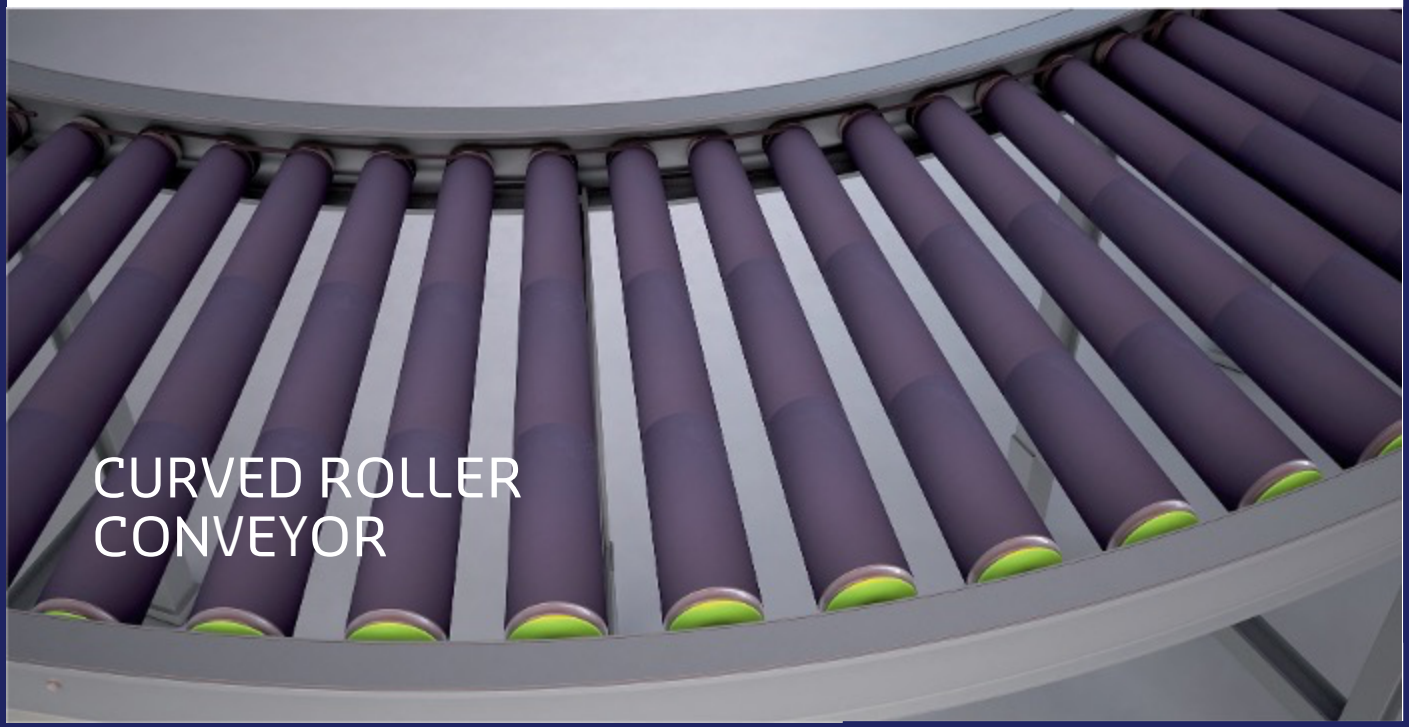
HUTCHINSON®

CONVEYDYN® BELTS
GENERAL RECOMMENDATIONS



The aim of this document is to describe the technical characteristics and parameters used for the calculation of CONVEYDYN® belts for roller conveyors.

As a partner and solutions designer, we can help you meet your design parameters: line transfers, sorters, very light load conveyors, special geometries...

1. CONVEYDYN® PRESENTATION

The belts have been specifically developed by **HUTCHINSON®** for roller conveyors

Our CONVEYDYN® belts can be offered for low loads (30 kg) straight and curve conveyors.

2. PRODUCT SPECIFICATION

2.1 Technical description:

Single elastic belt (CONVEYDYN®) with special D-shape profile design

2.2 Belt designation:

Ex: D271 CONVEYDYN®

D: CONVEYDYN® patented profile

271: length in mm

CONVEYDYN®: registered brand

2.3 Material requirement:

Material complies with the requirements of the directive 2002/95/EG (RoHS) and contains only substances, which have been checked and registered according to the REACH regulation (EG) No. 1907/2006.

Conductive belt complies with Standard ISO 1813 (ATEX): "Electrical conductivity of antistatic belts".
Due to rubber compound, our products are not compatible for conveying food or with clean rooms (No FDA approved).

2.4 Temperature range:

CONVEYDYN®: -30°C up to 80°C (+100°C at peak)

2.5 Labelling:

LOGO HUTCHINSON® + CONVEYDYN® + Made in XX + PROFILE&LENGTH + Production date (format: YY DDD)

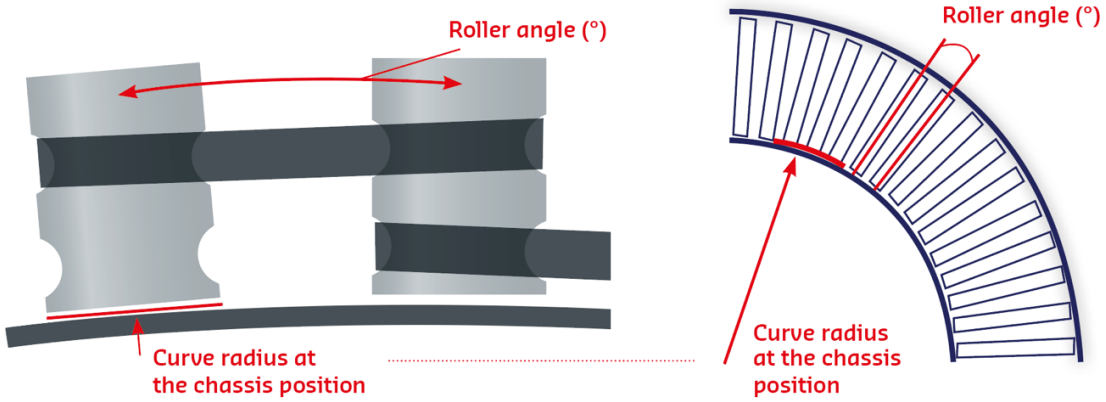
2.6 Dimensions:

CONVEYDYN® Profile is the property of **HUTCHINSON®**

2.7 Geometry Product limits:

Geometry limits are defined in the chapt.4: "RECOMMENDATIONS"

Nevertheless, for Curve conveyors:
- The angle between each roller must be 5° maximum
- The curve radius at chassis position must be higher than 800mm



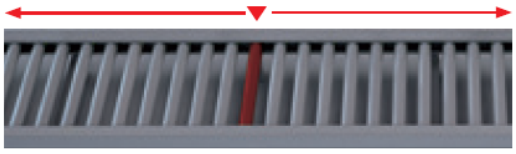
2.8 Power Range:

For loads from 0g up to 30 Kg

2.9 Cost Savings:

For Light loads: One motor can power up a maximum of 20 rollers (10 max per side).

Motor in central position recommended, validation by Hutchinson calculation.



2.10 Customer Confidence:

2.10.1 Clean: The CONVEYDYN® belt does not need any special maintenance.
No maintenance, no greasing, so the conveyor stays clean.

2.10.2 Reliability: The CONVEYDYN® service life up to 2 years / 1 000 000 starts-stops (Straight conveyor under the usage conditions recommended by Hutchinson).
After a quick trial run, the tension remains the same, for the entire life of the belt, thereby making maintenance unnecessary.

A PRODUCT DATA SHEET is available per reference on request (See Appendix 1)

3. BELT CALCULATION

3.1 Replacement solution / new conception

- For replacement solution: check of the belt reference
- In case of new conception: perform an optimized recommendation

3.2 Conveyor motorization

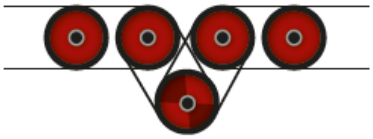
Two types of technology can be found on the market:

- Conveyors with integrated motor into the roller (same belt references on all pulleys)

Motorized motor

- Conveyors with a gearbox motor (same or different belt references on primary drive and pulley to pulley transmission).

Remote motor / Gearbox motor



The calculation remains identical in both cases except for the primary transmission between gearbox motor and roller(s).

3.3 Technical data & working conditions for calculation

The data and characteristics needed for CONVEYDYN® belt calculation are indicated in the "HUTCHINSON ROLLER CONVEYING **TECHNICAL INFORMATION FORM**" **(See Appendix 2)**

This Technical Information Form is mandatory to perform the Hutchinson recommendations and is valid for each type of conveyor: standard straight and standard curve conveyors.

3.3.1 The geometry

- Linear conveyor
  - Roller brand / Roller material / Roller diameter / Roller pitch with tolerance / Pulley diameter / Pulley material/groove radius/groove distance.
- Curve conveyor: **additional information requested**
  - Conical roller diameter (at the center of the roller) / Inside roller pitch / Outside roller pitch
- The existing belt reference (if existing or calculated by yourself)
- The type and number of loads
- Load weight
- Parcels dimensions

3.3.2 Conveyor configuration

- Motor type: Gearbox motor or motorized roller
- Number of slave rollers and configuration
- Inclination
- Specific for curve Conveyor
    - Curve radius at the chassis position / Conveyor curve angle

3.3.3 Conveyor working conditions:

The working conditions necessary for CONVEYDYN® belts calculation are indicated hereafter: The peak torque requested is during the starting phase.

- Conveyor speed
- Motor starting torque & acceleration.
- Conveying torque
- Number of stop & start per day
- Conveyor working time
- Temperature

3.3.4 Additional information for gearbox motor if necessary:

- Motor pulley diameter
- Distances from motor pulley to roller and tolerances

3.3.5 Comments & other additional information

- Draft of the conveyor
- Number of parcels
- Etc. …

3.4 Hutchinson recommendations

The calculation results are defined in the "HUTCHINSON CONVEYDYN® TECHNICAL RECOMMENDATIONS" **(See Appendix 3).**

The number of starts and stops, the acceleration time as well as the motor torque during the starting phase could influence the durability of the belt.

An appropriate validation system should be implemented to confirm the product lifetime for each conveyor configuration.

4. RECOMMENDATIONS

The aim of this paragraph is to describe the recommendations for storage, assembly and use of CONVEYDYN® belts for roller conveyors.

4.1 Storage conditions

4.1.1 CONVEYDYN® belt not assembled on the application

- Temperature: between 10 and 35°c

- From the date of manufacture, the belt must not be stored for any longer than 5 years in its original packaging.

4.1.2 CONVEYDYN® belt assembled on the application

- Temperature: between 10 and 35°c

- Once the belt has been installed and tensioned, the maximum period of static storage is 1 year

4.2 Characteristics of pulleys

4.2.1 Geometry

The CONVEYDYN® is validated for round groove shape rollers with radius 5 mm.

4.2.2 Material

The CONVEYDYN® belt is validated for steel roller or plastic roller with PA6.6 material.

4.2.3 Coating

4.2.3.1 Roller coating

The belt validation tests must be carried out with the mass production coating specified in the Hutchinson's technical information form. Any modification on the coating must be reported to Hutchinson for approval before applying it.

4.2.3.2 Pulley coating

The surface treatment products (for instance, manufacturing waste or bad application of protection product on pulleys) do not have to interfere with the belt (incompatible oil with belt rubbers must be eliminated by cleaning).

4.2.4 Misalignment of the pulleys

The maximum allowable misalignment between two consecutive pulleys is 0,3 mm for 100 mm belt span.

4.3 Environment

4.3.1 Housing or belt proximity

no contact recommended between load (boxes, carboard,..) and belts.

4.3.2 External aggressions

The belt should be protected against all forms of projections: gravel, liquids, external object, etc.

4.3.3 Operating cycle temperature

See appendix for product data sheet.

4.3.4 Handling warning for safety

Take care to avoid any finger trap between belt and pulley during installation, removal or when the conveyor is running. As a security measure: a finger protection should be implemented.

4.4 Tension and installation method

The CONVEYDYN® is an elastic power transmission belt, with a D shape rib.

4.4.1 The maximum stretch allowed for the belt in straight conveyor, including fitting on the pulley, is indicated in the table hereunder.

An over-stretch could damage the mechanical properties of the belt.

Belt profile	Maximum static elongation allowable	Maximum assembly elongation allowable
CONVEYDYN®	**5%**	**10%**

4.4.2 Tools used to fit the belt on the pulleys, on production lines and service, must be approved by Hutchinson.

4.4.3 The stabilized tension can be checked on conveyor, only at ambient temperature (20°C ± 10°C), and after minimum 6min running and cooling.

A stabilized tension measurement with another method could not be representative.

4.5 Recommendations for assembly

The elastic CONVEYDYN® belt can be installed quickly and easily. Suitable tools can be used to tension the belt with a transmission ratio of 1:1 in order to avoid over-elongation of the belt when it is installed.

Please consult us for more information.

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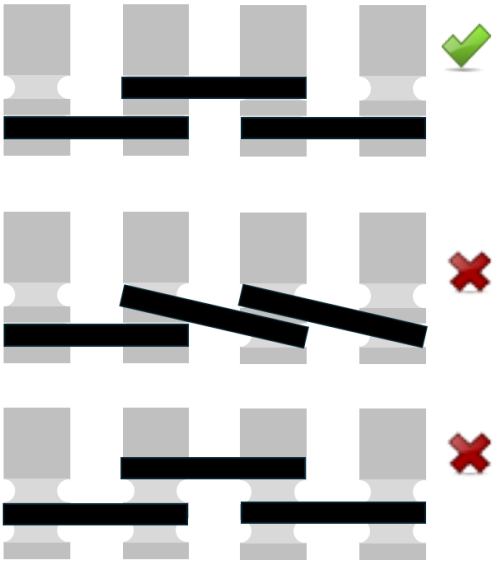
As a general rule:

- There must not be any contact between two belts, the box or any other part of the conveyor.
- Each belt must be assembled on the same groove of the two pulleys to avoid any misalignment.
- The belt shall not be installed on area between grooves.
- Note: The number of starts and stops, the acceleration time and motor torque during the starting phase could influence the durability of the belt. An appropriate system validation shall be conducted to confirm the product lifetime in your conveyor configuration.



4.6 Replacing CONVEYDYN® belt

- Remove the old belt manually.
- Do not store the new belt near a source of heat.
- Visually inspect the new belt. There must be no signs of cuts, tears, broken cord or rubber, or cracks on the rib or on the back of the belt. If any of these defects are visible, replace with a new belt. Also check that the pulleys are aligned and clean.
- Install the belt in the rib of the pulleys with tool approved by HUTCHINSON®. Elongation of the belt mustn't be greater than levels given by HUTCHINSON®. Check the Recommendations for assembly in §4.5.
- Never re-install a used CONVEYDYN® belt. Always install a new belt.

Nota: Any modification brought by the customer to the conveyor and being able to impact the functioning of the belt must be indicated to HUTCHINSON®

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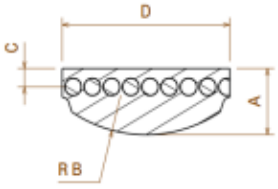
Appendix 1

HUTCHINSON® BELT DRIVE SYSTEM	PRODUCT DATA SHEET CONVEYDYN®	VERSION 1 DATE July 25th, 2024 PAGE : 1/1

PRODUCT REFERENCE	D271 CONVEYDYN®
DETAILS	monorib belt number of ribs : 1 profile : D shape for round single groove rollers conveyors Length : 271 mm
PRODUCT DESCRIPTION	The Conveydyn® is a power transmission elastic belt for O'ring roller conveyors.
MANUFACTURING SITE	Product developped and manufactured in the plant of : HUTCHINSON SNC Rue des martyrs 37304 Joué-Lès-Tours FRANCE
COMPOSITION	Cord : Polyamide Rubber : EPDM
PHYSICAL AND CHEMICAL PROPERTIES	Physical state : elastomer belt Black color (back) green (rib) Smell : rubbery PH : not applicable Boiling point : not applicable Melting point: not applicable solubility (in water) : insoluble Other informations : no oxidizing properties, non bio degradable
PACKAGING	In carton box according to the quantity ordered
MARKING	Indelible marking on the back showing the requested reference (LOGO HUTCHINSON + CONVEYDYN + Made in XX + profile + length + production batch) Production batch : 23 = year 203 = Day HUTCHINSON® CONVEYDYN® Made in France D277 24 212
CHARACTERISTICS	 Thickness (A) 2,8 mm Rib radius (B) 5 mm Back/cord (C) 0,67 mm Width (D) 6 mm Linear mass 16,8 g/m Max linear speed 60 m/s Minimum bending Ø 30 mm Temperature range -30 to 80°C
STORAGE CONDITIONS	recommendations are detailed in ISO 2230 Rubber products - guidelines for storage New parts should be stored between 0°C to 35°C with Humidity > 50%HR Maximum duration of storage in genuine packaging : 5 years from production batch.
QUALITY CERTIFICATES	Belt control according to the HUTCHINSON quality Management System HUTCHINSON is ISO 9001 certified
OTHER	For more informations, please consult the product and market leaflets on our website : www.hutchinsontransmission.com

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Appendix 2

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CONVEYING TECHNICAL INFORMATION FORM

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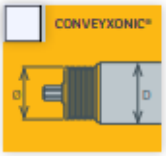
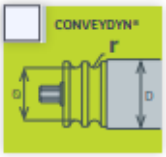
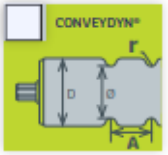
- Company name :
- Project name :
- Contact name :
- Date :
- Email address :

1. GEOMETRY AND CONVEYOR CONFIGURATION

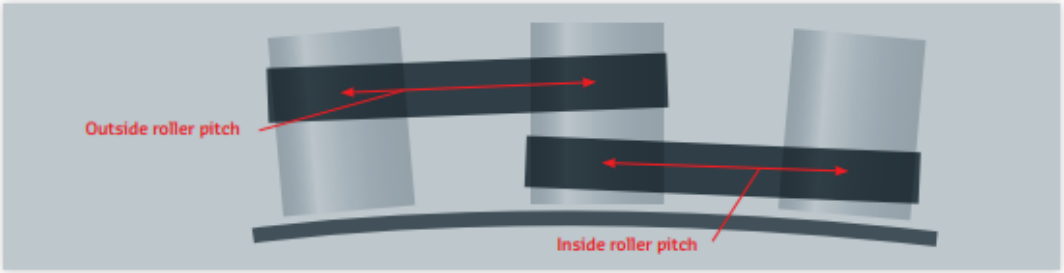
- Roller brand :
- Roller material : ☐ Plastic ☐ Metal Other :
- **Pulley type :**

☐ CONVEYXONIC®  Ribbed

☐ CONVEYDYN®  Grooved

☐ CONVEYDYN®  Grooved stamped

  - Groove radius **r** (mm) : *see picture above*
  - Groove distance **A** (mm) :
- Pulley diameter **ø** (mm) : *see picture above*
- Pulley material : ☐ Plastic ☐ Metal Other :
- **Linear conveyor :**
  - Roller diameter **D** (mm) : *see picture above*
  - Roller pitch with tolerances (mm) :
- **Curve conveyor :** *(see drawing below)*
  - Conical roller diameter (mm) : *(at the center of the roller)*
  - Inside roller pitch (mm) :
  - Outside roller pitch (mm) :



- Existing belt designation / number of ribs :

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- Type of load : ☐ Cardboard box ☐ Plastic box Other :
- Number of loads on the conveyor unit :
- Load weight (kg) :
- Parcels dimensions (mm) :
- Motor type :

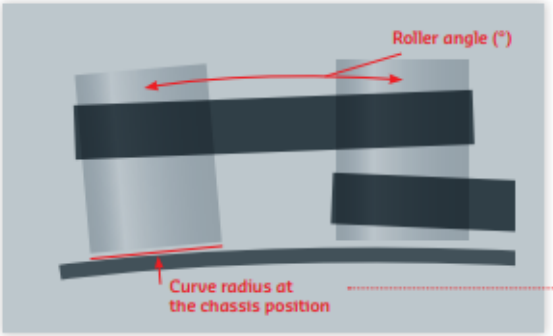
☐ Remote motor 

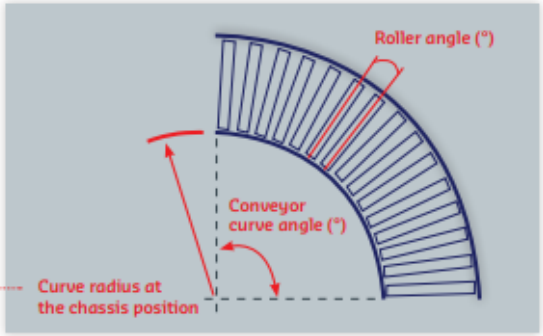
☐ Motorized roller 

For remote motor do not forget to fill the point 4.

- Number of slaved rollers :

- Inclination (%) :
- Roller angle (°) *(see drawing below)* :
- Curve radius at the chassis position :
- Conveyor curve angle (°) :





2. CONVEYOR WORKING CONDITIONS

- Conveyor speed : ☐ m/s ☐ m/min ☐ rpm
- Motor starting torque (Nm) :
- Conveying torque (Nm) :
- Number of start and stop per day :
- Conveyor working time (h/day) :
- Temperatures (°C) :

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3. COMMENTS

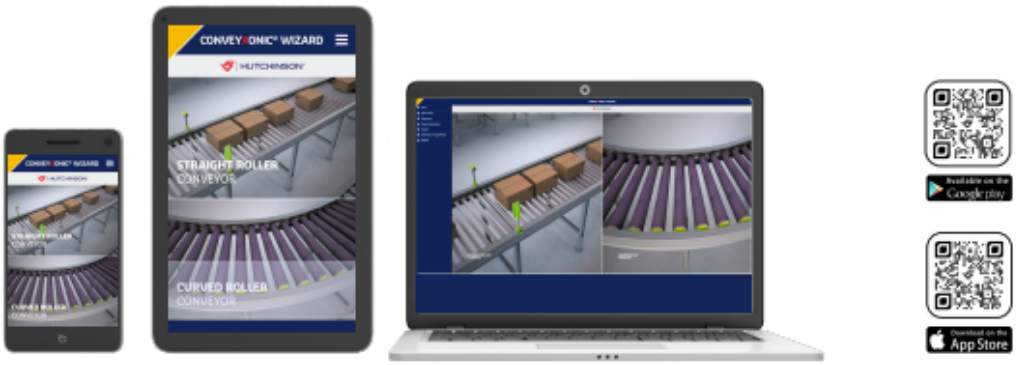
Please attach by email the drawing of your conveyor.

4. REMOTE MOTOR

- Motor Pulley diameter (mm) :
- Distances from motor pulley to roller (mm) :
  - Minimum :
  - Maximum :
- Comments :

CONVEYXONIC® WIZARD APP

Simple & fast,
Define **your belt** for roller conveyor :
www.hutchinsontransmission.com/resource-center/apps



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Appendix 3

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CONVEYING TECHNICAL RECOMMENDATIONS

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CUSTOMER CONTACT DATA	
Company Name:	
Contact Name:	
Date:	11/09/2024
Project Name:	P60 and 75 mm

HUTCHINSON CONTACT DATA			
Sales Manager:		Tech ID:	
Email:	@hutchinson.com		
Telephone:	+33 2.47.48.		

Straight Conveyor 25 kg

1. Input Data :

- **Straight Rollers Data :**
  - Brand :
  - Type : Grooved stamped
  - Groove radius : 5.0 mm
  - Diameter : 48.6 mm
  - Material : Metal
  - Speed : 45 m/min => 295 rpm
  - Conveyor configuration : 6 slave rollers + 1 motor roller + 6 slave rollers
- **Pulleys Data :**
  - Motor Roller Diameters : 38.1 mm
  - Slave Roller Diameters : 37.7 mm or 38.0 mm
  - Groove Radius : 5,0 mm
  - Material : Metal
  - Center distance : 60.0 mm and 75.0 mm

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- **Existing Belt Designation :** Oring clear Φ5mm

- **Load Data :**
  - Number of loads on the conveyor unit : 1
  - Maximum load : 25 kg maximum
  - Type of load : Cardboard box
  - Dimensions : 615x480x370

- **Environment Data :**
  - Inclination : NC
  - Motor starting torque : NC
  - Motor conveying torque : NC
  - Number of start & stop : 25 000 per day
  - Operation time : 22 h/day
  - Temperature : 30°C

2. Hutchinson recommendations :

Nota : The number on starts / stops is very important. Our CONVEYDYN belt is validated for 1 million starts / stops on our test bench.

- **CD 60.0 mm with 37.7 mm slave roller diameter (HKS) :**
  - Belt reference : **D242 CONVEYDYN**
  - Belt nominal tension : 67 N/span
  - Belt nominal frequency : 634 Hz (530 Hz min)
  - Belt elongation range : 3.7 %
  - Max belt transmissible torque (conveying) : 1.78 N.m
  - Necessary torque to convey the load : 0.72 N.m
  - Necessary conveying torque for entire conveyor : 0.84 N.m
  - Necessary starting torque for entire conveyor : 2.99 N.m

- **CD 60.0 mm with 38.0 mm slave roller diameter (TKK) :**
  - Belt reference : **D242 CONVEYDYN**
  - Belt nominal tension : 71 N/span
  - Belt nominal frequency : 651 Hz (545 Hz min)
  - Belt elongation range : 3.9 %
  - Max belt transmissible torque (conveying) : 1.89 N.m
  - Necessary torque to convey the load : 0.72 N.m
  - Necessary conveying torque for entire conveyor : 0.84 N.m
  - Necessary starting torque for entire conveyor : 2.99 N.m

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- **CD 75.0 mm with 37.7 mm slave roller diameter :**

-	Belt reference :	**D271 CONVEYDYN**
-	Belt nominal tension :	77 N/span
-	Belt nominal frequency :	541 Hz (453 Hz min)
-	Belt elongation range :	4.3 %
-	Max belt transmissible torque (conveying) :	2.03 N.m
-	Necessary torque to convey the load :	0.72 N.m
-	Necessary conveying torque for entire conveyor :	0.84 N.m
-	Necessary starting torque for entire conveyor :	2.99 N.m

- **CD 75.0 mm with 38.0 mm slave roller diameter :**

-	Belt reference :	**D271 CONVEYDYN**
-	Belt nominal tension :	80 N/span
-	Belt nominal frequency :	553 Hz (463 Hz min)
-	Belt elongation range :	4.4 %
-	Max belt transmissible torque (conveying) :	2.13 N.m
-	Necessary torque to convey the load :	0.72 N.m
-	Necessary conveying torque for entire conveyor :	0.84 N.m
-	Necessary starting torque for entire conveyor :	2.99 N.m

- **Assembly recommendations:**
  - There shall be no contact between two belts the package or other fixed elements of the conveyor

- **Nota :** The number of start and stop, the acceleration time and motor torque during the starting phase could influence the durability of the belt. An appropriate system validation shall be conducted to confirm the product lifetime in your conveyor configuration.

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