

MEANZ MANUAL of OPERATING PROCEDURES

For MINIATURE RAILWAYS

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Preface

This manual has been compiled by the Model Engineering Association of New Zealand for the guidance of Incorporated Societies that are members of MEANZ. The Association and its Member Societies recognise their obligations to provide a safe environment for visiting public and members alike during operating sessions at various locations throughout New Zealand.

1. GENERAL

1.1 Scope.

1.1.1 This manual is intended to cover minimum safe operating requirements of member societies operating miniature railways of gauges up to 185mm (7¼”) and other miniature steam or ride

equipment operated as a non-profit, hobby operation.

1.1.2 This manual is based upon general operating procedures as carried out by societies in NZ over many years.

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 operate their equipment safely throughout NZ.

1.3 DEFINITIONS

1.3.1 Operators: shall be defined as the person who is considered competent and is “In Charge 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.

1.3.3 Copies of these records should be kept, in either hard copy or electronic form in case of loss, fire or theft.

2 REGISTRATION, RECORDS & Safety Audit

2.1 Societies, as members of MEANZ will have their tracks registered with Worksafenz as Passenger carrying miniature railways operating on a track gauge up to 185mm (7¼”) and shall be subject to MEANZ Safety Audit.

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

2.3 Society owned equipment shall be recorded, maintained and inspected by the appropriate officer of the society.

2.4 Privately owned equipment will be recorded by the appropriate officer and it will be the responsibility of the

owner to arrange suitable maintenance and inspection for the equipment.

2.5 The records shall give details of owner, identification and general description, boiler number if applicable, plus a photo if a locomotive, and the owner, identification information and load capacity of passenger vehicles.

2.6 The records should be available for inspection as required.

2.7 Where the locomotive is sold, or the owner changes society membership, a copy of its records 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.

3.1 Every locomotive should be fitted with adequate couplings between engine and tender and/or driving trolley, suitable for the towing capacity and giving consideration to the scale and gauge.

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

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

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

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

4. LOCOMOTIVES – Steam

4.1 Every steam locomotive shall have a current boiler certificate to regulatory requirements. (AMBSC Codes 1 & 2) or any subsequent code as adopted by MEANZ.

4.2 Every steam locomotive should have, where practical, spark arrestors 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 other persons. Side discharge of cylinder cocks is to be discouraged.

5. LOCOMOTIVES – Non Steam

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

5.2 Every internal combustion engine locomotive shall have the exhaust fumes directed away from the driver and passengers.

5.3 Every internal combustion engine locomotive shall 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 shall have adequate precautions to deflect fuel spillage away from dangerous areas such as exhaust pipes and batteries.

6. CARRIAGES – passenger carrying ride-on wagons.

6.1 All ride-on wagons shall be fitted with adequate strength couplings. Safety chains shall also be fitted between all cars in a consist i.e. loco, drivers car and ride-on wagons.

6.2 Draw gear may be sprung and carriages should be coupled together

using solid bar type couplings. Screw link couplings correctly buffered are permitted but loose link couplings should not be used.

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

6.4 Ride-on wagons 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 wagon on which they ride will be required. Hand rails 100 – 150mm 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 wagons 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 $\frac{1}{3}$ rd of the ride-on wagons in a train. (see clause 8.3)

7. CARRIAGES – Driving Trolley

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

8. OPERATOR

8.1.0 The person who is responsible for the safe working of the railway and should not be less than 18 years of age.

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

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

8.1.3 Should be in such a position 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 in motion.

8.1.5 Should ensure, track, line side fixtures, ride-on wagons, couplings etc are inspected prior to use on a running day and that all components are safe to operate.

8.1.6 Should not allow trains to run until any defects found are rectified.

8.1.7 Should not allow passengers who are visibly affected by alcohol or drugs and cannot be safely seated.

8.1.8 Should stop a train immediately if any passenger is observed tampering with couplings, brakes, or is behaving in a manner that could cause harm to, or place in danger, the other passengers.

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.

8.2 Each society shall compile a manual of Safe Operating Rules and General Instructions for its operator and members.

8.3 Trains carrying members of the public should have a minimum of one (1) ride-on wagon 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 with continuous braking systems, it should

also be capable of being operated by the guard.

8.5 A guard should ride on the last wagon of a train consisting of three (3) or more ride-on wagons, or if requested by the driver.

8.6 Where two or more individually braked ride-on wagons are in a train, they must be manned by a guard or assistant guard(s).

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

8.8 Societies shall be responsible for initiating safe working practices and procedures for trains on their systems.

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

8.10 Maximum operating speed shall be specified and arrived at in consultation with senior and experienced members of the society. This maximum speed will be governed by the gauge, ruling gradients, radii of curves plus any lineside restrictions that may apply to the individual systems. A normal maximum speed of 10kph is recommended.

8.11 Unattended locos should have brakes applied, or be suitably spragged, and where practical, be placed in neutral or midgear and have cylinder drain cocks opened and the cut-off device activated, to prevent accidental or unauthorised movement when unattended.

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

8.13 First Aid and Fire Fighting 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 arrestors.

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 or train. Drivers must be vigilant at all times for obstructions in the track ahead.

9. TRACKS RAILS LINESIDE FIXTURES

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

9.2 Tracks should contain gauge sleepers at consistent intervals to prevent rails 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 fishplates with at least two (2) bolts through each rail or other acceptable bolting methods. Consideration should be made for expansion joints in tracks subject to high temperatures.

9.4 Rails shall 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 as to maintain an even alignment. Anti-tip rails should be fitted if required to prevent ride-on wagon valances hitting the structure supports in derailing or tipping incidents.

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

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

9.9 Where clearances cannot comply with acceptable requirements, then speed of passing through such areas should be as determined by the society safety committee.

10. PORTABLE MINIATURE RAILWAY

10.1 For societies wishing to operate Portable Miniature Railways, it will be necessary for the society to comply with the Amended Amusement Device Regulations 1978 as these tracks operate under similar circumstances to commercial rides.

11. WHISTLE CODES

11.1 Start: 1 long, green flag or light.

11.2 Set back: 2 short.

11.3 Stop: 3 short, red flag or light.

12. REVISION

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

13. DRIVER LICENCING

13.1 Societies shall have in place, a driver licensing system suitable to their operation.

(see Appendix A3)

14. CONCLUSION

14.1 Where this manual of safety does not directly apply to a member society's operations, the society shall prepare and issue a manual of safety with the additional necessary requirements.

14.2 Reports of Incidents and Accidents to members and the public must be recorded in a log book which should be kept in or near the 1st Aid Cabinet.

14.3 Injury Accidents should be reported to WorksafeNZ and MEANZ within 48 hours of the incident.

(see Appendix A6)

APPENDIX

A1. COUPLINGS

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

A1.1.1 Up to small 89mm gauge engines - 4mmØ

A1.1.2 larger 89mm and 127mm gauge engines - 6mmØ

A1.1.3 185mm gauge engines - 10mmØ

A1.1.4 Safety chains adequate to carry the load if required.

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

A2. WHEELS

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

A3. DRIVERS LICENCE RECOMMENDATIONS

A3.1 Class 1. Allowed to operate an I.C, or Battery powered or live steam locomotive/ road engine by themselves.

A3.2 Class 2. Allowed to operate an I.C, Battery powered or live steam locomotive/ road engine and to haul passengers under supervision.

A3.3 Class 3. Full licence. Allowed to drive all classes of Locomotive/ road engine and to instruct others.

A4. SUGGESTED DRIVER TRAINING REGIME.

A4.1 Class 1.

A minimum of five (5) hours instruction and experience under supervision of Class 3 driver over a period of 3 to 6 months.

A4.2 Class 2.

A minimum of ten (10) hours instruction and experience under a Class 3 Driver for a period of 6 to 12 months.

A4.3 Class 3.

Open Certificate. Each candidate for Class 3 must be a minimum of 16 years 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 min 30 minutes practical driving under Passenger hauling conditions.

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

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

A6. INCIDENTS, ACCIDENTS.

A6.1 In the event of an accident:

A6.1.1 DO NOT ADMIT LIABILITY.

A6.1.2 Obtain name and address of injured party.

A6.1.3 Obtain names and addresses of witnesses and a statement from same.

A6.1.4 Obtain statement from driver, guard, station staff etc involved.

A6.1.5 Complete Incident/ Accident Form and forward to Worksafenz and MEANZ.