

Measuring Welded Steel Chain Elongation

WHY MEASURE ELONGATION?

When the chain engages with the sprocket, the chain articulates on the pin which causes wear on the pin and bushing. As the chain pitch elongation increases, the chain tends to climb the sprocket preventing a smooth conveyor operation. At 3% elongation, it is time to consider changing the chain. At 4-5% elongation, the chain will not interact with the sprocket and eventually lead to failure, unplanned downtime and lost production.

HOW TO MEASURE ELONGATION?

Figure 1 is a depiction of the recommended areas to measure chain elongation. The key is to find a consistent surface to measure from and ensure you are measuring to the same place on the corresponding pitch measured. For Welded Steel Chain, it is recommended to measure 10 pitches. If this is not feasible, measure a minimum of four pitches or as many pitches as possible. Measurement should be taken with adequate tension on the chain, it is recommended to take the measurement close to the drive sprocket on the tensioned portion. The chain pitch elongation per link is determined by comparing the actual pitch to the original pitch of the chain. See Figure 2 for further example.





Figure 1: Places to Measure Elongation



HOW TO CALCULATE THE AMOUNT OF ELONGATION?

<u>Standard length</u>	=	Chain F

<u>Chain Elongation(%)</u> =

FOR EXAMPLE:

- WH157 chain has a standard pitch of 6.050" per pitch
- Standard length of 10 pitches = 60.5"
- Measured length of 10 pitches = 61.25"
- Measured length Standard length = 0.75" / Standard length = 0.0124
- 0.0124 x 100 = **1.24% Chain Elongation**

Elongation of 3% or less is acceptable; however, anything above 3% elongation indicates that chain has reached functional service life and plans for replacement are now recommended.

Pitch x Number of Links

Measured Length - Standard length

 $\times 100$

Standard length

NEED HELP WITH **MEASURING** ELONGATION OR **ANALYZING** WEAR?

Tsubaki's Technical Solutions Team can assist you!

The Tsubaki Difference

When properly specified, installed, and maintained, a chain should never break but wear predictably, allowing for maximum productivity, ultimate reliability, and peace of mind.

Improve Operational Reliability and Productivity with ProService®

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- Application Optimization
- Installation Support
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For more information, contact Tsubaki of Canada Ltd. at **1-800-263-7088** | **tech@tsubaki.ca** or visit **www.tsubaki.ca/technicalsolutions**



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