

Mark W. Laughlin / Konecranes America Shane Toncrey/ Anvil Attachments, LLC

KONECRANES[®]

Lifting Businesses

MENTS

Pro-Line · Owen · Yaun · Williams · Dro

PRIMARY LIFETIME FACTORS



KONECRANES® Lifting Businesses[™]

LUBRICATION

- **REGULAR, EFFECTIVE LUBRICATION**
- USE RECOMMENDED LUBRICATING MATERIALS

INSPECTION

- CATCHING PROBLEMS WHILE MINOR
- CHECKING FOR PHYSICAL DAMAGE
- **COMPARING WEAR TO EXPECTATIONS**

MAINTENANCE

- TIMELY REPLACEMENT OF PINS/BUSHINGS/BEARINGS
- REPAIR MINOR CRACKING



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EFFECTS OF CYCLES



KONECRANES® Lifting Businesses[™]

WEAR AREA'S

- MAIN SHAFTS
- BOWL-ARM PINS / BUSHINGS
- SHEAVES / SHEAVE BEARINGS
- CORNER/EDGE WEAR PADS
- BOWL PLATE THICKNESS
- TIMING TEETH

ATIGUE AREA'S

- UPPER/LOWER BLOCK SECTIONS
- MAIN BOWL ARMS
- BOWL PLATES



Typical Bucket Structure Designed for 1,000,000 Cycles

Buyer should specify when purchasing

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NYACHMENTIS Hawco + Pro-Line + Owen + Yaun + Williams + Drott

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KONECRANES® Lifting Businesses[™]





3 PHASES OF COKE BUCKET LIFE

BASED ON CYCLES OF OPERATION



ALTER AND A DECIMAL OF A DECIMA



KONECRANES® Lifting Businesses[™]

EARLY PHASE ACTIONS

Early Phase

To 500,000 Cycles

Mid Phase

500,000 to 800,000 Cycles

ate Phase

800,000 to 1,000,000 Cycles LUBRICATE PER MANUFACTURER

8 HOUR INTERVALS

USE RECOMMEND LUBRICATION

CHECK AND REPLACE FASTENERS

STOCK PINS/BUSHINGS



COLUMN THE COLUMN



KONECRANES® Lifting Businesses[™]

MID PHASE ACTIONS

Early Phase

To 500,000 Cycles

Mid Phase

500,000 to 800,000 Cycles

.ate Phase

800,000 to 1,000,000 Cycles LUBRICATE PER MANUFACTURER

TWICE WEEKLY INSPECTIONS

REPLACE MAIN SHAFT AND

LOWER ARM PINS

STOCK UPPER/LOWER BLOCK





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KONECRANES® Lifting Businesses[™]

LATE PHASE ACTIONS

Early Phase

To 500,000 Cycles

Mid Phase

500,000 to 800,000 Cycles

Late Phase

800,000 to 1,000,000 Cycles

LUBRICATE PER MANUFACTURER

DAILY INSPECTIONS

REPLACE MAIN SHAFT AND LOWER

ARM PINS

FAILURE TO DUE SO WILL RESULT

IN PREMATURE CRACKING

SPARE BUCKET HIGHLY RECOMMENDED



KONECRANES® Lifting Businesses[™]

PINS AND BUSHINGS

A. INSPECT UPPER ARM PINS

CHECK FOR ALIGNMENT AND WEAR

B. INSPECT LOWER ARM PINS

CHECK FOR ALIGNMENT AND WEAR

C. INSPECT MAIN SHAFTS

CHECK FOR ALIGNMENT AND WEAR





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PINS AND BUSHINGS





KONECRANES® Lifting Businesses[™]

PINS AND BUSHINGS

PROPER PIN/BRACKET

WORN PIN/BRACKET



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WEAR AREA'S

Not all joints in the bucket pivot the same amount.

As the bucket opens, "A" pivots only about 20 degrees, while "B" and "C" pivot about 75 degrees each.

Also, "A" is more isolated from the coke and water than "B".



"B" is easier to reach than "A", and easier to disassemble than "C".



So if we tap pin "B" partially out, we can examine the wear, and consider this a reliable indicator of the wear at "C".



KONECRANES® Lifting Businesses

UPGRADES

ASTRALLOY PINS/MANGANESE BUSHINGS

INCREASES LIFE BY 60%

PREVENTS CRACKING AND MISALIGNMENT







KONECRANES® Lifting Businesses**

WEAR AREA'S

D. INSPECT CORNER WEAR PADS

REPLACE WHEN LESS THAN 30%

E. INSPECT BOTTOM WEAR PADS

REPLACE WHEN WEAR REACHES NOTCH

F. INSPECT BOLT ON EDGES

REPLACE WHEN GAP FORMS

G. INSPECT BOWL GEARS CHECK FOR WEARING OF TEET





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KONECRANES[®]

Lifting Businesses[™]

INSPECTION AREA'S

WEAR AREA'S





KONECRANES®

SHEAVES AND BLOCKS

H. INSPECT CLUSTER SHEAVES

CHECK FOR SIDE PLAY

I. INSPECT UPPER/LOWER SHEAVES CHECK FOR SIDE PLAY J. INSPECT UPPER/LOWER BLOCKS CHECK FOR CRACKING K. INSPECT CORNER ARM FRAME CHECK FOR CRACKING





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CHECK FOR CRACKING







KONECRANES® Lifting Businesses[™]

BOWL AND EDGES

L. MEASURE BOWL FOR THICKNESS

REPLACE WHEN LESS THAN 50%

M. INSPECT LIPS/EDGES

CHECK FOR WEAR

N. MONITOR UPPER GEAR

CHECK FOR EXCESSIVE MOVEMENT





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Control Feature Protection:

Slack Rope Control: Konecranes inverter controls sense the load on the ropes and maintain tension so ropes don't go slack, which could snag on objects, or snap back when operator tries to raise bucket, damaging components.

Control without slack rope protection



Overload Protection: Konecranes hoists include load cells for overload prevention, reducing stress on machinery, increasing safety.





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Control Feature Protection:

Load Share Control: Konecranes bucket-hoist control is PLC-based to properly share the load between the two hoist machineries and synchronize their motion, reducing stress on the

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bucket.



Automation:

Automated cranes follow pre-set routes and routines, avoiding obstacles, optimizing movements and minimizing "operator effects" on control, machinery... and the bucket.





NOT JUST LIFTING THINGS, BUT ENTIRE BUSINESSES

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