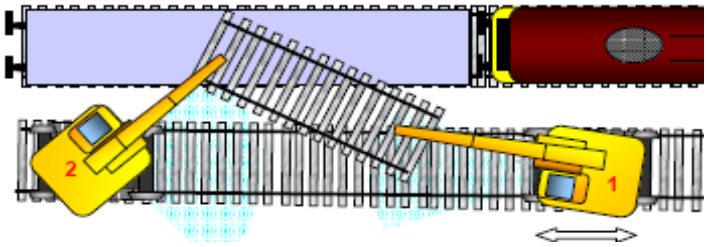
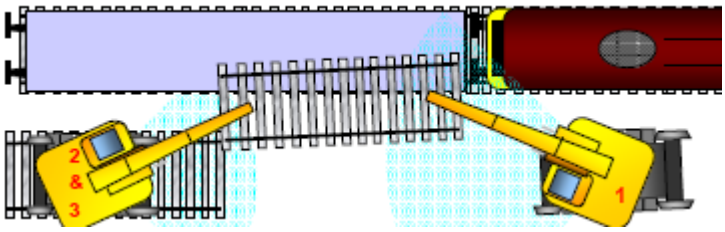


Guidance on
Good Practice for Selection of
RRV Excavator Cranes for
Tandem Lifting of Track Panels



Contents

Tandem Lifting Working Group Members

This guidance has been developed by the Tandem Lifting Working Group which consists of the following members:

Steve Sandford	-	Network Rail
Mark Prescott	-	Network Rail
Andy Littlejohns	-	Network Rail
Shelly Winfield	-	Network Rail
Chris Sayers-Leavy	-	Network Rail
Bob Keogh	-	Network Rail
Liesel von Metz	-	Office of Rail Regulation
Ron Wells	-	Balfour Beatty
John Watson	-	Babcock Rail
Colin Weallans	-	Carillion
Gilles Moullec	-	ameyCOLAS
Graham Pirson	-	Quattro
Ian Pollard	-	Hydrex
Andy Crago	-	Hydrex
Peter Stone	-	Liebherr

Scope and Application

This Guidance applies to any lifting operation which involves the lifting of track-panels using a pair of RRV excavator-cranes working in tandem. In particular it applies to Lifting Operations which involve lifting track panels out of the railway formation and placing them either onto an adjacent Engineering Train or in stacks for later pick-up.

This guidance is aimed at staff directly involved in lift planning with RRV excavator cranes, staff involved in selection of RRV excavator-cranes for lifting operations, or staff involved in managing Track Renewals production activity.

This guidance assumes that sufficient and adequate information to properly plan a lifting operation has been obtained in sufficient time. Typically this is through a site assessment visit (ideally by the Lift Planner) at an early stage in the planning process- eg the Track Renewals Contractors' walk-out at T-22.

This guidance represents good practice, but does not replace or remove the legal duty to properly plan all lifting operations. It should be used in conjunction with:

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER),

- The LOLER Approved Code of Practice and Guidance;
- BS7121:1

and

- Relevant Railway Group Standards, Network Rail standards and M&EE Group Codes of Practice

Assumptions

This Guidance is prepared in order to reflect the most commonly used scenario for the lifting operations in scope, and makes the following assumptions. The lift will be carried out by:

- A pair of RRVs of the same type and with the same version/type of RCI (see Appendix 3).
- The Lifting Accessories in use are a pair of panel-grabs, suspended from a hook on the RRV boom by means of a flexible link (NOT using rotators)- see details in current Network Rail Standards and M&EE Group Guidance (also see photograph in Appendix 3).
- The total load weight must include the weight of the Lifting Accessories being used. Also note that most Duty Charts do not allow for the weight of a quick-hitch (QH), so if there is a QH on the machine this should also be included in the calculation of total weight.
- One RRV is working in rail mode, the other is working in road mode; or both are working in rail mode.
- Any slewing movements are carried out with the float (oscillating) axles set in the configuration (locked or unlocked) specified in the lift plan (typically this requires that the axles be locked on the rail-mode machines).
- The maximum radius throughout the operation is based on the Duty that represents a 45^0 angle of rotation over the fixed (non-pivot) end, as this is typically where the optimum capacity is found. If other slew angles are used, the radius must be calculated for the chosen slew angle and the capacity of the RRV checked at the changed radius/slew angle (see Appendix 1).
- The adjacent line on which any Engineering Train is placed is at standard track interval (ie. 3.5 metres centre to centre, 1970mm running edge to running edge- see Appendix 1).
- The cant on which the rail-mode machine is working does not exceed 50mm. If working on a cant in excess of 50mm, you must check the capacity of your chosen machines at the actual cant (amount and direction) you will be working on.
- Decision about the cant values to be used **must** be based on cant measurements taken on site or an accurate, up to date and detailed site survey.
- Each 60 foot track panel has no more than 28 sleepers, and no more than 14 sleepers for a 30 foot panel.
- If the machine has an articulated boom, it can achieve maximum load configuration (see drawing in Appendix 3).
- There is no allowance made in the load weights used to prepare this Guidance for ground adhesion or frozen ground.

Machine Categories

RRVs have been divided into four categories based on capacity. A full list of machines in each category is given in Appendix 4. This list is based on information supplied by the Rail Plant Association (RPA) and is correct as of the date of issue of Appendix 4.

Machine category	Total Load including lifting accessories *(before de-rating of capacity and sharing of load)*
Red	Under 5.0 tonnes
Yellow	5.0 to 6.5 tonnes
Green	6.5 to 7.0 tonnes
Purple	7.0 to 7.5 tonnes

The categories are based on the ability of the machines to lift 50% of total load share after capacity de-rating in accordance with NR/L2/RMVP/0200/P003 Section 4.5 (published 4th June 2011, compliance by 3rd September 2011) at a calculated Radius of 5.5 metres. This reflects typical lifting operation using a 45^0 slew and then manoeuvring to place a panel onto the wagons of an adjacent Engineering Train at standard track interval. (A diagram showing definition and evaluation of Calculated Radius is shown in Appendix 1).

Where the Auxiliary Lifting Point is used, any difference between the ALP and the RCI reading point should be taken into account when calculating the required radius.

The 45^0 angle of rotation has been chosen as a benchmark as it most often gives the optimum capacity in these conditions. However this does not limit the competent Lift Planner to using this slew angle, provided the machines eventually selected for the Lifting Operation have sufficient capacity and clearance to manipulate the load at the slew angle and radius required/specified.

Selection Guide

Machine category	When using a matched pair of RRVs:	
Red	**USUALLY CANNOT:**	Any 60-foot panel Any 30-foot panel
	USUALLY CAN:	Breather switches comprised of 4 sleepers and 2 60-foot rails
Yellow	**CANNOT**	60-foot, concrete sleepered panel 60-foot, hardwood sleepered panel
	SOMETIMES CAN*	30-foot, concrete sleepered panel 60-foot, softwood sleepered panel 60-foot, steel sleepered panel
	USUALLY CAN	30-foot, hardwood sleepered panel 30-foot, softwood sleepered panel 30-foot, steel sleepered panel Anything else that a pair of "red" category machines "usually can" do.
Green	**CANNOT:**	60-foot, concrete-sleepered panel 60-foot, hardwood sleepered panel
	USUALLY CAN:	30-foot, concrete sleepered panel 60-foot, softwood sleepered panel 60-foot, steel sleepered panel Anything else that a pair of "yellow" category machines "usually can" do.
Purple	**CANNOT:**	60-foot, concrete-sleepered panel
	USUALLY CAN:	60-foot, hardwood sleepered panel Anything else that a pair of "green" category machines "usually can" do.

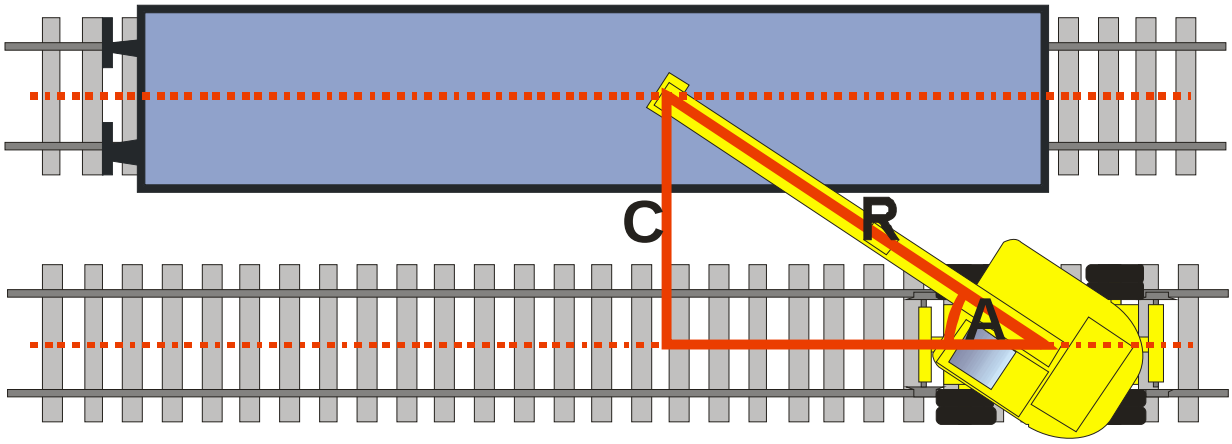
***** further guidance on selection is contained in the flowchart in Appendix 2

Further Guidance and Parameters to Consider

Selection of a pair of RRVs for a lift and the planning for the lift must always be in accordance with the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER). Additional factors need to be considered when planning include:

- The actual machine Duty Chart or Calculator tool to be used to check capacity at the radius that you actually need to work at. If in doubt, a trial lift should be carried out.
- A change of Lifting Accessory will change the total load weight
- The use of the Auxiliary Lifting Point (ALP) and the position of the ALP and RCI reading point on the actual machine to be used should be taken into account in evaluating the calculated radius. Note that the most recent RIS1530 RCIs allow selection of ALP, dipper nose pin or quick-hitch, so the CC should check the operator has selected the correct setting as per the lift plan.
- When using the flexible link with the panel grab, allowance for the lifting accessories will need to be added to the "height" value (see diagram in Appendix 3). The CC should also check throughout the lifting operation that the flexible link is monitored for "plumb" as movement out of plumb indicates uneven load share/load transfer
- A small change of slew angle can increase the Calculated Radius by a relatively large amount. The 45^0 slew angle this Guidance is based upon represents the edge of a Duty Sector for many machines, so close control of the work will be required to remain in the optimum capacity position
- The correct Duty for the slew angle must be chosen. The labelling of sectors in Duty Charts is different for different RCI types (see Appendix 3), however the pivot end is usually zero degrees, and the fixed end is always 180 degrees.
- At a Radius of over 5.5 metres, the capacity of most RRVs drops off rapidly
- If using a machine with an articulated boom, it may not always be able to achieve the optimum boom configuration for maximum capacity, particularly if there are overhead restrictions
- The use of axle-locked slew and other specific moves will require clear written instructions and detailed briefing of the operator and Tandem Controller, as it is may be different to what they "normally" do.
- The operator can only see his own RCI, and the Tandem Controller cannot see either of the RCIs, so neither the Operators nor the Tandem Controller knows what proportion of the load-share each machine really has.
- The RCI will only "see" vertical loads, it does not react to sheer or lateral forces, or to swing. It is due to these additional forces and to compensate for lack of perfectly even load-share that the load de-rating factor detailed in NR/L2/PMVP/0200/P003 section 4.5 (published 4th June 2011, compliance by 3rd September 2011) is applied to tandem lifts with RRV excavator-cranes.
- The RCI will only warn of approach to Safe Working Load (SWL) for the re-rated Tandem Lift load if it has a Tandem Lift mode. If an RCI sounds when Tandem Lifting without Tandem Lift mode (using manual de-rating through the lift plan), you should stop immediately and review the lifting operation/plan
- If the machines have Tandem Lift mode available on the RCI, it must be switched on for all Tandem Lifting operations.

Appendix 1: Diagram showing calculation of Radius.



C = Centre to centre of railway tracks
Note this is NOT normally the radius, although it has frequently and incorrectly been used as such
C can be worked out by adding 1435 mm to the running-edge-to-running-edge (Track Interval) measurement taken where the lifting operation is to be undertaken

R = Calculated Radius

A is the slew angle
This should be the actual angle measured from zero, not the sector quadrant which is often expressed as taken from 180 degrees when working over the fixed end. Hence a quadrant

$$R = \frac{C}{\sin A}$$

Using a typical track interval (3.5 metres centre of four-foot to centre of four-foot), an estimated value for the Radius of the lift can be calculated:

At 45^0, sinA = 0.707, so the (calculated) Radius is 4.95 metres

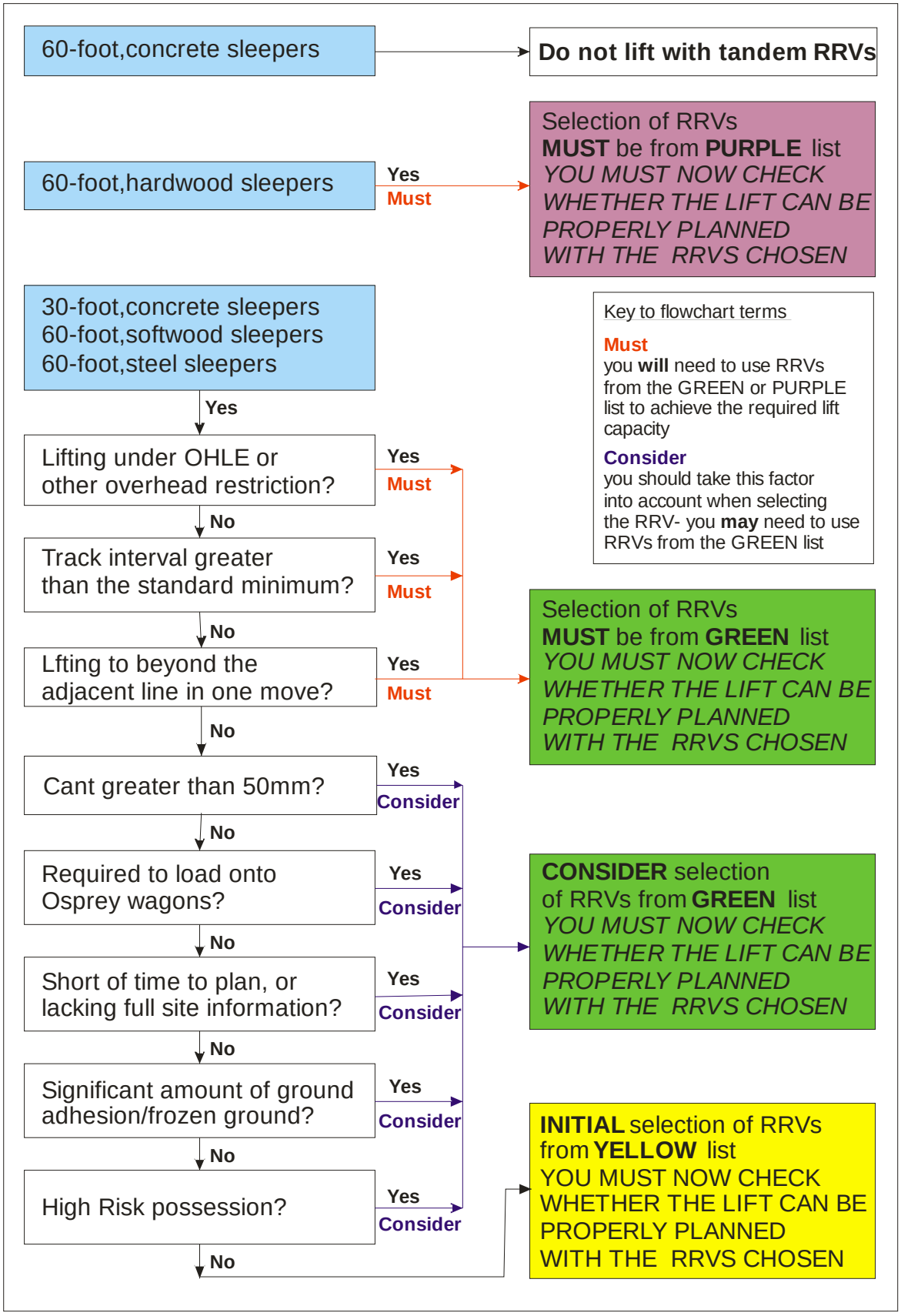
At 30^0, sinA = 0.500, so the (calculated) Radius is 7.00 metres

At 20^0, sinA = 0.342, so the (calculated) Radius is 10.23 metres

If using an Auxiliary Lifting Point (ALP), you may have to add up to 500mm to the calculated value for the Radius to allow for the difference between the RCI (radius) measuring point and the position from which the load is being lifted- depending on the position of the ALP and where the RCI is calibrated to read from.

Thus when checking capacity of a machine working in rail mode to lift panels onto an Engineering Train (using the ALP), it will typically require this capacity at a minimum radius of 5.5 metres in a sector that represents the 45^0 slew. (Note that this configuration of radius/slew angle that most often yields the optimum scenario for capacity).

Appendix 2: Factors to Consider in Machine Selection



Appendix 3: Definitions and further information

Types of RCI

The type of RCI fitted to a RRV excavator-crane can be of two main variants, depending when the RRV was manufactured or last upgraded. These two variants are: (1) those fitted prior to the introduction of the current RIS-1530 standard for plant, and (2) those fitted after that. The RCIs fitted prior to the RIS-1530 plant standard (to the GM/RT1300 standard) are often referred to colloquially as “1300” RCIs, and those fitted in accordance with RIS-1530 are generally known as “1530” RCIs. All types of RCI will sound an alarm on approach to SWL and at overload, and will also motion cut to some extent at overload.

Note that the activation points for the different types of RCI vary. For GM/RT1300 machines, the values are: approach 92.5% to 97.5% of SWL and overload 102.5 to 110% of SWL. For RIS-1530 machines, the values are: approach 90% to 97.5% and overload 100% to 110%. No lift should be planned at more than **93% of SWL** to prevent getting near to overload (ie RCI activation/motion cut).

All RCIs have an in-cab display of some type and all types of RCI have both audible and visual indications of approach and overload. PC-type RCI displays show a message on-screen for approach and overload, whereas the LW4 and LW5 RCIs show lights- yellow for approach and red for overload.

The correct Duty Charts for the RCI calibrated load lifting point being used should be selected, as although there are different settings for use on Network Rail infrastructure and London Underground, some suppliers include both sets with the machine.

The main variants of RCI also have specific characteristics and indications:

GM/RT1300 Type RCI

This variant may have red and white status indicator lights fitted in the machine cab- this is a Jarvis/Balfour Beatty modification, and not fitted to all machines. Where these lights are fitted, the white light is lit if the RCI is active, the red light is lit if the RCI is inactive (switched off) or is over-ridden after an overload. The red light is also lit if the machine is in non RCI (dig) mode.

When overload is reached, the operator can over-ride the RCI and carry on working (red cab light- if fitted- illuminates), and is able to lower the load as well as reduce radius. However, extreme caution must be taken at this time. Before moving any boom section, the CC must determine why the RCI has ‘motion cut’ and whether the load can be lowered and/or which boom section can be moved.

This type of RCI does not have a Tandem Lift Mode.

RIS-1530 Type RCI

These machines may have the same red and white status lights as the GM/RT1300 RCI, but will always have a blue light indication (single beacon or strip of lights) visible from all sides from at least 20 metres away on the ground.

When the RCI is active (in “lift” mode), these blue lights are illuminated. In “dig” mode, the blue lights are not illuminated. The blue lights will also not be illuminated if the RCI has been over-ridden using the key-switch to isolate it. The machine also has a “soft” over-ride switch which can be used in an overload situation to bring the RRV back into a duty which allows movement of the arm.

The machine should only carry out lifting operations in “lift” mode ie **with the blue light illuminated**. If a RIS-1530 machine is lifting with the blue light not illuminated, the lifting operation must be stopped and thorough checks carried out to establish why the blue light is not illuminated. If the RCI is switched off (“dig” mode) or has been over-ridden in any way, in addition to the blue light not being illuminated, this will be logged as an event on the RCI data-logger; if isolated, this RCI will also give a continuous audible warning.

This type of RCI usually has a display screen showing details of the machine modes, cant, gradient and messages such as approach to SWL, overload etc. An alarm will sound on approach to SWL. When maximum rated capacity is reached, in addition to the alarm the RCI will “motion cut.” The only moves available are those which will decrease the radius (this may not include lowering the load).

This type of RCI may or may not have a Tandem Lift mode, depending on the RCI issue version and whether or not it has subsequently had an upgrade.

Manufacturers of RCI- GKD, Prolec, Liebherr and Duty Charts

Both GM/RT1300 type and RIS-1530 type RCIs typically come from two main manufacturers- Prolec or GKD. In addition, Liebherr machines are typically fitted with a proprietary Liebherr RCI. The RCI manufacturer is not of itself an indicator of RCI type (GM/RT1300 or RIS-1530).

Although the same types of RCIs have the same basic functionality and warnings, the Duty Charts have different formats, depending on manufacturer.

Prolec Duty Charts are usually formatted in Sectors (A to E or A to F) where A is the pivot end, whereas GKD and Liebherr work in degrees of rotation (zero over the pivot end) and do not have sectors.

The actual Duty Charts supplied with the machine also differ in format. Prolec Duty Charts are formatted as tables of specific capacities for each Sector, Leibherr arranges the Duty Charts in 15-degree increments, however GKD charts are displayed graphically as capacity contours around the machine. Typically the GKD contour Duty Charts are supplemented by an electronic calculator tool.

When planning a lift with a machine that uses the contour-type Duty Charts, the machine-specific calculator tool must be used, as is used alone, the contour-type Duty Charts are rarely sufficient to enable accurate lift planning.

Lifting Beam with Flexible Link

Photograph of a typical arrangement used to suspend the lifting beam:

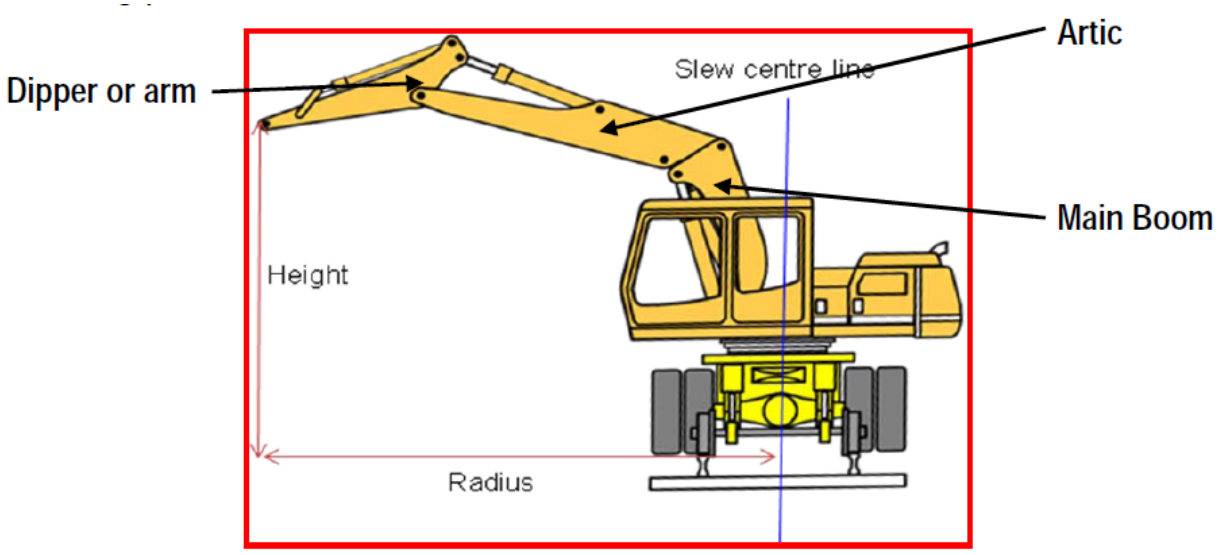
RRV Boom Types

RRVs can be fitted with two types of boom: Monoboom, or an Articulated boom. The monoboom has simple duty charts and has good lifting capabilities albeit cannot be configured for all activities that may be required on the infrastructure. The Articulated type machines have an “artic” boom and “dipper” boom (also known as an arm) allowing several different configurations hence more complicated duty charts. Photographs of the two types of boom are shown below:

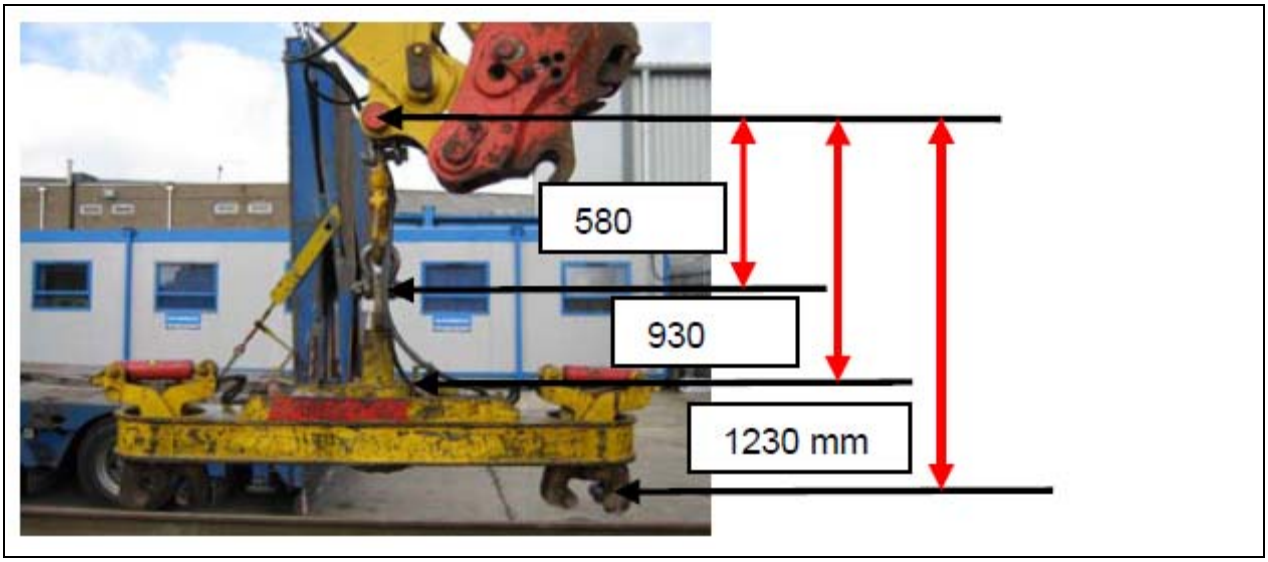
Monoboom

Articulated boom

Boom Components



Auxiliary Lifting Point- Typical Location/Dimensions



The Impact of Boom Configuration- “max” and “min” Duty Charts

A triple articulation machine (ie one with an “artic” boom) can reach the same height and radius using an almost infinite number of equipment angle permutations. This presents a problem for the lift planner as there will be configurations where the machine has a higher capacity in one configuration than another often called minimum and maximum as shown below.

Level Rail

0-50mm

67% SWL

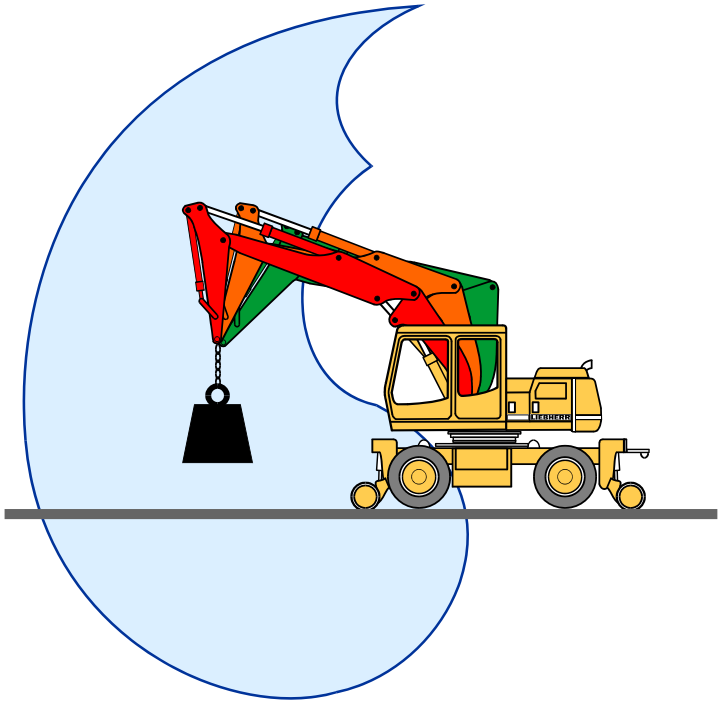
Unlocked

	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m	6.5m	7.0m
7.0m	-	-	-	-	-	5.04	-	-	-	-	-
6.0m	-	-	-	-	-	-	4.39	3.83	-	-	-
5.0m	-	-	-	-	-	5	4.35	3.83	3.39	-	-
4.0m	-	-	-	-	5.66	4.88	4.26	3.76	3.35	3	-
3.0m	-	-	-	6.65	5.5	4.72	4.15	3.68	3.3	2.97	-
2.0m	-	-	8.02	6.44	5.34	4.57	4.03	3.59	3.23	2.92	2.65
1.0m	-	9.9	7.67	6.21	5.18	4.47	3.95	3.53	3.18	2.88	-
0.0m	*7.54a*	*8.19a*	7.39	6.02	5.08	4.41	3.9	3.48	3.14	2.86	-
-1.0m	*7.14a*	*7.49a*	7.28	5.98	5.07	4.41	3.89	3.47	3.14	-	-
-2.0m	12	9.39	7.38	6.05	5.12	4.44	3.92	-	-	-	-

	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m	6.5m	7.0m
7.0m	-	-	-	-	-	5.04	-	-	-	-	-
6.0m	-	-	-	-	-	-	4.41	3.83	-	-	-
5.0m	-	-	-	-	-	5.02	4.4	3.89	3.4	-	-
4.0m	-	-	-	-	5.73	4.96	4.37	3.89	3.42	3.01	-
3.0m	-	-	-	6.67	5.67	4.92	4.34	3.88	3.4	3	-
2.0m	-	-	8.04	6.64	5.65	4.91	4.34	3.83	3.36	2.97	2.65
1.0m	-	10.12	8.06	6.66	5.67	4.89	4.28	3.74	3.29	2.93	-
0.0m	*11.93a*	9.9	7.87	6.5	5.52	4.78	4.17	3.64	3.23	2.88	-
-1.0m	12	9.77	7.74	6.4	5.45	4.67	4.06	3.56	3.17	-	-
-2.0m	12	9.74	7.71	6.32	5.31	4.56	3.98	-	-	-	-

It can be noted that the capacity differs by a relatively small amount at the larger radii and is greater at the smaller radii. The capacity which is in italics indicate the RRV artic cylinder (identified with an ‘a’ beside the number) due to the hydraulic pressure reaching its limit of 87% of system pressure.

The sketch below indicates this principle above achieving the same height/radius position in different configurations; green shows the Main boom fully back, red shows the Main boom fully forward, with orange showing the position midway between these.



Appendix 4: List of Machines in Each Category

GIGA

PURPLE Category **7.0 to 7.5 tonnes total load** **5.3 to 5.7 tonnes COP008 load share**

Machine	NWR UID No:	Upper SWL (@ 100% of RCI value; e g 'Alarm') Height Range, (min default Lifting Point Height + 1.0m)	Rail Duty	Radius	cant	height limit
Hydrex:						
Philmor (Monster) YB04-02347 (1.2m Dipper)	99709_911006-3	8750kg	135° Locked	5.5m	50mm	envelope
Philmor (Monster) YB04-02354	990709 911007-1	8750kg	135° Locked	5.5m	50mm	envelope
Philmor (Monster) YB04-02377	990709 911004-8	8750kg	135° Locked	5.5m	50mm	envelope
Philmor (Monster) YB04-02378	990709 911005-5	8750kg	135° Locked	5.5m	50mm	envelope
Philmor Kobelco SK200 YB02-02040 (1m + 3m arm)	99709_911071-7	6170kg (6070kg 2m818 arm)	2h Locked	5.5m	50mm	envelope
Philmor Kobelco SK200 LA02-01230 (1m + 3m arm)	99709_911070-9	6170kg (6070kg 2m818 arm)	2h Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301274 (1.8m arm)	99709-940031-6	5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301275	99709-940032-4	5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301277	99709-940033-2	5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301278	99709-940034-0	5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 168M301766	99709-940006-8	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 168M301767	99709-940007-6	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 168M301769	99709-940014-2	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 168M301774	99709-940015-9	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301299	99709-940087-8	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301301	99709-940088-6	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301302	99709-940089-4	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301303	99709-940091-0	5930kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301279	99709-940035-7	5410kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', 180S301280	99709-940037-3	5410kg	Sector D Locked	5.5m	50mm	envelope
Quattro:						
TEREX 'Giga-Railer', 180S301265 (axle 2168)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301266 (axle 2169)		5600kg	Sector D	5.5m	50mm	envelope

			Locked			
Readypower:						
TEREX 'Giga-Railer 12', (1.8m arm) [FR641]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR642]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR643]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR645]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR646]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR647]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR648]		5690kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer 12', (1.8m arm) [FR644A]		5690kg	Sector D Locked	5.5m	50mm	envelope
Shovlin:						
TEREX 'Giga-Railer', 180S301286 (2227)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301288 (2228)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301306 (2290)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301307 (2291)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301308 (2292)		5600kg	Sector D Locked	5.5m	50mm	envelope
TEREX 'Giga-Railer', 180S301309 (2293)		5600kg	Sector D Locked	5.5m	50mm	envelope
Story Rail:						
Colmar T10000 SR 681 (99709-940553-9) 8033		6570kg	Sector D Locked	5.5m	50mm	envelope
Colmar T10000 SR 681 (99709-940553-9) 8034		6570kg	Sector D Locked	5.5m	50mm	envelope
VolkerRail:						
Colmar T10000FS (#7034)		7000kg	2LtC	5.5m	50mm	envelope
Colmar T10000FS (#7035)		7120kg	2LTC	5.5m	50mm	envelope
Colmar T10000FS (#7036)		7120kg	2LTC	5.5m	50mm	envelope
Colmar T10000FS (#7037)		7120kg	2LTC	5.5m	50mm	envelope

GIGA 2

GREEN Category **6.5 to 7.0 tonnes total load** **4.9 to 5.3 tonnes COP008 load share**

Machine	NWR UID No:	Upper SWL (@ 100% of RCI value; e g 'Alarm') Height Range, (min default Lifting Point Height + 1.0m)	Rail Duty	Radius	cant	height limit
Hydrex:						
Terex 2804 168M301663	99709-940147-0	5200kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301651	99709-940149-6	5200kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301666	99709-940148-8	5200kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301671	99709-940151-2	5200kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301674	99709-940150-4	5200kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301675	99709-940152-0	5200kg	2d Locked	5.5m	50mm	envelope
Keltbray:						
Komatsu PC228 S'No:4009 Ax'No:2132 (E1318)		5230kg	Sector C Stationary	5.5m	50mm	envelope
Komatsu PC228 S'No:4009 Ax'No:2132 (E1317)		5230kg	Sector C Stationary	5.5m	50mm	envelope
Paul John Plant:						
Doosan Ulitmate 260 [917]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 260 [918]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 260 [919]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 260 [920]		awaiting GKD planner software		5.5m		
QTS:						
Doosan DX160 Ult' 260 (RRC237)		5170kg	225° Locked	5.5m	50mm	envelope
Doosan DX160 Ult' 260 (RRC239)		5170kg	225° Locked	5.5m	50mm	envelope
Quattro:						
Doosan DX160 Ult' 260 (QPL313)		5170kg	225° Locked	5.5m	50mm	envelope
Doosan DX160 Ult' 260 (QPL314)		5170kg	225° Locked	5.5m	50mm	envelope
Stobart:						
Doosan DX160 Ult' 260 (RRC251)		5170kg	225° Locked	5.5m	50mm	envelope
Total Rail Solutions:						
Case WX170M 2m13+2m57+2m20 [TRS1001]		4910kg	2d Locked	5.5m (min 3.5m)	50mm	4.0m
Case WX170M 2m13+2m57+2m20 [TRS1002]		4910kg	2d Locked	5.5m (min 3.5m)	50mm	4.0m

MEGA

YELLOW Category **5.0 to 6.5 tonnes total load** **3.8 to 4.9 tonnes COP008 load share**

Machine	NWR UID No:	Upper SWL (@ 100% of RCI value; e g 'Alarm') Height Range, (min default Lifting Point Height + 1.0m)	Rail Duty	Radius	cant	height limit
APWebb Plant Hire:						
JCB JS175RR +1m95 +3m40 +1m00 [063]		3890kg	2d Locked	5.5m	50mm	envelope
JCB JS175RR +1m95 +3m40 +1m00 [064]		3890kg	2d Locked	5.5m	50mm	envelope
Caledonian Industrial:						
Colmar T10000FS (#7233)		4260kg	2d Locked	5.5m	50mm	envelope
Hydrex:						
CASE 988SP2M CGG0232350	99709_940229-6	4220kg	2d Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232361	99709_940230-4	4220kg	2d Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232349	99709-940209-8	4100kg	2dL	5.5m	50mm	5.0m
CASE 988SP2M CGG0232317	99709-940211-4	4100kg	2dL	5.5m	50mm	5.0m
CASE 988SP2M CGG0232320	99709_940199-1	4100kg	2dL	5.5m	50mm	5.0m
CASE 988SP2M CGG0232282	99709-940190-0	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232334	99709-940189-2	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232335	99709-940192-6	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232336	99709-940193-4	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232327	99709-940194-2	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232342	99709-940195-9	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232379	99709-940212-2	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232377	99709-940213-0	4100kg	Sector D Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232129	99709-940183-5	4100kg	Sector D Locked	5.5m	50mm	5.0m
Case 988 CGG0231201	99709_940171-0	3970kg	225° Locked	5.5m	50mm	envelope
Case 988 CGG0231225	99709_940172-8	3970kg	225° Locked	5.5m	50mm	envelope
PW150 Ult' 250 K35180	99709-940284-1	4710kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35197	99709-940291-6	4710kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35199	99709_942093-2	4710kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35179	99709_942083-3	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35181	99709_940285-8	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35182	99709_940286-6	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35198	99709-940292-4	4690kg	2d Locked	5.5m	50mm	5.0m

PW150 Ult' 250 K35191	99709-940287-4	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35194	99709-940288-2	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35195	99709-940289-0	4690kg	2d Locked	5.5m	50mm	5.0m
PW150 Ult' 250 K35196	99709_940290-8	4710kg	2d Locked	5.5m	50mm	5.0m
Liebherr A900CZW 1033PZK046551	99709-940654-5	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK047373	99709-940655-2	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW ZK047374	99709-9406656-0	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW TZK047441	99709-9406657-8	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW PZK047442	99709-940658-6	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW KZK047605	99709-940659-4	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK047647	99709-940669-3	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW JZK047718	99709-940670-1	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK047719	99709-940671-9	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW EZK047792	99709-940672-7	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK047865	99709-940673-5	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW VZK047866	99709-940674-3	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW TZK047925	99709-940675-0	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK047972	99709-940676-8	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW AZK048033	99709-940678-4	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW AZK048078	99709-940679-2	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW LZK048079	99709-940680-0	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK048121	99709-940681-8	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW TZK048122	99709-940682-6	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW PZK048123	99709-940683-4	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW LZK048177	99709-940684-2	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK048278	99709-940686-7	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW TZK048279	99709-940687-5	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW LZK048339	99709-940688-3	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW VZK048340	99709-940689-1	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW AZK048405	99709-940699-0	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW LZK048406	99709-940700-6	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW EZK048473	99709-940701-4	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK048474	99709-940702-2	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW TZK047973	99709-940677-6	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW CZK048619	99709-940703-0	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW PZK048669	99709-940704-8	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW 3AZK050316	99709-940713-9	4500kg	225° Locked	5.5m	50mm	5.0m
Liebherr A900CZW ZK050410	99709-940714-7	4500kg	225° Locked	5.5m	50mm	5.0m
CASE 988SP2M CGG0232362	99709_940210-6	4100kg	Sector D Locked	5.5m	50mm	5.0m
Case 988SP2S CGG0232152	99709-940234-6	3870kg	Sector D Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232153	99709-940222-1	3870kg	Sector D Locked	5.5m	50mm	envelope

Case 988SP2S CGG0232345	99709-940196-7	3870kg	Sector D Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232346	99709_914026-8	3870kg	Sector D Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232347	99709-940197-5	3870kg	Sector D Locked	5.5m	50mm	envelope
Terex 1604 Superailer 169M301642	99709-940038-1	3800kg	Sector D Locked	5.5m	50mm	envelope
Case WX170 Superailer CGG0232648	99709_940206-4	3870kg	Sector D Locked	5.5m	50mm	envelope
L&W Contractors:						
Colmar T10000FS (#7794)		4220kg	2d Locked	5.5m	50mm	envelope
Paul John Plant:						
Case 988 SP2M 2m10 dipper [RR904]		3930kg	2d Locked	5.5m	50mm	envelope
Case 988 SP2M 2m10 dipper [RR905]		3930kg	2d Locked	5.5m	50mm	envelope
PW150ES-6 1m965+3m25+2m10 [RR1141]		4170kg	2d Locked	5.5m	50mm	6.0m
PW150ES-6 1m965+3m25+2m10 [RR1143]		4170kg	2d Locked	5.5m	50mm	6.0m
PW150ES-6 1m965+3m25+2m10 [RR1145]		4170kg	2d Locked	5.5m	50mm	6.0m
Case Super Railer 988 [RR1135]		awaiting GKD planner software		5.5m		
Case Super Railer 988 [RR1136]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [910]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [911]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [912]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [913]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [909]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [914]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [915]		awaiting GKD planner software		5.5m		
Doosan Ulitmate 220 [916]		awaiting GKD planner software		5.5m		
Quattro:						
WX170 Megarailer CGG0232764 [139]		3890kg	2dl	5.5m (min 3.5m)	50mm	envelope
WX170 Megarailer CGG0232765 [140]		3890kg	2dl	5.5m (min 3.5m)	50mm	envelope
WX170 Megarailer CGG0232803 [250]		3890kg	2dl	5.5m (min 3.5m)	50mm	envelope
WX170 Megarailer CGG0232799 [251]		3890kg	2dl	5.5m (min 3.5m)	50mm	envelope
WX170 Megarailer CGG0232804 [253]		3890kg	2dl	5.5m (min 3.5m)	50mm	envelope
Terex 2804 168M301653		4800kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301658		4800kg	2d Locked	5.5m	50mm	envelope
Komatsu PW160 MR3 [QPL701]	99709 940532-3	4740kg	Sector D Locked	5.5m	50mm	6.0m
Komatsu PW160 MR3 [QPL696]	99709 940619-8	4740kg	Sector D Locked	5.5m	50mm	6.0m
Komatsu PW160 MR3 [QPL697]	99709 940620-6	4740kg	Sector D Locked	5.5m	50mm	6.0m

Komatsu PW160 MR3 [QPL698]	99709 940645-3	4740kg	Sector D Locked	5.5m	50mm	6.0m
Komatsu PW160 MR3 [QPL699]	99709 940663-6	4740kg	Sector D Locked	5.5m	50mm	6.0m
Komatsu PW160 MR3 [QPL700]	99709 940664-4	4740kg	Sector D Locked	5.5m	50mm	6.0m
Readypower:						
Terex 2804 168M301570 [FR625]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301592 [FR626]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301629 [FR629]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301631 [FR630]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301634 [FR631]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301645 [FR632]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301646 [FR633]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301648 [FR634]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301643 [FR635]		4760kg	2d Locked	5.5m	50mm	envelope
Terex 2804 168M301647 [FR636]		4760kg	2d Locked	5.5m	50mm	envelope
TerexGigarailer 12 168M301661 [FR637]		4760kg	2d Locked	5.5m	50mm	envelope
TerexGigarailer 12 168M301662 [FR638]		4760kg	2d Locked	5.5m	50mm	envelope
TerexGigarailer 12 168M301644 [FR639]		4760kg	2d Locked	5.5m	50mm	envelope
TerexGigarailer 12 168M301650 [FR640]		4760kg	2d Locked	5.5m	50mm	envelope
Case 988 SP2M 231361 [FR611]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 231372 [FR612]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232033 [FR613]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232094 [FR614]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232176 [FR615]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232226 [FR616]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232236 [FR617]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 SP2M 232243 [FR618]		4180kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case 988 CGG0232314 [FR619]		3940kg	Sector D Locked	5.5m	50mm	envelope
Case 988 CGG0232322 [FR620]		3940kg	Sector D Locked	5.5m	50mm	envelope
Case 988 CGG0232381 [FR621]		4520kg	Sector D Locked	5.5m	50mm	4.0m
Case 988 CGG0232382 [FR622]		4520kg	Sector D Locked	5.5m	50mm	4.0m
Case 988 CGG0232383 [FR623]		4520kg	Sector D Locked	5.5m	50mm	4.0m
Case 988 CGG0232387 [FR624]		4520kg	Sector D Locked	5.5m	50mm	4.0m
Case WX170 CGG0232778 [FR670]		4380kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope
Case WX170 CGG0232779 [FR671]		4380kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope

Shovlin:							
Case 988 Mega 1.8m+3.13m+2.1m [1667]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1668]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1748]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1749]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1750]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1751]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1752]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1773]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1824]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1825]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Mega 1.8m+3.13m+2.1m [1826]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1405]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1436]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1438]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1439]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1588]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Case 988 Super 1.8m+3.13m+2.1m [1591]		3900kg	Sector D Locked	5.5m (min 4.0m)	50mm	envelope	
Total Rail Solutions:							
Case 988 1.80m+2.10m+3.13m [TRS705]		4790kg	2dL	5.5m	50mm	4.0m	
Case 988 1.80m+2.10m+3.13m [TRS706]		4790kg	2dL	5.5m	50mm	4.0m	

SUPER

RED Category **under 5.0 tonnes total load** **under 3.8 tonnes COP008 load share**

Machine	NWR UID No:	Upper SWL (@ 100% of RCI value; e g 'Alarm') Height Range, (min default Lifting Point Height + 1.0m)	Rail Duty	Radius	cant	height limit
APWebb Plant Hire:						
O&K MH5 +1.70m dipper [065]		awaiting GKD planner software				
O&K MH5 +1.70m dipper [066]		awaiting GKD planner software				
O&K MH5 +2m +3m +1.78m dipper [53] 315520	99709-970049-1	2440kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +1.78m dipper [55] 315519		2440kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [27] 315525	99709-970042-6	2490kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [43] 315534	99709-970054-1	2490kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [47] 315527	99709-970051-7	2490kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [68] 315586		2490kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [69] 315587		2490kg	225° Locked	5.5m	50mm	envelope
O&K MH5 +2m +3m +2.30m dipper [70] 315588		2490kg	225° Locked	5.5m	50mm	envelope
O&K MH4-S 1m50 dipper [057] 315068		1390kg	2d Locked	5.5m	50mm	envelope
Hydrex:						
WX170M Artic CGG0232752	99709_940240-3	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232755	99709_940241-1	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232742	99709_940242-9	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232754	99709_940243-7	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232750	99709_940200-7	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232757	99709_940205-6	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232763	99709_940201-5	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232772	99709_940204-9	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232774	99709_940202-3	3580kg	2d Locked	5.5m	50mm	envelope
WX170M Artic CGG0232770	99709_940203-1	3580kg	2d Locked	5.5m	50mm	envelope
PW150ES-6 K35051	99709-940281-7	3520kg	2d Locked	5.5m	50mm	envelope
PW150ES-6 K35105	99709-940282-5	3520kg	2d Locked	5.5m	50mm	envelope
Liebherr A900ZW 972-CKZ23909	99709-940526-5	2160kg	2c Locked	5.5m	50mm	envelope
Liebherr A900ZW 972-CKZ23910	99709-940455-7	2160kg	2c Locked	5.5m	50mm	envelope
Case 988P CGG0232220	99709_940236-1	2680kg	2d Locked	5.5m	50mm	envelope
Case 988P CGG0232244	99709_940237-9	2680kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232035	99709_940179-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232075	99709_940216-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232096	99709_940181-9	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232135	99709_940220-5	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232147	99709_940221-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232150	99709_940232-0	3450kg	2d Locked	5.5m	50mm	envelope

Case 988SP2S CGG0232151	99709_940233-8	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232156	99709_940223-9	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232157	99709_940224-7	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232179	99709_940184-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232186	99709_940185-0	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232196	99709_940235-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232216	99709_940238-7	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232225	99709_940239-5	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CCG0232229	99709_940225-4	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232233	99709_940186-8	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232324	99709_940226-2	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232325	99709_940227-0	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232329	99709_940228-8	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232344	99709_940188-4	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232348	99709_940198-3	3450kg	2d Locked	5.5m	50mm	envelope
Case 988SP2S CGG0232246	99709_940187-6	3450kg	2d Locked	5.5m	50mm	envelope
Komatsu PW130 K34068	99709_940272-6	3350kg	2c Locked	5.5m	50mm	envelope
Komatsu PW130 K34071	99709_940275-9	3350kg	2c Locked	5.5m	50mm	envelope
Komatsu PW130 K34070	99709_940274-2	3430kg	2c Locked	5.5m	50mm	envelope
Komatsu PW130 K34069	99709_940273-4	3430kg	2c Locked	5.5m	50mm	envelope
Philmor SK135 YH02-04453	99709_911052-7	3010kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04975	99709_911059-2	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04959	99709_911056-8	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04960	99709_911057-6	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04994	99709_911065-9	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04995	99709_911066-7	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-05268	99709_911067-5	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-05455	99709_911069-1	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-05269	99709_911068-3	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04976	99709_911060-0	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04986	99709_911062-6	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04985	99709_911061-8	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04989	99709_911063-4	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06623	99709_911134-3	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06613	99709_911133-5	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06637	99709_911135-0	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06551	99709_911130-1	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06544	99709_911129-3	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06595	99709_911131-9	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY04-06599	99709_911132-7	2840kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04956	990709 911055-0	3070kg	225° Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04963	990709 911058-4	3070kg	225° Locked	5.5m	50mm	envelope
Kobelco SK135 YY03-04993	99709_911064-2	3070kg	225° Locked	5.5m	50mm	envelope

Kobelco SK135SR YY04047945	990709 911001-4	3630kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135SR YY04047968	990709 911002-2	3620kg	2d Locked	5.5m	50mm	envelope
Kobelco SK135SR YH0201904	99709_911051-9	3110kg	225° Locked	5.5m	50mm	envelope
Kobelco SK135SR YY0204454	99709_911053-5	3110kg	225° Locked	5.5m	50mm	envelope
Komatsu P95 21D5200264	99709_911126-9	no equivalent duty	n/a			
Komatsu P95R 21D5220472	99709-911003-0	1990kg	2c Locked	5.5m	50mm	envelope
Komatsu P95 21D520000099	99709_911125-1	no equivalent duty	n/a			
Komatsu P95R 21D5200263	99709_914036-7	no equivalent duty	n/a			
Komatsu PC110-9A 0446	99709-911011-3	1730kg (estimate)	225° Locked	5.5m	50mm	envelope
Komatsu PC110-9A 0447	99709-911012-1	1730kg (estimate)	225° Locked	5.5m	50mm	envelope
Komatsu PC110-9A 2265010476	99709-911016-2	1730kg	225° Locked	5.5m	50mm	envelope
Komatsu PC110R-1 2265010478	99709-911261-4	1730kg	225° Locked	5.5m	50mm	envelope
Komatsu PC110 2265010477	99709-911017-0	1730kg	225° Locked	5.5m	50mm	envelope
Komatsu PC110 2265010479	99709-911018-8	1730kg	225° Locked	5.5m	50mm	envelope
Komatsu PC128US 8158	99709_911119-4	2170kg	2d Locked	5.5m	50mm	envelope
Komatsu PC128US K9017	99709_911124-4	2620kg	2d Locked	5.5m	50mm	envelope
Komatsu PC128US 9012	99709_911123-6	2960kg	2d Locked	5.5m	50mm	envelope
Komatsu PC128 8455	99709_911120-2	2620kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 5366	99709_911093-1	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6023	99709_911094-9	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6034	99709_970018-6	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6087	99709_911098-0	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6133	99709_911103-8	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6150	99709_911104-6	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6198	99709_911107-9	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6212	99709_911108-7	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6276	99709_911112-9	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6281	99709_911113-7	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6270	99709_911110-3	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6274	99709_911111-1	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 5320	99709_911092-3	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6262	99709_911127-7	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6609	99709_911115-2	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6596	99709_911114-5	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6630	99709_911116-0	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6651	99709_911117-8	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6657	99709_911118-6	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 6675	99709_911128-5	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7805	99709-911214-5	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7804	99709-911213-5	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7803	99709-911212-7	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7802	99709-911211-9	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7801	99709-911210-1	1060kg	2d Locked	5.5m	50mm	envelope

Komatsu PC138US-2RM 7800	99709-911209-3	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7798	99709-911030-3	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7797	99709-911029-5	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7796	99709-911028-7	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7794	99709-911026-1	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7795	99709-911027-9	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7580	99709-911014-7	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7619	99709-911015-4	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7608	99709-911010-5	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7631	99709-911024-6	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7642	99709-911023-8	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 7793	99709-911025-3	1060kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 4641	99709_911076-6	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 4642	99709_911077-4	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 4648	99709_911078-2	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 4653	99709_911079-0	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 5234	99709_911087-3	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2RM 5318	99709_914034-2	980kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 4619	99709_911072-5	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 4630	99709_911073-3	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 4633	99709_911074-1	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 4637	99709_911075-8	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 4658	99709_911081-6	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5213	99709_911084-0	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5305	99709_911091-5	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5224	99709_911085-7	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5230	99709_911086-5	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5292	99709_911088-1	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5293	99709_911089-9	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-3RM 5300	99709_914033-4	970kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2 4891	99709_911083-2	3130kg	2d Locked	5.5m	50mm	envelope
Komatsu PC138US-2 4894	99709_943029-9	3130kg	2d Locked	5.5m	50mm	envelope
Mecalac14MXT RR30768	99709_940299-9	1065kg	2b Locked	5.5m	50mm	envelope
Mecalac14MBX RR30777	99709_940301-3	1160kg	2b Locked	5.5m	50mm	envelope
Mecalac14MBX 30818	99709_942096-5	no equivalent duty	n/a			
Mecalac14MBX 30824	99709_940297-3	no equivalent duty	n/a			
Mecalac14MBX 30827	99709_940298-1	no equivalent duty	n/a			

Paul John Plant:						
Case WX170M 1m80+3m10+2m10 [RR907]		3580kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
Case WX170M 1m80+3m10+2m10 [RR908]		3580kg	2d Locked	5.5m (min 4.0m)	50mm	envelope
SK135SR 4m60 mono +2m10 dipper [RR130]		3010kg	2d Locked	5.5m	50mm	envelope

SK135SR 4m60 mono +2m10 dipper [RR131]		3010kg	2d Locked	5.5m	50mm	envelope
SK135 2.32+2.50+2.1 [RR132]		2840kg	2d Locked	5.5m	50mm	envelope
SK135 2.32+2.50+2.1 [RR133]		2840kg	2d Locked	5.5m	50mm	envelope
SK135 2.32+2.50+2.1 [RR134]		2840kg	2d Locked	5.5m	50mm	envelope
SK135 2.32+2.50+2.1 [RR135]		2840kg	2d Locked	5.5m	50mm	envelope
PC138US-2RM 1m963+3m23+2m10 [RR301]		1060kg	2d Locked	5.5m	50mm	envelope
PC138US-2RM 1m963+3m23+2m10 [RR302]		1060kg	2d Locked	5.5m	50mm	envelope
PC138US-2RM 1m963+3m23+2m10 [RR303]		1060kg	2d Locked	5.5m	50mm	envelope
PC138US-2RM 1m963+3m23+2m10 [RR304]		1060kg	2d Locked	5.5m	50mm	envelope
PC138US [RR201]		awaiting GKD planner software		5.5m		
PC138US [RR202]		awaiting GKD planner software		5.5m		
Quattro:						
PW150 K35119 [QPL137]		3620kg	2dl	5.5m	50mm	6.0m
PW150 K35133 [QPL419]		3620kg	2dl	5.5m	50mm	6.0m
PW150 K34311 [QPL124]		3620kg	2dl	5.5m	50mm	6.0m
PW160 Artic boom K40523 [441]		3150kg	2dl	5.5m	50mm	envelope
PW160 Artic boom K40524 [442]		3150kg	2dl	5.5m	50mm	envelope
PW160 4m20+1m80 K40006 [423]		3290kg	2dl	5.5m	50mm	envelope
PW160 4m20+1m80 K40007 [424]		3290kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40242 [426]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40253 [431]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40263 [433]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40296 [440]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40241 [425]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40243 [427]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40244 [428]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40251 [429]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40252 [430]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40254 [432]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40264 [434]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40265 [435]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40266 [436]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40268 [438]		3470kg	2dl	5.5m	50mm	envelope
PW160-7 1.8arm K40295 [439]		3470kg	2dl	5.5m	50mm	envelope
PW150SR K30407 [348]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35111 [412]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35112 [413]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35112 [414]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35114 [415]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35143 [422]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K34278 [402]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K34293 [409]		3280kg	2dl	5.5m	50mm	envelope

PW150SR K34294 [410]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35115 [416]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35126 [417]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35132 [418]		3280kg	2dl	5.5m	50mm	envelope
PW150SR K35135 [421]		3280kg	2dl	5.5m	50mm	envelope
PW150-6 K34287 [QPL 405]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34295 [QPL 411]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34290 [QPL 407]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34291 [QPL 406]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34292 [QPL 408]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34284 [QPL 403]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34286 [QPL 404]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34279 [QPL 401]		2900kg	2dl	5.5m	50mm	envelope
PW150-6 K34256 [QPL 349]		2900kg	2dl	5.5m	50mm	envelope
Readypower:						
Case 988 CGG0128923 [FR601]		3250kg	Sector D Locked	5.5m	50mm	envelope
Case 988 CGG0128930 [FR602]		3250kg	Sector D Locked	5.5m	50mm	envelope
Case 988 CGG0128936 [FR604]		3250kg	Sector D Locked	5.5m	50mm	envelope
Case 988 CGG0129059 [FR605]		3250kg	Sector D Locked	5.5m	50mm	envelope
Komatsu PW410 21D0004375 [FR1003]		820kg	2d Locked	5.5m	50mm	envelope
Komatsu PW410 4389 [FR1004]		820kg	2d Locked	5.5m	50mm	envelope
Komatsu PW130 K30366 [FR501]		1402kg	2b Locked	5.5m	50mm	envelope
Komatsu PW130 K30367 [FR502] [FR503]		1402kg	2b Locked	5.5m	50mm	envelope
Komatsu PW130 K30368		1402kg	2b Locked	5.5m	50mm	envelope
Mecalac14MBX 30855 [FR690]		1160kg	2b Locked	5.5m	50mm	envelope
Mecalac14MBX 31030 [FR691]		1160kg	2b Locked	5.5m	50mm	envelope
Komatsu PC138 4693 [FR506]	99709 911020-4	1130kg	Sector D Locked	5.5m	50mm	envelope
Komatsu PC138 4692 [FR507]	99709 911019-6	1130kg	Sector D Locked	5.5m	50mm	envelope
Komatsu PC138 4890 [FR509]	99709 911022-0	1450kg	Sector D Locked	5.5m	50mm	envelope
CX135L (Offset monoboom) 13U0247 [FR650]		210kg	2c Locked	5.5m	50mm	envelope
CX135L (Offset monoboom) 13U0301 [FR651]		210kg	2c Locked	5.5m	50mm	envelope
CX135L (Offset monoboom) 13U0309 [FR654]		210kg	2c Locked	5.5m	50mm	envelope
Case CX135 L 13U0322 [FR652]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0328 [FR653]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0327 [FR655]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0354 [FR656]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0417 [FR657]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0392 [FR658]		1750kg	2a Locked	5.5m	50mm	envelope

Case CX135 L 13U0403 [FR659]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0445 [FR660]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0448 [FR661]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0537 [FR662]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0547 [FR663]		1750kg	2a Locked	5.5m	50mm	envelope
Case CX135 L 13U0549 [FR664]		1800kg	Sector D Locked	5.5m	50mm	envelope
Shovlin:						
Case 988P 1m80+3m13+2m10 [1343]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P 1m80+3m13+2m10 [1381]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P 1m80+3m13+2m10 [1382]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P 1m80+3m13+2m10 [1399]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P 1m80+3m13+2m10 [1433]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P 1m80+3m13+2m10 [1435]		2920kg	2d Locked	5.5m	50mm	envelope
Case 988P Artic 1m80+3m13+2m10 [1344]		2700kg	2d Locked	5.5m (min 3.5m)	50mm	envelope