

RAMA

Street lamp
2000

LIGHTING:

GENERAL DESCRIPTION:

For compact fluorescent lights of 57 or 70 W, or discharge lights of high-pressure sodium vapour, or metallic halides lights (max.150W).

WEIGHT: 8Kg

COVER AND LAMP HOUSING:

Attachment bridle made of grey, blue or brown injected engineering polymer, aluminium reflector and hardened-glass diffuser.

DIFFUSER:

Tempered glass, 4 mm thick.

TECHNICAL SPECIFICATIONS:

Lamp	70W / 100W / 150W HIT-CE
Lamp holder	E27 / E40 / E40
Sistem power	88W / 115W / 167W
Light efficiency	77.64%
FHS rating	0.0%

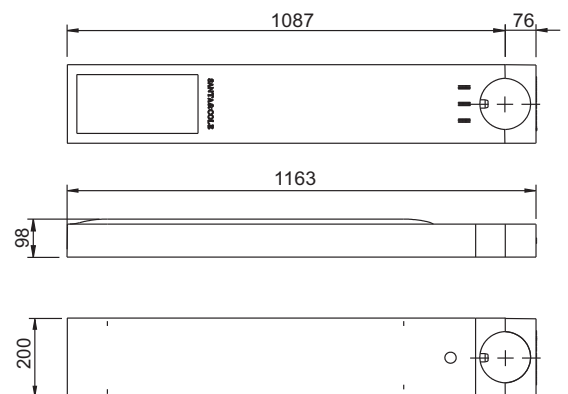
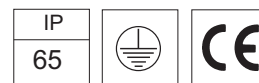
Lamp	70W / 100W /150W HST-MF
Lamp holder	E27 / E40 / E40
Sistem power	83W / 115W / 170W
Light efficiency	71.36%
FHS rating	0.0%

Lamp	57W / 70W TC-QEL
Lamp holder	GX24q - 5 / 6
Sistem power	63W / 77W
Light efficiency	58.13%
FHS rating	0.0%

Lamp	50W / 150W HIT-DE-CE
Lamp holder	Rx7s
Sistem power	88W / 167W
Light efficiency	77.42%
FHS rating	0.0%

Lamp	70W/ 150W HST-DE
Lamp holder	Rx7s
Sistem power	83W / 170W
Light efficiency	71.22%
FHS rating	0.0%

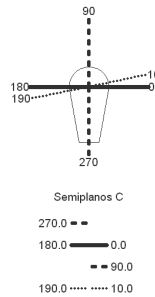
Power supply	230V - 50Hz
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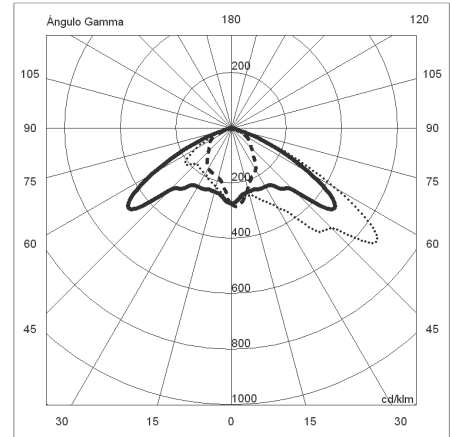
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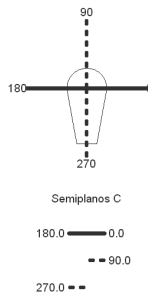
code	MH lamp		
RAF04	70W HIT-CE E27	88 W 230 V 50 Hz	
RAF05	100W HIT-CE E40	115 W 230 V 50 Hz	
RAF06	150W HIT-CE E40	167 W 230 V 50 Hz	



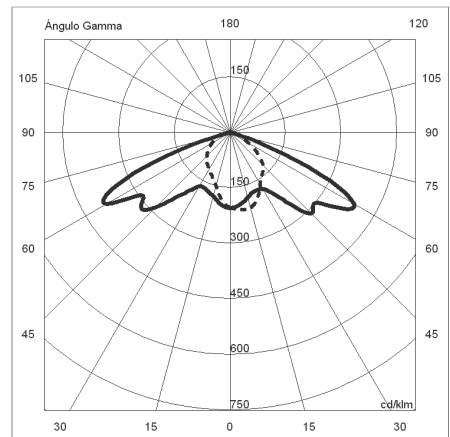
Máximo 662.24 cd/klm
 Posición C=10.00 G=52.50
 Rendimiento η = 77.64%
 Tasa FHS = 0.02%



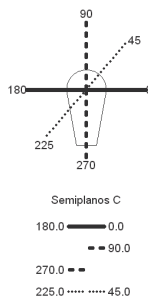
code	HPSV lamp		
RAF04	70W HST E27	83 W 230 V 50 Hz	
RAF05	100W HST E40	115 W 230 V 50 Hz	
RAF06	150W HST E40	170 W 230 V 50 Hz	



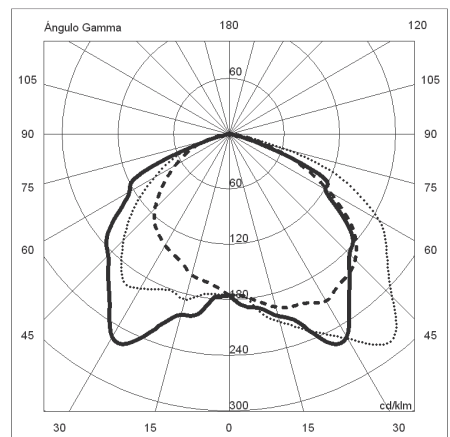
Máximo 384.70 cd/klm
 Posición C=0.00 G=60.00
 Rendimiento η = 71.36%
 Tasa FHS = 0.02%



code	CF lamp		
RAF07	(*) 57W TC-QEL GX24q-5	63 W 230 V 50 Hz	
RAF07	(*) 70W TC-QEL GX24q-6	77 W 230 V 50 Hz	



Máximo 282.60 cd/klm
 Posición C=135.00 G=35.00
 Rendimiento η = 58.13%
 Tasa FHS = 0.02%



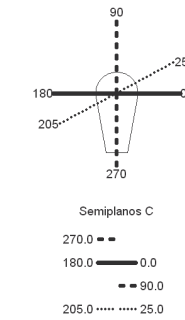
(*) Recommended lamp:
OSRAM DULUX T/E IN

RAMA

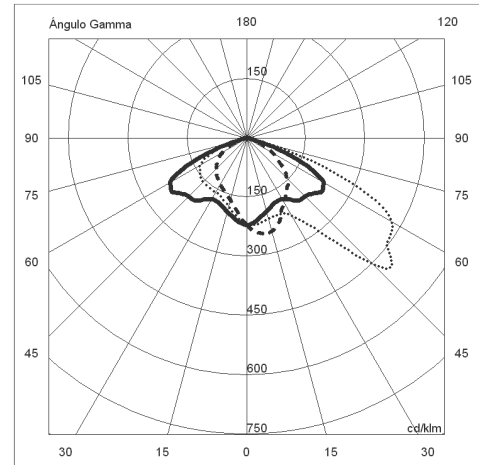
Street lamp
2000

code	MH lamp		
RAF104	70W HIT-DE-CERx7s	88 W 230 V 50 Hz	

RAF106	150W HIT-DE-CERx7s	167 W 230 V 50 Hz	
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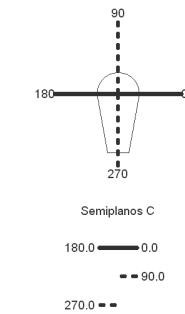


Máximo 489.70 cd/klm
Posición C=25.00 G=47.50
Rendimiento η = 77.42%
Tasa FHS = 0.02%

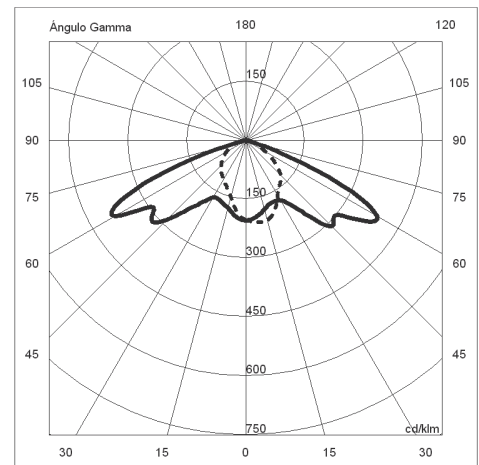


code	HPVS lamp		
RAF104	70W HST-DE Rx7s	83 W 230 V 50 Hz	

RAF106	150W HST-DE Rx7s	170 W 230 V 50 Hz	
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Máximo 394.70 cd/klm
Posición C=0.00 G=60.00
Rendimiento η = 71.22%
Tasa FHS = 0.02%



(*) Recommended lamp:
OSRAM DULUX T/E IN

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COLUMNS

GENERAL DESCRIPTION

Tubular column of different diameters and lights(according to refence).
1, 2 or 5 lights can be assembled.
Doble-section columns composed by squared or circular tube in the lower part and circular tube in the superior part.

COLUMN OF 4.7m/ 6,0m/ 6,2m HIGH:

Materials and finishings:

- Ø127 mm column of hot-galvanized steel S275 JR (4.7m and 6.2m).
- Ø127 mm column of hot-galvanized and painted steel S275 JR (4.7m and 6.2m).
- Ø129 mm column of polished stainless steel AISI 304 (4.7m and 6.2m).
- Ø127 mm column of anodized aluminium (4.7m and 6.2m).
- Ø127 mm column of painted aluminium (4.7m and 6.2m).

Doble-section columns:

Doble-section column assembled with 3 DIN 7984 M10x12:

- lower part: squared tube (140x140) or Ø152mm of painted galvanized steel.
- superior part: Ø129mm tube of stainless steel AISI 304.

Lights

1or 2 litghts of same heights can be assembled.
2 lights of different heights can be assembled to 6m and 6.2m columns

COLUMN OF 8.2m HIGH:

Doble-section columns welded or assembled with (3DIN7984 M10x12).

- lower part: Ø152.4m tube of galvanized, or galvanized and painted.
- superior part: Ø127mm tube of galvanized, or galvanized and painted or Ø129mm tube of painted stainless steel AISI 304.

Lights

1 or 2 lights of same heights can be assembled.
2 or 5 lights of different heights can be assembled.



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ANCHORAGE

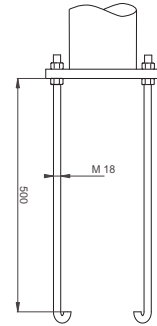
The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Length (m): 0.5
Diameter (mm): (M18)

MATERIALS:

Steel S 235 JR
Yield stress (MPa): 235
Ultimate stress (MPa): 400

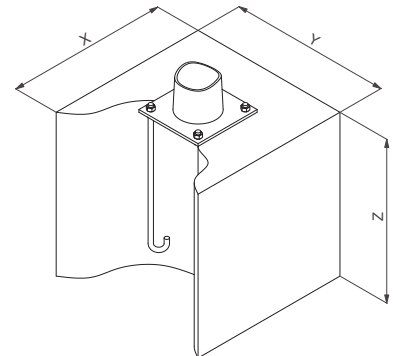


FOUNDATION CUBE

GEOMETRICAL CHARACTERISTICS:

Columns	X	Y	Z
4.7	0.65	0.65	0.60
6.0 / 6.2	0.80	0.80	0.70
8.2	0.90	0.90	0.70

(Dimensions in m)



MATERIAL:

Concrete HM-20
Typical resistance: 20 MPa

TERRAIN TYPE:

Terrain type II (according to UNE-EN40-3-1).
Allowable pressure: 1 Kg/cm²

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COLUMN 4.7m HIGH IN STAINLESS STEEL

GENERAL DESCRIPTION:

Ø129mm column made of polished stainless steel (AISI 304)

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m):	4.7
Maximum illuminated area (m ²):	0,0993
Thickness (mm):	2

MATERIALS:

Stainless steel AISI 304	
Yield stress (MPa):	295

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s):	28
Terrain category:	1
Wind pressure (N/m ²):	450.8

SAG AT THE END:

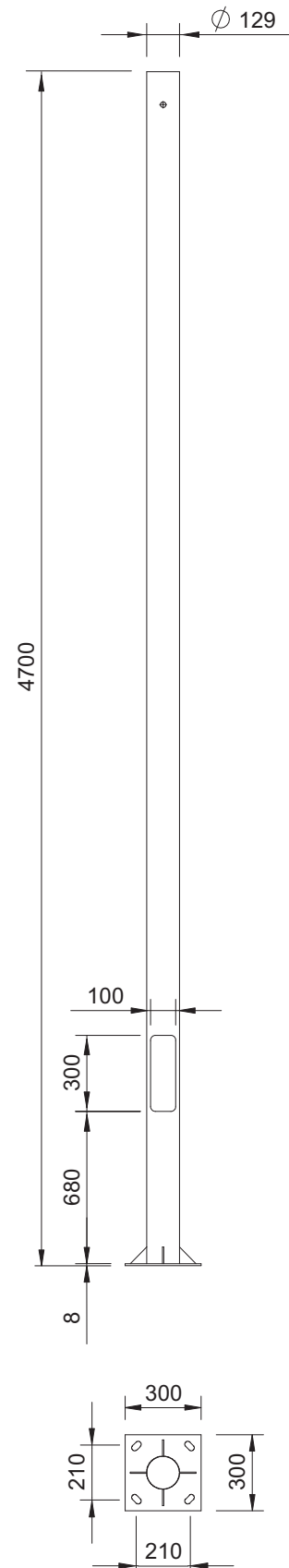
For x L/240
For y L/185

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	1Lum. / 2Lum.
Weight (KN):	0.50 / 0.60
Moment X (KNm):	2.11 / 2.79
Moment Y (KNm):	1.69 / 1.63
Wind speed X (KN):	0.66 / 0.66
Wind speed Y (KN):	0.77 / 0.92
Twisting moment (KNm):	0.07 / 0.00
Compound stress: X (MPa)	68.40 / 66.10
Y (MPa)	85.40 / 112.60

SECTION OF OPENING (h = 0.68m)	1Lum.
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Weight (KN):	0.45
Moment X (KNm):	1.67
Moment Y (KNm):	1.30
Wind speed X (KN):	0.58
Wind speed Y (KN):	0.69
Twisting moment (KNm):	0.07
Ultimate moment Y (KNm):	3.12
Ultimate moment X (KNm):	5.01
Ultimate stress (KNm):	0.95



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COLUMN 4.7m HIGH IN GALVANIZED STEEL

GENERAL DESCRIPTION:

Ø127 column made of hot galvanized steel(S 275 JR)

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m):	4.7
Maximum illuminated area (m ²):	0,0993
Thickness (mm):	3

MATERIALS:

Steel S 275 JR	
Yield stress (MPa):	275

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s):	28
Terrain category:	1
Wind pressure (N/m ²):	450.8

SAG AT THE END:

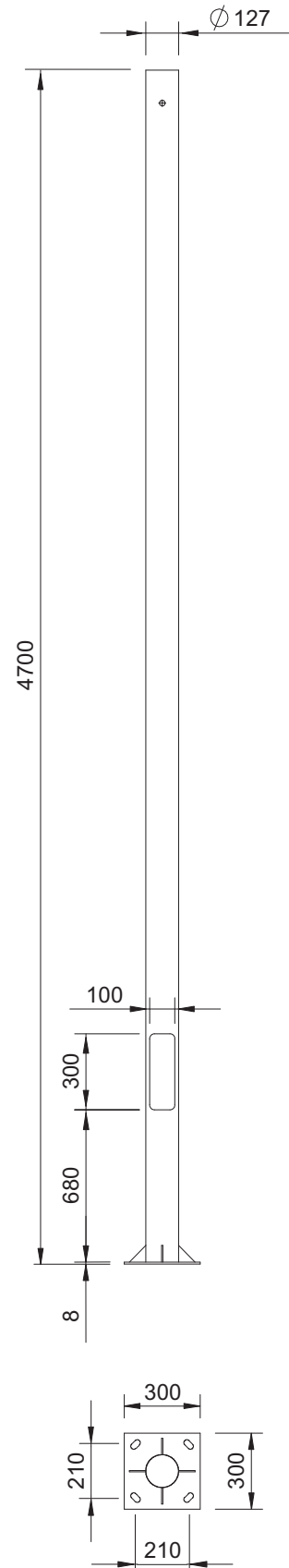
For x L/335
For y L/260

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	1Lum. / 2Lum.
Weight (KN):	0.68 / 0.79
Moment X (KNm):	2.11 / 2.79
Moment Y (KNm):	1.69 / 1.63
Wind speed X (KN):	0.66 / 0.66
Wind speed Y (KN):	0.77 / 0.92
Twisting moment (KNm):	0.07 / 0.00
Compound stress: X (MPa)	48.30 / 46.70
Y (MPa)	60.30 / 79.50

SECTION OF OPENING (h = 0.68m)	1Lum.
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Weight (KN):	0.61
Moment X (KNm):	1.67
Moment Y (KNm):	1.31
Wind speed X (KN):	0.58
Wind speed Y (KN):	0.69
Twisting moment (KNm):	0.07
Ultimate moment Y (KNm):	5.14
Ultimate moment X (KNm):	8.23
Ultimate stress (KNm):	1.41



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COLUMN 6,0m HIGH IN STAINLESS STEEL

GENERAL DESCRIPTION:

Ø129mm column made of stainless steel (AISI 304)

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m):	6,0
Maximum illuminated area (m ²):	0,0993
Thickness (mm):	2

MATERIALS:

Stainless steel AISI304	
Yield stress (MPa):	295

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s):	28
Terrain category:	1
Wind pressure (N/m ²):	450.8

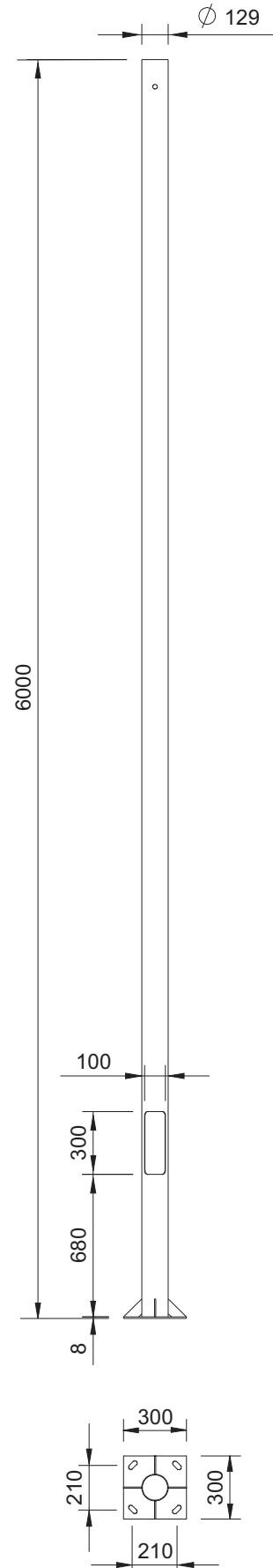
SAG AT THE END:

For x L/335
For y L/260

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	1Lum. / 2Lum.
Weight (KN):	0.61 / 0.71
Moment X (KNm):	3.74 / 4.53
Moment Y (KNm):	3.00 / 2.95
Wind speed X (KN):	0.91 / 0.94
Wind speed Y (KN):	1.05 / 1.21
Twisting moment (KNm):	0.09 / 0.00
Compound stress: X (MPa)	121.00 / 119.00
Y (MPa)	151.00 / 183.00

SECTION OF OPENING (h = 0.68m)	1Lum.
Weight (KN):	0.55
Moment X (KNm):	3.04
Moment Y (KNm):	2.39
Wind speed X (KN):	0.84
Wind speed Y (KN):	0.98
Twisting moment (KNm):	0.09
Ultimate moment Y (KNm):	3.20
Ultimate moment X (KNm):	5.00
Ultimate stress (KNm):	0.95



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COLUMN 6,0m HIGH IN GALVANIZED STEEL

GENERAL DESCRIPTION:

Ø127 column made of hot galvanised steel (S 275 JR).

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m): 6,2
Maximum illuminated area (m²): 0,0993
Thickness (mm): 3

MATERIALS:

Stainless steel AISI304
Yield stress (MPa): 275

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s): 28
Terrain category: 1
Wind pressure (N/m²): 450.8

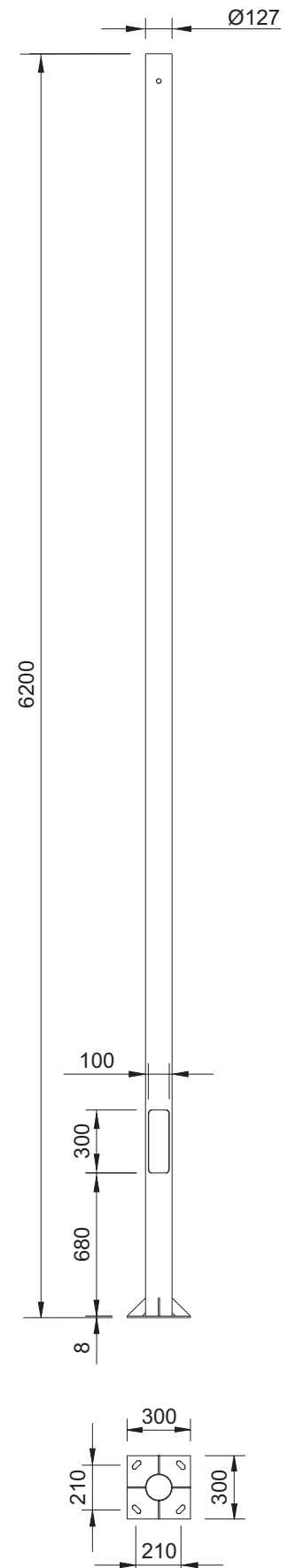
SAG AT THE END:

For x L/335
For y L/260

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	1Lum. / 2Lum.
Weight (KN):	0.84 / 0.94
Moment X (KNm):	3.74 / 4.53
Moment Y (KNm):	3.00 / 2.95
Wind speed X (KN):	0.94 / 0.94
Wind speed Y (KN):	1.08 / 1.21
Twisting moment (KNm):	0.09 / 0.00
Compound stress: X (MPa)	85.40 / 84.20
Y (MPa)	106.50 / 129.00

SECTION OF OPENING (h = 0.68m)	1Lum.
Weight (KN):	0.75
Moment X (KNm):	3.04
Moment Y (KNm):	2.39
Wind speed X (KN):	0.84
Wind speed Y (KN):	0.98
Twisting moment (KNm):	0.09
Ultimate moment Y (KNm):	5.10
Ultimate moment X (KNm):	8.20
Ultimate stress (KNm):	1.41



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COLUMN 4.7m / 6.20M HIGH IN ALUMINIUM

GENERAL DESCRIPTION:

Ø127 column of extruded anodized aluminium, the lower part is protected by a plastic cover.

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.

The foundation should provide a slot for electrical connection.

WEIGHT

4.7 high	20kg.
6.2 high	26.3kg.

COLUMN

Column made of extruded aluminium alloy AW-6060 T6 with anodized finishing.

Anodized finishing protects from corrosion, improves debilitation resistance and electric insulation.

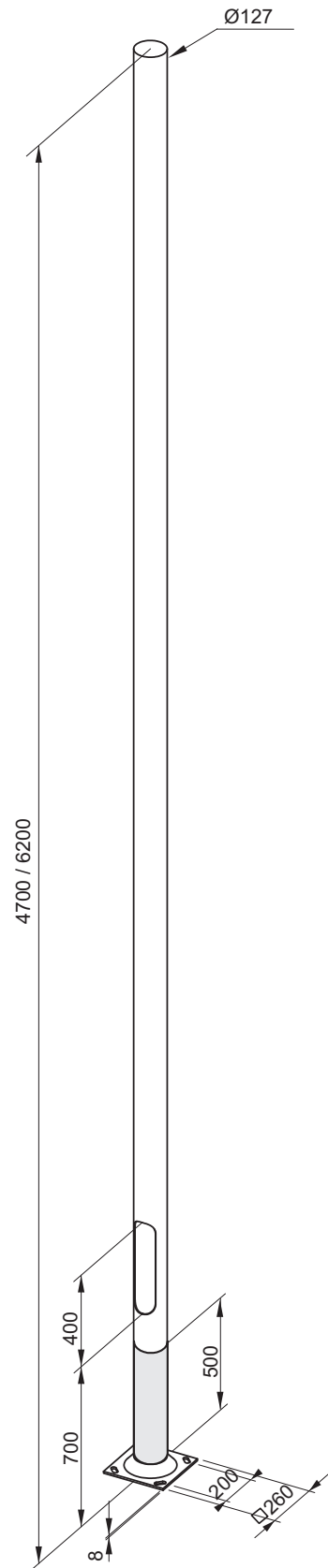
The lower part of the column(500m) is covered by a non porous plastic cover with insulating properties (250µ thickness)

AW-6060 T6 MECHANICAL PROPERTIES

Stretch limit	150 N/mm ²
Breaking strength	190 N/mm ²
HB hardness	65 HB
Minimum elongation	8 %

AW-6060 T6 CHEMICAL COMPOSITION

Silicon (Si)	0.30-0.60 %
Steel(Fe)	0.10-0.30%
Copper(Cu)	0.10%
Manganese (Mn)	0.10%
Magnesium(Mg)	0.35-0.60 %
Chrome (Cr)	0.05%
Zinc (Zn)	0.15%
Titanium(Ti)	0.10%
Other element	0.15%
Aluminium (Al)	the rest.



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COLUMN 8,2m HIGHT IN GALVANIZAED STEEL

GENERAL DESCRIPTION:

Doble-section column of galvanized steel (S275JR):

- lower part: $\varnothing 152.4\text{m}$
- superior part: $\varnothing 127\text{mm}$

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m):	8,2
Maximum illuminated area (m ²):	0,0993
Thickness (mm):	3

MATERIALS:

Steel S 275 JR	
Yield stress (MPa):	275

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s):	28
Terrain category:	1
Wind pressure (N/m ²):	450.8

SAG AT THE END:

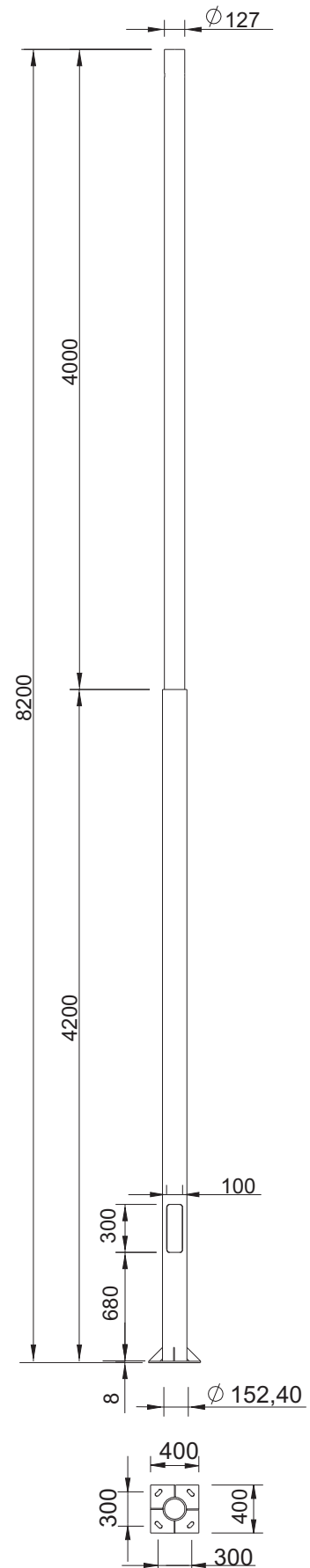
For x L/335
For y L/260

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	1Lum. / 2Lum.
Weight (KN):	1.22 / 1.33
Moment X (KNm):	6.14 / 7.76
Moment Y (KNm):	5.25 / 5.35
Wind speed X (KN):	1.15 / 1.18
Wind speed Y (KN):	1.27 / 1.48
Twisting moment (KNm):	0.09 / 0.00
Compound stress: X (MPa)	102.70 / 104.70
Y (MPa)	120.00 / 151.40

SECTION OF OPENING (h = 0.68m)

Weight (KN):	1.12
Moment X (KNm):	5.31
Moment Y (KNm):	4.48
Wind speed X (KN):	1.07
Wind speed Y (KN):	1.19
Twisting moment (KNm):	0.09
Ultimate moment Y (KNm):	8.39
Ultimate moment X (KNm):	12.30
Ultimate stress (KNm):	3.00



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COLUMN 8,2m HIGHT

GENERAL DESCRIPTION:

Doble-section column assembled with 3 DIN 7984 M10x12:

- lower part of painted galvanized steel $\varnothing 152.4\text{mm}$
- superior part of polished stainless steel $\varnothing 129\text{mm}$

The columns are fixed using a reinforced concrete cube, made on site and anchorage bolts, 20cm below the ground.
The foundation should provide a slot for electrical connection.

GEOMETRICAL CHARACTERISTICS:

Height (m):	8,2
Maximum illuminated area (m ²):	0,0993
Thickness $\varnothing 219$ (mm):	4
Thickness $\varnothing 129$ (mm):	2

MATERIALS:

Steel S 275 JR	
Yield stress (MPa):	275/295

CHARACTERISTICS OF WIND PRESSURE:

Reference speed (m/s):	28
Terrain category:	1
Wind pressure (N/m ²):	450.8

SAG AT THE END:

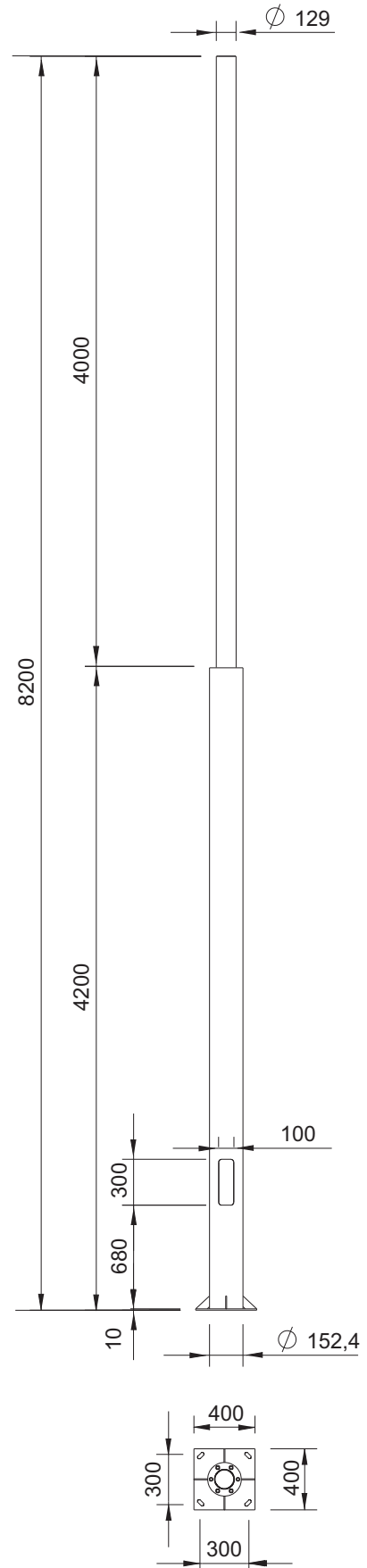
For x L/335
For y L/260

CRITICAL STRESSES:

EMBEDMENT SECTION (h=0m)	5Lum.
Weight (KN):	1.22
Moment X (KNm):	6.14
Moment Y (KNm):	5.25
Wind speed X (KN):	1.15
Wind speed Y (KN):	1.27
Twisting moment (KNm):	0.09
Compound stress:	X (MPa)
102.70	Y (MPa)
120.00	

SECTION OF OPENING (h = 0.68m)

Weight (KN):	1.86
Moment X (KNm):	6.48
Moment Y (KNm):	6.80
Wind speed X (KN):	1.60
Wind speed Y (KN):	1.59
Twisting moment (KNm):	0.00
Ultimate moment Y (KNm):	31.00
Ultimate moment X (KNm):	39.00



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WALL ATTACHMENT

GENERAL DESCRIPTION:

Anchorage that allows to fix a RAMA light to vertical surfaces.
A wall bracket of bent AISI 304 stainless steel sheet in sand-finish.

AISI 304 MECHANICAL PROPERTIES

Stretch limit	210	N/mm ²
Breaking strength	520	N/mm ²
Minimum elongation	40	%
HB hardness	202	HB

AISI 304 CHEMICAL COMPOSITION

Carbon (C)	0,08 %
Chromium (Cr)	18-20 %
Nickel (Ni)	8-12 %
Manganese (Mn)	2,00 %
Silicon (Si)	1,00 %
Sulphur (S)	0,03 %
Nitrogen (N)	0,04 %

