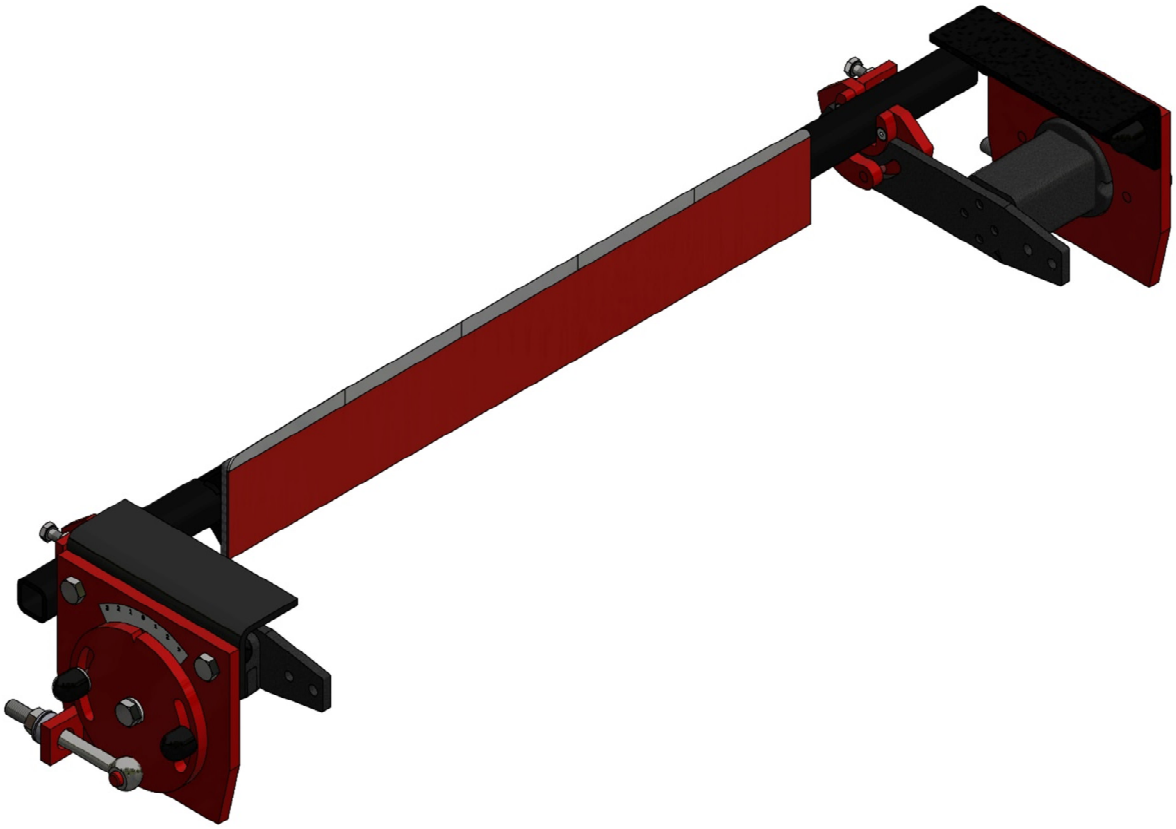
Assembly instructions

REMACLEAN HM-U3

CONVEYOR BELT CLEANING SYSTEM

with carbide segment and a lever clamping device
for use on the track



Click here for the assembly animation

Status of the last editing: 03.2024

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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 braces can be used as needed in the temperature range of **-40° to + 60° C.** The max. conveying speed of **4.0 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 HM-U3** corresponds to the latest technological standards at the time of delivery. It 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.

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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 ^{109} Ω.

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

Equipment group I category M2 includes equipment that is designed to operate in accordance with the characteristics specified by the manufacturer and to ensure 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.

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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-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 $10^6\ \Omega$ ·

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 labelling (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

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3. Components

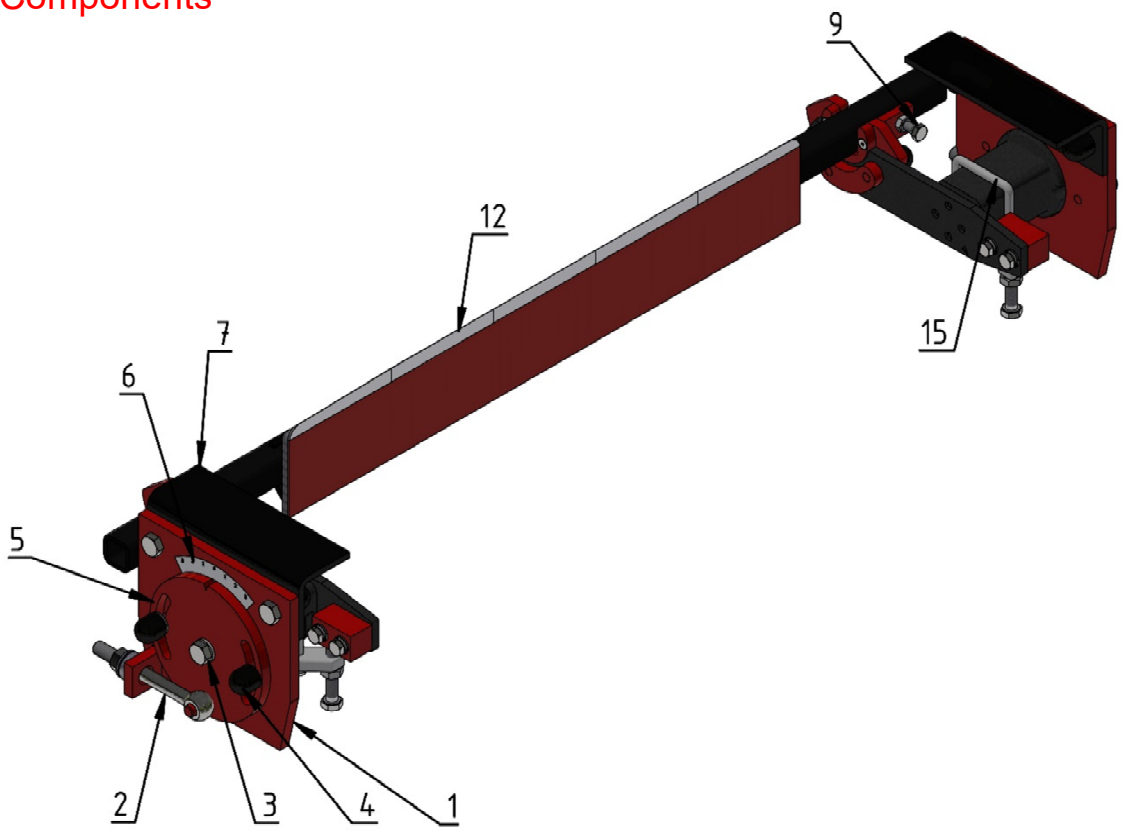

Image 1

- Pos.. 1: Clamping device **INNOVATION**
- Pos.. 2: Tensioning bolt incl. nut
- Pos.. 3: Fastening screw for pressing element
- Pos.. 4: Fastening screw for swivel part
- Pos.. 5: Turned part
- Pos.. 6: Scale
- Pos.. 7: Mounting bracket
- Pos.. 8: Rocker (=receiving holder carbide strip)
- Pos.. 9: Locking screw for the carbide strip
- Pos.. 10: Locking screws of the rocker
- Pos.. 11: Press-on element / torsion element
- Pos.. 12: Carbide scraper bar **REMACLEAN HML**
- Pos.. 15: Reversing stop (optional)

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4. Conditions of use, purpose and task

- The conveyor belt scraper **REMACLEAN HM-U3** is a device intended for fine cleaning of the soiled surface of the carrying side of a conveyor belt. The scraper bar is made of carbide.
- The **HM-U3** consists of a clamping device **INNOVATION** and a continuous carbide strip **REMACLEAN HML**.
- The scraper type **HM-U3** is always installed directly behind the ejector drum according to the installation instructions.
- An optimal cleaning effect can only be achieved if the conveyor belt surface is undamaged and the connections are in good condition.
- Pre-cleaning improves the function of the scraper systems.
- **Attention!**
  This scraper type with carbide strip **HML** and must not be used with mechanical belt connections!

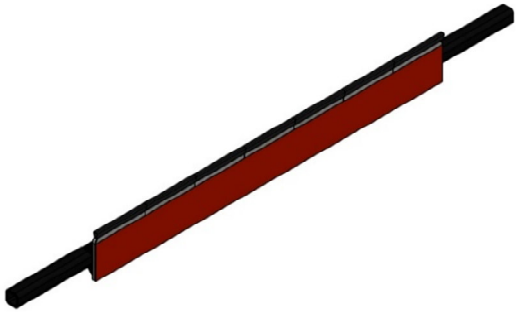

Image 2

Carbide strip - **REMACLEAN HML**

- Always ensure that the conveyor belt runs smoothly behind the drum and that the drum cover is undamaged. If the conveyor belt coming from the drum should trough strongly or form waves in the transverse direction, it is essential to install a counter-pressure roller in the immediate vicinity of the scraper.
- The max. conveyor belt speed of **4.0 m/s should not be exceeded** during operation. Higher application speeds may be possible in consultation with the manufacturer.
- The **HM-U3** scraper may be used for short-time belt reverse. The reversing stop is traded as an accessory.

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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 electrical disconnection of the conveyor belt system must be checked (and possibly 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, fire 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-U3** scraper system is a conveyor belt cleaner that is used in the free lower run. The best function is 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 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 be covered dust-tight with a rubber plate.

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6. Installation position

First of all, it should be determined where the clamping device **pos. 1** can be installed. It must be taken into account that the scraped material is to fall onto the next belt conveyor, into the bunker or onto a steep chute. It is imperative that at the installation point of the carbide strip the conveyor belt is still very well tensioned and runs smoothly. **Image 3** shows the possible mounting location.

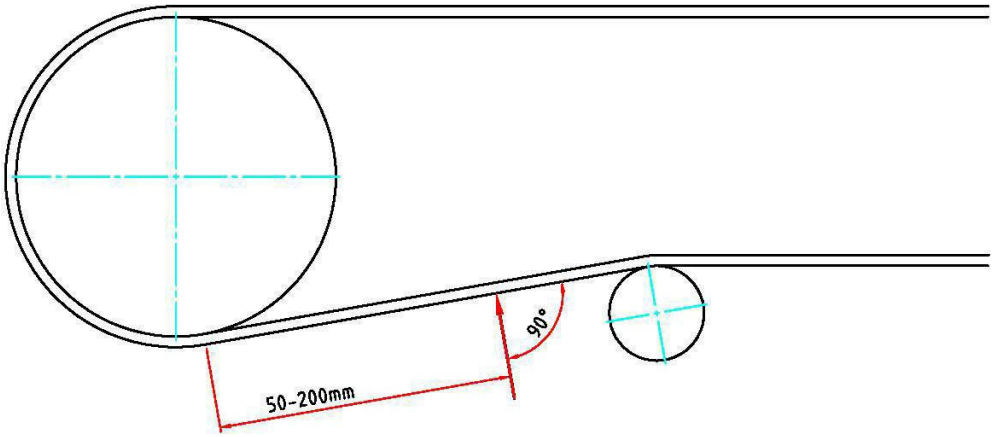

Image 3

Should it happen that the carbide scraper is used further than **200 mm** from the axis of the ejector drum, then a counter-pressure roller should be installed in the immediate vicinity of the scraper bar, see **Image 4**.

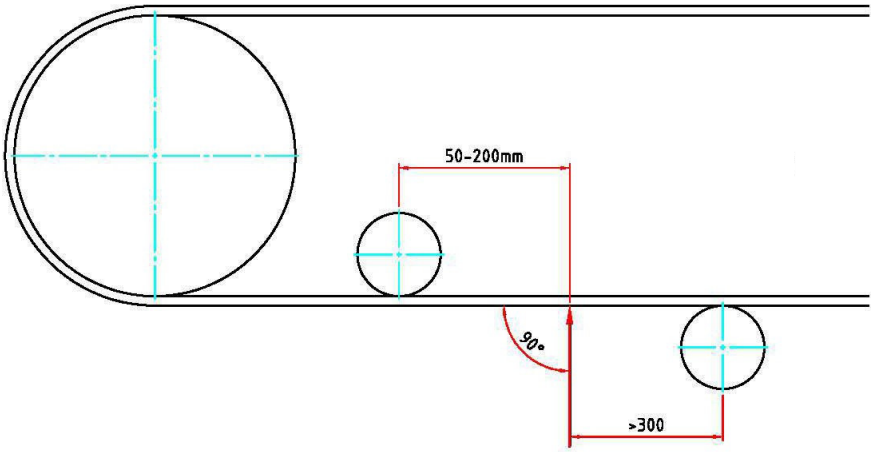

Image 4

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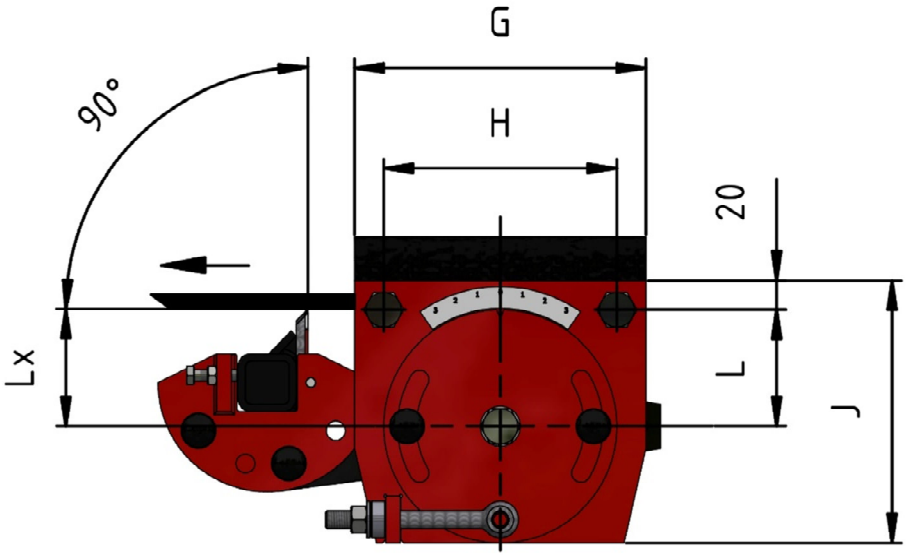

Image 5

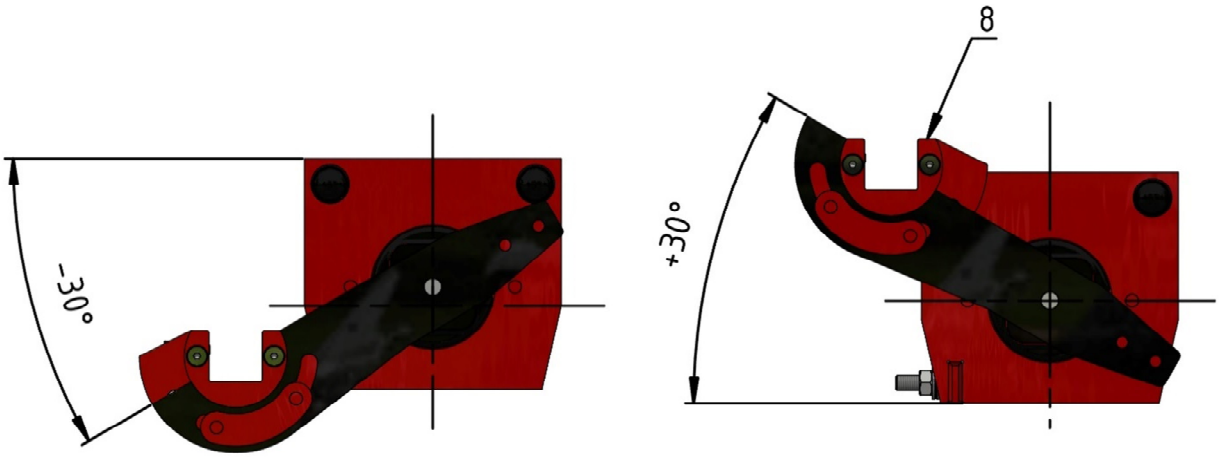

Image 6

Belt width [mm]	Lx at 30° [mm]	Lx at 0° [mm]	Lx at -30° [mm]	G [mm]	J [mm]	H [mm]	L [mm]
400 - 900	130	80	15	178	158	138	69
1000	160	85	0	200	180	160	80
1200 - 2000	190	90	-15	240	220	200	100

pos. 8 of the **INNOVATION** clamping device allows a twisting angle of **± 30°**. See **Image 6**

The carbide strip must always be mounted so that the carbide strip is at **90°** to the conveyor belt.

Explanation of the table:

As an example, an **HM-U3** is installed as **GB 1000**.

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This means that the axis of the torsion element must be located at a distance **Lx** of **0-160 mm** below the conveyor belt.
If, for example, we are **180 mm** below the conveyor belt with the axis of the torsion element, then we will not touch the conveyor belt with the scraper bar. The same applies if we are **50 mm** above the conveyor belt with the axle. This way the scraper could not be mounted.

7. Assembly steps

1. Determine the place where the **INNOVATION** clamping device can be mounted. Observe the specification for the distance **Lx**.

2. The **INNOVATION** clamping device also includes a mounting bracket **pos. 7**. These can be welded or screwed to the belt construction.

3. The clamping devices can be screwed to the mounting brackets on both sides.

4. Before starting the actual assembly, the **"0" position of** the pressing device is checked and adjusted if necessary. When doing so, the indicator (triangular notch) in the turntable **pos. 5** must be set to **0**. To be able to make this adjustment, loosen the two screws **pos. 4**, adjust the turntable and then tighten the screws again.

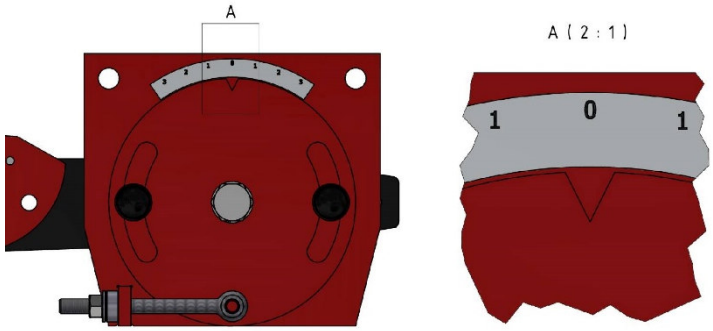

Image 7

5. Drill the mounting holes for the fixing screws **pos. 3** on the sides of the belt construction at a distance **Lx** from the conveyor belt and fix the clamping device to the existing belt construction.

6. The scraper bar REMACLEAN HML **pos. 12** is now placed in the holder pos. **8** of the INNOVATION **pos. 1**. To make this possible, loosen the screw **pos. 3** and fold down the lever arm of the clamping element.

7. The inserted carbide strip is then pressed against the belt by means of the tensioning lever; the screws **pos. 3** must be loosened.

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8. At the same time as pressing on the bar **pos. 12**, make sure that the turntable **pos. 5** is turned so that the pointer (triangular notch) is in the **0** position. (Always on both sides of the plant!)

9. Now tighten the fixing screw **pos. 3** so that you no longer have to hold the strip **pos. 12**. When you let go, the bar slips a little bit away from the belt again, which is why you have to do the basic tensioning in the next step.

10. With the tensioning screw **pos. 2** the cleaning bar is now turned up / tensioned until it lies well against the conveyor belt.

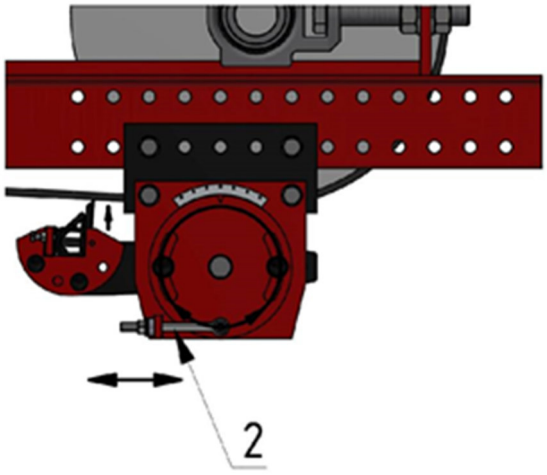

Image 8

11. The carbide strip must now be positioned **90° to the conveyor belt** using the rocker **pos. 8**. Then screw the fixing screws **pos. 10** of the rocker tightly.

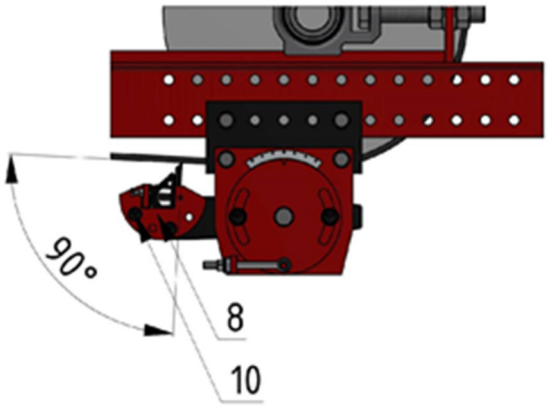

Image 9

12. The cleaning strip **pos. 12** must now be positioned centrally to the belt construction.

13. The **HM-U3** is now ready for final assembly.

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8. Final assembly, creation of pre-tensioning and adjustment work

1. In the last step, the pre-tensioning of the scraper is created. The screws **pos. 4** are not yet tightened. First, check again that the turntable display is in the **0 position**

2. Then use the nut of the tensioning screw **pos. 2** to turn the rotary disc until the display of the rotary disc has reached scale position **1** or **2**. Then fasten the screws of the turntable **pos. 4** again.

3. In the last step, before commissioning, the strip is secured by means of the screws **pos. 9**.

The scraper is now ready to work.

Tighten all screws again and perform a test run to see the function of the scraper.

If the cleaning is not sufficient, the **assembly steps** must be carried out again. It must always be taken into account that the pre-tensioning is **not unnecessarily** high.

Hint:

The carbide strips also take a few working days to grind in. After grinding in the carbides, the degree of cleaning increases significantly.

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

At the end of assembly, retighten and lock all screws, check that all saw cuts are deburred and protected from corrosion again.

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

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9. Reverse operation

The **HM-U3** scraper system is not suitable for permanent reversing operation.
A reversing stop for non-return protection can be upgraded. This must be installed on both sides if there is a short return run of the conveyor belt.

In belt installations where there is a return of the conveyor belt, a counter-pressure roller should be installed near the carbide strips. This ensures that any overturning of the scrapers cannot occur.

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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 scrapers lead to a deterioration of the cleaning effect. We recommend that in case of multi-shift operation, a daily visual inspection should take place.

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

- We recommend that the installed scraper systems should be checked and serviced by a specialist every **3 months**. A maintenance contract with a service company helps the operator to make optimum use of the scraper systems used.

- If the cleaning result is poor or insufficient, the wear of the scraper bar **pos. 12** should be checked and, if necessary, the worn scraper bars should be replaced or a correction made to the setting on the clamping device **pos. 11**.

For the scraper bar, we recommend replacing it if there is wear of 6-8 mm, i.e. the residual height of the carbide is approx. **6 mm**.

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11. Installation dimensions

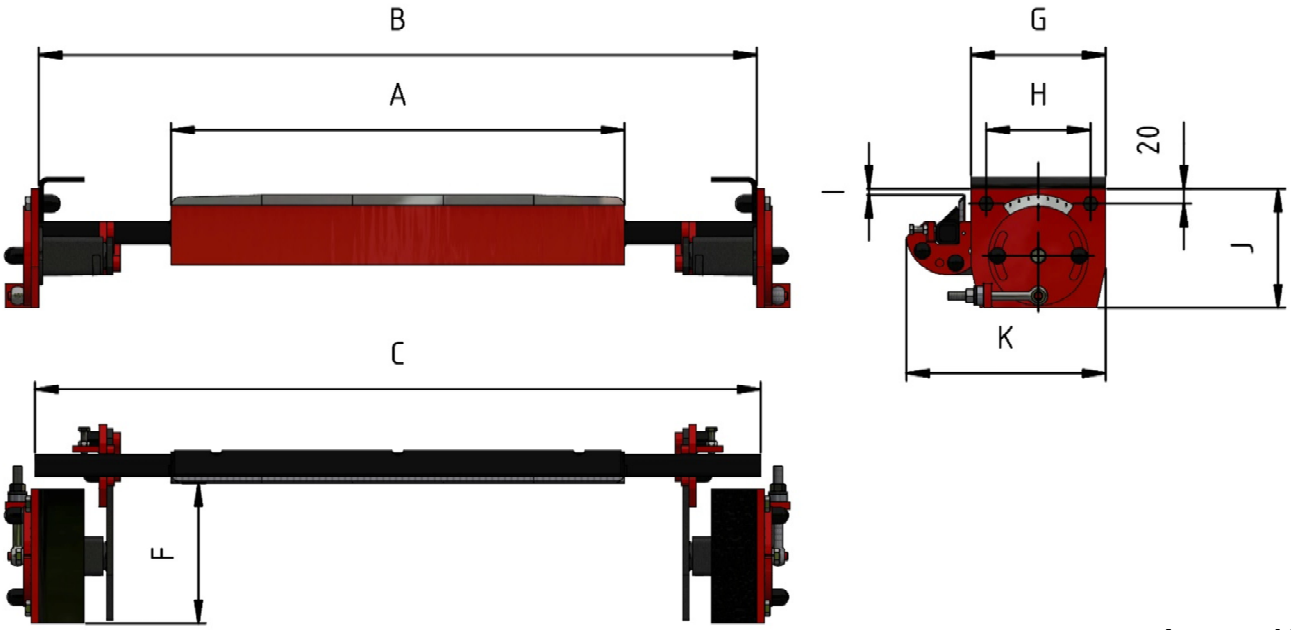

Image 10

GB [mm]	A [mm]	B [mm]	C [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]
400	360	600 - 800	720	186	178	138	10	158	264
500	480	700 - 900	840						
650	600	850 - 1050	960						
800	720	1050 - 1250	1080						
1000	960	1250 - 1450	1360	237	200	160	20	180	335
1200	1080	1500 - 1700	1480	307	240	200	35	220	405
1400	1320	1740 - 1940	1720						

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2. Article numbers

REMCLAEAN HM-U3

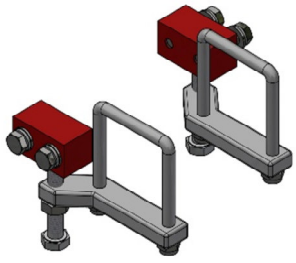
Art. No.	Belt width [mm]	Designation
578 8900	400	REMACLEAN HM-U3
578 8910	500	REMACLEAN HM-U3
578 8920	650	REMACLEAN HM-U3
578 8930	800	REMACLEAN HM-U3
578 8940	1000	REMACLEAN HM-U3
578 8950	1200	REMACLEAN HM-U3
578 xxxx	1400	REMACLEAN HM-U3

Spare and wear parts

Art. No.	Belt width [mm]	Designation
578 2010	400	REMACLEAN HML
578 2020	500	REMACLEAN HML
578 2030	650	REMACLEAN HML
578 2040	800	REMACLEAN HML
578 2050	900	REMACLEAN HML
578 2060	1000	REMACLEAN HML
578 2070	1200	REMACLEAN HML
578 2072	1400	REMACLEAN HML

Accessories

Art. No.	Belt width [mm]	Designation
578 8130	400 - 900	Reversing stop
578 8140	1000	Reversing stop
578 8150	1200 - 2000	Reveriser stop



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13. Risk assessment

Ing. Kurt Klopsch Fördertechnik GmbH

· zertifiziert nach DIN EN ISO 9001
· ermächtigter Sachverständiger BGZ Nr. 1378
· Sicherheitsfachingenieur · autorisierter Händler
· vereidigter Sachverständiger des Handwerks

Fachbetrieb für Krane · Hebezeuge · Fördertechnik

Ing. Kurt Klopsch Fördertechnik GmbH
Friedrich-Engels-Straße 10 · 14770 Brandenburg / Havel

Zertifikat zur Gefährdungsbeurteilung

gemäß Maschinenrichtlinie 2006/42/EG Anhang I und EN ISO 14121-1:2007

Durchführung:	René Neubert Ing. Kurt Klopsch Fördertechnik GmbH Friedrich – Engel – Straße 10 D – 14770 Brandenburg a. d. Havel
Gerätebezeichnung:	Gurtreinigungssystem REMACLEAN / Fördergurtreinigungssystem
Hersteller:	TIP TOP Industrievulkanisation Borna GmbH NL Nauen Siemensring 13 / 14641 Nauen TIP TOP Saar GmbH Am Kreuzgraben 24/26 / 66280 Sulzbach / Brefeld
Geräte – Typ – Daten:	HM-F1 / HM-F2 / HM-F2-VA / HM –U1 / HM-U1 / HM-U1 VA HM-U2 / HM-U1S / HM- U3 / HM-U7 MF / HM U7 MF-V / HM-U7 V / HM-U7 / HM-U8 / HM-U8 MF / HM-U8 MF-V / HM-U8 V / HM-U9 / HM-U10 / SGB / TMB / Innovation RB-IGD / RB-IGP / PUR-F5 / PUR-F300 / PUR-F400 / PUR-F500 / HM-U500 / GRB / Precision

Der Hersteller erklärt, dass das oben genannte Produkt eine unvollständige Maschine im Sinne der Maschinenrichtlinie ist. Das Produkt ist ausschließlich zum Einbau in eine Maschine oder unvollständige Maschine vorgesehen und entspricht daher noch nicht allen Anforderungen der Maschinenrichtlinie.

Die speziellen technischen Unterlagen gemäß Maschinenrichtlinie 2006/42/EG Anhang I und EN ISO 14121-1:2007 wurden erstellt. Die Gefährdungsbeurteilungen sind in der Konstruktionsabteilung der Firma TIP TPO NL Nauen abgelegt und können zur Ansicht angefordert werden.

Der Bevollmächtigte für das Zusammenstellen der technischen Unterlagen verpflichtet sich, die Unterlagen auf begründetes Verlangen an die einzelstaatlichen Stellen zu übermitteln.

Brandenburg, 04.09.2014

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Sitz der Gesellschaft: Brandenburg / Havel
Geschäftsführer: Dipl.-Ing. Kurt Klopsch
Amtsgericht Potsdam HRB 5839

Seite 1

14. EC Declaration of Conformity

//ONE BRAND //ONE SOURCE //ONE SYSTEM

EC- Declaration of Conformity

Declaration of Incorporation for partly completed machinery

DA 9-8
Page 1 of 1

Manufacturer / Authorized representative	TIP TOP Industrievulkanisation Borna GmbH NL Nauen Siemensring 13 D – 14641 Nauen Phone number: Fax number: E-Mail:	 03321 / 455018 03321 / 455021 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
//ONE BRAND //ONE SOURCE //ONE SYSTEM

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

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MS.01-02/2020

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
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