

2024/ET/41/13  
**Motorman Refresher Course**

09873/2024	<b>Modules</b>	<b>Duration</b>
A	Transportation Module	6 days
B	Technical Module	12 days
	<b>Total</b>	<b>18 days</b>

**DESCRIPTION**

**(A) Transportation, First Aid & Fire Fighting**

**DURATION**

**6 days**

Sno.	Subject	Duration in days
1.	Brief description of GR & SR pertaining to LOCO PILOTS. Correction slips.	6 days
2.	Summarizing of Important definitions such as Adequate. Distance, Block Section, Isolation, Faulting mark, Running Line, Axle counter, Station section. Authority to proceed and Station working rules	
3.	Light engine, Relief Engine, Banking Engine, Train Engine, Shunting Engine, etc	
4.	Personal equipment of LOCO PILOTS	
5.	Stations <ul style="list-style-type: none"> <li>• Kinds and classification of stations minimum essential signals etc. for each station.</li> <li>• Block and non-Block stations.</li> <li>• Block overlap.</li> <li>• Yard Layout, etc.</li> </ul>	
6.	System of working – <ul style="list-style-type: none"> <li>• Absolute Block System</li> <li>• Automatic Block System,</li> <li>• Train following System, etc</li> </ul>	
7.	Signals – <ul style="list-style-type: none"> <li>• Necessity and Evaluation of signals,</li> <li>• classification and kinds of signals,</li> <li>• Approach and Departure signals permissive signals, subsidiary signals, etc.</li> </ul>	
8.	Defective signals <ul style="list-style-type: none"> <li>• Defective signal, Automatic signals, Semi-automatic and Gate signals, manual signals.</li> <li>• Action and rules for passing defective signals of different types.</li> <li>• Practical tour for sight in Yard.</li> </ul>	
9.	Engineering signals – <ul style="list-style-type: none"> <li>• Engineering Signals. Their placement.</li> <li>• Permanent and Temporary Engineering Cautions.</li> </ul>	

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	<ul style="list-style-type: none"> <li>• Brief of Chat Section</li> <li>• Speeds.</li> </ul>
10.	Isolation
11.	Different authorities/forms
12.	Whistle codes What is a Whistle Code? When and how is to be used? Precautions before starting a Train from a station (originating) or Yard right signals.
13.	Abnormal working – <ul style="list-style-type: none"> <li>• Rules for working of trains – single line working on Double line in absolute and automatic Block Sections.</li> <li>• Total failure Communication.</li> <li>• Rules for sending relief engine from right line and wrong line.</li> <li>• Precautions to be observed during abnormal working in different cases.</li> </ul>
14.	Shunting – <ul style="list-style-type: none"> <li>• Kinds of shunting.</li> <li>• Precautions for safe and smooth shunting.</li> <li>• Rules for shunting in Yard, coaching Yard and “B” class stations.</li> <li>• Model Room training.</li> </ul>
15.	<ul style="list-style-type: none"> <li>• Train operation in fog</li> </ul>
16.	Protection Rules
17.	Exchange of Signal & its significance
18.	Accident – <ul style="list-style-type: none"> <li>• Duties of Loco Pilot in case of accident.</li> <li>• Mid Section derailments. Engine failures etc.</li> <li>• Over shooting</li> <li>• Protection in block section in case of accidents.</li> <li>• Use of detonators</li> </ul>
19.	<ul style="list-style-type: none"> <li>• Duties in case of fire in train/loco.</li> </ul>
20.	Identifying and handling of various types of fire extinguishers, precautions to be taken while extinguishing fire, Render first aid to the burn injuries, first aid to persons affected by suffocation, communication, etc.

<b>Module no.</b>	<b>Training Content</b>	<b>Duration in days</b>
<b>MRM-1</b>	EMU/MEMU Module	2
<b>MRM-2</b>	Driving Module	2
<b>MRM-3</b>	Safety & Operation Module	2
<b>MRM-4</b>	Pneumatic Module	2
<b>MRM-5</b>	C&W and Air Brake Module & overview of Vande Bharat type train set, Push-Pull etc.	½
<b>MRM-6</b>	TrD module	½
<b>MRM-7</b>	Simulator Training	1
<b>MRM-8</b>	Case Studies	1½
<b>MRM-9</b>	Assessment and Grading	½
	<b>Total days</b>	<b>12</b>

**Note** - In the case of LPPs driving DEMU trains exclusively, the above course may be modified for DEMU operations and imparted with the approval of the PCEE.

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**DESCRIPTION**  
**EMU/MEMU Module**

**DURATION**  
**2 days**

**CONTENT**

Sno.	Subject	Duration in days
1.	Summarizing the general description of electric Multiple Unit (EMU/MEMU) – Three phase & conventional EMU – composition, types of coaches – MC, TC (driving, non driving), speed, Tractive effort, etc.	2 Days
2.	Brief description on safety items - undergear safety fittings & intactness (cattle guard, rail guard, coupling, axle box, battery box, air suspension bellow, switch gear, tap-changer, other bogie/under gear equipment which needs to be checked on line, moisture draining locations, location of lubrication points, etc. – use of audio-visual digital content is recommended.	
3.	Location and functions of various types of relays, switches, MCBs, fuses, and other electrical equipment, along with their normal positions, in LT/HT compartment - need to be regularly checked and operated during train operations - use of audio-visual digital content is recommended.	
4.	Detailed description of CAB items, switches/controls to be operated by LP. Understanding symbols in HMI and various operations in HMI like brake release etc.	
5.	Safety items to be checked while taking over charge of train.	
6.	Model room/Field demonstration	

DESCRIPTION  
Driving Module

DURATION  
2 days

CONTENT

Sno.	Subject	Duration in days
1.	Proper Self call out of signal. <ul style="list-style-type: none"> <li>Demonstration of procedure of self call out of signal as per instructions laid down</li> </ul>	2 days
2.	This should be demonstrated by each LP multiple times. Energizing (cab occupation) and De energizing an EMU rake.	
3.	Brake continuity, Brake feel & brake power test <ul style="list-style-type: none"> <li>Procedure for carry out of brake continuity test and locations/situations where carry out.</li> <li>Importance of brake feel test &amp; brake power for safety of trains.</li> <li>Procedure for carry out brake feel test &amp; brake power test.</li> </ul>	
4.	Instructions for Joint Brake Power Testing as per ACTM	
5.	Observance of permissible speed, permanent, & temporary speed restrictions, etc.	
6.	Punctuality of coaching trains, Working time table Maximum permissible speed, etc.	
7.	Description of dynamic/regenerative braking procedure and its benefits.	
8.	Use of Cruise Control and precaution while using it.	
9.	Use of ENS, PIS configuration.	
10.	Effect on regenerative/dynamic brake upon braking through EP/Auto brakes and no tension of OHE.	
11.	Description of auto regression feature in case of full service brake application and emergency brake application.	
12.	Good driving technique, instructions for train operation, alertness, etc.	
13.	Train operation in ghat sections	
14.	Duties of LP defined in ACTM.	
15.	Description of tools provided to LP and provided on Rake	
16.	<ul style="list-style-type: none"> <li>Observance of caution order, Permanent &amp; temporary speed restrictions, engineering boards, OHE boards, coasting boards, gradient boards, etc.</li> <li>Sharp lookout on signal, track, OHE &amp; adjacent line, Tress passers etc.</li> <li>ADD and ORD of panto.</li> </ul>	
17.	Use of Flasher light and actions to be taken when flasher light of opposite direction train is glowing.	
18.	Stopping of coaching train with position of coach display board/stop board provided at platform.	
19.	Operation of passenger related amenities – Lights, Fans, Ventilation, Announcements, PIS etc.	

**DESCRIPTION**  
Safety & Operation Module

**DURATION**  
2 days

**CONTENT**

Sno.	Subject	Duration in days
1.	Types of faults, reading method fault in HMI, status code and reading of troubleshooting directories.	2 days
2.	Working with isolation of different equipment in rake	
3.	Bell codes, Talkback, Fault indication lamps.	
4.	Function & use of BPEMS switch.	
5.	Rescue Driving Mode.	
6.	Train operation in case of Head light defective.	
7.	Train operation in case of SPM defective.	
8.	Train operation in case of HMI defective.	
9.	Train Operation with deflated/punctured bellow.	
10.	Stabling of rake & securing to avoid rolling down/rolling back.	
11.	Action to be taken train stalled on gradient	
12.	Actions to be taken in case of ACP.	
13.	Actions to be taken & inspection of rake in case of CRO.	
14.	Precautions in dead movement of rake.	
15.	Function of various safety equipment VCD, Fogsafe/FogPass device, KAVACH, RDAS, AWS etc.	
16.	RTIS equipment, usage and precautions.	
17.	Cab Changing Procedure.	

**DESCRIPTION**  
EMU/MEMU Pneumatic Module

**DURATION**  
2 days

**CONTENT**

Sno.	Subject	Duration in days
1.	Overview on braking system of three phase EMUs	2 days
2.	Working of EP, Auto, dynamic and parking brake on three phase EMUs	
3.	Overview on braking system of conventional EMU	
4.	Working of EP, Auto and parking on conventional locomotives	
5.	Action to be taken in case of MR pressure not build up	
6.	Action to be taken in case of BP pressure not build up	
7.	Action to be taken in case of BP pressure not maintaining	
8.	Pneumatically/Electric isolation of brakes.	
9.	Operations and control of pneumatic system from HMI	
10.	Releasing of parking/hand brake in case of brake binding.	
11.	Location of air dryer and isolating procedure	

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Sno.	Subject	Duration in days
2024 12.	Procedure of various tests & checks – joint brake power testing	
13.	Discussion of various pneumatic failures and remedies	

MRM-5

**DESCRIPTION**

C&W and Air Brake Module &  
Vande-Bharat type train set, Push-Pull, etc.

**DURATION**  
½ day

**CONTENT**

Sno.	Subject	Duration in days
1.	Different types of coaching stock - Nomenclature	½ day
2.	Air brake system - working method with diagrams, parts & functions, working single pipe and Twin pipe air brake system. Pneumatic brake - working principle, BMBS and APS, Hand brake in rolling stock.	
3.	Brake power certificates - kinds - Coaching trains, percentage of brake power required in mixed/passenger trains, Alarm chain pulling - resetting & isolation, FIBA, Fire Detection(VESDA), etc	
4.	Continuity test, cases of brake binding and releasing, Flat tire detection and action to be taken, isolation of distributor valve, isolation of bogie pneumatically, etc.	
5.	LHB coach, Hybrid coach, conventional coach, Hot axle symptoms and action to be taken.	
6.	Brake continuity test and its importance	
7.	Overview of Vande-Bharat type train set, Push-Pull, etc.	

MRM-6

**DESCRIPTION**

TrD Module

**DURATION**  
½ day

**CONTENT**

Sno.	Subject	Duration in days
1.	Introduction to TrD	½ day
2.	Brief of Power Supply arrangement.	
3.	Cantilever - Its parts	
4.	Use of ATD in OHE	
5.	Neutral Section.	
6.	Different type of TrD boards & description	
7.	Panto Entanglement - it's causes	
8.	Instruction of Loco Pilots to in case of tripping of OHE	
9.	Duties of Loco Pilot during OHE unusual and Break Down	

MRM-7

**DESCRIPTION**

**DURATION**

**CONTENT**

**Simulator Training** – Simulator training may be imparted to develop good driving skills on different type of terrains, acceleration & deacceleration, controlling of speed, response to unusual scenarios etc.

**Tripping car** – Practical training of troubleshooting used TSD.

**Note :** In case of non availability of Simulator, handling may be performed under supervision of CLI.

**MRM-8**

**DESCRIPTION**  
Case Studies

**DURATION**  
1½ days

**CONTENT**

Sno.	Subject	Duration in days
1.	Case Studies	1½ days

**MRM - 9**

**DESCRIPTION**  
Assessment and Grading

**DURATION**  
½ day

**CONTENT**

Sno.	Subject	Duration in days
1.	Assessment and grading of trainees for judging training performance. There shall <b>NOT</b> be any pass/fail criteria upon assessment.	½ day

**Instruction for training centers & Instructors (Technical Module)**

- The above content is for technical training only. Candidate/trainee would also need to undergo requisite Traffic Transportation training.
- Classroom training to have audio-visual aids with digital content.
- Deep knowledge of circuits (electrical or pneumatic), etc is not required.
- Training should primarily emphasize on driving skills, requirements of rules / regulations / discipline in day to day operation.

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- During subject-specific <sup>2024/E(Trg)/41/13</sup> classroom training, it is essential to emphasize discussions on safety cases, including SPAD, accidents, derailments, collisions, side collisions, and incidents involving entering unwired/sand humps. This emphasis should highlight how adherence to proper procedures or correct actions by the LPP/Motorman on the subject could have effectively prevented such cases.
- Furthermore, any outstanding topics relevant to the assigned duties should be integrated into the training curriculum as necessary.
- There shall **NOT** be any pass/fail criteria in the refresher course.

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