ANSWERS - VOLUME2: STRESSES, STRAINS, DISPLACEMENTS

Chapter 4, Members Subject to Bending and Extension

problem 4.014, page 237

Remarks: See § 4.4, pages 168 till 170

Answer:

Stress-diagram b.

Explanation:

Calculate the location of the normal centre NC.

The distance of the NC from the top of the cross –section is:

$$\frac{(10\times30\times5 \text{ mm}^3) + (30\times10\times25 \text{ mm}^3)}{(10\times30 \text{ mm}^2) + (30\times10 \text{ mm}^2)} = 15 \text{ mm}$$

Since N=0, the normal stress at the normal centre NC must be zero.

Therefore stress-diagram b is correct.

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