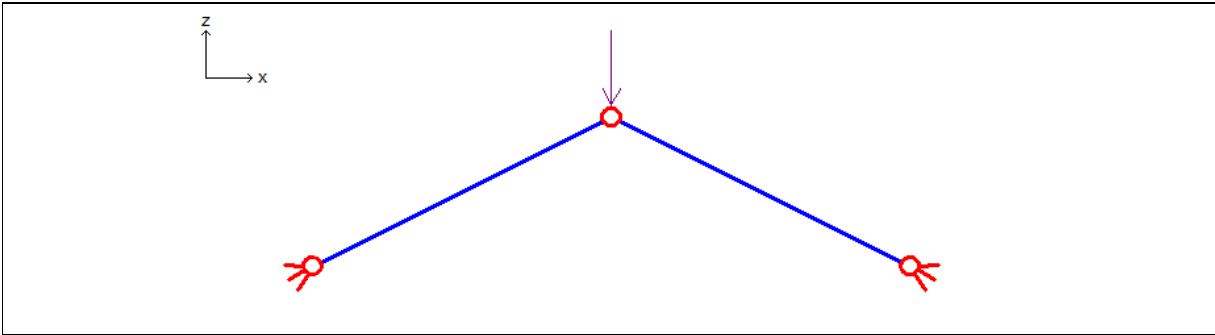


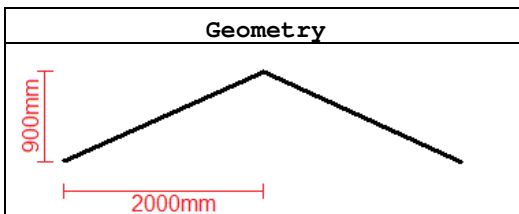
**Validation of Sargon Nonlinear solver (CURAN, version 9.60)**
**TEST TR001**
**VALIDATION, RELIABILITY, BENCHMARK**
**Marco Croci Rev.2-03/12/2010**

**Test description**

Constitutive law of trusses material: indefinitely elastic

 Test model: **curanTR\_001.WSR**
**Material properties**

Name	$\nu$	E
S235EL	0,3	210000N/mm <sup>2</sup>

**Cross-section:** circular section, diameter=40mm (area=1256,64mm<sup>2</sup>)

**Geometry**

**Force (z direction)**

Load case 1	F= - 300000N
Load case 2	F= + 300000N
Load path: not active	

**CHECK**

Load case	Value	Unit	CURAN	THEORETICAL	% diff.
1	Truss #1 axial force	N	-3,655E+05	-3,655E+05	0,00
1	Node #8 displacement (z)	mm	-7,403E+00	-7,403E+00	0,00
2	Truss #1 normal stress	N/mm <sup>2</sup>	2,909E+02	2,909E+02	0,00
2	Node #8 displacement (z)	mm	7,403E+00	7,403E+00	0,00

$$\% \text{ difference} = (\text{CURAN} - \text{THEORETICAL}) / \text{THEORETICAL} * 100$$

Precision of limit multiplier for the analysis: 0.005