

Hines Digital Sundial, p. 2/2 (Shadow Mask)

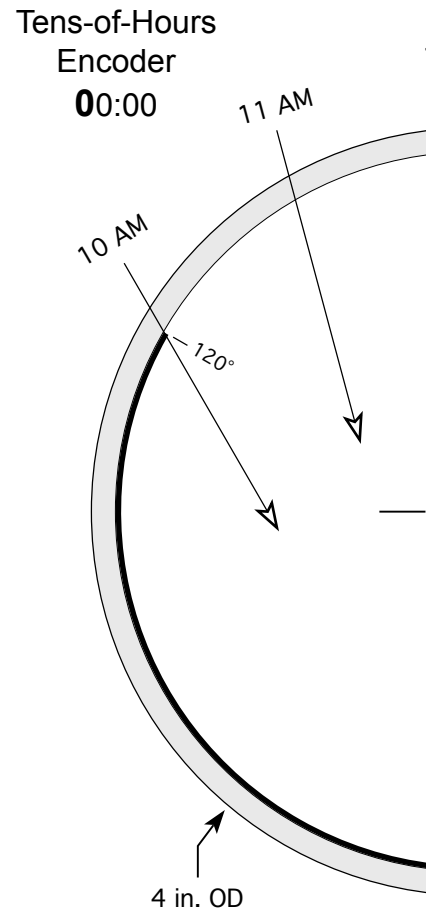
<https://www.hineslab.com/optical-projects/digital-sundial/>

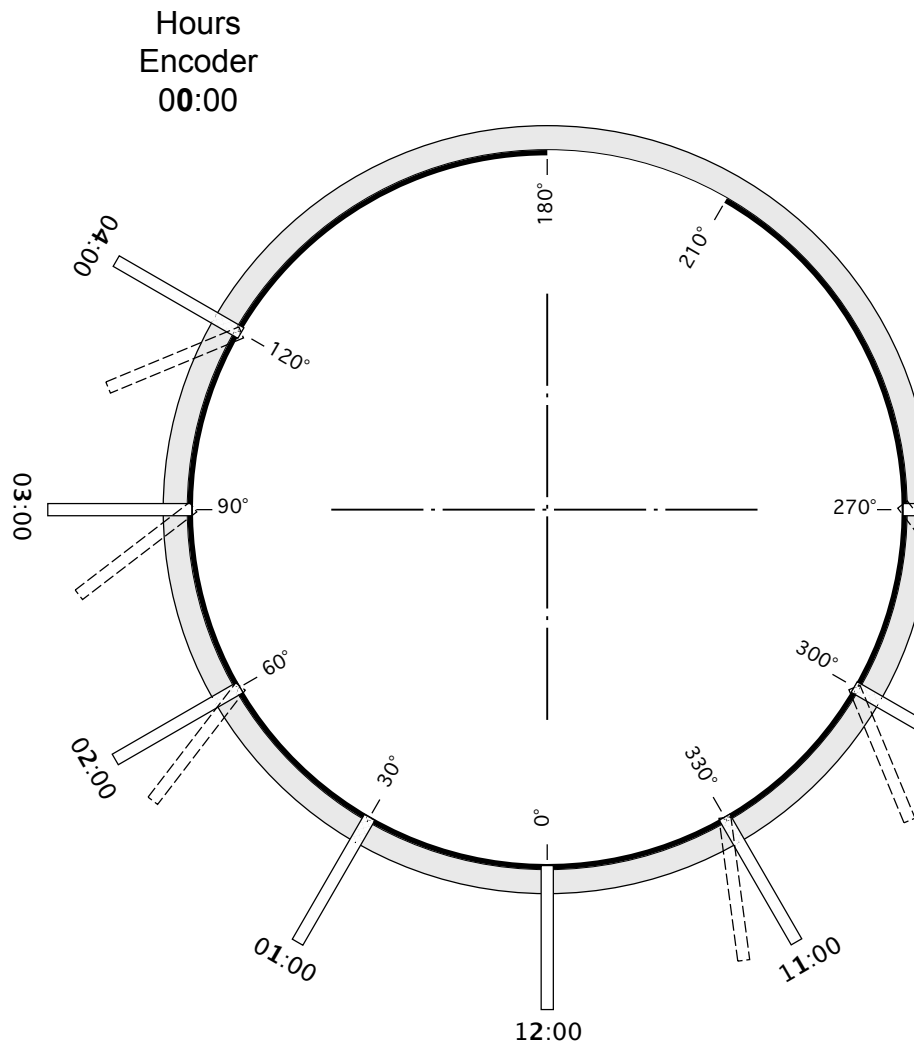
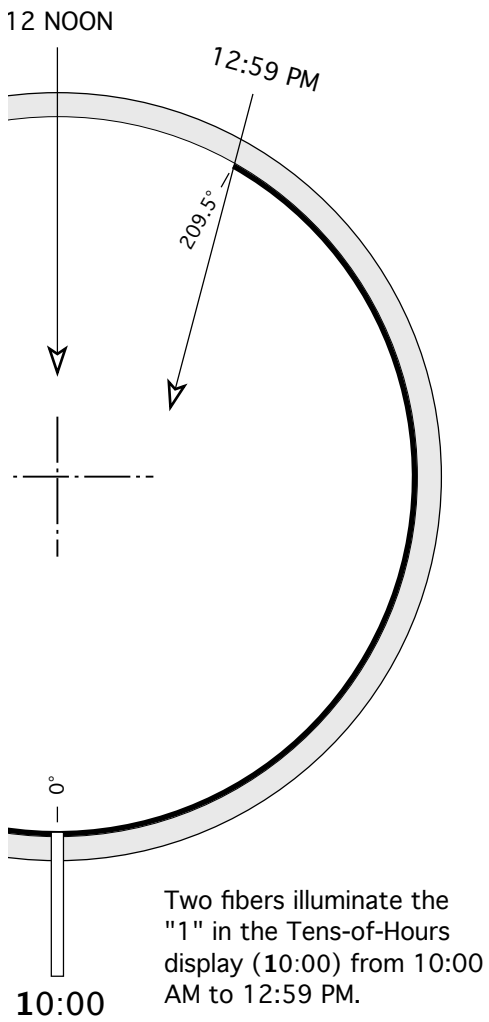
HinesLab grants the right to construct one Digital Sundial.

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Dec. 21, 1984
Nov. 1, 1988, U.S. Pat. 4,782,472
August 27, 1994
Sept. 17, 2007
May 6, 2025

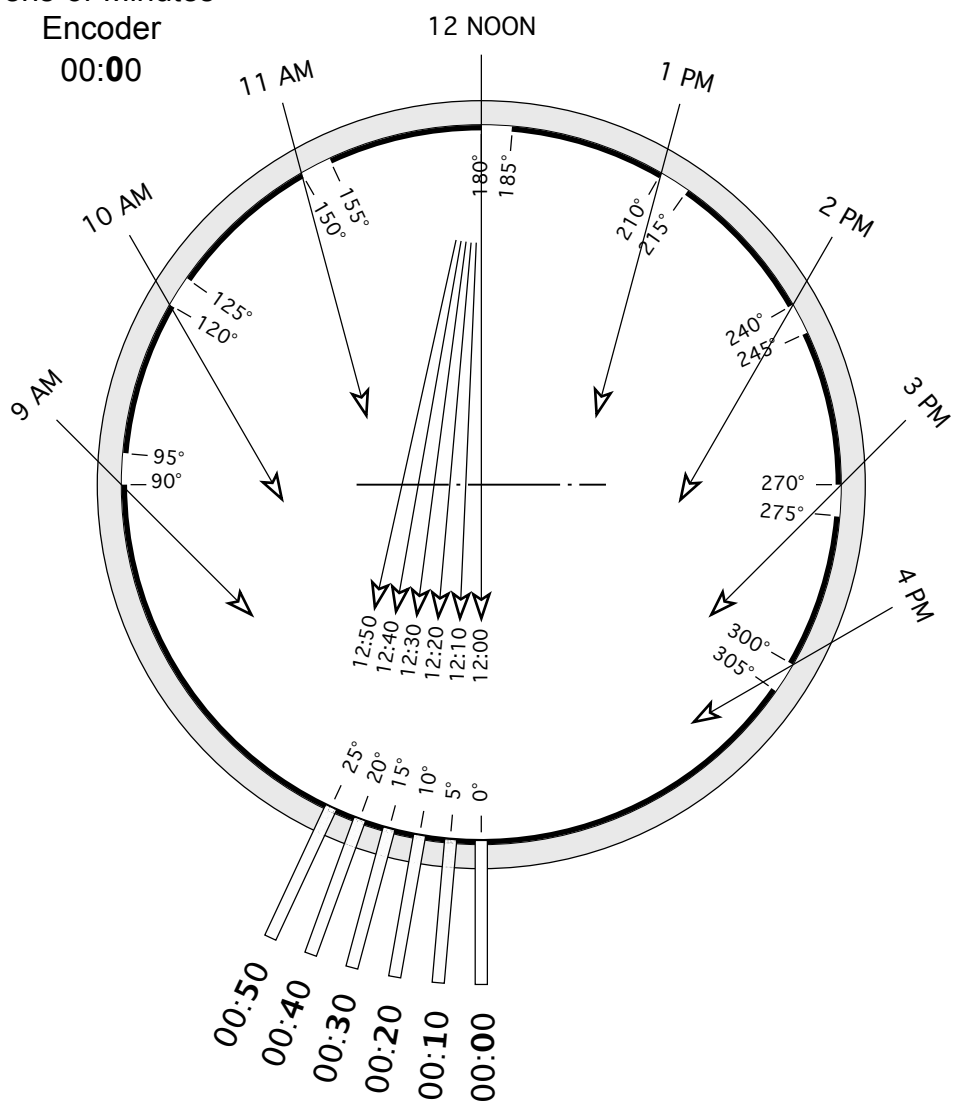
CROSS
SECTIONS THROUGH
ENCODING CYLINDER





Hint: Holes can be drilled perpendicular to the cylinder (solid lines), which will illuminate the bright-hour numerals in the middle of the day; however, the brightness of the display for the early morning and late afternoon hours will be improved if the optical fibers are drilled or filed and epoxied in line with the open mask (dashed lines). Rough file the end of the fibers to increase the acceptance angle.

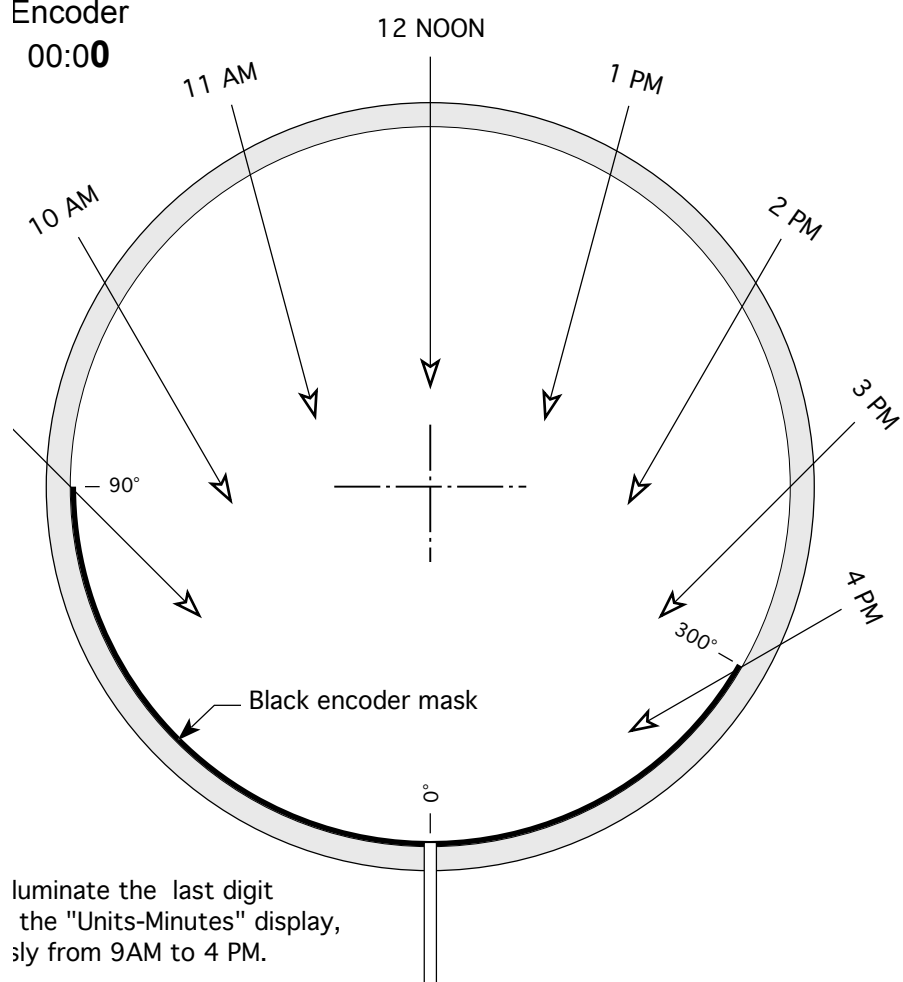
Tens-of-Minutes
Encoder
00:00



Six fibers I
(00:00) in
continuous

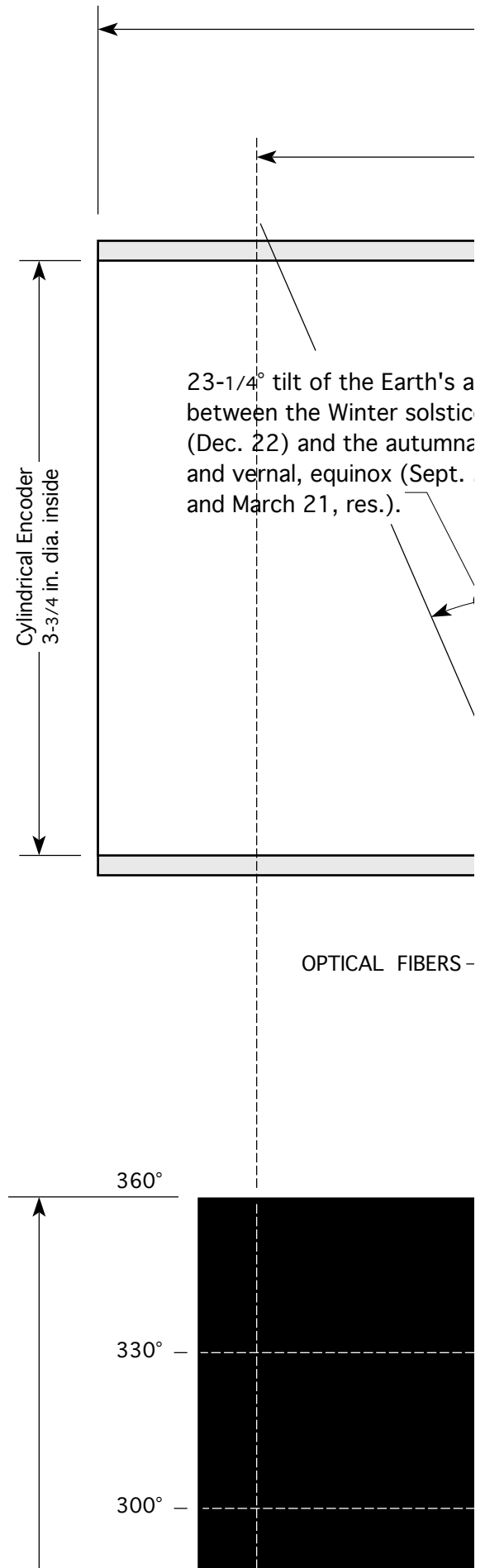
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f the holes
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ceptance

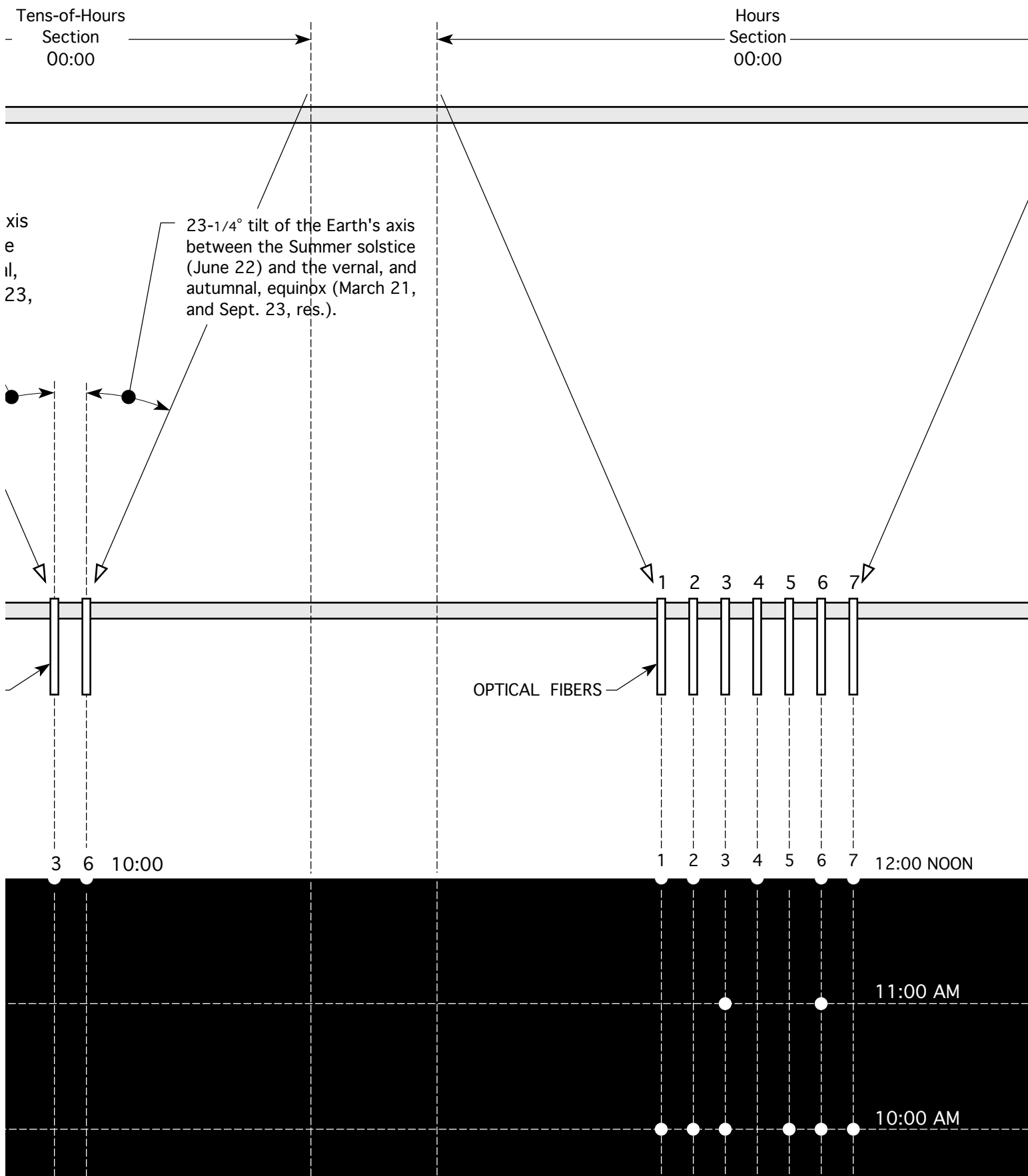
Minutes
Encoder
00:00



LONGITUDINAL
SECTION THROUGH
ENCODING CYLINDER

punch
plate in

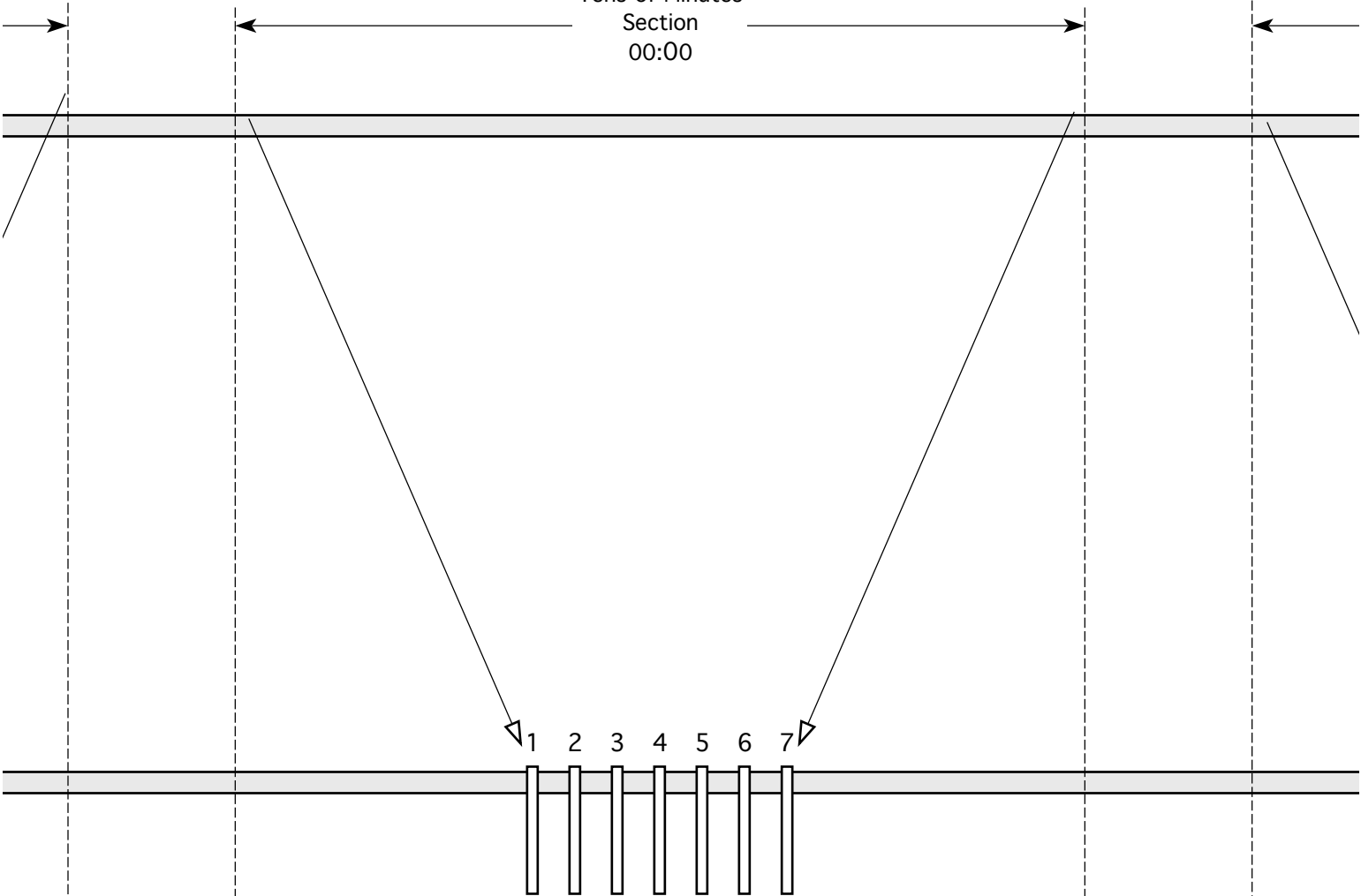




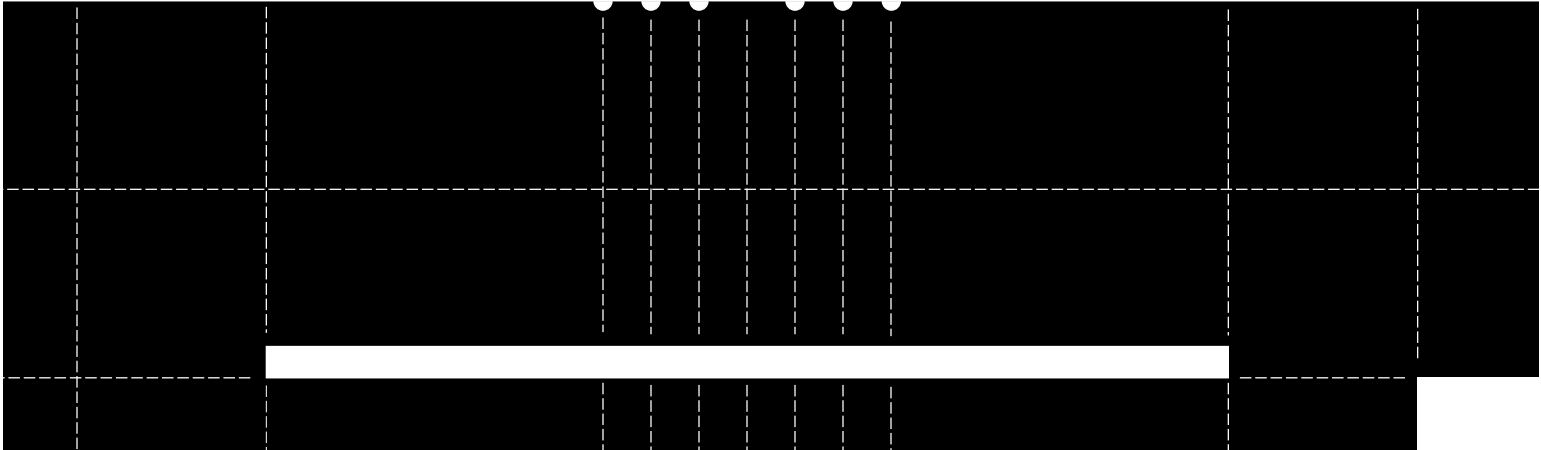


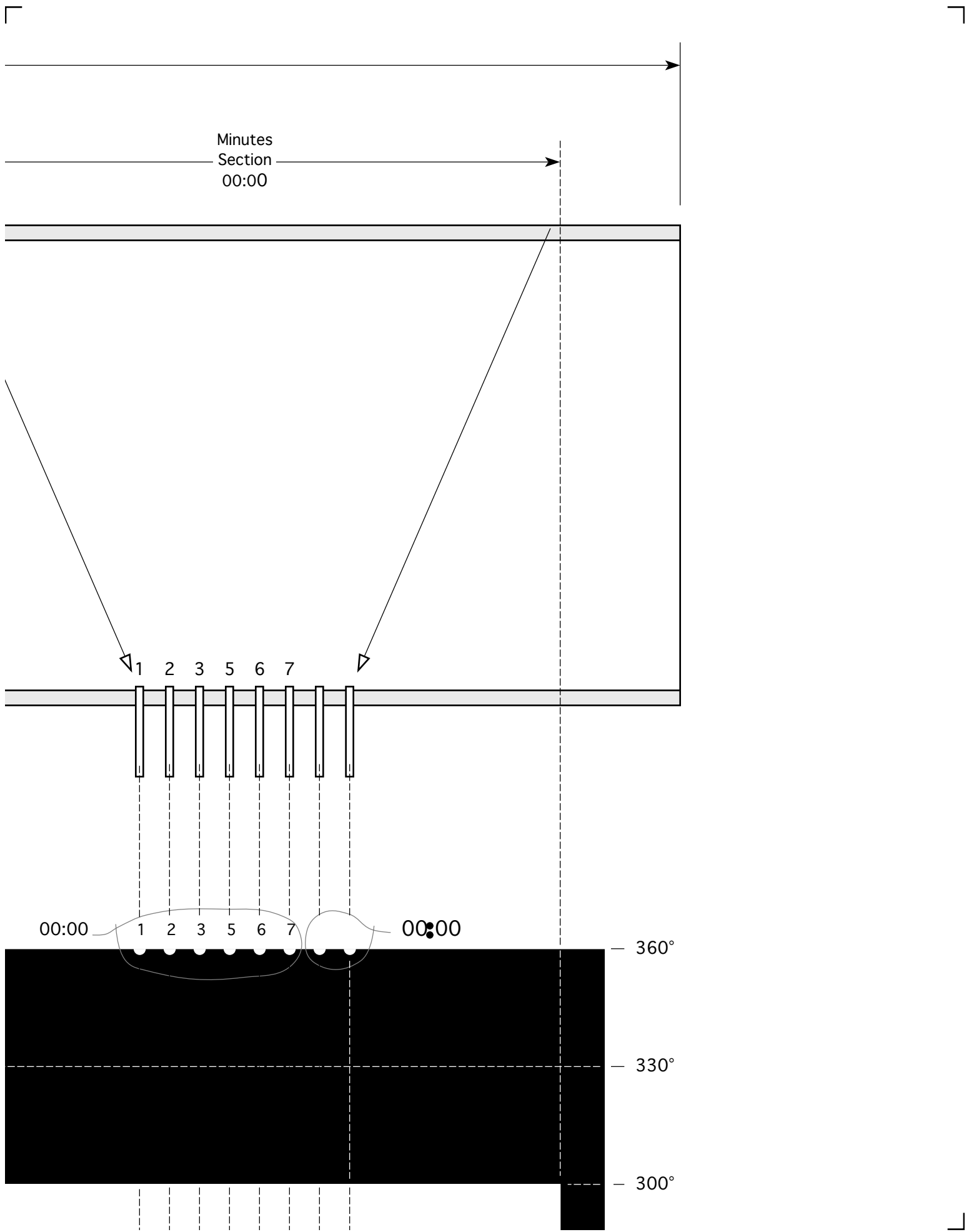
24.00 in.

Tens-of-Minutes
Section
00:00



1 2 3 4 5 6 7 00:00



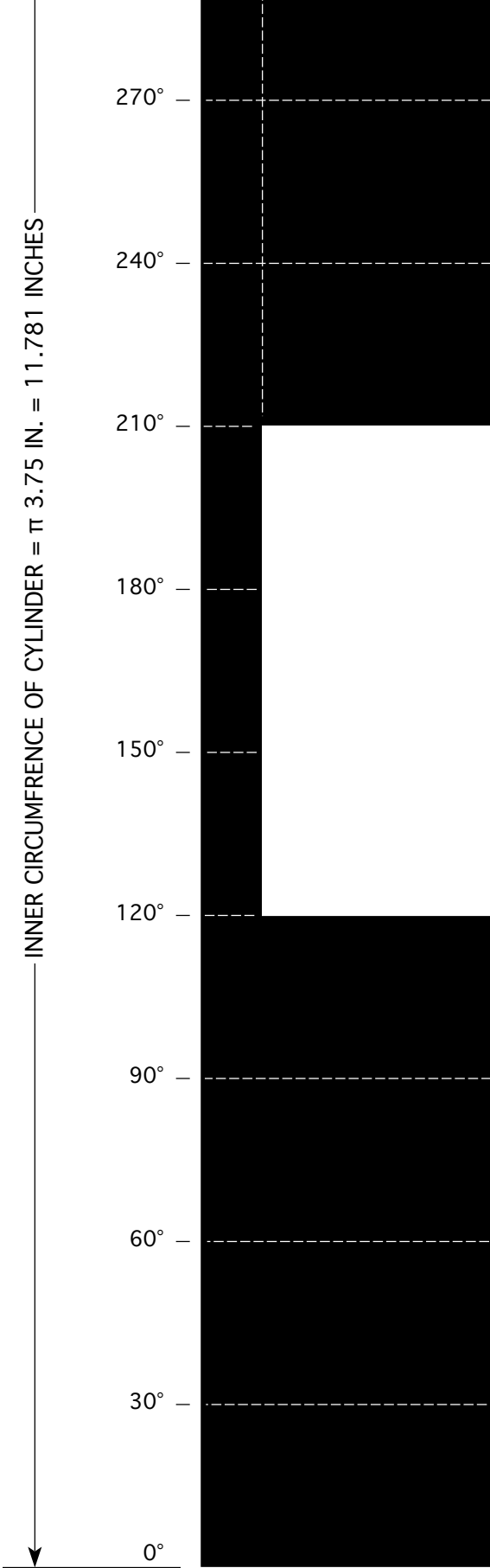


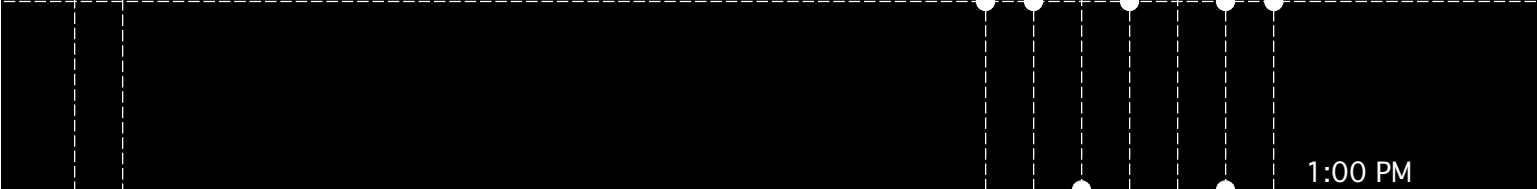
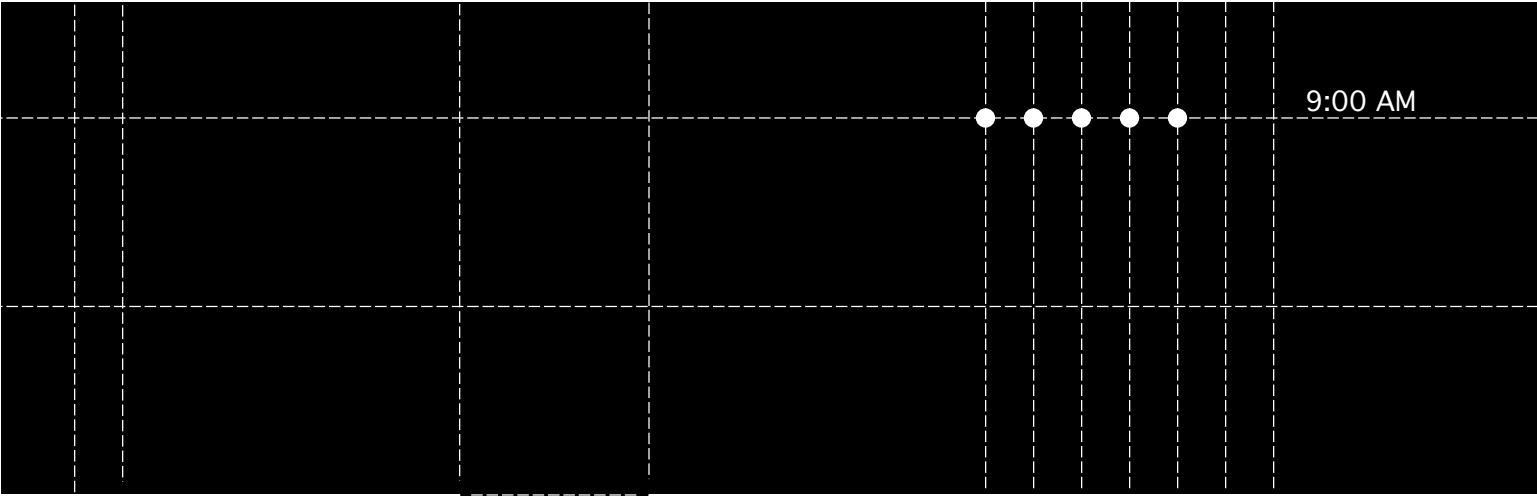


ENCODER MASK AND HOLE TEMPLATE

Use the template to cut out the encoder mask from thin black cardboard or construction paper. Also, small holes in the black cardboard to mark the positions of the optical fibers.

Then, insert the template, picture side out, into the cylinder as a hole-drilling pattern. Center the template the cylinder, leaving 5/8" at both ends. Drill the holes for the fibers with 1/16" dia. drill.

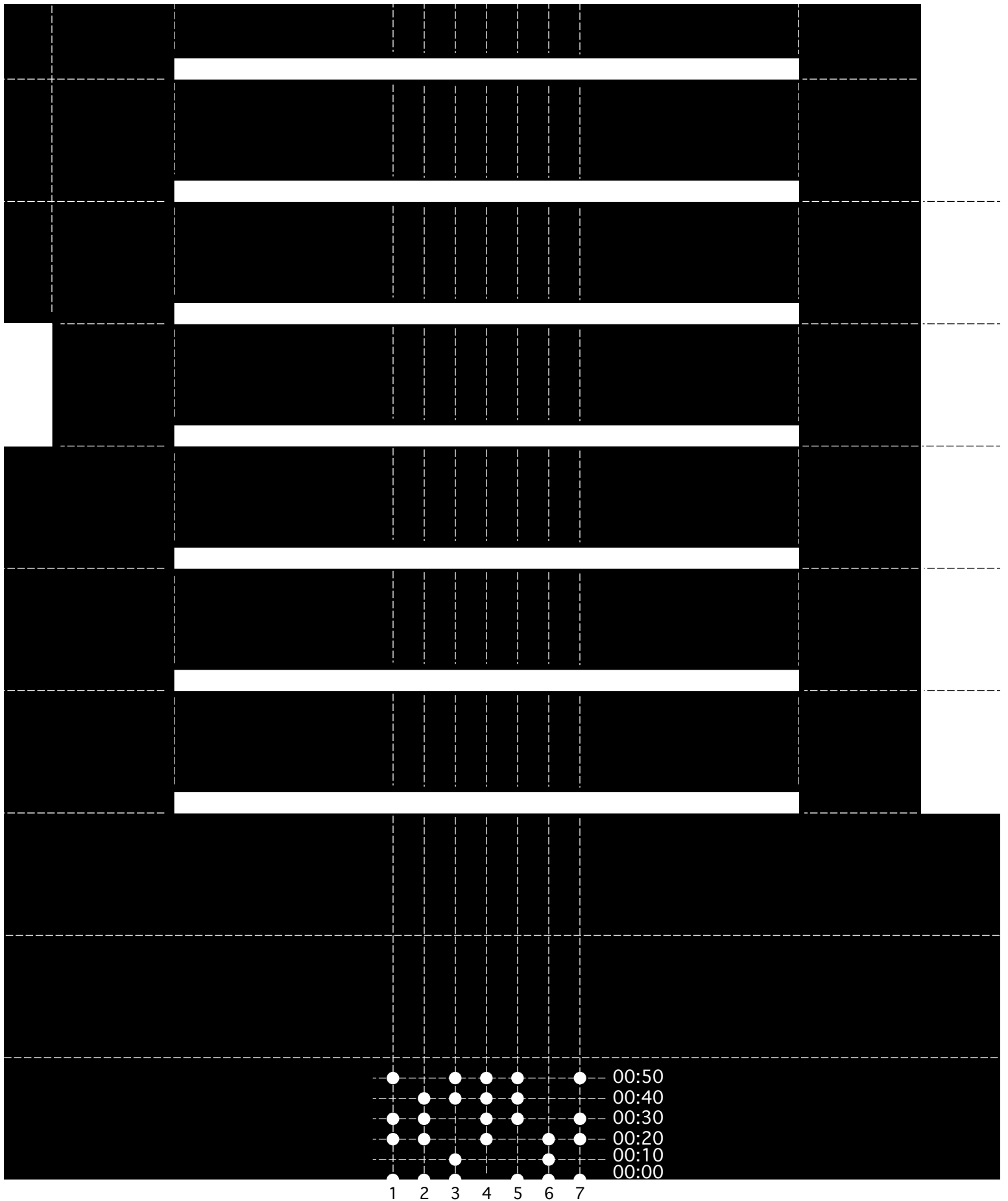




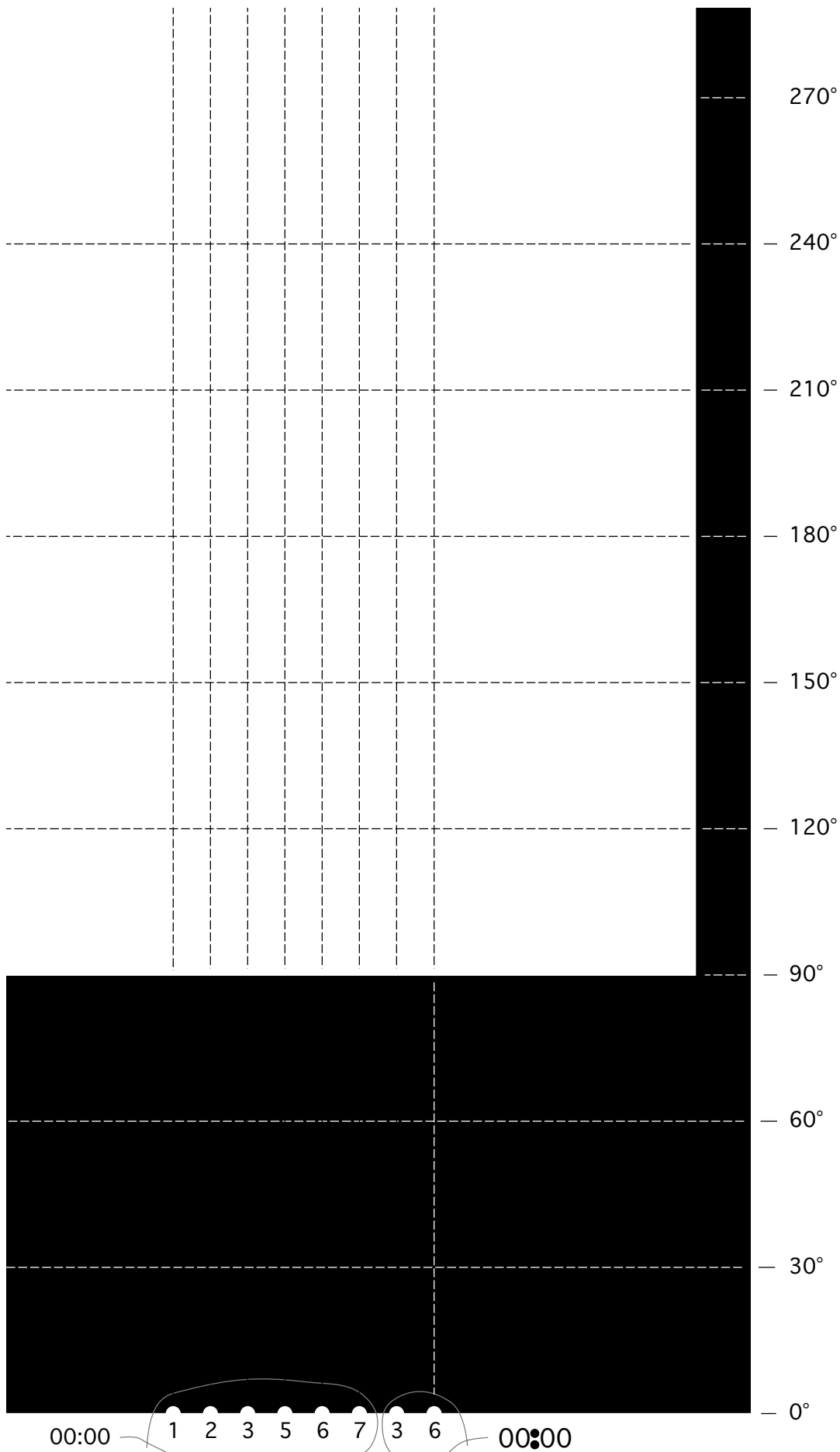
3 6 1 2 3 4 5 6 7

H O U R S S E C T I O N

H O U R S S E C T I O N



T E N S - O F - M I N U T E S S E C T I O N



M I N U T E S S E C T I O N

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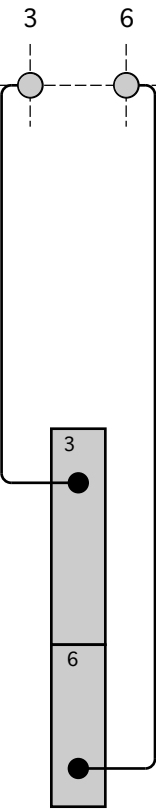
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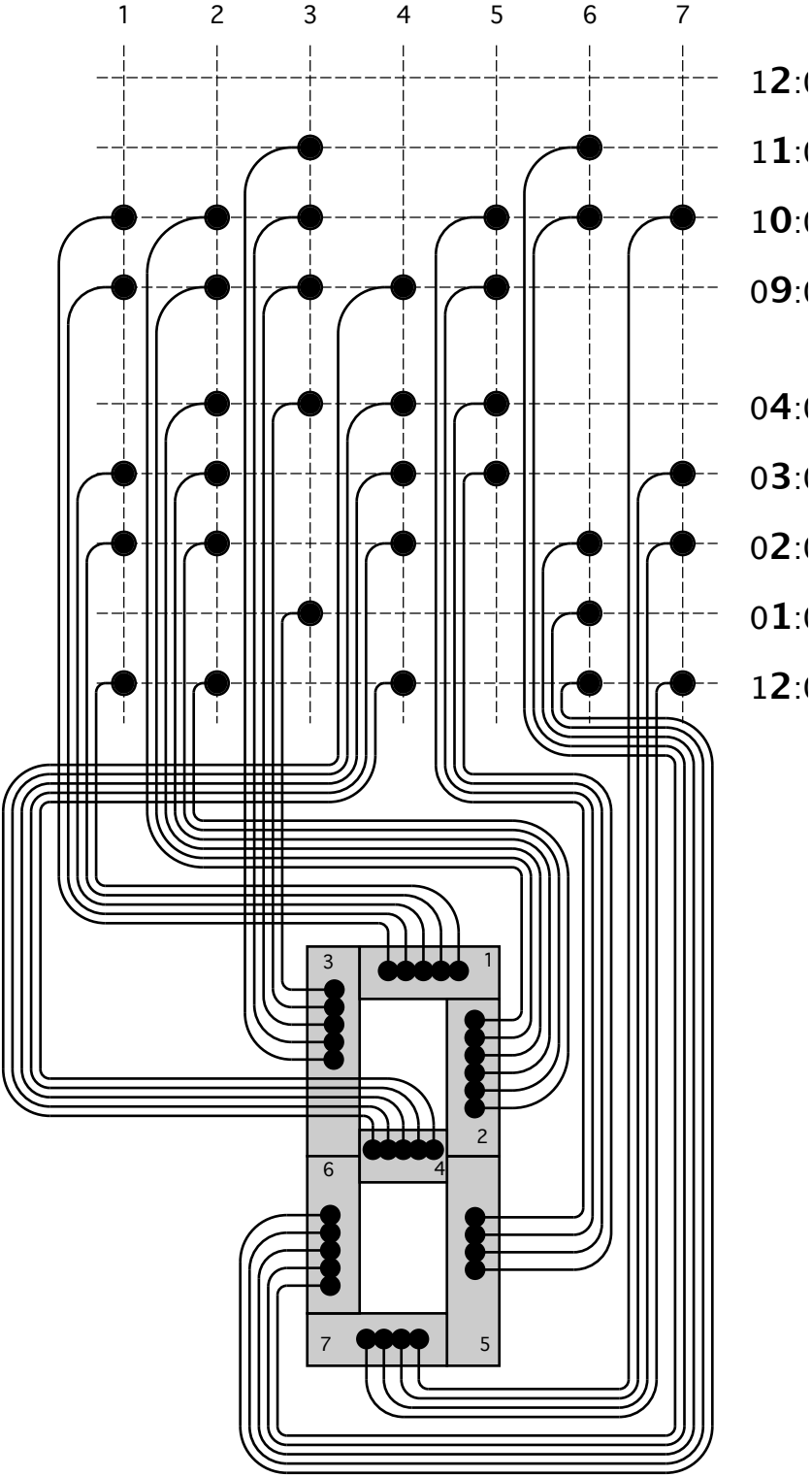
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FIBER-ROUTING DIAGRAM

SEGMENT No.



SEGMENT No.





00 NOON

00 AM

00 AM

00 AM

00 PM

00 PM

00 PM

00 PM

00 NOON

T
I
M
E

SEGMENT No.

1

2

3

4

5

6

7

00:50

00:40

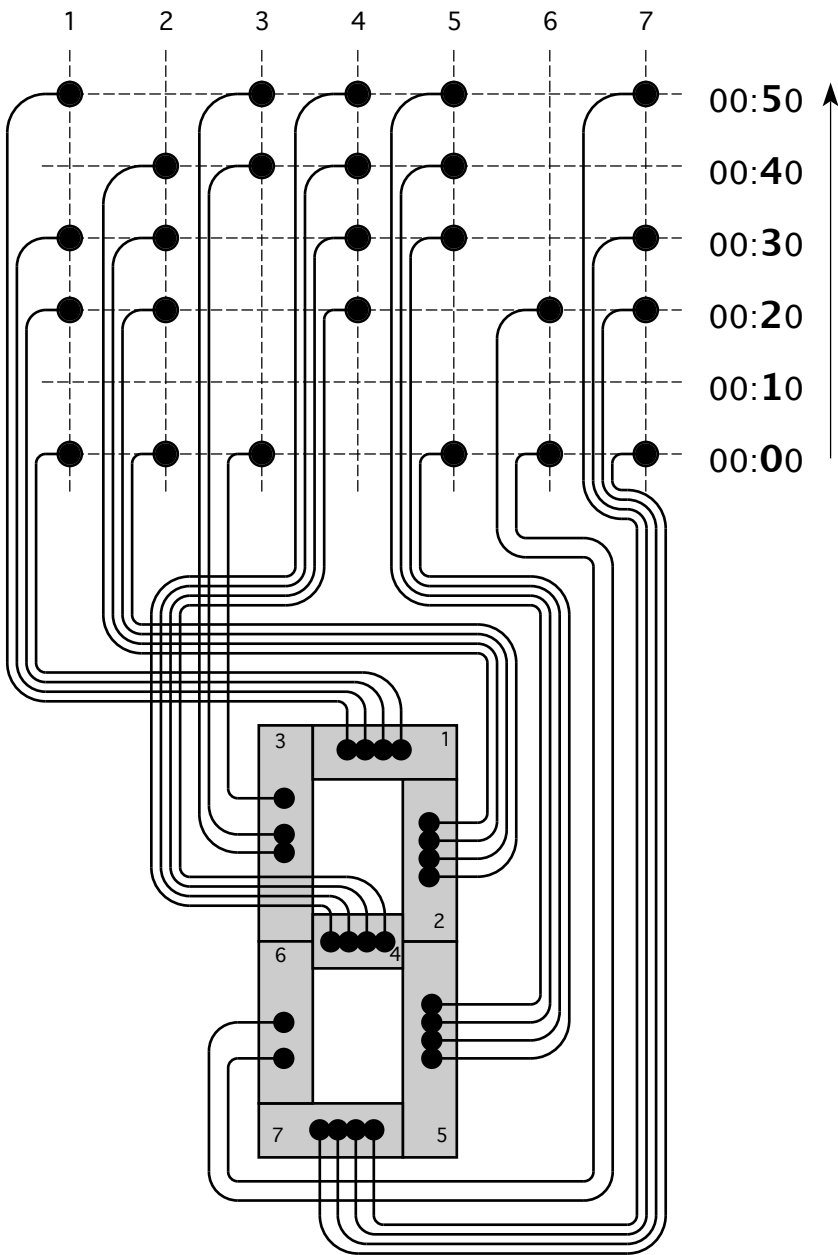
00:30

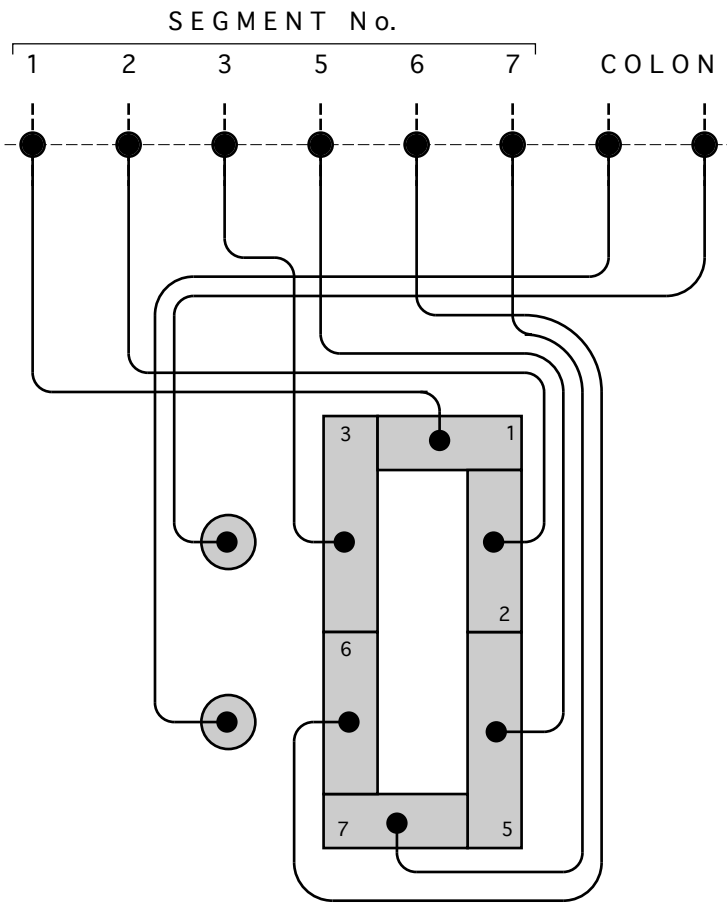
00:20

00:10

00:00

T
I
M
E





Hole pattern is drawn as viewed from outside of cylinder.
 Seven-segment display is drawn as viewed from the front.
 Typical for all sections.