



Model Engineering Association of New Zealand Incorporated.

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Manual of Operating Procedures for Hobby Club Miniature Railways

For Hobby Club Miniature Railways up to 187mm (7.25
inches) Gauge Track

Contents

Preface

- Section 1 General
- Section 2 Registration & Safety Audit
- Section 3 Locomotives – General
- Section 4 Locomotives – Steam
- Section 5 Locomotives – Non Steam
- Section 6 Carriages
- Section 7 Carriages – Driving Trolley
- Section 8 Operating Procedures
- Section 9 Track rail etc
- Section 10 Portable Track
- Section 11 Whistle Codes
- Section 12 Revision
- Section 13 Licensing
- Section 14 Conclusion
- Appendix –
 1. Couplings
 2. Wheels
 3. Driver Licence Recommendations
 4. Suggested Driver Training Regime
 5. Insurance Claim Incidents
 6. Wheel, Track and Couplings Standards

Preface

This manual (MOP), was compiled by the Model Engineering Association of New Zealand (MEANZ) in 2006 for the guidance of Incorporated Societies that are members of MEANZ.

The Association and its Member Societies recognise their obligation to provide a safe environment for visiting public and members alike during operating sessions at various locations throughout New Zealand. **When clubs join MEANZ they sign a form to say they will abide by these MEANZ Operating Procedures.**

The 2006 MEANZ Executive consisted of;

President	Colin Burleigh	KMR
Sec/Treasurer	Peter Anderson	HVMES
N.I. Representative	John Romanes	HNLS&ASS
S.I. Representative	Jock Miller	CSM&EE

2017 review of MEANZ Manual of Operating Procedures

This revised Manual was prepared in accordance with MEANZ Administration Policy (MAP). The MEANZ executive, are required to review key documents in use by MEANZ member clubs as outlined in MAP 9.

The review consisted of benchmarking the 2006 MOP against two overseas and two NZ club Miniature Railway operating procedures/Safety Rules to ascertain whether the MEANZ MOP still represented best practise in the operation of our Miniature Railways and to revise where necessary to ensure that the provisions within the MOP are not consistent with other MEANZ documents.

These were,

- Australian Association of Live Steamers - COP Operation of Miniature Railways, Road Vehicles and Plant (2013).
- The health and Safety Executive (UK) - Passenger-carrying Miniature Railways (2001).
- Canterbury Society of Model and Experimental Engineers Inc. – Safety and Running Rules (2015).
- “Traincraft” Dave Giles and Roger Reynolds – The Safe Operation of Miniature Passenger Hauling Railways (2015).

1 GENERAL

1.1 SCOPE

1.1.1 This manual is intended to cover minimum safe operating requirements of member societies operating miniature railways up to 185mm (7 1/4 “) and other miniature steam or ride on equipment operating as a hobby operation.

1.1.2 This manual is based upon best practice operating procedures as determined by New Zealand and International Written Codes of Practice/Safety documents.

1.2 PURPOSE

1.2.1 The purpose of this manual is to help societies to establish and operate their facilities in a safe manner and to provide a standard operating basis in order to promote free movement of members to operate their equipment safely throughout NZ.

1.3 DEFINITIONS

1.3.1 Operator: shall be defined as the person who is considered competent and is in charge of the society activities of the day to ensure safe operation of the train rides. (See clause 8).

1.3.2 Internal Registration: shall be defined as the procedures adopted by societies to record equipment and its condition, which belongs to the society and its members.

2 REGISTRATION & SAFETY AUDIT

2.1 Societies as members of MEANZ have their tracks listed as Passenger Carrying Miniature Railways operating on a track gauge up to 185mm (7 1/4") and shall be subject to their safety audit.

2.2 Structural and fixed components of the railway should be designed and certified to the requirements of the local authority.

2.3 Society owned equipment will be listed maintained and inspected by the appropriate officer of the society as an internal registration.

2.4 Privately owned equipment belonging to a member of the society will similarly be listed by the appropriate officer, and it will be the responsibility of the owner to arrange suitable maintenance and inspection.

2.5 The register should give details of the owner, builder, identification, boiler number if applicable, plus a photograph if a locomotive and the owner, identification and load capacity of passenger vehicles.

2.6 The register should be available for inspection as required.

2.7 Where the locomotive is sold, or the owner changes society membership, a copy of its register entry may be requested by the other society.

3 LOCOMOTIVES - General

3.1 Every locomotive shall be fitted with a suitable braking device where practical, particularly where a driver rides on, or in the locomotive.

3.2 Every locomotive **shall** be fitted with adequate couplings and safety chains between engine and tender and /or driving trolley, suitable for the hauling capacity and given consideration to the scale and gauge.

3.3 Every locomotive shall have couplings visually inspected prior to each operating session.

3.4 Every locomotive should have couplings safety checked periodically (through examination and recorded in the register).

3.5 Every locomotive **shall** be fitted with an audible warning device.

3.6 Every locomotive using LPG as fuel should have all fittings and pipe work to NZ standards. Hoses from bottle to locomotive shall be long enough to prevent stretching if the draw gear fails and safety chains take the load. No locomotive should be left unattended whilst the bottle valve is open.

4 LOCOMOTIVES- Steam

4.1 Every steam locomotive shall have a current boiler certificate to New Zealand Government regulatory requirements. (AMBSC Codes Part 1&2) or (inspection and certification by a PECPR approved authority)

4.2 Every steam locomotive should, where practical, be fitted with spark arresters and ash pans.

4.3 Every steam locomotive should discharge steam or condensate from blow down, steam traps or any other source to a place where there is no risk of injury to persons. Side discharge of cylinder drain cocks is to be discouraged.

5 LOCOMOTIVES- Non Steam

5.1 Every non steam locomotive should have a cut out device, which when operated will render the locomotive inoperable when unattended.

5.2 Every internal combustion engine locomotive should have hot exhaust fumes directed away from the driver and persons riding on the train.

5.3 Every internal combustion engine locomotive should have hot exhaust pipes or other areas likely to cause burns to persons, adequately protected by lagging or shielding.

5.4 Every liquid fuelled locomotive should have adequate precautions to deflect fuel spillage away from dangerous areas like exhaust pipes and batteries.

6 CARRIAGES- Passenger Carrying

6.1 Carriages shall be fitted with adequate strength couplings and safety chains.

6.2 Draw gear may be sprung and carriages should be coupled together using solid bar type couplings. Screw link couplings correctly buffered should be permitted, but loose link couplings should not be used.

6.3 Automatic couplings of the knuckle type may be permitted but safety chains shall be fitted as they are notorious for parting. Automatic type couplings should not be used between the driver and the locomotive.

6.4 Carriages should have some means to prevent passenger contact with track and or running equipment. Full length foot boards with end boards/barriers to ensure passengers place their feet on the carriage on which they ride may be required. Handrails or boards 100mm to 150mm high above the seat at each end of the carriage should be provided. Full length valances should be fitted where required, extending down from the seat board to the foot boards. Spaces between carriages should be kept to a minimum and where practical should be covered to prevent hand contact with the track or running gear.

6.5 Effective brakes should be working on at least a third of the carriages in a train. (See clause 8.3)

7 CARRIAGES- Driving Trolley

7.1 Driving trolleys should be fitted with effective brakes and couplings and safety chains **shall** be fitted to guard against the locomotive being separated from the driver.

8 OPERATING PROCEDURES

8.1 The Operator

8.1.0 Is responsible for the safe working and should not be less than 18 years of age.

8.1.1 Each society should be responsible to ensure the operator is competent to be in charge of the society's activity of the day.

8.1.2 Should appoint assistants to ensure smooth and safe operation of the society's activities of the day.

8.1.3 Should be in such a position so as to be able to supervise the operation at all times.

8.1.4 Should not allow passengers to mount, board, or leave a train while it is still moving.

8.1.5 Should ensure track, line side fixtures, rolling stock, coupling are inspected and satisfy him/herself that all components are safe to operate.

8.1.6 Should not allow trains to operate until any defect found is rectified.

8.1.7 Should not allow passengers to ride who are visibly ill under the influence of alcohol or drugs and cannot be safely seated.

8.1.8 Should stop the train immediately if any passenger is observed tampering with coupling, brakes, or is behaving dangerously such as standing up.

8.1.9 Should not start or operate trains while any member of the society or public is in an endangered or unsafe position on the train or track.

8.1.10 Should be aware of procedures to assist ill or injured passengers.

8.1.11 Remove from service any train being operated in an inconsiderate or dangerous manner.

8.2 Each society should compile a manual of safe working rules and general instructions for its operator.

8.3 Trains carrying members of the public should have a minimum of one (1) carriage in three (3) fitted with an effective brake. Such brakes to be under the control of the driver and/or guard.

8.4 Where trains are fitted continuous braking systems it should also be capable of being operated by the guard.

8.5 A guard shall ride on the last carriage of a train consisting of four (4) or more carriages. The guard shall have clear view of the entire train and have communication with the locomotive driver.

8.6 Where two or more individually braked carriages are in a train they should be manned by a guard or assistant guard/s.

8.7 Light engines operating during passenger carrying sessions should be fitted with effective brakes.

8.8 Societies should be responsible for initiating adequate safe working procedures for trains on their system.

8.9 Societies shall be responsible to ensure that an adequate number of assistants to assist the operator are present to carry out safe working procedures.

8.10 Speed of Operation

8.10.1 Maximum operating speed shall be as specified by the MEANZ Safety Auditor or an Inspecting Engineer and arrived at in consultation with senior and experienced members of the society and will be governed by the gauge, ruling gradients, radii of curves plus any line side restrictions that may apply to the individual systems. The **Maximum** permitted speed of a Hobby Club Miniature Railway is 15kph. (WORKSAFE NZ).

8.10.2 Trains used for passenger hauling shall be fitted with speedometers, either fitted to the locomotive or the drivers ride car and be visible to the driver during track running.

8.11 Unattended locomotives should have brakes applied, or be suitably sprung, and where practical, be placed in neutral or mid-gear and have cylinder drains opened and the cut off device activated in the case of a non-steam locomotive to prevent accidental or unauthorized movement when unattended.

8.12 Refuelling of liquid fuelled locomotives shall be carried out in a non-hazardous location, remote from the public.

8.13 First aid and firefighting equipment shall be readily available on site.

8.14 Adequate means should be used to prevent sparks from locomotives, by using selected screened and washed coal and or spark arresters.

8.15 Track inspections should be made during passenger carrying activities to minimise risk of an accident due to foreign matter being placed or dropped on the track and or train.

9 TRACKS, RAILS, LINE SIDE FIXTURES

9.1 Tracks should consist of suitable section rails laid on and securely fixed to longitudinal sleepers, traverse sleepers or framework members.

9.2 Tracks should contain gauge sleepers at consistent intervals to prevent the rail from springing over gauge. The spacing will be less than one (1) metre.

9.3 Rails should be joined at their ends by welding or by fish plates with at least two (2) bolts through each rail or other acceptable bolting methods.

9.4 Rails should be fixed to their supports so they are effectively maintained in their position.

9.5 Sleepers, where used should be properly bedded on well consolidated metal screenings or other suitable non compressible material.

9.6 In the case of elevated miniature railways, tracks should be so fastened to the support structure so as to maintain an even alignment. Anti-tip members should be fitted if required to prevent trolley valances springing on the columns in derailing or tipping incidents.

9.7 Curves should have transition sections at each end to ease vehicles between tangent and curve of the normal radius.

9.8 Line side fixtures, fences, electrical wiring, water services, buildings and fittings shall comply with NZ Standards or Local Authority requirements as required.

10 PORTABLE MINIATURE RAILWAY

10.1 Portable Miniature Railways operated by member societies will need to be registered as an Amusement Device with Worksafe NZ as a separate device to their fixed miniature railway.

11 WHISTLE CODES

11.1 Start: 1 Long, green flag or light.

11.2 Setback 2 Short.

11.3 Stop 3 Short, red flag or light.

12 REVISION

12.1 Revisions of this manual will be issued as necessary (MAP 9), following consultation by MEANZ.

13 DRIVER LICENCING

13.1 Societies come under the driver licensing system in these MAPs. Societies should introduce a driver licensing system under the MEANZ system.

13.2 Minimum Diver age

The minimum age of drivers for public operation at a MEANZ affiliated club is defined in Table 1. Individual club's rules may be more stringent than the MEANZ minimum age.

MEANZ recognises the need to encourage young people to participate in the hobby, gain enjoyment from and experience in operating models. This must be tempered providing an appropriate level of supervision, taking into account the aptitude of the young person, the complexity of the locomotive/or miniature road vehicle and the operation. In all cases the assessment must conservatively consider risk to others operating in the environment and the public, which is to be as low as reasonably practicable.

Table 1: Minimum driver age Matrix

	Club open for normal public passenger rides	Club event for members only & club not open to the public. Other Trains running/ vehicles operating	One train operation, private event on club grounds e.g., family running models & club not open to the public.
Fully licensed driver, 15 years and above	U	U	U
*Trainee driver, 15 years and above	DS	U1	U1
*Trainee Driver, 12 - 15 years	DS	U1	U1
*Trainee Driver, < 12 years	DSNP	DS	IS

NOTES:

* Person in charge of the locomotive/vehicle must take into account the aptitude of the young person and the complexity of its operation when deciding on the appropriate level of supervision, and may choose to apply a higher level of supervision than these minimum recommendations.

U = May operate towing public passengers unsupervised

U1 = May operate towing other members/family passengers unsupervised

DS = Must have supervision, i.e. the supervisor is riding on train directly behind driver.

DSNP = Must have direct supervision, i.e. the supervisor is riding on train directly behind driver, and must not carry public passengers.

IS = Indirect supervision – supervisor must be able to see majority of track and may supervise from fixed position.

14 CONCLUSION

14.1 Where this manual of safety does not directly apply to a societies operation the society should prepare and issue a manual of safety with the additional requirements.

14.2 Reports of accidents to members and public alike should be recorded in a log book, which could be kept in or near the first aid cabinet.

14.3 Injury accidents should be reported to MEANZ and/or Worksafe NZ if called for.

APPENDIX

A1 COUPLINGS

A1.1 Minimum draw bar clevis pin sizes should be:

A1.1.1 Up to small 89mm gauge engines 4mm dia.

A1.1.2 Larger 89mm & 127 mm gauge engines 6mm dia.

A1.1.3 185mm gauge engines, 10mm dia.

A1.1.4 Safety chains adequate to carry the load.

A1.2 Coupling heights for Passenger Ride Cars should be as in the accompanying chart A6.

A2 WHEELS

A2.1 Wheel profile and gauge standards should be as in the accompanying chart A6.

A3 DRIVER LICENCE RECOMMENDATIONS

A3.1 Class 1. Allowed to operate a locomotive by him/herself.

A3.2 Class 2. Allowed to haul passengers but with a class 3 driver riding immediately behind the driver for supervision except when operating on small tracks the class 3 driver may be within the trackside perimeter.

A3.3 Class 3. Full licence allowed to haul all classes of traffic and to instruct others.

A3.4 To initiate the licence system the `grandfather` approach to be applied to existing drivers, the society allocating grades as considered appropriate.

A4 SUGGESTED DRIVER TRAINING REGIME

A4.1 Class 1

A minimum of five (5) hours experience under the supervision of a class 2 or 3 driver, over a period of 3 to 6 months.

A4.2 Class 2

A minimum of ten (10) hours experience under supervision of a class 3 driver over a period of 6 to 12 months.

A4.3 Class 3

Open certificate. Each candidate for class 1, (2 and 3) must be a minimum of 16 years meet the minimum driver age of age and also have driven while holding a class 2 licence.

A4.4 It will be the responsibility of the member society to arrange an examination system and to issue the appropriate class of licence to their members.

A4.4.1 An examiner may ask all or any of the questions set. A candidate may be re-examined between each category.

A4.4.2 Each class of licence is issued at the discretion of the examiner.

A4.4.3 The final examination (class 3) is oral with minimum of 30 minutes practical driving under Public Passenger Hauling conditions.

A4.4.4 It will be the responsibility of the member society to endorse the licence with the appropriate classification of the equipment upon which the applicant was examined, e.g. Steam, Motor, Electric etc.

A4.4.5 A licence may be cancelled at the discretion of the issuing society.

A5 INSURANCE CLAIM INCIDENTS

A5.1 In the event of an incident.

A5.1.1 Do not admit any liability until an incident investigation is complete.

A5.1.2 Obtain name and addresses of injured party.

A5.1.3 Obtain a statement and names and addresses of any witnesses.

A5.1.4 Obtain statement from driver, guard, station staff etc. involved.

A5.1.5 Complete incident form and forward as required with copy to MEANZ.

A5.1.6 If injured person requests details of societies insurance. **Do not provide** any details except the name and address of the society. Any enquiries to be made in writing to the secretary.

A5.1.7 In the event that the incident is further pursued in writing to the society, the society will then have to inform their insurance company (if they have one).

