

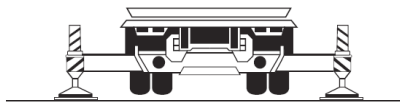
Greetings all. Today's Bulletin is about correct set up of mobile crane outriggers.

Many factors need to be considered when safely setting-up mobile cranes on site. All parties who are involved in the planning, set up and use of cranes must be aware of the fundamental criteria, planning issues and risk assessments that are needed to ensure lifting operations proceed in a safe and stable manner.

Crane stability is critical for safe lifting operations. Correct set up of crane outriggers on timber pads or bog mats, and effective assessment of ground conditions are essential to assist with safe set up and operation of cranes.

This bulletin covers the correct set up and use of mobile crane outriggers and outrigger pads/mats. Mobile crane outriggers should be extended to lift the wheels off the ground.

#### SET OUTRIGGERS CORRECTLY



**CORRECT**  
Wheels are free  
of the ground

Vehicle loading crane stabilisers do not lift the wheels off the ground.

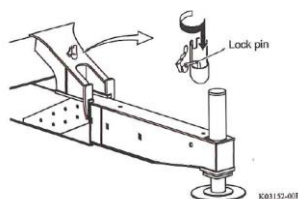
*Vehicle loading cranes are designed for the truck/vehicle wheels providing the main stability and with additional assistance of the stabilisers.*  
**NOTE: This is the opposite of a mobile crane.**



The space available on sites is often constricted. It is frequently impossible to extend all the outriggers of the mobile crane evenly. With the development on crane design, many cranes allow flexible crane outrigger position for crane setup. **But please note that flexible outrigger position is only allowed when specified by the crane manufacture. The specific load chart for that configuration should be used.**

Insert all the four lock pins into the pin-holes to lock the outrigger beams.

**WARNING**  
Make sure that all the lock pins are inserted before you operate the crane. Otherwise, the outrigger beams can retract during operation, causing an overturning accident. After extending the outrigger beams, be sure to insert the lock pins.



Forces imposed on the outriggers during lift operation varies for different lifting configurations, and if the outrigger position/configuration is not set up following the manufacturer's instructions stability of the crane will be impacted.

#### [Video Segment 2. Safely using outriggers to OEM specifications](#)

Crane outrigger pads/mats (timber, steel, HDPE, etc.,) are used to distribute the load of the crane to the supporting surface. The suitability of the crane pad/mat used is determined by:

- the size of the pad/mat is suitable to distribute the load to the ground at a stress level less than the ground bearing capacity and
- the strength and integrity of the pad/mat to handle the load exerted by the crane through the outrigger foot.

Crane pad/mat size can be calculated by dividing the crane load by the maximum permissible ground pressure. Vice versa, if crane load and crane pad/mat size are known, the pressure imposed by the crane on the ground can be calculated. This pressure is then compared with the maximum permissible ground pressure to check whether the pad/mat size is suitable for the lift.

It is also important that the load is placed in the centre of the pad/mat and away from the edges. If the load is placed too close to one side it has the effect of concentrating the load on a smaller area, resulting in excessive deformation and possible collapse.

The videos below provides more information on crane timber pads and bog mats.

#### [Video Segment 5 -Timbers pads and bog mats](#)

#### [Video Segment 6 -Interview 01](#)

#### [Video Segment 7-Interview02](#)

CICA has developed an easy-to-use ground pressure App called "CICA Outrigger App" to calculate ground pressure or crane pad/mat size based on the formulas and ground pressure capacity estimates provided in the Queensland Mobile Crane Code of Practice 2006. This App is available from your phone's App store. This app is a handy tool for crane crews to assess ground conditions on site.



## CICA – Vic / Tas Branch Crane Safety Bulletin #286 May 2021



🔍 cica outrigger app



取消



### CICA Outrigger App

Ground pressure calculator

★★★★★ 3

OPEN

**Ground Pressure Calculator**

GROUND TYPE

Hard Rock  
Shale rock and sandstone  
(connected gravel has to 20% sand)  
If other, please input here (2m³)  
enter ground type t/m²

CRANE

Crane Make/Model  
enter make & model

Total Crane Mass (t)  
enter total crane mass

Mass of lifted load (t)  
enter mass of lifted load

MAXIMUM GROUND PRESSURE

Outrigger Mat or Timber Length (m)  
enter outrigger mat or timber length

**Results**

Crane:  
20t Franna AT20

Load:  
10.00t

MAXIMUM GROUND PRESSURE

Outrigger Mat or Timber  
0.5m x 0.5m (0.25m²)

Ground Pressure  
78t/m² 780kPa

% of the allowable 200t/m² ground pressure  
39%

CRANE MAT SIZE

Maximum Permissible Ground Pressure  
200t/m² 2000kPa

Area Required  
0.0975m²

Stay Safe - CICA