

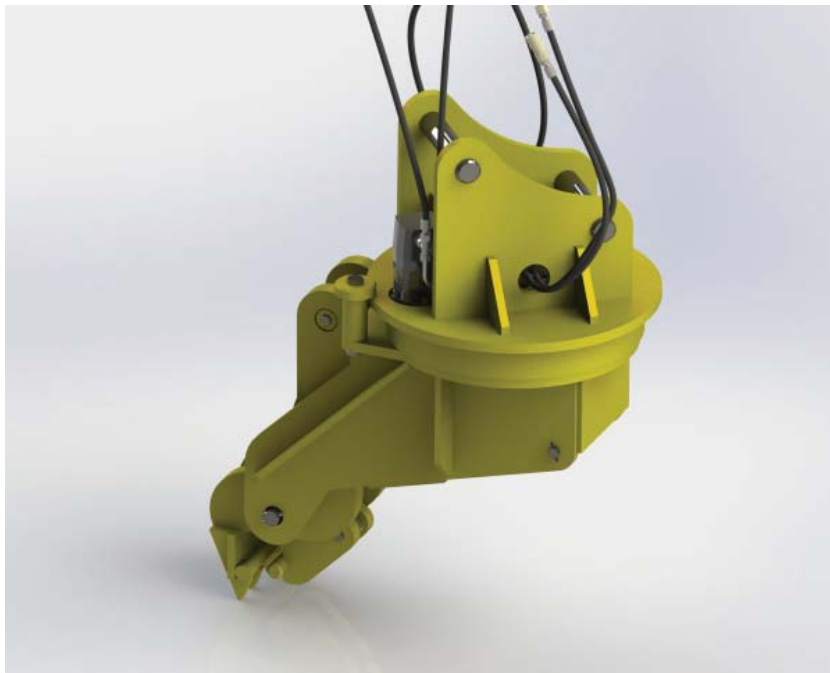


Thomson Engineering Design Ltd

RAIL TURNER

RT211

INSTRUCTIONS FOR USE & MAINTENANCE



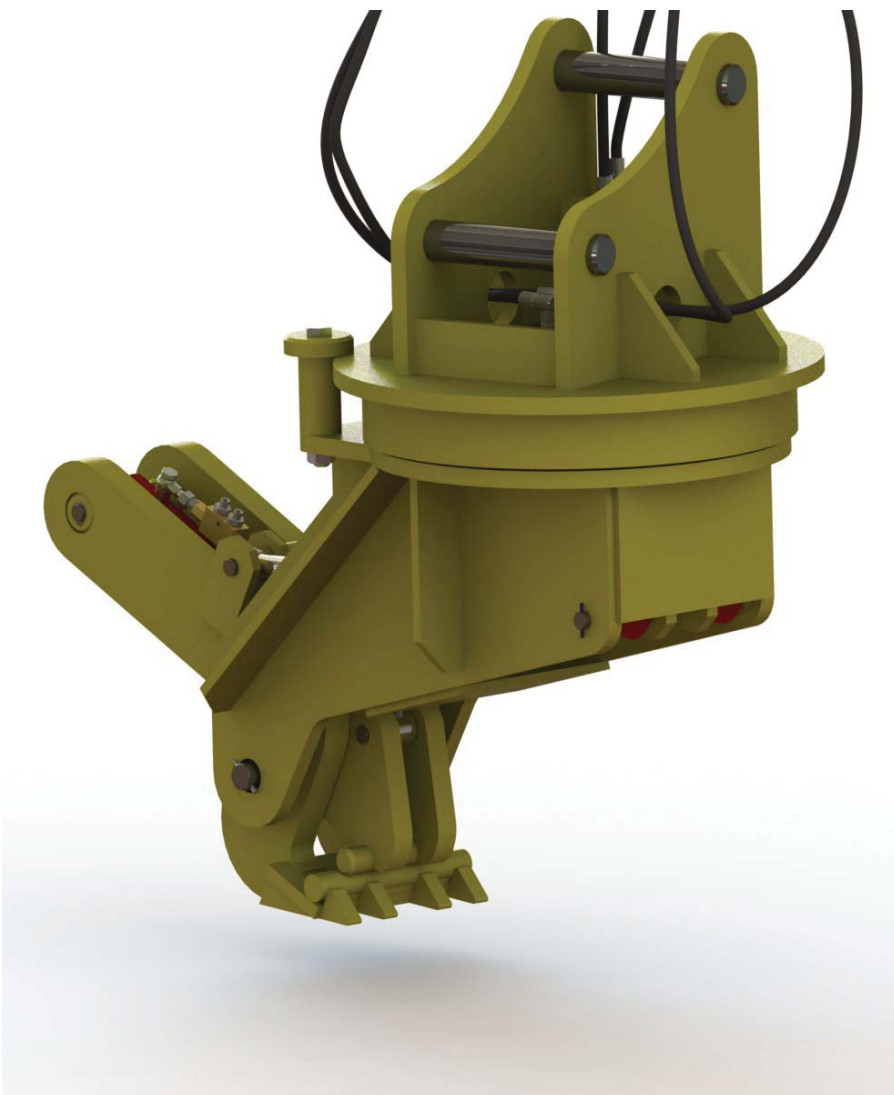
ORIGINAL INSTRUCTIONS IN ENGLISH LANGUAGE

ISSUE 5: MAY 2013



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The RT211 Rail Turner is proudly designed and made in the United Kingdom

INTRODUCTION

The Thomson Engineering RT211 Rail Turner is an attachment for a Road-Rail or other excavator which has been designed for the safe and efficient handling and recovery of rails.

IT IS IMPORTANT THAT ALL OPERATORS READ AND FULLY UNDERSTAND THE CONTENTS OF THIS DOCUMENT BEFORE USING THE RT211 RAIL TURNER.

This instruction manual describes the RT211 Rail Turner, details the regular checks and maintenance operations which are needed to keep the RT211 in full working order and describes how the RT211 Rail Turner may be used to lift, turn and handle rail sections.

The RT211 Rail Turner incorporates features which allow it to be used to securely grip and control the rail even when rail is overturned.

The device has a built-in hydraulic rotator which allows the operator to align the jaws of the RT211 Rail Turner with the rail regardless of where the rail is found.

Before using RT211 Rail Turner be sure to carry out the pre-use checks listed in the relevant section of this manual.

Please note that the RT211 Rail Turner is lifting equipment as defined by the Lifting Operations and Lifting Equipment Regulations (LOLER) and as such must be subject to regular statutory inspections. Do not use the device unless it is in good condition and a valid LOLER certificate is provided.



WARNING

The RT211 Rail Turner is designed for the handling and manipulation of running rails. It may be used with flat bottomed and bull-head rail sections. It may be used in the manner described within this instruction manual to handle any length of rail.

The RT211 Rail Turner must not be used for handling anything other than running rail sections.

Using the RT211 Rail Turner for any other purpose will invalidate the warranty and may also lead to failure of the device either immediately or at some later time with consequent risk of serious or fatal injury.

DO NOT USE RT211 RAIL TURNER IN ANY TANDEM LIFTING OPERATION.

NOTE

The RT211 Rail Turner requires three separate bi-directional hydraulic services in order to use all its features.

CONTACTING THE MANUFACTURER

If any part of this instruction manual is unclear to you or if, after reading this publication, you have any queries regarding the RT211 Rail Turner please contact Thomson Engineering Design Ltd.

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OUT OF HOURS OUR MAIN TELEPHONE LINE AUTOMATICALLY DIVERTS TO ON-CALL TECHNICAL SUPPORT PERSONNEL.

INTRODUCING THE RT211 RAIL TURNER

The RT211 Rail Turner is designed as an attachment for excavators and Road Rail Vehicles (RRV's). It incorporates hydraulically powered jaws mounted on a hydraulically powered tilting subframe which, in turn, is mounted on a lower section which may be rotated under hydraulic power.

On this page we introduce the main parts of the RT211 Rail Turner and describe how to set it up ready for use.

ATTACHING THE RT211 RAIL TURNER TO THE HOST MACHINE

The host machine must be able to provide three independent hydraulic services. Each of these should be set to give a minimum pressure of 150 Bar and a maximum pressure of 210 Bar.

First mount the RT211 Rail Turner on the host machine using the host machine's quick hitch (sometimes referred to as a 'quick coupler' or 'coupler'). Connect the quick hitch to the attachment pins [6]. Consult the quick hitch operator's instructions for details of how to do this.

NOTE: SOME QUICK HITCHES USE A REMOVEABLE SAFETY PIN TO SECURE THE QUICK HITCH AGAINST ACCIDENTAL RELEASE OF THE ATTACHMENT. ALWAYS ENSURE THAT SUCH SAFETY PINS ARE CORRECTLY FITTED BEFORE USING THE RT211 RAIL TURNER.

Next connect the three pairs of hoses coming from the adapter head to the hydraulic services of the host machine. The two hoses from the black hydraulic motor should be connected to the rotation control service, the pair of hoses from one side of the adapter head are then connected to the jaw control service and finally the other pair of hoses from the other side of the head are connected to the tilt control service connection of the host machine.

Before putting the device into service start the engine of the host machine and operate all three services a few times to check that all hose connections are secure and leak tight.

WARNING

ALWAYS STOP THE ENGINE OF THE HOST MACHINE AND RELEASE THE PRESSURE FROM THE HYDRAULIC SERVICES BEFORE ATTEMPTING TO CONNECT OR DISCONNECT HYDRAULIC ATTACHMENTS.

MAXIMUM RATED PRESSURE OF 210 BAR MUST NOT BE EXCEEDED.

EXCEEDING THIS PRESSURE MAY LEAD TO BURST HOSES OR LEAKAGE FROM COMPONENTS.

HYDRAULIC FLUID UNDER PRESSURE MAY CAUSE SEVERE INJURY



PARTS OF THE RT211 RAIL TURNER

- [1] ROTATOR WITH HYDRAULIC MOTOR DRIVE
- [2] JAWS FOR GRIPPING RAIL
- [3] JAW SUBFRAME HYDRAULICALLY ROLLS RAIL
- [4] LOWER SECTION ROTATES
- [5] ADAPTER HEAD FITS TO EXCAVATOR
- [6] FIXING PINS FOR QUICK HITCH
- [7] HYDRAULIC CONNECTION TO HOST M/C

TIP

Dirt ingress is the most common cause of hydraulic system failure.

Always ensure that quick release couplings are clean before connecting.

SPECIFICATIONS

Weight:	650 kg*
Safe Working Load:	2,000 kg
Max Hydraulic Press. (grab):	200 Bar
Max Hydraulic Press. (tilt):	200 Bar
Max Hydraulic Press. (rotate):	150 Bar
Proof Load:	4,000 kg
Hose burst protection:	PO Check Valve on jaw cylinder
Supply hose length:	1.5 m
Supply hose termination:	3/8" BSPP F
Hydraulic fittings:	3/8" BSPP & M20

Three independent services are required.

* Weight may vary according to adapter head configuration. For tare weight always consult manufacturer's plate affixed to the beam.

CONTROLLING THE RT211 RAIL TURNER



JAWS

One of the controls in the cab of the host machine now controls the operation of the rail gripping jaws of the RT211 Rail Turner.

Operating the control in one direction opens the jaws to release rail (left) whilst closing the jaws allows the rail to be securely held and manipulated (right)



TILT

The second control in the cab of the host machine allows the operator to tilt the whole jaw assembly in order to easily grip rail which has been left lying on its side and to roll this rail to the upright position.

This feature is unique to the RT211 Rail Turner. The shape of the jaws is also designed to allow the device to be used to grab rails even when they are tightly bunched together as the chisel edge shape of the jaw can be used to ease the jaw between tightly packed rails.

Please consult the host machine operator's instructions for details of all the controls.

IMPORTANT

Ensure that you are familiar with all the controls of the host machine and how they operate the RT211 Rail Turner before attempting to use the device.



ROTATE

The grab section of the device may be rotated to help align it with the rail.

A third control in the cab of the host machine gives the operator the ability to rotate the device in either direction.

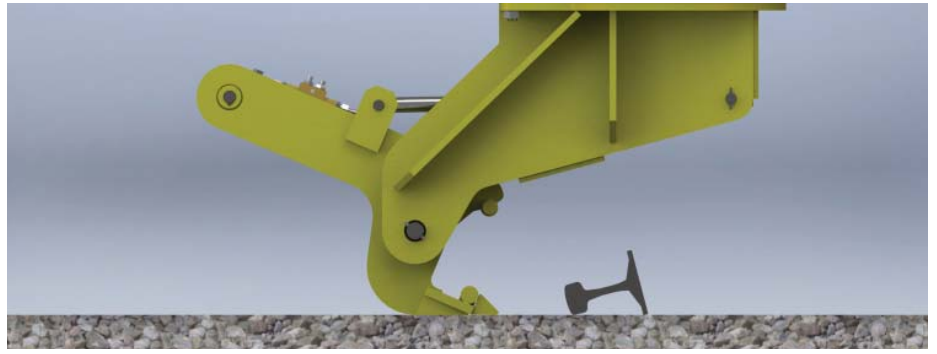


TURNING RAIL USING THE RT211 RAIL TURNER

ALIGN

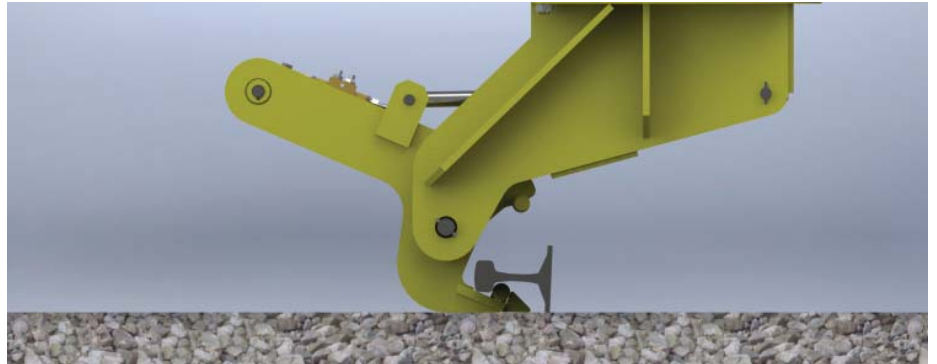
Open the jaws of the RT211 Rail Turner then rotate and tilt the jaws to align them with the rail.

When rail is lying on its side the jaws are tilted so that the lower jaw can run along the ground to allow the chisel edge of the jaw to drive under the head of the rail.



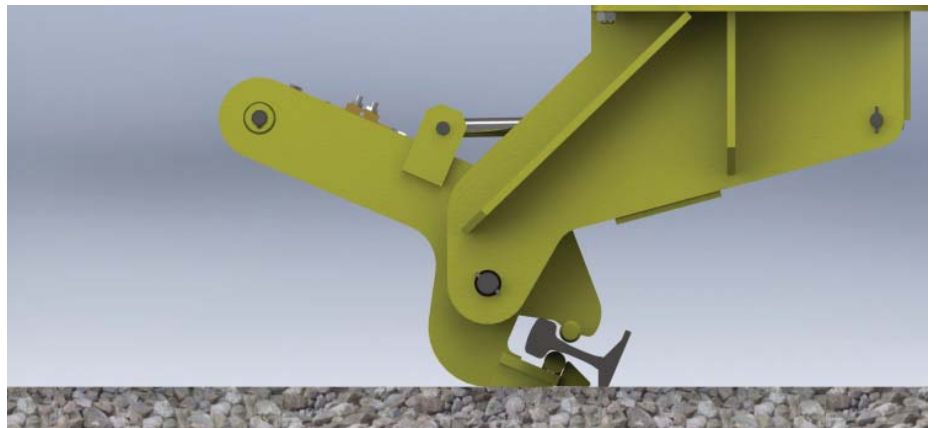
POSITION

Drive the lower jaw under the head of the rail so that the rail head sits above the round bar of the lower jaw as shown.



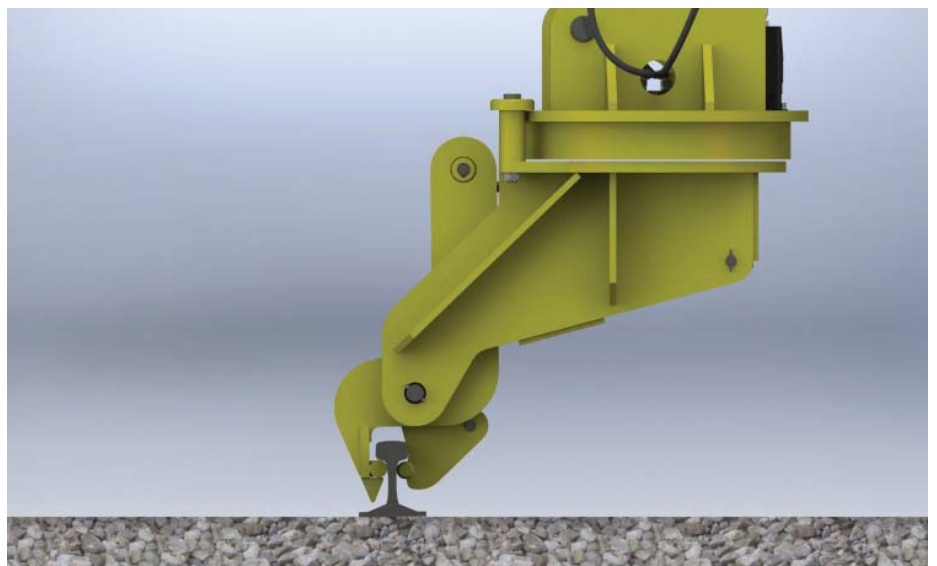
GRIP

Operate the control in the cab of the host machine to close the jaws. The RT211 Rail Turner now has a firm grip on the rail.



TURN

Operate the tilt control to turn the rail upright. If required, the RT211 Rail Turner may now be used to 'pick and place' the rail into a suitable location for later recovery.



NOTES & WARNINGS

GENERAL

The RT211 Rail Turner is designed for the handling and manipulation of short and long lengths of running rail. It is designed to cope with long welded rails up to 200m in length with 113 lb and UIC 60 sections.

USING THE RT211 RAIL TURNER FOR ANY OTHER PURPOSE IS STRICTLY FORBIDDEN AND MAY LEAD TO SERIOUS RISK.

The RT211 Rail Turner is a robust device and should give many years of reliable service when correctly maintained and used by a trained and competent operator.

The warnings, tips and notes on this page will help you get the best from the RT211 Rail Turner.

WARNING

RAIL SECTIONS, PARTICULARLY LONG WELDED RAIL SECTIONS, MAY MOVE RAPIDLY AND UNPREDICTABLY WHEN ROLLED AND HANDLED.

ALWAYS ENSURE THAT PERSONNEL ARE KEPT WELL CLEAR OF THE WORKING AREA.

NOTE

To prevent pressure build up within the case and potential failure of the shaft seal of the rotation motor the return line pressure should not exceed 50 Bar.

TIP

Regular maintenance and inspection, prompt attention to defects and careful matching of the device to the host machine are the best ways to ensure the long term reliability of any attachment.

The manufacturer of the RT211 Rail Turner will be pleased to advise on any aspect of its use.

TIP

When rotating rail try to grip the rail as near to the mid point of its length as possible, this minimises the twist in the rail and makes it easier to turn.

REPAIRS

The RT211 Rail Turner is Lifting Equipment as defined by the Lifting Operation and Lifting Equipment Regulations (LOLER).

If for any reason the RT211 Rail Turner requires a mechanical repair then this must be carried out by a competent and properly trained person.

NO WELD REPAIRS MAY BE CARRIED OUT ON THIS EQUIPMENT WITHOUT THE FULL AGREEMENT OF THE MANUFACTURER.

Welding of the structure of the device requires correctly specified weld procedures and must only be carried out by welders who have been assessed for the relevant procedures.

IMPORTANT

Ensure that you are familiar with all the controls of the host machine and how they operate the RT211 Rail Turner before attempting to use the device.

WARNING

ALWAYS ENSURE THAT THE HOST MACHINE SAFE LOAD INDICATOR IS IN USE WHEN USING THIS DEVICE.

ALL LIFTING OPERATIONS MUST BE CAREFULLY PLANNED, TAKING INTO ACCOUNT THE DUTY RATING OF THE HOST MACHINE.

ALWAYS ALLOW A MARGIN OF SAFETY FOR LOAD AND RADIUS WHEN PLANNING AND CARRYING OUT LIFTING OPERATIONS.

WARNING

ALWAYS STOP THE ENGINE OF THE HOST MACHINE AND RELEASE THE PRESSURE FROM THE HYDRAULIC SERVICES BEFORE ATTEMPTING TO CONNECT OR DISCONNECT HYDRAULIC ATTACHMENTS.

MAXIMUM RATED PRESSURE OF 210 BAR MUST NOT BE EXCEEDED.

EXCEEDING THIS PRESSURE MAY LEAD TO BURST HOSES OR LEAKAGE FROM COMPONENTS.

HYDRAULIC FLUID UNDER PRESSURE MAY CAUSE SEVERE INJURY

WORKING SAFELY WITH THE TR211 RAIL TURNER

The RT211 Rail Turner is designed to reduce the risks associated with the recovery of rails. This will only be achieved if the RT211 itself is used in a safe manner. In this section we look at a suggested procedure for using the RT211 to recover rails but this should be taken as for guidance only. IT IS THE RESPONSIBILITY OF THE LIFT PLANNER TO ENSURE THAT A SAFE SYSTEM OF WORK IS PLANNED AND ADOPTED. THIS MAY VARY WITH SITE CONDITIONS.

In the example which follows we have assumed that a section of long welded rail is being recovered from an embankment using a road rail excavator (RRV). The RRV is to be on the adjacent running line and the rail is to be left in the four-foot of that line standing upright.

PLANNING THE WORK

Before any work begins the site is inspected to ascertain how far the length of rail to be recovered is from the running line where the RRV is to be sited.

At the same time the inspector will assess how secure the rail is in its current location, that is to say, whether the rail might slip down the embankment if it is disturbed. This will depend on the steepness of the embankment, the surface condition of the embankment and whether or not there is anything on the embankment which might help hold the rails such as stout trees, etc.

This inspection will be carried out by a competent and experienced person.

Having assessed the site and measured the maximum required operating radius for the lifting operation an RRV is selected which is capable of lifting at least 2,000 kg plus the weight of the TR211 rail turner (650 kg typical) at that radius taking into account the cant of the track.

Once all of the above has been completed a Method Statement and a Lifting Plan are completed by qualified personnel. These documents must accurately reflect the conditions on site and be realistic in their details of the methods to be adopted in order to complete the task.

PREPARING FOR THE JOB

Once the work has been assessed and the correct RRV selected, the pressure settings on the RRV are set to match the requirements of the RT211 and all the pre-use checks on the machine and attachment are carried out.

RECOVERING THE RAIL

Turning the rail upright is usually the final operation. Before this happens the rail will be moved up the embankment, onto the sleeper ends and finally into the four-foot by picking and placing the rail. The rail will not normally be moved more than 1.5 to 2m at a time to avoid the risk of damaging the rail.

Timber dunnage will be used to prevent the rail damaging any of the track 'furniture' (clips, clip housings, wires, etc.).

A sequence of illustrations on the next page shows the stages of a typical recovery operation.

RAIL RECOVERY SEQUENCE OF OPERATIONS

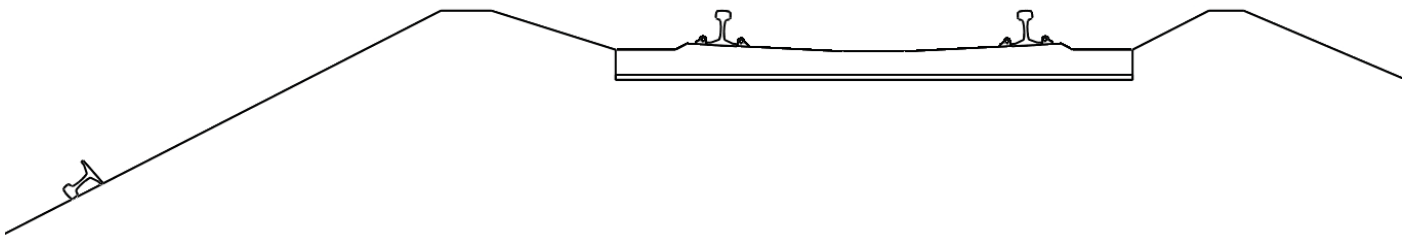
The illustrations below show typical stages in a rail recovery sequence of operations.

Rail is brought up the embankment using the RT211 Rail Turner. Beginning at one end the rail is lifted, drawn part of the way up the embankment and placed back down. The RRV then moves about 20m along the rail and repeats the operation. This process continues until the whole rail length has been moved.

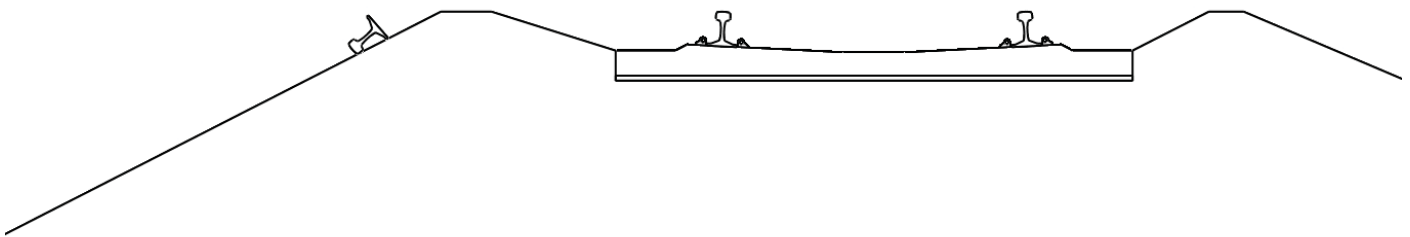
If the rail is a long way from the desired final position then it may be necessary to move the rail in a number of stages, running back and forth along its length.

When the rail is in its final position, prior to turning it upright, it should be laid as straight as possible to aid the turning operation.

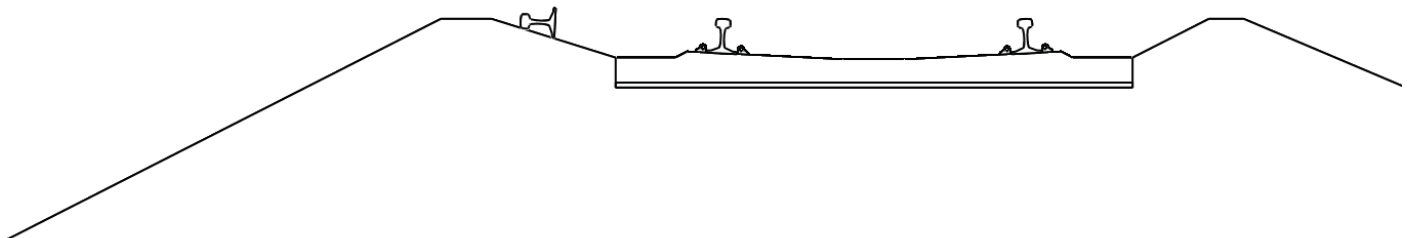
Finally, use the RT211 to roll the rail into the upright position and the task is complete.



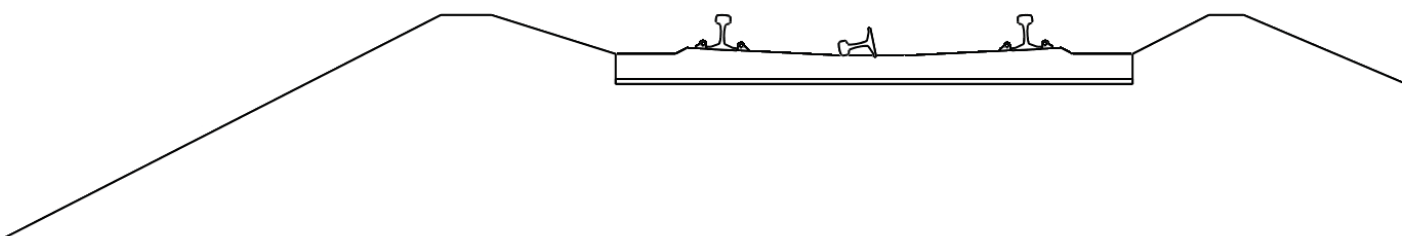
The rail to be recovered lies on the embankment



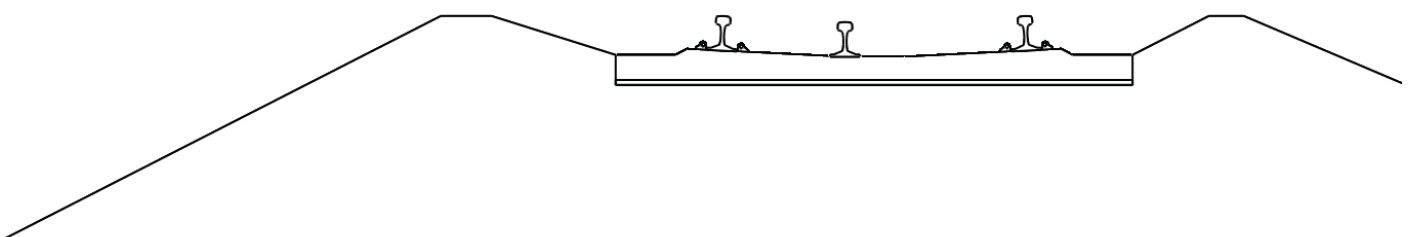
The rail is brought up the embankment in stages taking care not to bend the rail



The process continues until the rail is on or near the sleeper ends using timber dunnage to protect the rail furniture.



The final lift places the rail safely in the four-foot. The rail is now laid as straight as possible for ease of turning.



Finally the rail is turned using the RT211 and the task is complete

ROUTINE MAINTENANCE

This page gives outline details only of the routine maintenance checks. See separate maintenance document for full details.

DAILY (PRE-USE) CHECKS

Before using the RT211 Rail Turner perform the quick checks listed here to ensure that the device is safe to use.

If you have any concerns about this equipment do not use it but report your concerns immediately to your supervisor or to trained maintenance staff.

1. Inspect hoses for damage, leaks, etc.
2. Attach the device to the host machine and check that the hoses cannot get crushed or damaged.
3. Check hydraulic cylinder mounting points for wear, cracks or damage.
4. Check pipework for damage or leaks.
5. Check all parts for cracks or damage
6. Grease all cylinder bushes and hinge bushes.
7. Grease slew ring assembly

WARNING

Never use defective lifting equipment.

Always report any concerns regarding the state of lifting equipment to your supervisor.

Do not try to repair defective lifting equipment unless you are properly trained to do so.

Damaged hoses may have sharp wires protruding - wear gloves.

WEEKLY MAINTENANCE

In addition to performing the daily checks listed above, once per week carry out the checks and maintenance operations listed here.

1. Check hinge and cylinder bushes for excessive free play.
2. Check rotary coupling for leaks.
3. Check all nuts and bolts are tight.
4. Check all hose connections are tight.
5. Check jaws and attachment points for wear.

NOTE

If any weekly check repeatedly requires a defect to be remedied, for example if it is often noted that a particular bolt is loose, this may indicate another more serious fault.

Consult the manufacturer for advice if an examination of maintenance records indicates a repeated defect with no immediately obvious cause.

SIX MONTHLY MAINTENANCE

Every six months each RT211 Rail Turner must be subjected to a thorough examination by a competent person and a new certificate issued under LOLER before it may be returned to service.

It is the responsibility of the owner to ensure that this is carried out however, if required, the device may be returned to the manufacturer for testing.

1. Thorough Examination under LOLER

HELP OTHERS

Please notify the manufacturer (contact details page 3) of any defects noted during examination.

This will allow the manufacturer to notify all users of this equipment of potential maintenance or safety issues.

DECLARATION OF CONFORMITY

WE:

THOMSON ENGINEERING DESIGN LTD
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CINDERFORD
GLOUCESTERSHIRE
GL14 2NZ


DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCT
KNOWN AS:

RT211 RAIL TURNER

TO WHICH THIS DECLARATION RELATES IS IN CONFORMITY WITH
THE FOLLOWING STANDARDS:

2006/42/EC

AUTHORISED SIGNATORY:

A handwritten signature in blue ink that reads "D. Thomson". The signature is written in a cursive style with a large initial 'D'.

DAVID THOMSON BSC CENG MIMECHE



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