



**BRISTOL SOCIETY OF MODEL &
EXPERIMENTAL ENGINEERS**

**ASHTON COURT ESTATE
MINIATURE RAILWAY**

**Miniature Locomotive Driver
Training and
Authorisation**



Issue 3 March 2016

Before commencing training, please ensure that you have read the Society's Handbook and that you have in your possession the latest issue of the Code of Practice and the Signalling Handbook.

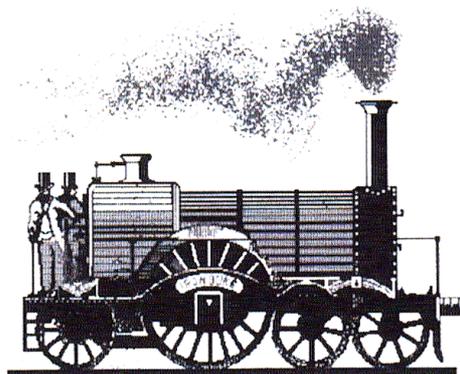


TABLE OF CONTENTS

1.	Driver training and authorisation	page 3-4
2.	Competence to drive Locomotives	page 5-6
3.	Preparing a steam locomotive	page 7-8
4.	Driving a miniature steam Locomotive	page 9-10
5.	Disposal and cleaning	page 11
6.	Dealing with emergencies	page 12

SECTION I.

DRIVER TRAINING AND AUTHORISATION

Authority to drive is divided into 2 classes.

Class 1.

Covers Steam, IC and Electric Locomotives up to and including 7 ¼ “ gauge.

Class 2.

Covers IC and Electric Locomotives only up to and including 7 ¼ “ gauge.

New drivers are required to take a ‘Test of Competence’. The basis of the test will be to demonstrate the ability to prepare a locomotive, drive with regard to signals, conclude safely and have a good knowledge of the current Code of Practice and relevant sections of the BSMEE Handbook.

In addition to the above, the test for a class I licence shall include the ability to keep a steam engine working safely, keep it on the move without stopping to use the blower, bring the engine to a halt within a reasonable distance, finishing with the steam engine and demonstrate a good working knowledge of the requirements for the disposal and cleaning of the locomotive.

Note!

Only authorised persons over the age of sixteen years are permitted to drive during public running days.

SECTION I Continued.

DRIVER TRAINING AND AUTHORISATION

Trainee drivers are required to select their own tutor and undertake a course of instruction as applicable to their present level of competence. The tutor must be an authorised driver over the age of sixteen and in possession of a Class I Driving Authorisation Card. Trainee drivers must be accompanied by their tutor and may not drive without supervision until they have passed their test. Training will take place at the discretion of the railway management and shall NOT be undertaken at times of passenger carrying or during track maintenance.

Between the ages of twelve and sixteen inclusive, any applicant who is a member of the society may receive training. However, upon passing their test they will be issued with a Driving Authorisation Card, endorsed 'Not valid for public carrying'. This restriction will be removed by application to the issuing authority, on or after the members sixteenth birthday.

All members wishing to drive a locomotive on any occasion at Ashton Court Estate Miniature Railway are required to have 'Authority to Drive' unless undergoing training.

SECTION 2.

COMPETENCE TO DRIVE STEAM LOCOMOTIVES

To obtain authorisation to drive a locomotive without supervision on Ashton Court Estate Miniature Railway, members must prove their competence as detailed below to an experienced and authorised BSME driver.

2. 1 Move engine (with help if required) on to a suitable steaming bay.
2. 2 Prepare engine for running; i.e. water, fuel, lubrication, loco checks and the raising of steam.
2. 3 Obtain permission to take the locomotive on to the main line, using traverser, turntable or points.
2. 4 Couple the locomotive to its train.
2. 5 Drive train away, making a number of non-stop circuits of the track and firing on the move as necessary.
2. 6 On instruction from the examiner carry out an emergency stop. It is the responsibility of the examiner to ensure that it is safe to conduct an emergency stop.
2. 7 Stop train at the station platform with engine ready to move off again.
2. 8 Reverse train a few yards and return to the platform.
2. 9 Drive to traverser, turntable or points, uncouple the engine and move it to a steaming bay. Drop the fire and dispose engine ready for removal from site.

SECTION 2 Continued.

COMPETENCE TO DRIVE STEAM LOCOMOTIVES

- 2. 10 Show a complete knowledge of the signalling system and points operation on all tracks at the railway.
- 2. 11 Have a good knowledge of the current 'Code of Practice'.
- 2. 12 Demonstrate a knowledge of how to deal with emergency situations.
- 2. 13 Have a general knowledge of the site facilities and services e.g. water, coal, electrics etc.
- 2. 14 With respect to Class 2 Authorisation the above requirements apply, as applicable, but without the items specific to steam engines.

Note for tutors & examiners:

With respect to the above points, common sense must prevail at all times.

Take into account the locomotive being used, it may not have the capacity to complete several circuits of the track non-stop, but should be capable of completing at least one circuit without stopping.

When completely satisfied that the trainee driver is competent and safe, a completed application form shall be presented to the Railway Manager, so that a Driving Authorisation Card can be issued and the new driver's name be registered.

SECTION 3.

PREPARING A STEAM LOCOMOTIVE

3. 1 Check the engine has a current boiler certificate.
3. 2 Ensure there is sufficient water in the boiler and the level can clearly be seen in the gauge glass.
3. 3 Check that the smoke-box, tubes and fire-box are clean, the ash-pan and grate are secure and in the correct position.
3. 4 Whilst examining smoke-box and firebox, check for any evidence of steam leaks from the boiler, such as leaking tubes, stays, joints, superheater(s) and fusible plugs. Also check for leaks on the boiler exterior and fittings.
3. 5 Check the smoke-box door is tightly shut.
3. 6 Fill water tanks with water and ensure there is enough coal in the bunker.
3. 7 Lubricate the valve gear, axle-boxes, etc (known as oiling round) and fill the cylinder lubricator with steam oil, making sure oil does not get on the wheels or track.
3. 8 Check the engine is in full working order. This should include checks on the running gear and motion, buffer beams, drawbars, couplings and brake gear. Look for any loose or missing nuts, bolts, motion pins, split pins, taper pins or cotters. Check the operation of the cab controls (reverser, regulator, draincocks, handbrake, etc).

SECTION 3 Continued.

PREPARING A STEAM LOCOMOTIVE

3. 9 Light the fire using wood/charcoal/paraffin. Build up to a good coal fire by use of an electric blower, then switch to the engine's steam blower once pressure has risen sufficiently.
3. 10 When the engine is to be steamed, or left in steam, ensure the reverser is in mid-gear, drain-cocks are open, hand brake is on and the regulator along with all steam valves are closed. On no account are mains blowers (240v) or petrol to be used for lighting fires.
3. 11 Check the water gauge frequently during lighting up and while running, examiners will want to see this done. The water level must be kept well up in the gauge glass.
3. 12 Check all valves/gauges and water feeds and make sure they are working. The axle-pump will require checking when the engine is on the move. The gauge glass(es) should be blown down when steam is first raised and then periodically throughout the day.
3. 13 Test the safety valves to ensure they lift at the correct pressure and that they reseat when the pressure falls.
3. 14 Good steam pressure and water level along with a good fire will indicate when the locomotive is ready for use.
3. 15 With the engine ready, obtain permission to go to the main line.
3. 16 Ensure you have completed the running register as required.

SECTION 4.

DRIVING A MINIATURE STEAM LOCOMOTIVE

4. 1 Using the traverser/ turntable move engine to main line and couple train. It is the driver's responsibility to ensure all couplings and safety chains (if fitted) are secure and in place. It is recommended that everyone use eye protection while driving a steam locomotive.
4. 2 When ready, check for approaching trains, ensure signals are set to give your train right of way. Drive off with drain cocks open, when cylinders are clear of water close the drain cocks.
4. 3 Check brakes are adequate and when on the move that any mechanical feed pump is working. Keep a watchful eye on the water gauge at all times.
4. 4 Keep a watch for hazards, do not get close to the train in front, leave enough distance to stop safely, keep within line of sight. Look out for walkers, dogs, debris etc.
4. 5 Obey all signals and be prepared to stop at any adverse signal or a signal by an authorised person.
4. 6 Observe the current speed limit and be aware of your passengers, particularly children. Stop if necessary and look out for following trains.
4. 7 Do not move within the station area until cleared to do so by Station Staff.

SECTION 4 Continued.

DRIVING A MINIATURE STEAM LOCOMOTIVE

4. 8 When driving ensure there is an adequate level of water in the gauge glass. Do not let the level get low or too high. If the latter open cylinder drain cocks and turn off water feed. Keep a good fire going to ensure steam pressure is maintained.
4. 9 When in station use the blower valve to maintain steam pressure. Refuel and water in the station, not in the steaming bays, as this would hold up other passenger trains.
4. 10 Petrol and LPG engines must take on fuel well away from the station area, steaming bays and buildings. Trains so refuelling must not carry passengers.
4. 11 Check the operation of the cylinder lubricator at intervals throughout the day. The oil level in mechanical lubricators can generally be checked whilst stopped in the station, ensure the oil level drops as more laps of the track are completed. Oil delivery from hydrostatic lubricators should be checked by observing drops of oil passing through the sight feed glass(es).
4. 12 A film of oil around the chimney top is a good indication that cylinder lubrication is working correctly.
4. 13 If running for an extended period of time, further lubrication of the motion and running gear will probably be required. This may be carried out in the station if time allows, alternatively a return to the steaming bays may be necessary to oil round.
4. 14 Please give notice to Operating Staff when you wish to go on shed. Return to the steaming bays leaving the main line free of obstructions and signals set to clear.

SECTION 5.

DISPOSAL AND CLEANING

5. 1 On returning to steaming bay, check engine is safe, water in boiler, in mid gear, drain cocks open and brakes on. Drop the grate and ensure fire is out.
5. 2 When the fire is out blow down the boiler, make sure no one is in the adjacent area, as there is a risk that bystanders could be injured.
5. 3 Drain water tanks, clean and lubricate working parts. Check the engine is mechanically sound and ready for the next run.
5. 4 When finished, clean the steaming bay area and pick up ashes, wood etc. and clear away any items used.
5. 5 Ensure the running register has been completed showing name of driver, name of locomotive, gauge and time on and off.
5. 6 When the locomotive has cooled, clean out the fire box, tubes and smoke box. The latter is most easily cleaned out by using a vacuum cleaner. It is recommended that this activity is done prior to final storage of the loco.

SECTION 6.

DEALING WITH EMERGENCIES

6. 1 If the driver rides on or behind the tender it is recommended that a safety chain be fitted between the engine and tender or between the tender and the vehicle carrying the driver. (See BSMEE handbook section 5.7).
6. 2 If the water gauge glass breaks while the engine is in steam, take immediate action. Always carry a piece of rag which can be used to cover the escape of steam and water. If possible shut off the gauge, drop the grate and put out the fire. You can also block up the chimney with rag and turn the blower on full. Fill the boiler with water by use of the injector or hand pump and take the engine to the steaming bay.
6. 3 If a locomotive de-rails or tips over, immediately extinguish the fire and pump water into the boiler.
6. 4 If an adequate water level cannot be maintained in the boiler (e.g. due to failure of the water feed arrangements) the grate should immediately be dropped and the fire put out. If the grate cannot be dropped, the fire should be extinguished by other means (see 6. 2 above).
6. 5 If a locomotive breaks down or stops on the main line for any reason, it is imperative that following traffic is warned. If the attention of a member cannot be achieved a passenger should be asked to go back and give a warning.

This booklet has been compiled to help members of the Bristol Society of Model & Experimental Engineers pass a test of competence which will allow them to drive locomotives at the Ashton Court Miniature Railway.



After passing the test, which will be conducted by an approved and experienced member of the society, the applicant will be issued with Authorisation to Drive locomotives of the appropriate class carrying passengers on Public Running days.