Inside the Disney Hall organ

Variously described as looking like pickup sticks or French fries, Disney Hall’s unorthodox $8-million pipe organ is the centerpiece of the Los Angeles Philharmonic’s season-opening concert this weekend. While the four-tiered organ looked finished when the hall opened a year ago, the unveiling was scheduled for this season because all 6,134 pipes had to be hand-tuned and -voiced to suit the acoustics of the auditorium.

Organ divisions

The organ chamber is divided into five sections, each controlled by its own simulated ivory keyboard or wood pedalboard.

Flue division

Cold bass pipes accompany orchestral climaxes. (Controlled by top keyboard)

Stopped pipe

Raising, lowering wire adjusts tone of pipe. (Any metal pipe)

Chimney cap

Emphasizes a particular tone. (Any metal pipe)

Positive division

Lowered shutters work like a volume control to muffler or amplify sound.

Pedal division

Deep bass pipes on both sides of chamber. (Pedalboard)

Pedalboard

Feet play three 5-horsepower fans to pump wind from blowers and bellows.

Swell division

Chimney and angle of pipes in facade don’t affect sound or tone.

Great division

Main chorus of principal pipes and reeds on second level accompany the orchestra. (Second keyboard)

Great tone controls

Simultaneous combinations.

Split down the middle

The organ is organized into halves with the pipes alternating between the two sides based on the notes in a musical scale. Every other note emanates from an alternate side. Here’s how it works:

Keyboard

Each row corresponds to an organ chamber level.

What the keyboard controls

Organ divisions

Each chamber level corresponds to keyboard rank.

Bowed division

A fix employed to “lengthen” a pipe cut too short.

Cone tuning

Emphasizes a particular tone of pipe. (Any metal pipe)

Stopped pipe (matte) Slide tuner (Organ tone)

Tail is cut and curled down on large metal pipes.

Scroll tuner

Emphasizes a particular tone of pipe.

Chimney cap (Brass Spanish violonbasse stop)

Lowest in organ.

Longest pipe (Chimney pipe)

Size: 12 feet Weight: 102 pounds

Note played: Tallest in organ.

Fine-tuning the pipes

Adjusting each pipe in the Disney Hall organ for correct pitch has been a yearlong process. Depending on the style of pipe, various tuning methods are employed. Here’s how it’s done:

Douglas fir and Norwegian pine pipes

Weight: 1 ounce

Length: 32 feet

Wooden flute

(Dip) size

Adjustable slider in channel changes length of pipe.

Add pipe

Plunger with handle slides up and down in cavity.

Flue pipe

(Choirs)

Raising lowering wire adjusts length of vibrating tongue.

Chimney pipe

(Choirs)

Raising, lowering wire adjusts length of vibrating tongue.

Cone tuning

Emphasizes a particular tone of pipe.

Chimney cap (Brass Spanish violonbasse stop)

Lowest in organ.

Positive division

Throw to open and close louvers.

Great division

Plunger with handle slides up and down in cavity.

Bridge西班牙 trumpets project from behind the organ into the orchestra.

Like an octopus at the controls

An organist at the console uses his whole body to play the instrument. Here’s how it’s done:

1) Hands play multiple keyboards simultaneously.

2) Thumbs and toes push buttons for preset combinations.

3) Feet operate pedals to open and close louvers.

4) Feet play bass pedals on pedalboard.

5) Fingers pull 128 stops to access organ voices composed of multiple pipes.

Comparing the pipes

The longest pipe is as tall and thick as a telephone pole. The shortest pipe is as short as a small pencil.

Longest pipe (Chimney pipe)

Size: 12 feet Weight: 102 pounds

Note played: Tallest in organ.

Visible pipes represent only 2% of total organ.

40-ton organ mounted on earthquake-proof stainless steel frame.

Organ tuners climb ladders to access various levels.

40-ton organ mounted on earthquake-proof stainless steel frame.

Organ chambers

Visible pipes represent only 2% of total organ.

40-ton organ mounted on earthquake-proof stainless steel frame.

Organ tuners climb ladders to access various levels.

All the angles: The design is a collaboration between architect Frank Gehry and organ builder Manuel Rosales.