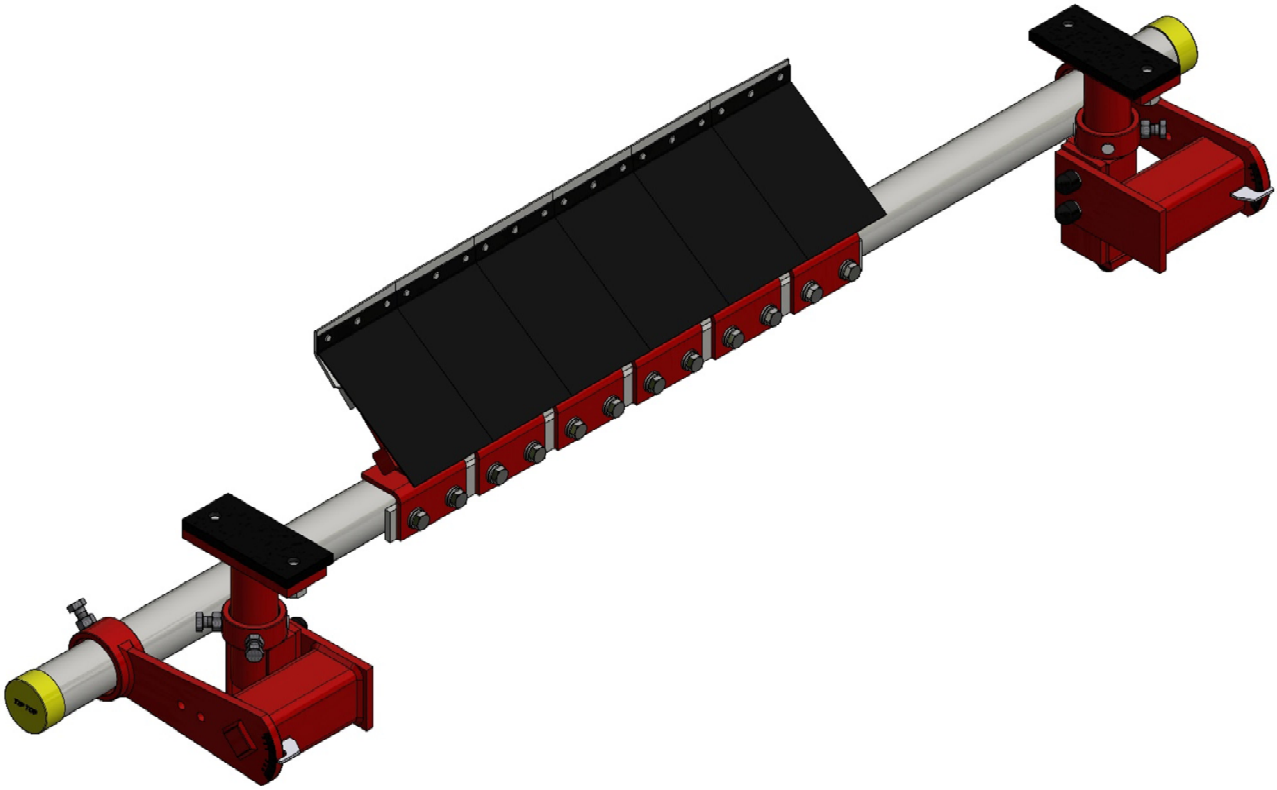
REMA TIP TOP //ONE BRAND //ONE SOURCE //ONE SYSTEM

Assembly instructions

REMACLEAN Type HM-U9

CONVEYOR BELT CLEANING SYSTEM
with carbide strip for use in the lower run



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1. General safety information

- The instructions in these operating instructions must be followed without restriction. In the event of non-compliance, the manufacturer accepts no liability whatsoever for any resulting damage to people or machinery. As scrapers are generally installed in conveyor belt systems, the manufacturers of these systems or the operator who installs the scraper must comply with the provisions of the machine construction guidelines.

- REMA Tip Top GmbH conveyor belt scrapers may only be used in accordance with the intended use for cleaning conveyor belts at points intended for this purpose.

- It must always be clarified with the operator under which conditions the scraper is to work (e.g. underground, in a quarry, etc.)

- Inall branches of industry where no special requirements are made, the scrapers can be used as needed in the temperature range from **-40°** to **+ 70° C**. The max. conveying speed of 6.5 m/s must not be exceeded.

- Installation and commissioning should be carried out by the manufacturer's qualified personnel in order to maintain the warranty, as these persons, due to their training, experience and instruction, are able to carry out the respective required activities, recognising and avoiding any hazards.

- During all installation work, the Accident Prevention Regulation (UVV) and the relevant regulations of the local authorities and local legislation must be observed.

2. Basic safety information

- These safety instructions do not claim to be exhaustive. If you have any questions or problems, please contact the manufacturer.

- Theconveyor belt scraper **REMACLEAN type HM-U9** corresponds to the latest technological standards at the time of delivery. They may only be installed and operated in perfect condition.

Retrofitting, modifications or conversions are generally prohibited and require consultation with the manufacturer in individual cases.

2.1 REMACLEAN SYSTEMS in ATEX design

Scraper elements lie on the belt surface and, similar to a scraper, remove residual material from the belt as it passes by.

The scraper construction is made of steel. The scraper elements can be made of polyurethane, rubber, ceramic or carbide.

The polyurethane and rubber elements can be made of electrostatically dissipative material with a surface resistance of less than 10^9 Ω.

The conveyor belt cleaning systems correspond to equipment group I category M2 and equipment group II category 2D according to Directive 2014/34/EU.

Equipment group I category M2 comprises equipment designed to be capable of operating in conformity with the characteristics specified by the manufacturer and ensuring a high level of safety. Equipment in this category is intended for use in underground mines and their surface installations endangered by firedamp and/or combustible dust. If an explosive atmosphere occurs, it must be possible to switch off the equipment. The apparative explosion protection measures within this category ensure the required level of safety during normal operation, even under severe operating conditions and especially during rough handling and changing environmental influences.

Equipment group II category 2D category 2 comprises equipment designed to be capable of operating in conformity with the manufacturer's declared characteristics and ensuring a high level of safety. Equipment in this category is intended for use in areas in which an explosive atmosphere consisting of gases, vapours, mists and/or dust/air mixtures is likely to occur occasionally. The apparative explosion protection measures of this category ensure the required level of safety even in the case of frequent equipment malfunctions or fault conditions that are usually to be expected.

2.1.1 Conditions for safe use

The maximum temperature of all surfaces of the conveyor belt cleaning systems is exclusively dependent on their uses, especially on the speed of the conveyor belts. Relative speeds greater than 6.5 $m\text{-}s^{-1}$ are not permitted in conjunction with conveyor belt cleaning systems used in conveyor belt systems. A surface temperature of 150°C must not be exceeded.

All conductive parts of the conveyor belt cleaning systems must be earthed with a dissipative resistance to earth of less than 10^6 Ω.

The group II category 2D conveyor belt cleaning systems may only be used in conjunction with dusts whose minimum ignition energy is greater than 10 mJ and whose minimum ignition temperature (dust cloud) is greater than 300°C and whose minimum ignition temperature (deposited dust) does not exceed 225°C.
Only components made of electrostatically dissipative plastics approved for underground coal mining may be used for the conveyor belt cleaning systems of group I category M2.

Group I category M2 conveyor belt cleaning systems may only be used on conveyors which can be switched off in the event of an explosive atmosphere occurring.

2.1.2 Labelling

The marking (clearly visible, legible and permanent) shall include at least the following information:

- Name and address of the manufacturer
- CE marking
- Machine number
- Year of manufacture

I M2

II 2 D T150 °C

3. Components **HM-U9**

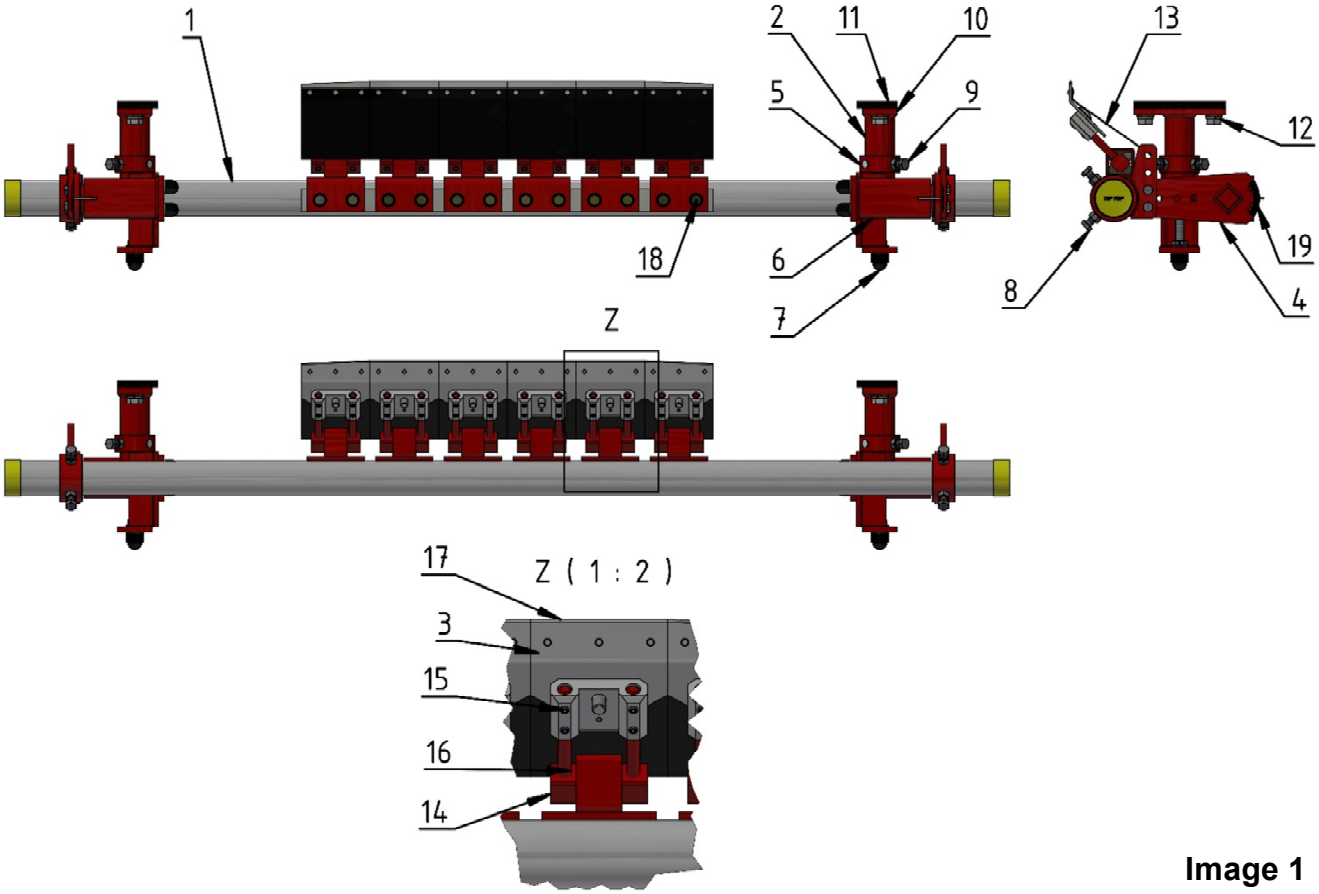

Image 1

- Pos.. 1: System support tube
- Pos.. 2: Spindle kit / spindle clamping device
- Pos.. 3: Carbide segment **type U9/10-120**
- Pos.. 4: Swing arm of the clamping device with mounting piece
- Pos.. 5: Guiding part of the clamping device
- Pos.. 6: Torsion element of the clamping device
- Pos.. 7: Clamping nuts of the clamping device
- Pos.. 8: Fixing screws of the carbide strip
- Pos.. 9: Fixing screws of the guide part of the clamping device
- Pos.. 10: Mounting plate of the clamping device
- Pos.. 11: Welding plate for mounting the clamping device
- Pos.. 12: Mounting screws of the spindle clamping device
- Pos.. 13: PE skirt of the carbide segment
- Pos.. 14: Torsion element HM-U9/U10
- Pos.. 15: Fixing screws of the carbide scraper
- Pos.. 16: Arms of the carbide segments HM-U9/U10
- Pos.. 17: carbide strip HM-U9/U10
- Pos.. 18: Fastening screws of the segments with torsion elements on the system support tube
- Pos.. 19: Pre-tension indicator

4. Conditions of use, purpose & Task

- The conveyor belt scraper **REMACLEAN type HM-U9** is a device intended for cleaning the soiled surface of the carrying side of a conveyor belt. In the **HM-U9 system**, a carbide strip is used that consists of individual segments that stand next to each other. Each segment is elastically supported in a torsion element. This allows each segment to work individually and adapt to the surface of the conveyor belt. In case of overload, each segment can give way or move elastically backwards.

- The scraper types are installeddirectly behind the ejector drum according to the installation instructions.

- An optimal cleaning effect can only be achieved with a good conveyor belt surface and good condition of the joints.

- **This type of scraper must not be used with mechanical connections!**

- **This type of scraper must not be used if the conveyor belt surface is badly damaged!**

- Ensure that the conveyor belt runs smoothly on the drum and that there is no damage or material caking on the drum cover. If the conveyor belt coming from the drum still troughs strongly or forms waves in the transverse direction, it is essential to install a counter-pressure roller in the immediate vicinity of the scraper.
- Max. conveyor belt speed **6.5 m/s**. Higher operating speeds are possible in consultation with the manufacturer.

- **This type of scraper must not be used in reversing operation.**

5. Assembly preparation

- Before starting any work on the conveyor belt scraper, the power supply to the belt system must be switched off by the operator's personnel and secured against unauthorised switching on.

- The proper disconnection of the conveyor belt system must be checked and, if necessary, additionally secured by the fitter who installs the belt cleaning system.

- The fitter must ensure that tools and aids are used in perfect condition.

- When using a welding torch or other welding equipment, it must be checked whether the official regulations (explosion protection, firedamp protection, etc.) are complied with.

- During welding and cutting work, heat-sensitive components e.g. conveyor belt must be covered.

- During all installation work, the Accident Prevention Regulation (UVV) and the relevant regulations of the local authorities and local legislation must be observed.

- A high cleaning effect can only be achieved if the belt cover is in good condition (no washout or poor bonding). It is essential to ensure that the conveyor belt runs smoothly in the installation area. If necessary, the belt tension must be adjusted or an additional idler/pressure roller must be used.

The **REMACLEAN HM-U9** scraper system is a conveyor belt cleaner used in the free lower run. The best function is usually achieved when installed directly behind the ejector drum. At this point, the conveyor belts still run relatively smoothly and give the carbide strip sufficient resistance to be able to pre-tension with the necessary contact pressure.

It should also be taken into account that in the immediate vicinity of the ejector drum, the side walls of the transfer can very often be in the way. In such cases, appropriate cut-outs must then be prepared for the carrier of the carbide strip. This change to the construction must be agreed in advance with the system operator. After mounting, the prepared cut-outs should possibly be covered dust-tight with a rubber plate.

6. Installation position

First of all, it should be determined where the carbide strip **pos. 17** can be installed. It must be taken into account that the scraped material can fall onto the next belt conveyor, into the bunker or onto a steep chute. It is urgently necessary that the conveyor belt is still very well tensioned and running smoothly at the mounting point of the carbide strip **pos. 17**. **Image 2** shows the mounting location.

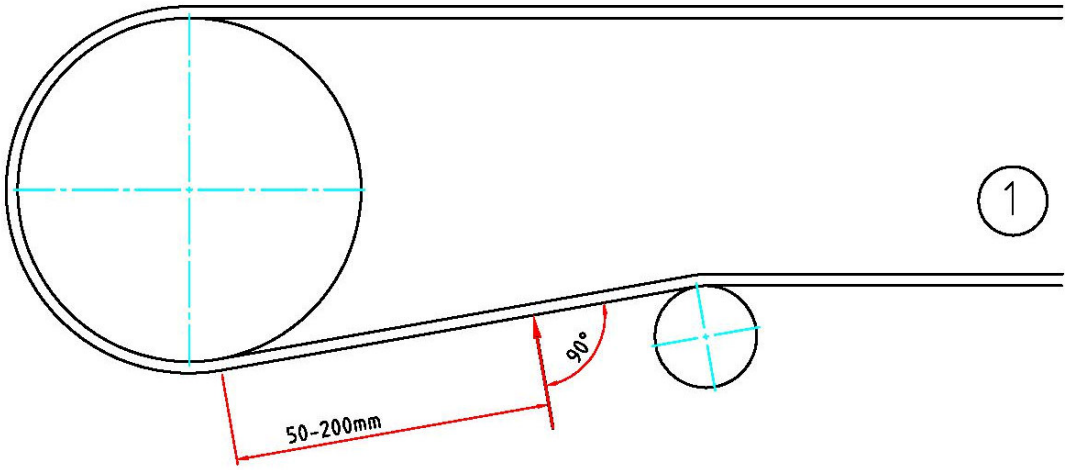

Image 2

If the scraper bar **pos. 17** is used further than 200 mm from the axis of the ejector drum, it is essential to install a counter-pressure roller in the immediate vicinity of the scraper bar **pos. 17**, see **Image 3**.

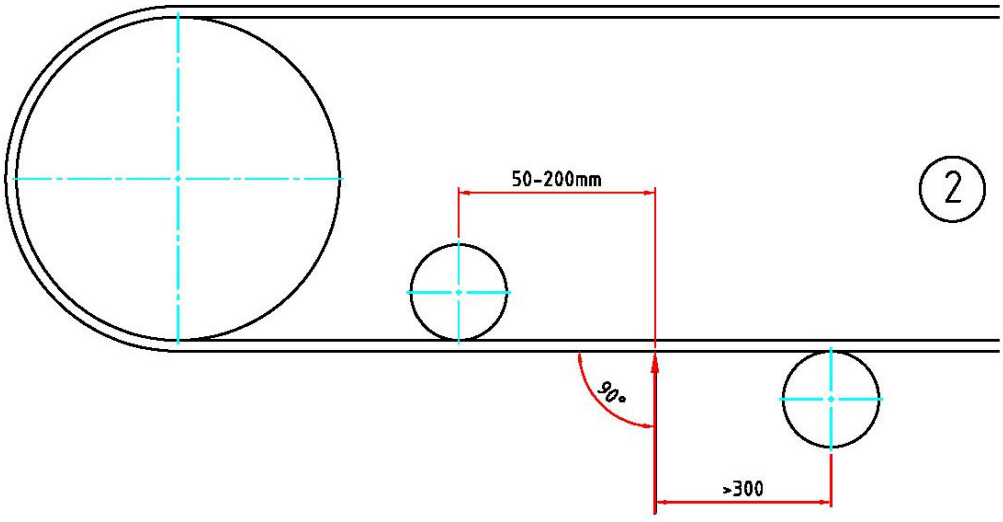

Image 3

The mounting location of the clamping fixtures must be determined according to the mounting location of the carbide strip. Both spindles of the tensioning devices must be mounted **90° to the conveyor belt** and the specified distance **Lx** of the mounting plates **pos. 11** to the conveyor belt of the belt conveyor must be observed, because only under this condition can **100 % efficiency of** the scraper be guaranteed.

During assembly, in which the specified distance **Lx** cannot be achieved, additional mounting brackets or mounting brackets must be installed. See **Image 1 and 4**.

With the scraper types, the spindle clamping devices **pos. 2** can be installed either suspended or upright. For the hanging variant, the distance **Lx,** forthe standing variant , the distance**Ly** must be observed. See **Image 4**.

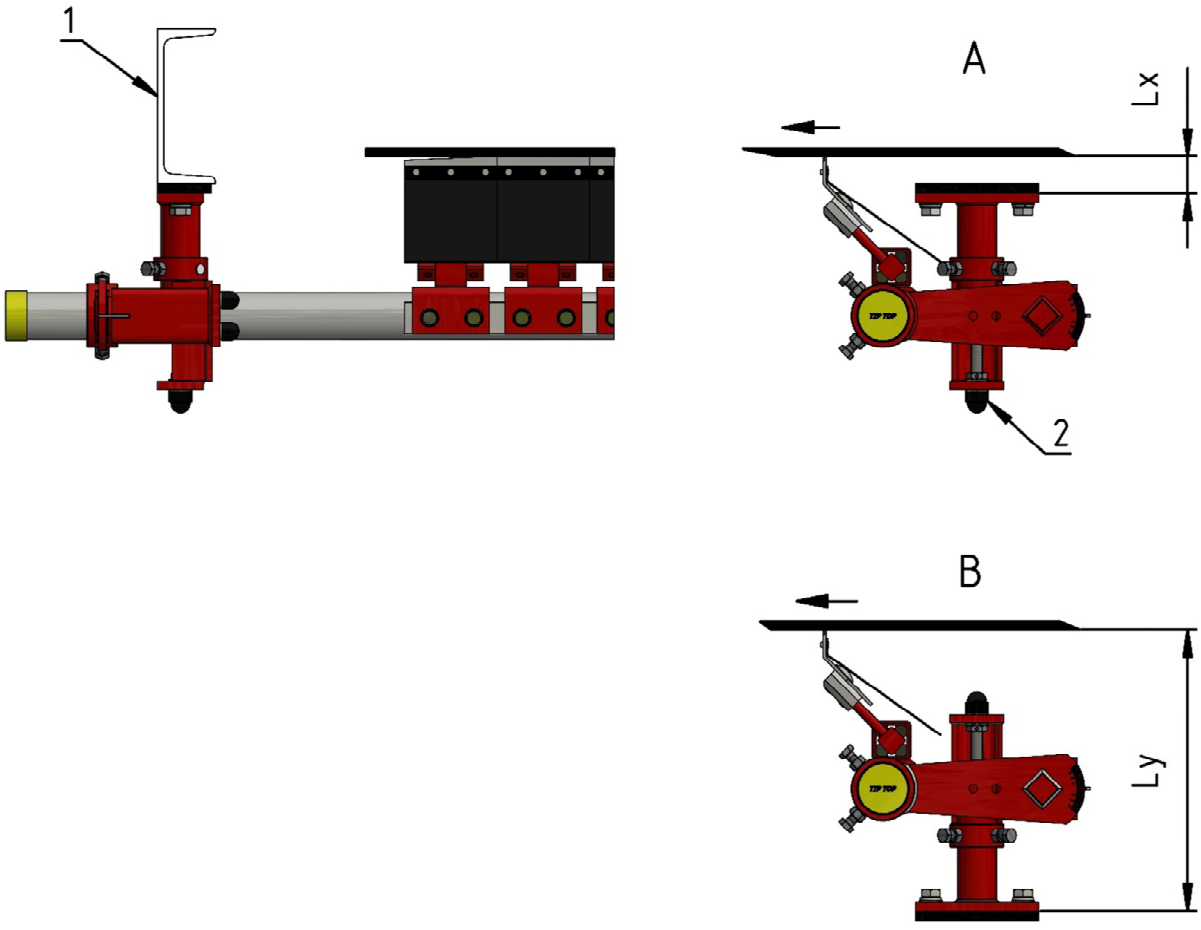

Image 4

A - Hanging installation variant
B - Standing installation variant

1 - Existing steel structure
2 - pos. 7 - Clamping nut of the clamping device

Lx max = 130 mm
Lx min = 0 mm
Ly max = 450 mm
Ly min = 320 mm

Starting from this, the system support tube **pos. 1** is to be mounted in the receptacles of the spring rockers **pos. 4**. Then align the system carrier tube centrally to the steel structure of the conveyor belt and align the **carbide carrier 90°** to the conveyor belt. In this position the system support tube **pos. 1** is fixed in the receptacles of the spindle kits / clamping devices **pos.2,** with the screws provided for this purpose **pos. 2** on each side) **pos. 8**.

7. Assembly steps

1. Prepare the appropriate mounting holes at the determined mounting location or screw or weld on the prepared mounting bracket. The specifications for the distance **Lx or Ly** must also be taken into account.

2. If necessary, the openings in the side walls must also be prepared for the system support tube.

3. The prepared carbide strip with the system support tube **pos. 1** can now be used at the mounting location and inserted into the prepared openings in the side wall or suspended appropriately on 2 chain hoists.

4. Or mount the two spindle clamping devices **pos. 2** first. Insert the carbide strip with the system support tube **pos. 1** into the receptacles of the swing arm **pos. 4**.
   Depending on the width of the belt construction, it may be necessary to mount one side first, i.e. screw on clamping device **pos. 4**, and then insert the system support tube **pos. 1** and only then mount the pressing device **pos. 4** on the other side.

Important!

After assembly, the swinging arms with mounting piece **pos. 4** must point in the running direction of the conveyor belt. See **Image 4**.

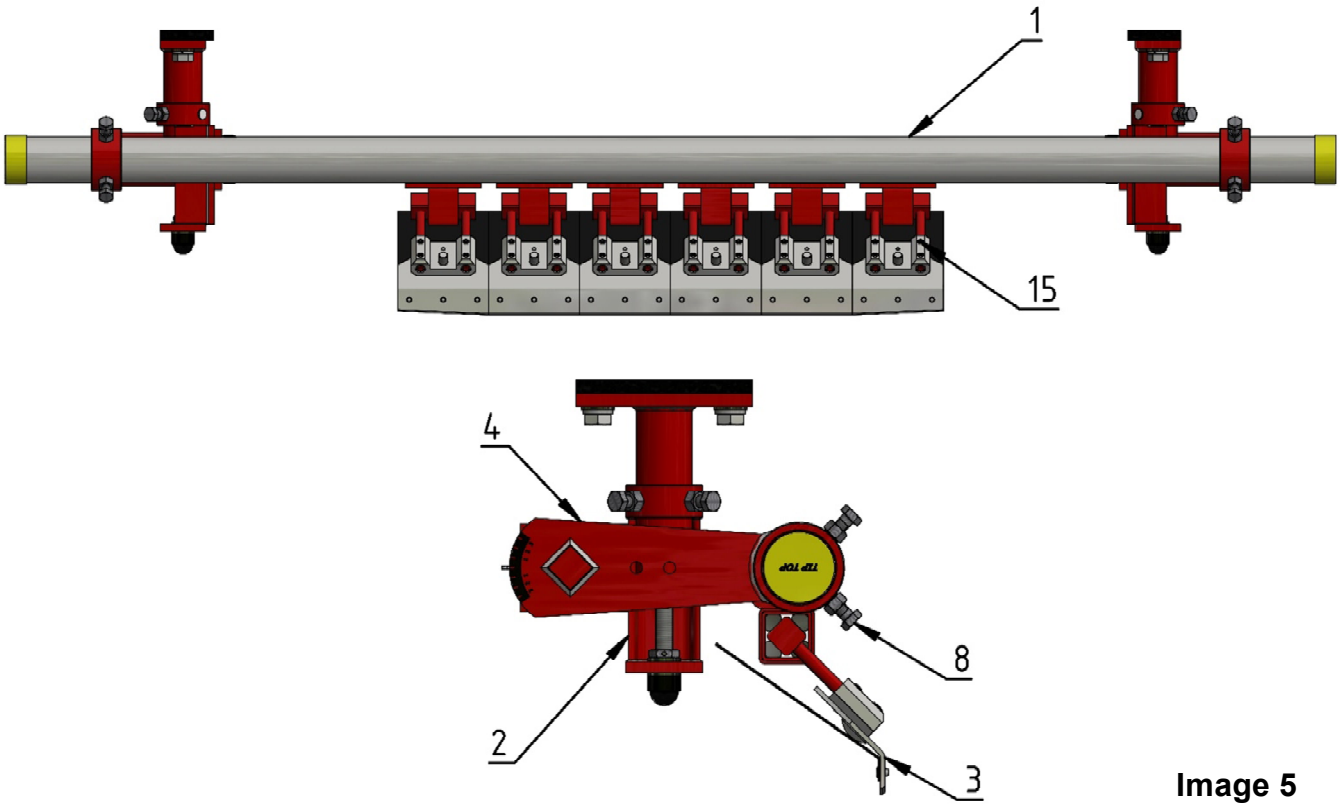

Image 5

5. The carbide strip is now in the two holders of the swinging arms **pos. 4**, the carbide segments pos. **3** hang down and the system support tube **pos. 1** can still be moved. Now the carbide strip is to be positioned centrally to the existing steel structure and then set at **90°** to the conveyor belt. Then lightly tighten the screws **pos. 8** on both sides. In this state, the carbide strip is at **90°** to the conveyor belt and the swing arms are almost parallel to the conveyor belt. The carbide strip **pos. 17** is already directly on the conveyor belt or a short distance away.

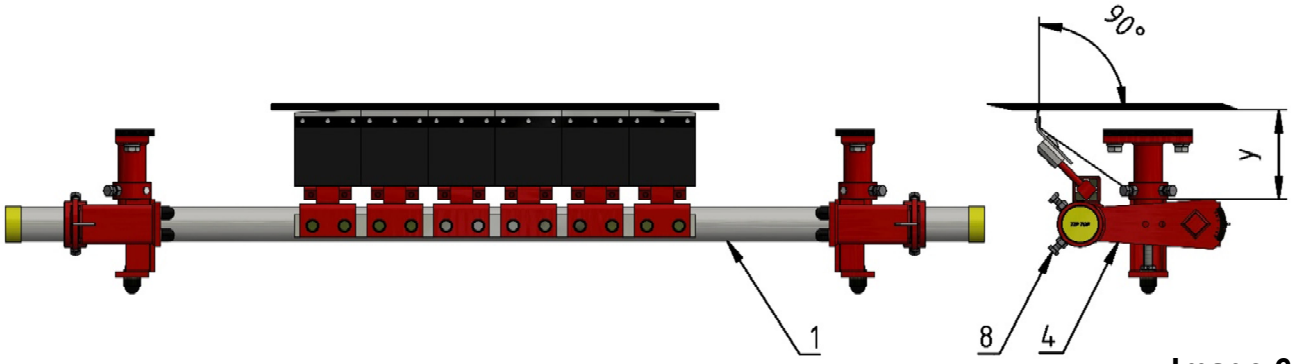

Image 6

8. Adjustments and pre-tensioning

1. On the two spindle clamping devices, tighten the clamping nut **pos. 7** evenly until the carbide strip **pos. 17** is in contact with the conveyor belt. The guide part **pos. 5** of the clamping device **pos. 2** has reached **position "0"**. (You should mark the spot now)

2. After adjustment, the segment core must always be parallel to the conveyor belt. The carbides of the carbide segments **pos. 3** of the segment strip lie equally without tension on the conveyor belt. The scraper is not yet pre-tensioned!

Important:

Please note that the adjacent carbide segments **pos. 3** must form a line. If there is a small step at one point, a carbide segment **pos. 4** must be repositioned. The correction can be carried out with the fixing screws **pos. 15** of the carbide segment **pos. 3**.

3. Now adjust the angle of the carbides to the conveyor belt. The harmetals should be slightly tilted forward 3 - 5 ° in the condition.

4. Measure and note the distance **Y**

5. Now the contact pressure is generated on both sides of the belt unit by further turning the tensioning nuts **pos. 7** on the tensioning devices **pos. 2**. The guide part **pos. 5** always moves in the direction of the conveyor belt and moves away from the previous **position "0"**. The distance from **position "0"** can therefore be used to define the pre-tensioning, e.g. pre-tensioning 5, 10, 15 mm etc.

We define Pre-tensioning as follows:

Pre-tensioning 5 mm - **light** pre-tensioning
Pre-tensioning 10 mm - **medium** pre-tensioning
Pre-tensioning 15 mm - **strong** pre-tensioning

The intermediate values are also allowed.

Example:

If the measured value was e.g. **Y= 60** mm then at the mean pre-tensioning the value will change to **50 mm** and so on.

Important!
After the pre-tensioning has been achieved, the carbide segments should be at **90°** to the conveyor belt. Very slight tilting backwards is allowed. So the angle is less than **90°**.

If the angle is greater than **90°** after the final pre-tensioning, the carbide strip will work very unsteadily.

6. Depending on the degree of soiling of the conveyor belt, the type of material being conveyed, the conveying speed and the condition of the conveyor belt surface, the correct pre-tensioning must be selected. We recommend first selecting a weaker pre-tensioning, **e.g. 8 mm**, and then running the belt system and observing how the carbide strip behaves or what the degree of cleaning is. If the pre-tensioning is not sufficient, it can be further tightened until the desired degree of cleaning is achieved.

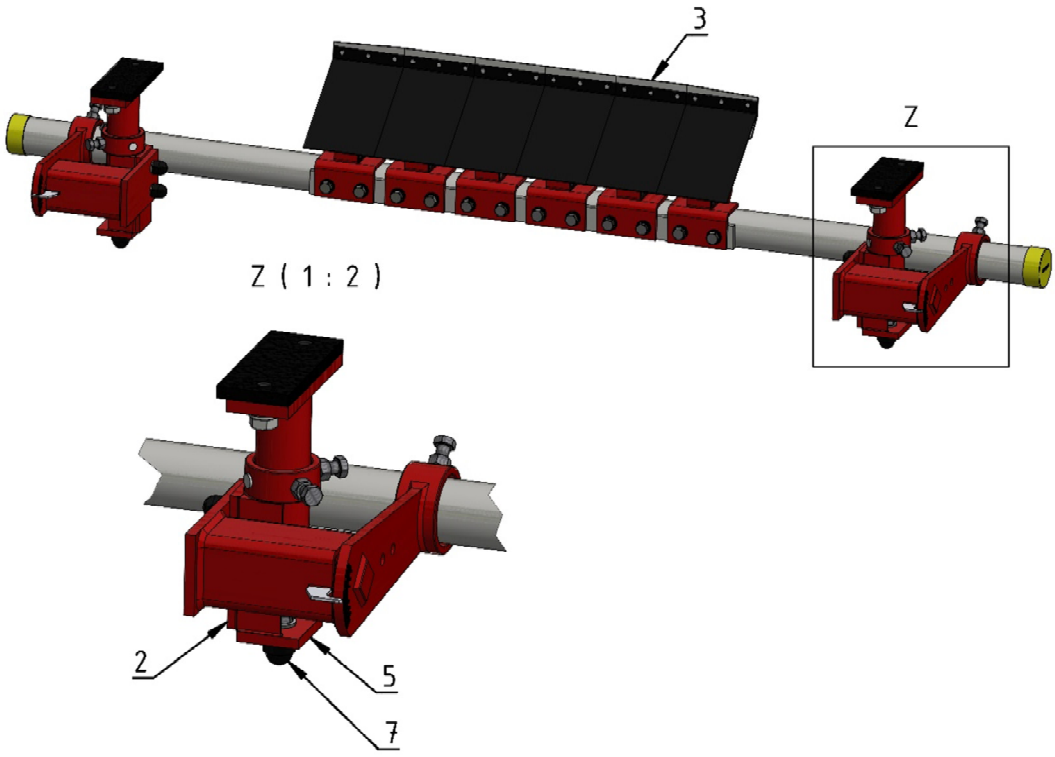

Image 7

In the assembly report it is essential to enter the pre-tensioning created(e.g. 8 mm). This is important for further maintenance work!
The pressing device of the **HM-U9** also has a pre-tension indicator **pos. 19**
Read off the value and enter it in the assembly report.

After the pre-tensioning has been created, the fixing screws **pos. 9** of the guide parts **pos. 5** on both sides of the clamping devices **pos. 2** must be tightened and locked.

You can also readjust it after a few days, after the carbide strip **pos. 17** has partially worn down. Always follow the instructions in **point 5**.

When generating the pre-tensioning, however, the mutual **influence between contact pressure - cleaning effect** should always be taken into account.

7. At the end of assembly, retighten and lock all screws. Check that all saw cuts are deburred and protected from corrosion again. If necessary, the system support tube can be shortened to fit.

8. We recommend checking every newly installed scraper system after approx. 1-2 weeks to make sure that all screw connections are tight and to check whether the degree of cleaning is sufficient.

9. Reverse operation

The **HM-U9** scraper is **not suitable for reversing** suitable.

10. Maintenance and inspection

Depending on the material to be conveyed and the duration of use, the scraper should be checked and cleaned at regular intervals because deposits on the carbide strip lead to a deterioration of the cleaning effect. We recommend that in case of multi-shift operation, a visual inspection should take place once a day.

After approx. **8 weeks**, we recommend having the scraper checked by a specialist.

We further recommend that the installed scraper systems are checked and serviced by a specialist every **3 months**. A maintenance contract with a service company can help the operator to make optimal use of the scraper systems in use.

If the cleaning result is poor or insufficient, the wear of the carbide segments **pos. 3** should be checked and the worn carbide segments **pos. 3** should be replaced or a correction of the setting on the clamping device **pos. 2** should be made.

When replacing the carbide segments **pos. 3**, we recommend always replacing all segments.

Important!

After the pre-tensioning has been achieved, the carbide segments should be at **90°** to the conveyor belt. Very slight tilt to the rear is permitted. So the angle is less than **90°**.

If the angle is greater than **90°** after the final pre-tensioning, the carbide strip will work very unsteadily.

In particular, the wear of the carbide plates **pos. 17** on the carbide segments **pos. 3**should be inspected more closely becausethe carbide plates wear differently depending on theconveyor belt and conveyor belt surface.

The carbide plates may be worn down to a maximum of **3 mm**. After reaching this limit, it can no longer be guaranteed that the remaining soldering surface will transmit the large frictional forces.

11. Installation dimensions **HM-U9**

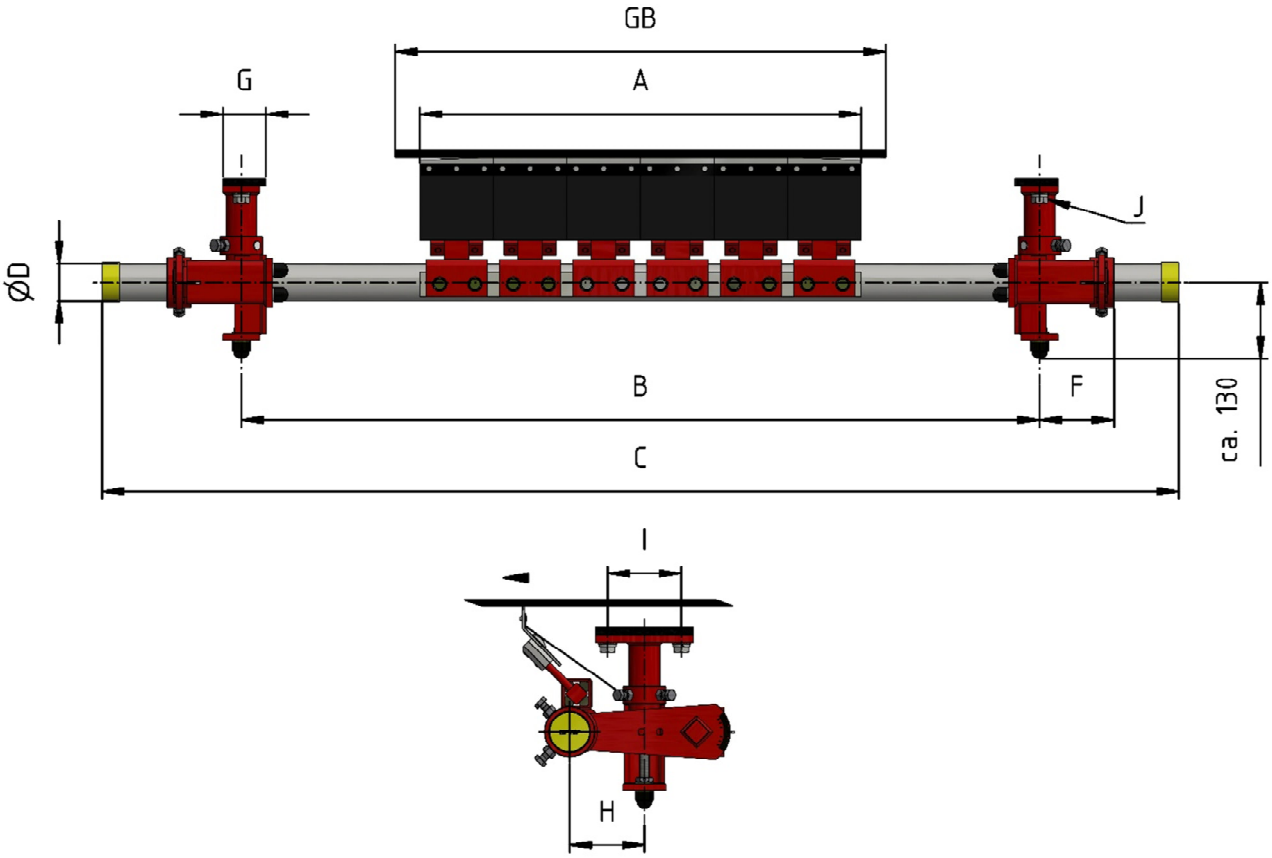

Image 8

GB [mm]	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]
650	600	725-1390	1650	51	93	70	85	120	M16
800	720	870-1430	1750	60.3	125		122		
900	840	990-1580	1900						
1000	960	1110-1680	2000						
1200	1080	1230-1800	2200	76.1	165		170		
1400	1200	1350-2000	2400						
1600	1440	1660-2640	3100	101.6	202	100	190	150	M20
1800	1680	1900-2840	3300						
2000	1800	2020-2830	3500		302				

12. Article numbers

REMACLEAN **HM-U9**

Art. No.	Designation	Belt width [mm]
578 9345	REMACLEAN HM-U9	650
578 9346	REMACLEAN HM-U9	800
578 9348	REMACLEAN HM-U9	1000
578 9349	REMACLEAN HM-U9	1200
578 9350	REMACLEAN HM-U9	1400
578 9351	REMACLEAN HM-U9	1600
578 9352	REMACLEAN HM-U9	1800
578 9353	REMACLEAN HM-U9	2000

Spare and wear parts

Art. No.	Designation	Width [mm]
578 3638	Carbide carrier HMT-U1 S, U9, U10, centre	120
578 1100	Carbide carrier HMT-U1 S, U9, U10, right	120
578 1090	Carbide carrier HMT-U1 S, U9, U10, left	120
578 3610	REMACLEAN Torsion part for HM-U9 / HM-U10	

13. Risk assessment

The risk assessments are available for inspection at the branch office
Tip Top Industrievulkanisiation Borna GmbH, Siemensring 13, 14641 Nauen.

14. EC Declaration of Conformity

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EC- Declaration of Conformity

Declaration of Incorporation for partly completed machinery

DA 9-8
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Manufacturer / Authorized representative	TIP TOP Industrievulkanisation Borna GmbH NL Nauen Siemensring 13 D – 14641 Nauen Phone number: 03321 / 455018 Fax number: 03321 / 455021 E-Mail: info.nauen@tiptop-borna.de
Description of the device	
Devices – types – specifications	Conveyor belt cleaning system REMACLEAN HM-F1 / HM-F2 / HM-F2 VA/ HM-F2 HR/ HM-F2 S/ HM-F2 PUR/ PUR-F3 / PUR-F4 / PUR-F5 / PUR-F5 V / PUR-F6 / PUR-F7 / PUR-F8 / PUR-F300 / PUR-F400 / PUR-F500 / HM-U1 / HM-U1 VA / HM-U1 HR / HM-U1 S / HM-U2 / HM-U3 / UNICLEAN HM-U3 / HM-U7 / HM-U7 MF / HM-U7 MF V / HM-U7 V / HM-U8 / HM-U8 MF / HM-U8 MF V / HM-U8 V / HM-U9 / HM-U10/ HM-U10-S / HM-U11R / HM-U500 / HM-U500 TWIN/ RB-IGD / RB-IGD V/ RB-IGD VA / RB-IGD HD / RB-IGP / RB-IGP-S / RB-IGP-S HD / INNOVATION / TMB / SGB / SGB-PUR / SGF / GRB / GBM
Application field of the device	usage for cleaning the belt conveyor from bulk material

General provisions

The design and the construction of these belt cleaning systems comply with the recognized rules of technology and prior art. With any unauthorized modification of the construction this declaration loses his validity.

Our systems are corresponding with general provisions such as EN standards, CEN reports and DIN standards.
The conception and construction of the systems are based on the Machinery Directive 2006/42/EC for distributors and manufacturer and the ninth GPSGV-Machine Regulation. If necessary these regulations can be consulted.

The systems for usage in underground mines and in explosion-protected areas are produced according to the requirements of Directive 2014/34/EU. Identification rules of the systems: **CE Ex I M 2** / **CE EX II 2 D T150° C**

Supplied products which are provided to the cleaning belt system as an additional attachment must have a certificate of conformity or a manufacturer's declaration. The assembly must comply with the requirements of the above-mentioned EC-Directive.

TIP TOP Industrievulkanisation Borna GmbH
NL Nauen

Patrick Schmalfuß
.....
name and signature of the authorized person

Nauen, February 27, 2024

15. Certificate according to DIN EN ISO 9001

Management Service

ZERTIFIKAT

Die Zertifizierungsstelle
der TÜV SÜD Management Service GmbH

bescheinigt, dass das Unternehmen

Industrievulkanisation Borna GmbH
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TIP TOP Industrievulkanisation Borna GmbH

OT Zedtlitz, Zedtlitzer Dreieck 10
04552 Borna
Deutschland

einschließlich der Standorte und Geltungsbereiche
gemäß Anlage

ein Qualitätsmanagementsystem
eingeführt hat und anwendet.

Durch ein Audit, Auftrags-Nr. **707050042**,
wurde der Nachweis erbracht, dass die Forderungen der

ISO 9001:2015

erfüllt sind.

Dieses Zertifikat ist gültig vom **21.02.2022** bis **20.02.2025**.

Zertifikat-Registrier-Nr.: **12 100 50665 TMS**.

Leiter der Zertifizierungsstelle
München, 05.01.2022

DAkkS Deutsche Akkreditierungsstelle D-ZM-14143-01-00

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M/S/01-03/2020

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuvsud.com/de-certificate-validity-check

TÜV®