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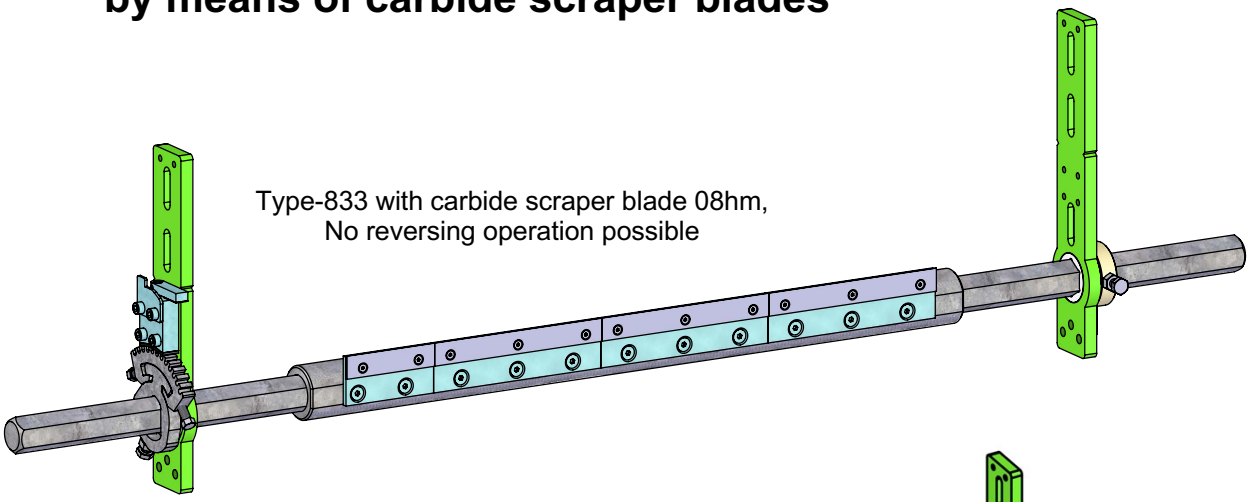
STARCLEAN
SMART CONVEYING SOLUTIONS

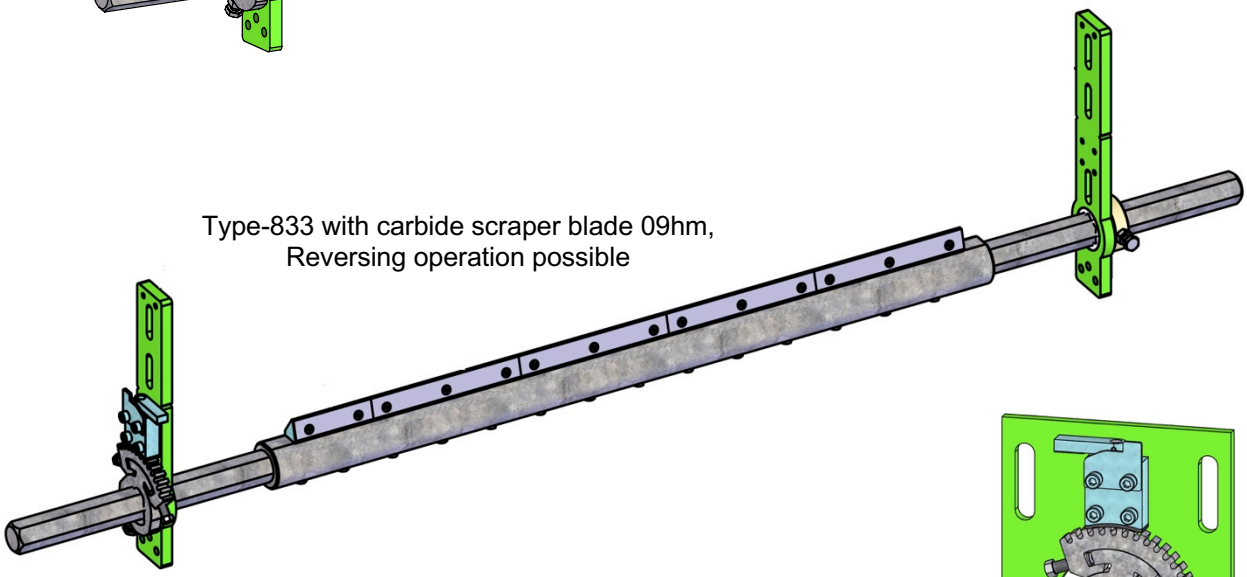
Installation and operating instructions

STARCLEAN® conveyor belt scraper
Types 831 (830-01) and 833 (830-03)

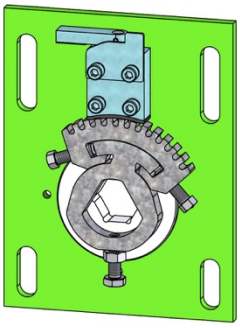
with snap-action tensioning device
for cleaning conveyor belts at the pulley and below the belt by means of carbide scraper blades



Type-833 with carbide scraper blade 08hm,
No reversing operation possible



Type-833 with carbide scraper blade 09hm,
Reversing operation possible



Alternative mountingplate
SPV-840

Contents

1 Important safety informaton and instructions

1.1 Manufacturer, Copyright

Manufacturer:

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Copyright:

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1.2 Scope of installation and operating manual

This installation and operating manual (item No.: 95-MA-831-GB…) applies to all **conveyor belt scraper systems** in lines 831 (830-01) and 833 (830-03), regardless of which of the line's components described below are being used (scraper blade types and number, blade-base types and lengths, or installation equipment).

Keep this installation and operating manual together with the machine documentation for future reference, and make them accessible to the installation and operating personel!

1.3 Key: (Meanings of symbols)

Warns of a hazard point / Pay special attention or read.

Do not switch on / Make sure that the band system is not turned on during installation

Warning: potentially explosive atmosphere

1.4 General safety instructions

- This operating manual is intended for technical personnel trained by the manufacturer because – due to their training, experience, instruction and knowledge of the relevant standard, guidelines, accident preventon regulations and operating conditions – these people are able to perfom the required activities whilte at the same time recognising potential hazards and preventing them.
- To maintain the warranty, installation and start-up should be carried out by the manufacturer`s technical personnel.
- The instructions in the operating manual must be followed without exception. The manufacturer shall bear no liability for damages to persons or machines due to non-compliance.

- Because the conveyor belt scrapers are generally installed into conveyor belt systems, the manufacturers of these systems or the operator who has installed the scrapers must comply with the provisions of the applicable machine guidelines.
- Schulte Strathaus conveyor belt scrapers must be used only in keeping with intended use for cleaning conveyor belts at the positions provided for this.
- In order to ensure the guaranteed functions, only replacement parts from the manufacturer are to be used.
- During all work, the applicable local regulations and legislation must be observed.
- There is no claim that these safety instructions are complete. If there are questions or problems, please contact the manufacturer.
- STARCLEAN\ conveyor belt scraper type 831 (830-01) and 833 (830-03) reflects the state of the art at the time of delivery.
- It must be installed and operated only in perfect condition, and installation by the operator of the system must be configured safely accodring to the relevant accident prevention regulations.
- Retrofitting, modification and conversion are completely prohibited because these may affect worker safety.

1.5 Instructions for use / for use in potentially explosive environments

- The conditions under which the conveyor-belt cleaner is to work (e.g. underground, potential explosive areas, etc.) shall be clarified with the operator.
- **STARCLEAN® conveyor-belt cleaner systems for use in potentially explosive areas are equipped with special scraper blades and scraper bars. These always have the color black and are labeled as „v“. They are made from approved for underground coal mines plastics and have a maximum surface resistance of $10^9\Omega$.**

  All Starclean® conveyor-belt cleaner systems are marked with the following identification plates.

Schulte Strathaus GmbH & Co. KG Germany
www.starclean-solutions.de

Art.-Nr.: .....

Auft.-Nr.: .....

Baujahr: 2019/... SN: .....

The STARCLEAN® scrapers suitable for installation in potentially explosive atmospheres **are marked as follows for different applications**

- **The conveyor belt cleaning systems of group I category M2 may only be used with the above-mentioned special segments and scraper strips (marking "v") on conveyor belt systems which can be switched off in the event of an explosive atmosphere.Die Relativgeschwindigkeit des Fördergurtes darf 4,5 m/ s nicht überschreiten.**
- **A surface temperature of 150° C must not be exceeded. Idle running in combination with high belt speed and high pretension can lead to higher temperatures!**
- **For use in underground operations of mines and their surface installations which may be endangered by mine gas and/or combustible dusts.**

Marking =

CE Ex I M2 Ex h Mb X
$-20°C \le T_a \le +40°C$ / V_{max} = 4,5 m/s

- **Group II Category 2D conveyor belt cleaning systems may only be used on conveyor belts with the special segments and scraper blades (marked "v") mentioned above.**
- **The relative speed of the conveyor belt must not exceed 6 m/s.**
- **A surface temperature of 190° C must not be exceeded.**
- **The range of application corresponds to zone 21.**

Marking =

CE Ex II 2D Ex h IIIC T 200°C Db
$-40°C \le T_a \le +40°C$ / V_{max} = 6 m/s

- **Group II Category 2G conveyor belt cleaning systems may only be used on conveyor belts with the special segments and scraper blades (marked "v") mentioned above.**
- **The relative speed of the conveyor belt must not exceed 6 m/s.**
- **The max. surface temperature corresponds to temperature class T3 (200°C).**
- **The range of application corresponds to zone 1.**

Marking =

CE Ex II 2G Ex h IIB T3 Gb
$-40°C \leq T_a \leq +40°C$ / $V_{max} = 6$ m/s

This applies to all scraper systems in hazardous areas:

- **Scraper blades which are provided with carbide tips (types 08hm, 09hm, 50, 52, 53, 56, 256, 66, 266) may ONLY BE OPERATED UNDER CERTAIN CONDITIONS on conveyor belts with steel cord belts or with mechanical belt connectors. Danger due to sparks if not observed!**

- Equipment group I, cat. M2,
with belt speed < 5 m/s:
Steel cord belts and mechanical connections permissible.

- Equipment group I, cat. M2,
with belt speed >= 5 m/s und minimum ignition energy (MIE) >= 100mJ:
Steel cord belts and mechanical connections permitted in case of positive assessment of the risk assessment of the belt system.

- Equipment group II, cat. 2D, dust class IIIA, IIIB or IIIC
with belt speeds < 5 m/s and MZE of dust >=10 mJ:
Steel cord belts and mechanical connections permissible.

- Equipment group II, cat. 2D, dust class IIIA, IIIB or IIIC with belt speeds < 5 m/s and MIE of dust <10 mJ:
Steel cord belts and mechanical connections are not permitted.

- Equipment group II, cat. 2D, dust class IIIA, IIIB or IIIC
with belt speeds > 5 m/s independent of the MZE of the dust:
Steel cord belts and mechanical connections are not permitted.

- Equipment group II, cat. 3D, dust class IIIA, IIIB or IIIC
independent of belt speed
Steel cord belts and mechanical connections permissible.

- Equipment group II, Cat. 2G, explosion groups IIA or IIB
Steel cord belts and mechanical connections not permitted.

- Equipment group II, Cat. 3G, explosion groups IIA or IIB
Steel cord belts and mechanical connections permissible.

Further points which must be strictly adhered to:

- **Mechanical belt fasteners shall be properly mounted in the belt surface recessed.**

- **Damaged belt connectors and damaged steel cable belts must be taken out of operation immediately!**
  Danger due to sparks!

- **Scraper segments provided with carbide strips (types 08hm, 09hm, 50, 52, 53, 56, 256, 66, 266) must not be subjected to more than 200 N pretensioning force.**

- **All scraper systems used in hazardous areas may only be operated with pre-tensioned segments. If the conveyor system is to be operated without scrapers, the scraper blades must be removed from the blade base!**

- **All conductive parts of the conveyor belt cleaning system must be grounded with an earth leakage resistance to earth of less than 10^6 Ω.**
  Use the supplied grounding kit (Part. -No. 95-SKE-001)

- **All dissipative parts of the conveyor belt cleaning systems must be grounded with an earth leakage resistance to earth of less than 10^8 Ω.**
  Use the supplied grounding kit (Part. -No. 95-SKE-001)

- **The dust-explosive products to be processed must have the following safety characteristics**
  Minimum ignition temperature of the dust cloud: > 300 °C
  (according to EN 50281-2-1)
  Minimum ignition temperature of the dust layer (max. 5 mm thick): > 275 °C
  (according to EN 50281-2-1)

- **The scrapers must be regularly cleaned of dust deposits!**

- The machine must not be put into operation **until the plant operator** has determined that the plant in which the STARCLEAN® scraper system has been installed complies with the basic requirements of Directive 2014/34/EU.

- With regard to the use of conveyor belts and belt connectors, the requirements of IEC/TS 60079-32-1 must be observed for all scrapers, including non-metallic scrapers.

- No substances sensitive to impact or friction (e.g. in accordance with Class 4.1 ADR) or self-decomposing or hybrid mixtures shall be conveyed or produced in the area of the belt scrapers in relation to their flammability or explosive capacity.

- During operation, no potential ignition sources (e.g. glowing or burning particles, glow nests, foreign bodies) may be introduced into the conveyor system on which the belt scrapers are installed.

- For use of the belt scrapers in potentially explosive atmospheres, they may only be operated with equipment suitable for the respective application and placed on the market in accordance with Directive 2014/34/EU. A separate risk assessment for additional ignition hazards must be carried out by assembling the conveyor belt scrapers with these operating resources.

- The requirements of EN 60079-14 must be observed with regard to the selection and installation of electrical equipment.

- Use original spare parts only!

1.6 Special safety instructions

- Before any work begins on STARCLEAN® conveyor belt scrapers, the belt conveyor's voltage supply must be switched off **and** secured against unauthorised activation.
- Before welding and cutting work begins, approval for this work must be obtained from the operator of the belt system!

- When the STARCLEAN® conveyor belt scraper is installed before use of a welding torch and/or other welding equipment, inspection must be made to ensure compliance with legal regulations (explosion protection, firedamp protection, etc.).

- During welding and cutting work, heat-sensitive components, such as the conveyor belt, must be covered. If necessary, a fire watch is required.

2 Description of the STARCLEAN® conveyor belt scraper

2.1 Purpose and tasks (intended use)

The STARCLEAN® - conveyor belt scrapers type 831 (830-01) and 833 (830-03) are mainly used for scraping off material residues from the conveyor belt "below the belt".
For this purpose, the scraper blade is pressed against the surface of the conveyor belt in a defined manner by its positioning on the belt system, in order to carefully scrape off material residues and buildup from the belt.

By releasing the locking device of the detent clamping device, the blade can be easily tensioned and also folded down for cleaning and maintenance work.

The scrapers are offered in two different versions:

Type 08hm cannot be used with reversible conveyor systems.

Type 09hm can be used with reversible conveyor systems.

The scrapers are suitable for belt widths from 300 mm to 3000 mm including.
The permissible belt speeds depend on the segment blade base types and lengths used.
See tables 1, 1a and 1b on page 16 and 17 for details.

For higher belt speeds, consult the manufacturer.

When using the scrapers in potentially explosive atmospheres, it is essential to observe the information under point 1.5!

2.1.1 Information on selecting and positioning the scraper on the conveyor

The type 08hm and 09hm scraper blades should ideally be installed X mm behind the axis of the drum on the track of the conveyor belt system, **in an area where the conveyor belt is still level and the belt tension is sufficiently high.**
(see also item 3.5.1).

2.1.2 Information on belt condition / condition of belt connection / mechanical joints

In case of poor belt condition and its connection (s), or when using mechanical joint, the scraper blades of type 08hm must be positioned with an angle α of approx. 70° (see also page 19) in relation to the conveyor belt.

In addition, the scrapers can only be operated with low pretensions. This can have a negative effect on the cleaning result.

2.1.3 Information on belt tension

When installing the secondary scraper on the track, the pre-tension of the scraper blade is achieved through the spring effect of the foot and the counterforce of the conveyor belt. If the scraper blade's pre-tension deflects the belt by more than 2 cm, the belt tension must be increased, and or a counter-pressure roller installed.

2.1.4 Information on conveyed material to be scraped off

The scraper blades type 08hm and 09hm are suitable for scraping off all types of conveyed goods, in particular for cleaning wet and sticky material, glass batches and combustion residues.

2.1.5 Information on operation without material to be conveyed (dry running)

An operation of the scraper bars type 08hm and 09hm without material to be scrapped (dry running) should be reduced as far as possible or kept as short as possible. This serves on the one hand to reduce temperature loads and wear on the conveyor belt and scrapers, but also to save energy.
If it is not necessary to clean the entire width of the conveyor belt (e.g. in the outer area of the conveyor belt), the scraper segments located there should not be mounted there.

2.2 Component description (example 90-833.09hm.09)

Item 1	Scraper segment base consisting of: (see Fig. 1a)
Item 1.1 A	Scraper segments (here type 95-Seg-09hm-110-03)
Item 1.2 A	Scraper segments (here type 95-Seg-09hm-210-03)
Item 1.3	Blade base type 3
Item 1.4	Blade base type 1 (alternatively see Fig. 1b)
Item 2	Mounting plate version 830 with snap-action tensioning device and pivot bearings made from plastic
Item 2.1	Locking device
Item 2.2	Latch element with fine-tuning element
Item 3	Mounting plate version 830 with pivot bearings made from plastic and adjusting ring
R5	= Radius R5 on the outer sides

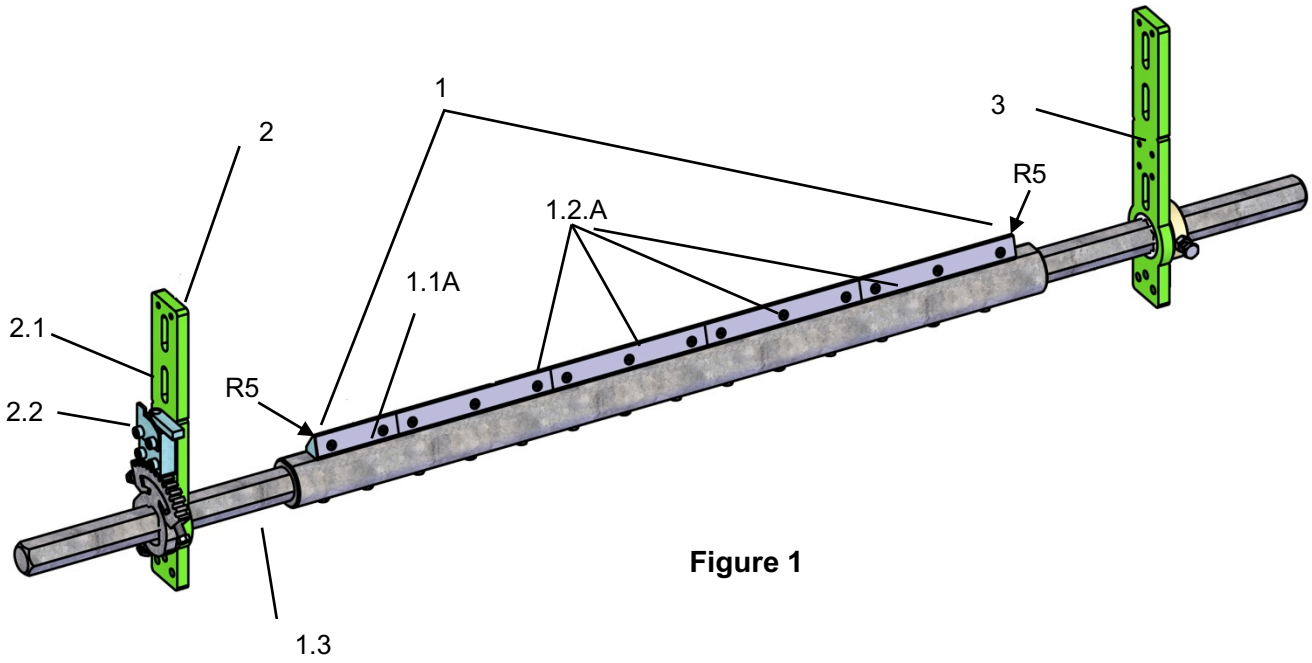


Figure 1

2.2.1 Detail: Scraper blade type 09hm

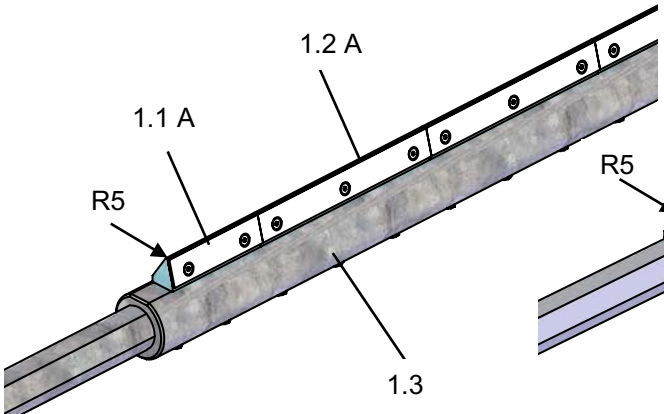


Figure 1a Seg-09hm-110(-210)-03
With blade base type 3

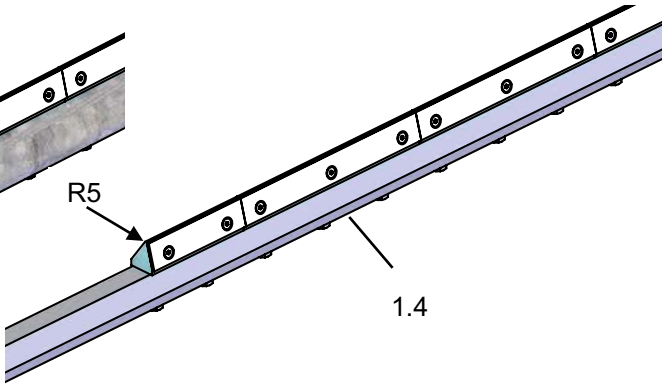


Figure 1b Seg-09hm-110(-210)-01
With blade base type 1

2.3 Component description (example 90-833.08hm.08)

Item 1	Scraper blade base consisting of: (see Fig. 2b)
Item 1.1 B	Scraper blades (here type 95-Seg-08hm-110-03)
Item 1.2 B	Scraper blades (here type 95-Seg-08hm-210-03)
Item 1.3	Blade base type 1
Item 1.4	Blade base type 3 (alternatively see Fig. 2b)
Item 2	Mounting plate type 830 with snap-action tensioning device and pivot bearing
Item 2.1	Locking device
Item 2.2	Latch element with fine-tuning element
Item 3	Mounting plate type 830 with pivot bearings and adjusting ring

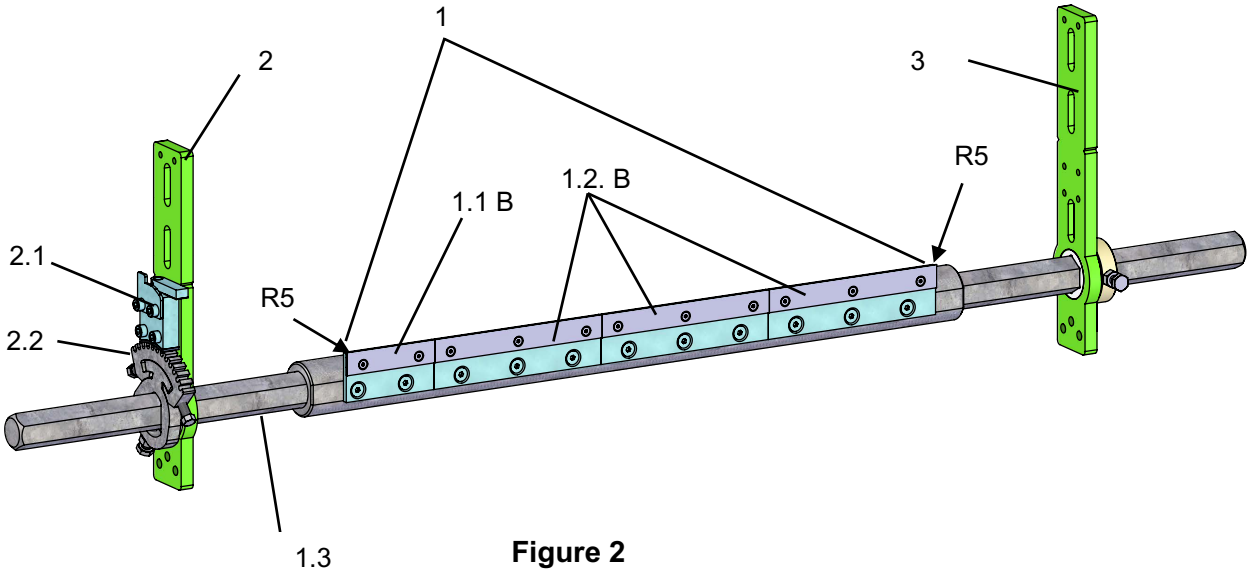


Figure 2

2.3.1 Detail: Scraper blade type 08hm

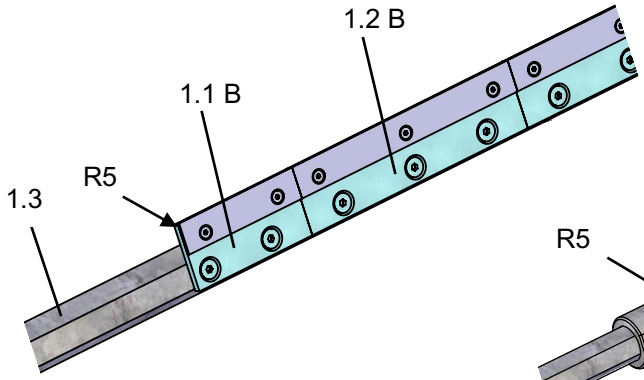


Fig. 2a Seg-08hm-110(-210)-01 with blade base type 1

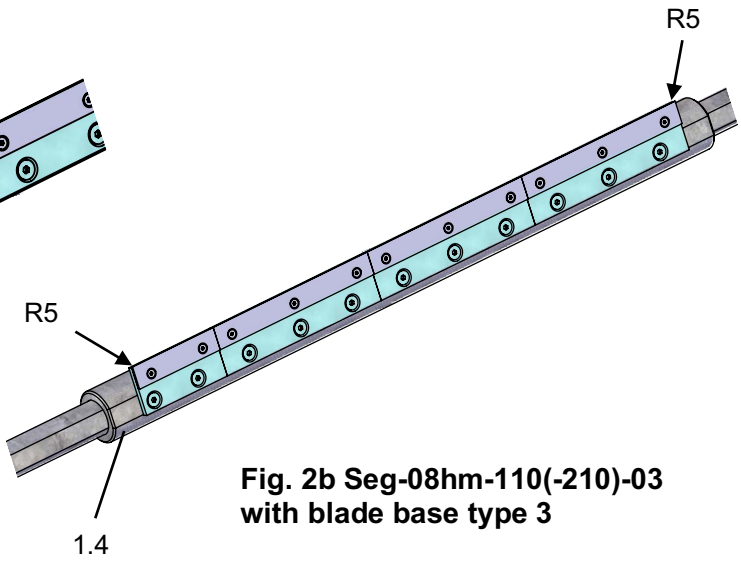


Fig. 2b Seg-08hm-110(-210)-03 with blade base type 3

2.3.2 Detail: Mounting plate type 830 with snap-action tensioning device, fine tuning element and pivot bearing

Item 2 B.1	Mounting plate type 830
Item 2 B.2	Pivot bearing type 830
Item 2.1	Locking device
Item 2.2.1	Fine-tuning element
Item 2.2.2.1	Fine-tuning screws (2x)
Item 2.2.2	Latch element
Item 2.2.2.1	Safety bolt for axial blade base attachment
Item 2.2.2.2	Lock nut

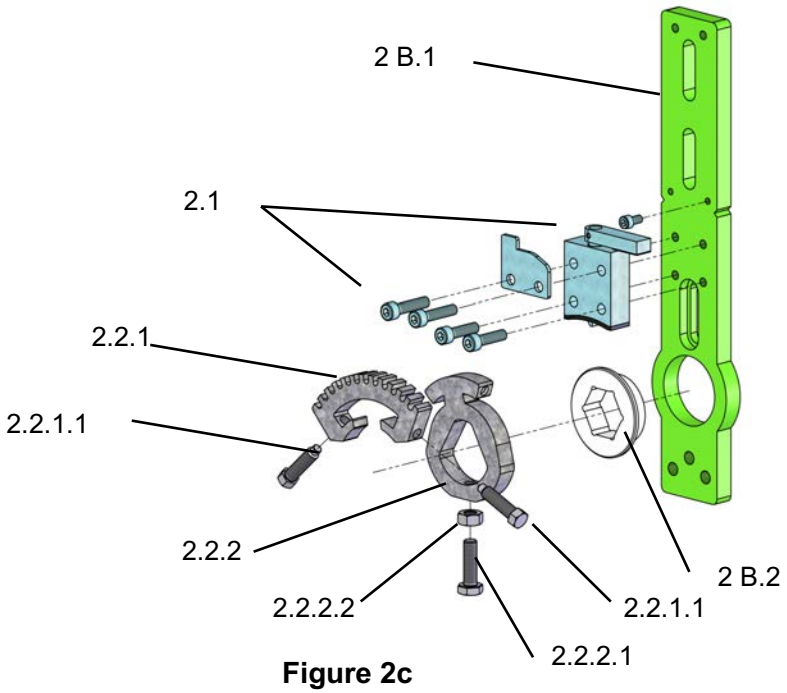


Figure 2c

2.3.3 Detail: Mounting plate type 830 with pivot bearing and adjusting ring

Item 3	Mounting plate type 830
Item 2 B.1	Adjusting ring type 830
Item 2 B.2	Pivot bearing type 830
Item 2.2.2.1	Safety bolt for axial blade base attachment
Item 2.2.2.2	Lock nut

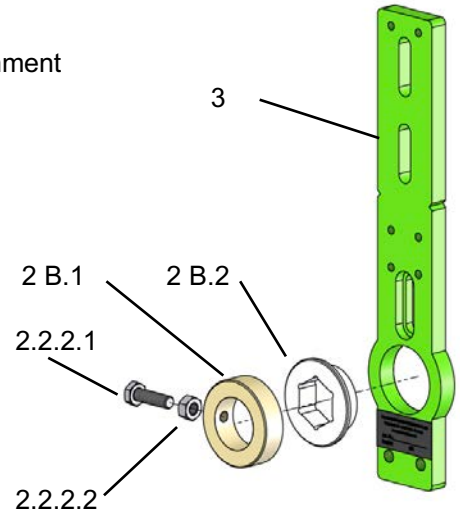


Figure 2d

2.3.4 Installation options of the Tensioning device

The mounting plate with snap action tensioning device as well as the mounting plate with pivot bearing could be installed in different ways on the belt conveyor. Here is an overview of the most common installation options.

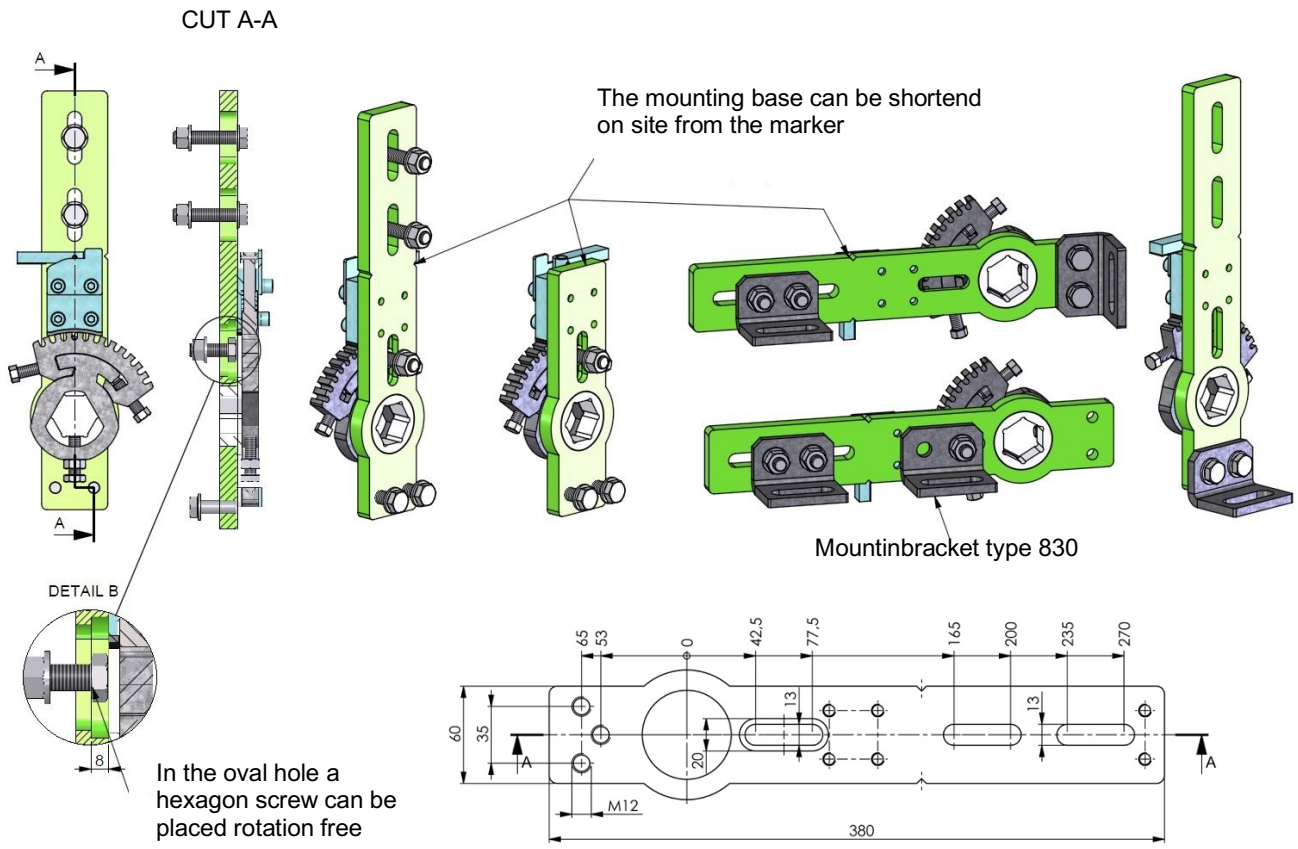


Figure 2e

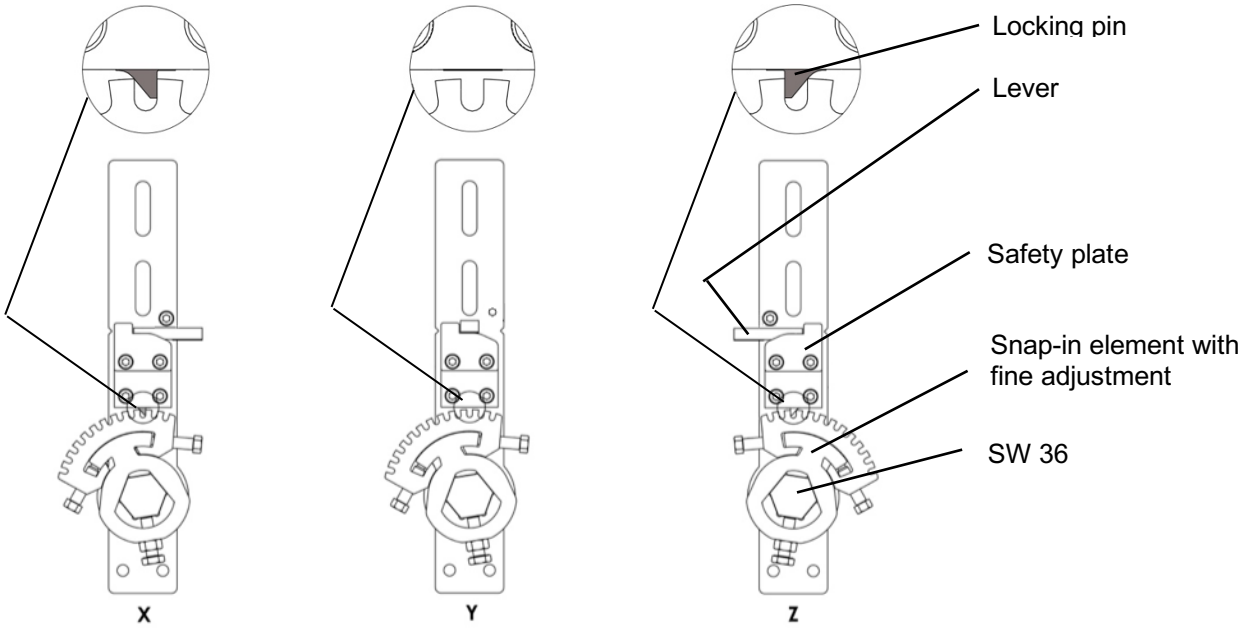
2.3.5 Function: Snap-action tensioning device

The snap-action tensioning device serves to produce the right contact pressure of the scraper-blades. Pre-tension is achieved by twisting the blade-base together with the scrapers and the locking gear.

The locking gear has to be mounted in that way, as the vertical side oft he notches shows in the direction of the scraper segment

The snap-action tensioning device **can only be pretensioned in the lever direction** of the locking gear.

a) <u>Positions of the lever</u>



X Position “Right“ ➔ Pre-tensioning can be performed clockwise only.

Y Position “0“ ➔ Installation and maintenance position. No pretension can be generated

Z Position “Left“ ➔ Pre-tensioning can be performed counterclockwise only.
If necessary, the safety plate has to be mounted in the opposite way. Loosen the two M8 hexagon socket screws, and turn the Safety Plate around. Tighten the screws again thoroughly.

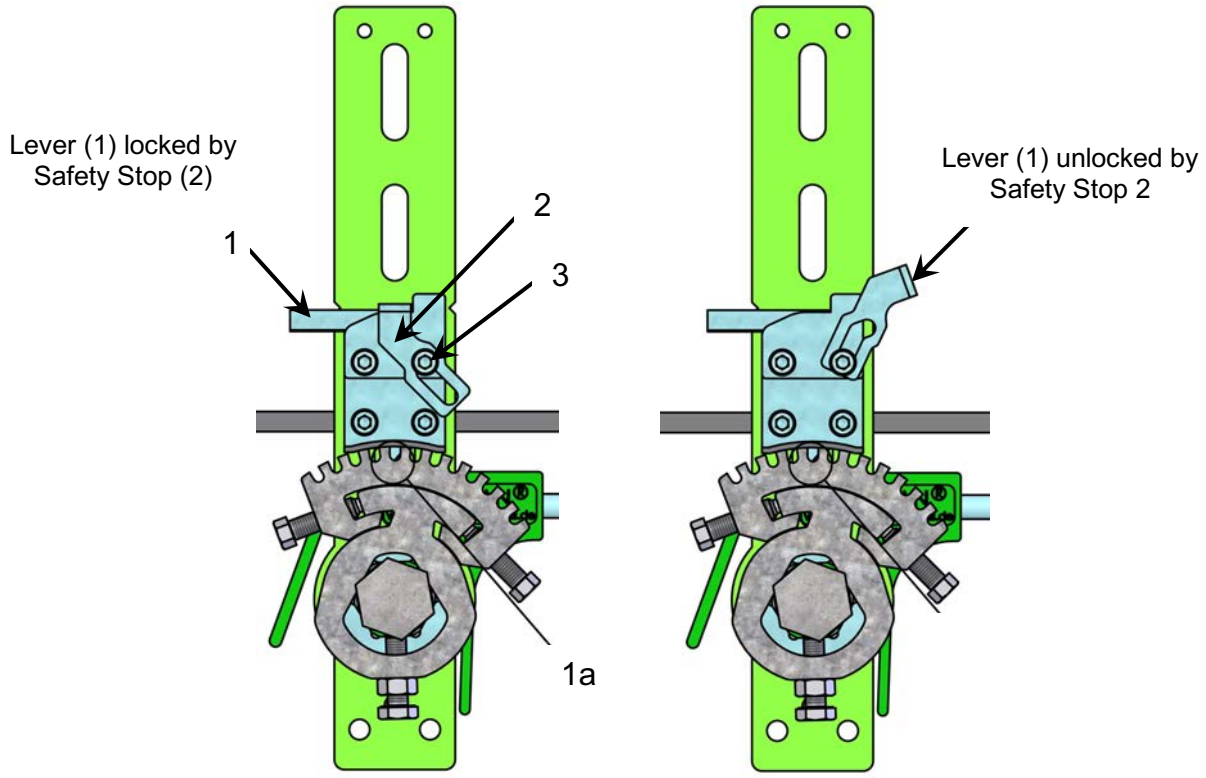
<u>Attention</u>! Pre-tensioning in opposite direction can damage the tensioning mechanism.

b) <u>Releasing the pre-tensioned Snap-action Tensioning Device</u>

1. Release safety stop and fold down (if present) (see para. 2.3.6)
2. Turn the blade-base with a wrench WS 36 slightly in direction of the lever.
3. Lift lever up and shift to "0" position. Now the device is not locked, and the scraper can be twisted in any direction.
4. After appropriate work, position the safety stop (if present) in lock-position again.

2.3.6 Safety stop (mandatory for use in potentially explosive areas and in case of belt runback)

Depending on the scraper segments used and the area of application, the scraper systems are supplied with a safety stop (2), which must be used for use in potentially explosive areas. If the belt reverses, the safety stop can be purchased as an option under article number 95-ET830-023 and used as required



The locking lever (1) with locking pin (1a) can be **secured against unintentional actuation** with the safety stop (2). To do this, bring the safety stop (2) into position so that the stop is directly above the locking lever. Tighten the screw (3) with an Allen key SW 6.
To open the safety stop, loosen the screw (3) only so far that the safety stop (2) can be folded down

Scraper systems for potentially explosive areas are always supplied with safety stop.
The tensioning device may only be operated when the belt is at a standstill and in atmospheric conditions which allow safe working.

2.3.7 Detail: Blade bases type 1, type 3 and 3-HD

Hexagon blade base for Seg 08hm / 09 hm Type 1 (SK01)

Tubular blade base for Seg 08hm / 09 hm Type 3 (SK03)

Reinforced tubular blade base for Seg 08hm / 09 hm Type 3-HD (SK03-01)

2.3.8 Scraper Blade – permitted belt speeds

The scraper blade consists of a type 1 or type 3 blade base adapted to the belt's width with a corresponding number of different scraper segments that are bolted to the segment blade base.

The width of the scraper and the number of scraper segments depend on the width of the conveyor belt. The scraper segments are 110 mm and 210 mm in width.
(95-Seg-08hm-110 / 95-Seg-08hm-210 for belt systems that do not run in reverse;
95-Seg-09hm-110 / 95-Seg-09hm-210 for reverse-running belt systems)

Two type-1 blade bases of different lengths can be used for belt widths of 300 to 650 mm. You can see the number of installed scraper segments in Table 1.

Belt width [mm]	Max. Belt speed [m/s]	Blade base Item no.:	Seg-08hm		Seg-09hm		Scraper length [mm]
			-110-01	-210-01	-110-01	-210-01	
			Number	Number	Number	Number	
300	2,8*	95-SK01-004		1		1	210
400	2,8*	95-SK01-004	1	1	1	1	320
500	2,8*	95-SK01-004		2		2	420
600	2,8*	95-SK01-007	1	2	1	2	530
650	2,8*	95-SK01-007		3		3	630

Table 1

With belt widths of 800 mm and over, type-3 blade bases of different lengths are used. You can see the number of installed scraper segments in Table 1a.

Belt width [mm]	Max. Belt speed [m/s]	Blade base Item no.:	Seg-08hm		Seg-09hm		Scraper length [mm]
			-110-03	-210-03	-110-03	-210-03	
			Number	Number	Number	Number	
800	5*	95-SK03-007	1	3	1	3	740
900	5*	95-SK03-008		4		4	840
1000	5*	95-SK03-009	1	4	1	4	950
1200	5*	95-SK03-011	1	5	1	5	1160
1400	5*	95-SK03-013		6		6	1260
1600	5*	95-SK03-015		7		7	1470
1800	5*	95-SK03-017		8		8	1680
2000	5*	95-SK03-019		9		9	1890

Table 1a

From a belt width of 1000 mm to 3000 mm and belt speeds of up to 7.5 m/s, tubular blade bases of different lengths of type 3-HD are used. The number of mounted wiper segments is shown in table 1b

Belt width [mm]	Max. Belt speed [m/s]	Blade base Item no.:	Seg-08hm		Seg-09hm		Scraper length [mm]
			-110-03	-210-03	-110-03	-210-03	
			Number	Number	Number	Number	
1000	7,5*	95-SK03-009-01	1	4	1	4	950
1200	7,5*	95-SK03-011-01	1	5	1	5	1160
1400	7,5*	95-SK03-013-01		6		6	1260
1600	7,5*	95-SK03-015-01		7		7	1470
1800	7,5*	95-SK03-017-01		8		8	1680
2000	7,5*	95-SK03-019-01		9		9	1890
2200	7,5*	95-SK03-021-01		10		10	2100
2400	7,5*	95-SK03-023-01		11		11	2310
2600	7,5*	95-SK03-025-01		12		12	2520
2800	7,5*	95-SK03-027-01		13		13	2730
3000	7,5*	95-SK03-029-01		14		14	2940

Table 1b

* The specified max. belt speeds are strongly dependent on the condition of the belt, the forces applied and the material conveyed and are only an indicator.

In potentially explosive atmospheres, the information under point 1.5 must be observed!

3 Start-up

3.1 General

Installation and especially start-up must be performed only by suitably trained technical personnel in compliance with applicable regulations. The manufacturer shall bear no liability for damages to persons or machines or any consequential damages due to non-compliance.

3.2 Transport

Types 831(830-01) and 833 (830-03) are only delivered as assemblies:

3.2.1 Type 831 (830-01) with hexagonal blade base type 1

a) Mounting plate type 830 with snap-action tensioning device and fine-tuning
b) Mounting plate type 830 with pivot bearing and adjusting ring
c) Blade bases type 1
d) Scraper segment base version 08hm or 09hm (pre-mounted)

3.2.2 Type 833 (830-03) with tubular blade base type 3 or type 3-HD

a) Mounting plate type 830 with snap-action tensioning device and fine-tuning
b) Mounting plate type 830 with pivot bearing and adjusting ring
c) Blade bases type 3 or type 3-HD
e) Scraper segment base 08hm or 09hm (pre-mounted)

- During transport, all damage and external forces must be completely prevented. Damaged components must not be installed – risk of injury!

3.3 Warehousing Requirements

In many cases belt cleaning systems and their spare parts are stored for some time before installation and commissioning, sometimes even for several months.

As a matter of principle, all components are protected against corrosion in line with their installation site so that very few problems are expected to occur.

To prevent premature damage (also caused by colliding with other stored parts) the components should be stored on shelves in dry rooms or in their transport packaging.

Avoid condensation caused by strongly varying temperatures using appropriate ventilation.

In the event of non-compliance, the manufacturer shall not assume any liability for resulting damage to man or machine or for any consequential damage.

3.4 Installation / start-up

Before installation make absolutely certain that power to the belt system has been switched off and cannot be reactivated by third parties.

If changes have been made to the product – especially during installation, deinstallation, part replacement, installation of new parts or changes to installes parts – and these are not approved by the manufacturer, the warranty is void for defects occuring thereafter.

The locking pin/lever of the snap-action tensioning device must be turned to position „0“!

It is absolutely necessary to examine and evaluate the condition of the belt, and especially of the belt connections. When in doubt, contact the manufacturer to judge the suitability of the type of scraper chosen.

3.5 Illustration of installation distances (blade base axis / belt surface) for HM secondary scrapers type 08hm und type 09hm

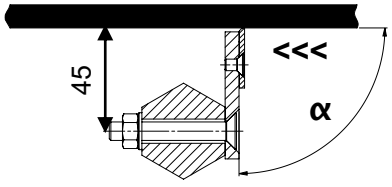
The type 08hm and 09hm scraper blades should ideally be installed X mm behind the axis of the drum on the track of the conveyor belt system, **in an area in which the conveyor belt is level and the tension of the belt is sufficiently high but can still give way if an obstacle is encountered.** If the belt is still curved at the planned place of installation, we recommend the use of out type 511...523 scraper system with segmented counter pressure rollers.

Make sure that the axis of the blade base is parallel to the belt and at right angles to the belt's direction of travel.

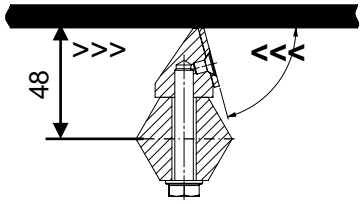
The blade bases must be installed such that the scraper blades are positioned to the centre of the conveyor belt. Secure in position with the retaining collar.
When using the type 95-Seg-08hm scraper blades (no reversible operation), the angle between the belt and scraper blade must initially be set to approx. 90°. If this causes vibrations, the angle can be adjusted slightly until the vibrations are stopped.

When using the type 95-Seg-09hm (reversible operation), the blades must be positioned such that the tungsten carbide tips point in the direction of the discharge drum.

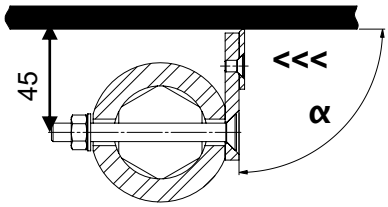
With a pretension = 0 (= straight contact with the flat belt) the distance from the center of the blade base to the belt surface is 45 mm with blade base type 1 and type 3 using segment type 08hm. With segment type 09hm and blade base type 1 it is 48 mm, and 58 mm using blade base type 3.



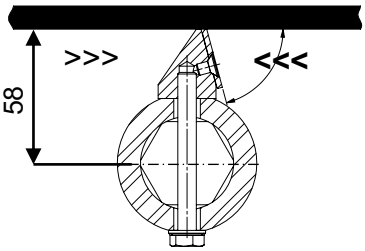
Alignment of the blades
95-Seg-08hm-01 on SK01



Alignment of the blades
95-Seg-09hm-01 on SK01



Alignment of the blades
95-Seg-08hm-03 on SK03



Alignment of the blades
95-Seg-09hm-03 on SK03

The pre-tension is achieved by spindling the scraper blades onto the belt. Exercise extreme caution when doing so - if possible in several stages with corresponding trial run and raise both sides evenly!!

The type 08hm and 09hm scraper blades can be used for **mechanical belt joints**, whereby the angle **α** should be adjusted to approx. 70° and the pre-tension must be reduced.

For **lightly damaged belts or damaged belt joints respectively**, the conveyor system may be able to continue to be operated using this belt-saving setting.
It is the responsibility of the operating company to determine whether further operation of the conveyor system is possible under these conditions.

3.5.1 Installation steps

1st Mounting and alignment of the mounting plate with detent clamping device and pivot bearing (Fig. 2c) as well as the mounting plate/counter bearing with pivot bearing and adjusting ring (Fig. 2d) according to the information (Figs. 3 and 4) on the frame of the conveyor belt system.

The mounting plate must be mounted at right angles to the conveyor belt to allow the scraper blade to be tensioned or retensioned relative to the conveyor belt.

2nd Mounting and alignment of the mounting plate with swivel bearing.
Attention! The scraper blade base must be mounted parallel to the discharge drum or belt.

3rd Mounting and alignment of the scraper.
Hang the scraper blade basel into the openings of the mounting plates.
Slide the plastic bearings 2B.2 over the hexagon ends of the segment blade base and into the mounting plates 2 B.1 or 3.
The blade base must be mounted so that the scraper blades are positioned centrally to the conveyor belt. Secure position with adjusting ring 2B.1.

When using the scraper segments 95-Seg-08hm (no reversing operation), the angle α between belt and scraper must first be set to approx. 90°. (Please see also informations with point 3.4.1)

When using the scraper blades 95-Seg-09hm (reversing operation possible), the segments must be positioned so that the carbide tips point in the direction of the discharge drum.

4th Set the locking lever in the snap action tensioning device to position "0

5th Twist the blade base so that the scraper segments are positioned with respect to the conveyor belt as described under point 3.

6th Place the latch element with fine adjustment element 2.2 on the blade base, whereby the locking pin should grip in the first or second notch.

7th Tighten and lock the locking screw 2.2.2.1 in the locking element.

8th Tighten fine adjustment element 2.2.1 with fine adjustment screws 2.2.2.1

9th **in potentially explosive atmospheres, the supplied earthing set (95-SKE-001) must be fitted!**

10th Preload and test run:
The preload is achieved by placing the blade base with the scraper segments

a) is displaced towards the conveyor belt via the slotted holes of the mounting plates until the belt exerts sufficient force on the scraper, or,

b) The blade base with the mounted scraper segments is rotated by approx. 16° to 24° in the running direction of the conveyor belt (this corresponds to 2 to 3 notches), and then the blade base with the scrapers is moved over the slots in the mounting plates in the direction of the conveyor belt until the scraper segments just touch the belt.
The pretension is then achieved by turning the scraper blades with an SW 36 wrench against the belt running direction until the positions of the wiper segments described under point 3 are reached.

The pretension is strongly dependent on the belt tension and must not be more than 200 N!

11th Tighten all screws sorrowly!

12th **Turn the safety stop (see also point 2.3.6) above the locking lever and tighten Allen screw M6!**

13th Start the test run. Special care must be taken to ensure that no persons are endangered.
Observe the degree of cleaning for a few minutes.

During trial operation, it must be determined whether the blade base is vibrating. If so, the angle **α** must be slightly reduced.
To do this, turn the segment blade base with the fine adjustment accordingly (see point 14).

If any material remains on the surface of the conveyor belt, continue pretensioning.

14th A fine adjustment of the angular position of the scraper blades is possible by carefully loosening the fine adjustment screw 2.2.2.1 on one side and simultaneously tightening on the other side.
The latching element 2.2.2 rotates relative to the fine adjustment element 2.2.1
Tightening the fine adjustment screws 2.2.2.1

15th If necessary, shorten the protruding ends of the blade base. Leave sufficient length (approx. 40 mm) on the clamping side to attach the clamping key.

3.5.2 Earthing the STARCLEAN® scraper in potentially explosive areas

Attention! After mounting the supplied earthing set (95-SKE-001) on the blade base and the conveyor frame, the correct function of the mounting must be checked and ensured by the system operator by measuring the electrical resistance (< 10^6 Ohm) between the scraper blades and the conveyor frame.

3.6 Retraction points and openings

Attention! Secure all openings and snagging points between the scraper and conveyor belt against reaching and catching according to the accident prevention regulations.

Attention! For installation in existing belt conveyor systems, the provisions of the machine guidelines for belt conveyor systems must be observed.

The conveyor system operator is responsible for compliance with the statutory regulations

3.6.1 Start-up

1. Turn the belt system on and check the default values and scraper behaviour.

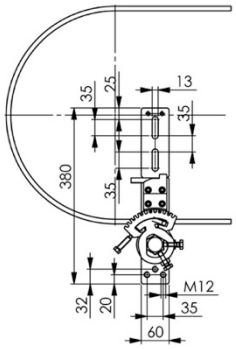
2. If necessary, readjust the pre-tension, i.e. increase or decrease it in **compliance with accident prevention regulations**.
For special cleaning problems please contact the manufacturer.

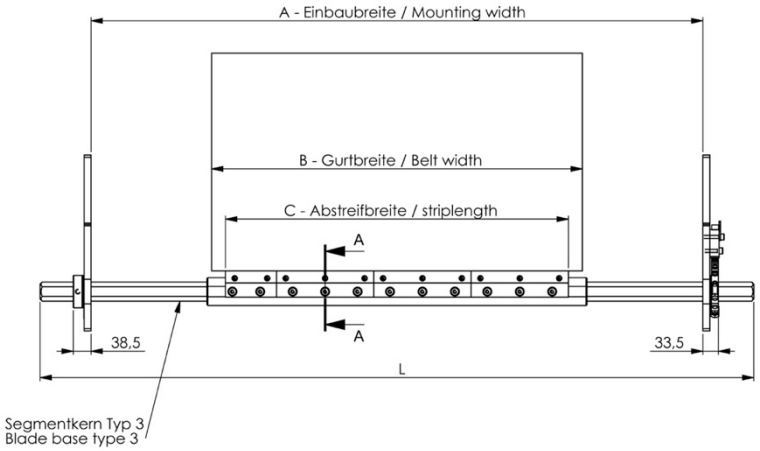
3. **The conveyor belt system may only be put into operation for production after the operator has included the incomplete machine "conveyor belt scraper" in the CE declaration of conformity of his system and declared it to be in conformity.**

For special cleaning problems please contact the manufacturer.

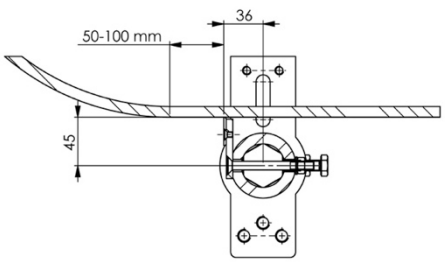
3.6.2 Examples for Positioning

3.6.2.1 Example for positioning Item.-No.: 90-833.08hm.07



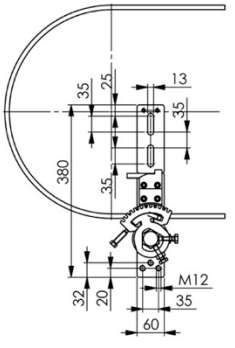


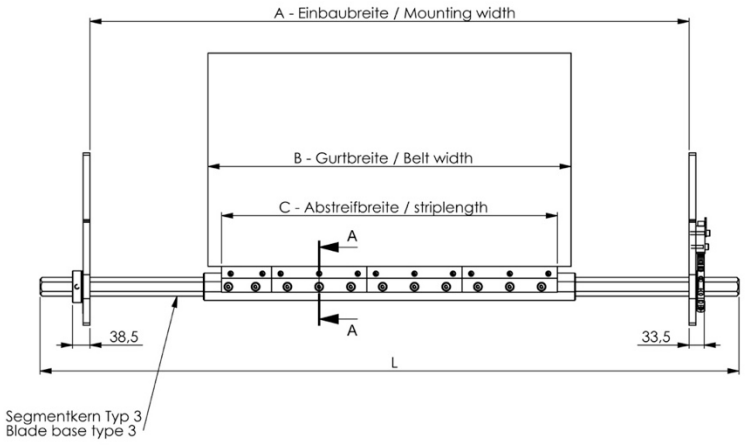
SCHNITT A-A



Art.-Nr.	A max. (mm)	B (mm)	C (mm)	L (mm)
90-833.08hm.15D	2210	1600	1470	2290
90-833.08hm.13D	2010	1400	1260	2090
90-833.08hm.11	1860	1200	1160	1940
90-833.08hm.09	1660	1000	950	1740
90-833.08hm.08	1560	900	840	1640
90-833.08hm.07	1460	800	740	1540
90-833.08hm.06	1460	650	630	1540

3.6.2.2 Example for positioning Item.-No.: 90-833.09hm.07





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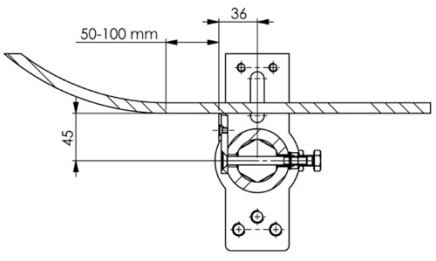

Art.-Nr.	A max. (mm)	B (mm)	C (mm)	L (mm)
90-833.08hm.15D	2210	1600	1470	2290
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90-833.08hm.11	1860	1200	1160	1940
90-833.08hm.09	1660	1000	950	1740
90-833.08hm.08	1560	900	840	1640
90-833.08hm.07	1460	800	740	1540
90-833.08hm.06	1460	650	630	1540

4 Maintenance / disposal

4.1 General

Only maintenance according to the applicable maintenance guidelines can ensure the scraper's optimal cleaning behaviour and long service life.

4.2 Maintenance instructions

Attention!
The scraper blades must be replaced only when the belt system is switched off and secured. Accident prevention regulations must be observed.

Although the scraper is very low-maintenance, the following points should be checked regularly:

1st Are the scraper blades free of build-up? Clean, if necessary.

2nd Is the pre-tension correct? Correct, if necessary.

3rd Are the screws all tight? Tighten, if necessary.

4th Do the scraper blades lie perfectly against the belt? Check the segment axis movement, if necessary.

5th Are the scraper blades too worn to use?
If the segments are worn, they must be replaced to prevent belt damage!

6th Are the scraper blades damaged? Replace the segments, if necessary.

7th Can the blade-base still freely turn for tensioning? Clean, if necessary.

4.3 Maintenance inspection / maintenance intervals / special maintenance

The maintenance required depends on many factors, such as the material conveyed, the condition of the belt, etc., and can vary. Following installation, the actual maintenance effort is to be determined and organised accordingly. The following are reference values:

- Every week – in 3-shift operation
- Every 2 weeks – in 2-shift operation
- Every 3 weeks – in 1-shift operation

In wintertime, the scraper systems must be maintained with special care (and more often than indicated). This prevents damage to the conveyor belt the next time the belt is turned on, such as due to frozen material.
The manufacturer assumes no liability for damages due to improper installation, deficient maintenance and material deposits.

In wintertime, it is essential to remove any ice or snow from the scraper and check it´s proper function before starting the conveyor. (Risk of belt damages)

A similar procedure must also be used with materials such as gypsum and clay. After the belt system has stopped, conveyed materials tend to become so hard that after the system is restarted the conveyor belt surfaces grip may cause damage.

In belt systems running with mechanical connections, the scraper systems should be inspected daily. These inspections are to ensure that damaged mechanical connections do not in turn damage the scraper system.

It should be noted that mechanical joints influence the lifespan of the scraper blades used and may cause them to wear out prematurely. Therefor it must be ensured that the mechanical connections can also get into the cover plate on the running side. This will significantly extend the life of the scraper blades.

4.4 Troubleshooting

If the scraper system malfunctions, follow the instructions below:

“Poor cleaning results“	
Causes	**Resolution**
The scraper blades do not lie against the belt.	Check installation against the operating manual.
Scraper blades are defective or worn.	Replace the scraper blades.
Scraper blade bar or scraper blades are dirty.	Clean the scraper blade bar and scraper.

4.5 Replacing a scraper blade

1st Stop the belt system according to accident prevention regulations.

2nd Release the safety stop (see item 2.3.6).

3rd Loosen the pre-tensed scraper blades:

- Turn the blade-base slightly towards the locking lever, using a 36 w.s. wrench.
- Lift the locking lever and set to position “0“. The locking mechanism is now disengaged, and the scraper blades may be twisted at will.

4th Loosen locking screws 2.2.2.1 for axial segment blade base fixing incl. lock nuts 2.2.2.2.

5th Pull the segment blade base out of the mounting plates.

6th Unscrew scraper segments and replace with new ones. Make sure that in cases where only segments of type ...-210 are used, the first hole in the segment blade base remains free. This is only used in conjunction with the segments of type ...-110.

7th **The outer segments must be provided by the customer with a radius R5 on the side facing the belt edge to protect against belt damage. The 110 mm wide scraper segments are always provided with this radius on one side as standard. The 210 mm wide segments are to be placed close together without radius on the segment core and only the "end elements" are to be provided with this radius R5 on the right and/or left side.** (see also separate instructions enclosed with the replacement segments)

8th Replace the segment blade base in the middle of the mounting plates under the conveyor belt and secure it with the locking screws for axial segment blade base fastening.

9th Pre-tension and secure the locking lever with the safety stop (see item. 2.3.6)

10th **Start the test run. Make sure all people are out of danger.**
Observe the degree of cleaning for a few minutes.

If material still remains on the conveyor belt surface, increase the pre-tension.

After the segments have worn, we recommend always replacing all scraper blades in the scraper blade bar!

4.6 Disposal

The polyurethane segments cannot be disposed of with household waste. Please contact your local waste disposal company or the manufacturer. All other components can be taken for metal recycling

5 Order numbers / ordering replacement parts

5.1 Sample order for scraper systems

Example: Item No. 90-831.08hm.05 = STARCLEAN® - scraper system
- with snap-action tensioning device type 830
- with counter-bearing type 830
- with blade-base type 1 (hexagon blade-base SW 36)
- with scraper blades type 08hm (no reverseable action)
  (2 Segments 95-Seg-08hm-210-01 and 1 Segment 95-Seg-08hm-110-01, for belts 650 mm wide)

Example: Item No. 90-831.09hm.09 = STARCLEAN® - scraper system
- with snap-action tensioning device type 830
- with counter-bearing type 830
- with blade-base type 3 (tubular blade-base ø 60 mm)
- with scraper blades type 09hm (reverseable action)
  (4 Segments 95-Seg-09hm-110-03 and 4 Segment 95-Seg-09hm-210-03, for belts 1000 mm wide)

5.2 Sample order for replacement parts

Original order XYZ from ...
STARCLEAN® 90-831.08hm.07

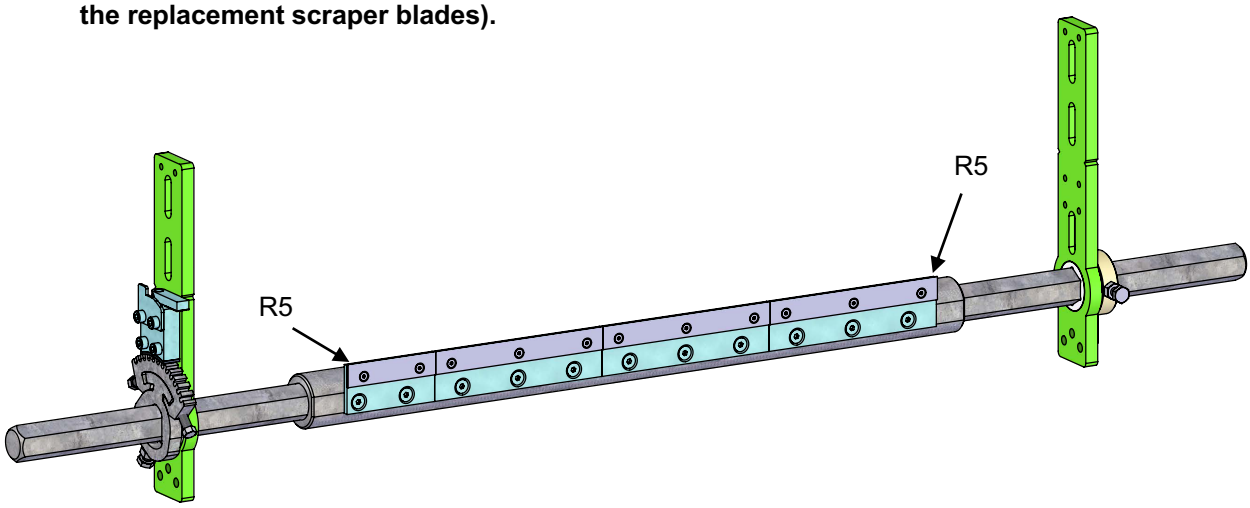
1. Replacement scraper blades type 08hm for scraper type 90-831.08hm.07
   (1x 95-Seg-08hm-110-01, 2x 95-Seg-08hm-210-01)
2. Replacement blade base type 1 for belt width 650 mm

Original order XYZ from ...
STARCLEAN® 90-523.09hm.09

1. Replacement scraper blades type 09hm for scraper type 90-833.09hm.09
   (4x 95-Seg-09hm-210-03, 1x 95-Seg-09hm-110-03)
2. Replacement blade base type 3 for belt width 1000 mm

Important note!

The 210 mm long scraper blade of types 08hm and 09hm must be provided with a radius R5 on the outside of the scraper bar by the customer. (see also the installation information supplied with the replacement scraper blades).



5.3 Accessories

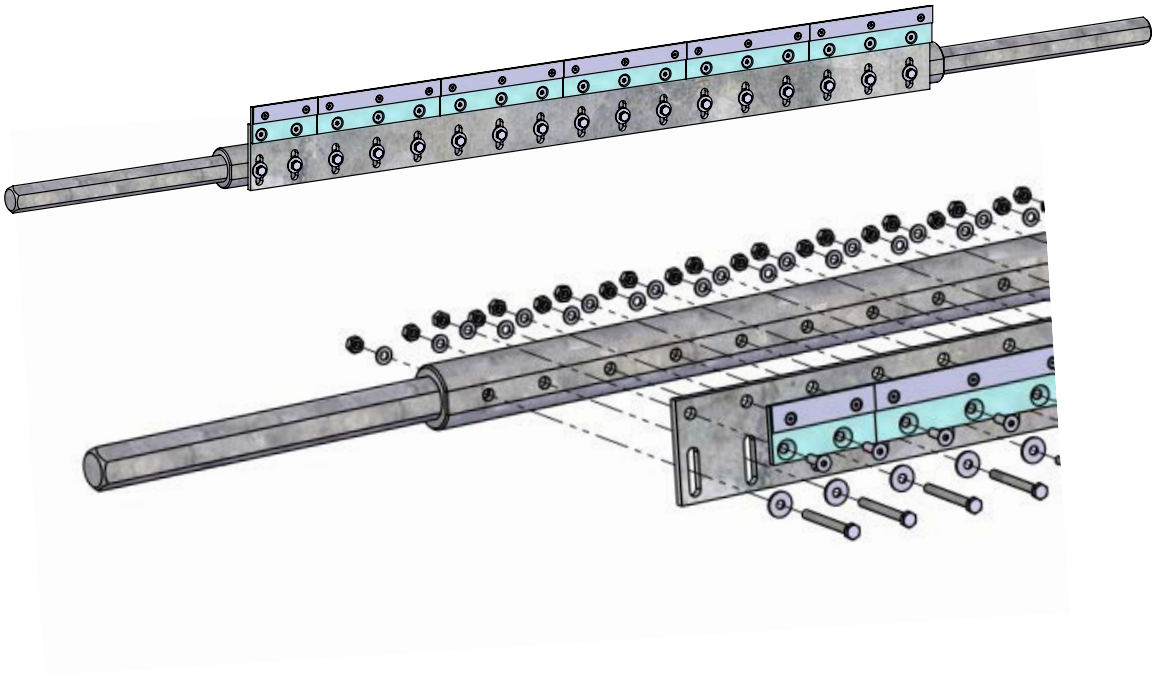
5.3.1 Accessories: Extension plate 95-ET-007-001 / -003

Extension plates are available for the carbide scraper base with 95-Seg-08hm-01 / -03 segments to increase the distance from the blade base to the conveyor belt by 38 mm to 73 mm.

The item numbers are:
95-ET500-007-01 for an extension for segment blade base type 1 (incl. fastening material)
95-ET500-007-03 for an extension for segment blade base type 3 (incl. fastening material)
The width of an extension plate is 1160 mm. The width must be adapted to the stripping width on site if necessary.

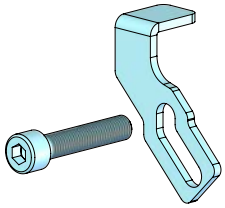
For larger belt widths, several extension plates must be ordered accordingly, one of which must be adapted to the stripping width on site if necessary.

The carbide scraper segments are not part of the extension plate, but of the scraper system.



5.3.2 Accessories: Safety stop 95-ET830-023

1 Stk. Safety stop 95-ET830-023



6 Declaration of Incorporation

Einbauerklärung Im Sinne der Maschinenrichtlinie 2006/42/EG, Anhang II B
Declaration of Incorporation according to Machinery Directive 2006/42/EC, Appendix II B

Schulte Strathaus GmbH & Co. KG
Runtestraße 42, 59457 Werl / Germany

erklärt in alleiniger Verantwortung, dass die Fördergurt-Reinigungssysteme Typ STARCLEAN® der Baureihen	*declares in sole responsibility, that the Conveyor-Belt-Cleaning-Systems Type STARCLEAN® of our product lines*

140, 142, 144, 150, 150-08, 240, 262, 264, 320, 321, 322, 323, 324, 420, 422, 424, 511, 513, 521, 523, 565, 620, 622, 624, 627, 628, 629, 630, 720, 722, 724, 727, 728, 729, 830, 831, 832, 833, 834, 940, 942, 944, 950, 952, 954, 960, 962, 964, 970, 972, 974, 980, 982, 984 und 995

auf die sich diese Erklärung bezieht mit der Maschinenrichtlinie 2006/42/EG übereinstimmen.
that are subject to this declaration are meeting the requirements set forth in the Machinery Directive 2006/42/EC

Angewandte Normen:
Applicable standards:

für die Richtlinie 2006/42/EG: EN ISO 13854, EN ISO 12100, EN ISO 13857, EN ISO 14118-1
for the Directive 2006/42/EC:

Zusätzliche Angaben:
Additional information:

Die unvollständige Maschine darf erst in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den grundlegenden Anforderungen der Maschinenrichtline entspricht.
The partly completed machinery must not be put into service until it has been established that the machinery into which the partly completed machinery is to be incorporated complies with the essential requirements of the Machinery Directive.

Die speziellen technischen Unterlagen gemäß Anhang VII- Teil B und die Montageanleitung gemäß Anhang VI der Richtlinie 2006/42/EG wurden erstellt.
The specific technical documentation referred to in Annex VII, Part B and the assembly instructions referred to in Annex VI of Directive 2006/42/EC have been prepared.

Bevollmächtigter der Fa. Schulte Strathaus GmbH & Co. KG
für die Zusammenstellung aller technischer Unterlagen:

Authorised representative of the company Schulte Strathaus GmbH & Co. KG for compiling all technical documentation:

Herr H. - J. Kröning
Name

Werl, den 22.12.2019
Schulte Strathaus GmbH & Co. KG

Geschäftsführer / *Managing Director*: Dr. M. Schulte Strathaus

Unterschrift / Signature

7 Declaration of Conformity

EU Konformitätserklärung / EC Declaration of Conformity

- **Im Sinne der ATEX-Richtlinien 2014/34/EU, Anhang VIII, Kategorie I M2 und II 2D/G**
  According to ATEX-Directives 2014/34/EU, Appendix VIII, Category I M2 and II 2D/G

  (gilt nur im Zusammenhang der unter Pkt. 1.5 genannten Einschränkungen)
  (applies only in context to the restrictions mentioned under item Point 1.5)

- **Im Sinne der Maschinenrichtlinie 2006/42/EG, Anhang II B**
  according to Machinery Directive 2006/42/EC, Appendix II B

Schulte Strathaus GmbH & Co. KG

erklärt in alleiniger Verantwortung, dass die Fördergurt-Reinigungssysteme
Typ STARCLEAN® der Baureihen
declares in sole responsibility that the Coneyor-Belt-Cleaning Systems
Type STARCLEAN® of our productline

140, 142, 144, 150, 150-08, 240, 262, 264, 320, 322, 324, 420, 422, 424, 511, 513, 521, 523, 565, 620, 622, 624, 630, 632, 634, 620-HD, 720, 722, 724, 720-HD, 830, 831, 832, 833, 834, 830-HD, 940, 941, 942, 943, 944, 950, 951, 952, 952, 954, 960, 961, 962, 963, 964, 970, 971, 972, 973, 974, 980, 981, 982, 983, 984, 995

auf die sich diese Erklärung bezieht mit der
Richtlinie 2014/34/EU (ATEX) und der Maschinenrichtlinie 2006/42/EG übereinstimmen
that are subject to this declaration are meeting the requirements set forth
in Directive 2014/34/EU (ATEX) and the Machinery Directive 2006/42/EC

Angewandte Normen:
für die Richtlinie 2014/34/EU (ATEX): EN 1127-1, EN 1127-2, DIN ISO 80079-36
für die Richtlinie 2006/42/EG: EN ISO 13854, EN ISO 12100, EN ISO 13857, EN ISO 14118-1

Applicable standards:
for the Directive 2014/34/EU (ATEX): EN 1127-1, EN 1127-2, DIN ISO 80079-36
for the Directive 2006/42/EC: EN ISO 13854, EN ISO 12100, EN ISO 13857, EN ISO 14118-1

Schulte Strathaus GmbH & Co. KG hinterlegt die gemäß 2014/34/EU, Anhang VIII (ATEX) geforderten Unterlagen bei benannter Stelle:

Schulte Strathaus GmbH & Co. KG will archive the documents required according to 2014/34/EU (ATEX), Appendix VIII at the following location:

EXAM GmbH, Bochum, EU-Code 0158

Bevollmächtigter der Fa. Schulte Strathaus GmbH & Co. KG
für die Zusammenstellung aller technischer Unterlagen:
Authorized representative of Schulte Strathaus GmbH & Co. KG
for the compilation of all technical documentation:

Herr H.-J. Kröning
Name

Werl, den 4.12.2019

Schulte Strathaus GmbH & Co. KG Geschäftsführer

Angabe zum Unterzeichner Unterschrift