

PPU108

Lab 3

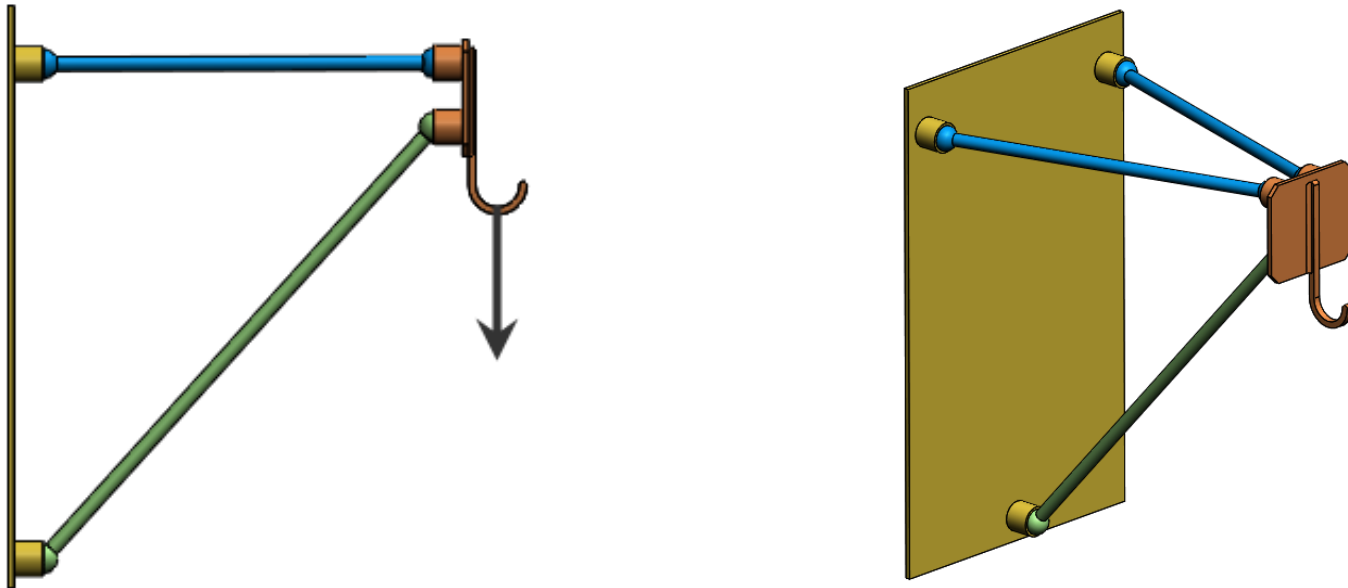
- Krafter i tre dimensioner
 - Med solider i SolidWorks Motion
 - Med balkar i SolidWorks Simulation

Övningsfiler: P:\Courses\P\PPU108\Course material\Datorverktyg

Eller: Kurshemsida, zoomin.idt.mdh.se

Krafter i tre dimensioner - Solider

Förenklad modell av lyftkrok

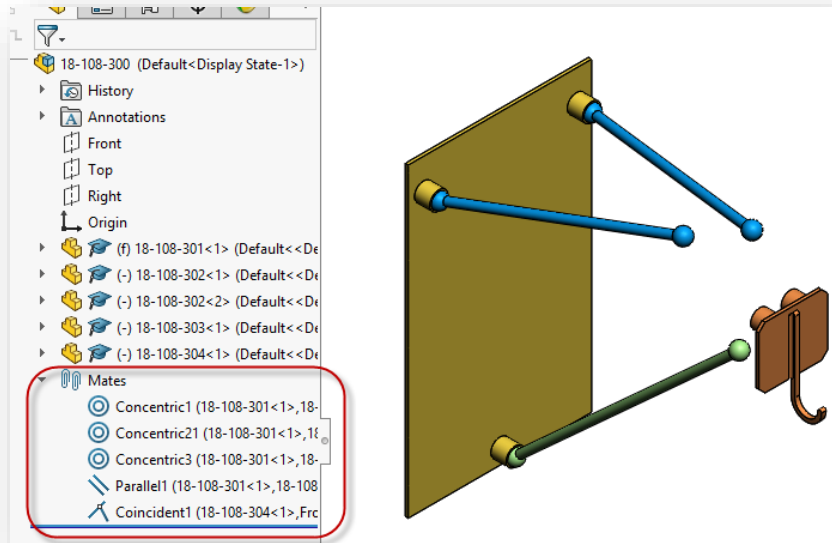


Reality check: Vad händer vid belastning?

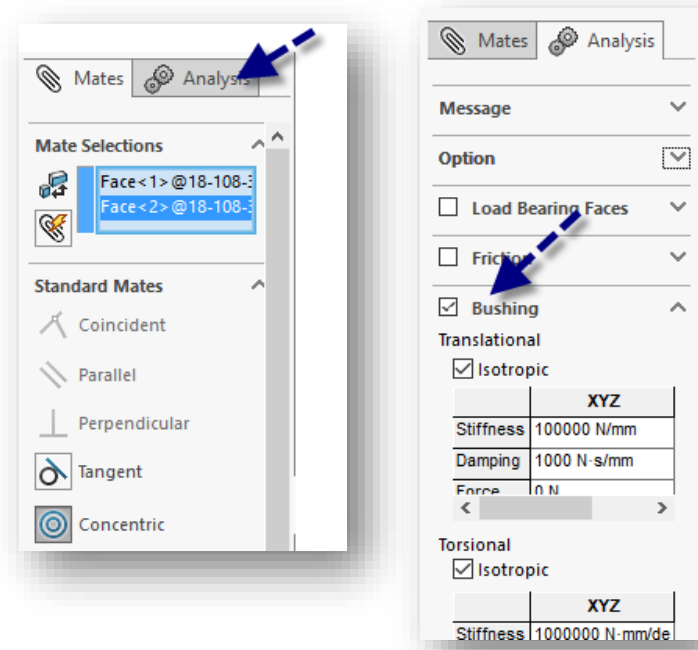
Förväntat resultat? Krafter, moment...

Kopplingar – Mates

Öppna smst 19-108-300



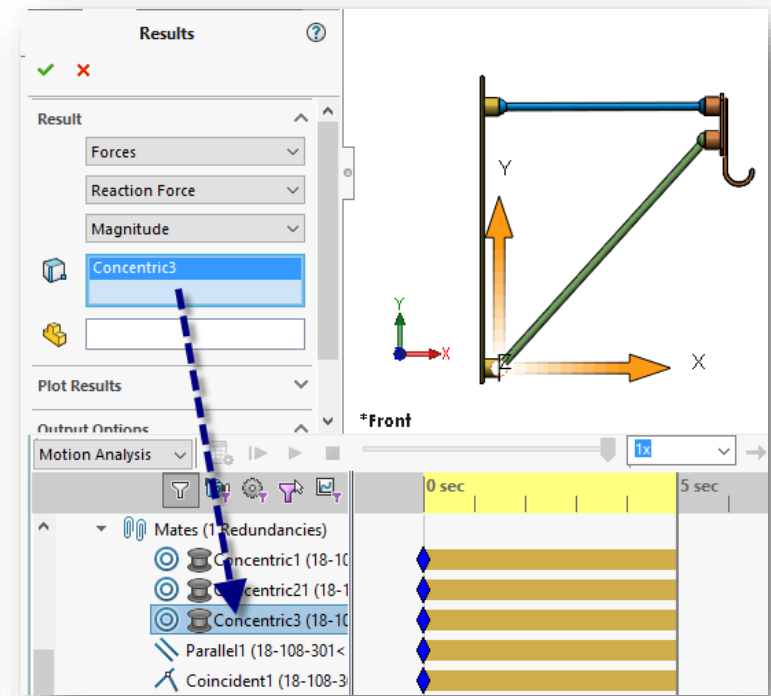
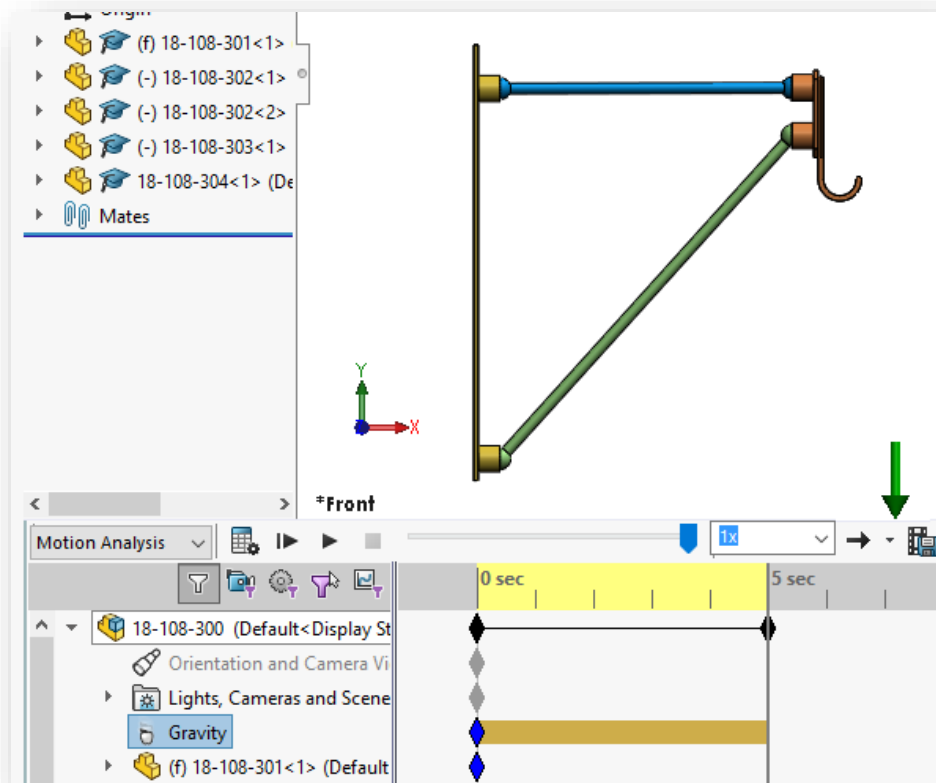
Mates för kulleleder:
Concentric + "Bushing"



För att kunna analysera reaktionskrafter i Motion

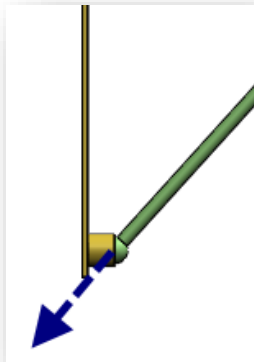
Motion – utan last

Skapa en Motion-analys utan last
Hämta ut reaktionskrafter för några leder

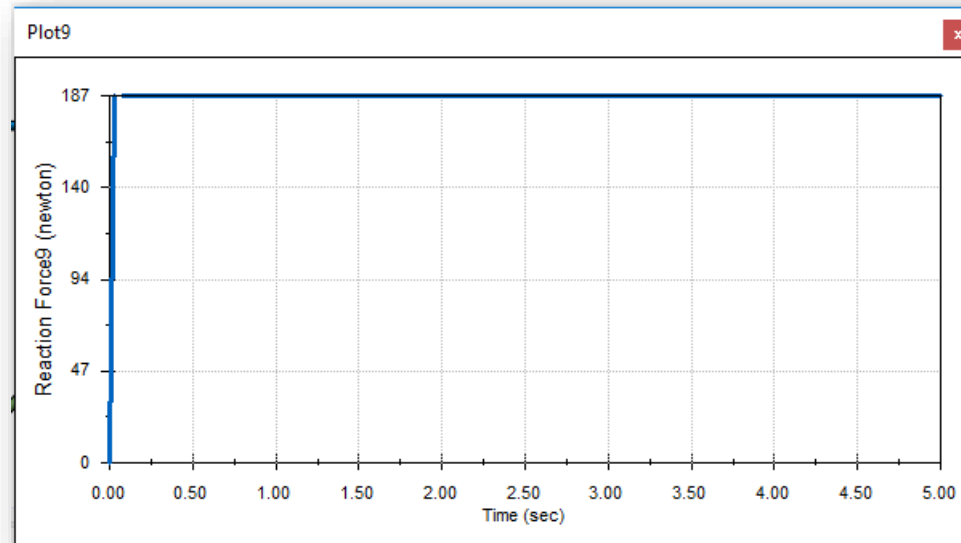


Resultat

”Magnitude” - resultanten

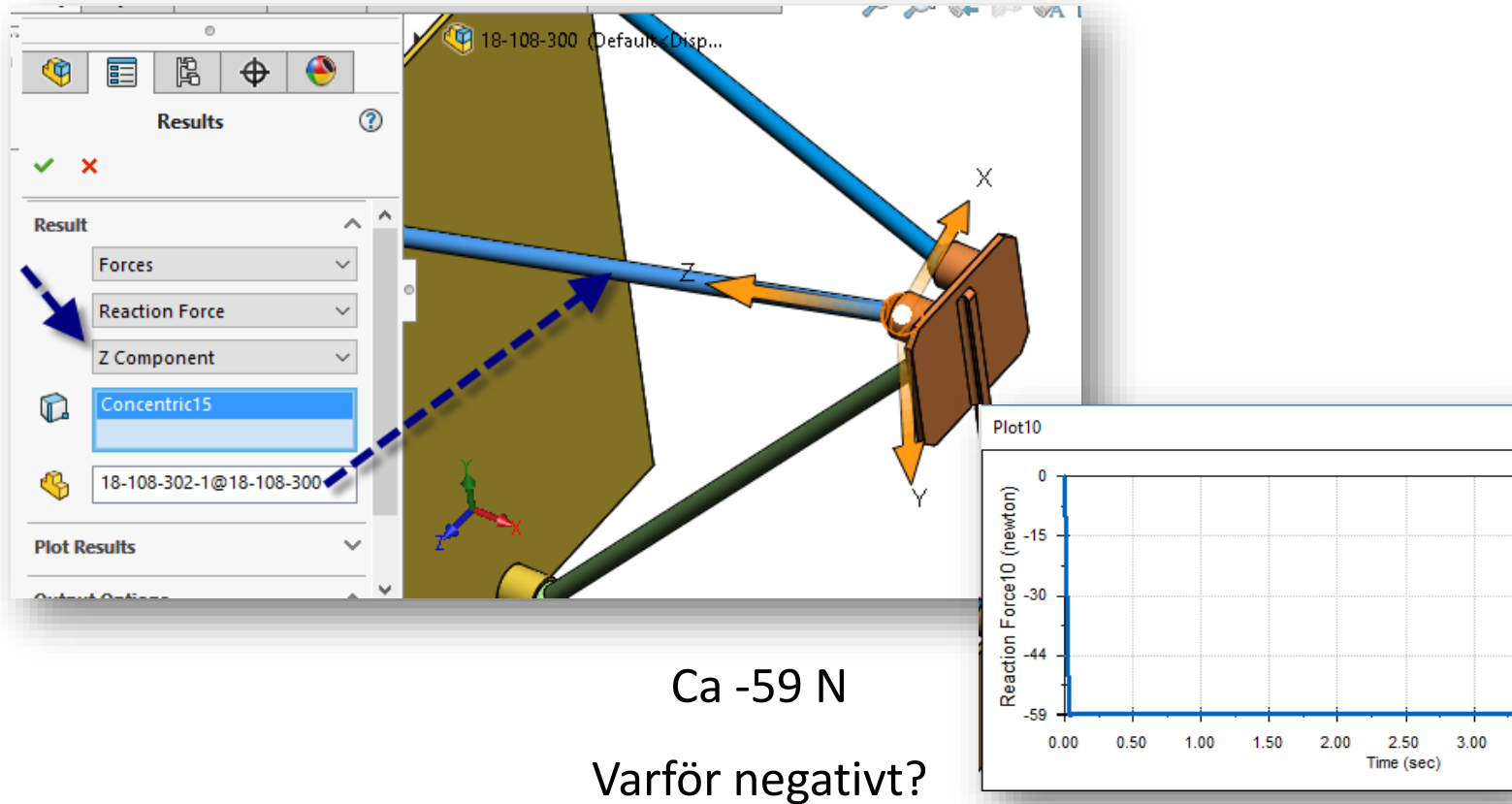


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Reaktionskraft i specifik riktning

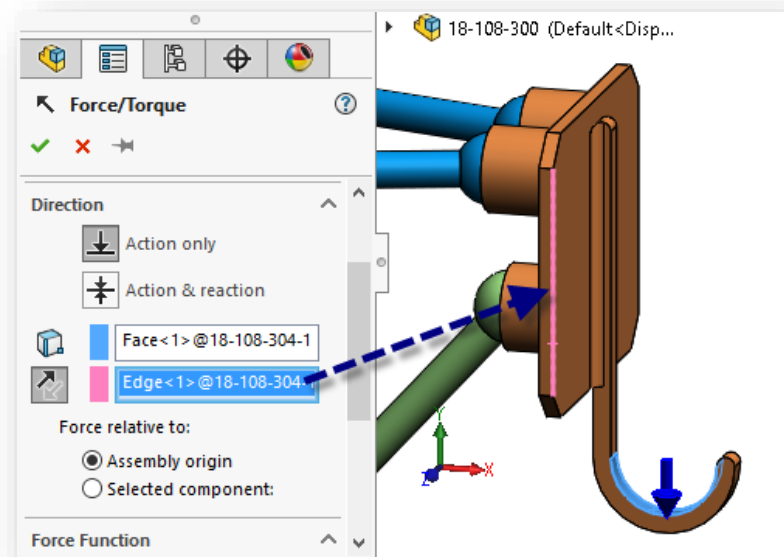
Z-led för en av de övre stängerna



Motion – med last

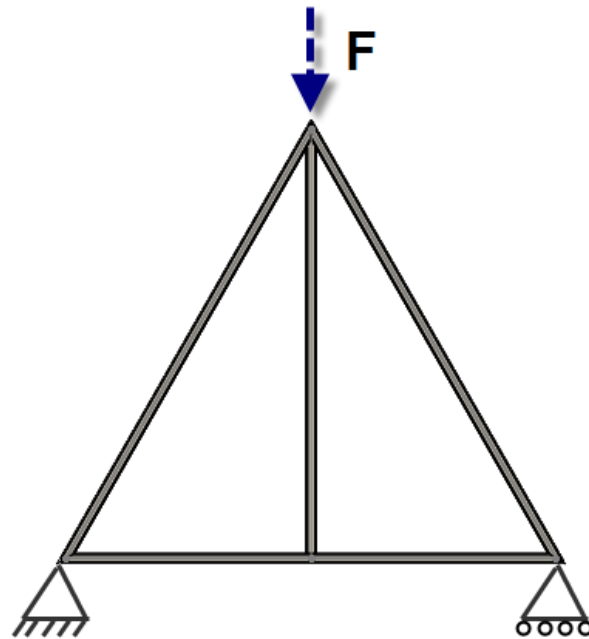
Kopiera analysen, lägg på last

Använd någon kant
för rätt riktning

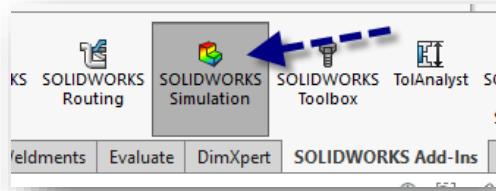


Rimliga resultat?
Kan du kontrollräkna?

Fackverk i SolidWorks Simulation



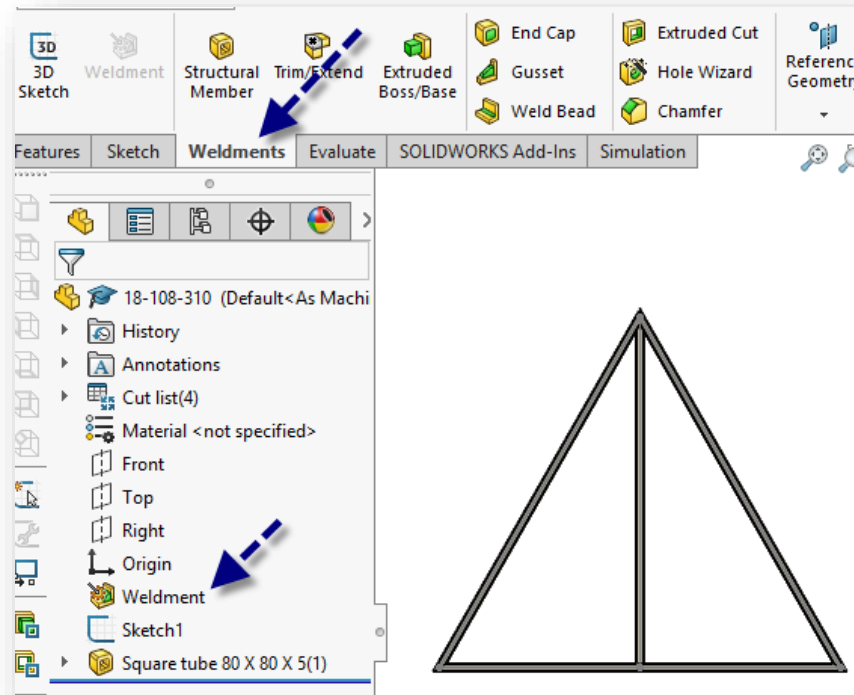
SolidWorks Simulation



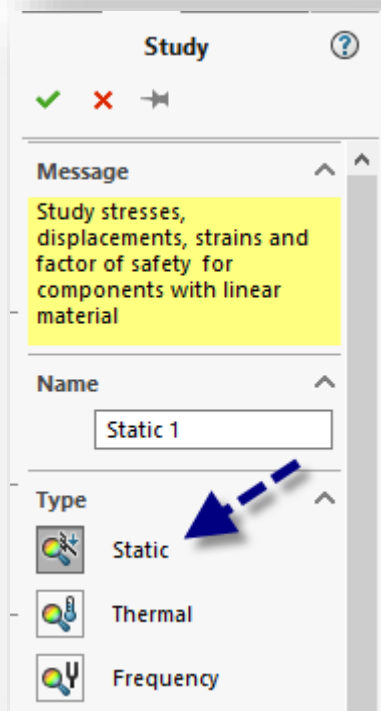
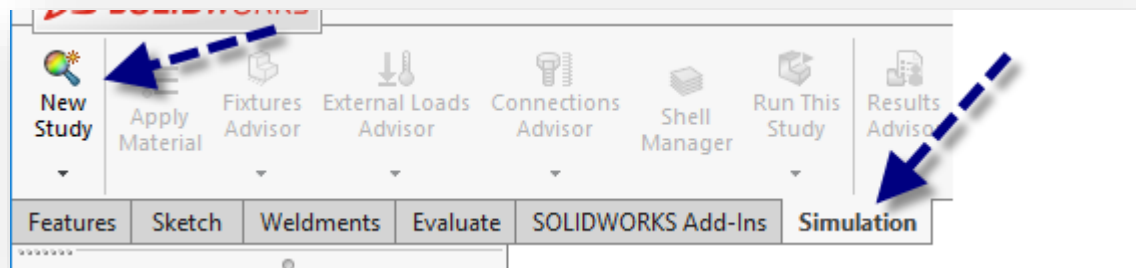
Aktivera Add-in

Öppna fil 19-108-310

Modellen är uppbyggd med Weldments



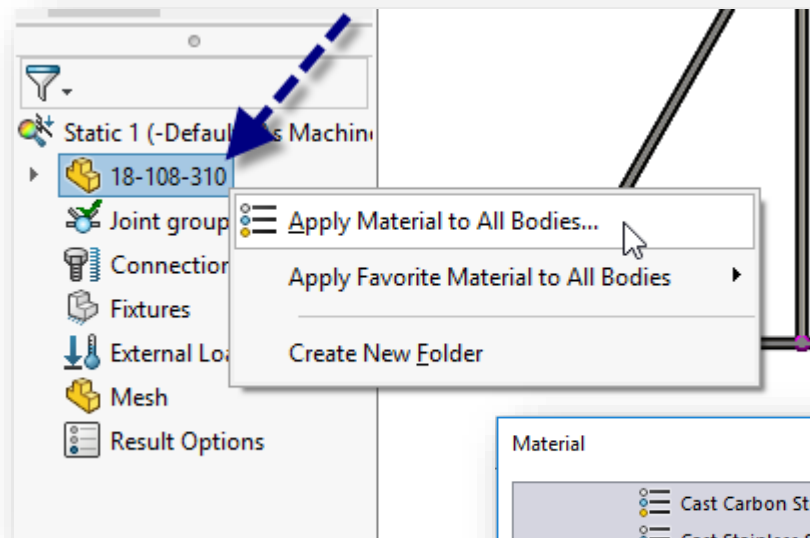
”New Study”



Välj ”Static”

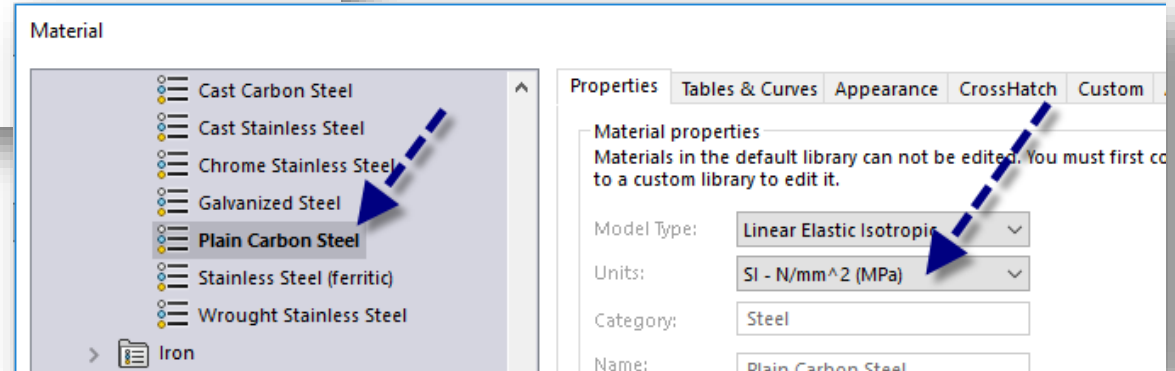
Ange material

Högerklick, välj "Apply Material..."



Välj "Plain Carbon Steel"

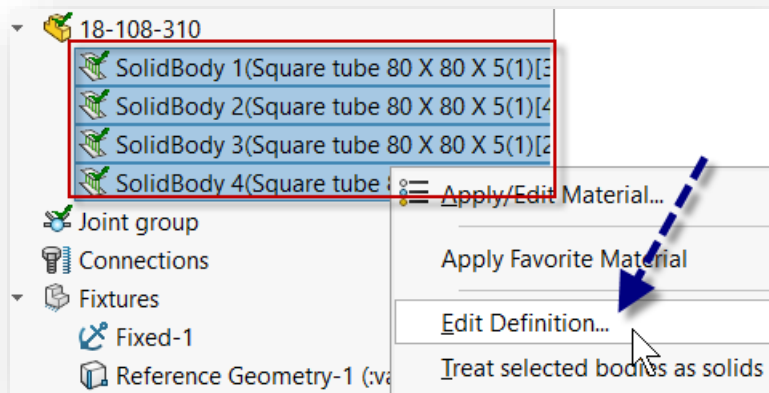
OBS: Byt till MPa



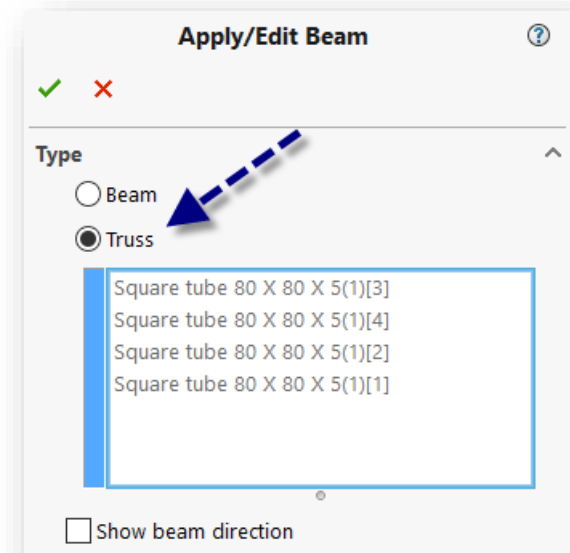
Välj "Truss" - fackverk

Välj alla balkar

Högerklick, välj "Edit definition..."

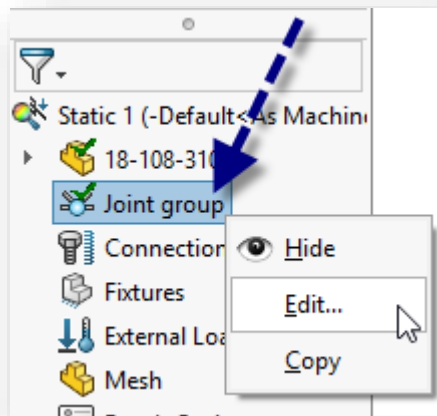


Välj "Truss"

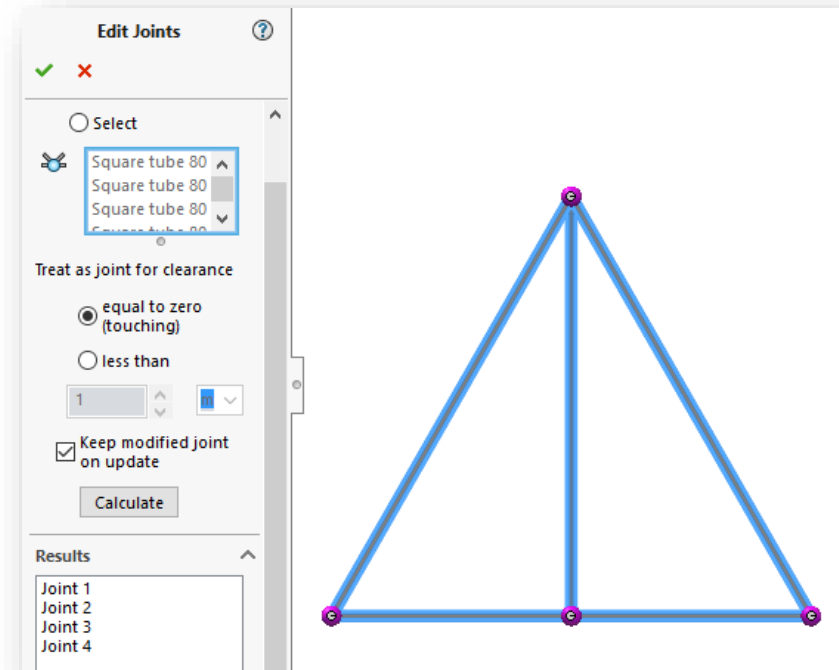


Kontrollera knutpunkter

Högerklick, välj "Edit..."

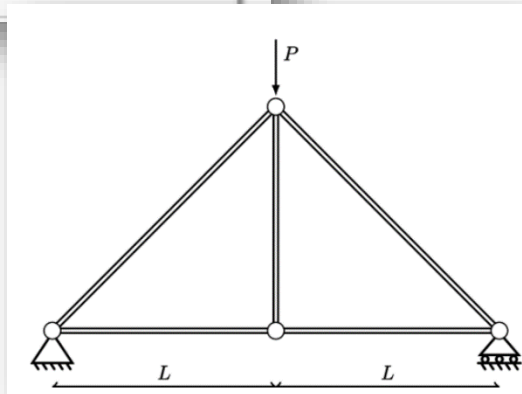
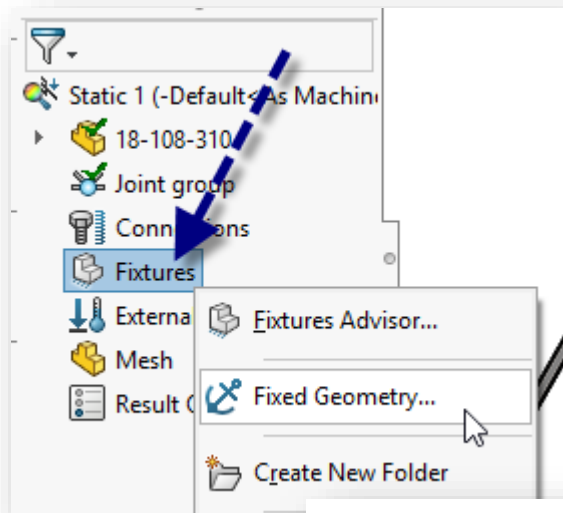


4 knutpunkter = ok.

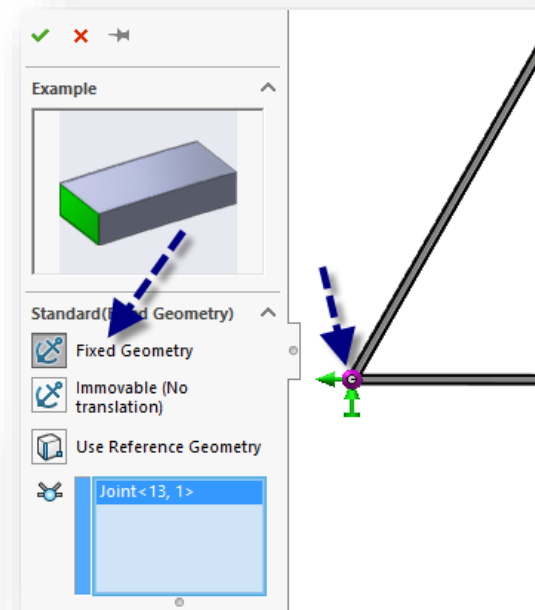


Randvillkor, "Fixtures" – Fast inspänd

Högerklick, välj "Fixed..."



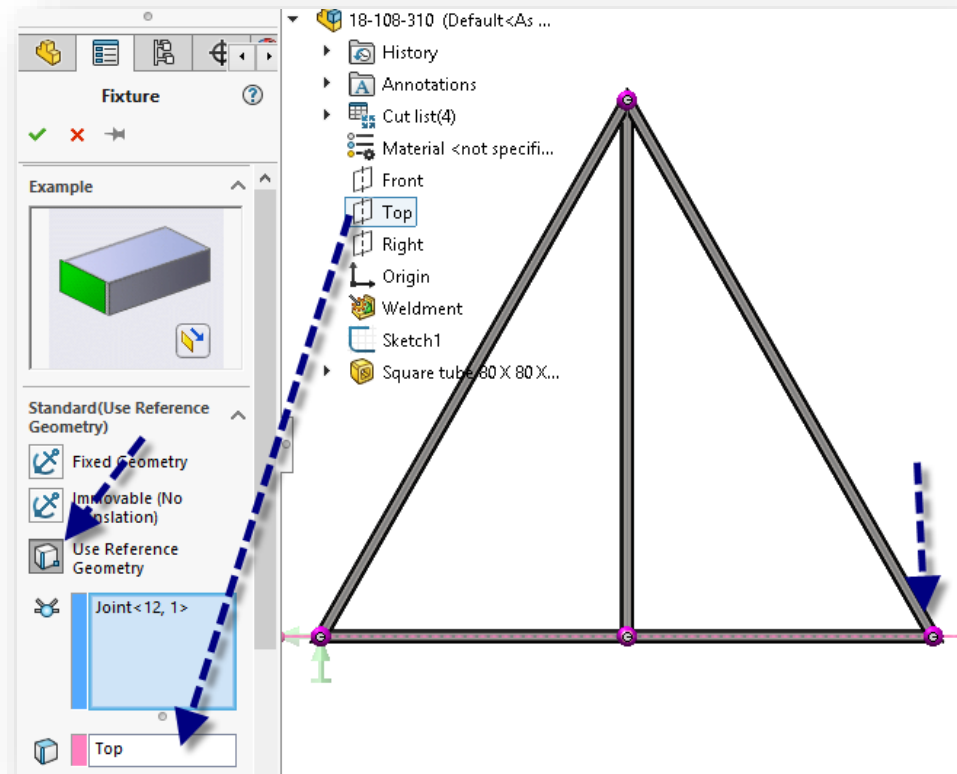
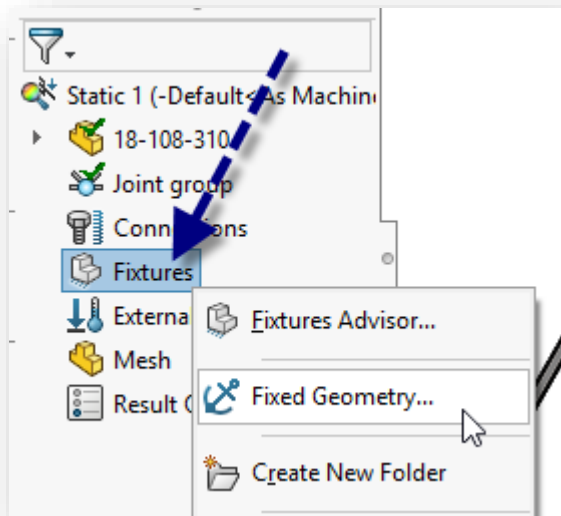
Varför bara ena sidan?



Randvillkor, "Fixtures" – Fritt upplagd

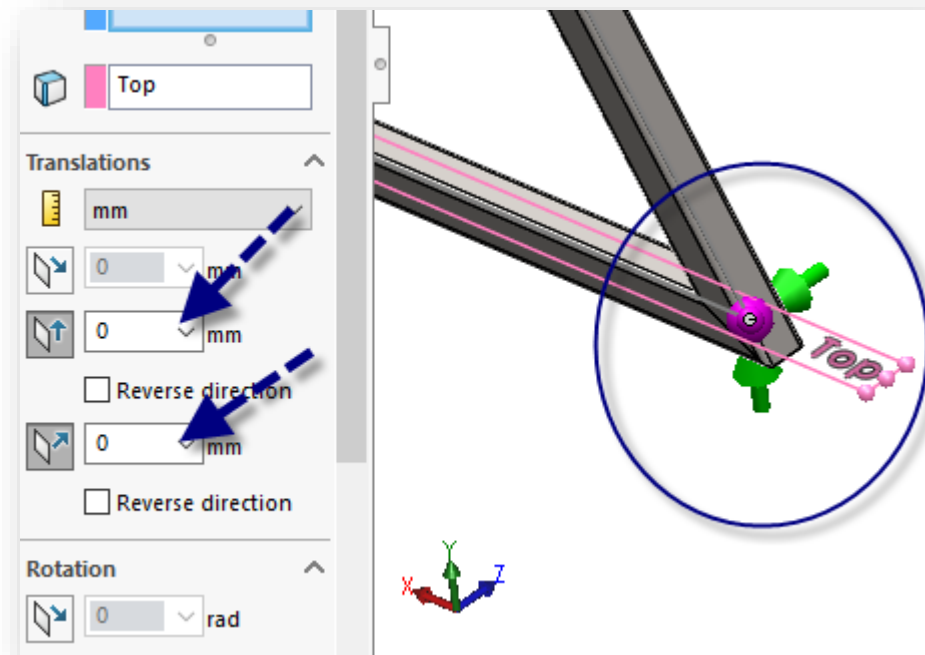
Högerklick, välj
"Fixed... > Use Ref. geometry

"Top" som referens



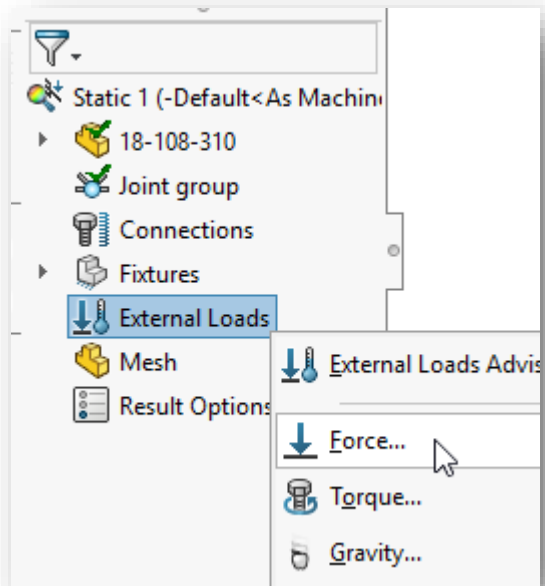
Randvillkor, "Fixtures" – Fritt upplagd

Begränsning av rörelse i två riktningar



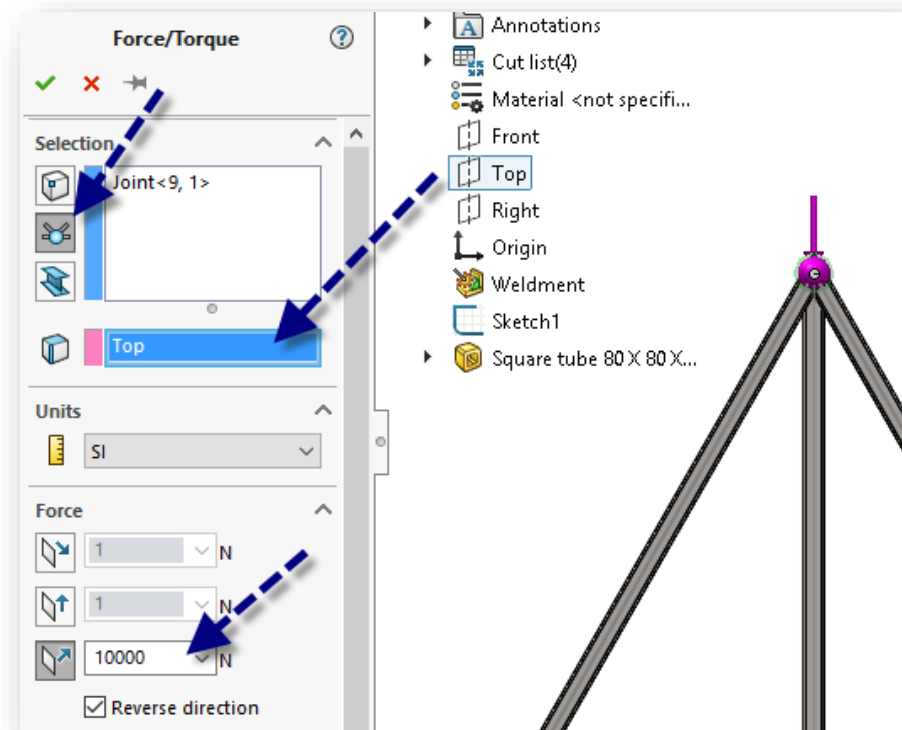
Belastning

Högerklick, välj "Force..."

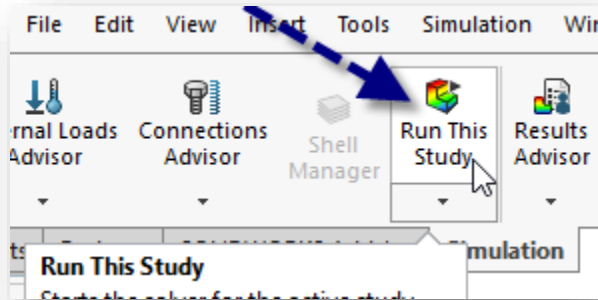


"Top" som referens

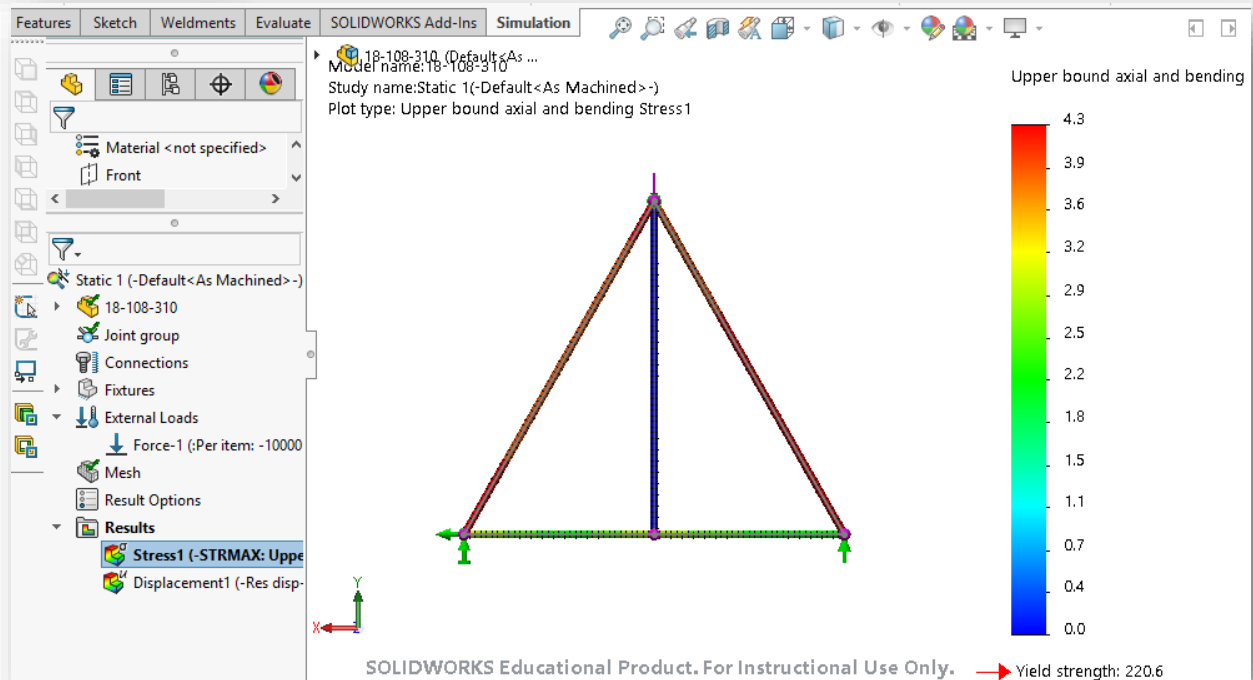
10 000 N



Beräkna – "Run"

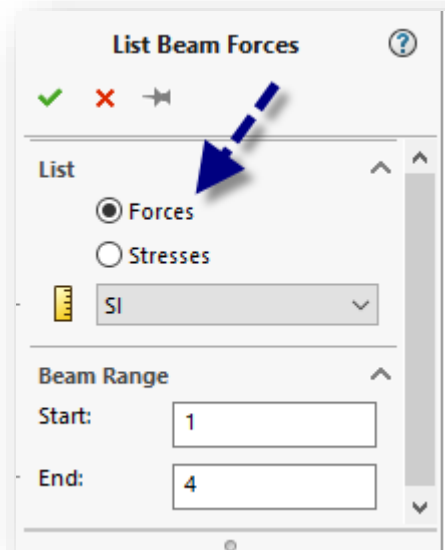
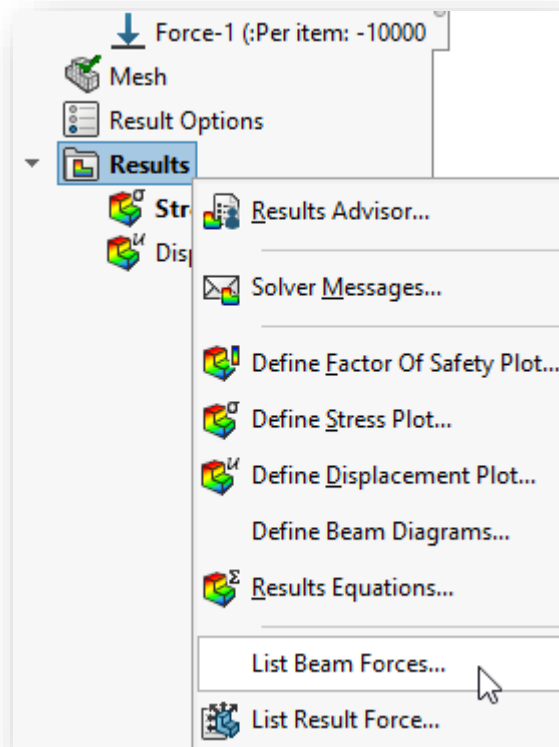


Resultatplot - spänning



Stångkrafter

Högerklick, välj "Beam Forces..."



Stångkrafter

OBS: Resultat kan skilja sig lite mellan olika datorer.

”Extreme values only”

The screenshot shows a software window titled "List Beam Forces" with a sub-dialog "List Forces". The sub-dialog has a "Study name: Static 1" and "Units: SI". It features a checked checkbox for "Show extreme values only" and an unchecked checkbox for "Show only beam end points". Below these is a table with the following data:

Beam Name	Element	End	Axial (N)	Shear1 (N)	Shear2 (N)
	—	—	-57143	0	0
Beam-2(Square tube 80 X 80 X 5(1)[4])	—	—	1.3208e-11	0	0
Beam-3(Square tube 80 X 80 X 5(1)[2])	—	—	1.1518e+05	0	0
Beam-4(Square tube 80 X 80 X 5(1)[1])	—	—	1.1518e+05	0	0

The dialog box has "Close", "Save", and "Help" buttons at the bottom. The background shows a 3D model of a truss structure with a blue arrow pointing to a specific beam and a green arrow pointing to a joint.

FRÅGOR