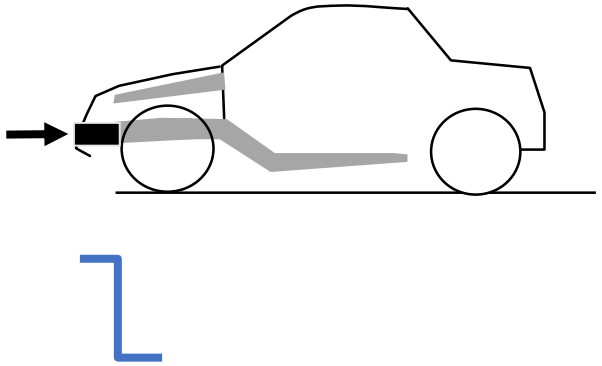
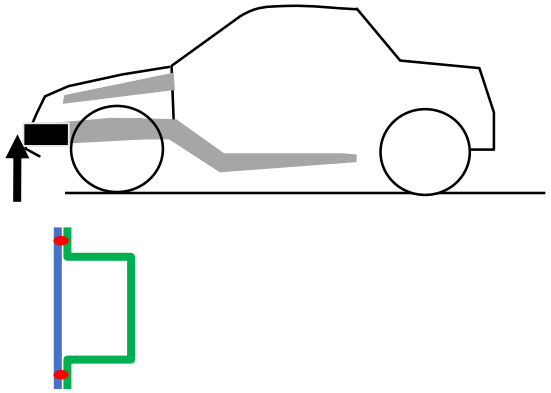
GAS2.0 Training

PRACTICE EXERCISES

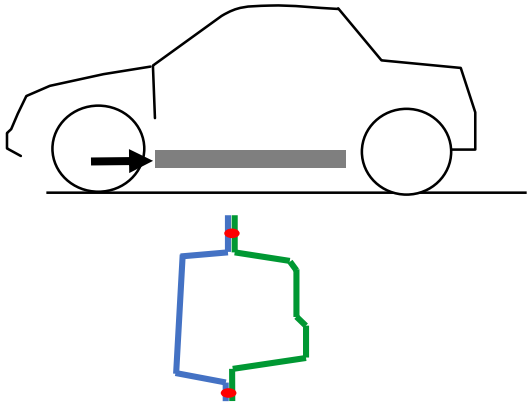
Exercise Z



Exercise Hat



Exercise Rocker



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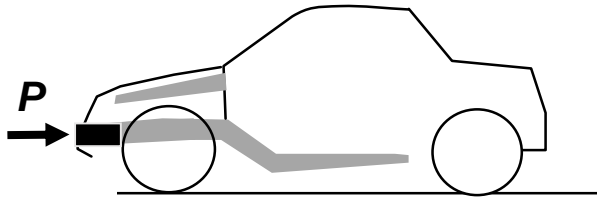
EXERCISE Z



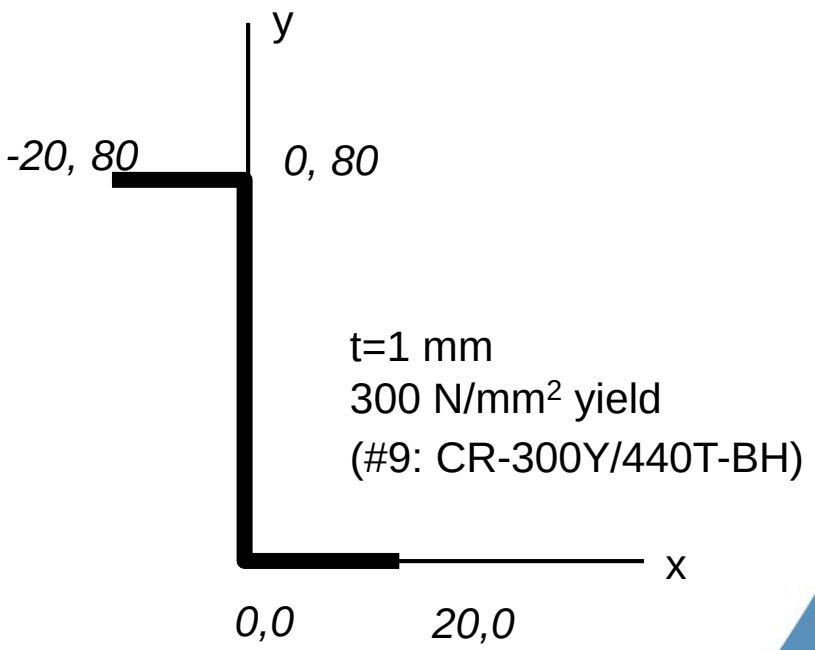
Axial load

1. Hand calculate the axial load, *P*, that would cause yield if buckling could be ignored. $P=\sigma_Y A$

2. Model the section in GAS and determine Nominal properties.

   -Compare cross section area from task 1 with the value in GAS.

   -Note that the warping constant, C_W is large. This indicates the section will warp when twisted.



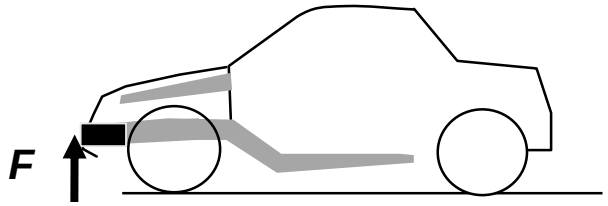
3. Calculate Effective properties under an axial load.

   -What is the load that causes yield of the effective section? Compare with the result of task 1.

4. Model changes to section to increase effective properties.

GAS2.0 Training

EXERCISE HAT



Moment, M_{X-}

1. Model the section in GAS and determine Nominal properties.

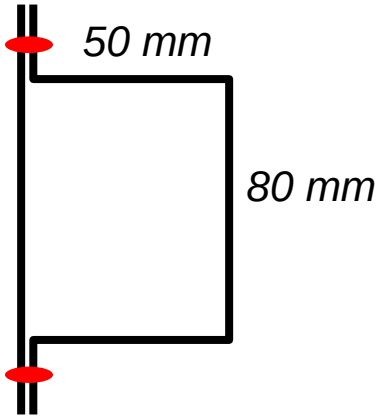
   -Note the moment of inertia about the xx axis.

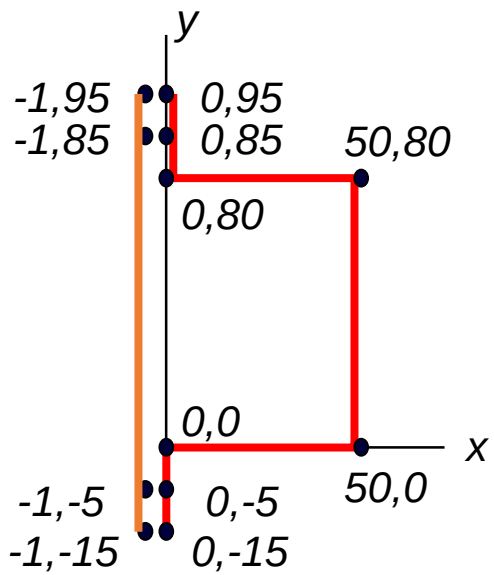
2. Calculate Effective properties under an M_{-X} moment.

   -What is the moment that causes yield of the effective section?

   -Compare the effective moment of inertia about the xx axis with the result of task 1.

3. Model changes to section to increase effective properties.





Both parts
t=0.6 mm
σ_Y=600 N/mm^2
#27: CR-600Y/780T-CP

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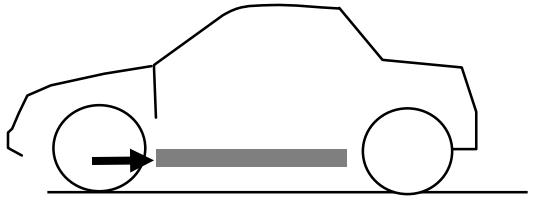
EXERCISE ROCKER



1. Model the section in GAS by scaling the sketch, and determine Nominal properties.

   -What is the moment of inertia about the xx axis.

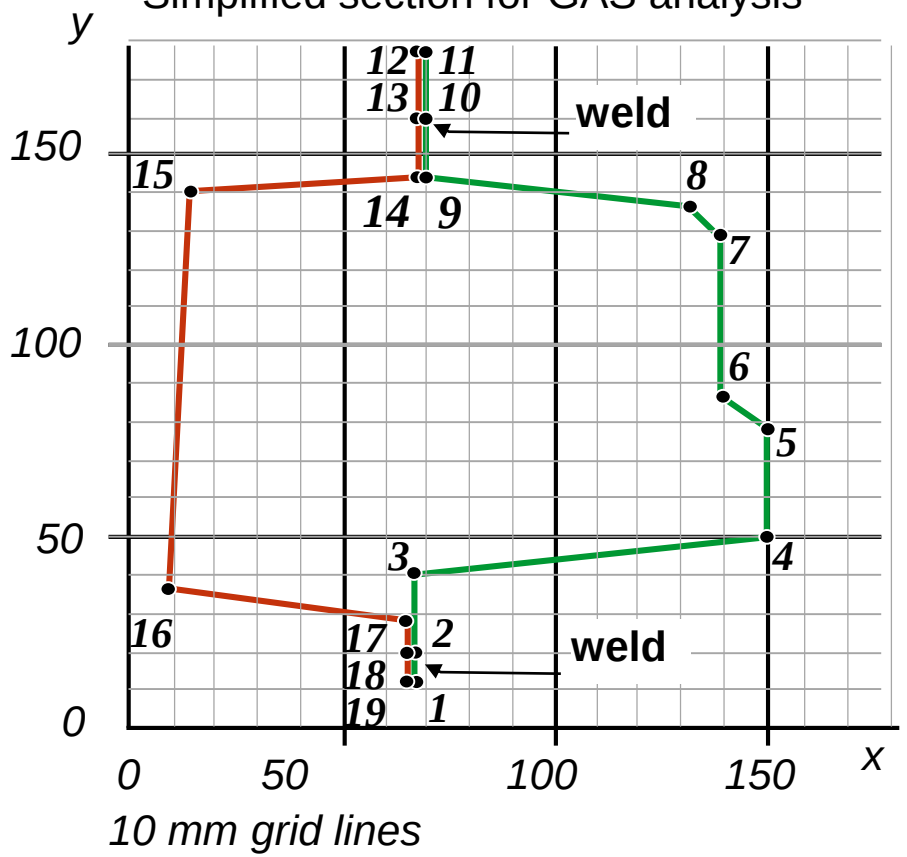
2. Calculate Effective properties under an axial load.

   -What is the load that causes yield of the effective section?

   -Compare the effective moment of inertia about the xx axis with the result of task 1.

3. Model changes to the section to increase effective properties.

Simplified section for GAS analysis



t = 1.20 mm for both parts

#16: CR-340Y/410T-HSLA

Welds between points 2-18, 10-13

Weld flanges approximately 1 mm apart in x direction

GAS2.0 Training

EXERCISES

Training Files

- DEMO Square Hat.gsi
- DEMO Square.gsi

Files for demos used in training modules

- EXERCISE Hat improved.gsi
- EXERCISE Hat.gsi
- EXERCISE Rocker.gsi
- EXERCISE Z improved.gsi
- EXERCISE Z.gsi

Solutions to exercises