

Conduct the following calculations using the given **Tadano GT-600EL** and **Liebherr LTM 1055-3.2** Load Charts (provided separately to this document).

Scenario 1

Today you are operating a **Tadano GT-600EL** Hydraulic Truck Crane. You are working on a new construction site that still has earthworks being completed. You receive a site plan that shows you are to set up near a recent excavation.

Question 1

The crane has been set up on asphalt.

The lift plan requires the load to be slewed above each outrigger foot.

There are two outriggers on each side of the crane and all have been extended to their maximum reach.

Calculate the **minimum width** and **length** of the timbers to be placed under each outrigger when lifting directly above an outrigger foot.

You are required to show the formula and factors and all calculations. Show units of measure in your answer. **Round your answer up to the nearest 0.1m.**

- The total mass of the crane is: 27 tonnes
- The heaviest load to be lifted is: 17 tonnes
- The bearing pressure of asphalt is: 20 tonnes/m².

Scenario 2

Now that you have setup the **Tadano GT-600EL** you extend the boom **35m** in Telescoping **Mode II** and lower the **60T** hook block to unload a precast panel from a truck.

Question 2

How many **boom sections** are extended with a **35m** boom length?

Question 3

How many **parts of line** should the **60t** hook block be configured in?

Question 4

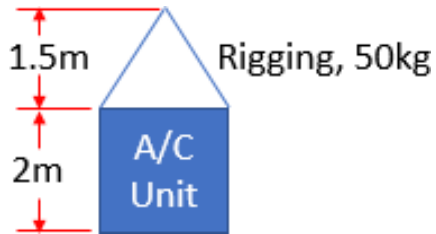
On **6.5m** spread outriggers, what is the **rated capacity** at a **11m** radius?

Question 5

You receive a precast panel certificate that shows a weight of **7.2 tonnes**. **Can you lift the panel off the truck at a 11m radius? Show working.**

Scenario 3

A Liebherr LTM 1055-3.2 is used to lift an air conditioner to the top of a **30m** building. The crane is set up such that the edge of the building is **10m** away from the slew centre of the crane. The centre of the air conditioner needs to be landed **2m** from the edge of the building. Dimensions of the air conditioner and rigging are shown below:



Question 6

What is the **minimum boom length** you should use to lift this air conditioner?

Question 7

With the crane set up in the same configuration as **Question 6** and with **7 tonnes** of counterweight, a **3 sheave** hook block and **50kg** of rigging, what is the **maximum weight** in **kg** that can be lifted? Show your workings.

Scenario 4

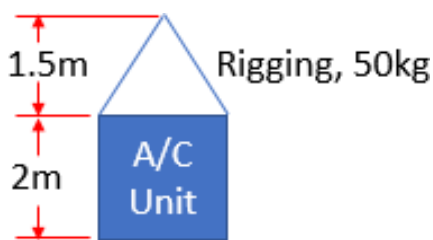
To get additional capacity a **5 tonne** counterweight is added to the same **LTM 1055-3.2**. The crane is used to unload material from a truck positioned **directly behind the rear of the crane**. The truck unloading bay is **30m** away from the crane's slew centre. The crane is pinned with a **37.6m boom length**.

Question 8

What is the **maximum weight** that can be unloaded from the truck? Assume rigging is **50kg**. Show your answer to the **nearest 10kg**. Show workings.

Scenario 5

In a new configuration, the **Liebherr LTM 1055-3.2** is fitted with a **16m** fixed fly jib and **12 tonnes** of counterweight. The fixed jib angle is **20 degrees** and the boom is pinned at **40m** main boom length. Assume the same dimensions for rigging and the air conditioner unit shown below. **Only a single fall hook block is fitted**.



Question 9

What is the **maximum** air conditioner unit **weight** that can be lifted at a **16m** radius? Workings and adjustments **must** be shown in your written answers. Show units in your answer.

Question 10

Can this unit be landed on a **49m** tall building?

Scenario 6

Today you are operating a **Tadano GT-600EL** Hydraulic Truck Crane. You are working on a new construction site that still has earthworks being completed. You receive a site plan that shows you are to set up near a recent excavation.

Question 11

The crane has been set up on asphalt.

The lift plan requires the load to be slewed above each outrigger foot.

There are two outriggers on each side of the crane and all have been extended to their maximum reach.

Calculate the **minimum width** and **length** of the timbers to be placed under each outrigger when lifting directly above an outrigger foot.

You are required to show the formula and factors and all calculations. Show units of measure in your answer. **Round your answer up to the nearest 0.1m.**

- The total mass of the crane is: 17 tonnes
- The heaviest load to be lifted is: 7 tonnes
- The bearing pressure of asphalt is: 20 tonnes/m².

Scenario 7

Now that you have setup the **Tadano GT-600EL** you extend the boom **19m** in Telescoping **Mode II** and lower the **60T** hook block to unload a precast panel from a truck.

Question 12

How many **boom sections** are extended with a **19m** boom length?

Question 13

How many **parts of line** should the **60t** hook block be configured in?

Question 14

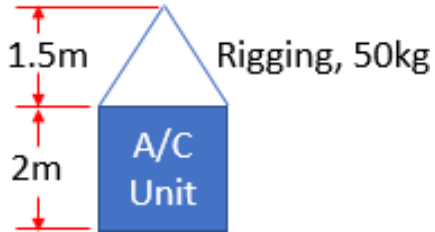
On **4.7m** spread outriggers, what is the **rated capacity** at a **9m** radius?

Question 15

You receive a precast panel certificate that shows a weight of **11.8 tonnes**. **Can** you lift the panel off the truck at a **9m** radius? **Show working.**

Scenario 8

A Liebherr LTM 1055-3.2 is used to lift an air conditioner to the top of a **24m** building. The crane is set up such that the edge of the building is **14m** away from the slew centre of the crane. The centre of the air conditioner needs to be landed **2m** from the edge of the building. Dimensions of the air conditioner and rigging are shown below:



Question 16

What is the **minimum boom length** you should use to lift this air conditioner?

Question 17

With the crane set up in the same configuration as **Question 16** and with **7 tonnes** of counterweight, a **3 sheave** hook block and **50kg** of rigging, what is the **maximum weight** in **kg** that can be lifted? Show your workings.

Scenario 9

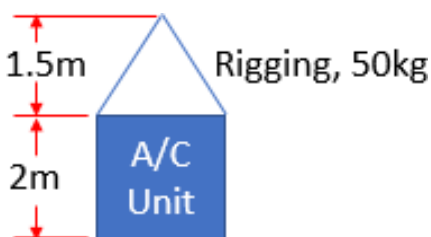
To get additional capacity a **5 tonne** counterweight is added to the same **LTM 1055-3.2**. The crane is used to unload material from a truck positioned **directly behind the rear of the crane**. The truck unloading bay is **34m** away from the crane's slew centre. The crane is pinned with a **37.6m boom length**.

Question 18

What is the **maximum weight** that can be unloaded from the truck? Assume rigging is **50kg**. Show your answer to the **nearest 10kg**. Show workings.

Scenario 10

In a new configuration, the **Liebherr LTM 1055-3.2** is fitted with a **9m** fixed fly jib and **12 tonnes** of counterweight. The fixed jib angle is **0 degrees** and the boom is pinned at **40m** main boom length. Assume the same dimensions for rigging and the air conditioner unit shown below. **Only a single fall hook block is fitted**.



Question 19

What is the **maximum** air conditioner unit **weight** that can be lifted at a **9m** radius? Workings and adjustments **must** be shown in your written answers. Show units in your answer.

Question 20

Can this unit be landed on a **48m** tall building?

Scenario 11

Today you are operating a **Tadano GT-600EL** Hydraulic Truck Crane. You are working on a new construction site that still has earthworks being completed. You receive a site plan that shows you are to set up near a recent excavation.

Question 21

The crane has been set up on compacted gravel with up to 20% sand.

The lift plan requires the load to be slewed above each outrigger foot.

There are two outriggers on each side of the crane and all have been extended to their maximum reach.

Calculate the **minimum width** and **length** of the timbers to be placed under each outrigger when lifting directly above an outrigger foot.

You are required to show the formula and factors and all calculations. Show units of measure in your answer. **Round your answer up to the nearest 0.1m.**

- The total mass of the crane is: 47 tonnes
- The heaviest load to be lifted is: 22 tonnes
- The bearing pressure of asphalt is: 40 tonnes/m².

Scenario 12

Now that you have setup the **Tadano GT-600EL** you extend the boom **39m** in Telescoping **Mode II** and lower the **4.5T** hook block to unload a precast panel from a truck.

Question 22

How many **boom sections** are extended with a **39m** boom length?

Question 23

How many **parts of line** should the **4.5t** hook block be configured in?

Question 24

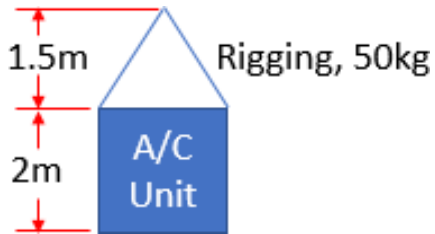
On **6.5m** spread outriggers, what is the **rated capacity** at a **18m** radius?

Question 25

You receive a precast panel certificate that shows a weight of **2.8 tonnes**. **Can you lift the panel off the truck at a 18m radius? Show working.**

Scenario 13

A Liebherr LTM 1055-3.2 is used to lift an air conditioner to the top of a **16m** building. The crane is set up such that the edge of the building is **18m** away from the slew centre of the crane. The centre of the air conditioner needs to be landed **2m** from the edge of the building. Dimensions of the air conditioner and rigging are shown below:



Question 26

What is the **minimum boom length** you should use to lift this air conditioner?

Question 27

With the crane set up in the same configuration as **Question 26** and with **7 tonnes** of counterweight, a **3 sheave** hook block and **50kg** of rigging, what is the **maximum weight** in **kg** that can be lifted? Show your workings.

Scenario 14

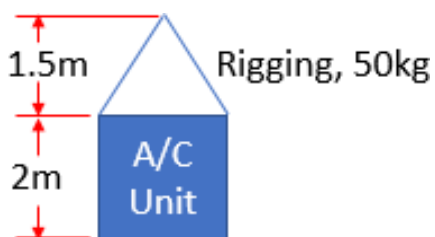
To get additional capacity a **5 tonne** counterweight is added to the same **LTM 1055-3.2**. The crane is used to unload material from a truck positioned **directly behind the rear of the crane**. The truck unloading bay is **20m** away from the crane's slew centre. The crane is pinned with a **27.3m boom length**.

Question 28

What is the **maximum weight** that can be unloaded from the truck? Assume rigging is **50kg**. Show your answer to the **nearest 10kg**. Show workings.

Scenario 15

In a new configuration, the **Liebherr LTM 1055-3.2** is fitted with a **16m** fixed fly jib and **12 tonnes** of counterweight. The fixed jib angle is **20 degrees** and the boom is pinned at **37.6m** main boom length. Assume the same dimensions for rigging and the air conditioner unit shown below. **Only a single fall hook block is fitted**.



Question 29

What is the **maximum** air conditioner unit **weight** that can be lifted at a **18m** radius? Workings and adjustments **must** be shown in your written answers. Show units in your answer.

Question 30

Can this unit be landed on a **46m** tall building?