

TEST SCHEDULE R 32	EN 1993-1-1: 2005 (EUROCODE 3)	Sargon ©, Cescoplus ©
RESISTANCE	SHEAR 3 + BENDING 2	EC3.RES.T3M2.003



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			
1 (*)	FREE		FIXED			
LOADS						
Type		Value		Point of application		
BENDING MOMENT M_2		M=1.500.000Nmm		LEFT END		
Type		Value		Point of application		
SHEAR FORCE T_3		T=35.000N		LEFT END		
MATERIAL						
A572/42						
f_y [N/mm ²]	f_u [N/mm ²]	E [N/mm ²]	ν	γ_{M0}	γ_{M1}	γ_{M2}
290	414	2,000e+05	0,3	1,1	1,1	1,25
CROSS SECTION						
O 54x3,2		CLASS: $M_2 \rightarrow 1$				
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						
$A_V=2A/\pi$ [mm ²]	$V_{pl3}=A_V \cdot f_y / (\sqrt{3} \gamma_{M0})$ [N]	$T_3 > 0,5V_{pl}$?	$M_{pl}=W_{pl2} \cdot f_y / \gamma_{M0}$ [Nmm]	$\eta = \sqrt{1 - (T/V_{pl})^2}$ **		
325,1	49.487	YES	2.180.001	0,707		

TARGET VALUES BASED ON PRELIMINAR COMPUTATIONS

$$T_v = M / (M_{pl} \cdot \eta) \quad **$$

Tv
9,960E-01

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

Cv	(Cv-Tv)/Tv
9,960E-01	0,000E+00

(*) length is only 1mm in order to diminish the increase of moment along the beam
(**) formulae given in J. Rondal, K.-G. Wurker, D.Dutta, J. Wardenier, N. Yeomans, *Structural stability of hollow sections*, Verlag TUV Rheinland, 1992