

Thomson Engineering Design Ltd

RG17-01 Rail Grab



Operating and Maintenance Instructions

Original Document in English Language

Issue 1

December 2017



Introduction

The Thomson Engineering Design RG17-01 Rail Grab has been designed as a heavy-duty rail handling attachment for use with truck cranes and excavators.

A unique design of jaw assembly makes the grab capable of attaching to rails which are stacked tightly together (foot-to-foot). Despite its compact design the jaw assembly is very strong and the grab has a Working Load Limit of 2,500kg (5,500lbs).

The high working load allows the RG17-01 Rail Grab to be used for handling machines, stillages and other loads equipped with suitable lifting points and the manufacturer can supply weld-on lifting points for this purpose.

Warning

The Thomson Engineering Design RG17-01 Rail Grab must not be used for any purpose or in any way not described within this document. Using the Thomson Engineering Design RG17-01 Rail Grab for any purpose not described in this document could be dangerous and may invalidate the manufacturer's warranty.

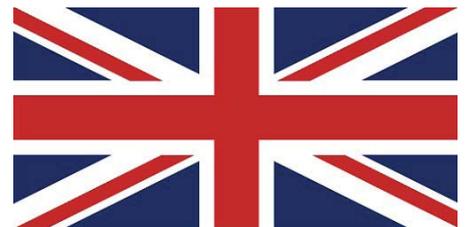
Warning

The maximum hydraulic pressure which may be applied to the hydraulic circuit of the RG17-01 Rail Grab is marked on the manufacturer's plate.

It is extremely dangerous to over-pressurise a hydraulic system and doing so may lead to severe injury.

The hydraulic service on the host machine must be adjusted to ensure that the maximum pressure rating of the RG17-01 Rail Grab rotator is not exceeded.

A pressure control valve is fitted to limit the pressure in the jaw hydraulic system.



The Thomson Engineering Design RG17-01 Rail Grab is proudly designed and manufactured in the United Kingdom.

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Specifications

Overall Dimensions	Height	1,042 mm
	Width	550 mm
	Length	500 mm
Overall Weight (not including adapter head)		300 kg
Minimum Hydraulic Pressure		90 Bar
Maximum Hydraulic Pressure		210 Bar
Maximum Working Load		2,500 kg
Proof Load (Factory Test)		5,000 kg

Issue Record

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Description of the RG17-01 Rail Grab

The RG17-01 Rail Grab is a hydraulic grab equipped with a hydraulic rotator, pressure control valve, safety locking valve and check valve on the cylinder.

The jaw design allows the grab to be used with all running rails and to stack most rails foot-to-foot and the high working load limit of 2,500kg makes it suitable for handling of other loads equipped with suitable lifting points.

A single hydraulic cylinder, enclosed within the heavy section body, is fitted with a pilot operated check valve which will lock the cylinder in the event of a pipe or hose failure.

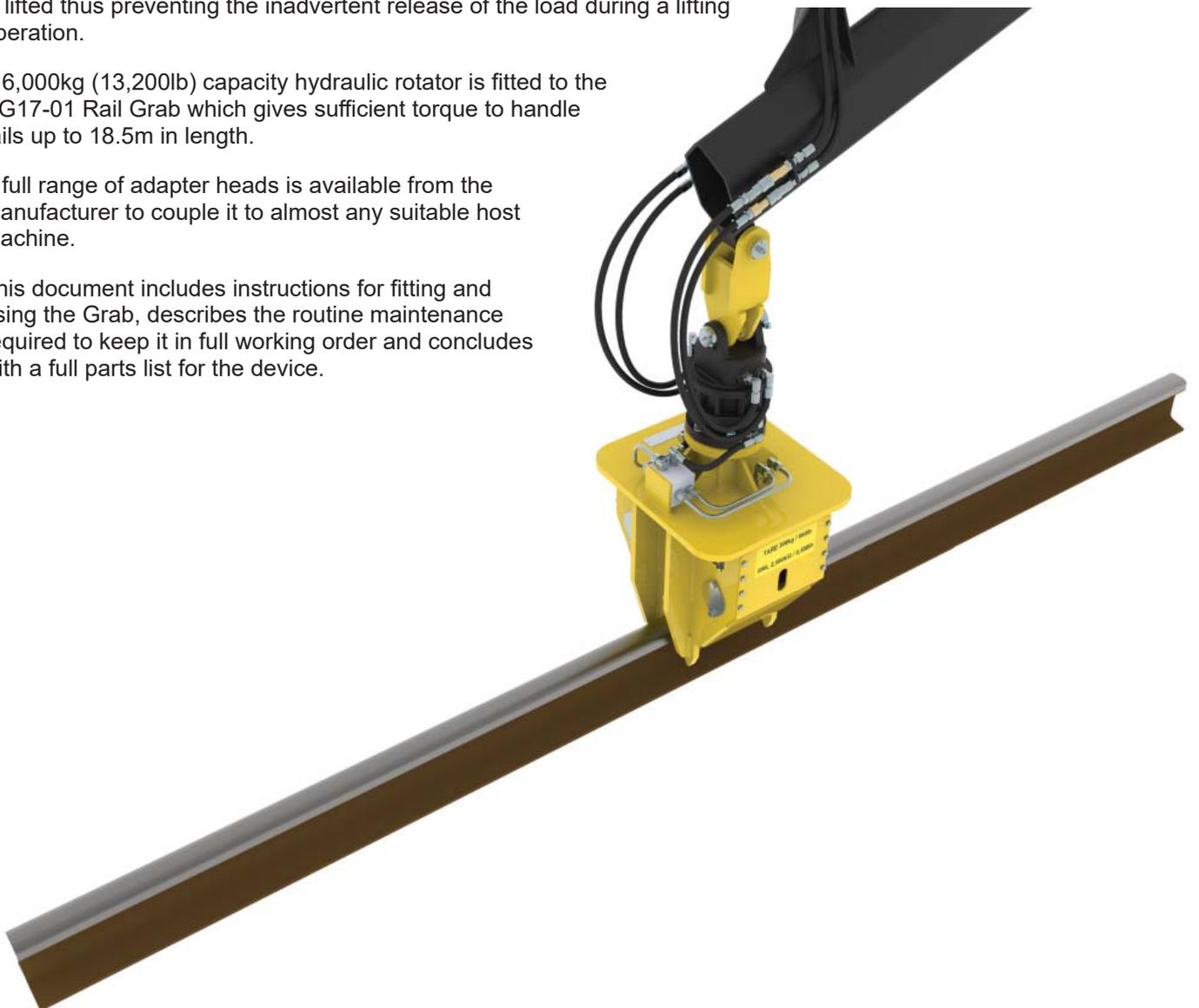
Hydraulic pressure within the grab cylinder is limited by the built-in pressure reducing valve. This allows the RG17-01 Rail Grab to be fitted to almost any suitable crane or excavator without adjustment.

The safety locking valve prevents the grab cylinder operating when the grab is lifted thus preventing the inadvertent release of the load during a lifting operation.

A 6,000kg (13,200lb) capacity hydraulic rotator is fitted to the RG17-01 Rail Grab which gives sufficient torque to handle rails up to 18.5m in length.

A full range of adapter heads is available from the manufacturer to couple it to almost any suitable host machine.

This document includes instructions for fitting and using the Grab, describes the routine maintenance required to keep it in full working order and concludes with a full parts list for the device.



Host Machine Requirements

The Thomson RG17-01 Rail Grab may be fitted to a wide variety of host machines.

The host machine must have sufficient lifting capacity to safely handle the weight of the grab, its adapter head and the load. If in doubt, refer to the duty chart for the host machine which will show the maximum capacity of the host machine at all points in its working range.

Two reversible hydraulic services are required to power the Grab: one for the rotate function and one to power the jaw cylinder. The pressure and flow produced by these services will significantly affect the performance of the Grab.

The torque of the rotator is directly related to the pressure. We recommend a minimum pressure of 90Bar (1,300psi). The pressure must not exceed 250Bar (3,625psi). Recommended flow rate for the rotate circuit is 15 to 25l/min (4 to 6.6 US gpm).

The grip force produced by the grab is related to the pressure in the supply system but is limited by the pressure reducing valve fitted to the grab. A minimum of 90Bar (1,300psi) is required to ensure a safe grip on the load. Pressure in the supply system should not exceed 200Bar (2,900psi) to avoid damage to the seals within the rotator.

Pre-Use Checks and Maintenance

Before using the RG17-01 Rail Grab perform the following checks to ensure that the device is fit for use.

- Check hoses for damage and abrasion
- Check hydraulic system for leakage
- Visually inspect grab for cracking and distortion
- Check the functions of the Grab as described in the section 'Using the RG17-01 Rail Grab'.

Any damaged parts found during this inspection should be repaired or replaced before using the grab.

Daily maintenance involves applying grease to the cylinder ends, jaw hinge shaft and adapter head shaft. These operations are described fully in the Maintenance section of this document.

Attaching and Connecting

Connect the Grab to the host machine using a suitable adapter head.
The manufacturer can supply a full range of adapter heads to suit almost all host machines.

Ensure that the load rating of the adapter head is sufficient to safely carry the weight of the Grab and its maximum load.

IMPORTANT NOTE

The adapter head used MUST allow the Grab to swing freely in all directions and ensure that the Grab can hang vertically regardless of the position and attitude of the host machine boom. Please consult the manufacturer for advice.

The two hydraulic services must be connected to the host machine using flexible hoses. The rotator has two pairs of inlet ports, one marked with a letter R and the other with GR cast into the body.

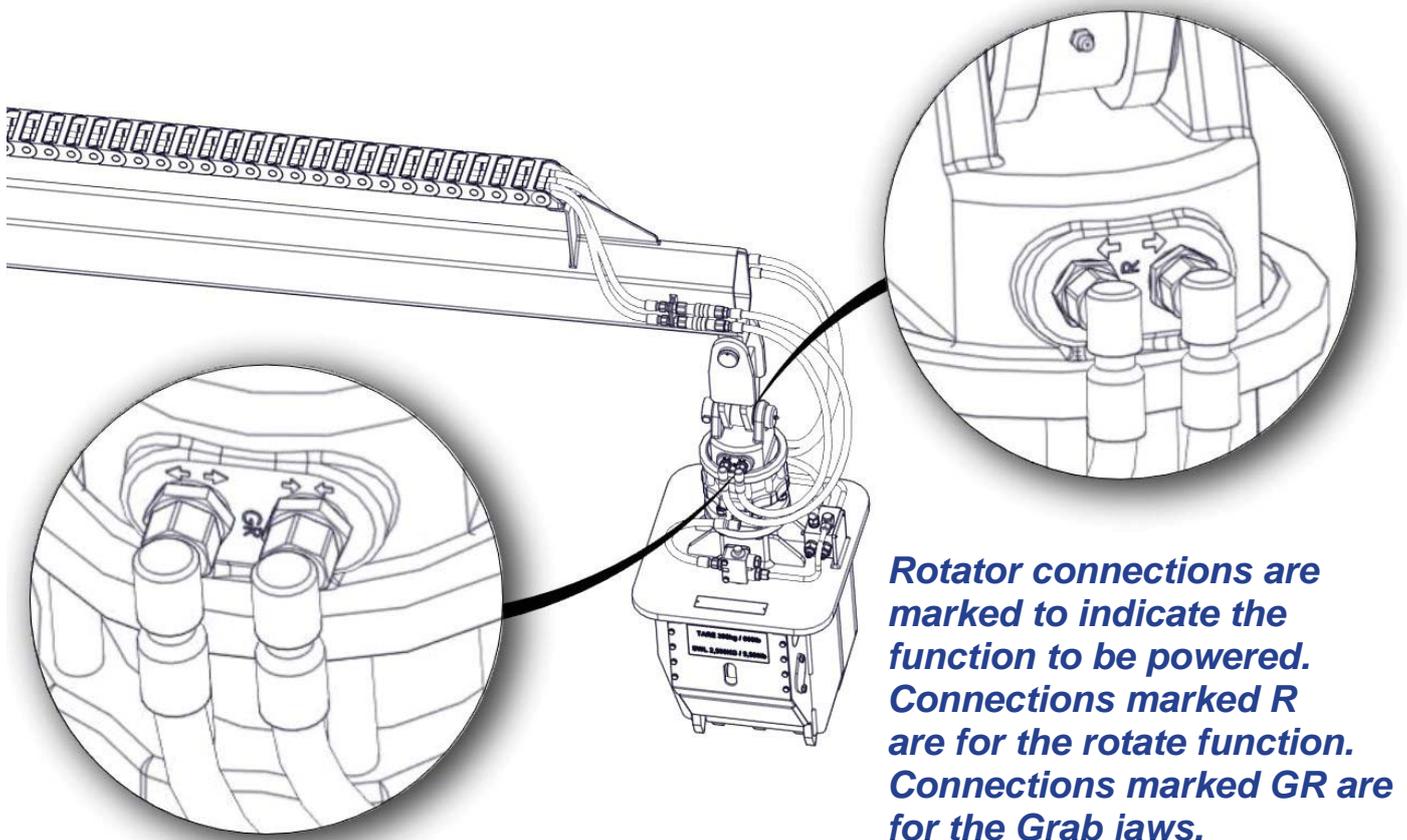
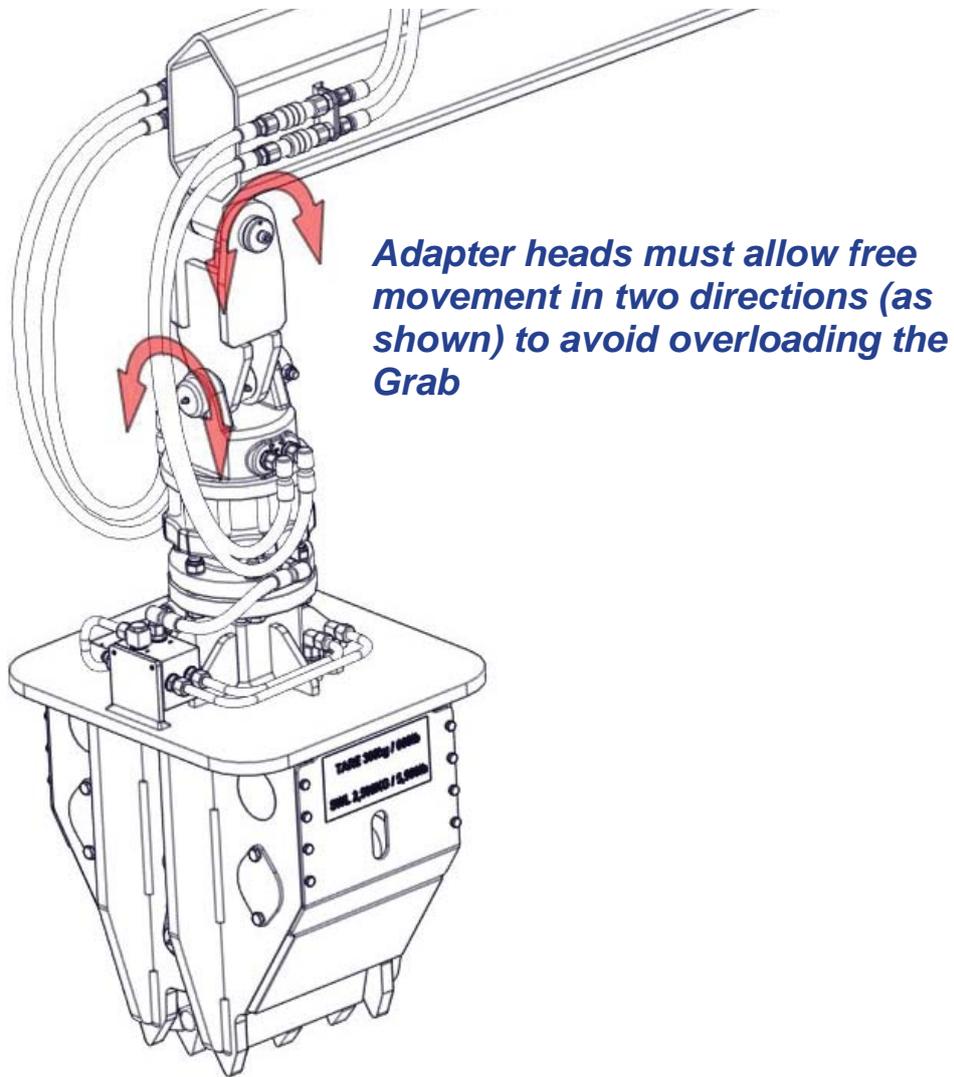
Connect the R connections to the supply connections to control the rotation of the Grab. Connect the GR ports to the second hydraulic service to control the Grab jaws.

Take care not to allow dirt into the hydraulic system when connecting or disconnecting the hydraulic systems and always cap exposed connections to prevent the ingress of dirt.

If the Grab is to be frequently disconnected from the host machine we recommend using quick release couplings on the hose connections. Couplings must be rated for the maximum pressure of the supply services. Always clean couplings before connecting to prevent the ingress of dirt into the hydraulic system.

Please see the illustrations on page 7 for clarification of the above.

When attaching to a host machine for the first time check that the lifting capacity of the host machine is sufficient to cope with the weight of the Grab and load. Also check that the pressure and flow of the hydraulic supplies are suitable (see the section 'Host Machine Requirements' on Page 5).



Using the RG17-01 Rail Grab

The RG17-01 Rail Grab is simple to use and is fully controlled using the auxiliary hydraulic services of the host machine.

Before lifting the first load of the day, check the functions of the Grab as follows:

Checking the Rotate Function

Raise the Grab using the boom of the host machine so that the Grab is clear of the ground and any personnel or equipment.

Operate the rotate function on the host machine and check that the Grab rotates freely. Reverse the service and check that the Grab rotates freely in the opposite direction.

Checking the Grab Function

With the Grab still raised and clear of all personnel and obstructions operate the grab function and check that the jaws CANNOT be opened or closed.

Slowly lower the Grab onto a firm, flat surface until the rotator and its mount drop approximately 19mm (0.75") into the body. This releases the safety lock valve.

Now operate the grab function and check that the grab jaws open and close freely.

Fully open the grab jaws ready for use.

Handling Rail

With the Grab jaws fully open lower the Grab over the rail to be lifted. The Grab should be positioned as close to the middle of the rail as possible to ensure that the rail stays level when it is lifted.

Operate the rotator to align the body of the grab with the rail and lower the grab onto the head of the rail. Check that the grab rests firmly on the head of the rail before closing the jaws to grip the rail.

Once the jaws are fully closed the rail may be safely lifted.

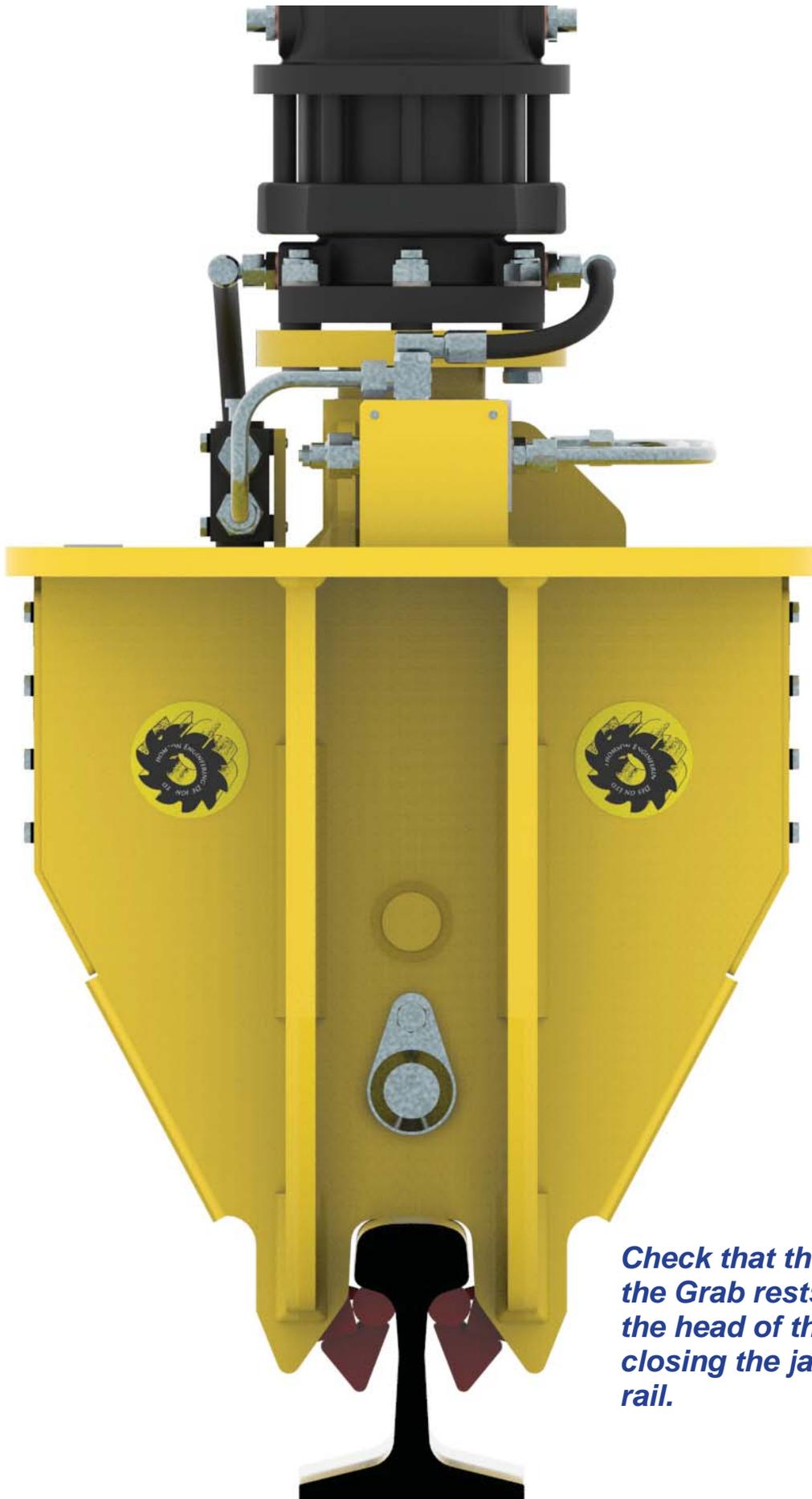
Rails up to 18.1m (60ft) long may be lifted using the RG17-01 Rail Grab.

Take care when lifting long lengths of light rail (less than 50kg/m (100lb/yd) not to lift the rail too violently as this may bend the rail.

Rail must be properly supported before releasing the jaws.

After Use

Fully open the grab jaws ready for the next use and stow the Grab securely for transport.



Check that the body of the Grab rests firmly on the head of the rail before closing the jaws to grip the rail.

Disconnecting and Transporting

Before disconnecting the RG17-01 Rail Grab from the host machine ensure that it is securely supported.

Begin by releasing the pressure in the hydraulic services following the instructions host machine operator's manual.

Disconnect the hydraulic hoses and plug the open ends (this is not necessary if using quick release couplings).

Disconnect the adapter head from the host machine to complete the process.

Warnings

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 MUST NOT BE EXCEEDED.

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

HYDRAULIC FLUID UNDER PRESSURE MAY CAUSE SEVERE INJURY.

WARNING

NEVER MOVE RAIL UNTIL YOU ARE SURE THAT THE WORK AREA IS CLEAR OF ALL PERSONNEL.

MINIMISE THE STRESS IN THE RAIL BY OPERATING THE HOST MACHINE SLOWLY AND SMOOTHLY.

ENSURE THAT RAIL IS PROPERLY SUPPORTED BEFORE RELEASING THE RG17-01 Rail Grab.

WARNING

TAKE CARE WHEN SLEWING LONG RAIL SECTIONS THAT THE WHOLE AREA IS FREE OF PERSONNEL AND OBSTRUCTIONS.

IF RAIL IS NOT LEVEL WHEN LIFTED IT IS ADVISABLE TO RE-POSITION THE GRAB CLOSER TO THE CENTRE OF THE RAIL LENGTH.

WARNING

MOVING RAIL IS A LIFTING OPERATION.

ALL LIFTING OPERATIONS MUST BE CAREFULLY PLANNED TAKING INTO ACCOUNT THE DUTY CHART OF THE HOST MACHINE TO ENSURE THAT NEITHER THE RAIL GRAB NOR THE HOST MACHINE CAN BECOME OVERLOADED.

OVERLOADING OF THE RG17-01 RAIL GRAB OR THE HOST MACHINE MAY LEAD TO SERIOUS INJURY OR DEATH.

WARNING

THE RG17-01 RAIL GRAB IS DESIGNED FOR HANDLING RUNNING RAIL SECTIONS AND EQUIPMENT FITTED WITH COMPATIBLE LIFTING POINTS. IT MUST NOT BE USED FOR ANY OTHER PURPOSE.

THE USE OF THE RG17-01 RAIL GRAB FOR ANY OTHER PURPOSE MAY LEAD TO SEVERE INJURY TO PERSONS AND DAMAGE TO THE DEVICE.

WARNING

ONLY TRAINED AND COMPETENT OPERATORS SHOULD USE THE RG17-01 RAIL GRAB.

DO NOT ATTEMPT TO USE THE RG17-01 RAIL GRAB UNTIL YOU HAVE READ AND UNDERSTOOD THIS OPERATORS' MANUAL.

ALWAYS COMPLETE THE DAILY CHECKS AND MAINTENANCE BEFORE USING THE RG17-01 RAIL GRAB.

If any part of this Operators' Instruction document is unclear or for any technical advice please contact the manufacturer.

Manufacturer's contact details can be found on Page 12.

Contacting the Manufacturer

The Thomson Engineering RG17-01 Rail Grab is manufactured in the United Kingdom by:

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All spare parts, technical, training and sales enquiries should be directed to our technical department:

Email: technical@thomsondesignuk.com



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Certificate of Conformity

WE:

THOMSON ENGINEERING DESIGN LTD

Valley Road

Cinderford

Gloucestershire

GL14 2NZ

Declare under our sole responsibility that the product known as:

RG17-01 RAIL GRAB

To which this declaration relates is in conformity with the following standards:

2006/42/EC

Authorised signatory:

David Thomson BSc CEng MIMechE

October 2017

