

# CORRUGATED BOX MANUFACTURERS' PRACTICAL STANDARDS

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**FCBM R-1:00**

(Revised Edition of FCBM 1:87)

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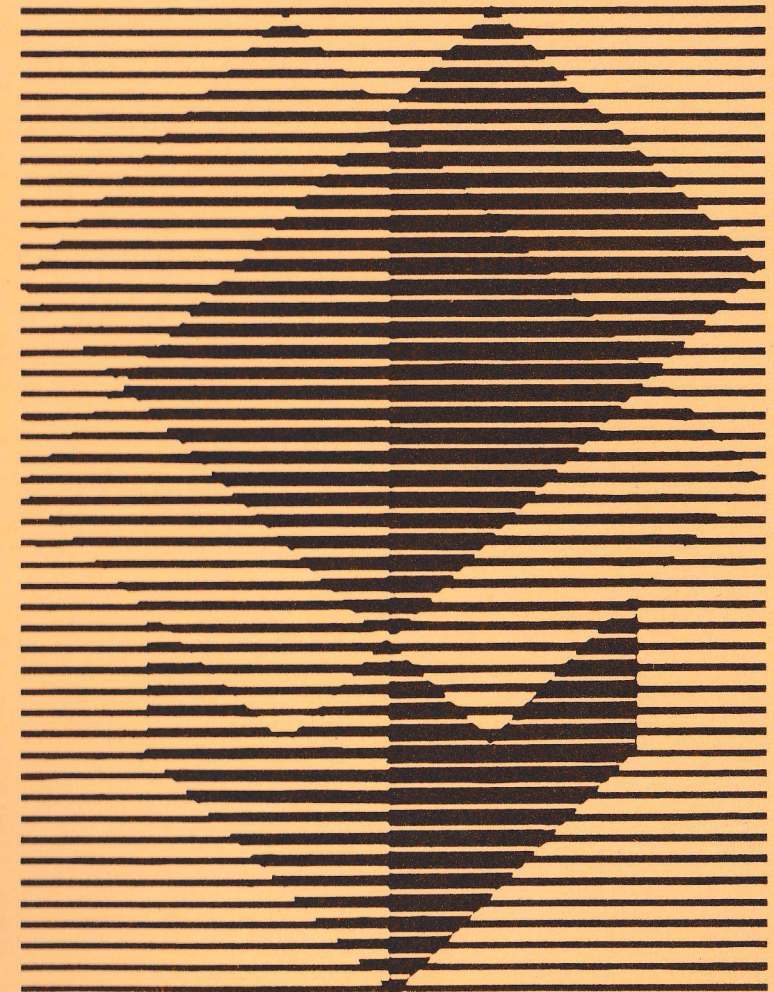
Published in the interest of manufacturers and users of corrugated boxes.  
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**FEDERATION OF CORRUGATED BOX  
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# FLUTE HEIGHT

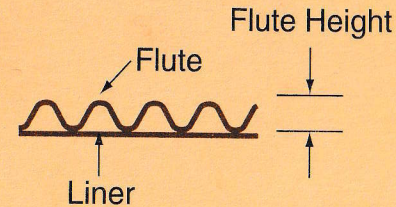
Standardisation of Test Methods and Measurement of Properties are necessary for systematic growth and development of our industry. With this view in mind the R&D Committee of FCBM has been making continuous efforts in bringing out Practical Standard booklets for the benefit of our industry. These booklets have been well received by the corrugated box manufacturers and others connected with our industry.

In 1987 R&D Committee brought out the 1st booklet on Standard of Flute Height, Box Sizes, Slotting, Manufacturer's Joint, etc., for the benefit of our industry. Since then these Standards have undergone some changes and it is felt necessary to bring out the revised booklet with the changes.

I congratulate our R&D committee for its efforts to bring out this Revised Practical Standard booklet. I do hope that the R&D Committee will continue to bring out such useful publications.

**Baldev Mehta**  
*President*  
 Federation of Corrugated Box  
 Manufacturers of India

23.9.2000



Normally Flute Height is measured from the bottom of the liner to the tip (highest point on the flute curve) of the flute.

Flutes are the geometric configurations formed by undulations (continuous rolling waves) of the corrugated medium in corrugated board.

Flutes make the material far stronger than the paper or paperboard from which it is made.

The exact dimensions of the flute will vary slightly depending on corrugating roll contour, material characteristics, converting equipment and technique.

The details of seven types of flutes are listed below:

Flute Type	Flute Height	Flutes per 30 cms	Flutes per mtr	Nominal Take-up Factor
K	5.5-6.0 mm	28-32	93-107	1.60
A	4.2-4.6 mm	32-38	107-127	1.50
C	3.4-3.8 mm	38-44	127-147	1.45
B	2.4-2.8 mm	50-56	167-187	1.40
E	1.2-1.6 mm	90-96	300-320	1.30
F	0.7-1.1 mm	110-126	365-420	1.25
N	0.4-0.6 mm	150-167	500-560	1.22



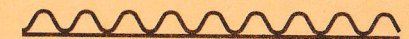
K Flute



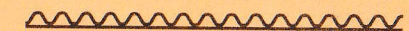
A Flute



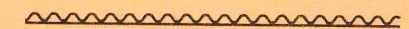
C Flute



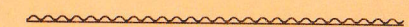
B Flute



E Flute



F Flute



N Flute

Scale: 1:1

## BOX SIZE

**Length:** Inside dimension between two short (width) panels of the box, nearer to the long panel.

**Width:** Inside dimension between two long (length) panels of the box, nearer to the short panel.

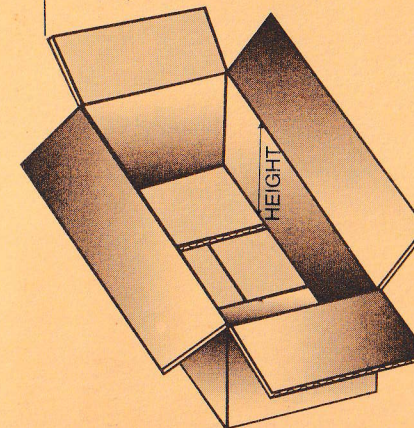
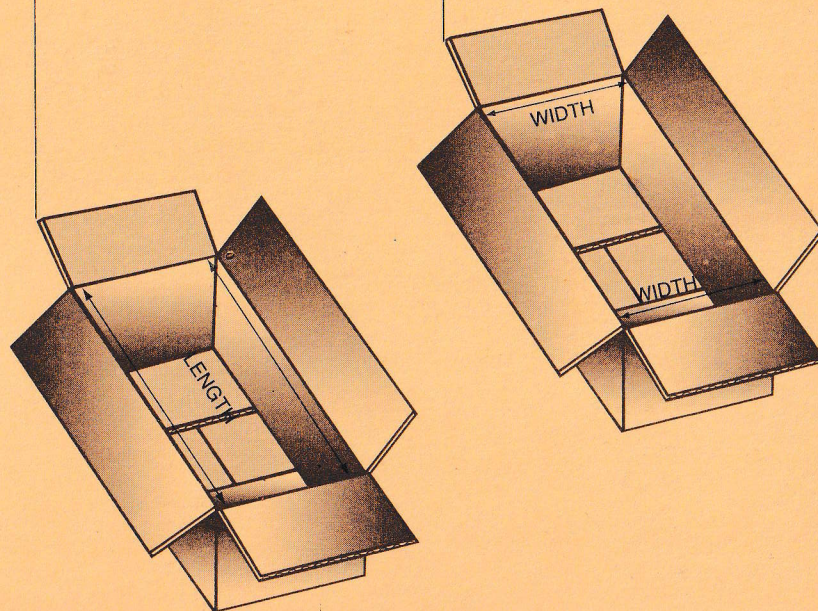
**Height:** Always measured perpendicular to length and width. Distance between top of inside flap and centre of top score line.

Correct measurement of a box is essential for perfect packaging. A tight fit is important for safe transportation.

In order to design a box of proper size, it is always necessary that the box manufacturer is provided with the article required to be packed. If it is not possible to submit the article, a complete description of the article including drawings when available, the quantity to be packed, and the weight to be shipped in the box should be supplied to ensure that the box which is designed will fully protect the contents.

Box dimensions are normally **inside dimensions** and are always stated in sequence of length, width and height.

Normal tolerance is  $\pm 3$  mm pads, liners, partition pieces, sheets, etc., with only two dimensions are normally specified with the first dimension parallel to corrugations.

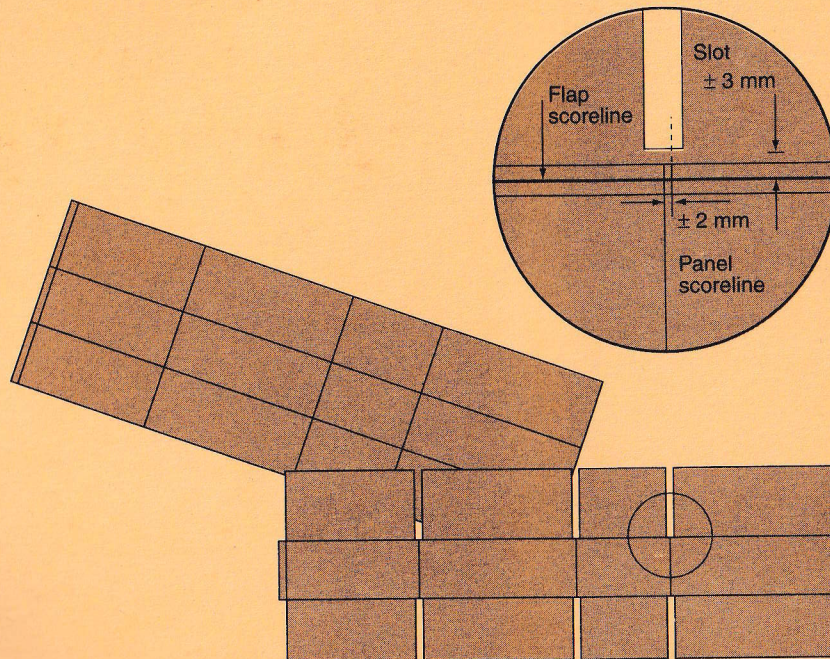


## SLOTTING

Slot is a cut made in corrugated sheet, usually to form flaps and thus permit folding.

Position of slot —

- End of slot  $\pm 3$  mm from centre of flap score.
- Centre of slot  $\pm 2$  mm from centre of panel score.



## MANUFACTURER'S JOINT

The Manufacturer's Joint is that part of the box where the ends of the scored and slotted blank are joined together by stitching or gluing. Since this is accomplished in the box manufacturer's plant, it is known as Manufacturer's Joint.

**Width of Joint:** Not less than 30 mm.

**Pin Spacing:** 5 mm to 15 mm between near edge of flap score and centre of pins.  
50 mm to 65 mm between centre of any two consecutive pins.

**Alignment Tolerance:** Variations in the width of gap at the manufacturer's joint shall not exceed 5 mm when measured at two flap scorelines.

