

Scissors Lift Case Study

by

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Input Parameters

Product Type : Mobile Scissors Lift
Load Capacity : 1750 Kg
Platform Length : 1500 mm
Platform Width : 1000 mm
Lower Height : 903 mm
Platform Lift : 1500 mm
Actual Overhung : 228 mm

1. Top Frame

Top Frame Section : C – Channel 125 x 65 x 6 mm

Case 1) Uniform load

Table 1 : Top Frame- Uniform Load Result Comparison

Loading Condition	Result Description	Software Results (mm)	FEA Results (mm)	Physical Results (mm)
Top Frame Uniform Load	Deflection Between Supports	0.27	0.28	0.25
	Deflection at End	0.15	0.14	0.1

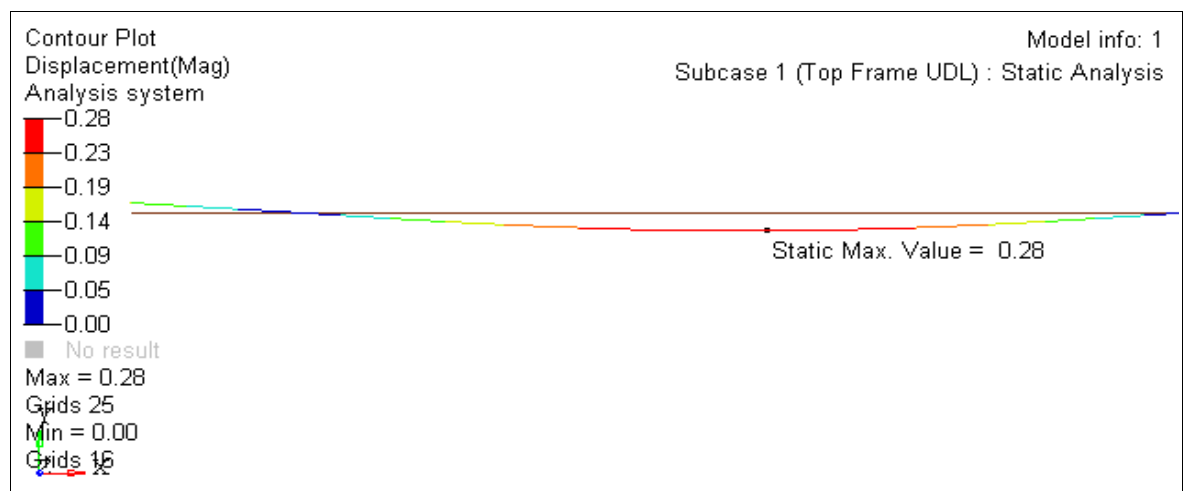


Fig. 1: Top Frame Deflection under Uniform Load



Case 2) Partial load

Percentage Loading of Platform Length (A) = 80 %

Table 2 : Top Frame- Partial Load Result Comparison

Loading Condition	Result Description	Software Results (mm)	FEA Results (mm)	Physical Results (mm)
Top Frame Partial Load	Deflection Between Supports	0.28	0.29	0.22
	Deflection at End	0.16	0.15	0.1

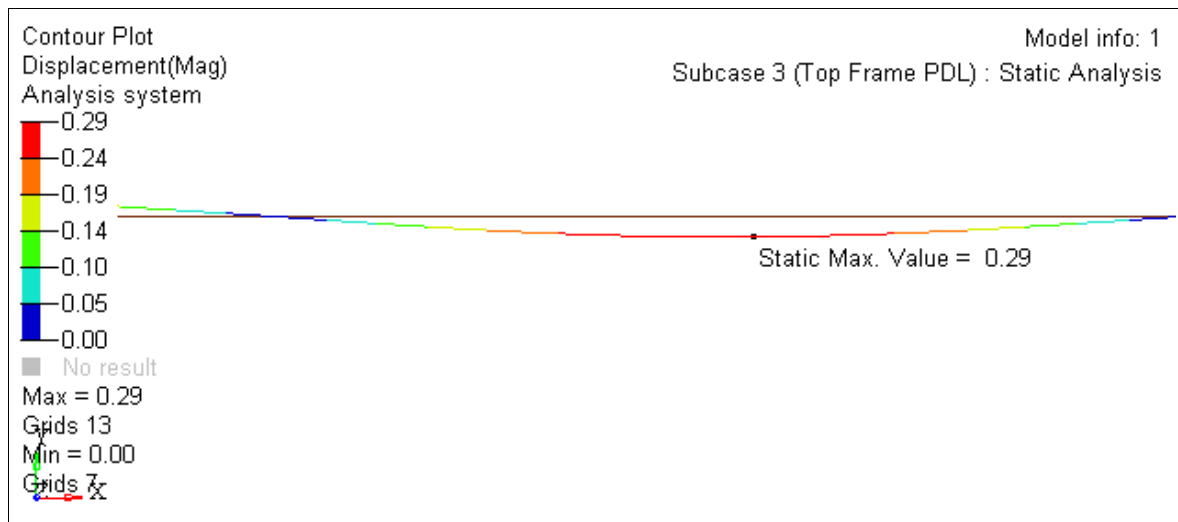


Fig. 2: Top Frame Deflection under Partial Load

Case 3) Point Load

Wheel base (b) :- 1000 mm

Table 3 : Top Frame- Point Load Result Comparison

Loading Condition	Result Description	Software Results (mm)	FEA Results (mm)	Physical Results (mm)
Top Frame Point Load	Deflection Between Supports	0.12	0.13	0.1
	Deflection at End	0.04	0.05	0

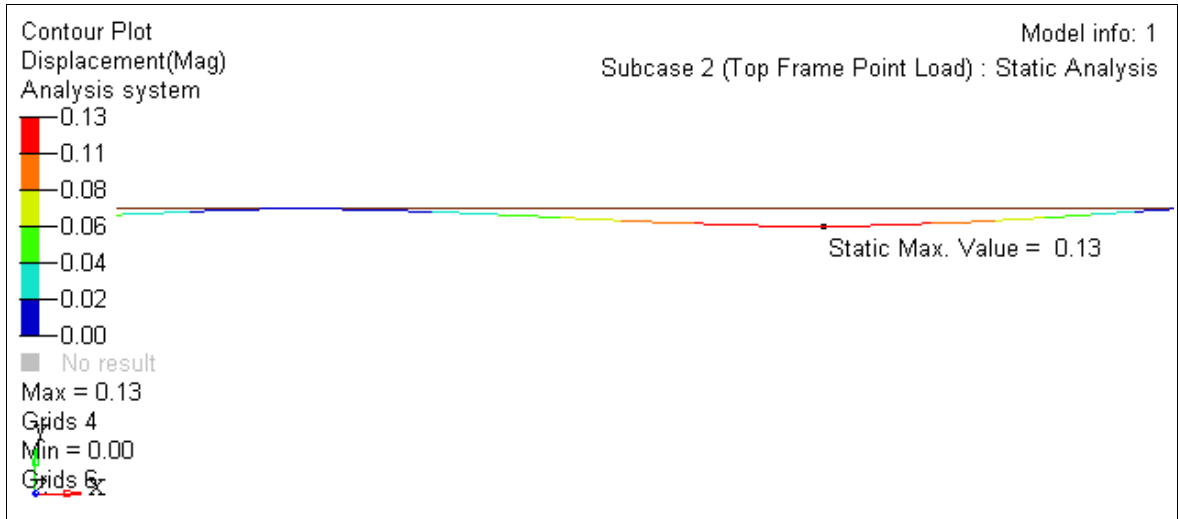


Fig. 3: Top Frame Deflection under Point Load

2. Bottom Frame

Bottom Frame Section : C – Channel 125 x 65 x 6 mm

Table 4 : Bottom Frame Result Comparison

Loading Section	Result Description	Software Results (mm)	FEA Results (mm)	Physical Results (mm)
Bottom Frame	Maximum Deflection	0.34	0.35	0.28

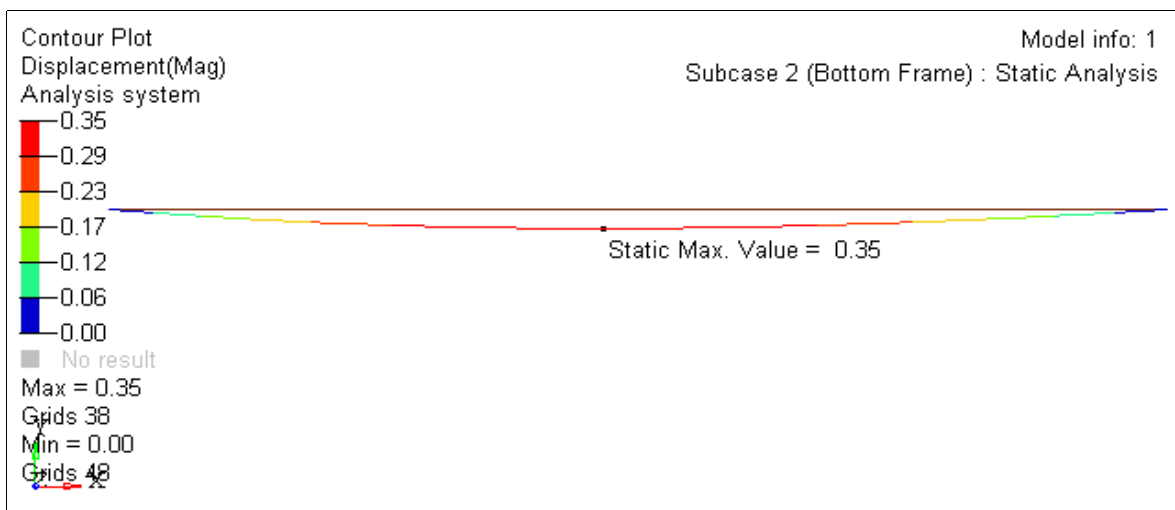


Fig. 4: Bottom Frame Deflection



3.Arm Section

Arm Section : Hollow Tube 120 x 60 x 10 mm

Table 5 : Arm Section Result Comparison

Loading Section	Result Description	Software Results (mm)	FEA Results (mm)	Physical Results (mm)
Arm Section	Maximum Deflection	1.19	1.21	1.13

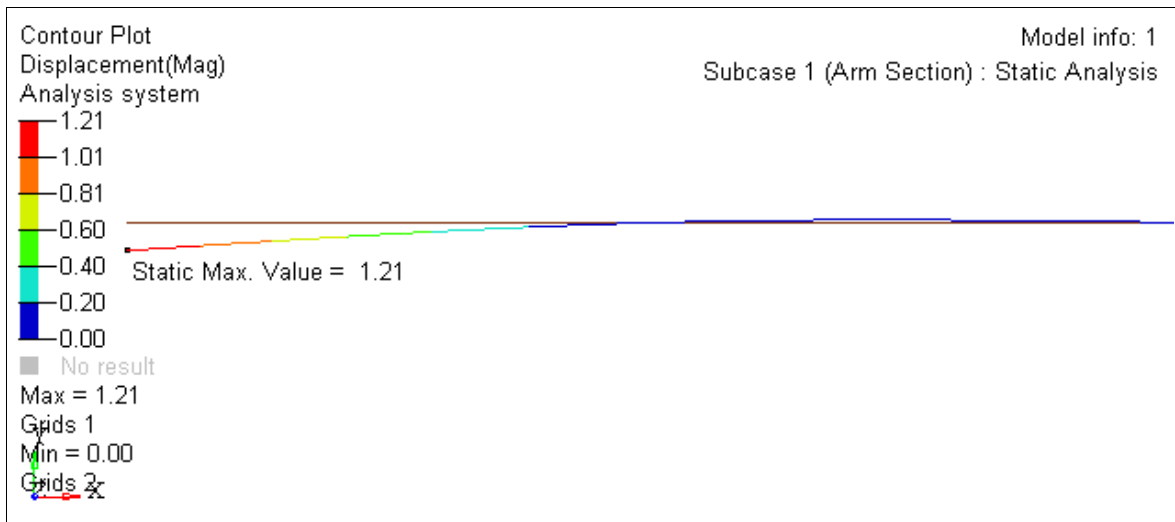


Fig. 5: Arm Section Deflection



Boundary Conditions in FEA :

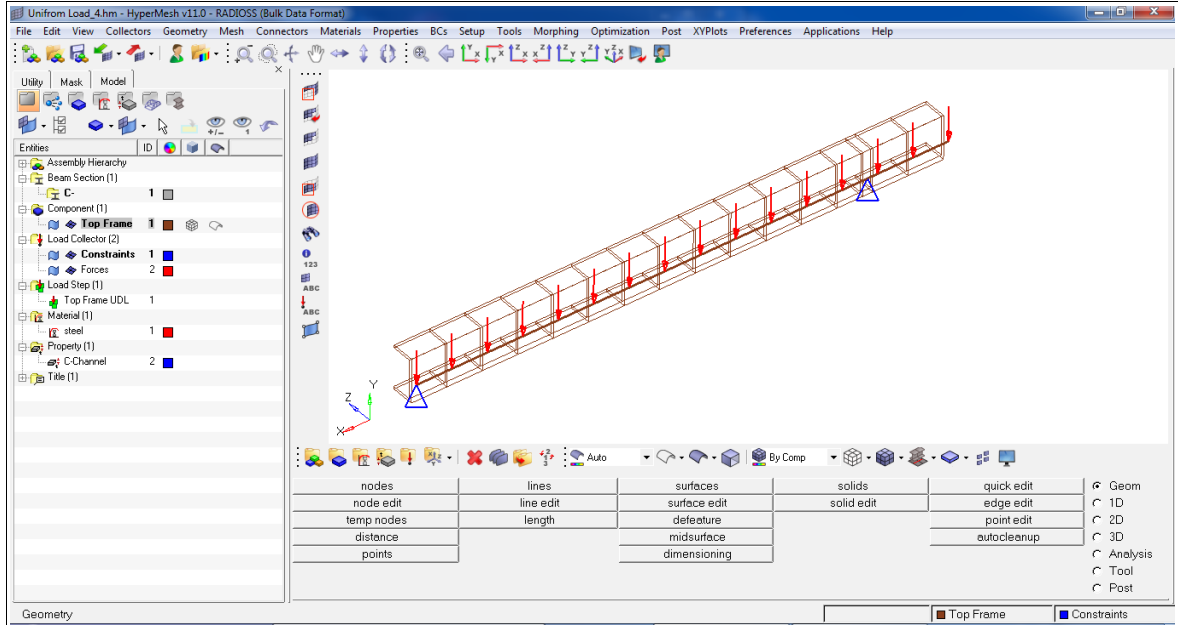


Fig. 5: Top Frame Boundary Conditions for Uniform Load



Fig. 6 : Actual Scissor Lift