Stewardship & Management Workgroup

of The Central Council of Church Bell Ringers

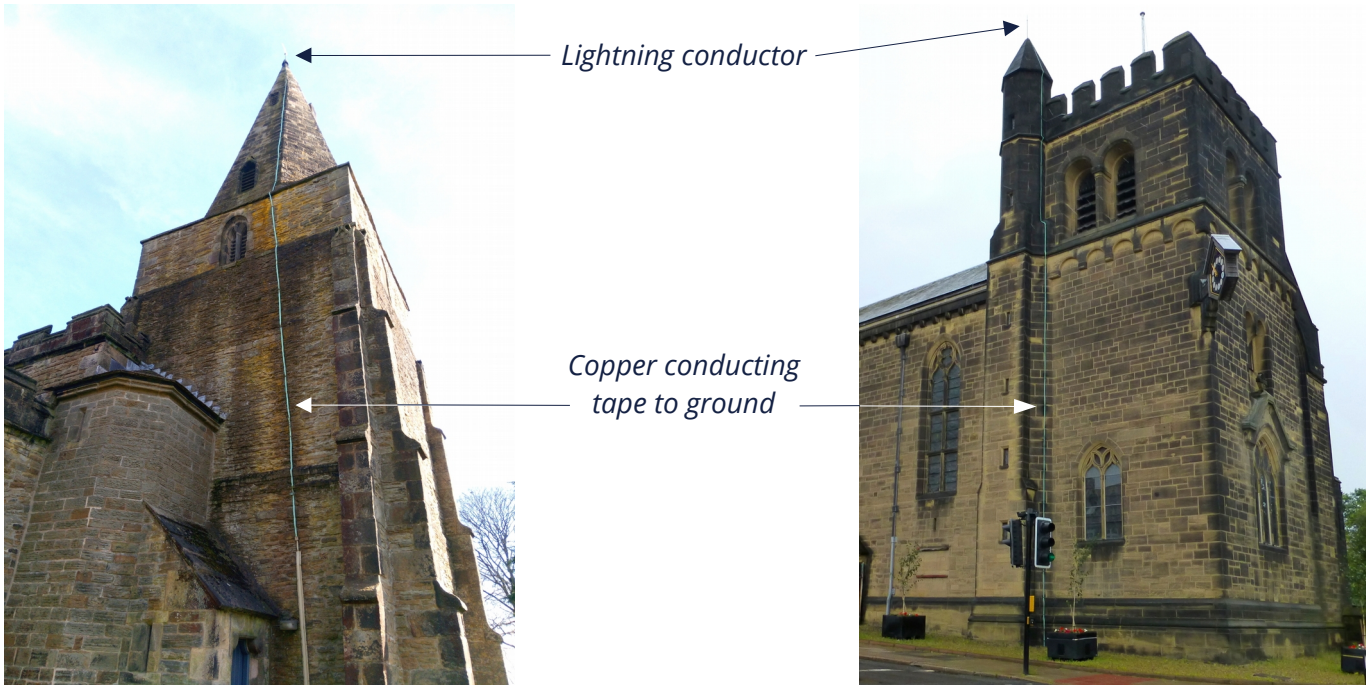
THE CENTRAL COUNCIL OF CHURCH BELL RINGERS

Lightning Protection and Bell Frames In Church Towers

A Guide for Bell-Ringers

Introduction

Ringers are probably familiar with lightning conductors – typically one or more metal spikes mounted on the highest points of a church tower or spire, connected via substantial copper or aluminium conductors (lightning tape) to spikes in the ground. The spikes are often integrated into the weather vane so not distinct.



Ringers probably do not think that lightning protection has much 'connection' with the bells that we ring. However, in many towers, particularly those with a metal bell frame, the lightning conductor should be electrically bonded (i.e. connected) to the bell frame, at one or more points. The reason for this is because of the huge electrical charges generated during a thunderstorm, and how they are dissipated.

If a metal bell frame is not connected to a lightning tape, then lightning may strike through the tower whilst seeking a path to earth. The 'path of least resistance' is likely to be to the frame then down damp bell ropes, or wired connections to simulators, or through clock hammer linkages to the mains electrical supply to electric winders. A lightning conductor should create a safe electrical path for the charges and so prevent fires, masonry falls, electrical shocks, damage and failure of electrical equipment in the church. Such scenarios have all been known to occur. In addition, the churches where we ring often now contain electronic systems so power connections to them need surge protection devices to protect the electronics from charges that may be induced in the cables.

Conductor base going into the ground

How Ringers Can Help

Lightning conductors are one of the safety systems in the tower and must be installed, inspected periodically and maintained by specialist contractors. Lightning conductors should never be disconnected or damaged in any way. While any work is underway in the tower, adequate lightning protection must be maintained.

Ringers may spot defects in a lightning protection system while they are in or around a tower. Regrettably, the high price of metals such as copper, makes lightning conductors attractive to metal thieves and this may result in loss or damage to the conductor. Note that even a small break or loss of connection to the ground may make a lightning conductor useless. If you are concerned, then please alert the Church Wardens.

Further Information

The documents below offer more information for those interested in lightning and protection systems. It is reiterated that lightning conductors must be installed, inspected and maintained by specialist contractors.

https://historicengland.org.uk/images-books/publications/lightning-protection/
Historic England Guidance on Lightning protection – specifically mentions bell frames

http://www-public.tnb.com/eel/docs/furse/BS_EN_IEC_62305_standard_series.pdf
British Standard on Lightning protection – compared with older standard
The full standard is available from the British Standards Institute, price £236.60 (March 2020)

https://www.an-wallis.co.uk/information/literature
Trade literature, a technical introduction to lightning and lightning protection – 'Wallis Designers Electrical protection Handbook'

https://new.abb.com/low-voltage/products/earthing-lightning-protection/furse/literature
Various specialist documents from trade suppliers

http://storage.electrika.com/flips/8300-furse-14/files/assets/common/downloads/Furse%20Total%20Solution%20to%20Earthing%20and%20Lightning%20Protection.pdf
Trade literature, with technical information on earthing and lightning Protection

Alison Hodge
The Central Council of Church Bell Ringers
Stewardship & Management Workgroup
March 2020