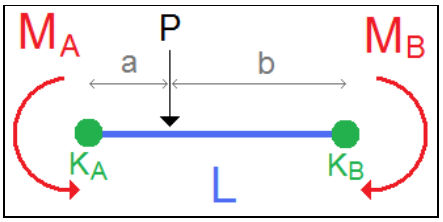
SEMI-RIGID NODES	TEST 003	rev.1 16/09/13	version 10.70
VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Tested by: Marco Croci - Checked by: Paolo Rugarli		



MODEL		
MODEL NAME	OUTPUT FILE	ANALYSIS TYPE
SR_003.WSR	SR_003.CS1.EEN	linear static

DATA							
L [mm]	P [N]	a [mm]	b [mm]	E [N/mm^2]	I [mm^4]	K_A [Nmm/rad]	K_B [Nmm/rad]
1000	10000	700	300	210000	1.592E+05	6.686E+07	1.504E+08

THEORETICAL COMPUTATION

$$r_A = \frac{1}{1+\frac{3EI}{K_A L}} = 0.4 \qquad r_B = \frac{1}{1+\frac{3EI}{K_B L}} = 0.6$$

$$M_A = \frac{r_A P L}{4 - r_A r_B}\frac{a}{L}\frac{b}{L}\left[2\left(2-\frac{a}{L}\right) - r_B\left(1+\frac{a}{L}\right)\right] \qquad M_B = \frac{r_B P L}{4 - r_A r_B}\frac{a}{L}\frac{b}{L}\left[2\left(1+\frac{a}{L}\right) - r_A\left(2-\frac{a}{L}\right)\right]$$

CROSS-CHECK

End Moment	Sargon [Nmm]	Theory [Nmm]	% difference (S-T)/T*100
M_A	3.530E+05	3.530E+05	0.0
M_B	9.651E+05	9.651E+05	0.0

NOTES
- L force is parallel to flanges (weak axis bending).
- Formulae for M_A and M_B computation given in *Practical Analysis of Semi-Rigid Frame Design*, Editor: W F Chen, World Scientific Publishing.
- r_i=0: hinge; r_i=1: fixed