

Greetings all. Today's Bulletin is about why understanding load charts is so important.

Even though many lifts are planned using computer simulations and load indicators in crane cabs signify when lifts approach or exceed a crane's capacity, for any crane operator, understanding load charts is crucial.

These charts are not just a part of the crane; they guide its safe and efficient use.

Load charts provide essential information about a crane's lifting capacity, helping operators make informed decisions to prevent accidents and protect personnel and equipment.

Simply put, they explain what the crane can and can't do.

So, which are the most common mistakes people make when reading load charts?

LOAD CHART

MAC 25-3

Failblock, Front Counterweight, 3rd Boom Retracted

Pick & Carry 0.4m/s (1.44 km/h); On rubber 664% AS 1418.5
 5.12-14.32m

Boom Length (m)	Boom Length (m)															
	5.12	6.40	7.68	8.96	10.24	11.52	12.80	14.08	15.36	16.64	17.92	19.20	20.48	21.76	23.04	24.32
1.4	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000
2.0	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000
2.5	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000
3.0	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
3.5	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000
4.0	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
5.0	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
6.0	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
10	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
8.0	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
9.0	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
10	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
11	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
12	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
13	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
14	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
15	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
15.71	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200

RCI (deg) < than 10° articulation
 RCI (deg) > than 10° articulation
 Boom angle
 Radius at 0° boom angle
 Loads above red line are artificial

Notes to lifting capacity
 Lifting capacities do not exceed 66 % of tipping load. Weight of hook blocks and slings is part of the load, and is to be deducted from the capacity rating. Consult Rated Capacity Manual for further details.
 Data published herein is intended as a guide only and shall not be construed to warrant applicability for lifting purposes.
 Crane operation is subject to the computer charts and Rated Capacity Manual both supplied with the crane.

Ignoring Crane Configuration: Failing to consider the specific crane configuration, such as counterweight amount and outrigger extension, can lead to inaccurate assessments of the crane's capabilities and potential risks.

Ignoring or miscalculating these configuration parameters can lead to overloading, unstable lifting conditions, and potential accidents.

Not Accounting for Load Radius: Neglecting to account for the load radius, which is the horizontal distance from the centre pin to the load, can result in

overestimating the crane's capacity and potentially lead to overloading.

As the load radius increases, the crane's lifting capacity decreases. So, the load radius must be considered to select a crane with the appropriate lifting capacity for the specific load radius required.

Misinterpreting Boom Angle and Length: Misinterpreting the boom angle and length can lead to miscalculations of the crane's load capacity. If one doesn't accurately read these parameters from the load chart, the lift will be compromised.

Failing to Deduct Accessory Weights: Forgetting to deduct the weight of crane accessories such as rigging, fly jib, and the hook block from the total load capacity can result in overloading the crane.

Disregarding Stability Considerations: Overlooking stability factors and limitations specified in the load chart can lead to unsafe lifting conditions, potentially causing the crane to tip or overturn. Crane stability is directly affected by factors like boom angle, extension, and counterweight distribution.

Not factoring in the Ground Angle: All load chart ratings are based on the machine being level (1% gradient or 0.57°) This is calculated as a ratio, e.g. over a distance of 100 meters, the ground had a difference in elevation of 1 meter) in all directions. This applies to cranes "on crawlers", "on tyres", "on outriggers" and when travelling with a load.

A crane that is not level causes side loading of the boom, reducing the rated capacity, and a crane that is three degrees out of level may reduce the rated capacity by as much as 50 per cent.

Reduced capacity load charts are available for lift out of level up to 5 deg. Standard load charts cannot be used.

The slope of the ground can not only affect the capacity of the crane; it also affects the radius and the stability of the crane during travelling and slewing.

When facing down a hill, the distance to the load seen by the crane is more than would be anticipated on level ground. The rated capacity indicator will under predict the actual radius when travelling forward downhill. Therefore, reversing down hill will bring the load closer to the crane and the actual radius will be less than what the RCI reads.



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It's essential to remember that load charts don't account for all variables, especially environmental ones like wind, ground conditions, and temperature.

CICA has designed a [lift supervisor course](#), the content of which has been curated by industry experts and aligns with international standards.

From crane types and configurations to critical decision-making during lifting operations, the CICA [lift supervisor course](#) equips participants with the knowledge to better handle challenges in lift operations.

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