Amazon ADTA (Automated Divert to Aisle)

Training Session

Note

This training pack contains pictures, drawings and/or examples that are based on standard Vanderlande equipment.

Equipment for your system can and will vary from this slide pack, but this will not have any effect on the maintenance principles as explained in the slide pack.

Introduction
Amazon ADTA (Automated Divert to Aisle)

Training Session

Learning objectives

Target group:

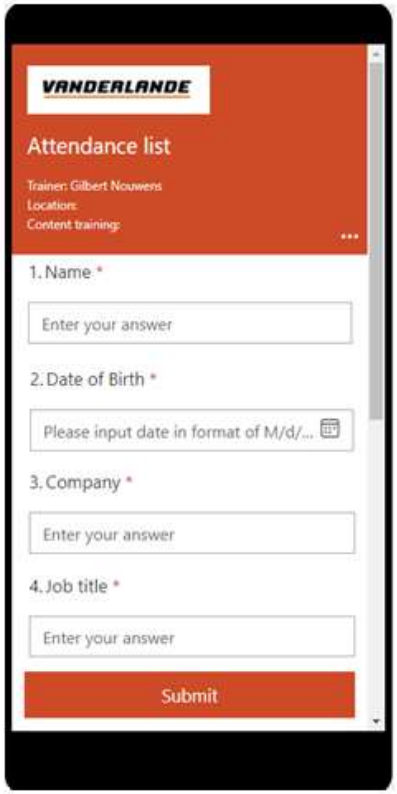
- anybody who maintains Vanderlande equipment
- anybody who solves problems with Vanderlande equipment

By the end of this training you:

- to be able to maintain
- to be able to localise and solve faults
- speaking the Vanderlande language

Training attendance Vanderlande

- Scan the QR code
- Fill in your:
  - Name
  - Data of birth
  - Company name
  - Job title
- Submit

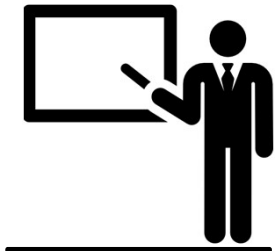


Training attendance Amazon

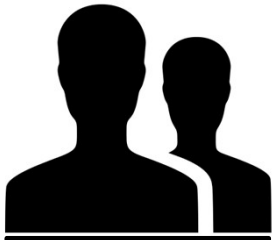
- Scan the QR code
- Fill in your:
  - Name
  - Data of birth
  - Company name
  - Job title
- Submit

Vendor Training Roster

Introduction



Trainer



Who is Who

Expectation

Appointments

System Introduction

Abbreviation

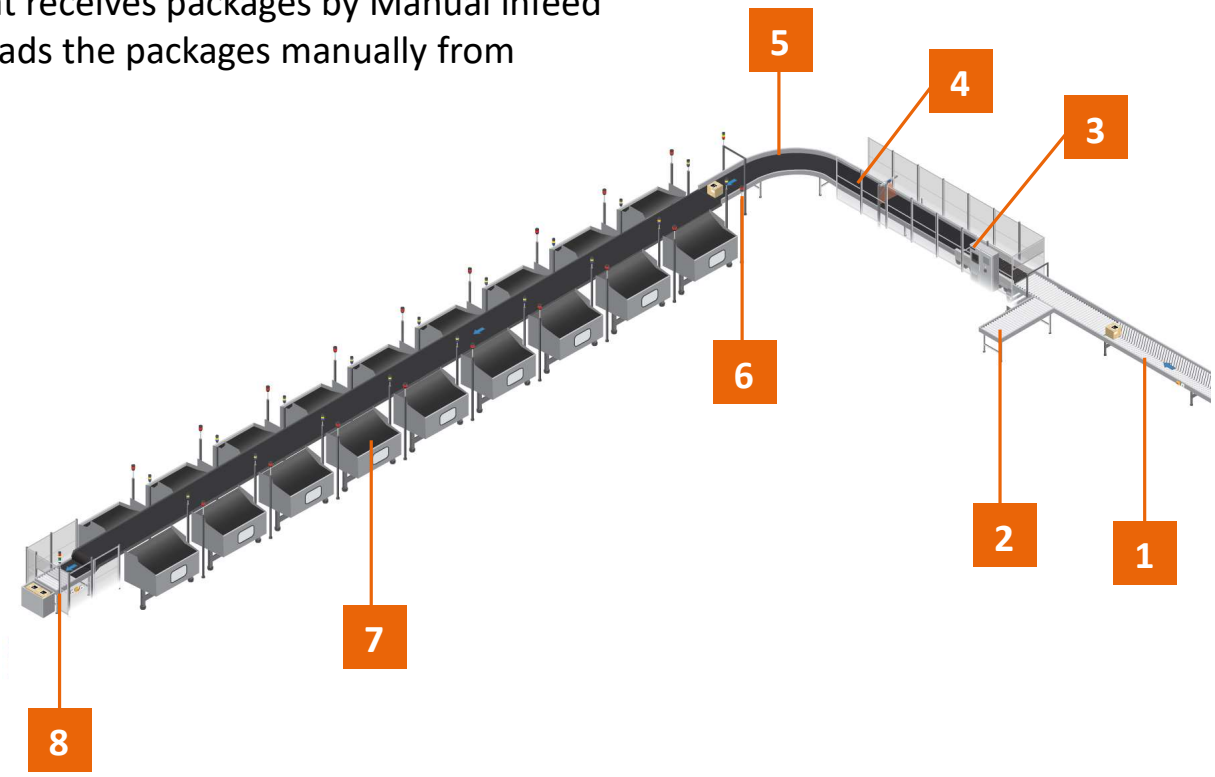
Code	Description
CCC	Central Control Cabinet
LCC	Local Control Cabinet
EQS	EQuipment Special
SLO	Safety Lock Object
SLC	Signal Light Colum
ID	InDentification
ESO	Emergency Stop Object

Code	Description
PBB	Push Button Box
SR	Skewed Roller
LRD	Live Roller Drummotor
BF	Belt Floorveyor
BC	Belt Curve
CH	CHute
HCO	Hight Check Object

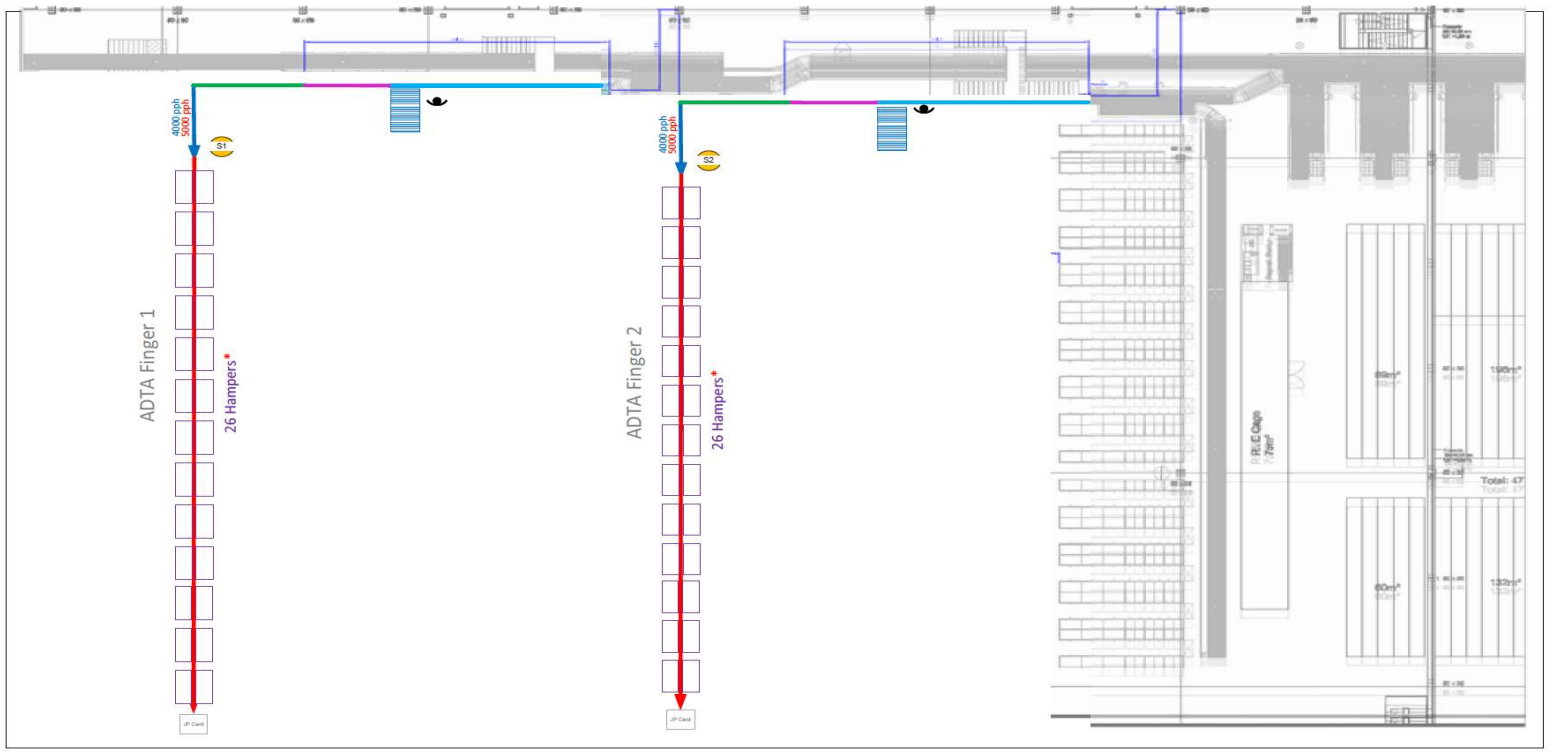
System overview

- The AMZL Project is a Delivery Station (DS) that receives packages by Manual infeed and ASL, sorts the packages by ADTA and re-loads the packages manually from chutes to trucks.

Nr	Description
1	Singulation zone
2	Cleaning zone
3	Gapping zone
4	Identification zone
5	Transport
6	Positioning zone
7	Sortation zone
8	Reject zone



MFD overview

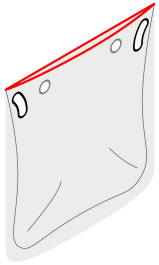


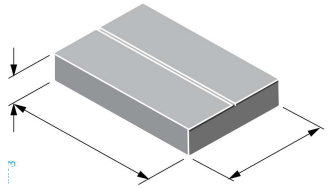
Material Flow Diagram (Amazon)				
Doc nr. 28616-03-0900FM01-EN-B ADTA Material Flow Diagram	SX Scanner ID Point Associate Cleaning Workstation	Singulator Pre-Gapper Gapper Belt Curve	Intralox Sorter As build/no VI scope *The quantity of Hamper per ADTA Finger varies from site to site.	**Capacity:** Red values: Vendor Capability (Vanderlande: Line Capacity) Blue values: Average Requirement (Vanderlande: Operational Capacity) Capacities are based on defined parcel distribution

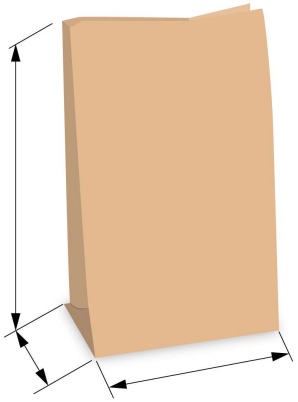
User roles

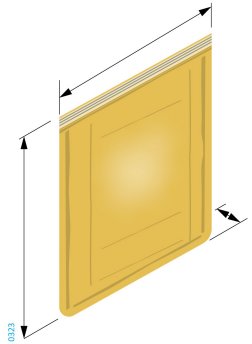
- Operators perform specific tasks at these positions:
  - Cleaning zone
  - Sortation zone
  - Reject zone
- Maintenance perform specific tasks:
  - Maintenance
  - Repairs
- Control room operator
  - Scada
  - Amazon Warehouse Controls System
- Supervisors
  - Determined by the system owner

Parcel requirements







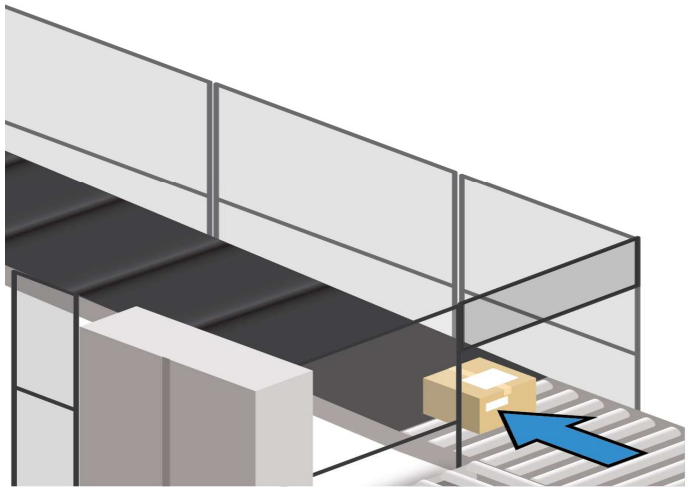


	Min	Max
Height	3 mm	635 mm
Width	100 mm	715 mm
Length	100 mm	1200 mm
Weight	0.05 Kg	30.00 Kg
Type	• Cardboard Box • Cardboard Letter • Polybag • Paper bags • Jiffy/Waller	

SLC
Signal Light Colum

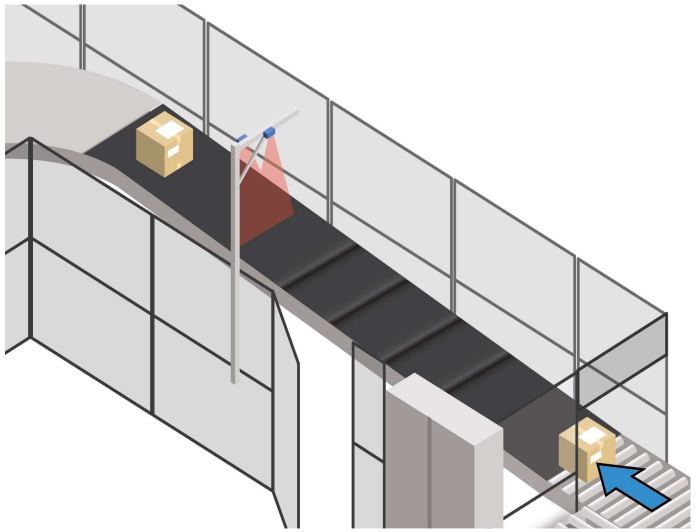
Main control panel

	DESCRIPTION
	ON → EMERGENCY ACTIVE ON → Safety Guard Opened
	Flashing 1 Hz → General Fault Active Flashing 2 Hz → Local Jam fault active Steady On → Maintenance Mode Active
	Flashing 1 Hz → A chute is 75% Steady On → A chute is 100%
	Steady ON → Machine Running Flashing 1 Hz → ADTA in Manual Mode Flashing 2 Hz → Machine Starting
	EMERGENCY: 1Hz buzzer, stops after 5 seconds MHE&ADTA Startup: costant for 5 seconds before machine starts. JAM: 2Hz, stops after 5 seconds



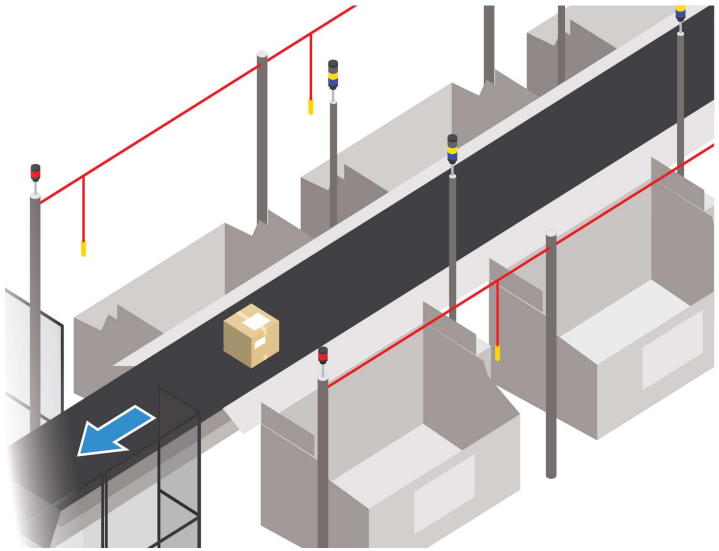
Camera tunnel

	DESCRIPTION
	ON → EMERGENCY ACTIVE
	Flashing 1 HZ → General Fault Active Steady On → Maintenance Mode Active
	Steady ON → Machine Running Flashing 1 Hz → ADTA in Manual Mode Flashing 2 Hz → Machine Starting
	EMERGENCY: Buzzer 1 Hz, stops after 5 seconds



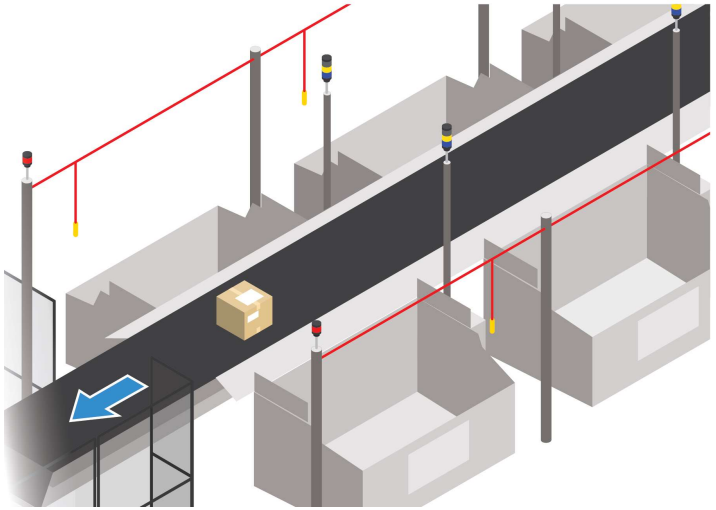
Chute

	DESCRIPTION
	STEADY ON → Emergency active FLASHING 1 HZ → Emergency activated on the ADTA
	Flashing 1 HZ → A general fault active in one of the chute
	Flashing 1 Hz → Jackpot is 75% Full Steady ON→ Jackpot is 100% Full
	Flashing 1 Hz → Change Jackpot bay container active
	Buzzer 1 Hz: 75% Full Buzzer 2 Hz: 100% Full



Jackpot

	DESCRIPTION
	Flashing 1 HZ → General Chute Fault Active
	Flashing 1 Hz → Chute is 75% Full Steady On → Chute is 100% Full
	Buzzer 1 Hz: 75% Full Buzzer 2 Hz: 100% Full



Jam

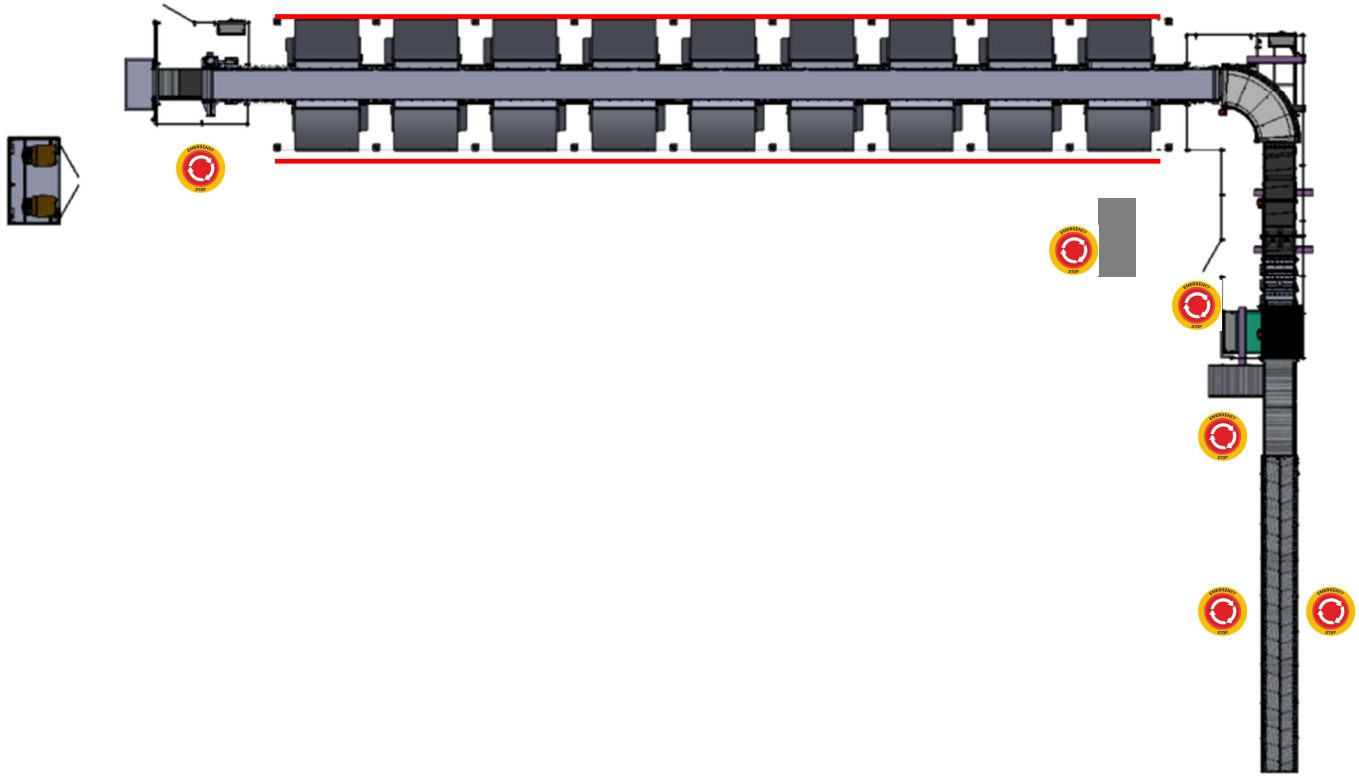
	DESCRIPTION
	Flashing 1HZ → Local Jam fault active

E-stop and push buttons

E-stop overview

E-stop pull cord

Local E-stop



- All equipment within 15 meters (49 feet) of that E-stop will automatically stop when that E-stop is pushed.

Push button overview

E-stop pull cord

Local E-stop

Jam reset/start

Change JP cart box

Restart

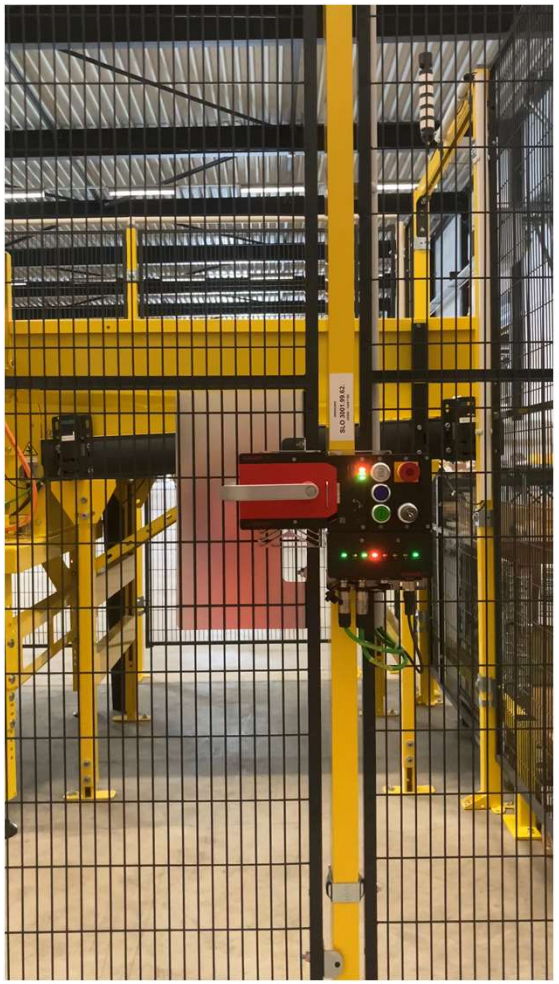
Start, stop and restart the system

Check the following before (re-) starting the system:

- Are all protective devices installed/complete?
- No-one is locked in?
- Can it run without interfering materials and products left behind?
- To stop the system, you must use the dedicated “stop” function.
- Use the “emergency stop” only in case of an emergency!

Safety door

- Entrance procedure:
  - Turn the key to zero
  - Press white button
  - Door will unlock
  - Close door
  - Press blue button for reset
  - Switch the key back to 1
  - Press green button for start



Lock Out / Tag Out

Health & Safety

There is no job so important that it is allowed to do it unsafe!

Lock Out & Tag Out

Why apply the LOTO procedure?

- The person working in an area may not be visible from the location where the system is started.
- An accidental or unexpected re-start of a system while someone is carrying out maintenance can cause serious injury.
- Protect persons working on a system or a machine against a re-start with the Lock Out / Tag Out (LOTO) procedure.

Hasp, Tag & Padlock

Use a **Hasp** if multiple persons work independently in the same area

The following information shall be given on the **Tag**:

- Your name
- Date of adding the tag
- Mobile phone number

Use your personal P**adlock** to prevent that the equipment can be switched on again. Remove the key from your dedicated padlock and keep it in a secure place while working on the system

LOTO procedure for Local Motor Starter

LOTO procedure

1. Turn the main switch to off If necessary switch off the up/downstream conveyor also
2. Mount the lock on the mainswitch
3. Prevent re-energizing (Lock Out) and inform others about who is working (Tag Out)

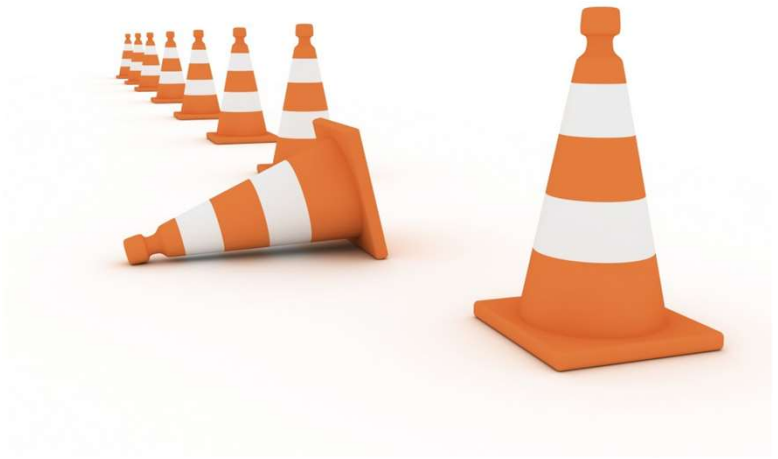
Examples of LOTO

LOTO can be applied to?

- Complete system or an area by locking and tagging the Central Controls Cabinet (CCC) or a Local Controls Cabinet (LCC).
- Fenced-off area by locking and tagging the safety gate or door.
- Single drive by locking and tagging a supply cable on a Local Motor Starter (LMS).
- Single drive by locking and tagging the switch on a drive.
- Single circuit by locking and tagging the circuit breaker.
- Compressed air line

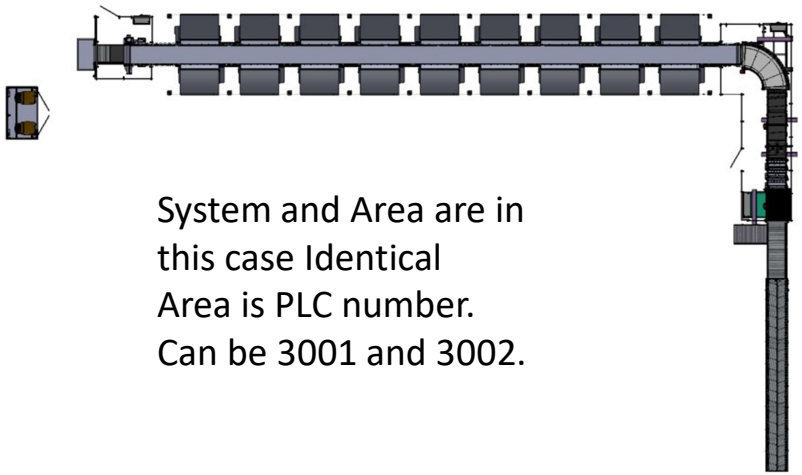
Exceptions

- For some jobs it is necessary to let the system running
  - Check bearings
  - Belt tracking
  - Lubricate
  - Adjustments
- Pay extra attention doing these jobs
- Work preferably with 2 persons
- Inform others
- Use proper tools

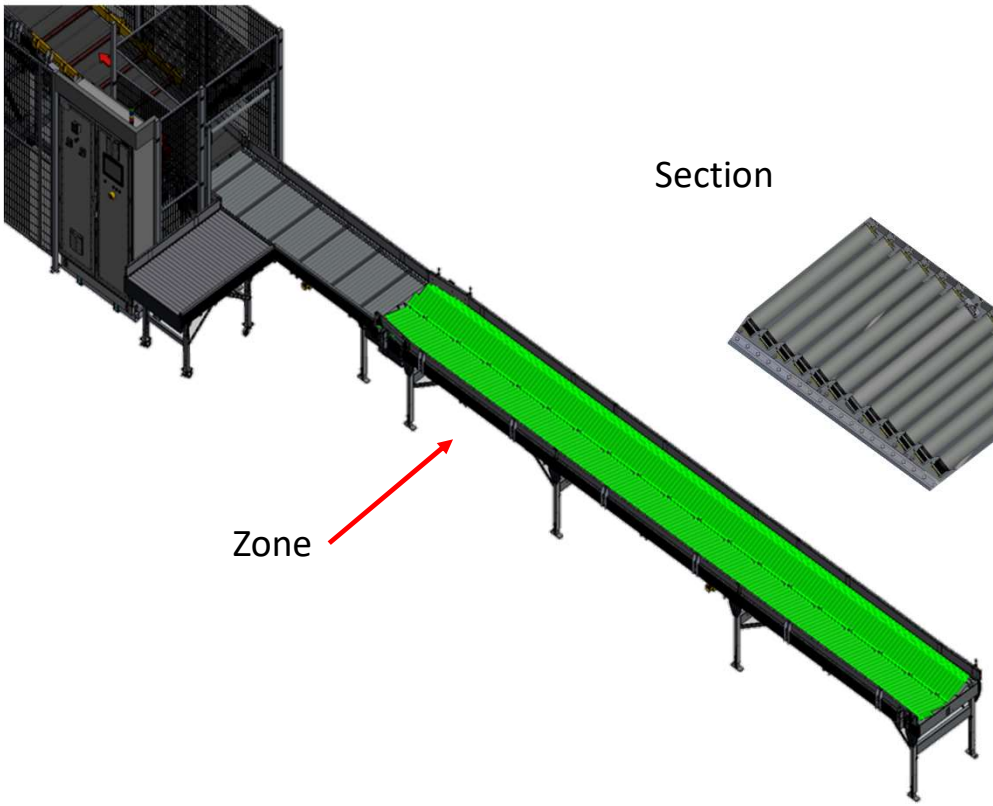


Mark code & Conveyor number

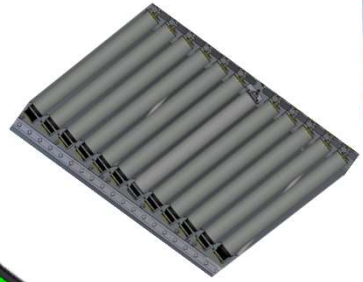
Area Zone Section Element numbering



System and Area are in this case Identical
Area is PLC number.
Can be 3001 and 3002.



Section



Element

Markcode sticker

- BF:……..Markcode
- 3001:……Area
- 8:……Zone
- 1:……Section
- 29569:……Project number
- 14401110:…….Activity number

Markcode & Conveyor list

- Markcode & conveyor number is necessary for:
  - Conveyor list (length, power, speed, etc.)

VANDERLANDE
BF.3001.8.1
29569-14401110

Conveyor List
RELEASED

Customer:	Amazon DNX2 AMZL
Project nr:	29569
Doc number:	29569-338-00001-EN-B

						VANDERLANDE						Project supply voltage 230/400 [V] 50 [Hz] 3ph						General			
A	Z	S	E	Mark Code	Customer Number	Transport Length [mm]	Drive Part Speed [m/m	Power Feeder Speed [m/m	Power [kW]	Nr. of Poles [-]	Nom. Current [A]	Brake	Aux. Brake	LMS Type	Drive Part Belt Type	Power Feeder Belt Type	Remarks	Project	PLC id	Activity number	Rev.
3001	6	2		BF		438	30		0,75	4	1,75	N		SC	Belt EL0/V10 LG-SE black		Nom. speed=60;	29569	3001	14401110	A
3001	6	3		BF		438	30		0,75	4	1,75	N		SC	Belt EL0/V10 LG-SE black		Nom. speed=60;	29569	3001	14401110	A
3001	6	4		BF		438	30		0,75	4	1,75	N		SC	Belt EL0/V10 LG-SE black		Nom. speed=60;	29569	3001	14401110	A
3001	8	1		BF		3329	60		1,1	4	2,5	N		SC	Belt E8/2 U0/U2 green FDA		Nom. speed=60;	29569	3001	14401110	A
3001	8	2		BC		2458	53		1,1	4	2,5	N		SC	Chiorino 2T12 U0-V10 FM FR		90;	29569	3001	14401170	A
3001	8	89		ID					0		0						Object; Array bridge	29569	3001	14401120	A
3001	8	91		ID					0		0						Cameras	29569	3001	14465110	A
3001	8	92		EQS					0		0						Object; Sensor positioner	29569	3001	14461160	A

Mark code & BOM list

- Markcode & conveyor number is necessary to find your item number in the BOM list

VANDERLANDE
BF.3001.8.1
29569-14401110

Bill of Materials

VANDERLANDE

Project nr:	29569	Date: 7-5-2023	Document nr:	Status:
Customer:	Amazon DNX2		29569-461-00002 A01	Released
City/Country:	Wuppertal / Germany			

1) Mark code	2) Conveyor number	3) Markcode clarification	4) Qty	5) Item number	6) Description	7) Supplier	8) OEM nr.	9) OEM description
PRT	3001.06.080	Loose parts	4 x	002315-01409	Anchor expansion cracked concrete M10x110 clamp reach >=30mm	Hilti	2105714	
PRT	3001.06.080	Loose parts	4 x	002370-89220	Nut hex M20 ISO4032/DIN934 CL8 flZn/nc/L/600H ISO10683	Vanderlande		
PRT	3001.06.080	Loose parts	4 x	002763-00020	Washer M20 flat without chamfer ISO7089/DIN125A Steel ZP	Vanderlande		
PRT	3001.06.080	Loose parts	4 x	008885-511-10245	Footbase With M20 Rod and Dampener	Vanderlande		
BF	3001.08.001	Belt conveyor	7,352 m	000000-01958	Belt E8/2 U0/U10 S/LG-SE black W=800 prepared	Forbo Siegling	906650	
BF	3001.08.001	Belt conveyor	2 x	000000-02945	Photo sensor reflective M12 male 4p 24Vdc pnp/npn range 0-2m pigtail L=270mm	Sick	1221943	RAY26P-34162330A00
BF	3001.08.001	Belt conveyor	1 x	000000-10196	Frequency converter 400V AC3 1,1kW 3,1A Sinamics G115D	Siemens	6SL3520-1XB41-1AF0	
BF	3001.08.001	Belt conveyor	1 x	0G0027-052-02300	Motor Cable LMS-V 4.0 Straight HANQ8 / Angled HANQ8	Lapp	SI052023	
BF	3001.08.001	Belt conveyor	1 x	0G0027-232-03000	Power Cable 3phase, Open end / Straight (HanQ4/2)	Lapp		
BF	3001.08.001	Belt conveyor	2 x	0L0124-00001	ASSY VERTICAL HINGE CONN FOR U-GUARDING H=100 MM.	Vanderlande		
BF	3001.08.001	Belt conveyor	3 x	0L3323-00100DQZ	ASSY GUARDRAIL HIGH U-SHAPE STRAIGHT SECTION	Vanderlande		
BF	3001.08.001	Belt conveyor	2 x	0P3321-00100C1G	End Cap High Guardrail	Vanderlande		
BF	3001.08.001	Belt conveyor	1 x	000420-13220	KA37/DRN90S4/1,1/271/M4A-270/-/AND8/30/-/E/#	SEW		
BF	3001.08.001	Belt conveyor	2 x	001693-50000	Grounding clip t=2-3mm	Vanderlande		
BF	3001.08.001	Belt conveyor	8 x	002311-06015	Bolt HH FT M6x16 ISO4017/DIN933 CL 8.8 DIN267 ZP	Vanderlande		
BF	3001.08.001	Belt conveyor	12 x	002311-06100	Bolt HH FT M6x100 ISO4017/DIN933 CL 8.8 DIN267 ZP	Vanderlande		
BF	3001.08.001	Belt conveyor	4 x	002311-06100	Bolt HH FT M6x100 ISO4017/DIN933 CL 8.8 DIN267 ZP	Vanderlande		
BF	3001.08.001	Belt conveyor	8 x	002311-10120	Bolt HH FT M10x120 DIN933 CL 8.8 DIN267 ZP	Vanderlande		

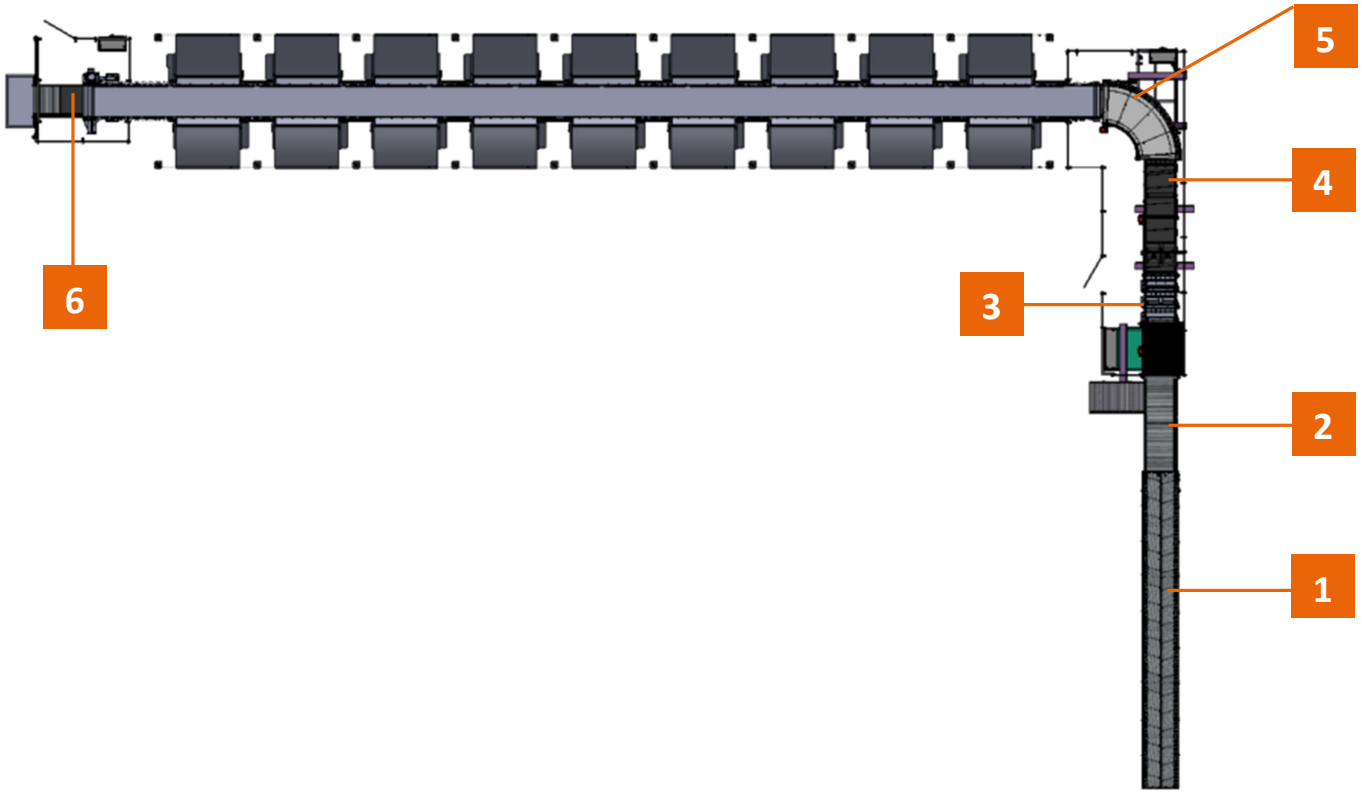
Mechanical

Markcode

- Section 1:……..Skewed Roller
- Section 2:……..Live Roller Drummotor
- Section 3:……..Short Belt
- Section 4:……..Belt Floorveyor
- Section 5:……..Belt Curve

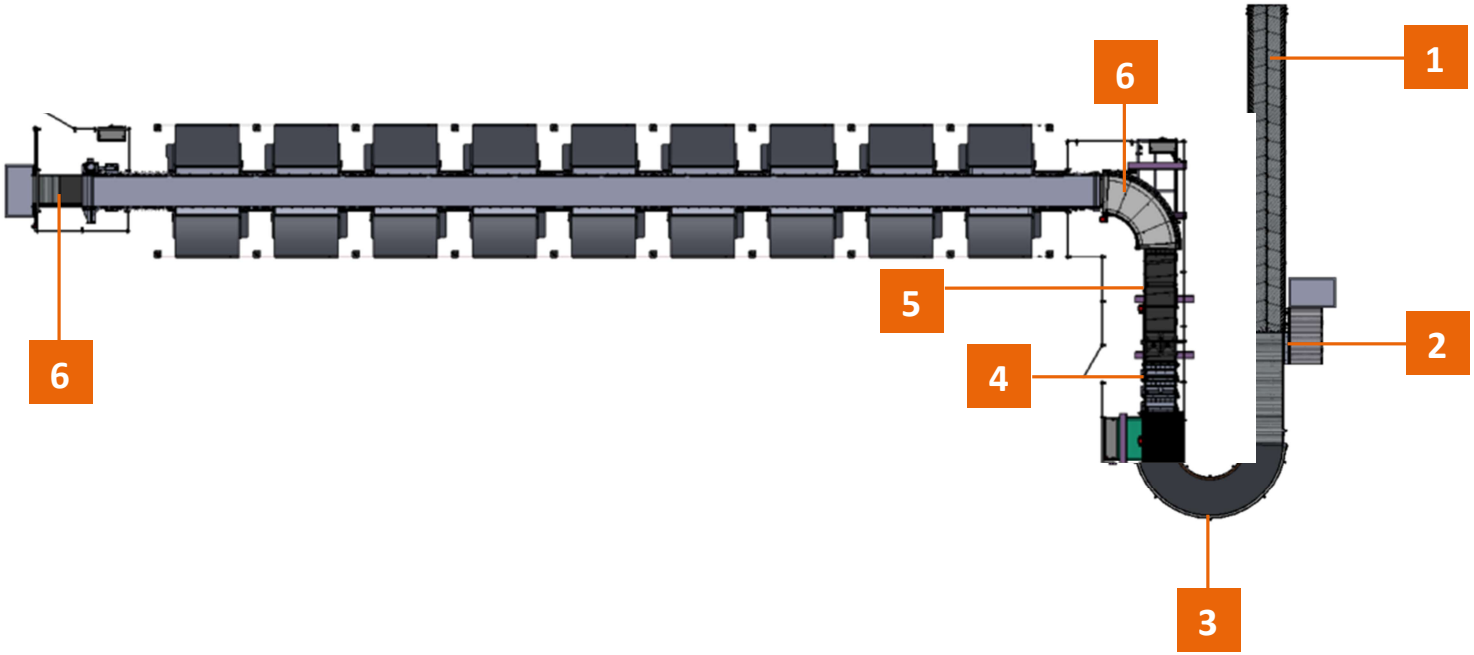
Equipment overview option 1

1) SR
2) LRD/GR
3) SB
4) BF
5) BC Vanderlande
6) LRD



Equipment overview option 2

1) SR
2) LR/GR
3) BC Transnorm
4) SB
5) BF
6) BC Vanderlande
7) LRD

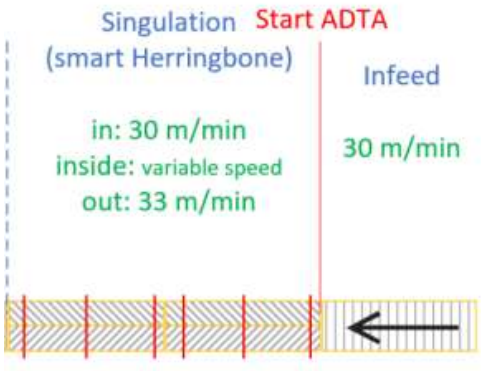


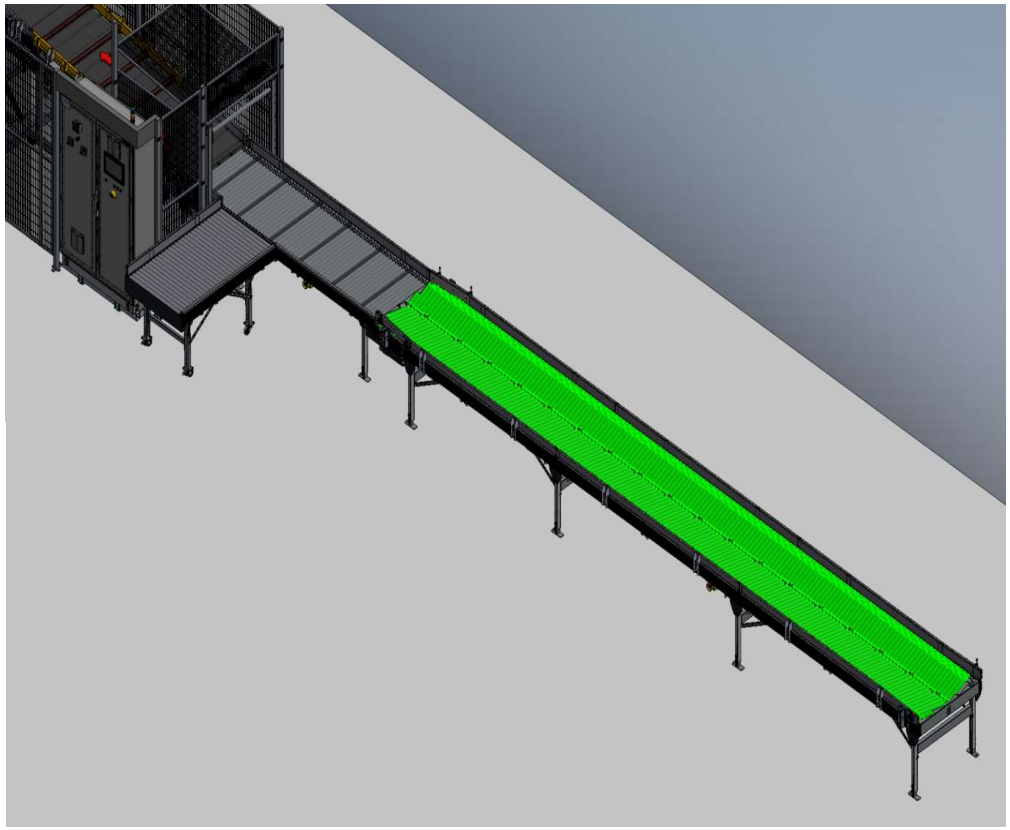
SR herringbone

Training Session

Position

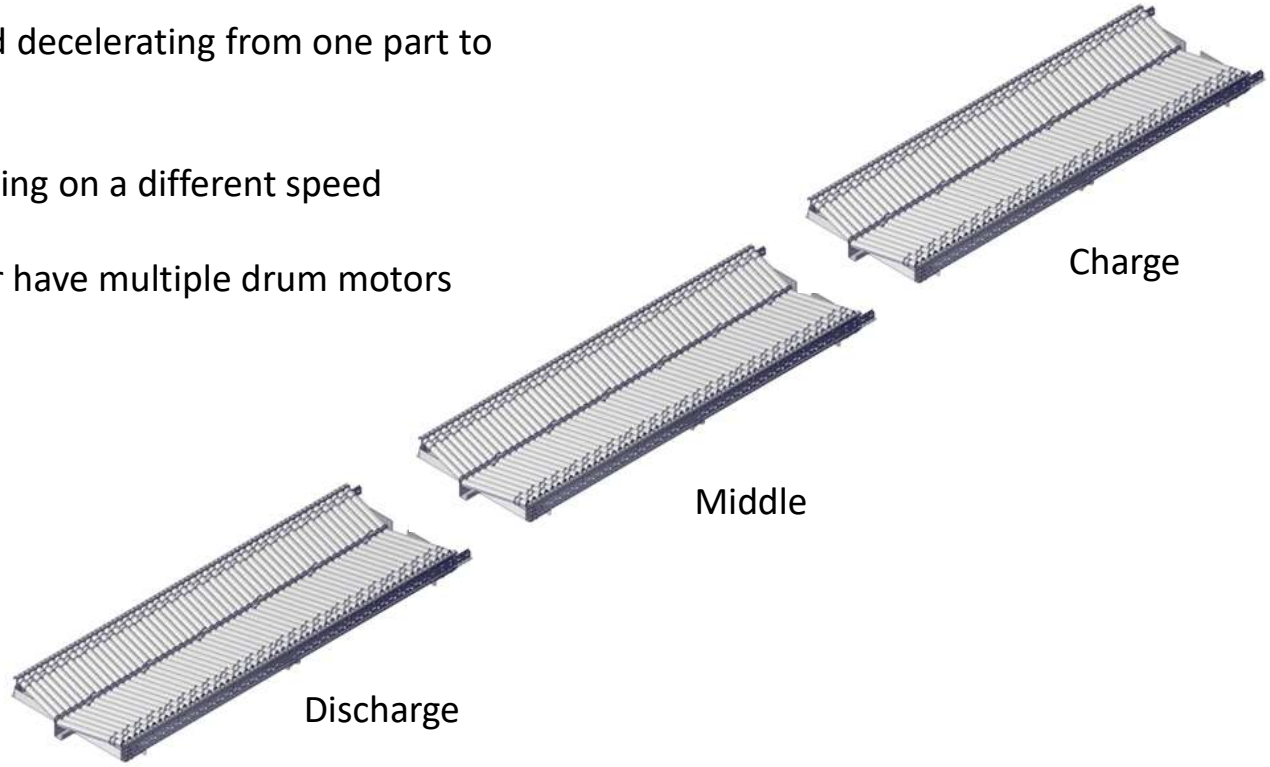
- Separate parcels
- Contain 3 sections
- Different speed sections
- 24-volt DC power supply





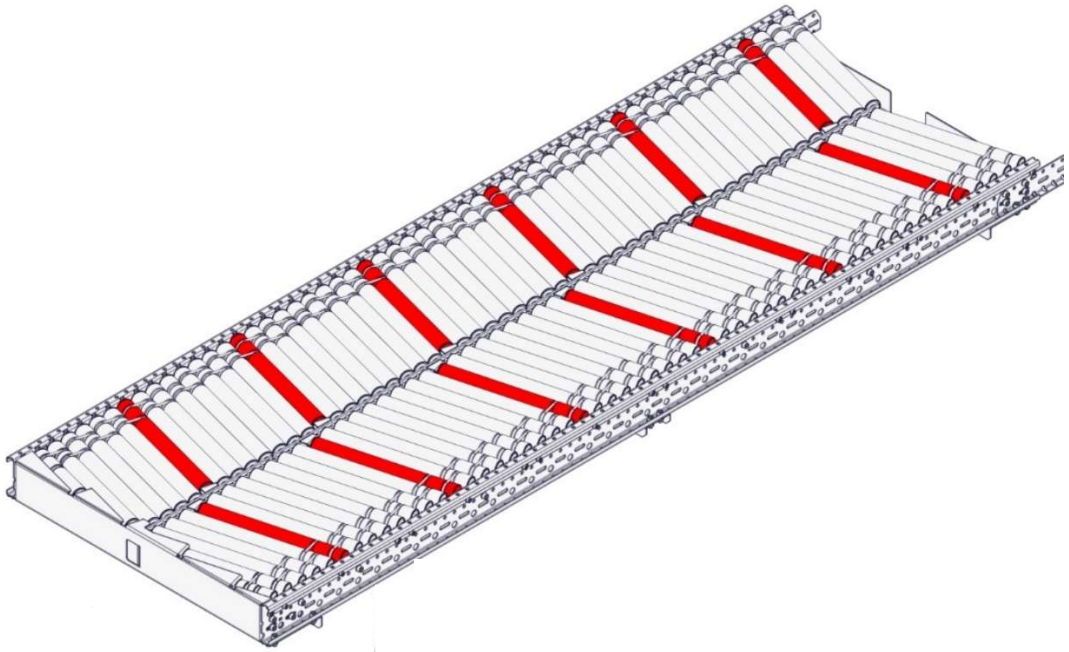
Introduction

- Acceleration and decelerating from one part to another part
- Motors are running on a different speed
- Each part , 3 mtr have multiple drum motors

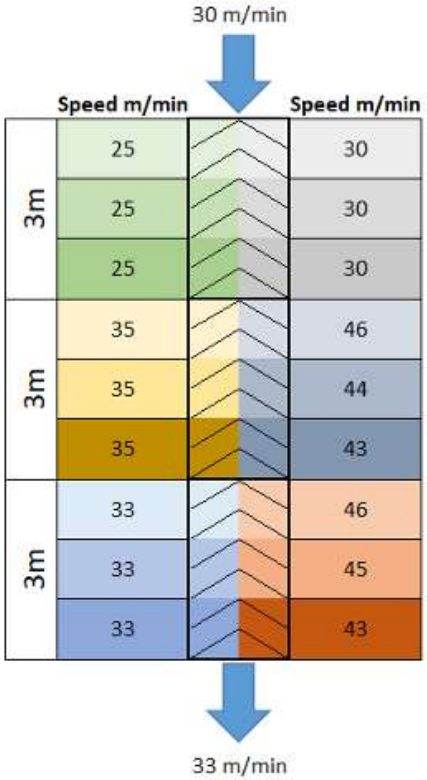


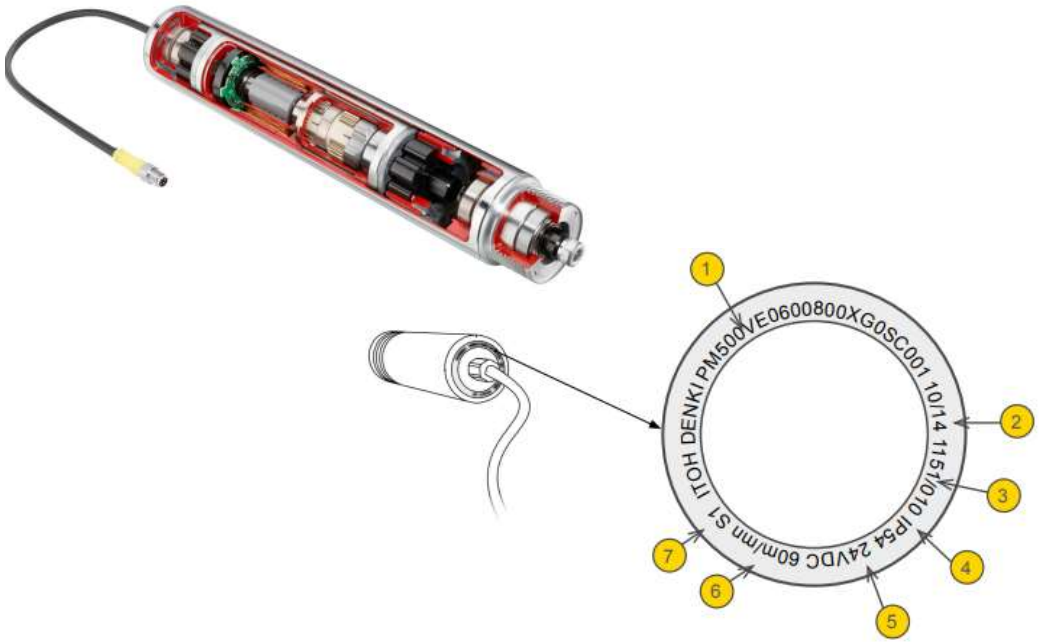
Drum motors

- Total 36 drum motors installed
- Every section different speed



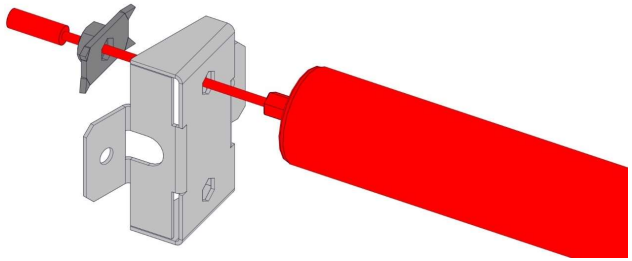
Drum motor

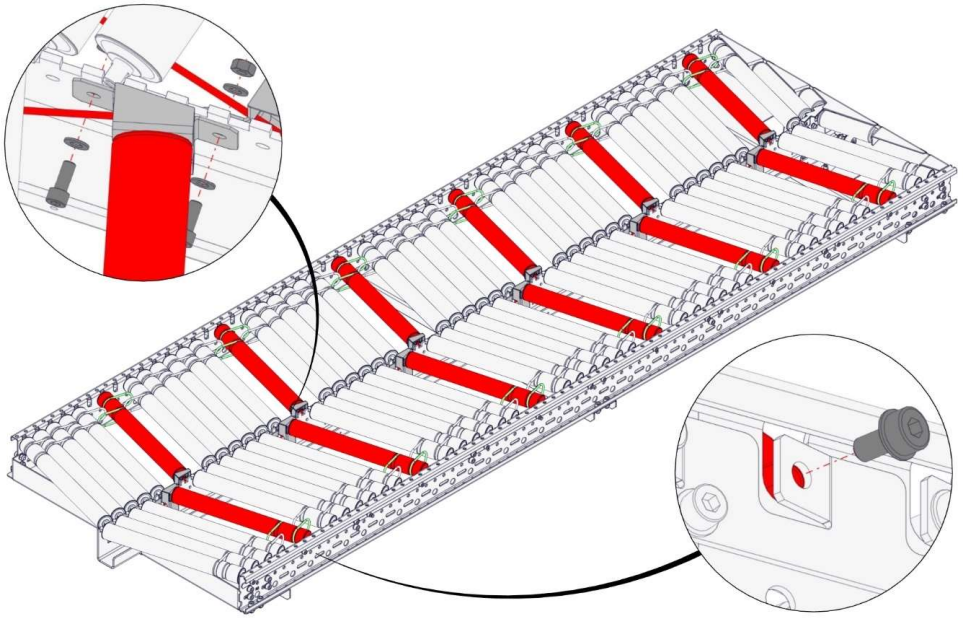




1. Product reference number
2. Month and year of shipment
3. Serial number
4. Protection index
5. Power supply
6. Speed
7. Operation

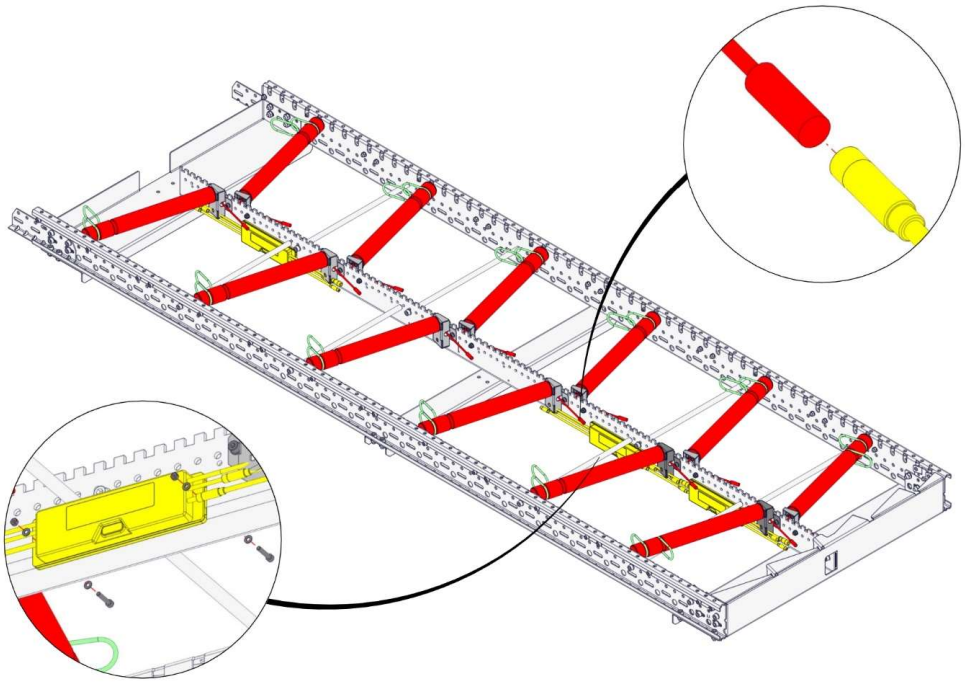
Install drum motor





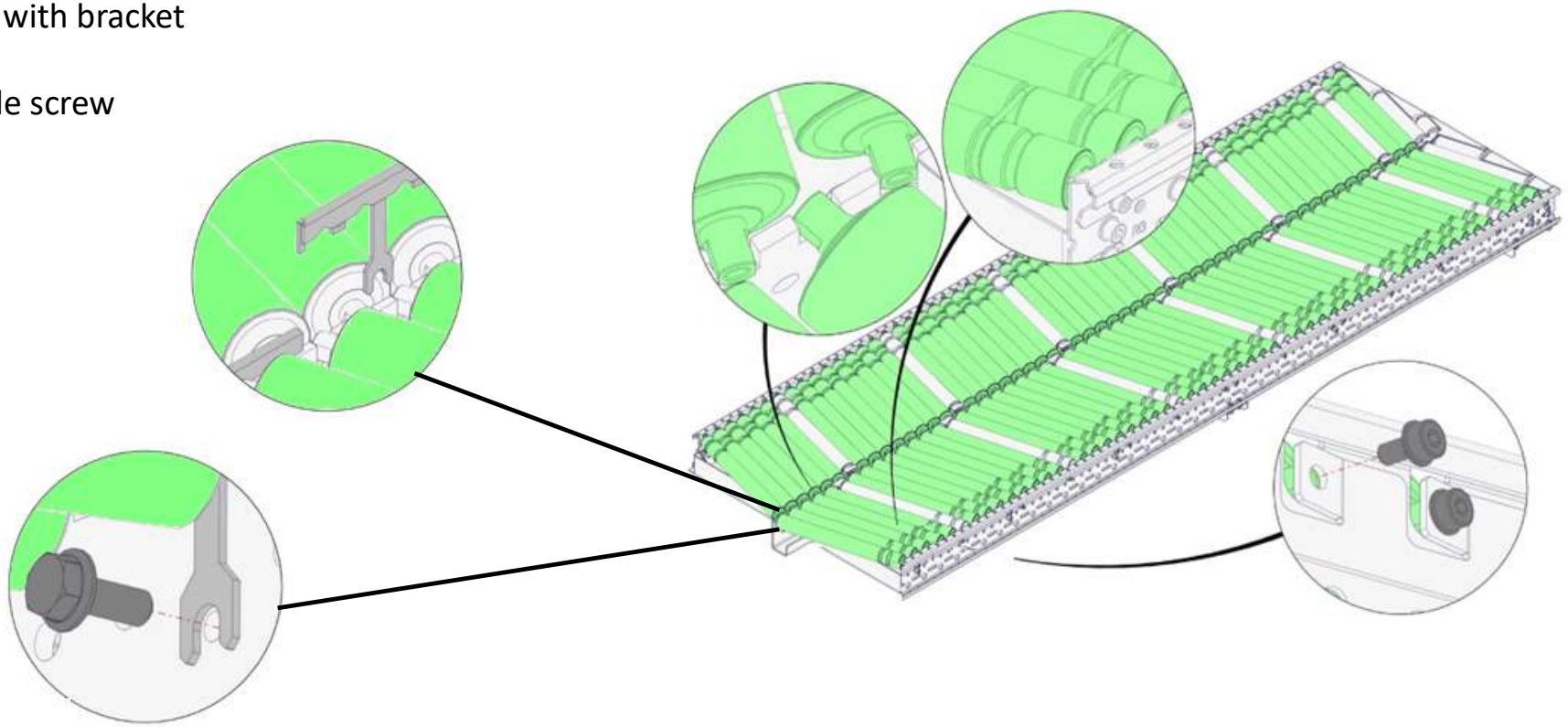
Drive controller

- 24-volt power
- Profinet communication
- More detail are described in chapter Electrical



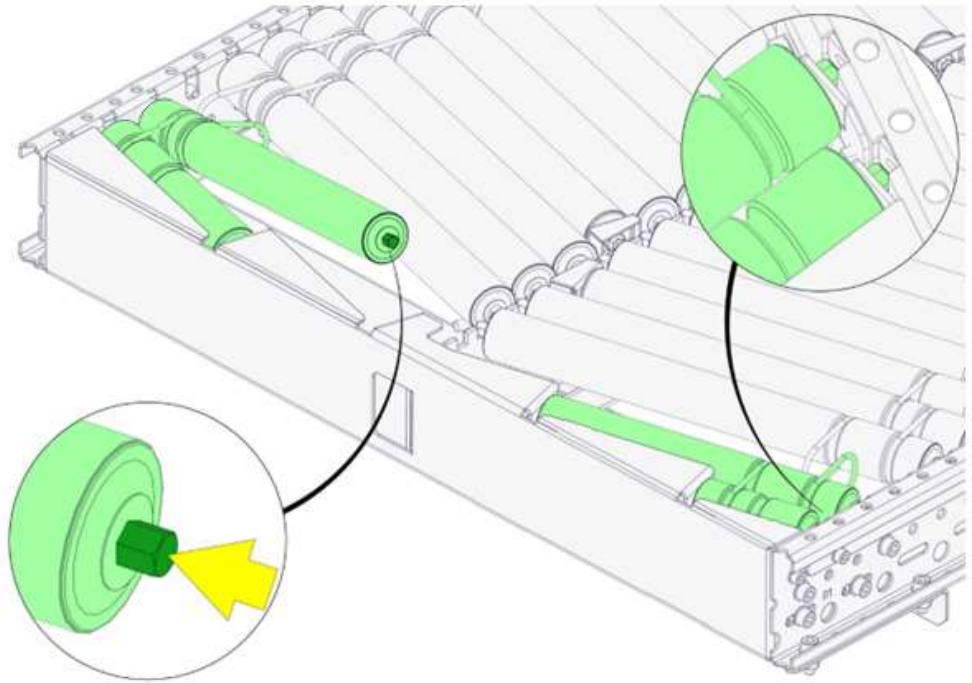
Roller fixation driven rollers

- In-side with bracket
- Out-side screw



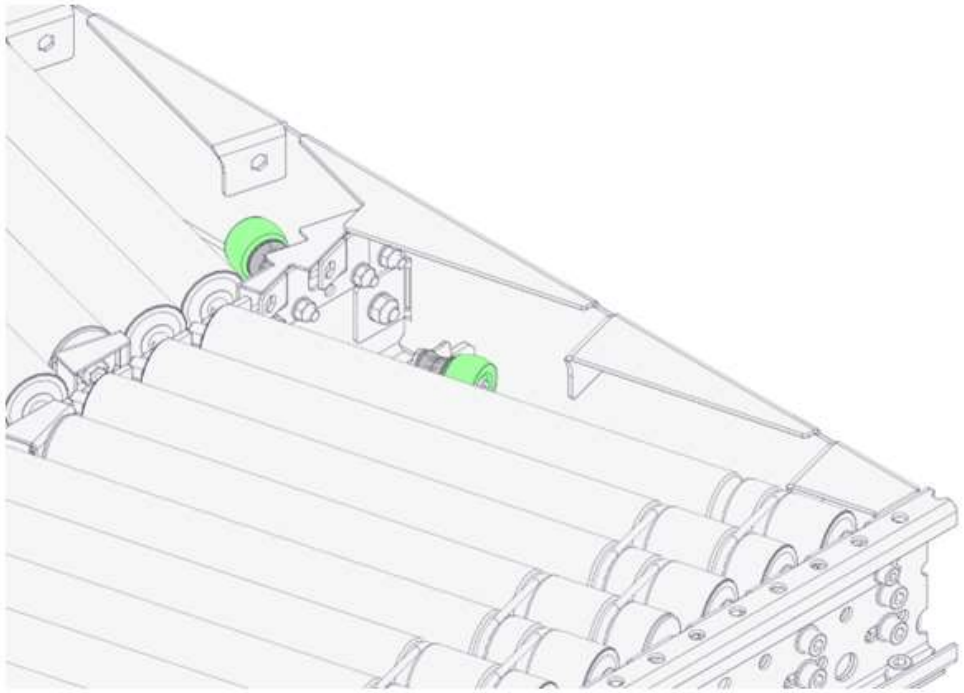
Roller fixation charge section

- In-side push in
- Out-side screw



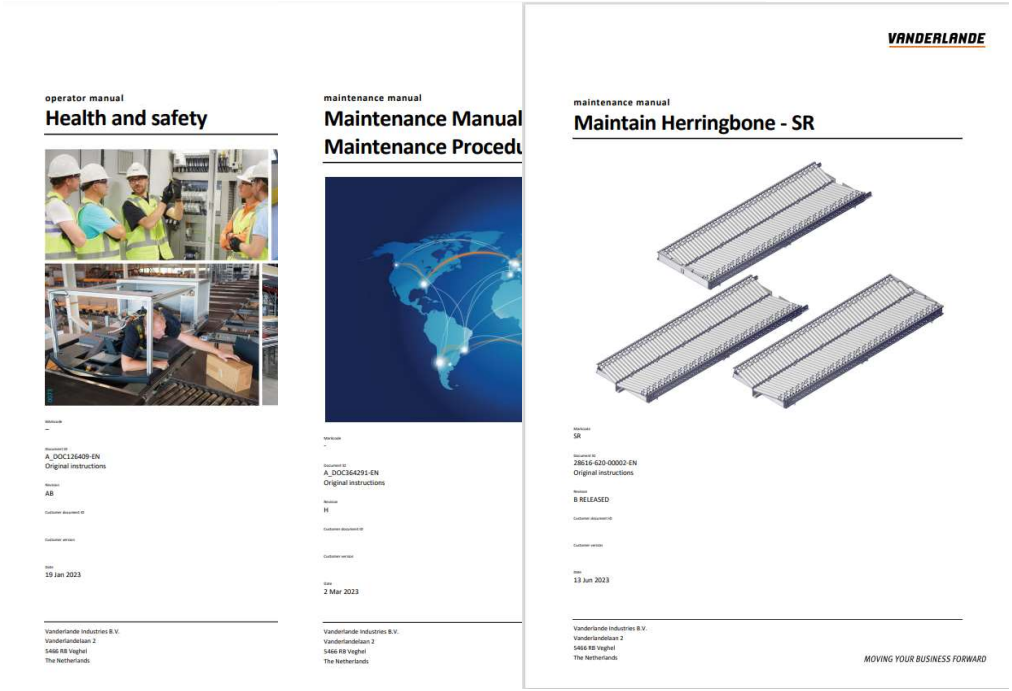
Roller fixation discharge section

- Friction driven
- Between pitch of 2 rollers



Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain Herringbone-SR

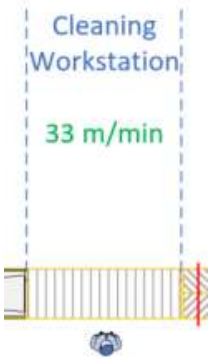


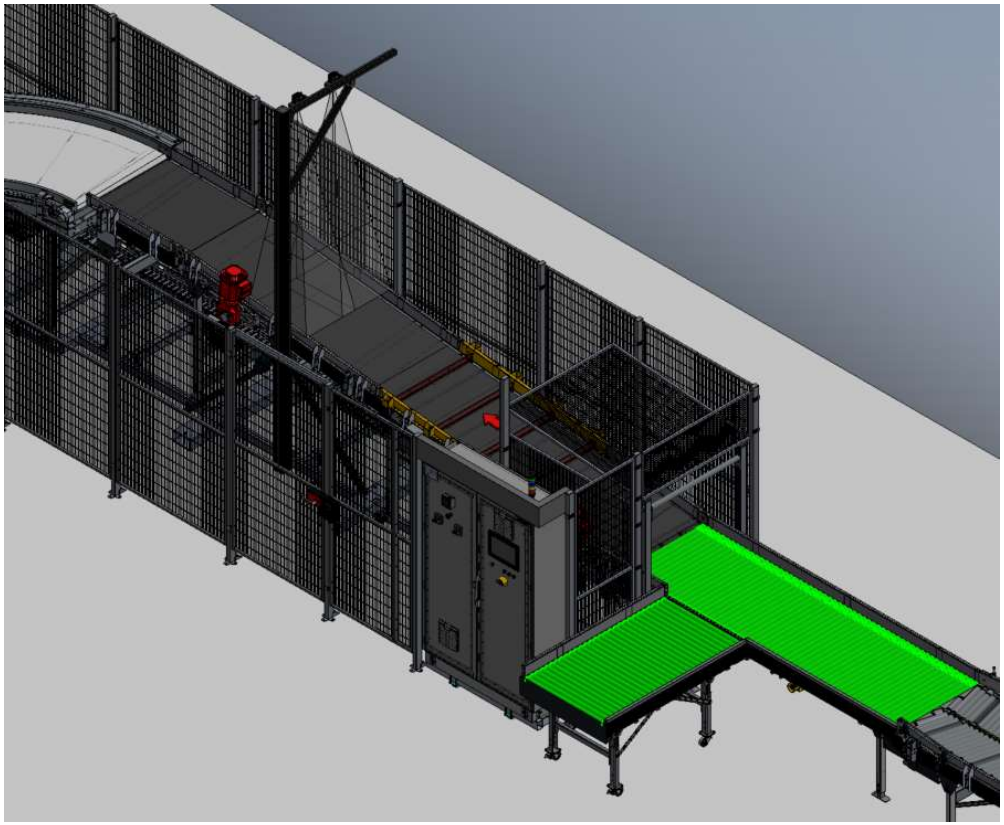
LRD and GR

Training Session

Position

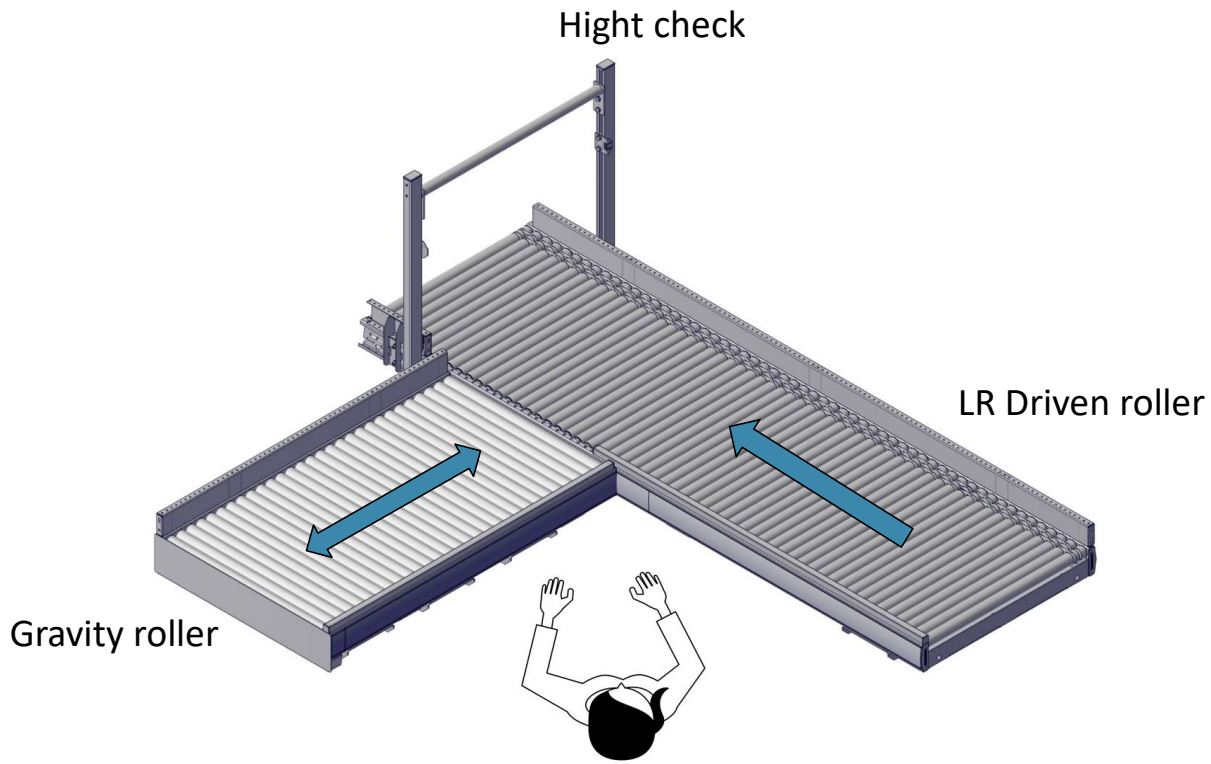
- Cleaning station
- Manual operation station





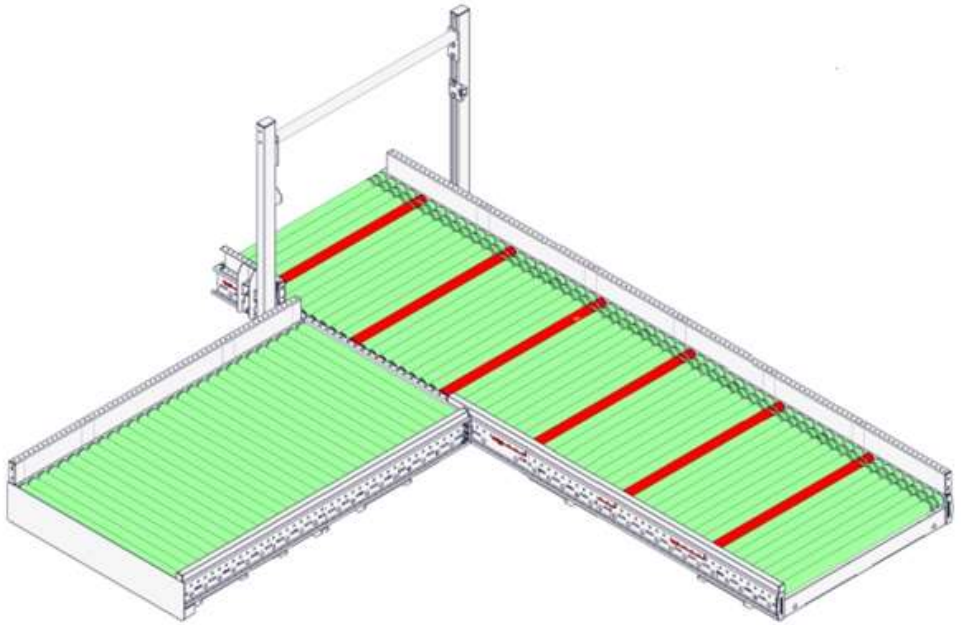
Introduction

- Stacked parcels will be put on a buffer table until there is time and space to re-inject them.
- Remove damaged and overheight parcels
- Buffer table of gravity rollers



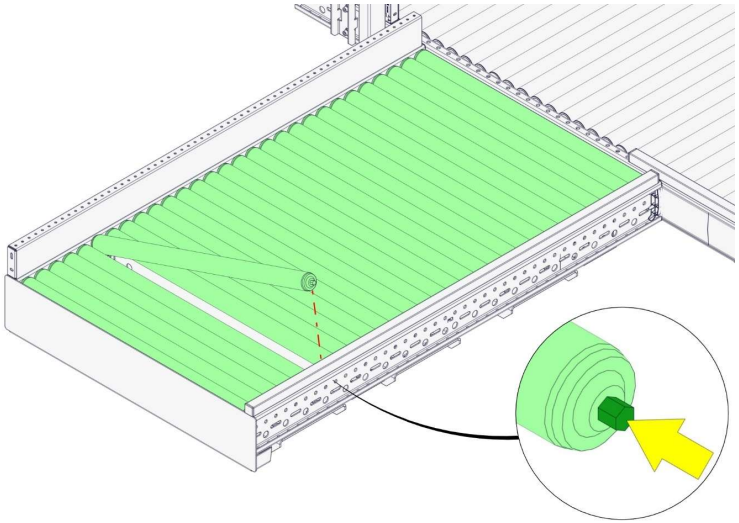
Drum motors LRD

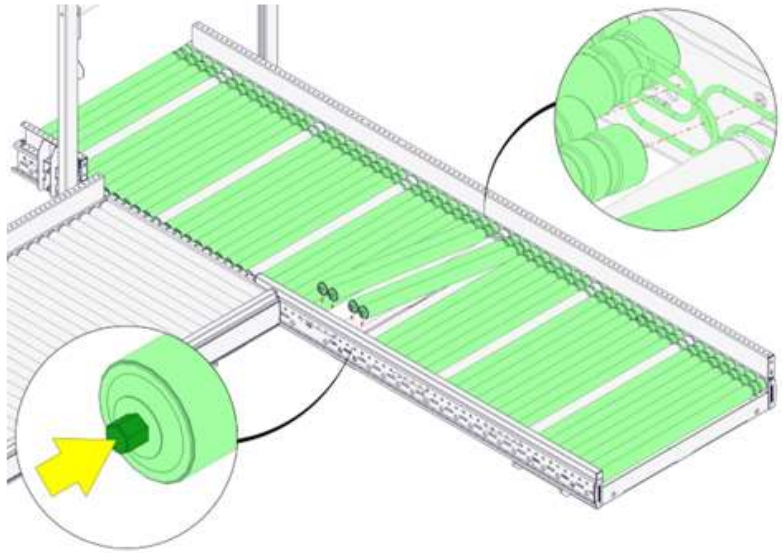
- 6 drum motors install
- Steering by drive control
- O-ring driven



Insert rollers

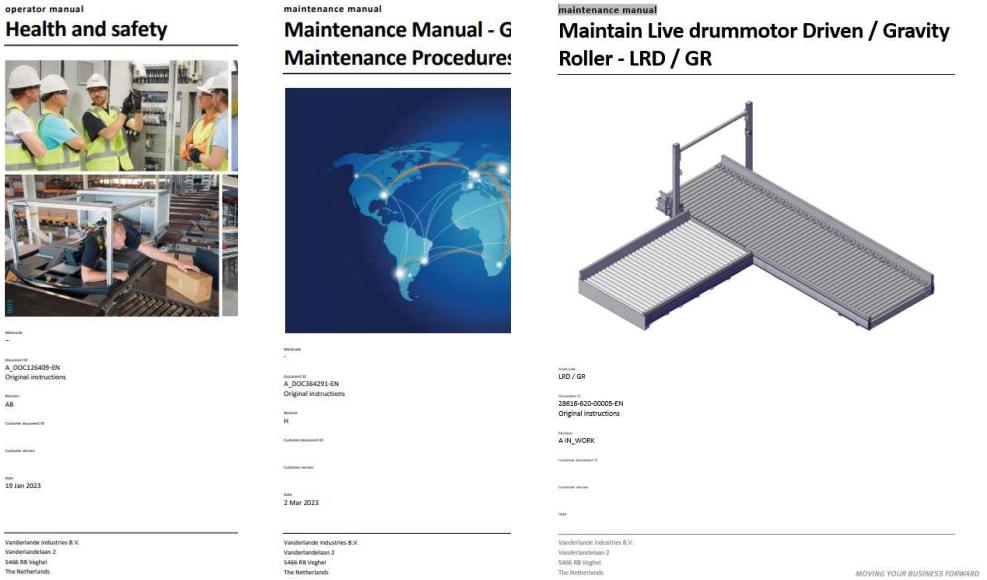
- Push in shaft
- O-ring connection





Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain Live drummotor Driven/ Gravity Roller –LRD/GR

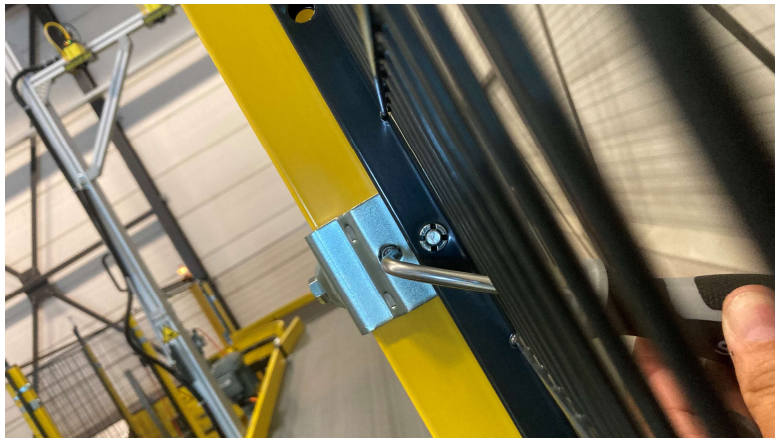


Fencing

Training Session

Open Fencing

- Special tool is needed for opening the fence. TX25, 10 pieces will be delivered with the project.
- To open the Smart Fix bracket, hardly any force is needed.

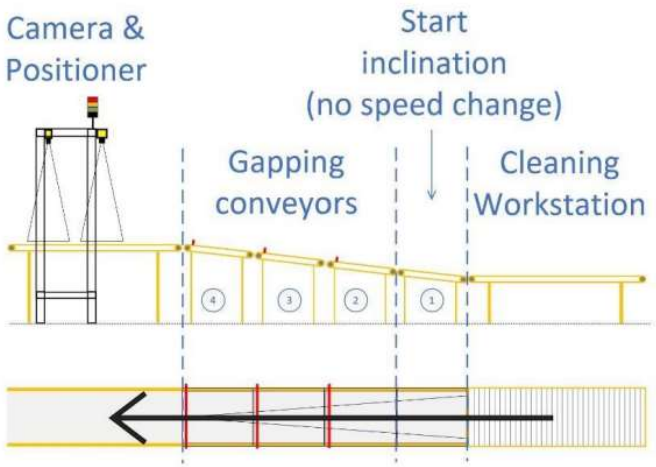


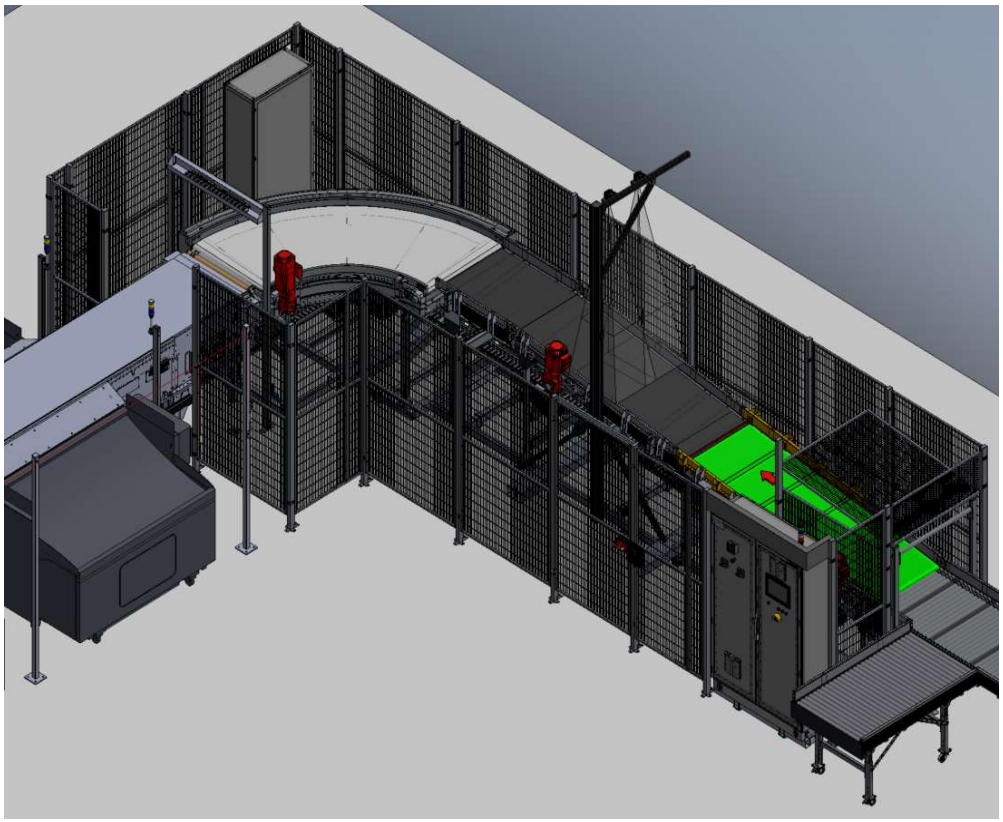
SB

Training Session

Position

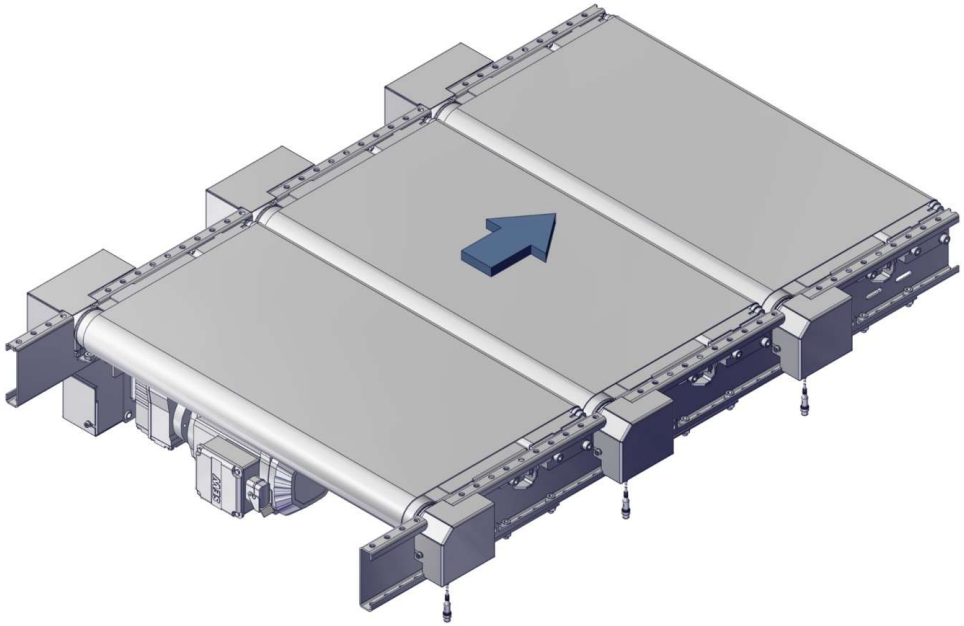
- Placed before scanner area
- To create gaps for correct scanning





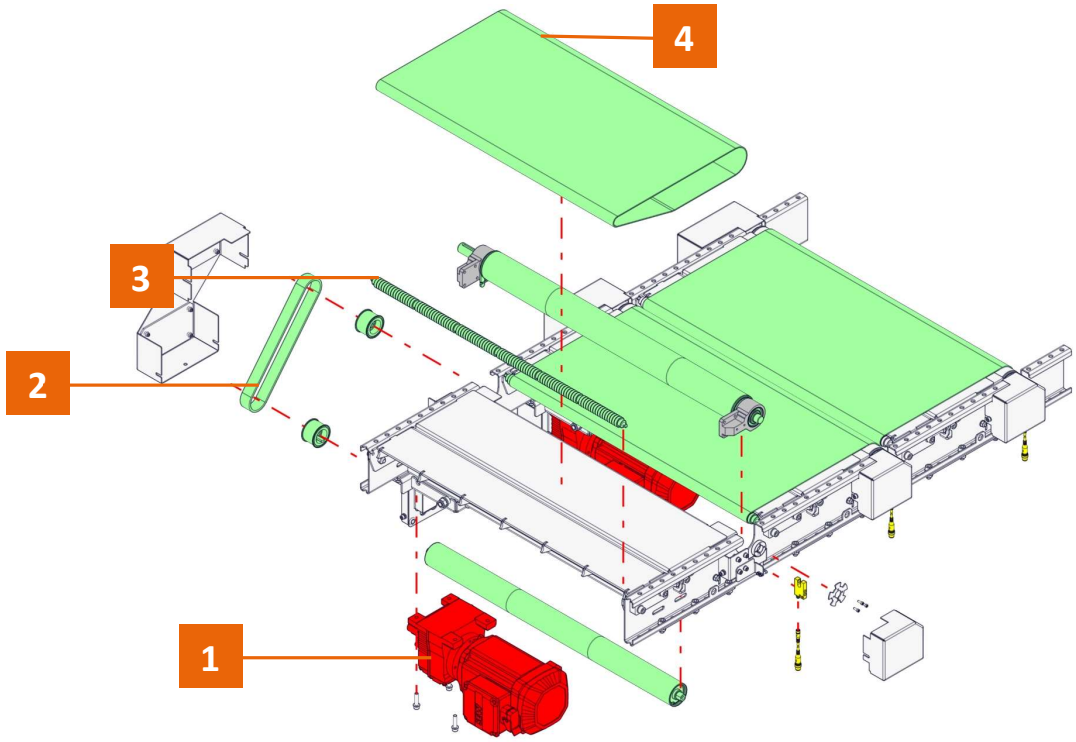
Introduction

- Every belt with own drive
- Different speed control
- PPI installed on every belt



Exploded view

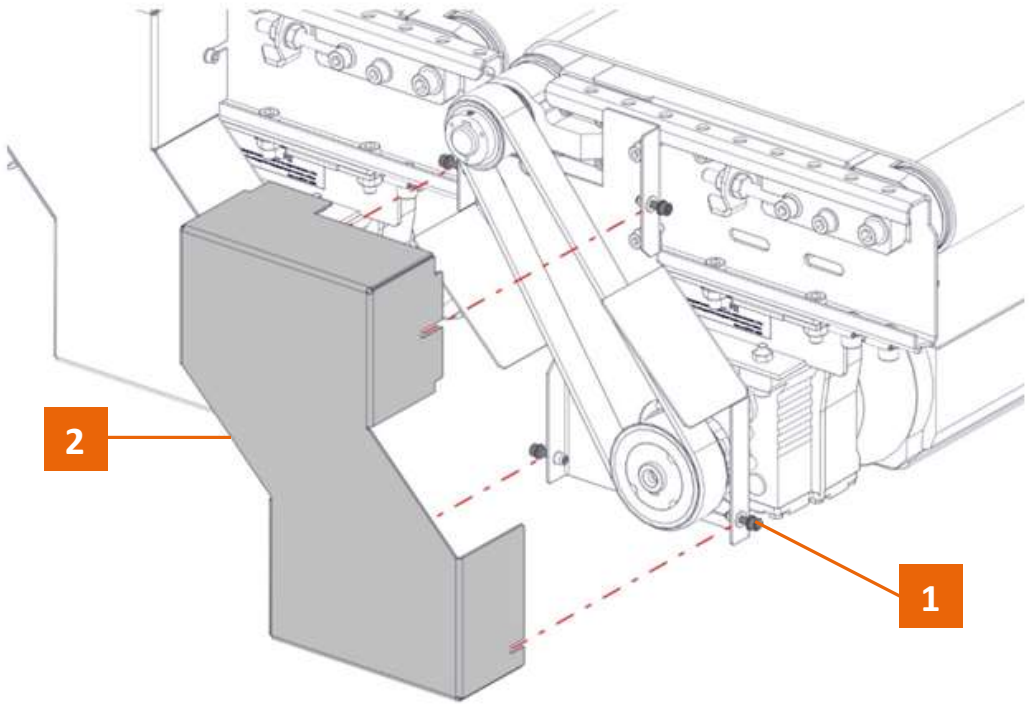
1) Drive
2) Timing belt
3) Knife ETU
4) Belt



Timing belt replacement

1) Loosen the 4 screws

2) Remove cover

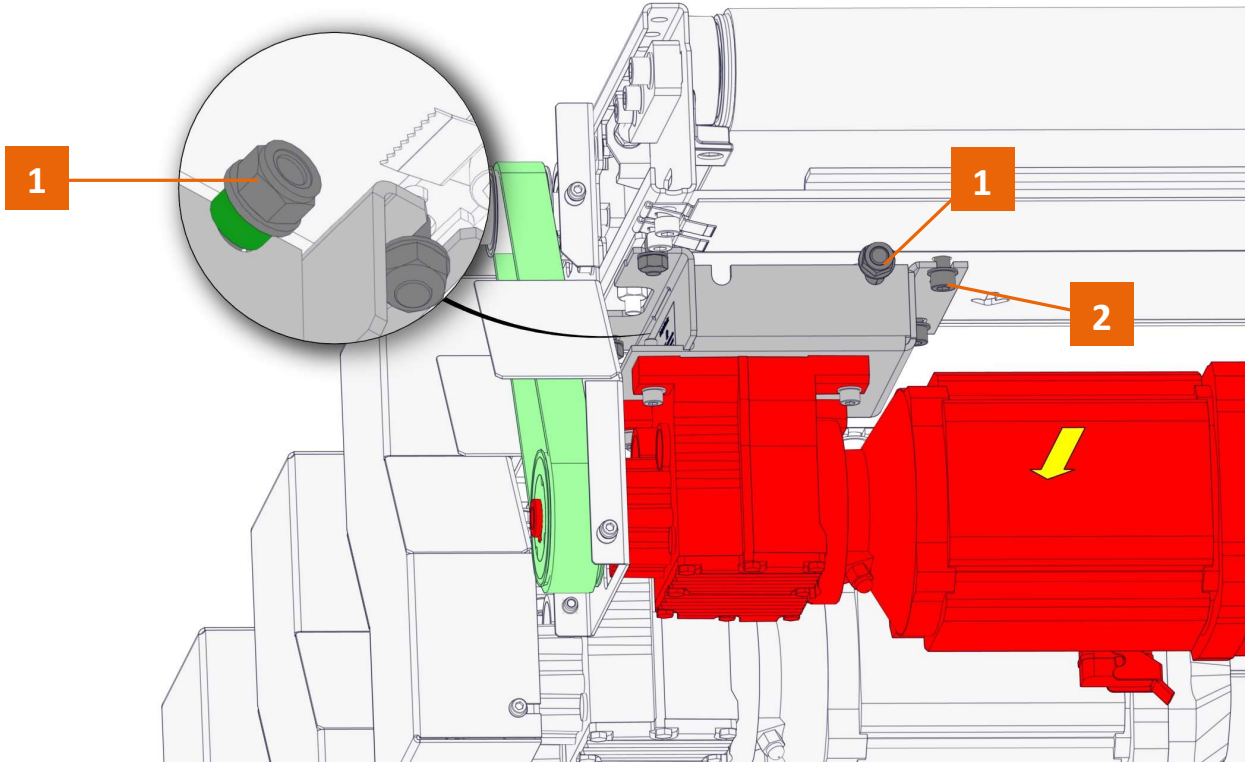


Timing belt replacement

1) Loosen the 2 nuts

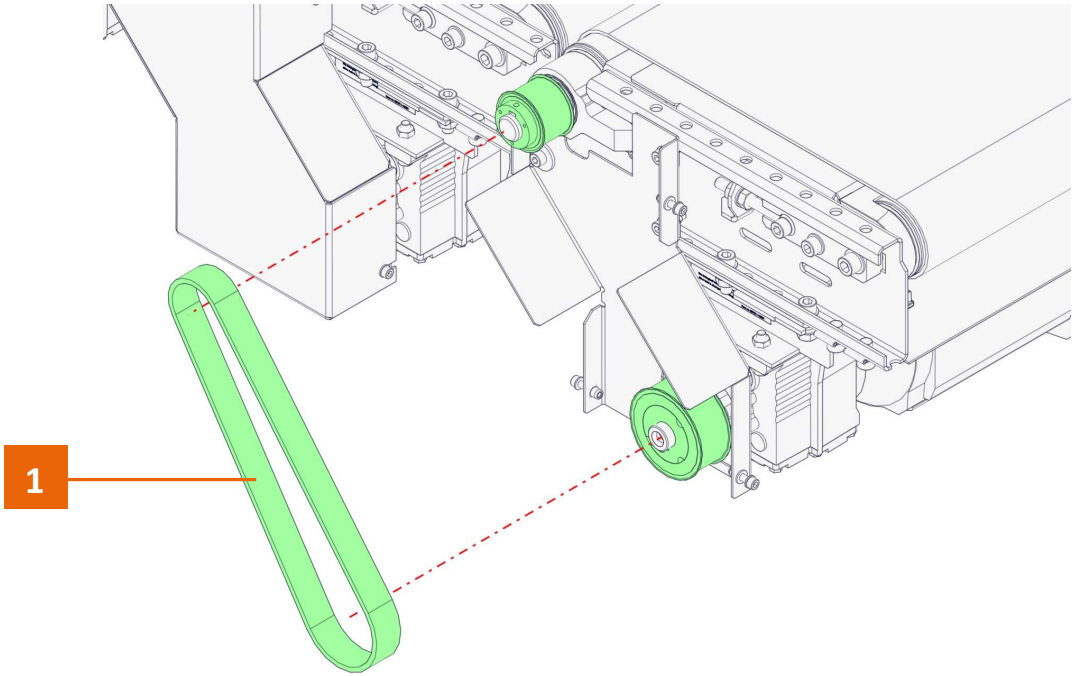
2) Loosen 4 bolts and nuts

⇨ Slide motor to release tension



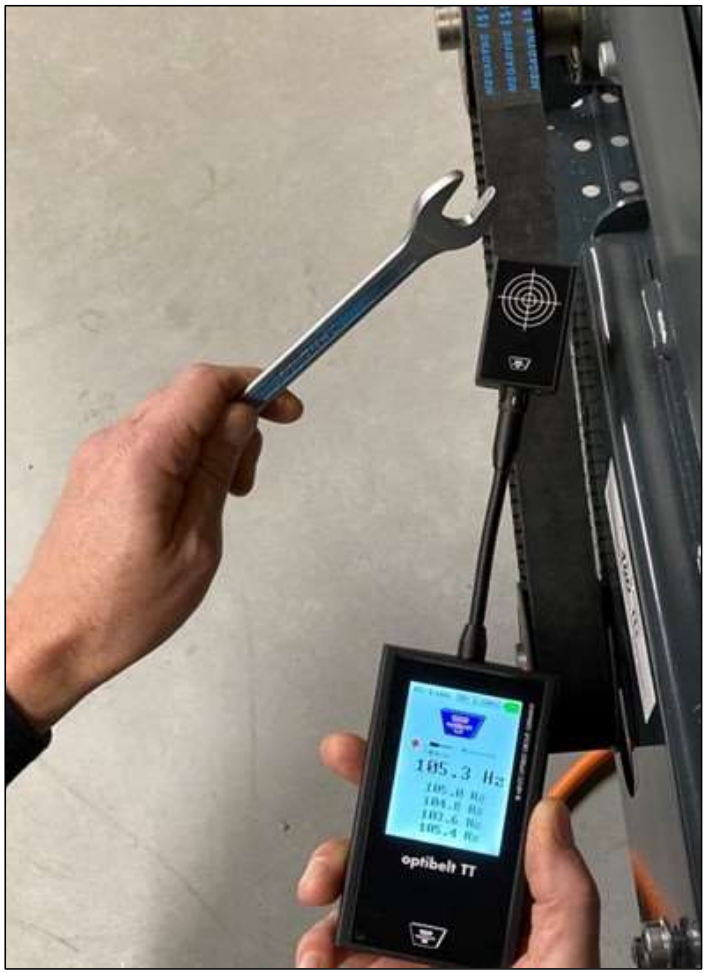
Timing belt replacement

1) Remove timing belt



Timing belt tension 3/3

- Non running belt
- Check the recommended frequency:
  - Maintenance manual
  - Sticker in drive
- Place meter next to the timing belt and hit the belt with wrench
- Check the frequency and adjust if necessary:
  - Make 3 measurements
  - Variation
  - f ≤ 100 Hz ± 5 Hz
  - f ≥ 100 Hz / ≤ 200 Hz ± 10 Hz
  - f > 200 Hz ± 15 Hz

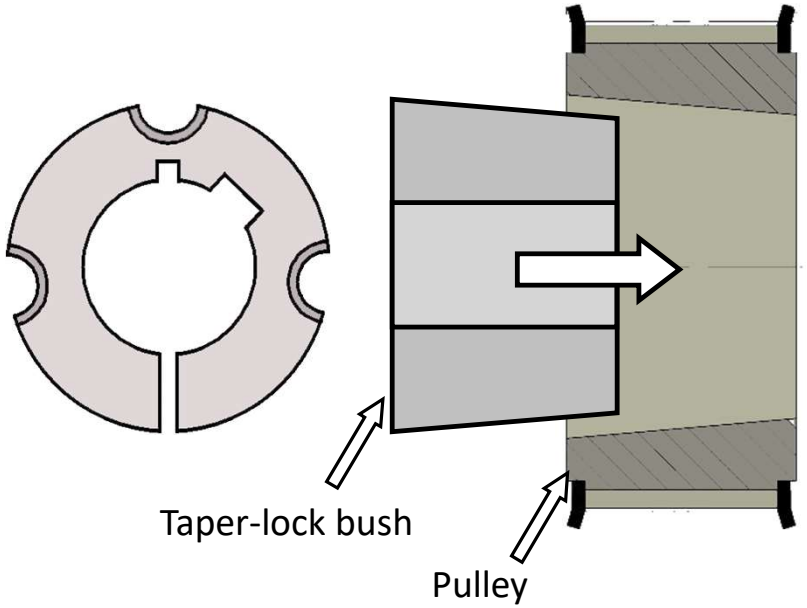


Where to measure?

- On the longest free part of the timing belt!
  - Check in equipment maintenance manuals

Timing belt pulley with taper-lock

- By pulling the 2 conical parts together with the bolts, the axle hole shrinks and therefore the pulley fits to the shaft

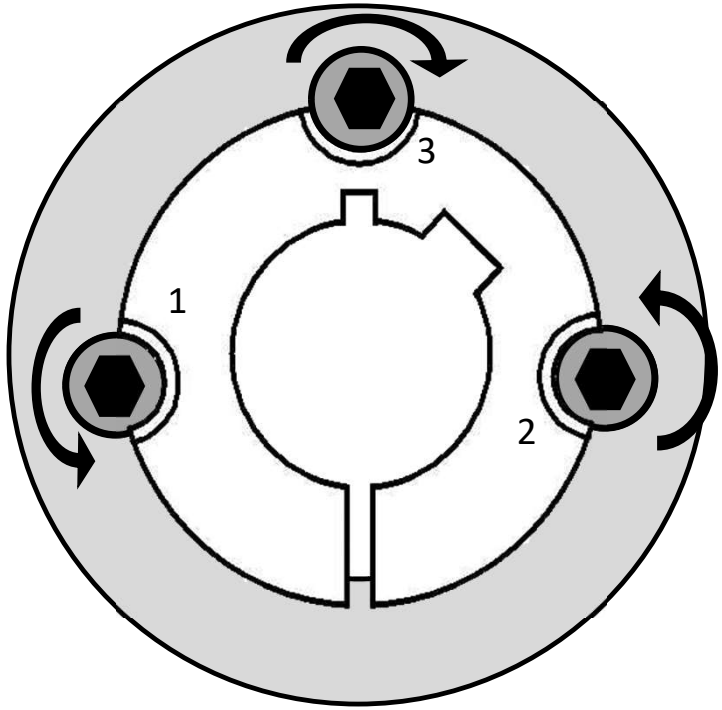


Demount taper - lock

1) Remove bolts from position 1 and 2
2) Position one of the bolts at position 3
3) Tighten the bolt in position 3 well
4) Parts, pulley and taper-lock, will split

- Hammer pulley carefully with nylon hammer if necessary

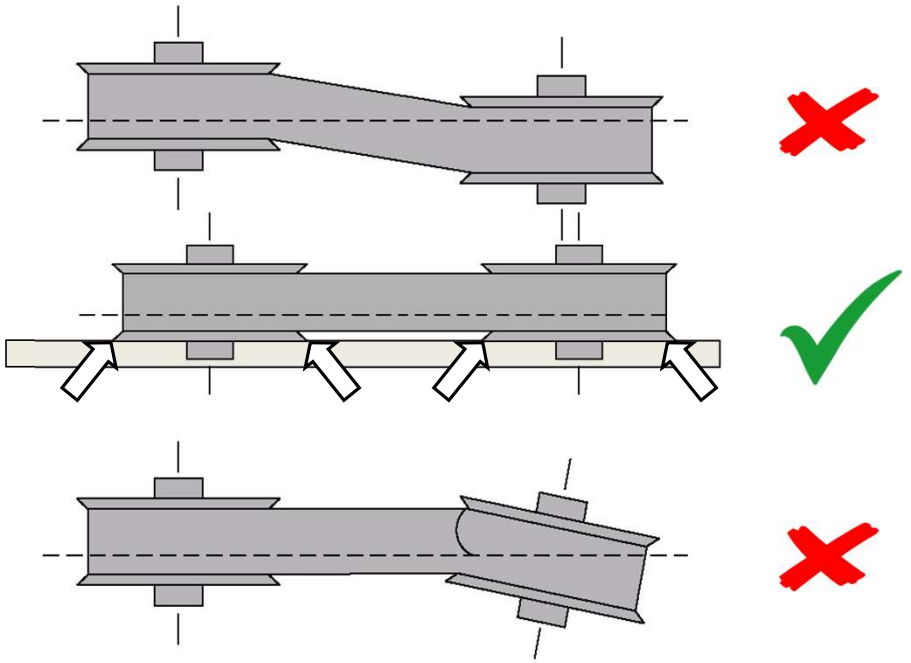
Never use a puller!



Type 1008-3030

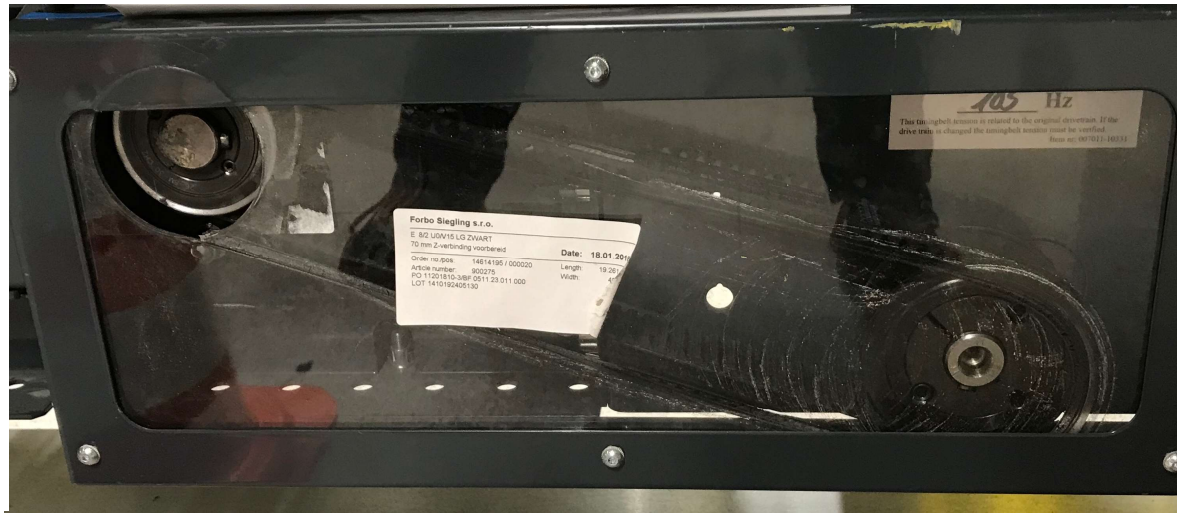
Mounting a taper-lock pulley 2/3

- Mount pulleys as close as possible (5 mm) to the bearings
- Check alignment by using a straight edge.



Mounting a taper-lock pulley 1/3

- Clean the motor axle and the bore of the taper-lock and bush
- Insert the bush in the taper-lock and mount the bolts loosely
- Slide the assembly on the motor axle, beware of the position of the key-way



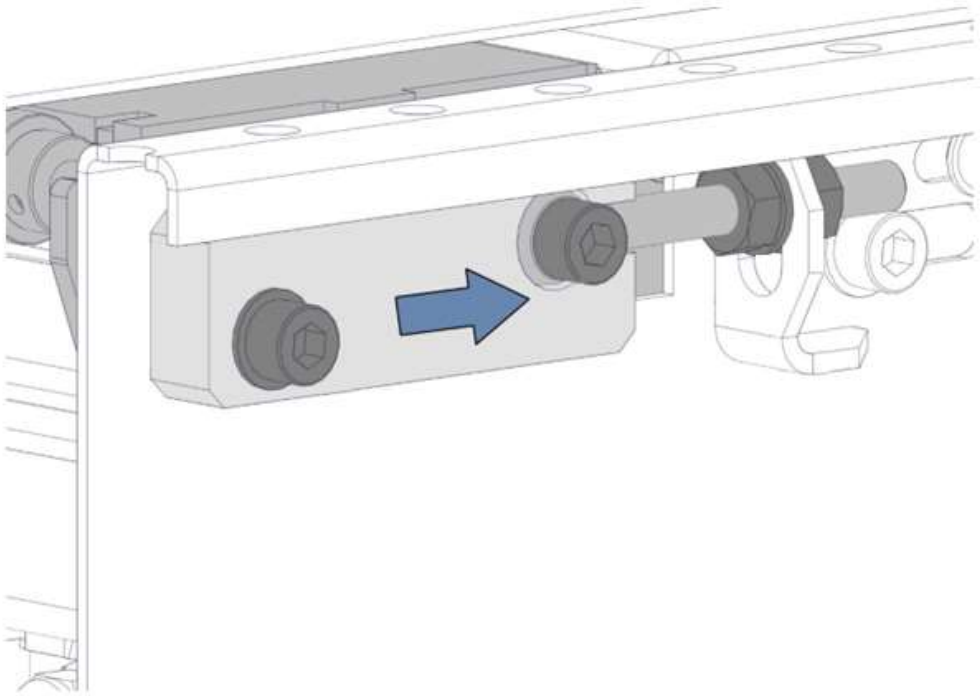
Mounting a taper-lock pulley 3/3

- Tighten bolts alternately and gradually
  - Use the proper torque
  - The pulley will come slightly towards you

Required torque per Taper-Lock type									
Taper-Lock	1008	1108	1210	1610	1615	2012	2517	3020	3030
Nm.	5.6	5.6	20	20	20	30	50	90	90
Taper-Lock	3525	3535	4030	4040	4535	4545	5040	5050	7540*
Nm.	115	115	170	170	190	190	270	270	See note

Belt replacement

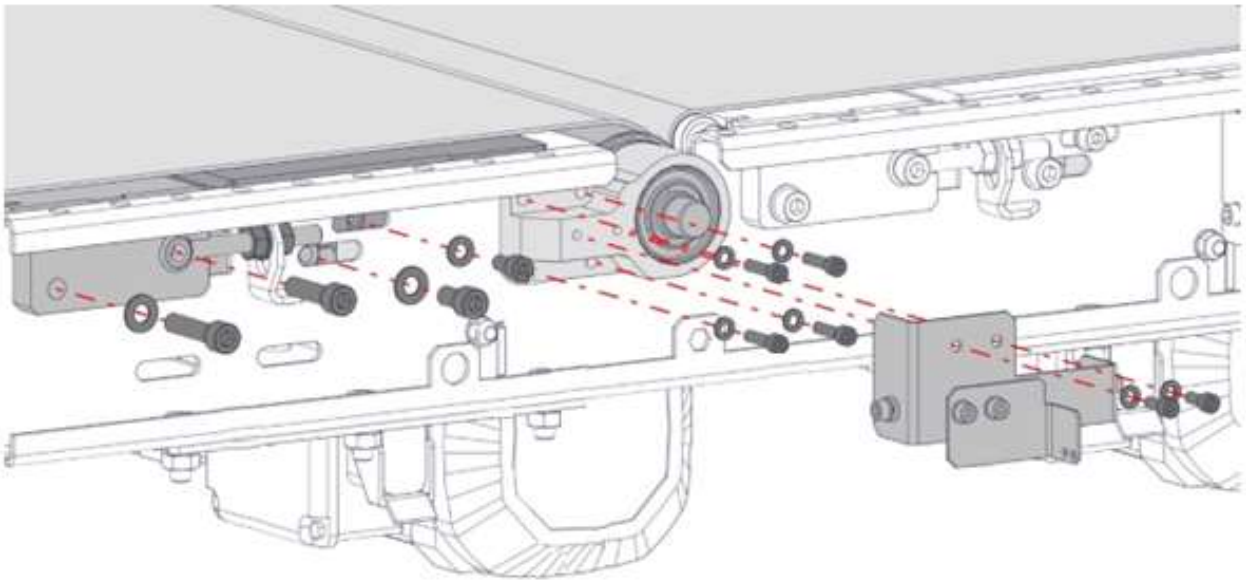
- Loosen de screws on both sides
- Un-tension the belt maximum



Belt replacement

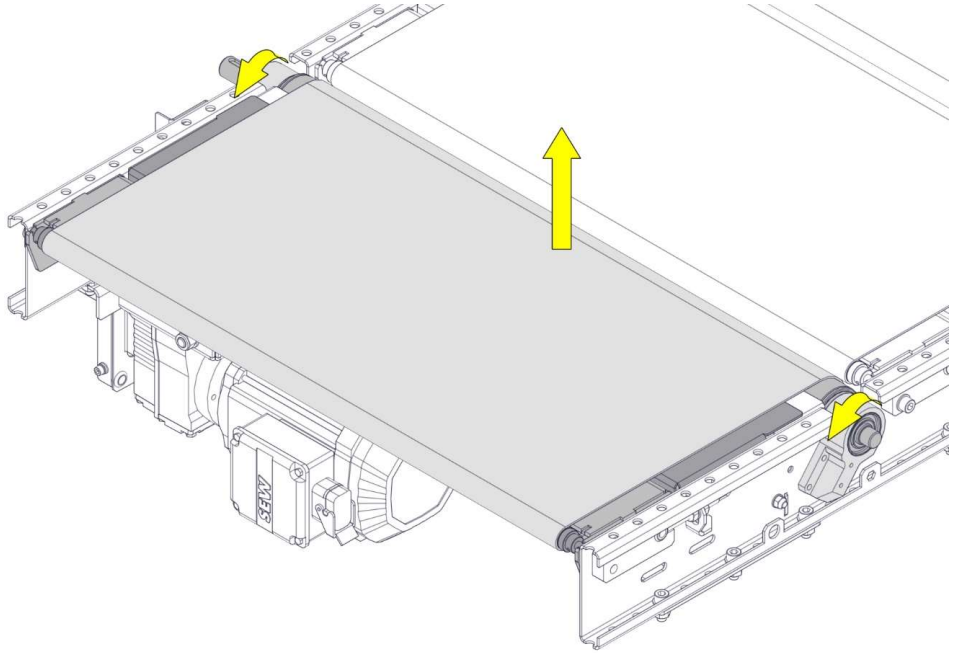
- Remove the screws of:

  - the bearing block
  - the tension unit
  - the deck



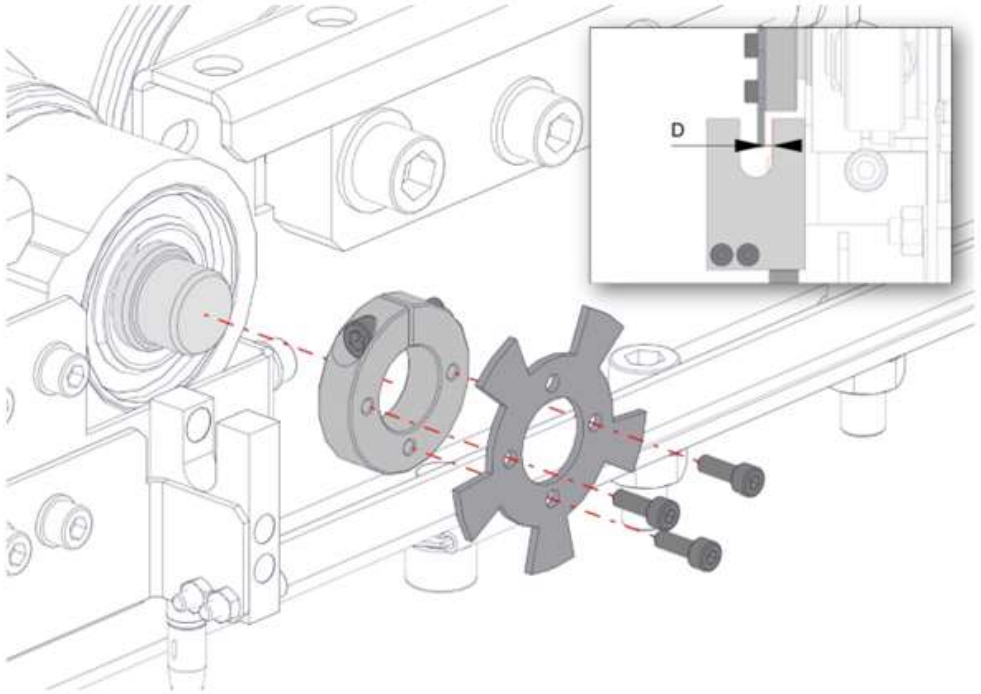
Belt replacement

- Turn the bearing blocks
- Lift the complete belt assy
- Belt EL0/V10 LG-SE black W=800 endless tol acc elastic



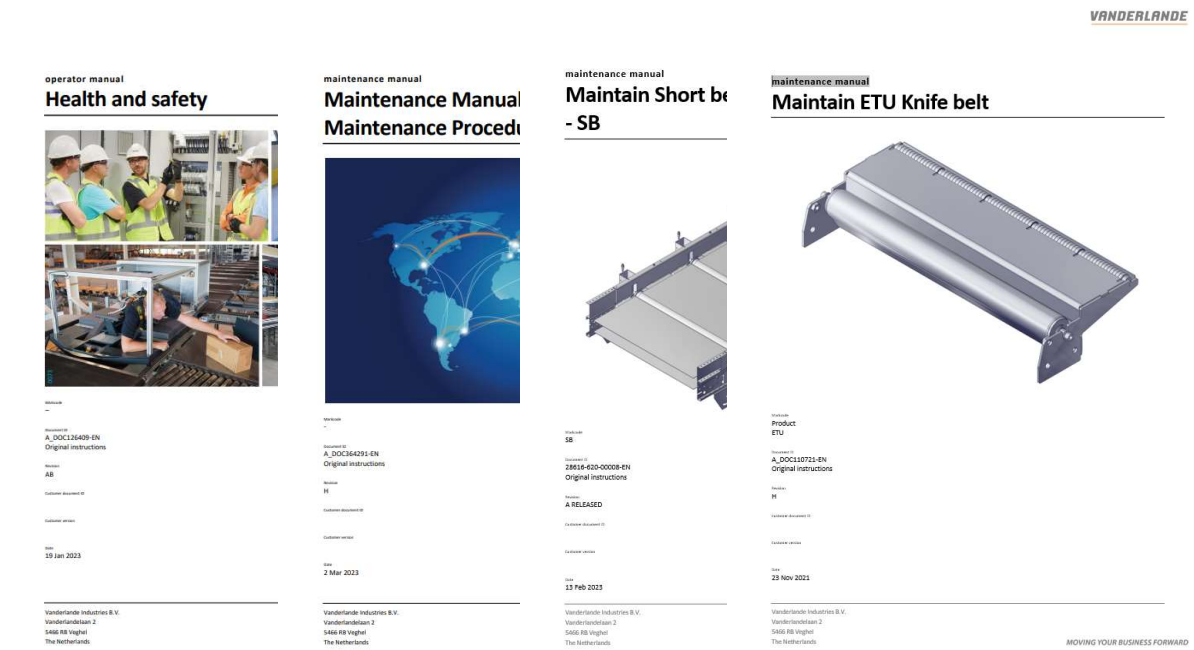
PPI Adjustment

- Sensor installed on one side
- Distance between sensor plate and sensor is 3.5 ± 0.5 mm (D)
- Apply Loctite 2400 on the thread of the screws



Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain Short belt gapper with knife ETU
- Maintain ETU Knife belt

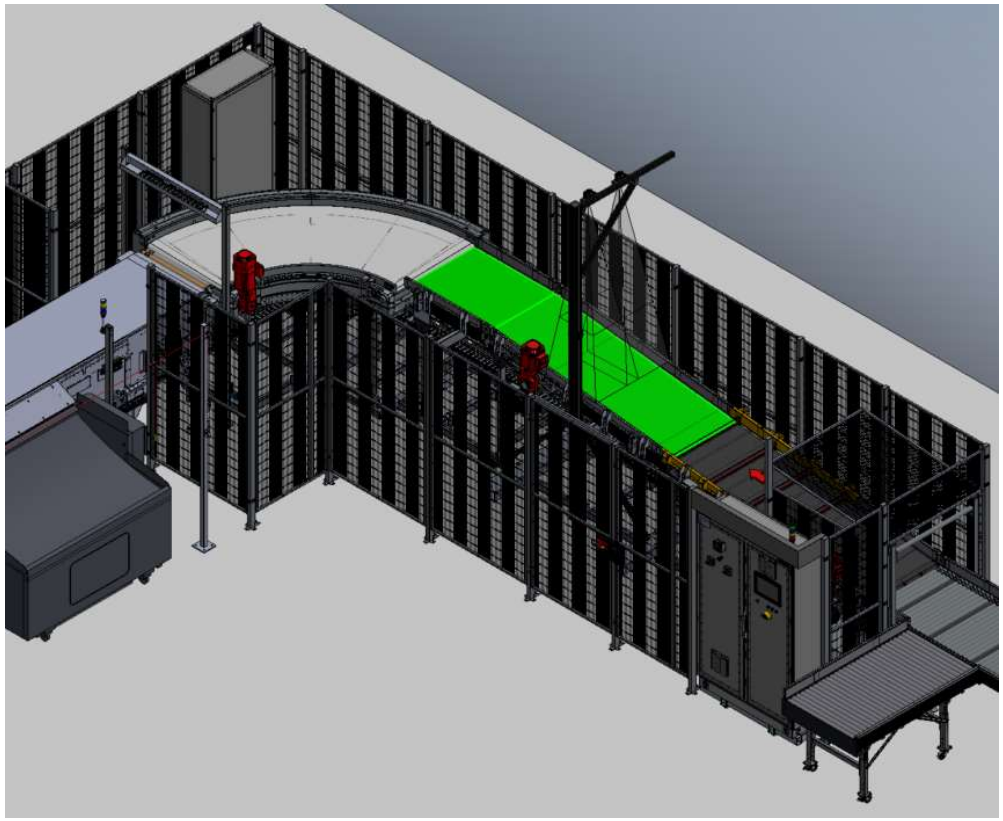


BF

Training Session

Position

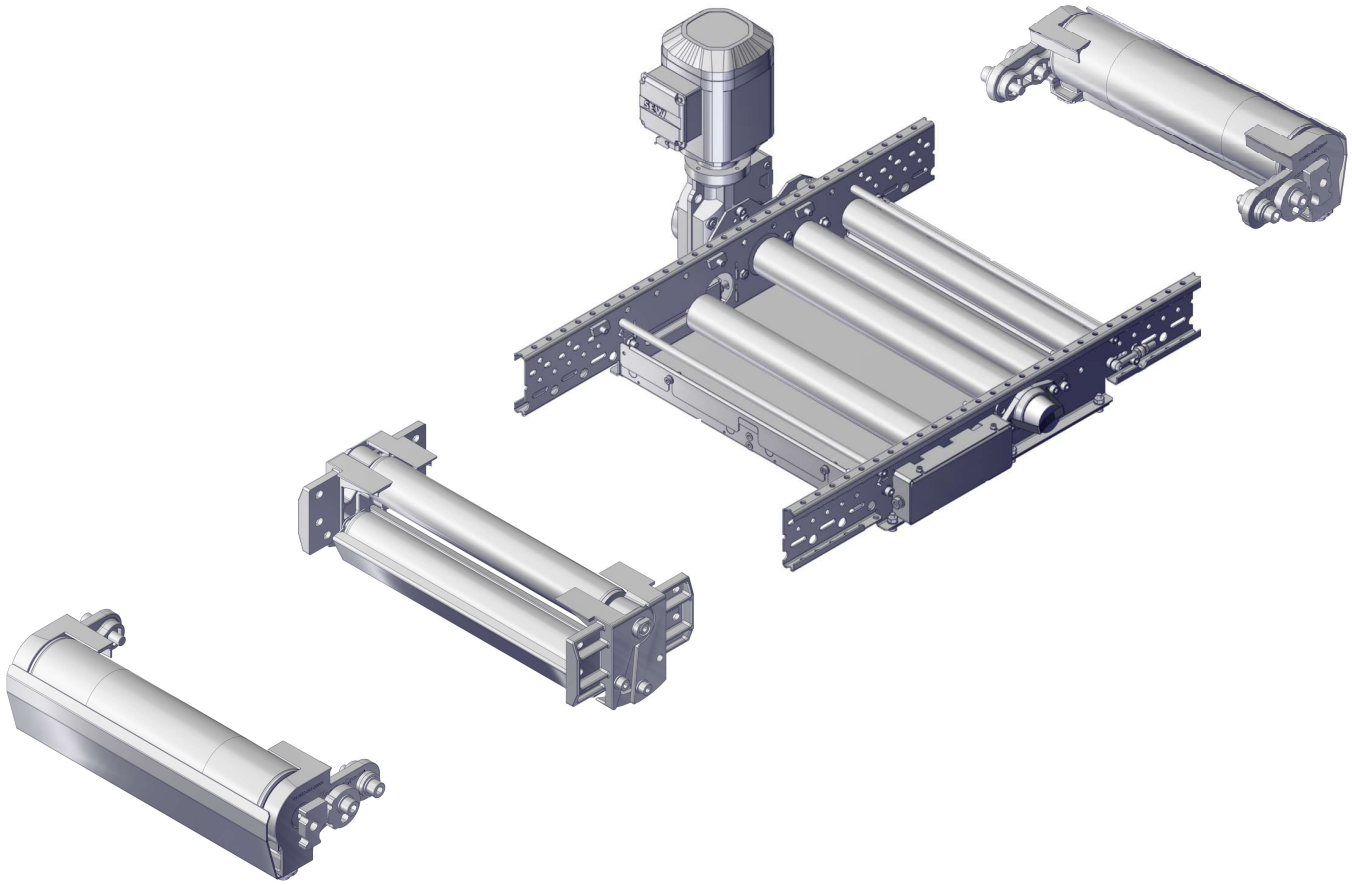
- Placed in scanner area
- Shallow drive of 75 mm



Introduction

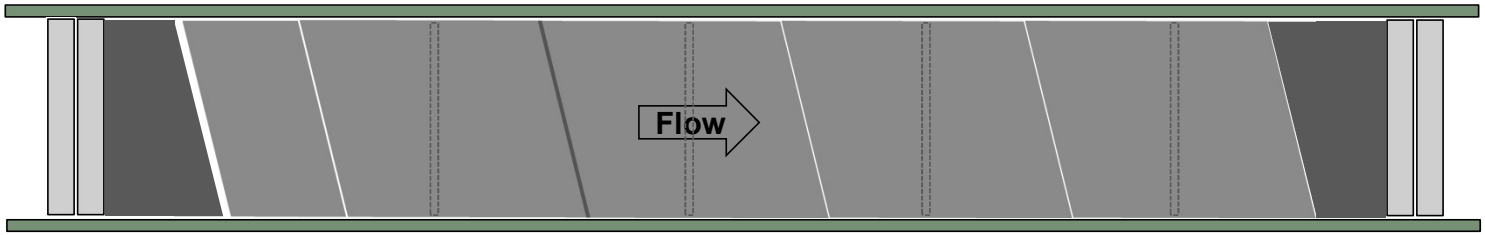
- The BF consists of:

- ETU
- Decks
- Drive Section
- Nose over
- ETU

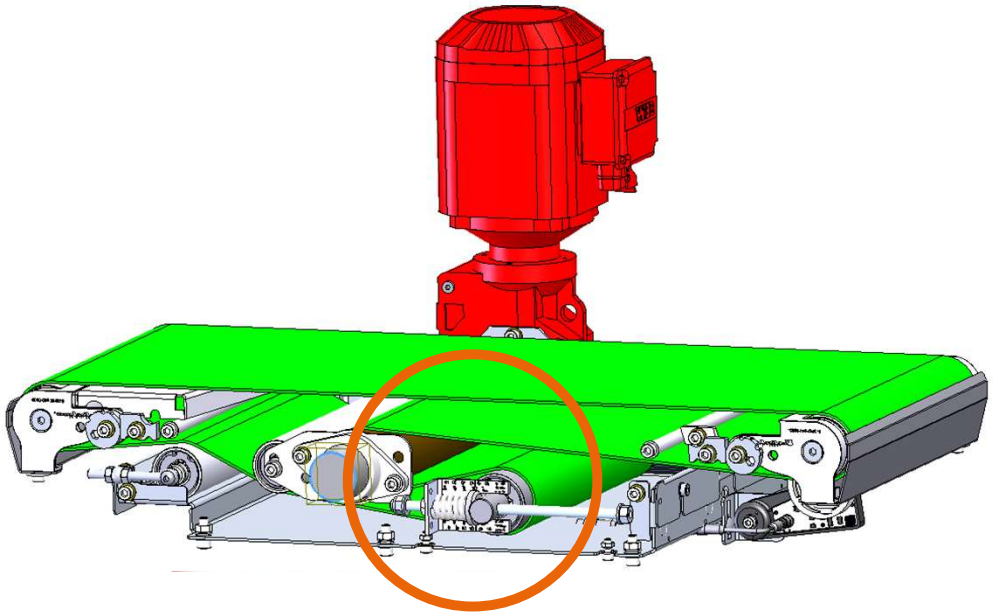


Configuration

- Decks are angled for noise reduction



Belt tension

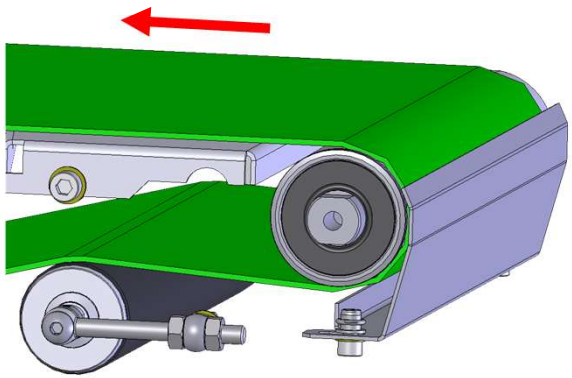


Equipment	Spring length (mm)						
Ø75 shallow Drive single belt	Advised compressed spring length [mm]						
	Drive train type	Belt width [mm]					
		400	500	600	700	800	900
	All types	51	49	47	45	45	45
	In case of belt slip, tension can be increased till spring length of 45 mm.						

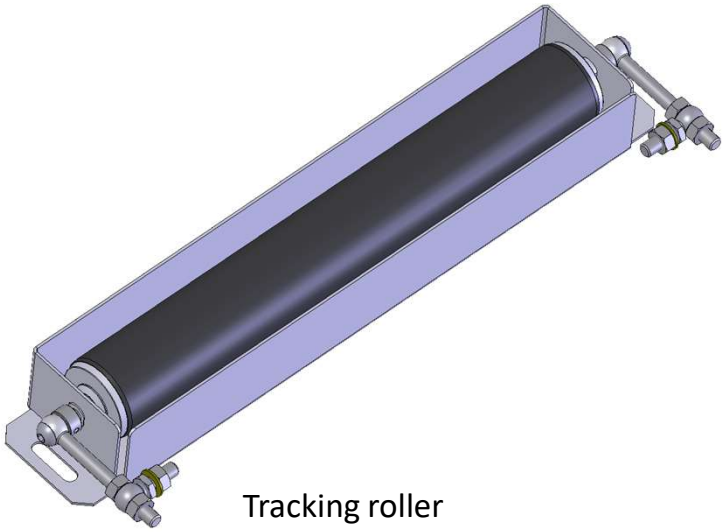
Belt tracking with tracking roller 2/3

If more tracking is needed, adjust the tracking roller

- Wait for the belt reaction before moving the return roller again
- Reaction time depending on belt type and speed

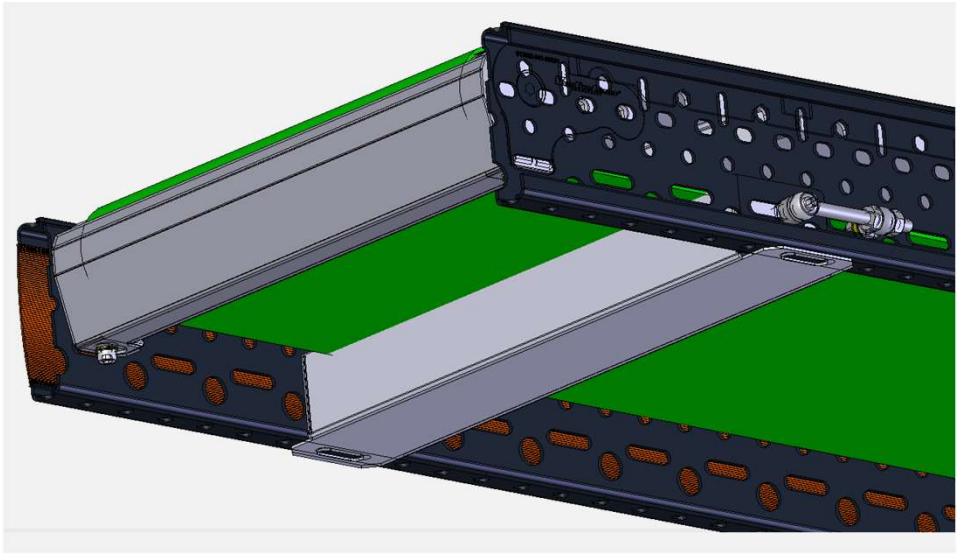


Tracking roller



Tracking roller

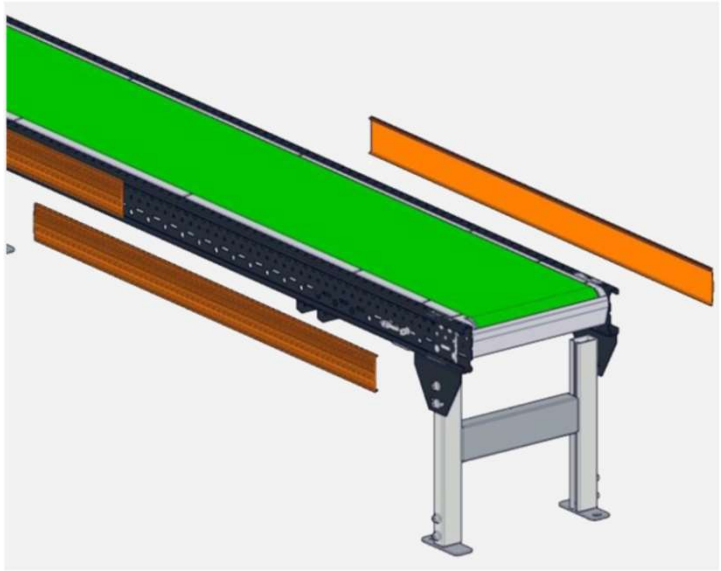
Tracking roller



Remove tracking roller

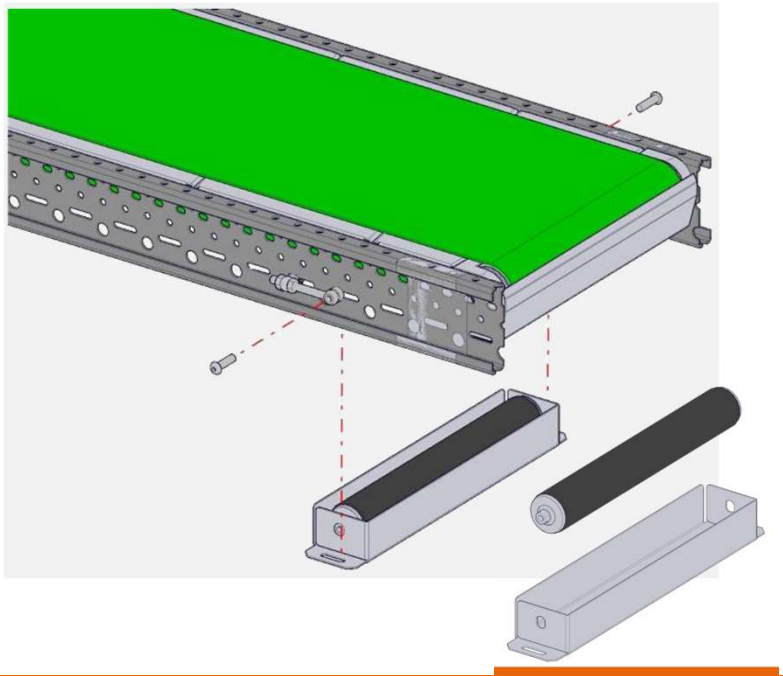
> Remove track side covers

> Mark position of assy tracking roller



> Remove assy tracking roller

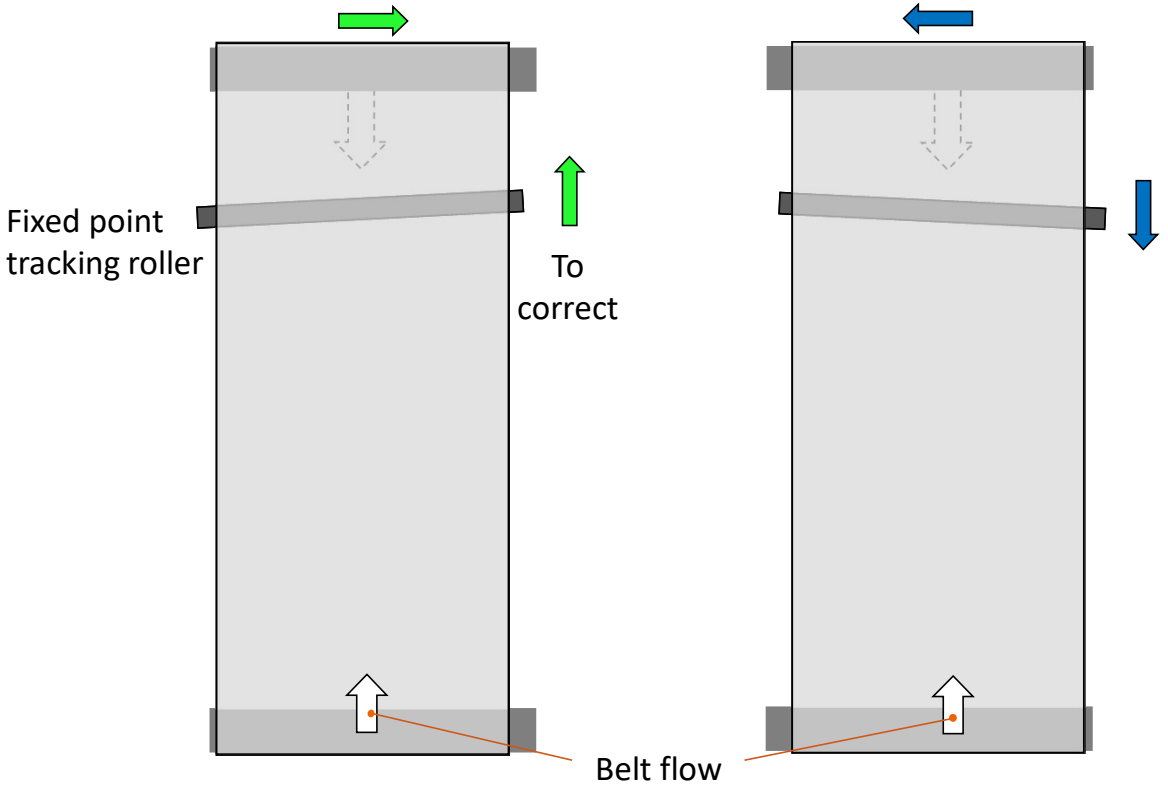
> Replace Ø 60 roller



Basic principle tracking

- Belt will always run on the roller at a 90° angle, use this principle for belt tracking
- Adjust return rollers or tracking roller in small steps
- Wait five to fifteen minutes
- Minor adjustments will have major affects

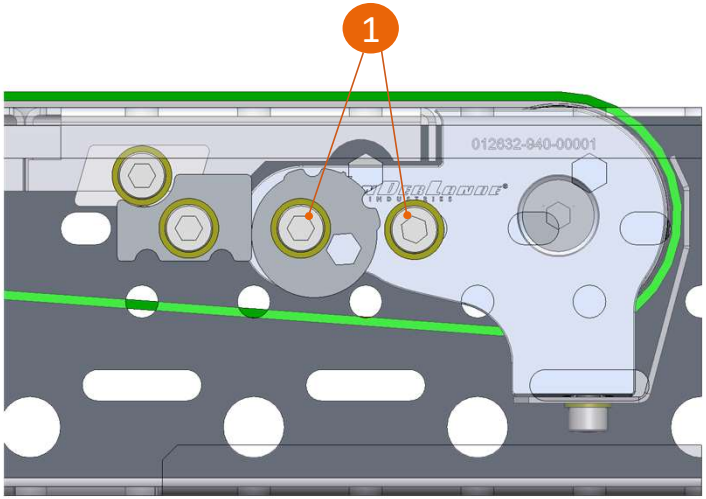
Tracking roller

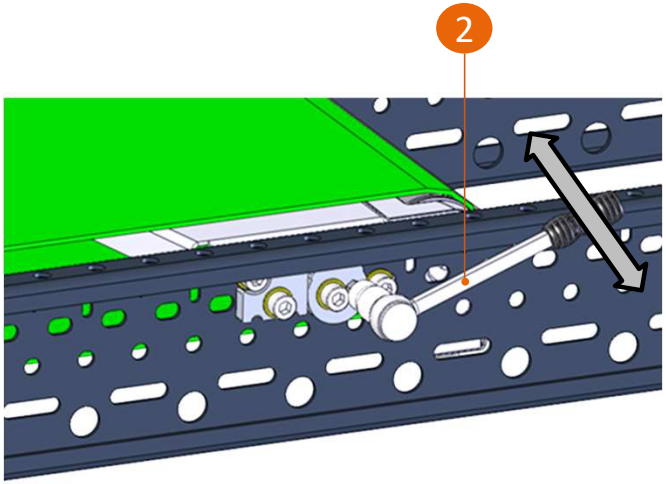


Belt tracking with the ETU 3/3

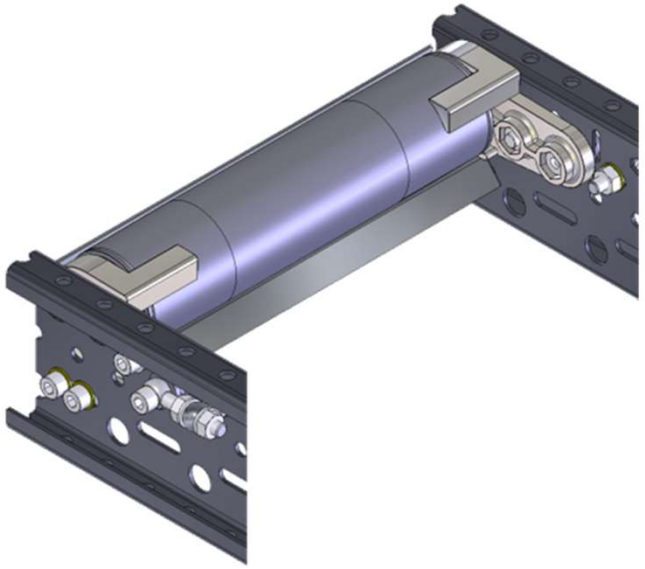
When no return or tracking rollers are available, tracking at ETU pulley

- A bigger effect on tracking
- Loosen bolts a few turns (1)
- Turn the eccentric (2) to move the ETU





ETU single belt




VANDERLANDE

maintenance manual

Maintain end take up - ETU BF

ETU BF

A_DOC081208-EN
Original instructions

K RELEASED

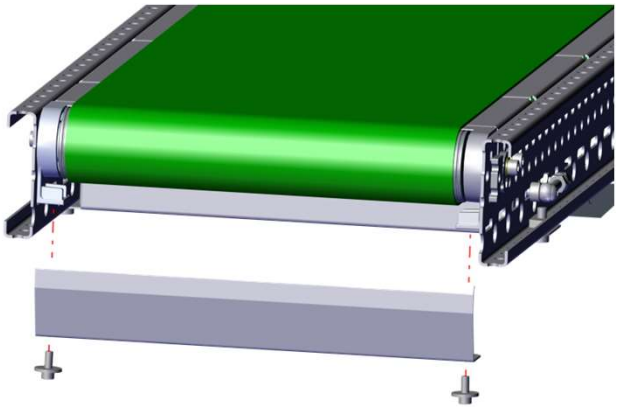
31 Mar 2022

Vanderlande Industries B.V.
Vanderlandelaan 2
5466 RB Veghel
The Netherlands

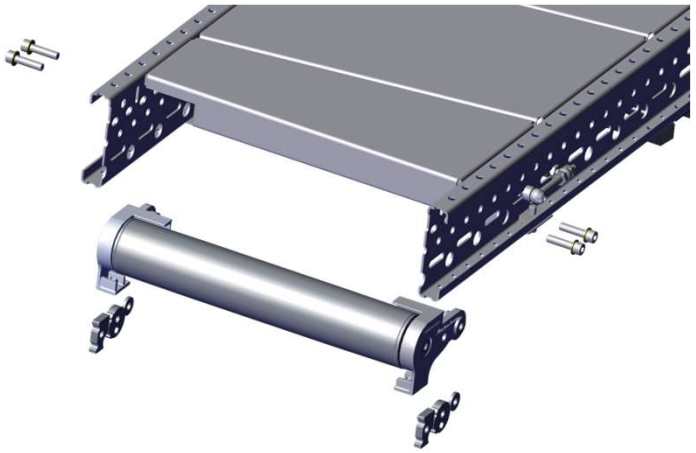
MOVING YOUR BUSINESS FORWARD

Replace the ETU

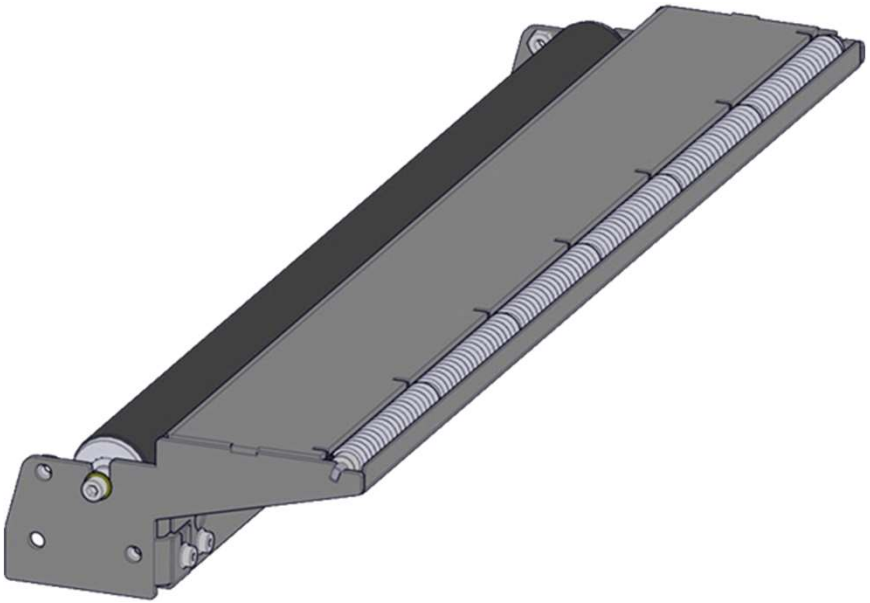
- Un-tension the belt
- Remove the safety cover



- Remove the roller



ETU knive belt



VANDERLANDE

maintenance manual

Maintain ETU Knife belt

Product
ETU

A_DOC110721-EN
Original instructions

H

23 Nov 2021

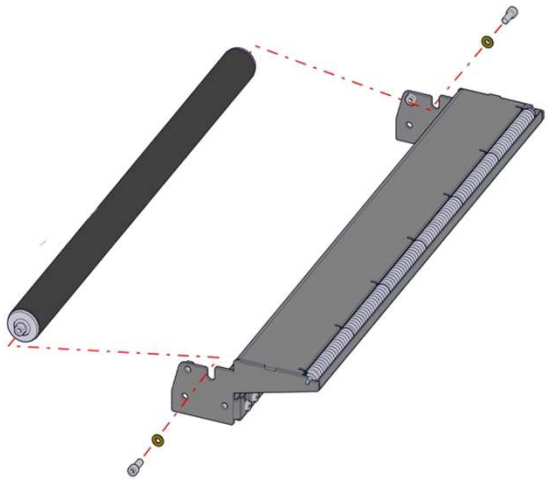
Vanderlande Industries B.V.
Vanderlandelaan 2
5466 RB Veghel
The Netherlands

MOVING YOUR BUSINESS FORWARD

Replace the roller

> Un-tension the belt

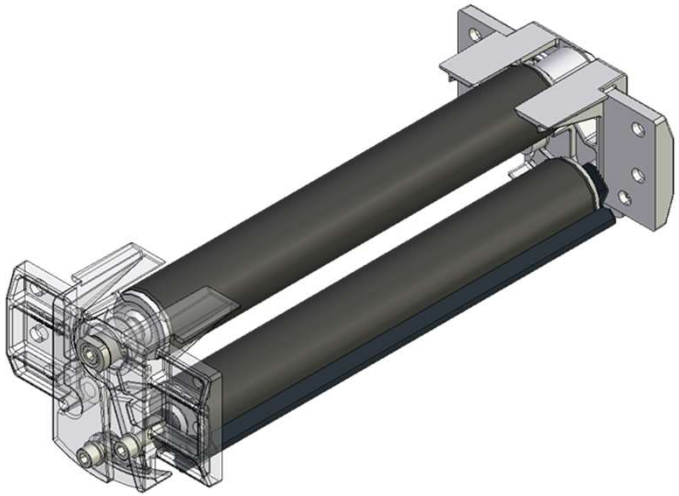
> Remove the roller



> Un-tension the belt

> Remove the roller

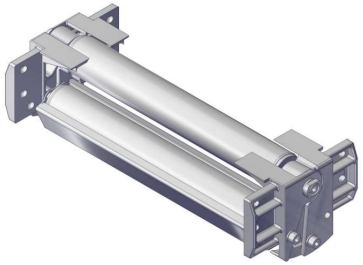
Nose over



VANDERLANDE

maintenance manual

Maintain Nose over - BF



Markcode
BF

Document ID
A_DOC081133-EN
Original instructions

Revision
I

Customer document ID

Customer version

Date
25 Nov 2021

Vanderlande Industries B.V.
Vanderlandelaan 2
5466 RB Veghel
The Netherlands

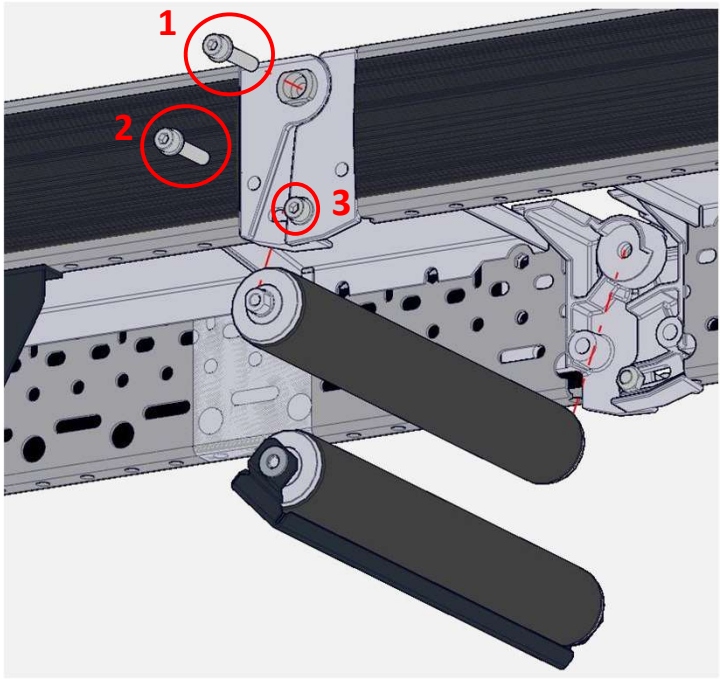
MOVING YOUR BUSINESS FORWARD

Replace the rollers

> Un-tension the belt

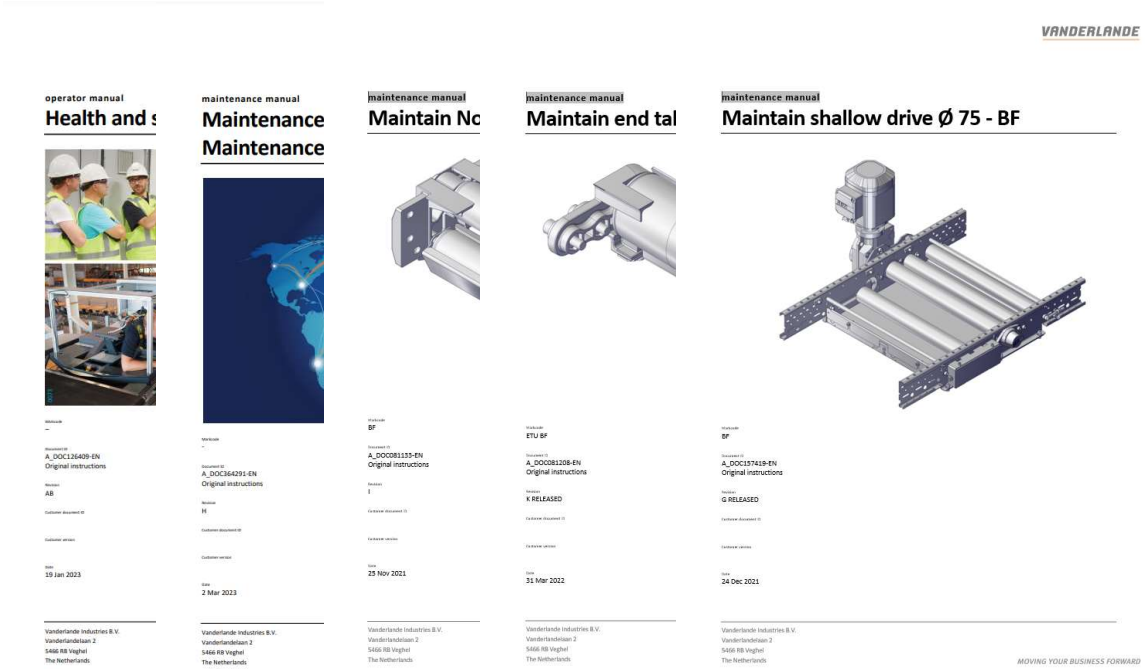
> With the bolts 1 and 2 you can replace the rollers.

> Bolt 3 must stay in position!



Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain Nose over-BF
- Maintain end take up –ETU BF
- Maintain shallow drive 75-BF



Identification

Training Session

Identification

- Camera zone receives a flow of gapped parcels. Its function to read the required barcode on the top surface of the packages and communicate it with AWCS
- Cognex camera take a snapshot
- Send the picture to the Cognex IPC
- Picture is visible for Amazon
- Vanderlande use only the data which is needed for sortation!!

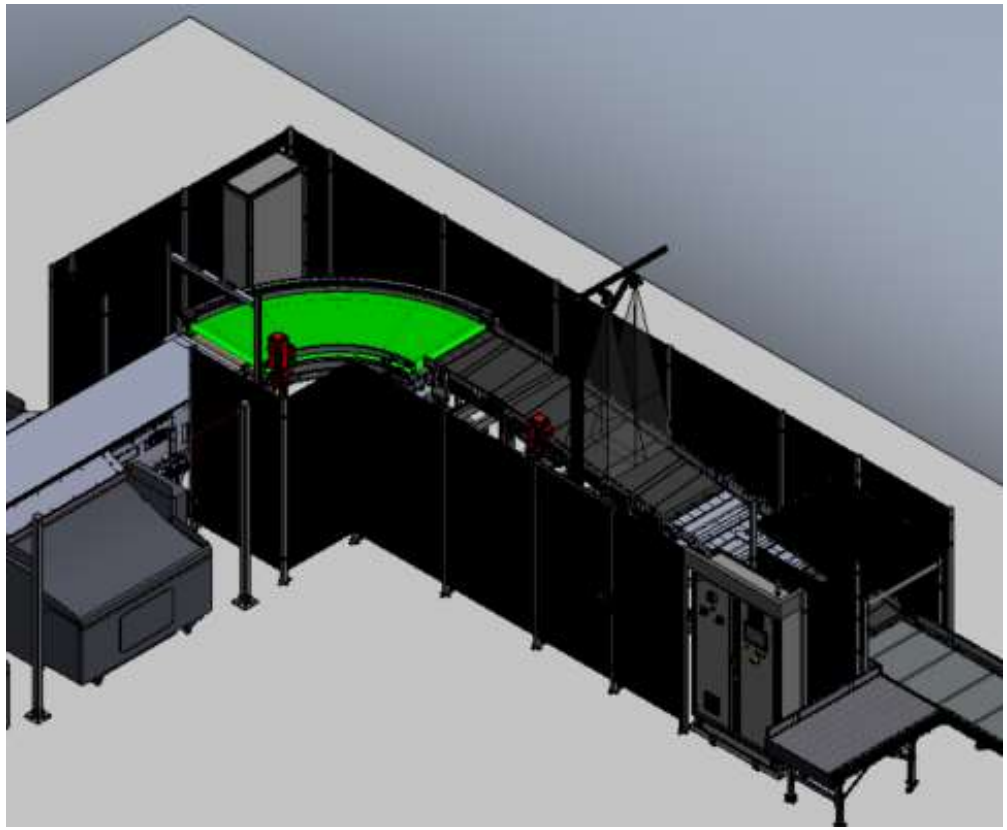
BC

Vanderlande

Training Session

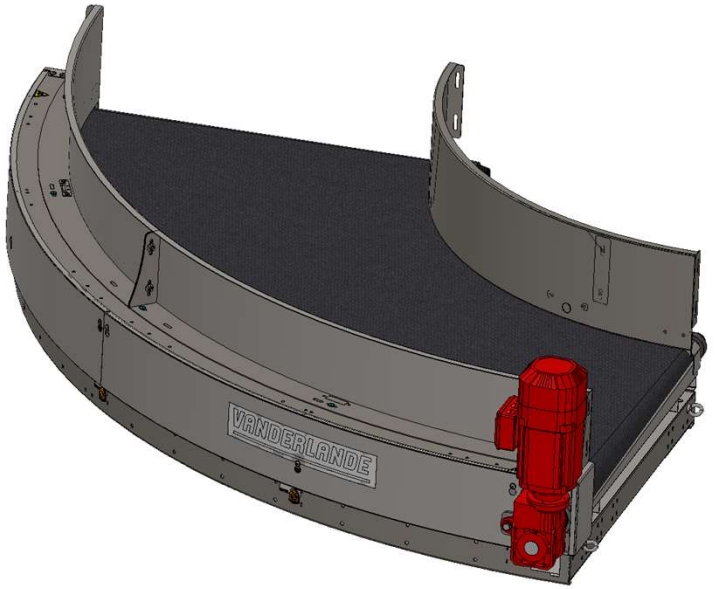
Position

- Placed after the scanner area
- 90 degrees curve
- Vanderlande equipment



Introduction

- The belt curve is a type of motorized conveyor with an endless belt, in which the belt describes a curved path, thus changing the horizontal direction of the moving parts it carries.
- Available in : 30º, 45º, 60º and 90º



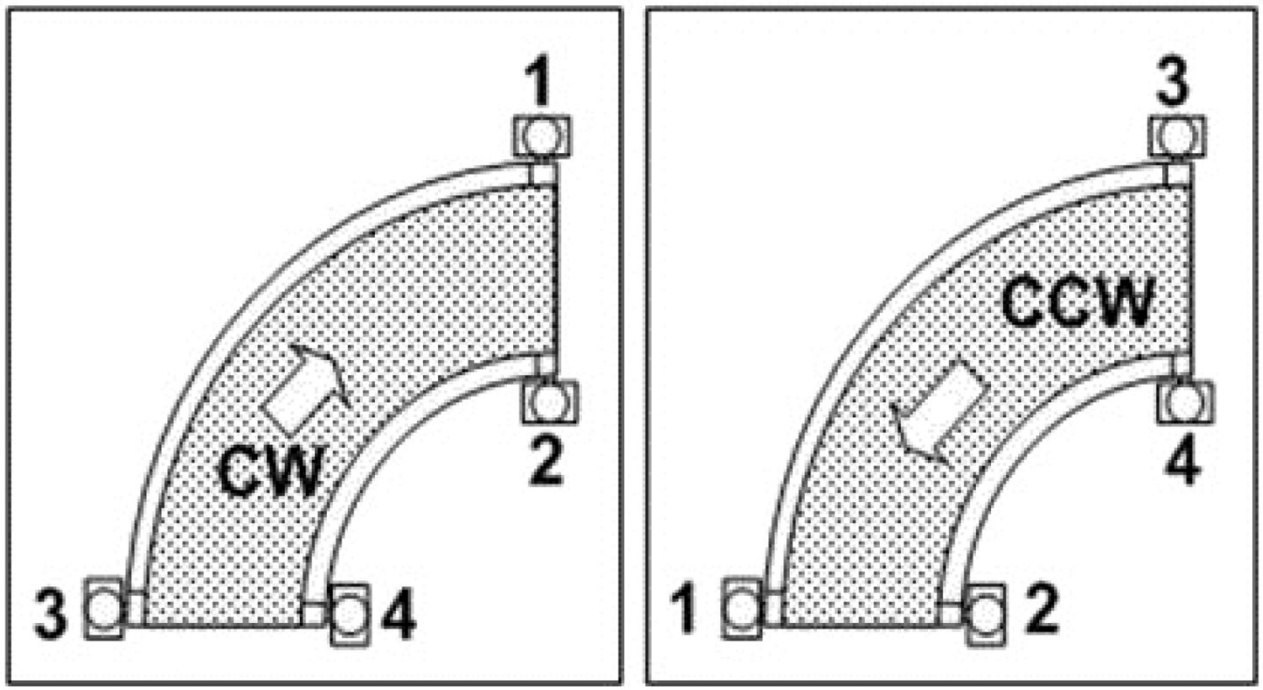
Motor position

Preferred

1. Downstream; outside radius, pulling
2. Downstream; inside radius, pulling

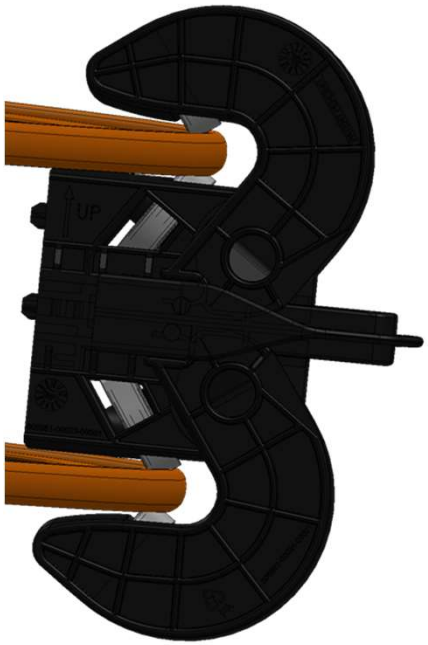
Not preferred

3. Upstream: outside radius, pushing
4. Upstream; inside radius, pushing

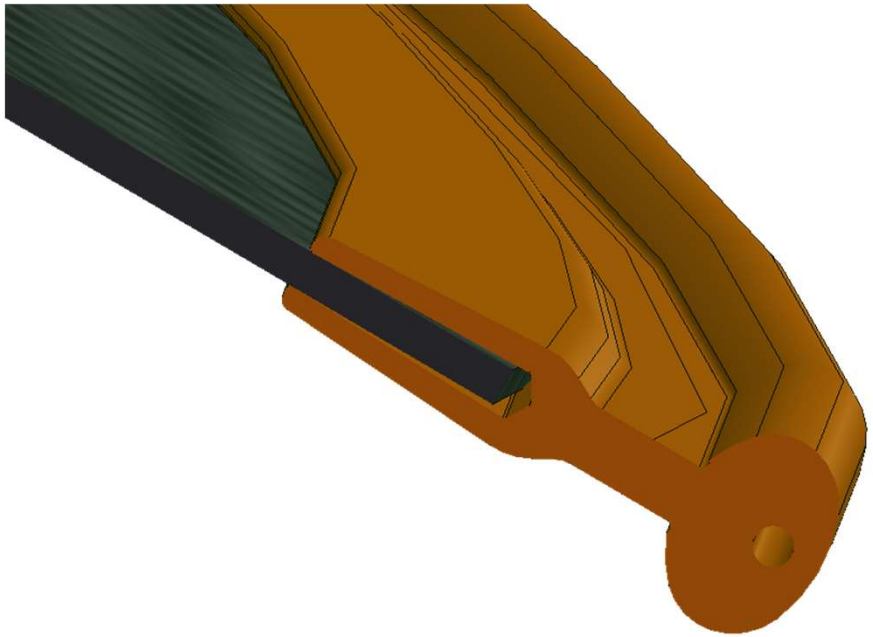


Belt and holder

- Belt and Holder

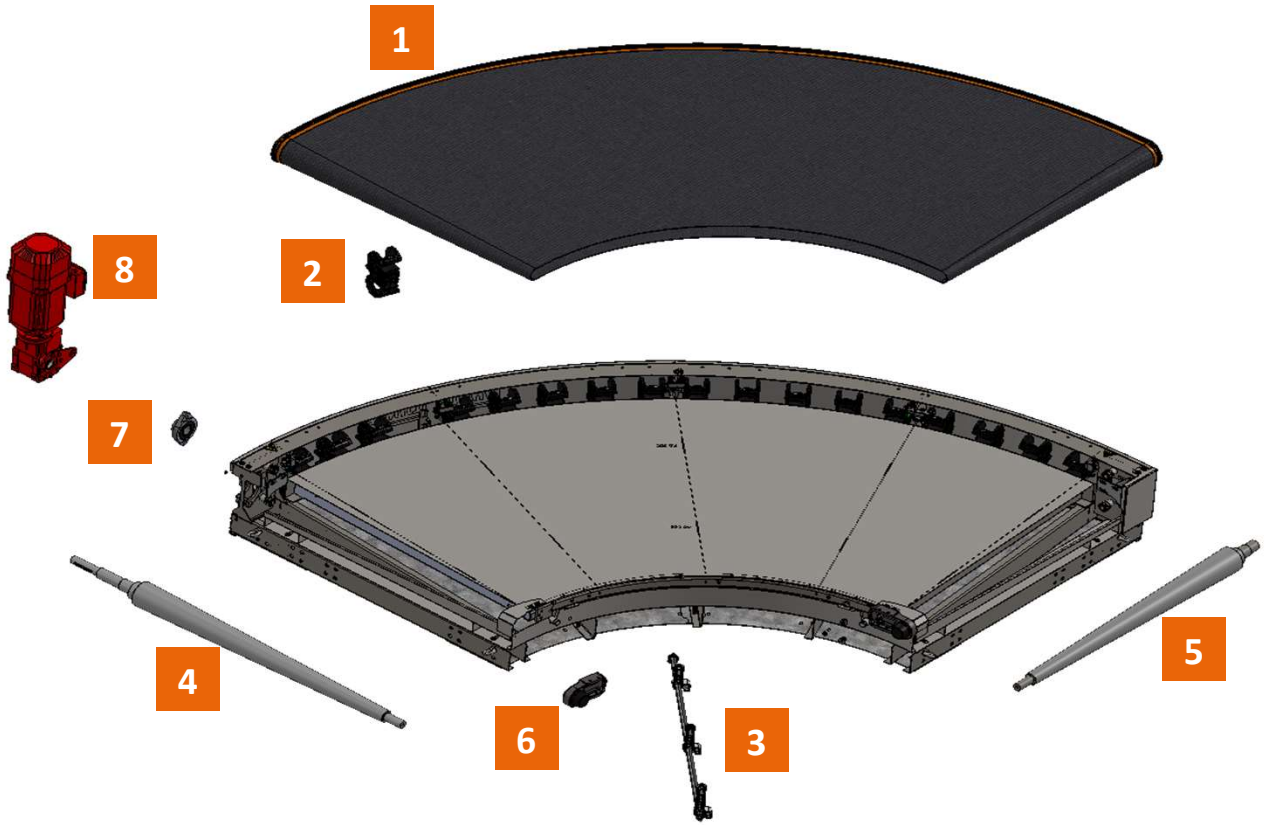


- Belt



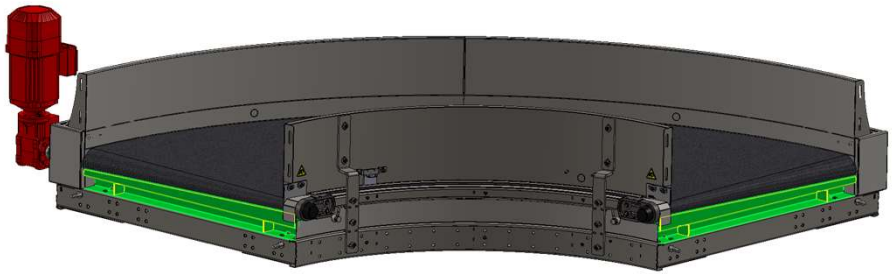
Parts

1. Belt
2. Belt edge guiding holder
3. Belt lifter (3x)
4. Drive conical pulley
5. Tail conical pulley
6. Inner support bearing
7. Outside bearing block
8. Gearmotor

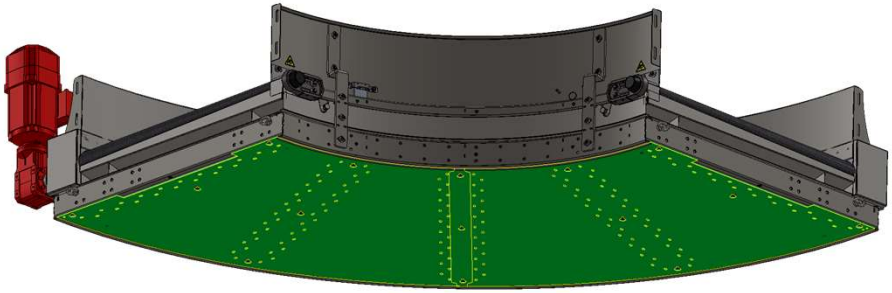


Covers

- Drive and tail pulleys are covered with adjustable cover



- Underguarding



Replacement of parts

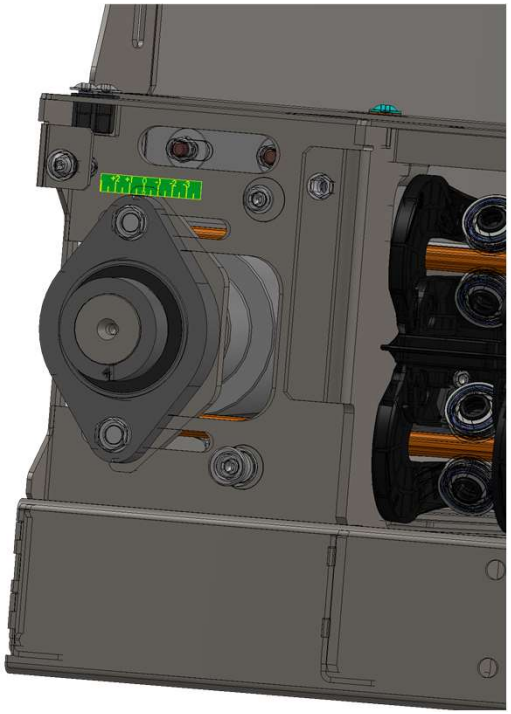
Check position of the bearing before start working
It refers to the tension of the belt

- Reference

- Support for tensioning

Check position of the bearing before start working. It refers to the tension of the belt

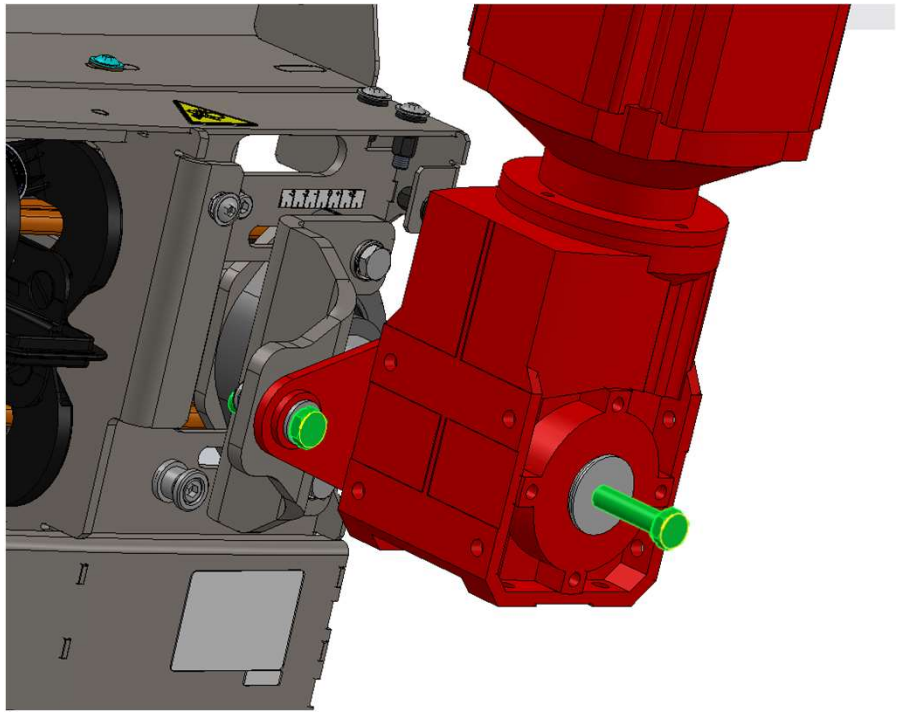
- Reference



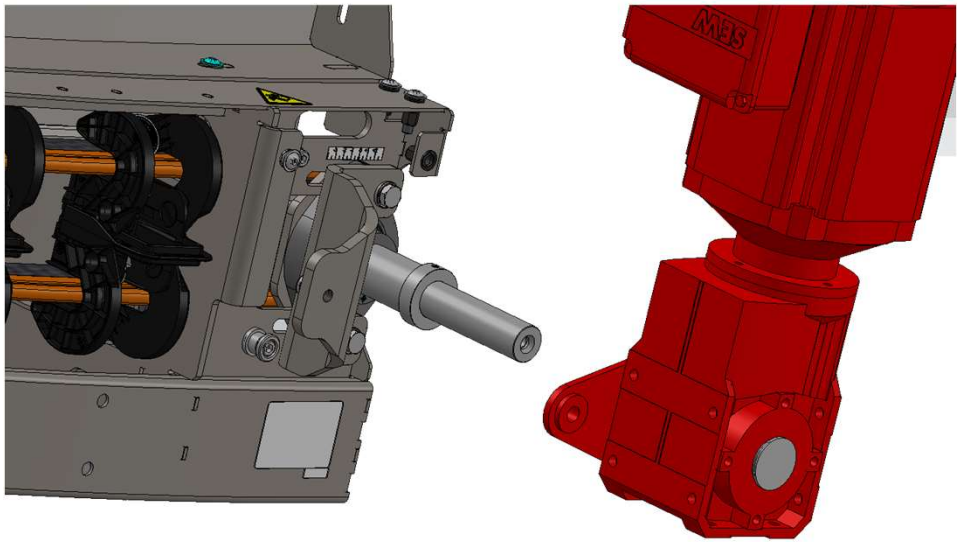
- Support for tensioning

Replacement of the motor

- Remove the bolt from the motor and the motor support

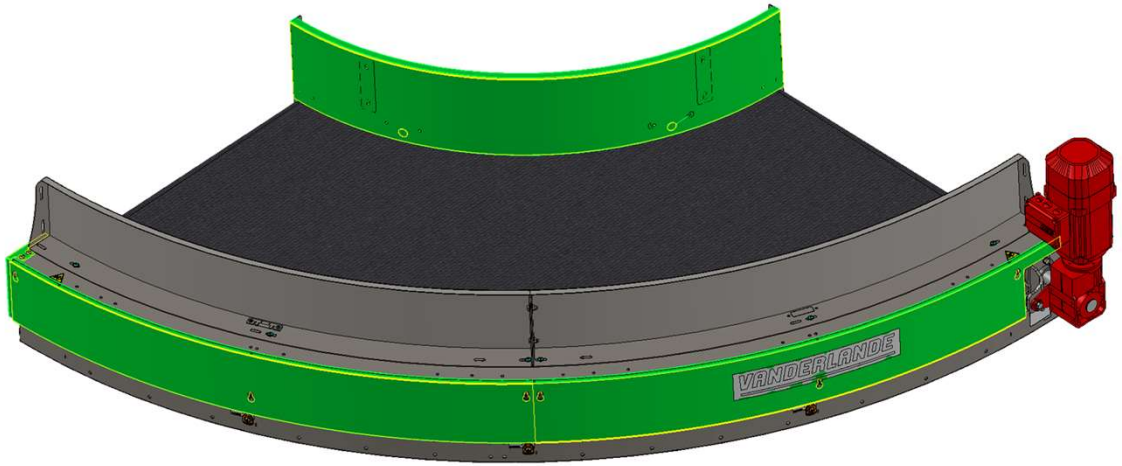


- Slide the motor of the axle



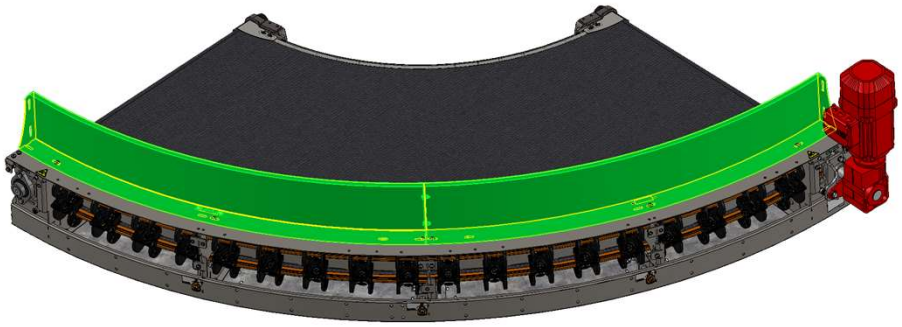
Replacement of the belt

- Remove all green marked covers

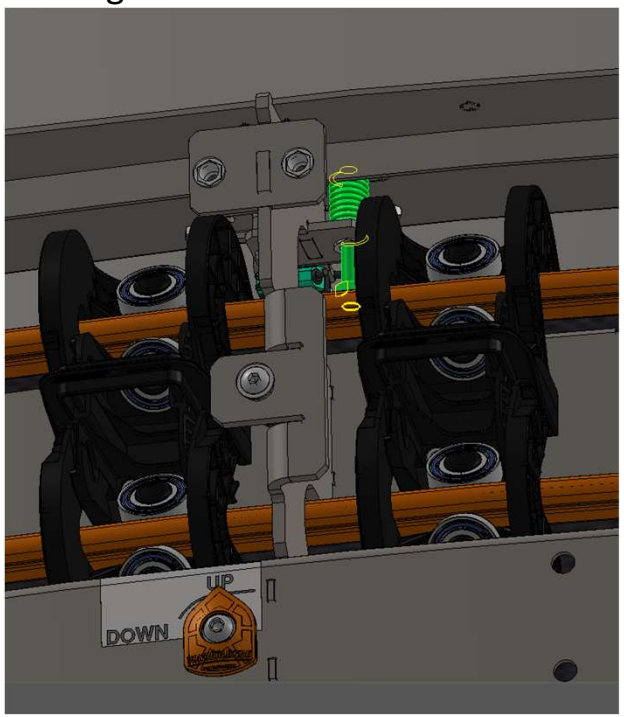


Replacement of the belt

- Raise the outside cover

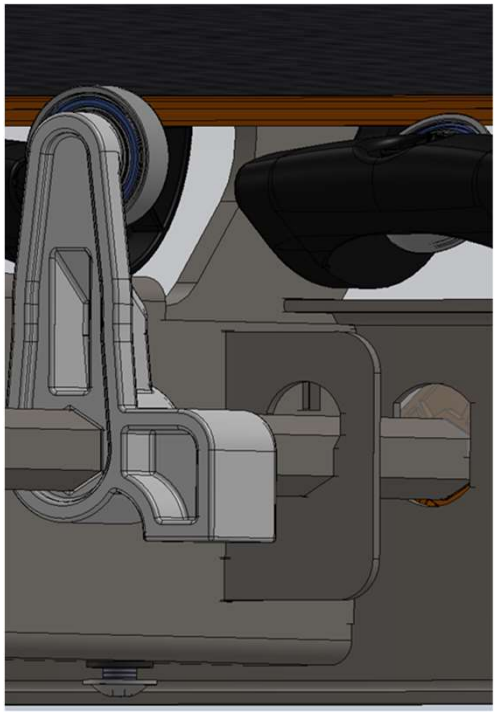


- This is mounted on springs. Release the bolts and there is enough clearance to work with the belt.



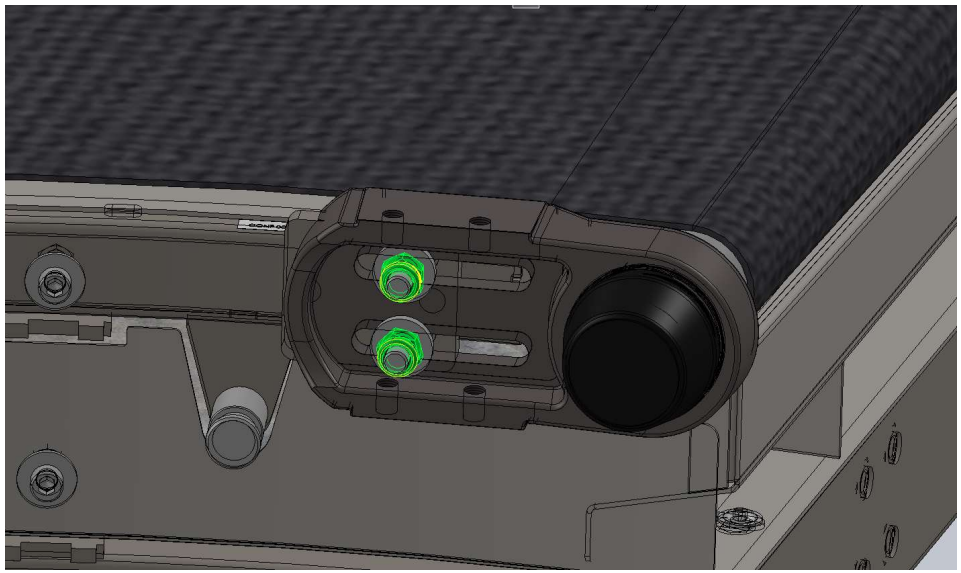
Replacement of the belt

- Move the lifters a few millimeters up and rotate to down

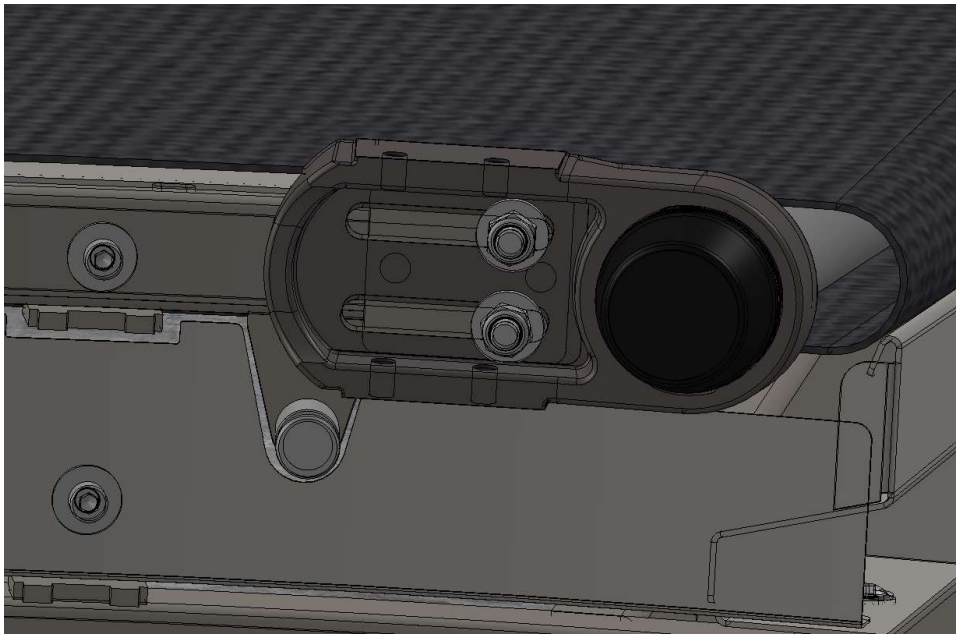


Replacement of the belt

- Release the bolts of the inner bearing , both sides

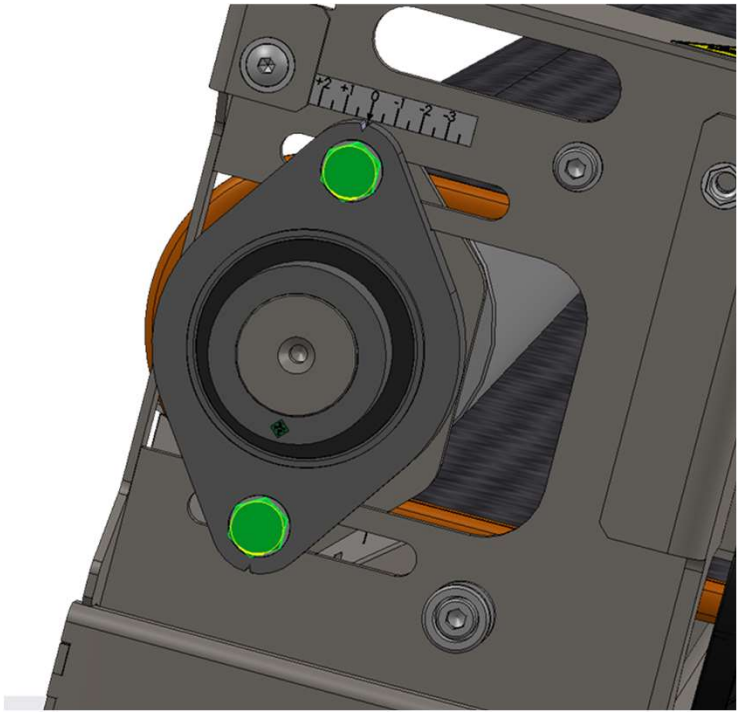


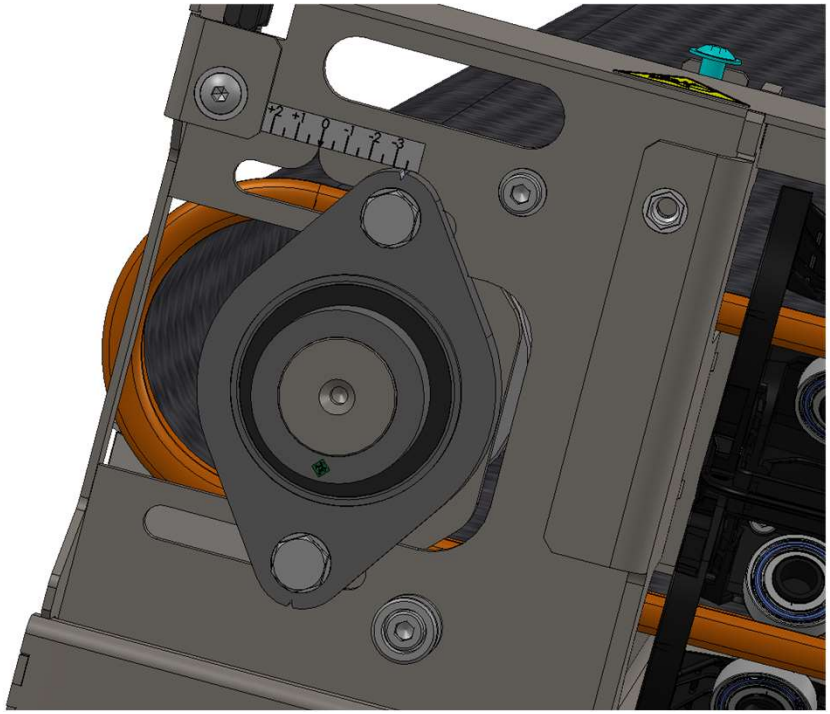
- Move the bearing/roller to the inside



Replacement of the belt

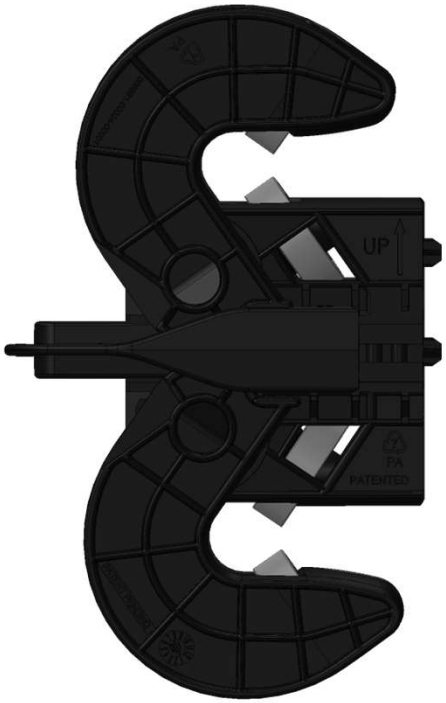
- Release the bolts of the outer bearing , both sides

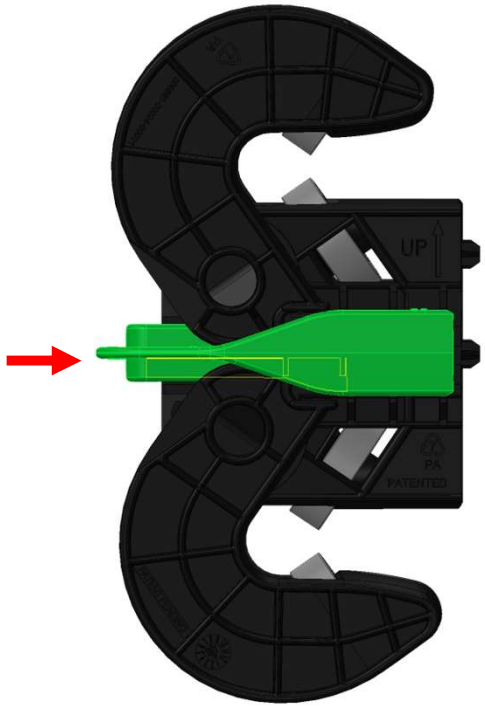




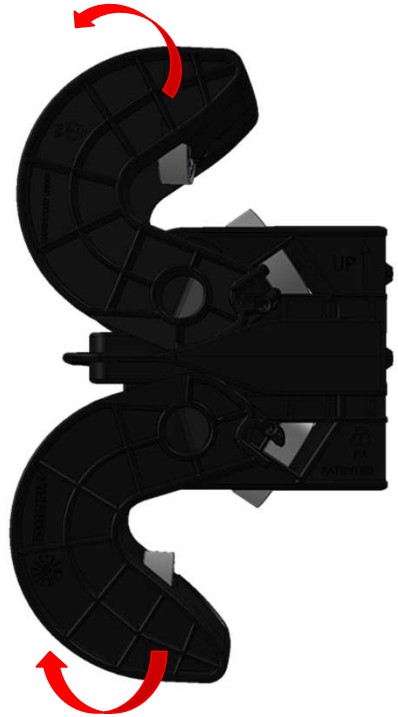
Replacement of the belt

- Unlock the belt holder



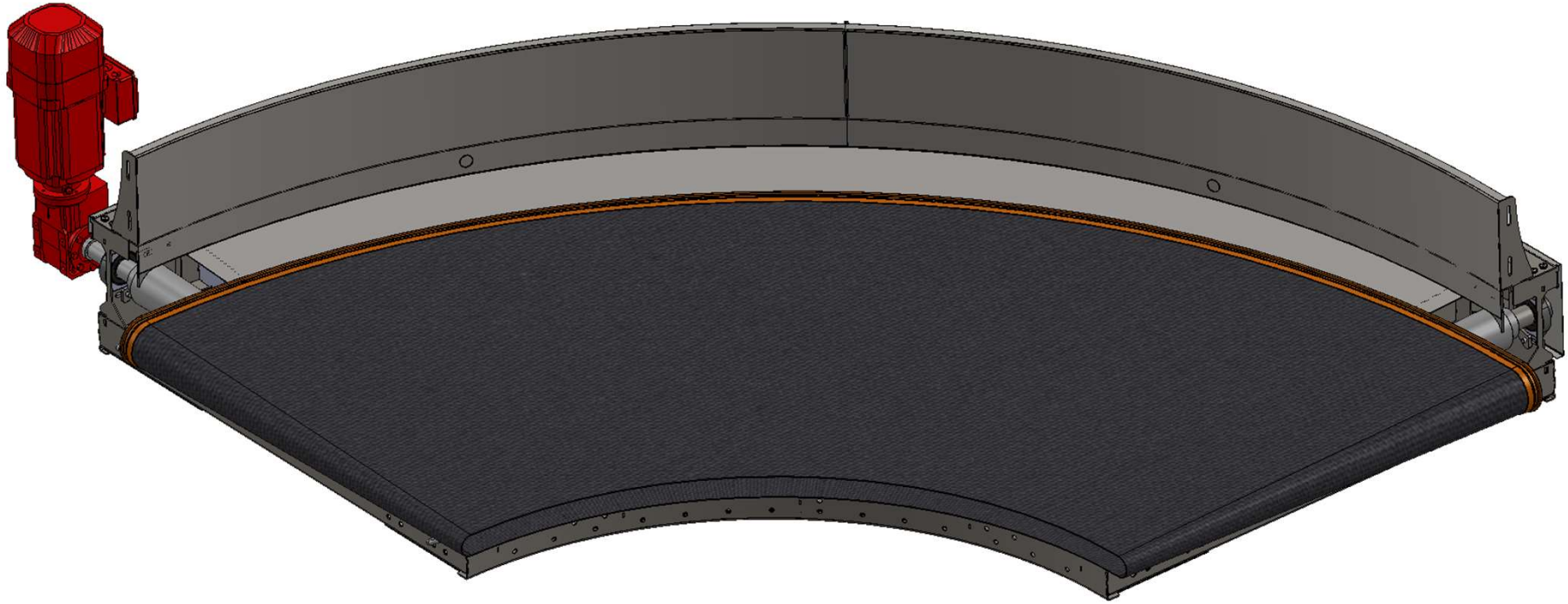


- Open the holders



Replacement of the belt

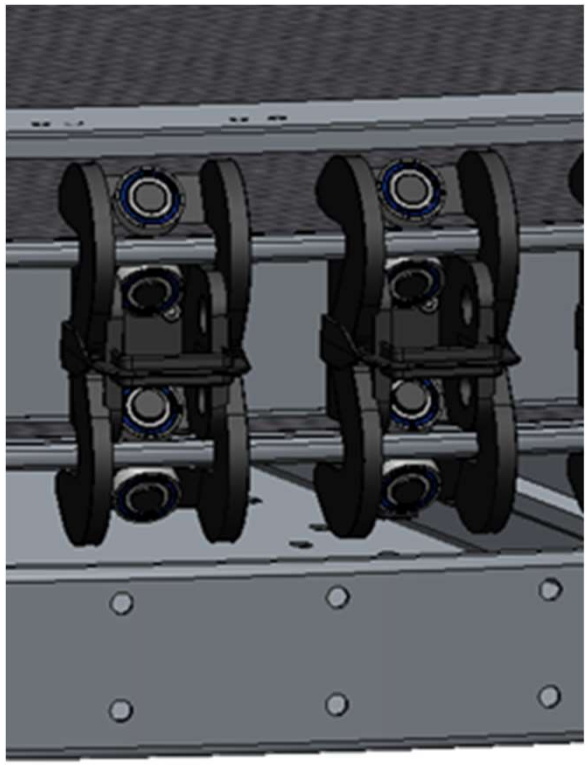
- Move the belt to the inside



Belt tension

Beltcurve belt tensioning

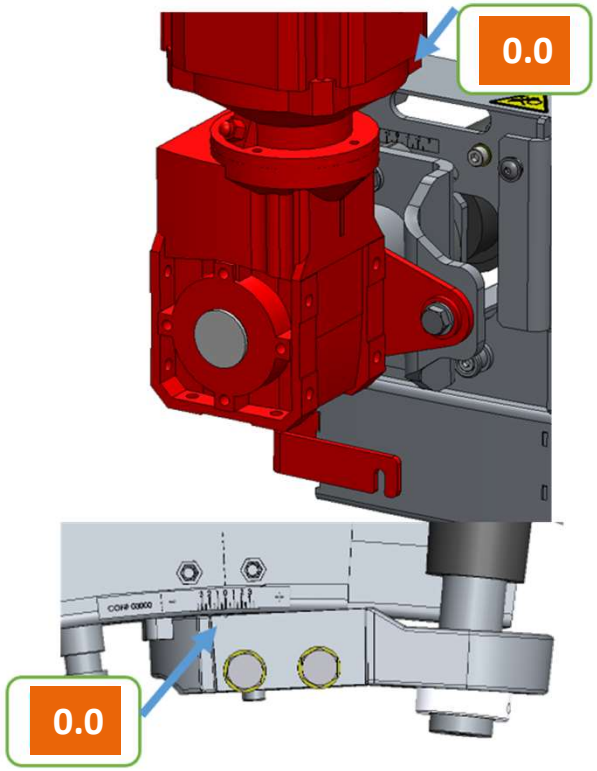
- Place the new belt.
- Secure the belt profile with the holders on the outer radius.
- Pull the slack out of the belt by pulling the driven pulley outward by hand.



Beltcurve belt tensioning

- Set pulleys to the default position
- Set the inner and outer curve bearing blocks on the motor side to the “0” position.
  Align the indicator on both bearing blocks with the label on the frame
- Tighten the fasteners of the 2 bearing blocks on the driving pulley on the motor side. The driven pulley must be able to slide.

Don’t tighten the bearing eccentric rings! This is the last step.

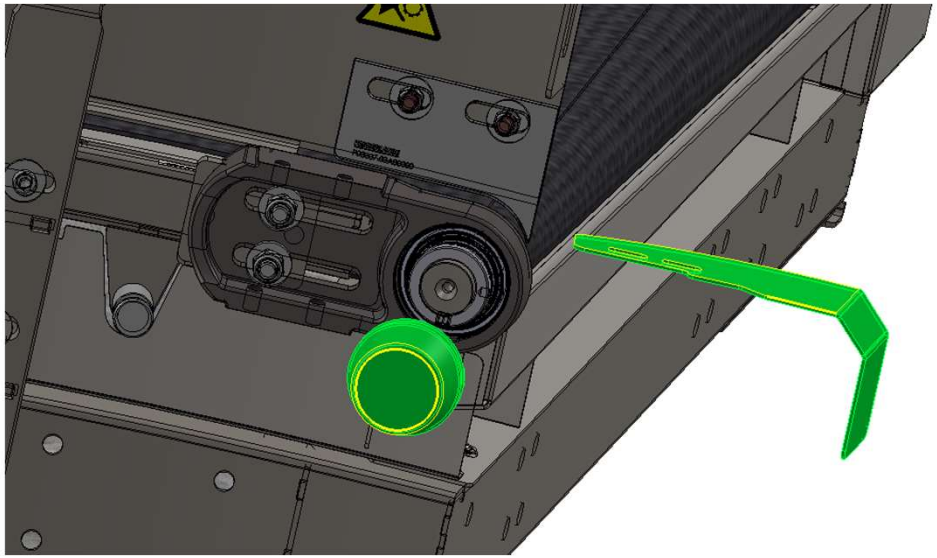


Beltcurve belt tensioning

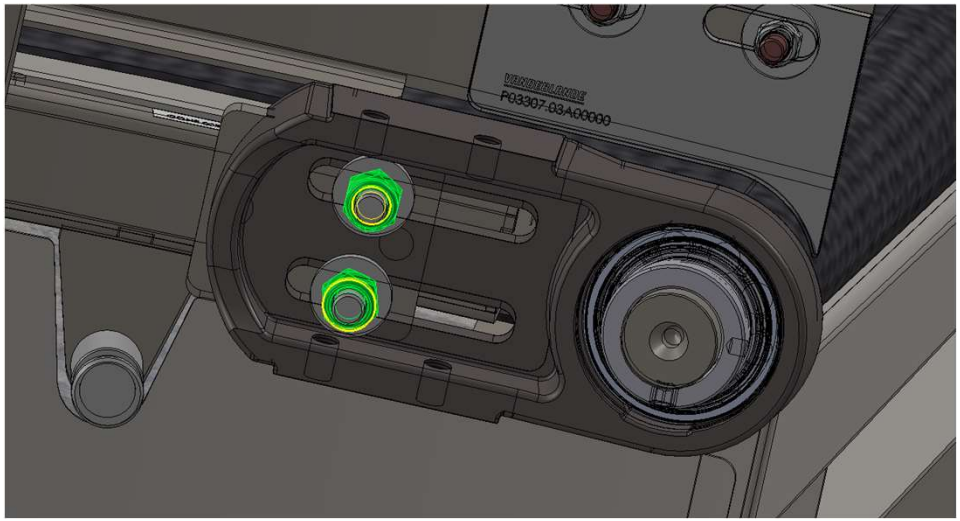
- When running the belt, the belt must not be able to be stopped by hand..
  The tension must not be too high

Replacement of the inner bearing

- Remove covers

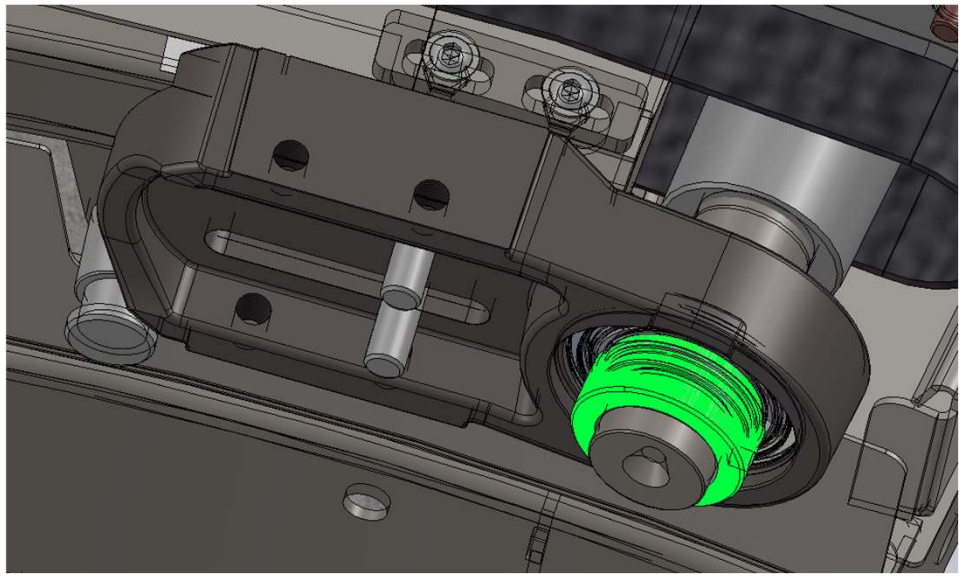


- Remove the bolts

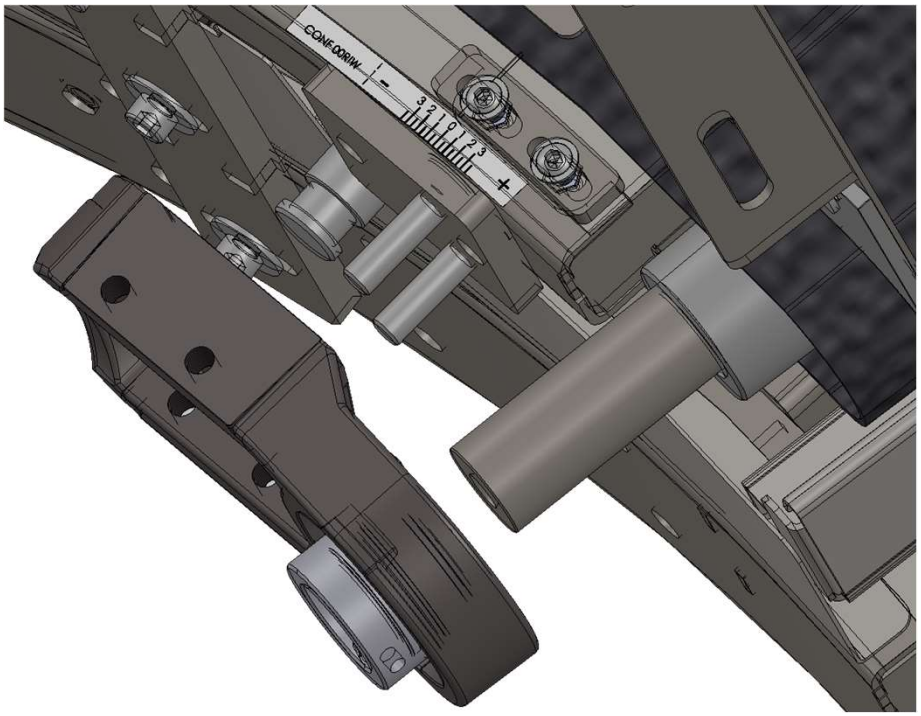


Replacement of the inner bearing

- Remove the ring from the bearing

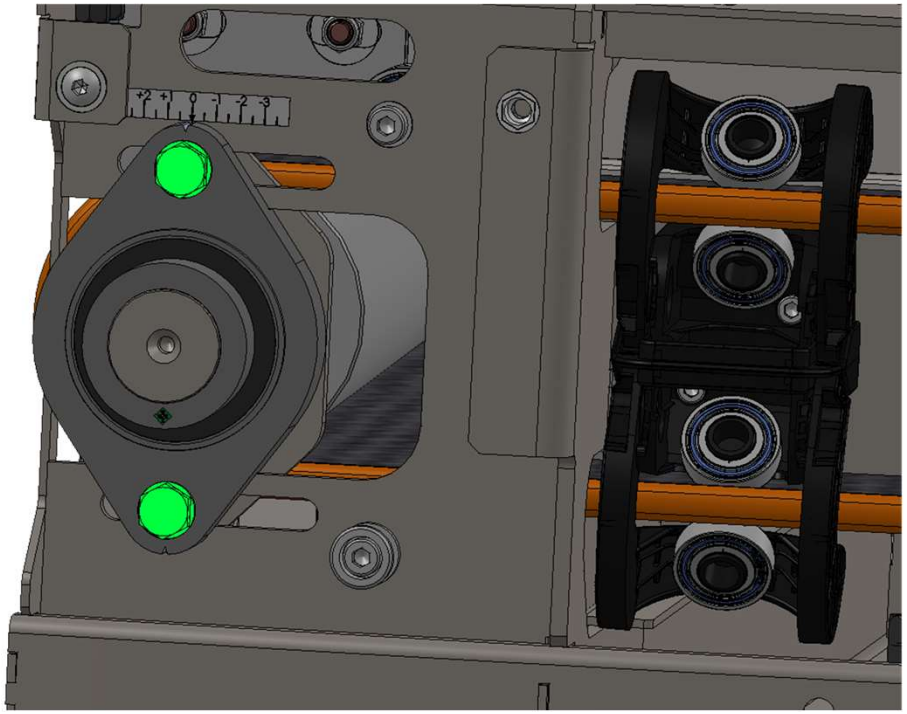


- Slide the bearing off

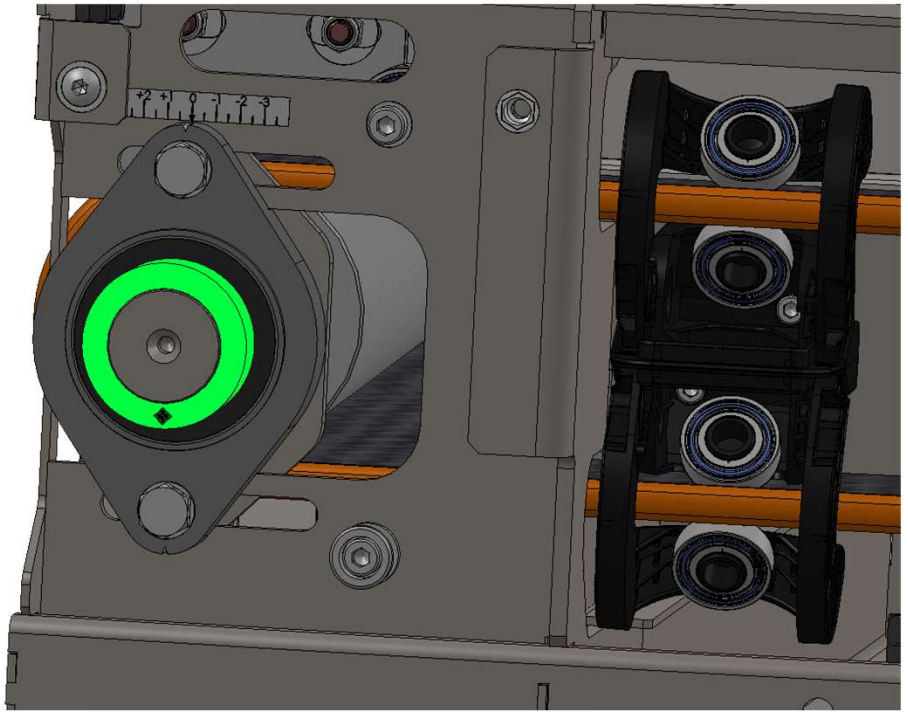


Replacement of the outer bearing

Remove covers and bolts

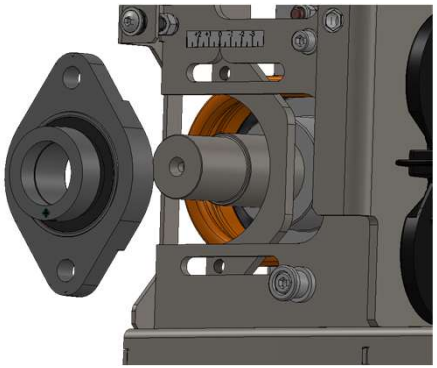


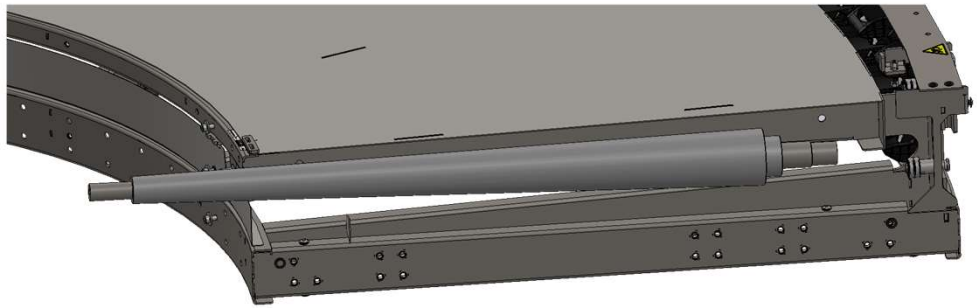
Remove the ring from the bearing



Replacement of the conical rollers

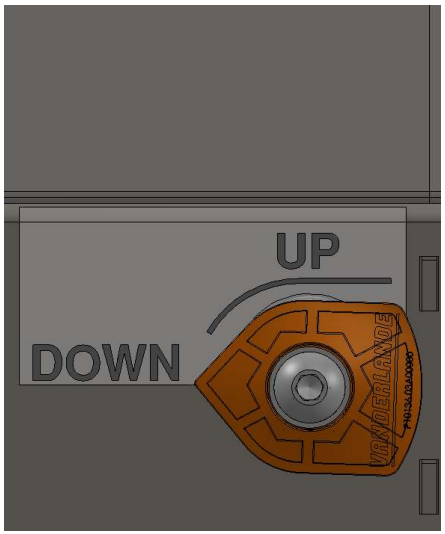
- Un-tension and remove the belt
- Remove the inner and outer bearings
- Slide the roller to the inside



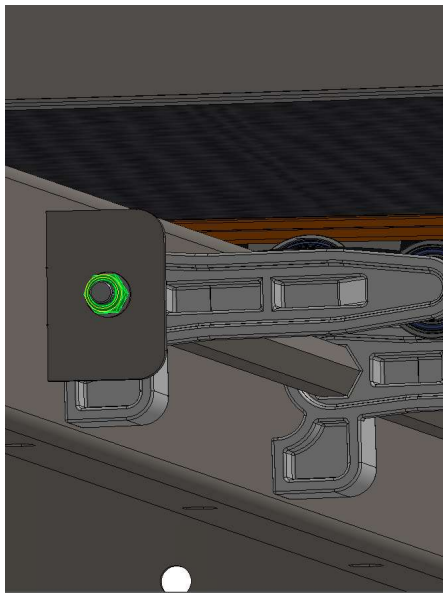


Replacement of the lifters

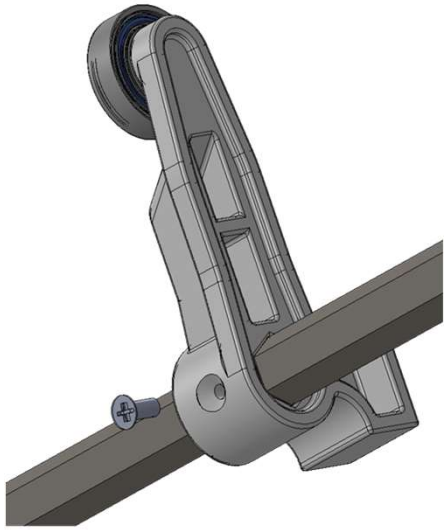
- Move the lifters down



- Remove the bolt on the inside and outside



- Take the bolt from the shaft

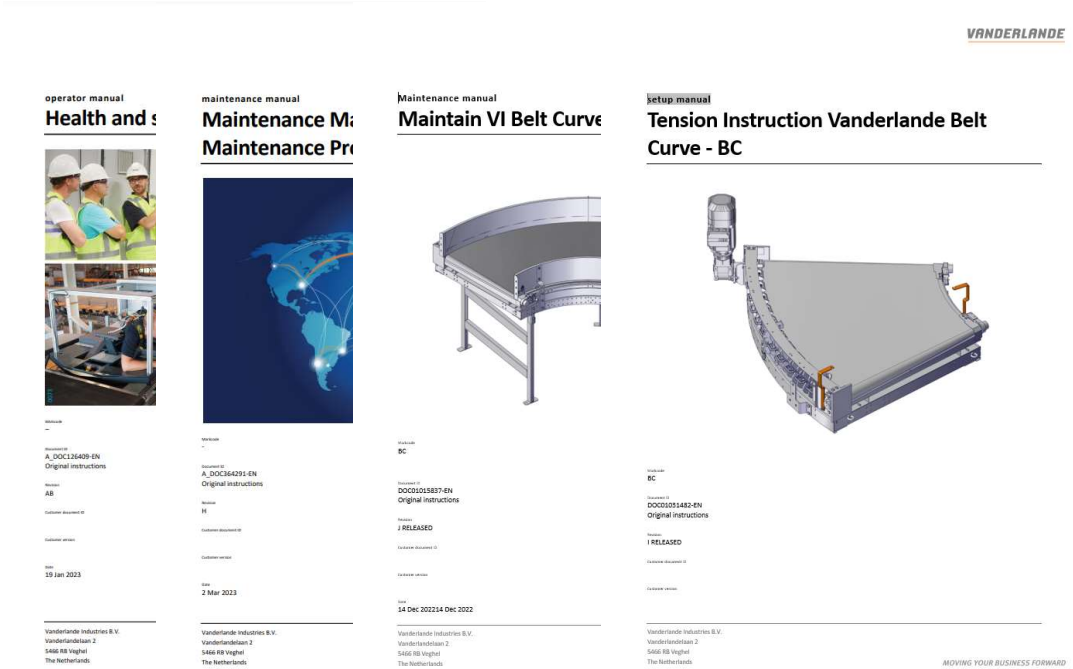


Troubleshooting

Problem	Possible cause	Corrective action
Belt does not run	No supply voltage	Verify the main electrical installation
The belt of moves laterally.	Section bases twisted.	Check if system is properly levelled.
	Blocked rollers.	Clean and free rollers.
	Belt runs off-center.	Track the belt.
The belt slides on the motor roller.	The belt is blocked.	Remove objects that interfere with the belt.
	The belt is overloaded.	Reduce the load on the belt.
	Loose belt.	Tension belt.
Noise of vibration.	Loosen bolts.	Verify the tightening of the bolts (legs, protections, holders).
Noise.	There are objects that interfere with the passage of the belt.	Remove objects that interfere with the belt.
	Roller bearings in poor condition.	Replace with suitable spare part.

Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain VI Belt Curve-BC
- Tension Instruction VI Belt curve

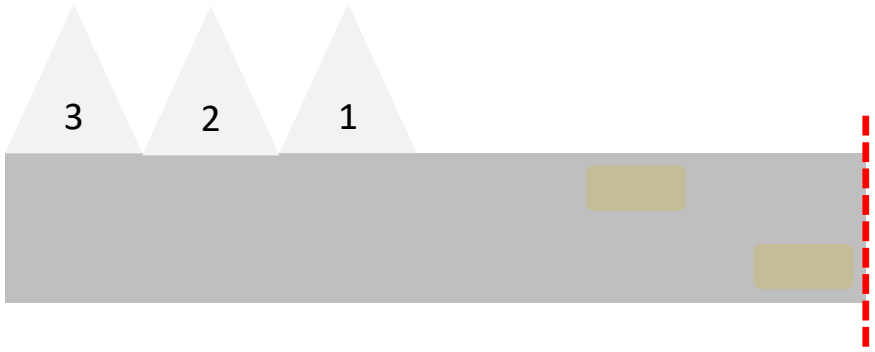


Positioning check

Training Session

Positioning

- Set of 16 Sick DT35 midrange distance sensor
- Detect the position and length of the parcel before it enter the sorter.
- This values are used to control the switching time and switching length of the diverts in the sorter.



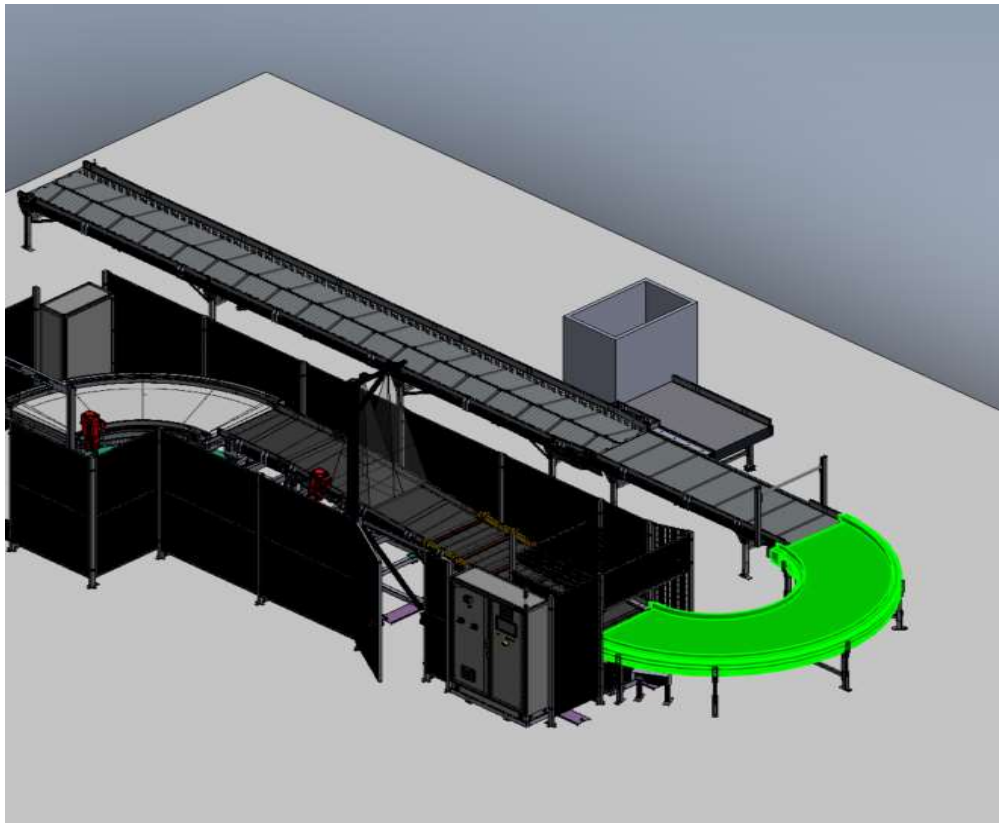
BC

Transnorm TS1600-105FH

Training Session

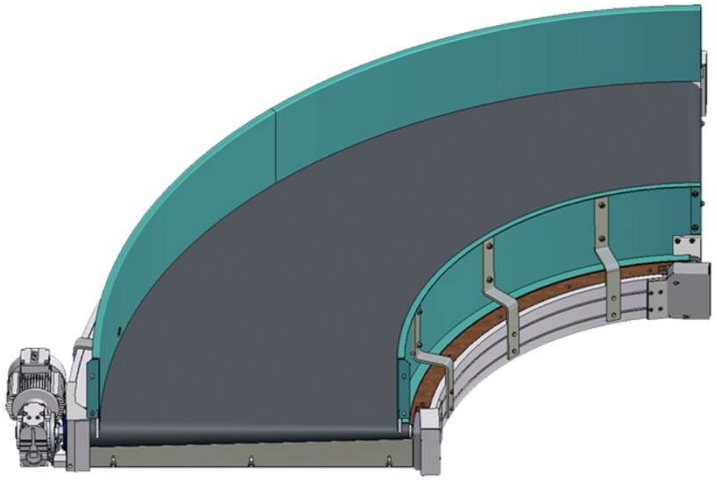
Position

- Option 2 configuration
- Placed in before scanner area
- 180 degrees
- Transnorm equipment



Introduction

- The TS1600-105FH has been optimized conveyor systems.
- As the key component of the innovative curve family TS1600, the TS1600-105FH with a load weight of up to 120 kg offers a very wide operational spectrum for in-company transport of packed and unpacked unit loads.



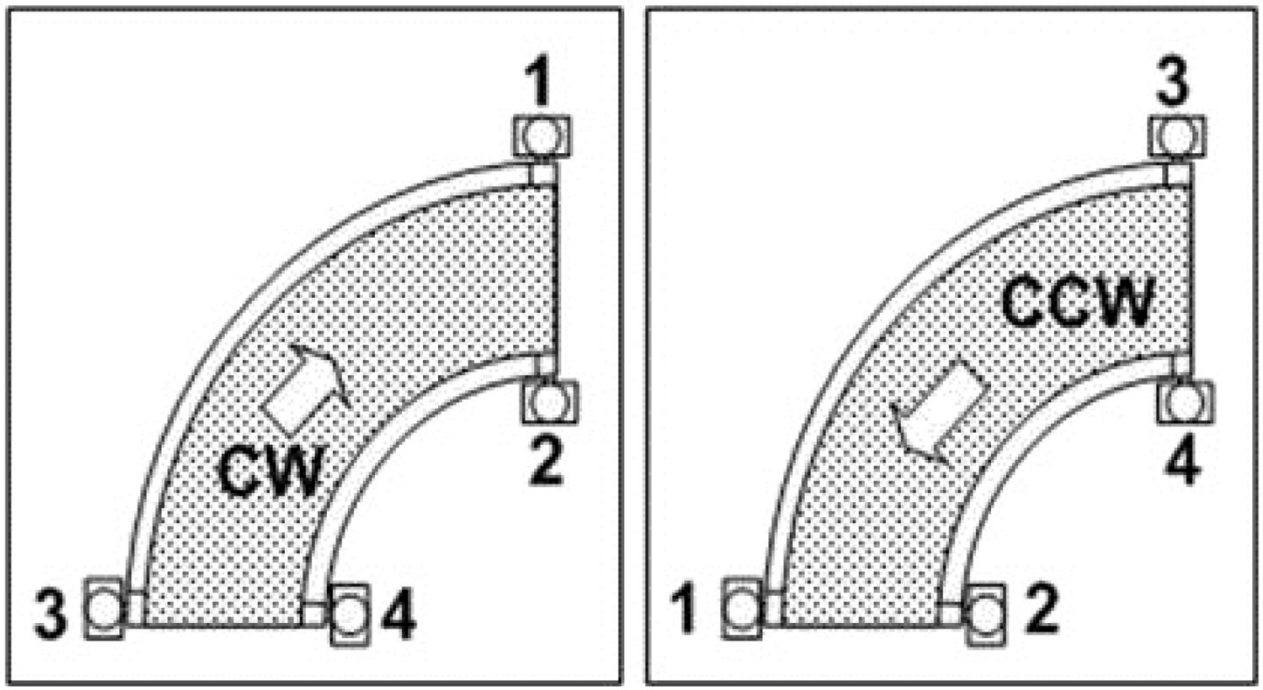
Motor position

Preferred

1. Downstream; outside radius, pulling
2. Downstream; inside radius, pulling

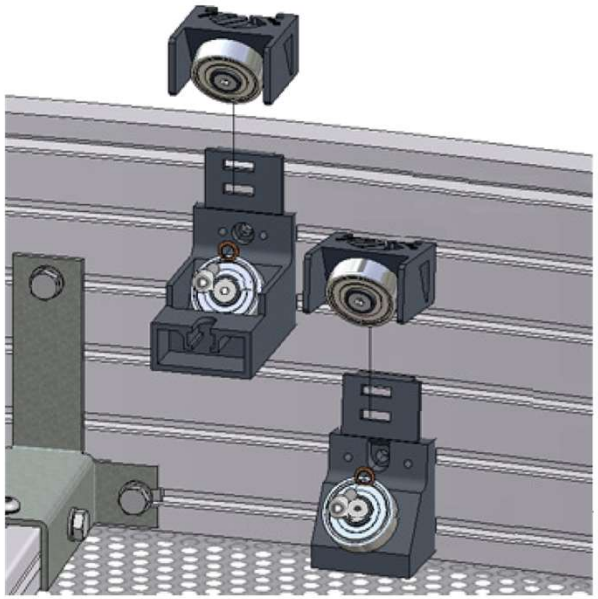
Not preferred

3. Upstream: outside radius, pushing
4. Upstream; inside radius, pushing

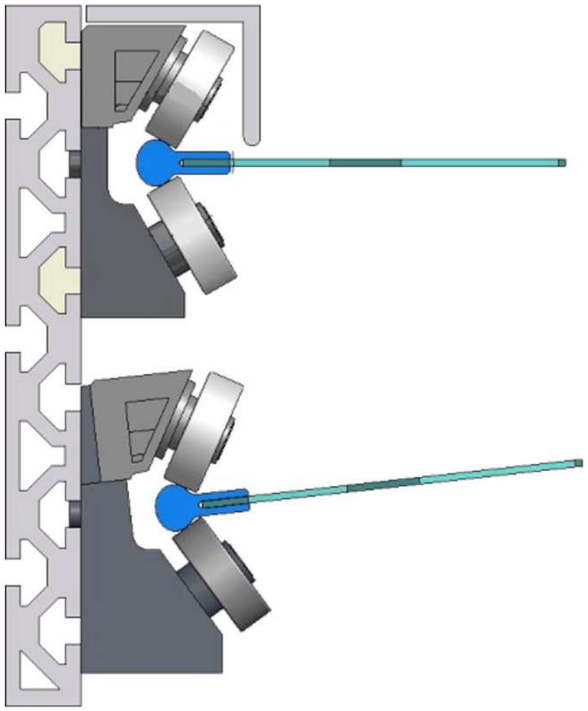


Belt edge holder and belt

- Belt edge holder

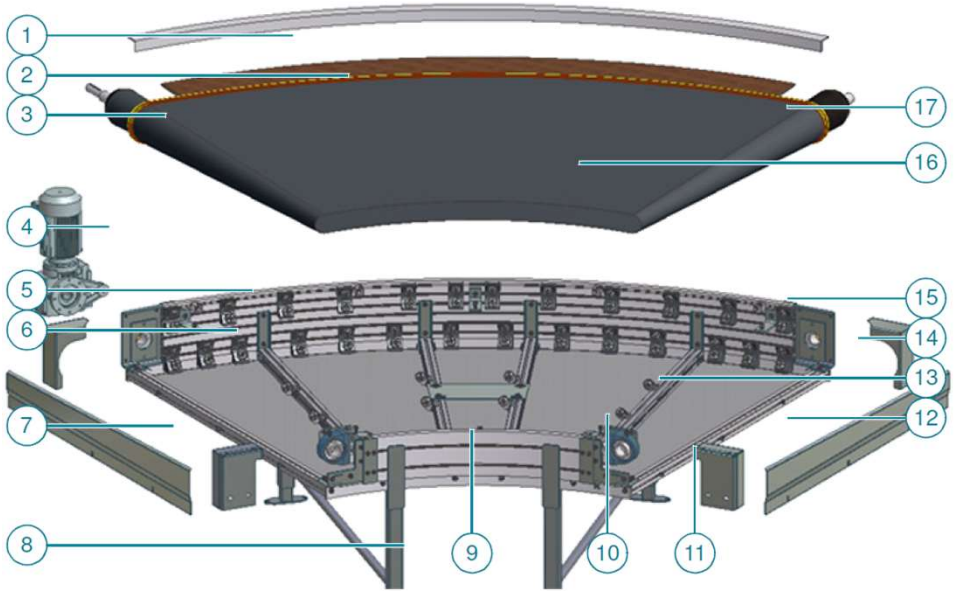


- Belt



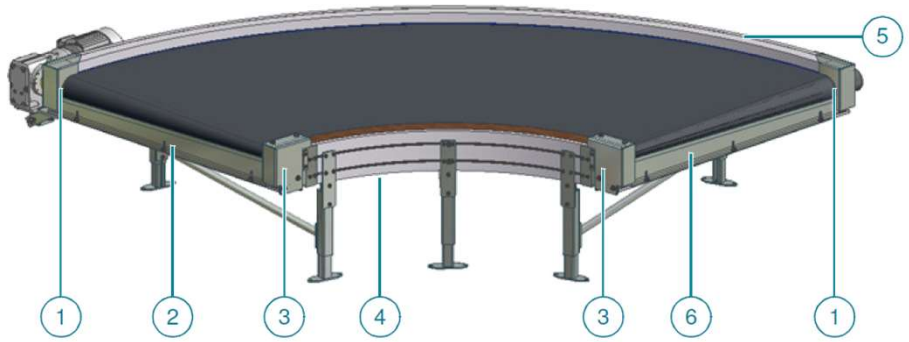
Parts

No.	Name	No.	Name
1	Finger guard	10	pulley bearings
2	beading	11	cover, pulley bearings
3	drive pulley	12	finger guard, tail pulley side
4	drive	13	bottom cover
5	belt edge holder, top	14	cover, bearing block
6	belt edge holder, bottom	15	Bearing support, outside
7	finger guard, drive side	16	conveyor belt
8	Supports	17	tail pulley
9	basic frame		



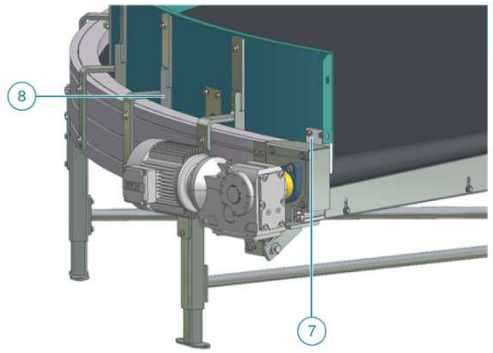
Safety Parts

Pos.	Description
1	finger guard insert
2	finger guard, infeed side
3	bearing cover
4	bottom cover
5	finger guard
6	finger guard, discharge side



Safety Parts

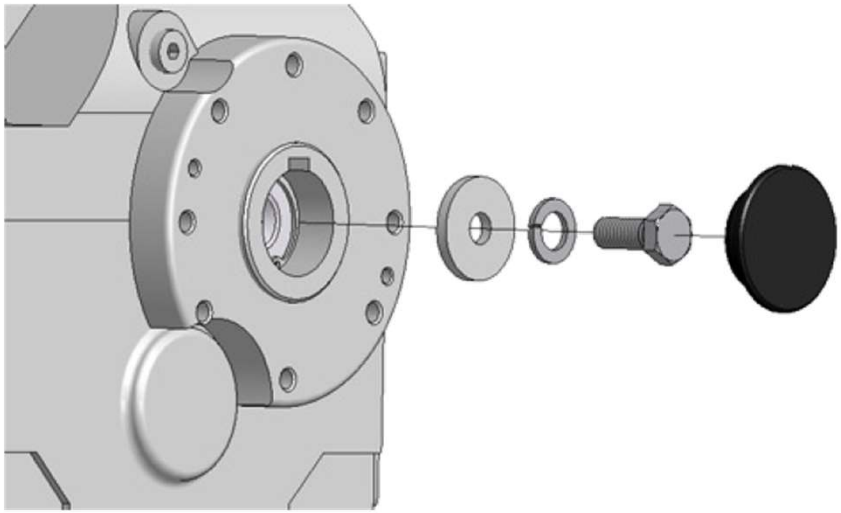
Pos.	Description
7	finger guard, side guide
8	finger guard, side guide



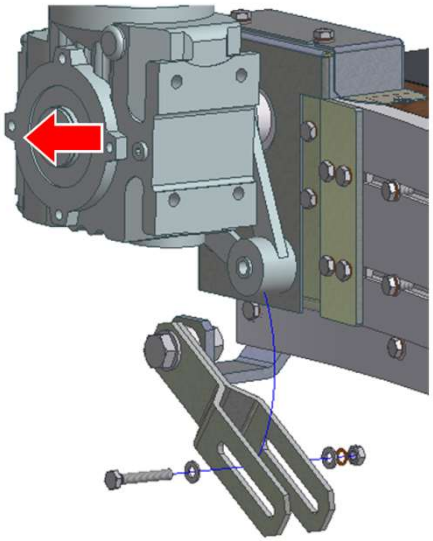
Replacement of parts

Replacement of the motor

- Remove the bolt from the motor and the motor support

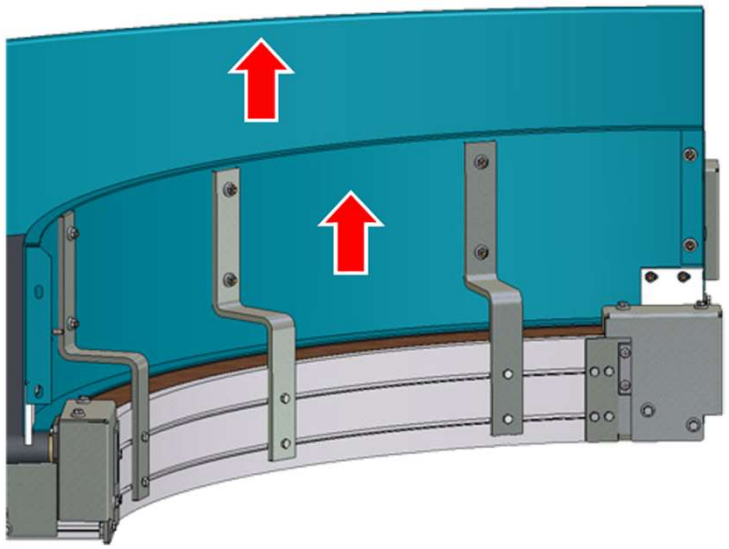


- Slide the motor of the axle

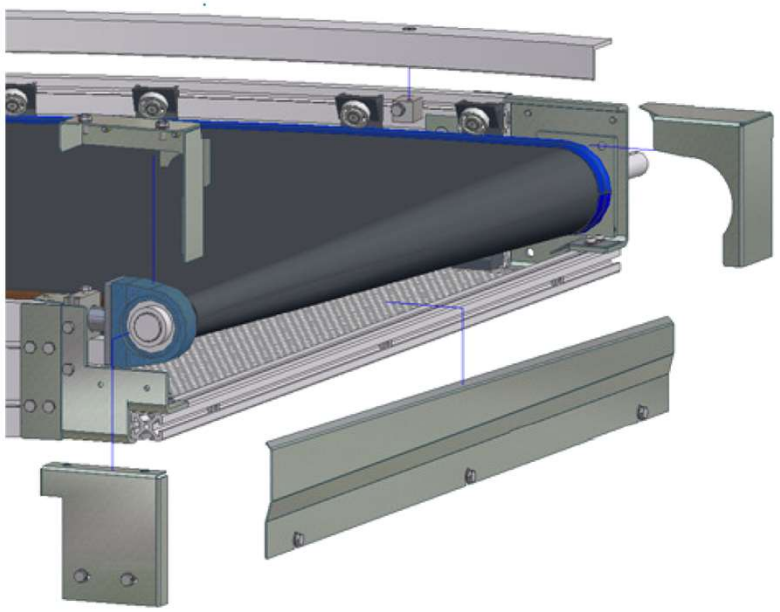


Replacement of the belt

- Remove side guard

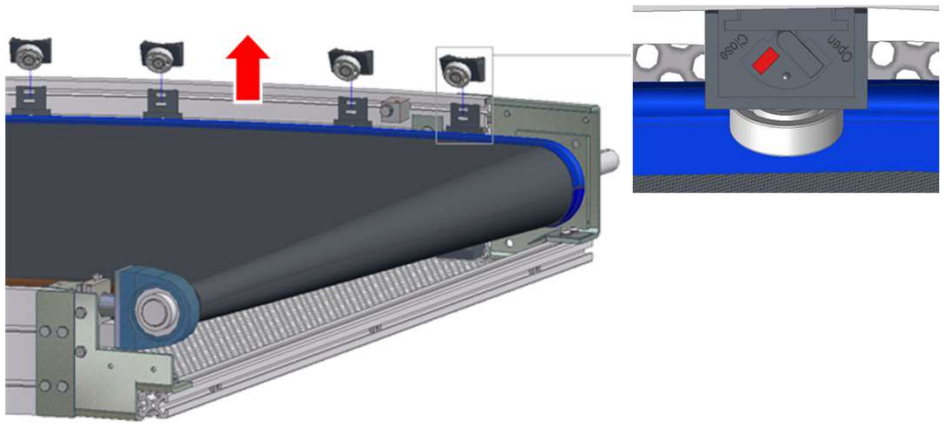


- Remove all the covers

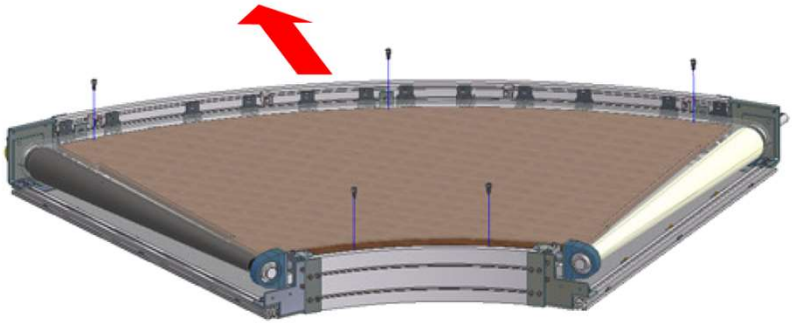


Replacement of the belt

- Pull off the upper parts of belt edge holder
  - Turn locking lever to „open“.

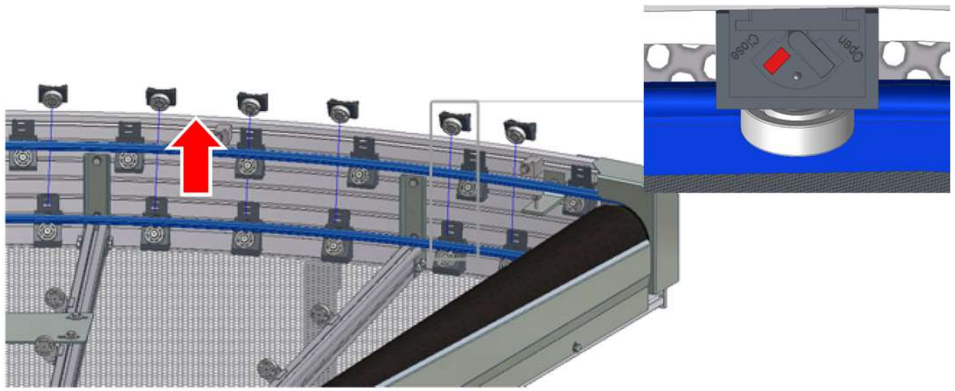


- Move the wooden plate to the outside radius

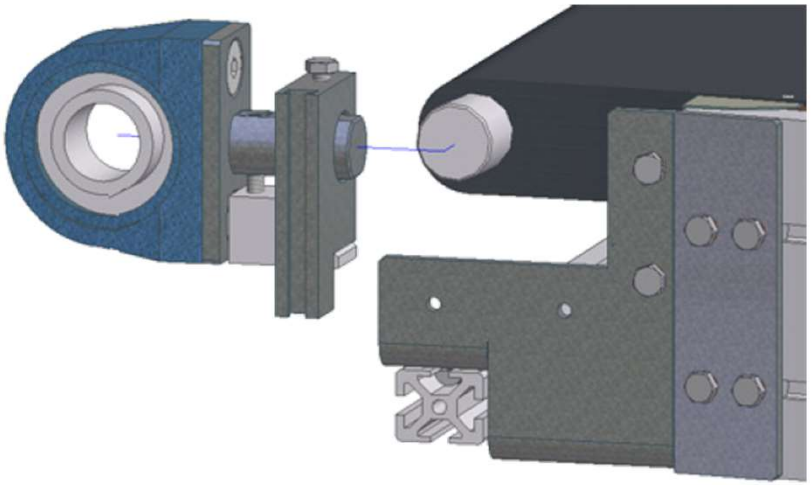


Replacement of the belt

- Pull off the upper parts of belt edge holders

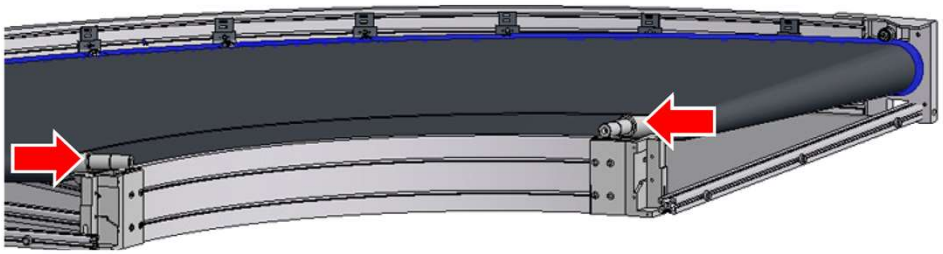


- Remove the inner bearings from the pulleys

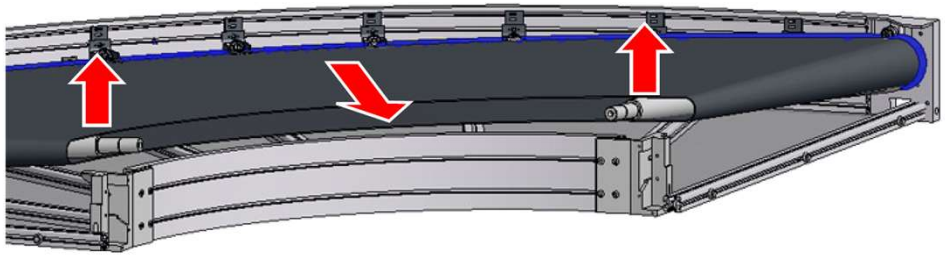


Replacement of the belt

- Move the rollers to the inside

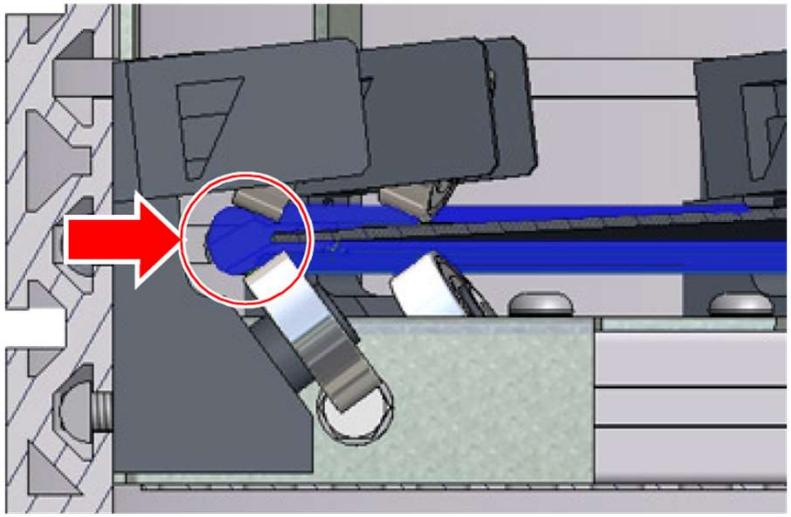


- Lift-up drive- and tail pulley and
- lift-off belt in the direction of the inside radius

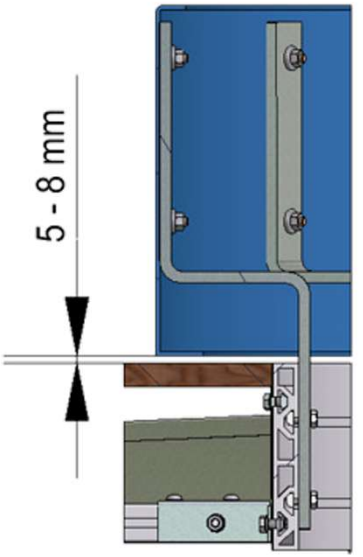


Replacement of the belt

- Attention point for install the new belt

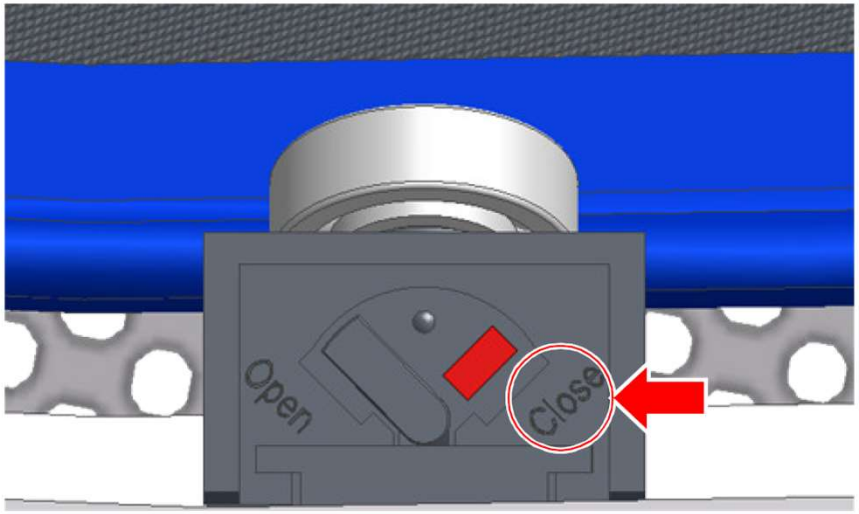


- Be aware of the height of the sideguard
  - The belt might damage



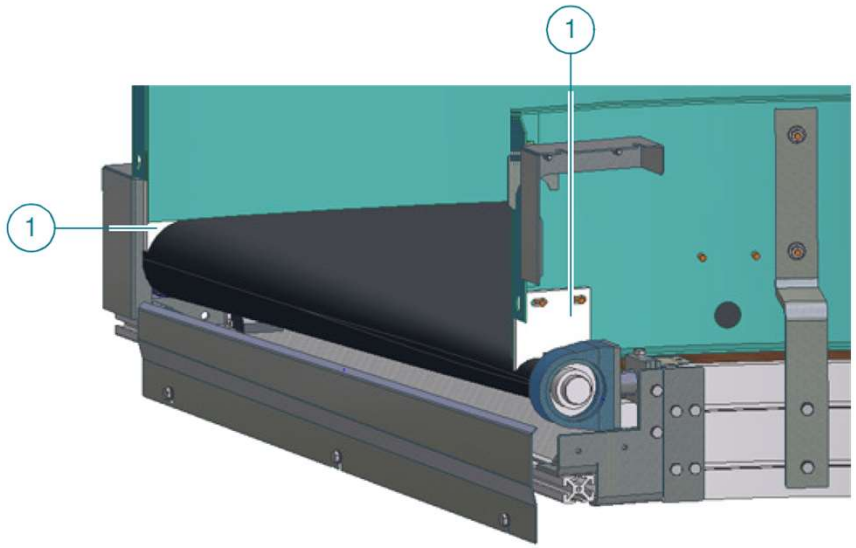
Replacement of the belt

- Make sure the belt edge holders are all closed



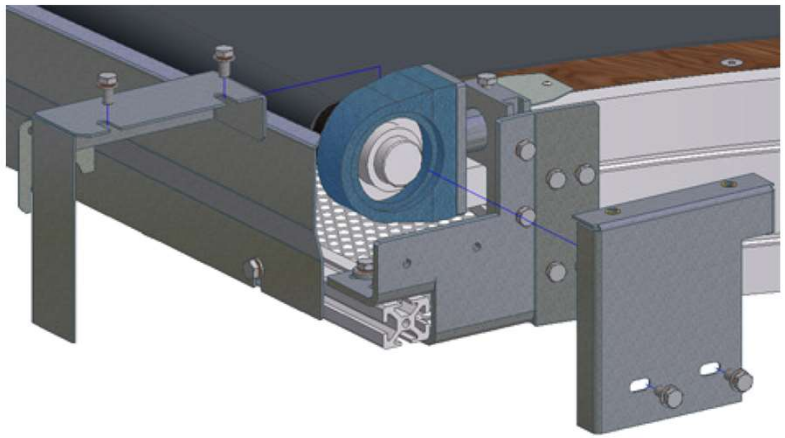
Mount finger plate

- Align and fasten finger plate (1), clearance <=5 mm.

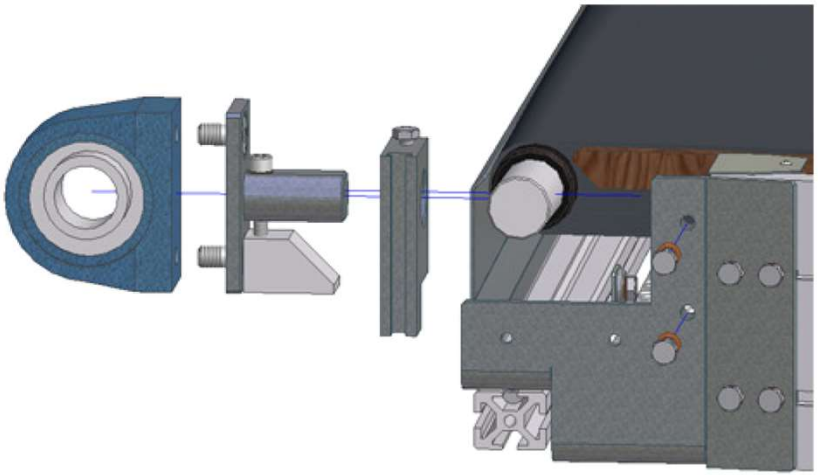


Replacement of the inner bearing, pedestal bearing

- Remove covers

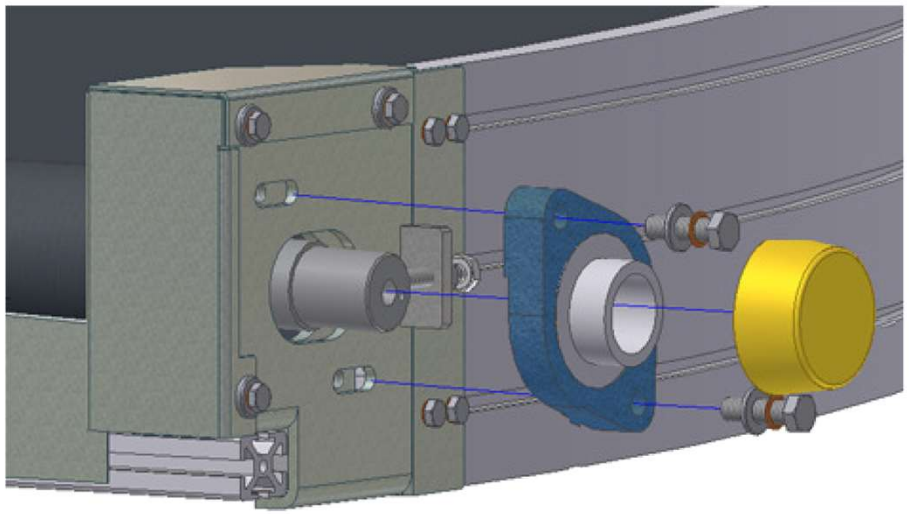


- Remove the bolts



Replacement of the outer bearing, flange bearing

- Remove covers and bolts

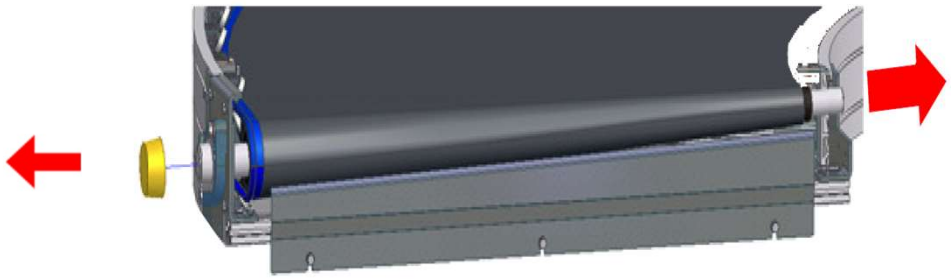


Replacement of the conical rollers

- Remove covers

(if drive pulley, remove the motor)

- Pull off the upper parts of belt edge holders
- Remove wooden plate
- Remove the inner and outer bearings
- Slide the roller to the inside



Troubleshooting

Troubleshooting

Detected disturbance	Possible cause	Fault clearance
Machine shutdown	Power supply disrupted, Malfunction message	Cause must be detected and eliminated by specialised staff
	Motor defect	Replace motor
Machine shutdown with running motor	Drive chain, drive belt ripped	Replace drive chain, drive belt
	Pulley journel is broken	Replace pulley
	Belt tension is too low	Tension and adjust belt
Stagnant belt run	Belt tension is too low	Tension and adjust belt
	Belt edge is damaged	Replace belt
	Belt is blocked by foreign particles	Remove foreign particles
Belt jumps out of edge holders	Incorrect adjustment	Tension and adjust belt
Belt bulges	Belt is overstreched or was tensioned incorrectly	Tension and adjust belt, If necessary, replace belt

Troubleshooting

Detected disturbance	Possible cause	Fault clearance
Belt makes rubbing noise	Belt rubs on the beading edges	Tension and adjust belt
		readjust beading
		readjust drive pulley / pulley
Noise development / leakage on pulley bearings	Pulley journal turns in internal ring of bearing Bearing defective	Replace bearing, Replace pulley if necessary
Noise development / leakage on belt edge holders	Belt edge holders / bearings defective	Replace belt edge holders
Belt makes rubbing noise	Belt rubs on the beading edges	Tension and adjust belt
		readjust beading
		readjust drive pulley / pulley

Available document

- Health and Safety manual
- Generic maintenace procedures
- Maintain

Electrical

Agenda

- PROFINET
- Itoh Denki IB-P05
- SIEMENS G115D
- MGUI
- E-plan

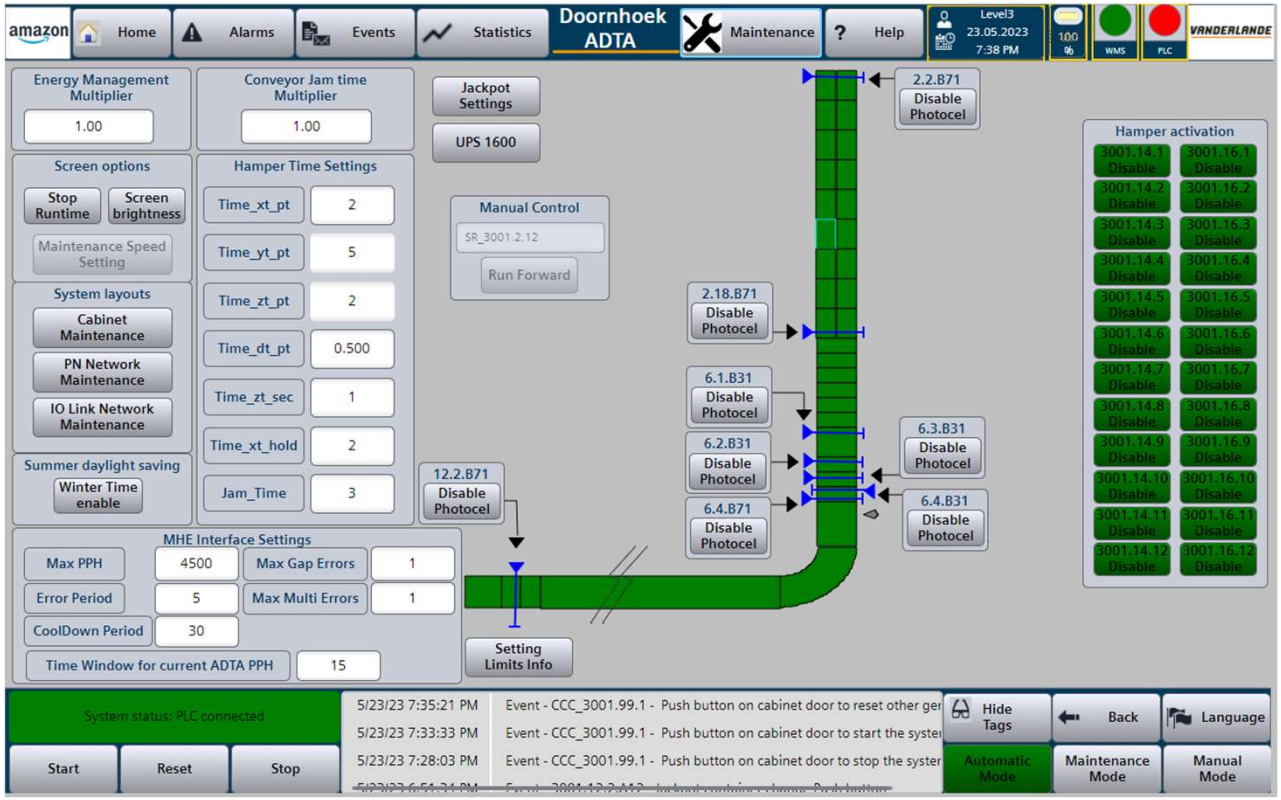
amazon VANDERLANDE

GUI

Colour coding

E-stop		E-Stop Activated
Unit Fault		Motor fault, VFD error
Jam		
100% Full		Chute/hamper full
75% Full		Chute/hamper 75% full
Running or ON		
Energy Saving		Unit is enabled and ready to start or started but not running due to timeout for no activity
Enabled/not Ready		Unit is enabled and ready to start or started but not running due to flow control (i.e.downstream is not ready)
OFF/Inactive/Disabled		Units is not started or enabled
Manual/Maintenance mode		Unit is in maintenance or manual mode
Gravity/not motorized		Forced status just for gravity conveyor/chute (hamper)

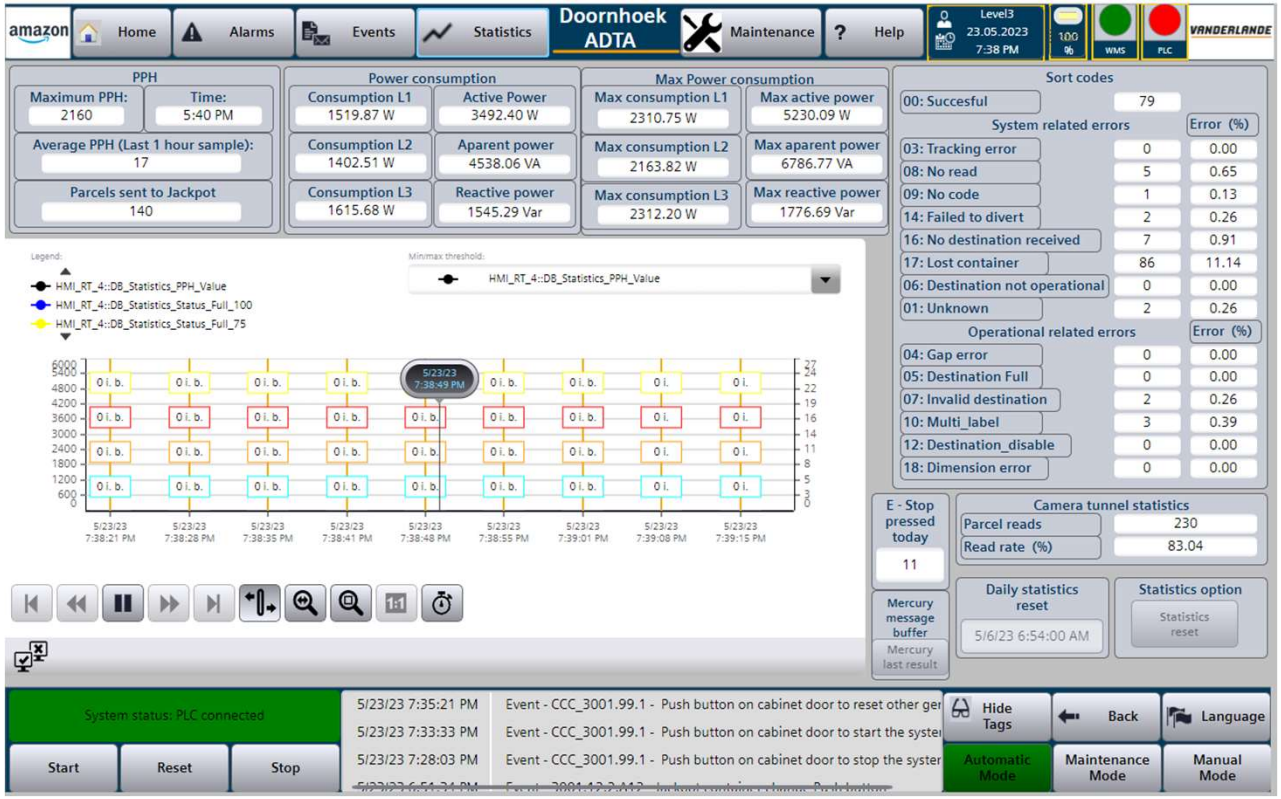
Maintenace screen



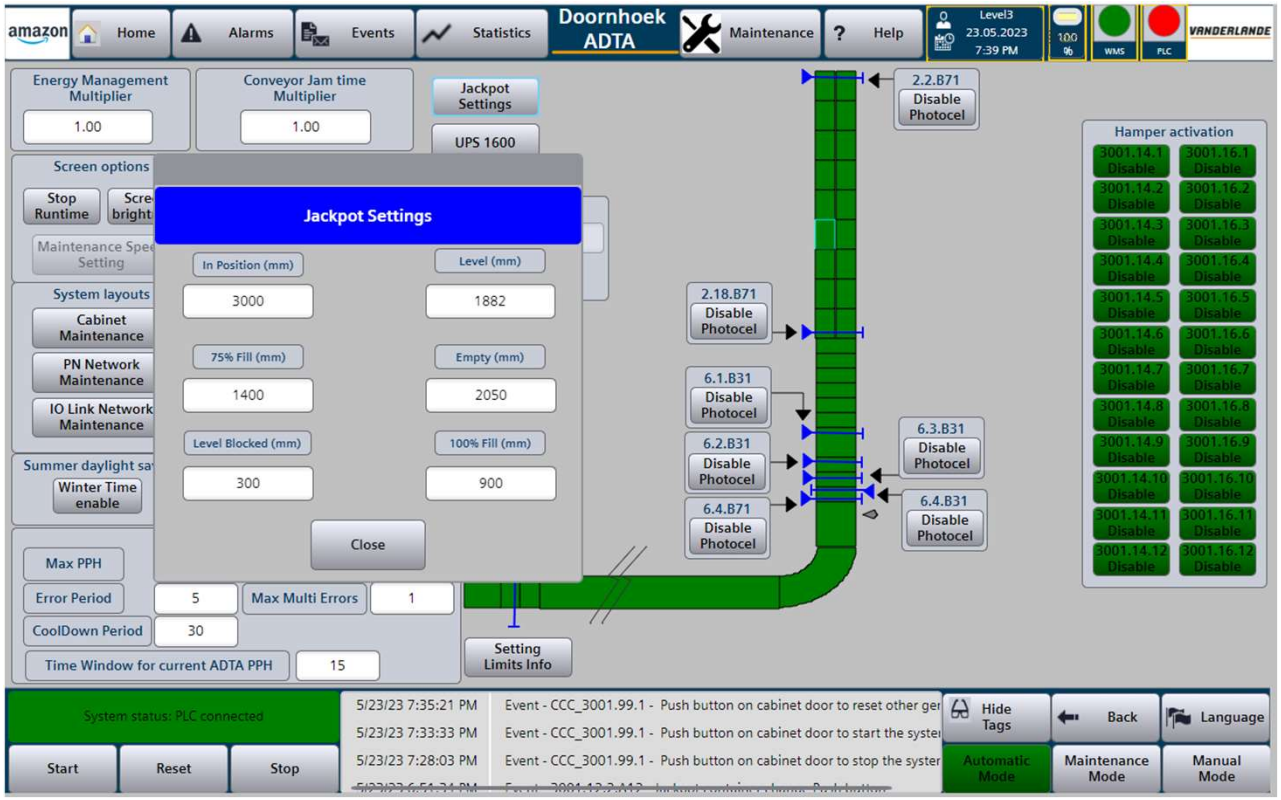
Login levels

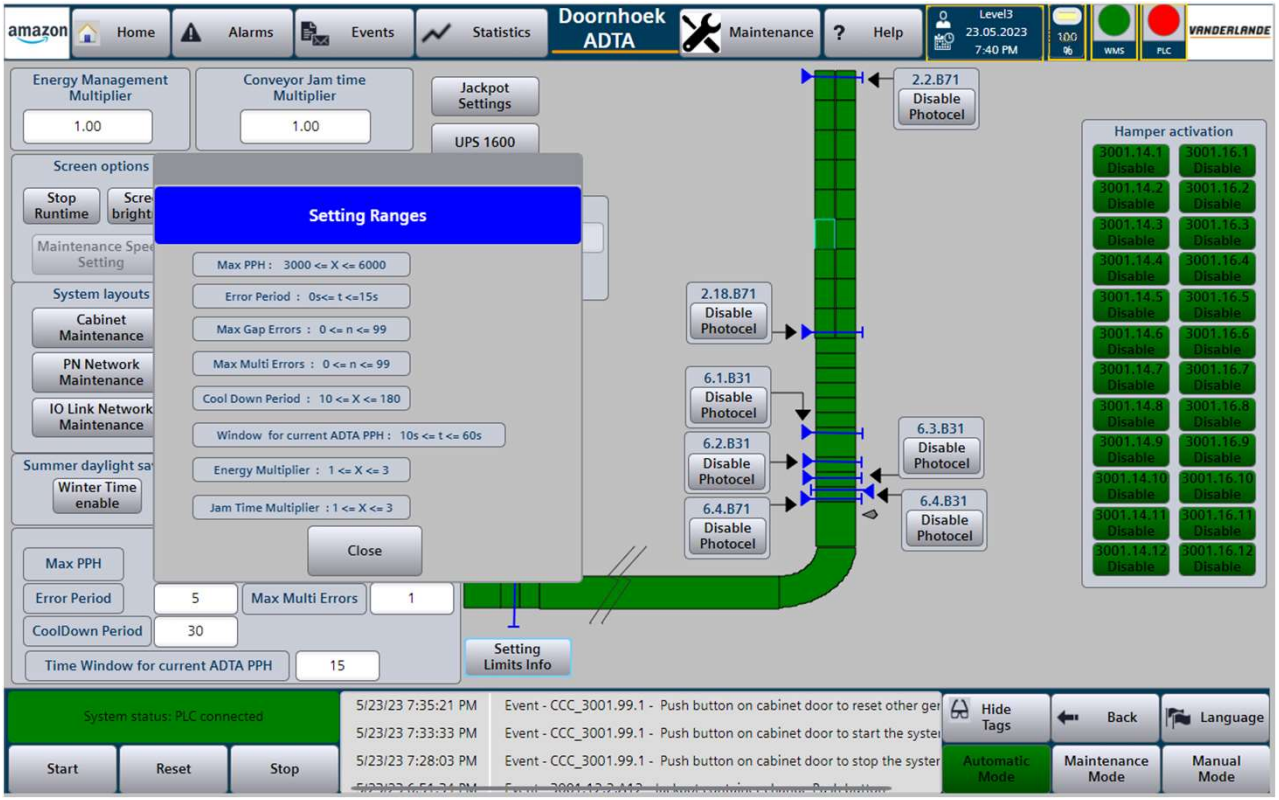
Username	Password	Applied to
Level2	Vanderlande2	Statistics page
Level3	Vanderlande3	Maintenance page
Level4	Vanderlande4	Speed settings / Manual conveyor run

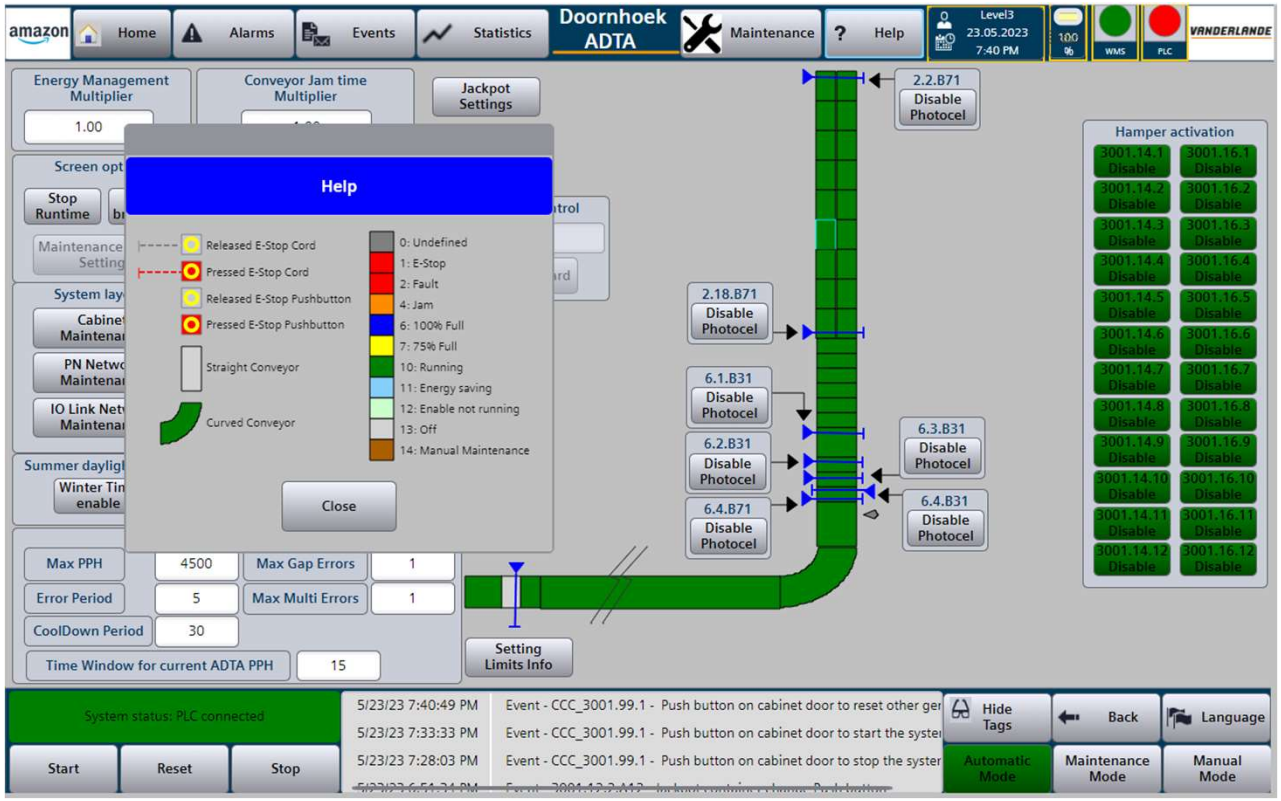
Statistics screen

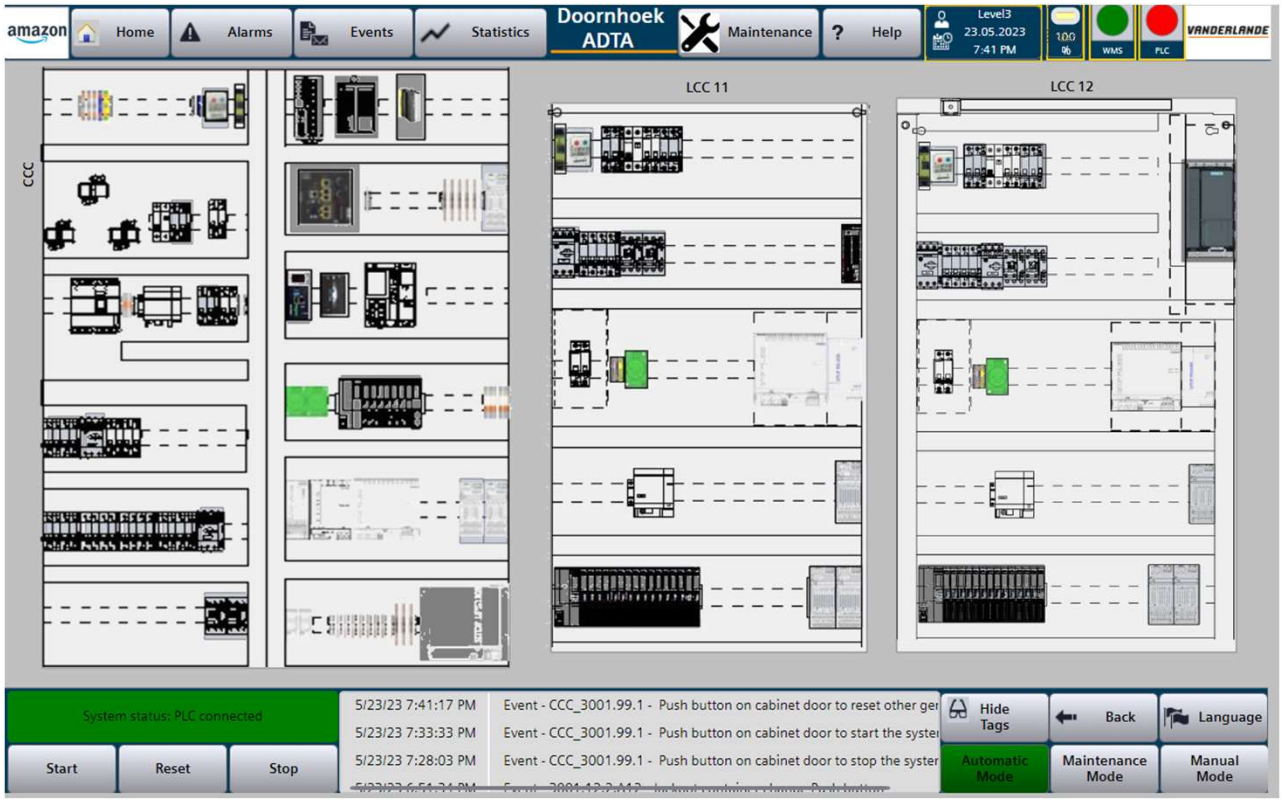


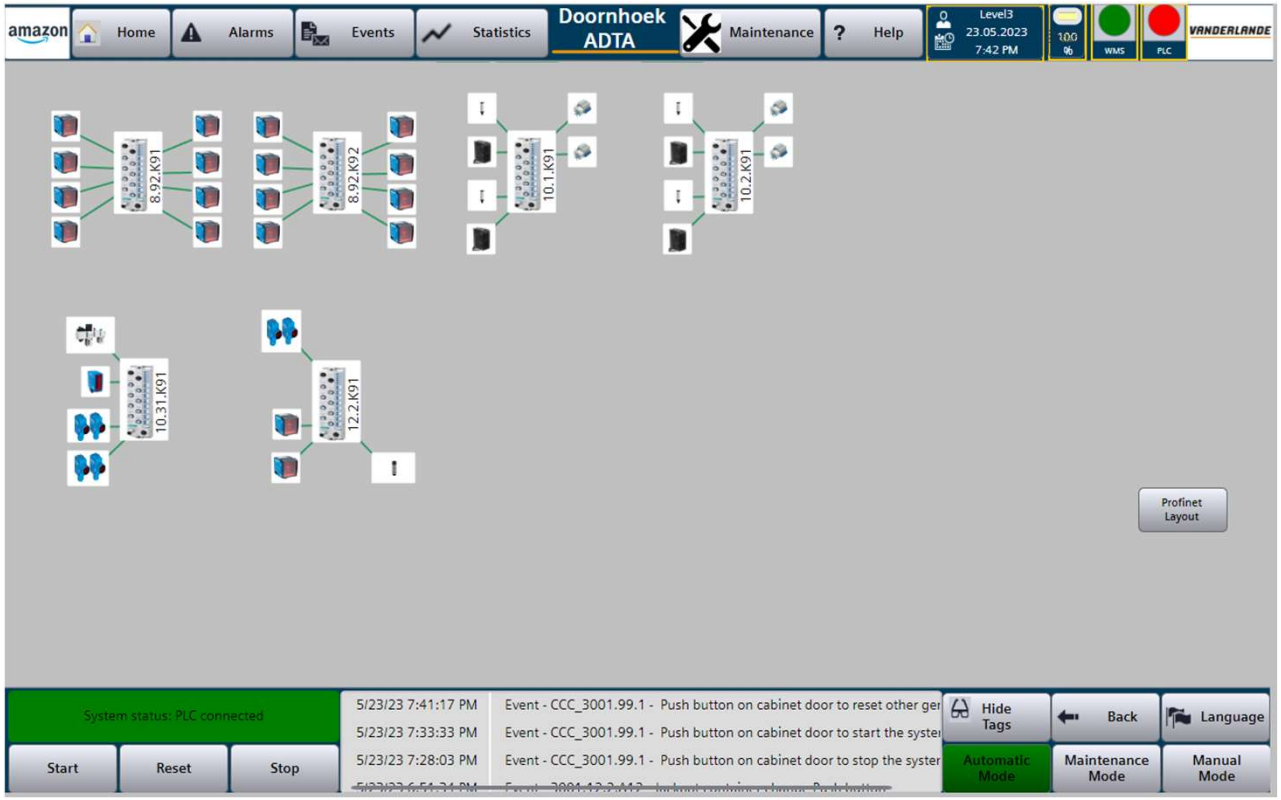
Jackpot screen




amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:40 PM
WMS
PLC
VANDERLANDE
Energy Management Multiplier
1.00
Conveyor Jam time Multiplier
1.00
Jackpot Settings
UPS 1600
Screen options
Stop Runtime
Maintenance Setting
System layouts
Cabinet Maintenance
PN Network Maintenance
IO Link Network Maintenance
Summer daylight sa
Winter Time enable
Setting Ranges
Max PPH : 3000 <= X <= 6000
Error Period : 0s<= t <=15s
Max Gap Errors : 0 <= n <= 99
Max Multi Errors : 0 <= n <= 99
Cool Down Period : 10 <= X <= 180
Window for current ADTA PPH : 10s <= t <= 60s
Energy Multiplier : 1 <= X <= 3
Jam Time Multiplier : 1 <= X <= 3
Close
Max PPH
Error Period
5
Max Multi Errors
1
CoolDown Period
30
Time Window for current ADTA PPH
15
Setting Limits Info
2.2.B71 Disable Photocel
2.18.B71 Disable Photocel
6.1.B31 Disable Photocel
6.2.B31 Disable Photocel
6.3.B31 Disable Photocel
6.4.B71 Disable Photocel
6.4.B31 Disable Photocel
Hamper activation
3001.14.1 Disable
3001.16.1 Disable
3001.14.2 Disable
3001.16.2 Disable
3001.14.3 Disable
3001.16.3 Disable
3001.14.4 Disable
3001.16.4 Disable
3001.14.5 Disable
3001.16.5 Disable
3001.14.6 Disable
3001.16.6 Disable
3001.14.7 Disable
3001.16.7 Disable
3001.14.8 Disable
3001.16.8 Disable
3001.14.9 Disable
3001.16.9 Disable
3001.14.10 Disable
3001.16.10 Disable
3001.14.11 Disable
3001.16.11 Disable
3001.14.12 Disable
3001.16.12 Disable
System status: PLC connected
5/23/23 7:35:21 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ge
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Start
Reset
Stop
Automatic Mode
Maintenance Mode
Manual Mode

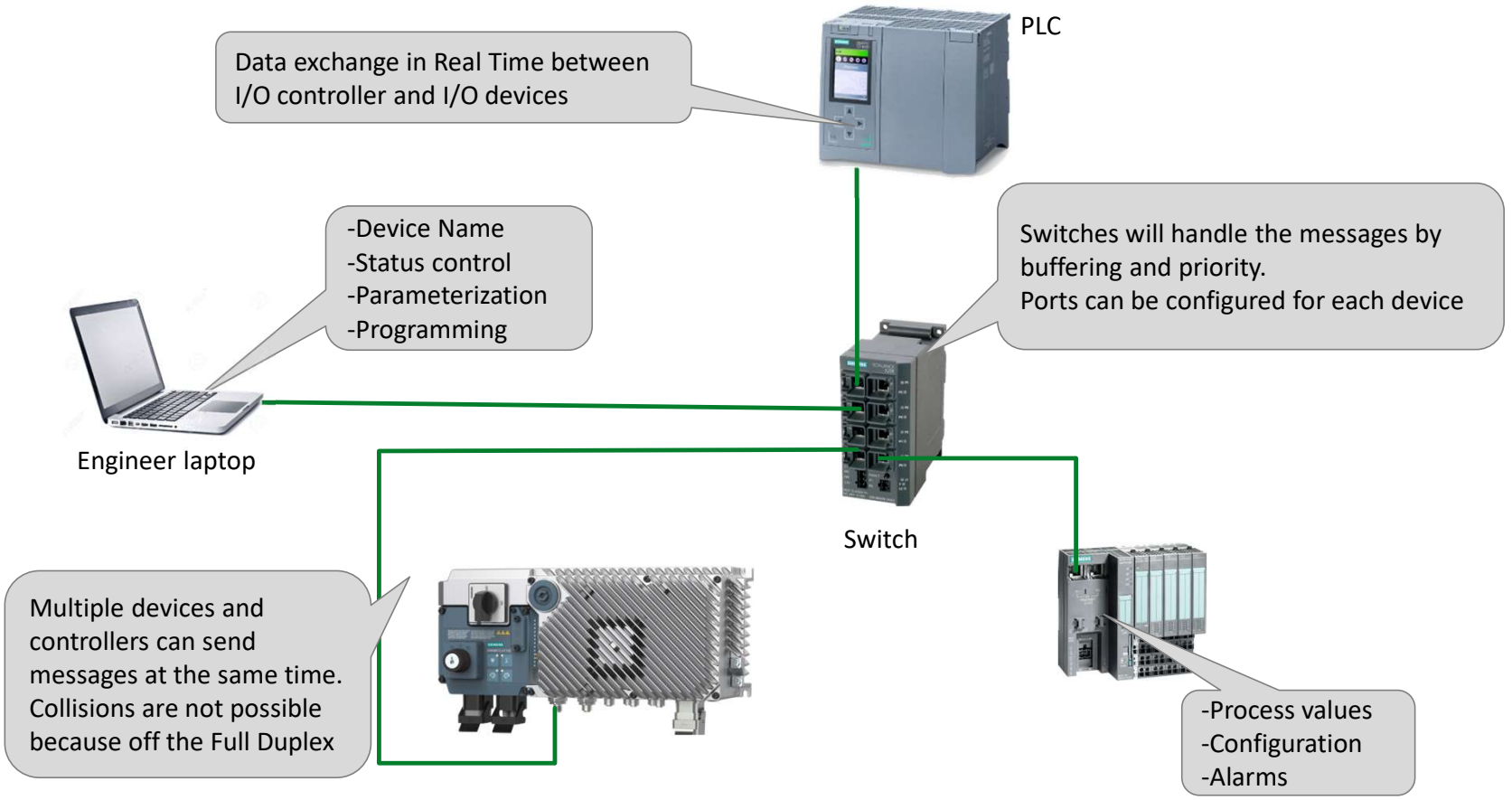

amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:40 PM
WMS
PLC
VANDERLANDE
Energy Management Multiplier
1.00
Conveyor Jam time Multiplier
Jackpot Settings
Help
Released E-Stop Cord
Pressed E-Stop Cord
Released E-Stop Pushbutton
Pressed E-Stop Pushbutton
Straight Conveyor
Curved Conveyor
0: Undefined
1: E-Stop
2: Fault
4: Jam
6: 100% Full
7: 75% Full
10: Running
11: Energy saving
12: Enable not running
13: Off
14: Manual Maintenance
Close
2.2.B71 Disable Photocel
2.18.B71 Disable Photocel
6.1.B31 Disable Photocel
6.2.B31 Disable Photocel
6.3.B31 Disable Photocel
6.4.B71 Disable Photocel
6.4.B31 Disable Photocel
Hamper activation
Max PPH
4500
Max Gap Errors
1
Error Period
5
Max Multi Errors
1
CoolDown Period
30
Time Window for current ADTA PPH
15
Setting Limits Info
System status: PLC connected
5/23/23 7:40:49 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Start
Reset
Stop
Automatic Mode
Maintenance Mode
Manual Mode


amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:41 PM
WMS
PLC
VANDERLANDE
CCC
LCC 11
LCC 12
System status: PLC connected
Start
Reset
Stop
5/23/23 7:41:17 PM
Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM
Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM
Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Automatic Mode
Maintenance Mode
Manual Mode


amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:42 PM
100 %
WMS
PLC
VANDERLANDE
8.92.K91
8.92.K92
10.1.K91
10.2.K91
10.31.K91
12.2.K91
Profinet Layout
System status: PLC connected
Start
Reset
Stop
5/23/23 7:41:17 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syste
Hide Tags
Back
Language
Automatic Mode
Maintenance Mode
Manual Mode

PROFINET

Profinet device roles, data exchange, device operation, etc



Profinet cable

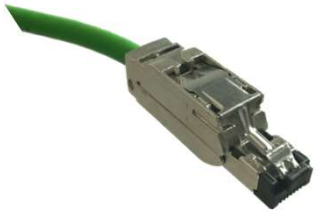
> Developed for industrial robustness

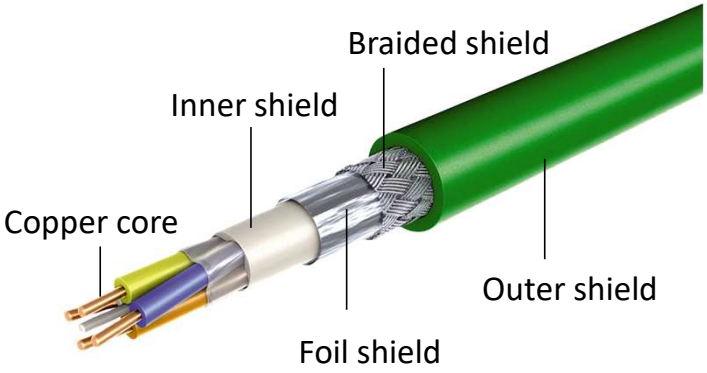
> 4 wire twisted cable

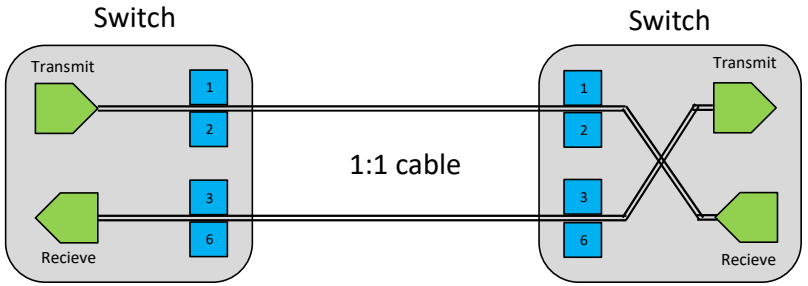
> Full duplex (transmission of data in two directions simultaneously)

> Cat 5 (100Mbps)

> Cable length max 100-meter between 2 devices (incl patch cables)



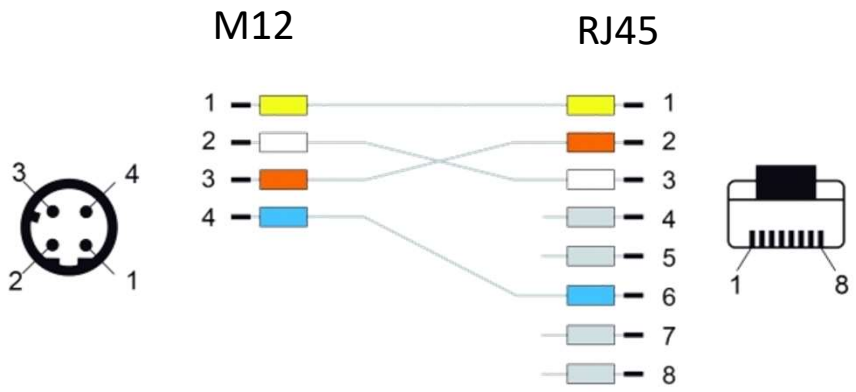




Switch automatically changes TX & RX

Cable striping & M12 vs RJ45 connector

> Cable stripping tool for M12 & RJ45



M12 connector can be used outside a cabinet

RJ45 connector is used inside a cabinet

Ethernet architecture

- Ring topology
  - Makes the network redundant
  - In a case that for a reason the ring topology is not working properly it can switch over to a line topology. This is a ring master switch function

amazon VANDERLANDE

IP – DNS – MAC addresses

IP address & subnet mask

> An IP address is used to identify each device connected in a network.

IP 11.200.3.30

IP address & subnet mask

> An IP address consists of a network part and a host part

> What the network part is, is determined by the subnet mask.

IP address & subnet mask

> For networks with more then 254 devices a different IP Address Class can be used

> Every class can contain a different number of hosts and has a different default subnet mask

– A specific range of IP addresses is reserved to be used in private (internal) networks

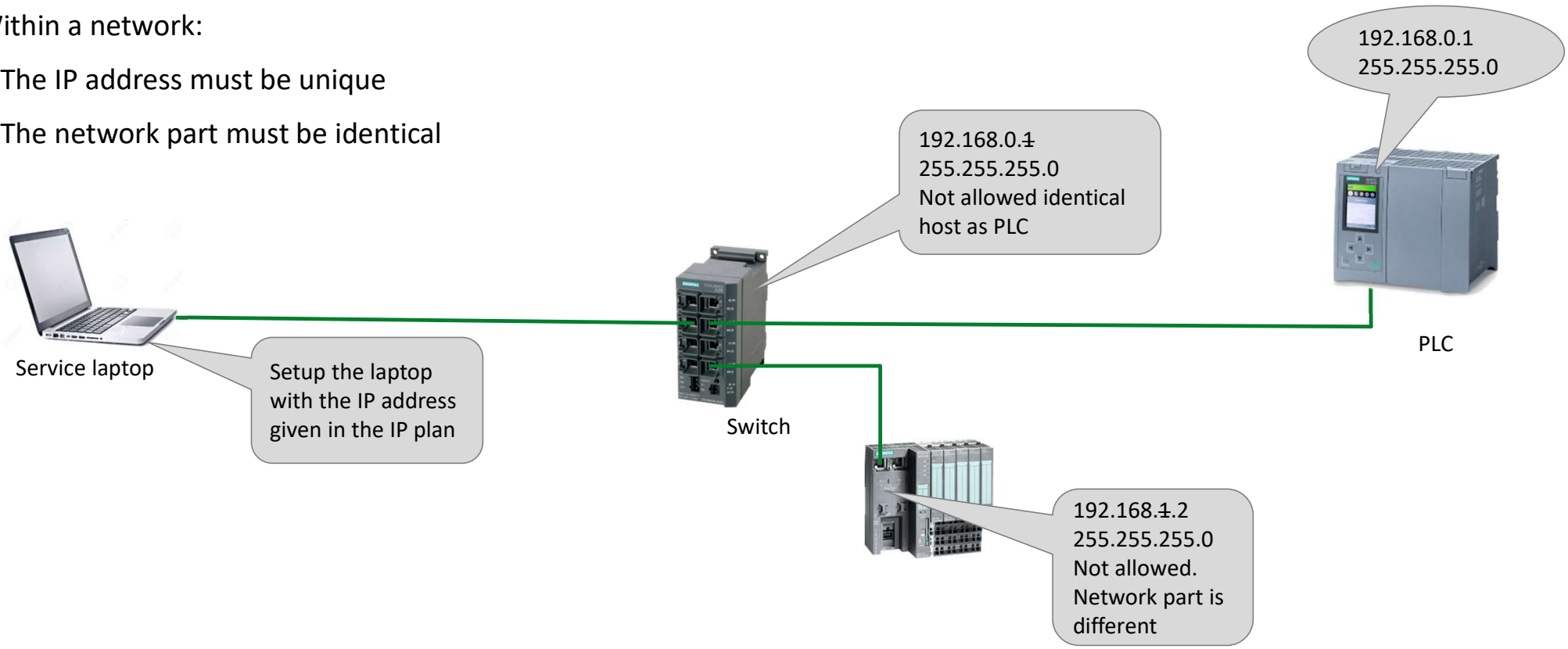
	Default subnet mask				First octet address	Maximum number of host in a netwok	Reserved adresses in private networks (not the WWW)	Example where used
Class C	Network	Network	Network	Host	192-223	254	192.168.0.0 - 192.168.255.255	Home network
	255.	255.	255.	0				

IP address & subnet mask

Within a network:

> The IP address must be unique

> The network part must be identical



IP plan

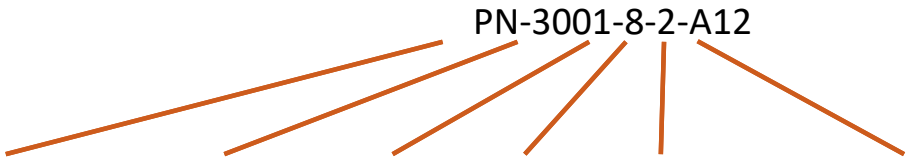
IP plan can be found on site in the hand over documentation Projectnumber-452*

> DNS (Domaine Name System) is a device naming system

DT	Device name	IP	
3001.1.1.A12	PN-3001-1-1-A12	11.200.3.130	RM
3001.1.2.A12	PN-3001-1-2-A12	11.200.3.131	RM
3001.1.81.K91	PN-3001-1-81-K91	11.200.3.240	RM
3001.2.1.A12	PN-3001-2-1-A12	11.200.3.30	
3001.2.2.A12	PN-3001-2-2-A12	11.200.3.31	
3001.2.3.A12	PN-3001-2-3-A12	11.200.3.32	
3001.2.4.A12	PN-3001-2-4-A12	11.200.3.33	
3001.2.5.A12	PN-3001-2-5-A12	11.200.3.34	
3001.2.6.A12	PN-3001-2-6-A12	11.200.3.35	
3001.2.7.A12	PN-3001-2-7-A12	11.200.3.36	
3001.2.8.A12	PN-3001-2-8-A12	11.200.3.37	
3001.2.9.A12	PN-3001-2-9-A12	11.200.3.38	
3001.2.10.A12	PN-3001-2-10-A12	11.200.3.39	
3001.2.11.A12	PN-3001-2-11-A12	11.200.3.40	
3001.2.12.A12	PN-3001-2-12-A12	11.200.3.41	
3001.2.13.A12	PN-3001-2-13-A12	11.200.3.42	
3001.2.14.A12	PN-3001-2-14-A12	11.200.3.43	
3001.2.15.A12	PN-3001-2-15-A12	11.200.3.44	
3001.2.16.A12	PN-3001-2-16-A12	11.200.3.45	
3001.2.17.A12	PN-3001-2-17-A12	11.200.3.46	
3001.2.18.A12	PN-3001-2-18-A12	11.200.3.47	

Example IP plan

Example device name in IP plan



PROFINET device-Area 3001- Zone 8-Object 2-I/O device, element number 12

DT	Device name	IP	
3001.8.2.A12	PN-3001-8-2-A12	11.200.3.91	
3001.8.3.A12	PN-3001-8-3-A12	11.200.3.92	BF
3001.8.91.B61	PN-3001-8-91-B61	11.200.3.195	

Diagnosis tools

Cable checking

- Cable checking devices are available on the market
  - E.g. FLUKE microscanner2

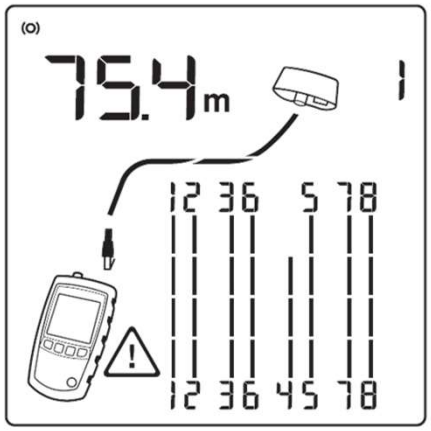
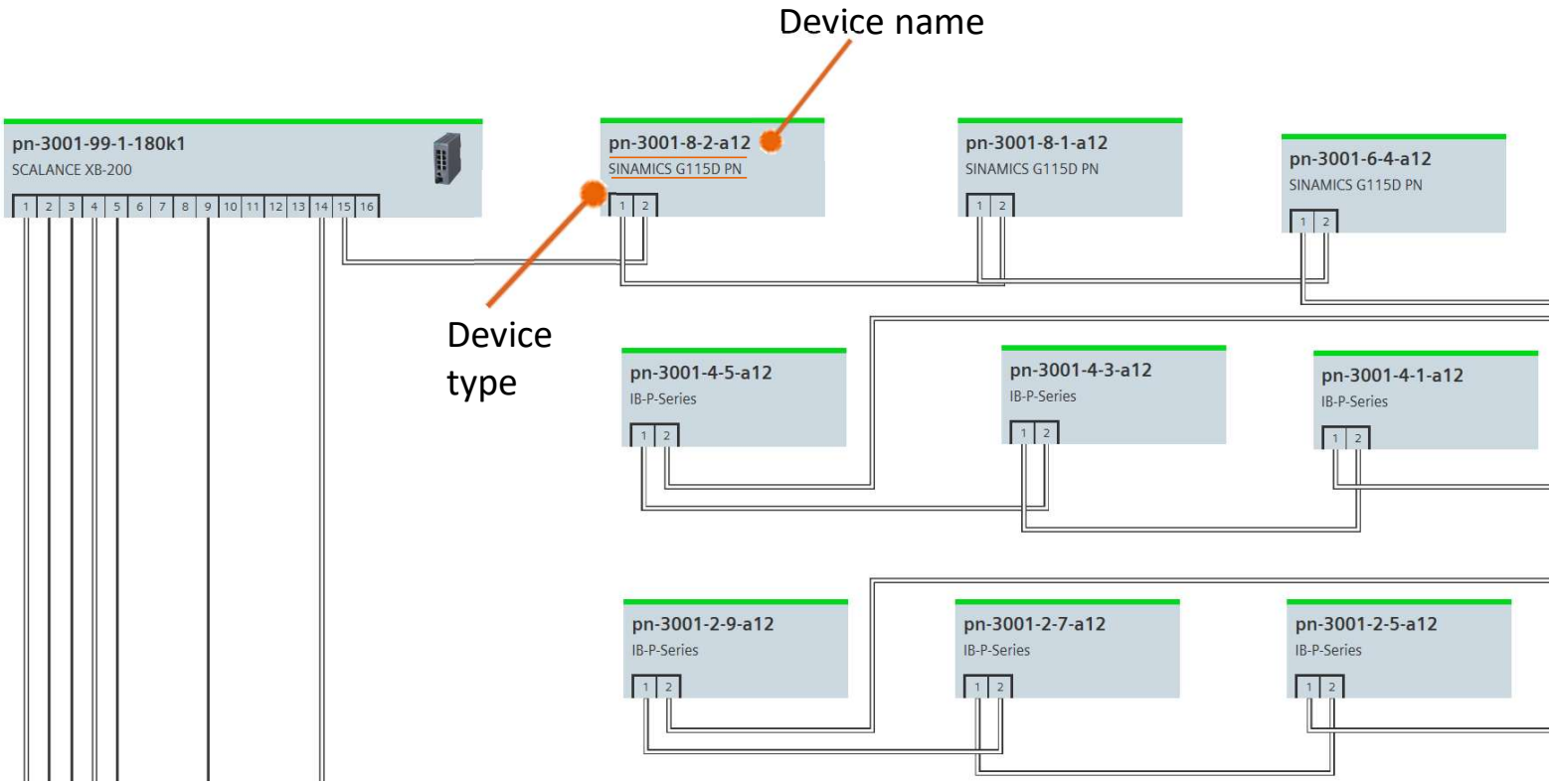


Figure 6. Open on Twisted Pair Cabling

Proneta scan

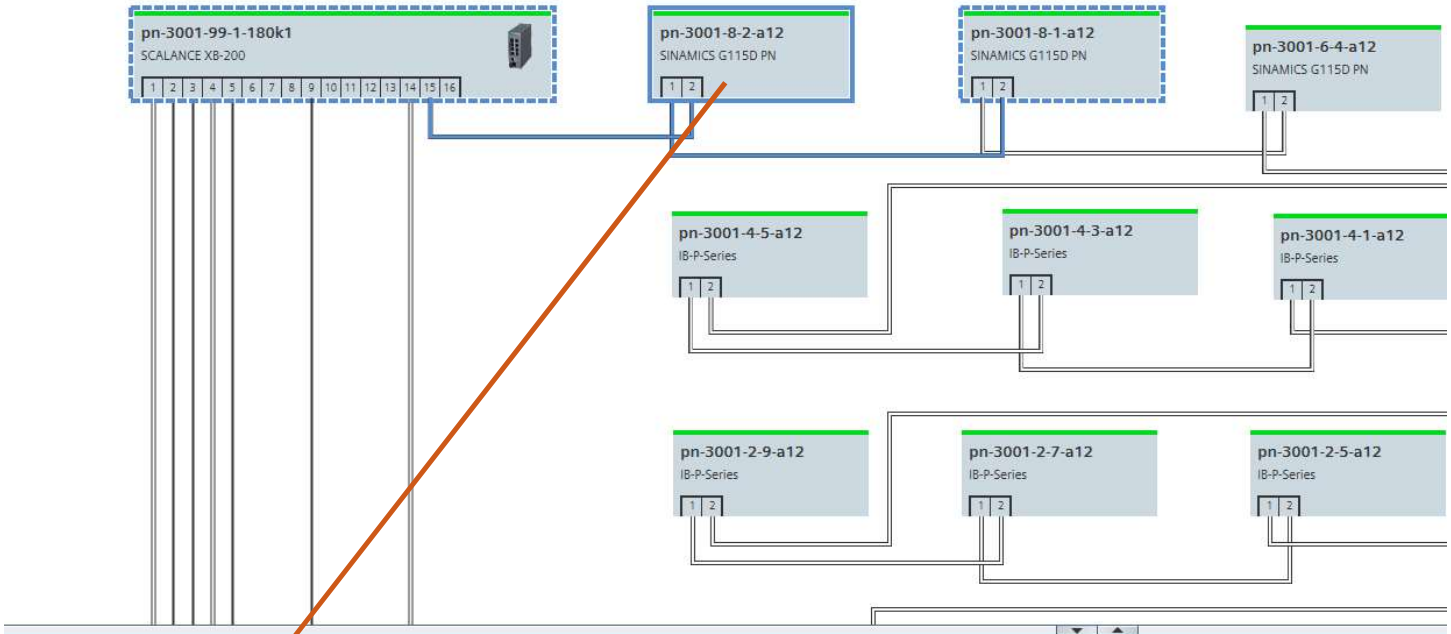


Proneta scan

Device Table - Offline

#	Name	Device Type	IP Address	Subnet Mask	MAC Address	Role	Vendor Name	Order Number
4	pn-3001-2-5-a12	IB-P-Series	11.200.3.34	255.255.255.0	00:22:21:80:eb:ae	Device	ITOH DENKI CO.,LTD.	IB-P-Series
5	pn-3001-4-3-a12	IB-P-Series	11.200.3.61	255.255.255.0	00:22:21:80:eb:b4	Device	ITOH DENKI CO.,LTD.	IB-P-Series
6	pn-3001-99-1-180k1	SCALANCE XB-200	11.200.3.191	255.255.255.0	38:4b:24:79:0a:00	Device	SIEMENS AG	6GK5 216-0BA00-2AB2
7	pn-3001-99-1-170k1	ET200SP	11.200.3.10	255.255.255.0	ec:1c:5d:81:0d:d7	Device	SIEMENS AG	6ES7 155-6AU01-0BN0
8	pn-3001-6-3-a12	SINAMICS G115D PN	11.200.3.77	255.255.255.0	68:3e:02:44:88:df	Device	SIEMENS AG	6SL3500-0XE50-7FA0
9	pn-3001-6-4-a12	SINAMICS G115D PN	11.200.3.78	255.255.255.0	68:3e:02:45:73:e1	Device	SIEMENS AG	6SL3500-0XE50-7FA0
10	pn-3001-8-1-a12	SINAMICS G115D PN	11.200.3.90	255.255.255.0	68:3e:02:44:9e:06	Device	SIEMENS AG	6SL3500-0XE51-1FA0
11	pn-3001-6-2-a12	SINAMICS G115D PN	11.200.3.76	255.255.255.0	68:3e:02:44:89:03	Device	SIEMENS AG	6SL3500-0XE50-7FA0
12	pn-3001-99-1-110p3	PAC3220	11.200.3.203	255.255.255.0	10:df:fc:06:a0:5c	Device	SIEMENS AG	7KM3220-1BA01-1EA0
13	ups1600	UPS1600	0.0.0.0	0.0.0.0	78:9f:87:05:79:58	Device	SIEMENS AG	

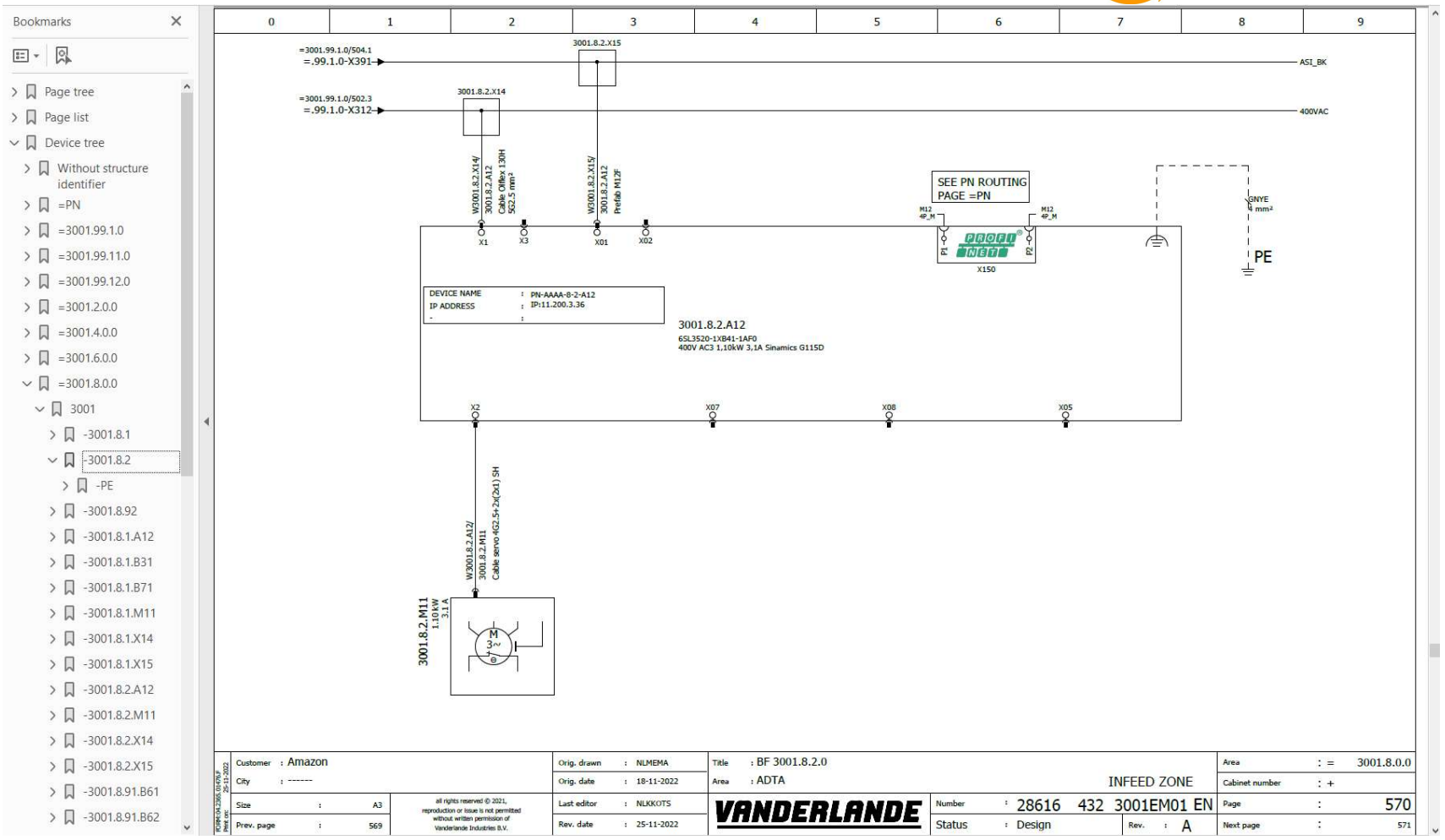
Devices have names and IP address



Device Table - Offline

#	Name	Device Type	IP Address	Subnet Mask	MAC Address	Role	Vendor Name	Order Number
27	pn-3001-2-6-a12	IB-P-Series	11.200.3.35	255.255.255.0	00:22:21:80:eb:71	Device	ITOH DENKI CO.,LTD.	IB-P-Series
28	pn-3001-2-17-a12	IB-P-Series	11.200.3.46	255.255.255.0	00:22:21:80:eb:74	Device	ITOH DENKI CO.,LTD.	IB-P-Series
29	pn-3001-8-2-a12	SINAMICS G115D PN	11.200.3.91	255.255.255.0	68:3e:02:44:9e:30	Device	SIEMENS AG	6SL3500-0XE51-1FA0

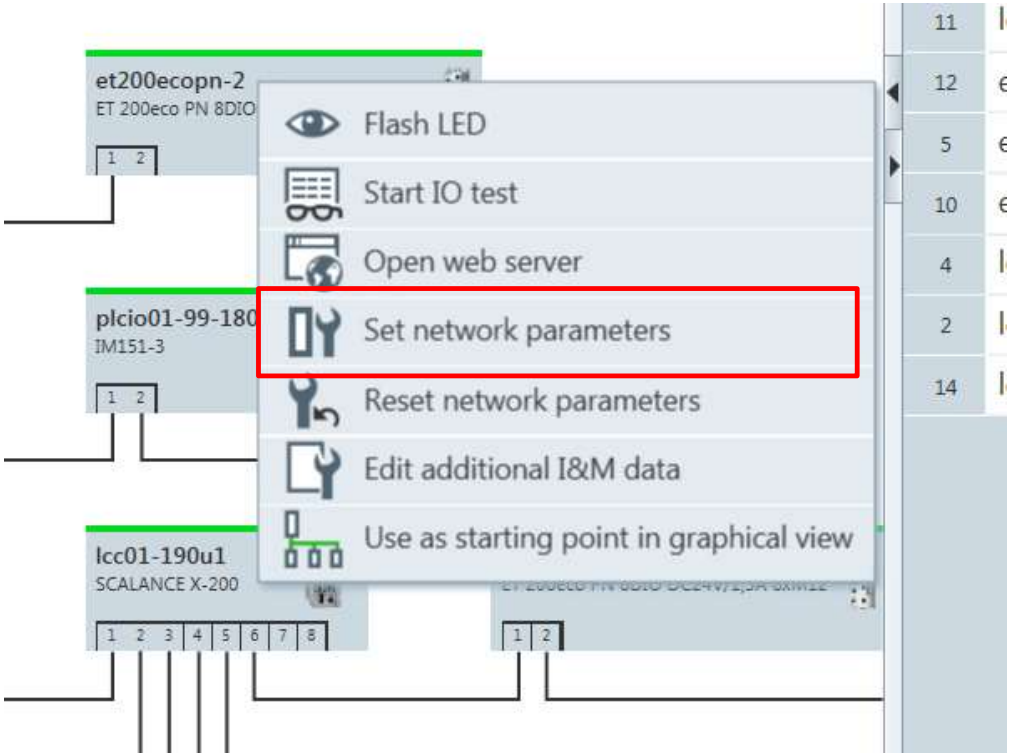
E-plan


Bookmarks
Page tree
Page list
Device tree
Without structure identifier
=PN
=3001.99.1.0
=3001.99.11.0
=3001.99.12.0
=3001.2.0.0
=3001.4.0.0
=3001.6.0.0
=3001.8.0.0
3001
-3001.8.1
-3001.8.2
-PE
-3001.8.92
-3001.8.1.A12
-3001.8.1.B31
-3001.8.1.B71
-3001.8.1.M11
-3001.8.1.X14
-3001.8.1.X15
-3001.8.2.A12
-3001.8.2.M11
-3001.8.2.X14
-3001.8.2.X15
-3001.8.91.B61
-3001.8.91.B62
0 1 2 3 4 5 6 7 8 9
=3001.99.1.0/504.1
=.99.1.0-X391
ASI_BK
=3001.99.1.0/502.3
=.99.1.0-X312
400VAC
3001.8.2.X15
3001.8.2.X14
W3001.8.2.X14/ 3001.8.2.A12 Cable Offlex 130H 5G2.5 mm²
W3001.8.2.X15/ 3001.8.2.A12 Prefab M12F
X1 X3 X01 X02
SEE PN ROUTING PAGE =PN
M12 4P_M
P1 P2
X150
GNYE 4 mm²
PE
DEVICE NAME : PN-AAAA-8-2-A12
IP ADDRESS : IP:11.200.3.36
3001.8.2.A12
6SL3520-1XB41-1AF0
400V AC3 1,10kW 3,1A Sinamics G115D
X2 X07 X08 X05
W3001.8.2.A12/ 3001.8.2.M11 Cable servo 4G2.5+2x(2x1) SH
3001.8.2.M11 1.10kW 3.1A
Customer : Amazon
City : ------
Size : A3
Prev. page : 569
all rights reserved © 2021, reproduction or issue is not permitted without written permission of Vanderlande Industries B.V.
Orig. drawn : NLMEMA
Orig. date : 18-11-2022
Last editor : NLKKOTS
Rev. date : 25-11-2022
Title : BF 3001.8.2.0
Area : ADTA
INFEED ZONE
VANDERLANDE
Number : 28616 432 3001EM01 EN
Status : Design
Rev. : A
Area : = 3001.8.0.0
Cabinet number : +
Page : 570
Next page : 571

Device options

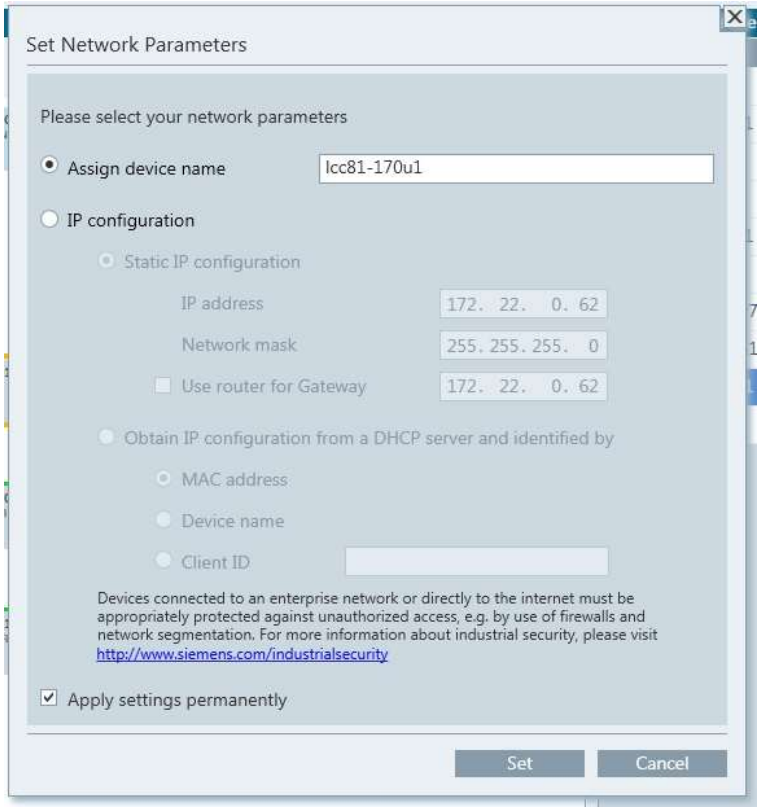
> Right click on a device

– Options will open



Modifying the modules name

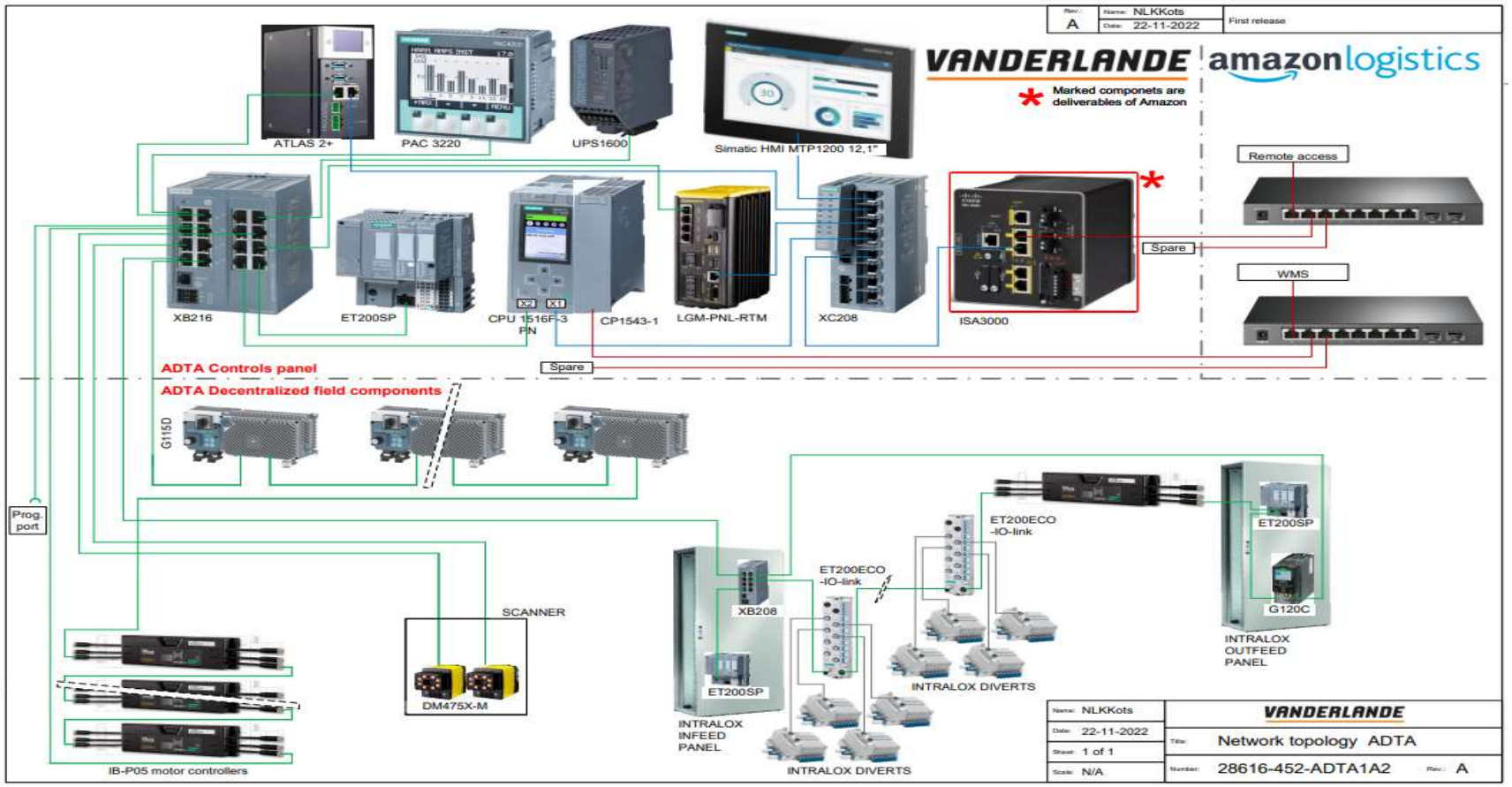
- Name should be modified when replacing a broken module by a new one
- Double click on the component
- Modify the name, click set
  - See IP plan
- When name is set, the module will be recognised by the controller and assigned an IP address



Tip

> It is advised to connect up the new module to your laptop first and assign the device name before connecting it to the network.

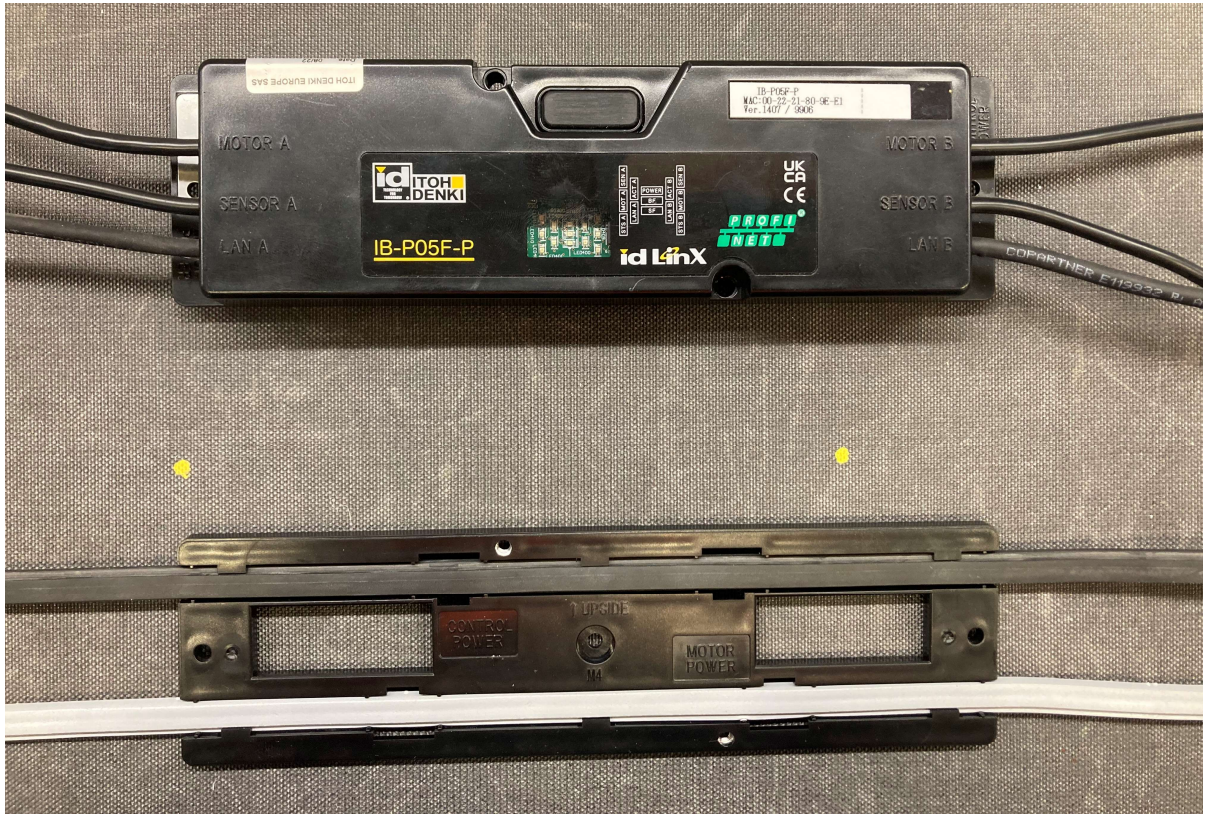
Network


A
NLKKots
22-11-2022
First release
VANDERLANDE
amazonlogistics
* Marked componets are deliverables of Amazon
ATLAS 2+
PAC 3220
UPS1600
Simatic HMI MTP1200 12,1"
Remote access
WMS
XB216
ET200SP
CPU 1516F-3 PN
CP1543-1
LGM-PNL-RTM
XC208
ISA3000
Spare
ADTA Controls panel
ADTA Decentralized field components
G115D
Prog. port
SCANNER
DM475X-M
IB-P05 motor controllers
XB208
ET200SP
INTRALOX INFEED PANEL
ET200ECO -IO-link
INTRALOX DIVERTS
ET200SP
G120C
INTRALOX OUTFEED PANEL
NLKKots
22-11-2022
1 of 1
N/A
VANDERLANDE
Network topology ADTA
28616-452-ADTA1A2
A

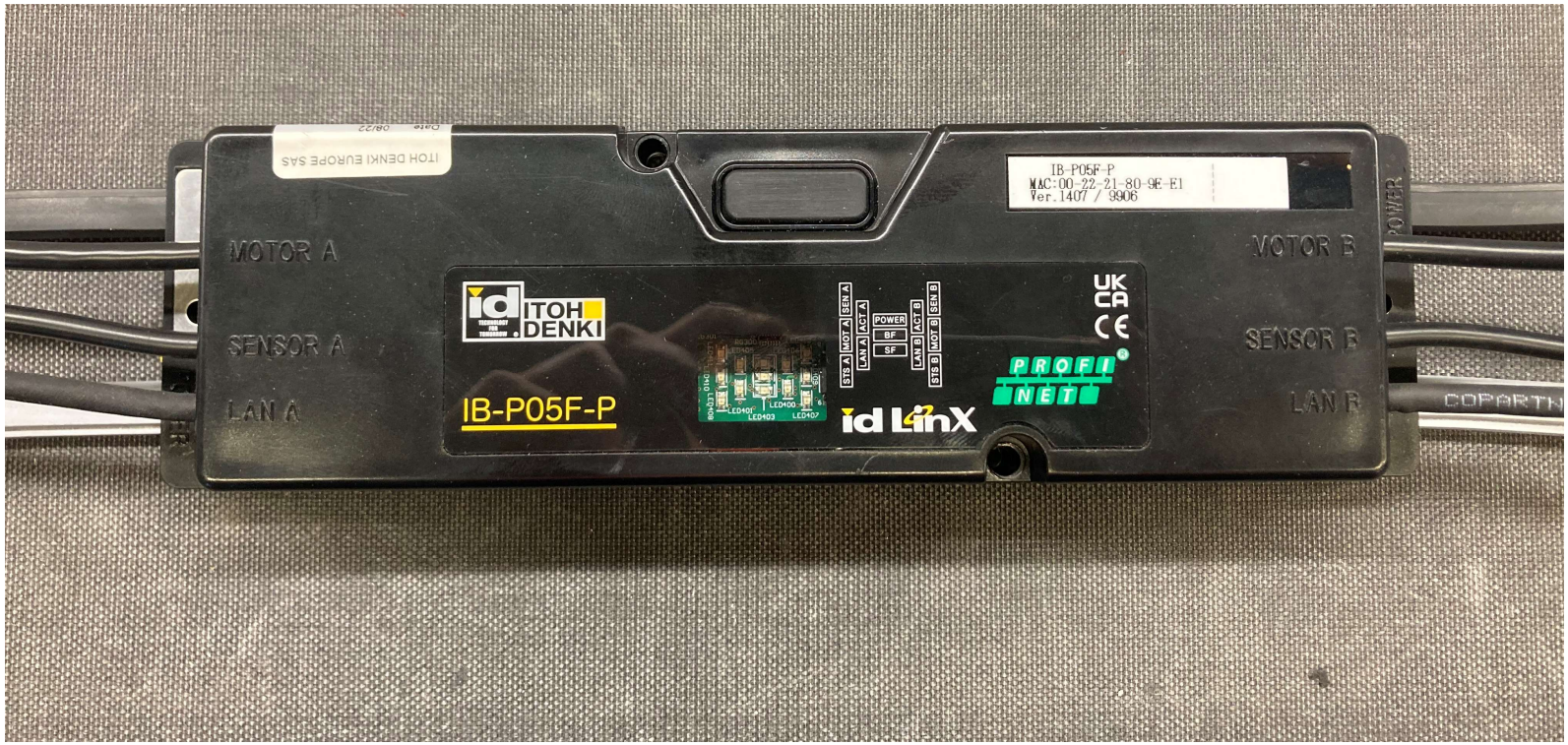
Itoh Denki

Power connection

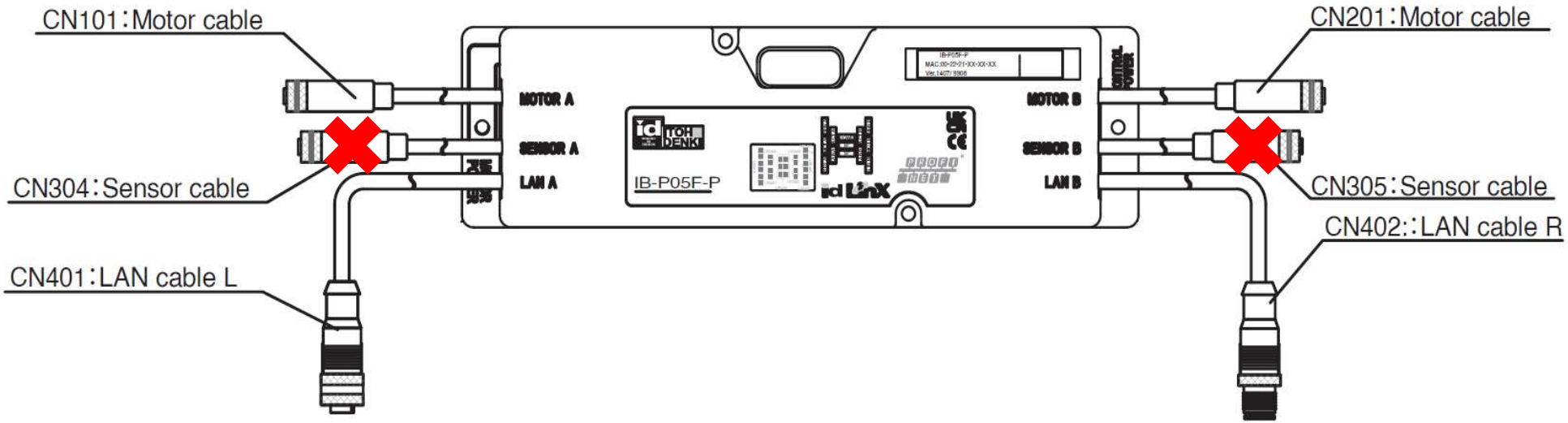
- Control power = Black
- Motor power = Grey



IB-P05 (front)

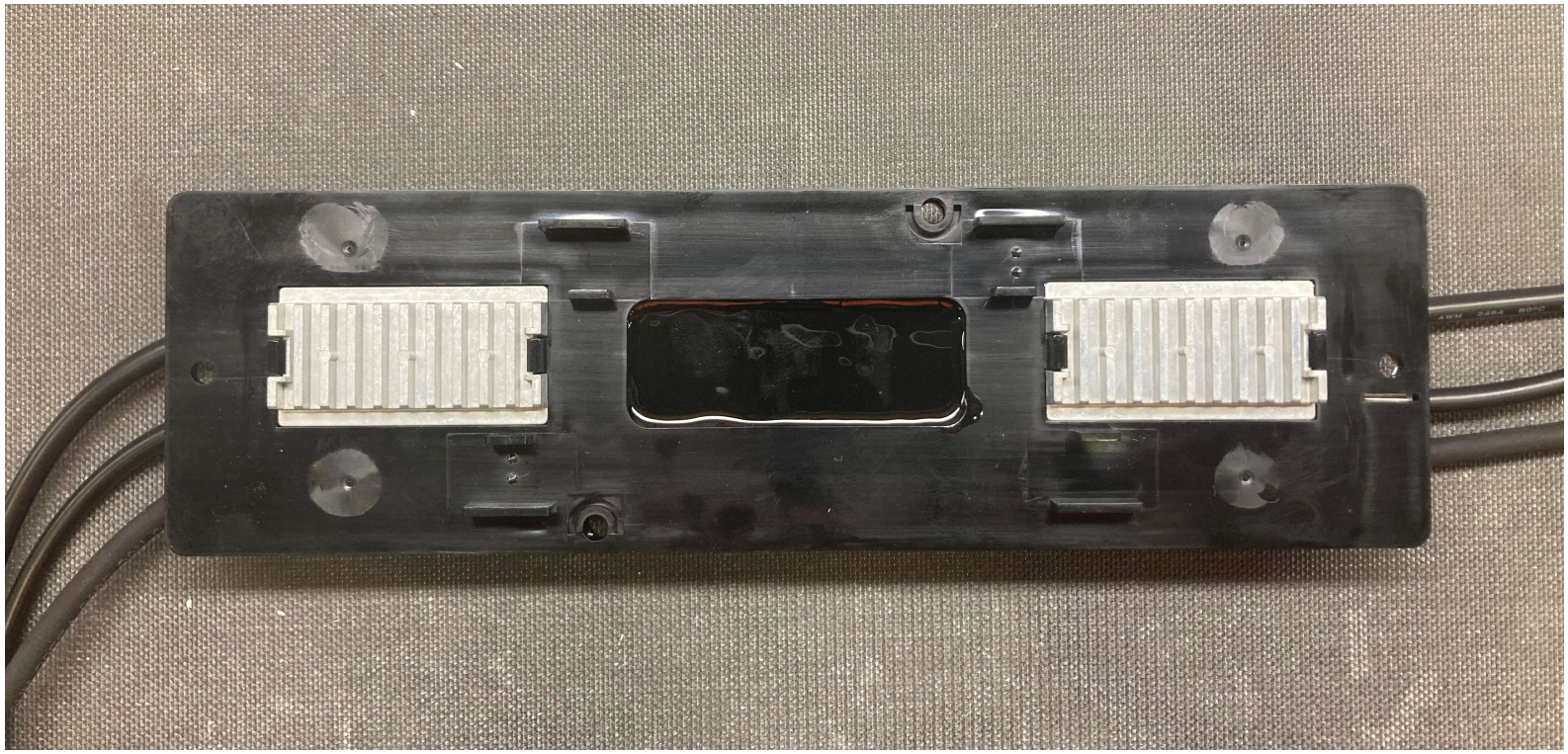

MOTOR A
SENSOR A
LAN A
MOTOR B
SENSOR B
LAN B
POWER
IB-P05F-P
MAC-00-22-21-80-9E-E1
Ver.1407 / 9906
ITOH DENKI
IB-P05F-P
POWER
BF
SF
id LinX
PROFI NET
UK CA
CE

IB-P05 (front)

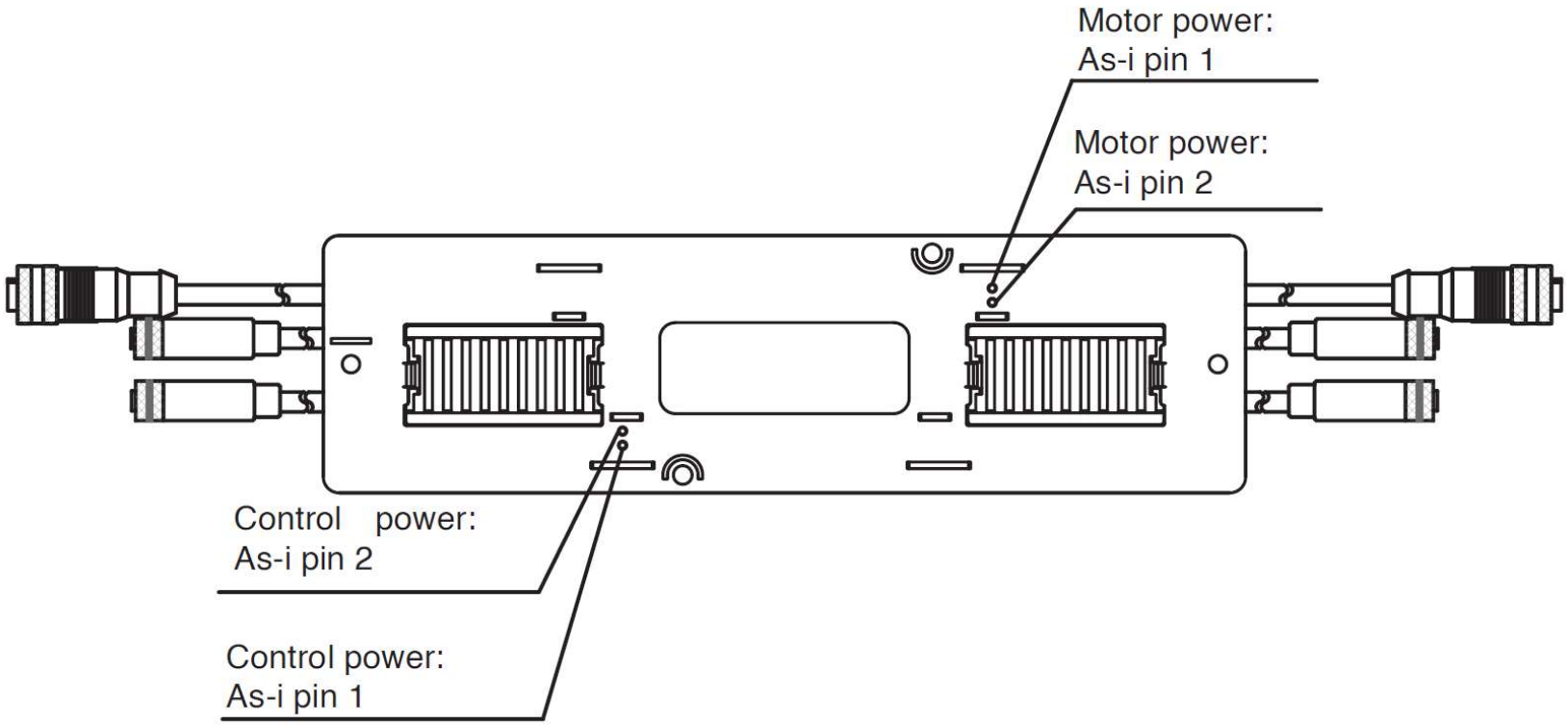


Not connected in the SR Herringbone

IB-P05 (back)



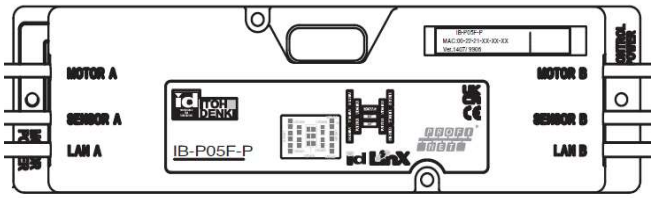
IB-P05 (back)

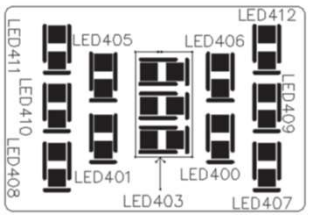


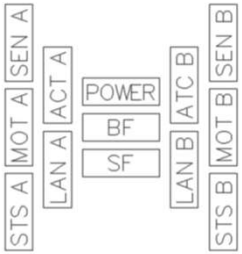
Back side

Introduction

Target LED	LED pattern Green	LED pattern Red	Description
Sen A / Sen B	ON	-	Sensor input detected
Sen A / Sen B	OFF	-	Sensor input not detected
Power	ON	-	Control power supply ON
Power	Flash 6Hz	-	Power supply of DRV board OFF
Power	OFF	-	Control power supply OFF
System Fault (SF)	-	OFF	No error
LED 420	-	ON	System fault error
Bus Fault (BF)	-	OFF	No error
LED 421	-	ON	Bus fault error
LAN A /LAN /B	OFF	-	Disconnected LAN cable
LAN A /LAN /B	ON	-	Connected Lan cable electrically
ACT1 /ACT2	OFF	-	Not sending/receiving data
LED 400/401	Flash	-	Sending/receiving data

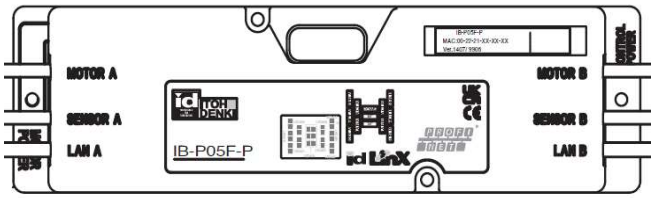


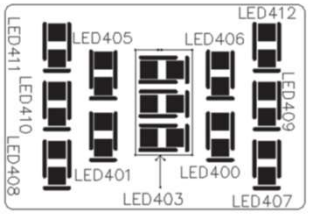


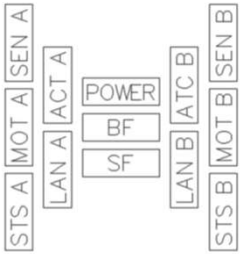


Introduction

Target LED	LED pattern Green MOT A /MOT B	LED pattern Red STS A / STS B	Description
	OFF	OFF	Motor stop (No error)
	ON	OFF	Rotation motor/motor port output (*2)
	ON	Flash 6 Hz	Blown fuse error
	OFF	Flash 1 HZ	Motor disconnect error
MOTOR A /B STS A/B	ON	Flash 1 Hz	Lock error
	OFF	ON	Motor or PCB thermal error
	ON	Flash 1.7s 6 Hz 2x	Back EMF error
	Flash Alternately 1 Hz	Flash Alternately 1 Hz	Jam error
	Flash Alternately 6 Hz	Flash Alternately 6 Hz	Software error
	Flash Alternately 2 Hz	Flash Alternately 2 Hz	Software error

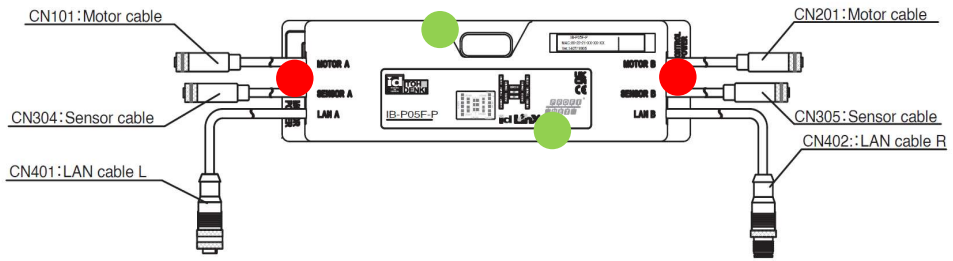






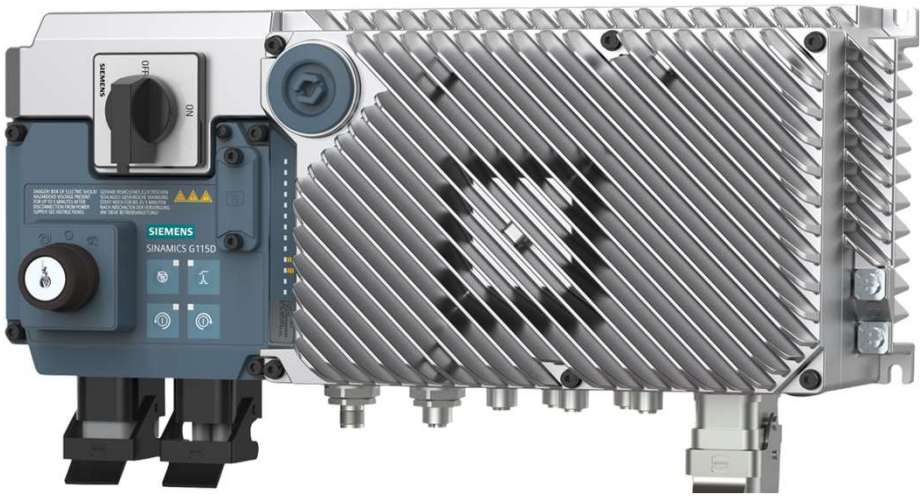
Replacement

- Remove 2 screw left and right
- Remove 2 screws in de middle
- Replace the backplate and install the motor power cable and the control cable
- Take a picture of the mac adress sticker which is placed on the controller
- Connect Proneta
- Assign the adress
- .
- .



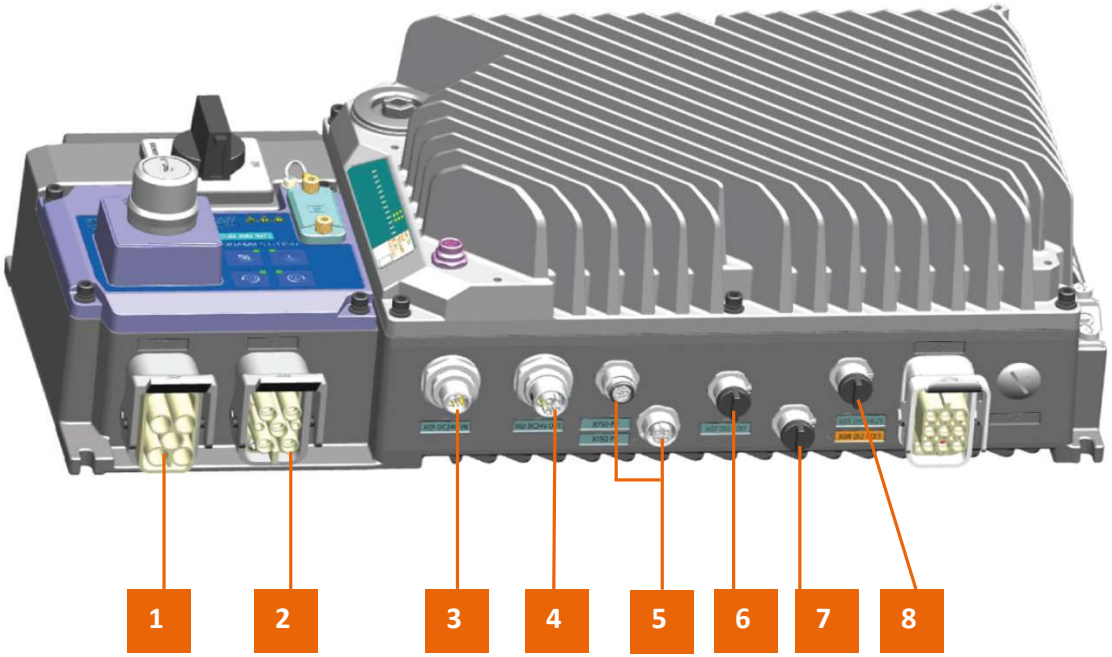
SIEMENS G115D

Introduction



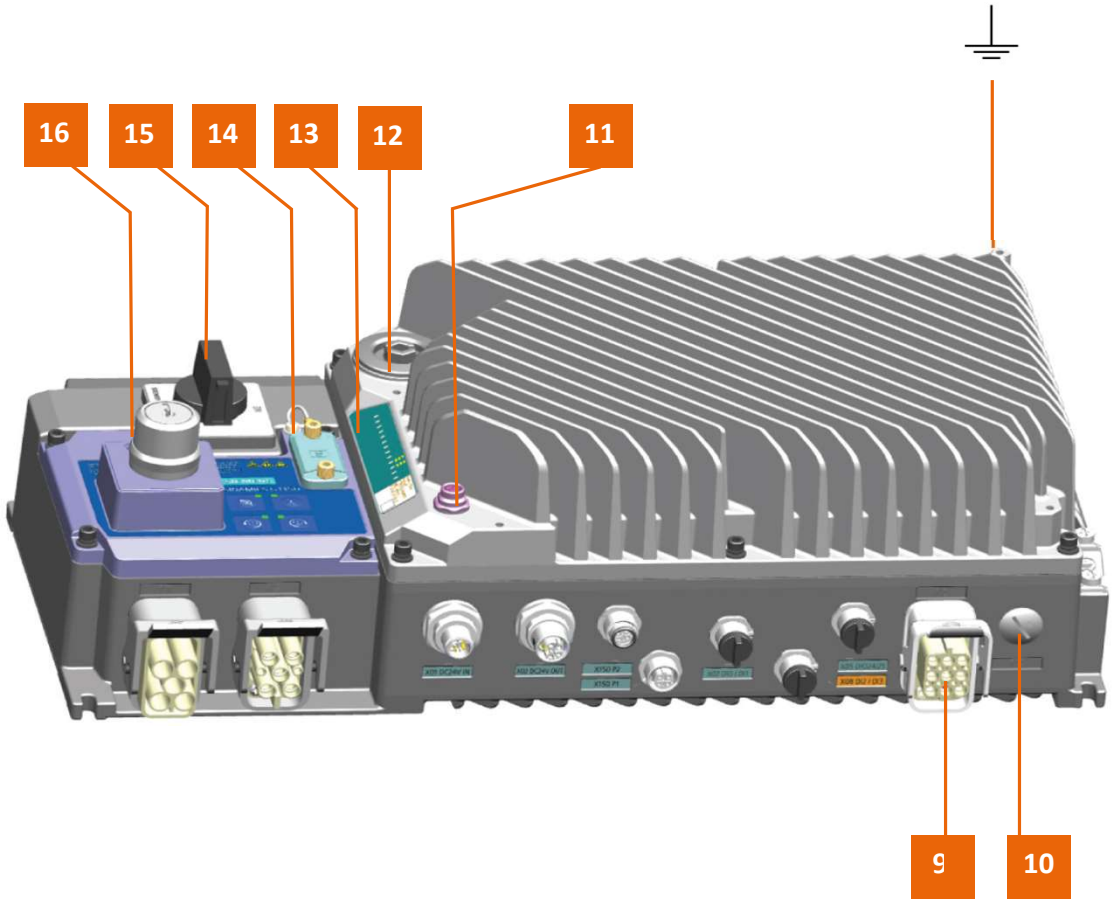
Overview LMS

Nr	Explanation
1	X1 : Line supply (IN)
2	VI doesn't have
3	X01 : 24 V DC supply (IN)
4	X02 : 24 V DC supply (OUT)
5	PROFINET interfaces - X150 P1 and P2 (for PROFINET variant only)
6	X07 : Digital inputs DI0/DI1
7	X08 : Digital input DI2/DI3
8	X05 : Bidirectional digital inputs/outputs DIO 24 and DIO 25



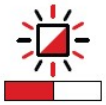
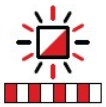
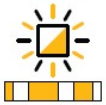
Overview LMS

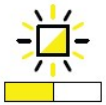
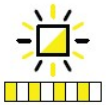
Nr	Explanation
9	X2 ： Motor power
10	X4 ： External braking resistor
11	Fan connector
12	Commissioning interface, including a mini-USB interface and two electromechanical potentiometers P1/P2
13	Status LED
14	Memory card interface
15	Integrated repair switch
16	(optional) Integrated local remote-control panel

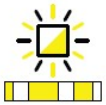


Status LEDs

LED	Explanation
RDY	**Ready**
	Temporary state after the supply voltage is switched on
	The converter is free of faults
	Commissioning or reset to factory settings
	A fault is active, or firmware update failed
	Firmware update is active
	Converter waits until the power supply is switched off and switched on again after a firmware update

LED	Explanation
BF	**PROFINET fault**
☐	Data exchange between the converter and control system is active
	The fieldbus is improperly configured
	In conjunction with a synchronously flashing LED RDY: Converter waits until the power supply is switched off and switched on again after a firmware update
	No communication with higher-level controller
	In conjunction with an asynchronously flashing LED RDY: Incorrect memory card
	Firmware update failed
	Firmware update is active

LED	Explanation
SAFE	**Integrated safety functions**
	One or more safety functions are enabled, but not active
	One or more safety functions are active and error-free
	The converter has detected a safety function fault and initiated a stop response

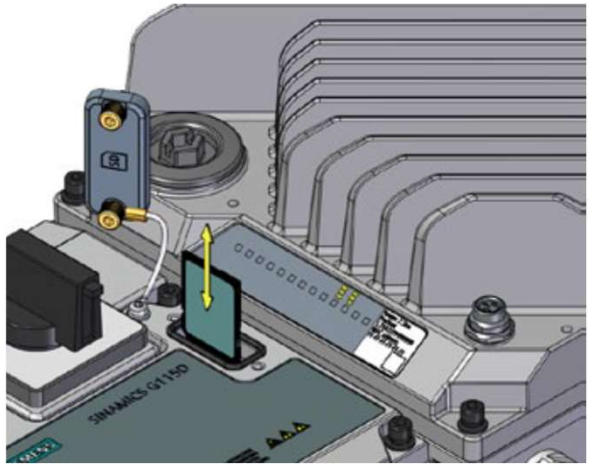
LED		Explanation
ACT	**LNK**	**PROFINET communication**
		Communication via PROFINET is error-free. Converter and open-loop control exchange actual data
		The converter is establishing communication with a higher-level control or a PG/PC with Startdrive installed
☐		Communication via PROFINET has been set up
☐	☐	Communication via PROFINET is not active

LED	Explanation
DI & DI/O	**Digital inputs and digital inputs/outputs**
	The associated digital input or digital input/output has the “high” state
☐	The associated digital input or digital input/output has the “low” state

Replace the memory card

- The new Electronic Module must have the same frame size and the same or higher power rating as those of the Electronic Module that is necessary for replacement.

- Power down the 400V
- Remove SD card
- Replace the LMS
- Insert the SD card
- Power up the system

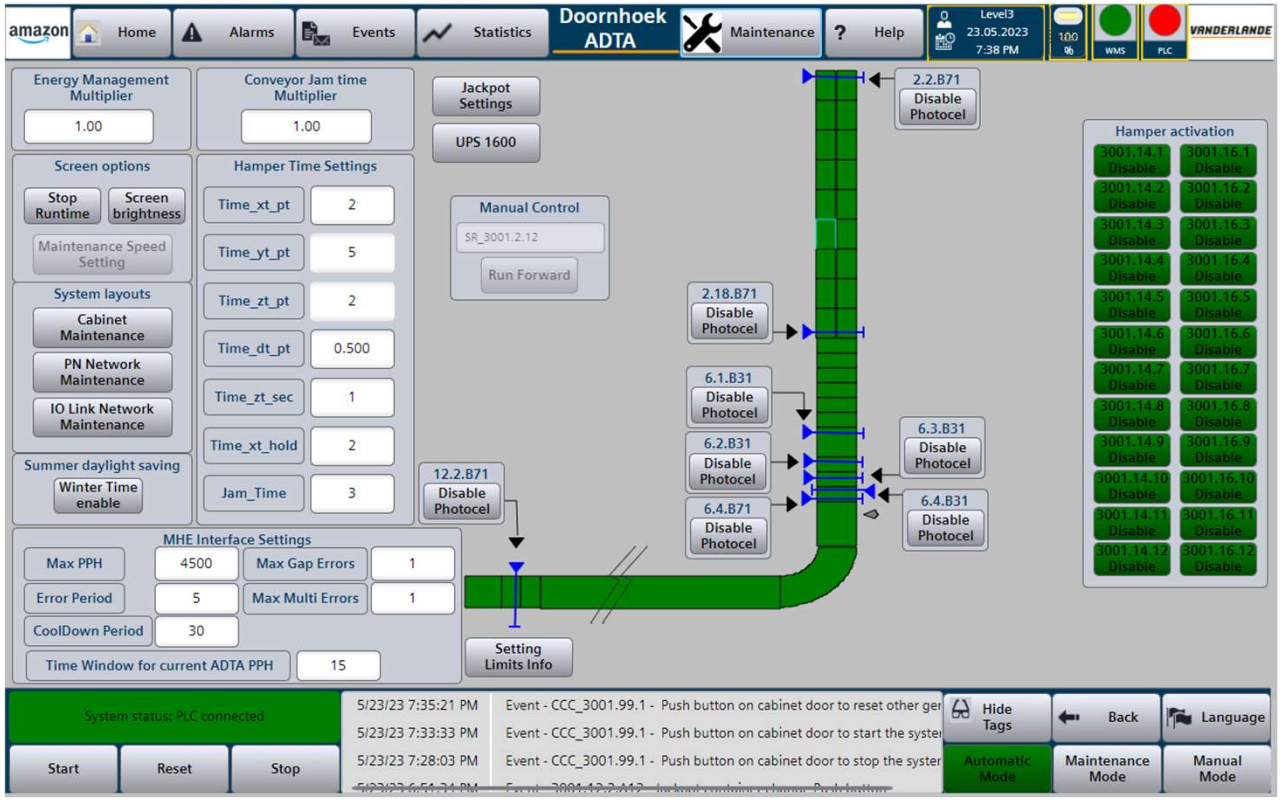


MGUI

Colour coding

E-stop		E-Stop Activated
Unit Fault		Motor fault, VFD error
Jam		
100% Full		Chute/hamper full
75% Full		Chute/hamper 75% full
Running or ON		
Energy Saving		Unit is enabled and ready to start or started but not running due to timeout for no activity
Enabled/not Ready		Unit is enabled and ready to start or started but not running due to flow control (i.e.downstream is not ready)
OFF/Inactive/Disabled		Units is not started or enabled
Manual/Maintenance mode		Unit is in maintenance or manual mode
Gravity/not motorized		Forced status just for gravity conveyor/chute (hamper)

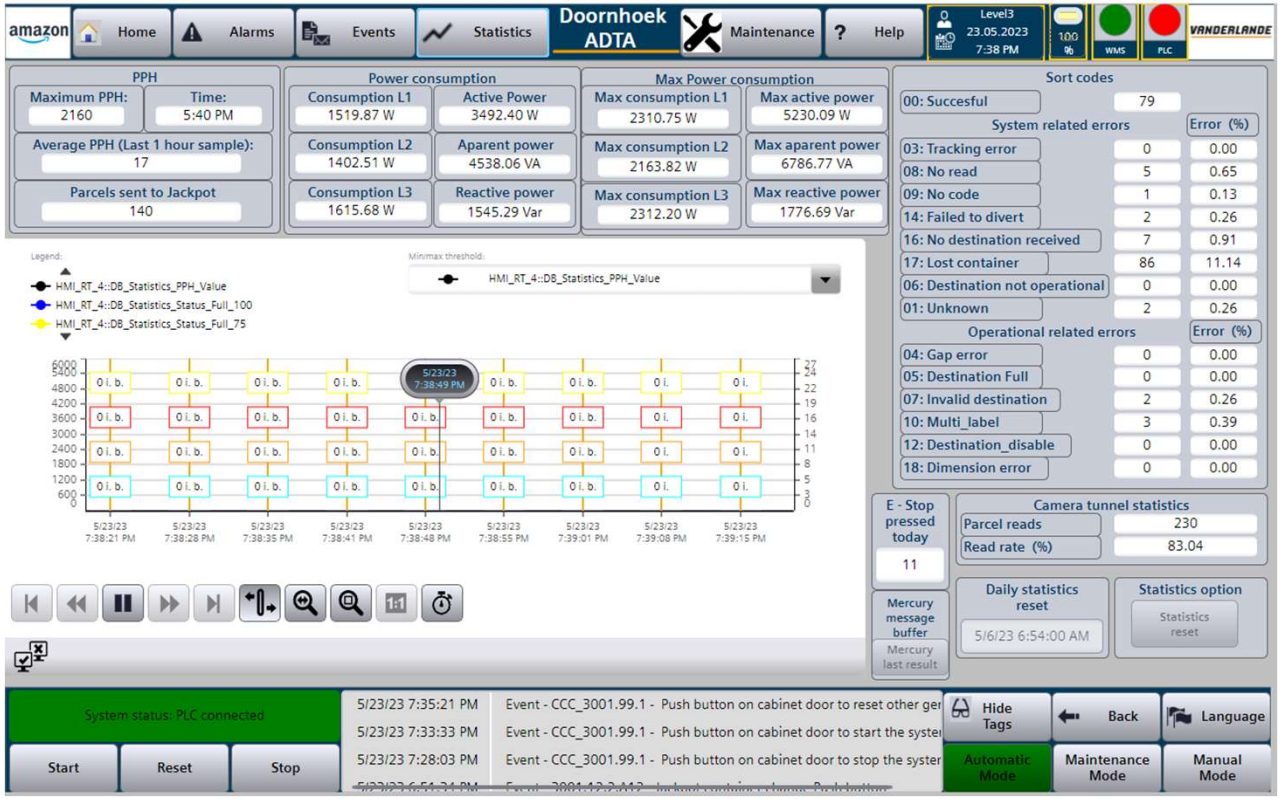
Maintenace screen



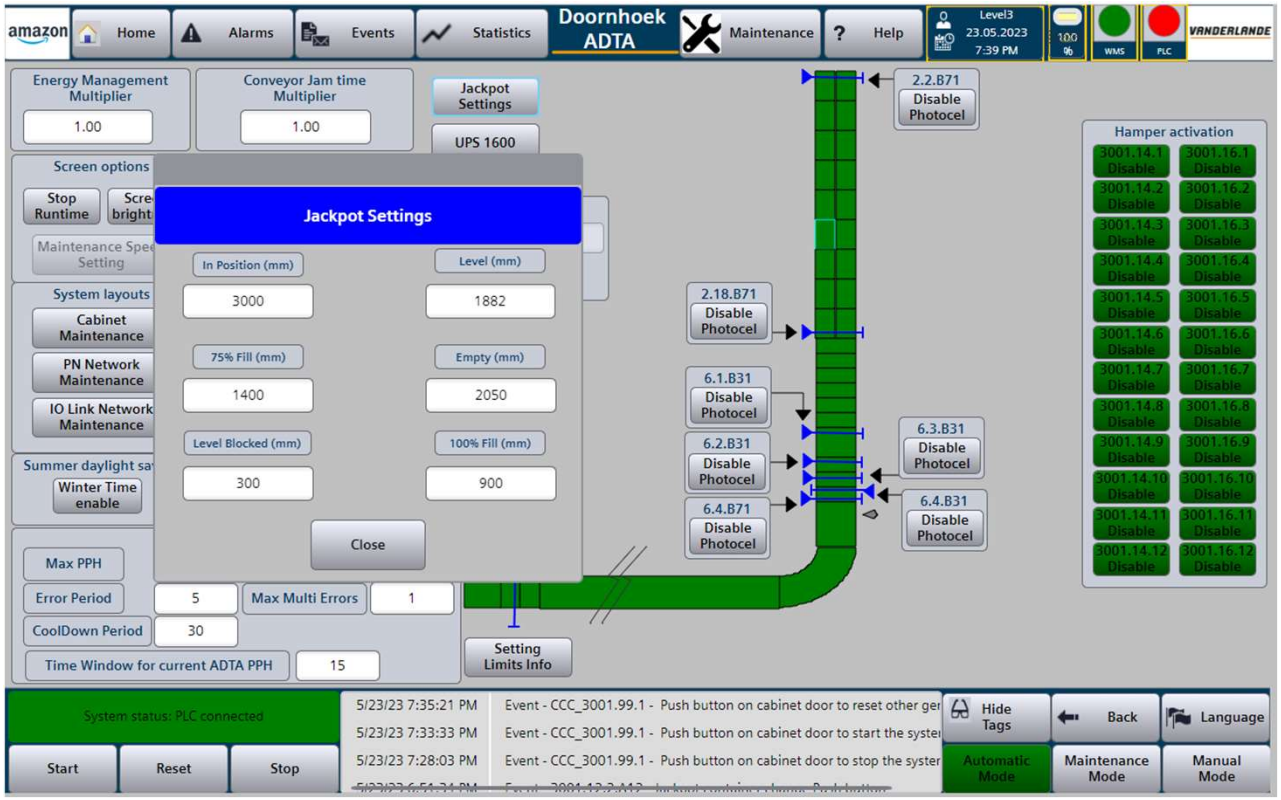
Login levels

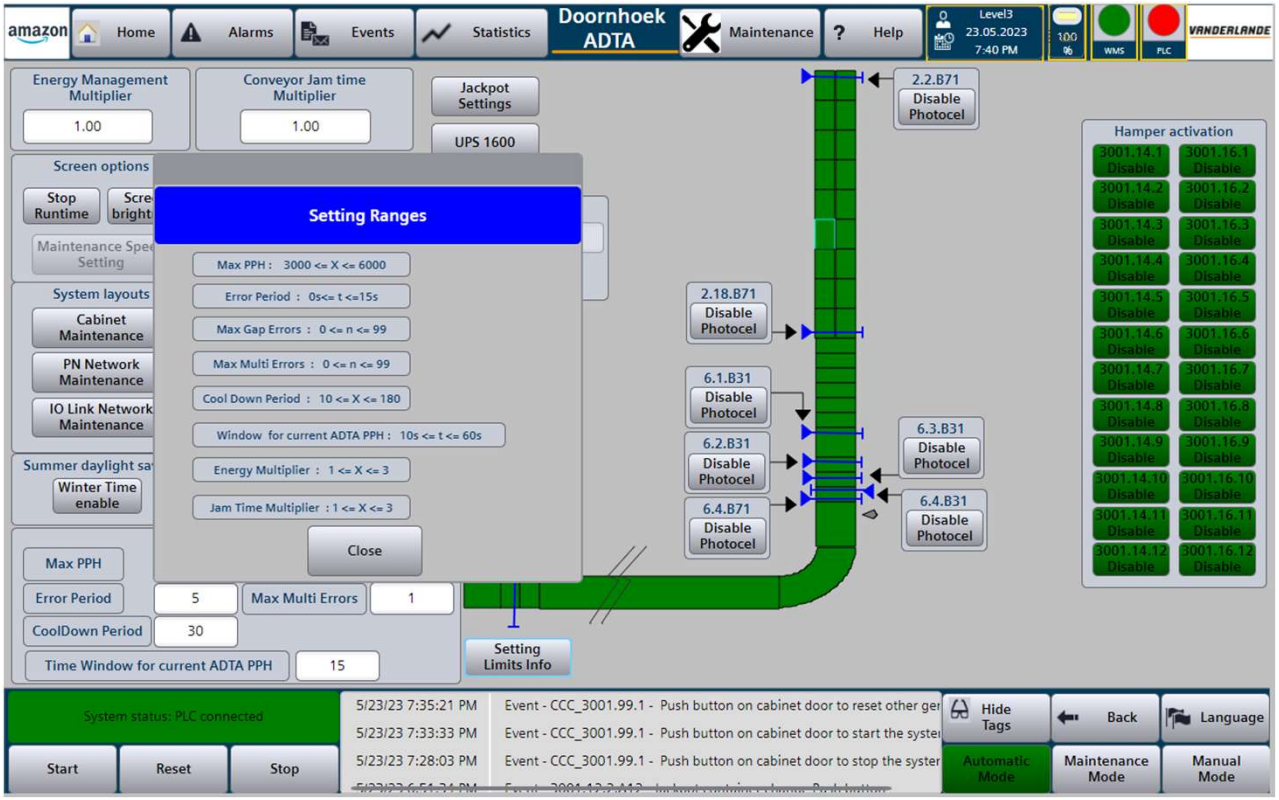
Username	Password	Applied to
Level2	Vanderlande2	Statistics page
Level3	Vanderlande3	Maintenance page
Level4	Vanderlande4	Speed settings / Manual conveyor run

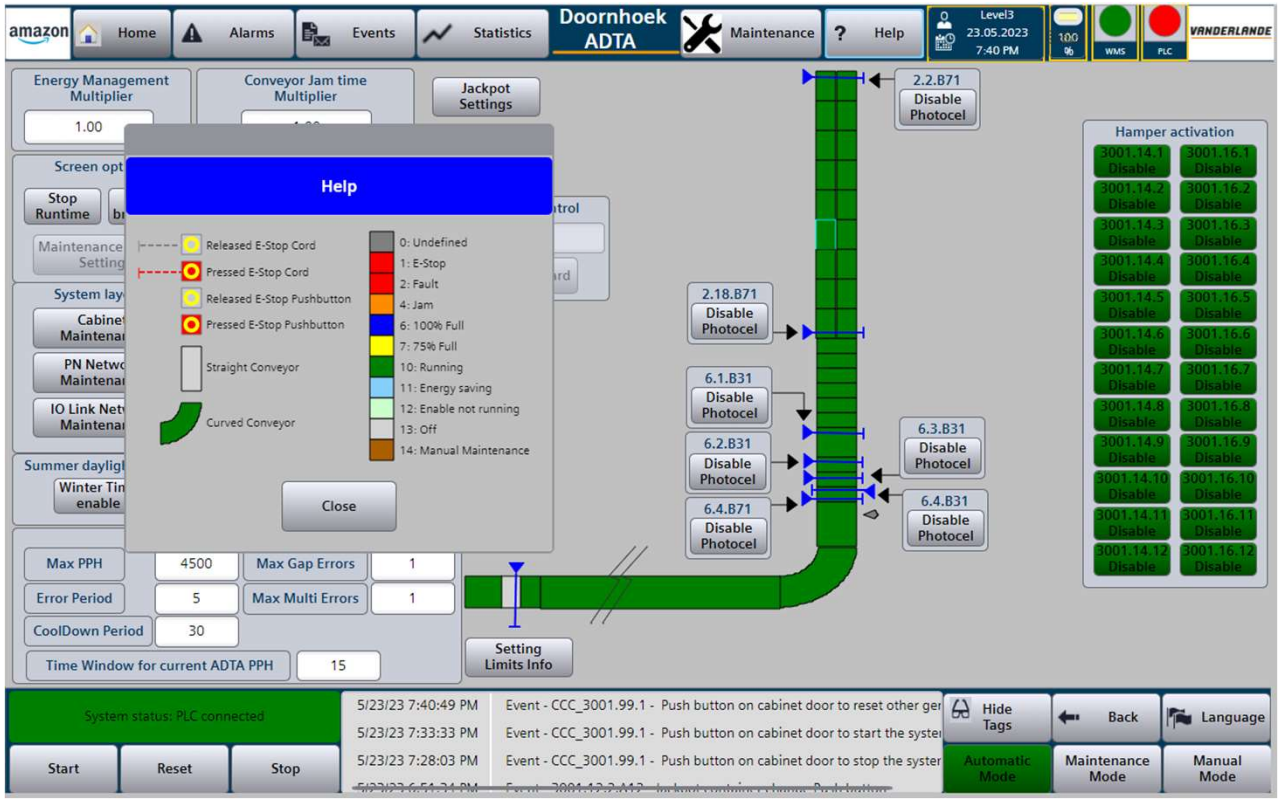
Statistics screen

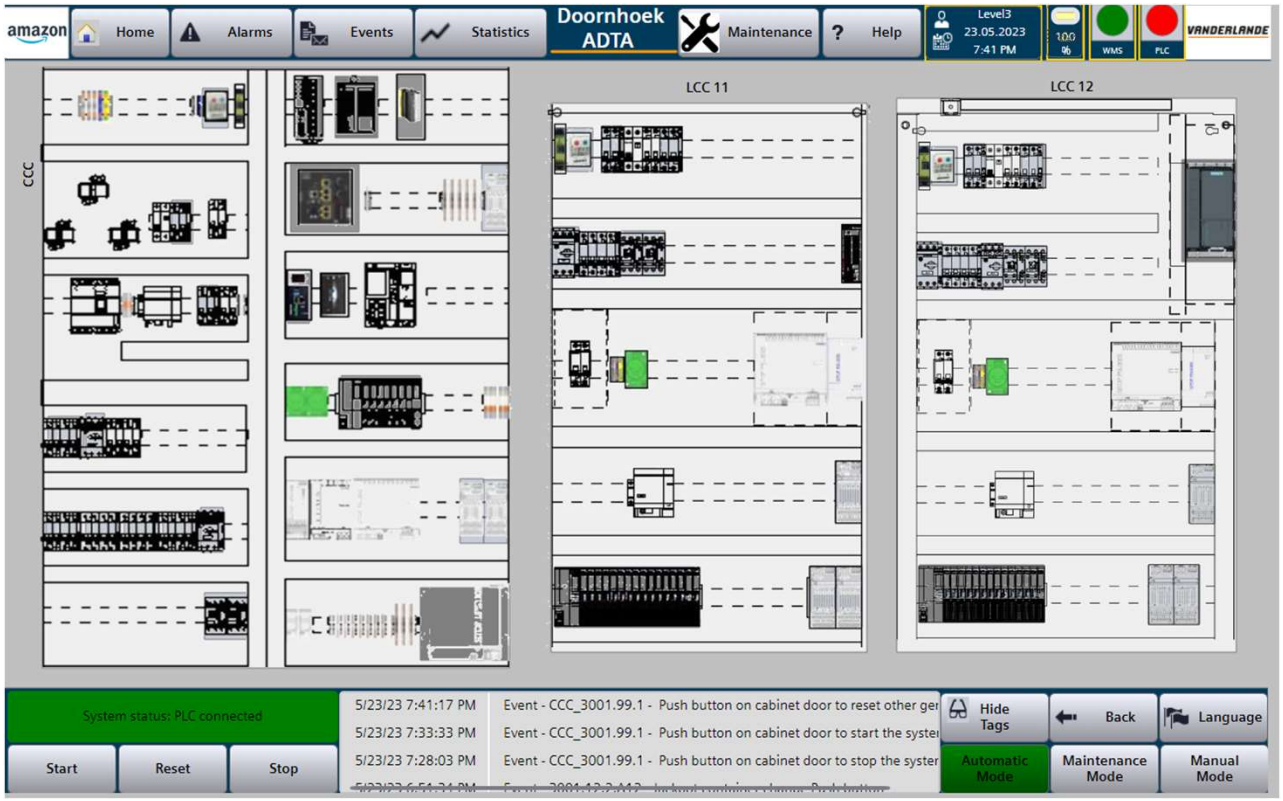


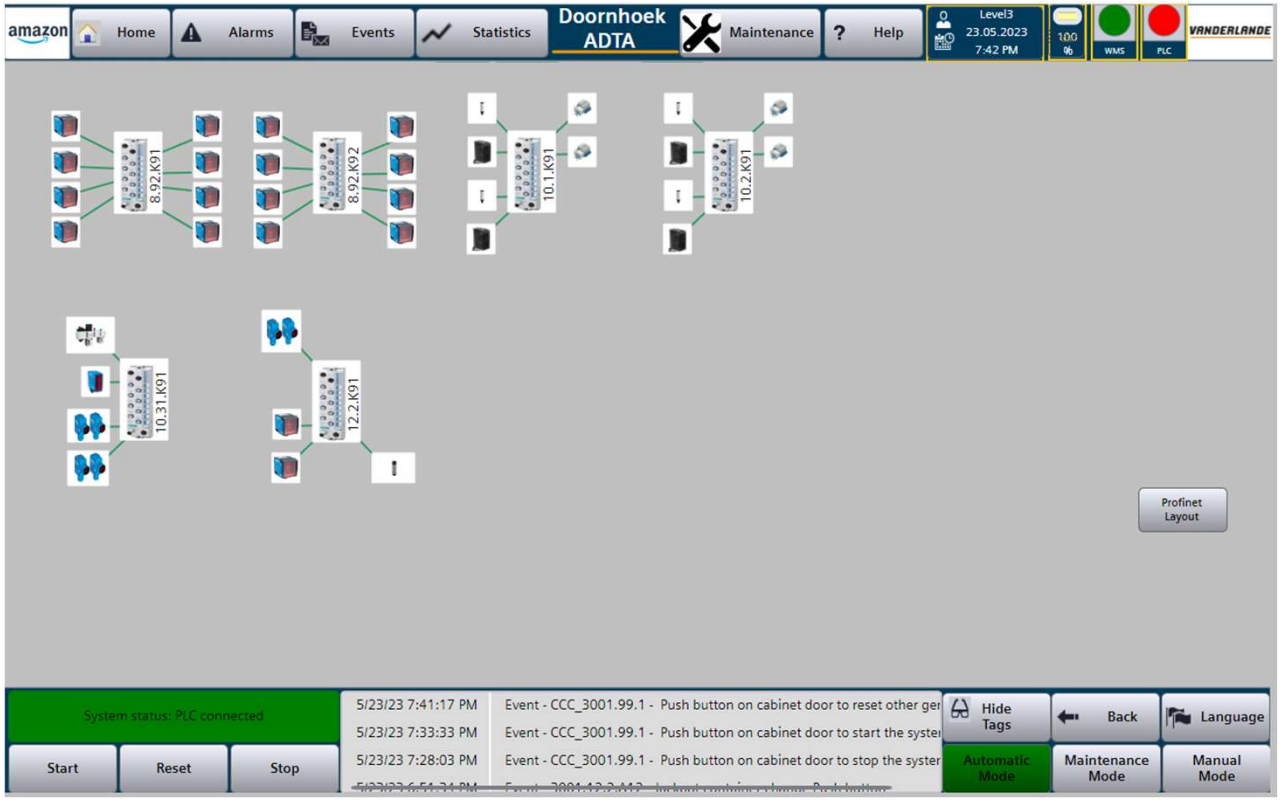
Jackpot screen




amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:40 PM
VANDERLANDE
Energy Management Multiplier
1.00
Conveyor Jam time Multiplier
1.00
Jackpot Settings
UPS 1600
Screen options
Stop Runtime
Maintenance Setting
System layouts
Cabinet Maintenance
PN Network Maintenance
IO Link Network Maintenance
Summer daylight sa
Winter Time enable
Setting Ranges
Max PPH : 3000 <= X <= 6000
Error Period : 0s<= t <=15s
Max Gap Errors : 0 <= n <= 99
Max Multi Errors : 0 <= n <= 99
Cool Down Period : 10 <= X <= 180
Window for current ADTA PPH : 10s <= t <= 60s
Energy Multiplier : 1 <= X <= 3
Jam Time Multiplier : 1 <= X <= 3
Close
Max PPH
Error Period
5
Max Multi Errors
1
CoolDown Period
30
Time Window for current ADTA PPH
15
Setting Limits Info
2.2.B71 Disable Photocel
2.18.B71 Disable Photocel
6.1.B31 Disable Photocel
6.2.B31 Disable Photocel
6.4.B71 Disable Photocel
6.3.B31 Disable Photocel
6.4.B31 Disable Photocel
Hamper activation
3001.14.1 Disable
3001.16.1 Disable
3001.14.2 Disable
3001.16.2 Disable
3001.14.3 Disable
3001.16.3 Disable
3001.14.4 Disable
3001.16.4 Disable
3001.14.5 Disable
3001.16.5 Disable
3001.14.6 Disable
3001.16.6 Disable
3001.14.7 Disable
3001.16.7 Disable
3001.14.8 Disable
3001.16.8 Disable
3001.14.9 Disable
3001.16.9 Disable
3001.14.10 Disable
3001.16.10 Disable
3001.14.11 Disable
3001.16.11 Disable
3001.14.12 Disable
3001.16.12 Disable
System status: PLC connected
5/23/23 7:35:21 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ge
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Start
Reset
Stop
Automatic Mode
Maintenance Mode
Manual Mode

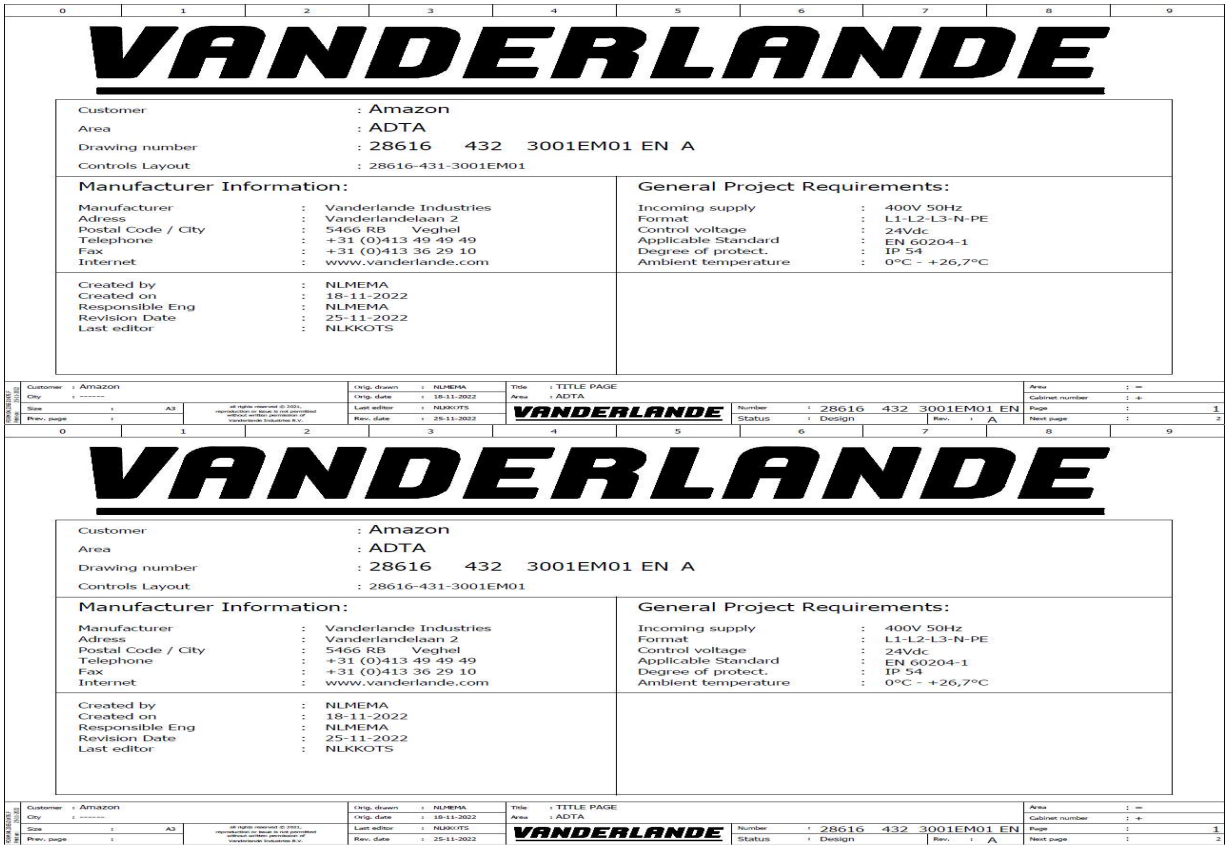

amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:40 PM
WMS
PLC
VANDERLANDE
Energy Management Multiplier
1.00
Conveyor Jam time Multiplier
Jackpot Settings
Help
Released E-Stop Cord
Pressed E-Stop Cord
Released E-Stop Pushbutton
Pressed E-Stop Pushbutton
Straight Conveyor
Curved Conveyor
0: Undefined
1: E-Stop
2: Fault
4: Jam
6: 100% Full
7: 75% Full
10: Running
11: Energy saving
12: Enable not running
13: Off
14: Manual Maintenance
Close
2.2.B71 Disable Photocel
2.18.B71 Disable Photocel
6.1.B31 Disable Photocel
6.2.B31 Disable Photocel
6.3.B31 Disable Photocel
6.4.B71 Disable Photocel
6.4.B31 Disable Photocel
Hamper activation
Max PPH
4500
Max Gap Errors
1
Error Period
5
Max Multi Errors
1
CoolDown Period
30
Time Window for current ADTA PPH
15
Setting Limits Info
System status: PLC connected
5/23/23 7:40:49 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Start
Reset
Stop
Automatic Mode
Maintenance Mode
Manual Mode


amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:41 PM
WMS
PLC
VANDERLANDE
CCC
LCC 11
LCC 12
System status: PLC connected
Start
Reset
Stop
5/23/23 7:41:17 PM
Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM
Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM
Event - CCC_3001.99.1 - Push button on cabinet door to stop the syster
Hide Tags
Back
Language
Automatic Mode
Maintenance Mode
Manual Mode


amazon
Home
Alarms
Events
Statistics
Doornhoek ADTA
Maintenance
Help
Level3
23.05.2023
7:42 PM
100 %
WMS
PLC
VANDERLANDE
8.92.K91
8.92.K92
10.1.K91
10.2.K91
10.31.K91
12.2.K91
Profinet Layout
System status: PLC connected
Start
Reset
Stop
5/23/23 7:41:17 PM Event - CCC_3001.99.1 - Push button on cabinet door to reset other ger
5/23/23 7:33:33 PM Event - CCC_3001.99.1 - Push button on cabinet door to start the syste
5/23/23 7:28:03 PM Event - CCC_3001.99.1 - Push button on cabinet door to stop the syste
Hide Tags
Back
Language
Automatic Mode
Maintenance Mode
Manual Mode

E-plan drawings

Eplan drawings



VANDERLANDE

Customer	: Amazon
Area	: ADTA
Drawing number	: 28616 432 3001EM01 EN A
Controls Layout	: 28616-431-3001EM01

Manufacturer Information:

Manufacturer	: Vanderlande Industries
Adress	: Vanderlandelaan 2
Postal Code / City	: 5466 RB Veghel
Telephone	: +31 (0)413 49 49 49
Fax	: +31 (0)413 36 29 10
Internet	: www.vanderlande.com

Created by	: NLMEMA
Created on	: 18-11-2022
Responsible Eng	: NLMEMA
Revision Date	: 25-11-2022
Last editor	: NLKKOTS

General Project Requirements:

Incoming supply	: 400V 50Hz
Format	: L1-L2-L3-N-PE
Control voltage	: 24Vdc
Applicable Standard	: EN 60204-1
Degree of protect.	: IP 54
Ambient temperature	: 0°C - +26,7°C

Customer : Amazon	Orig. drawn : NLMEMA	Title : TITLE PAGE				Area : -	
City : ------	Orig. date : 18-11-2022	Area : ADTA				Cabinet number : +	
Size : A3	Last editor : NLKKOTS	VANDERLANDE	Number : 28616 432 3001EM01 EN			Page : 1	
Prev. page :	Rev. date : 25-11-2022		Status : Design	Rev. : A		Next page : 2	

VANDERLANDE

Customer	: Amazon
Area	: ADTA
Drawing number	: 28616 432 3001EM01 EN A
Controls Layout	: 28616-431-3001EM01

Manufacturer Information:

Manufacturer	: Vanderlande Industries
Adress	: Vanderlandelaan 2
Postal Code / City	: 5466 RB Veghel
Telephone	: +31 (0)413 49 49 49
Fax	: +31 (0)413 36 29 10
Internet	: www.vanderlande.com

Created by	: NLMEMA
Created on	: 18-11-2022
Responsible Eng	: NLMEMA
Revision Date	: 25-11-2022
Last editor	: NLKKOTS

General Project Requirements:

Incoming supply	: 400V 50Hz
Format	: L1-L2-L3-N-PE
Control voltage	: 24Vdc
Applicable Standard	: EN 60204-1
Degree of protect.	: IP 54
Ambient temperature	: 0°C - +26,7°C

Customer : Amazon	Orig. drawn : NLMEMA	Title : TITLE PAGE				Area : -	
City : ------	Orig. date : 18-11-2022	Area : ADTA				Cabinet number : +	
Size : A3	Last editor : NLKKOTS	VANDERLANDE	Number : 28616 432 3001EM01 EN			Page : 1	
Prev. page :	Rev. date : 25-11-2022		Status : Design	Rev. : A		Next page : 2	

Groups & page structure

Group structure in Field drawings

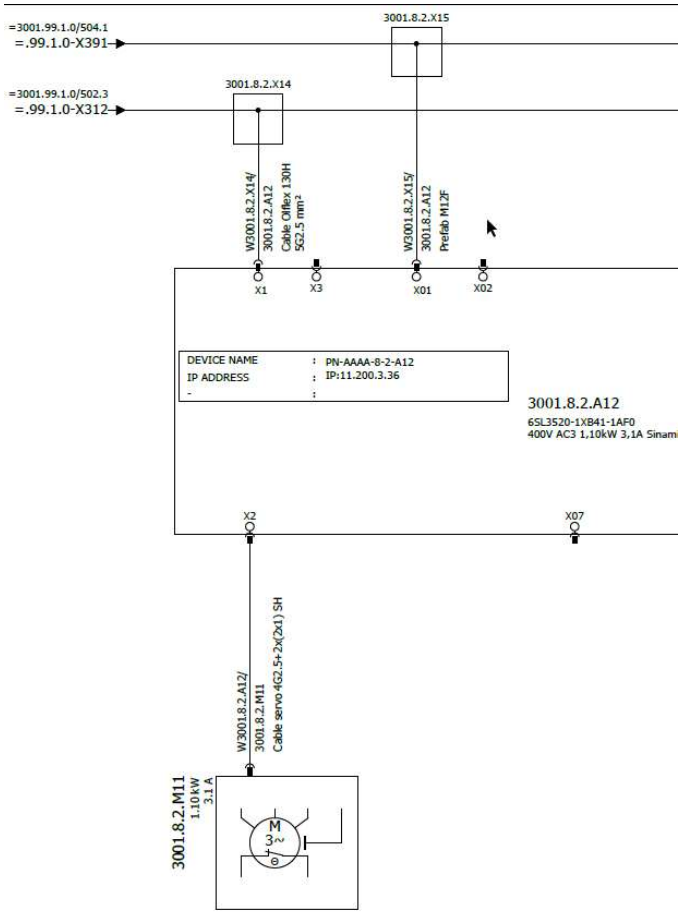
- Every drawing set has the same structure:
  - 001 ff Front page, requirements, bonding, numbering
  - 010 ff Revision-history
  - 020 ff Info
  - 030 ff Device list
  - 100 ff PROFINET network
  - 500 ff CCC and conveyors
  - 500 ff LCC and conveyors

Group structure in Cabinets

- Every drawing set has the same structure:
  - 001 ff Front page, requirements, bonding, numbering
  - 010 ff Revision-history
  - 012 ff Drawing list
  - 070 ff Cabinet view (outside / inner-side)
  - 100 ff Main switch and distribution
  - 150 ff 24VDC
  - 380 ff Interface
  - 500 ff Input/Output
  - 980 ff Network-configuration PROFINET
  - 1000 ff Bill of Material

Symbol coding

Element code	Discription
A	Local Motor Starter or AS-i modules.
B	Photocell, Proximityswitch, PPI.
F	Circuit breaker
H	Beeper, Signal Light
K	ASi module
M	Motor
S	Switch, Pushbutton
Q	Main switch
X	(Start up) Beeper / terminals



How is an Eplan drawingset build up

- CCC01 Central Controls Cabinet 01
- LCC11 Local Controls Cabinet 11 (e.g. Profinet I/O cabinet)
- CB01 Connection Box 01
- Etc

The total code is: 3001.2.2.A12

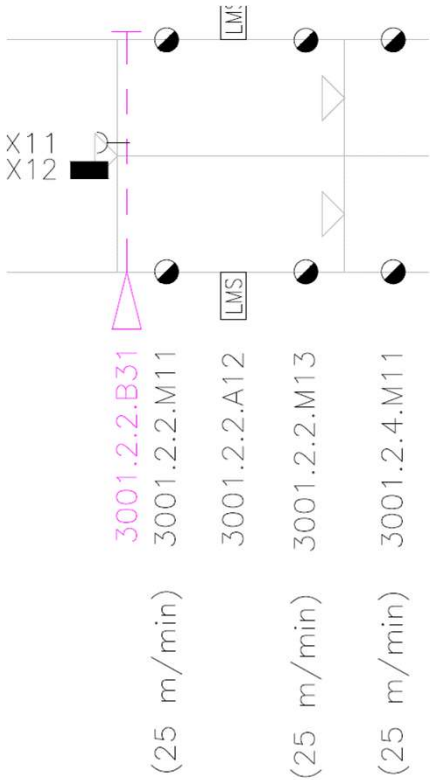
3001. Indication of the PLC/Area

2. Indication of the Zone

2. Indication of the Section

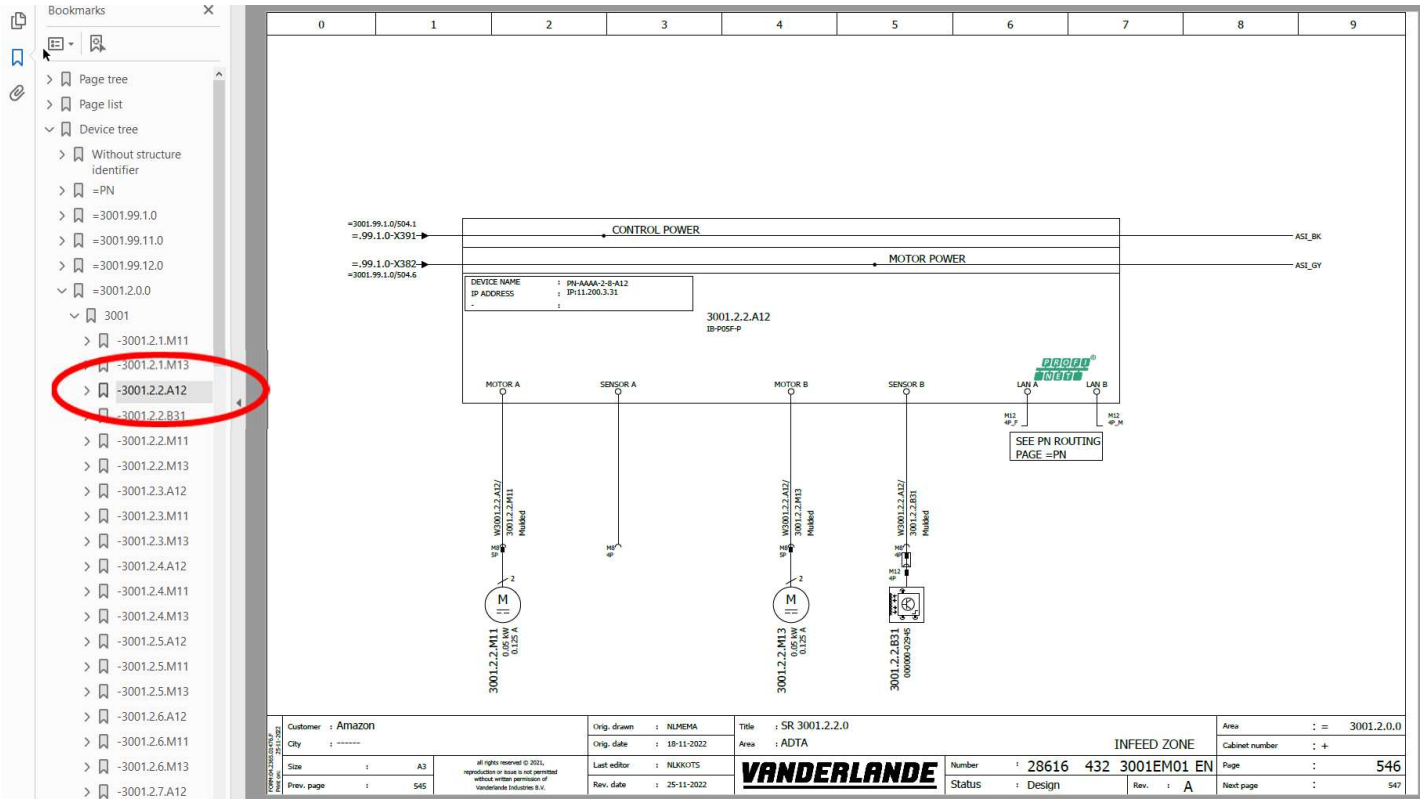
A12 Indication of the Element

Layout

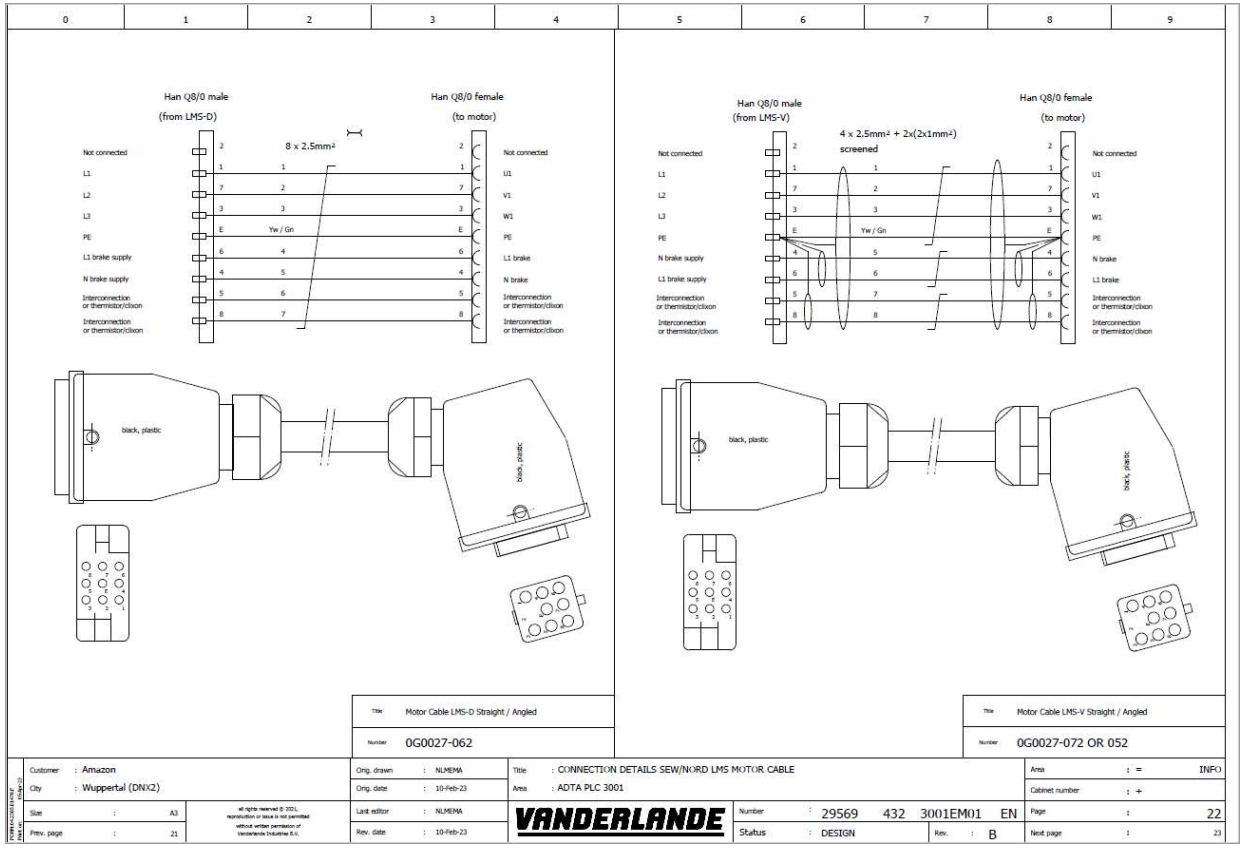


How to search in E-plan

Search in the device tree (Area.Zone) 3001.2.2.A12



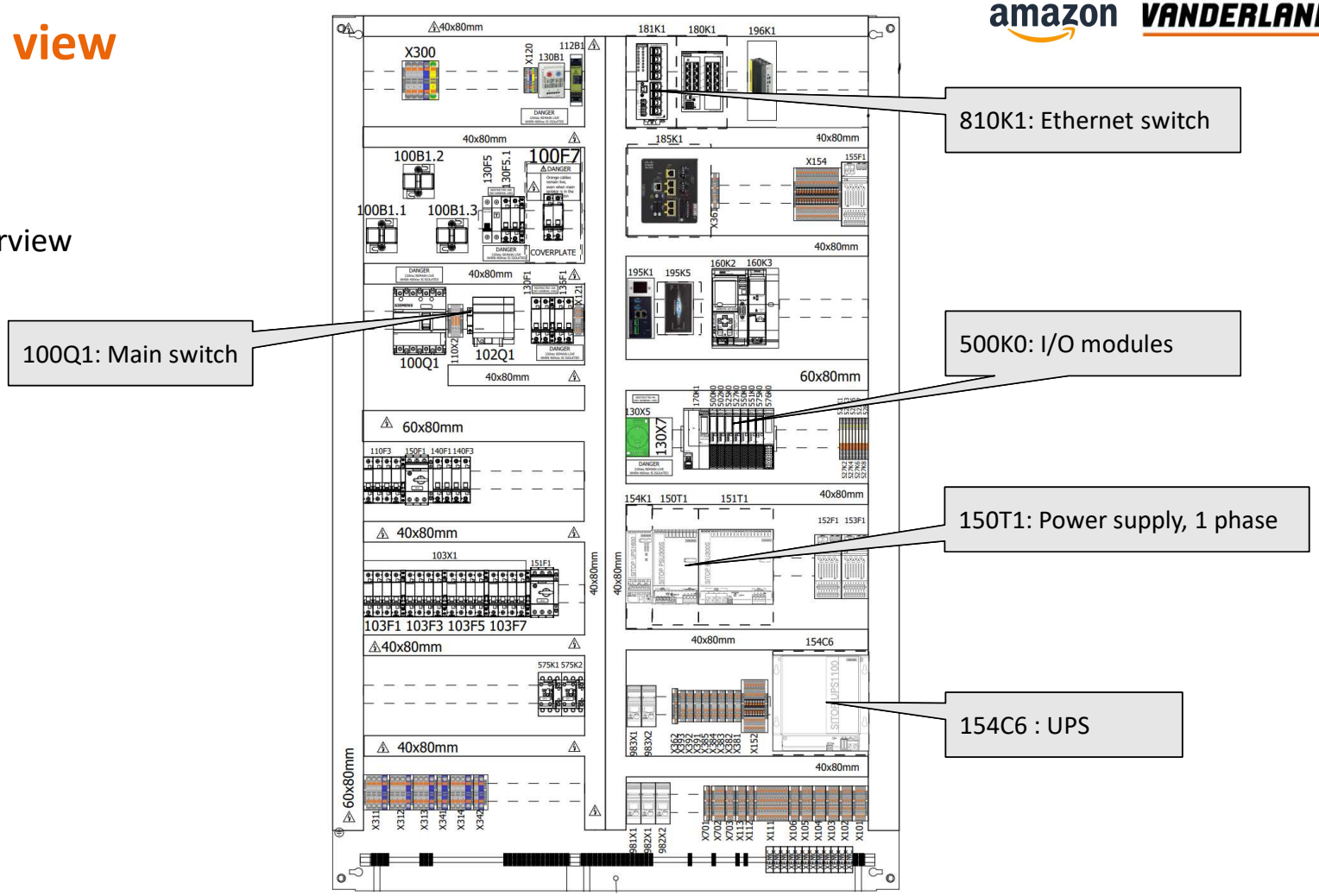
Group 0: Connection diagram LMS motor cable



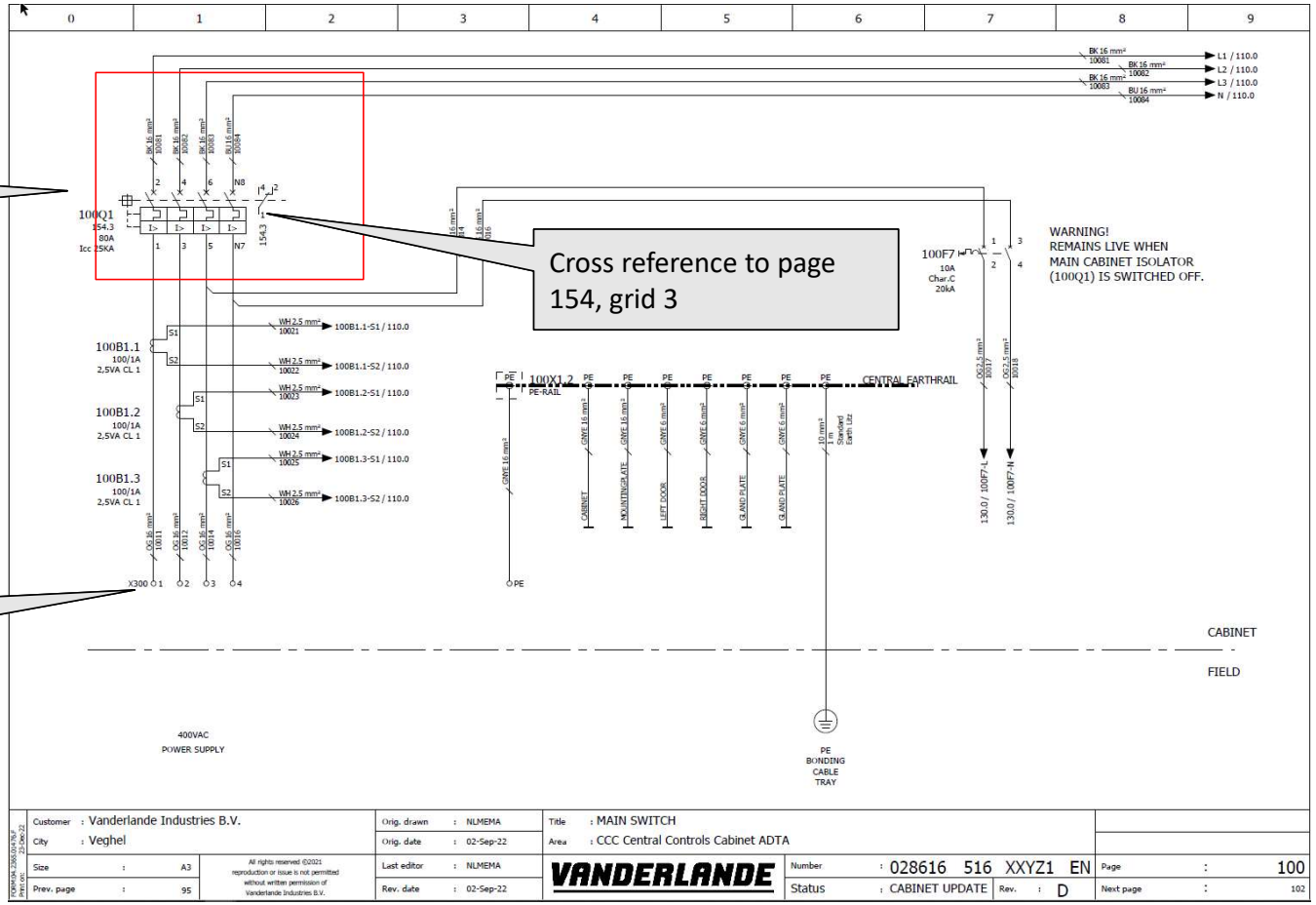
Group 0: Cabinet view

Cabinet

- Control components overview



Group 1: Incoming supply

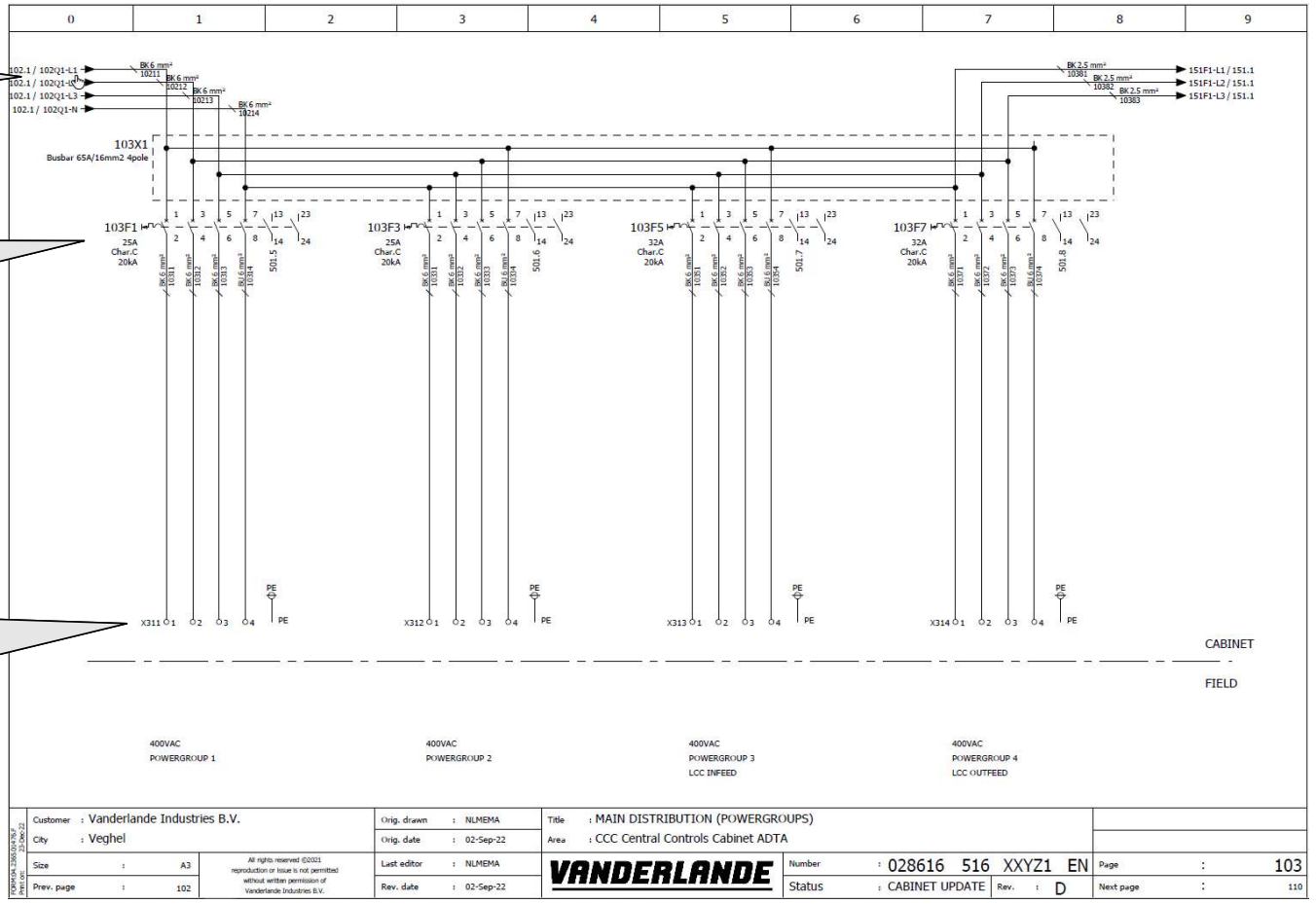


Group 1: Main distribution

3-Phase Power supply & N

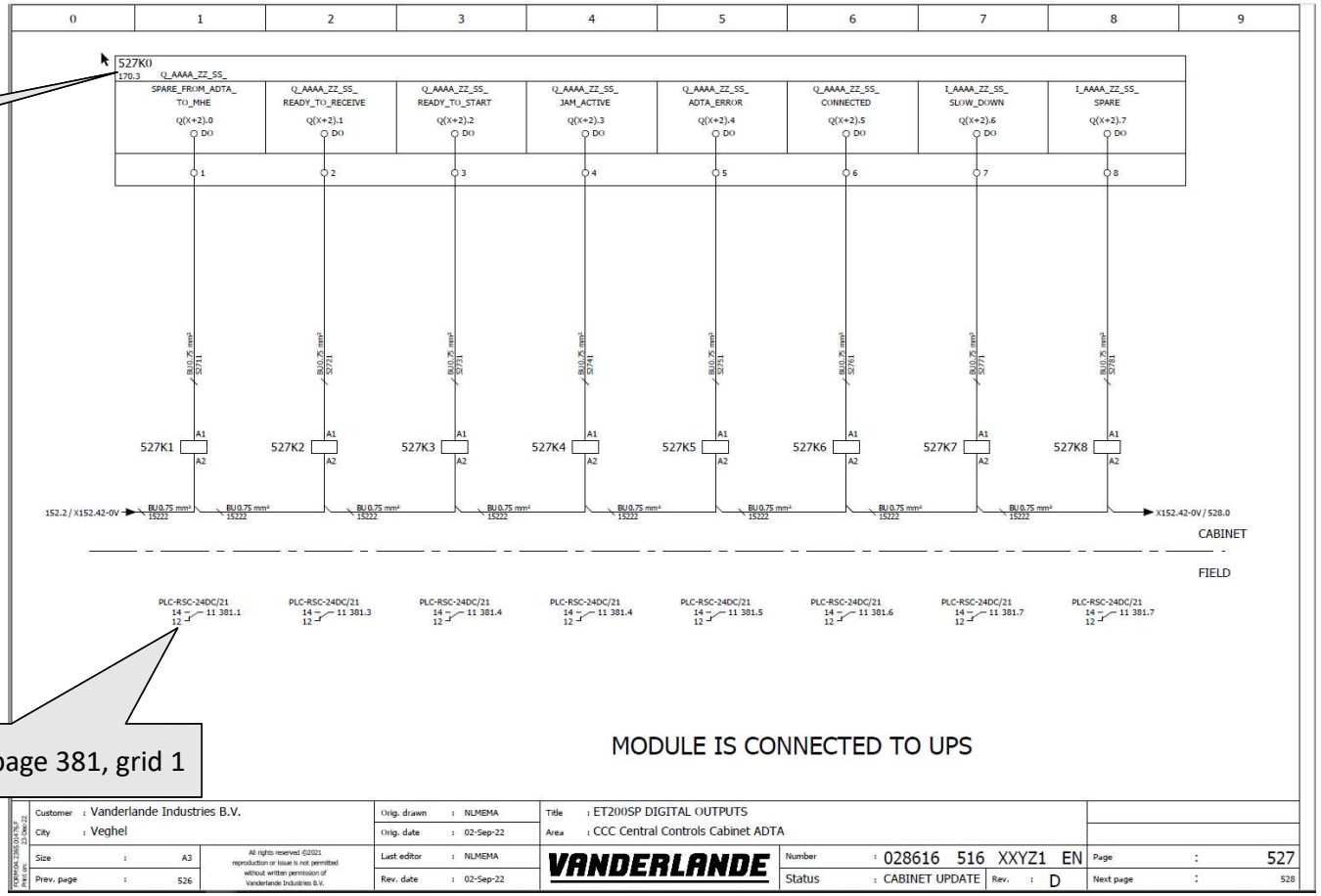
Circuit breaker, with cross reference

Terminal connection X311 to 400VAC Power group 1



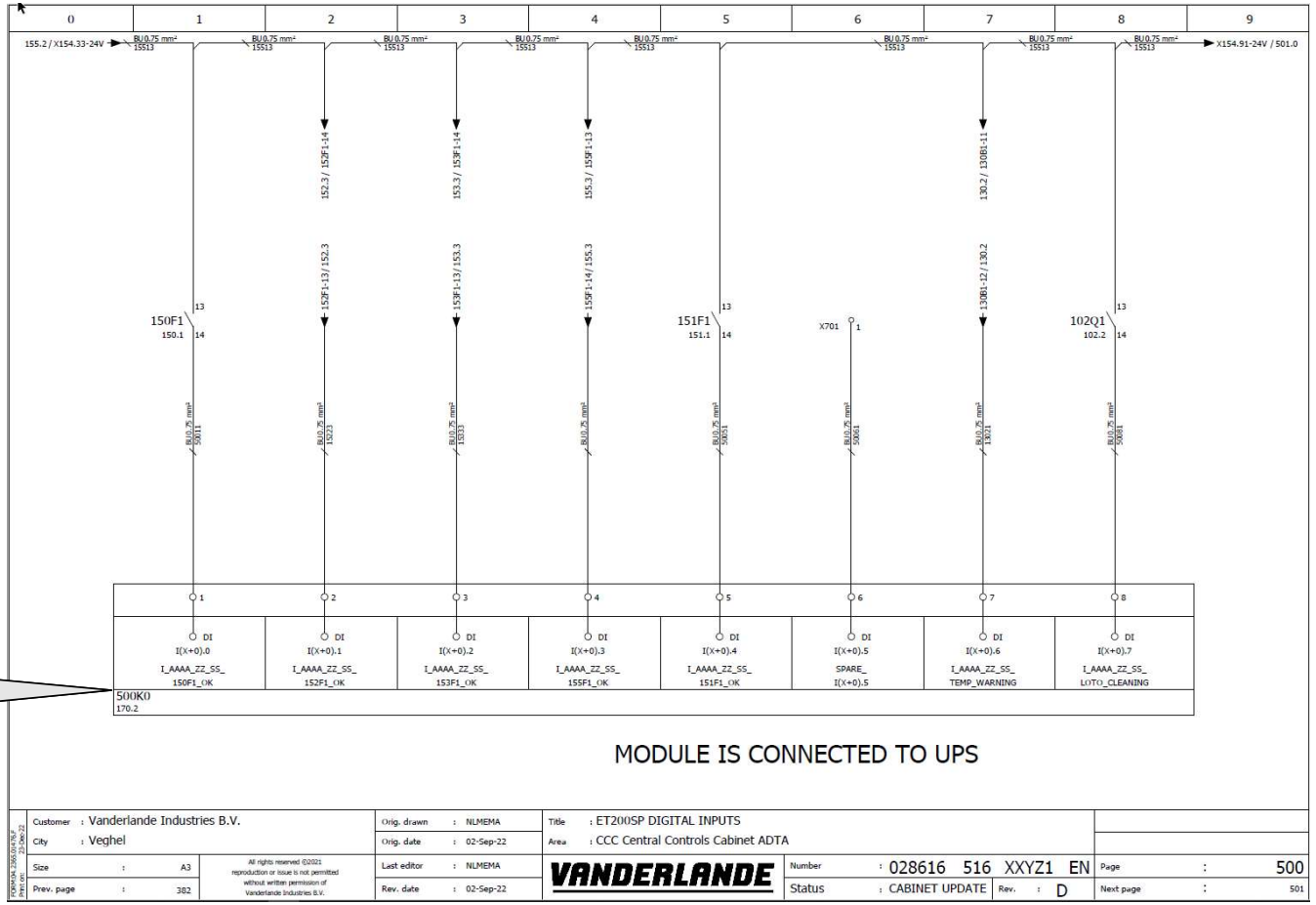
Group 5: input/output

I/O module (ET200SP)
8x DO: Digital Output



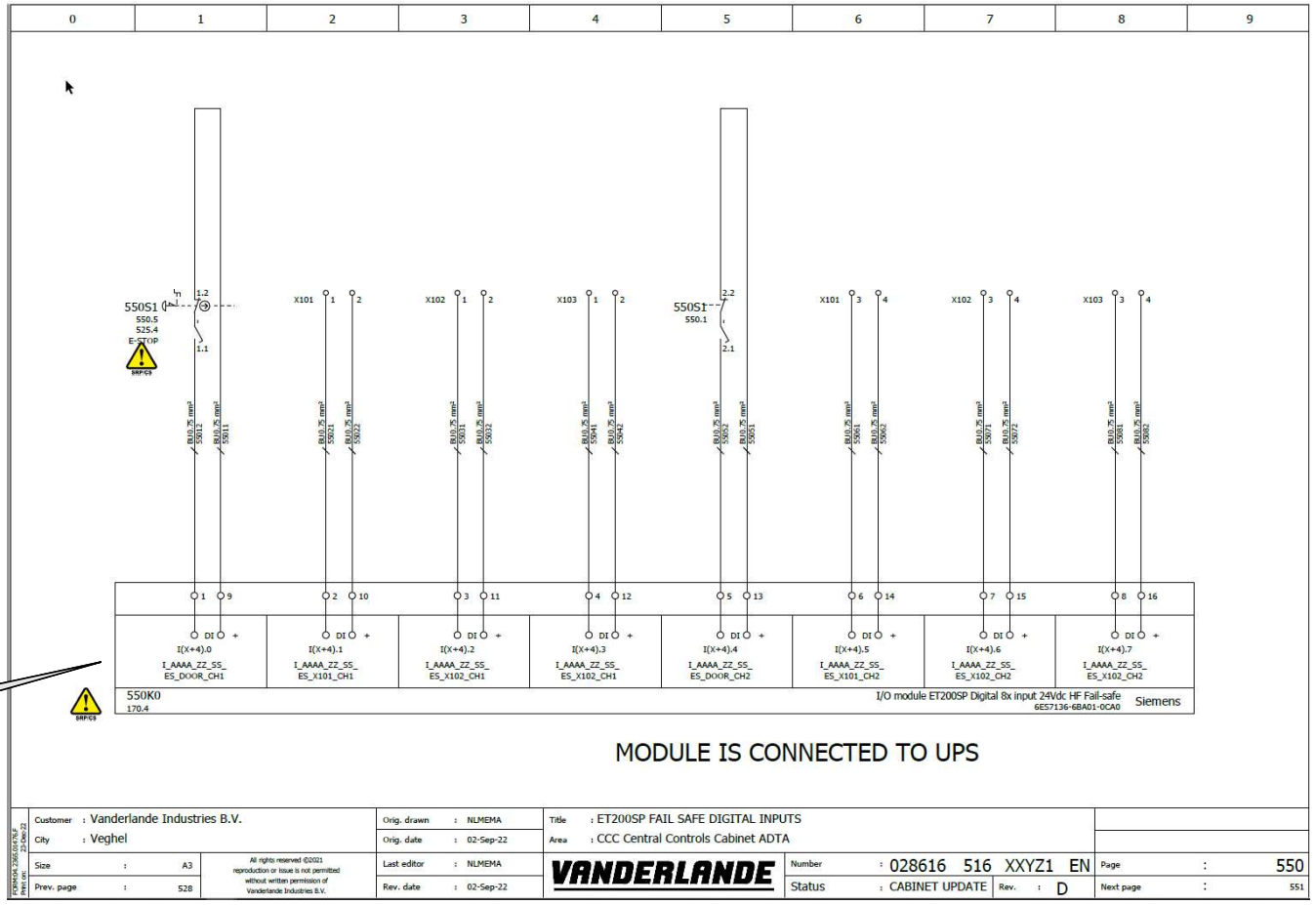
Cross reference to page 381, grid 1

Group 5: input/output



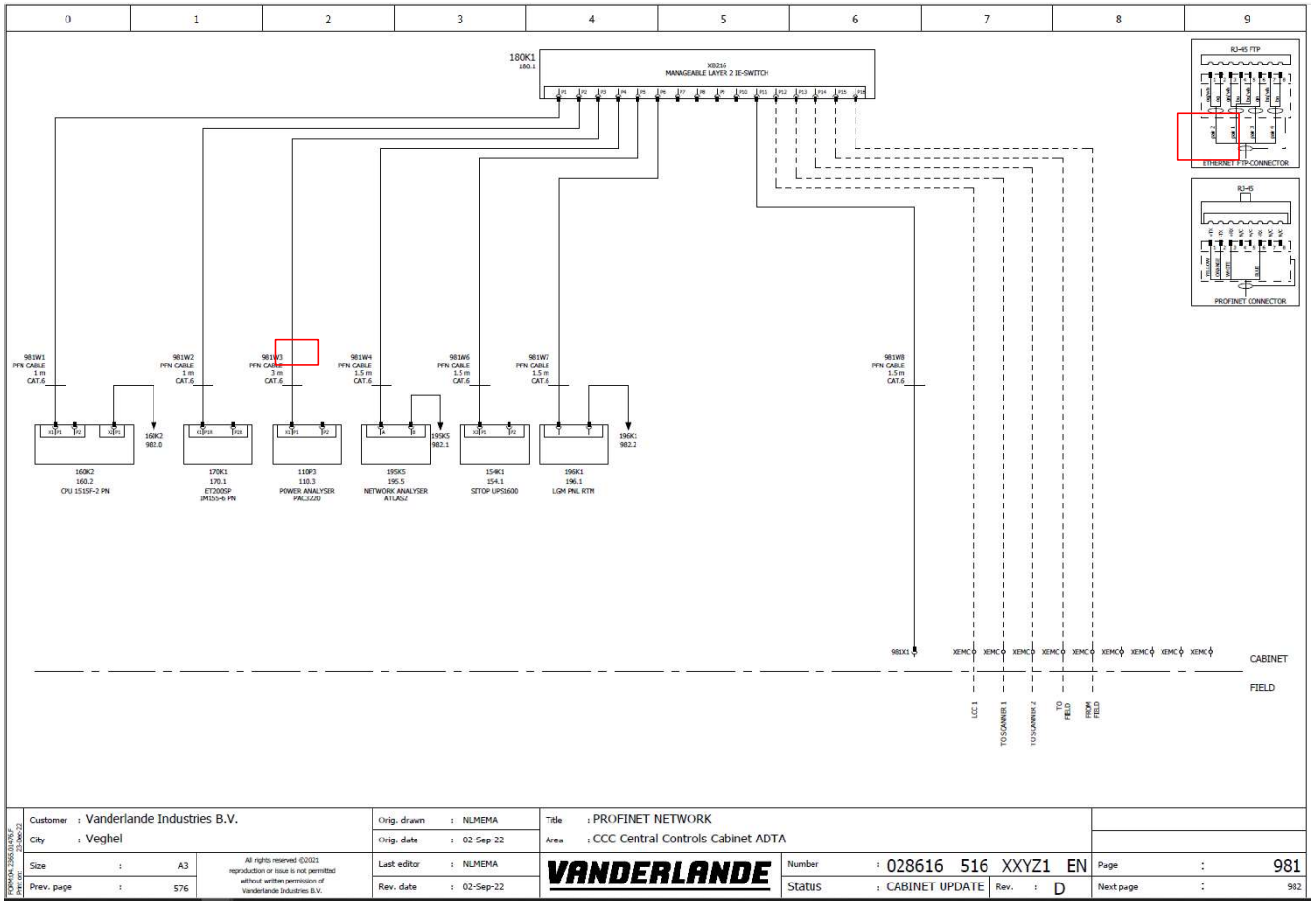
I/O module (ET200SP)
8x DI: Digital Input

Group 5: Safety inputs - E-stops



E-stop

Group 9: PROFINET Network-configuration



Group 10: Bill Of Material

amazon VANDERLANDE

0	1	2	3	4	5	6	7	8	9

CODE	DESCRIPTION	QNT	ITEMNUMBER Vanderlande Industries	TRADE MARK	ORDERNUMBER	TYPE	PAGE
70CV2	Enclosure WxHxD 1200x1800x400mm SE	1	000000-09599	Rittal	5841600	SE 5841.600	70.4
70CV2	Base/plinth corner piece with base/plinth trim panel front and rear H=100mm for W=1200mm	1	000000-04026	Rittal	8640007	VX 8640.007	70.4
70CV2	Base/plinth trim panel H=100mm for D=400mm	1	000000-04025	Rittal	8640031	VX 8640.031	70.4
70CV2	Hinge 180°	2	006003-02480	Rittal	8800190	TS 8800.190	70.4
70CV2	Handle with lock insert hole RAL7035	1	006003-02725	Rittal	8611020	TS 8611.020	70.4
70CV2	Enclosure key double-bit key no. 5	1	008200-20109	Rittal	2531000	SZ 2531.000	70.4
70CV2	Tableau for door W=600mm for TS SE CM PC	1	006003-03141	Rittal	4638600	PS 4638.600	70.4
70CV2	Eyebolts for VX, TS, SE	4	006011-11348	Rittal	4568000 | SZ 4568.000		70.4
70CV2	TS 4596.000 f.B=600mm,door rail for PS/ES, TS	6	009000-00237	Rittal	TS 4596.000		70.4
70CV2	Section for cable entry centre W=1200mm for VX	1	006003-01798	Rittal	8618803	VX 8618.803	70.4
70CV2	Cable duct Segma WxHxL 40x25x2000mm PVC	3500	000000-07480	Legrand	PW21152		70.4
70CV2	Marker carrier L=1m	1500	006003-02633	Phoenix Contact	0829559	CARRIER/L-EMP (1000x15) GY	70.4
70CV2	Cable conduit ø29mm, L=2m, SZ 2589.000	2	006003-02441	Rittal	SZ 2589.000		70.4
70CV2	Cable conduit holder for Ø29mm	2	006003-02545	Rittal	SZ 2591.000	SZ 2591.000	70.4
70CV2	Legend plate white-black 150x100x1.5 ID plate	1	006001-10953				70.4
70CV2	Sticker Vanderlande logo on aluminium plate 160x34mm, black characters	1	007200-00003	MANUF	007200-00003	007200-00003	70.4
70CV2	Label warning "Electricity" W=30mm ISO 7010-W012	1	007011-01031				70.4
70CV2	Cable gland M50x1,5 metric ST-M	1	006002-12121	Lapp	53111460	ST-M 50	70.4
70CV2	Nut M50x1,5 metric GMP-GL-M50	1	006002-12219	Lapp	53119063	GMP-GL-M50	70.4
80MP3	Marker carrier L=1m	7000	006003-02633	Phoenix Contact	0829559	CARRIER/L-EMP (1000x15) GY	80.3
80MP3	Mounting rail perforated TS35/7,5 SZ2313.750	7000	006003-02535	Rittal	SZ 2313.750	SZ 2313.750	80.3
80MP3	Cable duct Segma HxW 80x40mm PVC	6000	006003-02561	Legrand	PW21166	21166	80.3
80MP3	Cable duct Segma HxW 80x60mm PVC	4000	006003-02562	Legrand	PW21167	21167	80.3
80MP3	Label warning "Electricity" W=30mm ISO 7010-W012	1	007011-01031				80.3
80MP3	Standard Earth Litz 10mmâ ¯ M6 - Wire / 1mtr	1	0G0027-130-01000	MANUF	0G0027-130-01000	0G0027-130-01000	80.3
80MP3	Power terminal block AKG 16 GNYE	2	006005-02201	Phoenix Contact	0423027	AKG 16 GNYE	80.3
80MP3	Label self-adhesive ETS-E (ground symbol)	1	006005-00690	Phoenix Contact	0806767	ETS-E	80.3
80MP3	Marker carrier L=1m	20	006003-02633	Phoenix Contact	0829559	CARRIER/L-EMP (1000x15) GY	80.3
80XEMC	Mounting foot bright finish	11	006005-02180	Weidmüller	0687900000	FM 4/TS35	80.1
80XEMC	Clamping yoke	11	006005-02181	Weidmüller	1692261001	KLBU 3-8 SC	80.1
100B1.1	Transformer current 100/1A 2,5VA	1	006002-03063	Siemens	4NC5117-0CC21		100.1
100B1.1	Power terminal block AKG 4 GNYE	1	006005-02200	Phoenix Contact	0421029	AKG 4 GNYE	100.1
100B1.2	Transformer current 100/1A 2,5VA	1	006002-03063	Siemens	4NC5117-0CC21		100.1
100B1.2	Power terminal block AKG 4 GNYE	1	006005-02200	Phoenix Contact	0421029	AKG 4 GNYE	100.1
100B1.3	Transformer current 100/1A 2,5VA	1	006002-03063	Siemens	4NC5117-0CC21		100.1
100B1.3	Power terminal block AKG 4 GNYE	1	006005-02200	Phoenix Contact	0421029	AKG 4 GNYE	100.1

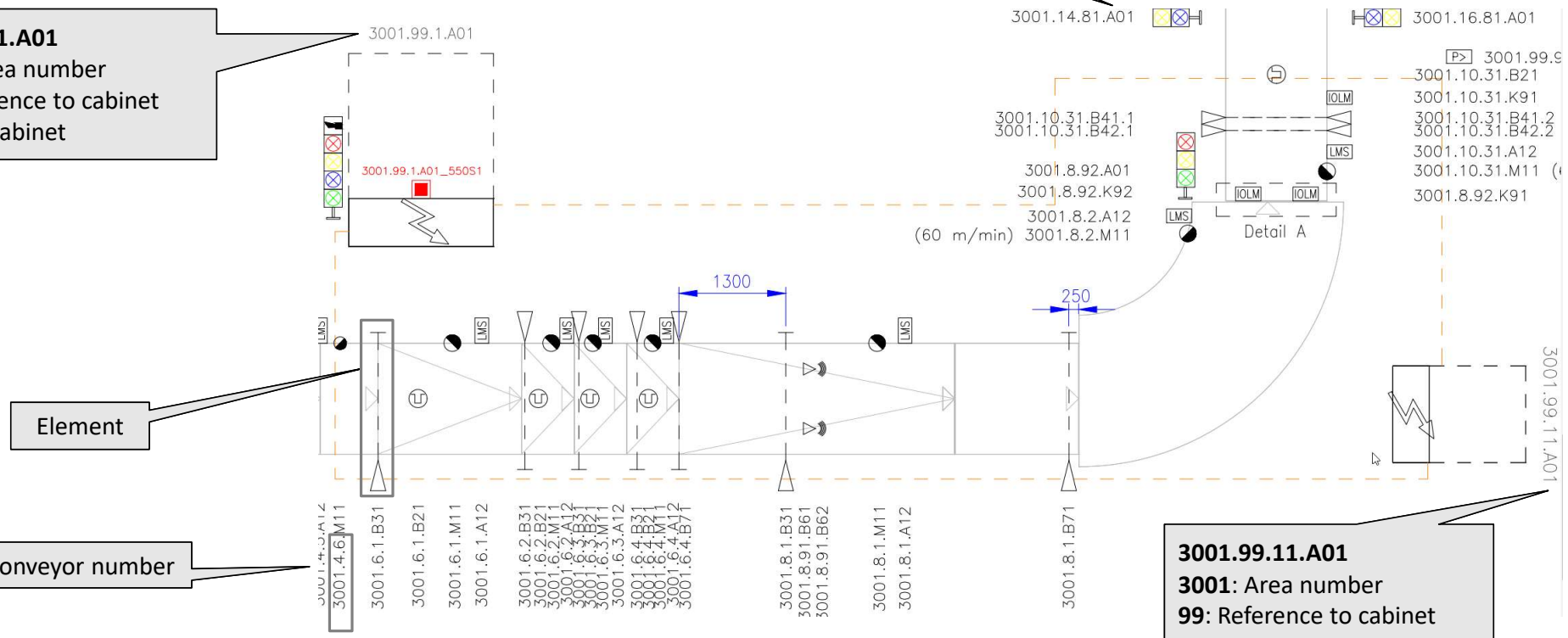
FORM:04 2365.01476.F Print on: 23-Dec-22

Customer : Vanderlande Industries B.V.		Orig. drawn : NLMEMA	Title : BILL OF MATERIALS	
City : Veghel		Orig. date : 02-Sep-22	Area : CCC Central Controls Cabinet ADTA	
Size : A3	All rights reserved ©2021 reproduction or issue is not permitted without written permission of Vanderlande Industries B.V.	Last editor : NLMEMA	VANDERLANDE — Number : 028616 516 XXYZ1 EN	Page : 1000
Prev. page : 983		Rev. date : 02-Sep-22	Status : CABINET UPDATE Rev. : D	Next page : 1001

Lay-out

EM components Lay-out

3001.99.1.A01
3001: Area number
99: Reference to cabinet
1: Main cabinet

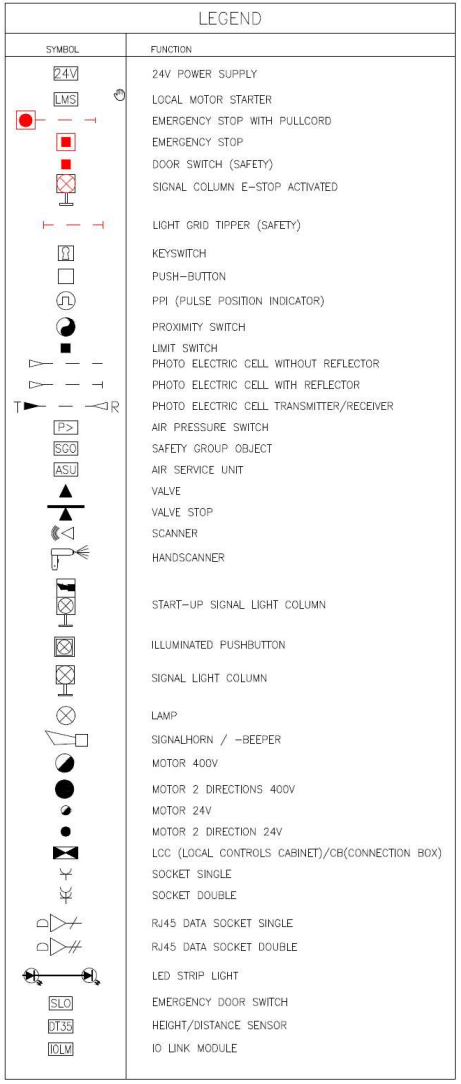


3001.99.11.A01
3001: Area number
99: Reference to cabinet
11: Local Control cabinet

Legend

Explanation used Lay-out symbols

> To be found on the lay-out drawing



Vanderlande Hotline

Global Service Desk Organization (1/2)

Remote Service Desk:

- through a single point of contact, you have direct access to a shared multidisciplinary trained team
- is a guaranteed solution that utilizes a proven ITIL method of working
- SLA Hotline response time:

1st line	15 min
2nd line PLC	30 min

Contact Helpdesk:

- For urgent incidents 24/7 (Sev1/2), always call Helpdesk on **+31 413 494 000**
- Non urgent requests (Sev3/4) can be sent via Email to Service.Desk@vanderlande.com (can be a delay in ticket registering)
- or registered directly on the Service Desk Portal DOS Maximo (non-urgent): dos.vanderlande.com (can be a delay in ticket response)

Global Service Desk Organization (2/2)

amazon VANDERLANDE

amazon

1st line Helpdesk

1st line Service Desk (24x7)
- 1st & main Point of Contact
- Call intake & registration
- Coordinate & manage all incoming incidents + problems
- Call ownership on all disciplines
- SLA Response time **15 min**

Field Service Engineer (Electrical/Mechanical)
- Will be invoiced afterwards
- Mutually agreed to send FSE

2nd line Helpdesk

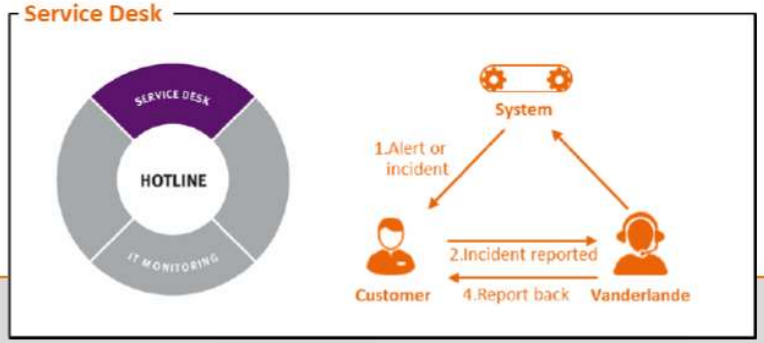
2nd line Service organization (24x7)
- Specialist Support (PLC)
- 3rd Party suppliers (Cognex)
- SLA response time **30 min**

Flying Engineer (PLC)
- Will be invoiced afterwards
- Mutually agreed to send FE

3rd line Helpdesk (R&D)

3rd line Service organization (8x5)
- R&D support
- Best effort base

Service Desk



Question time


VANDERLANDE

Training evaluation

- Scan the QR code
- Please respond the following statements by circling the most appropriate number from 1 (lowest) to 10 (highest)
- Submit