



Metro-North M8 Electric Multiple Unit



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1 Background

1.1 Loco

The M8 is a dual voltage electric multiple unit which can run 12.5kV AC from over head lines or from 750V DC from third rail. It was designed and built by Kawasaki Heavy Industries to replace the fleet of ageing M2s, M4s and M6s used on the New Haven Line section of the Metro-North Railroad.

1.2 Design & Specification

Builder	Kawasaki Heavy Industries
Locomotive Weight	65.7 tonnes (A car) and 65.2 (B car)
Vehicle Length	85ft (25.9m)
Vehicle Width	10ft 6 in(3.2m)
Top Speed	100 MPH (161km/h)
Brake Types	Regenerative/Pneumatic
Tractive Effort	30,000 lb (135 kN)

2 Rolling Stock

2.1 Metro-North M8 A Car



2.2 Metro-North M8 B Car



3 Driving the Metro-North M8

3.1 Cab Controls and image





- | | | | |
|---|------------------------|----|------------------------|
| 1 | Alerter Reset (Q) | 7 | Pantograph Mode Select |
| 2 | Power Controller (A/D) | 8 | Energy On/Off (P) |
| 3 | Reverser (W,S) | 9 | Cab Light (L) |
| 4 | In Cab Signalling | 10 | Wipers (V) |
| 5 | Operating Screen | 11 | Headlight Switch (H) |
| 6 | Speedometer | | |

3.2 In Cab Signaling

Locomotives on the New York to New Haven route feature in-cab signalling systems. The image below shows the in-cab display. Visually the display may vary for other locomotives but the principle remains the same.



Alarmer: Alerts the user to react if they don't touch controls for 60 seconds. Cancel the alarm by pressing Q or the "!" icon on the HUD.

Cab Signal Aspect: The aspect of the section you are in now.

Signal Speed: Displays the speed associated with the cab signal aspect.

Track Speed: Displays the current track speed.

The engineer must adhere to the minimum value of the signal and track speed. If no signal speed is displayed they must adhere to the current track speed.

If you enter a new block and it has a reduced aspect (e.g. going from Normal to Limited) then the following happens and must be done by the engineer:

1. An alarm will go off in the cab.
2. The cab signalling will update to reflect the new signal speed and confirm what the new aspect is.
3. If the train is within the MAS (Maximum Allowed Speed) then the engineer must simply press the ACKNOWLEDGE button (Q key) within 8 seconds.
4. If the train is above MAS then the engineer must zero the throttle, move the brakes into 40% application or greater, and then press ACKNOWLEDGE within 8 seconds.

(Note: It is not required to be within the speed limit during the 8 seconds, it is only required that the engineer has confirmed to the ATC system that they acknowledge the reduction in aspect and have taken appropriate action to comply with it.)

If the engineer moves the brake back out of suppression while still being above MAS then the alarm will sound again and the same procedure must be followed.

Failure to acknowledge correctly within 8 seconds means the brakes will go to full service application - however, the engineer can apply the same procedure as above and they will be able to regain control of the train without having to stop.

Once the train is under the new MAS the engineer can simply release the brakes and apply throttle as required.

Speed increase alert - This alarm is a small audio ping as a notification that your signal speed limit has increased. Note - this only applies to SIGNAL speed limits, not track speed limits. Currently you can only see this working if you have the control state dialog visible, there's nothing on the cab to indicate it.

Disabling the Alerts –

If the player does not want ALERTER functionality, they can press CTRL-F to toggle this.

If the player does not want ALERTER OR ATC alarm and penalty brake functionality then they can press CTRL-D to toggle ATC Cut-out. In this case the cab signalling will still function, it just won't pester you with alarms or brake applications.

3.3 Power

The New York New Haven route runs both overhead and third rail power lines. The M8 operates between this crossover and has the required functionality to switch between them. This crossover occurs between Mount Vernon East and Pelham station where it switches from third rail to overhead travelling from West to East.



- 1 Turns the power on and off.
- 2 Controls the type of power input, overhead or third rail.
AC Panto Down - no power.
AC Panto Up – overhead.
DC Mode - third rail.
- 3 Shows what type of power is coming in. This will be green only if the right power input is selected in 2 for the power available.

When you enter a crossover between the two power types there will be a period of overlap in which the power will need to be switched over. To do this the following must be done by the engineer:

1. Zero the throttle.
2. Change the mode of operation to the new power type.
3. Apply the throttle.

When using the Xbox controller or the HUD, simply by switching the pantograph control off then back on will select the correct power type.

4 Scenarios

4.1 Simple Controls Tutorial: M8 Simple Controls

Learn how to drive the M8 by driving from Harlem to Fordham.

4.2 Expert Controls Tutorial: M8 Expert Controls

Learn how to drive the M8 by driving from Harlem to Fordham.

4.3 Grand Central Bound

Run a morning commuter service into the city battling poor weather conditions and increasing traffic levels.

- **Duration** **70 minutes**

4.4 Stamford Local

Run a peak time service out of the city conveying commuters and shoppers at the end of a busy summer day.

- **Duration** **60 minutes**

5 Advanced Setup

For those wishing to create scenarios using the M8 there are advanced features for setting the pantograph state and destination boards.

In the scenario editor, double click the engine to bring up the properties panel where you can edit the engine number.

The FIRST letter prefixing the engine number determines the starting pantograph state: “O” = Overhead wires (pantograph up), “T” = Third rail (pantograph down).

The SECOND letter prefixing the engine number determines the destination board. The following table shows a list of available destinations.

A – New York Penn	a – Old Greenwich
B – Grand Central	b – Stamford
C – Harlem	c – Norton Heights
D – Yankees	d – Darien
E – Melrose	e – Rowayton
F – Tremont	f – South Norwalk
G – Fordham	g – East Norwalk
H – Botanical Garden	h – Westport
I – Williams Bridge	i – Greens Farms
J – Woodlawn	j – Southport
K – Mount Vernon East	k – Fairfield
L – Pelham	l – Fairfield Metro
M – Wakefield	m – Bridgeport
N – Mount Vernon West	n – Stratford
O – Long Island	o – Milford
P – Hunterspoint	p – West Haven
Q – Woodside	q – New Haven
R – New Rochelle	r – New Haven State
S – Larchmont	s – Glenbrook
T – Mararoneck	t – Springdale
U – Harrison	u – Talmadge Hill
V – Rye	v – New Canaan
W – Port Chester	w – Blank
X – Greenwich	
Y – Cos Cob	
Z – Riverside	

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