



## FICHE TECHNIQUE AIRPORT \

# FLAT CAROUSEL

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### ■ GENERAL CHARACTERISTICS OF THIS TYPE OF CAROUSEL

The carousel is made up of : :

- ◆ A handling chain,
- ◆ A bearing and guide track with straight and curved sections. Moving parts are guided by rollers with bearings that are lubricated for life.
- ◆ A continuous conveying surface made up of articulated elements called panels which are black, abrasion-resistant, self-extinguishing and rubber. All the friction elements during movement of the panels are made of synthetic material which limits unwanted noises during operation and ensures behaviour in line with the specifications.
- ◆ A continuous movable backplash made of steel components, panel supports made of machine-welded steel, with these supports also comprising polyethylene rubbing pads and support rollers, metal frame cradles supporting the bearing tracks and friction rails.
- ◆ A device for tensioning the chain via the eccentric axes allowing adjustment due to wear. This adjustment is carried out by an adjustable eccentric system built into the axes of the chain links which drive the cross beams supporting the panels. The axes of the links with a pitch of 250 mm allow, thanks to this eccentric set-up, to compensate by 1.5 mm individually.
- ◆ One or two drive units (depending on the application),
- ◆ A chassis supporting the drive group or groups,
- ◆ The motricity of the handling chain operates as follows

An "internal" drive unit comprising :

- ✦ an electric geared motor,
- ✦ a friction drive.

## ■ DESIGN AND DIMENSIONS

- ✦ The handling chain consists of links made of synthetic material.
- ✦ The chain is guided by bearings, the outer ring of which is equipped with a polyurethane band.
- ✦ The panels are rigid enough not to deform under the weight of luggage. These panels are fixed to the panel supports so that they are interchangeable.
- ✦ One in twenty panels will be a different colour, clearly distinct from the others. The flame resistance of the panels is at least M3 (according to the standard NF P92-507).
- ✦ The panel assemblies/panel support are removable from the top with a single tool. The bolts and spacers are mounted on the chain so the carousel may be rotated without the panel supports.
- ✦ Tensioning the chain links is simple and fast.
- ✦ The carrousel equipped with maintenance controls has a stationary maintenance box on the drive unit(s) and on the tensioning device.
- ✦ The drive unit is calculated according to the length of the circuit and the forces generated. It will be easily accessible.
- ✦ Load tests should be carried out with the max. load (adjustment of the motor settings or inverters accordingly for full-load start-up).

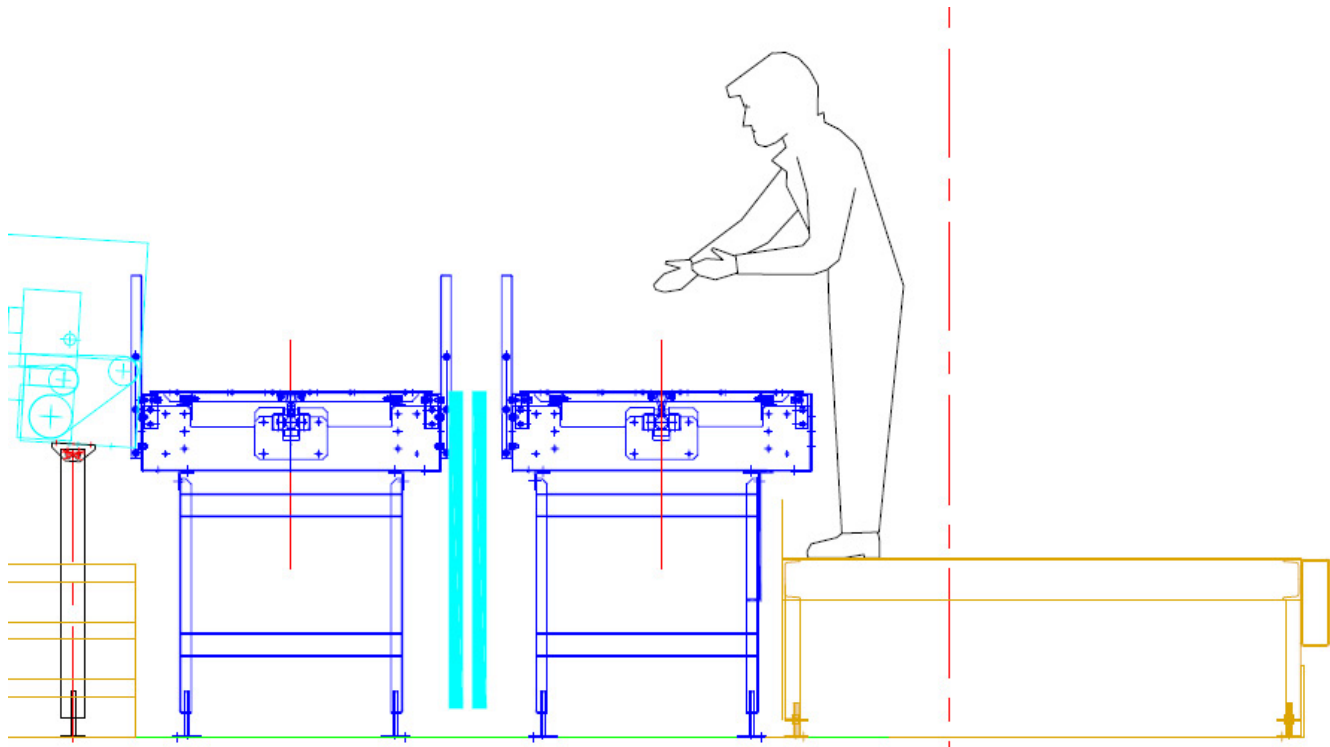
## ■ DEPARTURE CAROUSELS

- ✦ The carousels are flat models.

The dimensional characteristics and specific performance out puts shall be as follows :

- ✦ Electric motors with an IP 54 protection rating, self-cooled

Usable width	1 m
Height of the panels	0.62 m in relation to decking
Travelling speed	Adjustable between 20 et 30 m/min
Sides	400 mm high on the opposite side and outside peripheral handling zone



## ■ DECKING

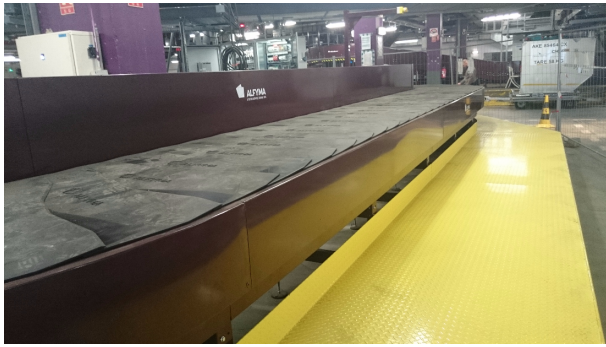
- ◆ Central decking forms the interior covering of the carousels and acts as a working platform.
- ◆ This decking consists of several openable or removable panels for maintenance operations.

The decking comprises panels made of a water-repellent agglomerate covered in:

- ◆ 15/10 thickness 220 grain stainless steel sheets on the visible side.
- ◆ The finish of the stainless steel must conform to the other claddings of the conveyor units only in public areas.
- ◆ Galvanised metal sheets, 15/10 thickness, on the non-visible side.
- ◆ Edges painted with a grey, water-repellent paint.
- ◆ Soundproof protection panels surround the drive unit and are fitted with opening enabling access during maintenance work (depending on the technology used).

The decking includes access hatches to facilitate maintenance work. These hatches are of a size and weight that allow them to be handled by a single person. The access hatches for the electrical equipment of the conveyor units and carousels are hinged and equipped with a triangle key lock. The decking will be supported from the ground by a painted steel support structure fixed to the floor via anti-vibration studs.

The deck must be able to withstand a person equipped with a tool box or luggage, i.e. 120 kg, without deforming. The decking, panel fittings and doors (hatches) will be treated. Special attention will be paid to the linkages between the various conveyor units or locking components (supporting structure and various supports) and decking.



## ■ TECHNICAL DESCRIPTION OF THE CAROUSELS



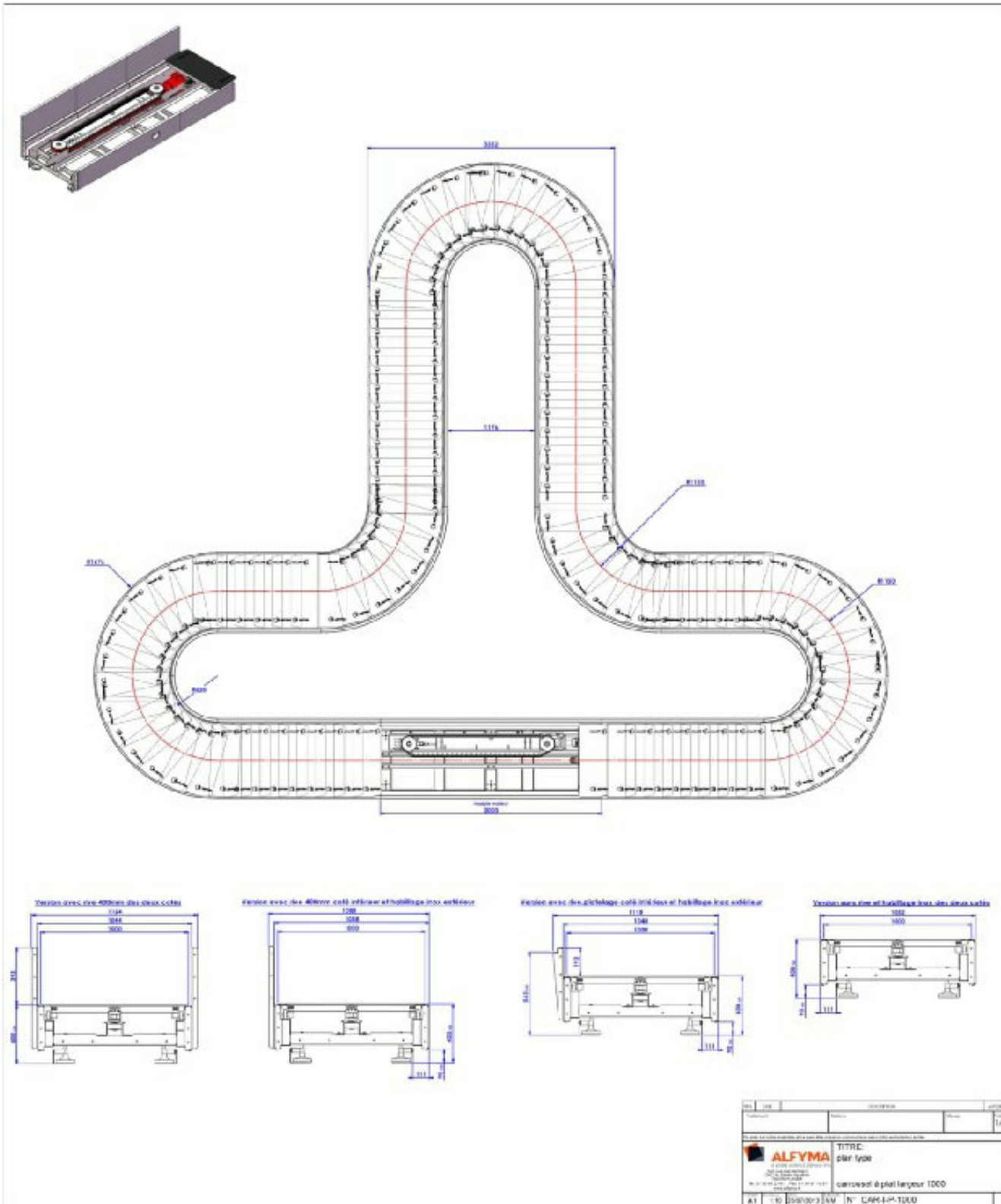
The carousels are made up of standard structural components with a support, with one or more motorised units, a tensioning unit, transport chains with guide rollers, a transport tray, side panelling and a control unit.

ALFYMA carousels have a modular shape allowing quick installation and straightforward integration into existing systems

### Configuration

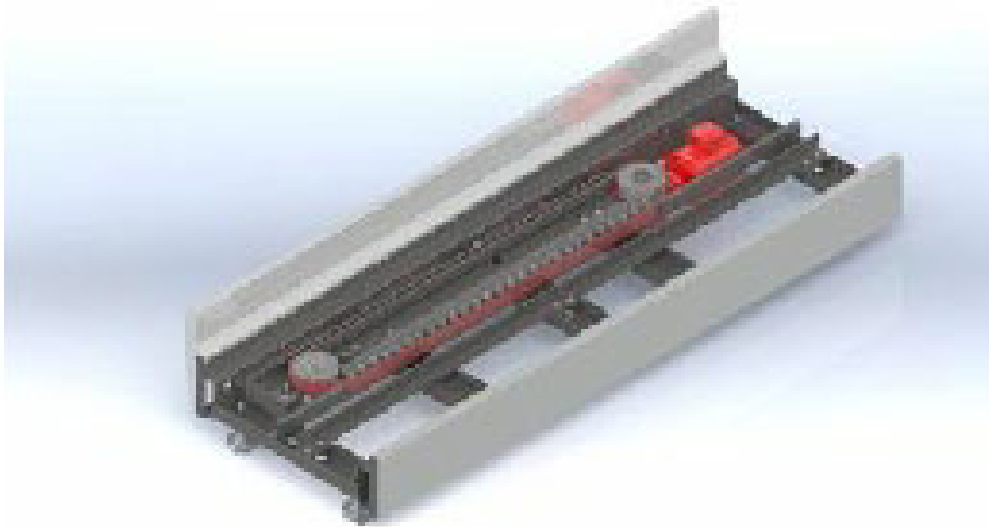
The carousels can be configured in 3D with any shape (see image below) that can be used by customers. The minimum curvature radius is 1,150 mm at the axis.

The configuration chosen for this project is a closed oval with a hollowed-out section in the centre; see the general and detailed plans of the project.



## Reliability

The friction drive system has been dimensioned with high loads to ensure reliable and long-lasting operation. The principle of the friction drive system allows linear and quiet motor torque transmission.

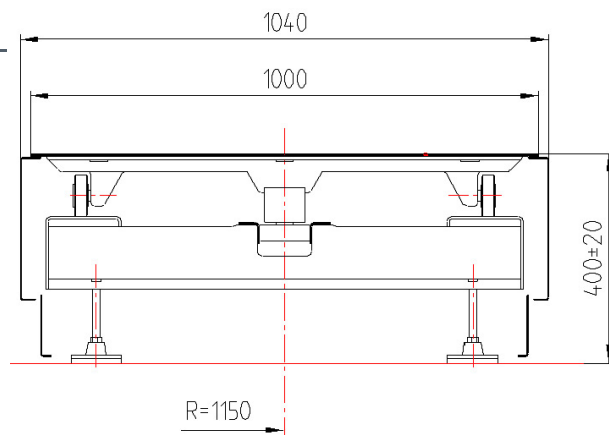


## Quiet operation

The support and guide system consists of guide wheels and support wheels with a polyurethane coating, reducing noise during operation (to less than 60 dB (A)).

## General characteristics

- ◆ Total width: 1,040 mm
- ◆ Width of the panels: 1,000 mm
- ◆ Median radius: 1,150 mm
- ◆ Minimum height of the conveyor: 400 mm
- ◆ Static load capacity: 2,500 N/m
- ◆ Static load peak: + 1,500 N/m
- ◆ Dynamic load: 800 N/m
- ◆ Nominal speed: 0.5 m/s (adjustable with frequency inverter)
- ◆ Power: minimum 1 x 1.5 kW, maximum 2 x 3.0 kW
- ◆ Sound level: maximum 60 dB(A)



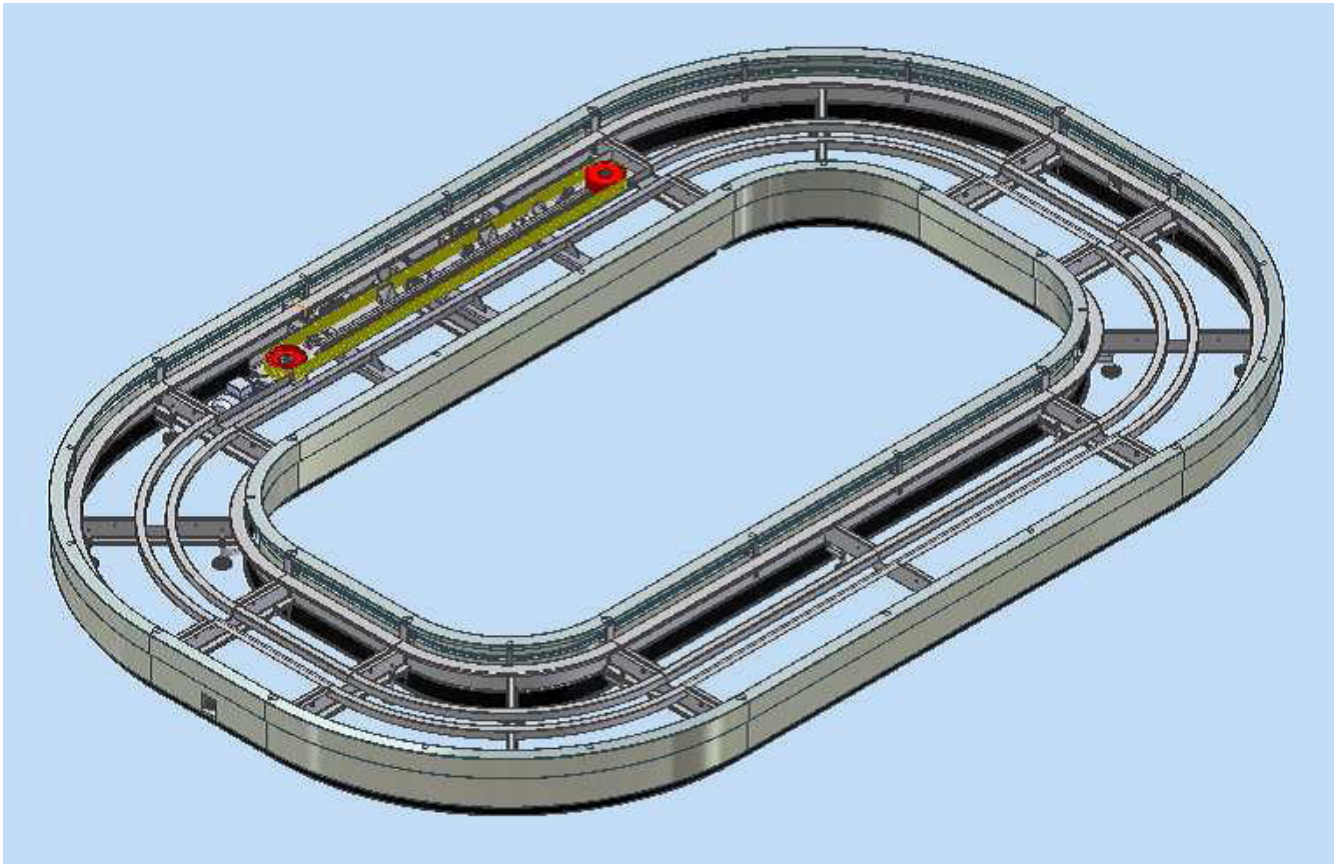
## Structure

The base units are attached to each other to form the final structure of the carousel. The standard components are 3,000 mm long. The components making up the structure of the curve are standard for an angle of 90 ° with the median radius measuring 1,150 mm. Depending on the size and shape of the carousel, straight units and special curved units can be made. The motor structure, on the other hand, is 3,000 mm long.

The structures are made of DIN St37 steel profiles 3 mm thick which are soldered to withstand imposed loads and are therefore easy to handle. They are designed to withstand a static load of 2500 N/m.

## Supports

All units can be height-adjusted using adjustable feet to compensate for irregularities in the ground by +/- 20 mm. We use rubber pads to dampen vibrations.



## Assembly of the chaines

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The traction chain is made of self-aligning links and guide rollers with a pitch of 250 mm. The links are made of reinforced polyamide fiberglass (or aluminium as an option). The stamped guide roller is covered with polyurethane which reduces noise. The bearings are lubricated for life.

The chain is tensioned by means of eccentric axes. The linkage axes of the chain are treated to guarantee optimum resistance.

## Panel supports

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The panel support is made of steel (or aluminium as an option) with a special profile enabling tailored assembly of the panel on the support. Each support has two polyurethane support wheels to minimise noise during operation. Each link unit is bolted directly to the links of the chain links.

## Panels

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The panels are rectangular. Due to their shape, the plates form a closed and uniform surface; this also applies to curved sections. The plates are made of SBR/NBRPV 5.5 mm thick with a surface hardness of 95 shore.

## Finish

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The structural components of the carrousel and sides are made of steel. All these components can be covered with an epoxy or galvanised paint according to requirements.

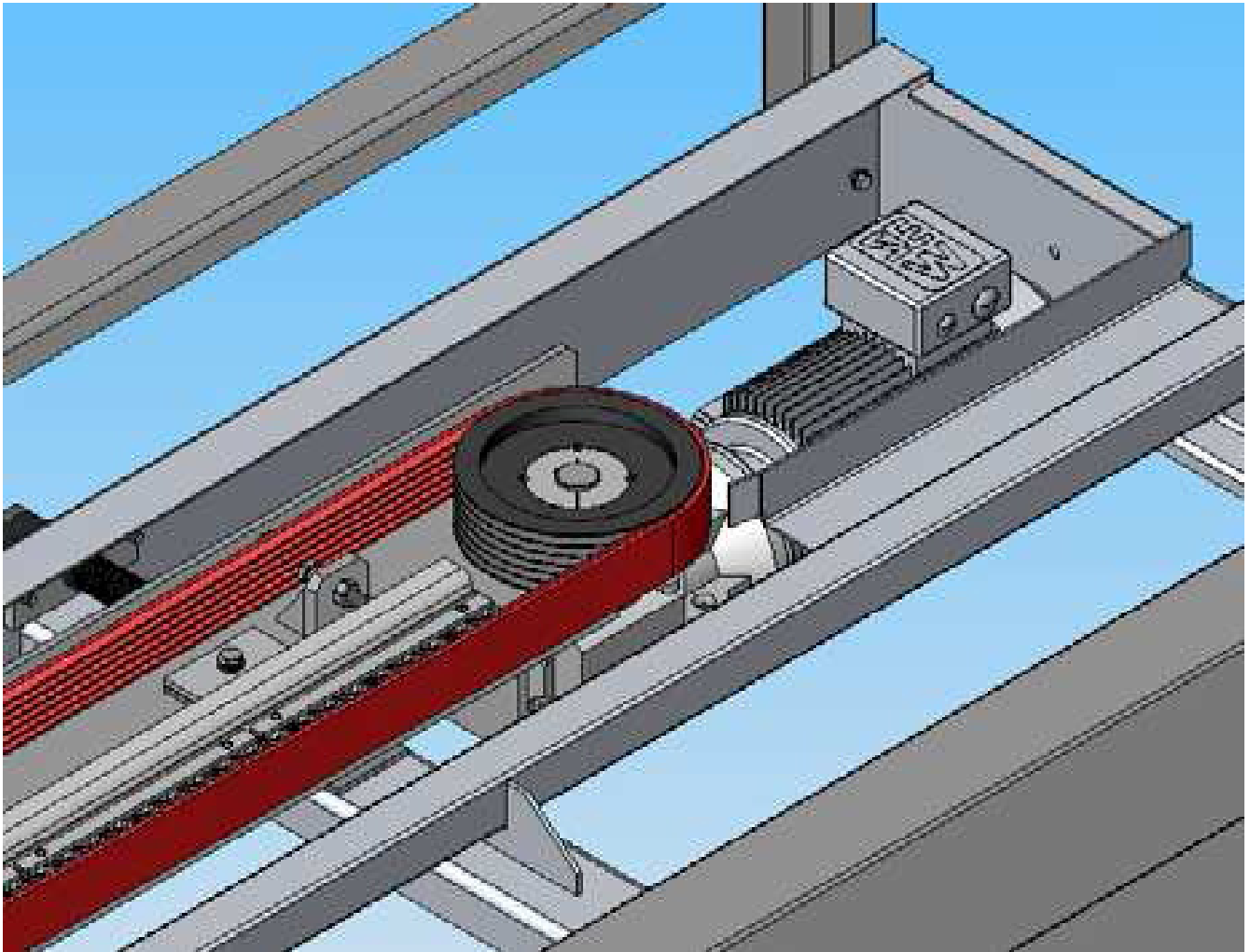
The bearing supports, tensioning components and other accessories are zinc-coated.

## Motorisation

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The motorisation of the carousels is based on the self-adjustment friction drive system. A special belt allows the transmission of force by friction on the chain. It remains clamped on the chain via an adjustable friction piece system to guarantee an optimal contact surface.





Depending on the desired length or degree of overlapping, one or more motor units can be fitted to the carousel.

The power of the motor is based on the dynamic load 800N/ m. The motors are equipped with a progressive start-up unit (or frequency inverter) to ensure a smooth start.

Note that in the project which concerns us, the carousels will be motorised by one or the Lenze MF or 8400 motec geared motors or even an SEW geared motor with energy efficiency class IE4.

In both cases, the acceleration or stop ramps are built into these assemblies. A mechanical brake can be added to the motor if necessary.

## ■ VIEW OF CAROUSEL COMPARISON

