

TUKAN 750 / 1500 / 3000

DOUBLE JIB LEVEL LUFFING CRANE





↑ Grande Tukan during transshipment operation

THE TUKAN: THE EFFICIENT CRANE.

A PERFECT MULTIPURPOSE CRANE SYSTEM: FOR
CARGO HANDLING AND SHIP ASSEMBLY WORK.

The seaports of this world are the relay stations for the flows of goods which, in the age of global business operations, are continuing to grow rapidly. Shipping units are becoming ever larger, turnaround times ever shorter and cargo handling operations ever greater. This is an enormous challenge for all those responsible for the loading of goods, and for those who build the ships.

Cranes, as high-performance instruments, play a decisive role in this process. Cranes in dockyards and ports, in all possible climatic zones, must always function correctly and fulfil the most varied demands with regard to handling capacity, geometry and ground pressure limits, etc.

→ INFO

What constitutes the best harbour and dockyard cranes?

What does it depend on?

→ Essentially, on:

- low operating costs
- high productivity rates

→ More precisely, on:

- efficient and safe handling of bulk goods, general cargo and containers
- precise, careful handling of materials and efficient assembly of ship components in dockyards
- maximising the handling capacity and, consequently, short turnaround times for the ships
- economical unloading and loading
- low costs for maintenance and operating materials
- long working life

The Tukan has all these features.



Containers waiting for dispatch

DOESN'T EVERY INVENTOR DREAM OF CREATING A NEW STANDARD? THE ARDELT **DOUBLE JIB LEVEL** **LUFFING PRINCIPLE.**

As early as 1932, Ardel had invented the double jib level luffing principle – and since then has implemented further developments. The jib system or double jib level luffing system comprises four elements: A-frame, jib boom, tie-back and jib. The crucial point about this special geometry: it allows the desired horizontal load path to be realised by mechanical means without having to expend energy through the hoisting gear. Characteristic of this design is the downward-pointing jib: it decisively shortens the length of the free-swinging rope.

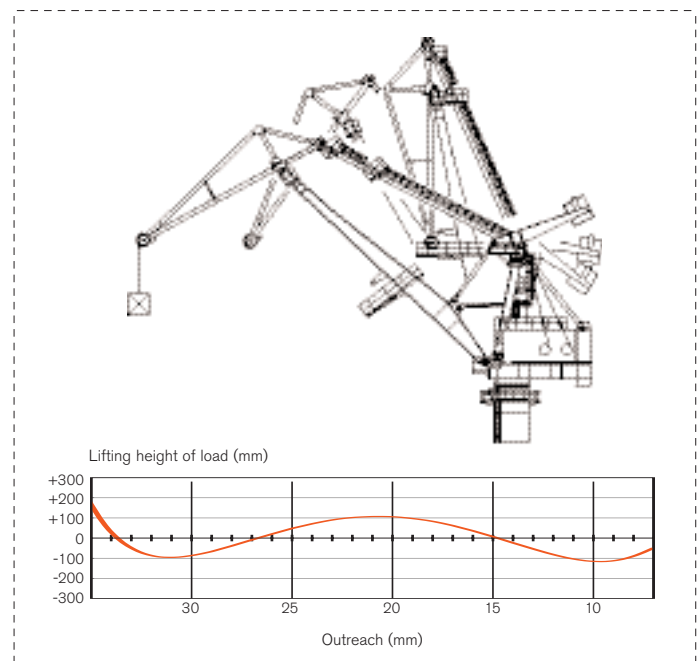
This means (above all, in comparison to single jib cranes): the horizontal load path and the closeness of the jib to the load allow excellent productivity rates. Thanks to short free-swinging rope lengths, positioning becomes very simple and precise, even in wind and bad weather conditions – a great advantage for all types of operation.

In addition, the short free-swinging lengths make the double jib level luffing crane ideal for semi-automatic operation, especially in the integrated bunker version.

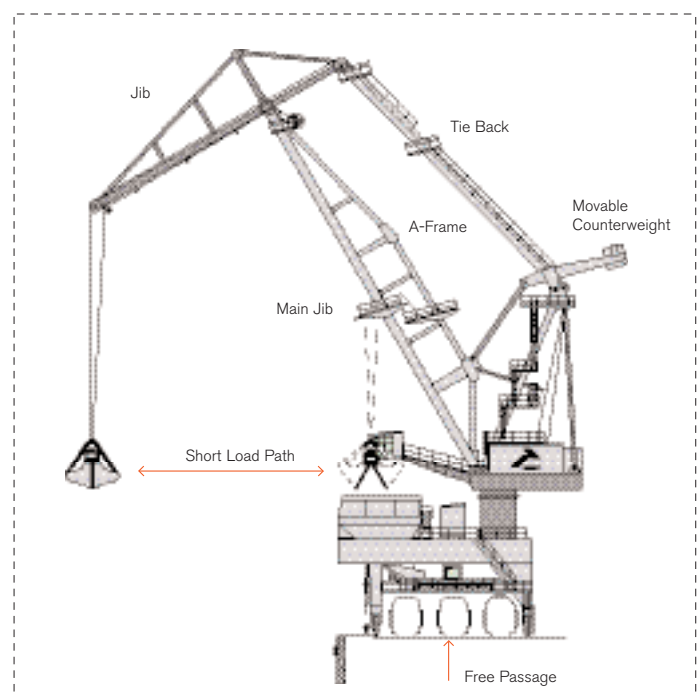
→ INFO

Typical features of the Tukan

- extremely productive: short load paths, short rope and free-swinging lengths, improved centre of gravity position: the double jib level luffing principle
- clear design concept: large-diameter tubular column
- very flexible: thanks to the slewing bearing
- very economical: recovery of braking energy



↑
Jib System – Horizontal Load Path



↑
Kangaroo Operation



↑ Reliable handling of general cargo

A further advantage of the Ardel double jib level luffing system: the jib cannot crash to the ground, even in the event of failure of the luffing gear. It is held absolutely secure by the tie-back.

And: optimum guidance of the rope minimises the bending load on the ropes and increases the life of the rope – therefore reducing the operating costs.

The special double jib level luffing concept of the Tukan provides a counterweight balancing lever. The movable counterweight ensures that, in every position, the centre of gravity of the whole jib system remains close to the slewing axis. This minimises the torques acting on the slewing bearing and also reduces the luffing energy required. In both cases, this means reduced wear and therefore lower costs.

The Tukan, with its slewing bearing and large-diameter tubular column, has a clear design concept providing great flexibility:

- The slewing bearing allows the crane to be mounted on many different types of portal. The Tukan can therefore be very easily adapted to suit the prevailing local conditions.
- The machinery house platform is compact, modular and low-maintenance, and arranged on the counterweight side of the crane.

Moreover, the Tukan is an extremely energy-efficient crane. Its primary energy consumption, already low, is further reduced by means of the latest converter technology. Through recovery of the braking energy fed back into the power supply system the Tukan exhibits a significantly better energy balance than a comparable mobile harbour crane.



↑ Efficient bulk handling

THERE ARE MANY REASONS FOR CHOOSING **THE TUKAN**. THE MOST COMPELLING ARE:

THE TECHNICAL HIGHLIGHTS.

01 THE DOUBLE JIB LEVEL LUFFING SYSTEM

Decades of experience pay off. Ardel builds what is not only the most robust, but also the lightest double jib level luffing system in the world. The Tukan is manufactured in three size classes, each with specific characteristics related to the lifting capacity: Tukan 750, Tukan 1500, Grande Tukan 3000.



↑ Reliable and safe – Rack and pinion luffing gears

02 THE HOISTING GEAR

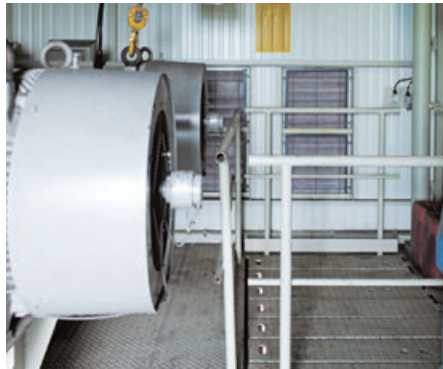
We have optimised our hoisting gear through decades of development, so we are able to guarantee highest performance and best availability. They are equipped as standard with compact, high-performance planetary gears of modular construction. In this way we achieve weight and cost savings.



↑ Proven hoisting gear block

03 THE MACHINERY HOUSE LAYOUT

Typical of the extremely easy-maintenance machinery house layout is the excellent accessibility of all components. The rope entry funnel into the machinery house roof is provided with excellent protection against rain or spray water by means of floating guide rollers (with reliable sealing).



↑ Spaciousness of the machinery house grants good accessibility and easy maintenance

04 THE LUFFING GEAR

The Tukan luffing gear is extremely safe, simple to maintain and independent of climatic conditions. Depending on size class, we install either single toothed rack luffing gear or double toothed rack luffing gear. This provides much lower operating costs in comparison to hydraulic or spindle drive luffing gear.



↑ Rope pressure device for safe hoisting rope winding

05 THE SLEWING GEAR

The Tukan slewing gear systems are compact, low-maintenance drive units with planetary gears. The slewing bearing is secured with Superbolt connections which prevent any uncontrolled loading of the bolts. No special tools are required for checking the pre-tension settings. Furthermore, the central lubrication system contributes to the ease of maintenance. Which means simply: Tukan slewing gear lasts longer.

06 THE TRAVELLING GEAR

For the Tukan we use only tried and tested components from well-known suppliers because we believe that reliability is a cardinal virtue. Travelling gear systems from Ardel characteristically have an extremely robust construction with one very special feature: the driving dogs between drive and drive shaft have involute toothing. This makes it possible to easily replace the drive units. Ardel travelling gear units are modular in design and – as modules – can be combined on travelling gear balancers. In this way they can easily meet all the requirements that the infrastructure of the respective installation site demands. Moreover: in comparison to rubber-tyred travelling gear, rail mounted travelling gear is less expensive to purchase and maintain because the high cost of tyres is eliminated.



↑ Travelling gear from construction kit

07 THE CONTROL SYSTEM

Ardelt is the only manufacturer of double jib level luffing cranes able to refer to an established and integrated knowledge chain: right from the electrical design stage through to programming and as far as manufacture and testing. Something which – apart from agreeable operation of the crane – also gives the customer the satisfaction of always having state-of-the-art equipment. Whether this concerns the components or forward-looking functions such as remote maintenance.



↑ Clear and ergonomically comfortable arrangement of operational elements in the driver's cabin

08 THE ELECTROCONTAINER

We only install first-class components in the modular-designed Tukan electrocontainer. We manufacture the control cabinets, for example, in Eberswalde, install them completely, test them meticulously and then deliver them as a compact unit together with the operator cabin.

The benefits:

- well-arranged structure thanks to the modular design
- high-quality components and functional testing
- low freight costs thanks to reduced dimensions
- less installation work during assembly.

09 THE OPERATOR CABIN

Ardelt operator cabins are individually manufactured to specially developed, standardised designs. We design and build the cabins to order, or to suit the relevant on-site operating conditions.



↑ Open racks for electrical equipment are common



↑ Visualisation of crane data via Crane Management System

10 THE PORTALS

Tukan portals are also precisely engineered. We manufacture them to exactly match the prevailing on-site conditions. With these, gantry gauges of 2.5–90m are possible, as well as asymmetrical portals. We have already produced cranes with hook heights of up to 60m with corresponding tubular column heights of up to 50m.



↑ Portals from Ardel are perfectly designed for unique requirements

THEORY: HIGHEST HANDLING CAPACITY WITH SPOT-ON OPERATING PRECISION. SOLUTION: THE TUKAN.



↑
Handling of parts of wind power plants by Tukan cranes

The Tukan is at home in any location where there are loads to be moved.

In the port, for example, it is the ideal, economical machine for handling bulk goods, as well as other cargos. In the so-called “kangaroo operation” it achieves peak handling capacities. With this method, besides the short load paths and swing lengths arising from the articulated jib design principle, there is a second decisive benefit: the handling operation is carried out essentially by the luffing movement. The slewing

movement therefore becomes secondary and the effects of braking and acceleration processes which normally occur during the trolley travel movements of ship unloaders are eliminated. One of the reasons crane drivers simply love the Tukan.

It is highly regarded in the dockyards for the assembly of ship components. This is due to the short rope lengths, the short load swings and the ability to make very fine and precisely-controlled movements.

→ INFO

In general cargo, heavy load and container handling too, the Tukan is able to make full use of its inherent advantages:

- highly accurate positioning
- horizontal load path (mechanical principle)
- high working speed

WHY ARDELT?

CRANE CONSTRUCTION SINCE 1902.

→ KNOW-HOW

With more than 2,300 double jib level luffing cranes delivered, Ardel is the world market leader. The technical basis on which our success is built derives from the "Double jib level luffing patent" of 1932, which we constantly develop further.

During the constant further development and design work, our engineers consistently apply the proven methods and rules of the German engineering industry. With this, the classification and categorisation of the cranes for continuous operation is carried out in an especially rigorous manner. The aim always remains the same: to increase the efficiency, safety and environmental aspects of the cranes.

→ QUALITY

For us, quality means: a sophisticated product concept, in-depth knowledge in the fields of design and control, as well as high precision in manufacture and production. It goes without saying that our engineers meticulously inspect and test all mechanical and electrical subassemblies.

All that brings decisive benefits:

- high performance and reliability of the cranes
- low operating costs
- long working life (even under the severest operating conditions).

→ SERVICE

By excellent service, we understand this to mean, among other things: to be present and available. After all, it's always possible for something unpredictable to happen. For this reason, our customers can contact us around the clock via a Hotline. In order to ensure your safety and satisfaction we employ only

highly qualified engineers and technicians in Customer Service. And not least, we place great value on comprehensive and technically sound training and support for your employees.

→ PARTNER APPROACH

The Tukan is a product with an extremely long working life. A decision to choose the Tukan is synonymous with the start of an extensive customer/supplier relationship – which is evident from the many repeat and follow-up orders.

We therefore place great value on developing this relationship to provide fair and long-term benefits to both parties. (For us, this starts long before the signing of a contract. We will be pleased to advise you, simply give us a call.)



↑ Home of Ardel in Eberswalde



↑ The Offices

THE TUKAN – THE ESSENTIAL TECHNICAL DATA.

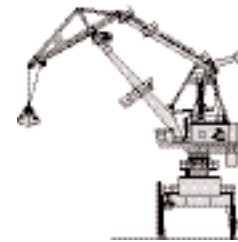
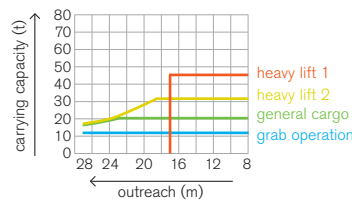
TUKAN 750



Working speeds ($\pm 5\%$):

- Hoisting/lowering from 0m/min up to 110m/min*
- Slewing from 0rpm up to 1.7U/rpm*
- Luffing from 0m/min up to 55m/min*
- Travelling 45.0m/min*

*DEPENDENT ON LOAD



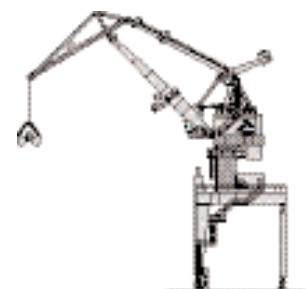
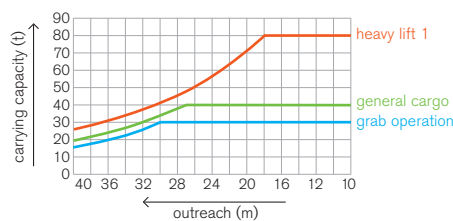
TUKAN 1500



Working speeds ($\pm 5\%$):

- Hoisting/lowering from 0m/min up to 90m/min*
- Slewing from 0rpm up to 1.7 m/rpm*
- Luffing from 0m/min up to 55m/min*
- Travelling 45.0m/min

*DEPENDENT ON LOAD



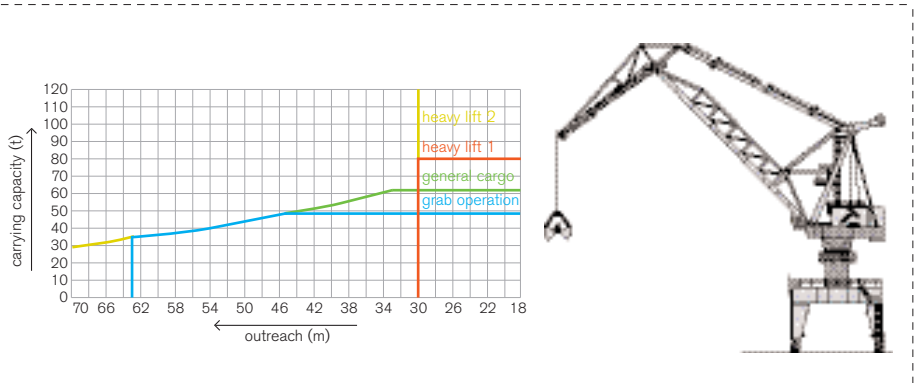
GRANDE TUKAN 3000



Working speeds ($\pm 5\%$):

- Hoisting/lowering from 0m/min up to 110m/min*
- Slewing from 0rpm up to 1.2rpm*
- Luffing from 0m/min up to 60m/min*
- Travelling 32.0m/min

*DEPENDING ON LOAD



OVERVIEW

	→ INLAND PORTS	→ LARGE INLAND AND SEAPORTS	→ SEAPORTS
<u>Size classes</u>	Tukan 750	Tukan 1500	Grande Tukan 3000
<u>Outreach</u>	27 m	27 m – 40 m	40 m – 70 m
<u>Capacities Heavy-duty operation (A2)</u>	45 t x 17 m	60 t x 18 m*	80 t x 25 m* 120 t x 30 m*
<u>Capacities General cargo handling (A5/A6)</u>	35 t x 20 m	40 t x 27 – 35 m	40 t x 40 – 55 m
<u>Capacities Bulk goods handling (A8)</u>	13 t x 27 m	16 – 30 t x 27 – 40 m**	30 – 40 t x 50 – 55 m

*OPTIONAL **PREFERRED DESIGNS: 30 T X 30 M AND 25 T X 37 M

KRANUNION. WORLD MARKET LEADERS UNITED.

Kranunion is an association of three world market leaders who have specialised in lifting and transporting heavy loads:

- KIROW is the world market leader for railway cranes and slag pot carriers
ARDELT is the world market leader for double jib level luffing cranes
KOCKS is the world market leader for Goliath cranes

Central to all Kranunion products are the technical design concepts created by our experts. Of course, we continue to optimise those fundamental concepts even further in the interests of our customers. Kranunion products are therefore based on practical requirements and are a symbiosis of tradition and innovation combining the tried and tested with the new.

Customers who choose Kranunion choose great German engineering skill: for environmentally-friendly and safe, modern technology, for low operating costs, for high performance and reliability.

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