

GUIDE

HOW TO CHOOSE THE RIGHT GRAB FOR TRANSSHIPMENT

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BOOSTING EFFICIENCY AND SAFETY IN CARGO HANDLING





WHY THE RIGHT GRAB SELECTION MATTERS

In dry bulk transshipment, even small mismatches in equipment or process can lead to slower cycles, increased wear, and higher operational costs. With changing cargo types, vessel schedules, and weather conditions, keeping operations running efficiently requires constant attention.

Balancing performance, safety, and cost-effectiveness isn't always straightforward. Even experienced teams may overlook smaller issues that, once addressed, unlock measurable improvements.

This guide offers practical insights into the grab characteristics that most impact efficiency. The goal: to help you evaluate whether your current setup is still the right fit, and if not, where small adjustments can deliver meaningful gains in cycle times, maintenance, and throughput.

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UNDERSTANDING YOUR OPERATION: EVERY SETUP IS UNIQUE

No two transshipment operations are the same. Equipment choices are often made based on what's available at the time, or based on conditions that have since changed. Cargo types evolve, crane specs get updated, and operating environments shift. Especially in remote or offshore setups, flexibility often takes priority. Even if that flexibility limits performance.

A general-purpose grab might appear to be a safe, cost-efficient option, but few are truly optimal across different cargo types and crane configurations.

IN REALITY:

- The specific combination of grab, crane, and cargo directly influences cycle times
- Weather shifts - like rainfall or wind - can affect fill rates and consistency
- Changes in cargo or logistics over time can reduce the efficiency of your current setup

Improving performance starts with understanding how well your current setup still aligns with the realities of your operation today, not just how it performed when it was first selected.





CHOOSING THE RIGHT GRAB: KEY DECISION CRITERIA

Choosing the right grab involves more than matching cargo type or crane capacity. Each operation comes with its own constraints and realities - from vessel types and weather exposure to logistical limitations and crane setup. What may seem like a logical choice at first glance can quietly limit performance in daily operations.

A structured, criteria-based approach helps ensure the grab you select supports both efficiency and reliability. Below, we outline the most important factors to consider, along with common oversights that can affect long-term performance.



What to consider:

- **Cargo type:** Moisture level, granularity, density, and flow behavior all influence the ideal grab geometry. A good fit ensures better fill rates, reduced spillage, and smoother cycle consistency.
- **Crane specifications:** Lifting capacity, working radius, rope configuration, and control systems define the limits within which the grab must operate. These directly impact both compatibility and cycle speed.
- **Cycle time and fill rate:** The interaction between grab volume, fill percentage, slewing angle, and crane performance shapes actual throughput and affects operator fatigue, vessel turnaround, and wear.
- **Weather and environment:** Rain, wind, swell, and temperature shifts all affect cargo behavior. A grab that performs well in calm, dry conditions may struggle in harsher or more variable environments.
- **Logistics and vessel layout:** The grab must fit within the physical limits of your crane and vessel configuration — including transloaders, FCTs, or barges.
- **Political and logistical realities:** In some transshipment regions, replacing or servicing grabs isn't straightforward. Reliability and long-term maintainability are key factors to weigh in.

Common blind spots during grab selection:

Even with a solid track record, grab selection is often influenced by familiar routines - shaped by previous setups, availability, or internal preferences. These decisions aren't necessarily wrong, but small mismatches can build up over time and quietly limit performance. The points below highlight areas where practical constraints sometimes get in the way of optimal choices.

Choosing all-round grabs for flexibility

Grabs designed for multiple cargo types are a common choice in transshipment. They simplify operations, reduce complexity, and offer logistical advantages. However, that same versatility can come at a cost. In high-volume environments, small mismatches in geometry or weight can affect fill rates, increase wear, and lengthen cycles over time.

Working with outdated operational data

Operational setups evolve - whether through changes in cargo mix, updated cranes, or faster cycle targets. Yet, grab selection is sometimes based on older specifications that don't fully reflect today's requirements. Without reviewing key assumptions periodically, opportunities for improvement may go unnoticed.

Oversizing or undersizing the grab

Finding the right size of grab involves more than just crane capacity. A grab that's oversized may push equipment to its limits or slow down cycles. One that's undersized may increase the number of lifts required - adding to fuel use and operator fatigue. Small shifts in cargo type or equipment setup can change what "optimal" looks like.

Underestimating the impact of cycle time and fill rate

In daily practice, it's easy to focus on overall throughput. But performance often comes down to how consistently the grab fills and how quickly each cycle runs. Even modest gains in these areas can make a noticeable difference when scaled across hundreds of operations per shift.

Limited collaboration across technical and operational teams

Grab selection works best when multiple perspectives come together early in the process. Engineering teams, operators, and equipment partners each bring different insights. Without this exchange, decisions may look good on paper but miss the nuances of daily operations.

The better your grab aligns with your specific reality, the more consistent and cost-effective your operation becomes. Challenging assumptions in the areas above can reveal untapped efficiency and strengthen your daily performance.

OPTIMIZATION VS. REPLACEMENT:

DO YOU NEED SOMETHING NEW?

Not every decline in performance means it's time for a new grab. In many cases, small optimizations - a different bucket shape, a better match between grab and cargo, or minor adjustments to crane settings - can yield noticeable gains. But there are also situations where holding on to aging or mismatched equipment creates more cost and risk than benefit.



Understanding the difference between a grab's technical and economic end-of-life is key to making the right call.

Technical vs. economic end-of-life

The technical end-of-life refers to the point when a grab can no longer physically operate or be repaired to safe, functional standards. However, most grabs reach their economic end-of-life long before that moment - when the cost of keeping them operational starts outweighing the value they bring.

In other words: **a grab that still works mechanically may no longer be the most cost-effective choice.**

This is where data becomes crucial. Tracking repair frequency, availability of spare parts, and performance trends over time can help uncover when a grab has passed this economic tipping point. Relying on the next fix might seem practical, but it often masks higher long-term costs.

The maintenance curve: understanding cost over time

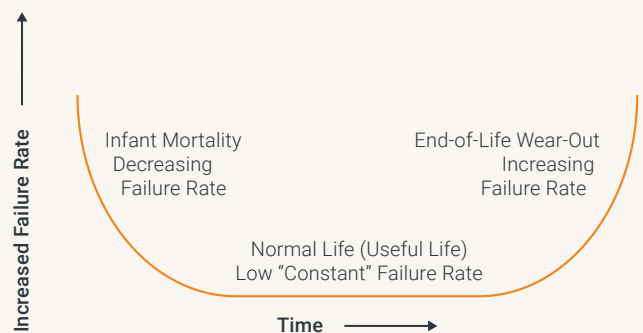
Every grab follows a predictable maintenance curve. Initially, costs are low - perhaps only some minor teething issues during the break-in period. After that, the grab settles into a stable, low-maintenance phase. But as time progresses and wear accumulates, maintenance costs begin to climb. And once they reach a certain tipping point, they accelerate fast.

This is known as **the bathtub curve**:

- **Early phase:** Minor issues, low costs
- **Mid-life:** Stable performance, low maintenance
- **Late stage:** Frequent repairs, higher costs, increased downtime

The bathtub curve

Hypothetical Failure vs. Time



At this point, even regular service - especially with non-original parts - may not be enough to restore consistent performance. Lower-cost parts often have shorter lifespans, don't fit as precisely, and may increase the chance of unplanned downtime.

Even with strong maintenance routines, all grabs reach a stage where continued repair is no longer the better option. Recognizing that shift early helps avoid unnecessary costs and planning disruptions.

WHEN OPTIMIZATION IS STILL THE BEST MOVE

Still, not every grab problem requires replacement. In many cases, re-optimising the grab for a specific cargo or adjusting your grab-crane combination can extend performance and delay the need for investment.

Examples of this are:

- Switching shell design or profile to better suit certain cargo
- Adjusting the rope configuration or grab settings to improve fill rates
- Reviewing crane capacity to determine if the grab weight is within the ideal efficiency range

The goal is to identify where your current setup is on the maintenance curve and take action before performance or costs begin to spiral. In many cases, these steps extend the useful life of existing equipment without requiring major investment.



THE IMPACT OF A WELL-MATCHED GRAB

A grab that fits your operation well does more than improve individual lifts. Its impact is felt across the workflow - often in ways that aren't immediately obvious. Better equipment alignment can reduce strain on systems, support safer working conditions, and improve predictability in time-sensitive environments like transshipment.

Especially when vessel turnaround affects profitability, consistent performance gains can make a measurable difference.

**THESE
BENEFITS**



Direct operational benefits:

- **Higher fill rates** → fewer cycles per hold → faster turnaround
- **Reduced wear** → lower maintenance costs → more uptime
- **Faster cycle times** → increased tonnage per shift
- **Lower fuel and energy consumption per ton**

Indirect benefits

- **Lower demurrage risk** through improved planning predictability
- **Improved safety** by aligning equipment with operational needs
- **Lower workload pressure** for crews thanks to fewer unplanned repairs or interruptions

These benefits build over time. Across multiple vessels, routes, or crews, a well-matched grab contributes to a more efficient and stable operation - helping you get more out of the resources you already have.



THE GRAB: SMALL ADJUSTMENT, BIG EFFECT

The grab may seem like just one part of a larger system. But small adjustments here often have a measurable effect on overall performance. Changes to geometry, weight, or shell design can influence fill rate, cycle time, and energy usage - with impact that adds up over hundreds of daily cycles.

A well-matched grab can:

- Improve crane utilisation
- Reduce stress on mechanical systems
- Lower fuel and energy consumption
- Support more consistent and precise operation

THE IMPACT OF SMALL ADJUSTMENTS



Even a single adjustment - in geometry, fill rate, or opening speed - can improve efficiency across the board. It's often one of the most direct ways to optimize daily output without major changes to infrastructure.



CASE STUDY

SMT SHIPPING – MORE OUTPUT, LESS WEAR

SMT Shipping, a global operator specializing in floating terminals and transshipment solutions, encountered declining performance in one of its setups. While operations remained functional, there were increasing signs of wear and lower-than-expected output.

Together with Nomag, they conducted a structured evaluation of the grab–crane–cargo configuration. Rather than immediately replacing equipment, they focused on targeted adjustments to improve alignment between grab characteristics and operational conditions.

The result:

- A **25% increase in daily output**
- **Significantly reduced wear** and associated downtime
- Improved **crew satisfaction** due to a smoother and more predictable operation

This case shows how aligning your grab specifications with your actual operational conditions can drive measurable improvements, without a major investment.



Want the full story? Download the **SMT Shipping Case Study** to learn how strategic adjustments made all the difference in a demanding transshipment environment.





CHECKLIST: IS IT TIME FOR A GRAB SETUP REVIEW?



Consider the following questions:

- ✓ Are fill rates consistent across different cargo types?
- ✓ Has maintenance become more frequent or unpredictable?
- ✓ Are cycle times trending upward without clear explanation?
- ✓ Is the grab well-matched to crane capacity and working radius?
- ✓ Have cargo types or operational conditions changed over time?
- ✓ Are wear parts being replaced more often than expected?
- ✓ Do operators report recurring handling issues?

If several of these apply to your operation, it may be worth reviewing your current grab configuration.

CONCLUSION: TRANSSHIPMENT

Transshipment is a game of fine margins, and the grab often plays a defining role. From cargo properties and crane capacity to weather and vessel layout, each element in your setup influences throughput, reliability, and operating cost. Yet in many cases, grab selection and configuration aren't revisited as conditions evolve.

This guide aimed to provide clarity on where the biggest gains can be found and to support more informed decisions around your current setup.

In high-volume, time-sensitive environments like transshipment, small changes can lead to meaningful improvements. And more often than not, the grab is the best place to start.



REAL-WORLD RESULTS: EXPLORE THE CASE



Curious to see how this plays out in practice? Check out the **SMT Shipping case study** to discover how they achieved a 25% boost in productivity.

ABOUT NEMAG

At Nemag, we specialize in designing and manufacturing high-performance grabs for the world's most demanding bulk handling environments. With decades of experience and a strong focus on innovation, we support operators in optimizing their grab-crane-cargo setup to maximize efficiency, minimize wear, and improve safety across the board.

Our solutions are engineered to last, with a clear focus on operational reliability, low maintenance costs, and adaptability to your specific materials, vessels, and environmental conditions. From consulting and custom grab design to lifecycle support and maintenance planning, we act as a long-term partner in helping you move more cargo, faster and smarter.

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