



BIG BEN

BROADCASTING THE CHIMES

The BBC first broadcast the Westminster Chimes on New Year's Eve 1923.

ENERGY EFFICIENCY

The clock dials were originally lit by gas. Today, energy efficient electric bulbs are used, each with a life of 60,000 hours.

THE WESTMINSTER CHIMES

Big Ben (note E natural) and the four quarter bells (G sharp, F sharp, E and B), sound the Westminster Chimes. The chimes are set to the following lines: "All through this hour, Lord be my Guide. And by thy power, no foot shall slide".

A brief history

Following the Great Fire of 1834 that destroyed most of the Palace of Westminster, the architect Charles Barry won a competition held to choose a design for the new building. The Astronomer Royal, Sir George Airy, judged another competition to build a clock for inclusion in Barry's design. Although the clock is commonly referred to as Big Ben, Big Ben is in fact the Great Bell which sounds the hour.

Edmund Denison, an amateur horologist, designed the Great Clock and the clockmaker Edward Dent constructed it. The Great Clock was installed in 1859 and started on 31 May. The Great Bell, Big Ben, began striking on 11 July 1859.

The Elizabeth Tower

In 2012, the Clock Tower was renamed the Elizabeth Tower in recognition of HM The Queen's Diamond Jubilee. The Speaker unveiled a plaque to mark the name change on 12 September 2012.

The outside of the tower is covered with Anston stone from Yorkshire. Inside, Caen stone from Normandy is used. The spire is covered with cast iron plates.

Although no longer accessible, there are rooms in the tower which were used in the past to detain MPs or peers for breach of conduct.

They were last used in 1880 when Charles Bradlaugh MP, an atheist, refused to take the oath of allegiance to Queen Victoria on the Bible.

The Great Clock

The Great Clock is accurate to within one second. Weights,

including pre-decimal pennies, sit on a shelf on the pendulum rod. Adding or removing weight on the pendulum regulates the clock.

So fine is the balance that adding one penny will cause the clock to gain two-fifths of a second in 24 hours. Denison invented the "Double Three-Legged Gravity Escapement" which is crucial to the clock's accuracy.

The first strike on Big Ben, the hour bell, indicates the hour. A microphone enables the BBC to broadcast the Westminster chimes worldwide. Beneath each clock dial a Latin inscription reads: "O Lord, make safe our Queen Victoria the First". Above the belfry is the Ayrton Light named after Acton Smee Ayrton, First Commissioner of Works. It was installed in 1885 and it is lit whenever either House is sitting after dark.

Big Ben – the Great Bell

Big Ben is thought to be named after Sir Benjamin Hall, Chief Commissioner of Works at the time the bell was installed. The first bell, cast in 1856 at Stockton-on-Tees, was brought to London by rail and sea. During tests in New Palace Yard a fatal crack appeared.

The bell was broken up and a second bell was cast at the Whitechapel Bell Foundry. After successful tests this bell was hauled sideways up a shaft inside the Tower. After

a few months the new bell also cracked and was silent for four years. It was restored to full voice in 1863 when the bell was turned by a quarter turn and a lighter hammer was installed.

Facts and figures

The Elizabeth Tower is over 96m high and 12m square. There are 334 steps to the belfry and another 59 to the Ayrton Light. The clock dials, framed in cast iron and glazed with 312 separate pieces of opal glass, are 7m in diameter. The centre of each dial is 55m from the ground.

The hour hands are made of gun metal, each 2.7m long and weighing about 300kg including counterweights. The minute hands are made of copper sheet 4.2m long. They weigh 100kg, including counterweights, and travel a distance equalling 190 kilometres (120 miles) a year.

The clock mechanism weighs about 5 tonnes. The pendulum is 4.4m long overall and weighs 310kg. The pendulum bob weighs 203kg and the three clock weights total nearly 2.5 tonnes.

Big Ben, the bell, measures 2.7m in diameter, 2.2m in height, and weighs 13.7 tonnes. The four quarter bells weigh between 1 and 4 tonnes each. The hammer which strikes Big Ben weighs 200kg.

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T: 020 7219 4272 E: hcinfo@parliament.uk

House of Commons Information Office,
House of Commons, Westminster,
London, SW1A 0AA

House of Lords Information Office

T: 020 7219 3107 E: hllinfo@parliament.uk

House of Lords Information Office,
House of Lords, Westminster,
London, SW1A 0PW