Tech Info – **Triangular Swingaway Inspection Procedure** Americas

This program was designed to establish a standard field procedure to check and inspect booms for squareness, sweep, twist, camber, flatness or convex / concave conditions.

This procedure pertains to Grove and GMK built booms. Fabricated trapezoidal booms, formed trapezoidal booms, rectangular booms, rectangular swingaways, triangular swingaways and AFrame jibs.

This boom inspection data form will be used to record all measurements taken while performing the inspection.

Note: All calculations will be done by Manitowoc Product Support

Note: Anytime you are using the gauge blocks, record the thickness of the block used in the appropriate space on the form. Always use gauge blocks large enough to ensure the string does not touch the boom section. **All check dimensions recorded will include the gauge block thickness.**

Note: All measurements are taken from the rear of the section to the front, with the exception of checking for a twist in an A-Frame jib or a swingaway. You must check A-Frame jibs and swingaways by leveling the front of the section and taking the check dimension at the rear. Because of the angle of inclination of the main chords, the front end is narrower than the width at the rear of the section.

Tools Required

Quantity 1 - 4 Foot Level
Quantity 1 - Large Square (3’ x 4’)
Quantity 2 - Small Squares (24” x 16”)
Quantity 2 - Vise Grip Clamps
Quantity 1 - 6” scale
Quantity 1 - 12 ‘ Tape Measure
Quantity 2 - Gauge Blocks or Rods (Same Thickness)
Mason String

Definitions

Trapezoidal Boom - A four sided boom with only 2 sides being parallel

Rectangular Boom - A four sided boom having edges, surfaces, or faces that are right angles

GMK Style / Megaform - A six sided boom made from two formed channels. The top half has 90° bends and the bottom half has multiple bends.

A-Frane Jib - A boom extension suspended by cables

Swingaway - A boom extension that is pinned directly to the main boom nose

Sweep - To curve to the right or left, a deviation from being parallel. Larger than the gauge block on one side and smaller then the gauge block on the other side.

Camber - To arch slightly, to curve upward or downward

Squareness - To test for a deviation from a right angle

Twist - To rotate while taking a curving path or direction

Convex - Arched up or bulging out condition

Concave - Arched inward or curving in condition

O. D. Width - Outside dimension measured from outside of left side plate to outside of right side plate

O. D. Height - Outside dimension measured from outside edge of top plate to outside edge of bottom plate

Distortion - To twist out of normal or original shape

Maximum Deviation - The difference between a fixed number (gauge block) and the check dimension

Check Dimension - The actual measurements taken at various places on boom

Strut - Tubing that is welded between main chords of A-Frame jibs

Gauge Blocks - Are blocks, being the same size, from which measurements are being taken

Main Chord - Main support tube that runs the full length of jibs and swingaways

Lacing - Tubing that is welded between the main chords of swingaways

Serial Number and Part Number Locations
On Booms, Swingaways and Jib Booms

Machine component serial numbers and part numbers are required for us to supply repair procedures for major weldments.

We have attached a list of major components with serial number locations.
Note: Part number is on opposite side of the serial number.

The numbers are steel stamped into the major components in the approximate locations shown.

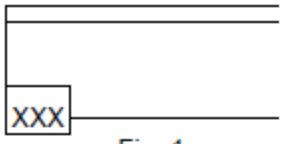


Fig. 1
Rectangular Boom
Left Forward
Bottom Corner

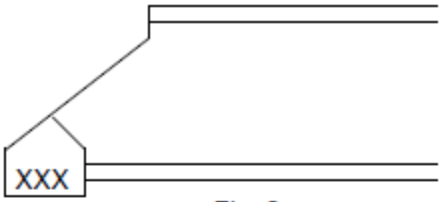


Fig. 2
Trapezoidal Boom
Bottom Left
Forward Bottom Corner

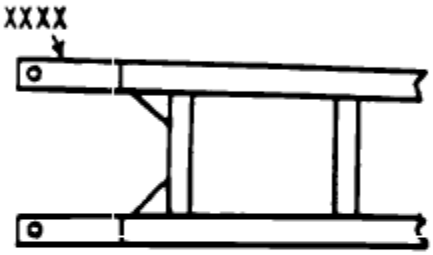


Fig. 3
A-Frame Jib

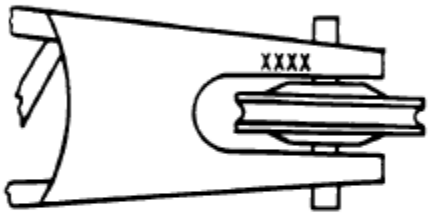


Fig. 4
Lattice Swingaways
and Fixed Lattice
Boom Extensions

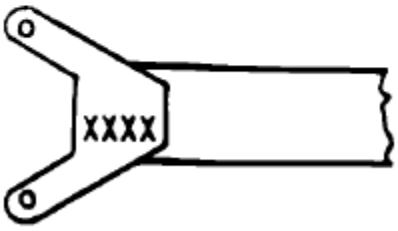


Fig. 6
Stevedore, IND 24, AP 308 and AP 206
Jib-Top Side of Trunnion Block

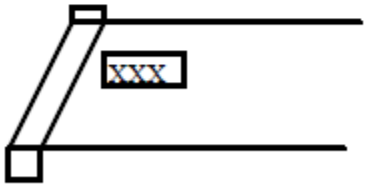
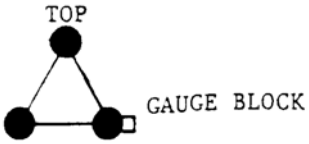


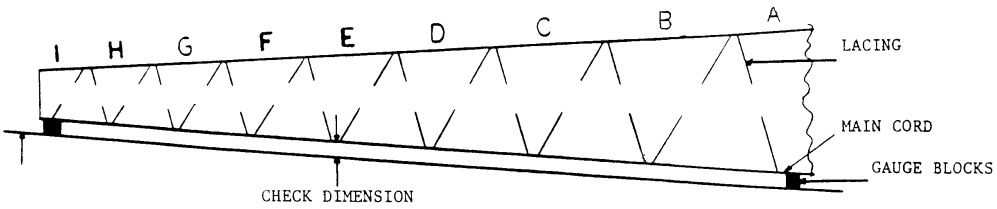
Fig. 5
GMK Style / Megaform

Triangular Swingaway Sweep

Chkd. By _____ Model _____
Date _____ Serial # _____
Distributor _____
Record Part Number of Swingaway _____
Record Serial Number of Swingaway _____



Record Thickness of
Gauge Blocks _____



1. With the top up, place gauge blocks along the side Max. Check Dimension
of bottom chord.
2. Pull the string tightly over the blocks. Right Side Left Side
3. Check dimensions are taken where cross lacing is _____ _____
welded to main chords.
4. Measure the distance between the string and main
chord at every lacing the entire length of the swingaway. At Which Lacing was Max.
5. Find the maximum check dimension and record this form. Check Dimension
6. Record at which lacing the maximum check dimension
was found. Right Side Left side
7. Repeat procedure checking both bottom chords. _____ _____

Triangular Swingaway
Camber Record Thickness of Gauge
Blocks_____

1. With the Swingaway laying on its side, place gauge Max. Check Dimension
blocks on the under side of the bottom chords.
2. Pull string tightly over the blocks. Right Side Left Side
3. Check dimensions are taken where cross lacing is _____ _____
welded to main chords.
4. Measure the distance between the string and main chord At Which Lacing Was Max.
at every lacing the entire length of the swingaway. Check
Dimension
5. Find the maximum check dimension and record on this form.
6. Record at which lacing the maximum check dimension Right Side Left Side
was found _____ _____
7. Repeat procedure checking both bottom chords.

Chkd. By _____ Triangular Swingaway Model _____
Date _____ Twist Serial # _____
Distributor _____
Record Part Number of Swingaway _____
Record Serial Number of Swingaway _____

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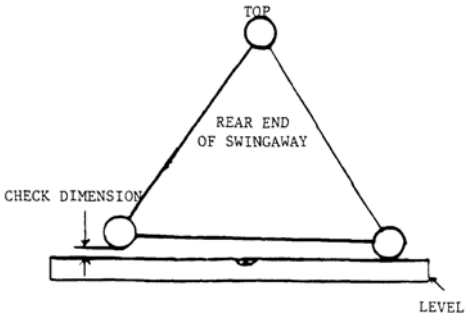
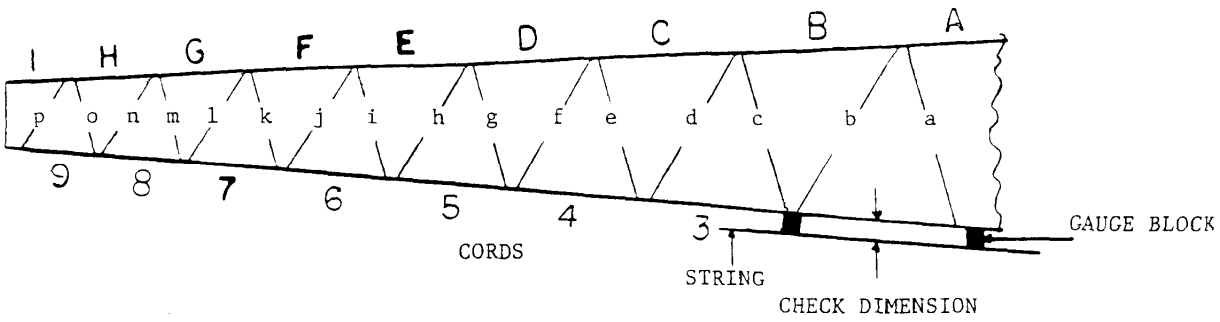
1. Level the front end of the swingaway off Record Check Dimension as Twist_____
the bottom chords.
2. Take the 4' level to the rear of the swingaway and place it across the bottom chords.
3. Lift either end of the level one way or the other until bubble is level.
4. Now measure the distance between the level and bottom chord.
5. Record that check dimension as twist on this form.



Triangular Swingaway
Distortion of Main Chords

END VIEW

Record Thickness of Gauge Blocks_____



Record Local Distortion of Main Chords

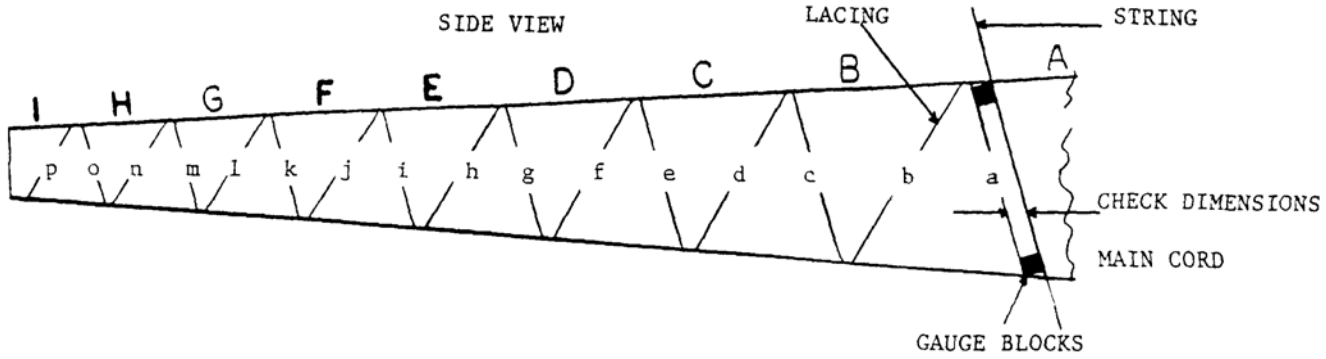
R/side L/side Top

1. _____ _____ _____
2. _____ _____ _____
3. _____ _____ _____
4. _____ _____ _____
5. _____ _____ _____
6. _____ _____ _____
7. _____ _____ _____
8. _____ _____ _____
9. _____ _____ _____

1. Place gauge blocks along main chord where cross lacing is welded to the chord.
2. Pull string tightly over the blocks.
3. Measure the distance between the string and main chord at various points between the gauge blocks.
4. Find the maximum check dimension and record this check dimension on this form.
5. Repeat the procedure for all main chord sections between lacing on all 3 chords.

Triangular Swingaway Distortion of Lacing

Chkd. By _____ Model _____
Date _____ Serial # _____
Distributor _____
Record Part Number of Swingaway _____
Record Serial Number of Swingaway _____



Record Distortion In Lacing

	R/side	L/side
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
e.	_____	_____
f.	_____	_____
g.	_____	_____
h.	_____	_____
i.	_____	_____
j.	_____	_____
k.	_____	_____
l.	_____ _	_____
m.	_____	_____
n.	_____	_____
o.	_____	_____
p.	_____	_____

of Gauge Block _____

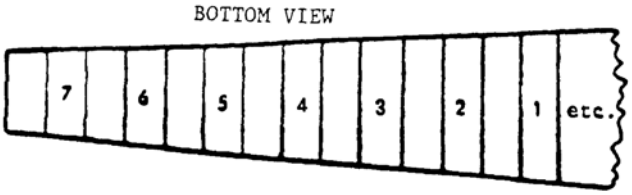
Record Thickness of Gauge Blocks_____

1. Check all the lacing on one side at a time.
2. Place the gauge blocks on the lacing close to the main chord.
3. Pull the string tightly over the blocks.
4. Measure the distance between the string and lacing at various points between the gauge blocks to find t he maximum check dimension.
5. Record the check dimension on this form.
6. Repeat Procedure for both sides and bottom lacing.
7. Record thickness of gauge blocks.

Triangular Swingaway
Distortion in Bottom Lacing

Record Thickness

Record Distortion in Bottom Lacing



1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____