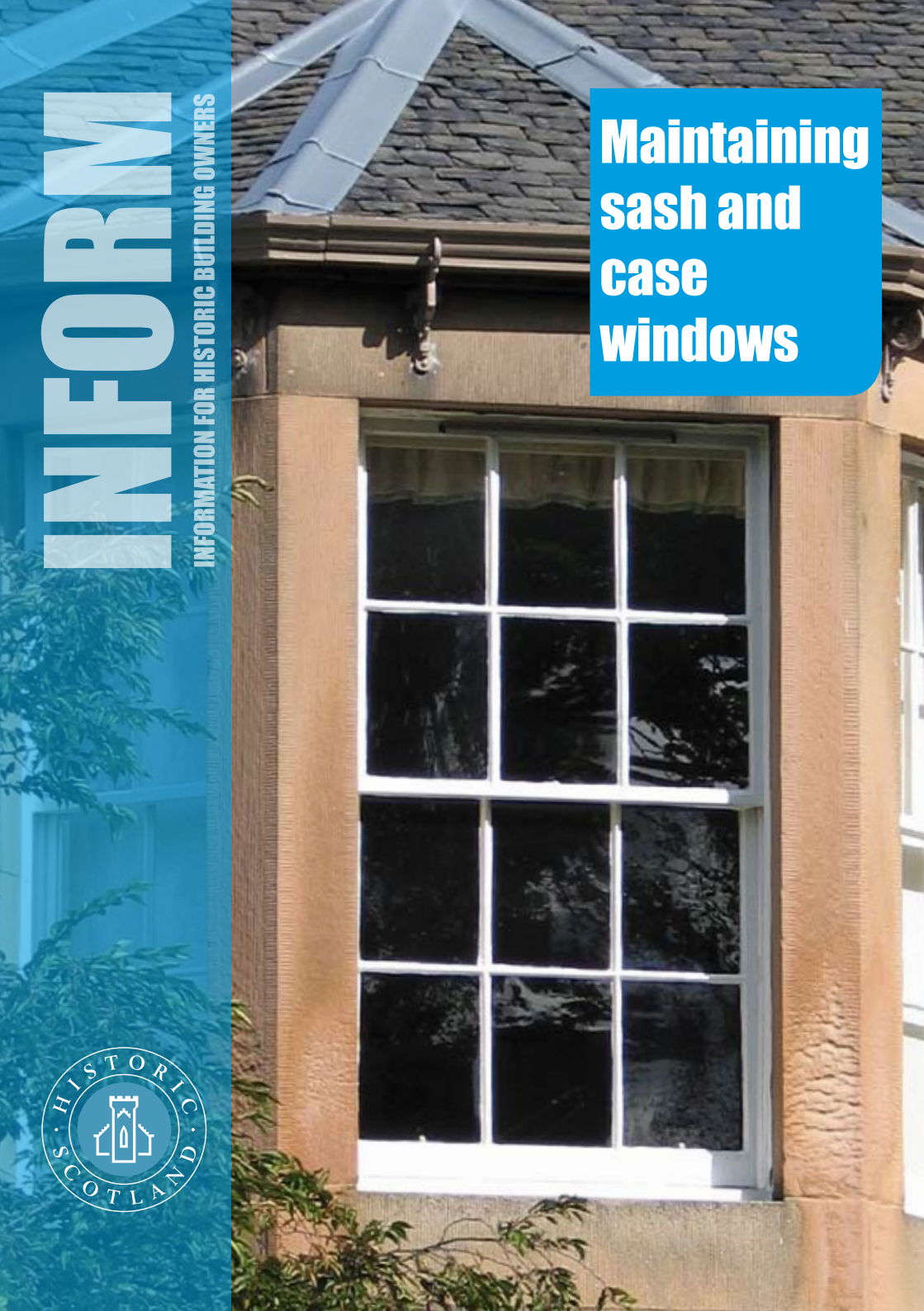
INFORM

INFORMATION FOR HISTORIC BUILDING OWNERS

Maintaining sash and case windows



HISTORIC SCOTLAND

Introduction

Traditional sash and case windows are well suited to the Scottish climate and are extremely durable, with a life span of 100 years or more. Most are of straightforward design and construction, and many aspects of their care and maintenance are easily undertaken by the homeowner and competent joiner. This INFORM provides information on:

- **Window evolution**
- **How sash and case windows work**
- **Assessing condition**
- **Common problems**
- **Maintenance and repairs**
- **Energy efficiency**

Window evolution

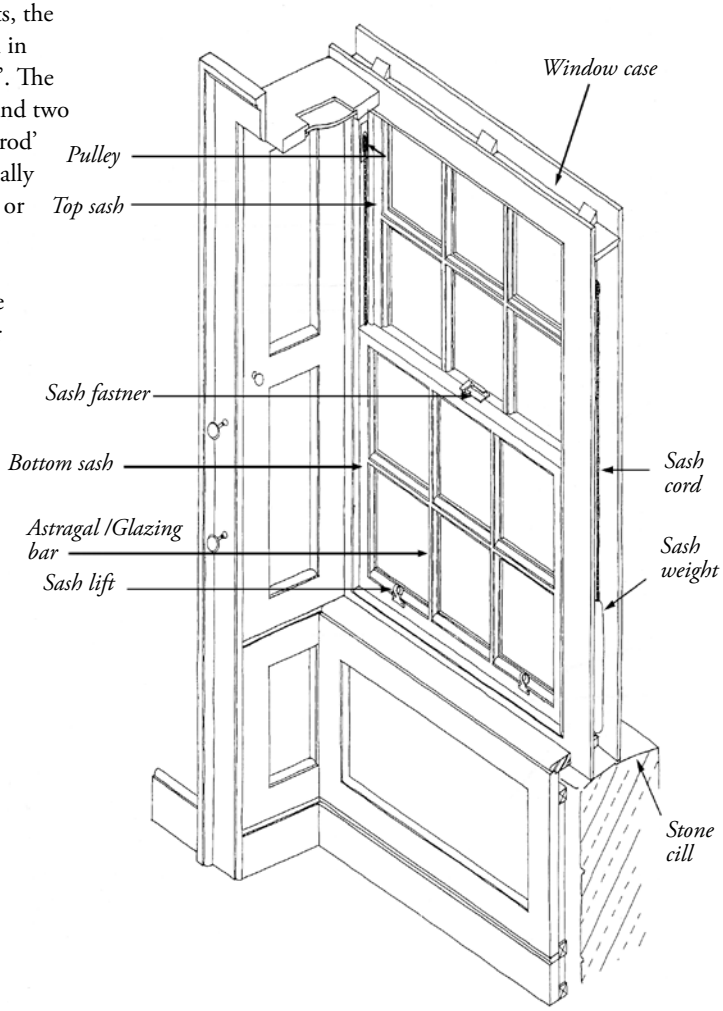
In the late 17th century, pulleys and weights were first applied to timber-framed windows to balance the weight of the individual frames, creating the sliding sash and case window. This new style of window soon became popular throughout Scotland and is now a recognised traditional feature of the country's buildings. Very early windows have thick timber subdividing members ('glazing bars' or 'astragals') dividing the sashes into small panes. As glass-making techniques improved, the size of panes increased, and the glazing bars became more slender. By the 18th Century, windows with 6 panes of glass in each sash

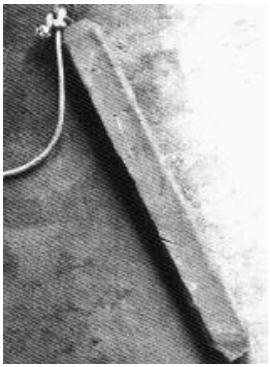
Window evolution

became widespread. In the 19th century, 'horns' began to appear on sashes. These are small, shaped extensions to the vertical sides of each sash which strengthen the joints at these points. By the middle of the 19th century it was possible to produce larger panes of glass. As a result, fewer subdivisions, and larger, heavier panes of glass became common. Windows glazed with single panes of plate glass in each sash became popular in many areas, while window designs with a single pane of plate glass in the lower sash and small panes in the upper sash also emerged. In the late 19th and early 20th centuries, thicker astragals and the multiple-paned sashes characteristic of earlier periods also became fashionable once more.

How do sash and case windows work?

Sash and case windows consist of two glazed timber-framed components, the 'sashes', which slide up and down in channels in the surrounding 'case'. The channels are formed by the case and two strips of timber called the 'baton rod' and 'parting bead'. Sashes are usually hung on ropes called 'sash cords', or occasionally on brass chains, which pass over pulleys in the top of the case. The sash cords are connected to lead or iron counter weights hidden within the surrounding case. These weights counter-balance the heavy sashes, making it easier to open and close them, whilst also enabling the sashes to safely stay open in any position.





A sash weight

Assessing condition

Historic Scotland's free publication, *Looking after your sash and case windows – A short guide for homeowners*, provides more detailed information. The Guide includes a pull out checklist to assist homeowners in the process of assessing the condition of windows.

Cleaning

Regular cleaning of glass and timber surfaces will improve the appearance of sash windows and ensure that they function correctly. Cleaning also presents an opportunity to inspect windows and spot any developing problems.

It is important to be aware of safety when cleaning, keeping both feet firmly on a solid surface at all times and never over-reaching, especially at the upper levels of a building. The lower sashes of many traditional sash and case windows are fitted with 'simplex' hinges. Where none exist, new 'simplex' hinging systems can be fitted easily. These devices allow both faces of the lower sash to be cleaned more safely from within the building by swinging the lower sash inwards into the room. They also allow the upper sash to be lowered when the inner sash is held on the hinge to enable it to be safely cleaned from the floor level access.

Common problems

Deteriorating paint leaves timber vulnerable to decay

Decay

Where paint breaks down, the timber parts are directly exposed to the weather and become vulnerable to decay. Rot is often localised however (the cill is usually the area most prone to decay), and in the majority of cases it is straightforward to repair. If tackled early, this will minimise the amount of material that needs to be replaced. Repainting is also essential to give the window better protection.

A badly rotten cill

Windows may not open or close properly for a number of reasons:

- Windows may become painted shut.
- Broken sash cords prevent sash weights counter balancing the sashes.
- Wearing of the sides of the sashes or cases caused by operating the window with only one side properly balanced.

Loss or breaking of the sash cord
Sash cords may wear out over time. The attached weights will fall to the bottom of the case if the cords snap, making it difficult to open the window. These weights can be retrieved via a pocket at the side of the sash called the 'pocket piece' and re-attached to new sash cords.

Loss or deterioration of putty and mastic
When paint fails on the sashes the putty used to hold the glazing in place will become hard and crack. This can allow water to seep in and decay the timbers and it should therefore be replaced and repainted.

Sand mastic has been traditionally used to fill the gap between the case and surrounding stonework. This will also dry out, harden over time and drop out and will need to be replaced.

Maintenance and repairs

Sash and case windows can usually be repaired with relative ease, and regular maintenance will prolong their life by many years. Modern timber can rarely match the quality and durability of the slow-grown softwoods originally used to make these windows. It is therefore best to retain as much of the original timber as possible wherever repair is required.

Paint-covered sash cords will make the window more difficult to open and close

Decay
Where decay is localised it is possible to splice in new timber, though care should be taken to select compatible wood with similar characteristics to the original. Severely rotten cills may need to be replaced, either in whole or, in some cases, just the front part, using new matching timber. This can be done in-situ.

New timber can be used to replace rotten sections

Painting
Paintwork to the window's external and internal faces must be kept in good condition due to the effects of the weather on the outside and condensation on the inside. Windows normally require external repainting every 3 - 5 years, depending upon exposure and the paint manufacturer's guidelines.

To avoid sealing the window shut there is a need to ensure that the joints where the sashes and the surrounding case meet are not painted over. The sequence in which a sash and case window is painted is also important to prevent sticking – Historic Scotland's publication, *Looking after your sash and case windows – A short guide for homeowners*, gives more detailed guidance on this.

Existing paint can be an effective base for fresh coats though it is important to ensure compatibility between that paint and any new coats –the paint manufacturer's advice should be checked on this aspect. All timber should be sound and the surface clean and dry before applying paint. Putty should be completely covered by paint which should also slightly overlap onto the glass to seal the joint.

Modern linseed oil and micro-porous paints are effective, and with appropriate approval, it may be possible to use traditional lead-based paint on category 'A' listed properties (see Useful Contacts). Local Authority consent may be required for changing the colour of windows in listed buildings or buildings within a conservation area. Epoxy paints, or other two-part systems, are not recommended.

Paint removal
If paint layers are hindering the window's operation, these can be removed using a number of methods. Whatever system is chosen, caution should be exercised to avoid damage to timber, glass, putty and surrounding masonry. If a heat-based system is considered, adequate precautions against starting a fire in the window should be taken, and glass should be protected.

Where windows have been painted shut, this can be remedied by carefully cutting through paint using a craft knife, and gently using a broad-based thin scraper blade to lever the sash and case apart.

Replacing sand mastic
Traditional mastic made of a mix of burnt sand and linseed oil is a long-lasting, durable material and is still readily available. The seal can occasionally be repaired, but when split or partially missing it should be replaced, cutting out the defective mastic and replacing entirely.

Re-cording
Cotton cords and braids will occasionally become worn and require renewal. This is best done before the cord breaks and is a reasonably straightforward operation, readily carried out by an experienced joiner. Where sashes have been hung using brass chains and these have broken, the chains should be repaired or replaced on a like-for-like basis.

Ironmongery and security
Surviving original ironmongery, such as cord clamps, sash lifts and sash fasteners, should be retained and reused wherever possible. Broken ironmongery can often be repaired. Where it has been obscured by thick over-painting, the paint should be removed without too much difficulty.

Additional sash locks can be fitted to the meeting rails to improve security. Timber blocks and/or special items of ironmongery (called sash stops) can also be fitted to restrict opening beyond a required point. Where

A 'simplex' hinge system

'Simplex' hinging system in operation

windows have very low cills, internal barriers can also be fitted to help prevent accidents.

Replacing glazing

Only original glazing which is missing or beyond repair should be replaced as many types of traditional glass are no longer produced in the UK. In most cases, replacement glass should match the original as closely as possible. Salvaged glass may be an option, and replica cylinder glass is also available. (See related INFORM – *Glass and Glazing*).

Sash fastener

Secondary glazing can be effective and unobtrusive

Energy efficiency

Heavy curtains, and closing any existing internal timber shutters can help reduce heat loss. Draught-stripping can be fitted cheaply and unobtrusively to timber sash and case windows. This reduces heat loss and improves noise insulation. The installation of secondary glazing can also be effective in appropriate circumstances. The Local Authority Planning Department should be consulted when this work is proposed on listed buildings as other constraints may apply.

Traditional sash and case windows have performed effectively for many decades and will continue to do so for many more given sensible maintenance at regular intervals.

Useful Contacts / Further Reading

Looking after your sash and case windows – A short guide for homeowners ISBN 1-903570-94-8
(Available free from the Historic Scotland Conservation Bureau, address below)

The Conservation of Sash and Case Windows, Practitioners Guide 3 ISBN 1-900168-87-1
(Available from the Historic Scotland Conservation Bureau, address below)

Scotland's Listed Buildings: A Guide to Owners and Occupiers
Visit http://www.historic-scotland.gov.uk/index/publications/ownerspublications.htm

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