How to make a short-term use set of muffles.

Introduction

This document describes how muffles can be made using materials which may be available at short notice. It is intended to facilitate fully muffled ringing in towers where only one set of muffles is currently available.

Guidance for operation London Bridge states that **"Bells should be rung half or fully muffled depending on how many muffles you have."**

The use of improvised or home-made muffles are not advised, but this document outlines a safe design for such muffles should you feel it is really necessary to make your own.

Muffles are used to attenuate the bell's strike note whilst retaining the hum. By muffling the clapper on one side, you get an 'echo' effect, as blows are alternately loud and soft, this is called "Half muffled". A clapper muffled on both sides is "fully muffled".

The echoing effect of half muffled ringing or the sombre sound of fully muffled bells make them most suitable for ringing which requires a solemn, mournful sound.

Bells are only rung fully muffled (or deeply muffled ie. with the backstroke of the tenor left open) for the death of a reigning monarch, the incumbent Vicar (Parish Priest), or the Bishop of the Diocese.

As such, it may not be economical to purchase two sets of muffles, so the ability to improvise a second muffle may be useful on rare occasions.

Safety Note.

Muffles are attached to the clapper of the bell and there are risks associated with this if it is not done correctly. The most severe risk is that of a muffle becoming partly detached and catching on the slider as the bell swings. This could potentially dislodge the slider leaving the bell un-settable, possibly without the ringer being aware. The dangers of this are obvious and serious.

For this and other reasons, anyone considering fitting improvised muffles should realistically assess their ability to do so safely and also if it is really necessary to ring fully muffled. As mentioned above, the guidance for operation London Bridge states that **"Bells should be rung half or fully muffled depending on how many muffles you have."** Fully muffled ringing is **not** a definite requirement.

The Central Council of Church Bell Ringers cannot accept responsibility for any loss, damage or injury sustained through use of the information in this document.

Safety When Fitting or Removing Muffles

Although fitting or removing muffles is a fairly simple task, all the normal Health and Safety guidelines for working on bells apply:

- Only fit or remove muffles when the bells are down.
- Always have an assistant in the bell-chamber with you when fitting or removing muffles. As well as being safer, many hands will speed up the process.
- It is especially important to disable any clock or other chiming apparatus when performing this task. To fit or remove muffles you will probably have to put you head inside the bell and it is very unpleasant, if not dangerous, to be inside a bell when it is struck by any type of chiming apparatus.

- Always tell someone that you will be working on the bells and take suitable measures to ensure that no one can begin to ring while you are working on the bells.
- Allow plenty of time to fit or remove muffles, it will usually take around half an hour to fit a set of half muffles and possibly longer for fully muffling or if the access is more than usually restricted.

How to make a simple, short term full-muffle

Materials required for the muffle pad

The pad of a bell muffle is subjected to extreme and repetitive forces which few materials can withstand for any significant period. The effect on the sound of the bells is also important, few materials will muffle the sound of the bell without virtually silencing it.

To meet the requirements hard leather (as used for shoe and boot soles, known as sole bend) is the preffered material but few people will have this material available. Sole bend is extremely hard and inflexible which is why it is a suitable material.

For a short-term solution thick (4 to 6 mm) veg tanned leather or similar will suffice.

Very hard rubber (such as conveyor belt material) of a similar thickness will also work but it must be extremely hard if it is to sound reasonable.

Any hard, inelastic but moderately flexible material might be suitable.

Tyre rubber, carpet, carpet tile, cloth of any sort or any soft material will not be suitable and should not be used.

Fixing the pad in place

For a short term muffle it is advisable to use large cable ties to secure the pad in place. To minimise the environmental impact of this it would be best to use re-usable cable ties if they can be obtained.

3.6 or 4.8mm width ties are suitable and a length of 300mm will be long enough for almost all clappers.

Construction

For each muffle you require, cut a piece of leather (or your chosen material) which is as wide as the clapper flight at its widest point and about 2.5 times as long as the clapper ball is high.

Make two symmetrical cuts inwards from each long edge of the piece, two at the top of the flight and two a little above the top of the ball. The upper two cuts should stop short of the centreline leaving two thirds of the shaft diameter un-severed. The lower two cuts should similarly leave two thirds of the flight diameter (at its neck, the narrowest point) un-severed. (See diagram, #1)

Above the upper two cuts, trim the width of the material to about 1.5 times the shaft diameter. (See diagram, #2)

Pierce six holes through the material using a drill or hole punch (an office hole punch will not be strong enough; a wad punch would be required). Four holes should be pierced in the flight section and two holes in the shaft section, not less than the material thickness from the edges of the piece. (See diagram, #2) The holes should be 5 to 6mm in diameter.

Trim off the corners of the central section if you wish.

Thread three cable ties through the holes as shown in the diagram (#3). The outer face of the muffle is shown with the ties mostly on the outside of the material. This will clamp the material to the clapper when the ties are tightened.

Fitting

If the home-made muffles are to be used in conjunction with professionally made muffles, it may be best to fit the home-made muffles first and the professionally made muffles over the top but this is left to the discretion of the user.

If the muffles are made of a smooth or slippery material, some non-slip material should be placed underneath the muffle to prevent slipping (see below).

Align the muffle on the clapper. The middle cable tie should be tightened first, as close around the neck of the flight as possible and as tight as you can without breaking the ties. A pair of pliers will help you to grip the ties.

Then tighten the lower and upper ties in the same manner while ensuring that the muffle is correctly aligned.

Stopping Muffles Slipping

Some ways to reduce the likelihood of muffles slipping are detailed below.

Self-amalgamating tape

Self-amalgamating tape can be wrapped around the clapper to provide a permanent, non-slip coating on which to fix muffles. Following the manufacturer's instructions, wrap it around the shaft and the flight where the muffles attach.

Non-slip mesh

Non-slip cushion material (similar to a soft, rubbery net) for use on kitchen work surface or shelves can be purchased from most hardware shops and this can be cut to size and placed between the muffle and the clapper to help prevent slipping.

PVC harness tape

Harness tape is a thin film and looks very like electrical tape but it is not sticky and even after years in position it will peel off without leaving sticky residue or even a mark. It is slightly elastic and when wrapped tightly around things several times it grips to itself and will hold things very firmly indeed.

If a quick fix to the problem of slipping muffles is urgently required, wrapping harness tape generously and tightly around the top of the muffle and the clapper shaft will generally hold the muffle in place. The end can be secured with a patch of adhesive tape or a knot.

Gaffer tape

In the last resort, gaffer tape (not to be confused with duct/duck tape) may be used to secure an ill-fitting muffle.

Things to avoid

- Masking tape is too weak and goes very sticky if left for a long period.

- Blu tack or white tack placed under the muffle pad can be effective but will get ingrained into the leather and leave a sticky mess. The mineral oils in blu tack and white tack can also cause the leather to deteriorate.
- Duct/duck tape will leave sticky residue and may cause damage when removed.
- Sellotape is too weak and too sticky.
- Electrical tape will leave sticky residue if left for too long and may cause damage when removed.