

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: 4lbs hammer, chain breaker and tensioning tool. A chain-breaker (see picture below) suitable for the linking and un-linking of the chain must be used. It is advised that a 4lbs hammer is used to strike the chain as per the instructions below.



Figure 1: Chain breaker

By using a tensioning tool (see picture), the proper tension on the chain can be adjusted as required.



Figure 2: Tensioning tool

2. Chain linking instruction

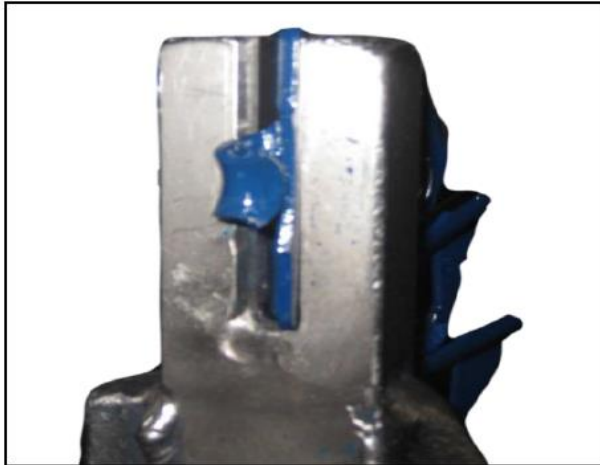


Figure 3: Place the knuckle end of the chain into the chain breaker with knuckle protruding

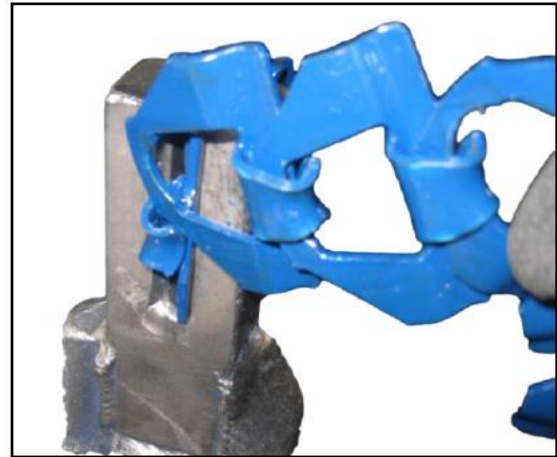


Figure 4: Place the next link next to the knuckle at the approximate angle and position as shown



Figure 5: Ensure that it is in the correct position; bring the side of the link as close to the chain breaker as possible in order to get a right (90°) angle.

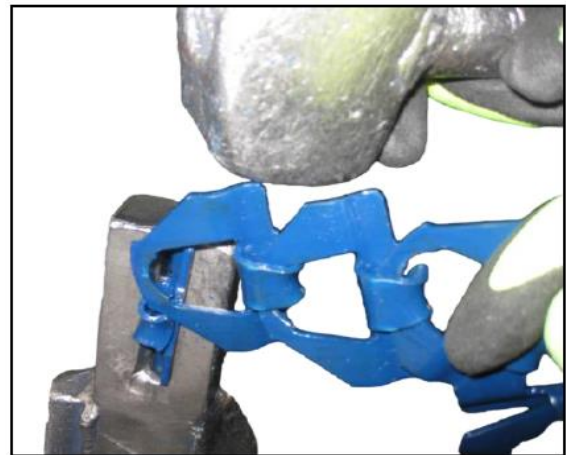


Figure 6: Using the hammer, firmly hit on the corner of chain link



Figure 7: Continue hitting the link, until it clips into the knuckle

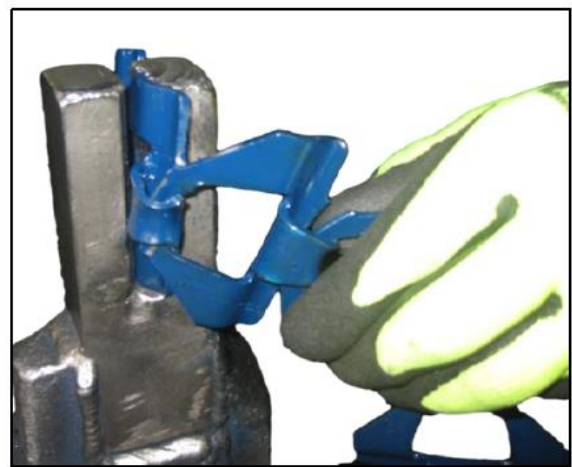
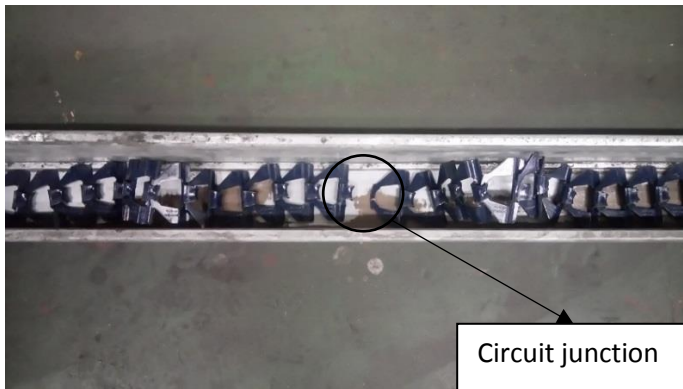


Figure 8: The link should be able to move freely. Ensure that the links were not damaged during the linking process.

3. Chain tensioning guideline

The following steps must be followed when tensioning the chain.

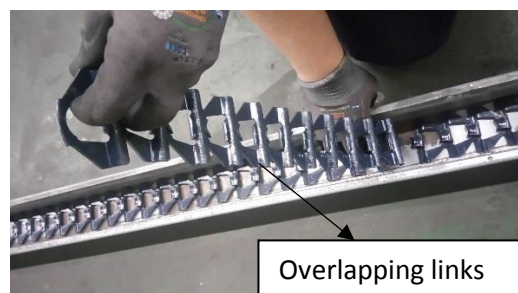
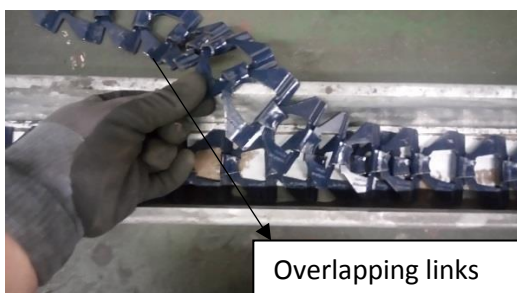
- 3.1 Assemble the required number of 10 m chain lengths to form the desired circuit length e.g. assemble twenty-five 10 m chain lengths for a 250 m circuit.
- 3.2 Note that due to tolerances and manufacturing procedures, the exact length of a 10 m chain segment will vary between 10 m and 10.042 m (236 ± 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**.



- 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.



- 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 links distance of each other at the circuit junction.



3.6 Once the **overlapping links** are removed the chain can be tensioned by removing an amount of links based on the circuit length. The table below gives the number of links based on the circuit length. These values are based on industry standards.

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	26	7
330	29	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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