

# SLEWING MOBILE CRANE (100T) SAFETY AND LICENCE GUIDE

Training support material for:

TLILIC0021

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



Produced by:



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# Introduction to Slewing Mobile Crane (up to 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

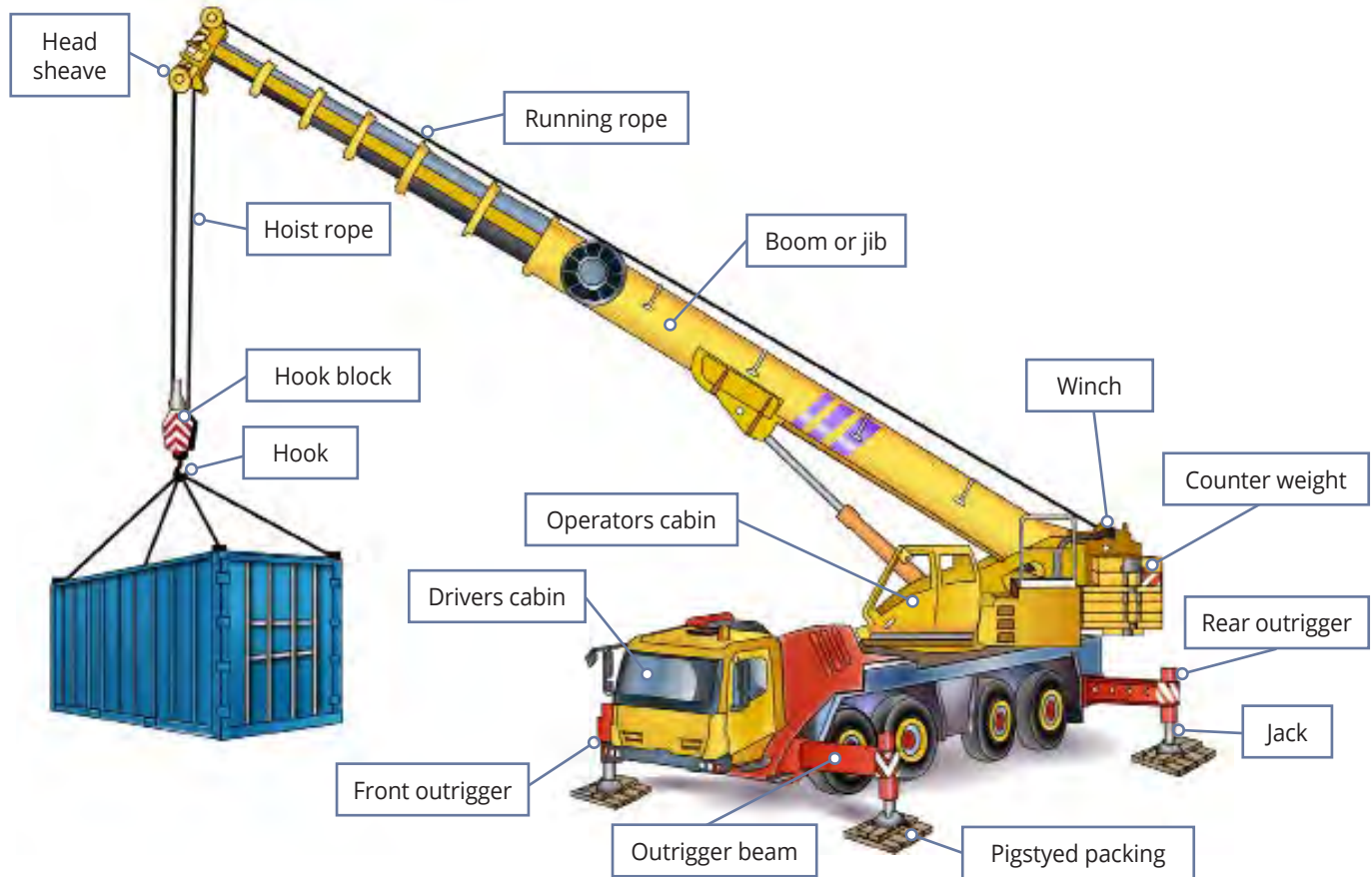


Rough terrain slewing crane



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 $m^2$ 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.

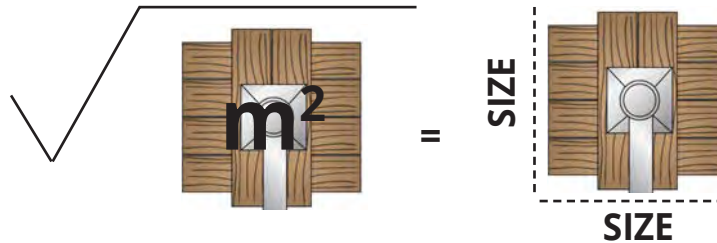
$$\sqrt{0.2166} = 0.465 \text{ metres}$$

Minimum packing size =  $0.465 \text{ m} \times 0.465 \text{ m}$

Round up the size =  $500 \text{ mm} \times 500 \text{ mm}$

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  $\times$  500 mm



Square root of  $0.2166 = 0.465 \text{ m}$

You would round this up to use a packing pad  $500 \text{ mm} \times 500 \text{ mm}$

## 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.



# Element 2 – Prepare for work / task

**QUESTION 101**

What happens to the WLL when the fly jib is stowed on the main boom section?

The WLL is reduced (lowered). To find out if the crane can be mobilized with a load on the jib, check the crane chart/ specifications.

**TRUCK MOUNTED HYDRAULIC MOBILE CRANE**

**LOAD CHART 'S'**

(CRANE WEIGHTS IN KILOGRAMS) (LOADS AND CAPACITIES IN KILOGRAMS) (DIMENSIONS IN METERS)

**CRANE WEIGHTS**

Model	Weight
TC 1000	10000
TC 1200	12000
TC 1500	15000
TC 1800	18000
TC 2000	20000
TC 2500	25000
TC 3000	30000
TC 3500	35000
TC 4000	40000
TC 4500	45000
TC 5000	50000
TC 5500	55000
TC 6000	60000
TC 6500	65000
TC 7000	70000
TC 7500	75000
TC 8000	80000
TC 8500	85000
TC 9000	90000
TC 9500	95000
TC 10000	100000

**CRANE DIMENSIONS**

Model	Height	Length	Radius
TC 1000	10.0	10.0	10.0
TC 1200	12.0	12.0	12.0
TC 1500	15.0	15.0	15.0
TC 1800	18.0	18.0	18.0
TC 2000	20.0	20.0	20.0
TC 2500	25.0	25.0	25.0
TC 3000	30.0	30.0	30.0
TC 3500	35.0	35.0	35.0
TC 4000	40.0	40.0	40.0
TC 4500	45.0	45.0	45.0
TC 5000	50.0	50.0	50.0
TC 5500	55.0	55.0	55.0
TC 6000	60.0	60.0	60.0
TC 6500	65.0	65.0	65.0
TC 7000	70.0	70.0	70.0
TC 7500	75.0	75.0	75.0
TC 8000	80.0	80.0	80.0
TC 8500	85.0	85.0	85.0
TC 9000	90.0	90.0	90.0
TC 9500	95.0	95.0	95.0
TC 10000	100.0	100.0	100.0

**CRANE CAPACITIES**

Model	Capacity
TC 1000	10000
TC 1200	12000
TC 1500	15000
TC 1800	18000
TC 2000	20000
TC 2500	25000
TC 3000	30000
TC 3500	35000
TC 4000	40000
TC 4500	45000
TC 5000	50000
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TC 5500	55.0	55.0	55.0
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TC 6500	65.0	65.0	65.0
TC 7000	70.0	70.0	70.0
TC 7500	75.0	75.0	75.0
TC 8000	80.0	80.0	80.0
TC 8500	85.0	85.0	85.0
TC 9000	90.0	90.0	90.0
TC 9500	95.0	95.0	95.0
TC 10000	100.0	100.0	100.0

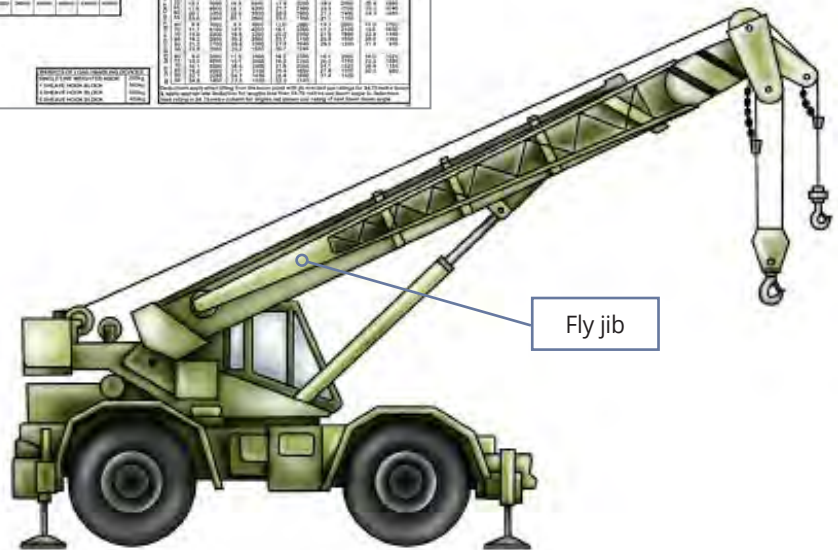
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TC 6000	60000
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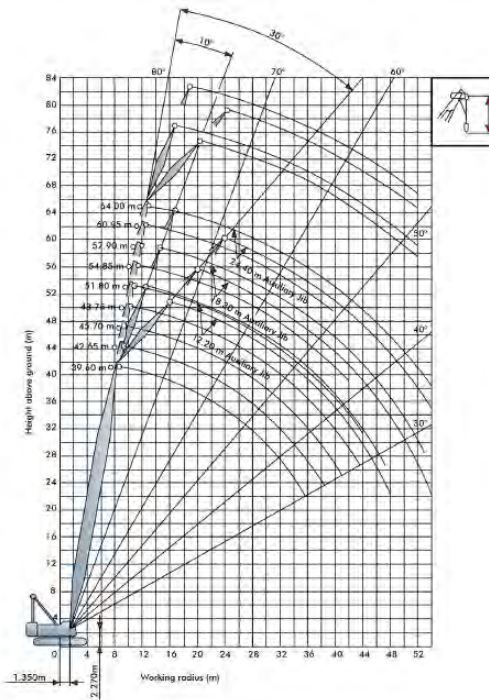
Load chart



**QUESTION 102**

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.



# READING LOAD CHARTS

FOR CRANES UP TO 100 TONNES

**Load Chart - 100 Tonne (A)**

**WARNING**

1. Boom backstops are required for all boom lengths.
2. Gantry must be in a railed 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 full drum 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.

Main boom in 360° work area - rated crane loads in kilograms (KGs)											
Powered boom lengths in metres											
Operating Radius (M)	34		36		40.5		43		46		Operating Radius (M)
	KGs	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											8.00
9.00											9.00
10.00	80	22,900									10.00
10.00	78	23,000	78	22,900	79	22,800					12.00
10.00	76	19,800	76	19,700	77	19,600	78	19,500	78	19,400	14.00
12.00	73	15,400	74	15,300	75	15,200	76	15,100	76	15,000	16.00
14.00	69	12,500	71	12,400	72	12,300	74	12,200	74	12,100	18.00
16.00	65	10,400	67	10,300	68	10,200	71	10,100	71	10,000	20.00
18.00	61	8,800	63	8,700	64	8,600	67	8,500	67	8,400	22.00
20.00	57	7,600	59	7,500	60	7,400	63	7,300	63	7,200	24.00
22.00	53	6,700	55	6,600	56	6,500	59	6,400	59	6,300	26.00
24.00	49	5,900	51	5,800	52	5,700	57	5,600	57	5,500	28.00
26.00	44	5,200	47	5,100	48	5,000	53	4,900	53	4,800	30.00
30.00	31	4,200	33	4,100	34	4,000	43	4,200	43	4,100	32.00
32.00			29	3,600	43	3,500	47	3,400	47	3,300	34.00
34.00					34	3,200	42	3,100	42	3,000	36.00
36.00					30	2,900	33	2,800	33	2,700	38.00
38.00							29	2,400	29	2,300	40.00
40.00									1,900	29	1,800
									1,750	28	1,650
									1,500	29	1,400

**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.

### GR-800EX RATED LIFTING CAPACITIES

ON OUTRIGGERS FULLY EXTENDED 7.3m SPREAD  
300° ROTATION (LIFE = 1000 hrs)

L	12.4 m		14.4 m		16.4 m		18.4 m		20.4 m		22.4 m		24.4 m		26.4 m		28.4 m		30.4 m			
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B		
10.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
12.5	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
15.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
17.5	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
20.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
22.5	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
25.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
27.5	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
30.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
32.5	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
35.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
37.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
40.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
42.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
45.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
47.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
50.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
52.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
55.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
57.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
60.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
62.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
65.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
67.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
70.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
72.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
75.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
77.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
85.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
87.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
92.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
95.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
97.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

# CRANE CHART CALCULATIONS

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

The crane charts include:

- C1 LOAD CHART\_LIEBHERR LTM1100-5.2
- C1 LOAD CHART\_TADANO GR800 (002)

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 C1 LOAD CHART\_LIEBHERR LTM1100-5.2 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.



## General Questions

a) What counterweight is fitted to the crane to allow it to have on-road axle weights of 12t?

Answer = 7t counterweight

b) What is the rated capacity of the 7-sheave hook block?

Answer = 55t

c) What is the tare weight of the 30.2t rated capacity hook block?

Answer = 260kg

d) The working radii on the LTM 1055 3.2 is measured from where on crane?

Answer = From centre of slew