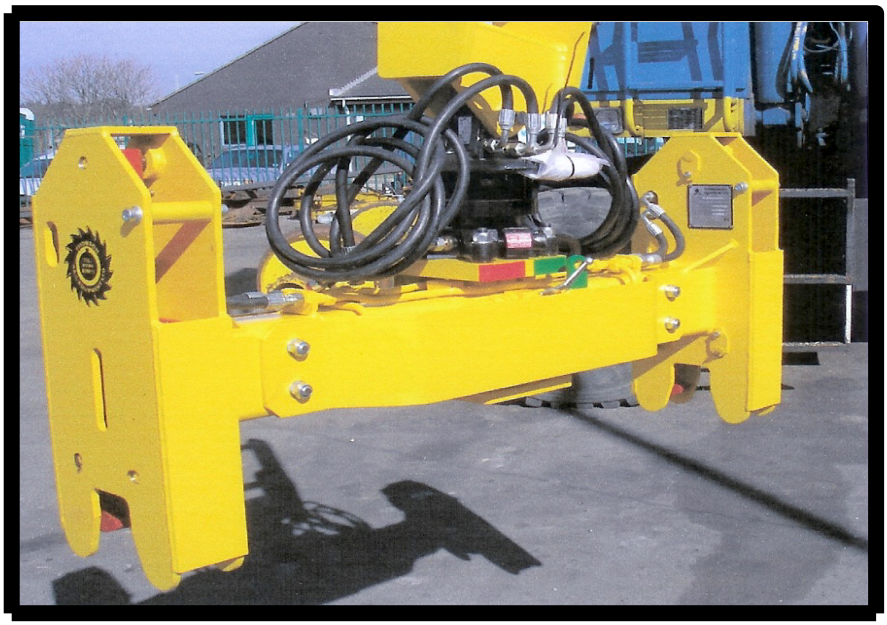
	RLB20 RAIL BEAM MAINTENANCE PLAN	**Thomson Engineering Number: TREL01 Issue: 2 Date: 24/03/2016 Type: MAINTENANCE**

MAINTENANCE PLAN

FOR

RLB20 RAIL BEAM



	RLB20 RAIL BEAM MAINTENANCE PLAN	**Thomson Engineering Number: TREL01 Issue: 2 Date: 24/03/2016 Type: MAINTENANCE**

Issued by

……..
Thomson Engineering Design Ltd

Approved By

……
PAB

Published and issued by,

Thomson Engineering Design Ltd
Valley Road
Cinderford
Gloucestershire
GL14 2NZ

	RLB20 RAIL BEAM MAINTENANCE PLAN	**Thomson Engineering Number: TREL01 Issue: 2 Date: 24/03/2016 Type: MAINTENANCE**

1 ISSUE RECORD

The document will be updated when necessary by the issue of the complete document, accompanied by revision letters. The amended or additional part of updated pages will be marked by vertical black line in the margin. Brief details of the changes undertaken shall be given.

ISSUE RECORD	DATE	PAGE(S) AFFECTED	INSERTED BY
1	**17/04/2006**	**New document**	**David Thomson**
2	**24/03/2016**	**Fully Revised**	**David Thomson**

1.1 IMPLEMENTATION

The provisions of this maintenance plan are mandatory and shall be implemented with immediate effect upon supply of equipment from Thomson Engineering Design Ltd.

1.2 DISCLAIMER

Thomson Engineering Design Ltd has used its best endeavours to ensure that the content, layout and text of this document are accurate, complete and suitable for its stated purpose. It makes no warranties, express or implied, that compliance with the contents of this document shall be sufficient to ensure safe systems of work or operation. Thomson Engineering Design Ltd will not be liable to pay compensation in respect of the content or subsequent use of this document for any purpose other than its stated purpose or for any purpose other than that for which it was prepared except where it can be shown to have acted in bad faith or there has been wilful default.

1.3 SUPPLY

Paper copies of this document will be available on request from:

Thomson Engineering Design Ltd
Valley Road
Cinderford
Gloucestershire
GL14 2NZ Telephone: 01594 826611

Any amendments or revisions should be notified in writing to:

Thomson Engineering Design Ltd
Valley Road
Cinderford
Gloucestershire
GL14 2NZ Telephone: 01594 826611

2 TABLE OF CONTENTS

3 INTRODUCTION AND GENERAL NOTES

3.1 SCOPE

This Maintenance Plan defines the work required to maintain the **RLB20 RAIL BEAM**

The frequency of the maintenance exams is detailed in the Maintenance Task Descriptions contained within section 5 of this document

3.2 USING THIS DOCUMENT

This document has been written for ease of use as much as possible. All job descriptions, given in Section 5 are fully self-contained, with no need to refer to additional lists or procedures apart from certain Reference Documents listed in Section 6. The maintenance frequencies for each type of scheduled examination are given in Section 4.

The heart of this instruction is Section 5, which contains the Job descriptions. Each description contains all the information required for that job, including exam frequency, materials and tools required. Throughout the document an * is used to indicate the exam at which each job is scheduled to be carried out.

3.3 DEFINITION OF TERMS

Within this document, any of the terms used from the following list shall be regarded as having the definition stated.

TERM	DEFINITION
CHANGE	Remove the original, and fit a new or overhauled part or assembly in its place.
CHECK	Determine a particular nominated condition before, during or after repair, e.g. completeness, security, position.
CLEAN	Remove all dirt and deposits.
DEFECT/ DEFECTIVE	Any fault or faults in a component or assembly, e.g. structural distortions or weld fractures, which may prevent the component or assembly from fulfilling its designed purpose.
DISMANTLE	Take to pieces.
EXAMINE	Determine general condition before repair, e.g. Wear, cracks, splits, leaks, scoring, corrosion, distortion, looseness, erosion, breaks.
GAUGE	Determine a nominated dimension by using suitable measuring equipment e.g. ruler, micrometer, callipers, feeler gauge or Go/No-Go gauge.
INSPECT	Determine conformity to required standards during and after repair.
LUBRICATE	Apply lubricant.
OVERHAUL	Do what is necessary to make a component re-usable, i.e. dismantle, strip, clean, examine, fit new parts, repair, re-assemble, test and inspect as required.
REASSEMBLE	Put together.
RECORD	Put down in writing the result of any specified examination, test, inspection or special checks.
RECTIFY	To set right.

REFIT	Put back and reconnect.
REMOVE	Disconnect and take off.
RENEW	Remove and scrap the original part, and provide a new specified part in its place.
REPAIR	Restore an original part to the required condition by hand tooling, machining, building up, welding, patching, bending, heat-treating, re-securing etc.
REPORT	Convey to the Maintenance Supervisor the condition of the item examined.
STRIP	Remove covering, i.e. paint, polish, fabric.
TEST	Prove correct operation by trial.

NOTE: In the job description, the phrase "Repair or Renew" means that either of the alternative actions is acceptable at the discretion of the owner.

3.4 SAFETY (maintenance)

All work carried out in the maintenance and overhaul of the **RLB20 RAIL BEAM** covered by this manual must be carried out in accordance with all applicable safety legislation and other safety procedures and practices which apply at the depot or location where the work is to be carried out. It is not the purpose of this manual to describe these safety procedures, as they differ from location to location and will change over time. It is the responsibility of each person involved in maintenance and overhaul work to be fully conversant with the applicable local safe working practices and procedures before starting work. It is also necessary that such persons' understanding of the safe working practices and procedures is checked by a Competent Person.

On completion of any maintenance, the **RLB20 RAIL BEAM** and all its systems and components must be made safe for its return to use.

The operation and maintenance of the **RLB20 RAIL BEAM** produces particular hazards, and the following minimum precautions must be taken:

- Observe all warning notices/signs
- Communicate fully at all times with all other maintenance personnel to ensure there is no conflict in duties being performed.
- Ensure you have all the necessary PPE to perform the maintenance tasks; this may include but may not be limited to High Visibility clothing, safety boots, hard hat, safety goggles, respiratory protection, personal padlocks.
- Do not search for hydraulic leaks with the system under pressure.

- Always be aware that although your particular task may be safe to perform, even without the engine running, you are in a hazardous environment of moving parts and live electrical systems.
- Ensure you know how to stop the engine in an emergency.
- Do not operate the vehicle unless you also hold a Machine Competency.
- Exhaust fumes are poisonous and can KILL.
- Clear up any spillages immediately.

3.5 CONTROL OF DEFECTS AND DEFERRED WORK

Safety critical work shall not be deferred. The safety critical components and systems relevant to the **RLB20 RAIL BEAM** are LOLER Examinations. If it is necessary to defer a non-safety critical job or repair then the nature of the defect and the reason for the deferral must be reported to the nominated company duty holder. No job may be deferred without the authorisation of this person.

The Maintenance supplier must put in place suitable systems in order to create and maintain records of service and maintenance actions in line with the owner's company standards policy.

Test and maintenance records must be kept in a suitable document retrieval system. At the time of writing this manual it is recommended that records should be kept for a minimum of seven years.

3.6 MAINTENANCE FACILITIES

Facilities at locations for maintenance must be suitable for the maintenance task to take place. The minimum engineering maintenance facilities that are necessary for the mandated examinations are defined in the table below:

FACILITY DESCRIPTION	EXAMINATION		
	A	B	C
A well lit and clean area with suitable hard standing to accommodate the placement of the host machine or Hydraulic power supply and lifting equipment necessary to operate the **RLB20 RAIL BEAM** in its working mode. There shall be sufficent room to accommodate a five metre cordon at all times around all machinery movements associated with this works	#	#	
Thomson Rail **RLB20 RAIL BEAM** Test Rig or alternative test rig suitable for holding the **RLB20 RAIL BEAM** whilst in lifting / working mode A secure cordoned area of 10 meters shall be held at all times during the test.			#

Note: # denotes facility must be available to undertake the examination concerned.

3. 7 STAFF COMPETENCY

Only authorised and skilled personnel with complete knowledge of this device shall be allowed to perform service/maintenance work on the **RLB20 RAIL BEAM**. Training in maintenance skills is available from the Thomson Engineering Design Ltd. Personnel shall be certificated in respect of Track Safety if required to maintain equipment line side. Guidelines on basic competency requirements for maintenance staff are contained in the standard issued by the Rail Plant Association London

All staff working on the **RLB20 RAIL BEAM** must also be fully conversant with the contents of this document and appropriate supporting documents before starting work on the equipment. Competency records must be kept by the maintainer in accordance with GM/RT3260.

Staff must hold the appropriate Track Safety Certification when attending to failures or carrying out maintenance on the **RLB20 RAIL BEAM** in yards or sidings where protection can be effected by the local manager. Where there is no local manager or instructions, or the site is a running line under the control of a Network Rail signaller, and then the process will be controlled by the DP process as detailed in GO/RT 8000 Master Rule Book, Module T10.

To carry out maintenance staff must be assessed as competent in the following areas:

- Mechanical fitting skills
- Fault finding on Hydraulic systems and electrical systems
- Certificated to complete LOLER testing (Six Monthly)

3.8 MATERIALS AND COMPONENTS

Suppliers of safety critical products and services must be qualified in accordance with GM/RT245.

3.9 LOCKING DEVICES

Wherever in the course of maintenance any locking devices are disturbed, the following actions must be taken:

DEVICE	ACTION
SPLIT PINS	Renew irrespective of condition
LOCK WIRE	Renew irrespective of condition
TAB WASHERS	Renew single position tab washers Multi-position tab washers shall not be used in more than two positions (subject to condition)
STIFF NUTS/SELF LOCKING NUTS	Renew irrespective of condition
LOCKING PLATES	These shall be straightened, de-burred, inspected and renewed subject to condition
FLAT AND SPRING COTTERS	Examine and renew if bent or badly scored
TAPER PINS	Examine and renew if bent or badly scored. The sawn split end type must be renewed irrespective of condition
SPRING WASHERS	Examine and renew if flattened

CASTELLATED, SLOTTED, LOCK AND THIN NUTS	Examine and renew subject to condition
NYLOC NUTS	Renew irrespective of condition

3.10 WELDING PROCEDURES

When any welding is carried out on the **RLB20 RAIL BEAM**, it is essential that return currents are prevented from passing through the following:

- Any bearings, as this can cause permanent damage to the rollers and races, making the bearing unfit for further use.
- Any electronic components or systems as this can destroy components.

No welding shall take place on any main load bearing fabrication without prior consultation with Thomson Engineering Design Ltd.

3.11 MAINTENANCE RECORDS

Sign off sheets for maintenance examinations are included in section 8 of this document. These are to be completed by the maintenance staff after every examination. The maintainer, for a minimum of seven years, will retain all maintenance and repair records.

The Maintainer shall put in place a system for inputting and interrogating **RLB20 RAIL BEAM** maintenance information, to enable safety and performance monitoring to be conducted.

4. MAINTENANCE FREQUENCIES

4.1 PRE USE INSPECTION (A&B)

This Inspection is to be carried out Daily.

4.2 SERVICE CHECKLIST (A&B)

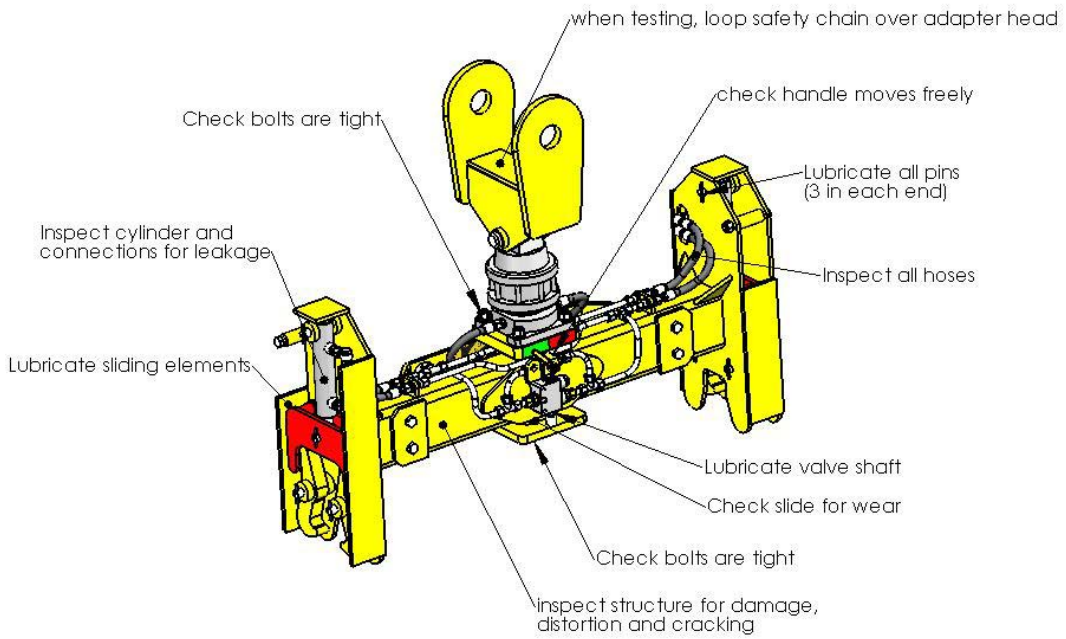
This inspection is to be carried out after initial use when the **RLB20 RAIL BEAM** reaches a time when it is disconnected from the host machine and then re connected to carry out its method of operation.

4.3 SERVICE CHECKLIST (Statutory Test C)

4.4 This inspection is to be carried out every six months, this check should be made at a workshop (in accordance with LOLER regulations).

4.5 PICTOGRAM showing maintenance and inspection areas.

Please note that some components of the beam have been removed in this illustration to aid clarity.



5. MAINTENANCE TASKS DESCRIPTIONS

FREQUENCY		
Pre Use (A&B)	**Prior to Use (or following any subsequent disconnection / re connection from the host machine)**	**Fitter/ Authorised Person**
Six Monthly (C)	**As defined by Lifting Certificate date (Six Monthly)**	**Competent Lifting and Testing Examiner / Technician**

6. SCHEDULED WORK

No	Items to be checked	Details	Material	Directions
A	**Pre Check Visual inspection**			
1	Check that all bolts and fasteners are tight.	As per RLB20 RAIL BEAM Torque Stetting List		Check
2	Check that grease nipples are fitted.	As per RLB20 RAIL BEAM Pictogram		Check
3	Grease all points.	Service	LM Grease	Lubricate
4	Raise and lower attachment head to observe correct operation of safety valve.	Safety valve plunger should move freely		Test
B	**Mechanical Checks**			
1	Set the control valve to the Red position.	As per RLB20 RAIL BEAM Pictogram		Test
2	Connect the beam to a suitable hydraulic supply. Open and close the jaws five times to purge the system of air.	Pressure range for Hydraulic supply shall be 150 to 210 bar		Operate
3	Raise the beam so that it is suspended from the attachment head	Visually inspect underneath floor of the beam for any signs of damage / cracks		Examine
4	Open and close the jaws.	Via the Hydraulic supply		Check for leakage
5	Move control valve to the Green position	As per RLB20 RAIL BEAM Pictogram		Test
6	Check that jaws cannot be worked	When the hydraulic system when the control valve is set to the Green position and the beam is		Test

		suspended		
7	Reset the control valve to the Red position	As per RLB20 RAIL BEAM Pictogram		Test
8	Close the jaws and pressurise the system for 15 seconds	Via the Hydraulic supply		Check for leakage
C	**Load Test Process**			
1	Open the jaws and place the beam into the test rig	As available from Thomson Rail		
2	Fit safety chains to designated points	As per RLB20 RAIL BEAM Pictogram		Fit
3	Close the jaws	Ensure that they clamp correctly below the head of the rail on the base of the test rig.		Check
4	Check that the jaws are fully locked	The upper locking bars are pressing on the jaw upper faces.		Check
5	Stop the hydraulic supply	Release the pressure from the supply hoses to ensure that the jaw cylinders are held by the check valves.		Check
6	Apply a lifting force of 500kg to the beam adapter head for 1 minute.	Check for hydraulic leakage from a safe distance. Stop the test if any leakage is observed or if any structural defect is observed.		Check
7	Apply a lifting force of 4000kg	Measure a two minutes and check for any leakage from a safe distance. Check for any pressure drop as per the Thomson Test Rig		Check
8	Release the lifting force from the beam	Remove the beam from the test rig.		Check
9	Visually check the beam for any signs of damage or any structural defects.	As per RLB20 RAIL BEAM Pictogram		Check
10	Record Records on TR FORM			

8. REFERENCE DOCUMENTS

Document reference Number	Title
GM/RT1310	Design Requirements and Acceptance of Portable/Transportable Infrastructure Plant and Work Equipment
BSEN 13977:2005	Railway applications – Track – Safety requirements for portable machines and trolleys for construction and maintenance

9. Technical Details

Dimensions (Main Measurements)

Length	1300mm
Width	280mm
Height	up to 1060mm depending upon configuration

Maximum Rail length to be lifted

Single	20m (60ft)
Double	20m (60ft)

Note that local regulations may limit the length which may be handled.

Weights and Capacities

Max Gross Weight	2300 kg
Tare Weight (depending upon configuration)	250 – 300 kg
Maximum SWL	2000kg
Proof Test Load	4000kg

Hydraulic System

Hydraulic Pressure	210 Bar
Hose specification	All hoses are 3/8” bore min 350bar SWP

Rotator (where fitted)

Manufacturer	Baltrotor
Model	GR465
Capacity	4500kg
Max Hydraulic Pressure	210 Bar

Torque Settings

M6 thread	10 Nm	8 lbft
M8	24.5 Nm	18 lbft
M10	50 Nm	40 lbft
M12	88.2 Nm	65 lbft
M16	206 Nm	151 lbft
M20	392 Nm	288 lbft
M24	740 Nm	540 lbft

Paint Colours

Main Body	BS 4800 08E51
Red Warning	BS 381C 538
Green Warning	BS 381C 221