



Rail Depot Solutions

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Stainless Versus Aluminium Flail Rods

Experience has shown that aluminium poles will fatigue, weaken and become brittle. The anticipated life span of the poles from new is approximately 10 years our recommendation is that the poles are replaced every third re-flail.

We recommended using stainless steel poles as the life span is double that of aluminium and as such a lesser chance of failure.

Studies of the two different materials revealed the following:

- Fatigue failures are more likely to occur in aluminium due to the manufacturing methods and the opportunities for inadequate annealing to the T6 condition are significant. In comparison, the stainless tube is formed and welded not extruded and will not suffer from these issues.
- The aluminium tube at 38.1mm diameter x 4.8mm wall is the same weight as stainless-steel tube 38.1mm diameter x 1.5mm wall, basically stronger due to its much higher yield stress. The aluminium tube uses 28% of its yield stress and the stainless-steel tube uses only 19% of its yield stress.
- The fatigue properties of aluminium verses stainless steel also give significant advantage to the stainless-steel version. The crude comparison assumes the loadings are the same in that you would expect twice the life from stainless steel compared with aluminium