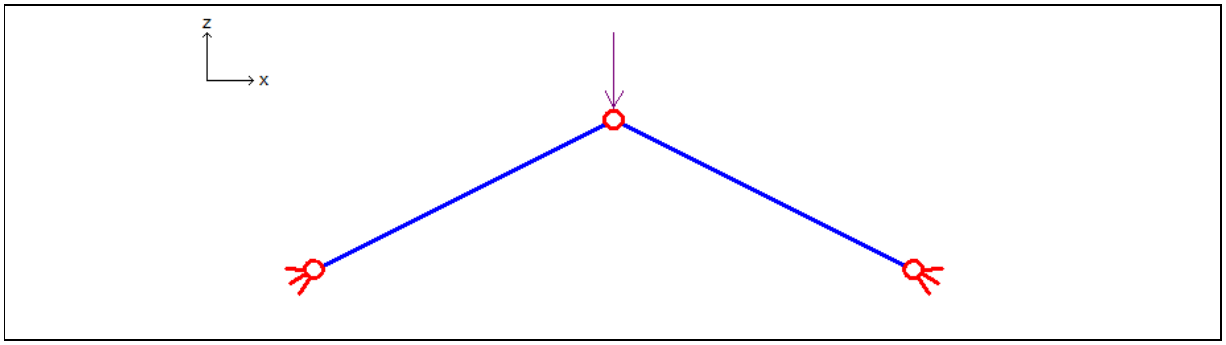
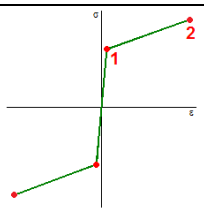
Validation of Sargon Nonlinear solver (CURAN, version 9.60)			
TEST TR022	**VALIDATION, RELIABILITY, BENCHMARK**	**Marco Croci**	**Rev.2-06/12/2010**

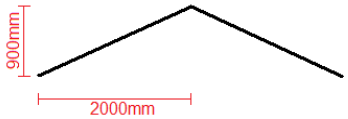


Test description
Constitutive law of trusses material: bilinear
This case is similar to test 014, but here load path includes 3 load cases: in the first one F_1 is applied; in the second one $F_2=-F_1$ is applied; in third one $F_3=F_1$ is applied. Since σ_1 is not exceeded, condition after load case 2 should be with null deformations/displacements and null internal forces. Cases 1 and 3 should coincide with case 1 of test 014.
Test model: **curanTR_022.WSR**

Material properties		
Name	S235BI	
ν	0,3	
ε_1	0,001119	
σ_1	235N/mm^2	
ε_2	0,02	
σ_2	360N/mm^2	

Cross-section: circular section, diameter=40mm (area=1256,64mm^2)

Geometry



Force (z direction)	
Load case 1	F = -240000N
Load case 2	F = +240000N
Load case 3	F = -240000N
Load path: active	

CHECK

Load case	Value	Unit	CURAN	THEORETICAL	% diff.
1	Truss #1 axial force	N	-2,924E+05	-2,924E+05	0,00
1	Node #8 displacement (z)	mm	-5,922E+00	-5,922E+00	0,00
2	Truss #1 axial force	N	5,723E-11	0,000E+00	~0,00
2	Node #8 displacement (z)	mm	8,882E-16	0,000E+00	~0,00
3	Truss #1 axial force	N	-2,924E+05	-2,924E+05	0,00
3	Node #8 displacement (z)	mm	-5,922E+00	-5,922E+00	0,00

% difference = (CURAN - THEORETICAL) / THEORETICAL * 100

Precision of limit multiplier for the analysis: 0.005