

6 **Covers**



6 Covers

| Summary | 6 | Covers | page 285 |
|----------------|----------|--|-----------------|
| 6.1 | | Introduction and methods of use | 287 |
| 6.2 | | Styles and characteristics | 287 |
| 6.3 | | Programme of plastic covers | 289 |
| 6.3.1 | | Installation method | 290 |
| 6.4 | | Programme of steel covers | 293 |
| 6.4.1 | | Installation method and fixing accessories | 294 |



6.1 - Introduction and methods

In the project design of a belt conveyor, after having defined the components of primary importance, it is important to consider other accessories such as covers for the conveyor.

The necessity to protect belt conveyors may arise from the weather, from the volatile characteristics of the conveyed material, or from the type of works plant, and also from European norms that require the covering of the total length of a belt conveyor in the open.

For example rain may create a problem of belt slip on the drums causing a tracking problem.

Extreme temperatures may cause the plant to mal-function or stop, whilst very strong wind may move the conveyor belt off its

natural position causing serious problems to the business or loss of conveyed material.

6.2 - Styles and characteristics

Belt conveyors covers do not require maintenance and are very easy to install and move around.

The fixing system is designed in a way that allows quick and easy relocation of the covers to facilitate the inspection of the conveyor.

There are two styles of covers that are proposed : those in pre-formed PVC and those in corrugated galvanised sheet steel.



6 Covers

series CPT in PVC

Plastic covers, thanks to the characteristics of PVC, are light, of good transparency, anti-corrosive and with a smooth surface. Above all they are easy to adapt to any type of conveyor. Apart from their resistance to corrosion they are themselves classified "NON FLAMMABLE".

Notwithstanding this property of self-extinguishing, the limit to the use of PVC covers in hot areas should not exceed 65° C.

PVC covers are produced in sections by heat forming sheets into "greek style" corrugations with profile and dimensions available to suit the most common belt widths.



| | | | |
|--------------|-------------------|--------------|--------------|
| Greek module | Sketch of profile | Total length | Corrugations |
| 70/18 | | mm | n. |
| | | 1090 | 15 e 1/2 |

The mechanical properties of the belt covers are summarised in the following table.

| Properties | Method | Unit (*) | Measurement |
|------------------------------|--------------------|--------------------|--------------------|
| Specific weight | - | Kg/dm ² | 1,4 |
| Thickness of sheet | - | mm | ~1,2 |
| Max elastic tension | ISO R 527 | N/mm ² | 50 |
| Breaking strain | ISO R 527 | N/mm ² | 50 |
| Stretch to break | ISO R 527 | % | 125 |
| Resilience to traction | DIN 53.448 | J/cm ² | 45 - 60 |
| Resistance to falling weight | 900 g x 2m at 23°C | % of breaking | < 5 |
| Coeff. of linear expansion | - | mm/mm° C | 7.10 ⁻⁵ |
| Coeff. of thermal conduction | DIN 52.612 | W/m° C | 0,15 |
| Profile deformation | 1 h at 65°C | % | <3 |

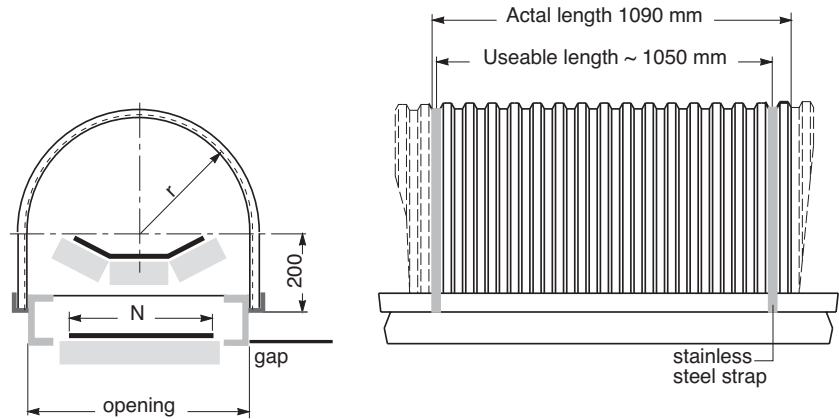
* the units of measurement are expressed in compliance with the advice from the European Community.

1 J/cm² = * 10 Kg/cm²

1 N = * 0.1 Kg

1 N/mm² = * 10 Kg/cm²

1 W/m° C = 0.86 Kcal/m.h. °C



6.3 - Programme of plastic covers

| Cover Type mm | Belt width mm | opening mm | radius r mm | Development straights mm | Weight Kg | Fixing accessories * |
|------------------|------------------|---------------|-------------------|--------------------------------|--------------|-------------------------|
| CPT 1 | 400 | 700 | 350 | 1500 | 3.6 | CPT 1F 400 |
| 2 | 500 | 800 | 400 | 1660 | 4.0 | 2F 500 |
| 3 | 650 | 950 | 475 | 1890 | 4.5 | 3F 650 |
| 4 | 800 | 1150 | 575 | 2200 | 5.3 | 4F 800 |
| CPT 5 | 1000 | 1350 | 675 | 2520 | 6.0 | CPT 5F 1000 |
| 6 | 1200 | 1600 | 800 | 2910 | 7.0 | 6F 1200 |
| 7 | 1400 | 1800 | 900 | 3230 | 7.7 | 7F 1400 |

(*) To fixing accessories are supplied with each cover and vary according to the belt width according to the following specification :

type CPT -1-2-3

- 1 Stainless steel strap and spring with galvanised hook
- 1 Fixed galvanised hook
- 2 Bolts M8x20 cadmium plated
- 2 Washers cadmium plated

type CPT -4

- 2 Stainless steel strap and spring with galvanised hook
- 2 Fixed galvanised hooks
- 4 Bolts M8x20 cadmium plated
- 4 Washers cadmium plated

type CPT -5-6-7

- 2 Arch in profile 20 x 20 x 2
- 6 Screws M 6 x 35 cadmium plated
- 4 Nuts M6 cadmium plated
- 6 Washers cadmium plated
- 4 Locking ruts M6 cadmium plated
- 2 Fixing brackets 30 x 40 in zinc plated steel

The last section of each conveyor needs one supplementary set of accessories.

Example of ordering
CPT 5, 1000
plus fixing accessories
CPT 5F, 1000

6 Covers

series CPT in PVC



6.3.1 - Installation method

CPT covers for belts 400 ÷ 800 mm

The pre-formed PVC covers must be located into steel angle sections welded to the conveyor structure, to avoid any movements from their fixed position.

Each cover section must be fixed by a stainless steel strap of 20 mm width and 0.6 mm thickness.

The steel strap is positioned on top of the section in the lower corrugation.

For covers CPT 800 an additional central strap is positioned at the centre of each section.

As shown in Fig. A and in relation to the section length, the steel strap is positioned and fixed as follows :

- a) on one side by an angle section drilled to accept bolts and washers M 8 x 20 .
- b) on the other side and in the identical position with a zinc plated hook fixed to the angle section with a bolt, nut and washer M8 x 20.

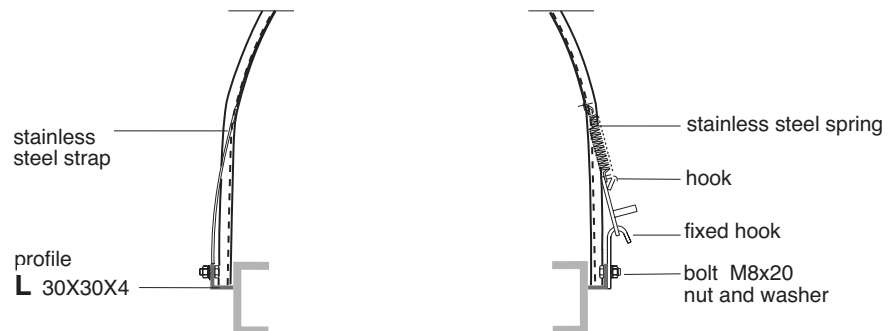
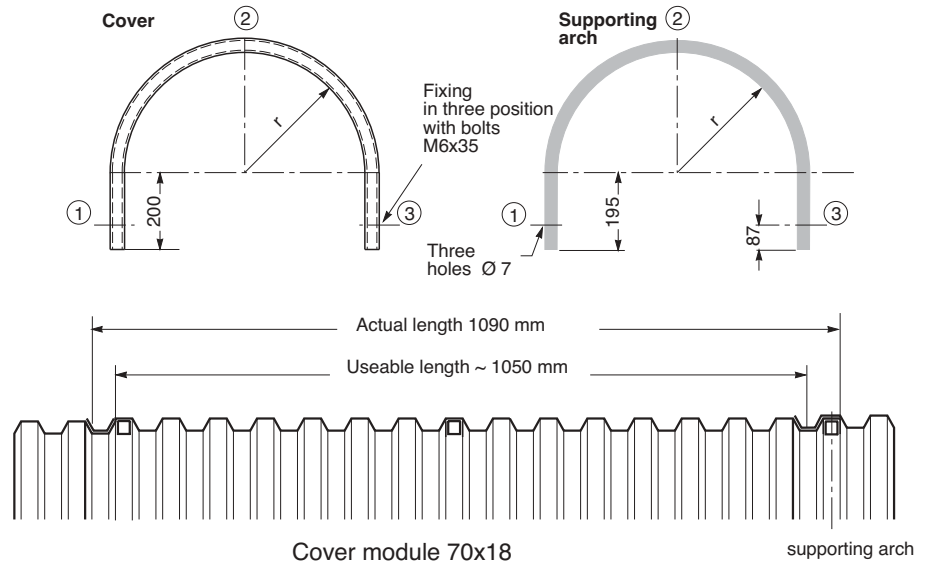


Fig. A

Fig. B



CPT covers for belts 1000+1400

Must be located into steel angle section which is welded to the belt conveyor structure Fig. C.

The arches must be fixed and positioned at the junction of two covers as indicated in Fig. B.

For these covers it is necessary to position two supporting arches made from galvanized steel tube, one at the overlap junction and the other at the centre of each section.

The pre-formed PVC cover and the steel arch are both positioned in the angle section with brackets and fixed and locked by bolts, washers and wing nuts.

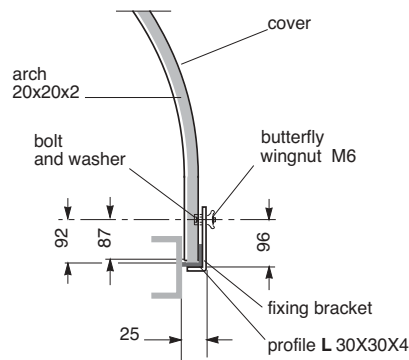


Fig. C

6 Covers

series CPTA in steel



Why covering belt conveyors ?

to protect the conveyed material,

to protect the environment:

- against dust
- against noise
- and for a better integration in the landscape

for the operators' safety,

for the protection of the belt:

- against the sun and bad weather
- and for a longer life

for the protection of the materials:

- with reduction of maintenance to the structures
- to avoid loss of materials and productivity due to the wind
- to avoid a deposit of the rain-water on the belt
- to assure the efficiency of the industrial constructions linked to the belt.

Advantages of the steel covers

Economy:

- less costs than the other systems or materials
- useable for any structure
- easy to install
- maintenance reduction.

Strength:

- can be built in (exceptional rigidity)
- resistance to bad weather (especially to high and low temperatures): they stand UV rays
- in compliance with the location (*)
- suited to the conveyed material (*)
- fire classification M.o.

Easy handling:

- lightness: 7,12 kg/m²
- handless (under request)
- easy fixing

(*) for extreme cases it is possible to supply covers in stainless steel or in aluminium.

Programme of installation

The steel covers are produced from galvanised corrugated sheet with 76/18 profile according to NFA 46.322 norm – December 1981.

Material:

- galvanised steel for construction according to Euronorm EN 10 147 of 1996
- class S 220 GD + Z 1.0241
- Other materials on request: aluzinc AZ 185 – aluminium-stainless steel.

Covering: Z 350 galvanisation on both sides 12.5 µm each side.

Covering options according to the environmental conditions and the conveyed materials:

Z=450 = 16.0 µ each side

Z=600 = 21.5 µ each side

Other types of covering:

- Painting – polyester 25 µm on galvanised steel Z 225
- PVDF 35 mm – polyvinyl thermoplastic resin
- Solifarm 25/35 µm – soft polyester resin
- Plastisol 100 µm – thermoplastic resin of polyvinyl chloride

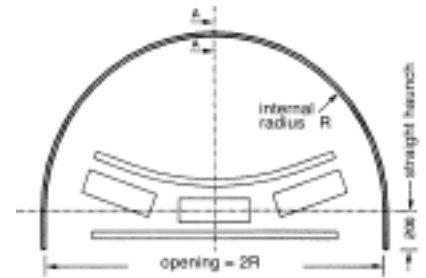


Characteristics

Produced from galvanised sheet steel corrugated section 18/76 for all belt conveyors but normally used for belt widths of 400 mm upwards.

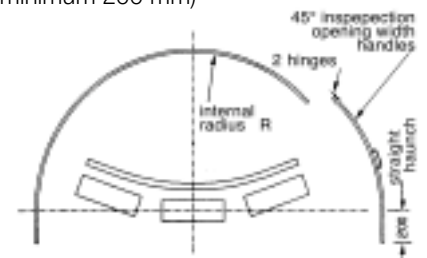
The steel covers for belt conveyors are produced from corrugated sheet to NFA 46322 norm and have the following advantages :

- self supporting
- non flammable
- resistant to breaking
- environmental
- supporting structures are not necessary
- maintenance free
- very strong
- easy to handle
- economic



Type 1, 180°

Other straight haunch lengths on request (minimum 200 mm)



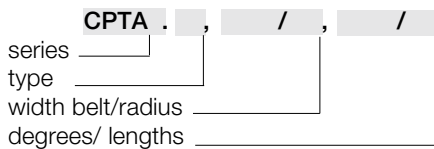
Type 1, 135°

6.4 - Programme of steel covers

| Cover Type | width belt mm | Radius r mm | standard Cover 180° Kg | open Cover 135° Kg | intermediate Cover 180° Kg | Thick. mm | complete Door 45° Kg | |
|---------------|---------------|-------------|------------------------|--------------------|----------------------------|-----------|----------------------|------|
| CPTA 1 | 400 | 350 | 9.17 | 6.28 | 3.05 | 0.75 | 3.97 | |
| | 500 | 400 | 10.11 | 6.86 | 3.37 | 0.75 | 4.21 | |
| | 650 | 475 | 475 | 11.53 | 8.04 | 3.84 | 0.75 | 4.59 |
| | | | 550 * | 12.94 | 9.10 | 4.32 | 0.75 | 4.95 |
| | 800 | 575 | 575 | 13.41 | 9.46 | 4.47 | 0.75 | 5.08 |
| | | | 650 * | 14.82 | 10.52 | 6.59 | 1 | 5.45 |
| | 1000 | 675 | 675 | 15.30 | 10.87 | 6.80 | 1 | 5.57 |
| | | | 750 * | 16.71 | 11.93 | 7.42 | 1 | 5.94 |
| | 1200 | 800 | 800 | 17.65 | 12.64 | 9.80 | 1.25 | 5.19 |
| | | | 875 * | 19.07 | 13.70 | 10.59 | 1.25 | 6.55 |
| | 1400 | 900 | 19.54 | 14.05 | 10.85 | 1.25 | 6.68 | |
| | 1600 | 1025 | 21.89 | 15.82 | 14.60 | 1.50 | 7.29 | |
| 1800 | 1125 | 23.78 | 17.23 | 15.85 | 1.50 | 7.78 | | |

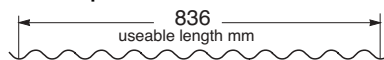
(*) Radius on request
Other types of covers on request

Ordering codes cover:

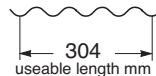


Example of ordering
Standard design:
CPTA 1, 650/475, 180°/836

Cover profile



Standard 11 waves



intermediate 4 waves

standard thickness 75/100

For intermediate covers thickness varies according to the radius.

6 Covers

6.4.1. Installation method and fixing accessories

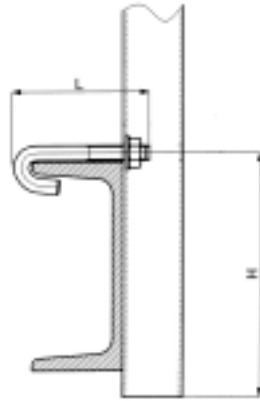
The fixing system is designed for a quick positioning and a simple removal of the covers to allow the inspection of the rollers sets and the conveyor belt.

Covers will be supplied:

- **with holes** for a fixing by bolts, hooks and brackets
- **without holes** for a fixing by stainless steel straps.



Fixing with galvanised hooks



The set is composed by:

- 1 hook M8
- 1 nut M8
- 1 washer

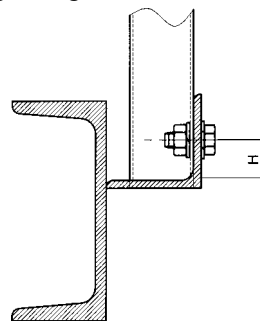
Quantity to be ordered: 4 for each cover

Ordering code: CPTA, LG, 60
CPTA, LG, 70
CPTA, LG, 80

The values 60, 70 and 80 represent the length "L" of the hook.

At the order time you should precise dimension "H" too.

Fixing with galvanised bolts



The set is composed by:

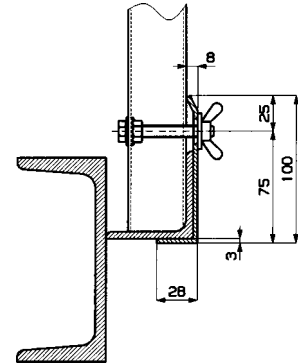
- 1 screw M8 x 20
- 1 nut M8
- 1 galvanised washer

Quantity to be ordered: 4 for each cover

Ordering code: CPTA, BU

At the order time you should precise dimension "H".

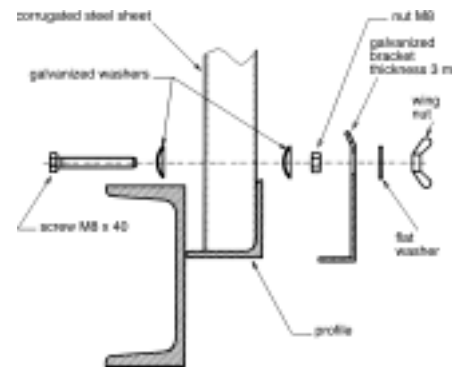
Fixing with bracket



This system allows a quick disassembling of the covers to inspect the belt and its structure.

No special tool is required for the operation and furthermore it is not necessary to unscrew the wing nut to remove the bracket.

Details of the components



The standard supply includes:

- 1 galvanised bracket thickness 3 mm.
- 1 screw M8 x 40
- 1 nut M8
- 1 wing nut
- 2 galvanised washers
- 1 flat washer

Quantity to be ordered:

- for belt width up to 800 = 2 for each cover
- for belt width up to 1000 and above = 4 for each cover

Ordering code: CPTA, ST

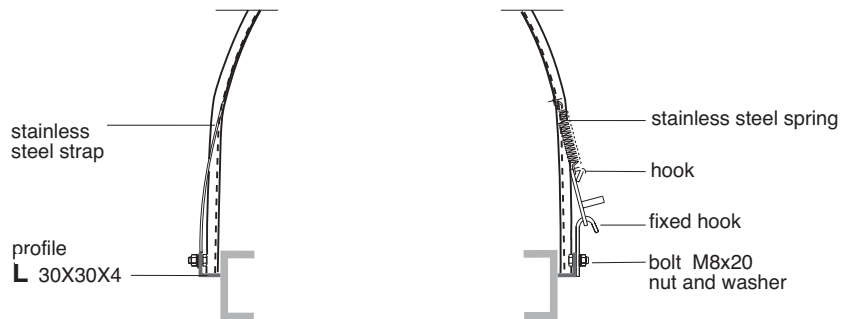
Fixing with stainless steel straps

Each cover must be fixed by a stainless steel strap of 20 mm width and 0.6 mm thickness.

The steel strap is positioned on top of the section in the lower corrugation.

As shown in Fig. A and in relation to the section length, the steel strap is positioned and fixed as follows :

- a) on one side by an angle section drilled to accept bolts and washers M 8 x 20 .
- b) on the other side and in the identical position with a hook fixed to the angle section with a nut and washer M8 x 20.



- The standard supply includes:
- 1 strap with stainless steel spring and galvanised hook
 - 1 fixed galvanised hook
 - 2 bolts M8 x 20 cadmium plated
 - 2 washers cadmium plated

- Quantity to be ordered:
- for belt width up to 1000 = 1 for each cover
 - for belt width from 1200 upwards = 2 for each cover

Ordering code: CPT-1F

