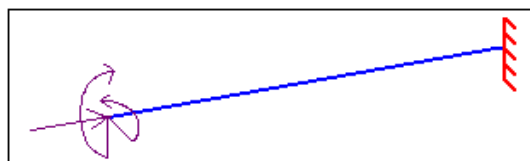


TEST SCHEDULE R 43	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
RESISTANCE	COMPRESSION + BENDING 2 + BENDING 3	EC3.RES.NNM2M3.004



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]	Left end	Right end
1000	FREE	FIXED

LOADS			
Type	Value	Point of application	
BENDING MOMENT M_2	$M=2.000.000\text{Nmm}$	LEFT END	
Type	Value	Point of application	
BENDING MOMENT M_3	$M=1.500.000\text{Nmm}$	LEFT END	
Type	Value	Point of application	
COMPRESSION	$N=120.000\text{N}$	LEFT END	

MATERIAL	A572/60					
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
414	517	2,000e+05	0,3	1,1	1,1	1,25

CROSS SECTION	O 54x3,2	CLASS: N →1 M₂ →1 M₃ →1 N + M₂ + M₃ →1 (reclasses metod*)			
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			
$N_{pl}=Af_y/\gamma_{M0}$ [N]	$M_{pl2,3}=W_{pl2}f_y/\gamma_{M0}$ [Nmm]	$M_s = \sqrt{M_2^2 + M_3^2}$ **	$\eta = \sqrt{1 - (T/V_{pl})^2}$ **
192.209	3.112.140	2.500.000	1

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$T_v = \frac{M_s}{M_{pl} \eta \cos\left(\frac{N}{\eta N_{pl}} \frac{\pi}{2}\right)} \quad **$$

Tv
1,444E+00

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

Cv	(Cv-Tv)/Tv
1,444E+00	2,718E-04

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

(**) formulae given in J. Rondal, K.-G. Wurker, D.Dutta, J. Wardenier, N. Yeomans, *Structural stability of hollow sections*, Verlag TUV Rheinland, 1992