

Chain conveyor system *VarioFlow plus*

Safety instructions for mounting assemblies

Valid for the following types:

3 842 546 120 – ...125	3 842 552 940 – ...942	3 842 555 820 – ...823
3 842 547 380 + ...381	3 842 552 984 + ...985	3 842 558 000 – ...007
3 842 547 516 – ...533	3 842 553 037 + ...038	3 842 998 291 + ...742
3 842 547 712 + ...713	3 842 553 914 + ...915	3 842 998 774 – ...776

Replaces:

RA83837598/2021-10

RB05299486/2023-11 ENGLISH



1 About this documentation

1.1 About this documentation

This document combines existing residual risks and measures to be observed when using components and assemblies of the VarioFlow *plus* chain conveyor system for systems in normal operation.

The measures listed here as well as the safety instructions must be observed by the machine operator together with the safety instructions in the assembly instructions (MA) 3 842 571 622 "VarioFlow *plus* chain conveyor system", assemblies". The assembly instructions (MA) can be found in the media directory: www.boschrexroth.de/mediadirectory

1.2 Validity of the documentation

This documentation applies in addition to the assembly instructions (MA) 3 842 571 622 "VarioFlow *plus* chain conveyor system, assemblies" and own system documentation.

The specifications made here must be observed when handling the products of assembly instructions "VarioFlow *plus* chain conveyor system, assemblies"!

- Read these instructions as well as the required and supplementary assembly instructions "VarioFlow *plus* chain conveyor system, assemblies" in full prior to working with or commissioning the product, particularly section 2 "Safety instructions" and section 3 "General notes on property and product damage".

2 Safety instructions

The residual risks specified here relate to the assemblies described in the assembly instructions "VarioFlow *plus* chain conveyor system, assemblies".

Please note:

The residual risks for assembly instructions for chain conveyor systems only serve as support and examples for the drawing up of own assembly instructions and the risk assessments provided by the system manufacturer. In particular, they do not replace the required risk assessments and tests by the creator and user of the required chain conveyor systems created from the Bosch Rexroth components. They are not part of the scope of delivery of components (see also operator responsibilities).

2.1 Safety equipment

Refer to the information in the following standards when designing safety equipment:

- DIN EN 619

2.2 Operator responsibilities

- Before the initial commissioning or re-commissioning of a conveyor system, carry out a risk assessment in accordance with DIN EN ISO 12100.
The residual risks specified in these instructions only serve as example for the operating manual and risk assessment of your individually designed conveyor system. The claim to the warranty is invalidated if no original spare parts are used.
- Provide safety-related instructions to the operating personnel before the initial commissioning or re-commissioning, and then at regular intervals.

2.3 Life stages of the machine according to EN 12100 Sect. 5.4 a /b (No. 1 -27)

Sect. 5.4 a

1. Transport, assembly and installation
- 2. Commissioning*);**
- 3. Use*);**
- 4. Disassembly, decommissioning and disposal*);**
5. Setting up;
6. Check;
7. Teaching/programming;
8. Changeover;
9. Startup;
- 10. All operating modes*);**
11. Machine loading;
12. Removing product from the machine;
13. Shutting the machine down;
14. Shutting the machine down in the case of an emergency
15. Restoring operation after a bottleneck or blockage;
16. Restarting after unscheduled shutdown;
17. Troubleshooting and remedial action (intervention by operating personnel);
18. Cleaning and keeping clean;
19. Preventive maintenance;
- 20. Corrective maintenance*).**

Operating states of the machine, Sect. 5.4 b

- 21. Normal operation*);**
22. Modification of a property or a dimension of the material or workpiece to be processed,
23. Failure of one (or more) of its components or supply devices,
24. External disturbances (e.g. impact, vibration, electromagnetic interference),
25. Design faults or defects (e.g. software errors),
26. Disruption in power supply and
27. Ambient conditions (e.g. damaged floors).

*) The life stages listed in these instructions.

3 Residual risks during normal operation

3.1 General

Table 1: Conveyor chains/conveyor medium

	Life stage	Location	Situation	Hazard		Action
1	–	In compliance with ISO 12100, the risk assessment requires that only trained specialist personnel are working at the system.				Personnel qualifications The activities described in this document and the assembly instructions (3 842 571 622) require a basic knowledge of mechanical, electrical and pneumatic systems, as well as familiarity with the corresponding technical terms. Additional knowledge regarding the use of lifting gear and corresponding slings is required for transporting and handling the product. To ensure safe use, these activities should therefore only be performed by qualified personnel or by an instructed person acting under the direction of such a person. "Qualified personnel" refers to those who can recognize potential hazards and take appropriate safety measures based on their technical training, knowledge, experience, and understanding of the relevant regulations pertaining to the work being performed. Qualified personnel must comply with the relevant technical regulations and have the necessary expertise.
2	–					When setting up the system, the requirements of product standard EN 619 must be complied with.

3.2 Conveyor chains

Table 2: Conveyor chains, part 1

	Life stage	Location	Situation	Hazard		Action
3	3/10/21	Between conveyor chains* with cleats and body parts * (Cleated chain, accumulation roller chain, universal chain)	Conveyor chain in contact with body part		Scraping	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barrier, enclosure (fixed or locked protective equipment in accordance with EN 294:192, EN 1088:1995 3.2 and as defined in EN 953) - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
4	3/10/21	VFplus for all chain types: In the inner curve area between the opening of the chain above the sliding rail	When reaching into the closing chain in the inner curve area	 	Crushing, shearing	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
5 + 6 + 9	3/10/21	Between chain links during curved runs (horizontal, vertical / gap dimension: VFplus 65 (5): < 5 mm, VFplus 90 (6): < 5 mm, VFplus 120 (9): < 5 mm)	When intervening	 	Crushing, shearing	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
7 + 10	3/10/21	VFplus 90/120: Between chain links (trough) during curved runs (horizontal, vertical)	When intervening	 	Crushing, shearing	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.

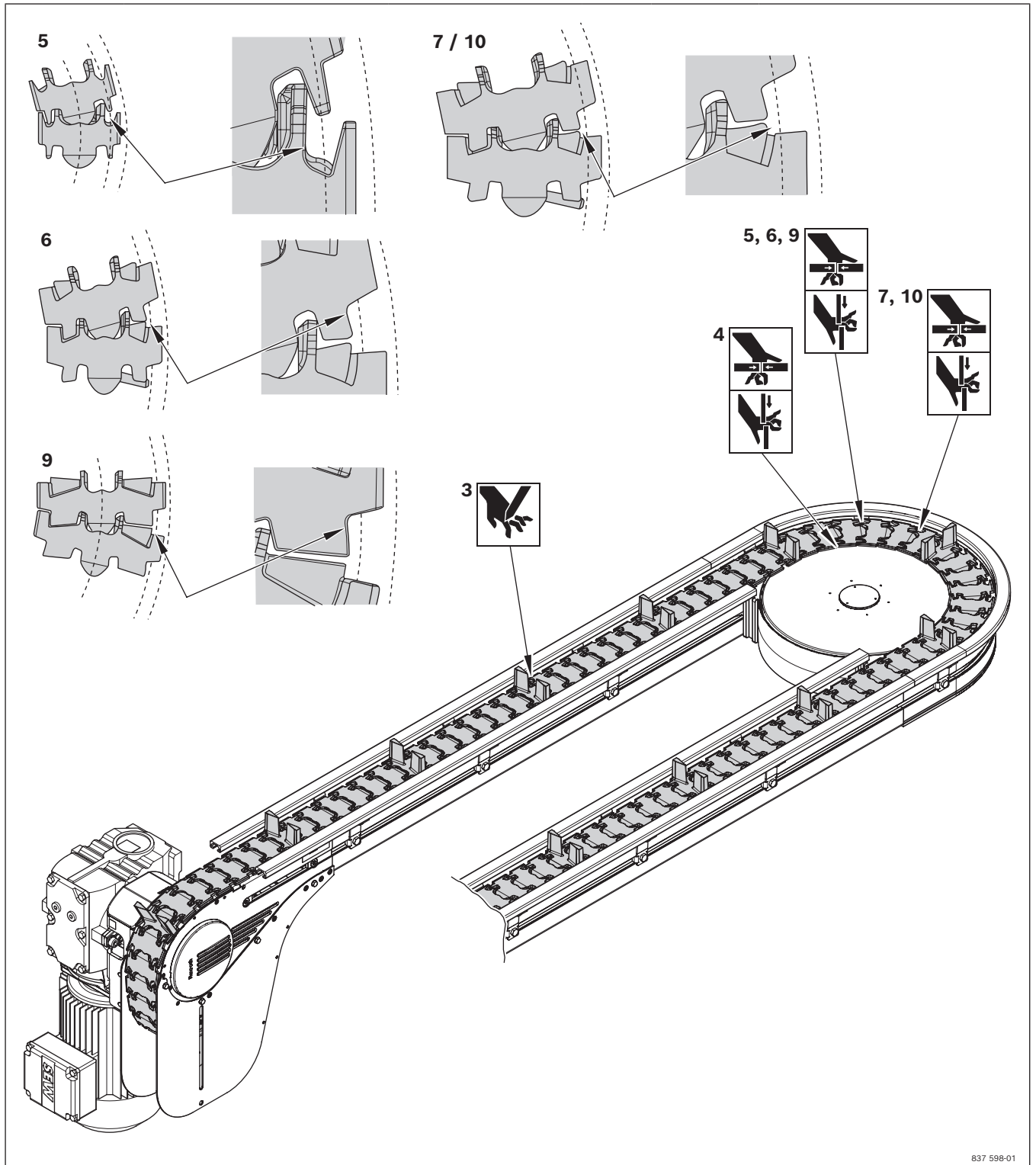


Table 3: Conveyor chains, part 2

	Life stage	Location	Situation	Hazard		Action
8 + 11	3/10/21	VFplus 65/90/120/160: Between active/passive connection kits and trough as well as in clearance at sliding rail in VFplus conveyor chains	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.

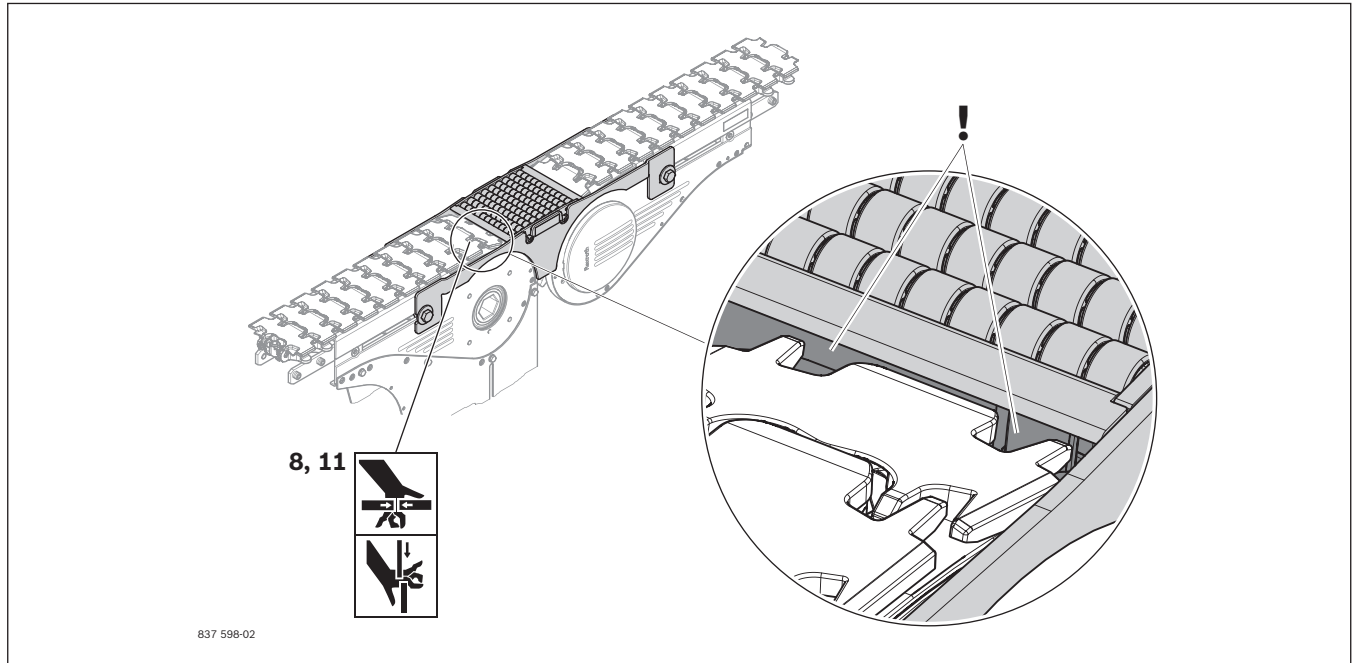
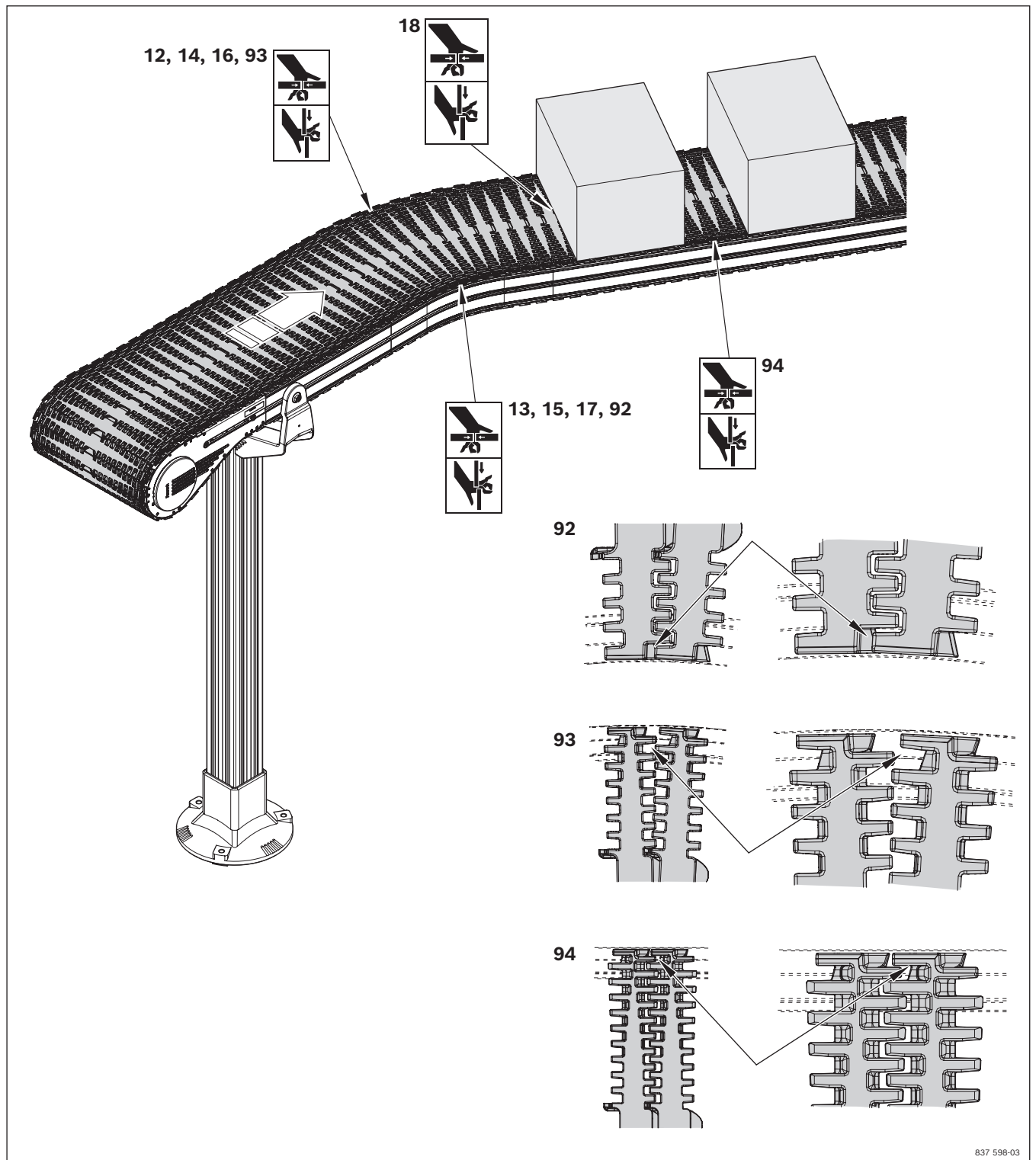


Table 4: Conveyor chains, part 4

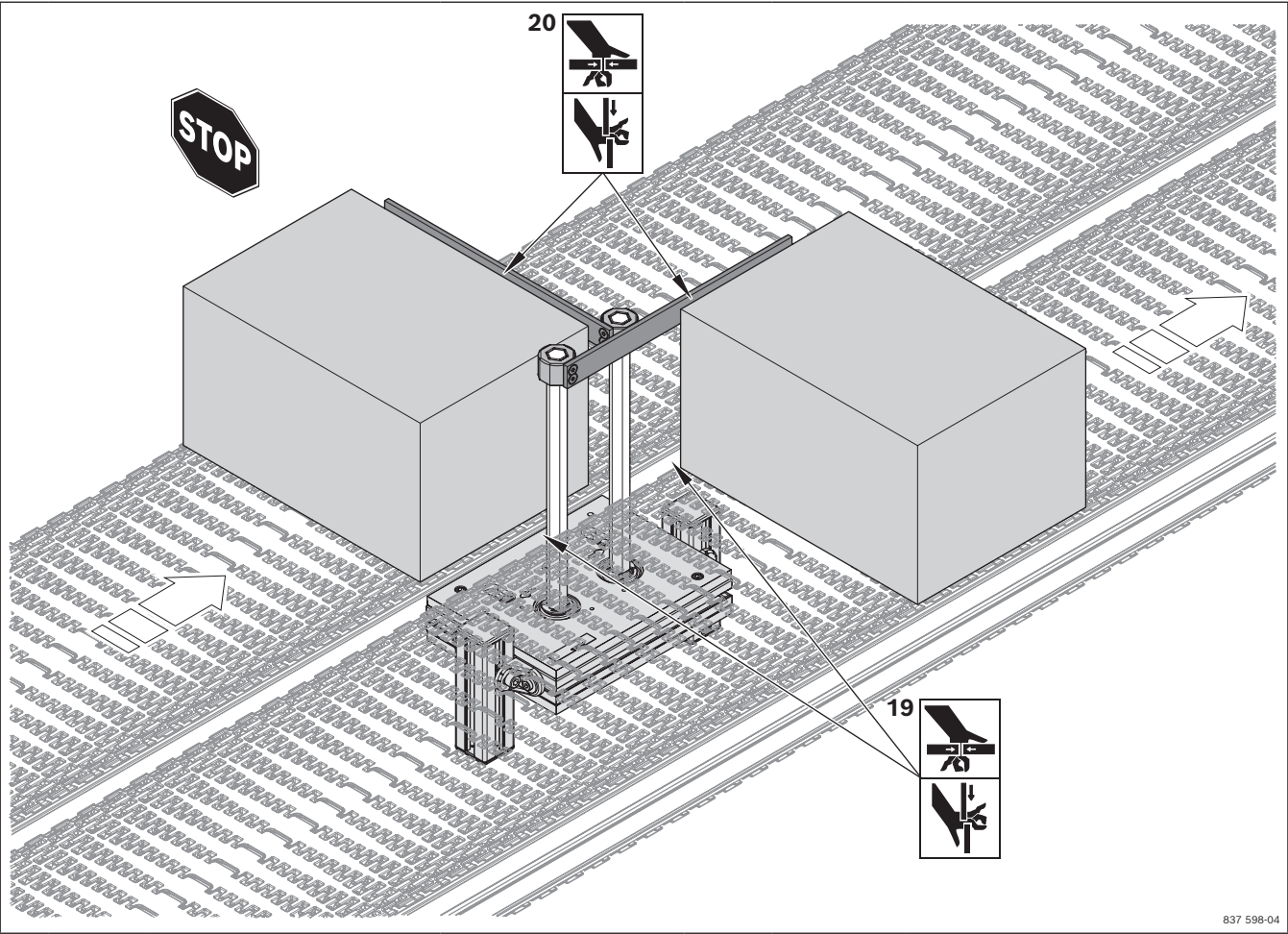
	Life stage	Location	Situation	Hazard		Action
13 + 15 + 17	3/10/21	VFplus 160/240/320: Between chain links during curved runs (interior radius)	When intervening	 	Crushing, shearing	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
14 + 16	3/10/21	VFplus 160/240/320: Between chain links during curved runs (outer radius / horizontal, vertical / insertion depth: < 5 mm)	When intervening	 	Crushing, shearing	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
18	3/10/21	VFplus 160/240/320: Between product and conveyor chain (accumulation operation)	Body part between product and conveyor chain	 	Crushing, shearing	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system. • Wear closely fitting working clothes and head covering
92 + 93 + 94	3/10/21	VFplus 160/240/320: At the teeth of the chain links. In addition, danger also occurs on the outer teeth on the straight sections.	Entanglement of jewelry, clothing, etc.		Entangle- ment	• Do not reach into running system. • Wear closely fitting working clothes and head covering



3.3
Barrier

Table 5: Barrier

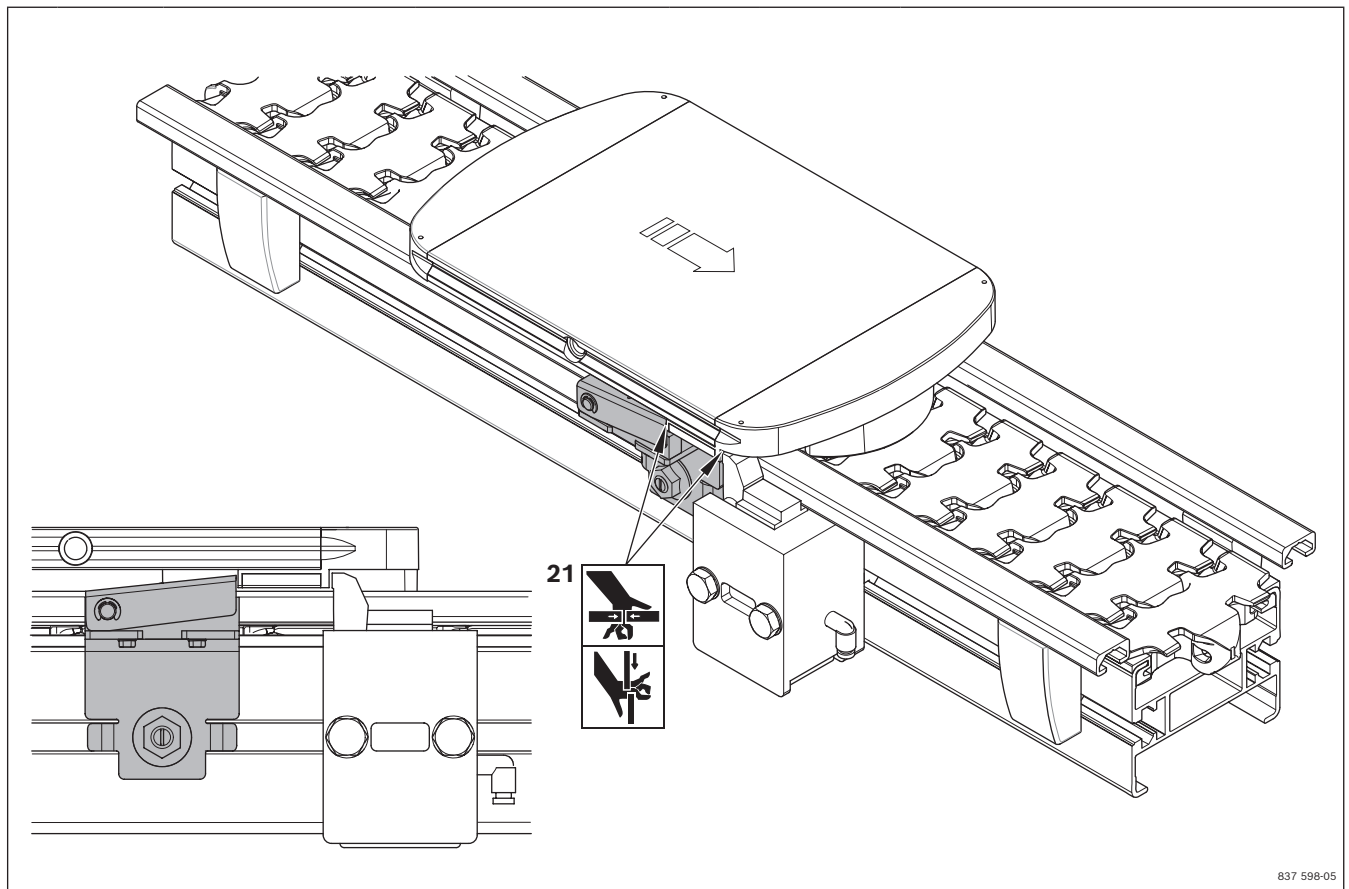
	Life stage	Location	Situation	Hazard		Action
19	3/10/21	Between transported material and vertical shaft	Trapping of body parts		Crushing, shearing	Here, a structural solution must be provided by the customer depending on the weight of the transported material and the conveyor speed. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
20	3/10/21	Between transported material and barrier arm				



3.4 Return stop

Table 6: Return stop

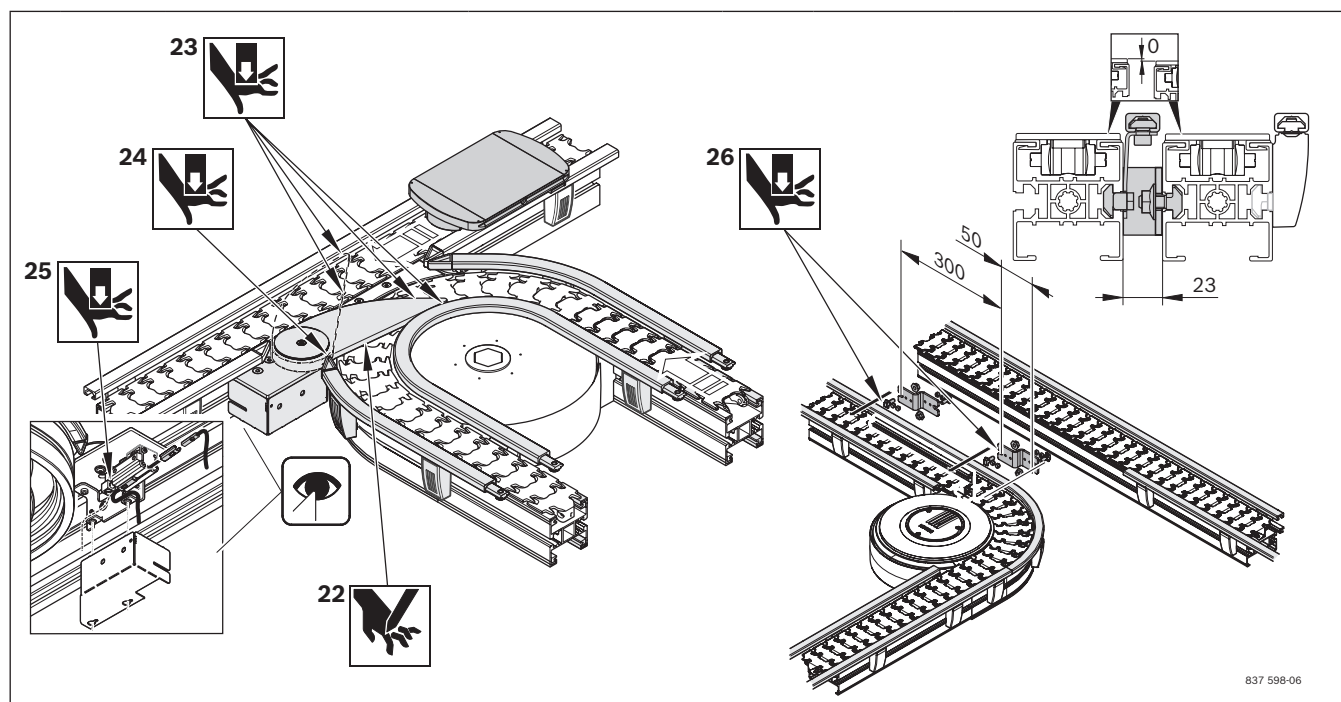
	Life stage	Location	Situation	Hazard		Action
21	3/10/21	Between workpiece and return stop or stop gate	Trapping of body parts ($v_{\max} = 18 \text{ m/min}$, max. weight = 8 kg)	 	Crushing, shearing	Here, a structural solution must be provided by the customer depending on the weight of the transported material and the conveyor speed. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.



3.5 Diverter, cross-diverter

Table 7: Diverter, cross-diverter

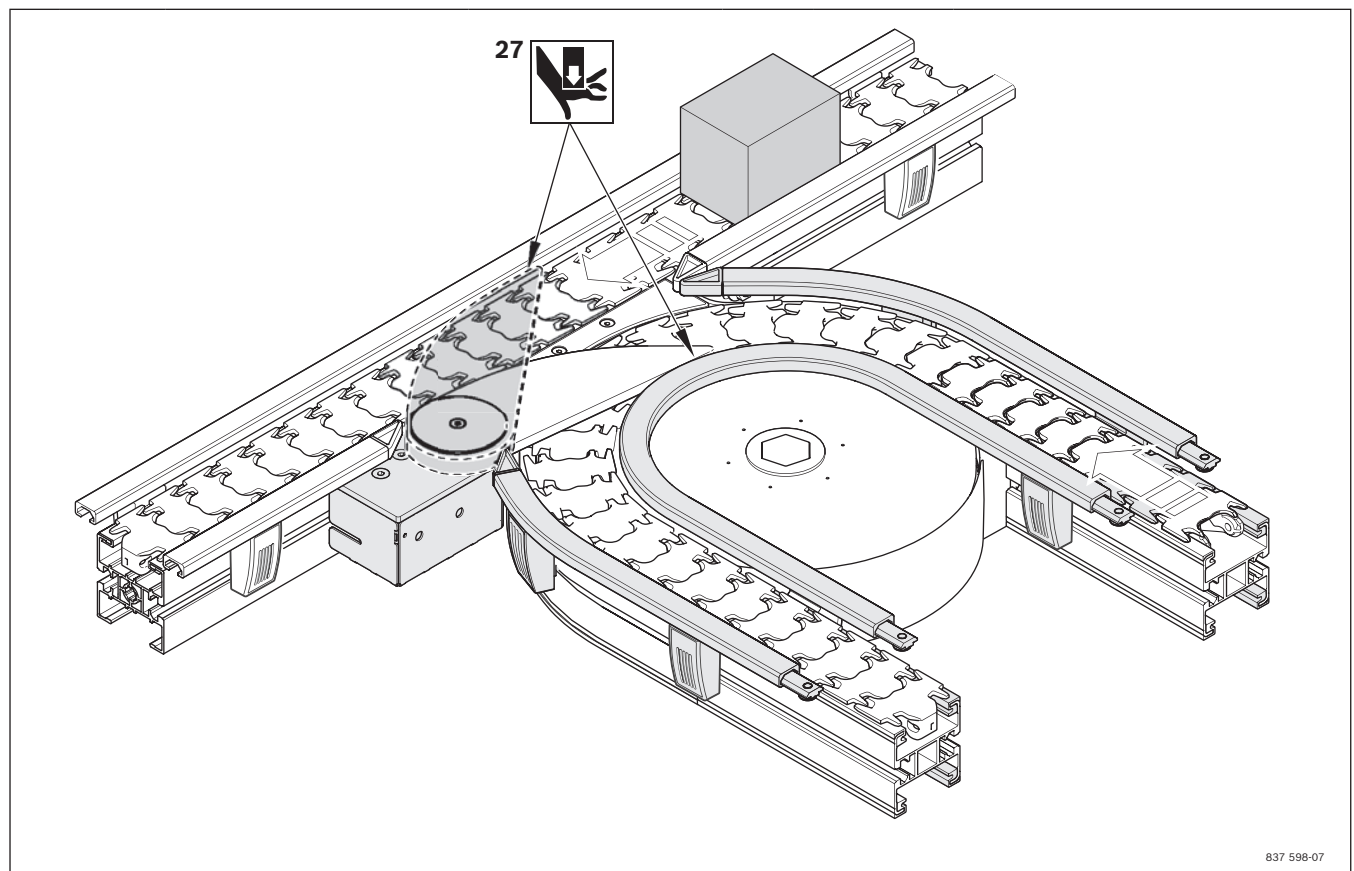
	Life stage	Location	Situation	Hazard		Action
22	3/10/21	Normal standard chain: Between diverter arm and conveyor medium	Body part between diverter arm and conveyor medium		(Cutting) scraping	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
23	3/10/21	Between diverter arm, workpiece pallet and lateral guide	Body part in gap between guide profile and diverter arm		Crushing	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
24	3/10/21	Between diverter body, workpiece pallet and lateral guide	Body part in gap between guide profile and diverter arm		Crushing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system. - Observe the structural gap dimension specified in accordance with EN 619 ($< 5 \text{ mm}$)
25	3/10/21	When the housing cover is removed: Between piston rod/actuating lever and cylinder housing	Body part between piston rod/actuating lever and cylinder housing		Crushing	- Assembly work may only be carried out by qualified personnel - Disconnect the power supply before removing the housing cover
26	3/10/21	During installation of the curve: Between section profile and curve profile	Body part between section profile and curve profile		Crushing	Assembly work may only be carried out by qualified personnel



3.6 Universal diverter

Table 8: Universal diverter

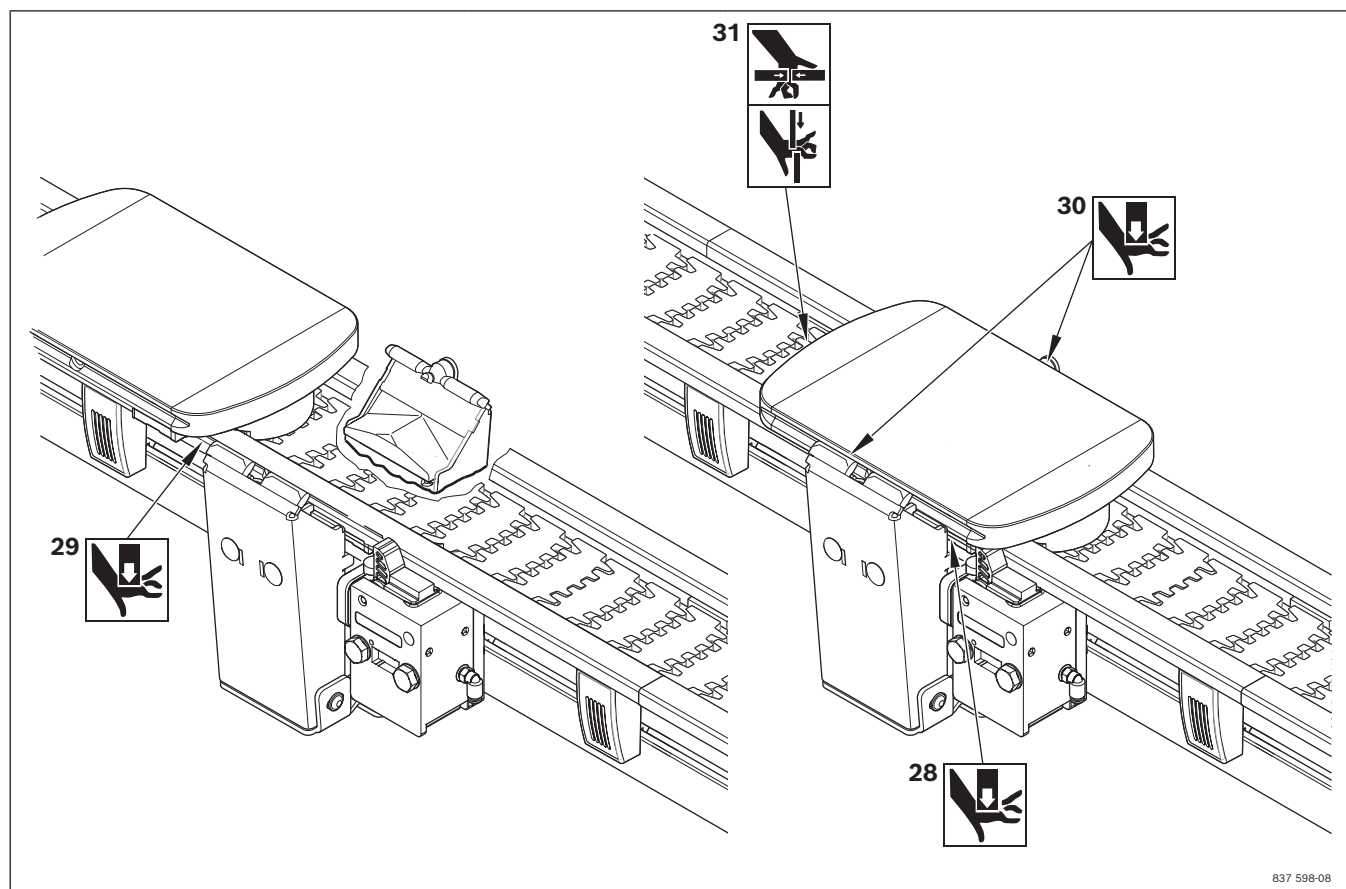
	Life stage	Location	Situation	Hazard		Action
27	3/10/21	Between customer-side diverter arm, conveyed material and lateral guide	Body part in gap between guide profile and diverter arm		Crushing	Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system. • Observe the structural gap dimension specified in accordance with EN 619 (< 5 mm)



3.7 Positioning unit VF

Table 9: Positioning unit VF

	Life stage	Location	Situation	Hazard		Action
28	3/10/21	Between clamping jaw of positioning unit and section profile	Trapping of body parts		(Cutting, scraping) crushing	Do not reach into running system.
29	3/10/21	Between stop gate housing WT fixed stop and positioning unit	Trapping of body parts when feeding in the workpiece pallet		Crushing	Here, a structural solution must be provided by the customer depending on the weight of the workpiece/workpiece pallet and the conveyor speed. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
30	3/10/21	Between centering pin, end stop and workpiece pallet	Trapping of body parts		Crushing	Do not reach into running system.
31	3/10/21	Conveyor medium: Between running conveyor medium and positioned workpiece pallet	Trapping of body parts, pulling in of clothing	 	Crushing, shearing	- Do not reach into running system. - Wear protective clothing. - Observe the general safety instructions in the assembly instructions (see page 2)

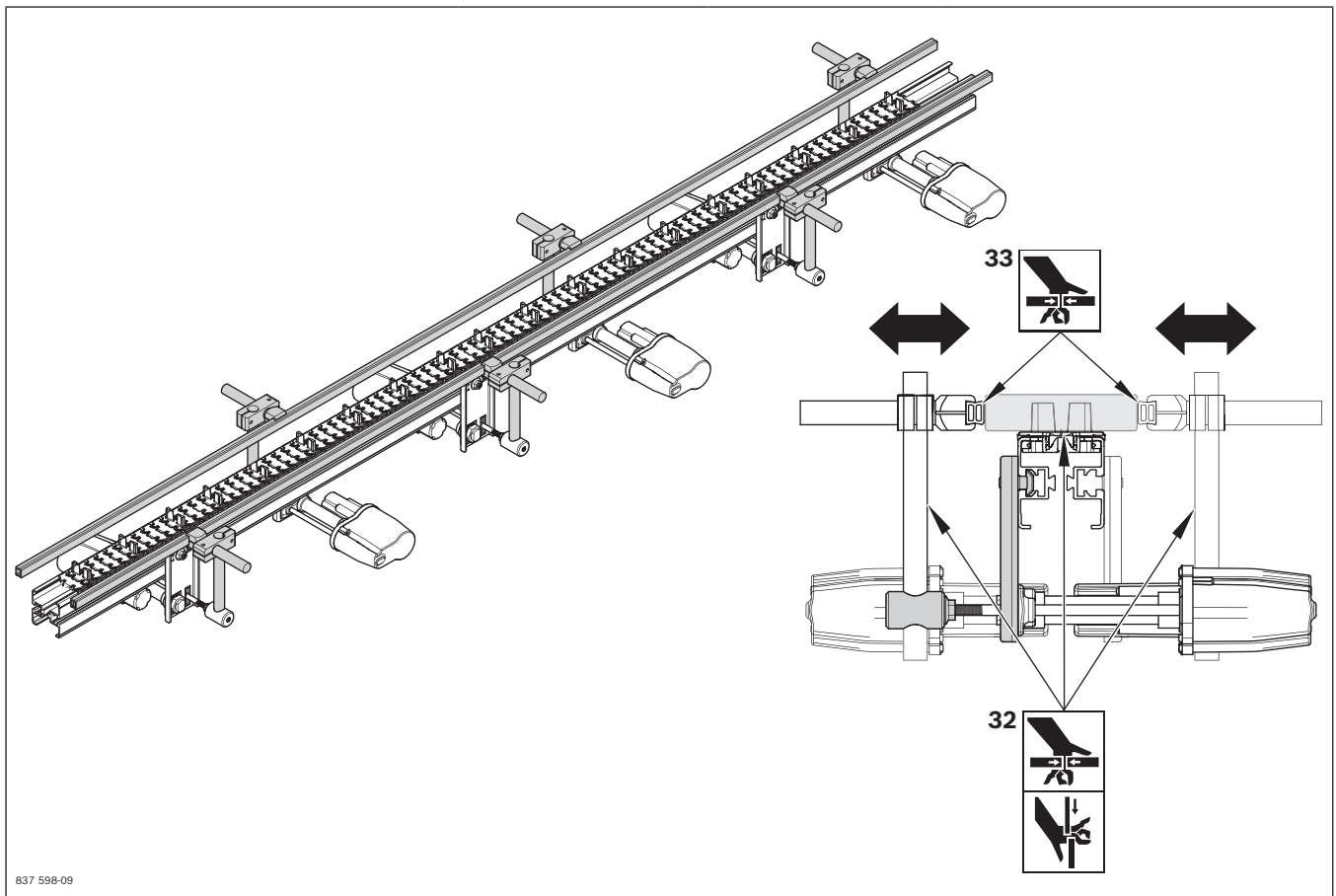


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3.8 Adjustable lateral guide

Table 10: Adjustable lateral guide

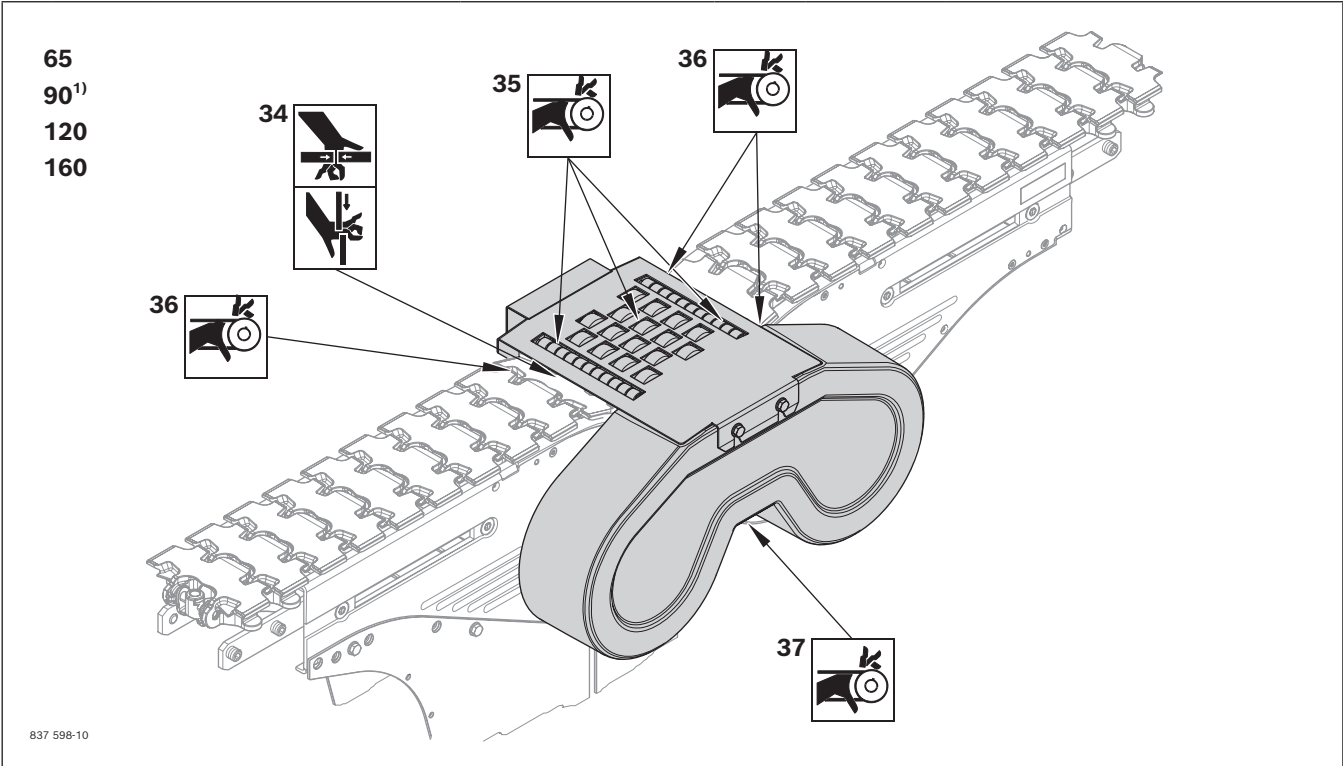
	Life stage	Location	Situation	Hazard		Action
32	3/10/21	Lateral guide holder: Between workpiece/ workpiece pallet and cleated chain, as well as holder	Trapping of body parts	 	Crushing, shearing	Here, a structural solution must be provided by the customer depending on the weight of the workpiece/workpiece pallet and the conveyor speed. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
33	3/10/21	Between guide and workpiece when extending the cylinder and when there is overpressure in the pneumatic system	When intervening		Crushing	• Avoid overpressure (normal pressure $p = 4 \dots 5$ bar) • Do not reach into running system.



3.9
Connection kits

Table 11: Connection kits, active roller bridge connection kit

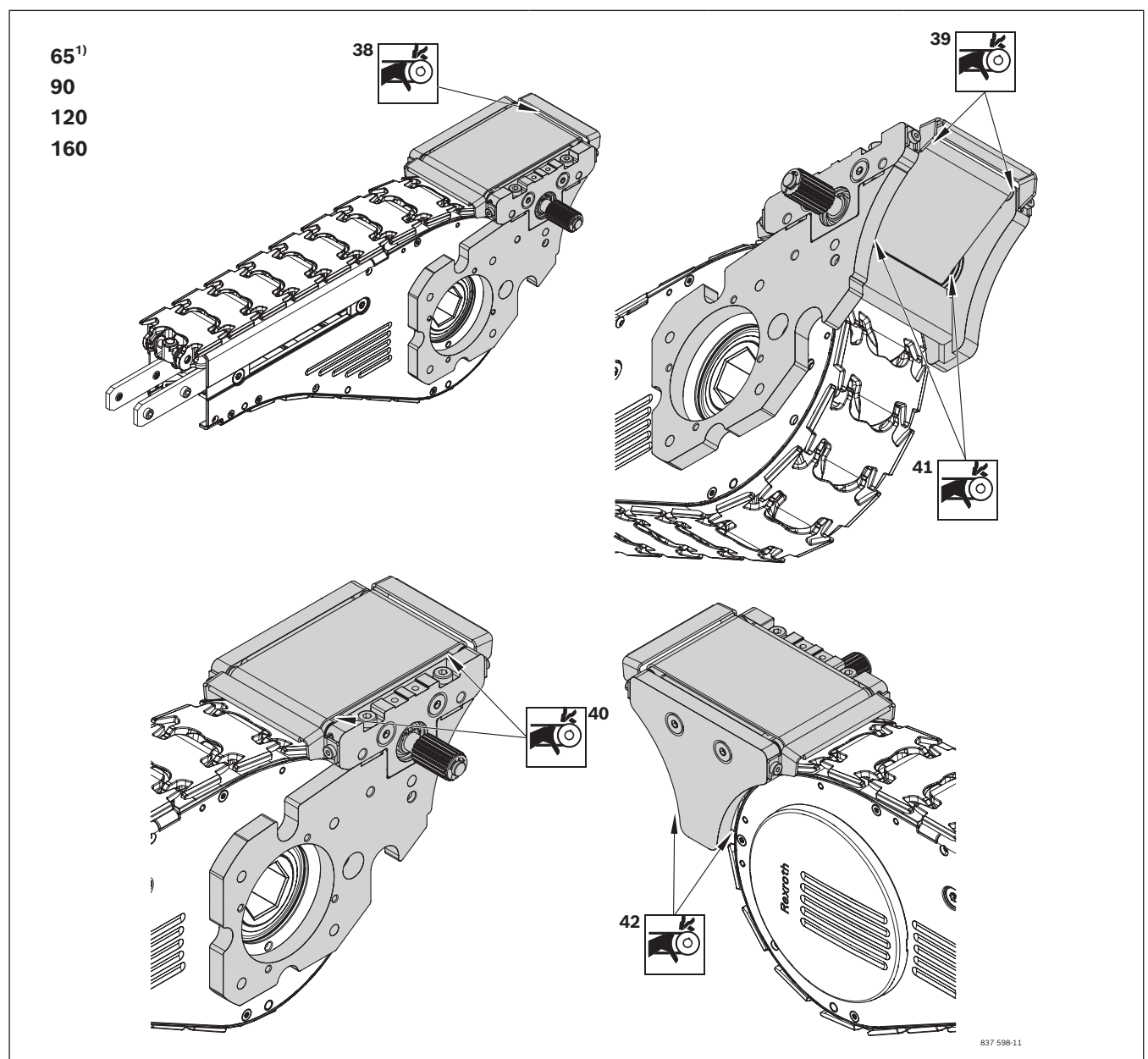
	Life stage	Location	Situation	Hazard		Action
34	3/10/21	Between active roller bridge connection kit and trough as well as in clearance at sliding rail in VFplus conveyor chains	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
35	3/10/21	Active roller bridge: Between rollers and protective cover	Pulling in of body parts/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering
36	3/10/21	Active roller bridge connection kit: Between conveyor medium and side plate				
37	3/10/21	Active roller bridge: Between conveyor medium and cross connector	Trapping of body parts, pulling in of clothing/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering



1) Size shown

Table 12: Connection kits, active belt bridge connection kit

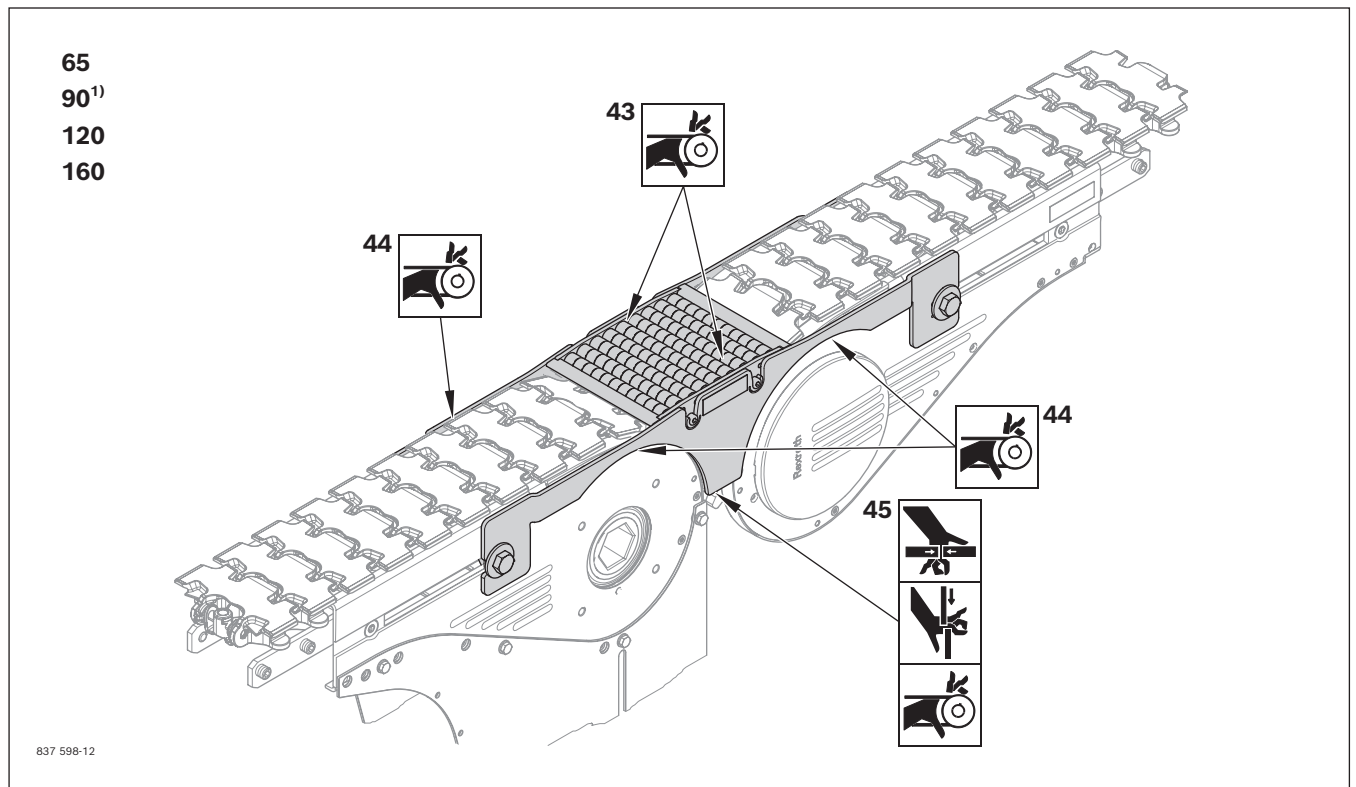
	Life stage	Location	Situation	Hazard		Action
38	3/10/21	Between conveyor medium connection kit and bridging sheet	Trapping of body parts, pulling in of clothing/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering
39	3/10/21	Between conveyor medium connection kit and slide bearings				
40	3/10/21	Between conveyor medium connection kit and support plate				
41	3/10/21	Between conveyor medium connection kit and splined shaft				
42	3/10/21	Between conveyor medium and side plate				



¹⁾ Size shown

Table 13: Connection kits, passive bridge connection kit

	Life stage	Location	Situation	Hazard		Action
43	3/10/21	Passive bridge connection kit Between rollers (D11)/rollers (D11) and retaining plates	Pulling in of body parts/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering
44	3/10/21	Between conveyor medium and side plates	Pulling in of body parts/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering
45	3/10/21	Between basic unit and return unit (reaching in from below)	Trapping of body parts, pulling in of clothing/long hair	  	Crushing, shearing, tearing out of long hair	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. cross connector or axis - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.

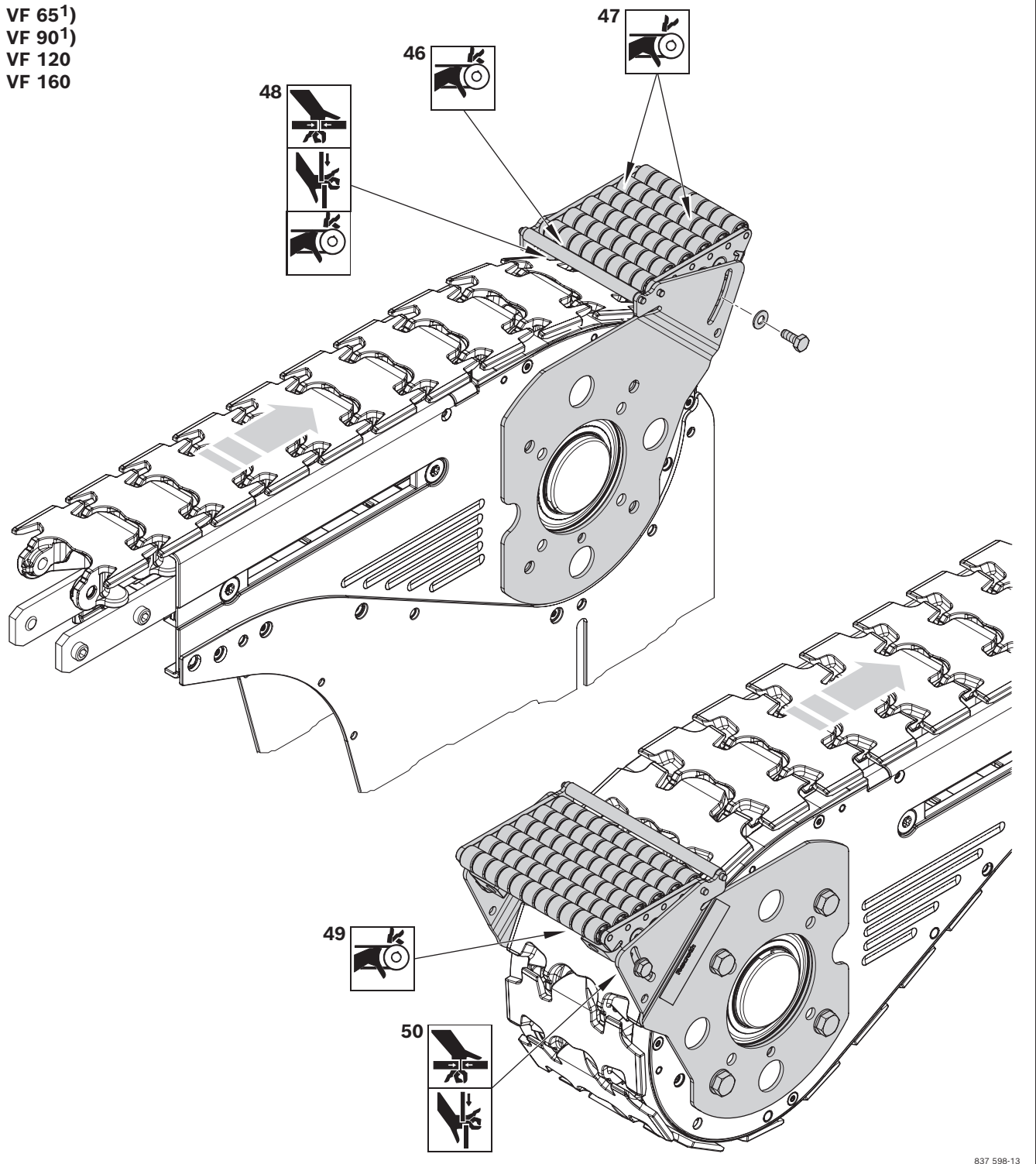


¹⁾ Size shown

Table 14: Connection kits, short passive bridge connection kit

	Life stage	Location	Situation	Hazard		Action
46	3/10/21	Between rollers (D11) and wheel	Pulling in of body parts/long hair		Crushing, tearing out of long hair	Wear closely fitting working clothes and head covering
47	3/10/21	Between rollers (D11)/rollers (D11) and retaining plates				
48	3/10/21	Between conveyor medium and roller element (from upper run towards passive bridge)	Trapping of body parts, pulling in of clothing/long hair/fingers	  	Crushing, shearing, tearing out of long hair	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Wear closely fitting working clothes and head covering
49	3/10/21	Between conveyor medium and roller element (from lower run towards passive bridge)				
50	3/10/21	Between conveyor medium and side plates	Trapping of body parts	 	Crushing, shearing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers, enclosure or protective cover - Wear closely fitting working clothes and head covering

VF 65¹⁾
VF 90¹⁾
VF 120
VF 160

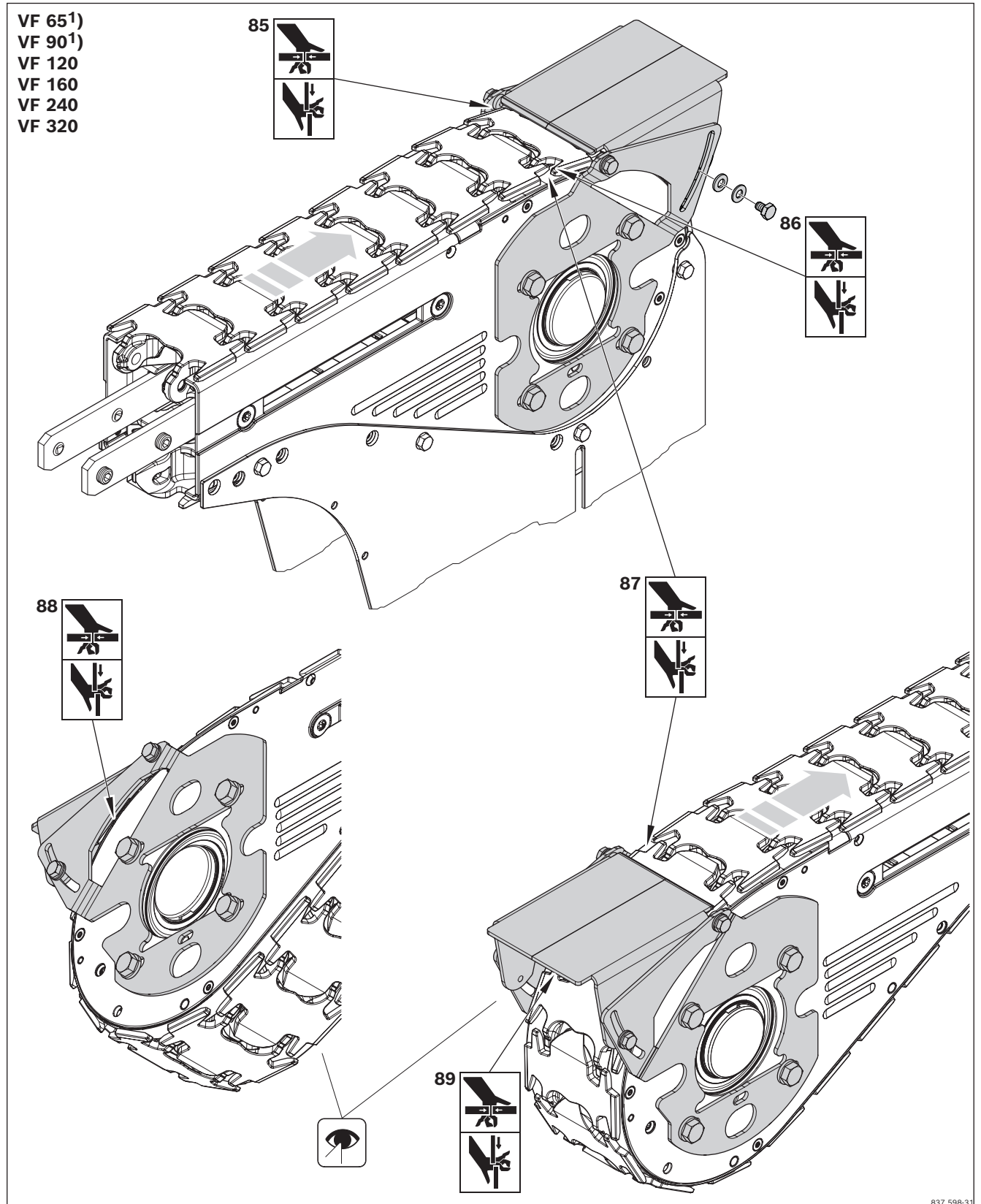


¹⁾ Size shown

3.10 Connection kits, short sliding bridge connection kit

Table 15: Connection kits, short passive bridge connection kit

	Life stage	Location	Situation	Hazard		Action
85	3/10/21	Between conveyor medium and side tab	Trapping of body parts, pulling in of clothing/long hair	 	Crushing, tearing out of long hair	Do not reach into running system.
86	3/10/21	Between conveyor medium (flat chain) and sliding plate	Trapping of body parts, pulling in of clothing/long hair	 	Crushing, shearing, tearing out of hair	Gap < 5 mm Wear closely fitting working clothes and head covering
87	3/10/21	Between conveyor medium (static friction chain) and sliding plate				Gap > 5 mm - Constructive solutions required, e.g. enclosure - Wear closely fitting working clothes and head covering
88	3/10/21	Between base unit/return unit and side plate (reaching in from side)				Wear closely fitting working clothes and head covering
89	3/10/21	Between third-party conveyor and return unit (reaching in from below)				Here, a structural solution must be provided by the customer. - Cut the protective cover according to the set bracket of the connection kit and taking into account the gap dimensions. - Wear closely fitting working clothes and head covering

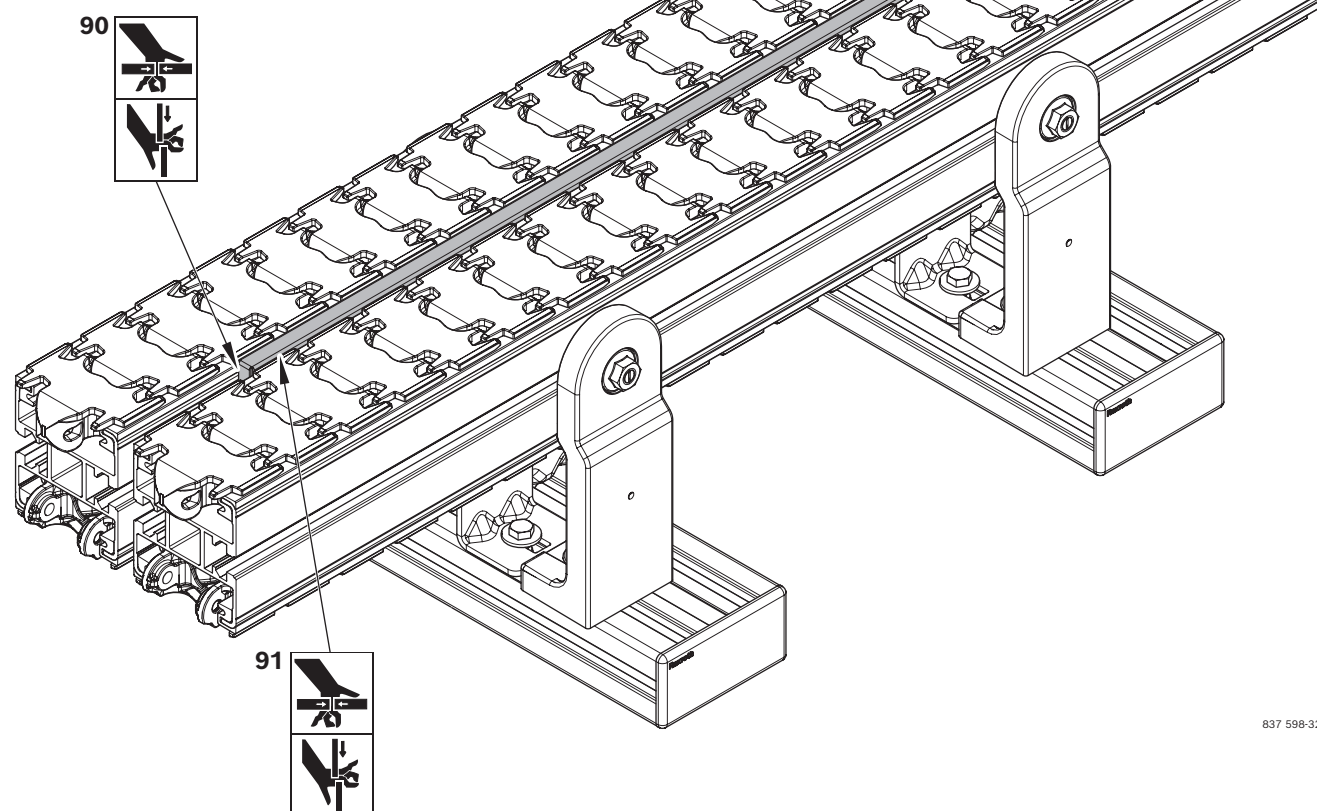


3.11 Parallel transfer

Table 16: Parallel transfer

	Life stage	Location	Situation	Hazard		Action
90	3/10/21	Between conveyor medium and sliding plate	Pulling in of body parts/long hair		Crushing, shearing, tearing out of hair	• Do not reach into running system.
						
91	3/10/21	Between conveyor medium and sliding plate			Pulled out hair	• Wear closely fitting working clothes and head covering
						

VF 65¹⁾
 VF 90¹⁾
 VF 120
 VF 160
 VF 240
 VF 320

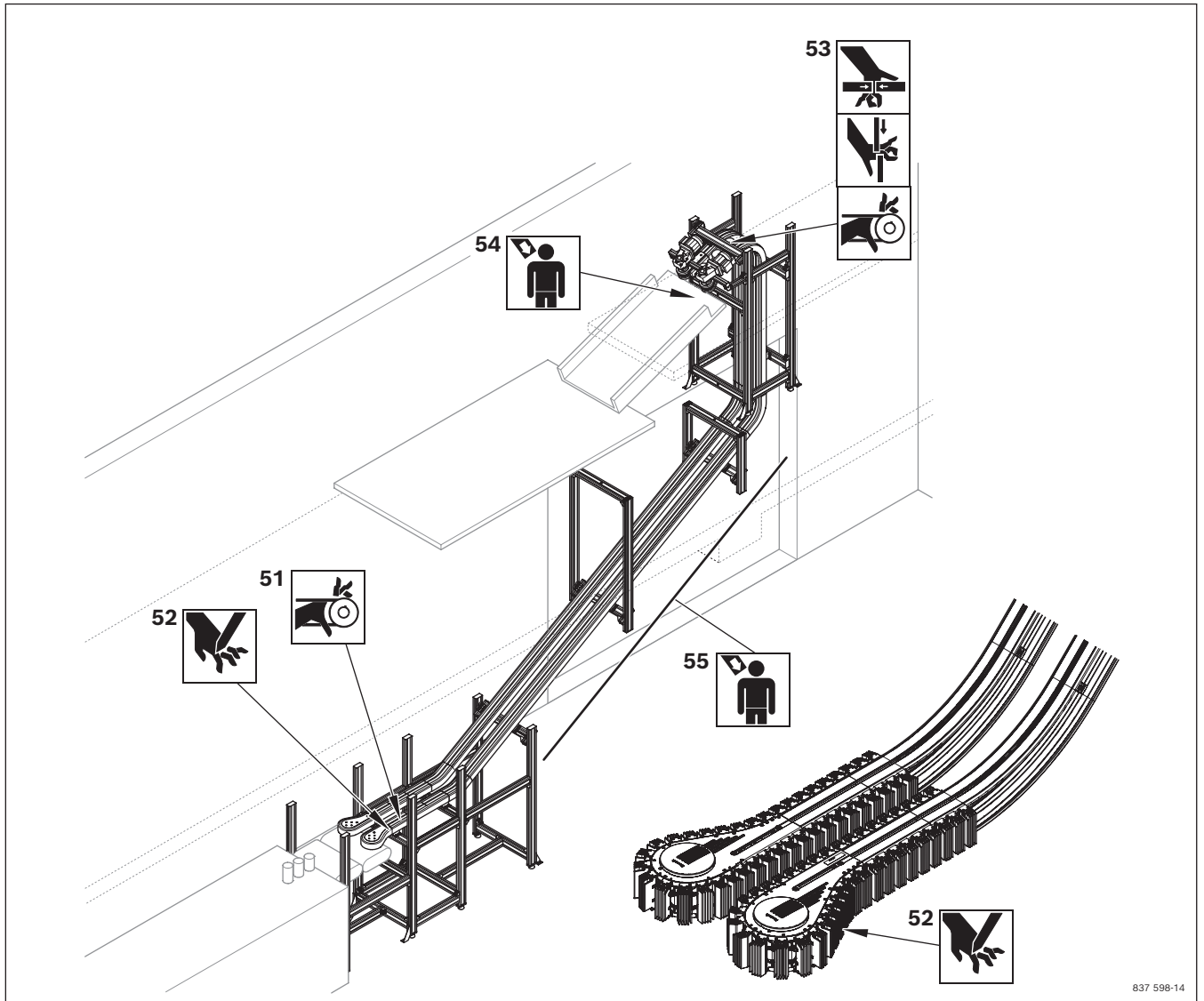


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3.12 Wedge conveyor

Table 17: Wedge conveyor

	Life stage	Location	Situation	Hazard		Action
51	3/10/21	Basic unit/return unit: Between side plate and wedge conveyor chain	Pulling in of clothing/long hair		Crushing, tearing out of long hair	- Do not reach into running system. - Wear protective clothing.
52	3/10/21	Wedge conveyor chain	Chain in contact with body part, contact with body parts		Cutting, scraping	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
53	3/10/21	Between wedge conveyor chain and frame	Pulling in of body parts/clothing/long hair	  	Crushing, shearing, tearing out of long hair	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system. - Wear closely fitting working clothes and head covering
54	3/10/21	End of conveyor section	Injury to body parts caused by falling workpieces/workpiece pallets		Crushing	Here, a structural solution must be provided by the customer depending on the transported material. - Set up a suitable guard at the system, e.g. end stops - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
55	3/10/21	Entire wedge conveyor section	Falling conveyed material		Crushing	Here, a structural solution must be provided by the customer depending on the weight of the transported material. - Set up a suitable guard at the system, e.g. barriers - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.

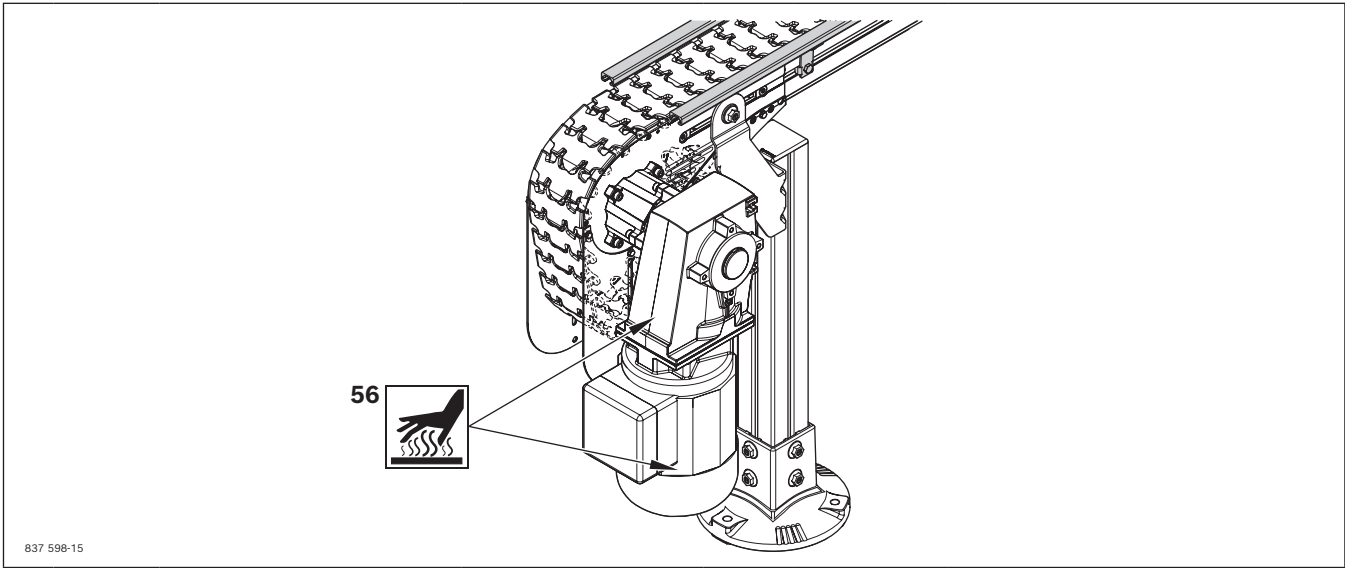


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3.13 Gear motor

Table 18: Gear motor

	Life stage	Location	Situation	Hazard		Action
56	3/10/21	Gear motor surface	Burning of body parts		Burning of body parts	Here, a structural solution must be provided by the customer depending on the motor temperature (combustion threshold over 65°C, burning risk over 70°C). • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.



3.14 Basic unit/return unit

Table 19: Basic unit/return unit, part 1

	Life stage	Location	Situation	Hazard		Action
57	3/10/21	Between side plate/sliding rail and conveyor chain	Pulling in of body parts/long hair	  	Crushing, shearing, tearing out of long hair	• Wear closely fitting working clothes and head covering
58	3/10/21	Laterally at the basic unit: Between protective cover and conveyor chain (chain running out of drive wheel)	Trapping of body parts, pulling in of clothing/long hair	  	Crushing, shearing, tearing out of long hair	• Wear closely fitting working clothes and head covering
95	3/10/21	At the teeth of the individual chain links	Pulling in of jewelry, body parts/long hair	  	Crushing, shearing, tearing out of long hair	Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system. • Wear closely fitting working clothes and head covering

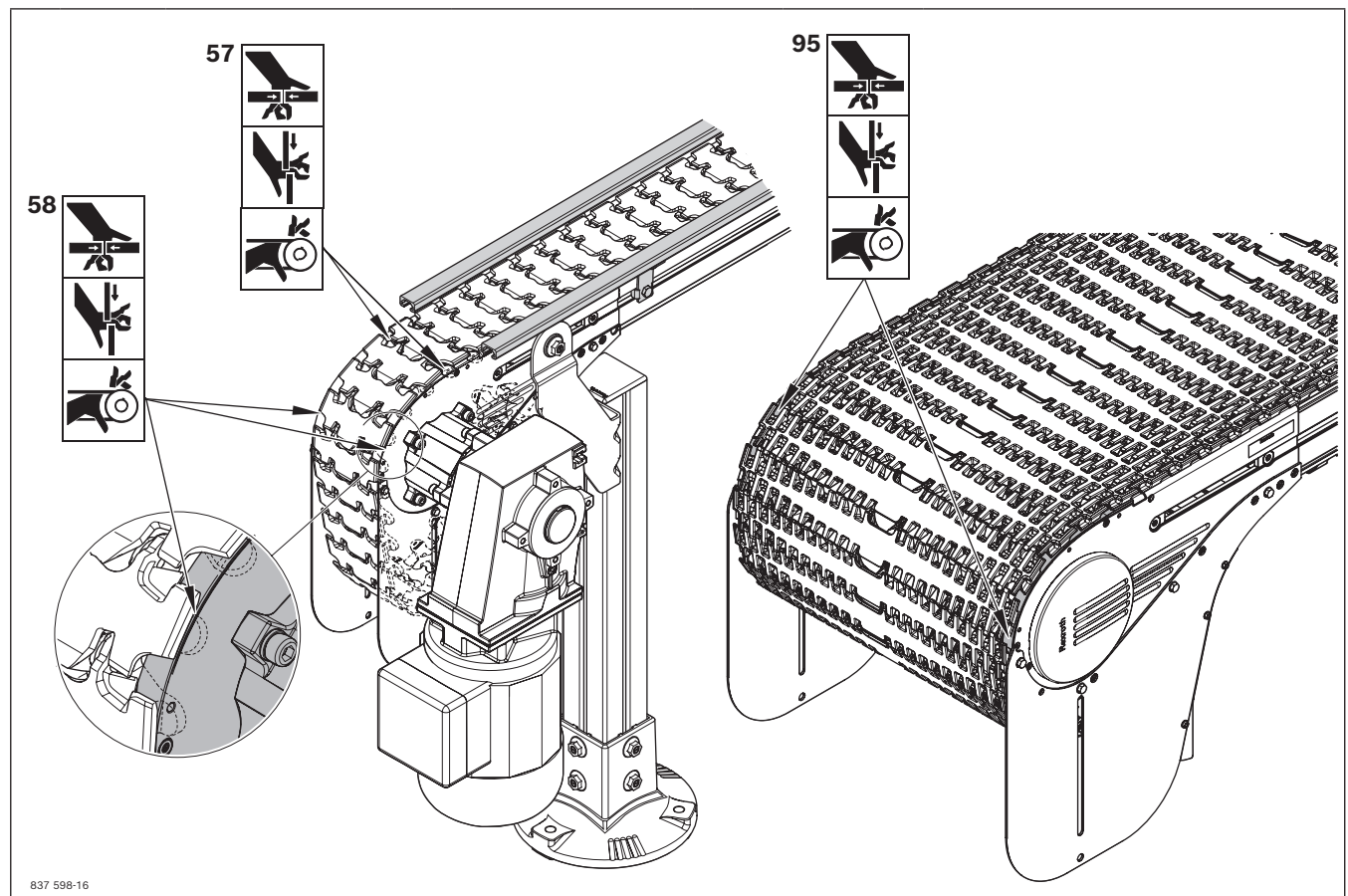
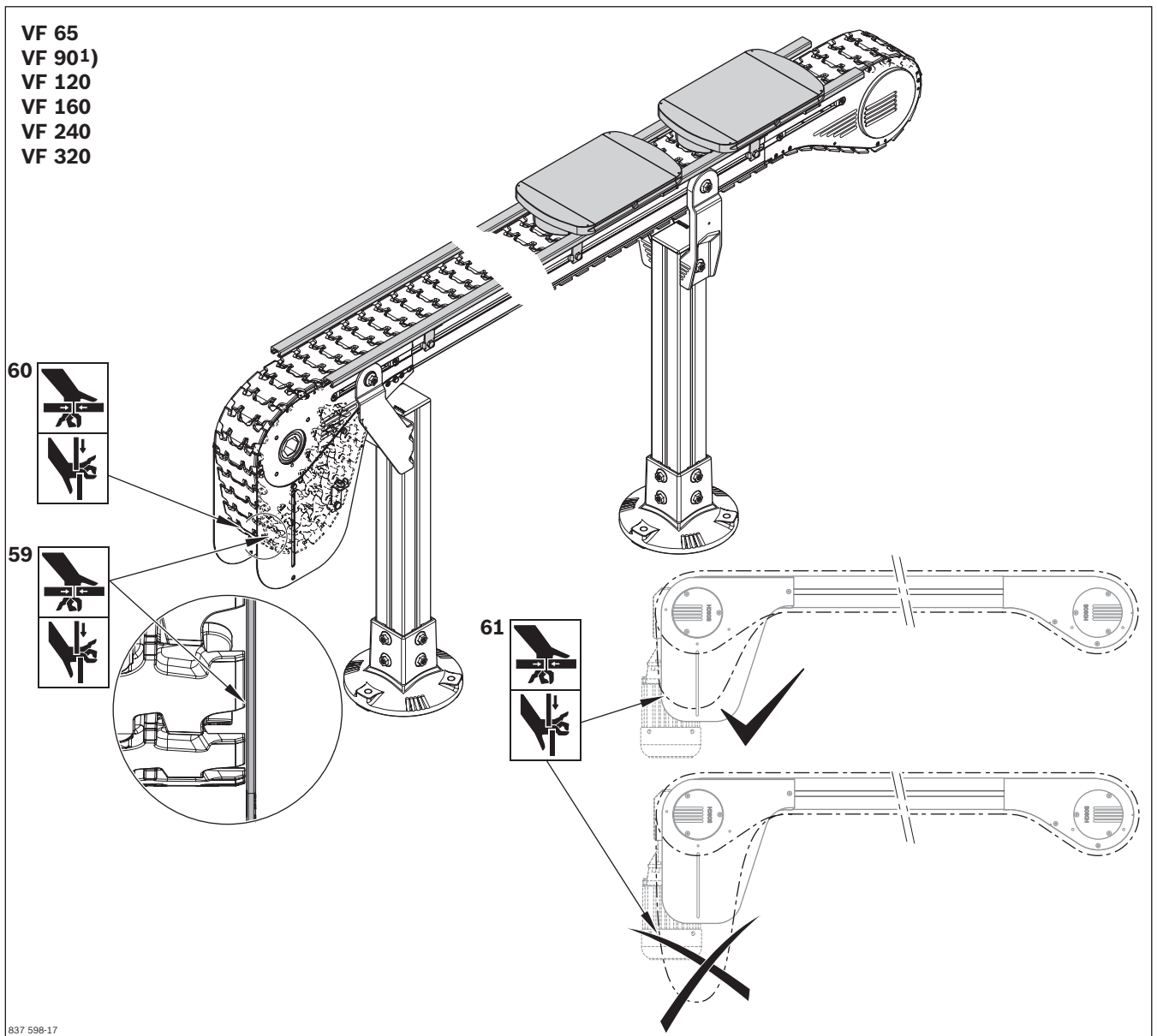


Table 20: Basic unit/return unit, part 2

	Life stage	Location	Situation	Hazard		Action
59	3/10/21	Between chain links in chain bag and protective cover (lateral reaching in; if chain bag is deflected over the contour of the protective cover)	Trapping of body parts, pulling in of clothing	 	Crushing, shearing	Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. additional chain guide, tensioner pulley, barriers • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
60	3/10/21	Reaching in from front at all chain widths: Between chain links in chain bag	Trapping of body parts, pulling in of clothing	 	Crushing, shearing	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system. • Wear closely fitting working clothes and head covering
61	3/10/21	Between conveyor chain and protective cover for chain bag extension over the protective cover length	Trapping of body parts, pulling in of clothing	 	Crushing, shearing	Here, a structural solution must be provided by the customer as necessary. • Set up a suitable guard at the system, e.g. by installation of a sensor according to EN 13849-1 PLR=d (e.g. light barrier) • Comply with the maintenance intervals, see MA (see page 2), section 10.2 Inspection

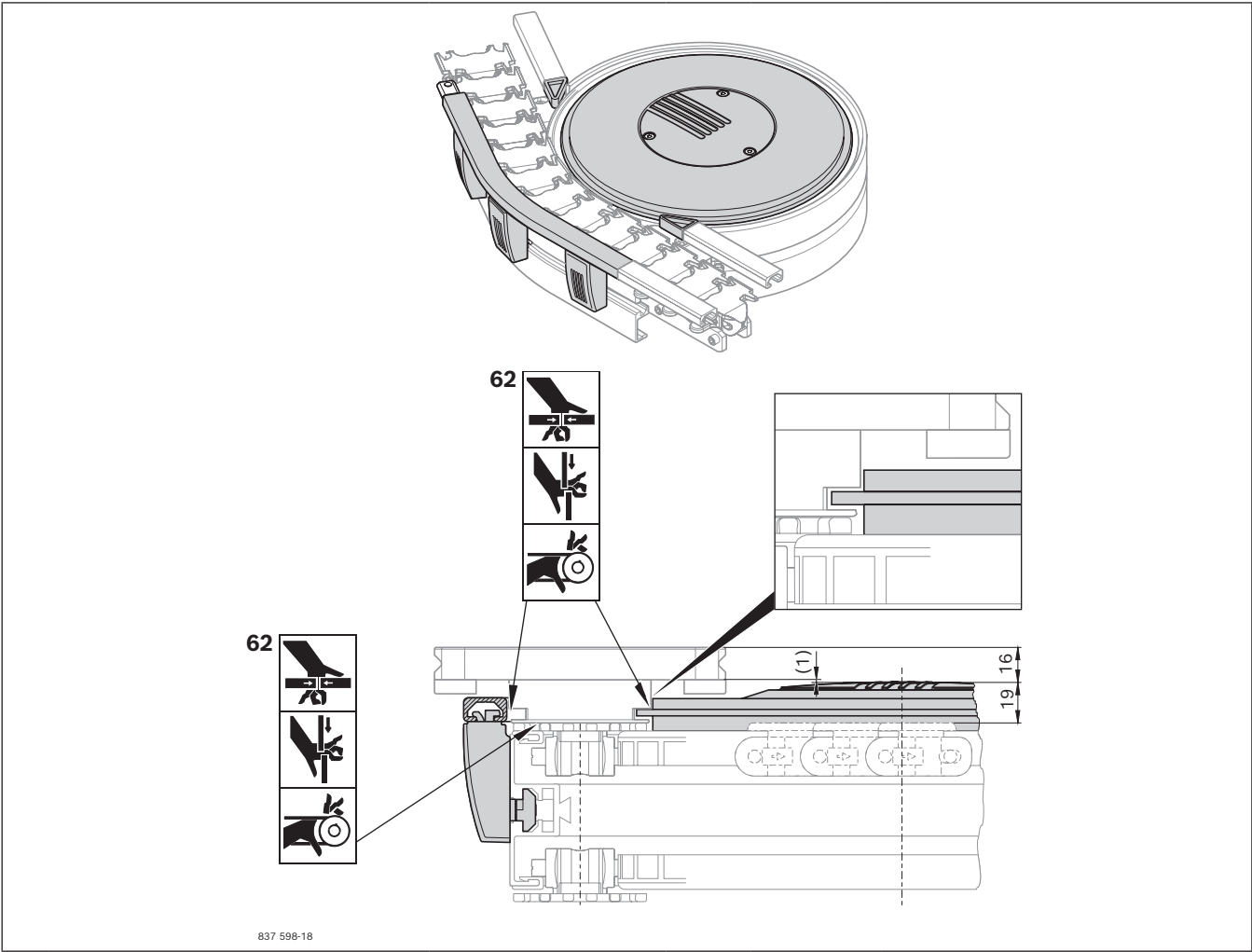


1) Size shown

3.15 Curve wheels

Table 21: Curve wheels

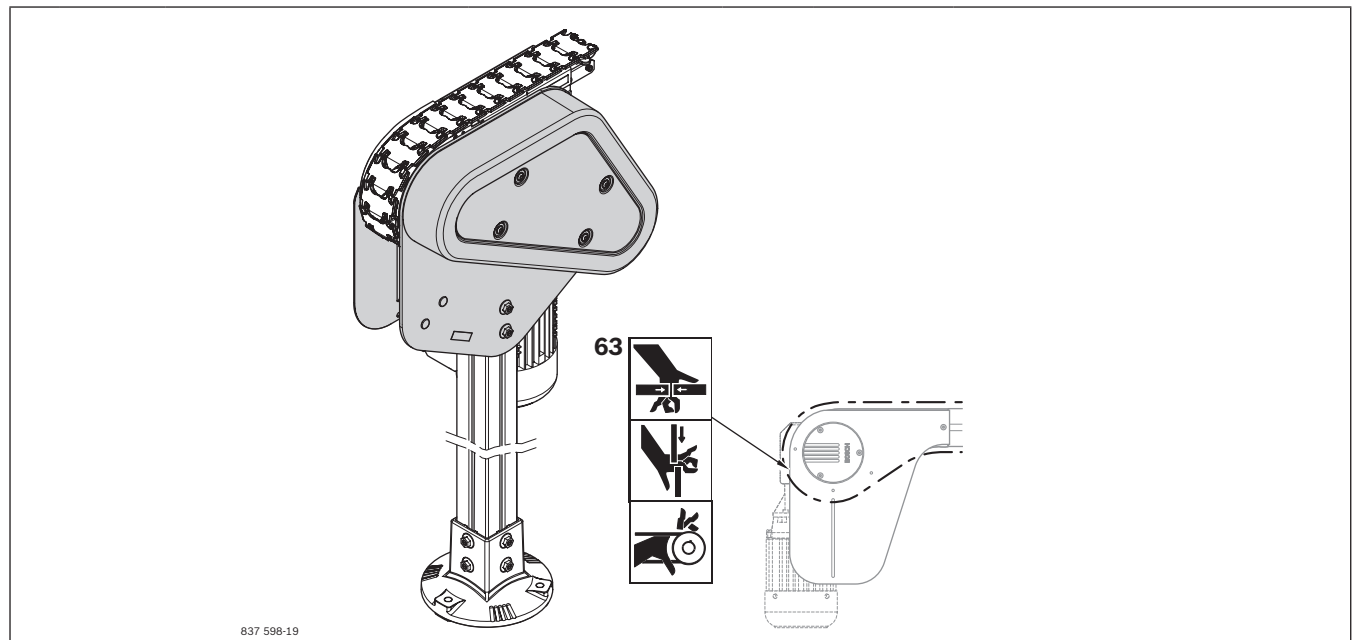
	Life stage	Location	Situation	Hazard		Action
62	3/10/21	Between conveyor material and conveyor chain, as well as lateral guide, section profile and curve wheel	Pulling in of body parts/clothing/long hair	  	Crushing, shearing, tearing out of long hair	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.



3.16 Transmission drive

Table 22: Transmission drive

	Life stage	Location	Situation	Hazard	Action
63	3/10/21	Between chain links in chain bag and protective cover	Pulling in of body parts/clothing/long hair	  	Crushing, shearing, tearing out of long hair Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. by adjusting the geometry of the side plate to the protective cover of the basic units, introduction of additional chain guides, clamping rollers or barriers • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.



3.17 Workpiece pallet system

Table 23: Workpiece pallet system, part 1

	Life stage	Location	Situation	Hazard		Action
64	3/10/21	Between workpiece pallets/body part	Body part between workpiece pallets		Crushing (finger injuries)	Here, a structural solution must be provided by the customer depending on the weight of the workpiece pallet and the conveyor speed ($\geq 15\text{m/min}$). • Set up a suitable guard at the system, e.g. barriers • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
65	3/10/21	Between workpiece pallet and conveyor medium	Workpiece pallet runs over body part		Crushing	• Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.

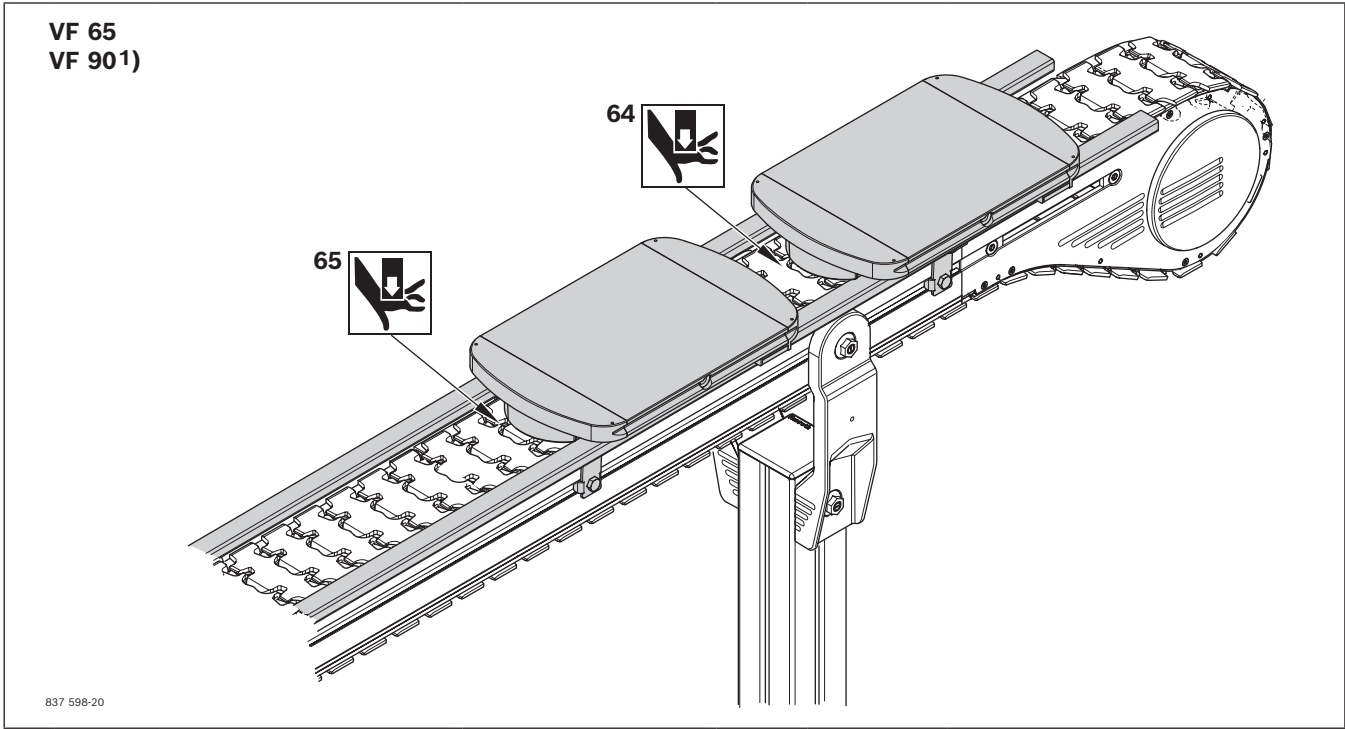
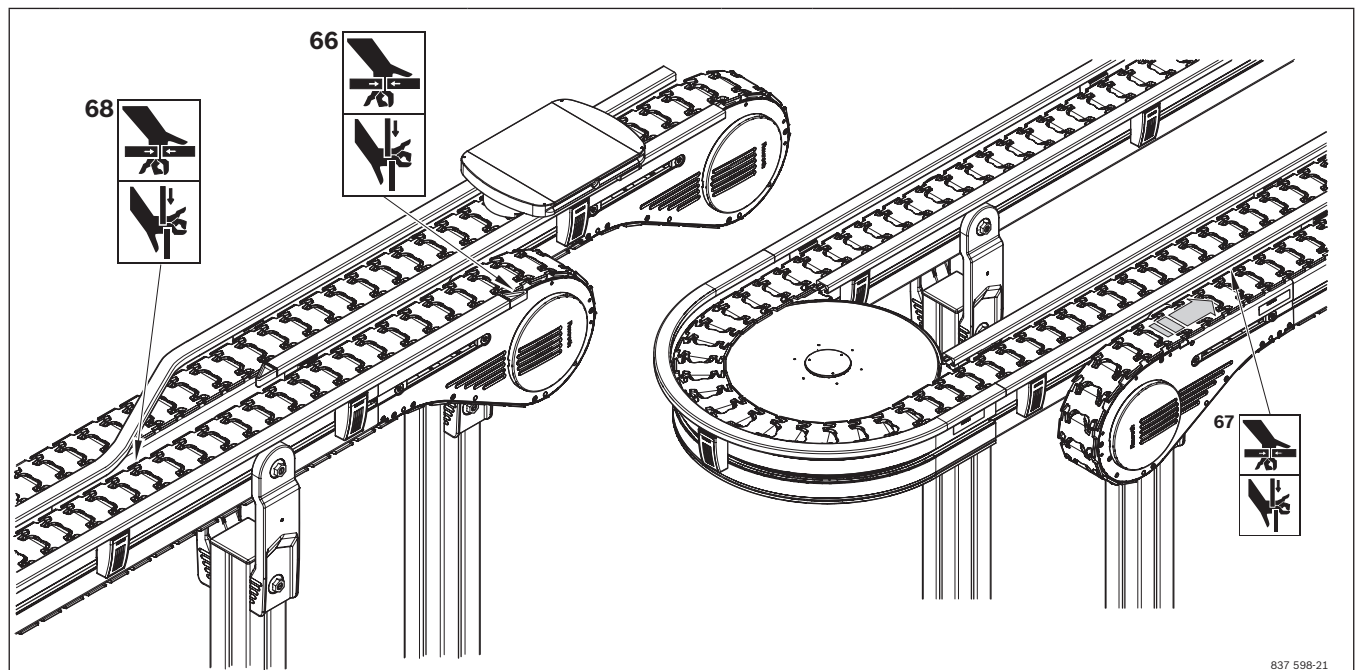


Table 24: Workpiece pallet system, part 3

	Life stage	Location	Situation	Hazard		Action
66	3/10/21	Between lateral guides and conveyor chain at the return unit	Crushing of body parts		Crushing, shearing	Here, a structural solution must be provided by the customer. - Take suitable structural measures at the system, e.g. by shortening the lateral guides to the max. distance/gap to the conveyor chain of 5 mm. The lateral guide must end at the beginning of the submerging of the conveyor chain (see EN 619, sect. 5.1.3.2) - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
67	3/10/21	Between return unit and straight conveyor section for parallel transfer	Trapping of body parts		Crushing, shearing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. a baffle plate (see EN 619, sect. 5.1.3.2) - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
68	3/10/21	Between conveyor chain and lateral guides during parallel section transfer depending on the gap dimension between conveyor chain top and the bottom edge of the lateral guide profile	Trapping of body parts		Crushing, shearing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.

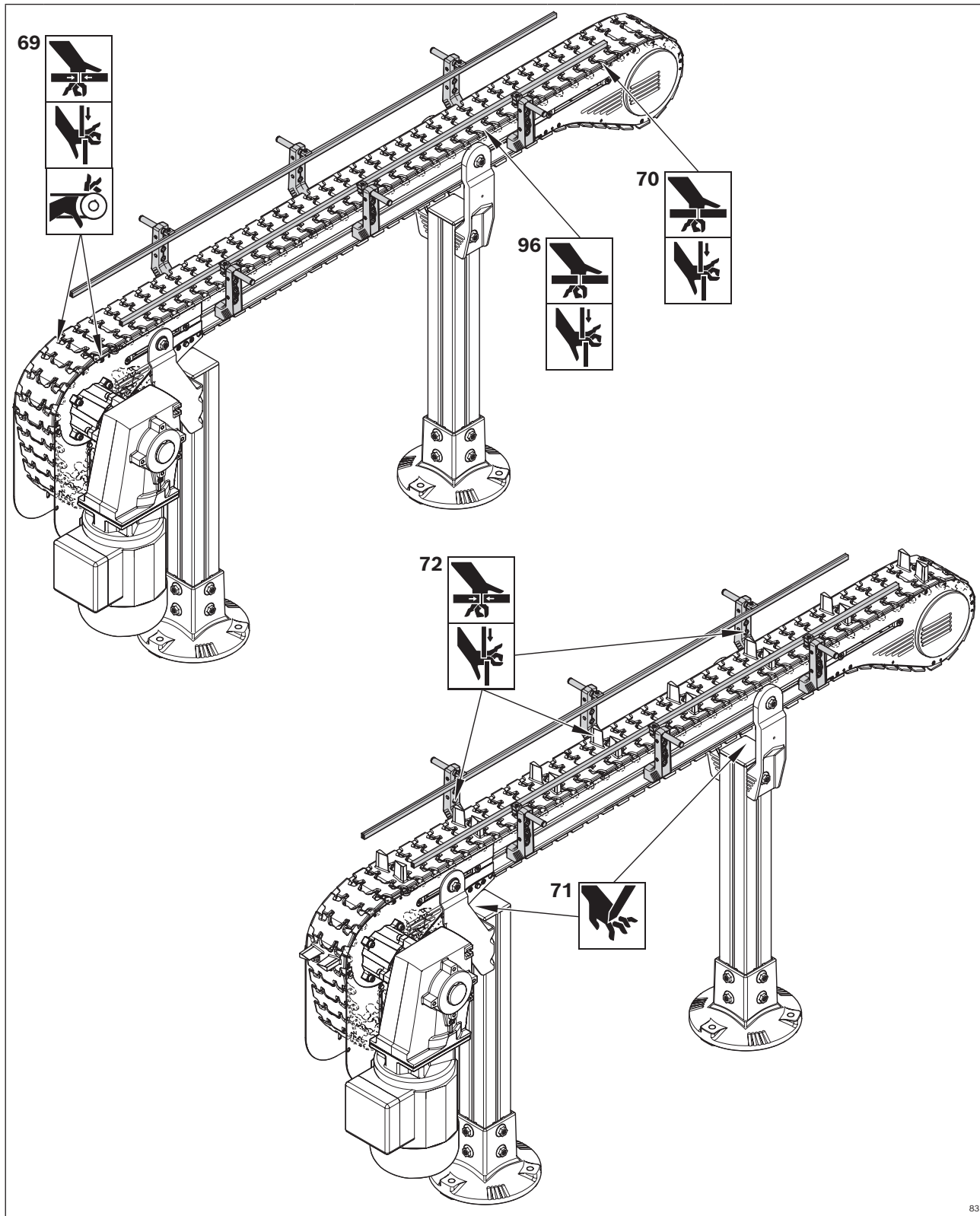


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3.18 Conveyor system

Table 25: Conveyor system, part 1

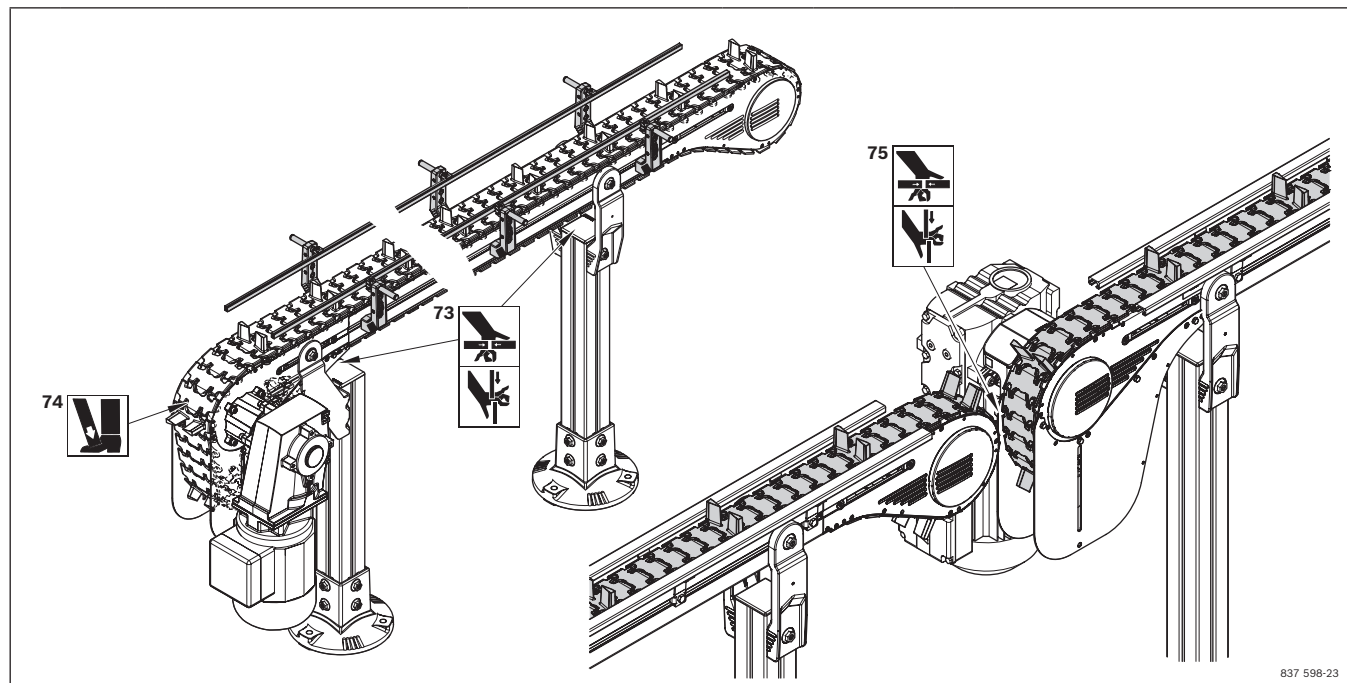
	Life stage	Location	Situation	Hazard		Action
69	3/10/21	Between conveyor medium and section profile/side plates, bottom/chain guide	Pulling in of body parts/clothing/long hair	  	Crushing, shearing, tearing out of long hair	- Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
70	3/10/21	Between conveyor chains and lateral guide holder/transported material	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer depending on the weight and dimensions of the transported material and the conveyor speed. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
71	3/10/21	Between flat conveyor chain/static friction chain and leg set opening	Pulling in of body parts		Scraping	Here, a structural solution must be provided by the customer. - Set up a suitable guard in the working area at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
72	3/10/21	Between conveyor chains* with cleats and lateral guide holder/transported material * (Cleated chain, accumulation roller chain, universal chain)	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.
96	3/10/21	Between transported material and lateral guide holder	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer depending on the weight and dimensions of the transported material and the conveyor speed. - Set up a suitable guard at the system, e.g. barriers or enclosure - Observe the general safety instructions in the assembly instructions (see page 2) - Do not reach into running system.



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Table 26: Conveyor system, part 2

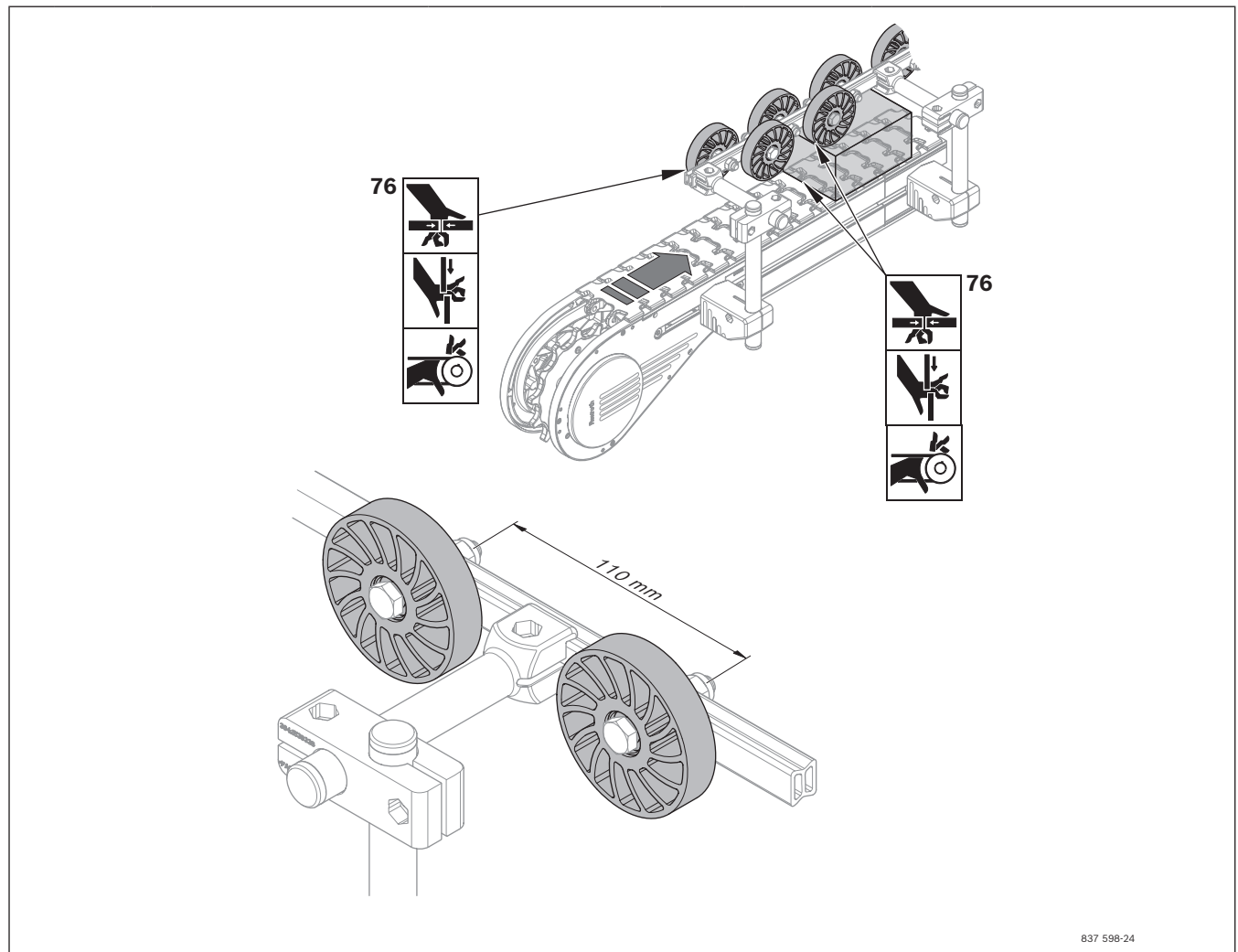
	Life stage	Location	Situation	Hazard		Action
73	3/10/21	Between conveyor chains* with cleats and leg set opening * (Cleated chain, accumulation roller chain, universal chain)	When intervening	 	Crushing, shearing	Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
74	3/10/21	End of conveyor section	Falling transported material		Crushing	Here, a structural solution must be provided by the customer depending on the transported material. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.
75	3/10/21	Distance* between two conveyor sections when one of the conveyor sections is at a standstill *(at a distance of 0.5 to 50 cm)	Pulling in of body parts (primarily fingers, hands and arms)/ clothing	 	Crushing, shearing	Here, a structural solution must be provided by the customer within the distance range of 0.5 to 50 cm. • Set up a suitable guard at the system, e.g. barrier or enclosure (see EN 619, sect. 5.1.3.2) • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.



3.19 Pressure roller

Table 27: Pressure roller

	Life stage	Location	Situation	Hazard	Action
76	3/10/21	Pressure roller with superstructure (holder), chain and conveyed material	When intervening Pulling in of body parts/clothing/long hair	  	Crushing, shearing, tearing out of long hair Here, a structural solution must be provided by the customer. • Set up a suitable guard at the system, e.g. barriers or enclosure • Observe the general safety instructions in the assembly instructions (see page 2) • Do not reach into running system.

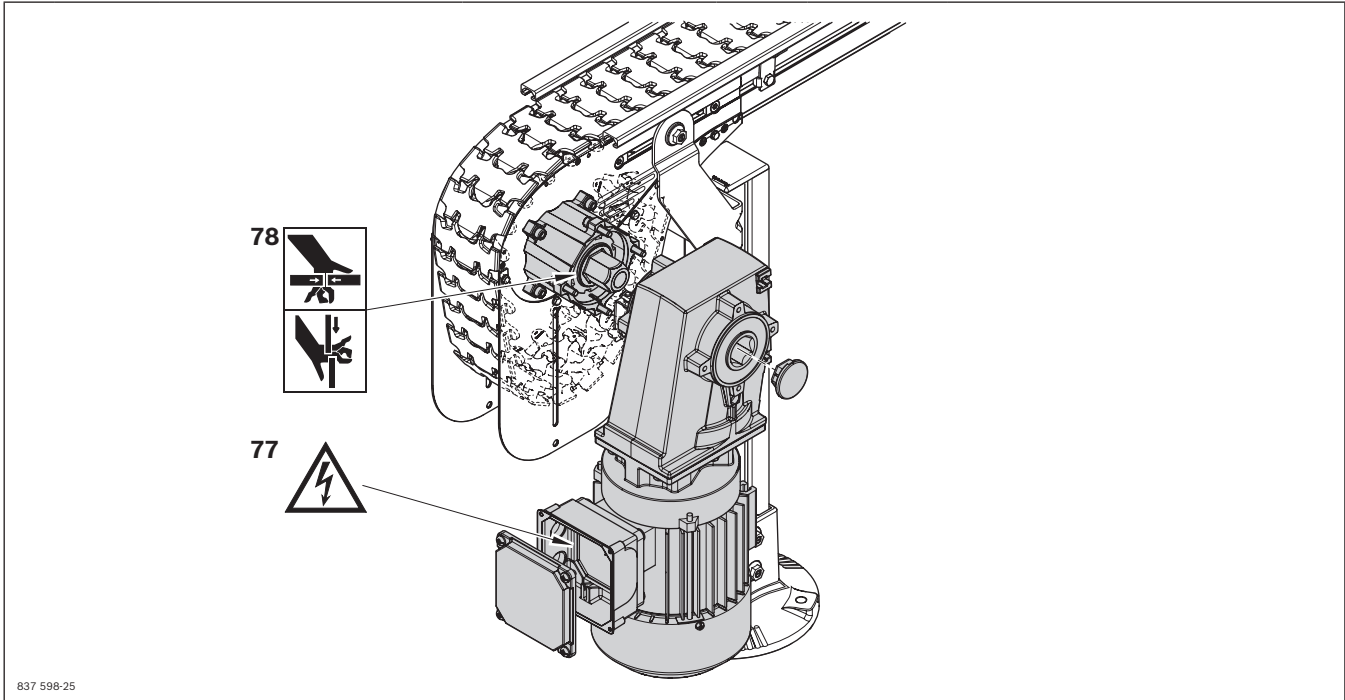


4 Maintenance

4.1 Gear motor

Table 28: Gear motor

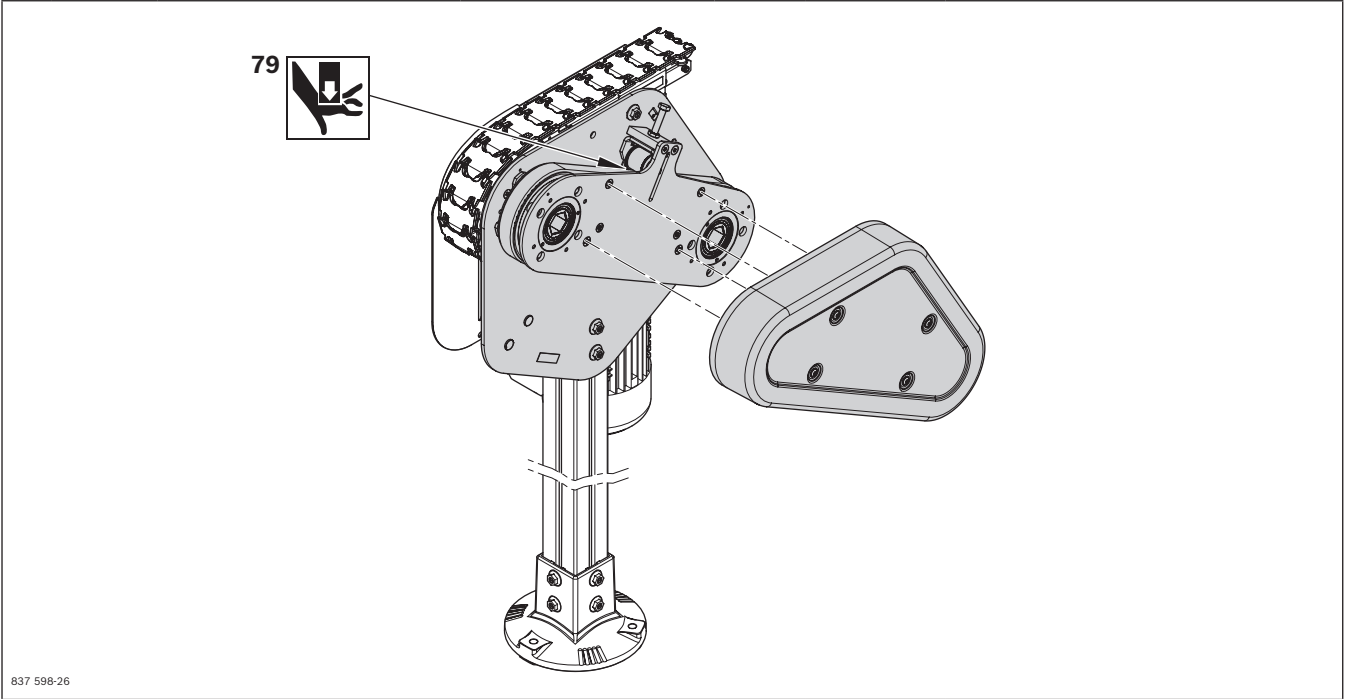
	Life stage	Location	Situation	Hazard		Action
77	2/4/20	Gear motor; when the terminal box cover is removed	Freely accessible live conductors		Electric shock	• Maintenance may only be carried out by qualified personnel • Observe the "five safety rules" in accordance with DIN VDE 0105-100.
78	2/4/20	Gear motor installation; between gear housing and flange side plate	Trapping of body parts between components	 	Crushing, shearing	• Maintenance may only be carried out by qualified personnel



4.2 Transmission drive

Table 29: Transmission drive

	Life stage	Location	Situation	Hazard		Action
79	2/4/20	Transmission drive; when protective cover is removed for maintenance of the toothed belt (tensioning); between toothed belt and toothed belt wheel	Trapping of body parts		Crushing	• Maintenance may only be carried out by qualified personnel

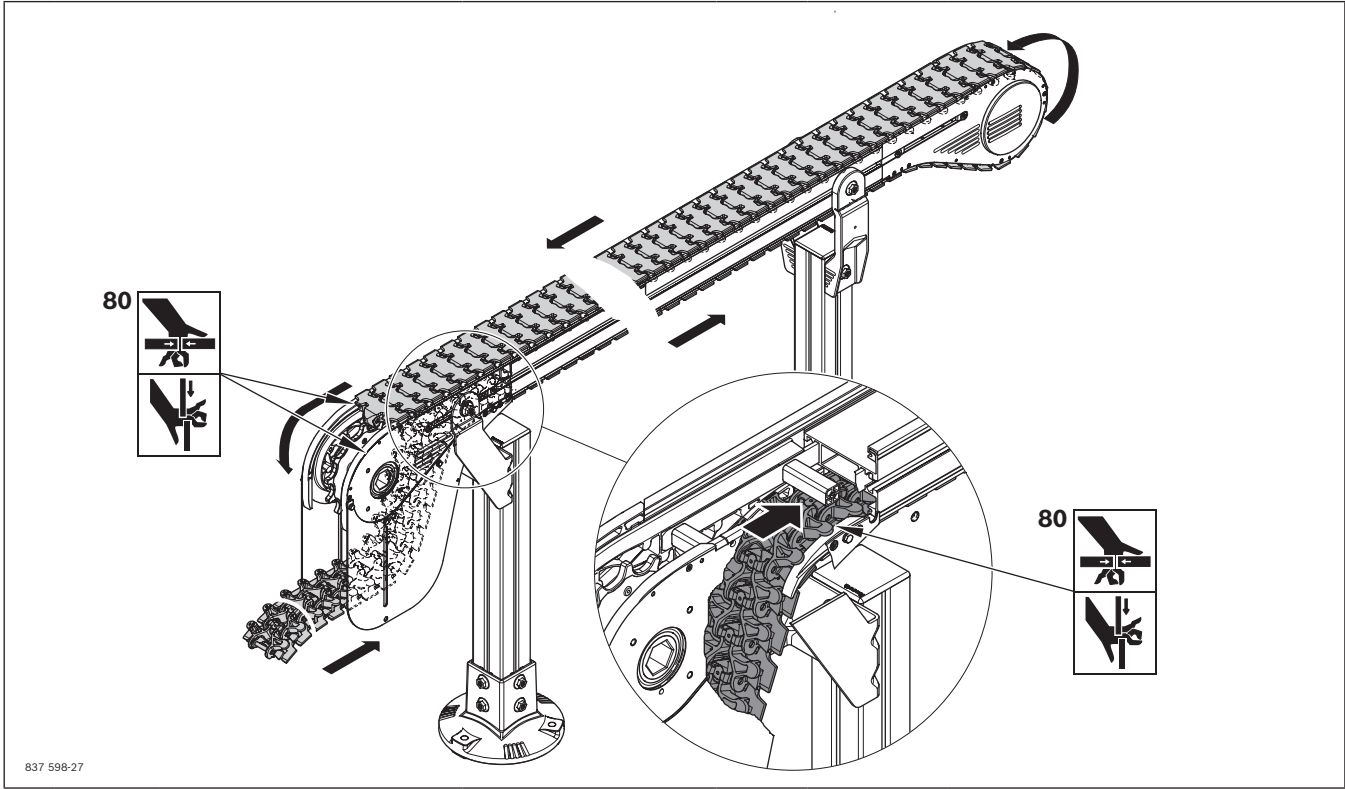


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4.3 Conveyor system

Table 30: Conveyor system

	Life stage	Location	Situation	Hazard		Action
80	2/4/20	Between conveyor medium and guide/section profile/ side plate/support rails when the conveyor medium is pulled in	Pulling in of body parts/clothing		Crushing, shearing	• Maintenance may only be carried out by qualified personnel



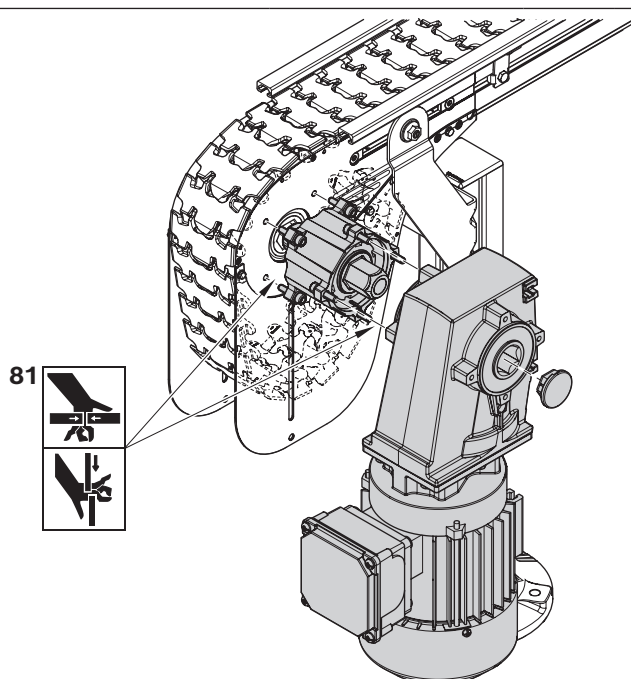
5 Installation

5.1 Gear motor

Table 31: Gear motor

	Life stage	Location	Situation	Hazard		Action
81	2/4/20	Gear motor installation; between gear housing and flange as well as protective covers/side plate	Trapping of body parts		Crushing, shearing	Assembly work may only be carried out by qualified personnel

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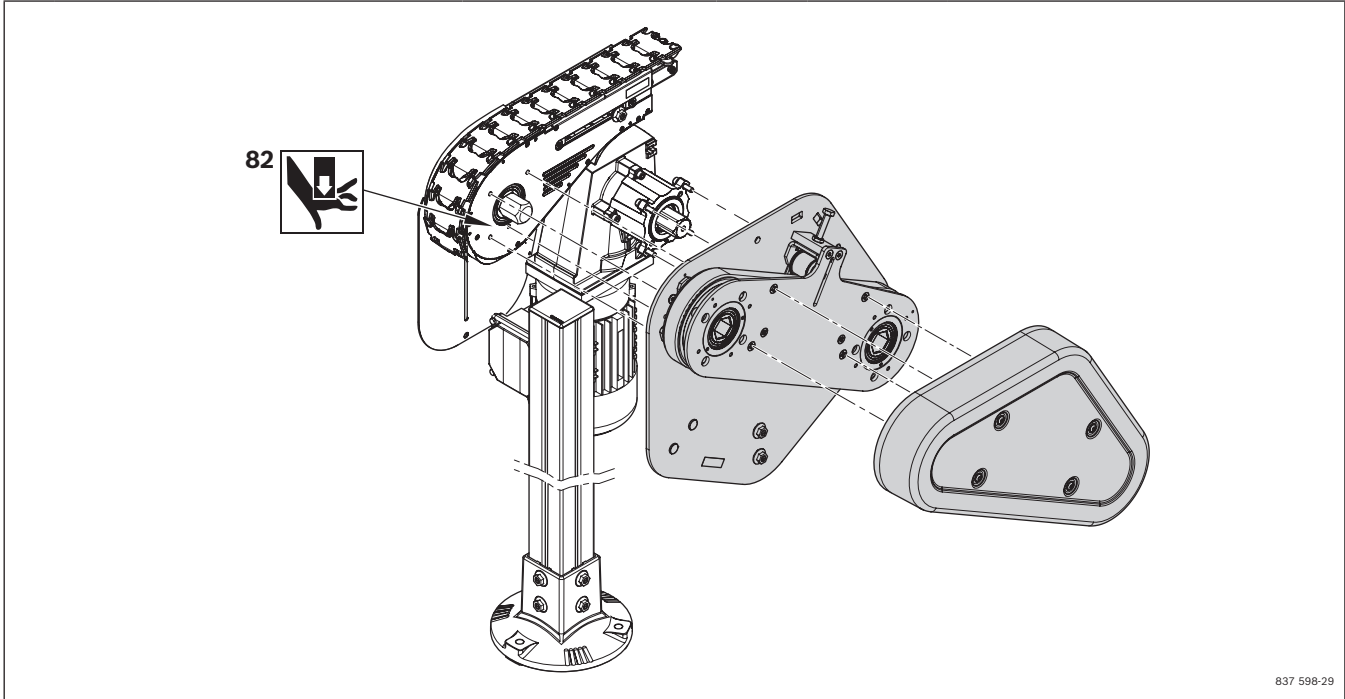


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5.2 Transmission drive

Table 32: Transmission drive

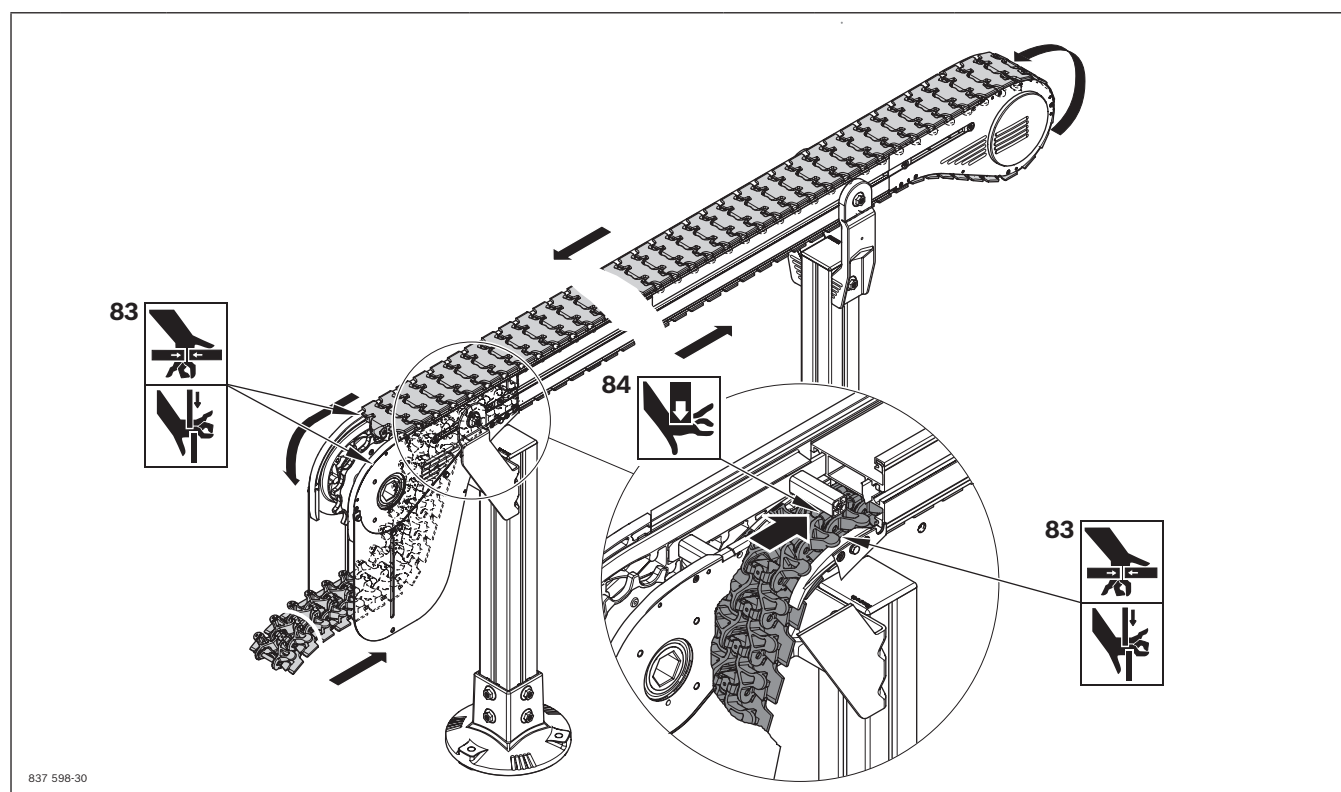
	Life stage	Location	Situation	Hazard		Action
82	2/4/20	Transmission drive: Between side plates and base unit during assembly of the transmission kit	Trapping of body parts		Crushing	• Assembly work may only be carried out by qualified personnel



5.3 Conveyor system

Table 33: Conveyor system

	Life stage	Location	Situation	Hazard		Action
83	2/4/20	Between conveyor medium and guide/cross connector/section profile/side plate/support rails; when the conveyor medium is pulled in	Pulling in of body parts/clothing	 	Crushing, shearing	• Assembly work may only be carried out by qualified personnel
84	2/4/20	Between side plates and section profile (front)	Trapping of body parts		Crushing	• Assembly work may only be carried out by qualified personnel



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Bosch Rexroth AG

Postfach 30 02 07

70442 Stuttgart

Germany

Fax +49 711 811-7777

info@boschrexroth.de

www.boschrexroth.com