

Greetings all. Today's Bulletin is about **minimum hook block weights** and why they're essential for safe crane operations.

When it comes to lifting safely, it's not just about how much weight a crane can carry, but also the minimum weight needed on the hook block for the crane to operate properly.

Here's why this seemingly minor detail is so important in maintaining crane and rope integrity, and ultimately, ensuring safety on-site.

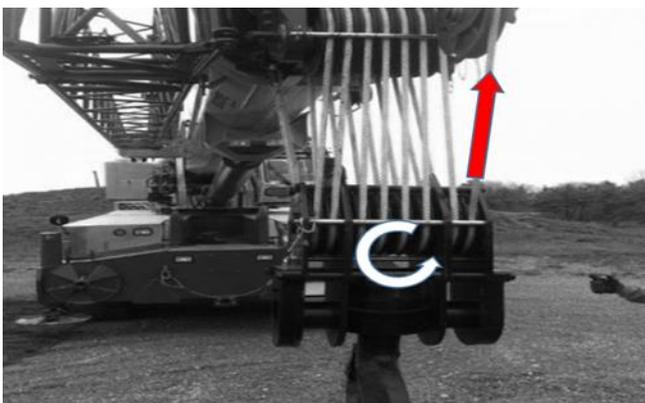
### Why Minimum Hook Weights Matter

Wire ropes are tough and built for lifting, but they have specific handling requirements. Tension on rope causes it to be round. If a crane's wire rope doesn't have enough tension or weight on it during operations, it can lead to unwanted compressive loads that cause a "birdcage" effect or partial unravelling.



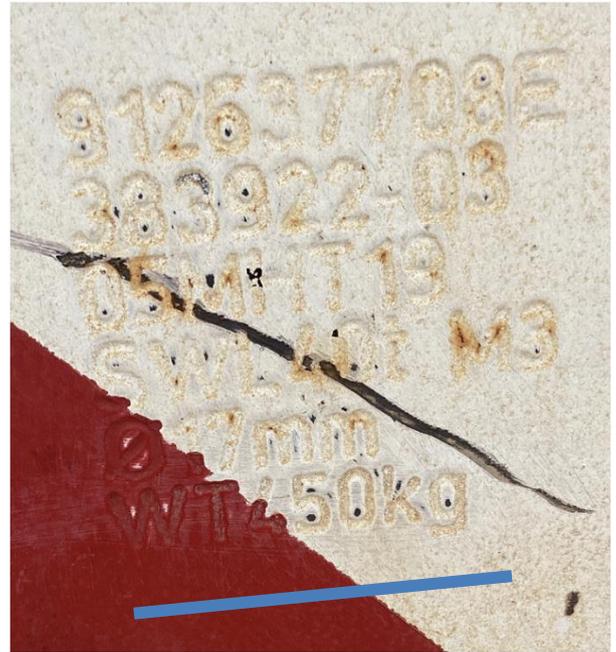
This can cause serious damage to the rope and may lead to costly replacements or, worse, accidents.

A crane winch, by design, feeds rope out under tension. Without enough weight on the hook block, slack can form, allowing the rope to accumulate loosely around the winch. This slack can be the result of inertia of the rope and friction in the sheaves.



Crane designers determine the weight of the hook block to avoid slack on the drum and provide proper tensioning of the rope on the drum. This is usually 2.5% to 5% of the breaking strength.

When winching down with insufficient hook weight, the hook block may suddenly drop, creating a serious hazard for anyone below.



### Effect of Friction

Friction resists both the raising and lowering of a load based on the how many sheaves the rope is running over.

1. **From raising:** the winch needs to overcome the friction of each sheave rotating and the friction from the rope bending around the sheave.
2. **From lowering:** the combined weight of the hook and any lifting gear (like slings or spreader beams) need to overcome the friction from the rope bending around the sheave and each sheave rotating.

### Example Calculation

See pages 101 – 103 in the [NSW Dogging and Rigging Guide](#).

Imagine you have to keep a tension of 200kg on the wire rope to have it correctly wrapped on the drum. With 4 parts of line reeved on a 2 sheave hook block the weight of the hook block would need to be 800kg. Obviously, in this simple example the weight of the rope on either side of the head block is neglected.



If you only have 2 parts of line in the reeving arrangement, then a 400kg hook block would only be required to keep 200kg rope tension on the drum.

This is why hook blocks with multiple sheaves often have cheek plates or additional weight that can be added when many parts of line are configured.



Measuring the minimum hook block weight accurately is essential because:

- It directly impacts the crane's lifting capacity.

- Heavier hook blocks and lifting gear, like spreader beams, reduce the crane's total load capacity.
- Ignoring these adjustments can lead to crane overloading, increasing the risk of accidents.

#### Additional Considerations for Safe Operations

Beyond basic weight calculations, crane operators should keep these in mind:

- **Fly Jibs:** If fly jibs are attached, their mass must be subtracted from the main hook's capacity.
- **Load Chart Details:** Refer to the crane's load chart to confirm if the hook block weight is already included in the capacities listed OR if it needs to be deducted.
- **Avoid Sole Reliance on Devices:** While limiting and indicating devices are helpful, they're not substitutes for the load chart and the operating manual's guidelines.

#### Safety in Planning

Planning around hook block weights, load capacities, and all related factors will prevent rushed decisions and keep operations safe.

If client requirements or unexpected changes push standards, rethink the lift plan instead of risking safety.

Following the manufacturer's guidelines, reviewing the load charts, and conducting regular inspections ensure the best results every time.

Stay safe, and remember, well-planned lifting keeps everyone on-site secure!

2025 Dates for the CICA Lift Supervisor Course have been released.

The CICA Lift Supervisor Course is a proactive initiative designed to enhance the safety and efficiency of crane operations on construction sites and industrial projects. This program introduces the role of a crane lift supervisor, who acts as a dedicated overseer of all crane-related lifting activities.

For more information and to book your place [click here](#)

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