

CPM Technical Guide / Load Configuration



Safety for Life

Technical Summary

Please Note:

The following information is purely for the customer to understand how CPM products can be loaded or unloaded safely using mechanical equipment that is specifically designed to handle these products. This equipment is also designed to handle the products with avoidance of 'access to vehicle beds'. Therefore reducing /eliminating the risk of a fall from height. However, a Risk Assessment must be carried out to determine any hazards that may increase the risk of injury before loading/unloading takes place.

The mechanical equipment is available either to purchase from our suppliers, or to hire (where possible) from CPM Group. Some information is also available whereby access to the vehicle bed is avoided using techniques that have been practised and achieved, e.g. use of web slings for Flexible Pipe, use of 'Lifting pin Inserting tool' (Photographs shown). Also vehicles with 'Side Rail Protection' are shown as well as fully equipped vehicles with 'Crane-off-Load' facilities.

Another important section is an information chart for the safe and correct use of Lifting Chains / Slings (BS EN 818-4)
Please read this section carefully before carrying out any lifting operations.

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Lifting Chain/Sling Angle Guidance (BS EN 818-4) / Safe use of 'Deha Lifting Clutches'

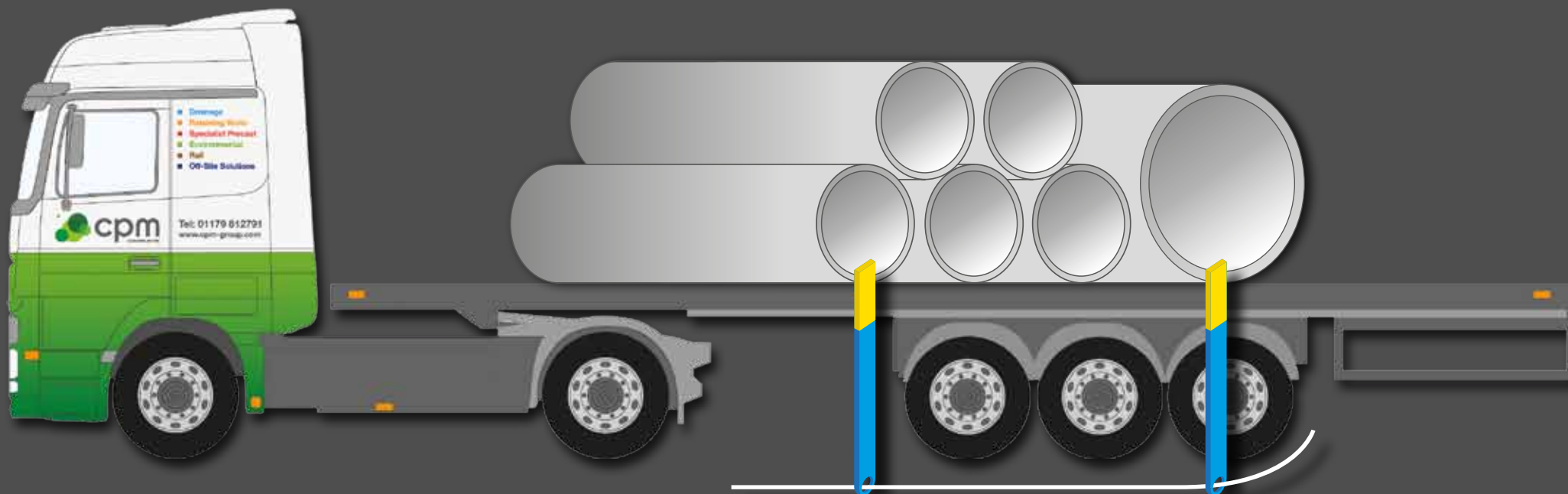
Load Configuration / Flexible Jointed / Ovoid Pipes

| Product | | | Lifting Equipment (CPM Group Ltd) | |
|---|-----------------|---------------|---|---|
| Flexible Jointed Pipes | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | |
|  | 225 | 100 |  |  |
| | 300 | 334 | | |
| | 375 | 510 | | |
| | 450 | 705 | | |
| | 525 | 900 | | |
| | 600 | 1210 | | |
| | 675 | 1235 | | |
| | 750 | 1440 | | |
| | 900 | 1919 | | |
| | 1050 | 2586 | | |
| | 1200 | 3550 | | |
| | 1500 | 5230 | | |
| | 1800 | 7150 | | |
| Ovoid Pipes | Dimensions / MM | Weight / (KG) | <p>Two 'Mechanical' Methods for unloading Flex and Ovoid Pipes using either fork lift truck or fork attachment on excavator or lifting machine or pipe lifter.</p> <p>(Enquire with CPM Sales Team)</p> | |
|  | 400 | 910 | | |
| | 600 | 2120 | | |
| | 800 | 3300 | | |
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Guidance for unloading Flexible Pipe / Web Sling

Guidance for unloading Flex Pipe Using Web Sling from ground level without the need for access to the vehicle

- To use the web sling on the top rows of pipe, attach a rope to one end and through the web sling lifting eye, pull the rope and sling through the 'Barrel' of the pipe so both web sling eyes are level, undo the rope and attach one end of the web sling eyes to the lifting hook on the machine, the machine is then 'Slewed' over and across to the other side of the pipe to be able to attach the other web sling eye.
- The driver of the machine, along with the 'Banks Man' then lifts off the pipe, the process is then repeated until all the top row is off the vehicle.
- The bottom and last row should not need a rope attached, but throw the web sling through and repeat the exercise.
- This method of unloading can be applied to ovoid pipes.



Load Configuration / Manhole Chamber Ring

Product

Lifting Equipment (CPM Group Ltd)

Manhole Chamber Rings

Dimensions (MM)

Weight (KG)

Loading /Unloading Technique



900

530

1050

710

1200

912

1350

1080

1500

1330

1800

1760

2100

2140

2400

2740

2700

3400

3000

4140

3660

5300

4000

6360

(Below) Three mechanical lifting versions for F.L.T. / Crane Excavator Attachments





Rail side protection available for certain size manhole chamber rings to allow safe working on the vehicle bed



If mechanical means are not available then the Lifting Pin Inserting tool is another method for inserting the Lifting Pins with chains attached. This works well on the larger diameter rings.



Load Configuration / Cover Slabs

| Product | | Lifting Equipment (CPM Group Ltd) | |
|---|--------------------------------|-----------------------------------|--|
| Cover Slabs | With Standard 675 MM Sq Access | | Loading /Unloading Technique |
|  | Dimensions (MM) | Weight (KG) | <div></div> <p>Cover slabs can be off-loaded with F.L.T. or loader/Excavator with Fork Tine attachments.</p> <p>‘Rail Side Protection’ vehicles are available to allow safe working on the vehicle flat bed. This also allows the safe method of attaching the lifting chains/hooks to the lifting points on individual cover slabs. The larger cover slabs can be ‘pre-slung’ providing enough quantities of lifting chain/slugs are available.</p> <p>Please Note:</p> <p>‘Rail Side Protection’ is also offered on smaller diameter Chamber Rings, Rectangular HIC Units,Gullies, some bespoke products</p> <p>For more information on ‘Rail Side Protection’ is available from our sales team.</p> |
| | 900 | 235 | |
| | 1050 | 235 | |
| | 1200 | 355 | |
| | 1350 | 505 | |
| | 1500 | 890 | |
| | 1800 | 1210 | |
| | 2100 | 1745 | |
| | 2400 | 2375 | |
| | 2700 | 3380 | |
| | 3000 | 4590 | |
| | 3660 | 7700 | |
| | 4000 | 9980 | |

Load Configuration / Road Gullies

| Product | | | Lifting Equipment (CPM Group Ltd) | |
|---|-----------------|-------------|--|--|
| Road Gullies | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | |
|  | 300 | 151 |   <p>Mechanical 'Four' or 'Two' Grab System.</p> <p>Can be attached with the fork lift truck with 'Spreader Beam and Drop Chain Hook' or excavator with Drop Chain Hook or if delivery is made using 'Crane-Off-Load' facility.</p> <p>This equipment can be arranged with delivery but enquiries for availability must be made while placing a order.</p> | |
| | 375 | 216 | | |
| | 450 | 287 | | |
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Load Configuration / Perfect Manhole System

| Product | | | Lifting Equipment (CPM Group Ltd) | | |
|---|-----------------|--------------------------------|---|--|--|
| Perfect Manhole Unit | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | | |
|  | 1200 | Dependant on base requirements |    | | |
| | 1500 | Dependant on base requirements | | | |
| | 1800 | Dependant on base requirements | | | |
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Chamber unit and cover slabs are usually palletised (At Extra Cost) for ease of off-loading eliminating the need to access the vehicle bed (If using this method) must have either 'Rail Side Protection System' or some kind of 'Fall Protection' system in place. Either air bags or safety harness attached to operate and lifting machine hook to allow access to lifting points.

If products are not palletised - Rail side protection is preferred, and carries lower risk.

Please Note:

Information and a safe working operating procedure (SWOP) is shown at the end of this information brochure for the use of the 'DEHA' Lifting Anchors / Clutches.

Load Configuration / Redi-Rock

| Product | | | Lifting Equipment (CPM Group Ltd) | |
|---|--------------------------|--------------------------|--|--|
| Redi-Rock Wall System | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | |
| <div>  <p>Redi-Rock Dimensions</p>  </div> | May vary info on Request | May vary info on Request | <div>   <p>Method of using fork lift truck in cut out production slots on the product.</p> <p>If fork lift or fork attachments are not available, then access to the vehicle bed would be required to attach alternative lifting chains to the cast in lifting loop at the top of each unit.</p> <p>Rail Side Protection Vehicle would be available on request.</p> </div> | |
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Load Configuration / HIC/DIC Rectangular Manhole Units

| Product | | | | Lifting Equipment (CPM Group Ltd) | |
|---|-----------------|------------|-------------|---|---|
| HIC/DIC | Dimensions (MM) | Depth (MM) | Weight (KG) | Loading /Unloading Technique | |
|  | 600 x 450 | 150 | 44 |  |  |
| | 600 x 450 | 225 | 58 | | |
| | 600 x 450 | 300 | 86 | | |
| | 750 x 600 | 150 | 67 | | |
| | 750 x 600 | 225 | 100 | | |
| | 750x600 | 300 | 134 | | |
| | 1000 x 675 | 150 | 83 | | |
| | 1000 x 675 | 225 | 130 | | |
| HIC Tops | Dimensions (MM) | HIC Tops | Weight (KG) | <p>Rectangular Manholes and Seating Rings can be palletised or loaded in ‘Bulk’ secured stacks for ease of loading / unloading.</p> <p>They can be off-loaded with fork lift truck, or fork attachments to excavator or loader.</p> | |
|  | 600 x 450 | 150 | 46 | | |
| | 750 x 600 | 225 | 67 | | |
| | 1000 x 675 | 300 | 89 | | |
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Load Configuration / Box Culvert / Miltons

| Product | | | Lifting Equipment (CPM Group Ltd) | |
|---|---------------------------|------------------------------|--|--|
| Box Culverts | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | |
|  | Varying / Sales Enquiries | Varying / Sales Enquiries | <div>   </div> <p>Independent Site Risk Assessments will determine the type of Lifting equipment necessary to safely off-load Box Culverts. Safety Harness/Fall Arrester equipment will be required when Culverts are requested by the customer to be loaded 'Upright' as in the two Photographs.</p> <p>Depending on the many varying sizes of Box Culverts ranging from:</p> <p>Width: 1000MM - 4000MM Height: 300 MM - 2500MM Length - 1000MM - 3000MM</p> <p>With weights ranging from: 2.38 tonne - 11.32 tonne</p> <p>Loading is carried out at CPM Milton Factory using Crane / Fork Lift Truck.</p> <p>Access to the vehicle bed is necessary on the larger, taller sizes, so working at height is almost inevitable to attach the lifting chains to the lifting points.</p> <p>A footed ladder will be required along with a fall arrester harness attached to the crane guideline.</p> | |
| | | From 2.38 tonne -11.32 tonne | | |
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Load Configuration / Retaining Wall Units

| Product | | | Lifting Equipment (CPM Group Ltd) | |
|---|-----------------------------|-----------------------------|---|--|
| Retaining Walls | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | |
|   | Range | Range |   <p>Retaining wall units handled with locating lifting holes to take supplied lifting pins. Access to the vehicle bed will be required. Can be handled using compatible Fork Lift Truck, Tele-handler, excavator with lifting attachments.</p> <p>Rail Side Protection vehicles available to allow 'Safe working at Height'.</p> | |
| | Height / 1000-3000 MM | From 0.47 tonne -2.04 tonne | | |
| | Toe Width Out / 650-1500 MM | | | |
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Load Configuration / Bespoke Product Sample

| Product | | | Lifting Equipment (CPM Group Ltd) | | |
|---|--|--|---|--|--|
| Bespoke | Dimensions (MM) | Weight (KG) | Loading /Unloading Technique | | |
| Bespoke products sample opposite Lifting points can be of types: <div> <div></div> Lifting Pin Hole Requires Use of Lifting Pin / Hook and Chain </div> <div> <div></div> Lifting cast in socket Requires use of Lifting Loop / Hook and Chain). </div> <div> <div></div> Deha Anchor Requires use of lifting Deha clutches / Sling or Chain </div> | Dependant on customer design and size of product | Dependant on customer design and size of product | | | |
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| | | | Bespoke product samples of how some can be palletised (Depending on size). Also lifting operation showing angle of lifting chains e.g. (4 Leg Chain 10MM / At 45-60 Deg / At 5-6 tonne). | | |

Load Configuration / Types Of Delivery Vehicles Available

Types of Delivery Vehicles



Six wheeler rigid flatbed with Side Rail Fall Protection

"Available as an articulated delivery"
(Safe working on vehicle bed)




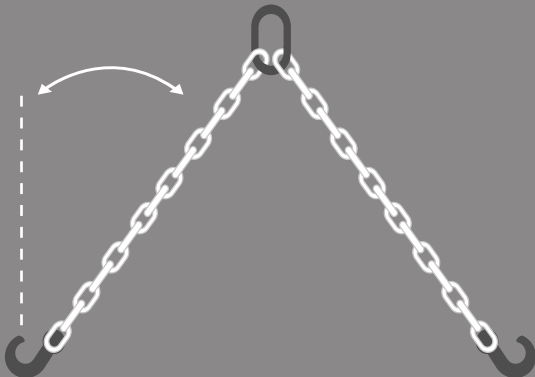
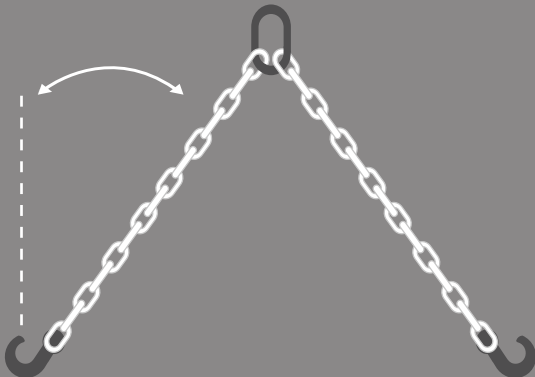
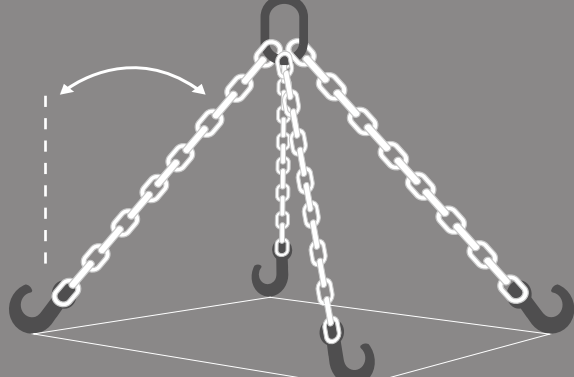
Six wheeler rigid with 'Crane Off-Load' behind the cab facility loaded with large manhole and cover slab units.

(No access to vehicle bed using this facility)



Crane mounted articulated unit with behind the cab crane. This vehicle is equipped with detachable trailer. The artic unit is then allowed to manoeuvre the product into position. This unit has a high capacity lift radius.

Load Configuration / Lifting Angle Guidance

| Chain Size | Single Leg | Two Leg 0° - 45° | Two Leg 45° - 60° | Three / Four Leg 0° - 45° | Three / Four Leg 45° - 60° |
|--|---|--|--|---|----------------------------|
| <p>Working Load Limits</p> <p>Uniform Load Method of Rating BS EN 818-4</p> <p>All general purpose slings should be rated by the uniform load method as shown in the table below.</p> |  |  |  |  | |
| 7mm | 1.5 tonne | 2.1 tonne | 1.5 tonne | 3.1 tonne | 2.2 tonne |
| 8mm | 2.0 tonne | 2.8 tonne | 2.0 tonne | 4.2 tonne | 3.0 tonne |
| 10mm | 3.15 tonne | 4.25 tonne | 3.15 tonne | 6.7 tonne | 4.75 tonne |
| 13mm | 5.3 tonne | 7.5 tonne | 5.3 tonne | 11.2 tonne | 8.0 tonne |
| 16mm | 8.0 tonne | 11.2 tonne | 8.0 tonne | 17.0 tonne | 11.8 tonne |
| 20mm | 12.5 tonne | 17.0 tonne | 12.5 tonne | 26.5 tonne | 19.0 tonne |
| 22mm | 15.0 tonne | 21.2 tonne | 15.0 tonne | 31.5 tonne | 22.4 tonne |
| 26mm | 21.2 tonne | 30.0 tonne | 21.2 tonne | 45.0 tonne | 31.5 tonne |
| 32mm | 31.5 tonne | 45.0 tonne | 31.5 tonne | 67.0 tonne | 47.5 tonne |

Load Configuration / Lifting Angle Guidance Notes

Please Read Carefully

Chain Working Load Limits

When deciding the size of chain sling required, consideration must be given to the mass of the load and the angle between the legs. As the angle increases the working load limit decreases, as shown on previous page - the most popular angle is 90°. (SWL in tonnes - Safety factor 4:1. Limits refer to normal use and equally loaded sling legs).

The Working Load Limit (W.L.L.) is the maximum load which should be applied to a chain sling when used in normal working conditions and is based on a safety factor of 4:1. As working conditions can vary widely the Safe Working Load (S.W.L.) should be determined by a competent person with full working knowledge of the service conditions of the chain sling.

Asymmetric loading conditions

For unequally loaded chain slings it is recommended that the Working Load Limits be determined as follows:-

- 2 leg slings calculated as the corresponding 1 leg slings
- 3 and 4 leg slings calculated as the corresponding 2 leg slings.

Safe use of 'Deha Lifting Clutches' and how to use them

Safe Working Operating Procedure

- Department
- Description of job / work activity
- Risk assessment
- Identified hazards
- Potential outcomes
- PPE Required

General site wide instruction
Using lifting anchor pins and their clutches

Suspended loads, Loss of load, Collapse, Contact with overhead cables, Moving loads, Impact between loads / Object / Persons / Vehicles, Crane failure, slips and trips.

Crush injuries, Broken bones, Bruises, Death



Hard Hat



Hi-Visibility



Hearing Protection



Gloves




Eye Protection

Tools

Activity

Remarks

- 1 Dress in standard company PPE
- 2 Make sure that the area around the cast in anchor is free of debris
- 3 Check the lifting clutch to make sure good and free from defects
- 4  Attach the lifting clutch to the anchor as shown in the photo section 4.

The clutch rotates around the lifting anchor head until the flat is level with the top of the block.

Tools Continued**Activity****Remarks**

5



The flat side of the clutch has to face the lifting centre as shown in the photo.

The lifting chains will hang at an angle locking the clutches into place.

Employee / Name / Signature**Employee Signed into SWOP / Date****Supervisor / Foreman and Signature**

Complete UK Coverage

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