

KOSMIC CLOCK DATA SHEET

Technical information for reference purposes

Dan Hudon has provided the following information to assist future restorations of these amazing clocks.

Outside Dimensions: Overall length: 31";

Upper case: Diameter: 15 $\frac{3}{8}$ "; Depth: 6"; Round top has a turned wooden bezel

Lower case: Width: 9"; Depth: 4 $\frac{1}{8}$ "

Reverse painted glass tablet: black, gold, grey; pendulum aperture outlined in gold paint

Inside frame dimensions: 8 $\frac{3}{4}$ " x 6 $\frac{5}{16}$ "

Inside case Side-wall boards: (2) 6 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{8}$ "; inside lower-case depth: 3 $\frac{1}{8}$ ".

The Dial

Dial: Diameter: 12 $\frac{1}{2}$ "

Ring Diameter: 11 $\frac{1}{4}$ "

Painted zinc dial with cut-outs for 12 rectangular blocks

Dial cut-out dimensions for blocks: 1 $\frac{11}{16}$ " x 1 $\frac{3}{8}$ "

Dial inscriptions: Kosmic / E. Howard & Co. / Boston / Pat'd. June 9th 85.

Hands: Minute hand: 5 $\frac{13}{16}$ " long, square center hole

Hour hand: 4 $\frac{1}{16}$ " long

Greenwich hand: 1 $\frac{7}{8}$ " long

Hand Style: Hour & Minute hand: spade

GMT Short hand: pointed

Rectangular blocks: All have four hand-painted faces with matching Arabic and Roman numerals repeated on opposing faces; numerals are embossed

Dimensions: 1 $\frac{5}{8}$ " x 1 $\frac{1}{4}$ "

Numerals: Arabic numerals on upper & lower halves of dial fan out. Blocks at the 3 & 9 O'clock positions are sideways.

Roman numerals also fan out on upper & lower halves of dial but are upside down on lower half in keeping with the traditional presentation of Roman numerals (numerals IV to VIII).

Rear case mounting plate: (for movement & mechanism): 6" x 5 $\frac{1}{2}$ " x $\frac{3}{32}$ " thick

Absent from this case (replaced as part of the repair)

Separator plate: used to separate the weight from the pendulum bob. It is a thin sheet of wood, painted black and nailed to the case; measurements: 7 $\frac{3}{16}$ " wide x 6 $\frac{1}{4}$ "

Pendulum tie-down: a 2 $\frac{3}{4}$ " — 3 inch brass plate used to hold down the pendulum rod during transport. It screws into the separator plate. The replacement tie-down has a screw thread number 5-40.

The Movement:

- Movement Plate Dimensions: 4 $\frac{1}{4}$ " x 3" x $\frac{3}{32}$ " thick
- Plates are secured by four tapered steel pins
- Suspension Bridge mounted on the front plate & held by two screws;
- 4-wheel train between the plates; solid pallet recoil anchor;
- Motion works mounted on the center arbor at the front plate including a minute wheel mounted on a stud. The minute wheel is mounted on the left side of the movement plate; the screw head holding the minute wheel is inside the movement and is extremely close to the third wheel teeth.
- The top left movement pillar secures the gut. There is a hole in the pillar to pass the gut.
- Gut: 0.52" dia.; 43 inches long;
- Train Calculation: (T) = teeth; (p) = pinion
 - Escape wheel 30T (9p); 3rd wheel 78T (9p); center wheel 88T
 - Beats per hour: 5084
- Current pivot diameters (2017) (NB. "f" is the pivot in the front plate and "b" is the pivot in the back plate)
 - Great Wheel: f: 5.0mm; b: 3.95mm;
 - Centre Wheel: f: 4.58mm; b: 1.60mm;

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- Current pivot diameters (2017) *Continued*
 - Third Wheel: f: 1.06mm; b: 1.01mm;
 - Escape wheel: f: 1.09mm; b: 1.12mm;
 - Pallets: f: 1.10mm; b: 1.15mm;

Suspension Unit:

- Suspension bracket is slotted to hold the suspension block in place;
- Pendulum: wood stick, painted black; total length $22 \frac{3}{4}$ " to end of threaded rod.
- Bob: $2 \frac{1}{2}$ " diameter with damascened surface
- Suspension spring: .0035" thick; 1" between pins; " wide.

Weight: 12 lbs. Dimensions: $6 \frac{3}{8}$ " wide x $4 \frac{1}{2}$ " high x $1 \frac{5}{16}$ " thick; cast iron;

Pulley: $1 \frac{1}{4}$ " diameter;

Winding crank: No. 5 key

Patent Mechanism

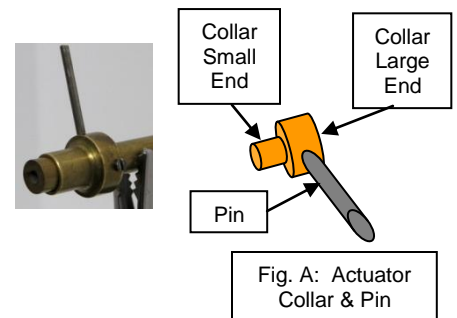
- A sub-plate (*Figure B*) with 11-inch diameter circular frame extending around the bezel behind the dial.
- The sub-plate & frame are made of brass.
- A brass disk in the center with bearing holes that radiate around the center.
- Tension springs are riveted to sub-plate
- Frame and parts: weight 2 lbs.

Actuator Collar (*Figure A*)

- Length of collar: 16.23mm (0.6395"); length of large end: 6.75mm (0.2666") length of small end: 9.48mm (0.3735")
- Diameter of large end: 1450mm (0.5710"); diameter of small end: 9.45mm (0.3720")
- Bore: 7.82mm (0.3080")

Actuating Pin:

- length: $1 \frac{13}{16}$ " 0.8125" (20.64mm)
- diameter: .0805" (2.05mm)



Spindles:

- The spindle rods are made of steel.
- Threaded bearings at the outer end of the circular frame receive the spindle rods and allow for measured end play adjustment. The numeral blocks are at this end.
- The spindle rods at the inner end are captured by bearing holes in a brass disc that is screwed to the sub-plate.
- The inner bearing holes are of brass while the outer bearing holes are steel. (see Figure B)

