

### 1. GENERAL

The RAILSCAF is a building maintenance system comprising a monorail fixed around the perimeter of a building structure. A traversing trolley, from which may be suspended a SOLO cradle, travels along the monorail to reach the various parts of the building.

The height of lift is limited to 40 m.

The maximum suspended load on each lifting point is 350 kg.

The powered trolley travels **horizontally** or on an **inclined** track.

For operating on an **inclined section** (up to 60°), the RAILSCAF rail has an integrated chain whereas the trolley is fitted with a pinion which engages automatically in the chain, giving safe and reliable traversing.

### 2. MONORAIL

#### 2.1. Mechanical specifications

Aluminium profile:	120x45 mm
Standard length:	5800 mm
Weight kg/m:	7.6
Aluminium material:	serie 6060 F18-20
Limit of elasticity:	Re 160 MPa
Breaking strain:	Rm 190 MPa
Standard elasticity:	E = 69 500 MPa
A %:	10
Linear expansion coefficient:	$23 \times 10^{-6} \text{ } ^\circ\text{C}$
Section:	S = 28 cm <sup>2</sup>
Inertia:	Ixx = 311,5 cm <sup>4</sup> Iyy = 53,6 cm <sup>4</sup>
	Wxx = 52,4 cm <sup>3</sup> Wyy = 23 cm <sup>3</sup>
Minimum bending radius	
(outer/inner)	R = 700 mm
Chain (only in inclined segments)	ASA 3/4"x1/2"

The maximum distance between brackets is limited to 3 m with a suspended load of 350 kg.

The distortion of the rail under a load of 350 kg is less than 1/250th of the span, i.e. less than 12 mm.

**CE** The RAILSCAF machine conforms to EU Directives and is manufactured in accordance with ISO 9001



### 2.2. Protection

**2.2.1. Anodisation** gives protection against corrosion by depositing a layer of aluminium oxide.

We recommend 1 thicknesses of protection:

– Class 20, 20 µ m. thickness

The colours available are:

– Natural aluminium	– Light beige	Eurocolor 2005
– Gold	– Dark beige	Eurocolor 2006
	– Chestnut	Eurocolor 2007
	– Black	Eurocolor 2008

#### 2.2.2. Electro-static painting

The paint adheres well to the aluminium rail.

The colours available are in the RAL range, mat or gloss (sample on request).

### 2.3. Site installation

The rails are delivered to site in lengths of 5.8 m. Each rail weights ±44 kg.

The minimum radius of the curves is 700 mm, and is made in the factory before despatch.

The rails are fixed to the brackets with hammerhead M12 hot galvanised 8.8 steel bolts.

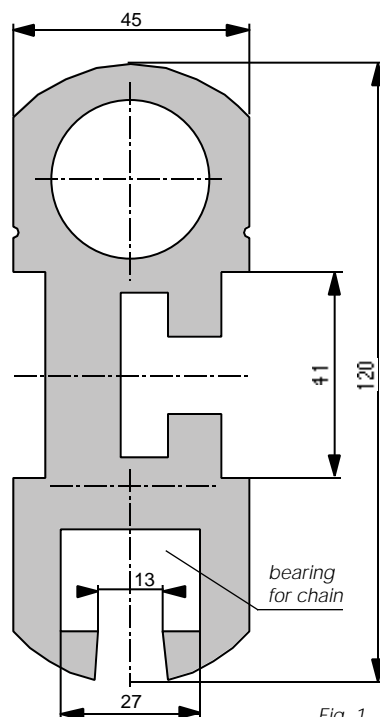


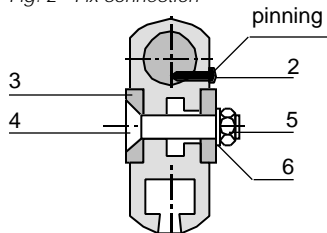
Fig. 1  
RAILSCAF profile, 120x45

### 2.4. Rail connections

#### 2.4.1. Fix connections

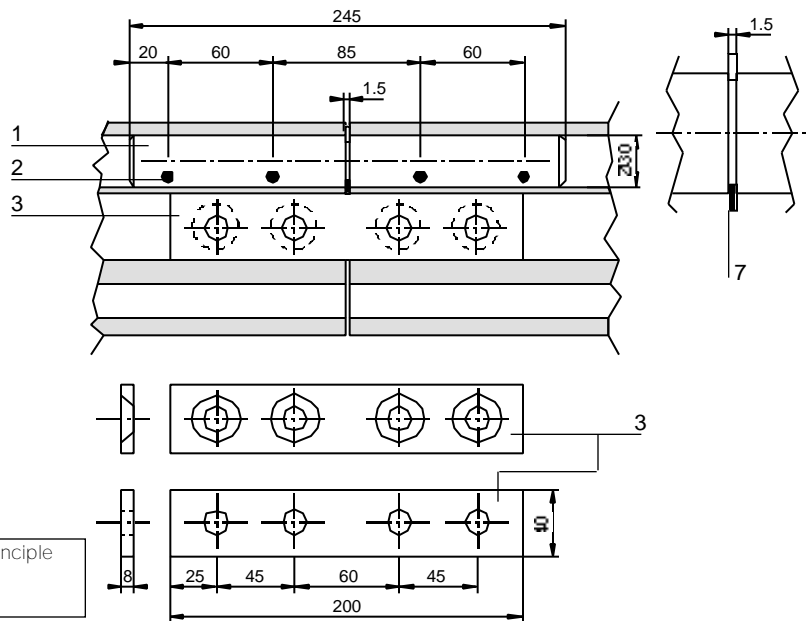
The connection between two rails is by 2 splice bars (3) and 1 aluminium rod (1), fixed by 4 pins (2). This type of connection should be done with a maximum distance of 500 mm from the bracket.

Fig. 2 - Fix connection



1. Aluminium rod  $\varnothing 30$  (1),
2. Pin  $\varnothing 3.7$  (4),
3. Splice bar 200x40x8 (1) + (1),
4. Screw (4),
5. Nut (4),
6. Washer (4),
7. Snap ring 30x1.5 INOX (1),

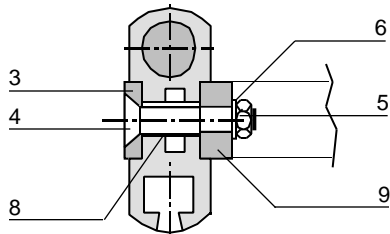
Pinning is only done on one side, and in principle on the side facing the facade, (i.e. on the bracket side).



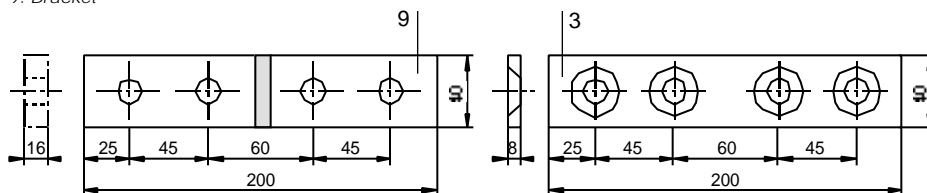
#### 2.4.2. Expansion connections

An expansion connection is fitted after two fix connections. The connection between two rails is by 1 aluminium rod (1) and 1 splice bar (3), fixed to the bracket. This type of connection must always be done on a bracket.

Fig. 2.1 - Expansion connection



8. Spacer  $\varnothing 16 \times 1,5 \times 35$  (4)
9. Bracket



## 2.5. Rail end stop

On "open" trackways an end stop (11) must be fitted at the end of the rails. It is fixed by screws.

End limit sensors (12) fitted on the trolley stop the trolley at the end of the trackway, approaching the end stop.

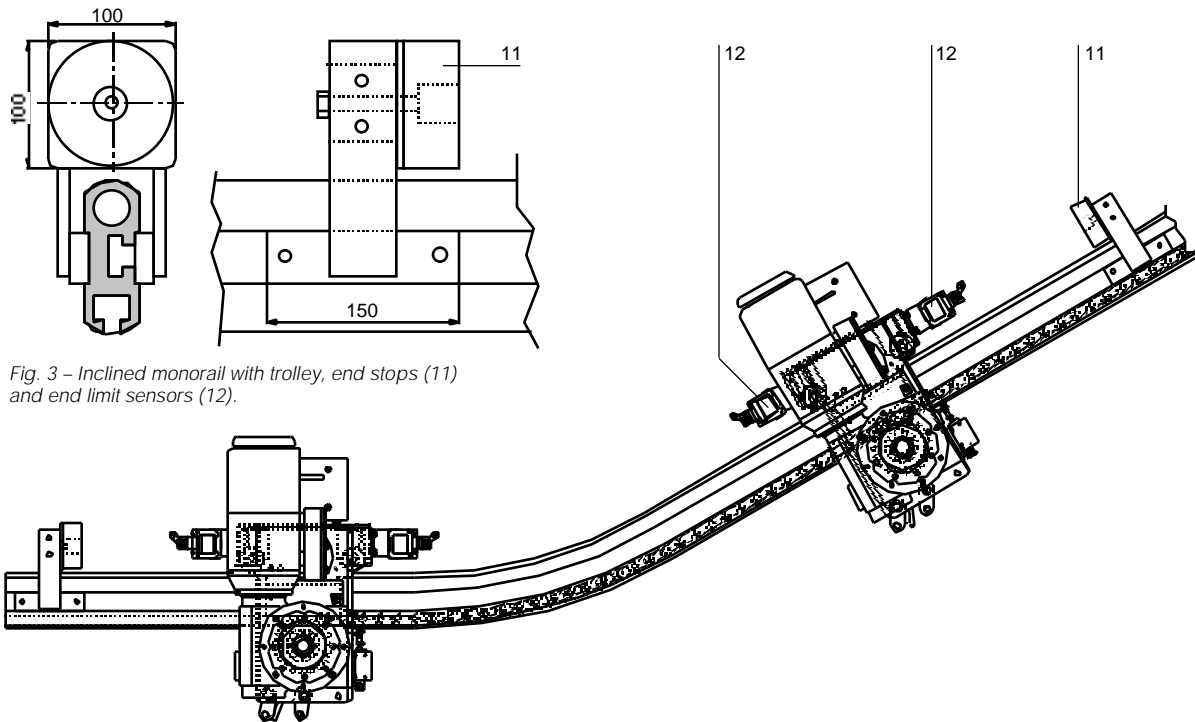


Fig. 3 – Inclined monorail with trolley, end stops (11) and end limit sensors (12).

## 3. BRACKETS

The brackets (Fig. 4) which support the rail, are positioned every 3 m on the straight sections and as set out in figures 6 to 9.1. for the curved sections. The brackets are galvanised or stainless steel.

The fixing plate of the bracket itself has a  $\pm 10$  mm vertical adjustment.

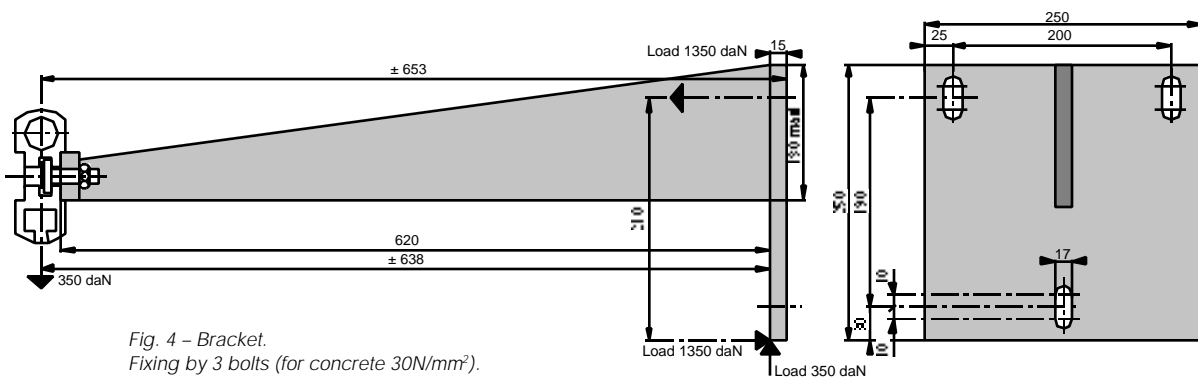


Fig. 4 – Bracket.  
Fixing by 3 bolts (for concrete 30N/mm<sup>2</sup>).

#### 4. TRAVERSING TROLLEY

The traversing trolley comprises 1 geared motors the main brake doubled by a fallstop device (secondary overspeed brake) and 1 set of guide rollers and sliding contacts fitted on the rail and giving a safe and reliable traversing around the corners and on inclined sections. The casing of the trolley is in stainless steel. On inclined sections the motor pinion engages automatically in the integrated chain of the rail. Traversing speed:  $\pm 6.5$  m/mn.

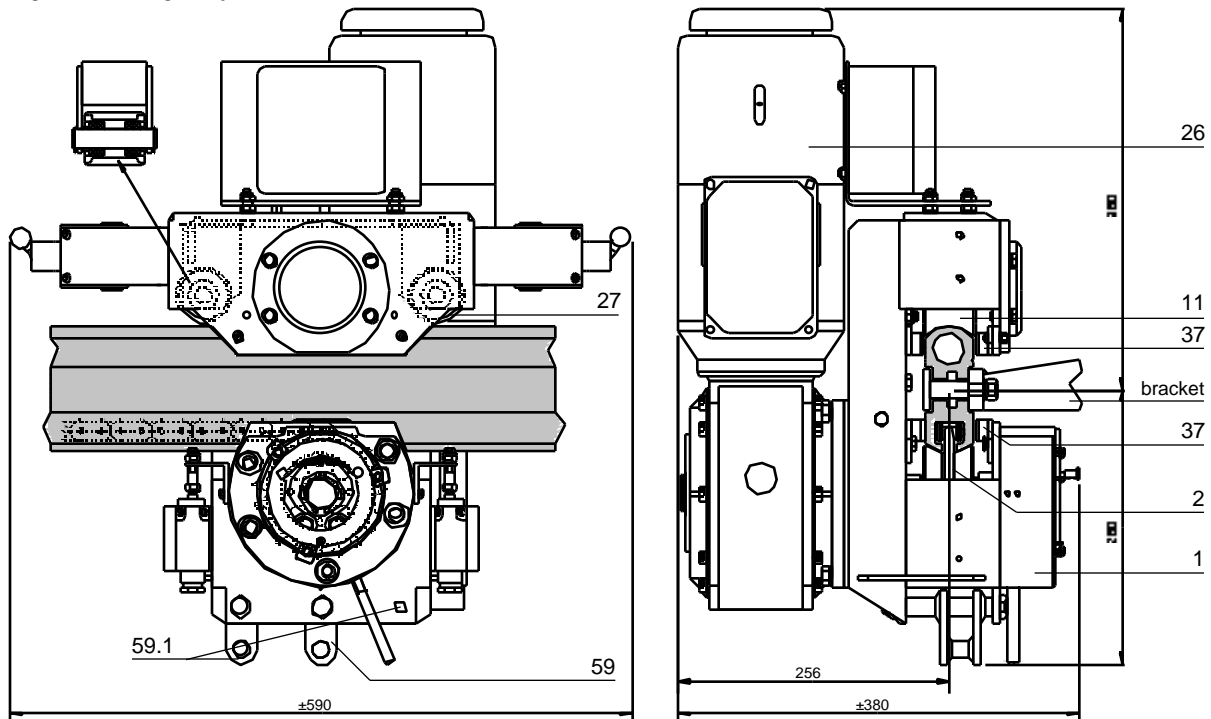
#### 4.1. Motor technical data

Type: geared motor with brake  
Level of protection: IP 55  
Insulation class: F  
Voltage: 3-phase 220/380 V 50 Hz or 240/415 V 50 Hz  
Controls: by push-button pendant control box or by the cradle control box.

#### 4.2. Main characteristics of the fallstop curce

- action by overspeed
- stainless steel + INOX
- window to check the correct movement of the weights.

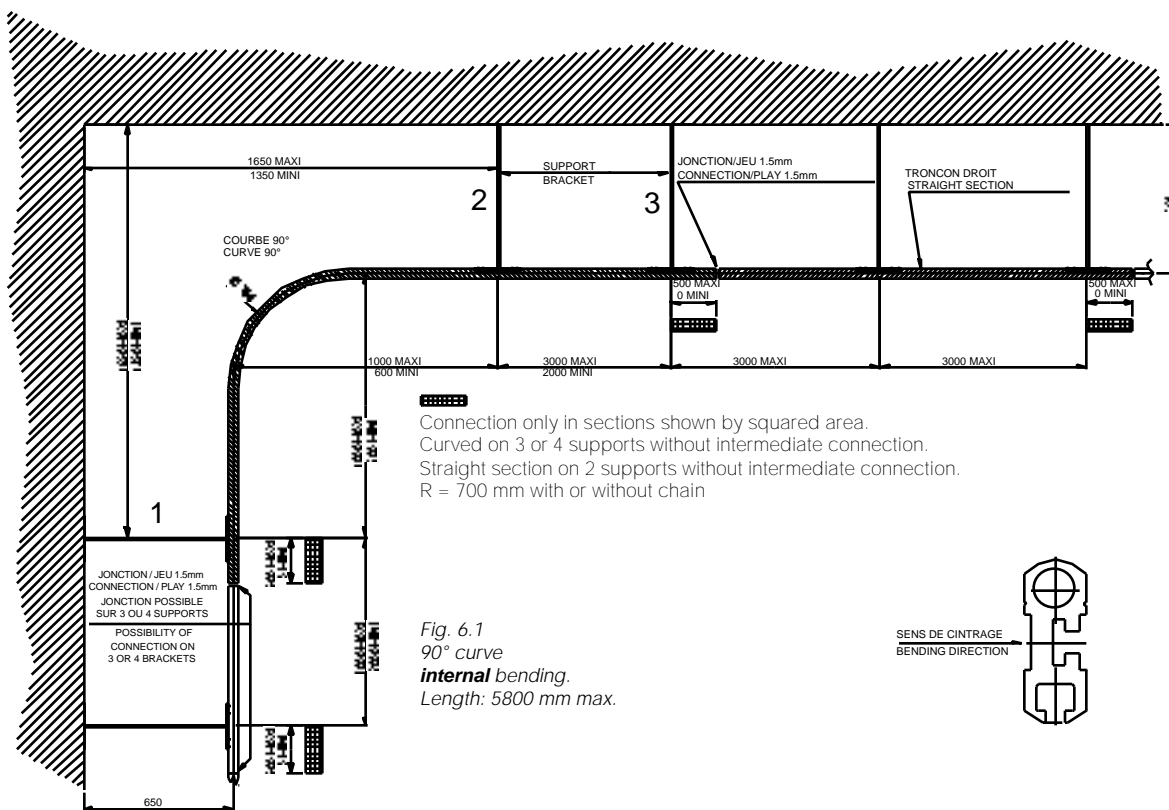
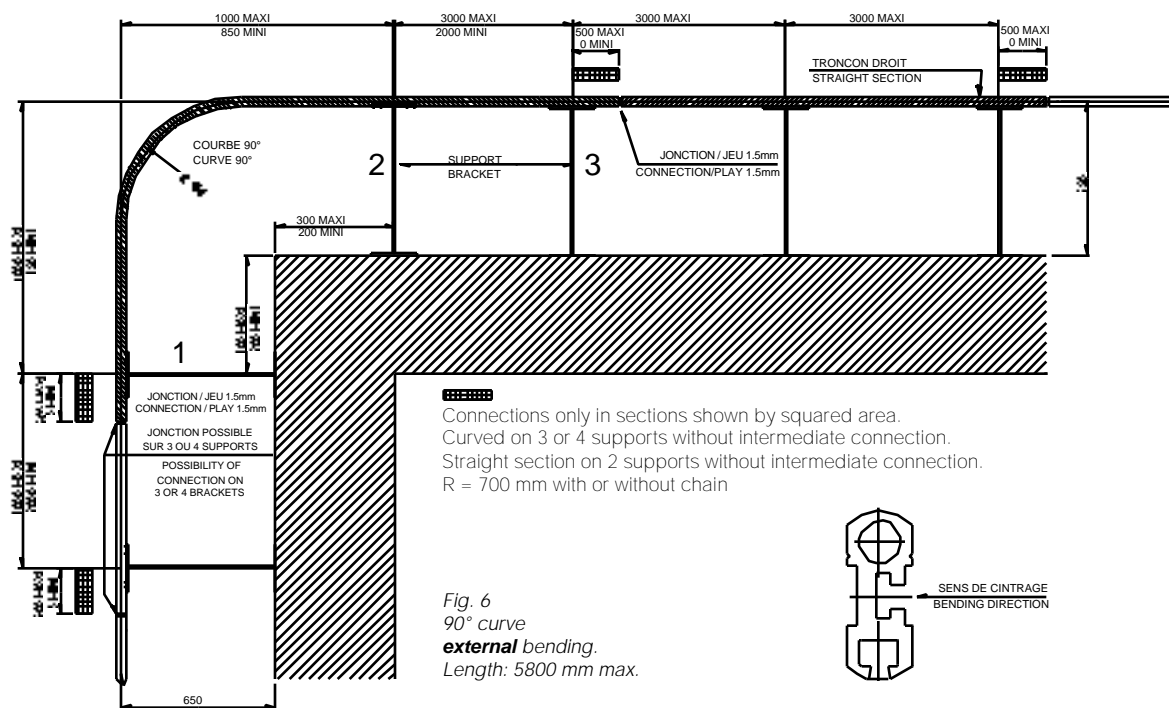
Fig. 5 - Traversing trolley

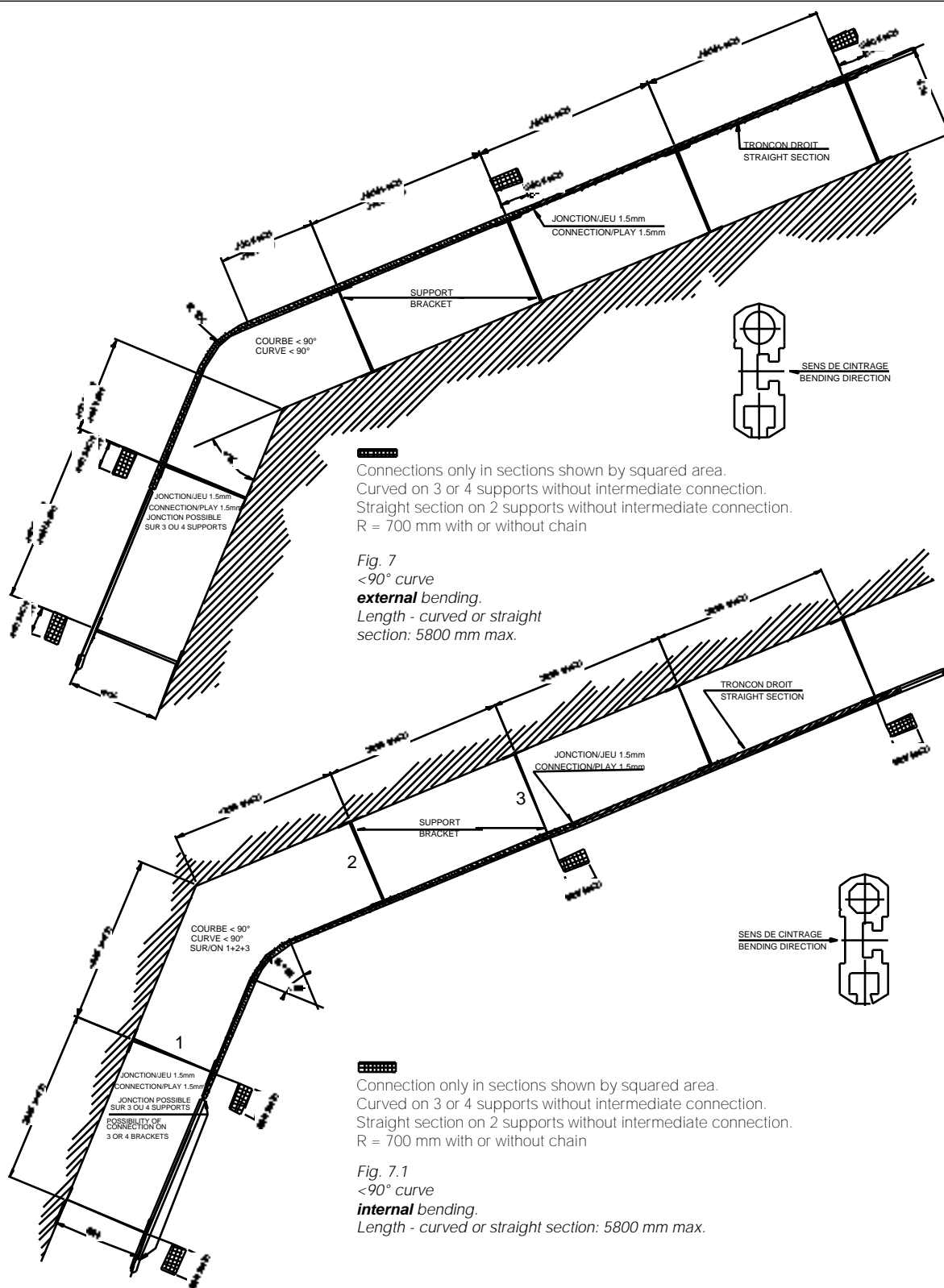


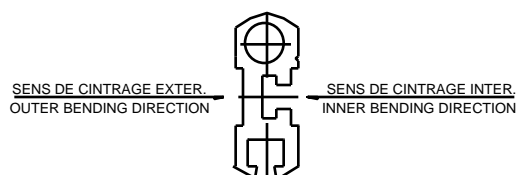
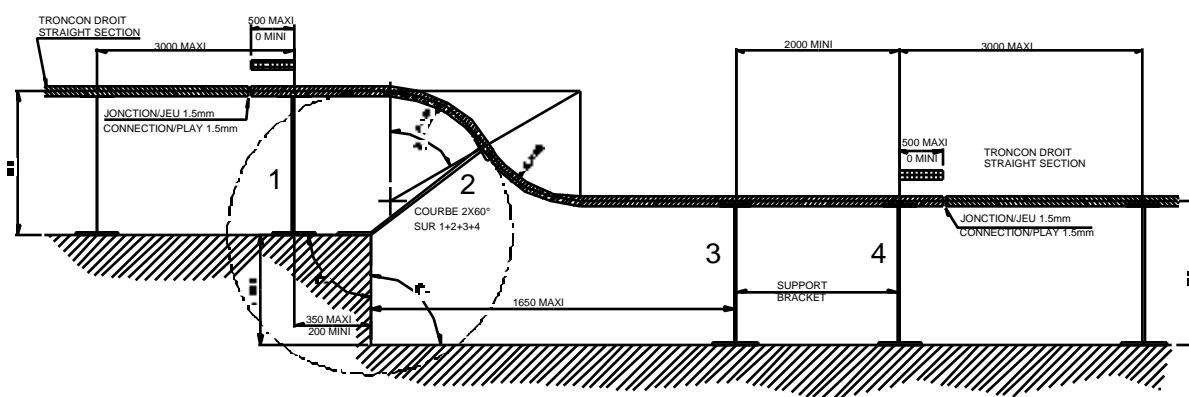
- 1. Fallstop device (1)
- 2. Set of chain pinion with guide roller (1)
- 11. Roller (1)
- 26. Gear motor (1)

- 27. Counter roller (2)
- 37. Lower (2) and upper (4) sliding contact
- 59. Lifting wire rope anchoring (1)
- 59.1. Safety wire rope anchoring (1)

## 5. SEVERAL EXAMPLES OF APPLICATIONS

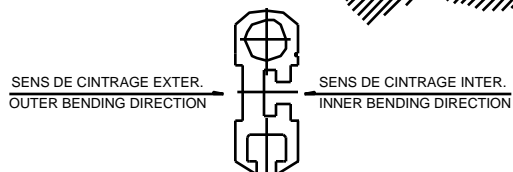
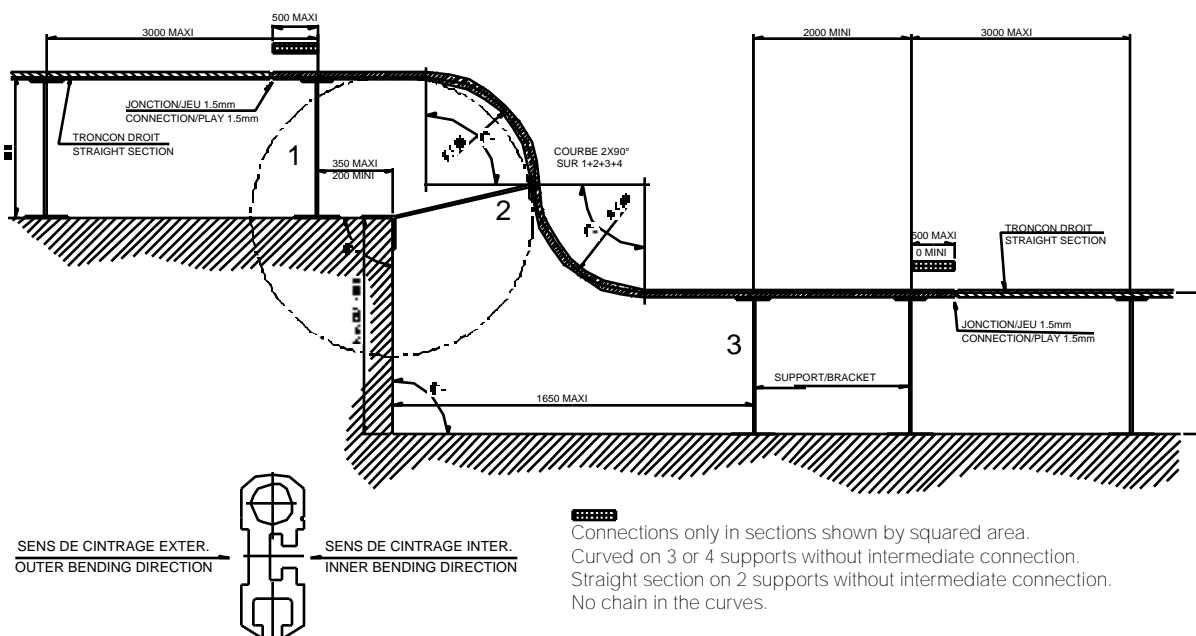






Connections only in sections shown by squared area.  
Curved on 3 or 4 supports without intermediate connection.  
Straight section on 2 supports without intermediate connection.  
No chain in the curves.

Fig. 8 - 2 x 60° for horizontal profile.  
**External** and **internal** bending.  
Length - curved or straight section: 5800 mm max.



Connections only in sections shown by squared area.  
Curved on 3 or 4 supports without intermediate connection.  
Straight section on 2 supports without intermediate connection.  
No chain in the curves.

Fig. 8.1 - 2 x 90° for horizontal profile.  
**External** and **internal** bending.  
Length - curved or straight section: 5800 mm max.

Fig. 9 - 45° slope.

Length: mini 3050 mm  
maxi 5800 mm  
Minimum bending radius:  
 $R = 1500$  mm

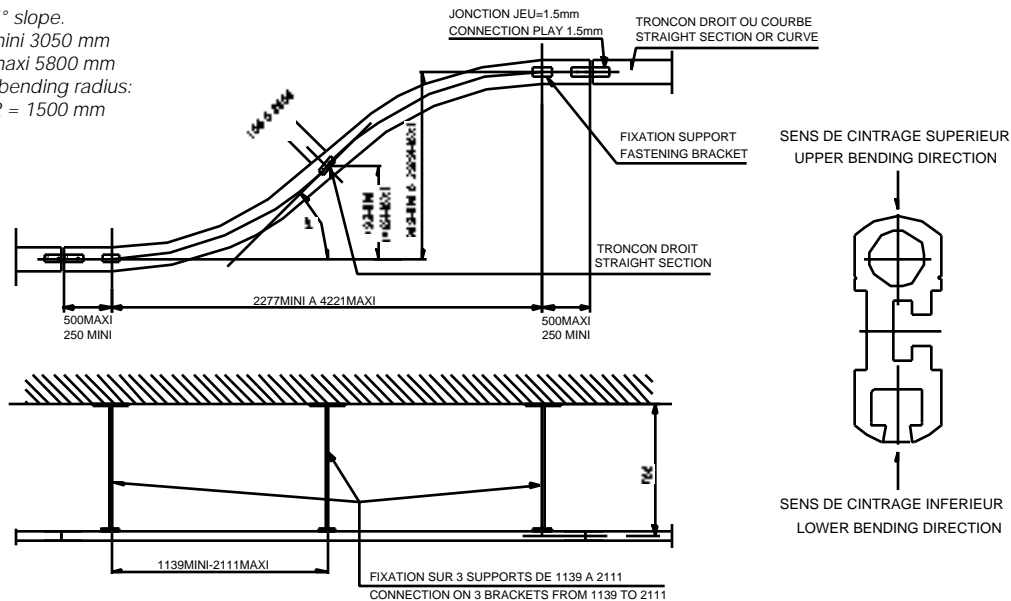


Fig. 9.1 - 60° slope.

Length: mini 3868 mm  
maxi 5800 mm  
Minimum bending radius:  
 $R = 1500$  mm

