

ADAPTER HEADS

Selection and Specification



**A Guide to the Selection and Specification of Adapter
Heads for Thomson Engineering Design Lifting Beams
and Attachments**

Issue 2

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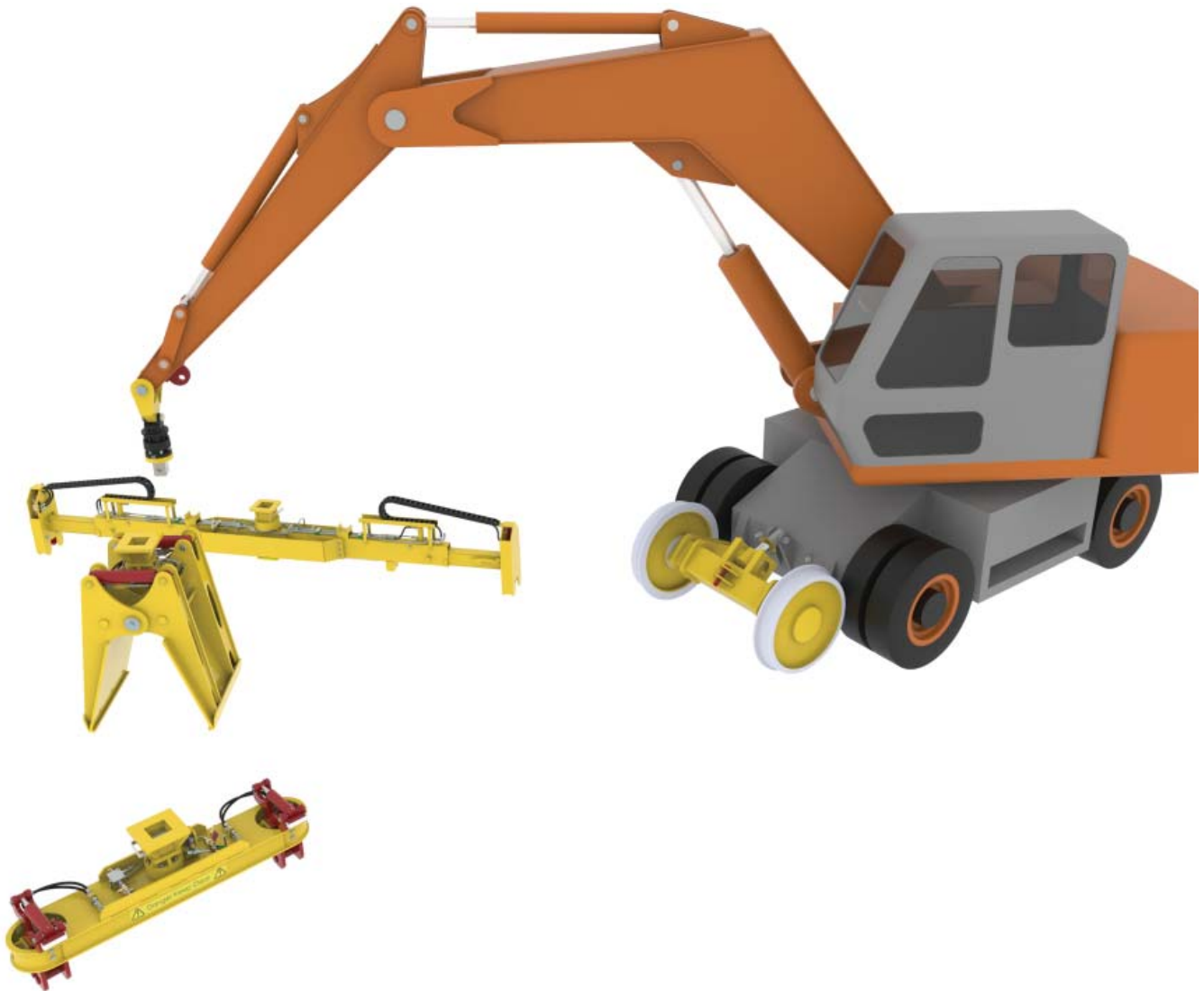
Introduction

Selecting the correct adapter head system for your new beam or attachment is vital to the safe and efficient working of the device.

This document has been prepared to assist in choosing the best options for your application. It covers the most common types specified, provides an explanation of the proper application for each type and shows the measurements we will need in order to manufacture it correctly for your machine.

Please note however by no means all of the adapter heads we produce are shown here. In all, drawings of more than 50 different types are in our files and new types are being added all the time. Please contact us if you need a design which is not shown.

Illustrations which include a hydraulic rotator are based on a 10,000kg capacity rotator however different rotator capacities are factory fitted according to the size and payload of the beam, grab or attachment required.



Standard Attachment Point on Beams and Grabs

Almost all of our beams and grabs and many of our attachments are fitted with our standard 6 bolt flange attachment point.

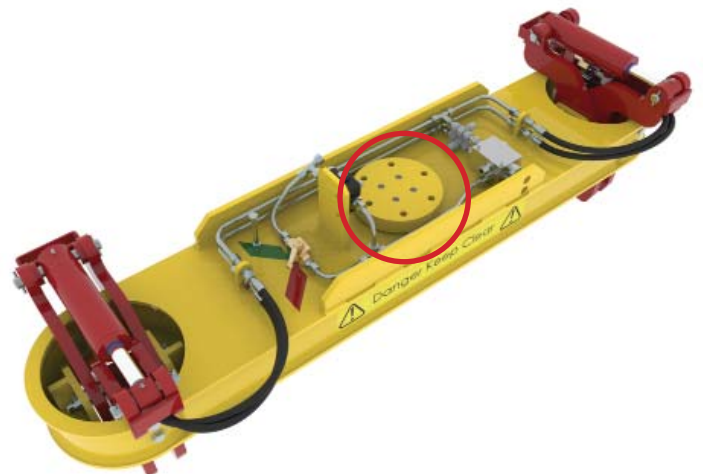
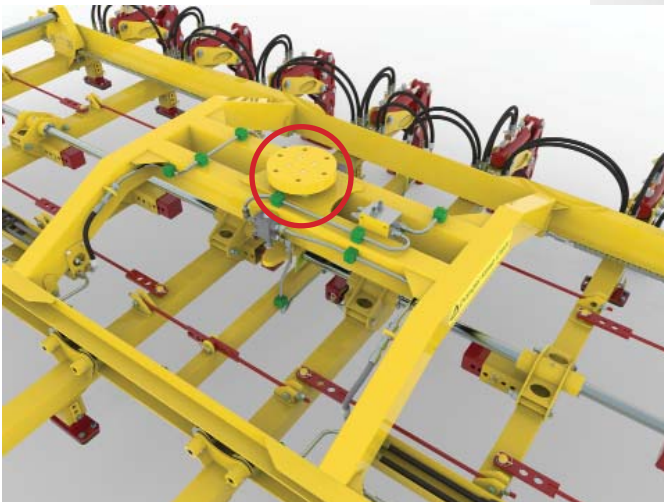
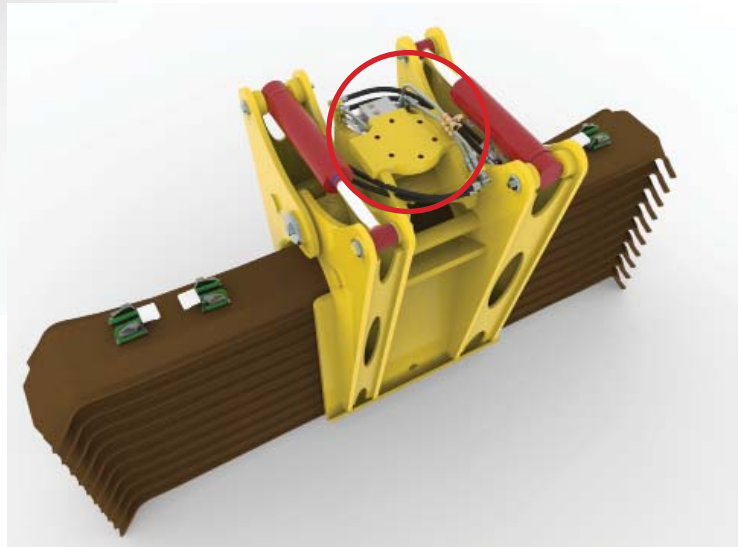
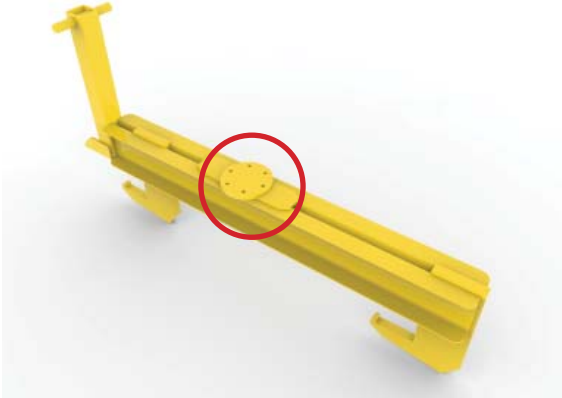
This feature allows us to fit hydraulic rotators, swivel heads and low headroom attachment points to the device and this interchangeability allows us to provide the correct solution for your application.

On the following pages these options are discussed in more detail.

IMPORTANT NOTE

All attachments equipped with 6-bolt flange attachment points must be fitted with free-hinged adapters

See page 4 & 5 for details



Important Note When Specifying Adapters

Hinged Connection

When specifying an adapter system for any lifting attachment equipped with a bolted flange adapter mount it is very important to ensure that the system chosen allows the attachment to swing freely to align with the load.

Our two-pin and one-pin rotator adapters incorporate hinges at 90 degrees to each other to allow the attachment to swing around the machine boom end pin and the rotator top pin to give the attachment complete freedom of movement.

Without this feature the flange will become overloaded unless the load is perfectly balanced and this can lead to failure of the flange bolts and the catastrophic failure of the attachment.

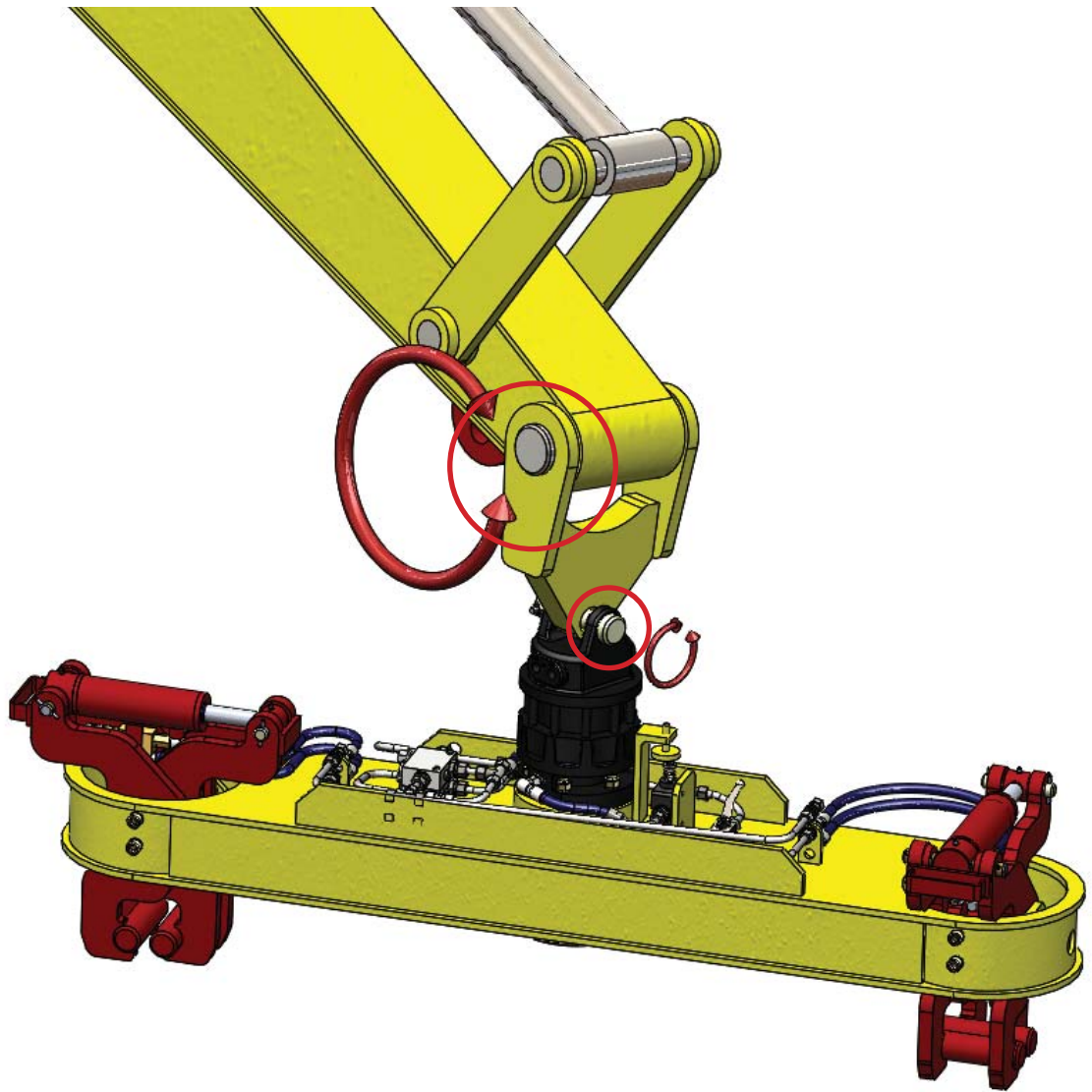
Free Rotation

When using a hydraulic rotator it is also important to ensure that a suitable pressure relief system is installed to prevent shock loading: for example, when an operator is rotating a load and suddenly releases the control the momentum of the load can cause extremely high shock loads if no relief system is fitted.

Hydraulic Rotators fitted to our attachments have a small bore cross line connection installed between the hoses on the rotate circuit to dampen out shock loads.



Rotator hoses are connected together using a 1mm bore fitting to dampen out shock loadings



Two Hinges at 90 degrees to each other allow the attachment to swing freely and prevent the bolted flange becoming overloaded.

Heads for Hooks

Three broad classes of hook are used on cranes and lifting machines: swivel hooks which have a bearing built into the hook assembly allowing the load to spin freely, rotating hooks which can be spun when unloaded and fixed hooks which do not spin at all.

It is important to check which type of hook is fitted to your machine as damage may occur if a fixed adapter head is used with a fixed or rotating hook.

Fixed or Rotating (unladen only) Hooks

A Swivel Head Adapter MUST be specified with this type of hook. The Swivel head incorporates bearings to allow the load to spin and reduce the stress applied to the attachment, the hook and the host machine.

Swivel Head Adapters are factory-fitted with a safety pin bow shackle for attachment to the hook. They bolt directly to the 6-bolt flange on the lifting device.

Swivel Hooks

Where swivel hooks are fitted to the host machine the most popular system is the Low Headroom Attachment Head.

This adapter also incorporates a safety pin bow shackle for attaching to the hook but it is rigidly fixed to the beam or grab.



A typical Swivel Head Adapter



Low Headroom Attachment Head



***T**ypical application of a Swivel Head Adapter fitted to a Universal Lifting Beam.*

Here, the Swivel Head Adapter has been specified for a pair of Universal Lifting Beams used for tandem lifting track panels.

The use of Swivel Heads allows the two lifting machines to slew without over stressing the load, the lifting beam or the host machines.

Heads for Hydraulic Rotators

Where a hydraulic rotator is required the selection of the correct adapter head system becomes somewhat more complex.

For individual beams, grabs or attachments the rotator is normally fitted directly onto the device and a suitable adapter head for the host machine fitted to the top of the rotator.

Where multiple attachments are to be provided for the same host machine our quick change adapter system can save considerable cost as it allows one rotator to be used with multiple attachments.

Quick Change Adapter System

With the Thomson Engineering Design Quick Change Adapter System the hydraulic rotator is mounted on a specially designed Square Drive Base.

Each attachment, grab or hydraulic beam is fitted with a matching Square Drive Adapter Head which bolts directly onto the 6 bolt flange attachment point.

The parts are carefully machined so that when the rotator section is engaged with the Square Drive Adapter Head the fixing pin can be easily inserted by hand to complete the fitting of the attachment.

As with all our rotator based attachment systems the top of the rotator may be fitted with any of a wide variety of attachment heads to suit your host machine.



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See page 4 & 5 for details

The parts of the Quick Change System



Typical application of the Thomson Engineering Design Quick Change System with three attachments.

The Road Rail Excavator can swap from a Telescopic Rail Beam to a Plate Grab to a Universal Lifting Beam in seconds.

The rotator part of the Quick Change System has been fitted with a 1-Pin Adapter Head fixing to the boom end.

Two-Pin Rotator Heads for Quick Couplers

Where the beam, grab or attachment has a rotator and is to be fitted to an excavator with a Pin type quick coupler a Two-Pin Attachment Head is required.

This arrangement is as shown below. The Two-Pin Attachment Head can pivot about the rotator top pin (1) and the rear attachment pin (2) so that the grab always hangs freely below the quick coupler.

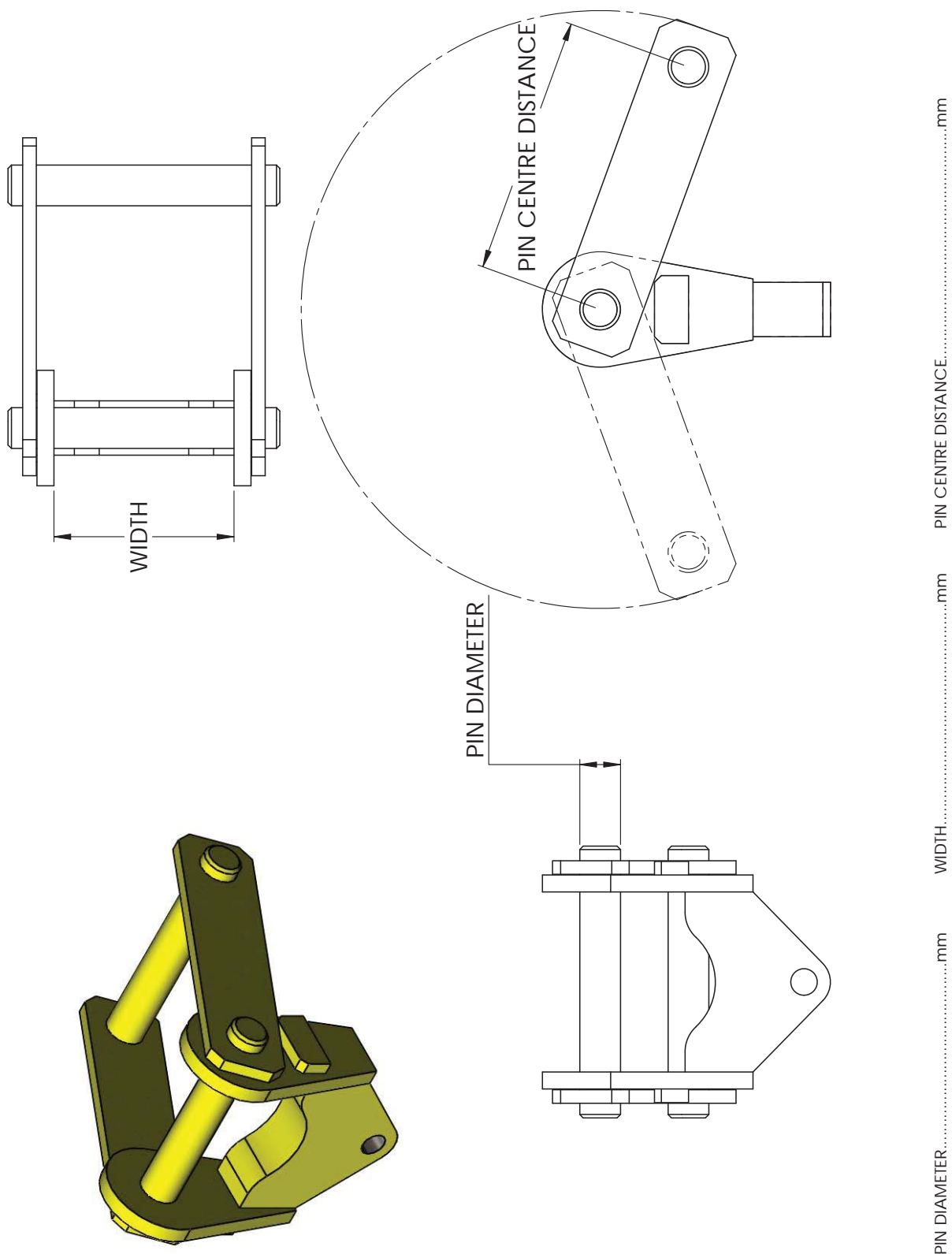
When specifying this attachment system we need to know the three dimensions as shown on page 9.



A typical Pin type Quick Coupler



Rotator and Two-Pin Adapter Head



One-Pin Rotator Heads for Direct Mounting

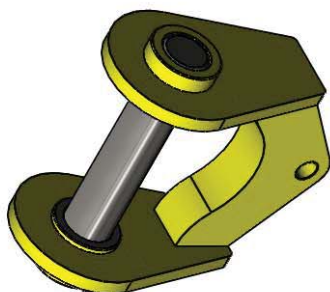
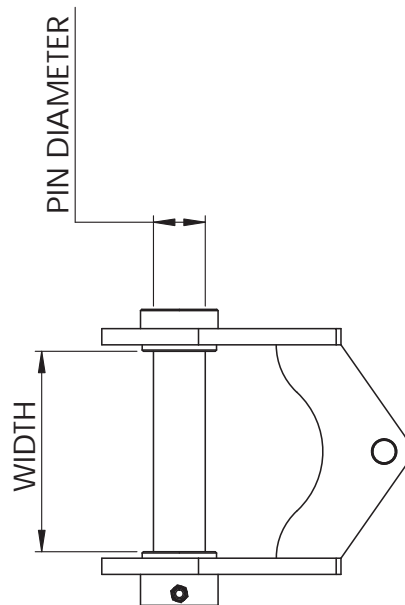
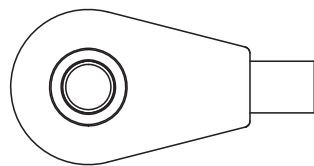
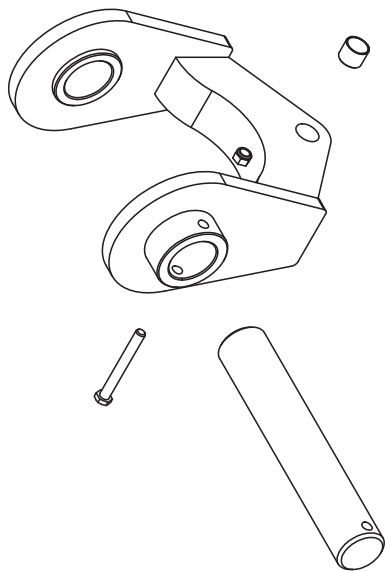
Where the beam, grab or attachment has a rotator and is to be fitted to an excavator which does not have a quick coupler a One-Pin Adapter Head should be specified.

This arrangement is as shown below. The Main Pin (1) is removable and fits through the excavator boom end boss.

When specifying this attachment system we need to know the two dimensions shown on Page 11.



Rotator and One-Pin Adapter Head



WIDTH.....mm

PIN DIAMETER.....mm

Archimedes Adapter Heads

Where the beam, grab or attachment is to be fitted to an excavator equipped with an Archimedes Rotator an Archimedes Adapter must be specified.

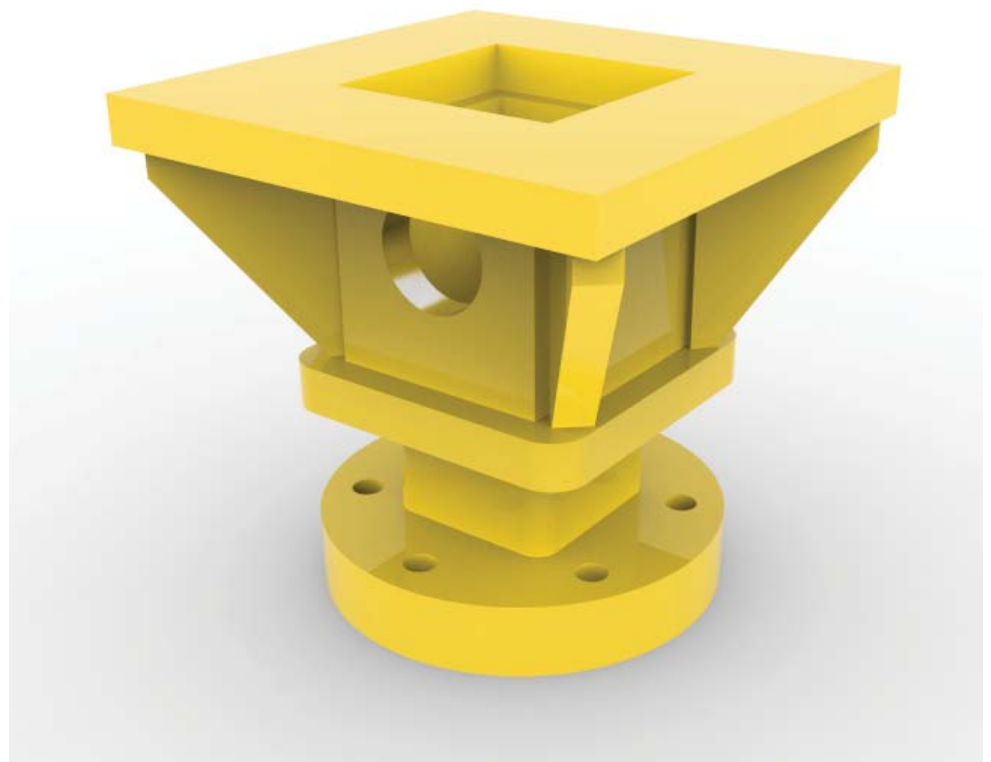
A typical Archimedes Adapter Head is shown below. The square recess engages with the square drive-shaft of the Archimedes rotator and is fixed with a cross pin (not shown).

When specifying this attachment system we need to know the SIX dimensions shown on Page 13.

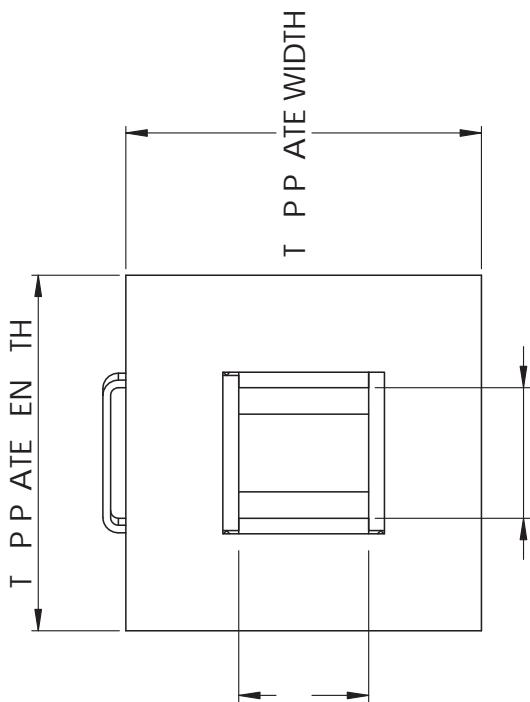
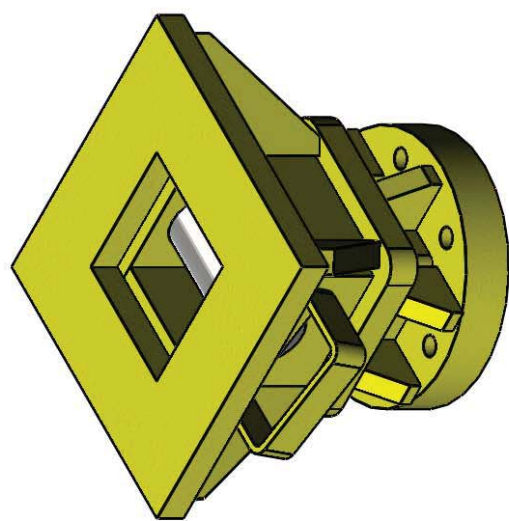
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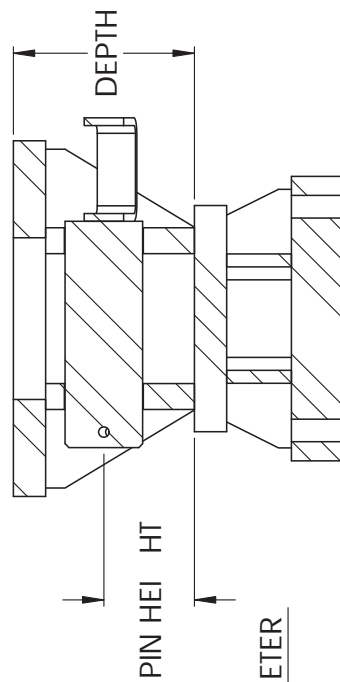
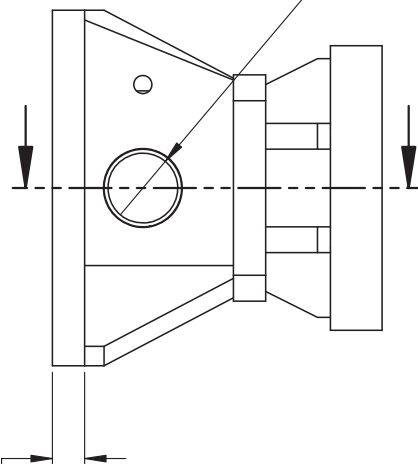
See page 4 & 5 for details



A typical Atlas Square Drive Adapter Head



T P P ATE THIC NESS



SECTI N

PIN DIAMETER.....mm PIN HEI HT.....mm DEPTH.....mm T P P ATE EN TH.....mm

T P P ATE WIDTH.....mm T P P ATE THIC NESS.....mm

Special Adapter Heads

Thomson Engineering Design produce a wide variety of custom adapter heads for all applications including those shown on page 15 as well as many others.

Please enquire for further details to:

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IMPORTANT NOTE

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All Thomson Engineering Design Products are proudly designed and manufactured in the United Kingdom



Caterpillar CW40



Atlas / Pesci / Hiab Truck Crane



Atlas Excavator



Swivel Converter



Quick Coupler Convertor

