco crosses the Reed Switch.
• Then, the Blue loco STARTS. The Orange loco travels on to the Station, and STOPS.
• The process REPEATS, when the Blue loco reaches the Reed Switch.
WARNING: The STOP command needs to be sent to the Orange loco when it reaches the Station, <u>BEFORE</u> the Blue loco travels around the loop and crosses the reed switch (or else Mini-Panel MISSES Blue loco crossing the reed switch, and have wreck).
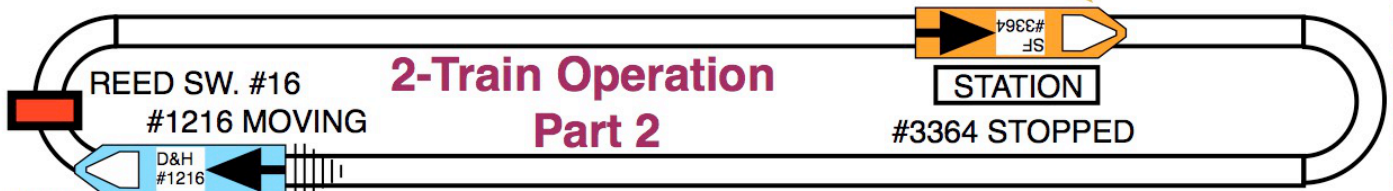
PART 2:
• The Orange loco is STOPPED, and WAITS until the Blue loco crosses the Reed Switch.
• Then, the Orange loco STARTS. The Blue loco travels on to the Station, and STOPS.
• The process REPEATS, when the Orange loco reaches the Reed Switch.
WARNING: The STOP command needs to be sent to the Blue loco when it reaches the Station, <u>BEFORE</u> the Orange loco travels around the loop and crosses the Reed Switch (or else Mini-Panel MISSES Orange loco crossing the reed switch, and have wreck).
NOTE: See previous Video #815 for a more DETAILED logic diagram of 2 train operation with a single reed switch.

Fig. 15 – Point-to-Point
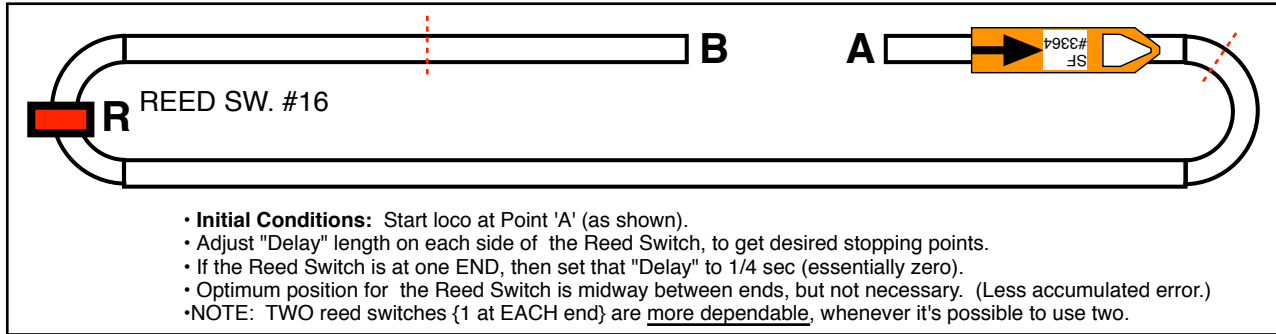
- **Initial Conditions:** Start loco at Point 'A' (as shown).
- Adjust "Delay" length on each side of the Reed Switch, to get desired stopping points.
- If the Reed Switch is at one END, then set that "Delay" to 1/4 sec (essentially zero).
- Optimum position for the Reed Switch is midway between ends, but not necessary. (Less accumulated error.)
- NOTE: TWO reed switches {1 at EACH end} are <u>more dependable</u>, whenever it's possible to use two.

Demo 15 – Point to Point – ONE Reed Switch at End or Middle

* We'll add a "Link" command at Input 2, to Link to Input 17.
* We can then use a pushbutton at Input 2 (terminal 2) to start above routine.
  But we have to change to "Operating" mode to use the button, because pushbuttons won't work (Inputs won't be polled) when in "Program" mode.
• The 'Accy 2000 Norm' cmds are for feedback to blink the MP's LED; they can be eliminated.

Inp	S			(Momentum=2)	
2	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
2	2	F0–F4: 0––––	3, 3, 1 [0]	headlights on (F0)	
2	3	F5–F8: 5–––	3, 3, 2 [5]	Strobe on (F5), sound on (audio mute F8 off)	
2	4	Link to Input: **17**	5, 3, **17**	Go to Input **17** (start Pnt. To Pnt. sequence)	
				We can use a pushbutton at Input 2, to turn on lights & sound, then start Pnt. To Pnt. At Input 17	

================ Forward Trip, A to B ================

Inp	S				
17	1	>Select Loco: **3364**	3, 1, **3364**	Select Loco #**3364**: Kato SF gray GP–35 diesel	
17	2	Speed Fwd: **16**	3, 2, 2, **16** F	START loco Speed **16**	
17	3	Wait Inp: **16** Ground	5, 2, 1, **16**	wait till reed sw. #**16** closed (resistance decr)	Cross reed Sw.
17	4	Accy: **2000** Norm	1, **2000**, **1**	Set turnout #**2000** Straight (blink MP's LED)	
–	–				
18	1	Delay 1/4 sec: **44**	5, 1, 2, **44**	====> Delay1= 11 second (¼ sec x **44**)	Fwd to Pt. B
				Note we're using time to measure distance. So if we change speed, we need to adjust time.	
18	2	Accy: **2000** Norm	1, **2000**, **1**	Set turnout #**2000** Straight (blink MP's LED)	
18	3	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)	STOP at Pt. B
18	4	Delay 1/4 sec: **36**	5, 1, 2, **36**	Delay2= 9 second (¼ sec x **36**)	Ramp down+Park

================ Reverse Trip, B to A ================

Inp	S				
19	1	Speed Rev: **16**	3, 2, 2, **16** R	START loco Speed **16** reverse (return)	
19	2	Wait Inp: **16** Ground	5, 2, 1, **16**	wait till reed sw. #**16** closed (resistance decr)	Cross reed Sw.
19	3	Accy: **2000** Norm	1, **2000**, **1**	Set turnout #**2000** Straight (blink MP's LED)	
19	4	Delay 1/4 sec: **86**	5, 1, 2, **86**	====> Delay3= 21-1/2 second (¼ sec x **86**)	Bkwd to Pt. A
–	–				
20	1	Accy: **2000** Norm	1, **2000**, **1**	Set turnout #**2000** Straight (blink MP's LED)	
20	2	Speed Fwd: **0**	3, 2, 2, **0** F	STOP loco (Speed 0)	STOP at Pt. A
20	3	Delay 1/4 sec: **36**	5, 1, 2, **36**	Delay4= 9 second (¼ sec x **36**)	Ramp down+Park
20	4	Link to Input: **17**	5, 3, **17**	Go to Input **17** (go back and repeat sequence)	