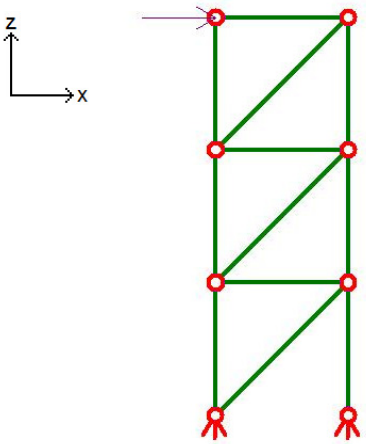
Validation of Sargon Nonlinear solver (CURAN, version 9.60)			
TEST TR019	**VALIDATION, RELIABILITY, BENCHMARK**	**Marco Croci**	**Rev.2-06/12/2010**



Test description
Constitutive law of trusses material: elastic-perfectly plastic. If σ_y is exceeded, the structure collapses. If σ_y is not reached, results should be equal to a linear elastic analysis.
Test model: **curanTR_019.WSR**

Material properties			
Name	ν	E	σ_y
S275EP	0,3	210000N/mm^2	275N/mm^2

Cross-section: HEA200

Force (x direction)	
Load case 1	F = +500000N
Load case 2	F = +20000N
Load case 3	F = +40000N

Load path: not active

CHECK

If σ_y is not exceeded, results should coincide with those of test 016 (case 2 and case 3). In test 016, in case maximum 1 normal stress is equal to 278,7N/mm$_2$: here structure should collapse at a load level equal to 275N/mm^2/278,7N/mm^2=0,9869 and normal stress should be equal to σ_y=275N/mm^2.

Load case	**Value**	**Unit**	**CURAN**	**THEORETICAL**	**% diff.**
1	Failure load level	/	9,855E-01	9,869E-01	-0,14
1	Truss #3 normal stress	N/mm^2	-2,746E+02	-2,750E+02	-0,14
2	Truss #4 normal stress	N/mm^2	5,254E+00	5,254E+00	0,00
3	Truss #12 normal stress	N/mm^2	1,051E+01	1,051E+01	0,00

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

Precision of limit multiplier for the analysis: 0.005