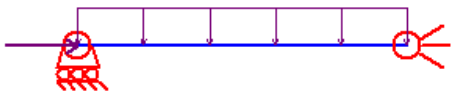


TEST SCHEDULE B 34	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
BUCKLING	COMPRESSION + BENDING 3	EC3.BUC.NN2.002



Program: WEURO © version October 2007 for Sargon and Cescoplus
Keywords: EN 1993, Eurocode 3, example, validation, benchmark, reliability, quality control, error measure. **Parole chiave:** Eurocodice 3, esempio, validazione, test, affidabilità, controllo di qualità, misura dell'errore
Tv=exploitation target value, **Cv**=exploitation computed value
Authors: Ing. Marco Croci, Ing. Paolo Rugarli

BEAM						
Length [mm]	Buckling factors		Left end		Right end	
1000	$\beta_2=1 \quad \beta_3=1$		SIMPLY SUPPORTED		HINGE	
LOAD						
Type		Value		Point of application		
COMPRESSION		N=10.000N		LEFT END		
Type		Value				
DISTRIBUTED LOAD q_2		q=15N/mm				
MATERIAL		S275				
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
275	430	2,10E+05	0,3	1,1	1,1	1,25
CROSS SECTION		O 54x3,2	CLASS: N ⁻ →1 M ₃ →1 N ⁻ + M ₃ →1 (reclasses method****)			
A [mm ²]	J ₂ [mm ⁴]	J ₃ [mm ⁴]	J _t [mm ⁴]	W ₂ [mm ³]	W ₃ [mm ³]	
510,7	1,654e+05	1,654e+05	3,308e+05	6,126e+03	6,126e+03	
W _{pl2} [mm ³]	W _{pl3} [mm ³]	i ₂ [mm]	i ₃ [mm]	i _t [mm]		
8,269E+03	8,269E+03	18	18	0		
OTHER DATA*						
	k_{yy}	k_{yz}	k_{zy}	k_{zz}		
Method 1	/	0,604	/	1,006		
Method 2	/	0.592	/	0.987		

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$\begin{aligned}
 T_{v1,j} &= N / (\chi_2 A f_y / \gamma_{M1}) + k_{yz} M_3 / (W_{pl3} f_y / \gamma_{M1}) \\
 T_{v2,j} &= N / (\chi_3 A f_y / \gamma_{M1}) + k_{zz} M_3 / (W_{pl3} f_y / \gamma_{M1})
 \end{aligned}
 \left. \vphantom{\begin{aligned} T_{v1,j} \\ T_{v2,j} \end{aligned}} \right\} T_{vmethod j} = \max(T_{v1,j}, T_{v2,j})$$

$T_{vmethod1}^{**}$	$T_{vmethod2}^{***}$
1,002E+00	9,852E-01

CHECKER'S RESULTS (COMPUTED VALUES) AND COMPARISON WITH THE TARGET

$C_{vmethod1}$	$(C_{v1} - T_{v1}) / T_{v1}$	$C_{vmethod2}$	$(C_{v2} - T_{v2}) / T_{v2}$
1,003E+00	7,109E-04	9,852E-01	-1,282E-05

(*) formulae given in EN 1993-1-1 6.3.3, annex A and annex B

(**) more accurated

(***) easier to use

(****) P. Rugarli, *Strutture in acciaio, La classificazione delle sezioni, Commento all'Eurocodice 3*, EPC Libri, 2007