R&D SOLUTIONS

Tent Profiles Catalogue 2020

ALUMINIUM FOR THE ARCHITECTURAL SECTOR

Aluminium Experts

- Industrial Engineering
- Aeronautical Engineering
- Naval Engineering
- Metallic Structures
- Metal Processing
- Facades and Roofs
- Industrial Design

R&D SOLUTIONS

Tent Profiles Index

R&D SOLUTIONS

Aluminium Alloy EN AW-6060 (AlMgSi)

Application

Among the heat treatable aluminium alloys the material EN AW-6060 shows médium mechanical properties and a good atmospheric and seawater corrosión resistance. The material is good weldable and is used for example in the automotive and railway industry. The alloy EN AW-6060 is heat treatable and it is suitable for decorative anodizing.

Chemical Compositions

Element	% Present
Silicon (Si)	0.30 - 0.60
Iron (Fe)	0.10 - 0.30
Copper (Cu)	0.00 - 0.10
Manganese (Mn)	0.00 - 0.10
Magnesium (Mg)	0.35 - 0.60
Chromium (Cr)	0.00 - 0.05
Zinc (Zn)	0.00 - 0.15
Titanium (Ti)	0.00 - 0.10
Aluminium (Al)	Balance

R&D SOLUTIONS

Aluminium Alloy EN AW-6060 (AlMgSi)

Mechanical properties at room temperature

Temper	Wall Thickness	Yield Strength	Tensile Strength	Elongation		Hardness[1)]
T5	≤ 5	≥ 120	≥ 160	≥ 8	≥ 6	60
	5 < t ≤ 25	≥ 100	≥ 140	≥ 8	≥ 6	60

Reference data for some physical properties

Property	Value
Density at 20°C	2.70 Kg/m^3
Electrical Conductivity (MS/m)	34 - 38
Specific Heat Capactiy (J/kg.K)	898
Modulus of Elasticity	69.5 GPa
Thermal Conductivity	200 - 220 W/m.K
Shear Modulus	26.1 GPa

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Aluminium Alloy EN AW-6060 (AlMgSi)

Processing / Welding

The material is good weldable with the conventional processes (MIG and TIG). As welding filler metal is SG-ALMg5, SG-AlMg3 recommended. In annealed temper there may arise some difficulties during machining (for example ribbon or thread chips). The machinability improves with the grade of ageing.

Important Note

Information given in this data sheet about the condition or usability of materials respectively products are no warranty for their properties, but act as a description. The information, we give on for advice, comply to the experiences of the manufacturer as well as our own. We cannot give warranty for the results of processing and application of the products.

Available Alloys

EN AW-6063 EN AW-6106 EN AW-6005 EN AW-6082

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Anodizing

Industrial anodizing is anodizing to produce a finish where protection is the primary characteristic and appearance is secondary or of no important.

Industrial anodizing produces anodic oxidation coatings that are mainly used to obtain:

- Resistance to wear through abrasión or erosion;
- Electrical insulation;
- Thermal insulation;
- Resistance to corrosión (when sealed).

Corrosion is a process that causes the degradation of metals. A familiar example is the rusting of iron and steel. Aluminium does not rust but can, neverthless, suffer various forms of corrosión. Anodizing builds up a thick, protective oxide film on the metal suface. This acts as a barrier that can prevent aggressive chemicals reaching the aluminium.

Moment of Inertia

Moment of inertia is the name given to rotational intertia, the rotational analog of mass for linear motion. It appears in the relationships for the dynamics of rotational motion.

The moment of inertia must be specified with respect to a chosen axis of rotation. For a point of mass, the moment of inertia is just the mass times the square of perpendicular distance to the rotation axis, I = m.r^2.

The unit of moment of inertia is a composite unit of measure. In the International System (SI), **m** is expressed in kilograms and **r** in metres, with **I** (moment of inertia) having the dimension kilogram-metre square.

ATTENTION: On the following pages, we express the formulas with different units in order to facilitate the calculation:

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Moment of Inertia

Formulas units:

F = Force (N)

l = Length (mm)

E = Modulus of Elasticity (mm^4) E Al = 70000 N/mm^2

I = Moment of Inertia (cm^4)

q = Distributed Load (N)

f = Deflection (mm)

σ = Calculated Stress (N/mm^2)

Mb = Max. Flector Moment (Nmm)

W = Resistant Moment (cm^3)

σ perm = Allowable Stress (N/mm^2)

Rp 0,2 Al = 195 N/mm^2

S = Safety Factor (without units)

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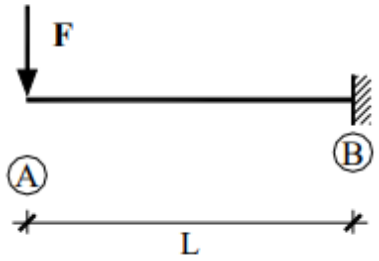
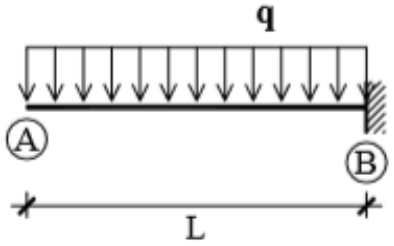
Moment of Inertia

To calculate the Deflection (**f**), the folowing formulas are valid:



$$f = \frac{F \times l^3}{3 \times E \times I \times 10^4}$$

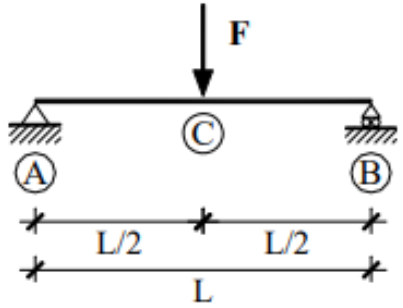


$$f = \frac{Q \times l^4}{8 \times E \times I \times 10^4}$$

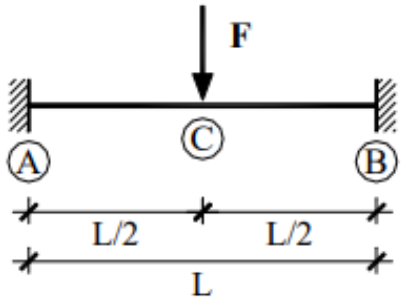
R&D SOLUTIONS

Moment of Inertia

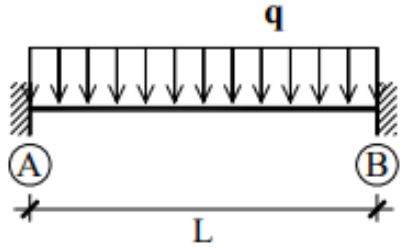
To calculate the Deflection (**f**), the folowing formulas are valid:



$$f = \frac{F \times l^3}{48 \times E \times I \times 10^4}$$



$$f = \frac{F \times l^3}{192 \times E \times I \times 10^4}$$



$$f = \frac{Q \times l^4}{384 \times E \times I \times 10^4}$$

R&D SOLUTIONS

Moment of Inertia

To calculate the Stress σ, the following formula is used:

$$\sigma = \frac{M_b}{W \times 10^3}$$

The calculated Stress σ should be compared with the Allowable Stress due to de flexion. The following formula is used:

$$\sigma_{perm} = \frac{Rp_{0,2}}{S}$$

ATTENTION: The Safety Factor S, must be selected according to the conditions required for each application.

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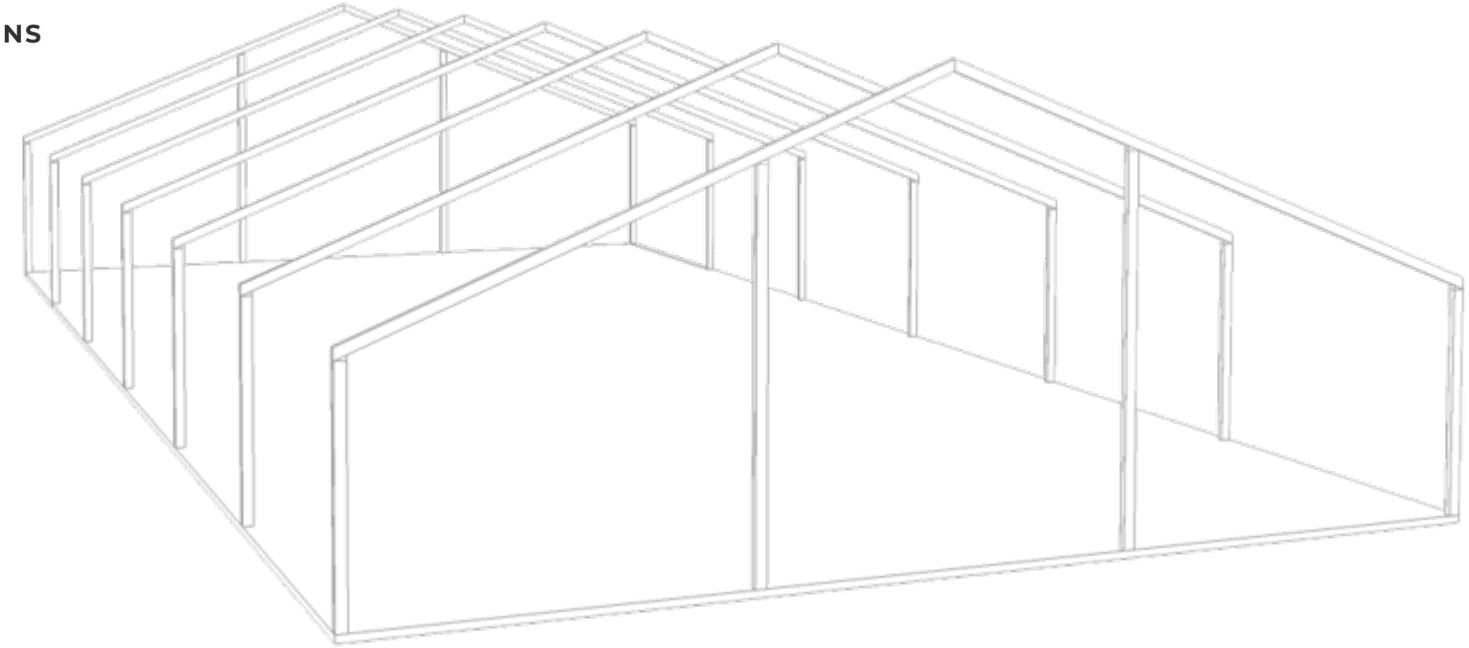

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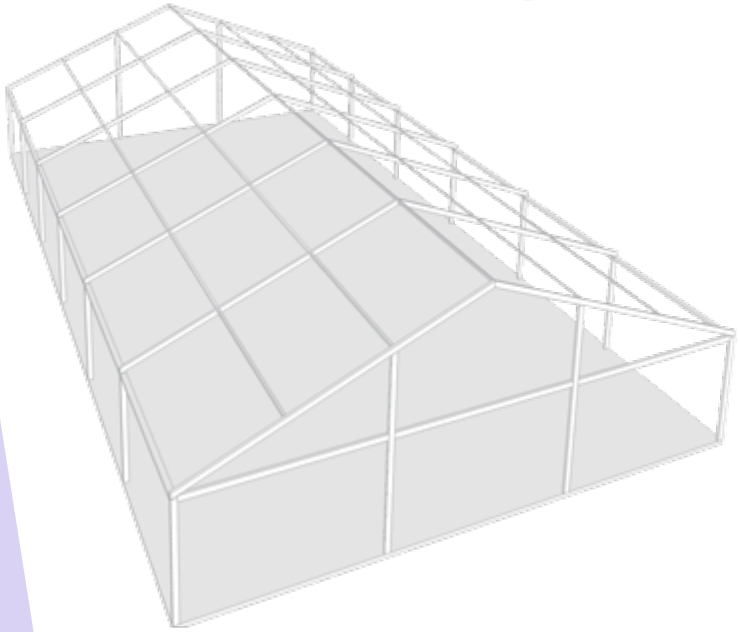
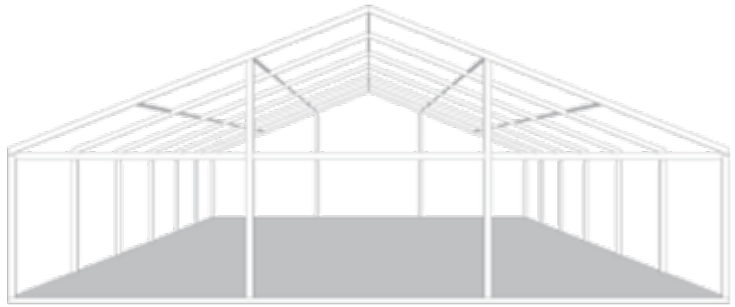
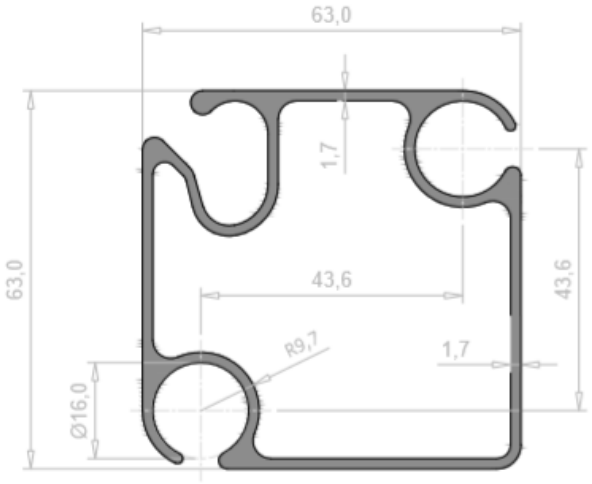




R&D SOLUTIONS

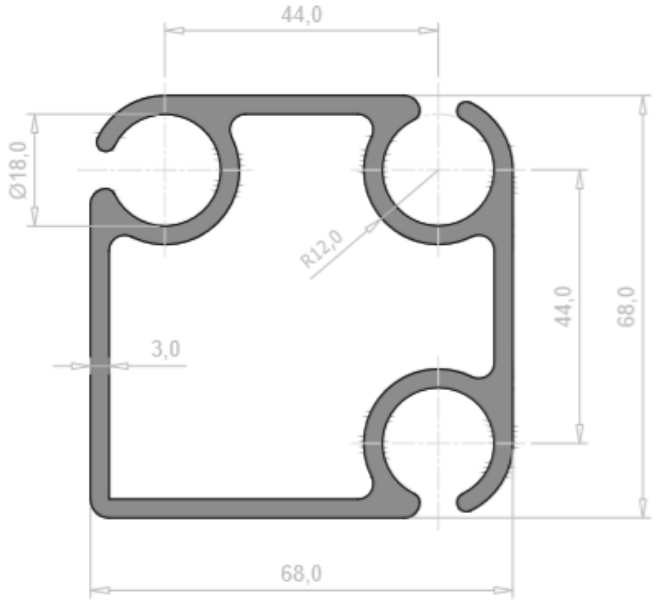
Pilaster



- 1920100001 P63x63 mm

Moment of Inertia:

Ix (cm^4) = 30,3 Iy (cm^4) = 29,8



- 1920100101 P68x68 mm

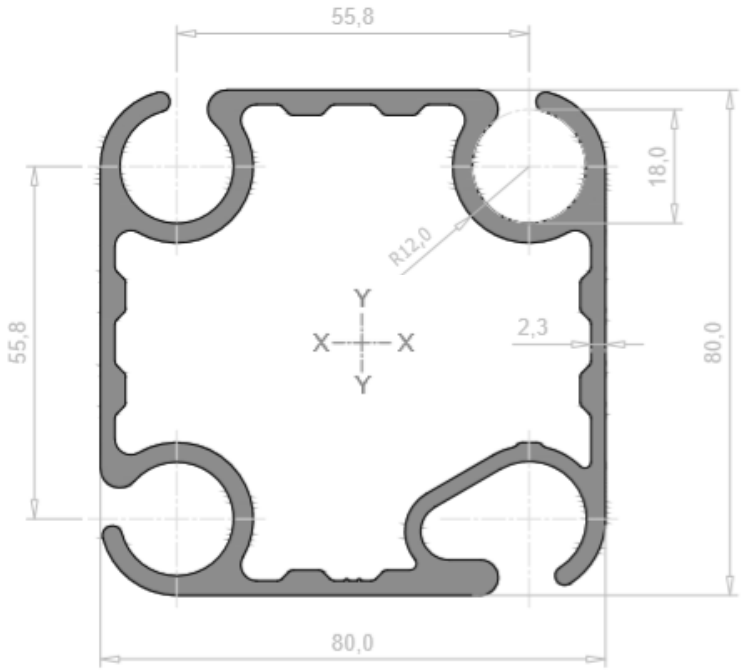
Moment of Inertia:

Ix (cm^4) = 58,7 Iy (cm^4) = 59,8

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100201 P80x80 mm

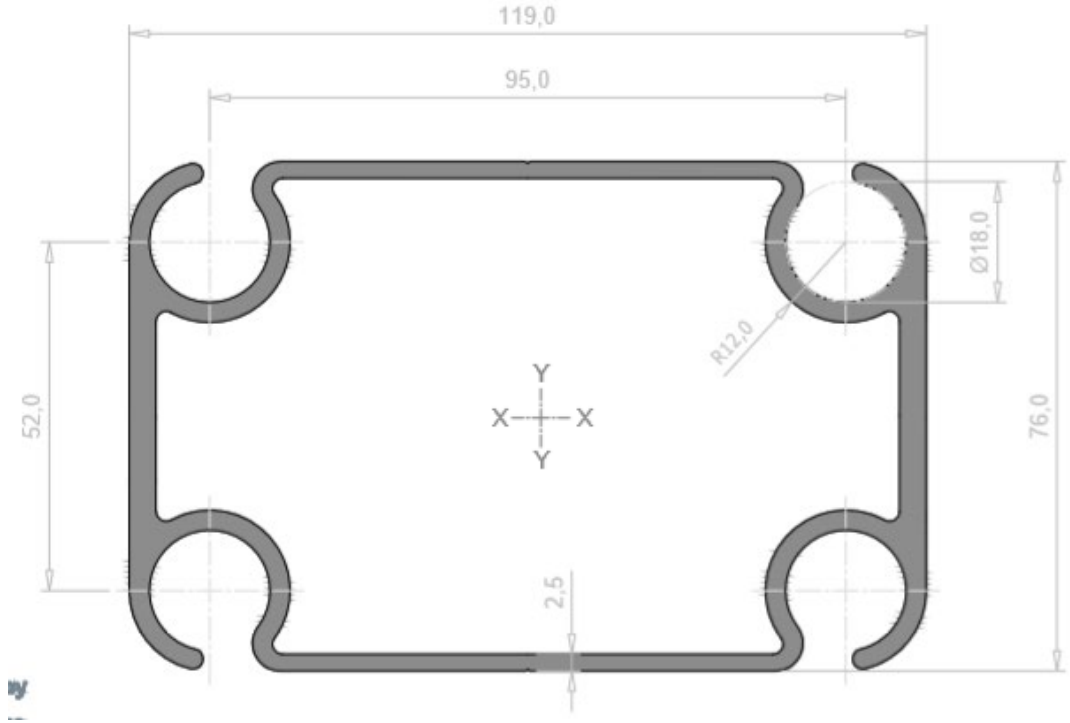
Moment of Inertia:

Ix (cm^4) = 103,4 Iy (cm^4) = 103,5

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100301 P119x76 mm

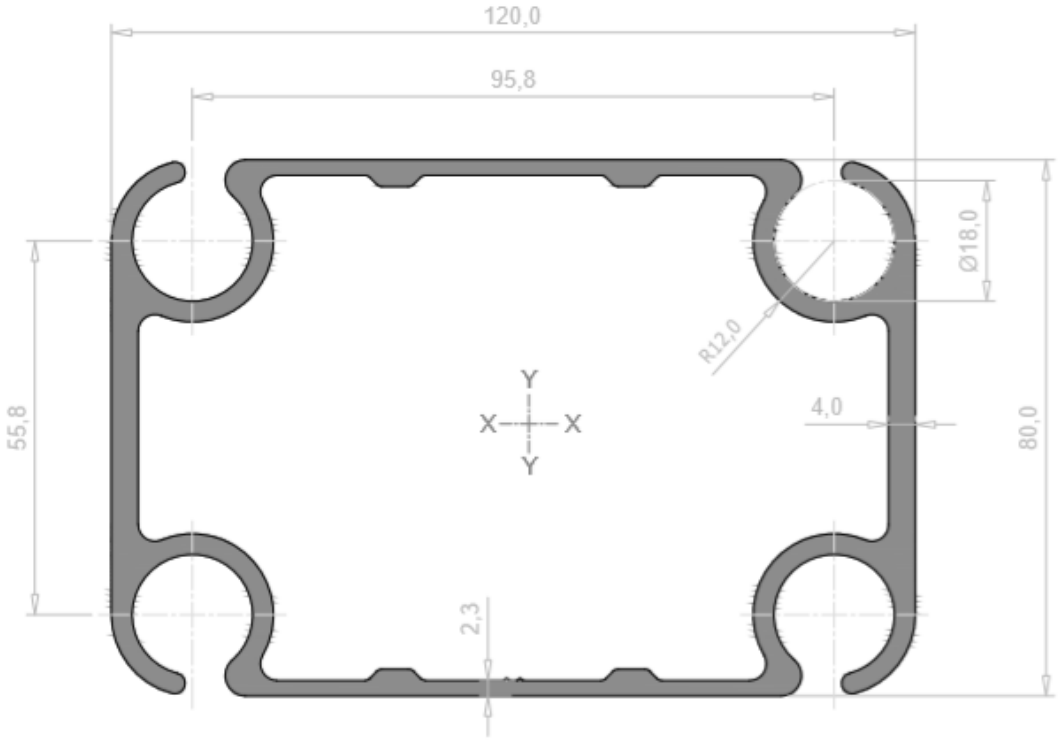
Moment of Inertia:

Ix (cm^4) = 104,1 Iy (cm^4) = 292,3

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100401 P120x80 mm

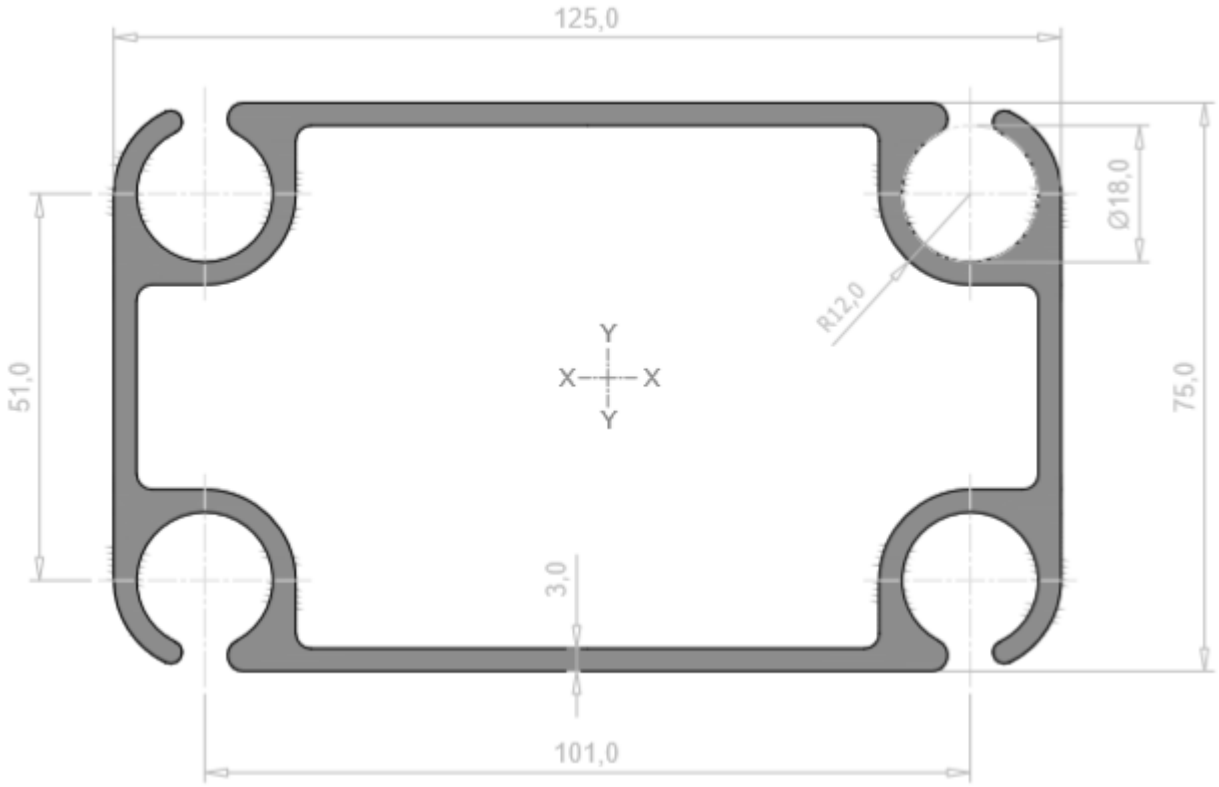
Moment of Inertia:

Ix (cm^4) = 129,5 Iy (cm^4) = 324,4

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100501 P125x75 mm

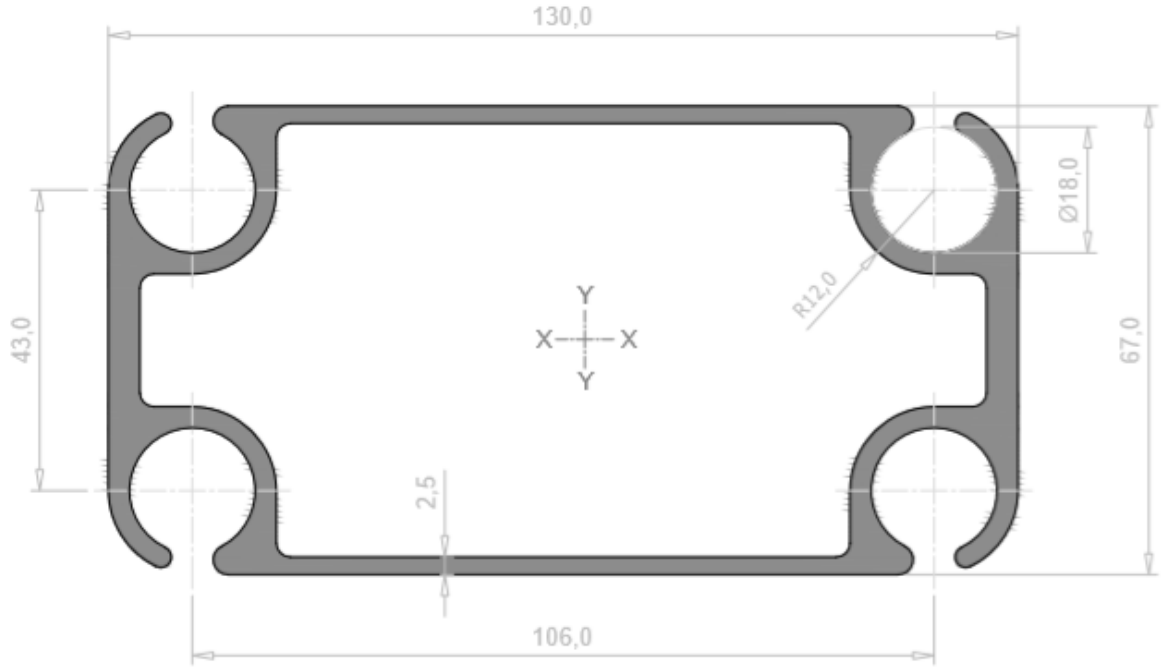
Moment of Inertia:

Ix (cm^4) = 124,7 Iy (cm^4) = 334,8

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100601 P130x67 mm

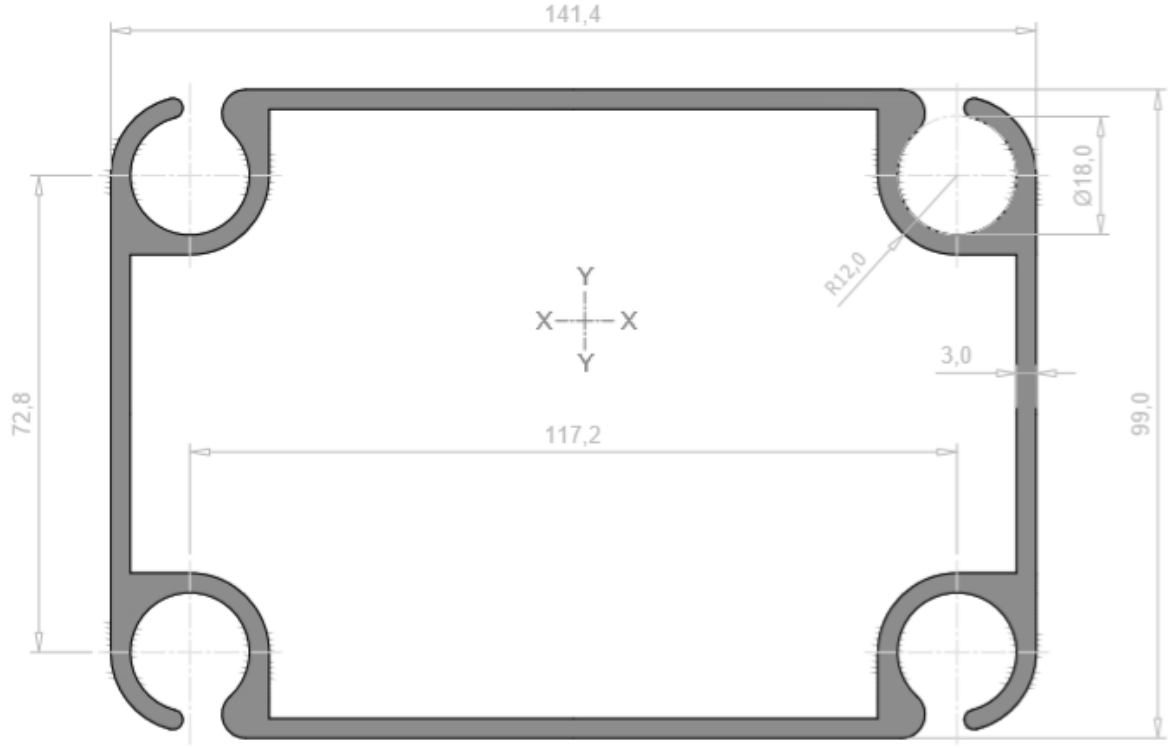
Moment of Inertia:

Ix (cm^4) = 89,6 Iy (cm^4) = 366,8

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100701 P141,4x99 mm

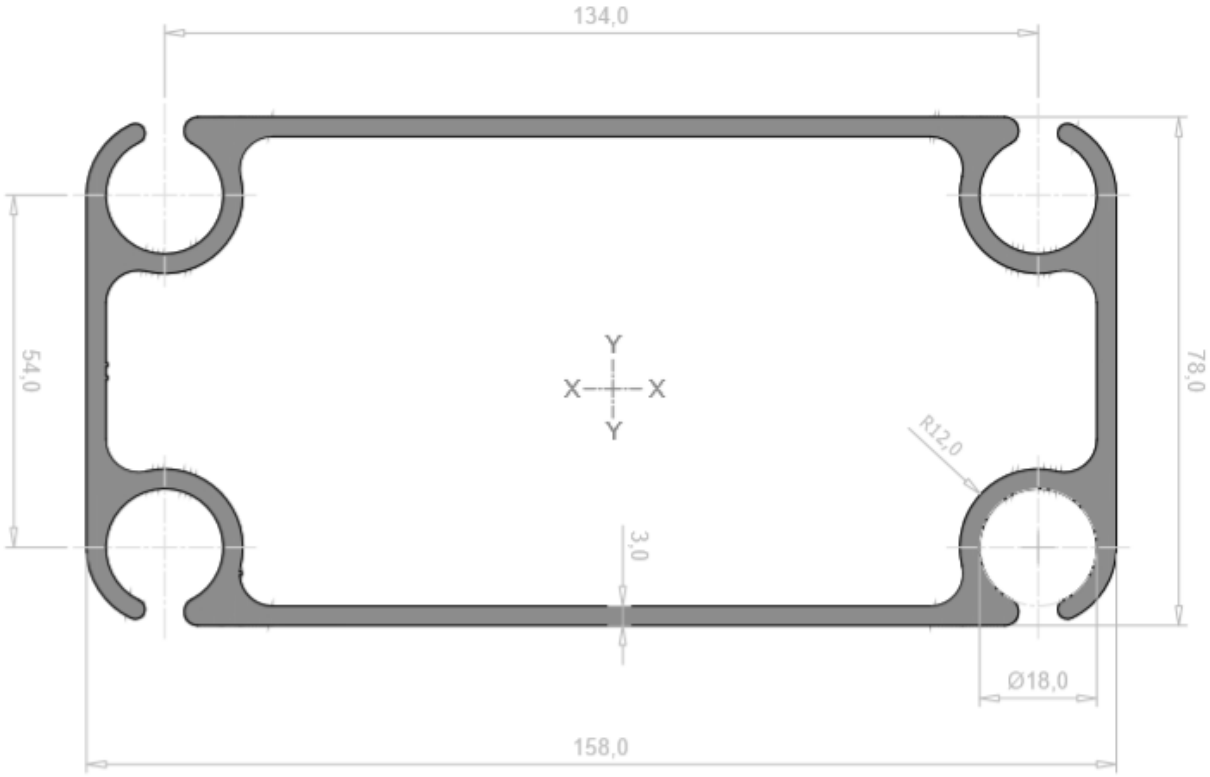
Moment of Inertia:

Ix (cm^4) = 265,7 Iy (cm^4) = 523,7

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100801 P158x78 mm

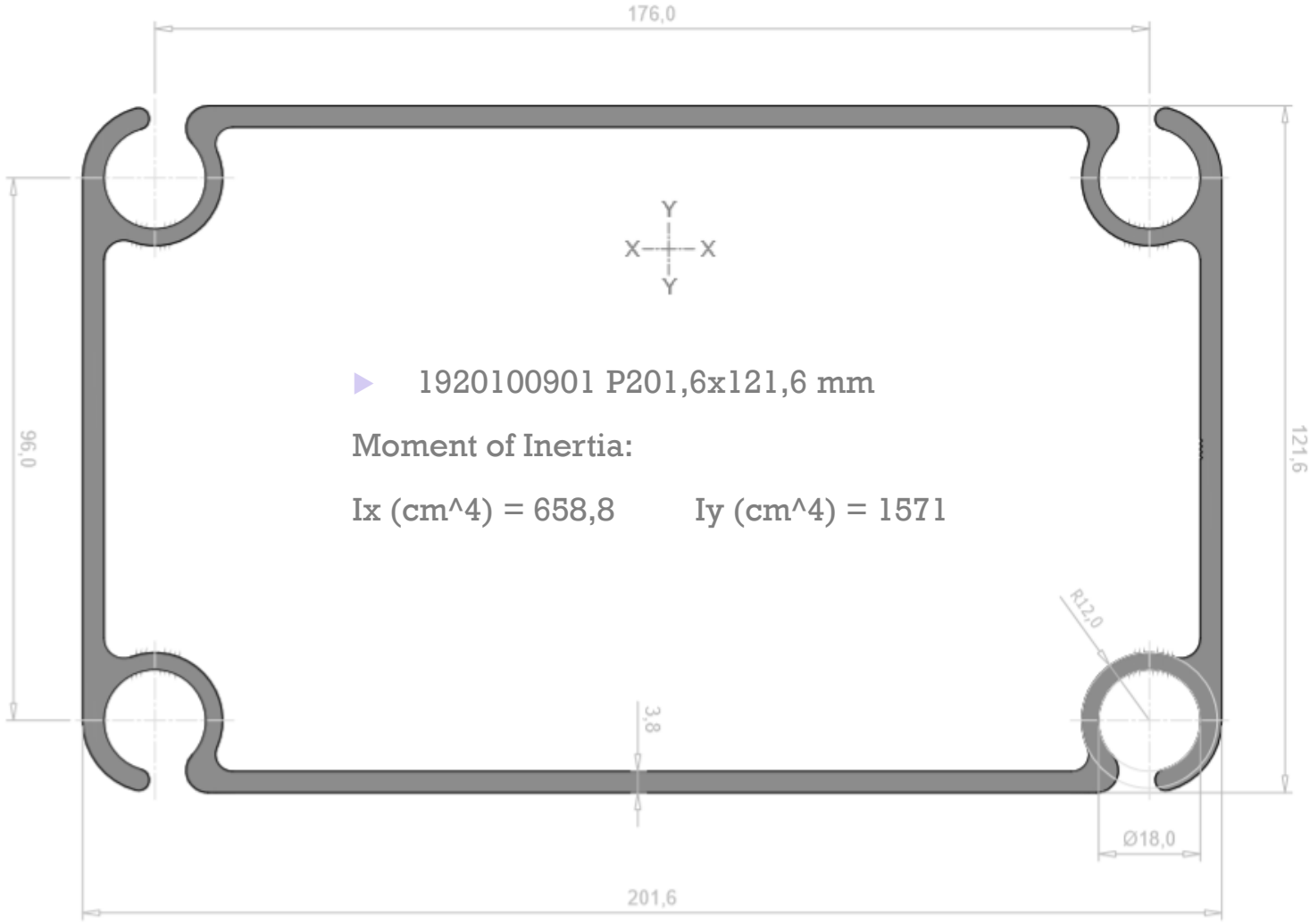
Moment of Inertia:

Ix (cm^4) = 166,2 Iy (cm^4) = 617,6

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920100901 P201,6x121,6 mm

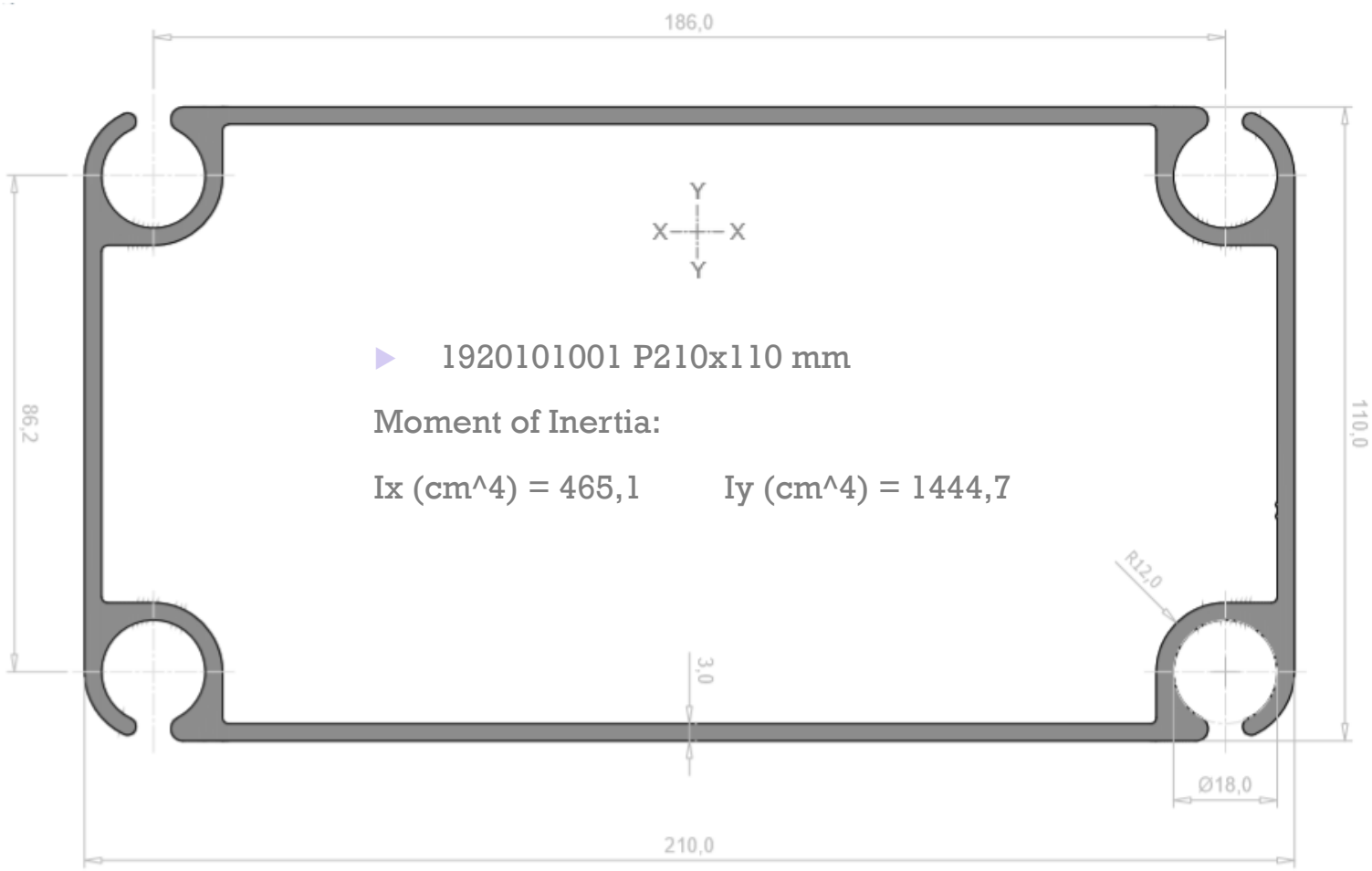
Moment of Inertia:

Ix (cm^4) = 658,8 Iy (cm^4) = 1571

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101001 P210x110 mm

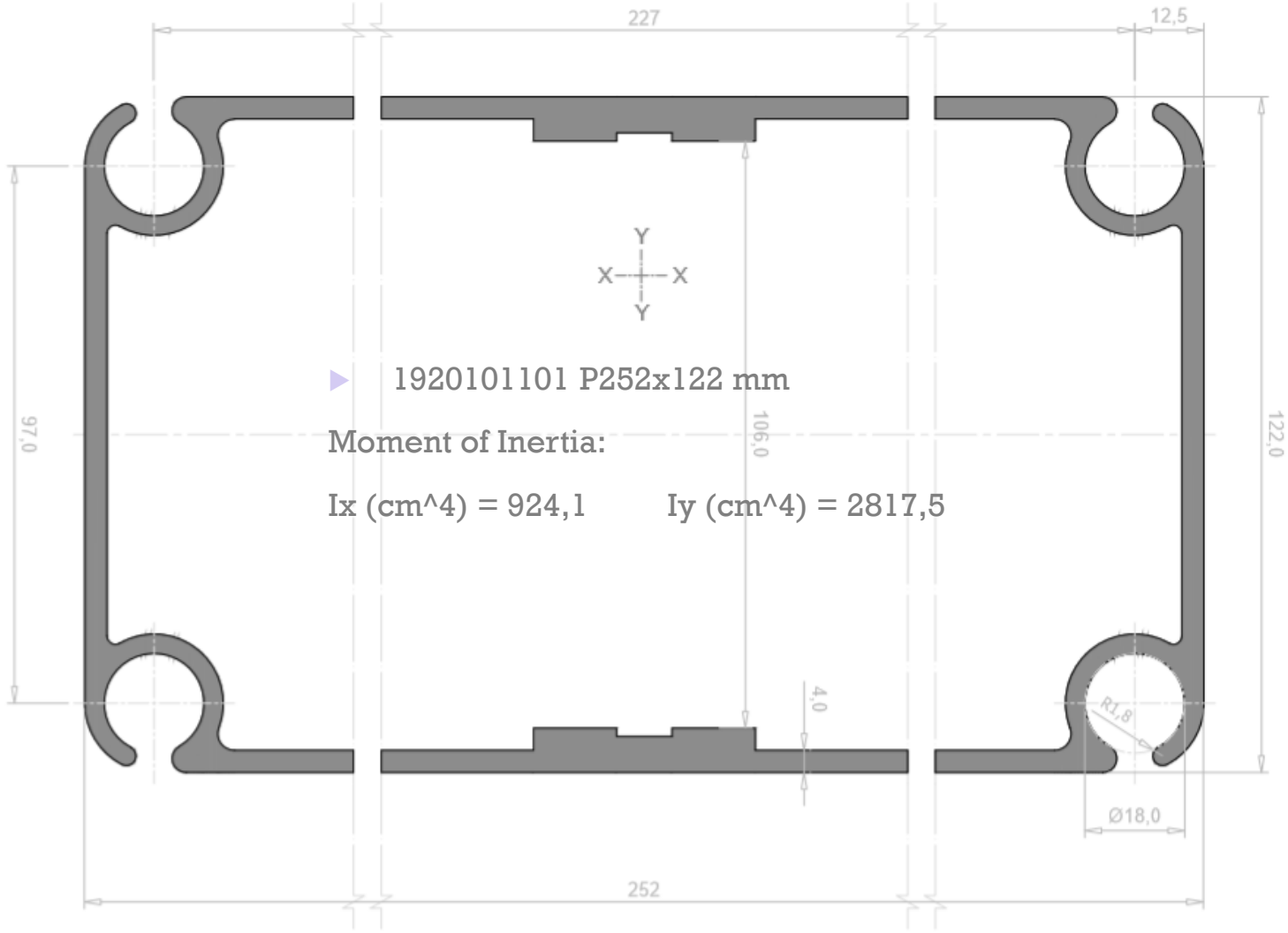
Moment of Inertia:

Ix (cm^4) = 465,1 Iy (cm^4) = 1444,7

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101101 P252x122 mm

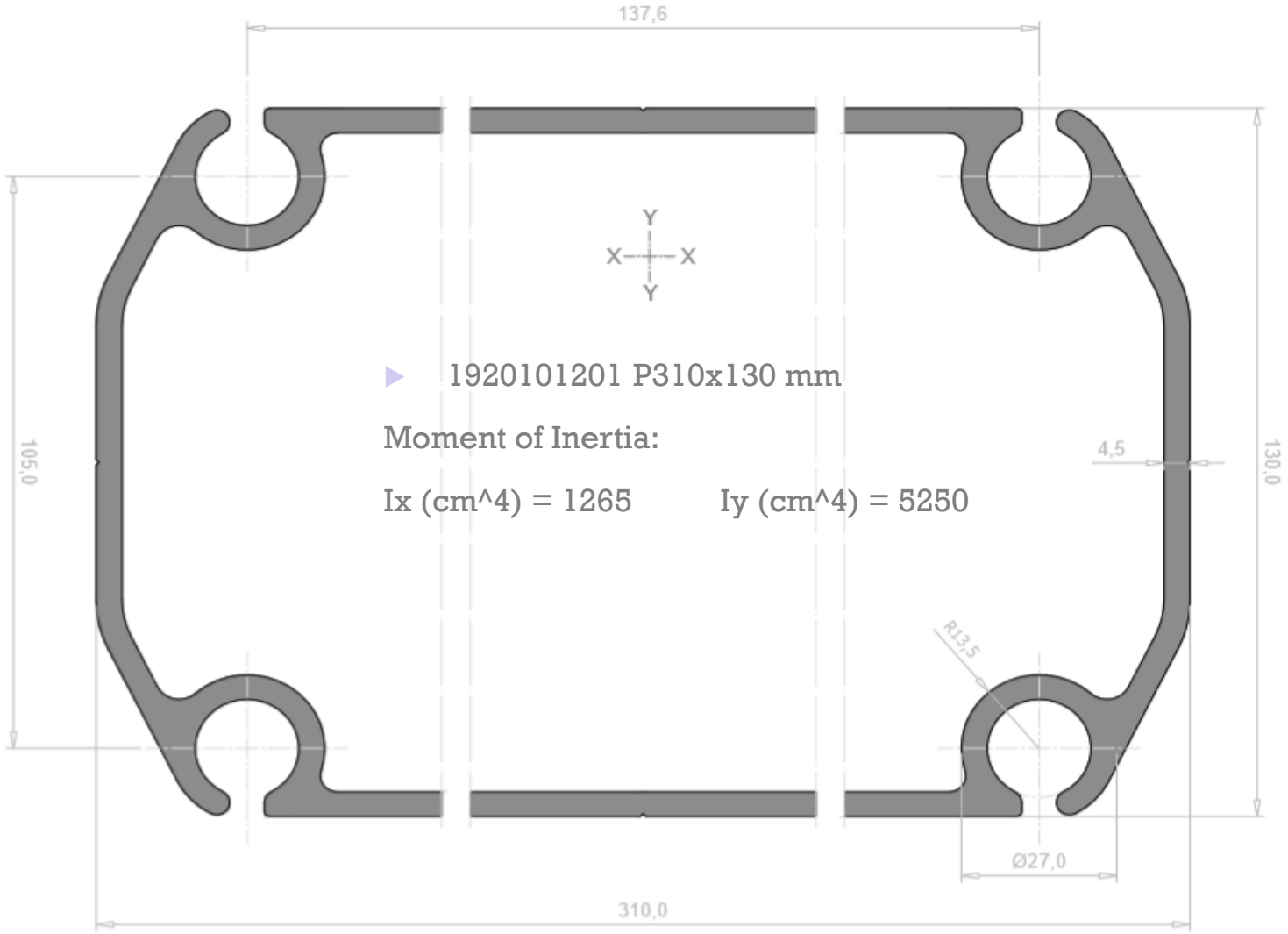
Moment of Inertia:

Ix (cm^4) = 924,1 Iy (cm^4) = 2817,5

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101201 P310x130 mm

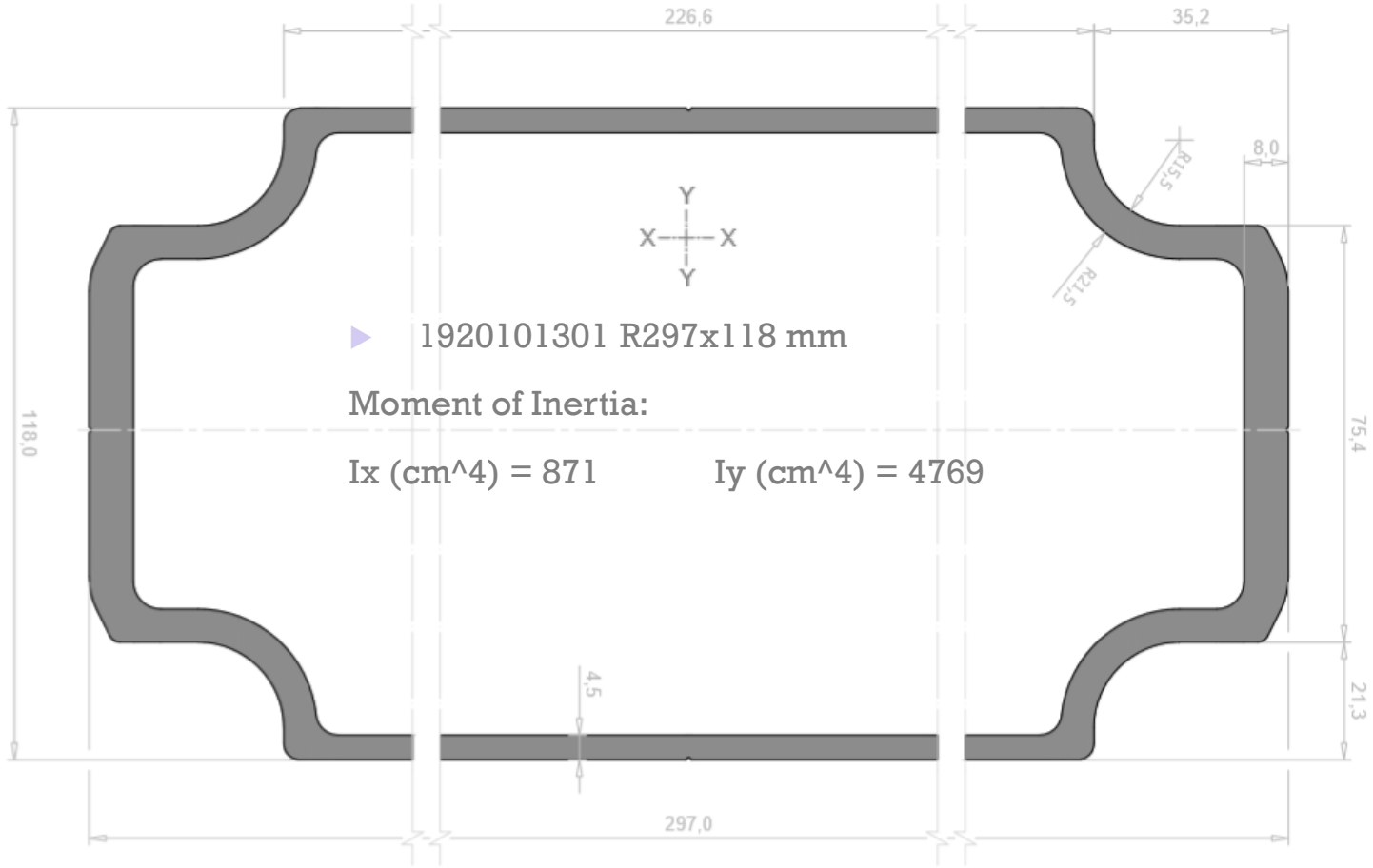
Moment of Inertia:

Ix (cm^4) = 1265 Iy (cm^4) = 5250

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101301 R297x118 mm

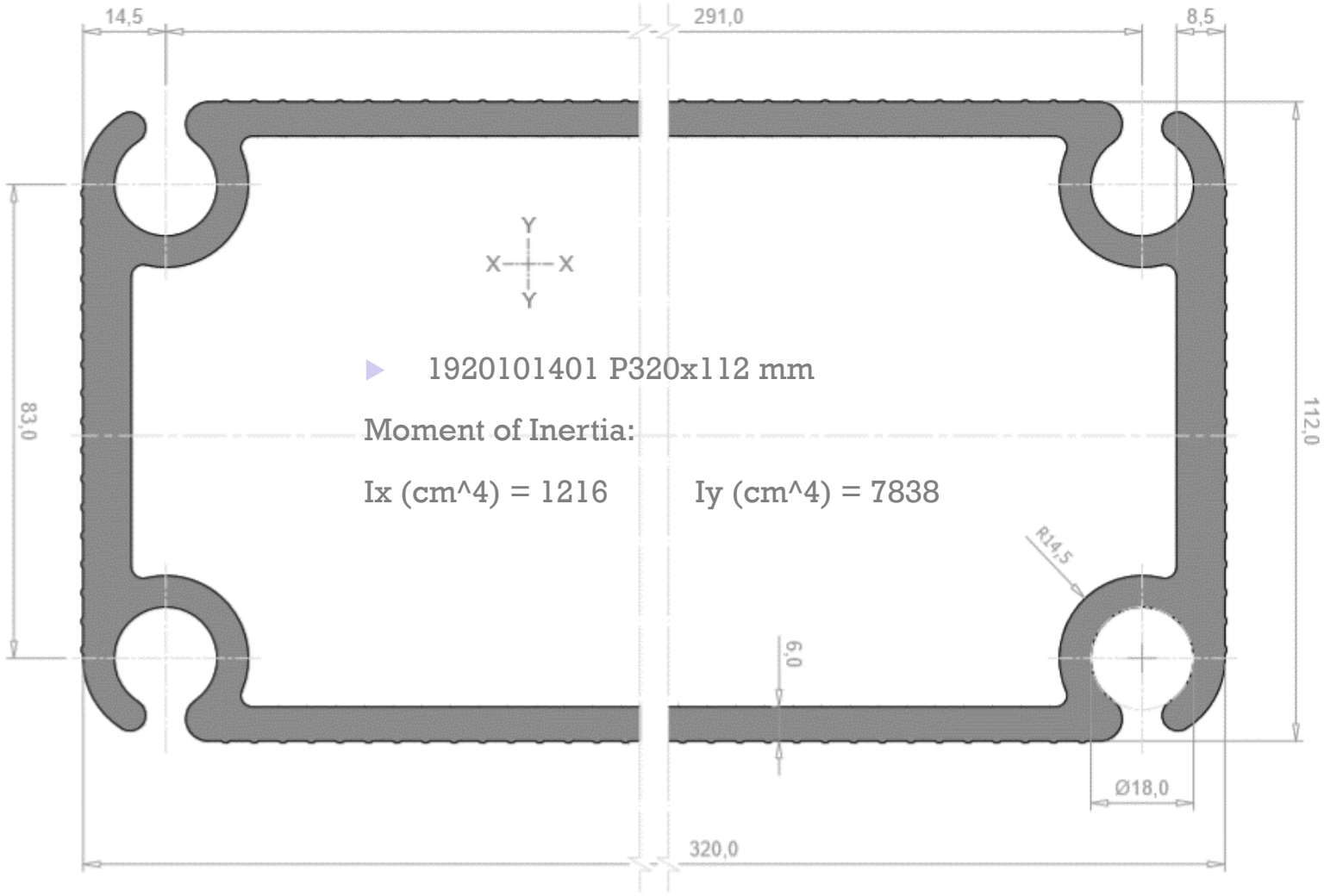
Moment of Inertia:

Ix (cm^4) = 871 Iy (cm^4) = 4769

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101401 P320x112 mm

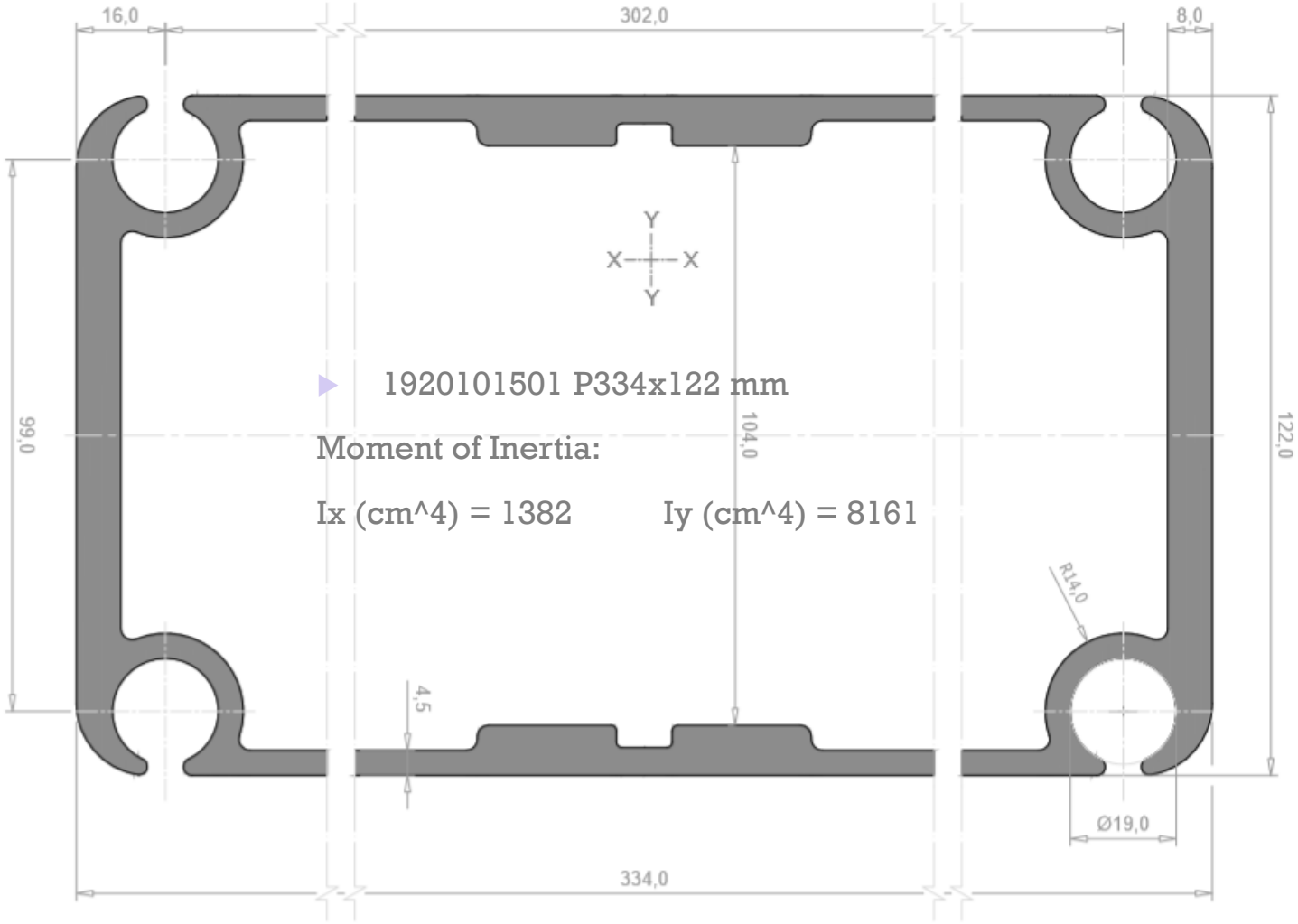
Moment of Inertia:

Ix (cm^4) = 1216 Iy (cm^4) = 7838

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101501 P334x122 mm

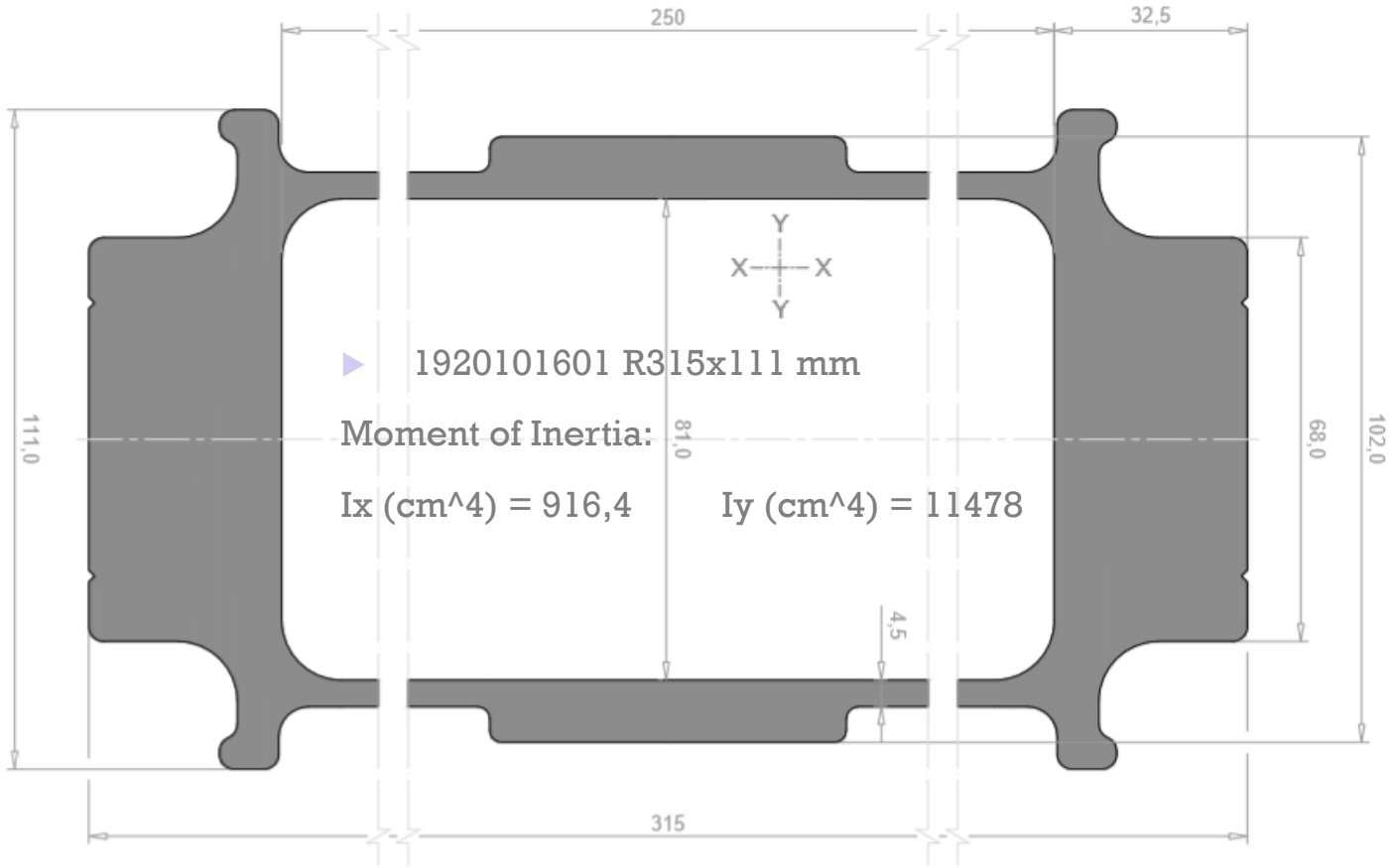
Moment of Inertia:

Ix (cm^4) = 1382 Iy (cm^4) = 8161

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Pilaster



- 1920101601 R315x111 mm

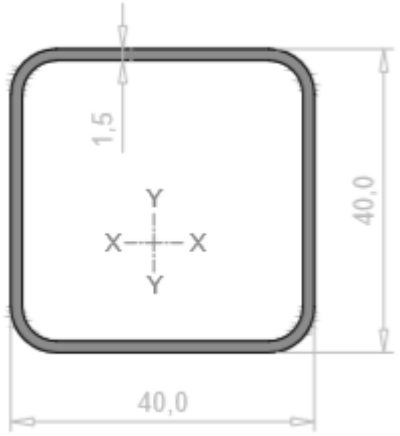
Moment of Inertia:

Ix (cm^4) = 916,4 Iy (cm^4) = 11478

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

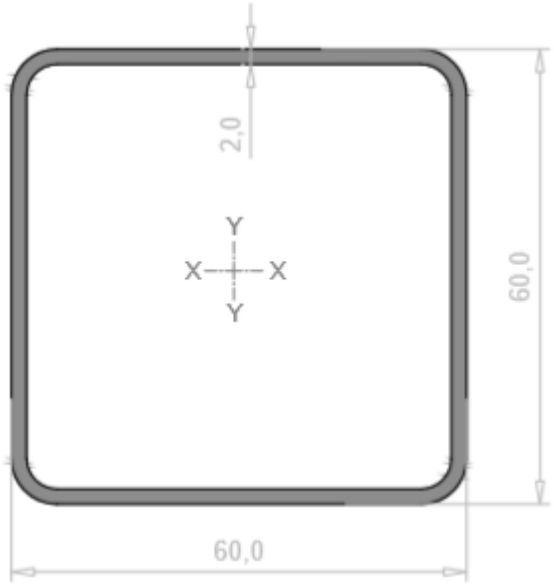
Trusses



- 1920101701 T40x40 mm

Moment of Inertia:

Ix (cm^4) = 5,2 Iy (cm^4) = 5,2



- 1920101801 T60x60 mm

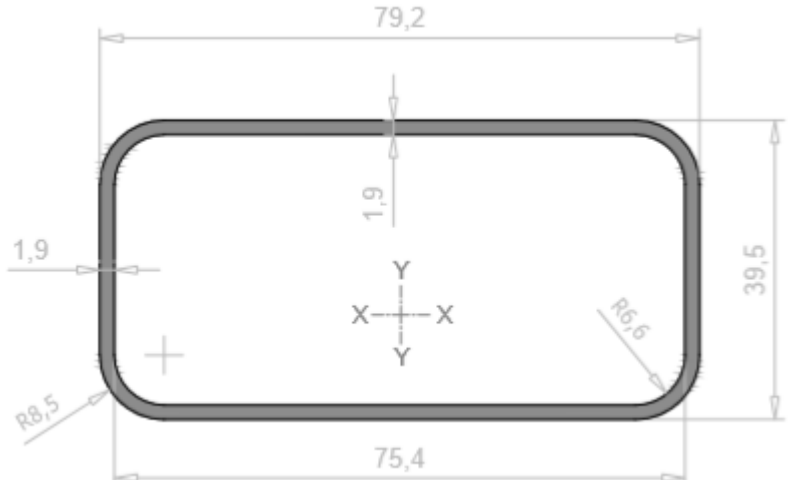
Moment of Inertia:

Ix (cm^4) = 24,5 Iy (cm^4) = 24,5

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

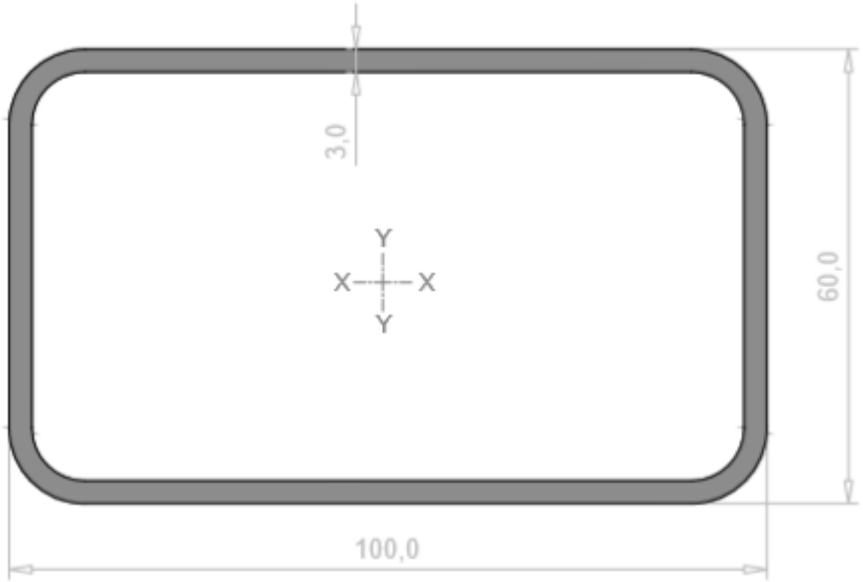
Trusses



- 1920101901 T79,2x39,5 mm

Moment of Inertia:

Ix (cm^4) = 11,1 Iy (cm^4) = 32,1



- 1920102001 T100x60 mm

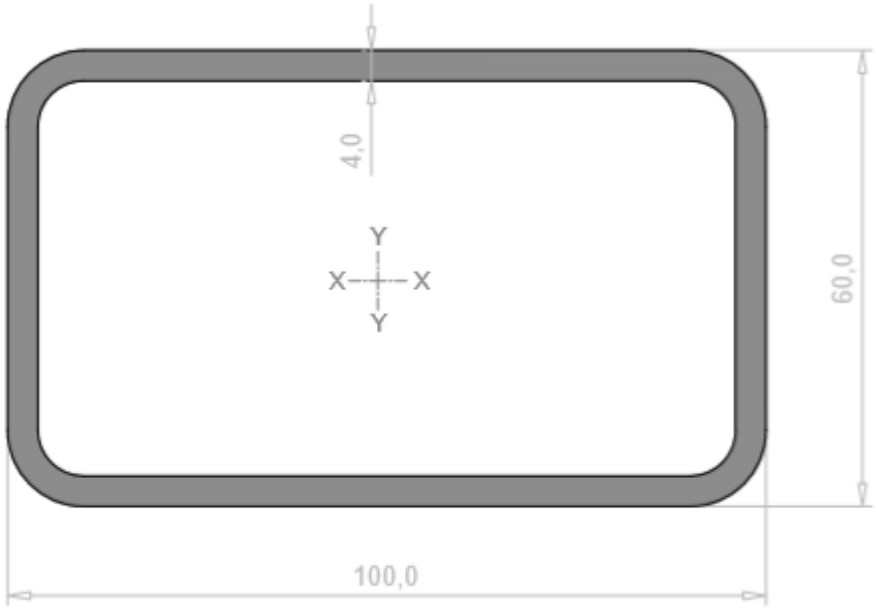
Moment of Inertia:

Ix (cm^4) = 52,7 Iy (cm^4) = 115,3

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

Trusses



- 1920102101 T100x60 mm

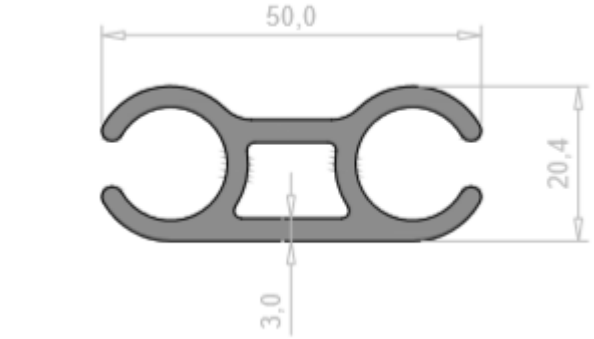
Moment of Inertia:

Ix (cm^4) = 67,4 Iy (cm^4) = 149,1

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

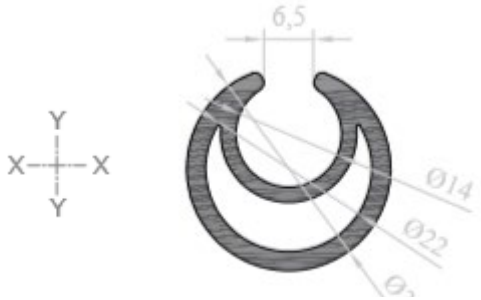
Various



- 1920102201 U50x20,4 mm

Moment of Inertia:

Ix (cm^4) = 1,8 Iy (cm^4) = 6,9



- 1920102301 TT27 mm

Moment of Inertia:

Ix (cm^4) = 1,3 Iy (cm^4) = 1,7

- 1920102401 TT34 mm

Moment of Inertia:

Ix (cm^4) = 3,2 Iy (cm^4) = 3,7

* Mill finish ** Anodized aluminium. Ask about other dimensions and alloys

R&D SOLUTIONS

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