

Operation Manual and
Assembly Instructions

Segment Conveyor SG

Series

SG2H, SG2L, SG3H, SG3L

This operation manual is a part of the technical documentation of the respective segment conveyor according to the EC directives for machines.

This operation manual corresponds with MRL Annex. I 1.7.4.

These operation manual is intended for the plant manager, who must pass them on to the staff who is responsible for the installation, connection, operation and maintenance of the machine. He must make sure that the information contained in the operation manual and the enclosed documents has been read and understood. The operation manual must be stored in a well-known place within easy reach; it must be consulted even in case of the slightest doubt.

The manufacturer cannot be held liable for damage to persons, animals, objects or to the machine itself, which are caused by inexperienced operation, non-compliance or insufficient compliance with the safety criteria indicated in these operation manual, and/or by modifications to the machine or the use of inadequate spare parts.

If in doubt, the text of the original operating instructions apply.

This operating manual plus the documents mentioned in the Annex must be available to the maintenance staff.

The plant operating company is responsible for ensuring that these documents are always accessible to the staff.

Version 2.0

Translation of the original operating instructions

Status 01-2014

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Version	Date	Modification	Modified by
2.0	01/2014	Anpassung MRL 2006/42/EG	TP

These documents and all attachments are not subject to updates!



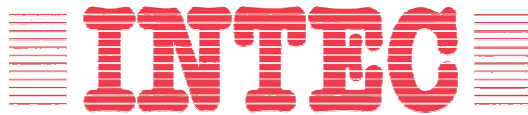
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1.1 Description

Segment conveyor SG
Series: SG2H, SG2L, SG3H, SG3L

1.2 Manufacturer & service

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1.3 Use

1.3.1 Use within the intended fields of application

The segment conveyor is exclusively used for feeding, sorting and separating of specific product parts. The diameter of these product parts must be between 2 mm and 20 mm; they may not exceed a total length of 100 mm. The product part size depends on the respective segment conveyor.

The product parts must have a high parts quality and may not be magnetic or coated with oil, grease or any other coating. If the product parts do have a coating, the sliding surfaces of the segment conveyor must be cleaned in regular intervals. For further information refer to chapter 1.4 "Technical data: and chapter 6.3 "Cleaning instructions).

Refer to chapter 1.5 "Dimensions" for the permitted filling volume.

Please refer to chapter 3 "Main components" for information regarding the functional design.



WARNING

The segment conveyor is intended for integration into a main machine, The segment conveyor is not equipped with a control unit and must be controlled by the main machine, into which the belt hopper is integrated (activation and deactivation of the machine). Only after all requirements of the EU Machinery Directive regarding safety and occupational health are met, the segment conveyor may be operated.

The use within the intended fields of application also includes:

- Observation of all notes in the operating instructions.
- Compliance with all inspection and maintenance works.
- Observation of the general and special security notes in these operating instructions and the relevant provisions for accident prevention.

Any other use or any use in excess thereof shall be considered not in accordance with the intended use. *INTEC Automationsprodukte für Industrietechnik GmbH* shall not be held liable for damages caused by that.

1.3.2 Improper use

Improper use, which can cause risks for the segment conveyor, the operator and third parties, is among others:

Use of the segment conveyor contrary to its intended use (chapter 1.3.1), especially with respect to:

Loading of the segment conveyor with product parts shaped differently than intended for the segment conveyor.

Loading of the segment conveyor with parts coated with oil, grease or any other coating. Loading of more product parts into the parts container than permitted. (Observe maximum permitted filling volume of your segment conveyor!) Segment conveyor operation without provision of respective emergency measured by the carrier.

Deployment of unqualified personnel. See chapter 2 "Safety".

Operation of the segment conveyor contrary to the provisions in the operating manual, regarding: Safety, transport, installation, operation & use, setup, maintenance & repair. It is prohibited to bypass or disable safety and protective equipment. Only skilled, briefed personnel may perform work on segment conveyor and equipment.

Operation of the segment conveyor in case if malfunctions / technical efficiencies, e.g. missing safety equipment, faulty or damaged product parts.

Operation of the segment conveyor in case of organizational efficiencies: e.g. deployment of unsuitable operating personnel, application of unsuitable work procedures.

Repair, cleaning or maintenance work without securing or shutting the segment conveyor down.



WARNING

No modifications, attachments and alterations must be performed without the manufacturer's prior approval.

Only parts and auxiliary materials approved by the manufacturer for the use with this segment conveyor may be used as spare parts and auxiliary materials.

The manufacturer shall not be held liable for damages caused by improper use of the equipment.

Risk of accidents, injuries and property damage exist in case of improper use of the segment conveyor. Thus, improper use shall not be permitted

1.4 Technical data

Control voltage:	24 V DC
Rated current:	min. 1 A
Connection to power supply:	25-pin SUB-D bush
Infeed cable cross section:	25 x 0.14 mm ²
Output/cycle:	Varies by product part and segment conveyor
Compressed air supply:	Service pressure: _____ 6 bar Quality: _____ dried, filtered and unoiled Connection: _____ 8 mm plug-in coupling
Machine dimensions:	See chapter 1.5 "Dimensions"
Weight:	Varies by segment conveyor and features See chapter 4 "Transport and installation"

Product specifications (as of 01.2010)**Minimum and maximum component sizes**

Article number	Sorting position	Sort items	Min. part size	Max. part size	Max. part length
SG2H	hanging	e.g. screw	approx. M 1.6	approx. M 5	approx. 50 mm
SG2L	flat	e.g. cylinder pin	Ø 2,0 mm	Ø 6,0 mm	approx. 80 mm
SG3H	hanging	e.g. screw	approx. M 4	approx. M 12	approx. 70 mm
SG3L	flat	e.g. cylinder pin	Ø 6,0 mm	Ø 20,0 mm	approx. 100 mm

The product parts may not be magnetic or coated with oil, grease or any other coating.

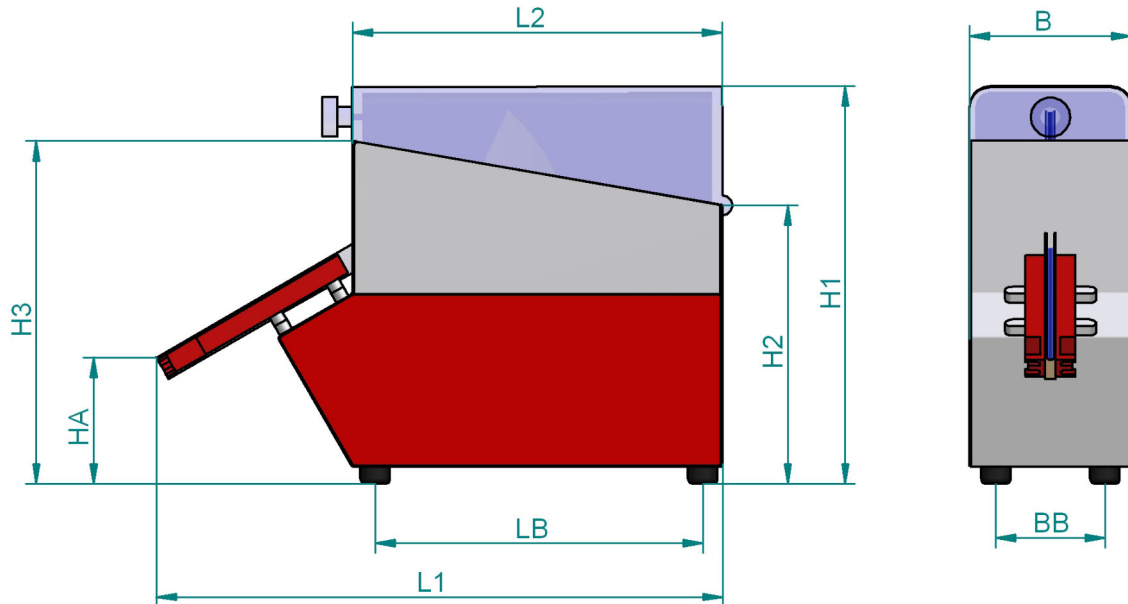
If the product parts do have a coating, the sliding surfaces of the segment conveyor must be cleaned in regular intervals. The cleaning cycle (frequency) must be practically determined.

Only briefed personnel with appropriate tools and cleaning agents may clean the machine,

The factory-adjusted settings may not be changed or damaged.

1.5 Dimensions

Segment conveyor SG 2 and SG 3



Article number	Filling volume	L1	L2	LB	B	BB	H1	H2	H3	HA
SG2H and SG2L	approx. 1.0 litre	571	373	330	163	110	402	282	346	128
SG3H and SG3L	approx. 2,0 litre	657	465	430	225	160	534	357	437	200

All data in the tables in chapter 1.5 "Dimensions" are stated in mm.

1.6 Noise level

Air-borne noise:

Measuring process: ___ in-process measurement
 Measuring instrument: ___ DIN IEC 651
 Measuring code: ___ DIN EN ISO 11202
 Background noise: ___ none
 Operating conditions: ___ conveying mode, without conveyed
 Measuring point: ___ 1 m sideways distance,
 1.6 m height
 LpA: ___ ≤ 70 dB(A)

2.1 Marking of instructions in the operating manual

Signal words contained in the operating instructions:

The following warnings specify a certain level of hazard:



This signal word specifies a hazard involving a high level of risk which, if not avoided, will result in death or severe injury.



This signal word specifies a hazard involving a medium level of risk which, if not avoided, will result in death or severe injury.



This signal word specifies a hazard involving a low level of risk which, if not avoided, may result in minor or moderate injury.

Instructions on the machine:

Notes attached right to the machine must be observed under any circumstances.

2.2 Staff qualification and training

The staff for operation, maintenance, inspection and installation must show sufficient qualification of these activities.

Competences and survey of the staff must be carefully organized by the manager. If the staff do not dispose of the necessary knowledge for this purpose, adequate instruction and training will be necessary. At the order of the manager, this instruction and training can be effected by the producer himself. Furthermore, the manager has to guarantee that the staff has entirely understood the contents of this operation manual.



Only staff members who have specialist, proven knowledge are allowed to perform maintenance work. To this effect, the persons instructed to do the work must dispose of different skills depending on the scope and the degree of difficulty of the maintenance work assigned to them.

Definition: Instructed staff

An instructed staff member is any person who has been informed about the tasks assigned to her or him and the possible dangers in case of inappropriate behavior and who has been trained and advised on the required protective equipment, if necessary.

Definition: Specialists

Specialists are workers who, due to their special training, knowledge and experience as well as the knowledge of the applicable provisions, are capable of judging the work assigned to them and recognizing possible dangers.

In addition to their (general) training, specialists must also be briefed in features and specific safety requirements of the segment conveyor.

Mandatory qualification requirement

If personnel do not have the required knowledge, they must be trained accordingly. The carrier of the segment conveyor is responsible for verifying professional qualification and education of the operating personnel.

2.3 Safety information

Our segment conveyors are built according to state-of-the-art technology and accepted safety regulations. This operating manual contains basic information ensuring failure-free and safe operation. Thus, it must absolutely be read by the responsible personnel/carrier and always be available at the site of operation of the segment conveyor.

Information and labels attached to the segment conveyor must be maintained in readable condition and may not be removed! After cable, line and component replacement, all existing labels and signs must be respectively reinstalled or newly installed.

Occupational health and safety information refer to the currently valid guidelines of the European Community. Please also comply with accident prevention regulations for electrical equipment. Furthermore, respective laws and country-specific provisions must be observed and met other countries.

The employees must be instructed with regard to risks and the necessary protective measures at regular intervals, at least however once per year.

The carrier of the segment conveyor must prepare working instructions for handling of product parts. The segment conveyor operator must completely observe these instructions. For issues related to occupational health and safety (e.g. handling of cleaning agents), the carrier must prepare operating instructions.

Commissioning, maintenance and repair may only be performed by specialists.



WARNING

For commissioning, maintenance, repair and troubleshooting activities, the segment conveyor must be disconnected from the power supply. Work on electrical equipment may only be performed by skilled electricians / electrical specialists. Risk of injury and electric shock exists! Make sure that the protective earthing of the power supply is in faultless condition.

Noise emission:

The permanent noise level amounts to maxim 70 dB(A). Product parts transport or belt consistency can cause a higher noise level. For these special cases inquire with the manufacturer regarding noise protection measures.

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2.3 Safety information (continued)

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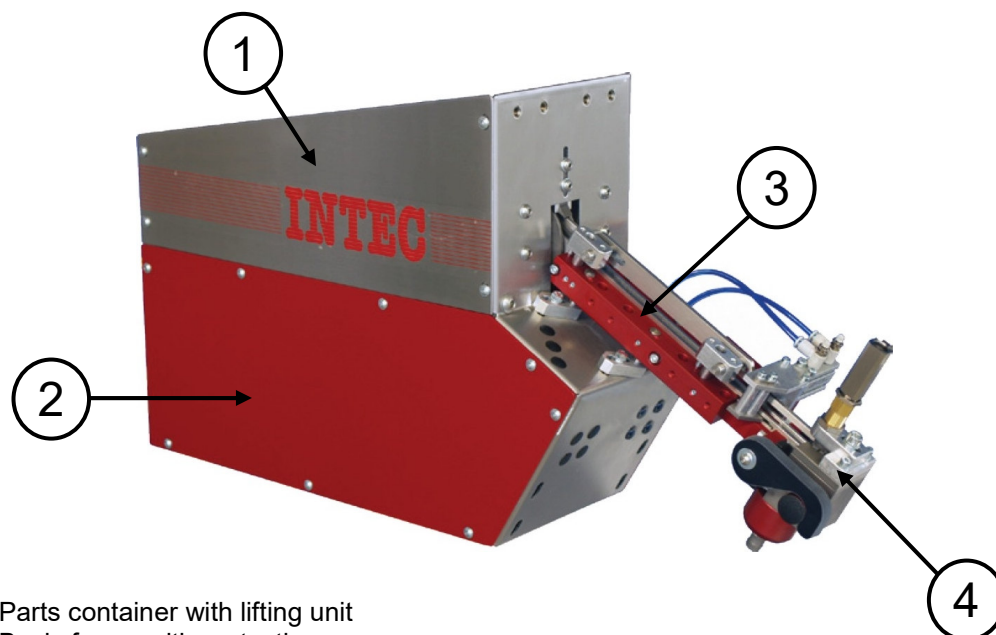
**WARNING*****Lifting segment:***

The stroke movement of the lifting segment causes risk of injury and products parts being thrown out of the conveyor. If the parts container is not equipped with a cover hood by the manufacturer, then the segment conveyor carrier must provide an appropriate cover of hazardous locations. Refilling of the parts container must be performed using suitable tooling. Do not reach with your hands into the parts separator. The segment conveyor may not be operated without sufficient safeguarding of the lifting segment.

Separator or deflector:

The carrier of the segment conveyor must ensure that during operation with separator or deflector, an impulse is only triggered when the system is closed. Hence, the blow-out channel and nozzle are closed. If multi-deflectors are integrated into the system, the carrier must ensure appropriate safeguarding/covering of hazardous locations. Do not reach into the effective range of separator or deflector while the segment conveyor is running. Risk of crushing exists.

3.1 Basic Construction



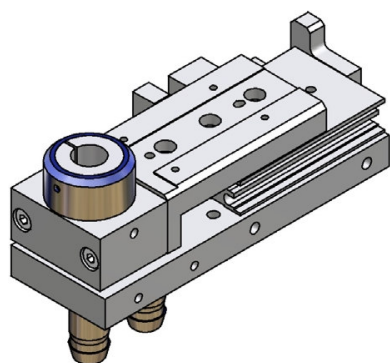
- 1 Parts container with lifting unit
- 2 Basic frame with protective cover
- 3 Output rail
- 4 Separator (optional)
- 5 Deflector (optional, without image)

The basic construction only refers to the base configuration. You can find the exact configuration of your ordered segment conveyor in the enclosed spare parts list.

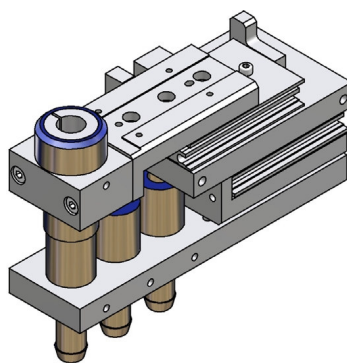
3.1.1 Deflector types (optional)

Using deflectors, the parts can be specifically distributed from a segment conveyor to up to four processing machines. The deflectors are mechanically separated from the segment conveyor and thus have the benefit that the deflectors can be installed at the most technically favourable position of the main machine. The supply hose may have a maximum diameter of 25 mm (according to deflector configuration). If no electrical and pneumatic control terminal is delivered by the manufacturer, the carrier must install the terminal of the segment conveyor.

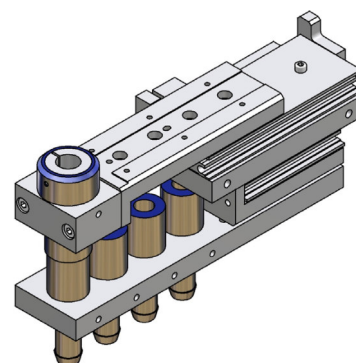
2-way deflector



3-way deflector



4-way deflector

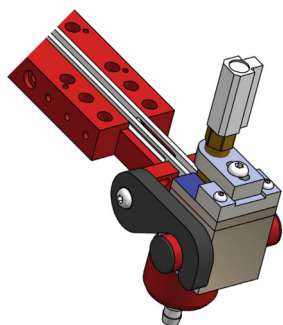


3.1.2 Separator types (optional)

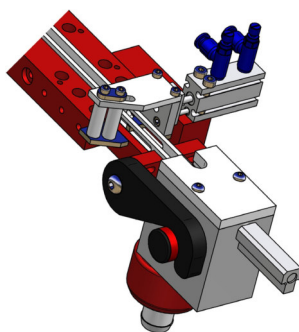
In the separator, product parts are separated and separately provided for further processing. The separator is installed on the output rail.

Variants:

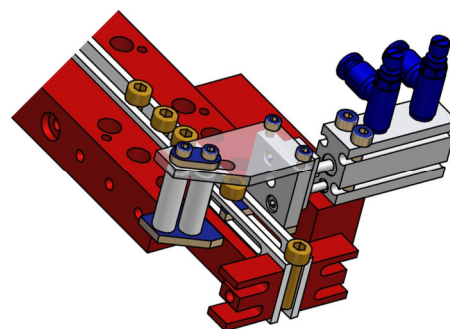
Axial separator



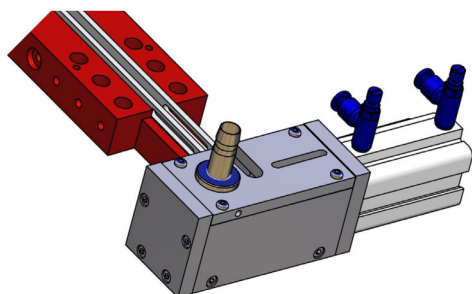
Axial separator gate



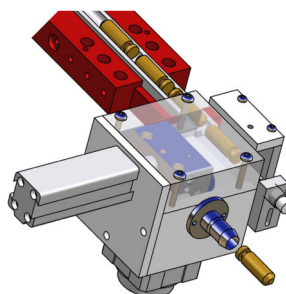
Upstream separator



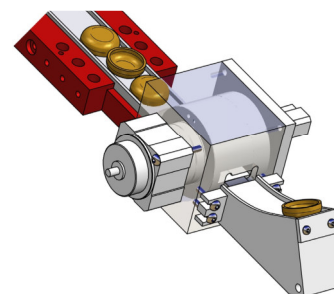
Longitudinal separation gate in the feeding tube



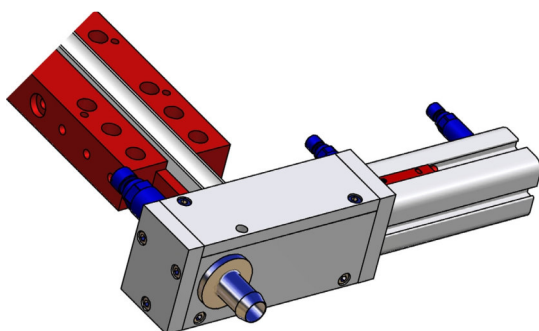
Rotational sorting in the feed tube



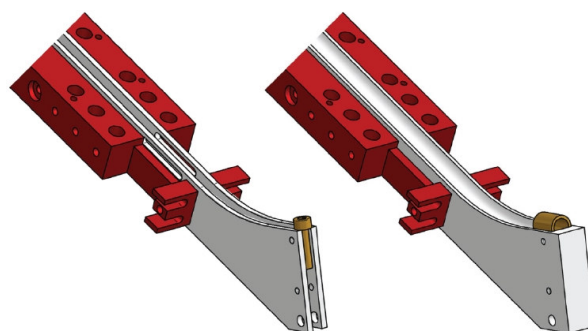
Pivotal sorting



Gate separator feed "head first"



Feeding horizontal



3.2 Equipment description

The segment conveyor is exclusively used for feeding, sorting and separating of specific product parts.

The INTEC segment conveyor is based on a parts container with lifting segment, which executed controlled raising and lowering movements. When raised, the lifting element picks several product parts in the correct position up. In the upper end position, the product parts slide onto the output tail, driven by their own weight. There they are fed into the separator and/or deflector (if installed) and prepared for further processing in the main machine.

4.1 Transport information

The segment conveyor is packed and transported in a crate.
No force may be applied to output rail or separator during transport of the segment conveyor.
The segment conveyor centre is the centre of gravity.
The crate should be transported using a solid transport trolley.
They weight depends on the segment conveyor configuration and can be found in the transport documentation.
Prior to transport, disconnect the segment conveyor from the power supply.

4.2 Safe installation information



WARNING

Assembly work may only be performed by specialists.

Make sure that the segment conveyor cannot be started by unauthorized persons prior to performing setup work on the segment conveyor. Mount warning and information signs clearly visible prior to work start!

Only use proper tools, especially spanners, which do fit and are not widened. Do not work with oily hands. Accidents due to slipping!

Make sure, that disassembled protection devices are reinstalled prior to first restarting.

Test runs: Verify that no tools, screws, auxiliary material or items are within the effective range of the segment conveyor.

4.3 Installation site

The segment conveyor should be installed on a solid, horizontal and flat base (plate, etc).



CAUTION

During installation of the segment conveyor, ensure that the segment conveyor is not exposed to strong magnetic fields (e.g. welding equipment). Otherwise make sure, respective shielding from the hazard location is planned.

Installation in explosion hazardous areas is prohibited.

4.4 Assembly, electrical and pneumatic connection

The delivered segment conveyor is completely assembled and must only be integrated into the control mechanism of an existing system. Furthermore, electrical power supply must be ensured. Installation of the segment conveyor using the vibration dampers is sufficient. However, we recommend a fixed installation. After disassembly of the vibration dampers, eight M6 threads for fixed installation can be found in the base plate underneath the segment conveyor.

Electrical connection and actuation via the customer-provided control takes places via a 25-pin SUB D bushing.

The pneumatic connection takes place via a 8 mm plug coupling.

The complete electronics and pneumatics (valves, sensors, etc.) are wired and with all piping by the manufacturer in the inside of the housing. For exact connection wiring of your segment conveyor refer to the enclosed terminal and PIN diagram.



WARNING

In case of malfunctions, the system must be disconnected from the power supply.

All connections are by default connected to a terminal. For cable penetration into the segment conveyor housing, a slot is located at the backside of the housing. Ensure a sufficient supply diameter. The connection cable must be equipped with a properly connected protective earthing conductor.



Compressed air connection:
8 mm plug-in coupling
Quality: dried, filtered and unooled
Operating pressure: 6 bar factory setting

Electrical connection:
Power supply connection: 25-pin SUB-D bush
Control voltage: 24 V DC
Nominal current: min. 1 A
Supply diameter: 25 x 0.14 mm²

5.1 Safety information



WARNING

Observe the safety instructions set out in chapter 2 “Safety” of this manual.

Define the responsibilities of the commissioning staff, and authorize them to refuse the execution of unsafe instructions issued by third parties.

Only work on this segment conveyor, if you were briefed regarding handling with respect to your function.

Prior to commissioning, check the segment conveyor for correct settings and for all required safety devices.

Basically no safety devices may be disabled, removed or bypassed.

Prior to shift start, briefed and trained personnel must check safety and protective devices for proper condition. If deficiencies are detected, which impact the safety of the segment conveyor, the segment conveyor must be shut down until these deficiencies are corrected.

Do not perform any cleaning activities after switching the segment conveyor on.



Operating personnel are not allowed to carry out any work on the electrical equipment. Refer to the equipment signs and labels attached to the segment conveyor. Label: Lightning flash.



Do not reach into the parts container while the segment conveyor is running.

Faulty machine components must be replaced as soon as possible. Please use the enclosed spare parts list to identify required spare parts.

5.2 Commissioning

Verify correct installation according to chapter 4 "Transport & assembly".

The segment conveyor is not equipped with a control unit and must be controlled by the main machine, into which the belt hopper is integrated.

Verification of the lifting segment:

The basic position of the segment conveyor is on top. In basic position, the transition between segment and output rail must be adjusted without gaps and offsets.

Verification of the segment speed:

The segment movement control valves are easily accessible at the back of the unit. Hence, segment speed should always be adjusted using the exhaust throttle. Too high segment speed can cause malfunctions or reduced system output.

Verification of the product parts:

Ensure high parts quality. Remove foreign material prior to filling. Product parts coated with oil, grease or any other coating should not be used. For further information refer to chapter 1.4 "Technical data: and chapter 6.3 "Cleaning instructions).

5.3 System filling

According to maximum fling volume. The permitted limits of your segment conveyor can be found in the table in chapter 1.5 „Dimensions“.

6.1 Wear and spare parts

Defective machine parts should be replaced as soon as possible. Please use the spare parts list enclosed in the attachment to identify required spare and wear parts.



WARNING

Only original parts or parts with equivalent quality maybe used for parts replacement.

6.2 Inspection

As needed:

Cleaning of the sliding surfaces of the segment conveyor with a cloth and, if needed, an appropriate cleaning agent by briefed personnel. The cleaning cycle (frequency) may vary depending on used product parts and must be practically determined.

Monthly

Check transitions between segment and feeding rail and between feeding rail and separator for offsets or gaps. Adjust if necessary.

Check transducers for tight fit. Adjust if necessary.

Quarterly:

Clean system with cloth. Empty the parts container. Check separator, output rail, blade and part container including its surface coating for damage.

Check pneumatics for leaks. If necessary, replace faulty parts.

All time intervals provided above, are calculated for average parts and average operating times. If the mentioned time setup does not provide the desired effect, then it should be adjusted to your actual production.

6.3 Cleaning instruction



WARNING

Prior to cleaning, the segment conveyor must be electrically and pneumatically isolated.

6.3.1 Clean parts container

Carefully remove screws by hand from the parts container.
Remove coarse dirt using a vacuum cleaner.
Remove wax and other wear from the parts container using a cloth and some solvent.



CAUTION

Do not remove screws using a magnet!

Do not bend rejection springs!



6.3.2 Lifting segment cleaning



CAUTION

Do not bend rejection springs!

a) Remove wax and other wear from the lifting segment using a cloth and some solvent.



b) Carefully clean segment gap.



6.3.3 Sorting channel cleaning



CAUTION

Do not bend rejection springs!

a) Remove contaminations from the segment gap within the sorting channel using a Q-tip and some solvent.



b) Remove contaminations within the sorting channel using a Q-tip and some solvent.



6.3.4 Output rail cleaning

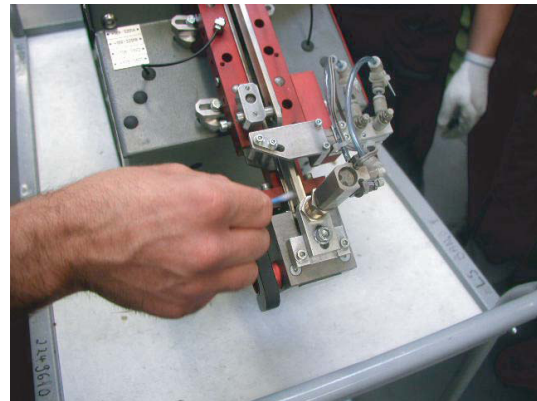
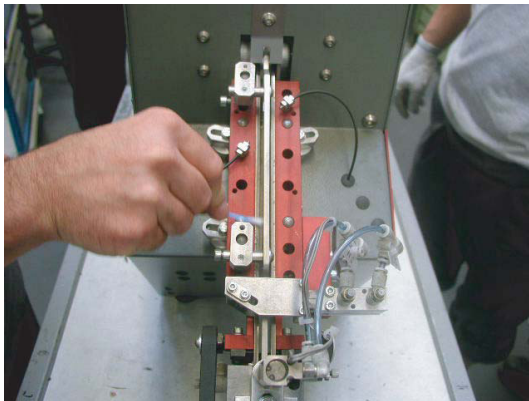


CAUTION

Do not bend hold-down clamps or upstream separator!

Do not damage optical fibres and sensor system!

- a) Remove contaminations from the slide surfaces of the output rail and the output rail gap using a Q-tip and some solvent.



6.3.5 Separator cleaning

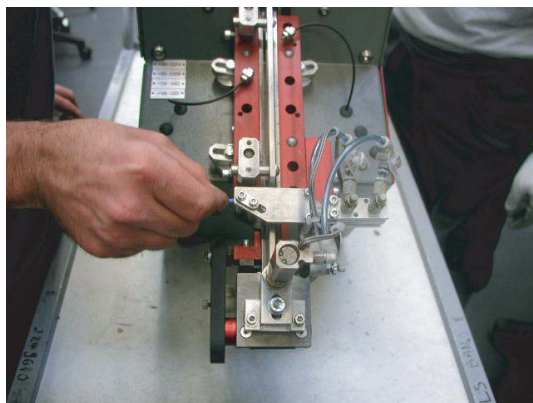


CAUTION

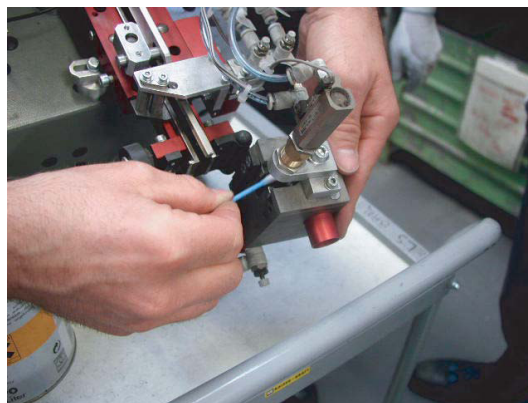
Do not bend hold-down clamps or upstream separator!

Do not damage optical fibres and sensor system!

a) Remove contaminations from the slide surfaces of the upstream separator using a Q-tip and some solvent.



b) Remove contaminations from the axial separator using a Q-tip and some solvent.



6.3.6 Cleaning interval

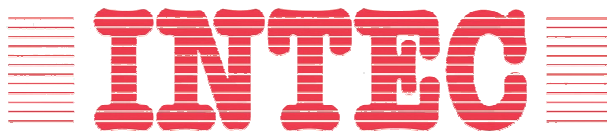
Intensive cleaning strongly depends on cycle time, sort items and degree of sort item contamination. However, intensive cleaning should take occur at least once a week!

Once per shift, the slide surfaces from segment to separator should be roughly cleaned. It is sufficient to clean the slide surfaces from depositions (using a cloth soaked in solvent).

The cleaning cycle must be adjusted based on empirical data according to sort item and coating type of the sort item!

Declaration of Incorporation according to EC directive for machines (2006/42/EC, annex II 1. B)

The manufacturer,



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Internet: www.intec-ger.de

declare in exclusive responsibility, that the incomplete machine,

Description: Segment Conveyor SG
Series: SG2H, SG2L, SG3H, SG3L
Year of construction: 2020

conforms to the following basic requirements of the Machine Directive (2006/42/EC):
Annex I, Section 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.5.1.

Moreover, the incomplete machine conforms to all the regulations in the directives Electrical Operating Equipment (2006/95/EC) and Electromagnetic Compatibility (2004/108/EC).

The incomplete machine may only be commissioned after determination that the machine, in which the incomplete machine should be integrated, complies with the regulations of the Machine Directive (2006/42/EC).

The following harmonized standards were applied:

DIN EN 12100	Safety of machinery - Basic concepts, general principles for design,
DIN EN 60204-1	Safety of machinery - Electrical equipment of machines, Part 1: General requirements

The manufacturer commits, to electronically transmit specific documentation regarding the incomplete machine to national authorities upon request. The technical documentation according to Annex VII, Part B, corresponding to the machine, was prepared.

The person responsible for the documentation is: **Mr. Max (General Manager)**

Place, Date:

Signatory and information on signatory:

Signature: