

1. Purpose

The purpose of this document is to present a guideline to tension the chain by removing the suggested number of links.

SAFETY NOTE: It is advisable to wear the correct gloves and eye protection during this operation

EQUIPMENT REQUIRED:

- Chain Breaker (Figure 1) – Must be suitable for linking and unlinking the chain.
- 4 lb Hammer – Recommended for striking the chain as described in the instructions.
- Tensioning Tool (Figure 2) – Used to adjust the tension as required.



Figure 1: Chain Breaker

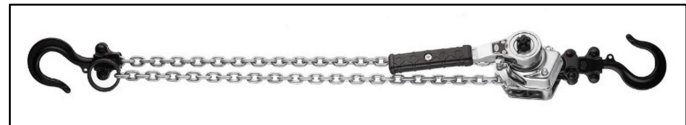


Figure 2: Tensioning Tool

2. Chain linking instruction

2.1. Chain link “GO” and “NO-GO” areas

Before linking or unlinking the chain, ensure that the linking mark is positioned on the nose of the chain (“GO” area). Linking beyond this mark may result in premature breakage of the chain when under tension. Refer to Figure 3 and Figure 4

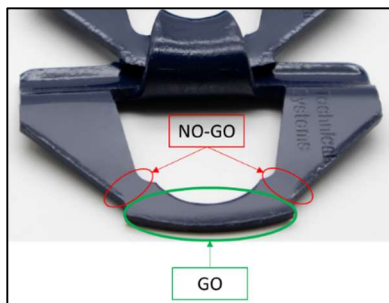


Figure 3: NO-GO & GO Areas Marked



Figure 4: Suitable mark in the "GO" area

2.2. Linking Procedure

Figure 5 to Figure 10 shows the important steps on how to link the feeder chain.

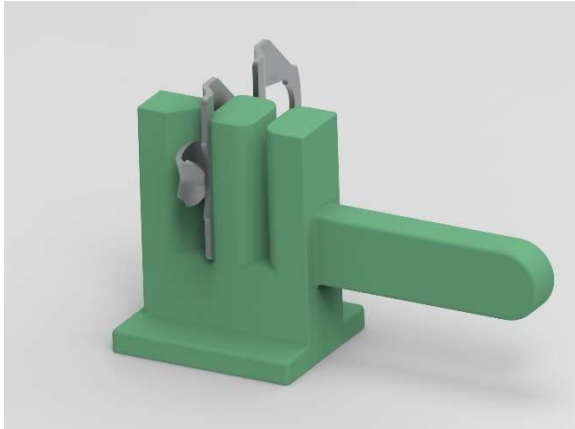


Figure 5: Place the knuckle end of the chain into the chain breaker with the knuckle protruding.



Figure 6: Place the next link next to the knuckle at the approximate angle and position as shown in the "Go" area.

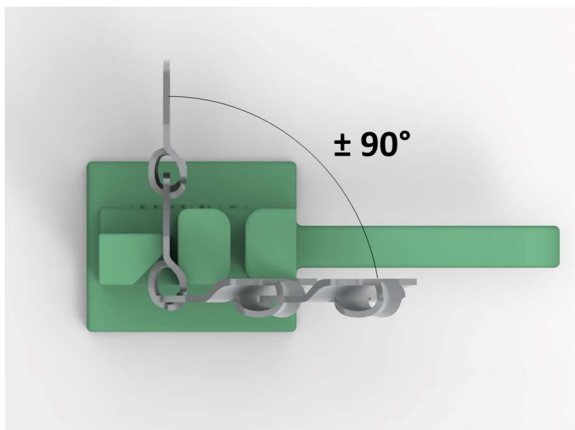


Figure 7: Ensure that it is in the correct position; bring the side of the link as close to the chain breaker as possible to get a right (90°) angle.

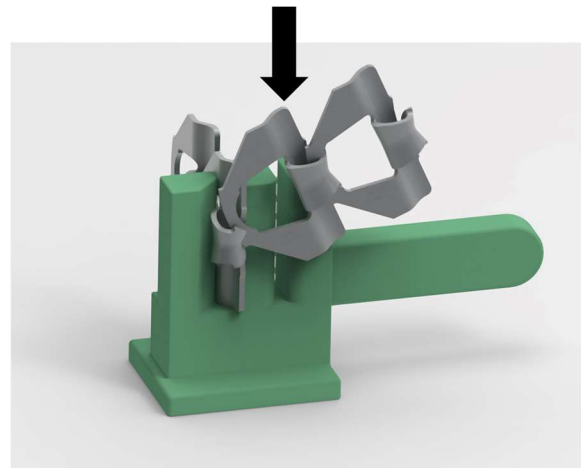


Figure 8: Using the hammer, firmly hit the corner of the chain link

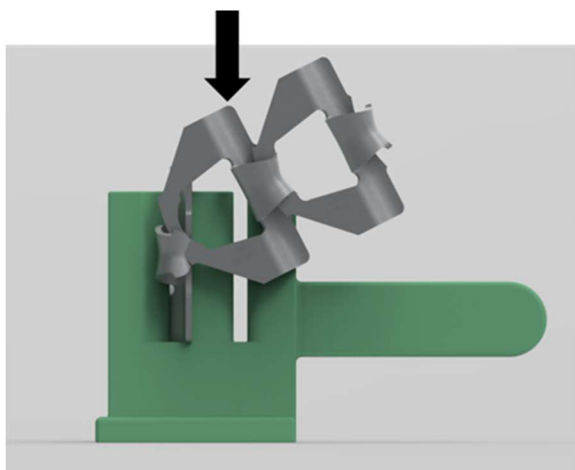


Figure 9: Continue hitting the link until it clips into the knuckle

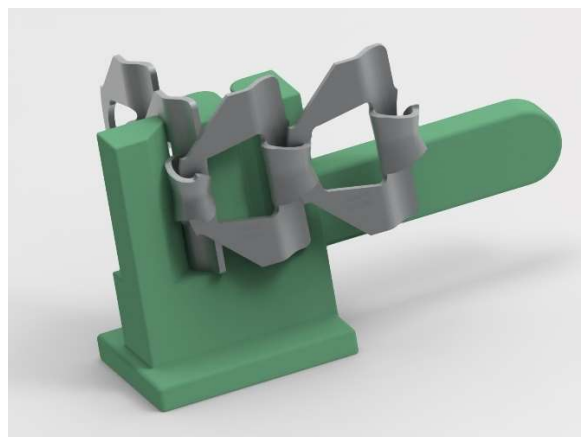


Figure 10: The link should be able to move freely. Ensure that the links were not damaged during the linking process (Refer to Section 2.3.).

2.3. Chain Link Condition

When connecting a chain link, it is recommended that the link not be struck more than four (4) times. If the link requires more than four attempts to connect, or if there are any signs of excessive damage marks observed – whether from the over-striking or from the link slipping during the initial attempts – the following action is required:

- The compromised link must be immediately removed (grind out, preferably) and replaced with a new chain link.

Damage marks include, but are not limited to, the examples shown in Figure 11 and Figure 12. Do not attempt to complete the installation using a damaged or overly-struck link. This step is essential to assist in preventing premature failure and to maintain the product's performance.

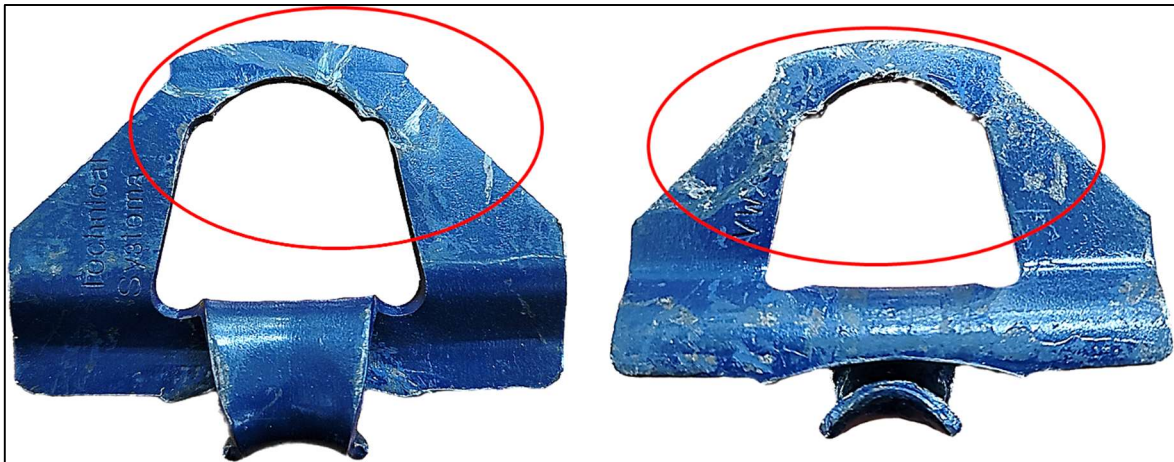


Figure 11: Excessive Linking Marks #1

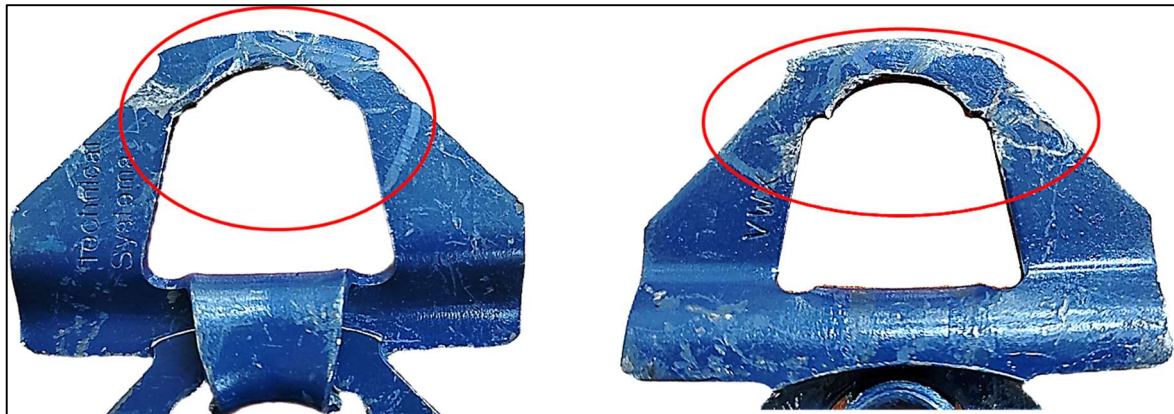


Figure 12: Excessive Linking Marks #2

3. Chain tensioning guideline

The following steps must be followed when tensioning the chain.

- 3.1 Assemble the required number of 10 m chain lengths to form the desired circuit length, e.g. assemble twenty-five 10 m chain lengths for a 250 m circuit.
- 3.2 Note that due to tolerances and manufacturing procedures, the exact length of a 10 m chain segment will vary between 10 m and 10.042 m (236 ± 2 links). i.e. if twenty-five 10 m chain lengths were used to construct a 250 m circuit, there may, in the worst-case scenario, be up to 1.05 m or 25 extra links in the circuit.
- 3.3 The chain must be placed in the circuit trough and the 2 ends brought together at the **circuit junction**. Refer to Figure 13.

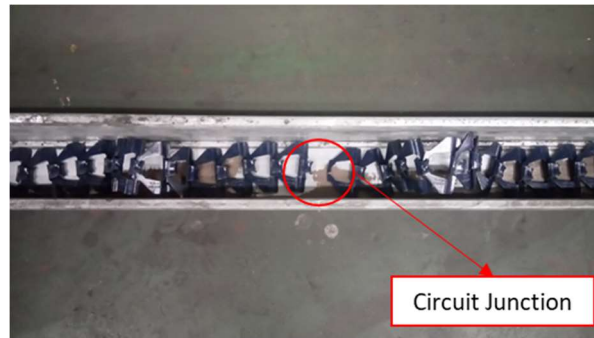


Figure 13

- 3.4 A tensioning device must be used to bring the chain to a **neutral tension** position. This would be where the inside of each chain nose is in contact with the knuckle of the next link. This can be done by tensioning the chain until there is slight tension in the chain and then releasing the tension. Refer to Figure 14 and Figure 15.



Figure 14



Figure 15

- 3.5 Any **overlapping links** at the **circuit junction** must be removed so that the entire chain is in the neutral tensioning position. Once the links are removed, the 2 ends of the circuit should touch or be within 1 link's distance of each other at the circuit junction. Refer to Figure 16 and Figure 17.



Figure 16



Figure 17

- 3.6 Once the **overlapping links** are removed, the chain can be tensioned by removing a number of links based on the circuit length. Table 1 gives the number of links based on the circuit length. These values are based on industry standards

Table 1: Removal of links based on the circuit length.

Circuit length (m)	Links to be removed (Single Drive)	Links to be removed (Dual Drive)
90	7	2
120	10	3
150	13	3
180	15	4
210	18	5
240	21	5
270	23	6
300	Not Recommended	7
330	Not Recommended	7
360	Not Recommended	8
390	Not Recommended	9

Alternatively, the following formula, as per industry standards, may be used to calculate the length of chain that needs to be removed:

For Single Drive:

$$x = \text{total length of circuit} \times 3.749$$

$$x = \text{length of chain to be removed in mm}$$

$$3.749 = \text{mm per m that must be removed}$$

For Dual Drive:

$$x = \frac{\text{total length of circuit} \times 3.749}{4}$$

$$x = \text{length of chain to be removed in mm}$$

$$3.749 = \text{mm per m that must be removed}$$

Notes:

- The circuit includes 4 corners of 90° each
- This is a guideline and should not be taken as 100% accurate; tensioning will vary for different circuit set-ups

- 3.7 Once the recommended links are removed, the circuit should be tested for tensional issues. During the testing, the chain should not rise in front of the sprocket. If this happens, it means that the chain is **under-tensioned**. The chain should always remain parallel to the trough. If the chain is angled towards the inside of the circuit, it means that the chain is **over-tensioned**.

- 3.8 The above tests will determine whether more links need to be removed or added to the circuit to achieve the desired tension.

- 3.9 The circuit should be **inspected every 6 months** for tensional issues

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