

The sound of bells enhances any building, whether it be a City Hall a Church, a modern Shopping Centre or a landscaped area. The use of bells in these environments always creates a friendly and welcoming atmosphere.

BELL CHIMING & BELL SOUND

Electro-magnetic hammers

FOR NEW AND EXISTING BELL INSTALLATIONS

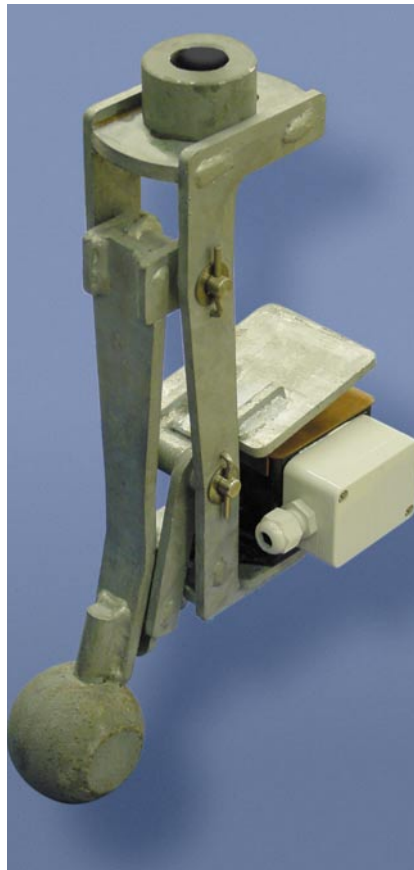
THE BENEFITS

- Remote and programmable striking, chiming, tolling, angelus and tune playing
- No mechanical linkage required.
- Will give new life to existing bells, for instance, where a weight driven clock or carillon is no longer operational.
- Fast response suited to repeat notes and much quicker than drop hammers.

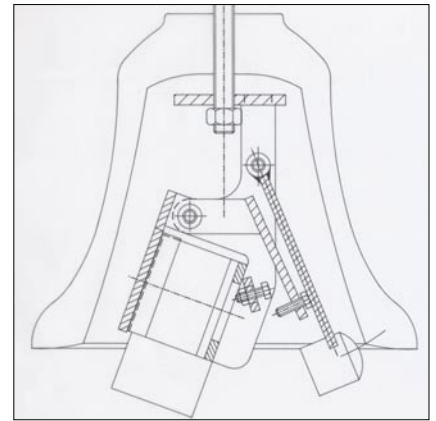
INTERNAL HAMMERS

Internal hammers have an action similar to an internal bell clapper, and are used where a bell is fixed in position.

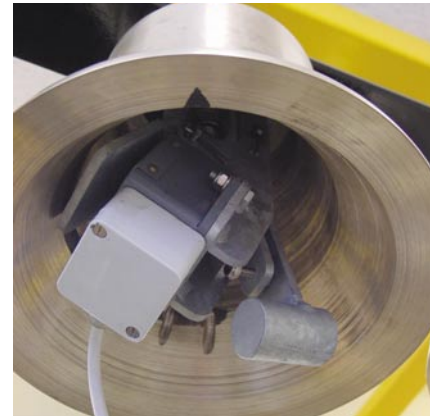
They are ideally suited to use in an outdoor location as the bell partially conceals the hammer unit and also acts as a protective cover.



Internal electro-magnetic hammer.



Typical internal hammer general arrangement.

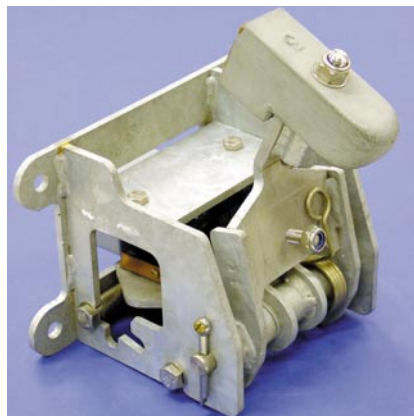


Internal electro-magnetic hammer in situ.

EXTERNAL HAMMERS

External hammers have an action similar to a traditional mechanically linked hammer. They are ideally suited for use on both static and swinging bells, whether the latter be either partial or complete rotation. For ringers safety switch see page 4.

External hammers are also used if it is not possible to fit an internal hammer, for instance, when the bell has a crown.



External electro-magnetic hammer.



Re-hung bell, replacement hangers & EMH.

DIMENSIONS

Electro-magnetic hammers are manufactured in a wide range of sizes, appropriate for most bells.

POWER REQUIREMENTS

110 to 220v, 50-60Hz single phase supply fused at 13 amps.

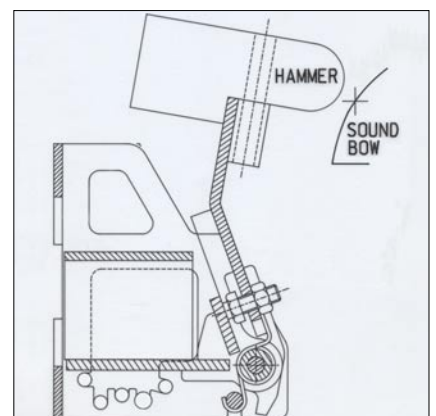
INSTALLATION & CONTROL

Smith of Derby manufacture all of their own equipment "in house" and provide a full installation and after-sales service.

Electro-mechanical hammers can be activated by a microswitch fitted to a clock movement, or via our C200 series fully programmable control system, details on page 7.



External electro-magnetic hammer in-situ.



Typical external hammer general arrangement.

Electro-mechanical toller units

THE BENEFITS

- Programmable operation of striking, chiming and angelus on traditional bells.
- Use existing or new mechanical drop hammers and connecting rods
- Operation identical to a weight driven clock.
- Will give new life to existing bells, for instance, where a weight driven clock or carillon is no longer operational.

REMOTE TOLLER UNIT

Electro-mechanical toller units are located remote from bell hammers, usually alongside or in place of an existing clock movement. Their function is identical to the lever action of the strike or chime side of a weight driven clock, to provide the action for tolling, striking and chiming.

Action is transmitted via mechanical linkage to the bell hammer.

DIMENSIONS

Electro-mechanical tollers are built according to the size of bell hammer. They are built with increasing power and robustness as hammer sizes increase.

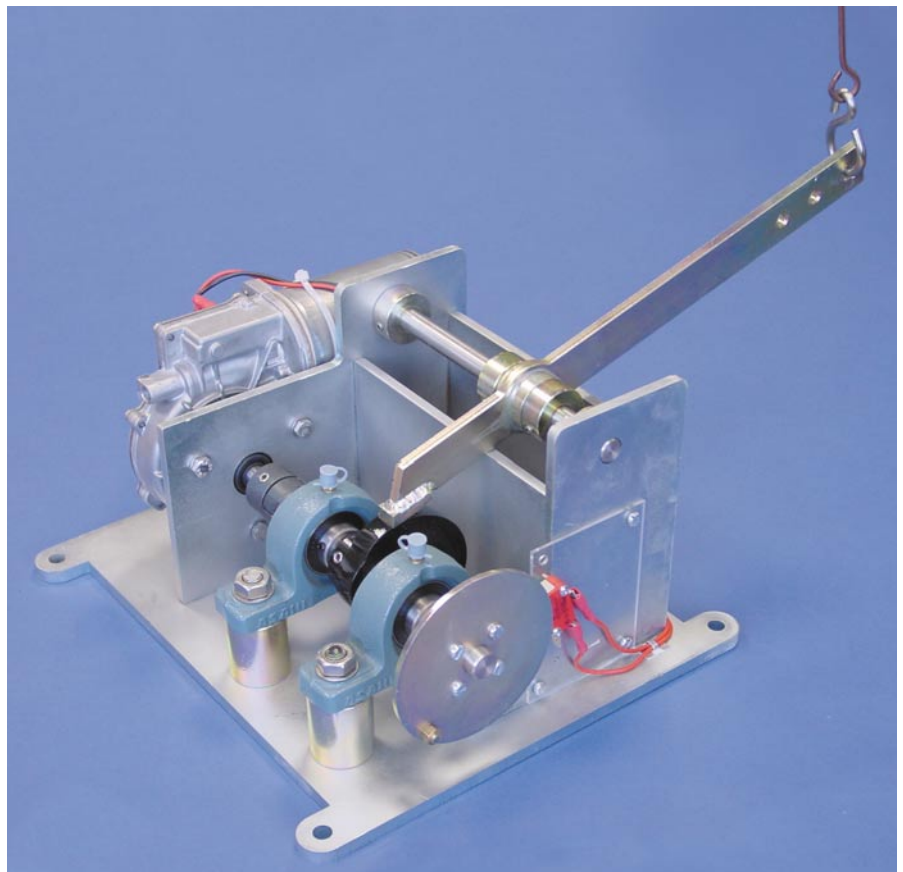
POWER REQUIREMENTS

110 to 220v, 50-60Hz single phase supply fused at 13 amps.

INSTALLATION & CONTROL

Smith of Derby manufacture all of their own equipment "in house" and provide a full installation and after-sales service.

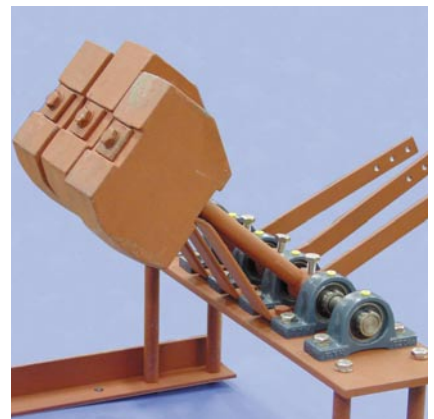
Toller units can be activated by a microswitch fitted to a clock movement, or via our C200 series fully programmable control system, details on page 7.



Electro-mechanical toller/strike/chime unit.



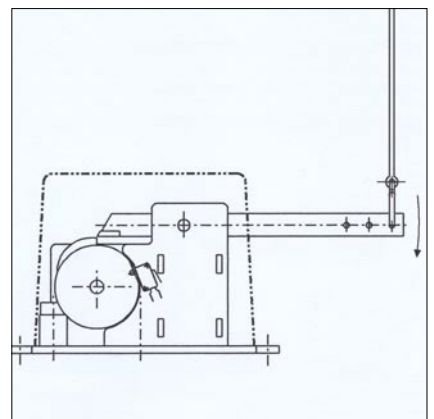
Typical hammer assembly unit.



Multiple hammer for rapid repeat on same bell.



Right-angle lever for hammer connecting wire.



Lever action on toller.

Bell safety and clock silencing

FULL RANGE OF PULL-OFF OPTIONS

MANUAL PULL-OFF

This is the simplest form of clock strike/chime silencing, and comprises a pull ring and linkage which is attached to the clock hammer connecting wires. Pulling the ring and locking it with the pin ensures that the clock hammers are kept clear of the bells during any clock strike or chime sequence, enabling safe bell practice and change ringing.



Manual pull-off.

CLOCK STRIKE/CHIME AUTOMATIC NIGHT SILENCING

Mechanical clocks

An electrical actuator (APO series) is installed with linkage to the clock mechanism hammer levers. The system is controlled by a programmable timer. According to the programme, the clock hammers at the bells will be pulled clear to effectively silence the clock strike/chime. The standard timer installation is programmable on a 7-day basis with night stop times and morning start times to suit the local requirements.

Optional extras include a second timer which allows individual timed control for the strike and chime respectively.

Ringers safety switch

Where the church tower has a ringing peal, the system can include a ringers safety switch which overrides the timer or automatic programme to allow bell practice and change ringing. Indicator lamps show the status of the installation: safe or unsafe for change ringing.

Electric hammer/toller installations

These systems have a fully programmable controller which includes night silencing for the clock strike and chime.

DESIGNING YOUR SYSTEM

For all bell ringing installations we offer a free and without obligation initial site visit. This enables our Technical Sales Engineer to determine your exact requirements, following which we can offer a full specification, with all the various options, together with appropriate fixed price quotation.



Electrical Actuator Pull-Off (APO series).



Night silencing timer with optional second timer.



Ringing room safety switch.



Example of a bell with crown and fixing rods.

BELL FIXINGS

Traditional bells are often secured to the timber stock or beam via a series of loops cast into the top of the bell. This is known as the "crown". A set of threaded rods or bolts holds the bell in place.

We can include repairs to these fixing rods as part of an overhaul of your bell installation. This is sometimes necessary if the bells need to be re-hung in a new location, for example, where the condition of original timbers no longer permits use of the bells.

Bell sound system

THE BENEFITS

- Authentic re-creation of bell sound.
- For interior and exterior settings.
- No existing clock required.
- Fully programmable for wedding peals, change ringing, chimes, tunes, night silencing and special events.

THE SOUND OF REAL BELLS

Our digital Bell Sound System recreates the sound of traditional bells so faithfully that you would believe they were real.

Authentic bell harmonics and sound characteristics make the system a perfect alternative to real bells, particularly where there are cost, space and structural limitations.

The 30W output system is designed for interior settings or limited space applications such as within a pillar clock or roof turret. The 120W output system gives an excellent sound range which in most locations will equal that of real bells.

The Bell Sound System is equally at home in large public buildings, leisure developments, churches and civil wedding venues. It can be used with or without a clock dial.

SOUND GENERATION

The standard bell sound system contains up to 15 separate bell notes which provides scope for a wide variety of tunes. A bespoke 30 note system is also available. Please refer to Bell Sound Tunes on page 8.

AMPLIFIER UNIT

High fidelity amplification ensures quality sound reproduction with a wide volume range free of distortion. The bell microchips and amplifier are housed in a robust steel cabinet, or within the column base of a pillar clock.

CONTROLLER

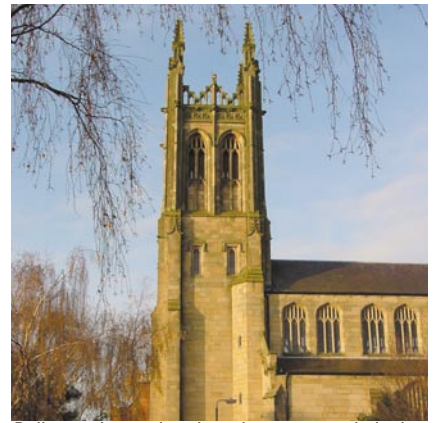
Our C200 series controller is the main interface for the bell sound system. See full description on page 7.

KEYBOARD

An optional MIDI keyboard converts the bell sound system into a modern day carillon. As standard it can control up to 15 bell notes, however, up to 30 notes can be included if required.



Bell sound at a municipal city hall.



Bell sound at a church with no external clock.



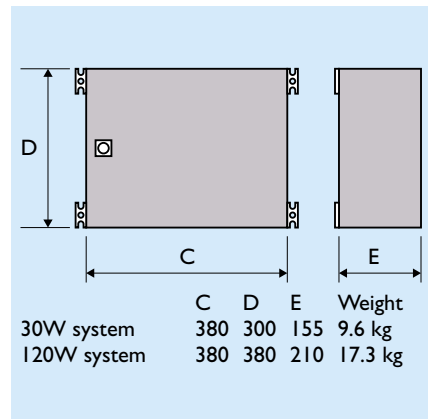
Bell sound in a pillar clock.



C200 series controller and amplifier.



Amplifier cabinet.



Amplifier cabinet dimensions.



C200 series controller display.



MIDI keyboard.

Bell sound system

SPEAKERS

Round type reflex horn high efficiency:

- 30W system: 2 x 270mm diameter.
- 120W system: 2 x 510 diameter.

More speakers can be added if required to overcome prevailing site conditions.

A 2-core 5A 100V cable is used to link the speakers to the bell sound amplifier.

Individual volume controls can be supplied for each speaker as an option, but this will require a separate 2-core 5A 100V cable for each speaker.

POWER REQUIREMENTS

110 to 220v, 50-60Hz single phase supply fused at 5 amps.

INSTALLATION & CONTROL

Smith of Derby manufacture all the parts required to complete your bell sound system, and provide a full installation and after-sales service.

The bell sound system is operated by our C200 series fully programmable controller, details on page 7.

CONNECTIONS

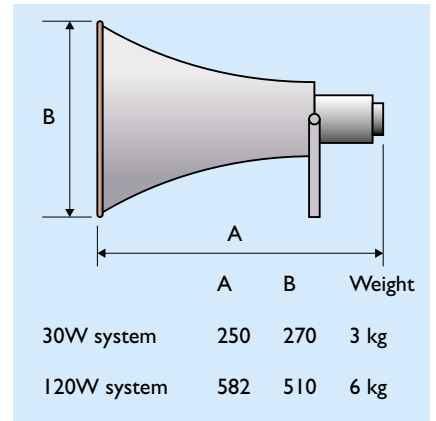
Provision of power supply and cable between amplifier and speaker locations must be done by a qualified electrical contractor prior to installation of the system by Smith of Derby.

Multi-wire signal cable is required to connect the C200 controller to the amplifier cabinet. We supply sufficient cable for when the two units are installed adjacent to each other, but if they are to be further apart, this cable must be in place prior to installation of the system. 20-core cable is typical.

Switched fused spurs with 5 amp fuses are required: one for the amplifier unit, one for the C200 controller and one for the radio control option described on page 7.



120W speaker.



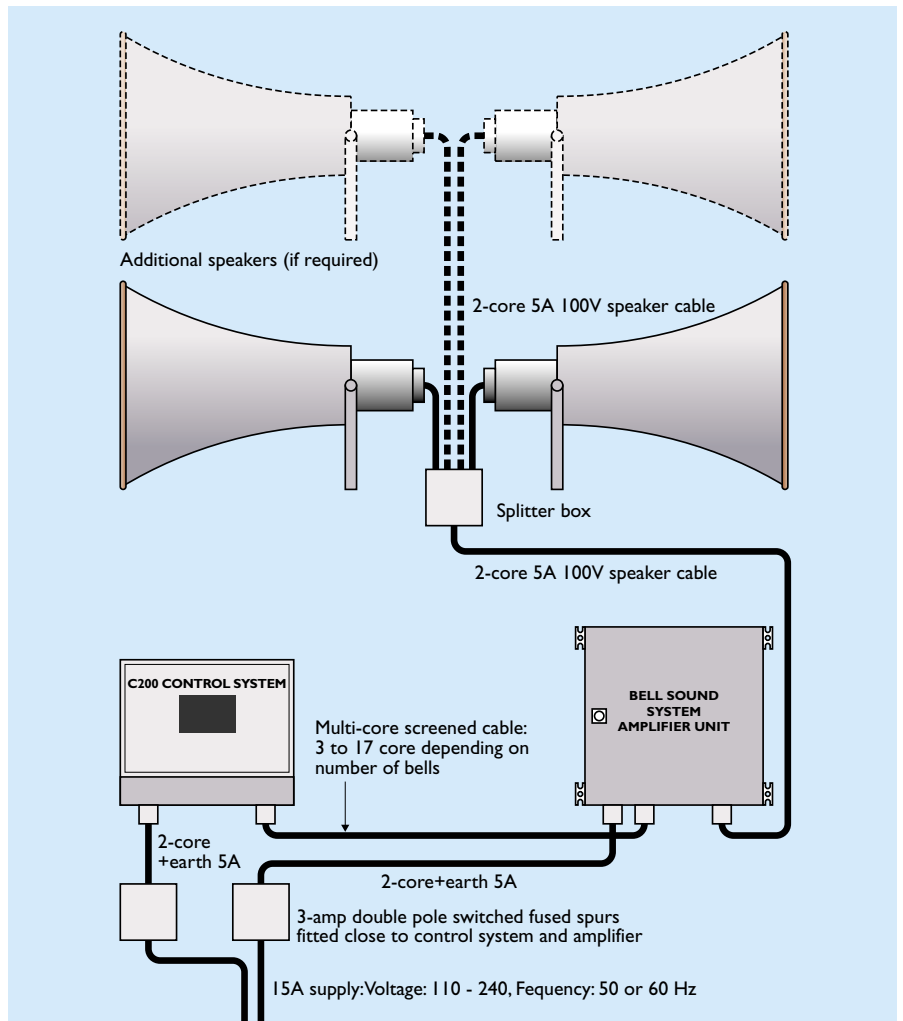
Speaker dimensions.



30W speaker.



30W speakers in a pillar clock.



Typical wiring scheme for a 30W or 120W Bell Sound system.

Control system

FEATURES AND BENEFITS

- Suitable for controlling electro-magnetic hammers, tolling units and electronic bell sound systems.
- Factory set to client specifications.
- User adjustable, with reset facility.
- Security key for tamper-proof mode.
- Manual override for special events

PROGRAMMED CONTROL

The Smith of Derby C200 system offers the most flexible and comprehensive control option for bell hammers or our bell sound system.

Control includes hour striking, chiming, angelus, tune playing and night silencing. It is factory set to a specified programme to which the user can add future amendments.

In standard form it can control up to 15 bell hammers and/or bell sound notes, which covers a wide range of tunes. A 30 note version is available if required.

A 70 year battery back-up ensures that the pre-programmed memory is not affected by power failures.

The configuration of each unit is determined by individual requirements in terms of the functions to be controlled. Please see the table opposite for more detail.

OPERATION

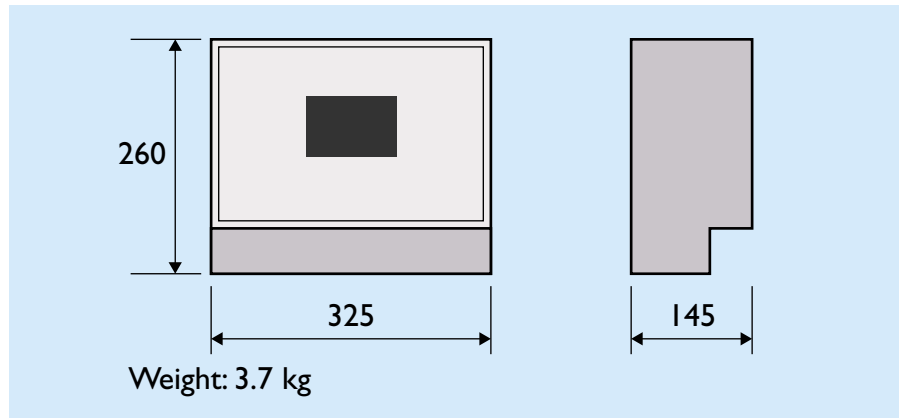
The controller is supplied preset with specified programmes to which the user can add future amendments. Manual override can be used on special occasions, for instance to play wedding peals before and after the ceremony.

The C200 series controller has 10 separate programme memories, each holding a full range of instructions including variable speed of repetition. You can pre-set programmes, for example, for Easter and Christmas, and set the controller to automatically change from one programme to another.

The C240 controller has full tune playing facilities, and the C250 also includes full automata control. For bell sound tune information see page 8.



C220 series control system keyswitch, display and pushbuttons.

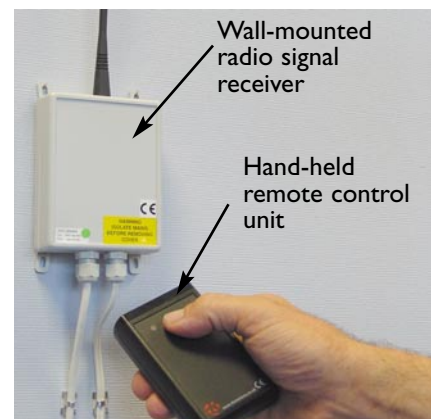


C220 series control system dimensions.

FUNCTIONS	C210	C220	C230	C240	C250	C270
Angelus Tolling	•	•	•	•	•	
Continuous Tolling	•	•	•	•	•	
Funeral Tolling	•	•	•	•	•	
Single Blow	•	•	•	•	•	
Clock Hour Strike		•	•	•	•	
Ding-dong quarter chimes			•	•	•	
Westminster quarter chimes			•	•	•	
Automatic Night Silencing		•	•	•	•	
Automatic Tune playing				•	•	
Automata control					•	
Electrical conversion of weight driven strike and chimes						•

REMOTE CONTROL

Remote control is available for operation of a bell, for example by the minister during a church service. Two versions are available: a fixed pushbutton or a hand-held radio remote control with wall-mounted receiver.



Hand-held remote control.

Bell tunes

BELL SOUND TUNES

The standard bell sound system with C240 controller contains 15 separate bell notes: C, D, E, F, F#, G, A, A#, B, C, C#, D, E, F and G. These provide scope for a wide variety of tunes.

Our current list of tunes contains over 250 and is regularly updated. The table gives a sample selection. A full list is available on request.

Tune availability

The C240 controller comes complete with 4 installed pre-programmed memory modules. This enables each system to provide a wide variety of tunes themed to your location, whether it be a City Hall a Church, a modern Shopping Centre or a landscaped area.

The content of our memory modules is:

H1, H2, H3: hymns and christmas tunes.

G1, G2: traditional airs, nursery rhymes, national anthems, general tunes.

C1, C2, C3, C4, C5, C6: change ringing and peals. (These include longer sequences, and therefore require more capacity.)

Custom requirements

Special selections from our list of bell tunes can be programmed into the system if required. We can also input other tunes from sheet music. However, the individual notes must be within the standard range available, which may necessitate a tune being transposed from its original key. Additional bell notes can be provided to special order, up to a maximum of 15 notes plus the standard 15 notes.

BELL SOUND DEMONSTRATION

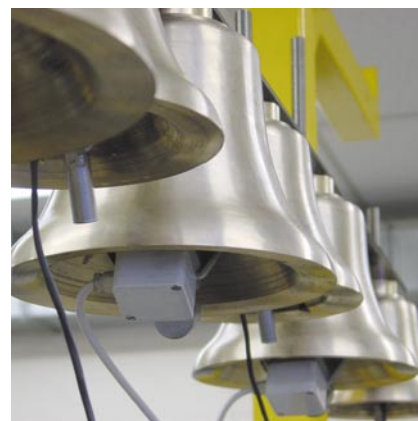
An 18-track Bell Sound System demonstration CD is available on request.

Alternatively, visit our website at www.smithofderby.com to hear a short bell sound demonstration chime. Please note that these are subject to the sound output quality of your stereo equipment or computer.

If you are UK or Eire based and seriously interested in purchasing a Smith of Derby Bell Sound System, an on-site demonstration using our portable system can be arranged.

Representative sample of available peals, hymns and tunes

Title	Bells req.
PEALS	
8-bell wedding peals - rounds	8
8-bell peals - Bob Major	8
10-bell peals, 10 minutes - Little Bob Royal	10
10-bell peals, 10 minutes - Grandsire Caters	10
10-bell peals - Queens Peal	10
Call changes - various	12
Monastic bells, European style - random	6
ROMAN CATHOLIC HYMNS	
Alleluia	14
Hymn to St. Patrick	11
O Sanctissima	10
Salve Regina	10
CHURCH OF ENGLAND TUNES	
Abide With Me	14
Praise My Soul The King Of Heaven	12
The Old Rugged Cross	14
Brother James' Air	14
TRADITIONAL AIRS	
Auld Lang Syne	14
Bobbie Shaftoe	10
Clementine	14
Myafnwyl	14
Anniversary Waltz	14
Lincolnshire Poacher	10
NURSERY RHYMES	
Boys And Girls Come Out To Play	12
Baa Baa Black Sheep	10
Hickory Dickory Dock	10
Oranges and Lemons	14
CHRISTMAS	
Away In A Manger	14
Silent Night	14
Deck The Halls	14
White Christmas	8
We Wish You A Merry Christmas	9
NATIONAL ANTHEMS	
God Save The Queen	14
American National Anthem	14



Electro-magnetic hammers on a peal of bells.

REAL BELL TUNES

Our C240 controller can be programmed to play tunes on any existing or a new bell installation.

The range of tunes possible on a peal of real bells will obviously be limited by the number and notes of the bells. For practical purposes, a minimum of 8 bells is required to give scope for a choice of tunes.

Our electro-magnetic hammers have a fast response suited to repeated notes in tunes, for example, Baa Baa Black Sheep, Jingle Bells and Clementine.



Sample Bell Sound CD.



Portable demonstration unit.

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