

SLEWING MOBILE CRANE SAFETY AND LICENCE GUIDE

Training support material for:

TLILIC0020

Licence to operate a slewing mobile crane
(Over 100 tonnes)

Produced by:



PICTURE BASED. PLAIN ENGLISH. LEARNING MADE EASY.



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Introduction to Slewing Mobile Crane (over 100 tonnes)

What is a slewing mobile crane

A slewing mobile crane is a powered crane which features a boom or jib that can slew from front to back. The crane is mounted on a vehicle.

Slewing mobile crane



Crawler crane

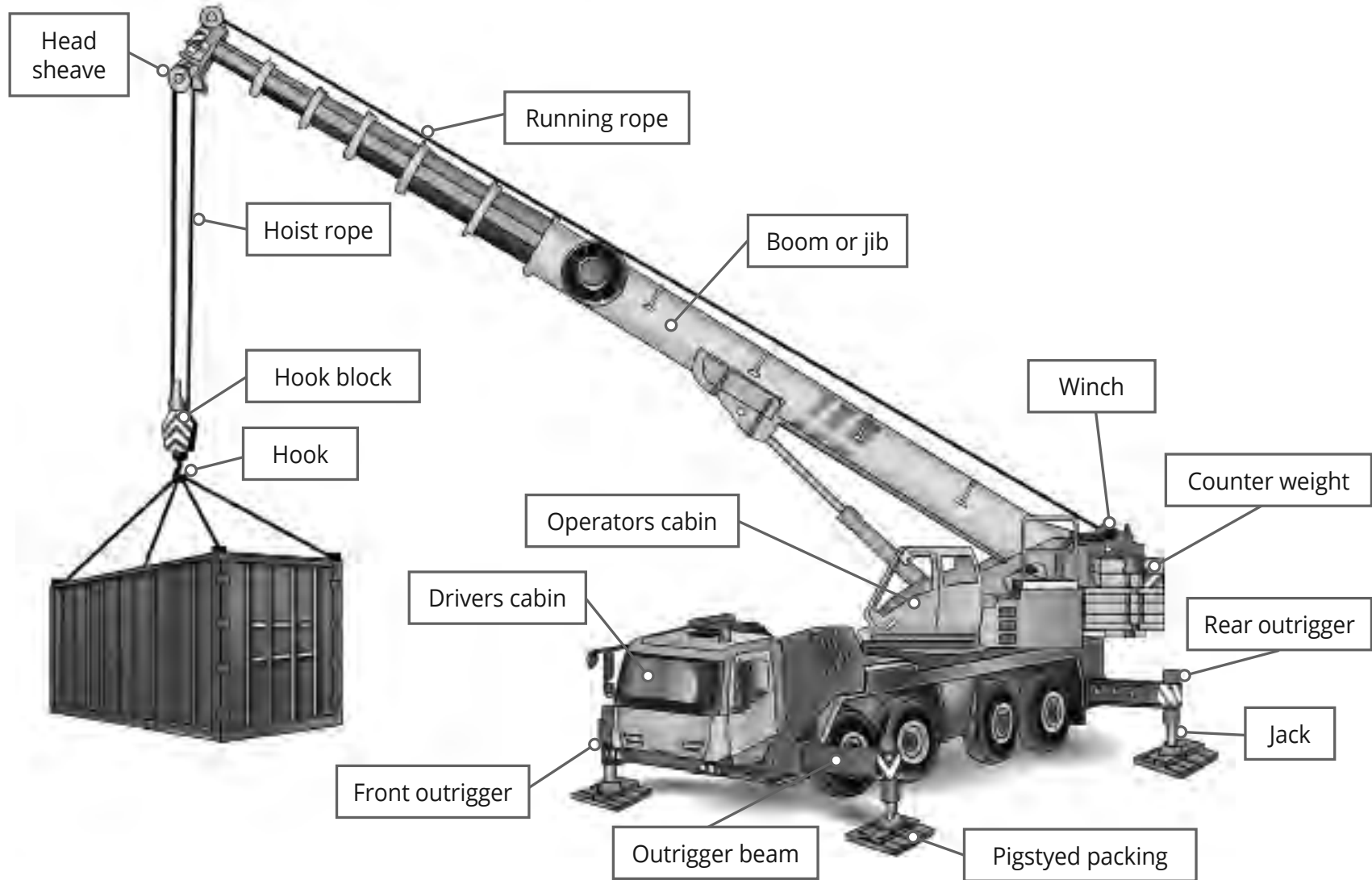


Rough terrain slewing crane



This learner resource does not cover front-end loader, backhoe, excavator or similar equipment when configured (arranged or set up) for crane operations.

Parts of a slewing mobile crane



Element 1 – Plan work / task

Convert m² to find the dimensions of the packing pad

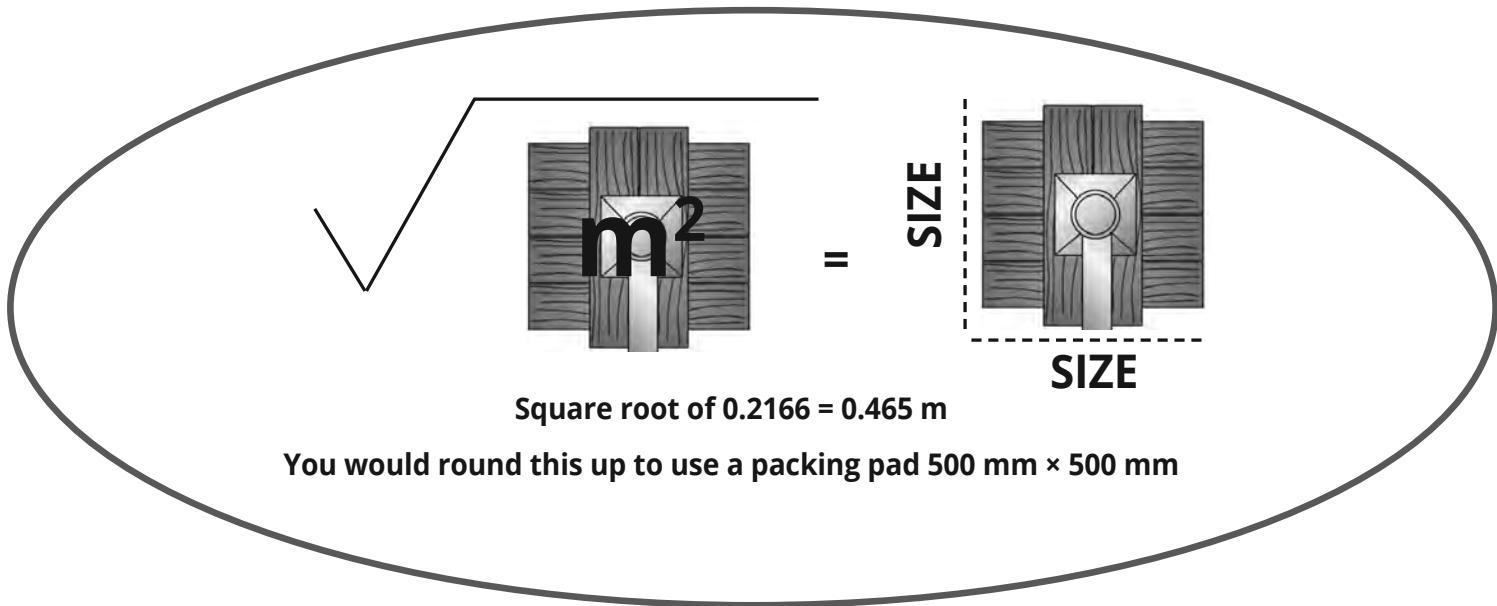
Now you know how many square metres of packing you need. If you need to calculate the measurements of the packing pad to use you simply square root the square metres.

$$\sqrt{0.2166} = 0.465 \text{ metres}$$

Minimum packing size = 0.465 m × 0.465 m

Round up the size = 500 mm × 500 mm

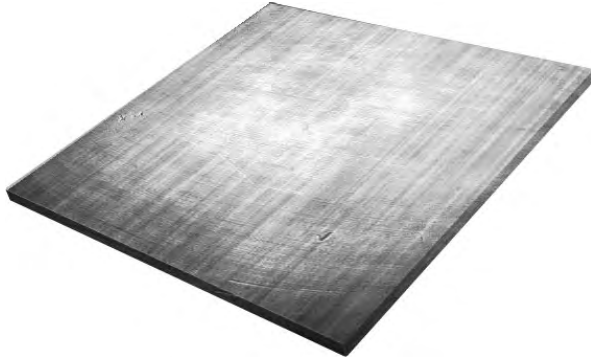
Note:
0.465 m or 465 mm is an uncommon size so the 465 mm is rounded up to a common size of 500 mm × 500 mm



Types of packing

Types of packing you may use include:

Steel plates



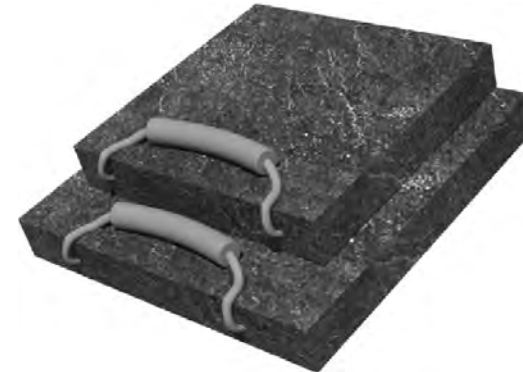
Hardwood packing



Sleeper mats



Concrete rafts



Packing is placed under the outriggers to distribute the weight of the crane and load.

QUESTION 54.2

What information can be found in an owners manual or operators manual from a manufacture for a piece of equipment or lifting equipment?

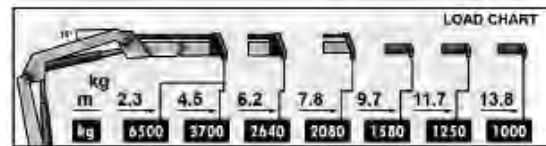
You can find the following information about a manufactures lifting equipment in an owner’s manual or operators manual;

- The way you should use the equipment or operate and interpret e.g. How to read a load chart, how to use lift features.
- How you should maintain the equipment by checking all fluid levels (oil, water, fuel, hydraulic fluid) and check for leaks.
- How to inspect the machinery and its parts. e.g. Check if there are any defects with the vehicle loading

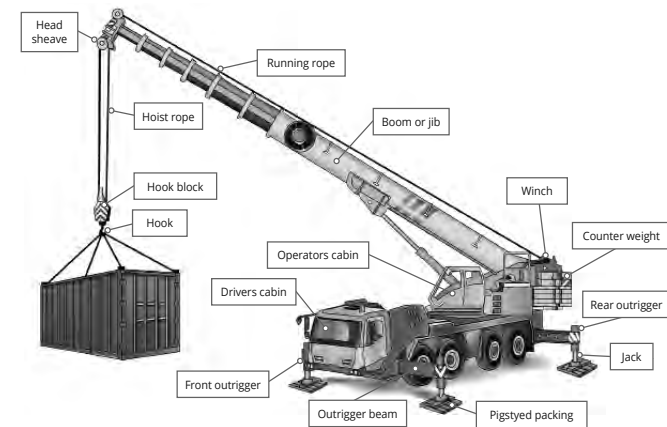
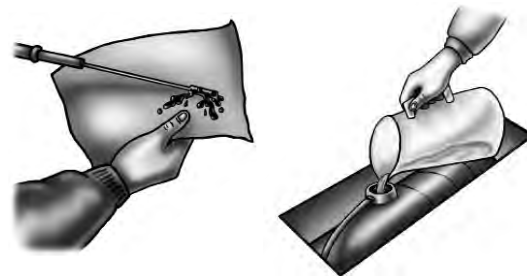


Inspect machinery and its parts

Check if there are any defects with the vehicle crane.



Checking fluid levels oil and water



Defects - Cracks

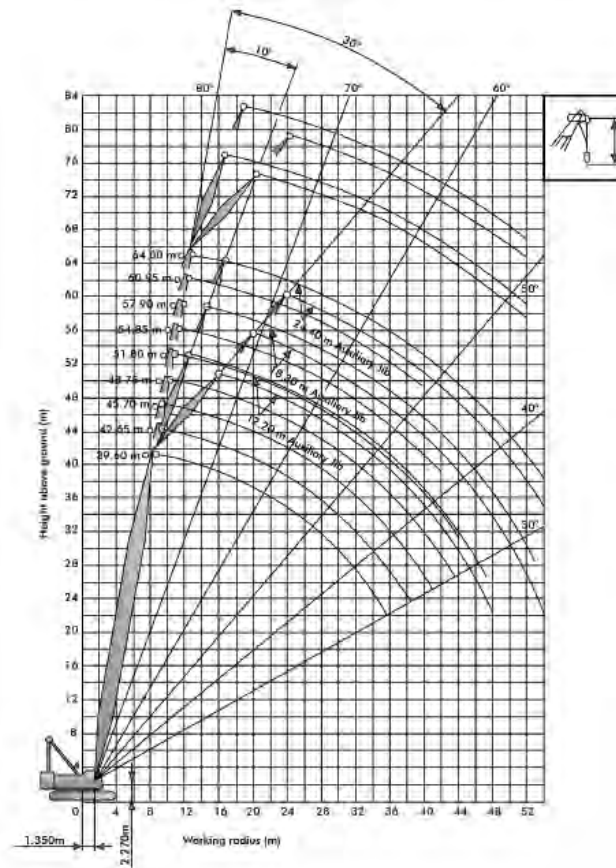


Element 2 – Prepare for work / task

QUESTION 100

How can you find out the load rating when the fly jib is set up?

Check the load chart or the angle of the jib.

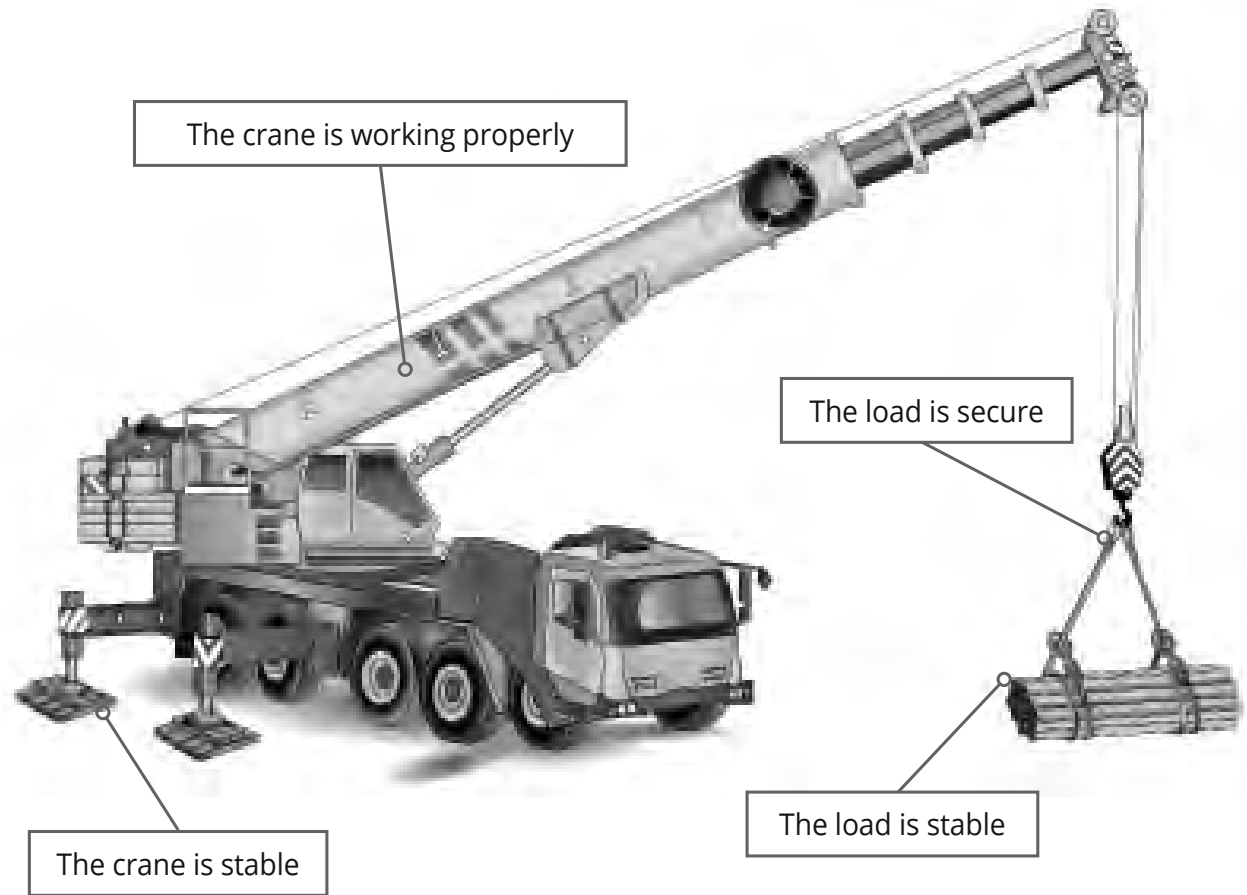


Element 3 – Perform work / task

QUESTION 114

Why is it important to do a test lift?

To make sure:



QUESTION 143

Some of the Australian standard signals used in dogging are shown here.

What does each of these signals mean?

Hoisting raise



2 short



Hoisting lower/down

Commonly used signal (not Australian Standard)



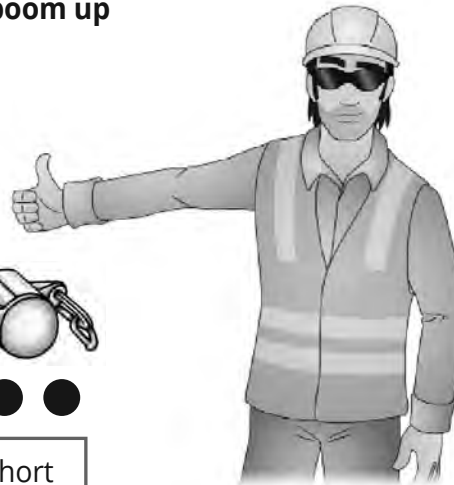
1 long



Luffing boom up



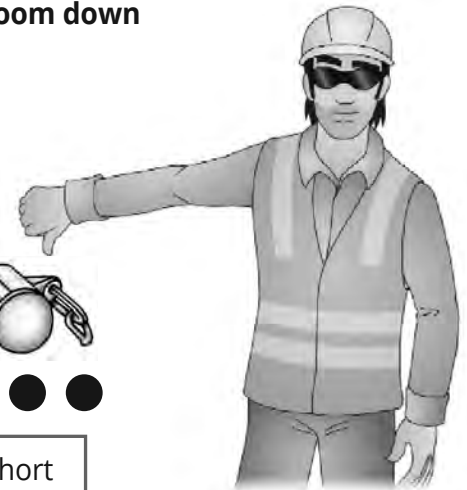
3 short



Luffing boom down



4 short



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READING LOAD CHARTS

FOR CRANES OVER 100 TONNES

Load Chart - 100 Tonne (A)

WARNING

1. Boom backstops are required for all boom lengths.
2. Gantry must be in a raised position for all operating conditions.
3. Boom inserts must be arranged as shown in the 'Boom Insert Arrangement Chart'.
4. Mid-point suspension (centre hitch) required when boom length is 55.5m or longer.
5. Safe loads depend up on ground conditions, boom length, radius of operation and proper handling. All of which must be taken into account by the user.
6. Standard boom hoist reeving is 12 parts line.
7. Ratings are based on crawler extended to a fulcrum point. Crawler frames must be fully extended for all crane operations.
8. For main boom ratings, with jib erected not shown, use rating for next longer boom.

Operating Radius (M)	Main boom in 360° work area - rated crane loads in kilograms (KGs)										Operating Radius (M)		
	Powered boom lengths in metres												
	34	36	40.5	43	46	49	52.5	55.5					
	KGs	KGs	KGs	KGs	KGs	KGs	KGs	KGs					
4.00											4.00		
5.00											5.00		
5.50											5.50		
6.00											6.00		
7.00											7.00		
8.00	80	22,900									8.00		
9.00	78	23,000	78	22,900	79	22,800					9.00		
10.00	76	19,800	76	19,700	77	19,600	78	19,500	78	19,400	10.00		
12.00	73	15,400	74	15,300	75	15,200	76	15,100	76	15,000	12.00		
14.00	69	12,500	71	12,400	72	12,300	74	12,200	74	12,100	14.00		
16.00	65	10,400	67	10,300	68	10,200	71	10,100	71	10,000	16.00		
18.00	61	8,800	63	8,700	64	8,600	67	8,500	67	8,400	18.00		
20.00	57	7,600	59	7,500	60	7,400	63	7,300	63	7,200	20.00		
22.00	53	6,700	55	6,600	58	6,500	59	6,400	59	6,300	22.00		
24.00	49	5,900	51	5,800	56	5,700	57	5,600	57	5,500	24.00		
26.00	44	5,200	47	5,100	54	5,000	55	4,900	55	4,800	26.00		
28.00	35	4,700	42	4,600	51	4,500	53	4,400	53	4,300	28.00		
30.00	31	4,200	33	4,100	48	4,000	50	3,900	50	3,800	30.00		
32.00			29	3,600	43	3,500	47	3,400	47	3,300	32.00		
34.00						34	3,200	42	3,100	42	3,000	34.00	
36.00						30	2,900	33	2,800	33	2,700	36.00	
38.00							29	2,400	29	2,300	33	2,200	38.00
40.00										1,900	29	1,750	40.00

NOTE: Please read the other 'Reading Load Charts' section before reading this section.

Step 1 - Find the right load chart

The first step in reading a load chart is to make sure the load chart you have matches the crane you are using.

You should check the heading on the load chart and make sure it matches the type of crane you are using.

For example, this chart is for a crane which can lift up to 100 tonnes.

Unit: metric ton

Jib Offset Angle: 30°

Counterweight: 90.0 t, Carbody weight: 24.0 t

Jib height (m)	27.4				38.8				48.7				54.9				Jib height (m)
	12.2	16.3	24.4	30.5	12.2	16.3	24.4	30.5	12.2	16.3	24.4	30.5	12.2	16.3	24.4	30.5	
14.0	14.1 m/10.3				15.7 m/10.3												14.0
16.0	16.7				18.2												16.0
18.0	17.9	13.5			18.7	23.5 m/15.6			19.1				16.9 m/10.2				18.0
20.0	16.6	13.0	27.9 m/18.2		18.1	13.5			18.7	21.8 m/13.4			15.0				20.0
22.0	15.9	13.1	16.2		17.2	13.5	23.5 m/16.1		18.2	13.5			16.8	22.9 m/11.9			22.0
24.0	16.2	12.6	7.9	25.3 m/14.4	16.4	13.1	6.1		17.4	13.4	35.1 m/18.1		16.2	13.6			24.0
26.0	14.5	12.0	7.6	4.4	16.7	12.8	7.9	27.5 m/14.3	16.7	13.2	8.0		17.6	13.4	26.1 m/11.1		26.0
28.0	13.9	11.4	7.4	4.2	15.1	12.5	7.6	4.0	16.1	12.8	7.8	28.8 m/14.4	17.6	13.2	8.0		28.0
30.0	13.4	10.8	7.2	4.1	14.6	11.8	7.4	4.2	15.6	12.5	7.8	4.3	16.4	12.9	7.9	33.8 m/14.3	30.0
34.0	12.7	10.0	6.6	3.9	13.7	10.9	7.1	4.0	14.6	11.8	7.3	4.1	15.5	12.2	7.5	4.2	34.0
38.0	37.9 m/12.4	9.4	6.5	3.7	13.0	10.2	6.8	3.6	13.9	10.8	7.0	3.9	14.7	11.5	7.2	4.0	38.0
42.0		9.0	6.2	3.5	12.6	9.6	6.5	3.6	13.3	10.3	6.7	3.7	14.0	10.9	6.9	3.8	42.0
46.0		11.0 m/10.4	6.1	3.3	11.8 m/12.4	9.2	6.3	3.5	12.6	9.8	6.5	3.6	13.2	10.4	6.7	3.7	46.0
50.0			6.1	3.3		8.9	6.1	3.4	12.1	9.4	6.3	3.5	11.4	9.9	6.5	3.6	50.0
54.0			10.1 m/11.1	3.0		13.9 m/11.9	6.1	3.3	11.7 m/11.7	9.1	6.2	3.4	10.9	9.5	6.4	3.5	54.0
58.0					15.2 m/12.5		6.1	3.1		8.9	6.1	3.3	0.0	9.2	6.2	3.4	58.0
62.0									2.9	Subtotal	6.1	3.3	11.9 m/12.4	8.2	6.1	3.3	62.0
66.0									11.1 m/11.0		6.1	3.1		7.2	6.0	3.2	66.0
70.0													2.9	11.7 m/11.3	6.0	3.2	70.0
74.0													22.9 m/21.6		13.9 m/11.0	3.1	74.0
78.0																2.9	78.0
82.0																23.9 m/21.6	82.0
Reverses	2	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1	Reverses

CRANE CHART CALCULATIONS

Look at crane charts in the Trainer’s Resources in the Easy Guides ‘Start-up Pack for Mobile Slewing Cranes (over 100T)’.

The crane charts include:

- CO LOAD CHART_KOBELCO CKE2500-2
- CO LOAD CHART_GROVE GMK5130-2

Answer the questions related to these crane charts. Your trainer will check your answers.

EXAMPLES OF READING CRANE CHARTS

Note: The following crane chart exercises us the **CO LOAD CHART_GROVE GMK5130-2** load chart. This is located in the 'Trainer's Resource' of the Easy Guides training material. Your trainer will provide you with this crane chart.



Scenario 1

Using the load charts for the Grove GMK 5130-2, the crane is setup with the following:

- 40.1t cw
- 6 parts of line on a 50t
- Main boom length of 45.99m

Question 1 What is the counterweight configuration required to achieve a counterweight configuration of 40.1t?

Answer: =

Quantity	Counterweight Number	Weight
1	1	2.5
1	2	2.5
3	3	5 x 3 = 15
1	4	5
1	6	2.5
2	10	2 x 5.8 = 11.6
1	11	1
	Total	40.1t