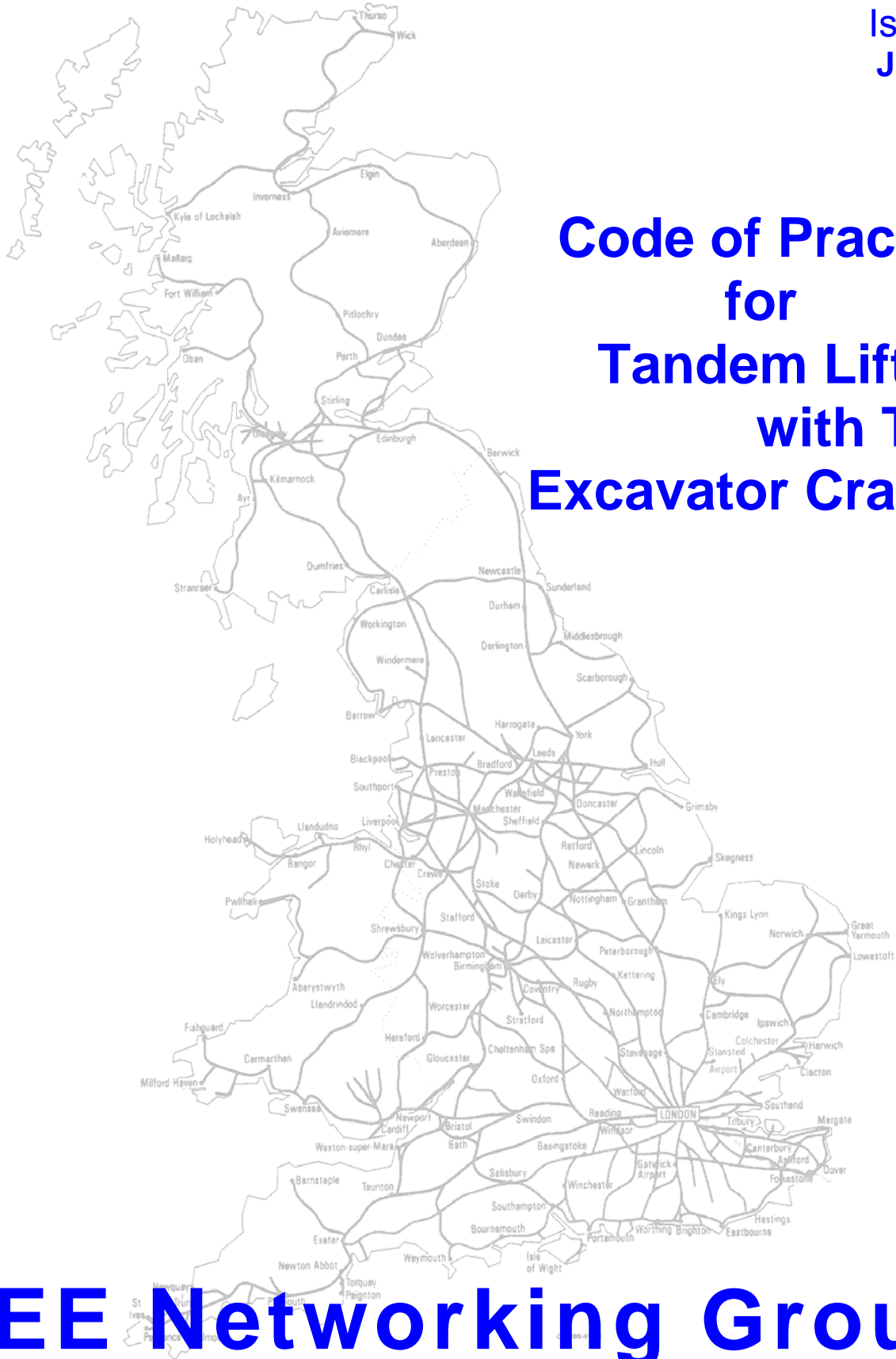


**COP0008**

Issue 2  
July 07



**Code of Practice  
for  
Tandem Lifting  
with Two  
Excavator Cranes**

**M&EE Networking Group**

## Document revision history

Issue	Date	Reason for change
1	Mar 01	First issue (now withdrawn)
2	Jul 07	Method of working with two excavator cranes researched by M&EE Technical Group and findings amalgamated in Issue 2 which has also been reviewed.

## Background

A sub-group of the M & EE Networking Group have looked at the arrangements for tandem lifting with excavator cranes and recommend the following as best practice for the Industry.

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DOCUMENT SIGNED OUTSIDE OF COMMITTEE 7 September 2007

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## Purpose

This Code of Practice details the control measures to be applied when using two excavator cranes to lift a load simultaneously.

## Scope

This Code of Practice applies to the use of two excavator cranes which normally lift loads independently but which are required to occasionally lift a load in conjunction with another similar excavator crane using a process known as Tandem Lifting. This Code of Practice applies to both road and rail lifting operations on Network Rail managed Infrastructure.

## Definitions

<b>Crawler machine</b>	A excavator crane with tracks rather than wheels
<b>Datapanel</b>	Information panel as described in Appendix C in RIS-1530-PLT
<b>Green Label</b>	Machines fitted with green labels do not have any of the orange label restrictions
<b>Orange Label</b>	A label displayed on the machine which details the restricted areas for lifting and lift and carry duties
<b>Tandem Lifting</b>	Is the lifting of a single load using two lifting machines working together under the direction of a single Crane Controller (TL).

## 1 Principles

- 1.1 The use of more than one excavator crane to lift the same load simultaneously is a potentially hazardous operation and should only be resorted to where the site conditions or physical dimensions, characteristics or weight of the load prevent it being lifted by one excavator crane. Should it be necessary to resort to tandem lifting then this Code of Practice should be followed to control the risks.
- 1.2 In order to maintain stability during tandem lifting the normal safe working load of each excavator crane for the required duty and operating radius shall be not less than the calculated share of the load to be handled by the excavator cranes during the operation plus 50%.
- eg 8 tonne load shared equally then 4 tonne per Crane + 50% means that each Crane needs a SWL of 6 tonne at the required radius.
- 1.3 When an unequal load is lifted both excavator cranes shall have the capacity at the working radius used to lift the heavier end using the principle in 1.2.
- eg 8 tonne load shared unequally 5 tonne and 3 tonne then BOTH cranes will need a SWL of 5 tonne plus 50% ie 7.5 tonne at the radius being used (see diagram 1).
- 1.4 Any lifting accessories necessary to achieve the lift must be included as part of the load calculated in 1.2 and 1.3
- 1.5 On and Off Tracking must not take place whilst Tandem Lifting.

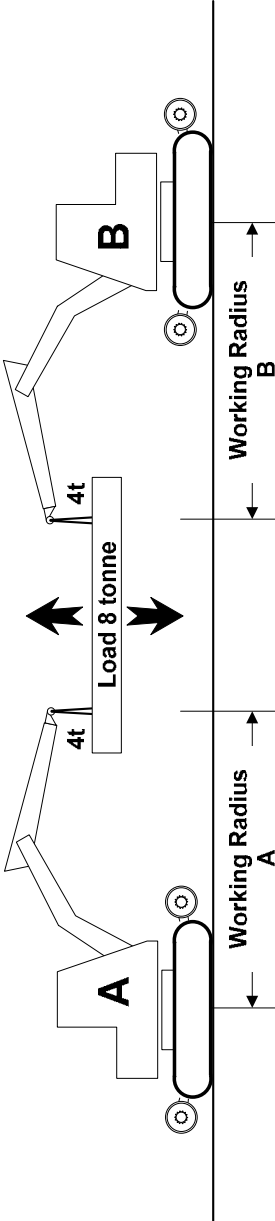
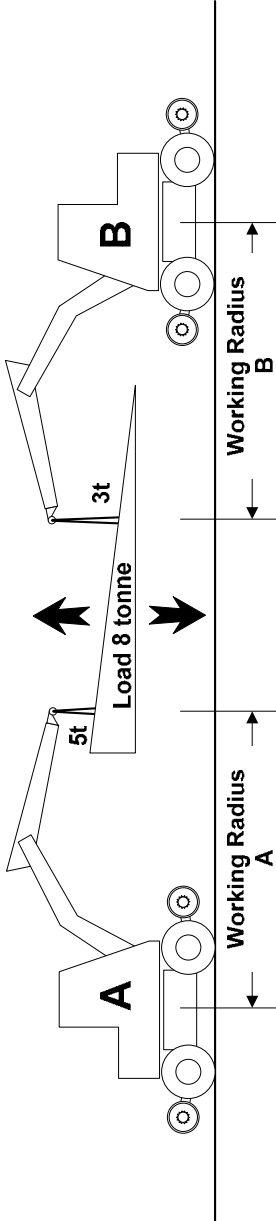
## 2 Process

### 2.1 Planning

- 2.1.1 Tandem lifting operations should always be planned (see COP0011 for guidance). A written work plan should be produced in advance by a competent (Sentinel registered) Crane Controller (TL) or Lift Planner (TL) who is conversant with this Code of Practice.
- 2.1.2 When using machines accepted to GM/RT1300 which still carry orange labels, planning of Tandem Lifting shall consider the restrictive lift and carry duties of those machines.
- Note; machines fitted with green labels or a datapanel do not have any of the orange label restrictions
- 2.1.3 Operators of excavator cranes being used to carry out the Tandem Lifting must be trained, assessed and certified competent in Tandem Lifting in accordance with M&EE COP0001 and conversant with the contents of this Code of Practice.
- 2.1.4 A thorough assessment of the proposed operation should be made and the method adopted should be such that no excavator crane being used is at any time loaded beyond its Safe Working Load following down rating as in section 1.2 and 1.3 above.
- 2.1.5 Lifting accessories planned to be used during Tandem Lifting should be capable of lifting the maximum load plus 50%.
- 2.1.6 Both excavator cranes being used to execute a Tandem Lift should have similar characteristics eg:-
- Load/radius capacity
  - Boom configuration
  - Speed of operation
- 2.1.7 Any excavator crane used for Tandem Lifting should be fitted with a rated capacity indicator with a lift and carry duty.
- 2.1.8 When machines are in road configuration and used for moving along a ballast bed consideration shall be given to uneven surface where sleepers are removed. Where practical a crawler machine should be used which mitigates against uneven ground conditions.

## **2.2 Site Working**

- 2.2.1 The Crane Controller must be trained, assessed and certified as competent in Tandem Lifting (TL) as laid down in the national machine crane controller scheme and conversant with this Code of Practice.
- 2.2.2 Where two excavator cranes are required to work together to lift the same load, the Crane Controller in overall control of the two excavator cranes must be in receipt of the previously prepared plan. The Crane Controller must have agreed the plan with the operators of the excavator cranes before any Tandem Lifting takes place.
- 2.2.3 Before any Tandem Lifting commences the Crane Controller must ensure that the operators have a clear understanding of the work to be undertaken and the communications to be used, the procedures being rehearsed where necessary.
- 2.2.4 Where the Crane Controllers signals cannot be clearly seen by both operators radio communication must be used between the Crane Controller and the operators. Only a dedicated radio frequency previously agreed by the Crane Controller and the operators should be used by the Crane Controller to give instructions to the operators. Each operator should be given a unique call sign.
- 2.2.5 The load must always be maintained vertically below the load lifting point of the excavator crane throughout the operation,

<p style="text-align: center;"><b>LIFTING AN EQUAL LOAD</b></p> 	<p><b>LOAD SHARED EQUALLY</b>  <b>4 TONNE PER CRANE</b></p> <p><b>SWL REQUIRED BY EACH CRANE IS:</b>  <b>4 TONNE + 50% = 6 TONNE</b></p> <p><b>BOTH CRANES REQUIRE A MINIMUM SWL OF 6 TONNES AT THEIR WORKING RADIUS</b></p>
<p style="text-align: center;"><b>LIFTING AN UNEQUAL LOAD</b></p> 	<p><b>LOAD SHARED UNEQUALLY</b>  <b>5 TONNE &amp; 3 TONNE</b></p> <p><b>SWL REQUIRED BY EACH CRANE IS:</b>  <b>5 TONNE + 50% = 7.5 TONNE</b></p> <p><b>BOTH CRANES REQUIRE A MINIMUM SWL OF 7.5 TONNES AT THEIR WORKING RADIUS</b>  <u>Note:</u> <b>CRANE B REQUIRES SWL OF 7.5 TONNE AT RADIUS B</b></p>
<p><b><u>Note:</u> IN BOTH EQUAL AND UNEQUAL EXAMPLES 'A' AND 'B' RADII MAY NOT BE THE SAME.</b></p>	

**Diagram 1**

## References

<b>Document</b>	<b>Title</b>
<b>BS 7121</b>	Safe Use of Cranes
<b>GE/RT8000</b>	Rule Book
<b>GM/RT 1300</b>	Engineering Acceptance of Road Rail Vehicles
<b>LOLER</b>	Lifting Operations and Lifting Equipment Regulations
<b>M&amp;EE COP0001</b>	Operator competency standards for possession only rail vehicles
<b>M&amp;EE COP0002</b>	Minimum Requirements for the planning and management of possession only rail vehicles
<b>M&amp;EE COP0011</b>	Planning and Executing Lifting Operations
<b>M&amp;EE COP 0016</b>	RRV & RMMM Machine/Crane Controller Checklists.
<b>RIS-1530-PLT</b>	Rail Industry Standard for Engineering Acceptance of Possession-only Rail Vehicles and Associated Equipment
<b>RIS-1700-PLT</b>	Rail Industry Standard for Safe Use of Plant for Infrastructure Work