COP0018
Issue 6
July 2020

Code of Practice for Rail Mounted Manually Propelled Equipment

M&EE Networking Group
Document revision history

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Reason for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Sep 11</td>
<td>Reference to specific trolleys removed and entire document reverted to general requirements</td>
</tr>
<tr>
<td>5</td>
<td>Mar 14</td>
<td>Made applicable to all infrastructure managers and more detailed requirements for pre use brake tests added to 1.2.3.</td>
</tr>
<tr>
<td>6</td>
<td>July 20</td>
<td>Restructure of the document, maintenance now a new section, Rule book reference changed to Infrastructure managers rules, Min of 2 persons required for pushing and removal of type testing appendix B</td>
</tr>
</tbody>
</table>

Background

A sub-group of the M&EE Networking Group have looked at the arrangements for the use of rail mounted manually propelled equipment. The M&EE Networking Group recommend this COP as good practice for the industry.

M&EE COPs are produced for the benefit of any industry partner who wishes to follow the good practice on any railway infrastructure. Where an infrastructure manager has mandated their own comparable requirements, the more onerous requirements should be followed as a minimum for work on their managed infrastructure.

The M&EE Networking Group makes no warranties, express or implied, that compliance with this document is sufficient on its own to ensure safe systems of work or operation. Users are reminded of their own duties under health and safety legislation.

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The M&EE Networking Group agreed and signed off this Code of Practice on 15 July 2020 and published on 5 September 2020

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Purpose
This Code of Practice details the use and some aspects of the design and maintenance of rail mounted manually propelled equipment to prevent uncontrolled movements.

Scope
This Code of Practice concerns all in service and new rail mounted manually propelled equipment.

For the purpose of this document, rail mounted manually propelled equipment can be divided into two main groups, those that can carry loads and those that cannot. Equipment which is not load carrying are normally items of plant and equipment with more than two rail wheels, for example:

- sleeper drills,
- coach screwing equipment,
- rail grinders,
- track geometry measurement equipment,
- rail clipping equipment.

(This list is not exhaustive)
1 General Requirements

1.1 Design

1.1.1 All rail mounted manually propelled equipment should be accepted for use by the respective infrastructure manager.

1.1.2 All rail mounted manually propelled equipment should be subject to maintenance, which in addition to the manufacturer's recommendations and company instructions should also achieve the requirements contained in this document.

1.1.3 All rail mounted manually propelled equipment should be fitted with fail safe operational brakes. The design is such that the rail mounted manually propelled equipment cannot be placed in an un-braked condition during set-up or use.

1.1.4 Where the design of brake relies on a pin to lock the wheel there should be proof that the equipment can be stopped during runaway and that the maintenance frequency is sufficient to cover potential use of the brake.

1.1.5 Relevant brake tests for both maintenance and pre use checks are documented in the maintenance and operating instructions as appropriate.

1.1.6 All rail mounted manually propelled equipment should meet the stopping distances stated in BS EN 13977:2011 (section 5.4).

1.2 Planning / Pre use checks

1.2.1 During planning, equipment should be checked it has the respective infrastructure managers approval, any equipment that does not have approval should not be used.

1.2.2 Check that each part of the rail mounted manually propelled equipment is labelled with unique identification, owner's name and contact details, where applicable the maximum uniformly distributed load (UDL) and that the maintenance brake test has not expired. If not compliant then do not use.

1.2.3 Each item of rail mounted manually propelled equipment is to be assembled in accordance with the manufacturer's instructions (including braking lever and, where applicable, push bars and side and end boards). This should be carried out by a competent person
who has had suitable training and instruction, who should ensure that it is in good working order.

1.2.4 The user should ensure that the brakes are in full working order during each pre use check prior to the start of a shift. Except as shown in 1.2.6 this should be done on the assembled item of rail mounted manually propelled equipment before placing on the rail.

1.2.5 For items with braked wheels: the test should be done by gaining access to the wheels and turning the braked wheels using one hand, see Fig 1, the wheels must resist movement. The wearing of task specific gloves is strongly recommended and should be identified within the task specific risk assessment.

Fig 1 Pre use brake test should only be undertaken with one hand

1.2.6 For items that are braked by other than the rail wheels (e.g. by a friction pad on the rail head) the braking arrangement should be checked before the item is in a condition that it could run away if the brake were not working. This might be achieved by placing the item on one rail without the stabilising arm onto the other rail or placing the item so that the stabilising arm is not on a rail, see Fig 2. With the machine on the rail and the brake applied the machine should be checked to see that it does resist movement along the track.
Fig 2 Pre use brake test should carried out on component parts before assembly – in this example a machine without rail wheel braking is checked before assembling the rest of the machine (if the brake was ineffective the machine would fall over and not run away).

1.2.7 For items where the design should prevent unaccompanied movement (eg where a tool has to be supported in raised position to allow movement): ensure that the mechanism operates correctly.

1.2.8 If in doubt, the item of rail mounted manually propelled equipment is not to be used until it is checked by a competent maintainer. Any item of rail mounted manually propelled equipment that cannot have a pre use functional brake test without the risk of running away if the brake is unserviceable must not be used.

1.2.9 Any item of rail mounted manually propelled equipment that fails the pre use check should be withdrawn immediately from service and clearly labelled “do not use” and placed in quarantine.
1.3 Placing onto the track

1.3.1 A documented and approved safe system of work must be in place, in accordance with the infrastructure managers rules, before placing the item of rail mounted manually propelled equipment on track.

Note: The use of some rail mounted manually propelled equipment will affect the safety of the line.

1.3.2 Ensure sufficient resources are available to lift the item of rail mounted manually propelled equipment and place onto the track.

1.3.3 The item of rail mounted manually propelled equipment should be put onto the track and the brake system immediately tested as follows:

a) For items with braked wheels: a push test conducted to ensure that the braked wheels do not rotate when pushed without activating the brake, any brake lever must be in place when this test is completed.

b) For items where the design should prevent unaccompanied movement (eg where a tool has to be supported in raised position to allow movement): ensure that the tool/restraining device drops to the ballast when released under all circumstances and load.

1.3.4 If any of the braked wheels rotate or the tool/restraining device fails to drop under gravity, then the item of rail mounted manually propelled equipment should be immediately removed from the track, clearly labelled “do not use” and placed in quarantine.

1.4 Use

1.4.1 The item of rail mounted manually propelled equipment should be used in accordance with the infrastructure managers rules and the manufacturer’s instructions. Any limitations of use, such as gradient restrictions, should be adhered to at all times.

1.4.2 The rail mounted manually propelled equipment should have at least two people with it when moving, one of them must be assessed as competent to operate the brake.
1.4.3 It is essential that rail mounted manually propelled equipment should not be moved faster than walking pace ie 3 mph or 5 km/hr.

1.4.4 The method statement should consider, when using the equipment on gradients, the manpower required to control the item of rail mounted manually propelled equipment (including its intended load where applicable) up and down gradient.

Note: Currently the brake on the equipment is only a parking brake (e.g. on or off) and not designed to be used to control speed.

1.4.5 Table 1 shows the recommended number of persons required to push the item of rail mounted manually propelled equipment up a gradient. These should be taken into consideration when planning work but they are indicative values only. It is recommended that no more than three persons simultaneously push an item of manually propelled equipment, except as shown in 1.4.11 and 1.4.12.

1.4.6 Manpower numbers are based on testing with a limited number of trolleys and assuming the average man can push with both hands on firm footing a value of 30 kg to overcome the initial start and then continue to push 20 kg whilst the item of rail mounted manually propelled equipment is moving. These figures have been used to estimate required manpower (Table 1), this may not always be valid due to condition of site, state of a trolley and ability of individuals.

<table>
<thead>
<tr>
<th>Load</th>
<th>1000 kg</th>
<th>500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 in 250</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1 in 250 to 1 in 150</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1 in 150 to 1 in 70</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1 in 70 to 1 in 50</td>
<td>(4)</td>
<td>2</td>
</tr>
<tr>
<td>1 in 50 to 1 in 25*</td>
<td>(5)</td>
<td>3</td>
</tr>
</tbody>
</table>

* Where authorised by local instructions
( ) Theoretical figures, may not be physically possible to achieve

Table 1 Estimation of manpower requirement to push rail mounted manually propelled equipment

1.4.7 Personnel should not interfere with the braking mechanism. Only authorised competent maintenance staff are permitted to maintain or adjust the braking mechanism.
1.4.8 Only the correct brake handle/device should be used to operate the equipment.

1.4.9 Persons should not ride on any manually propelled equipment at any time.

1.4.10 The total weight of the uniformly distributed load of any trolley should not exceed 1000 kg.

1.4.11 Rail mounted manually propelled equipment specifically for moving lengths of rail (commonly known as “Ironmen”) are convenient to have greater number of personnel to move the item along the track because they are designed to be used in multiple and can comfortably have personnel distributed around each of them, therefore it is permitted to have greater loads on these items only.

1.4.12 Table 2 shows the recommended number of persons required to push items of rail mounted manually propelled equipment specifically for moving lengths of rail up a gradient. These should be taken into consideration when planning work but they are indicative values only.

1.4.13 Manpower requirements assume the average man can push with both hands on firm footing whilst the item of rail mounted manually propelled equipment specifically for moving lengths of rail is moving. These figures have been used to produce the table below but this may not always be valid due to condition of site, state of equipment and ability of individuals.

<table>
<thead>
<tr>
<th>Gradient</th>
<th>Load</th>
<th>4000 kg</th>
<th>3000 kg</th>
<th>2000 kg</th>
<th>1000 kg</th>
<th>500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 in 250</td>
<td>#</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1 in 250 to 1 in 150</td>
<td>#</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1 in 150 to 1 in 70</td>
<td>#</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1 in 70 to 1 in 50</td>
<td>#</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1 in 50 to 1 in 25*</td>
<td>#  (12)</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Where authorised by local instructions
# The ability to move two 60 ft lengths of rail, or longer lengths than 60ft, is very dependent on site conditions and must be specifically risk assessed for each location
( ) Theoretical figures, not recommended to use

Table 2 Estimation of manpower requirement to move manually propelled rail movement equipment
1.5 Labelling

1.5.1 In addition to the requirements of BS EN 13977, all items of rail mounted manually propelled equipment should be marked with the following information. This should be visible externally when the item of rail mounted manually propelled equipment is in use.

- Unique identification number (NB this could be different from the serial number referred to in BS EN 13977).
- Date of next maintenance brake test (or the equivalent maintenance examination for equipment that does not require brakes as shown in 1.3.3.b).
- Owner name and contact details.

2 Requirements for load carrying rail mounted manually propelled equipment - trolley

2.1 Use including loading

2.1.1 Loading should be uniformly distributed and not interfere with the brake handle. No load should overhang the sides of a trolley unless a risk assessment has been completed and any necessary protection of the adjacent line(s) has been arranged.

2.1.2 Ensure that the UDL (carrying capacity as marked on the trolley) is not exceeded.

2.1.3 If two trolleys with unlinked brakes are used to move a load then a risk assessment and documented method statement that considers all risks should be produced.

2.1.4 No load should be carried that overhangs a single trolley by more than 50% of the trolley’s deck length if overhanging at one end, and by not more than 100% of the trolley’s deck length if the overhang is equal at both ends of the trolley. If loads longer than this are required to be carried the load should be carried between two trolleys.
3 Maintenance

3.1 All items of rail mounted manually propelled equipment should be subject to maintenance by a competent maintainer, which should as a minimum meet the manufacturer’s recommendations.

3.2 Unless the manufacturer or infrastructure manager specifies different, a maintenance brake test should cover the following:

a) Remove the brake shoes and check for wear and contamination, change the brake shoe if the thickness is below the manufacturer’s recommendation. If the brake shoes are contaminated, clean or replace as necessary.

b) Turn the wheel using a suitable torque measuring device (that may be supplied by the manufacturer) to ascertain a dynamic figure of the torque required to turn the wheel with the brake applied. Testing should be done with dry wheels and shoes. These figures allow for wet running conditions to meet the braking distances stated in BS EN 13977:2011.

c) The requirements of 3.2b) are best achieved by making each braked wheel turn and taking the torque reading required to continue the movement. Readings should be taken in both directions and in all 4 quadrants around the wheel (8 readings per wheel). The average figure should not be below the minimum figures stated in the manufacturer’s instructions.

d) After testing ensure that the brakes can be released.

3.3 The maintenance brake test should be completed at a periodicity of no greater than three months. The date of the next maintenance brake test should be marked in a suitable, easily seen position, on all trolleys. On rail mounted manually propelled equipment which is in sections, the date of the next maintenance brake test should be displayed on all braked portions only.

3.4 A record of the maintenance brake test should be kept. An example of a maintenance brake test record sheet is given in appendix A.
## Appendix A

### Example maintenance brake test record sheet

<table>
<thead>
<tr>
<th>Trolley Maintenance Brake Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trolley Number / Owners Name</td>
</tr>
<tr>
<td>Trolley Type</td>
</tr>
<tr>
<td>Number of Braked wheels</td>
</tr>
<tr>
<td>Calibrated torque wrench ID no</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Quadrant 1 forward</td>
</tr>
<tr>
<td>Quadrant 2 forward</td>
</tr>
<tr>
<td>Quadrant 3 forward</td>
</tr>
<tr>
<td>Quadrant 4 forward</td>
</tr>
<tr>
<td>Quadrant 1 reverse</td>
</tr>
<tr>
<td>Quadrant 2 reverse</td>
</tr>
<tr>
<td>Quadrant 3 reverse</td>
</tr>
<tr>
<td>Quadrant 4 reverse</td>
</tr>
<tr>
<td>Average Torque figure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Tester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of Tester</td>
</tr>
<tr>
<td>Date of Test</td>
</tr>
<tr>
<td>Date of next Test</td>
</tr>
<tr>
<td>Location of Test</td>
</tr>
</tbody>
</table>

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