

## 1 PRELIMINARY NOTE

These operating instructions are to be read and observed carefully before the chain elongation gauge is put to use. It contains important information with regards to the safe use and maintenance of the tool.

The elongation gauge is an inspection tool exclusively intended for checking the elongation or lengthening of round steel conveying chains. Round steel chains are, for example, used in face and haulage conveyors, they also come as flat, dualink or special chains with nominal diameters ranging between 18 and 61 mm<sup>#</sup>.

## 2 GENERAL

Prior to use check whether the following parts are available:

- 1 x Plastic case or leather bag
- 1 x Measuring gauge leg “slidable with scale”
- 1 x Measuring gauge leg “stationary”
- Spacer elements with chain marking (quantity may vary)
- 1 x Allen key, size 3 mm
- 1 x Open-ended spanner, size 6 mm



### **Before using the tool check for damage!**

Any damaged components have to be replaced prior to use of the elongation gauge.

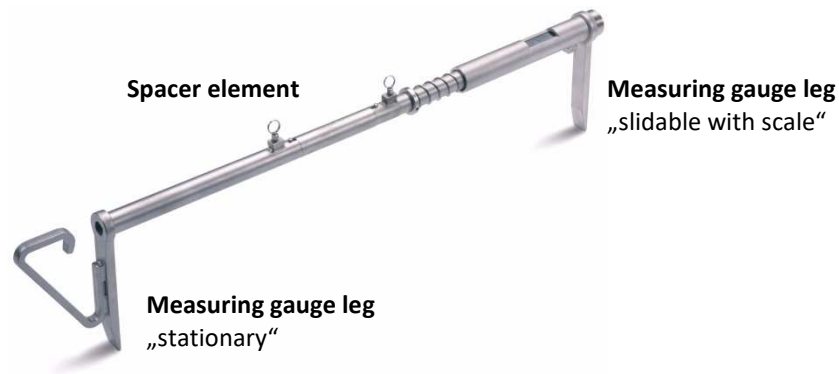
Store and transport the elongation gauge only in the containers provided for this purpose (case, leather bag).

When using the leather bag take care that the carrying strap does not get caught at stationary or movable objects!

### 3 FUNCTION AND DESIGN

The gauge must be assembled before measurements can be taken. For this purpose, select the spacer element that suits the nominal chain size. The pitch dimension of the chain to be tested is engraved there.

Connect one end of the spacer element to the “slidable with scale” measuring gauge leg and the other end to the “stationary” leg. Be sure the spring-loaded lock pins engage properly. The measuring gauge is now ready for use.



### 4 TAKING MEASUREMENTS

The chain to be measured should be located in a straight run and pre-tensioned. First press the “stationary” leg against an outer link rounding. Then the measuring leg "movable with scale" is now also pressed against a chain link rounding in the same position, which is located at the distance of the number of links listed in the table depending on the pitch dimension.

Note: The chain gauge is not used in the same way as the familiar caliper gauge!

The measurement can be carried out in the same way for the horizontal and vertical (recommended, see picture) chain links. The gauge is to be placed in parallel position to the chain run.



While the gauge legs have firm contact with the chain link roundings the relevant measuring value can be read on the scale (mm graduations).

The value indicated by the scale pointers denotes the elongation of the chain compared to its original state.

Example:

$$2 = 20 \text{ mm}$$



Elongation in a chain may vary. Therefore take readings in different areas of the chain.

## 5 ANALYSIS

The following table serves to display the wear percentage based on the measuring value determined.

Example: A measured value of 20 mm for 4 links of a chain with pitch 146 results in a wear of 3,42 %.

| Chain type:<br>Pitch:<br>Number of links:<br>Measured value | Flat- and Round steel chains acc. DIN 22252 / DIN 22255 |      |      |      |      |      |      |                |      |      |                |      |      |      |                |
|---|---|------|------|------|------|------|------|----------------|------|------|----------------|------|------|------|----------------|
|   | 64  | 86   | 92   | 100  | 105  | 108  | 126  | 126<br>121/131 | 137  | 146  | 152<br>144/160 | 170  | 180  | 187  | 189<br>181/197 |
|   | 10  | 8    | 8    | 6    | 6    | 6    | 6    | 8              | 4    | 4    | 4              | 4    | 4    | 4    | 4              |
|   | Chain elongation in %                                   |      |      |      |      |      |      |                |      |      |                |      |      |      |                |
| 1 mm  | 0,16  | 0,15 | 0,14 | 0,17 | 0,16 | 0,15 | 0,13 | 0,10           | 0,18 | 0,17 | 0,16           | 0,15 | 0,14 | 0,13 | 0,13           |
| 2 mm  | 0,31  | 0,29 | 0,27 | 0,33 | 0,32 | 0,31 | 0,26 | 0,20           | 0,36 | 0,34 | 0,33           | 0,29 | 0,28 | 0,27 | 0,26           |
| 3 mm  | 0,47  | 0,44 | 0,41 | 0,50 | 0,48 | 0,46 | 0,40 | 0,30           | 0,55 | 0,51 | 0,49           | 0,44 | 0,42 | 0,40 | 0,40           |
| 4 mm  | 0,63  | 0,58 | 0,54 | 0,67 | 0,63 | 0,62 | 0,53 | 0,40           | 0,73 | 0,68 | 0,66           | 0,59 | 0,56 | 0,53 | 0,53           |
| 5 mm  | 0,78  | 0,73 | 0,68 | 0,83 | 0,79 | 0,77 | 0,66 | 0,50           | 0,91 | 0,86 | 0,82           | 0,74 | 0,69 | 0,67 | 0,66           |
| 6 mm  | 0,94  | 0,87 | 0,82 | 1,00 | 0,95 | 0,93 | 0,79 | 0,60           | 1,09 | 1,03 | 0,99           | 0,88 | 0,83 | 0,80 | 0,79           |
| 7 mm  | 1,09  | 1,02 | 0,95 | 1,17 | 1,11 | 1,08 | 0,93 | 0,69           | 1,28 | 1,20 | 1,15           | 1,03 | 0,97 | 0,94 | 0,93           |
| 8 mm  | 1,25  | 1,16 | 1,09 | 1,33 | 1,27 | 1,23 | 1,06 | 0,79           | 1,46 | 1,37 | 1,32           | 1,18 | 1,11 | 1,07 | 1,06           |
| 9 mm  | 1,41  | 1,31 | 1,22 | 1,50 | 1,43 | 1,39 | 1,19 | 0,89           | 1,64 | 1,54 | 1,48           | 1,32 | 1,25 | 1,20 | 1,19           |
| 10 mm   | 1,56  | 1,45 | 1,36 | 1,67 | 1,59 | 1,54 | 1,32 | 0,99           | 1,82 | 1,71 | 1,64           | 1,47 | 1,39 | 1,34 | 1,32           |
| 11 mm   | 1,72  | 1,60 | 1,49 | 1,83 | 1,75 | 1,70 | 1,46 | 1,09           | 2,01 | 1,88 | 1,81           | 1,62 | 1,53 | 1,47 | 1,46           |
| 12 mm   | 1,88  | 1,74 | 1,63 | 2,00 | 1,90 | 1,85 | 1,59 | 1,19           | 2,19 | 2,05 | 1,97           | 1,76 | 1,67 | 1,60 | 1,59           |
| 13 mm   | 2,03  | 1,89 | 1,77 | 2,17 | 2,06 | 2,01 | 1,72 | 1,29           | 2,37 | 2,23 | 2,14           | 1,91 | 1,81 | 1,74 | 1,72           |
| 14 mm   | 2,19  | 2,03 | 1,90 | 2,33 | 2,22 | 2,16 | 1,85 | 1,39           | 2,55 | 2,40 | 2,30           | 2,06 | 1,94 | 1,87 | 1,85           |
| 15 mm   | 2,34  | 2,18 | 2,04 | 2,50 | 2,38 | 2,31 | 1,98 | 1,49           | 2,74 | 2,57 | 2,47           | 2,21 | 2,08 | 2,01 | 1,98           |
| 16 mm   | 2,50  | 2,33 | 2,17 | 2,67 | 2,54 | 2,47 | 2,12 | 1,59           | 2,92 | 2,74 | 2,63           | 2,35 | 2,22 | 2,14 | 2,12           |
| 17 mm   | 2,66  | 2,47 | 2,31 | 2,83 | 2,70 | 2,62 | 2,25 | 1,69           | 3,10 | 2,91 | 2,80           | 2,50 | 2,36 | 2,27 | 2,25           |
| 18 mm   | 2,81  | 2,62 | 2,45 | 3,00 | 2,86 | 2,78 | 2,38 | 1,79           | 3,28 | 3,08 | 2,96           | 2,65 | 2,50 | 2,41 | 2,38           |
| 19 mm   | 2,97  | 2,76 | 2,58 | 3,17 | 3,02 | 2,93 | 2,51 | 1,88           | 3,47 | 3,25 | 3,13           | 2,79 | 2,64 | 2,54 | 2,51           |
| 20 mm   | 3,13  | 2,91 | 2,72 | 3,33 | 3,17 | 3,09 | 2,65 | 1,98           | 3,65 | 3,42 | 3,29           | 2,94 | 2,78 | 2,67 | 2,65           |
| 21 mm   | 3,28  | 3,05 | 2,85 | 3,50 | 3,33 | 3,24 | 2,78 | 2,08           | 3,83 | 3,60 | 3,45           | 3,09 | 2,92 | 2,81 | 2,78           |
| 22 mm   | 3,44  | 3,20 | 2,99 | 3,67 | 3,49 | 3,40 | 2,91 | 2,18           | 4,01 | 3,77 | 3,62           | 3,24 | 3,06 | 2,94 | 2,91           |
| 23 mm   | 3,59  | 3,34 | 3,13 | 3,83 | 3,65 | 3,55 | 3,04 | 2,28           | 4,20 | 3,94 | 3,78           | 3,38 | 3,19 | 3,07 | 3,04           |
| 24 mm   | 3,75  | 3,49 | 3,26 | 4,00 | 3,81 | 3,70 | 3,17 | 2,38           | 4,38 | 4,11 | 3,95           | 3,53 | 3,33 | 3,21 | 3,17           |
| 25 mm   | 3,91  | 3,63 | 3,40 | 4,17 | 3,97 | 3,86 | 3,31 | 2,48           | 4,56 | 4,28 | 4,11           | 3,68 | 3,47 | 3,34 | 3,31           |
| 26 mm   | 4,06  | 3,78 | 3,53 | 4,33 | 4,13 | 4,01 | 3,44 | 2,58           | 4,74 | 4,45 | 4,28           | 3,82 | 3,61 | 3,48 | 3,44           |
| 27 mm   | 4,22  | 3,92 | 3,67 | 4,50 | 4,29 | 4,17 | 3,57 | 2,68           | 4,93 | 4,62 | 4,44           | 3,97 | 3,75 | 3,61 | 3,57           |
| 28 mm   | 4,38  | 4,07 | 3,80 | 4,67 | 4,44 | 4,32 | 3,70 | 2,78           | 5,11 | 4,79 | 4,61           | 4,12 | 3,89 | 3,74 | 3,70           |
| 29 mm   | 4,53  | 4,22 | 3,94 | 4,83 | 4,60 | 4,48 | 3,84 | 2,88           | 5,29 | 4,97 | 4,77           | 4,26 | 4,03 | 3,88 | 3,84           |
| 30 mm   | 4,69  | 4,36 | 4,08 | 5,00 | 4,76 | 4,63 | 3,97 | 2,98           | 5,47 | 5,14 | 4,93           | 4,41 | 4,17 | 4,01 | 3,97           |
| 31 mm   | 4,84  | 4,51 | 4,21 | 5,17 | 4,92 | 4,78 | 4,10 | 3,08           | 5,66 | 5,31 | 5,10           | 4,56 | 4,31 | 4,14 | 4,10           |
| 32 mm   | 5,00  | 4,65 | 4,35 | 5,33 | 5,08 | 4,94 | 4,23 | 3,17           | 5,84 | 5,48 | 5,26           | 4,71 | 4,44 | 4,28 | 4,23           |
| 33 mm   | 5,16  | 4,80 | 4,48 | 5,50 | 5,24 | 5,09 | 4,37 | 3,27           | 6,02 | 5,65 | 5,43           | 4,85 | 4,58 | 4,41 | 4,37           |
| 34 mm   | 5,31  | 4,94 | 4,62 | 5,67 | 5,40 | 5,25 | 4,50 | 3,37           | 6,20 | 5,82 | 5,59           | 5,00 | 4,72 | 4,55 | 4,50           |
| 35 mm   | 5,47  | 5,09 | 4,76 | 5,83 | 5,56 | 5,40 | 4,63 | 3,47           | 6,39 | 5,99 | 5,76           | 5,15 | 4,86 | 4,68 | 4,63           |

## 6 MAINTENANCE

After use clean the chain elongation gauge thoroughly and preserve it, for example by carefully applying a protective oil film using a cloth.

Using a 6-mm open-ended spanner adjust the sleeves accommodating the lock pins so that the spacer elements can be inserted with minimum play.

The sleeves are secured with Loctite 243 to prevent loosening.

The gauge leg “slidable with scale” is secured by means of a setscrew to prevent turning.

The setscrew must not be firmly tightened!



## 7 SPARE PARTS

| Designation   | Article-no.         |
|---|---------------------|
| Plastic case, water-tight, non-breakable                                  | Z08606              |
| Leather bag   | Z08881              |
| Gauge leg “slidable with scale”   | Z08879              |
| Gauge leg „stationary“  | Z08880              |
| Spacer element, chain pitch dimension p = 64 mm                           | Z08868              |
| Spacer element, chain pitch dimension p = 86 mm                           | Z08869              |
| Spacer element, chain pitch dimension p = 92 mm                           | Z08870              |
| Spacer element, chain pitch dimension p = 100 mm                          | Z09620 #            |
| Spacer element, chain pitch dimension p = 105 mm                          | Z10326 #            |
| Spacer element, chain pitch dimension p = 108 mm                          | Z08871              |
| Spacer element, chain pitch dimension p = 126 mm                          | Z08872              |
| Spacer element, chain pitch dimension p = 126 mm (Big-T 121/131; 6 links) | Z11176 #            |
| Spacer element, chain pitch dimension p = 126 mm (Big-T 121/131; 8 links) | Z11177 and Z10310 # |
| Spacer element, chain pitch dimension p = 137 mm                          | Z08873              |
| Spacer element, chain pitch dimension p = 146 mm                          | Z08874              |
| Spacer element, chain pitch dimension p = 152 mm #                        | Z08875              |
| Spacer element, chain pitch dimension p = 144/160 mm                      | Z11178 #            |
| Spacer element, chain pitch dimension p = 170 mm                          | Z11179 #            |
| Spacer element, chain pitch dimension p = 180 mm                          | Z10663 #            |
| Spacer element, chain pitch dimension p = 187 mm                          | Z11546 #            |
| Spacer element, chain pitch dimension p = 181/197 mm                      | Z10168 #            |
| Allen key 3 mm  | Z08915              |
| Open-ended spanner 6 mm   | Z08916              |

## 8 ENVIRONMENT

Dispose of packaging in accordance with local regulations.

## 9 THIELE OPERATING AND ASSEMBLY INSTRUCTIONS

Current operating and assembly instructions are available as a PDF download on the THIELE homepage.



## 10 IMPRINT

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