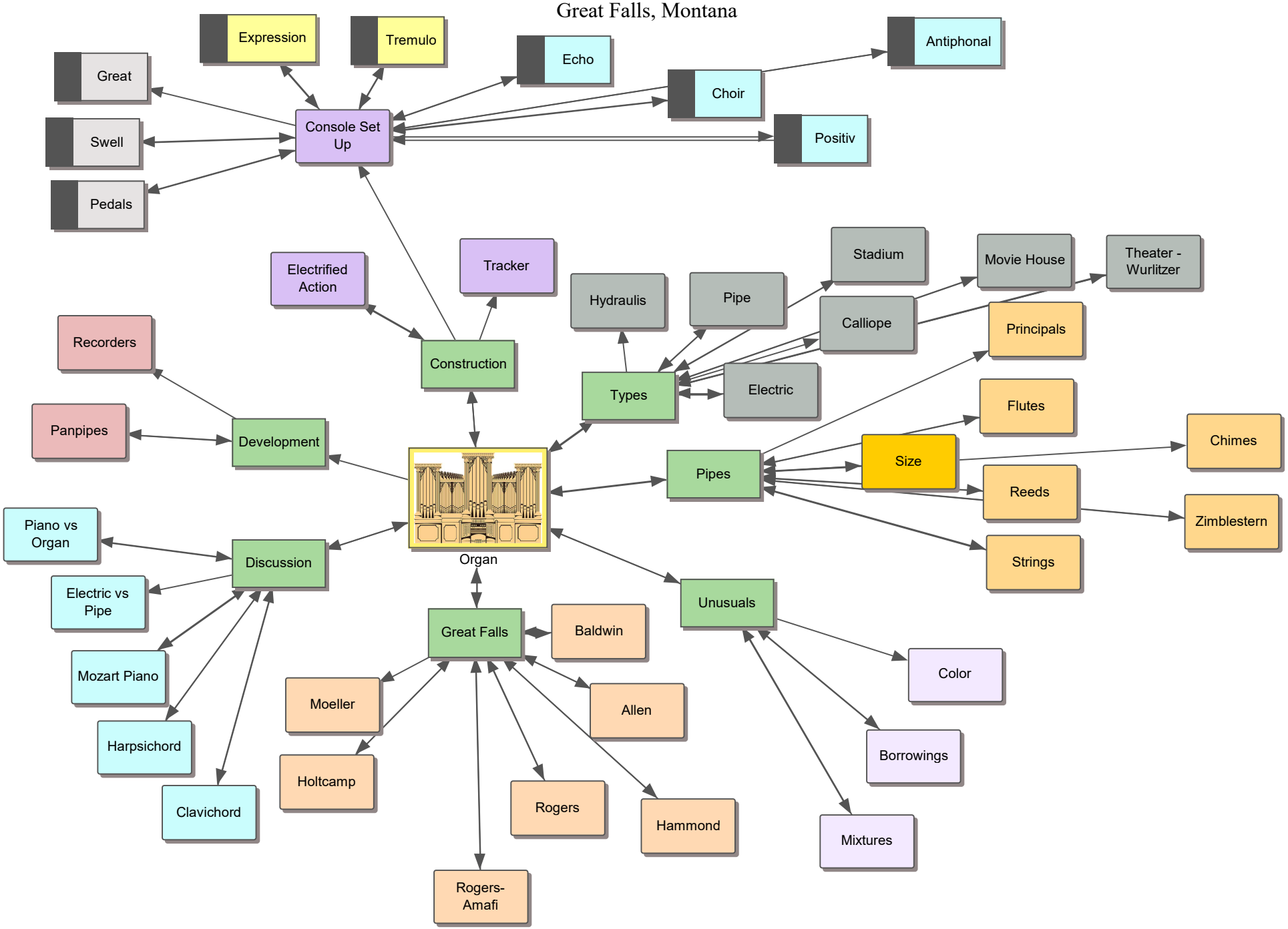

Expression
Tremulo
Echo
Antiphonal
Great
Choir
Console Set Up
Swell
Positiv
Pedals
Stadium
Movie House
Theater - Wurlitzer
Electrified Action
Tracker
Hydraulis
Pipe
Calliope
Principals
Recorders
Construction
Types
Electric
Flutes
Panpipes
Development
Size
Chimes
Pipes
Reeds
Zimblestern
Organ
Piano vs Organ
Discussion
Strings
Electric vs Pipe
Unusuals
Great Falls
Baldwin
Color
Mozart Piano
Moeller
Allen
Borrowings
Harpsichord
Holtcamp
Rogers
Hammond
Mixtures
Clavichord
Rogers-Amafi

Organ

I. Development

A. Panpipes

B. Recorders

II. Unusuals

A. Color

B. Borrowings

C. Mixtures

III. Great Falls

A. Holtcamp

B. Moeller

C. Rogers

D. Rogers-Amafi

E. Allen

F. Baldwin

G. Hammond

IV. Discussion

A. Piano vs Organ

B. Electric vs Pipe

C. Mozart Piano

D. Harpsichord

E. Clavichord

V. Construction

A. Electrified Action

B. Tracker

C. Console Set Up

1. Great

2. Swell

3. Pedals

4. Expression

5. Tremulo

6. Antiphonal

7. Positiv

8. Choir

9. Echo

VI. Pipes

A. Size

B. Principals

C. Flutes

D. Reeds

E. Strings

F. Chimes

G. Zimblestern

VII. Types

A. Hydraulis

B. Pipe

C. Electric

D. Calliope

E. Theater - Wurlitzer

F. Stadium

G. Movie House

Organ (music)

From Wikipedia, the free encyclopedia

In music, the **organ** (from Greek ὄργανον *organon*, "organ, instrument, tool") is a keyboard instrument of one or more pipe divisions or other means for producing tones, each played with its own keyboard, played either with the hands on a keyboard or with the feet using pedals. The organ is a relatively old musical instrument, dating from the time of Ctesibius of Alexandria (285–222 BC), who invented the water organ. It was played throughout the Ancient Greek and Ancient Roman world, particularly during races and games. During the early medieval period it spread from the Byzantine Empire, where it continued to be used in secular (non-religious) and imperial court music, to Western Europe, where it gradually assumed a prominent place in the liturgy of the Catholic Church. Subsequently it re-emerged as a secular and recital instrument in the Classical music tradition.

Overview

Pipe organs use air moving through pipes to produce sounds. Since the 16th century, pipe organs have used various materials for pipes, which can vary widely in timbre and volume. Increasingly hybrid organs are appearing in which pipes are augmented with electronic additions. Great economies of space and cost are possible especially when the lowest (and largest) of the pipes can be replaced.

Non-piped organs include the reed organ or harmonium, which like the accordion and harmonica (or "mouth organ") use air to excite free reeds.

Electronic organs or **digital organs**, notably the Hammond organ, generate electronically produced sound through one or more loudspeakers.

Mechanical organs include the barrel organ, water organ, and Orchestrion. These are controlled by mechanical means such as pinned barrels or book music. Little barrel organs dispense with the hands of an organist and bigger organs are powered in most cases by an organ grinder or today by other means such as an electric motor.

Pipe organs

The pipe organ is the largest musical instrument. These instruments vary greatly in size, ranging from a cubic yard to a height reaching five floors, and are built in churches, synagogues, concert halls, and homes. Small organs are called "positive" (easily placed in different locations) or "portative" (small enough to carry while playing).

The pipes are divided into ranks and controlled by the use of hand stops and combination pistons. Although the keyboard is not expressive as on a piano and does not affect dynamics (it is binary; pressing a key only turns the sound on or off), some divisions may be enclosed in a swell box, allowing the dynamics to be controlled by shutters. Some organs are totally enclosed, meaning that all the divisions can be controlled by one set of shutters. Some special registers with free reed pipes are expressive.

It has existed in its current form since the 14th century, though similar designs were common in the Eastern Mediterranean from the early Byzantine period (from the 4th century AD) and precursors, such as the hydraulic organ, have been found dating to the late Hellenistic period (1st century BC). Along with the clock, it was considered one of the most complex human-made mechanical creations before the Industrial Revolution. Pipe organs range in size from a single short keyboard to huge instruments with over 10,000 pipes. A large modern organ typically has three or four keyboards (manuals) with five octaves (61 notes) each, and a two-and-a-half octave (32-note) pedal board.

Wolfgang Amadeus Mozart called the organ the "King of instruments".[Some of the biggest instruments have 64-foot pipes (a foot here means "sonic-foot", a measure quite close to the English measurement unit)[citation needed] and it sounds to an 8 Hz frequency fundamental tone. Perhaps the most distinctive feature is the ability to range from the slightest sound to the most powerful, plein-jeu impressive sonic discharge, which can be sustained in time indefinitely by the organist. For instance, the Wanamaker organ, located in Philadelphia, USA, has sonic resources comparable with three simultaneous symphony orchestras. Another interesting feature lies in its intrinsic "polyphony" approach: each set of pipes can be played simultaneously with others, and the sounds mixed and interspersed in the environment, not in the instrument itself.

Church

Most organs in Europe, the Americas, and Australasia can be found in Christian churches.

The introduction of church organs is traditionally attributed to Pope Vitalian in the 7th century.] Due to its simultaneous ability to provide a musical foundation below the vocal register, support in the vocal register, and increased brightness above the vocal register, the organ is ideally suited to accompany human voices, whether a congregation, a choir, or a cantor or soloist.

Most services also include solo organ repertoire for independent performance rather than by way of accompaniment, often as a prelude at the beginning the service and a postlude at the conclusion of the service.

Today this organ may be a pipe organ (see above), a digital or electronic organ that generates the sound with digital signal processing (DSP) chips, or a combination of pipes and electronics. It may be called a church organ or classical organ to differentiate it from the theatre organ, which is a different style of instrument. However, as classical organ repertoire was developed for the pipe organ and in turn influenced its development, the line between a church and a concert organ became harder to draw.

Concert hall

In the late 19th century and early 20th century, symphonic organs flourished in secular venues in the United States and the United Kingdom, designed to replace symphony orchestras by playing transcriptions of orchestral pieces. Symphonic and orchestral organs largely fell out of favor as the *orgelbewegung* (organ reform movement) took hold in the middle of the 20th century, and organ builders began to look to historical models for inspiration in constructing new instruments. Today, modern builders construct organs in a variety of styles for both secular and sacred applications.

Theatre and cinema

The theatre organ or cinema organ was designed to accompany silent movies. Like a symphonic organ, it is made to replace an orchestra. However, it includes many more gadgets, such as mechanical percussion accessories and other imitative sounds useful in creating movie sound accompaniments such as auto horns, doorbells, and bird whistles. It typically features the Tibia pipe family as its foundation stops and the regular use of a tremulant possessing a depth greater than that on a classical organ.

Theatre organs tend not to take nearly as much space as standard organs, relying on extension (sometimes called unification) and higher wind pressures to produce a greater variety of tone and larger volume of sound from fewer pipes. Unification gives a smaller instrument the capability of a much larger one, and works well for monophonic styles of playing (chordal, or chords with solo voice). The sound is, however, thicker and more homogeneous than a classically designed organ.

In the USA the American Theater Organ Society (ATOS) has been instrumental in programs to preserve examples of such instruments.

Chamber organ

A chamber organ is a small pipe organ, often with only one manual, and sometimes without separate pedal pipes that is placed in a small room, that this diminutive organ can fill with sound. It is often confined to chamber organ repertoire, as often the organs have too few voice capabilities to rival the grand pipe organs in the performance of the classics. The sound and touch are unique to the instrument, sounding nothing like a large organ with few stops drawn out, but rather much more intimate. They are usually tracker instruments, although the modern builders are often building electropneumatic chamber organs.

Pre-Beethoven keyboard music may usually be as easily played on a chamber organ as on a piano or harpsichord, and a chamber organ is sometimes preferable to a harpsichord for continuo playing as it is more suitable for producing a sustained tone.

Reed or pump organ

The pump organ, reed organ or harmonium, was the other main type of organ before the development of the electronic organ. It generated its sounds using reeds similar to those of a piano accordion. Smaller, cheaper and more portable than the corresponding pipe instrument, these were widely used in smaller churches and in private homes, but their volume and tonal range was extremely limited. They were generally limited to one or two manuals; they seldom had a pedalboard.

- Harmonium or parlor organ: a reed instrument, usually with several stops and two foot-operated bellows.
- American reed organ: similar to the Harmonium, but that works on negative pressure, sucking air through the reeds.
- Melodeon: a reed instrument with an air reservoir and a foot operated bellows. It was popular in the US in the mid-19th century. (This should not to be confused with the diatonic button accordion which is also known as the melodeon.)

The chord organ was invented by Laurens Hammond in 1950. It provided chord buttons for the left hand, similar to an accordion. Other reed organ manufacturers have also produced chord organs, most notably Magnus from 1958 to the late 1970s.

Electronic organs

Since the 1930s, pipeless electric instruments have been available to produce similar sounds and perform similar roles to pipe organs. Many of these have been bought both by houses of worship and other potential pipe organ customers, and also by many musicians both professional and amateur for whom a pipe organ would not be a possibility. Far smaller and cheaper to buy than a corresponding pipe instrument, and in many cases portable, they have taken organ music into private homes and into dance bands and other new environments, and have almost completely replaced the reed organ.

Hammond

The Hammond organ was the first successful electric organ, released in the 1930s. It used mechanical, rotating tonewheels to produce the sound waveforms. Its system of drawbars allowed for setting volumes for specific sounds, and it provided vibrato-like effects. The drawbars allow the player to choose volume levels. By emphasizing certain harmonics from the overtone series, desired sounds (such as 'brass' or 'string') can be imitated. Generally, the older Hammond drawbar organs had only preamplifiers and were connected to an external, amplified speaker. The Leslie speaker, which rotates to create a distinctive tremolo, became the most popular.

Though originally produced to replace organs in the church, the Hammond organ, especially the model B-3, became popular in jazz, particularly soul jazz, and in gospel music. Since these were the roots of rock and roll, the Hammond organ became a part of the rock and roll sound. It was widely used in rock and popular music during the 1960s and 1970s by bands like Emerson, Lake and Palmer, Procol Harum, Santana and Deep Purple. Its popularity resurged in pop music around 2000, in part due to the availability of clonewheel organs that were light enough for one person to carry.

Allen

In contrast to Hammond's electro-mechanical design, Allen Organ Company introduced the first totally electronic organ in 1938, based on the stable oscillator designed and patented by the Company's founder, Jerome Markowitz. Allen continued to advance analog tone generation through the 1960s with additional patents. In 1971, in collaboration with North American Rockwell, Allen introduced the world's first commercially-available digital musical instrument. The first Allen Digital Organ is now in the Smithsonian Institution.

Other analogue electronic

Frequency divider organs used oscillators instead of mechanical parts to make sound. These were even cheaper and more portable than the Hammond. They featured an ability to bend pitches.

In the 1940s until the 1970s, small organs were sold that simplified traditional organ stops. These instruments can be considered the predecessor to modern portable keyboards, as they included one-touch chords, rhythm and accompaniment devices, and other electronically assisted gadgets. Lowrey was the leading manufacturer of this type of organs in the smaller (spinet) instruments.

In the '60s and '70s, a type of simple, portable electronic organ called the combo organ was popular, especially with pop, Ska (in the late 1970s and early 1980s) and rock bands, and was a signature sound in the pop music of the period, such as The Doors and Iron Butterfly. The most popular combo organs were manufactured by Farfisa and Vox.

Conn-Selmer and Rodgers, dominant in the market for larger instruments, also made electronic organs that used separate oscillators for each note rather than frequency dividers, giving them a richer sound, closer to a pipe organ, due to the slight imperfections in tuning.

Hybrids, starting in the early 20th century, incorporate a few ranks of pipes to produce some sounds, and use electronic circuits or digital samples for other sounds and to resolve borrowing collisions. Major manufacturers include Allen, Walker, Compton, Wicks, Marshall & Ogletree, Phoenix, Makin Organs, Wyvern Organs and Rodgers.

Digital

The development of the integrated circuit enabled another revolution in electronic keyboard instruments. Digital organs sold since the 1970s utilize additive synthesis, then sampling technology (1980s) and physical modelling synthesis (1990s) are also utilized to produce the sound.

Virtual pipe organs use MIDI to access samples of real pipe organs stored on a computer, as opposed to digital organs that use DSP and processor hardware inside a console to produce the sounds or deliver the sound samples. Touch screen monitors allows the user to control the virtual organ console; a traditional console and its physical stop and coupler controls is not required. In such a basic form, a virtual organ can be obtained at a much lower cost than other digital classical organs.

Other organ types

Mechanical

- Barrel organ—made famous by organ grinders in its portable form, the larger form often equipped with keyboards for human performance
- Organette—small, accordion-like instrument manufactured in New York in the late 1800s
- Novelty instruments or various types that operate on the same principles: Orchestrion, fairground organ (or band organ in the USA), dutch street organ and Dance organ—these pipe organs use a *piano roll* player or other mechanical means instead of a keyboard to play a prepared song.

Steam

The wind can also be created by using pressurized steam instead of air. The steam organ, or calliope, was invented in the United States in the 19th century. Calliopes usually have very loud and clean sound. Calliopes are used as outdoors instruments, and many have been built on wheeled platforms.

Organ music

Classical music

The organ has had an important place in classical music, particularly since the 16th century. Spain's Antonio de Cabezón, the Netherlands' Jan Pieterszoon Sweelinck, and Italy's Girolamo Frescobaldi were three of the most important organist-composers before 1650. Influenced in part by Sweelinck and Frescobaldi, the North German school rose from the mid-17th century onwards to great prominence, with leading members of this school having included Buxtehude, Franz Tunder, Georg Böhm, Georg Philipp Telemann, and above all Johann Sebastian Bach, whose contributions to organ music continue to reign supreme.

During this time, the French Classical school also flourished. François Couperin, Nicolas Lebègue, André Raison, and Nicolas de Grigny were French organist-composers of the period. Bach knew Grigny's organ output well, and admired it. In England, Handel was famous for his organ-playing no less than for his composing; several of his organ concertos, intended for his own use, are still frequently performed.

After Bach's death in 1750, the organ's prominence gradually shrank, as the instrument itself increasingly lost ground to the piano. Nevertheless, Felix Mendelssohn, César Franck, and the less famous A.P.F. Boëly (all of whom were themselves expert organists) led, independently of one another, a resurgence of valuable organ writing during the 19th century. This resurgence, much of it informed by Bach's example, achieved particularly impressive things in France (even though Franck himself was of Belgian birth). Major names in French Romantic organ composition are Charles-Marie Widor, Louis Vierne, Alexandre Guilmant, Charles Tournemire, and Eugène Gigout. Of these, Vierne and Tournemire were Franck pupils.

In Germany, Max Reger (late 19th century) owes much to the harmonic daring of Liszt (himself an organ composer) and of Wagner. Paul Hindemith produced three organ sonatas and several works

combining organ with chamber groups. Sigfrid Karg-Elert specialized in smaller organ pieces, mostly chorale-preludes.

Among French organist-composers, Marcel Dupré, Maurice Duruflé, Olivier Messiaen and Jean Langlais made significant contributions to the 20th-century organ repertoire. Organ was also used a lot for improvisation, with organists such as Charles Tournemire, Marcel Dupré, Pierre Cochereau, Pierre Pincemaille and Thierry Escaich.

Some composers incorporated the instrument in symphonic works for its dramatic effect, notably Mahler, Holst, Elgar, Scriabin, Respighi, and Richard Strauss. Saint-Saëns's *Organ Symphony* employs the organ more as an equitable orchestral instrument than for purely dramatic effect. Poulenc wrote the sole organ concerto since Handel's to have achieved mainstream popularity.

Because the organ has both manuals and pedals, organ music has come to be notated on three staves. The music played on the manuals is laid out like music for other keyboard instruments on the top two staves, and the music for the pedals is notated on the third stave or sometimes, to save space, added to the bottom of the second stave as was the early practice. To aid the eye in reading three staves at once, the bar lines are broken between the lowest two staves; the brace surrounds only the upper two staves. Because music racks are often built quite low to preserve sightlines over the console, organ music is usually published in oblong or landscape format.

Jazz

Electronic organs and electromechanical organs such as the Hammond organ have an established role in a number of popular-music genres, such as blues, jazz, gospel, and 1960s and 1970s rock music. Electronic and electromechanical organs were originally designed as lower-cost substitutes for pipe organs. Despite this intended role as a sacred music instrument, electronic and electromechanical organs' distinctive tone-often modified with electronic effects such as vibrato, rotating Leslie speakers, and overdrive-became an important part of the sound of popular music.

The electric organ, especially the Hammond B-3, has occupied a significant role in jazz ever since Jimmy Smith made it popular in the 1950s. It can function as a replacement for both piano and bass in the standard jazz combo. The Hammond organ is the centrepiece of the organ trio, a small ensemble which typically includes an organist (playing melodies, chords and basslines), a drummer and a third instrumentalist (either jazz guitar or saxophone). In the 2000s, many performers use electronic or digital organs, called clonewheel organs, as they are much lighter and easier to transport than the heavy, bulky B-3.

Popular music

Performers of 20th century popular organ music include William Rowland who composed "Piano Rags"; George Wright (1920–1998) and Virgil Fox (1912–1980), who bridged both the classical and religious areas of music.

Rock music

Church-style pipe organs are sometimes used in rock music. Examples include Tangerine Dream, Rick Wakeman (with Yes and solo), Keith Emerson (with The Nice and Emerson, Lake and Palmer), George Duke (with Frank Zappa), Dennis DeYoung (with Styx), Arcade Fire, Muse, Roger Hodgson (formerly of Supertramp), Natalie Merchant (with 10,000 Maniacs), Billy Preston and Iron Butterfly.

Artists using the Hammond organ include Bob Dylan, Counting Crows, Pink Floyd, Hootie & the Blowfish, Sheryl Crow, Sly Stone and Deep Purple.

Soap operas

From their creation on radio in the 1930s to the times of television in the early 1970s soap operas incorporated organ music in the background of scenes and in their opening and closing theme music. In the early 1970s the organ was phased out in favour of more dramatic, full-blown orchestras, which in turn were replaced with more modern pop-style compositions.

In sport

In the United States and Canada, organ music is commonly associated with several sports, most notably baseball, basketball, and ice hockey.

The baseball organ has been referred to as "an accessory to the overall auditory experience of the ballpark." The first team to introduce an organ was the Chicago Cubs, who put an organ in Wrigley Field as an experiment in 1941 for two games. Ebbets Field, home of the Brooklyn Dodgers, hired baseball's first full-time organist, Gladys Goodding. Over the years, many ballparks caught on to the trend, and many organists became well-known and associated with their parks or signature tunes.

Historical instruments

Predecessors

- Panpipes, pan flute, syrinx, and nai, *etc.*, are considered as ancestor of the pipe organ.
- Aulos, an ancient double reed instrument with two pipes, is the origin of the word *Hydr-aulis* (water-aerophone).

Early organs

- 3rd century BC - the Hydraulis, ancient Greek water-powered organ played by valves.
- 1st century (*at least*) - the *Ptera* and the *Pteron*, ancient Roman organ similar in appearance to the portative organs[
- 2nd century - the Magrepha, ancient Hebrew organ of ten pipes played by a keyboard
- 8th century - *Pippin's organ of 757* (Carolingian dynasty) was sent as a gift to the West by the Byzantine emperor Constantine V
- 9th century - the automatic flute player (and possibly automatic hydropowered organ), a mechanical organ by the Banū Mūsā brothers

Medieval organs

- Portative organ: a small portable medieval instrument
- Positive organ: a somewhat larger though still portable instrument
- Regal: a portable late-medieval instrument with reed pipes and bellows; forerunner of the harmonium and reed organ

Organ pipe

From Wikipedia, the free encyclopedia

An **organ pipe** is a sound-producing element of the pipe organ that resonates at a specific pitch when pressurized air (commonly referred to as *wind*) is driven through it. Each pipe is tuned to a specific note of the musical scale. A set of organ pipes of similar timbre comprising the complete scale is known as a *rank*; one or more ranks constitutes a *stop*.

Construction

Materials

Organ pipes are generally made out of either metal or wood. Very rarely, glass, porcelain, plastic, paper, Papier-mâché, or even stone pipes may be seen. A historical organ in the Philippines has pipes made exclusively of bamboo.

Metal

Metal pipes are usually made of lead; for increased rigidity it is alloyed with tin along with trace amounts of antimony and copper. The percentage of each metal in the alloy influences the characteristics of the resulting pipe. A high proportion of tin results in a slightly brighter colour (optical colour, not timbre). In addition, high amounts of tin give a gleaming and long-lasting polish, which may be desired if the pipe is clearly visible. The cost of each metal is also a factor, as tin is more expensive than lead. Cost considerations may also lead to the use of the inferior rolled zinc especially for the lower tones that take a lot of material. In addition, pipes have been made of many metals, including copper, aluminum, gold electroplate, silver, brass, and iron.

Metal pipes are generally made by first casting the desired lead alloy onto a long flat surface. Once the metal cools, it is cut into pieces, which are then rolled into shapes around molds called mandrels and soldered together. Thus, the cross-section of a metal pipe is usually circular. The low melting point, solderability and malleability of the organ metal makes the construction of pipes relatively easy.

Wood

The body of a wooden pipe can be made of either a coniferous wood or hardwood, although the lower section of the pipe (comprising the foot, cap, block and mouth) will nearly always be made from hardwood to provide a precise edge for the pipe's mouth. Using screws and glue, the pipes are assembled from wooden pieces of various shapes and sizes. In contrast with the circular cross-section of a metal pipe, the cross-section of a wooden pipe is most commonly square or rectangular.

Glass

Glass pipes have been created using warm glass and stained glass techniques by Xaver Wilhelmy. Three Wilhelmy glass ranks exist in the United States, two in a private collection in West Virginia and one in a private collection in Virginia. The image at left shows the Wilhelmy American Flag Glass Pipe Organ that was created as a part of a Memorial Proposal for Ground Zero after the events of September 11, 2001.[1]

Shapes

Organ pipe shapes

The bodies of organ pipes are generally made in three shapes: cylindrical, conical, or rectangular. Cylindrical pipes are simple cylinders, while conical pipes are in the shape of a tapering or expanding cone. Rectangular pipes form cuboid shapes with either a square or rectangular cross-section when viewed from above. There are some irregular shapes as well: the Flûte triangulaire, for example, has a triangular cross-section when viewed from above. In addition, a cylindrical or rectangular pipe can be *tapered*: that is, it can be made to be wider at the bottom than at the top. The internal shape of the pipe is a major factor in tone color.

The end of the pipe opposite the reed or mouth may be either open or closed (also known as *stopped*). A closed flue pipe with a uniform cross-section sounds an octave lower than a similar open pipe of the same length. Also, such an open pipe produces a tone in which both the even-numbered and the odd-numbered partials are present, while a stopped pipe, such as a gedackt, produces a tone with odd-numbered partials. The tone of a stopped pipe tends to be gentler and sweeter than that of an open pipe, though this is largely at the discretion of the voicer.

Certain organ pipes are also mounted horizontally in the shape of a trumpet horn so as to project the sound farther. These pipes are known as en chamades. However, when such a commanding tone is desired, but it is impossible to mount an en chamade on the case, a hooded reed is used. This type of pipe stands vertically and has a 90-degree bend at the top which acts to project the sound outward in the same way an en chamade does, but can be placed in the interior of an organ.

Pitch

The pitch produced by an organ pipe is determined in two fundamentally different ways. For a reed pipe it is determined mainly by the mechanical properties of the reed and the length of the protruding part. For the flue pipes it is determined by the shape of the air column inside the pipe and whether the column is open at the end. For those pipes the pitch is a function of its length, the wavelength of the sound produced by an open pipe being approximately twice its length. A pipe half the length of another will sound one octave higher. If the longest pipe, C, is 8 feet (2.4 m) in length, the pipe one octave higher will be 4 feet (1.2 m) long, and two octaves above (middle C) will be 2 feet (0.61 m) long. A closed (stopped) pipe produces a sound one octave lower than an open pipe. For example, a stopped pipe 4 feet (1.2 m) long will produce the same pitch as an open pipe 8 feet long: two octaves below middle C.

The nomenclature of a rank of pipes is based on the size of open pipe that would produce the same pitch, regardless of the type or size of the actual pipes in the rank. For example, a rank of open pipes labeled as 8′ (pronounced "eight-foot") would have a pipe for C two octaves below middle C that is approximately 8 feet long. An 8′ stop is said to sound at "unison pitch": the keys on the organ console produce the expected pitch (e.g. the key for middle C causes a middle C pipe to speak), like a piano. In a rank of stopped pipes, the lowest pipe is 4 feet in length but sounds at unison pitch—that is, at the same pitch as an 8′ open pipe—so it is known as an 8′ stop. Reed pipes are also labeled the same as that of an open pipe with the same pitch, regardless of the actual length of the pipe.

Varieties

Flue pipes

The sound of a flue pipe is produced with no moving parts, solely from the vibration of air, in the same manner as a recorder or a whistle. Wind from the "flue", or windway is driven over an open window and against a sharp lip called a *Labium*. By Bernoulli's principle this produces a lower pressure region just below the window. When the vacuum under the window is large enough, the airstream is pulled under the Labium lip. Then the process works in reverse, with a low pressure region forming over the Labium which pulls the airstream to the other side again. This 'fluttering' airflow creates high and low pressure waves within the pipe's air column. A high and a low pressure wave form a single "cycle" of the pipe's tone.

Flue pipes generally belong to one of three tonal families: *flutes*, *diapasons* (or *principals*), and *strings*. The basic "foundation" (from the French term *fonds*) sound of an organ is composed of varying combinations of these three tonal groups, depending upon the particular organ and the literature being played.

The different sounds of these tonal families of pipes arise from their individual construction. The tone of a flue pipe is affected by the size and shape of the pipes as well as the material out of which it is made. A pipe with a wide diameter will tend to produce a flute tone, a pipe with a medium diameter a diapason tone, and a pipe with a narrow diameter a string tone. A large diameter pipe will favor the fundamental tone and restrict high frequency harmonics, while a narrower diameter favors the high harmonics and suppresses the fundamental. The science of measuring and deciding upon pipe diameters is referred to as *pipe scaling*, and the resulting measurements are referred to as the *scale* of the pipe.

Reed pipes

The sound of a reed pipe is produced by a beating *reed*: wind is directed towards a curved piece of brass (the reed). A partial vacuum is created by higher velocity air flowing under the reed which causes it to be pulled closed against a hard surface called the *shallot*. This shuts off the vacuum and allows the reed to spring open again. A tuned resonator extends above this assembly and reinforces the sound produced. The principle is the same as that of the orchestral clarinet. The pitch of a reed pipe is determined primarily by the length of the reed but the volume of air in the resonator supports that frequency. Most reed pipes have a slide to adjust the vibrating length of the reed to fine-tune it. Because of the precision required in the making of the vibrating reed, resonator pipe and its accompanying parts, reed pipes are more complicated to manufacture than flue pipes.

By altering any of several parameters (including the shape and volume of the resonator, as well as the thickness and shape of the reed), a reed pipe can produce a wide variety of tonal colors. This allows reed stops to imitate historical musical instruments, such as the krumhorn or the regal. Because the resonator is partially stopped/closed by the reed, odd-numbered partials/harmonics are dominant (in the hollow tones of Krumhorn and Clarinet stops, for example). If the resonator pipe expands outward to conical, the geometry allows the production

of both even- and odd-numbered partials, resulting in the fuller tones of Trumpet and Oboe stops.

Diaphone pipes

The **diaphone** is a unique and uncommon organ pipe. Invented by Robert Hope-Jones around 1900, it has characteristics of both flue pipes and reed pipes. The pipe speaks through a resonator, much like a reed pipe, but a spring-loaded *pallet* instigates the vibration instead of a reed. Possessing a powerful bass groundtone, the pipe is generally made of wood and can be voiced at various wind pressures. The diaphone is usually found at 16′ and 32′ pitches, however there are a few examples of 8′ diaphones. There are two 32' Diaphones in Philadelphia's Wanamaker Organ, and a full-length 64′ Diaphone-Dulzian is installed in the Boardwalk Hall Auditorium Organ in Atlantic City.

Hope-Jones also developed an imitative version of the diaphone called the *diaphonic horn*, which had a more reed-like quality than the diaphone and was voiced on lower wind pressures. Wurlitzer built a version of the diaphonic horn for their theater organs at 32′ and 16′ pitches with huge wooden resonators as extensions of its Diaphonic diapason, and at 16′ with metal resonators as an extension of its smaller-scale Open diapason. The Austin Organ Company also developed a metal diaphone at 16′ pitch known as a Magnaton. Due to its penetrating tone, a diaphone-type horn has also been used in foghorns and fire signals.

Organ stop

An **organ stop** (or just **stop**) is a component of a pipe organ that admits pressurized air (known as *wind*) to a set of organ pipes. Its name comes from the fact that stops can be used selectively by the organist; each can be "on" (admitting the passage of air to certain pipes), or "off" (*stopping* the passage of air to certain pipes).

The term can also refer to the control that operates this mechanism, commonly called a **stop tab**, **stop knob**, or **drawknob**. On electric or electronic organs that imitate a pipe organ, the same terms are often used, with the exception of the Hammond organ and clonewheel organs, which use the term "drawbar".

The term is also sometimes used as a synonym for **register**, referring to rank(s) of pipes controlled by a single stop. **Registration** is the art of combining stops to produce a certain sound. The phrase "pull out all the stops" has entered general usage, for deploying all available means to pursue a goal.

Mechanics

Organ pipes are physically organized within the organ into sets according to note and timbre. A set of pipes producing the same timbre for each note is called a *rank*, while each key on a pipe organ controls a *note* which may be sounded by different ranks of pipes, alone or in combination. The use of stops enables the organist to selectively turn off ("stop") certain ranks in order to produce different combinations of sounds, as opposed to hearing all sounds simultaneously. A stop may be linked to a single or multiple ranks. While nowadays one speaks of "drawing" a stop to select a particular rank or set of ranks, the earliest organs were constructed with all ranks "on" by default.

The mechanism for operating the stops varies widely, but the principle is the same: the stop control at the console allows the organist to select which ranks of pipes will sound when a key is pressed. When the organist desires a rank to sound, they operate the corresponding control at the console, allowing wind to flow to the pipes. Likewise, the organist can deny wind to the pipes by operating the same control in the opposite direction. Common stop controls include *stop knobs*, which move in and out of the console, and *stop tabs*, which toggle back and forth in position.

Some organs, particularly smaller historical organs from England, Spain or Portugal,[feature *divided registers*, in which there are two stop knobs for certain ranks. One stop knob will control the upper portion of the keyboard, and the other will control the lower portion of the keyboard. This arrangement allows the upper portion of the keyboard to sound a different registration than the lower portion, which lends a greater versatility to smaller organs, especially those with only one manual.

Ranks which are neither divided nor extended (see below Unification, borrowing and extension) generally contain as many pipes as there are keys on the keyboard to which they are assigned: in most cases 61 pipes for a rank assigned to a manual and 32 pipes for a rank assigned to the pedal.

Methods of actuation

Over the course of the history of the pipe organ, there have been several different designs by which stops are actuated. In the longest-standing design, known as the *slider chest*, there is a strip of material (typically wood) called a *slider* which fits underneath a given rank of pipes. The slider has small holes drilled in it, one for each pipe in the rank. When the stop is set such that pipes are inactive, the holes are misaligned with the pipes, preventing the air from flowing up into the pipes above. When the stop is set such that the pipes are active, the slider moves over, aligning the holes with the pipes, allowing air to reach them. Because the slider chest was developed before the advent of electricity, it is inherently mechanical in nature. Many organs originally built with mechanical actuators have been retrofitted with electric actuators.

Other common designs include the spring chest, the cone valve chest, and the Pitman chest.

Unification, borrowing and extension

The term *unification* refers to the practice of expanding the tonal resources of an organ without adding more pipes by allowing several different stops to control the same rank of pipes. For example, an 8′ Gedeckt may also be made available as a 4′ Gedeckt, either on the same or a different manual. When both of these stops are selected and a key (for example, C_3) is pressed, two pipes of the same rank will sound: the pipe normally corresponding to the key played (C_3), and the pipe one octave above that (C_4).

Borrowing or *duplexing* refers to one rank being made available from multiple stop knobs, often on different manuals or pedal. *Extension* refers to the addition of extra pipes to the high and/or low ends of a rank in order to allow that rank to be borrowed by higher and/or lower stops. Unification and borrowing (duplexing) is mostly related to pipe organs with physical pipes; however, some (older) electronic organs also used unification and duplexing to expand the tonal resources of a limited number of synthesized virtual ranks.

While unification and extension increase the tonal resources and flexibility of the organ, greater care needs to be taken by the organist in registering the organ, particularly when the composition requires many notes to sound at the same time. In a non-unified organ, voices are scaled for their intended job. As an example, the octave (4′) diapason is generally of a smaller scale and softer than the corresponding 8′ diapason rank, whereas in unification they would be of the same strength due to using the same set of pipes. Straight reed choruses (16′, 8′ and 4′) have the luxury of ranks with different timbres, whereas a unified reed chorus has voices that are identical.

Playing with all stops out on a heavily unified/duplexed organ may result in chords that sound thinner or emphasize higher harmonics on some notes more than others, due to notes in different octaves using the same pipes instead of having their own. Part of an organist's training is to detect unification and duplexing and to create registrations that take them into account. Nonetheless, heavy unification can create issues for visiting artists with limited practice times, or those improvising compositions.

Borrowing between manuals occurs in English organs from about 1700, but extension of pipe ranks for the purpose of borrowing at different pitches is a relatively recent development.[] Extension and unification are heavily used in theatre organs to produce the maximum number of voices from a minimal number of pipes. It is still typical to see a significant amount of unification and duplexing in practice organs and small church organs. Traditionally, less use has been made of extension in large church organs and those designed for classical music, with authorities tending to regard borrowing in general and extension in particular as things to be avoided if possible, except in a few cases where space for pipes is limited, making extension and/or unification necessary.[] Borrowing 16' manual ranks for the pedal division is more widely employed because of the expense and space requirements of 16' stops and the versatility this allows.

Pitch and length

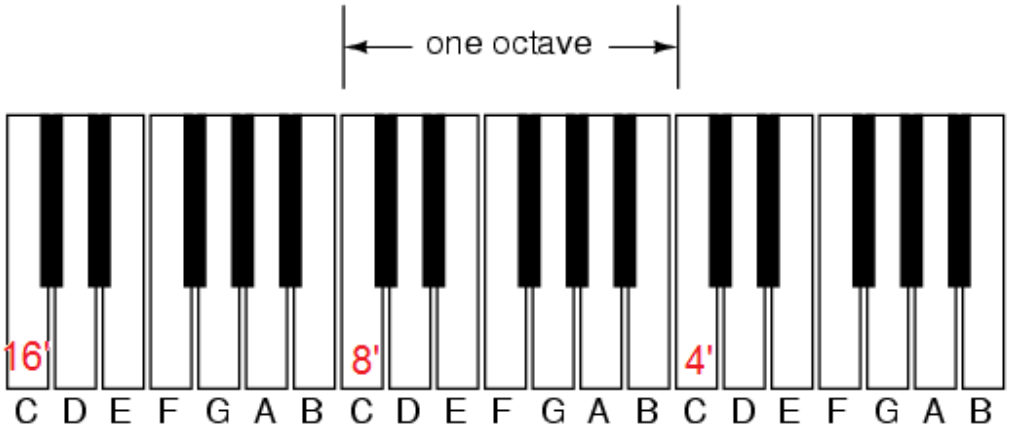
The pitch produced by an organ pipe is a function of its length. All else equal, longer pipes produce lower-pitched notes, and shorter pipes are higher in pitch. An organ stop utilizes a set (rank) of pipes of graduated lengths to produce the range of notes needed. Stops with pipes tuned to sound the pitch normally associated with the keys (i.e. the pitch of the same keys on a piano) are called "unison stops". Other stops use pipework that is longer or shorter than that of unison ranks to speak at a fixed interval above or below unison pitch ("octave pitch" or "mutation pitch").

The pitch of a rank of pipes is denoted by a number on the stop knob. A stop which speaks at unison pitch, or "native pitch", is known as an **8′** (pronounced "eight-foot") stop. This nomenclature refers to the approximate length of the longest pipe in a rank of open pipes. In a rank of stopped pipes, the lowest pipe is about 4 feet long, but because it sounds at unison pitch, it is also known as an 8′ stop.

Octaves

The octave sounded by a given pipe is inversely proportional to its length ("half the length = double the pitch"), meaning that a 4′ stop speaks exactly one octave higher than an 8′ stop. Likewise, a 2′ stop speaks one octave higher than a 4′ stop. Conversely, a 16′ stop speaks one octave below an 8' stop; and a 32′ stop speaks one octave below a 16′ stop. Octave pitch lengths used in actual organs include 64′, 32′, 16′, 8′, 4′, 2′, 1′, ½′, and ¼′.

Example:



Mutations and resultants

Ranks that do not speak at the unison or some octave of the unison pitch are called *mutation* stops, or sometimes "aliquots". They are rarely used on their own; rather, they are combined with unison stops to create different tone colors. A typical and distinctive sound of the organ is the cornet, composed of a flute and ranks making up its first four overtones, sounding 8′, 4′, 2 ⅔′ (labeled 3′ on some German and Swedish organs), 2′, and 1 ⅗′ (or 1 ½′ on some German organs).

The sounding length of a mutation stop gives the answer as to what pitch the rank sounds. For example, a stop labeled 2 ⅔′ (or one-third of 8′) has three times the frequency; i.e, the interval of a twelfth above unison pitch. This third harmonic (G) (twelfth, quint, qvinta, rorkvint, or nazard [nasard]) is the most-common pitch, followed by the fifth harmonic (E) (tierce [terz or ters on some organs]) (1 ⅗′) and sixth (G) (larigot, nasat) (1 ⅓′), with rarer examples from higher in the series, such as the "*septième*" or "*septima*" (1 ⅐′) and "none" (⅛′).

Mutations usually sound at pitches in the harmonic series of the fundamental, and except when derived from unified ranks, are always tuned pure. Some organs contain mutations that are overtones of 16' or 32' to create difference tones, e.g., quint-bass 10 ⅔′. Such "helper ranks" that sound at the fifth just above or fourth below the fundamental (e.g., Bourdon 16′), can create the impression of a stop an octave lower than the fundamental (e.g., Bourdon 32′), saving the space and money otherwise needed for larger bass pipes; such an effect is termed a *resultant*.

This is a list of some mutation stops.

Interval	Length of pipe	Sounding note when C_4 is played	Name on manual
5	5 ⅓′	G_4	Quint
10	3 ⅕′	E_5	Gross Tierce
12	2 ⅔′	G_5	Nazard, Twelfth
17	1 ⅗′	E_6	Tierce
19	1 ⅓′	G_6	Larigot
21	1 ⅐′	B_6	Septième
23	⅛′	D_7	None
27	8⁄13′	A_7	Tredezime
30	⅑′	D_8	Mollterz
40	⅙′	G_9	Quadragesima

Mixtures

Certain stops called *mixtures* contain multiple ranks of pipes above unison pitch, usually octave and fifths. The number of ranks in a mixture is denoted by a Roman numeral on the stop knob; for example, a stop labeled "Mixture V" would contain five pipes for every note. So, for every key pressed, five different pipes sound (all controlled by the same stop).

Cornets

A cornet organ stop is similar to that of a mixture, but they are primarily used as a solo voice. A cornet will always contain the fifth and major third, and, depending on the number of ranks, may contain octaves, and more rarely the minor seventh, and ninth. A cornet stop with two or three ranks is called a "sesquialtera".

Nomenclature

Pipe ranks have particular names, which depend on a number of factors ranging from the physical and tone attributes of the pipes in that rank, to the country and era in which the organ was manufactured, to the pipes' physical location within the organ. Each stop knob is labeled with the name of the rank it controls. In general, that label gives the organist two vital pieces of information about the rank of pipes in question:

- which octave of pitches the rank is natively tuned to
- which tone quality the rank possesses (principal, trumpet, flute, etc.)

This is an example of a pipe organ *stoplist*, showing both common stop names and conventional formatting. Within each division, flues are listed before reeds, then low to high pitch, then louder to softer stops within a pitch level. Separate celeste stops are next to their corresponding normally-tuned stops. Reed stops are often labeled in red on stop knobs or tabs.

GREAT	**SWELL**	**PEDAL**
Prestant 16′	Bourdon 16′	Subbass 32′
Prestant 8′	Open Diapason 8′	Open Diapason 16′
Gemshorn 8′	Stopped Diapason 8′	Subbass 16′
Chimney Flute 8′	Salicional 8′	Lieblich Gedeckt 16′
Principal 4′	Voix Céleste 8′	Octave 8′
Harmonic Flute 4′	Octave 4′	Bourdon 8′
Twelfth 2 ⅔′	Röhr Flute 4′	Choral Bass 4′
Super Octave 2′	Nazard 2 ⅔′	Rausch Quinte II
Mixture IV	Block Flute 2′	Posaune 16′
Trumpet 8′	Tierce 1 ⅗′	Tromba 8′
Clarion 4′	Cymbale III	
Tremulant	Contra Fagotto 16′	Great to Pedal
	Trompette 8′	Swell to Pedal
Swell to Great	Hautbois 8′	
	Vox Humana 8′	
	Tremulant	

Classifications of stops

Organ pipes fall into five broad categories:

- Principal or Diapason

  Principal stops are non-imitative; that is, their sound does not attempt to imitate that of a particular instrument. The Principal sound is the most characteristic sound of the pipe organ; it is the sound which comes to mind in the context of traditional church music (such as hymns). While spellings and names vary by language and era, here are some common examples:

  - Principal (or Diapason, Open Diapason, *Prinzipal*, *Montre*)
  - Octave (or Prestant)
  - Super Octave (or Fifteenth, *Doublette*)
  - Quint (or Twelfth; sometimes in the Flute category)
  - Mixture (or *Fourniture*, *Plein Jeu*, *Cymbale*, *Scharf*; followed by a Roman numeral indicating the number of pipes that play simultaneously for a single note; example: Mixture III, or Fourniture IV–VI)
- Flute

  Flute stops attempt to imitate (to one degree or another) the sound of flute-class woodwind instruments, such as the transverse flute and piccolo. Common examples:

  - Flute (or *Flûte*, *Flöte*)
  - *Gedackt* (or *Gedeckt*)
  - *Bourdon* (or *Bordun*)
  - Subbass (or *Soubasse*)

    - Stopped Diapason (or Stopped Flute) — despite its name, the Stopped Diapason is a flute-class stop
    - *Flûte Harmonique* (or Harmonic Flute, *Flûte Octaviante*)
    - Concert Flute (or *Flauto Traverso*)
    - Piccolo
    - *Rohrflöte* (or Chimney Flute, *Flûte à Cheminée*)
    - *Nachthorn* (or *Cor de Nuit*)
    - Quintaton (or *Quintadena*)
    - Nazard (or *Nasard*, *Nasat*)
    - *Tierce* (or *Terz*)
    - *Larigot*
- String

  String stops attempt to imitate (to one degree or another) the sound of stringed instruments, such as the violin and cello. Common examples:

    - Gamba (or Viola da Gamba, *Viole de Gambe*)
    - *Voix Céleste*
    - Violin (or Viola, *Viole d'Orchestre*)
    - Violoncello
    - Violone
- Reed

  Reed stops attempt to imitate (to one degree or another) the sound of brass instruments such as the trumpet and tuba, reed instruments such as the clarinet and oboe, and even the human voice. Common examples:

    - Trumpet (or *Trompete*, *Trompette*, Clarion, *Trompette en Chamade*)
    - *Posaune* (or Trombone)
    - Oboe (or *Hautbois*)
    - *Fagotto* (or *Basson*)
    - Clarinet
    - Tuba
    - *Cromorne* (or *Krummhorn*)
    - *Bombarde*
    - Vox Humana (or *Voix Humaine*)
    - *Dulzian*
    - Cornopean
    - Ophicleide
- Hybrid

  Hybrid stops contain one rank of pipes which attempts to combine the tone qualities of two other classifications of stops, such as Principal + String, String + Flute, or Principal + Flute. Common examples:

- Combination of String + Principal:
    - Geigen Principal (or Violin Diapason)
    - Salicional
    - Dulciana
- Combination of String + Flute

- Gemshorn
- *Spitz Flöte*
- *Erzähler*

Percussion stops (often referred to as "toy counters" or "toy stops"), unlike other organ stops, are not aerophones, but actual embedded percussion instruments (although they may still be actuated by the wind supplies of an organ). Both tuned and untuned percussion stops exist (for instance, marimba and snare drum, respectively). They are commonly designed to imitate orchestral or band instruments, or to imitate non-musical sounds (for instance, thunder), or to produce unique sounds (for instance, zimbelstern). Percussion stops are particularly common in theatre organs, which were generally made to accompany silent films.

Notable organ stops

- The loudest organ stop in the world is the Grand Ophicleide located in the Right Pedal division of the Boardwalk Hall Auditorium Organ. It stands on 100” wind pressure. A former organ curator warned the stagehands when the Grand Ophicleide was going to be used, because of the volume.
- The mixture stop with the largest numbers of pipes, called Ple, can be found in Santanyí (Majorca), Spain. It has 22 ranks in the left hand and 25 in the right.
- There are only two true and complete (acoustic, non-digital, going down to C_{-1}) 64′ stops in the world: the Contra-Trombone 64′ in the Sydney Town Hall Grand Organ and the Diaphone-Dulzian 64′ in the Boardwalk Hall Auditorium Organ. The lowest note of these stops has a frequency of 8 Hz. Because of the limitations of most loudspeakers and the limitations of human hearing, the listener will not be able to hear the lowest frequencies in the sample, but may "feel" them and hear the harmonics above them.
- Many large organs have a 64′ stop in their stoplist, but nearly all of these are either digital, acoustic imitations (32′ combined with a 21 ⅓′ extension creating a 64′ resultant impression), upper pipes in the octave, or else a sound sample of a higher-pitched stop electronically altered to sound one or more octaves lower. The Boardwalk Hall Auditorium Organ is capable of creating a resultant 128′ stop by combining its 64′ and 42 ⅔′ stops.

List of pipe organ stops

From Wikipedia, the free encyclopedia

An **organ stop** can mean one of three things:

- the control on an organ console that selects a particular sound
- the row of organ pipes used to create a particular sound, more appropriately known as a *rank*
- the sound itself

Organ stops are sorted into four major types: principal, string, reed, and flute.

This is a sortable list of names that may be found associated with electronic and pipe organ stops. Countless stops have been designed over the centuries, and individual organs may have stops, or names of stops, used nowhere else. This non-comprehensive list deals mainly with names of stops found on numerous Baroque, classical and romantic organs. Here are a few of the most common ones:

Stop name	Alternative name	Type	Notes
Aeoline	Aéoline Éolienne	String	an extremely small scaled stop with a very delicate, airy tone; built frequently as a single-rank stop, or as a double-rank celeste.
Baryton		Reed	16' or 8' reed stop imitative of the instrument
Blockflöte		Flute	German for "recorder"; a wide scaled conical or stopped flute of 4′ or 2′ pitch, taking its name from the common flute called a "recorder" which its tone closely resembles
Bombarde		Reed	a powerful chorus reed stop with a brassy timbre, occurring on the manuals at 16′ (and occasionally 8′), or in the pedal at 16′ or 32′ pitch; similar tone as the *Ophicleide* or *Trombone*
Bourdon		Flute	a wide-scaled stopped-flute, 16′ or 8′ on the manuals, and 16′ or 32′ in the pedals (where it may be called *Subbass* or *Contra Bourdon*)
Cello	Violoncelle	String	a string stop at 8′ or 16′; has a warmer, more "romantic" tone than the *Gamba*

Stop name	Alternative name	Type	Notes
Chimney Flute		Flute	a stopped flue stop with a chimneyed stopper.
Choralbass		Principal	a 4′ strongly voiced octave *Diapason* in the pedal division, mainly for cantus firmus use
Claribel	Clarabel Flute Claribel Flute Melodia	Flute	an 8′ open wood manual stop.
Clarinet	Clarinette Clarionet	Reed	a reed stop with a rich tone imitating the orchestral instrument
Clarion	Clairon	Reed	4′ or 2′ *Trumpet*, it is a chorus reed
Cor Anglais		Reed	16' or 8' reed stop imitative of the instrument.
Cornet		Flute	A multi-rank stop consisting of up to five ranks of wide-scaled pipes. The pitches include 8′, 4′, 2 ⅔′, 2′ and 1 ⅗′. Three- and four-rank cornets eliminate 8′ and 4′ ranks. This stop is not imitative of the orchestral cornet.
Cornopean		Reed	8′ chorus reed similar to the *Trumpet*; normally located in the Swell division.
Cromorne	Krummhorn Cremona	Reed	Cylindrical solo reed that has a distinct buzzing or bleating sound, imitative of the historical instrument of the same name
Diapason	Montre Open Diapason Principale Principal Prinzipal Tenori[1]	Principal	A flue stop that is the "backbone" sound of the organ. Most commonly at 8′ in manuals, and 8′ or 16′ in the pedals.

Stop name	Alternative name	Type	Notes
Diaphone			A special type of organ pipe that produces tone by using a felt hammer to beat air through the resonator. Common on theatre organs, not often used in classical instruments.
Dulcian		Reed	A reed stop at 8' pitch on the manuals with a tone similar to that of a bassoon.
Dulciana		String	An 8' metal string stop. Usually the softest stop on an organ.
Fagotto	Bassoon Fagot	Reed	16' chorus reed. Inverted conical construction, softer than a trumpet or trombone.
Flageolet		Flute	A flute stop of 2' or 1' pitch.
Fugara		Principal/String hybrid	A flue stop in 4' or 8' pitch. The tone has a sharp "stringy" quality.
Gamba	Viola da Gamba Viole	String	A string stop that has a thinner, more cutting tone than the *Cello* stop. It one of the earliest designs of string stops, and is named after the Baroque instrument viola da gamba.
Gedackt	Gedeckt Stopped Diapason	Flute	A basic stopped 8′ flute in the manuals, and stopped 16′ and/or 8′ flute voice in the pedal
Gemshorn	Cor de Chamois	Flute/String hybrid	A flue stop usually at 4', 2', pitch but sometimes 8' pitch; similar tone as *Spitz Flute*
Gravissima			Name for a resultant 64' flue (a 32' stop combined with a 21⅓' stop, which is a fifth, producing a difference tone of 8 Hz on low C.)
Harmonic Flute		Flute	An open metal flute made to sound an octave above its length by means of a small hole at its midpoint. This stop has a very pure flute tone and was popularized by Aristide Cavaillé-Coll.
Hohlflöte	Hohlflute Holpijp	Flute	A metal or wooden 8' open or stopped flute.
Keraulophon		Flute	A flue stop at 8' pitch with a stringy, reedy tone.
Larigot		Flute	Flute mutation stop at 1 ⅓′ pitch
Mixture	Fourniture Plein Jeu	Principal	Multi-rank stops that enhance the harmonics of the fundamental pitch, and are intended for use with foundation stops, not alone. *Mixture IV* indicates that the stop has four ranks. *Mixture 15.19.22.26* indicates the composition.
Nachthorn	Night Horn Cor de Nuit Corno de Nacht	Flute	wide-scaled flute with a relatively small mouth, produces a soft, but penetrating sound; occurring at 8′ and 4′ pitch, and also at 2′ pitch at pedal

Stop name	Alternative name	Type	Notes
Nasard	Nasat Nazard	Flute	Flute mutation stop of 2 ⅔′ (sounding a twelfth above written pitch)
Nason Flute		Flute	Flute stop with stopped pipes. Usually 4′ pitch in which the twelfth is often prominent
None		Flute	A rare mutation stop of 8/9', reinforcing the 8' harmonic series. (sounds a twentieth above written pitch)
Oboe	Hautbois	Reed	8' reed stop used as both a solo stop and a chorus reed.
Octave	Oktav Prestant Principal	Principal	A 4′ Principal. "Prestant" often indicates ranks that have pipes mounted in the front of the organ case.[3]
Octavin		Principal	1' principal
Ophicleide		Reed	powerful reed stop, much like the *Bombarde* or *Trombone*; normally a 16′ or 32′ pedal reed; unusually an 8′ or 16′ on the manuals
Orchestral Oboe		Reed	a different stop from *Oboe*; intended to imitate the orchestral instrument; of smaller scale than the non-imitative oboe
Piccolo		Flute	2′ or 1' flute
Quarte		Flute	2′ flute on 17th and 18th century French organs; short for *Quarte de nasard*, sounding an interval of a fourth above the nasard stop
Quint		Flute	a resultant mutation stop, 5 1/3' on the manuals reinforcing the 16' harmonic series or 10 2/3' in the pedal reinforcing the 32' harmonic series..
Quintadena	Quintaton	Flute	Flue stop of 4′, 8′, or 16′ foot pitch with stopped pipes and a flute tone in which the twelfth is prominent
Regal		Reed	a reed stop with fractional-length resonators; produces a buzzy sound with low fundamental frequency.
Rohrflöte	Chimney Flute	Flute	German for "reed flute"; a semi-capped metal pipe with a narrow, open-ended tube (i.e. "chimney") extending from the top which resembles a reed
Salicional		Principal/String hybrid	An 8′ string stop, softer in tone than the *Gamba*
Scharf	Cymbale	Principal	A high-pitched mixture stop
Sesquialtera		Flute	Comprises ranks at 2⅔' and 1⅗'
Sifflöte	Sifflet	Flute	1′ flute
Spitz Flute		Flute/String hybrid	4' or 2' flute with metal pipes tapered to a point at the top; similar tone as *Gemshorn*

Stop name	Alternative name	Type	Notes
Suabe Flute		Flute	Flute stop of 4′ pitch or 8′ pitch with a bright, clear tone.
Super Octave	Doublette Fifteenth	Principal	the manual 2′ *Principal* or *Diapason*; its name merely signifies that it is above (i.e. "super") the 4′ *Octave*.
Tibia Clausa	Tibia	Flute	a large-scale, stopped wood flute pipe, usually with a leathered lip; performs same function in a theatre pipe organ as a principal in a classical organ.
Tierce	Seventeenth Terz Tertia	Flute	mutation stop pitched 1 ⅗′, supporting the 8′ harmonic series
Trichterregal		Reed	an 8-ft reed stop on a pipe organ with funnel-shaped resonators. A trichterregal was used by Schnitger in the Schnitger organ that he built for St. James's Church, Hamburg.
Trombone	Posaune	Reed	Chorus reed simulating the trombone; most commonly in the pedal at 16′ or 32′ pitch; similar tone as *Bombarde* or *Ophicleide*
Trompette en Chamade		Reed	Solo trumpet laid horizontally; can often be heard over full organ.
Trompette Militaire		Reed	powerful solo reed of the trumpet-family, with a brassy, penetrating tone
Trumpet	Trompete Trompette	Reed	a loud chorus reed stop, generally a single rank, with inverted conical resonators.
Tuba		Reed	large-scale, high pressure, smooth solo reed usually 8′ in the manuals and 16′ (sometimes 32′) in the pedal. Tuba is Latin for Trumpet; it is not named after the orchestral tuba.
Twelfth		Principal	principal mutation stop of 2 ⅔′
Twenty-Second	Kleine Principal	Principal	a 1′ principal
Unda Maris		Flute	Latin for "wave of the sea"; a very soft rank tuned slightly sharp or flat. It is drawn with another soft rank to create an undulating effect. Occasionally built as a double-rank stop called *Unda Maris II*, which has both a normal-pitched and detuned rank.
Voix Céleste		String	An 8′ string stop tuned slightly sharp or flat to create an undulating effect when combined with another string stop. Some variants contain both a normal-pitched and detuned rank.
Vox Angelica		String	A soft organ flue stop tuned slightly flat.

Stop name	Alternative name	Type	Notes
Vox Humana	Voix humaine	Reed	fractional length regal supposedly intended to imitate the human voice
Waldflöte		Flute	A soft flute stop usually at 2' pitch but also at 8' or 4' pitch