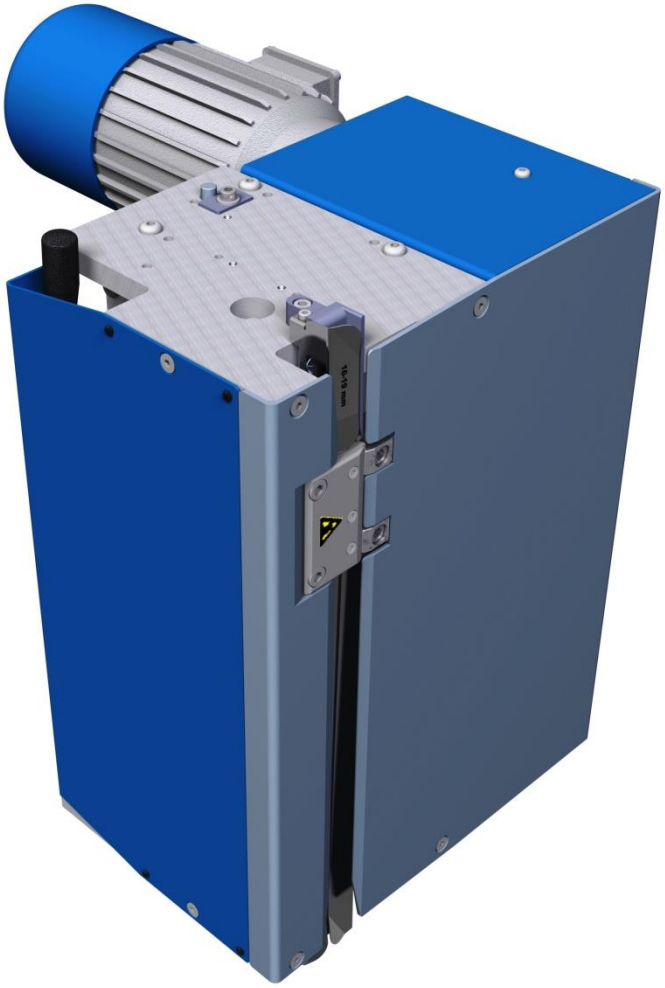
Operating Instructions

- Translation of the Original Operating Instructions -



K8000

48 0001

Strapping head for plastic strap

Thermo-weld joint

Important!

Do not throw these Instructions away. The customer undertakes to make these Operating Instructions available to all operating and service personnel and explain these.

TITAN®
Wir halten zusammen

Contents

1. Information about the manufacturer

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For quick help (Emergency Service) ⟹ **TITAN CARE**

We are at your service 24 hours a day,7 days a week!

Belonging to the TITAN family guarantees every customer:

- personal accessibility around the clock
- Competent advice in a multi-stage concept
- Constant readiness for repair by our technicians

2. Introduction

Thank you very much for your trust in the technology of TITAN Umreifungstechnik GmbH & Co. KG.

These Operating Instructions are intended to make the familiarisation and appropriate use of the strapping machine easier. The Operating Instructions contain important references how the strapping machine is to be used safely, appropriately and economically.

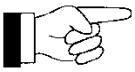
The Operating Instructions must be available permanently at the operation site of the strapping head. It must be read and applied by all persons who work with the strapping head. This work includes, in particular, the operation, troubleshooting and maintenance.

Adjustment and maintenance work must only be carried out by trained expert personnel.

Note to the employed warning and note symbols:

Caution!
Is used for hazards for human life and health.

Attention!
Is used for hazards which can cause material damages.



Note!
Is used for general notes and for notes where non-compliance can cause malfunctions in operational processes.

The Item Numbers (...) and designations used in the these Operating Instructions refer to the enclosed spare parts list, resp. the electrical documentation

2.1. General functions and application area, appropriate use

The **TITAN K8000 strapping head** is intended for installation in fully-automatic plastic strap strapping machines. Here it works as a sturdy, reliable and maintenance-friendly central unit when bundling, collating and securing packages of many kinds and forms. It is a quality product and is successfully used in many application areas.

The **TITAN K8000 strapping head** is operated electrically and is connected completely and functionally to plugs. As a result, it can be disassembled quickly for service and repair work and tested outside of the machine.
Through the drive with three-phase A.C. there is a great flexibility in the technical control version, including for special applications.

Each strapping head has passed a complete function test and high-voltage testing prior to delivery. The **K8000 strapping head** meets the German and European safety requirements and is consistent with the provisions of the following **EC Directives:**

- Machinery Directive 2006/42/EC
- EMC Directive 2004/108/EC

2.2. Notes for installation and use

The **TITAN K8000 strapping head** is intended for the strapping of packages. For reasons of safety it may not be used for any other purposes, e.g. strapping or pulling down of compressible packages. Machines with clamping bars must be used for this.

- **Inappropriate use**
  Strapping tapes must not be used as load lifting gear, this strapping head must be used exclusively for the above stated intend use.
- Liability is not assumed for damage to property and personal injury which are caused by non-intended use, e.g. incorrect handling, control errors, incorrect operation etc.
- At customer's premises the strapping head is to be secured so that unauthorized persons and untrained personnel cannot enter the hazard zone of the moveable machine parts.
- If the strapping machine created with the **strapping head K8000** is installed in a fully-automatic line, the strapping process must be triggered by at least two light barriers with a distance of at least 100 mm from each other.

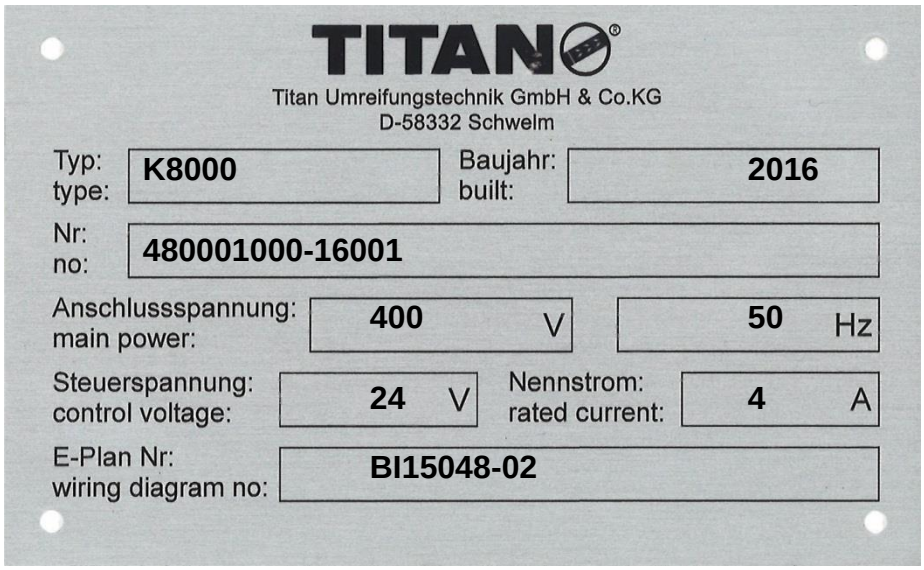
2.3. Product identification

The characteristics of the strapping head are shown on the type plate.
The type plate is located clearly visible on the lid of the terminal box **(551)**.
The following machine data can be read off the type plate:

Machine number	:.....
Type	::.....
Year of manufacture	::.....
Voltages	::.....
Frequency	::.....
Rated current and fuse	::.....

Please transfer the first three data to your Operating Instructions and always refer to this data when you have questions for our agent or service office.

Example:



3. Security

The warning notes and hazard warnings on the strapping head must be observed precisely,as well as kept in a full readable state. In the case of inappropriate handling or non-intended use, hazards can occur for life and limb of the users or a third party, as well as the impairment of the machine system or further material assets of the user. The manufacturer / Supplier is not liable for resultant damages. The user bears the sole risk. Not last, dangers also occur for the efficient working of the machine

That is why every person ordered with the set-up, commissioning, operation, maintenance and repair must have read and understood the Operating Instructions.

3.1. General

- When installing the strapping head, the general accident prevention regulations (BGV, A1) must be complied with in Germany. The nationally valid accident prevention regulations must be complied with in the respective user country.
- The area of strapping with plastic strap is a danger zone and must be secured according to EN 294!

Attention!
All safety and warning notices must be observed and we refer in particular to the **EC Machinery Directive**. In the installed state of the strapping head the test according to **EN 60204-1** must be carried out.

- Protective devices, covers and claddings of the head, resp. the strapping machine must be tested before commissioning They may neither be loose nor removed.
- The operating personnel must be instructed precisely before the first operation of the strapping head and familiarised with the handling of the head. Unauthorized persons are prohibited from using the strapping head.
- Before every commissioning of the machine, neither persons nor objects may be located in the strapping range of the head (machine).
- Before starting cleaning work and/or fault elimination, the strapping head must be decommissioned and secured against re-start. Turn main switch in position OFF.

Attention!
During strapping, no one must reach into the channel range and not under the packaged goods.
Attention! Danger of crushing!

When removing incorrect strapping, wear eye, face and hand protective gear. When cutting through the strap, hold onto the top section (see Figure).
Attention! The lower strap part will jump up.

Caution!
The strap can tear when tensioning.
Do not stand in the flight of the strap!

Use only **Original TITAN spare parts!** the use of spare parts other than TITAN parts excludes warranty claims and liability. We do not accept liability for arbitrary conversions, resp. changes to the strapping head! Furthermore,the warranty/guarantee and these Operating Instructions loose their validity.

3.2. Work places of the operating personnel

- In normal operation the operating personnel is outside of the danger one at the control panel of the strapping machine.
- In the case of fault elimination, resp. feeding with consumable materials, the operating personnel must enter the danger zone. The machine is switched into a secure operating mode.

Attention!
Before entering the danger zone, the machine, resp. the head must be decommissioned electrically.

3.3. Warning of hot parts

In the proximity of the closure area on the counter-plate **(508/ 522)** a yellow-black sign **(211)** is attached with the wording "Warning hot parts". It refers to the danger from the hot heating **E1 (512)** and to any possibly heated up parts lying close by. There is danger of burning or scalding the skin on these parts e.g. cover plate 2 **(478)** during prolonged contact.

Caution!
Do not allow heat sensitive items to stand over longer periods in the direct effective range of the heating warmth, e.g. on the cover plates **(477 resp. 478)**. Do not bring any explosive items, dust, liquids or gases close to the strapping head.

3.4. Procedure in the case of faulty strapping

If there is no package in the strapping channel and a strapping is conducted accidentally, the strapping tape wraps around the counter-plate **(508/ 522)**.

Note!
Before a restart, the strapping tape must be removed from the counter-plate with a scissors so that no consequential faults can occur (jamming of the counter-plate as a result of the additional strap feeding in).

The strap should be cut at about the middle of the counter-plate for this purpose. Then pick up the left turned-up end of the strap with one hand above the cover plate **(477)** and press the push button "Tip cam controller" on the operating unit with the other hand, so that the cam controller does a complete rotation. At the same time, the strap must be pulled out of the closure area while the counter-plate is opened..

Caution!
Never reach into the strap channel or the closure mechanism, as there is danger of getting trapped by the forces of the return spring.

3.5. Notes on the electrics and the drive units

The lid of the terminal box **(590)** may only be opened by expert electrical personnel. On principle, the machine is to be switched off before opening the lid. Never remove the earth cable **(Green/ Yellow)** on motors and other electrical parts. After repairs, special attention should be paid to a reconnection.

Attention!
In automatic operation, e.g. in an interlinked plant, attention must be paid that no shearing or pinching points occur between feeding device (e.g.roller conveyor) and movable machine / strapping head.

Here, the safety distances according to DIN 31001 Part 1 must be complied with or corresponding protective measures taken.

The electrical equipment of the strapping unit / machine must be inspected resp. tested regularly. Defects, such as loose connections, resp. cables must be removed immediately.

3.6. Noise information

The workplace-related noise emission value is **below 80 dB(A)**. However, it must be noted that the noise emission of a strapping machine is to a large degree dependent on the operating conditions.

- Factors for this are, e.g. different speeds, type of installation place, floor conditions, type and distances of the ceiling, materials requiring different processing.

3.7. Flue gas development

- Flue gases occur when welding the plastic straps.
- Based on research by national, resp. international technology institutes, the flue gases do not cause serious environmental or health damages when welded **PP** as well as **PET straps**.
- **When complying with the legal provisions of the German Labour Protection Act (ASchG §22) concerning the minimum fresh air volume flow in working areas, the specified MAC and TSC values fell short in the conducted model calculations for PP and PET straps.**
- If there is no adequate ventilation available at the workplace, an additional extraction can be installed which leads the extracted air into a filter or to the outside.

Deliverable additional unit (see also Chapter 8.5):

- TITAN Extraction **- Order No. 4004805010**
- TITAN Extraction fan - **Order No. 4004805020**

4. Product description

4.1. Technical specifications

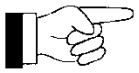
Mechanics:

- **Dimensions:** Width 370 mm; Height 490 mm; Length 500 mm;
- **Weight:** 70 kg
- **Strap width:** 9 - 19 mm
- **Strap thickness:** PP strap 0.6 – 1.0 mm; PET-strap 0.5 – 1.4 mm
- **Tension force:** up to max. 8000 N (strap dependent), infinitely variable
- **Closure type:** Thermo-welded joint
- **Drive type:** Electrical; 3 AC asynchronous drive motors
- **Strap transport speed:** 2.7 m/s (i = 1.77); when required 4.7 m/s (i = 1)
- **Tension speed:** 115 mm/s (i = 50)
- **Cam controller speed:** 0.2 m/s (i = 25)
- **Closure length:** 27 mm
- **Smallest package width:** 120 mm
- **Environmental temperature:** -20°C to +60°C

Electrics:

- **4 Inductive switches B1, B2, B3, B4:** 10 – 30 V DC per 13 mA
- **Heating compl. E1:** 0.028 Ohm; 1 V AC; 40 A
- **Strap transport motor M2:** 0.18 kW; 400 V AC; 0.7 A; 1350 min^{-1}; 50 Hz
- **Clamping motor M3:** 0.37 kW; 400 V AC; 1.0 A; 1360 min^{-1}; 50 Hz
- **Cam controller motor M1:** 0.25 kW; 400 V AC; 0.8 A; 1350 min^{-1}; 50 Hz
- **Heating transformer T1:** 0.16 kW; prim.: 36 V AC; 8 A; sec.: 2 V AC; 80 A
- **Total connected value:** 1.00 kW

The three-phase motors wired for 50 Hz net frequency can be connected to a 60 Hz network without problems. 220 - 240 / 380 - 420 V 50 Hz
254 - 277 / 440 - 480 V 60 Hz



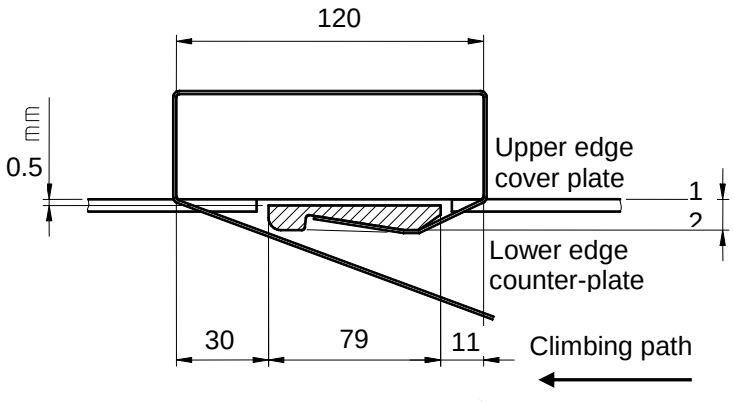
Note!
Use only plastic straps suitable for machines.
When operating with a frequency converter connect to **230 V**, use a separate shielded cable and operate in **87 Hz**-technology.

4.2. Smallest package width = 120 mm

This means the smallest, straight, side length of a package which can still be strapped and for which a strap tension results on the package which is adequately large for the application case.

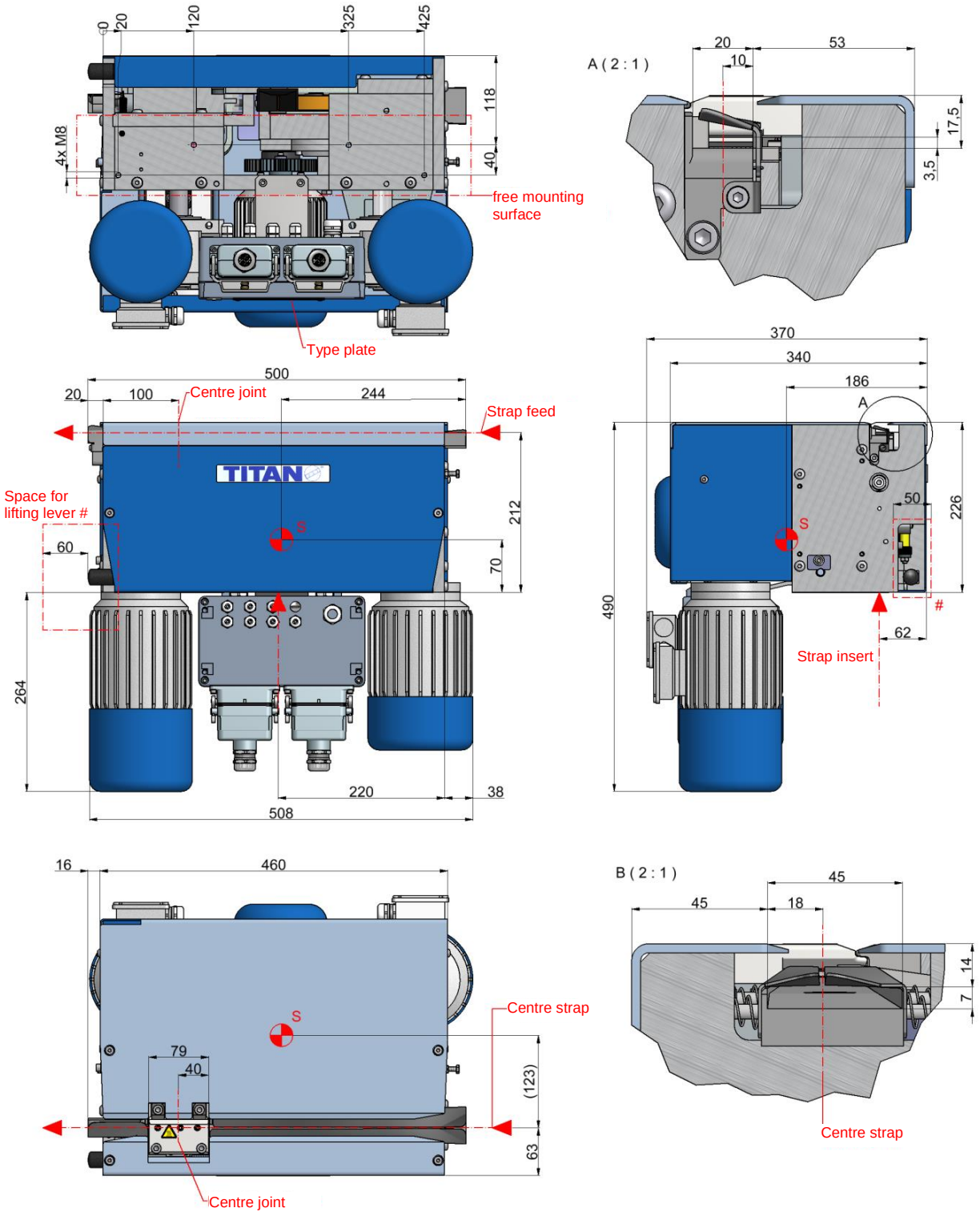
What is meant is the side of the package facing the counter-plate. The closure is on this after the strapping. As the counter-plate has also been entwined during the strapping, and then has to be pulled out after the strapping between the package and the strapping tape, it creates a strap tension loss.

This strap tension loss is not disruptively noticeable with large package widths and/or elastic packages, but with small hard packages it may come to a loosening of the strapping. The strap tension loss is all the smaller the smaller the strapped plate is and the closer the package comes to lie to the lower edge of the counter-plate.



the Figure shows that in the case of smaller packages, the placement of the package to the counter-plate must be more accurate. With the minimal package width of 120 mm, the package must be positioned according to the above presentation. This allows the strapping unit to climb about 10 mm (see also Chapter 8.3).

4.3. Dimensions and installation dimensions



4.4. Function groups

The K8000 is mainly comprised of the following function groups:

A: Closure unit:

The closure unit is a unit controlled via the cam control. It clamps the strap ends, cuts the strap and form the closure with the help of the heating.

B: Transport and tensioning unit

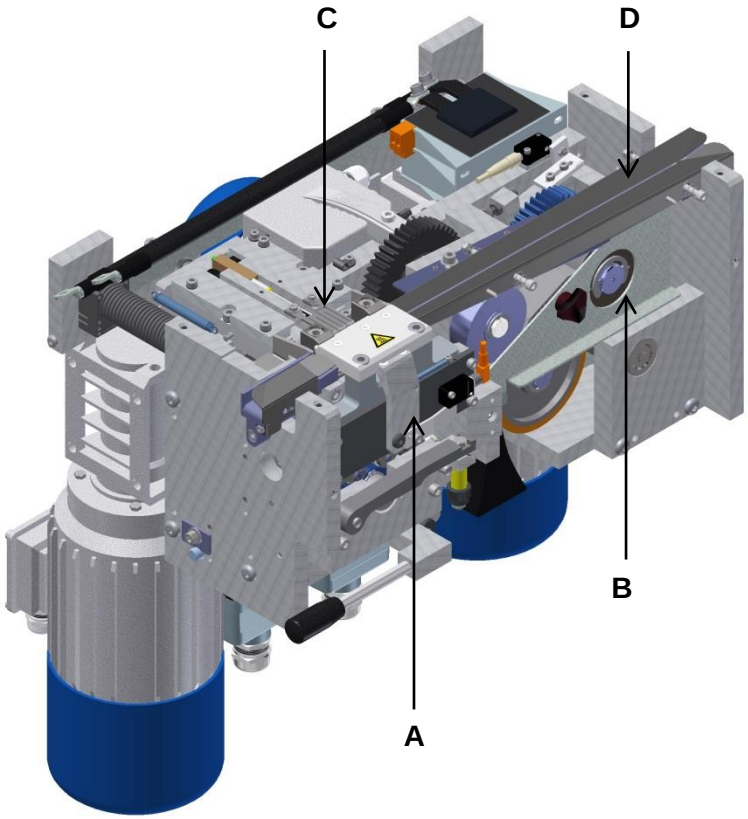
The transport and tensioning unit transports the strapping tape through the connected strap channel back into the strapping head where it actuates the strap stop switch. When return transporting, the strapping band is pulled tight around the package and tensioned corresponding to the pre-set tensioning time.

C: Heating:

The electrically operated resistance heating provides the necessary quantity of heat to form the closure. To do this, the heating dives between the straps and heats these in the area of the welding point.

D: Strap guide / Head attachment parts:

The strap guides are the connection between the strapping head, through which the strapping band is transported around the package.



4.5. Designations and operating elements

In the following symbol directory the symbol name is specified next to the designation and the function is explained briefly.

Alphabetical listing according to symbol names.

Designation	**Symbol name**	**Function**
Protective switch	**Q21**	Motor protection transport motor **M2.** Protection against thermal overload.
Protective switch	**Q31**	Motor protection tension motor **M3.** Protection against thermal overload.
Protective switch	**Q41**	Motor protection cam controller motor **M1.** Protection against thermal overload.
Sensor "Stop strap feed"	**B1**	Switch off strap transport on transport motor **M2.**
Sensor "Start strap tension"	**B2**	Switch on tension time **t1**. When the tension bridge **(351)** engages switch **B2**, timing element **t1** is started.
Sensor "Basic position on cam controller"	**B3**	Stop cam controller in **0°-position** (zero position).
Sensor "Index position on cam controller"	**B4**	Stop cam controller on the index position, i.e. Clamp-Weld-Release.
Sensor head switch-off **(Option)**	**B5**	Head before package Start creep mode head travel (machine).
Sensor head switch-off **(Option)**	**B6**	Head on package. Start strapping (machine).
Thermocouple	**B7**	Temperature sensor on heating.
Magnetic sensor	**B8**	Position detection at strap feed.
Heating compl.	**E1**	Melting strap ends.
Web height	**H1**	Web height clamping surface 1 at the counter plate **(508/ 522)**.
Web height	**H2**	Web height clamping surface 2 at the counter plate.
Web height	**H3**	Web height contact surface "Welding" at the counter plate .
Cam controller motor	**M1**	Drive for locking unit.
Transport motor	**M2**	Generates strap feed and strap return transport.
Tension motor	**M3**	Generates strap tension (final tension).
Distance	**La**	Lifting distance between screw tension unit and housing plate **(115)**.
Distance	**Lb1**	Switching distance laterally between switch screw of clamping bridge **(351)** and the push button of the sensor "Start strap tension" **B2**.

Alphabetical listing according to symbol names.

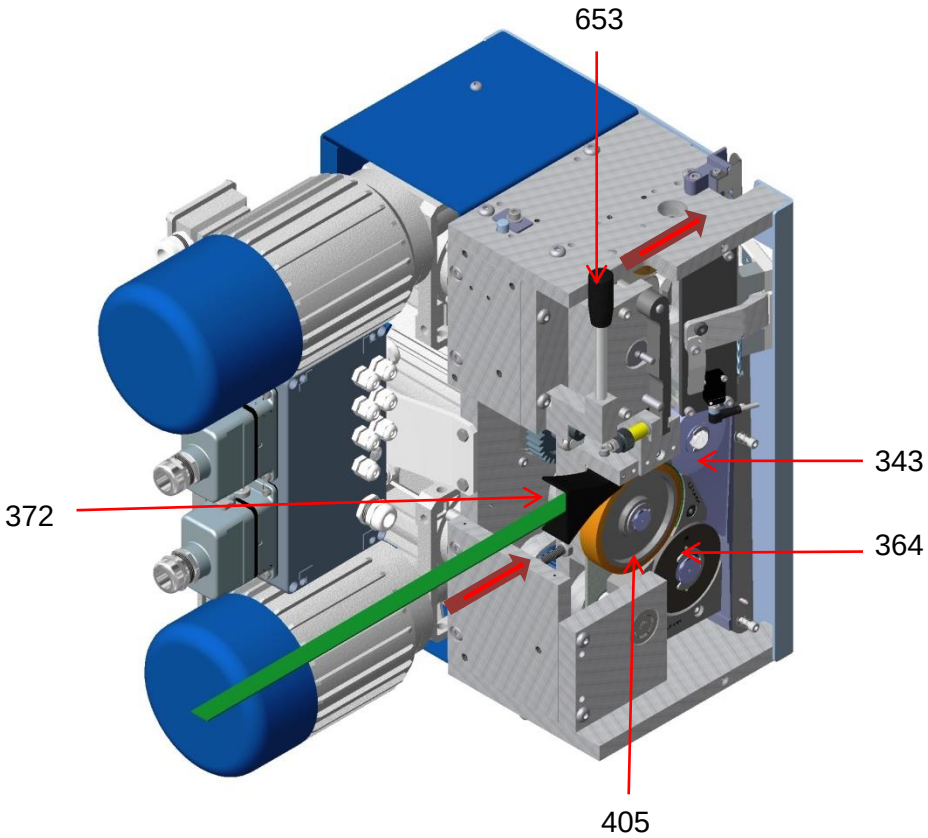
Designation	**Symbol name**	**Function**
Distance	**Lb2**	Switching distance laterally between switch screw of clamping bridge **(351)** and the push button of the sensor "Start strap tension" **B2**.
Distance	**Lc**	Distance between connection lever **(53)** and pressing pad **(374)**.
Distance	**Ld**	Distance between tension wheel **(364)** and counter roller **(405)** resp. cheek **(366)** relaxed.
Distance	**Ls**	Distance between sensor "Stop strap feed" **B1** and switch sheet **(236)** on the separator.
Gap	**L1**	Gap between die I **(501)** and counter-plate **(508/522)**.
Gap	**L2**	Gap between die II **(502)** and counter-plate **.**
Gap	**L3**	Gap between die II **(503)** and counter-plate **.**
Push button ➔ "Strap feed" **(Option)**	**S1**	Double function: a) a) long pressing starts the strap feed until the sensor "Stop strap feed" **B1** triggers (40° Position).. b) a short pressing starts an accelerated strap feed.
Push button T "Tip cam controller" **(Option)**	**S2**	Double function: a) with long pressing, the cam controller drives step-by-step to the next **index position (0°, 40°, 100°, 212° and 325°).** b) a short pressing allows the cam controller to start-up briefly. A desired position can be approached by TIPPING.
Timing element	**t1**	Setting the tension time
Timing element	**t2**	Reversal time to relax the upper strip.
Timing element	**t3**	Cool-down time for the closure
Timing element	**t4**	Run time monitoring strap feed
Timing element	**t5**	Run time monitoring strap return
Timing element	**t6**	Run time monitoring cam controller **M1**
Timing element	**t_{WC}**	Setting the clean time of the heating blade.
Melting temperature	**T_A**	Basic temperature (working temperature) of the heating blade
Clean temperature	**T_C**	Cleaning temperature of the heating blade
Adjustment dimension	**Xz**	Passage width at the centring fingers of the slide guide **(511)**.

All tightened electrical and electronic elements in this list relate to an electric control prepared according to TITAN circuit diagrams **BI15048-02 /-01**. In the case of controls prepared according to other circuit diagrams, the symbol names may deviate as there is a customer, resp. machine dependency.

4.6. Introducing straps (strap insert)

Before introducing the strap into the **K8000 strapping head**, make sure that the start of the strap is clean and cut off straight.

- Pull off the plastic strap from the dispenser, resp. the strap storage.
- Insert the beginning of the strap into the feed opening of the strap feed **(372)** and advance up to the limit stop.
- Lift the transport and tensioning unit by actuating the handlebar **(653)**.
- Push strap up to the tensioning wheel **(364)**.
- Release handlebar**.**



The strapping band is now jammed between the transport wheel **(343)** and he counter roller **(405)**. Now the head is ready for the strap pre-transport.

Note!
The heating up time for the heating blade after switch-on is approx. 1 min.

4.7. Start position

The start position of the K8000 strapping head is determined by the following prerequisites:

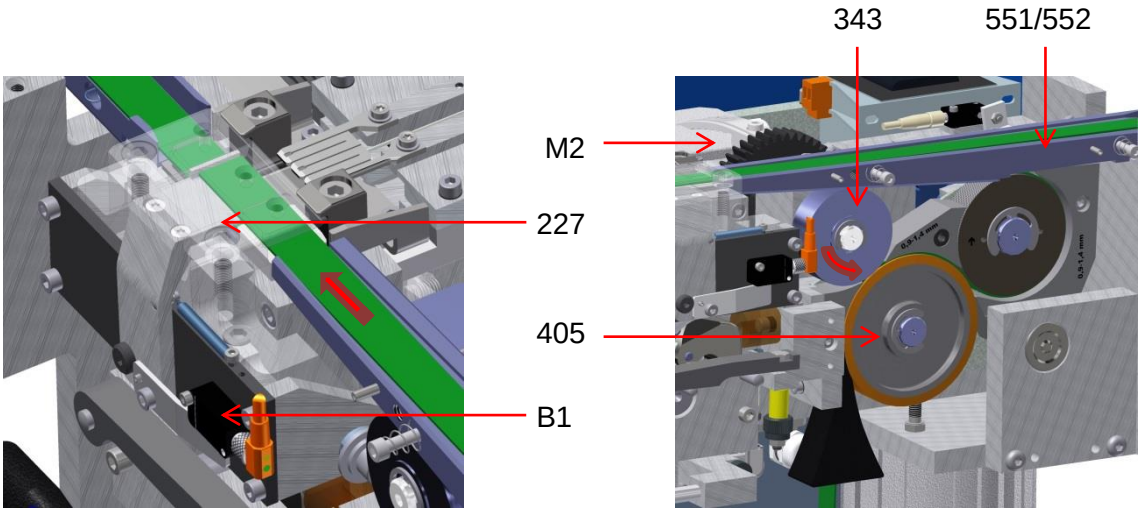
- Machine/Head switched on
- Strap fed forward, resp. inserted as described in Chapter 4.6
- Strapping head in basic position as described in Chapter 6.1
- Strap guides, resp. strap channels are closed.
- Release strap storage, strap catch box or unwinder full
- Heating at welding temperature

4.8. Function sequence

The strapping head is in starting position. The function sequence refers to an automatic strapping.

Strap feed / Fill channel

When starting the strapping cycle, the strapping band is transported through the strap channel of the strapping machine. The strap transport motor **M2** drives the transport wheel **(343)**, against which the non-driven counter-roller **(405)** is pressed. If the strap returns to the strapping head via the feed channel **(551/ 552)** the sensor "Stop strap feed"**B1** is actuated by the separator plate **(227)** and the strap transport motor is stopped.

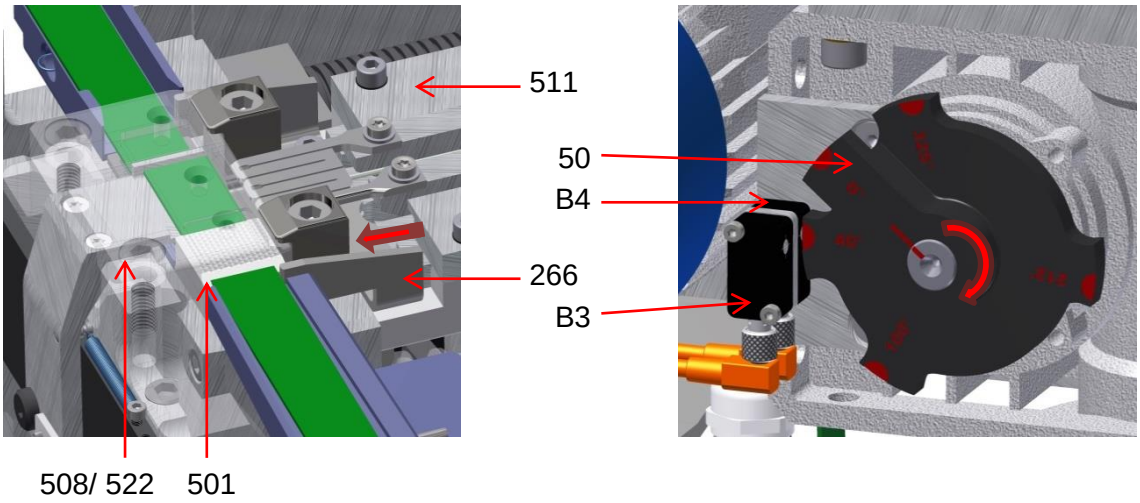


Note!
A control time of **t4** runs during the strap forward transport . If this time expires without the sensor **B1** having been occupied, the control reports a strap feed fault.

Clamping /Centring the strap

If the sensor "Stop strap feed" **B1** and the sensor "Basic position at cam controller" **B3** are occupied, the cam controller motor **M1** turns the cam discs all the way to 1st cam position 40°. The sensor „Index positions on the cam controller“ **B4** is then switched by the cam disc **(50)**.

At the same time the centring fingers **(266)** of the disc guide **(511)** move forward. The strap is centred in the closing section. Die I **(501)** clamps the strap start which has returned into the head against the counter plate **(508/ 522)**.

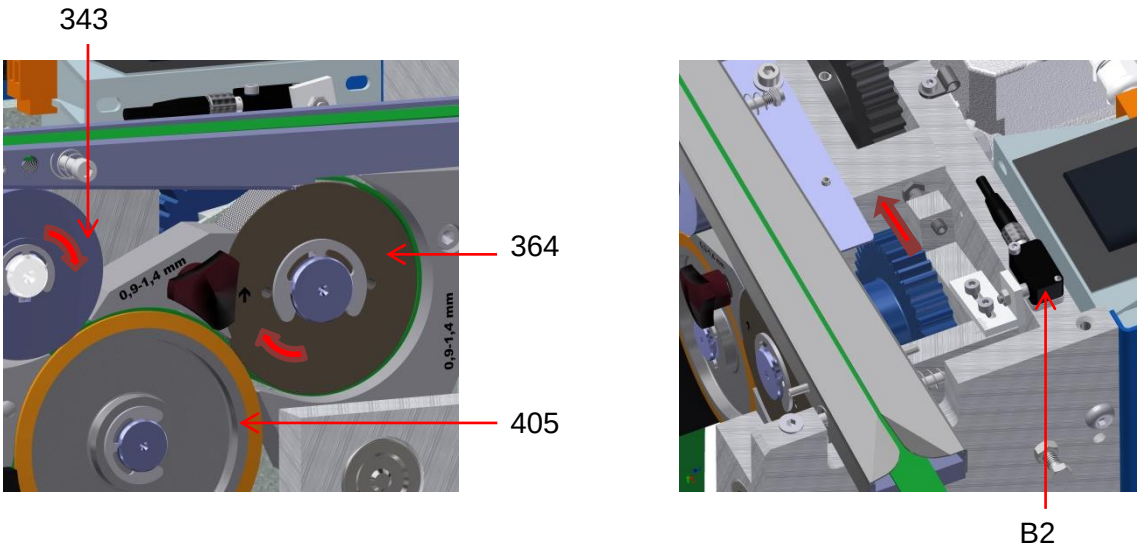


Reverse conveying / Tensioning

The electrical control switches the strap transport motor **M2** and the tensioning motor **M3** on at the same time.

The transport motor **M2** draws the strap over the transport wheel **(343)** quickly and until the package is embraced and the tensioning wheel **(364)** is pulled onto the counter roller **(405)**. When reaching the counter roller a signal is sent to the electrical control via the sensor "Start strap tension" **B2**.

This starts the tensioning time **t1**. The tensile force in the strap (strap tension) can be set looser or firmer via this time. At the same time, the strap transport switches off.

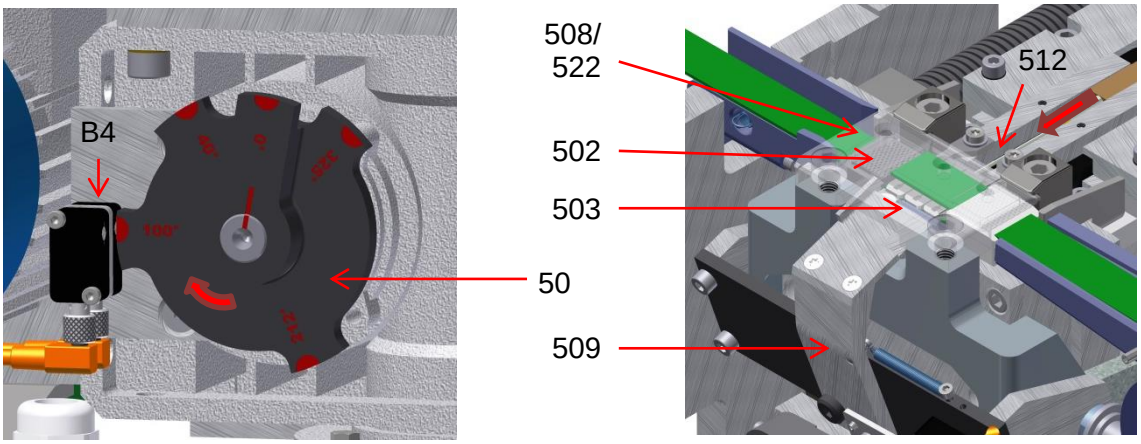


Forming the joint

After expiry of the tension time **t1** the tension motor **M3** is switched off and the cam controller motor **M1** is switched on again by the electrical control. The die II **(502)** now clamps the tensioned strap. After reaching the sensor **B4** the rotation direction of the tensioning motor **M3** is reversed briefly through expiry of the timing element **t2** for the tension-free cutting off procedure (reversal procedure) This position is defined as 2nd cam position 100°.

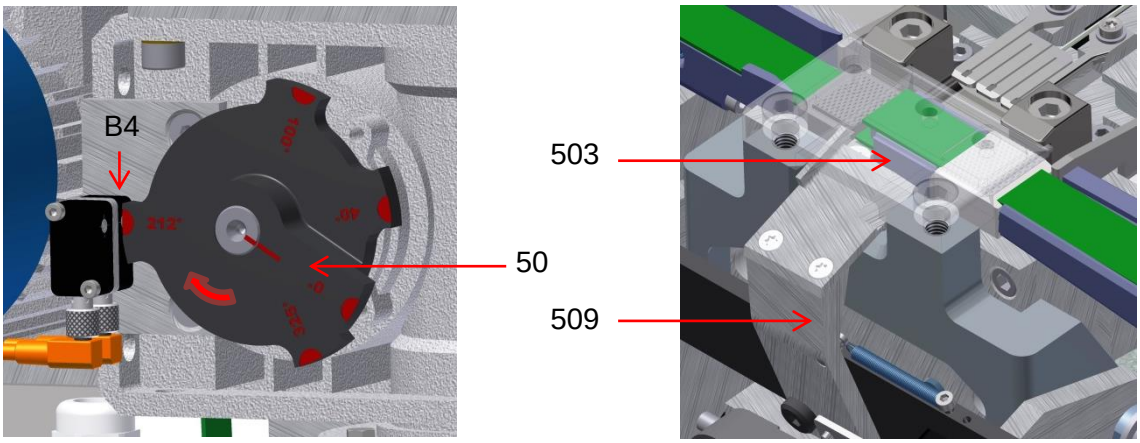
The heating **(512)** runs up. The die III **(503)** cuts off the strap and then presses the two strap ends together against the counter-plate **(508/ 522)**. with the heating lying between them, In the process, the opposing strap inside surfaces start to melt. After the moving out of the heating **(512)** the molten strap ends are once again pressed against the counter-plate by die III **(503)**. The strap centring is also lifted.

Cooling off position



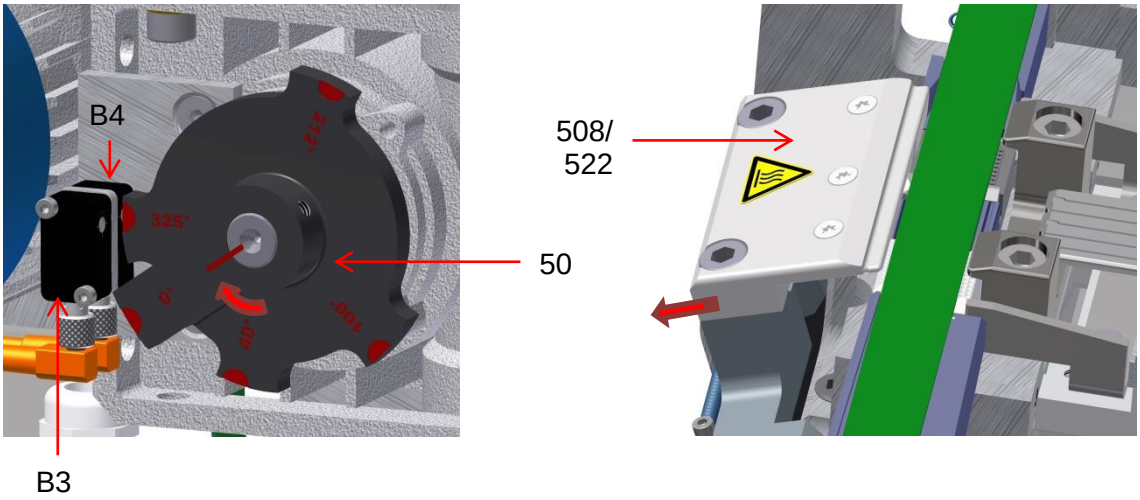
To cool down, the cam controller stops in the cooling off position. The sensor **B4** is switched by the cam disc **(50)** and determines the 3rd cam position 212°. Thereby, the die III **(503)** maintains the pressure on the strap ends until the cooling off time **t3** has expired.

After expiry of the cooling off time, the die I **(501)**, die II **(502)**, die III are lifted through the renewed switching on of the cam controller motor **M1**.



Counter-plate opened

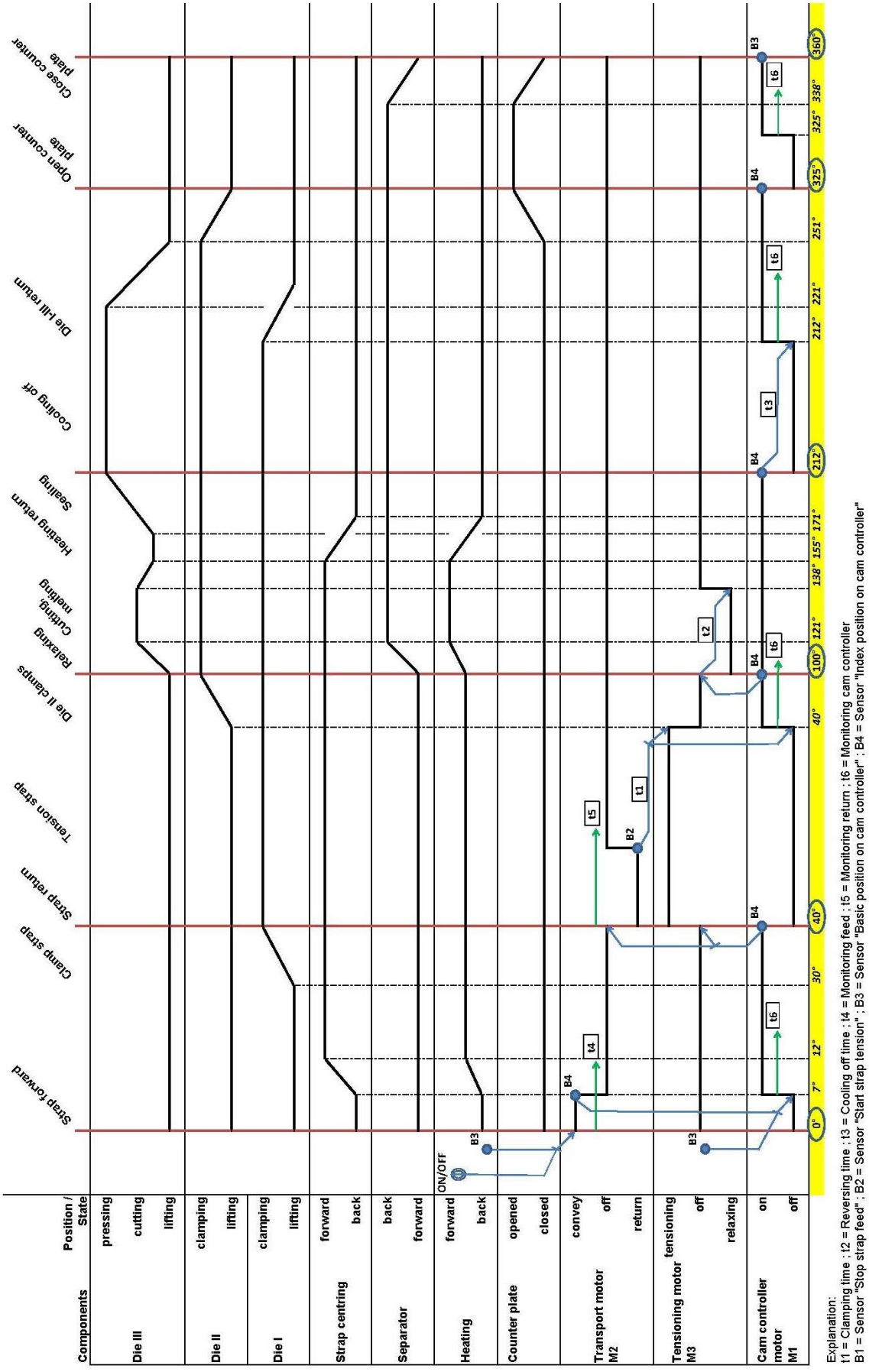
The finished strapping is released through opening of the counter-plate **(508/ 522)**. Depending on the machine type in which the strapping head is installed, the cam controller can be stopped when the counter-plate is opened and the sensor "Index position on the cam controller" **B4** is reached (see Section 4.10). This position is defined as 4th cam position 325°.



Counter-plate closed - Basic position

The counter-plate is then closed again, the separator **(509)** retracts. The sensor "Basic position on cam controller" **B3** switches the cam controller motor **M1** off again when reaching the zero position.

4.9. Function diagram



Explanation:
t1 = Clamping time ; t2 = Reversing time ; t3 = Cooling off time ; t4 = Monitoring feed ; t5 = Monitoring return ; t6 = Monitoring cam controller
B1 = Sensor "Stop strap feed" ; B2 = Sensor "Start strap tension" ; B3 = Sensor "Basic position on cam controller" ; B4 = Sensor "Index position on cam controller"

4.10. Proceeding with opened counter-plate

With different machine applications, e.g. "Head from above" or slit coil and tube strapping there are several possibilities of preparing a new strapping.

- The cam controller is stopped electrically in the 4th cam position 325° "Counter-plate open" via the sensor "Index positions at the cam controller" **B4** until the closure is removed from the area of the counter-plate by moving the unit or the package. The cam controller is restarted by a signal "Strap channel closed" or "Head in filling position". The counter-plate is closed. The sensor "Basic position at cam controller" **B3** switches the cam controller motor **M1** off again when reaching the **0°-Position**, and the function "Fill channel" can possibly follow automatically.
- The cam controller is not stopped and runs to **0°-Position, resp. Basic position**. In the process, the counter-plate closes after several tenths of a second, and after reaching the **0°-Position** the closed channel is filled automatically. A new strapping process can be initiated.

4.11. Tension-free cutting, resp. reversing

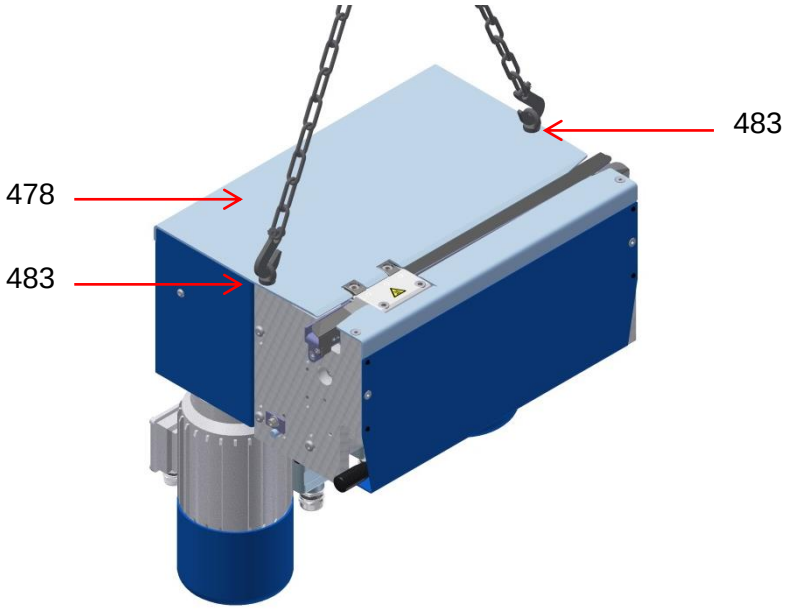
Tension-free cutting prevents the strap from splicing!
After expiry of the tension time **t1** the cam controller motor **M1** is switched on again and die II **(502)** clamps the tensioned strap. Before die III **(503)**
follows thus far and cuts off the strap, the tensioning motor **M3** is switched into reverse operation via the sensor "Index positions on the cam controller" **B4** to cut off the strap tension-free.

5. Installation/Commissioning

5.1. Handling during transport

The strapping head is transported by means of a lifting gear. The load capacity of the lifting gear must be at least the weight of the **K8000 strapping head** (see Technical Data Chapter 4.1).

To accept the head, the two countersunk screws **(483)** on the right and left side of the cover plate **(478)** are removed and replaced by customary lifting eyes with a screw thread **M6**.



The load hooks of the load gear are now hung into these lifting eyes and the strapping head is transported carefully. Consider the position of the centre of gravity so that it does not tilt when put down, resp. does not turn over when lifted.

Attention!
Do not stand underneath the load when lifting it and putting it down.
Banish bystanders from the danger zone.
Minimum load capacity **100 kg**.

5.2. Storage

Before the final installation, the strapping head should be stored in dry rooms at temperatures between +5 to +50°C. The strapping head should be protected against coarse environmental dirt. e.g. by covering it with corrugated cardboard which does not exclude ventilation of the strapping head (rel. humidity max. 60%).

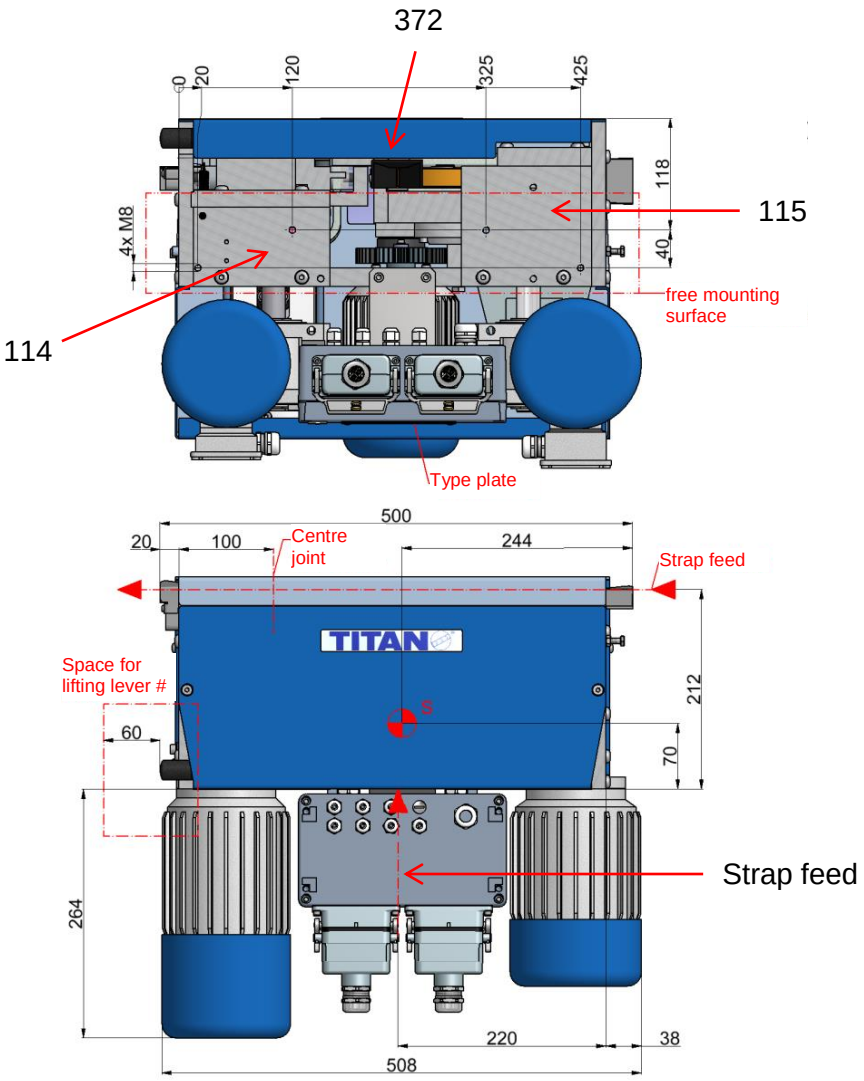
Note!
If you shut down the machine for a longer period, bearings, gears and shafts can rust very quickly at the contact points or collect moisture in some other way. Therefore use a drying agent with hygroscope according to **DIN 55273**. If this is not possible, all parts of the machine should be moved once per week.

5.3. Assembly

To mount the strapping head on the machine frame, four M8-threaded holes are located on the underside of the housing **(114/ 115) .** When mounting the head, a screw-in depth of at least **14 mm** must be achieved.

The transitions from the strap guides of the strapping head to the strap guide channel of the strapping machine must be designed so that strap running defects do not occur. The lateral distance, with the dimension 500 mm, should only be 2 mm respectively.

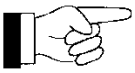
The arrow between the motors points to the funnel-shaped strap feed **(372)**. This is where the strap, which comes from the strap storage or roller, is introduced.



5.4. Commissioning

After mounting the strapping head in the strapping machine, the following points must be observed before the first commissioning:

- All motor protection switches in the electric control **(PLC)** must be switched on.
- Due to the ventilation of the motors, the strapping head must not be installed encapsulated.
- An axial minimum distance of 20 mm must be maintained to the ventilator caps of the motors.
- Check electrical feed for the various electrical connections (see Chapter 4, "Performance specifications").
- Check the correct direction of rotation of the motors and, if necessary, switch the phases so that the correct directions of running are available at the transport wheel **(343)** and tension wheel **(364)**.
- Check the function of the operating elements, timing elements and inductive limit switches.
- Check basic position of the cam controller and, if necessary, reset (see Chapter 6.1).
- Conduct high-voltage test according to DIN EN 60204, resp. VDE 0113.
- When the main switch is switched on, the heating **E1 (512)** is heated up and reaches the operating temperature of approx. 450°C.after approx.1 minute.
- The strap must be threaded correctly in the strapping head (see Chapter 4.6 "Introducing straps").



Note!
The list cannot be comprehensive. Further tests, if necessary, according to additional instructions or system-specific conditions.

5.5. Disposal

If packing material is to be disposed of, simply put this in the corresponding recycling bin, resp. add it to the dual system.

If the location of the head is not in Germany, the respective nationally valid country-specific regulations for disposal must be complied with.

If the strapping head is to be disposed of at the end of its lifetime, separate plastic, steel and aluminium and dispose of these separately. The motors and the electrical assemblies such as control, switches and cables must be disposed of separately. Provide these to a corresponding disposal point.

6. Settings

Note!
The **K8000 strapping head** is set to the strap dimensions specified by the customer. The following adjustment notes must be observed when changing the dimension.
How to handle the individual functions via the electrical control is described in the electrical documentation.

6.1. Setting the basic position (0°-Position)

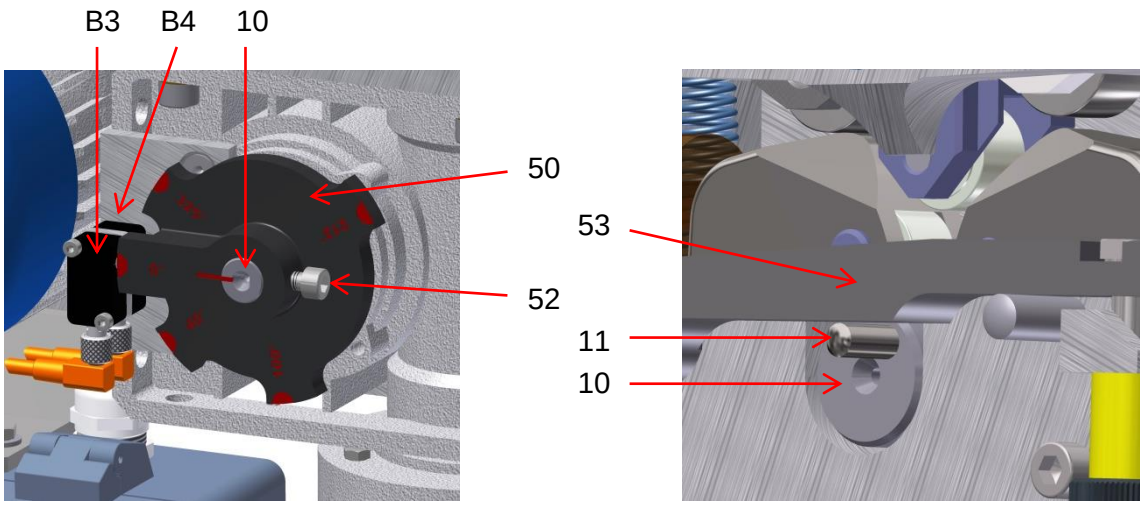
The basic position of the cam controller is set so that the marking of the shaft **(10)** is aligned with the marking of the cam disc **(50)**. The button of the 0°-cam engages sensor **B3**, the locking screw **(52)** of the cam disc then also lies parallel to the part axes.

To check whether the cam disc **(50)** is correctly positioned with the service switch **S1** after tipping, the following conditions must be met:

- The sensor „Basic position on the cam controller“ **B3** must be activated by the cam.
- Slide guide **(262)** with centring finger **(266)** have not yet, resp. only minimally moved in the direction of the centred position, resp. counter-plate.
- The clamping unit, resp. separator **(509)** and the counter-plate **(508/522)** are closed.
- The cylinder pin **(11)** must lie free to the lever edge of the connection lever **(53)**.

Note!
If the slide guide with centring finger has moved more than 1 mm from the rear, maximum opened position, the cam disc must be loosened and fastened, having been moved a little in clockwise direction. View from the rear onto the shaft **(10)** of the cam controller(see also Chapter 6.2).

An end control by way of a test strapping must be carried out subsequently.



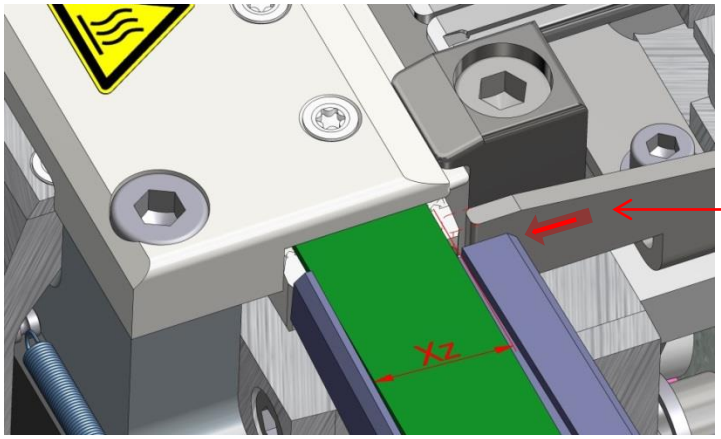
6.2. Setting the strap width

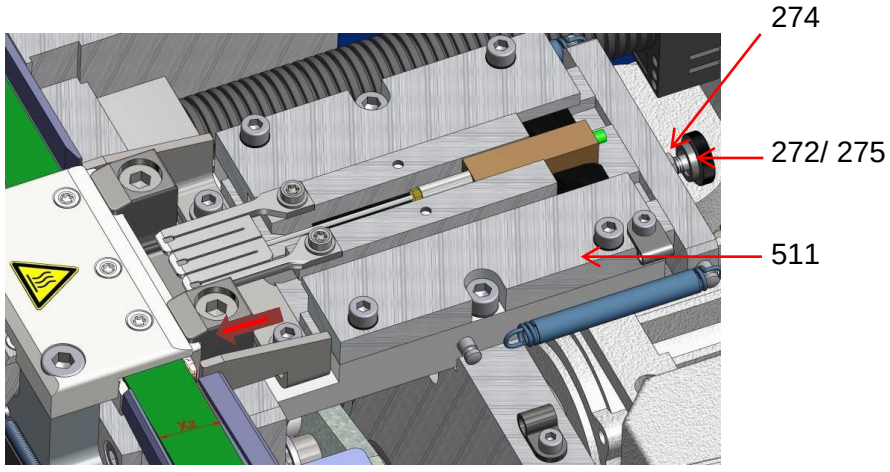
So that the strap ends in the closure area face each other as accurately as possible, a strap alignment (centring) is installed in the **K8000 strapping head**, which is set to the used strap width.

- The strap is centred via the centring fingers on the slide quide **(511)**.
- The centring fingers **(266)** slide the upper and lover strap onto the opposite guide wall. The captured strap areas are aligned to each other.
- So that, after centring, the retraction and tensioning of the strap can be carried out trouble-free, the centring fingers must not clamp the strap.
- That is why the **setting dimension of the aperture width at the centring fingers Xz** is set to:

Xz = maximum strap width + 0.2 mm

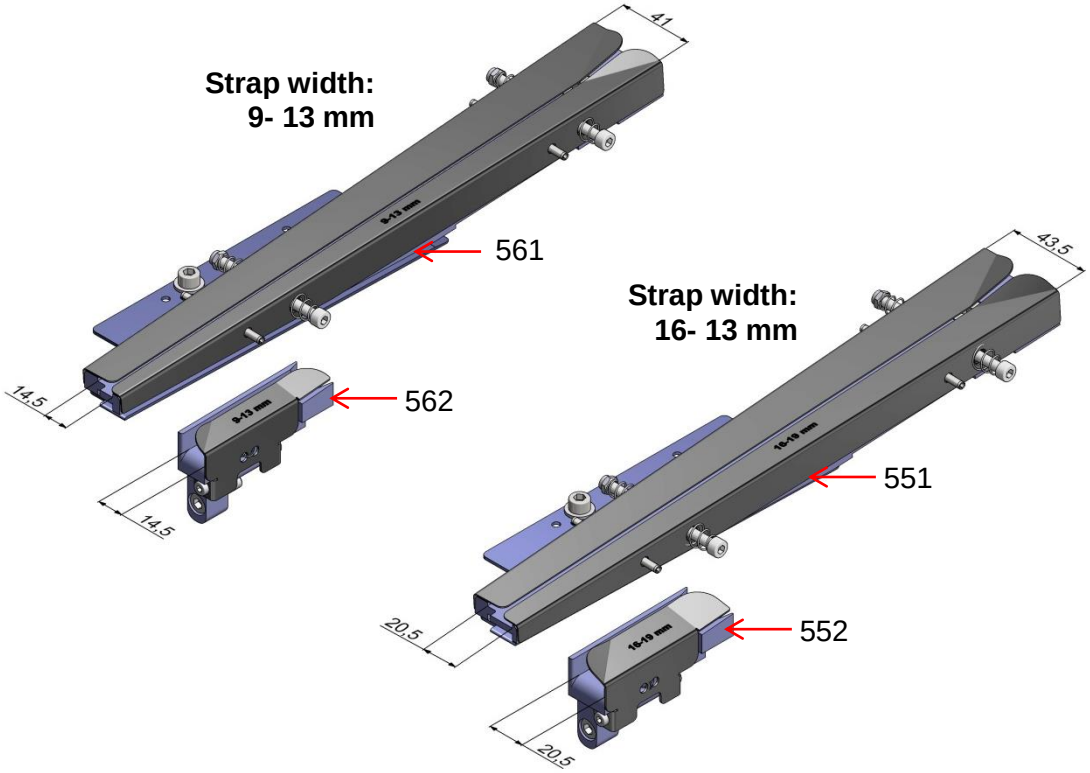
Bring the slide guide **(511)** into the centring position. In this position, the removal of the slide guide to the guide wall is the smallest. Loosen hexagon nut **(274)** at the screw **(272)** and set the centring fingers to the setting dimension of the aperture width **Xz** for the strapping band to be used by turning at the knurled screw head **(275)**. Re-tighten hexagon nut **(274)**.





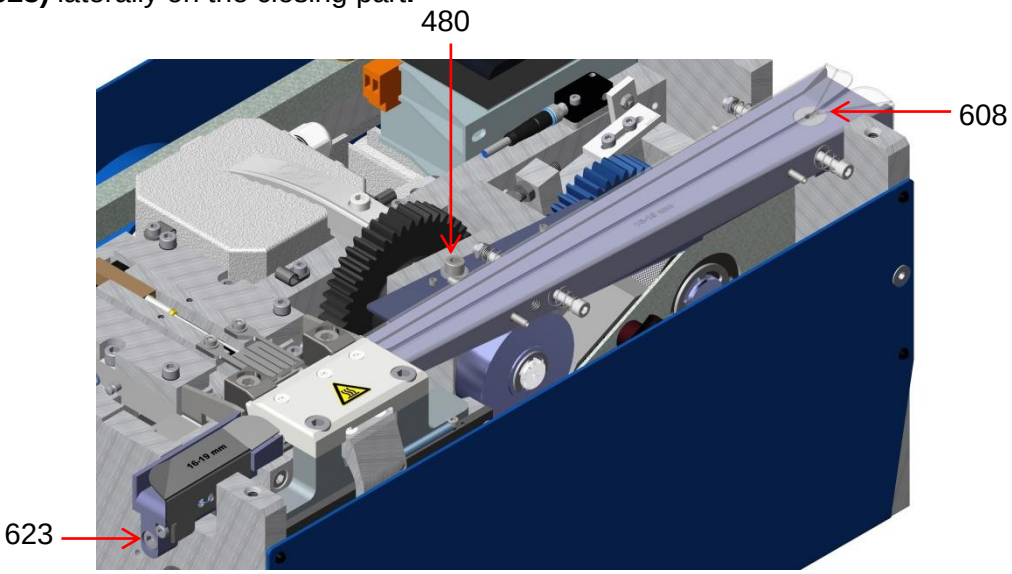
6.3. Strap width parts

The K8000 strapping head can be operated in two different strap widths 9-13 mm and 16-19 mm. For this it is necessary to change the head channel, i.e. the feed **(551, 561)** and outlet channel **(552, 562)**. The assemblies are the connecting link between the channel system to be generated externally and the closing part. They serve for the precise guiding of the strapping band into the closing mechanism.



Removing and installing the head channel

For this purpose, the feed channel on the transport and tensioning unit are to be dismantled via the 2 screws **(480, 608)** as well as the outlet channel via the cylinder screw **(623)** laterally on the closing part**.**



Deliverable modifications:

- Strap width parts 16-19 mm - **Order No. 76480003010**
- Strap width parts 9-13 mm - **Order No. 76480003020**

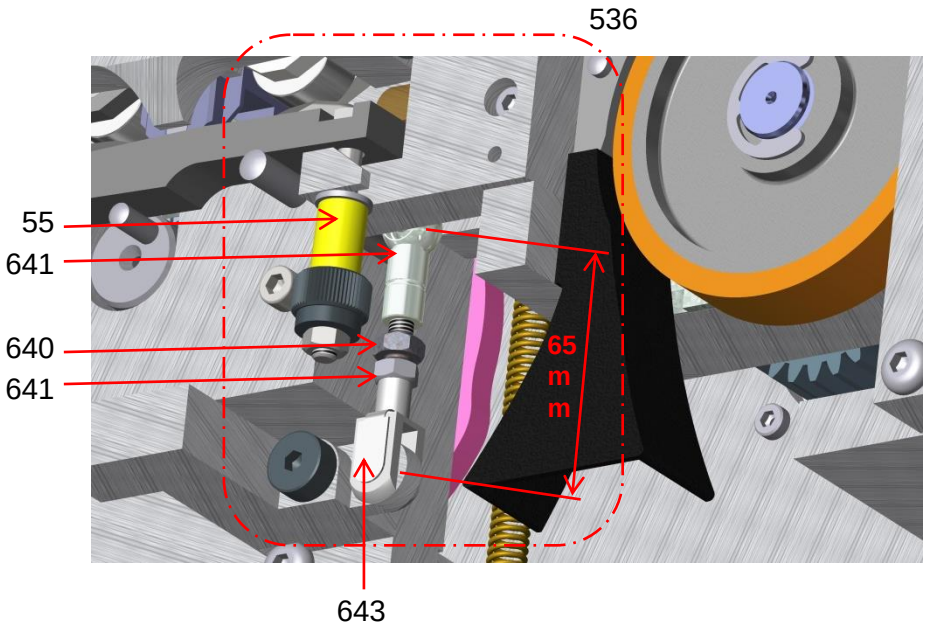
6.4. Setting the transport and tensioning unit

The **K8000 Transport and tensioning unit** must be set to the used strap thickness. The following information must be observed.

Attention!
The zero position of the cam controller must be set correctly before adjusting the tensioning unit (see Chapter 6.1.).

Pressure adjustment at the transport unit

The setting of the basic frictional force on the transport wheel **(343)** is carried out by adjusting the thrust rod **(536)**. Here, attention must be paid first to the correct distance between the centre of the ball socket of the angle joint **(641)** and the joint axis of the clevis **(643)** of approx. 65 mm.

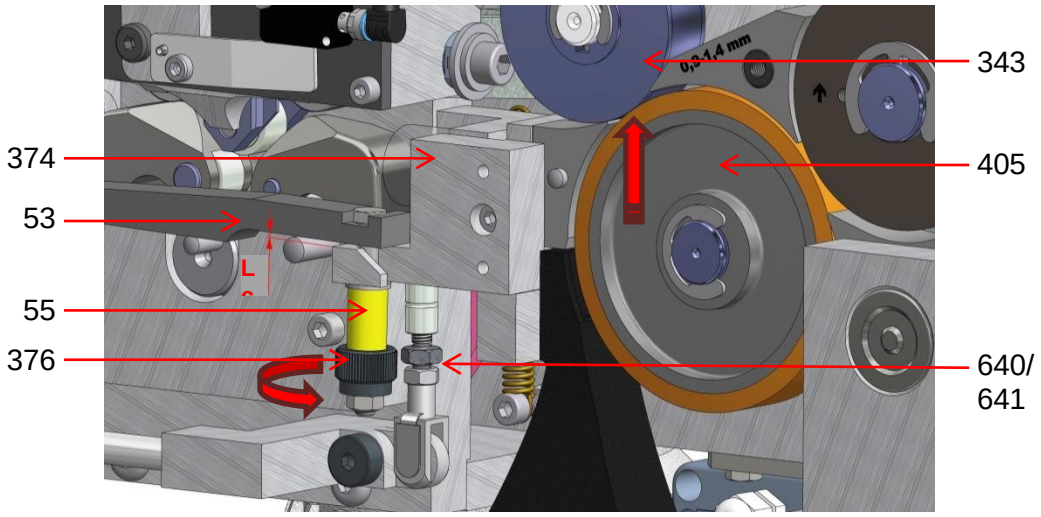


Readjustment is conducted via the threaded rod **(640)** by loosening the lock nut **(641)**.

The spring force of the compression spring **(55**) supports itself on the clamp button **(56)** on the one hand and on the other hand on the pressing pad **(374)**. The pressing pad presses the tensioning unit with the counter roller **(405)** against the transport wheel.

By loosening the lock nut **(57)** and turning the clamp button clockwise, the counter roller is moved in the direction of the transport wheel.

the correct pre-setting of the pressure is achieved when a distance **Lc** of 1.5 to 1.6 mm results between the connection lever **(53)** and pressing pad **(374).**

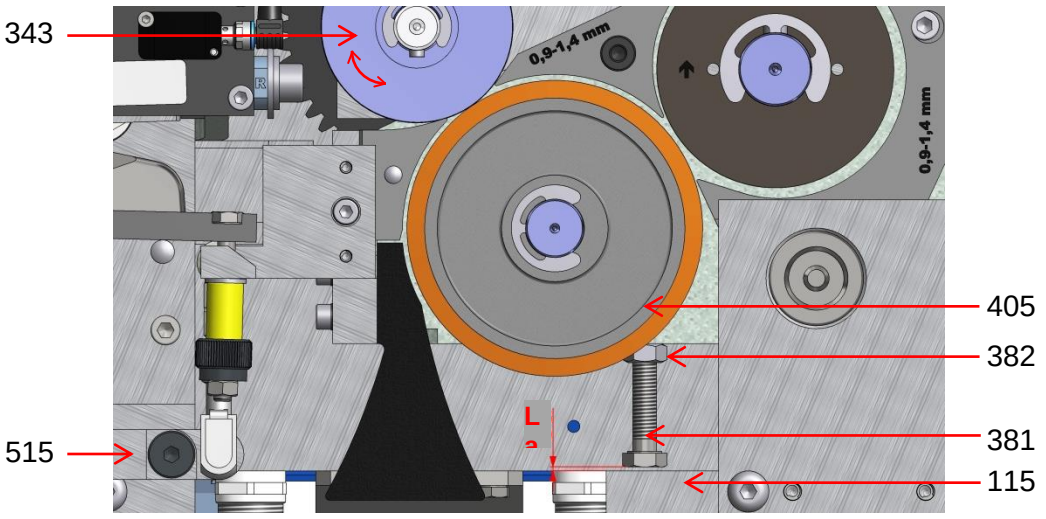


The transport unit is set optimally when the strap is pulled safely from the strap storage, resp, the roller and when landing on the separator plate **(227)** in the closure part, no creases (overlaps/kinks) occur in the strap guides, resp. in the tensioning unit.

Note!
The running surface of the of the transport wheel **(343)** must be kept free of dirt, lubricants, incrustations and scratches, so that there are constant friction conditions as far as possible.

Lifting stop on the tensioning unit

When inserting the strapping band into the head, lifting of the tensioning unit with the counter roller **(405)** is required, see Chapter 4.6. To limit the swing of the lift lever **(515)** it is necessary to set the distance **La**. The gap size **La** must be a strap thickness.



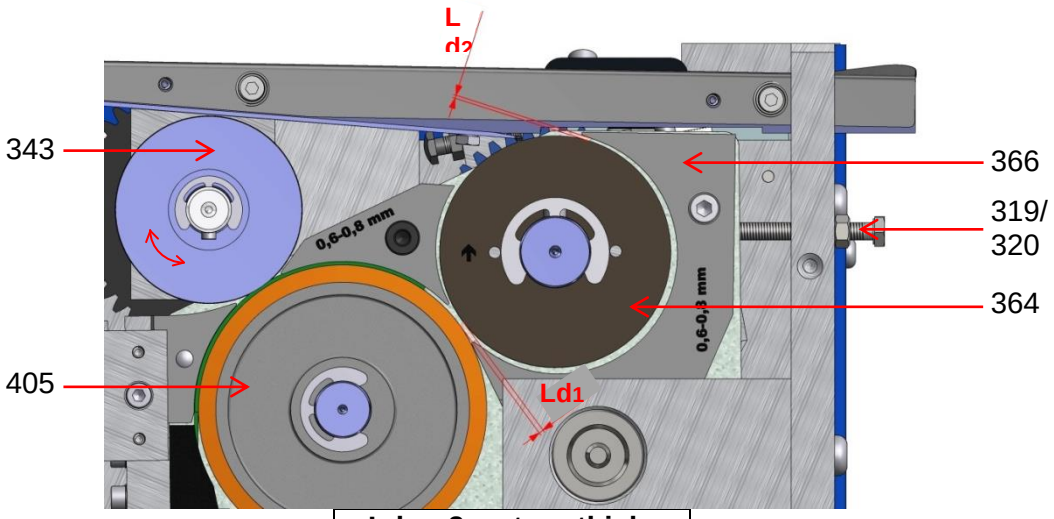
To do this, loosen lock nut **(382)** and slide a residual section of the plastic strap to be processed between the hexagon screw **(381)** and base plate right **(115)**. Turn the hexagon screw and place the screw head so far against the strap that movement of the trap section remains possible.

Then re-tighten the lock nut **(382)** and remove the strap section.

Passage distance on the tensioning wheel

The setting of the passage distance on he tensioning wheel must be carried out dependent on the changing strap thickness. Slide a residual section of the plastic strap to be processed between the transport wheel **(343)** and the counter roller **(405)**. In the case of strap thicknesses between 0.6 to 0.8 mm, the distance **Ld** in the feed section of the tensioning wheel **(364)** is set as follows:

- Loosen lock nut **(320)** and by turning the hexagon screw **(319)**, press, resp. lift the tensioning wheel against the counter roller **(405)**.
- Set the adjustment measure of the passage distance **Ld1** as follows with a feeler gauge:



Ld_1 = 2 x strap thickness

In the case of strap thicknesses between 0,9 to 1,4 mm, the distance **Ld_2** is set in the feed section of the tensioning wheel **(364)**.

- Loosen lock nut **(320)** and by turning the hexagon screw **(319)**, press, resp. lift the tensioning wheel against the counter roller **(366)**.
- Set the **adjustment measure of the passage distance Ld_2** as follows with a feeler qauge:

Ld_2 = strap thickness + 0.5 mm

Note!
When tightening the hexagon nut **(320)** the specified setting can change. That is why a subsequent check of **Ld** is recommended.

6.5. Setting strap tension, Sensor „Start strap tension“ B2

The strap tension of the K8000 strapping head should be changeable according to the package, so that it can be adapted to the respective circumstances of the package (soft-hard) or (large-small tension path) as sensitively as possible.

The strap tension is applied by letting the tensioning motor **M3** tension for a predetermined time **t1** after retracting the strap from the channel system.

For this purpose, the variable tensioning time **t1** must be provided in the machine control. Small tensioning time then corresponds to a low strap tension as well as long tensioning time.
(≥ 0.5 s) a high strap tension.

Note!
Before setting the sensor **B2 (311)** the setting of the transport and tensioning unit must be carried out (see Chapter 6.4).

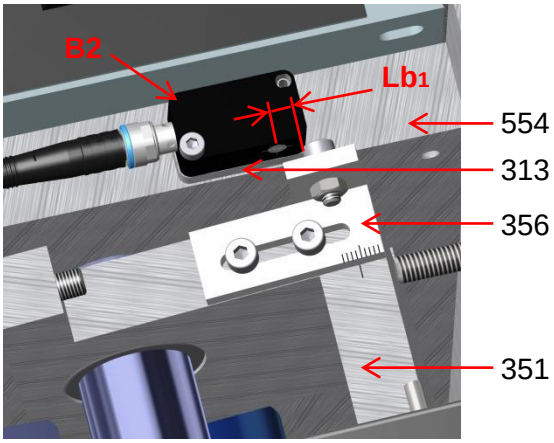
The sensor "Start strap tension" B2 lies on the block **(313)** on the right upper edge of the housing **(554)**.

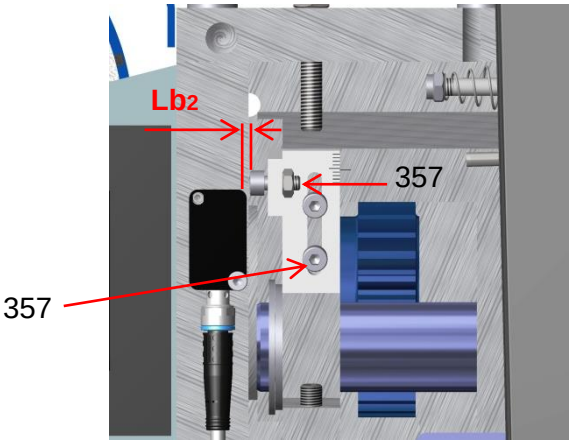
Setting the Sensor "Start strap tension" B2

The distance of the button on the sensor **B2** to the switch flag **(356)** of the tensioning bridge **(351)** is set as follows:

Shift the switch flag by loosening the screws **(357)** within the slot, until the front edge of the screw **(357)** stands about **Lb1 = min. 2 mm** in front of the button of the sensor.

The switching distance **Lb2** between the switching screw **(357)** of the tensioning bridge and the button of the sensor **B2** should be between **0.5 and 0.8 mm**.

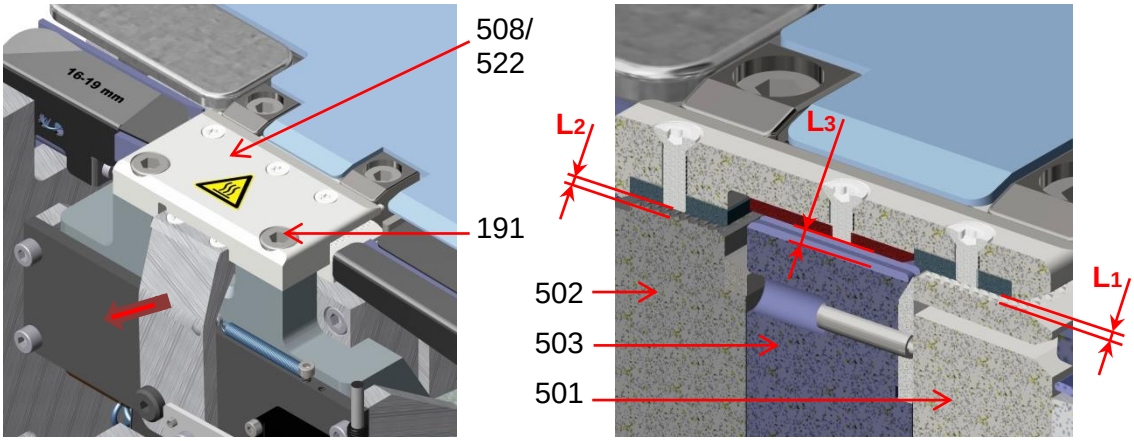




6.6. Setting the strap thickness at the clamping unit

The clamping unit of the K8000 must be set to the strap thickness used.

In the installed state , the gap dimensions **L1** to **L3** are checked and correct if necessary. The gap dimensions are measured with a feeler gauge between the dies **(501-503)** and the counter plate **(508 resp. 522)**.



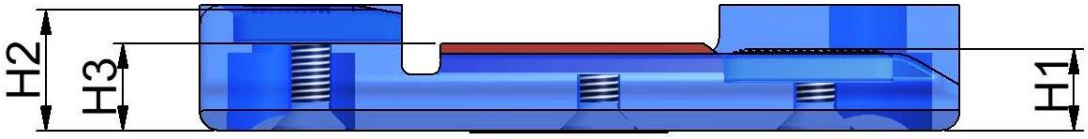
The gap dimensions must be checked in the **3rd. cam position 212°** "Cooling down position“ of the cam controller! The strapping unit is moved into position through brief actuation of the button **S2 "Tip cam controller“** on the operating unit.

The specified values are dependent on the strap strength and surface.

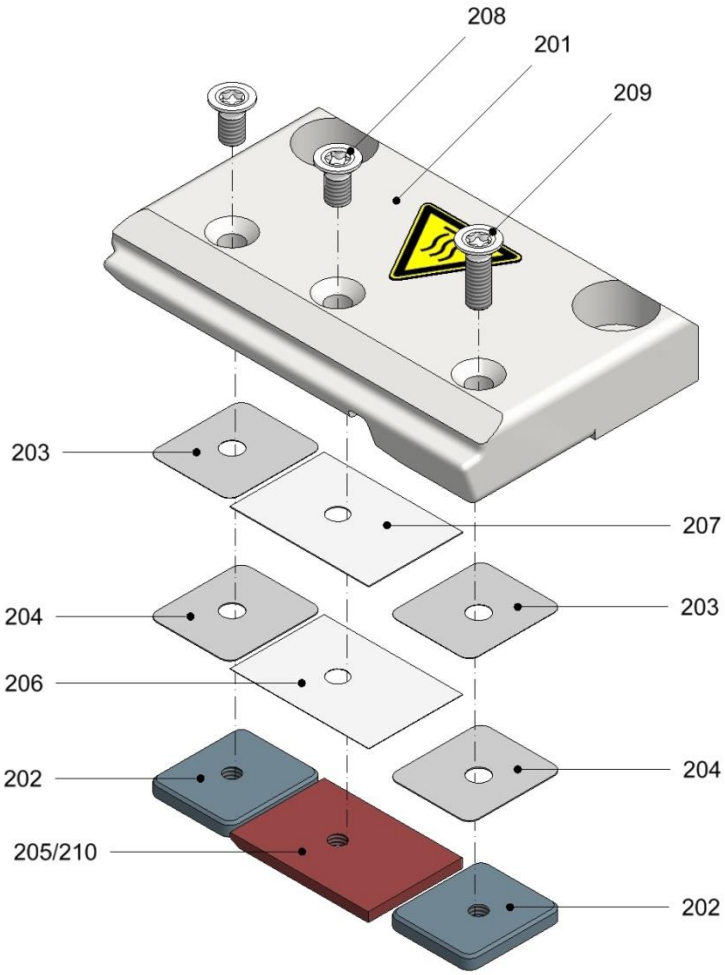
	Clamp 1 on die 1 (501)		**Clamp 2 on die 2 (502)**		**Pressure plate on die 3 (503)**	
Strap thickness: [mm]	**Height H1 [mm]**	**Gap L1 [mm]**	**Height H2 [mm]**	**Gap L2 [mm]**	**Height H3 [mm]**	**Gap L3 [mm]**
≥ 0,6	8.7	0.1	12.8	0.1	8,9 - 9.3	0.8 - 1.2
≥ 0,85	8.6	0.2	12.7	0.2	8.8 - 8.6	1.3 - 1.5
≥ 1,0	8.4	0.4	12.5	0.4	8.5 - 8.1	1.6 - 2.0

For adjustments, the counter-plate **(508, resp. 522)** is dismantled at the clamping unit by loosening the cylinder screws **(191)**.

By changing the clamp heights **H1, H2, H3** at the counter-plate, the gap dimensions are reduced, resp. increased.



The height offset of the grooved plates **(202)** and pressure plate **(205, resp. 210)** must be balanced by adding, resp. removing 0.1 and 0.2 mm thick intermediate plates **(203-204)** and pressure plates **(206-207)** in the counter plate.



The Torx countersunk screws **(208, resp. 209)** on the counter plate must be loosened for this purpose.

Attention!
Before taking the head into operation, check that the head is set to the thickness of the strap used.

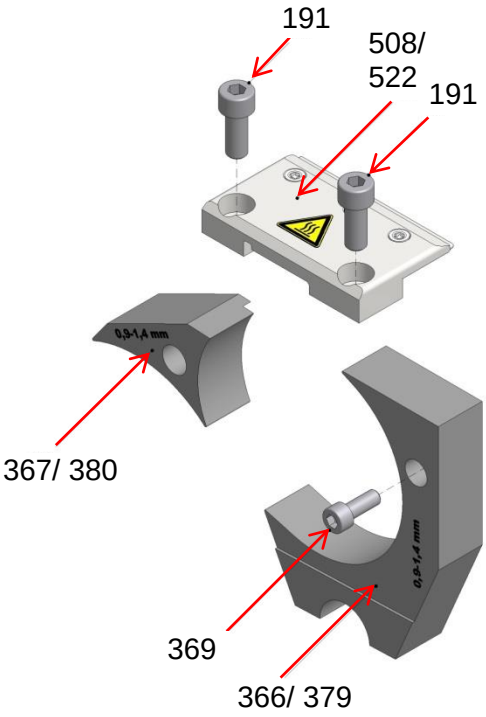
Attention!
To achieve optimum welding of the strapping bands, the straps need to be welded, resp. clamped neatly. If the welding is not conducted satisfactorily, it must be reset. Too strong application of the counter-plate effects blockage of the cam controller. This must be released by backward tipping of the cam controller.

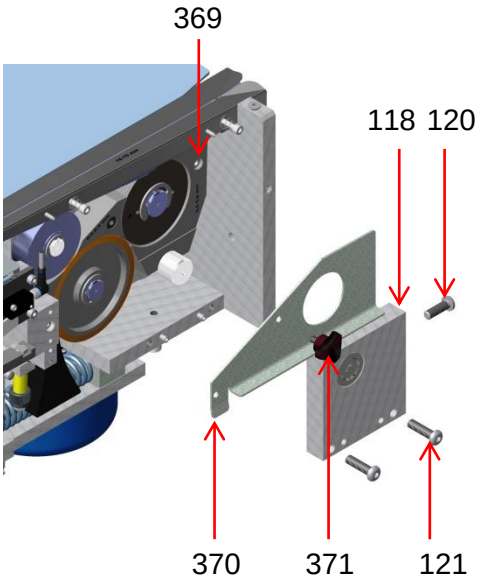
Provide machine control with program function!

6.7. Strap thickness parts

The K8000 strapping head can be operated in two different strap widths 0.6-0.8 mm and 0.9-1.4 mm. For this it is necessary to change the strap guides in the tensioning unit, i.e. the smooth edge protector **(367, 380)** and the side plate **(366, 379)**.

It is also necessary to change the counter-plate **(508, 522)** in the joint mechanism. The two versions of the counter-plates differ in the thickness of the pressure plate **(205, 210)** see also Chapter 6.6. This area is responsible for forming the joint and has the largest strap thickness spectrum. Double strap thickness from 1.2 to 2.8 mm.





Removing and installing the strap guides

- Loosen the rotary push-button**(371)** and remove the front plate **(370)**.
- Loosen oval head screws **(120, 121)** on the housing and remove connecting plate **(118)**.
- Pull out smooth edge protector **(367, 380)**.
- Loosen cylinder screw **(369)** and remove side plate **(366, 379)**.
- Reassembly is conducted in reverse order.

Removing and installing the counter-plate

- see Chapter 6.6.

Deliverable modifications:

- Strap thickness parts 0.9-1.4 mm - **Order No. 76480003030**
- Strap thickness parts 0.6-0.8 mm - **Order No. 76480003040**

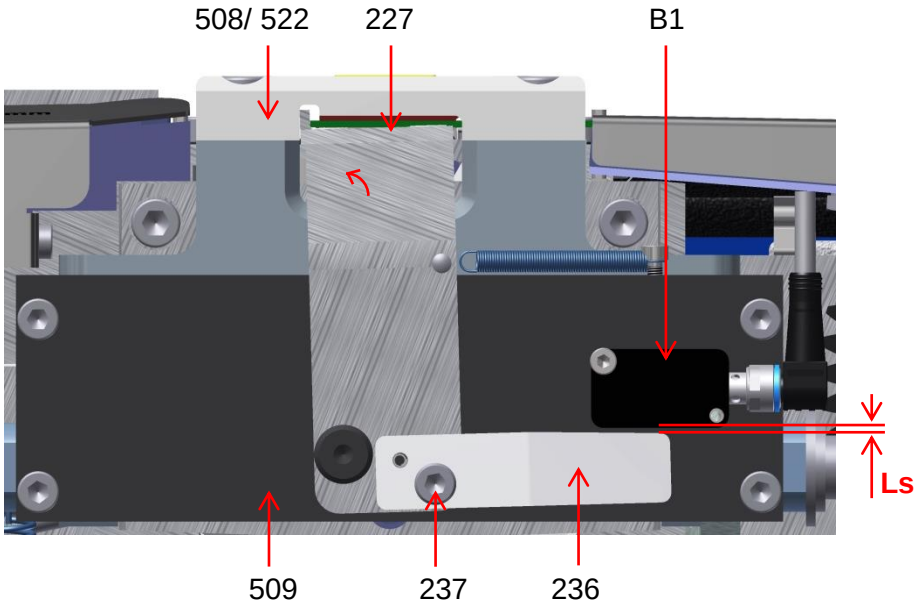
6.8. Setting the sensor "Stop strap feed" B1

The sensor "Stop strap feed" **B1** is located on the component separator **(509)**. The separator has two functions. Separating the two strap ends when forming the joint as well as the identification of strap overlap.

After the strap feed in the channel system, the strapping band reaches the separator plate **(227)** and swivels it against the counter-plate **(508/ 522)**. In the process, the switch plate **(236)** activates the switch zone of the sensor **B1**. This switches the transport motor **M2** off.

The switching distance between the sensor **B1** and the switch plate can, if necessary, be set by loosening the cylinder screw **(237)** and turning the plate.

Thereby the distance **Ls** between the two components, **in the end position switched by the strap, should be between 0.2 to 0.5 mm**.



So that a secure switch function is guaranteed, frequent cleaning of the sensor environment, especially on the counter-plate **(508/ 522)** and on die 2 **(502)** is recommended.

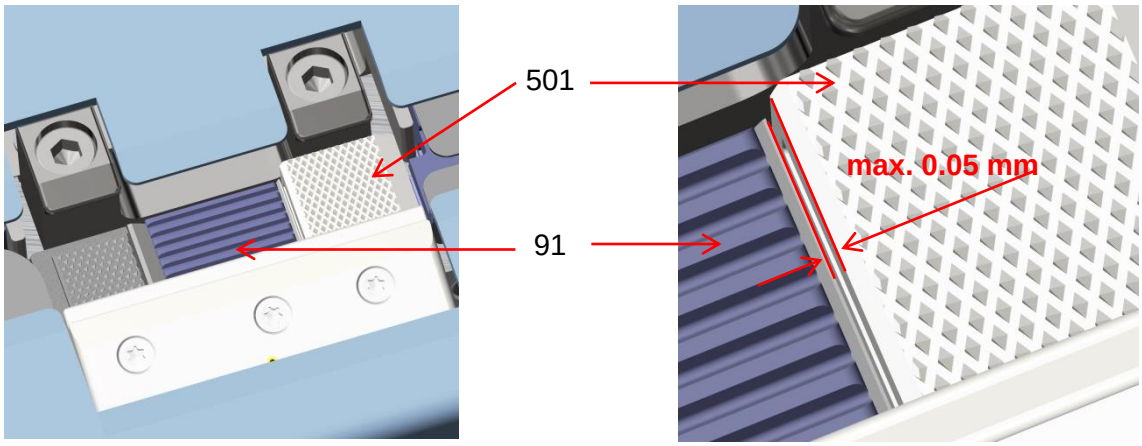
6.9. Setting the blade

When the machine is used over a longer period, the cutting gap between the blade **(94)** and die I **(501)** can increase due to wear. As a result, clean cutting of the strap is no longer guaranteed.

Setting can also be required when the blade is replaced to balance unavoidable production tolerances.

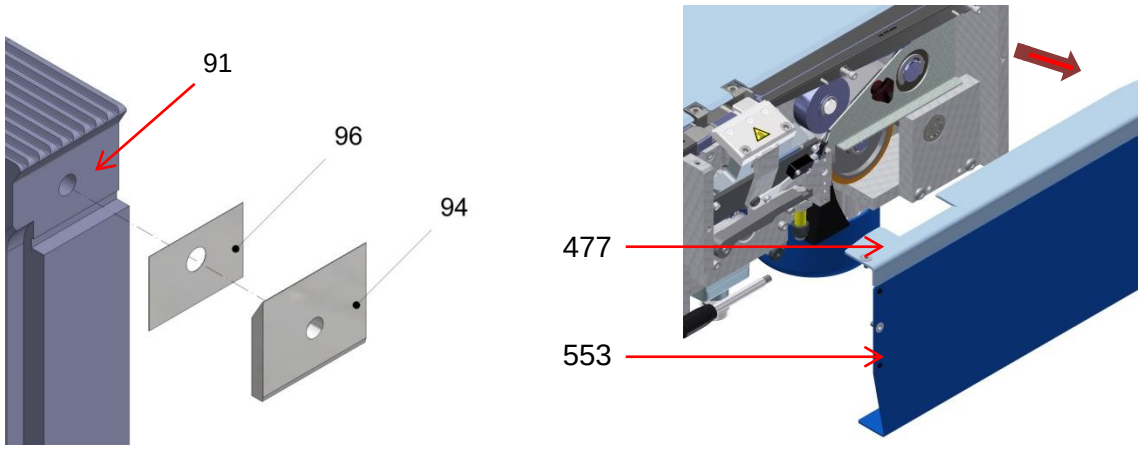
To balance the cutting gap, **which may be a max. of 0.05 mm**, one or several equalizing plates 3 **(96)** are provided, depending on requirement.

The equalizing plate 3 has a thickness of 0.05 mm. It is installed between die III **(91)** and the blade **(94)**.

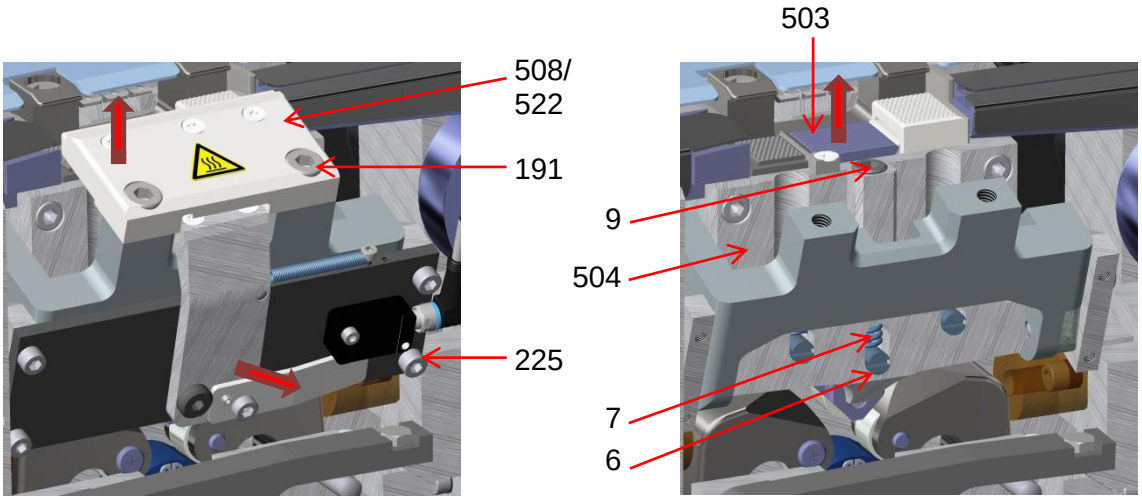


Removing and installing the equalizing plate

- In the 4th cam position 325° of the cam controller (see Chapter 4.8) set the main switch to OFF.
- In the installed state, measure the cutting gap between the blade **(94)** and die I **(501)** with a feeler gauge.



- Unscrew the front plate **(553)** and the cover plate 1 **(477)** .
- Remove the screws **(191)** and remove the counter-plate **(508/ 522)**. Also loosen the separator **(509)** at the screws **(225)** and swivel around.
- Remove the screw plug **(9)** visible from above and the pressure spring **(7)** below this.
- Unscrew pin **(6)** and push die III **(503)** out to the top.
- Installation is conducted in reverse order, where attention must be paid that die III must be able to be moved easily and without jamming in the die guide **(504)**.



6.10. Setting the welding temperature

The K8000 welding system consists of two transformers, a mains transformer in the electric control and a welding transformer on the strapping unit.

To start melting the straps, and electronically controlled heating **(512)** is used with meander-shaped welding tongue. Two electric circuits supply the welding tongue with a low voltage of approx. 1.5 - 2 V and different currents which generate two temperature ranges (see Electr. terminal assignment BI15048-02; Sheet 5; Chapter 10).

The melting temperature $\mathbf{T_A}$ (basic temperature) of the heating tongue is set at the operator panel of the electric control. The welding temperature can be set dependent on the strap thickness and strap quality:

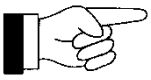
- Low temperature = for narrow, thin straps
- High temperature = for wide, thick straps

Temperature recommendations for TITAN plastic strapping:

approx. 370 to 450°C for TITAN PP straps

approx. 450 to 530°C for TITAN PET straps

So that very little melt material from the previous welding goes into the subsequent one, the welting tongue surface was polished. Only a thin film remains on the tongue. After a hundred joins in succession, this film builds up so much that a cleaning of the tongue is necessary. Through a high clean power (≥ 6 A) this film burns completely at a clean time $\mathbf{t_{wc}}$ of approx. 10-30 seconds.



Note!
With a new polished tongue this process is already completed in 10 s. However, this should not detract from the fact that the roughness of the tongue deteriorates somewhat in the course of a longer operating time and therefore the clean time has to be increased.

The clean temperature $\mathbf{T_C}$ (cleaning temperature) of the heating tongue is set at the operator panel of the electric control.

For all TITAN straps approx. 600°C.

Note!
The above settings relate to the ambient temperature of 20°C. IN the case of large deviations, or with additional action of air circulation, the values may have to be adjusted.

Power supply of the heating with temperature control

The voltage conversion in the external control must be carried out with the help of a control transformer which has several terminals for 30 V to 40 V on the secondary side so that possible voltage losses can be balanced by reconnecting. In addition, the following function modules must be provided in the control to regulate the heating on the head.

- Circuit breaker to secure the control transformer.
- Coupling relay to switch from basic / resp. clean temperature
- Circuit breaker to secure the feed of the welding transformer on the head
- Semi-conductor relay for fast / frequent cocking of the basic temperature

Deliverable additional devices:

- Power supply for temperature control - **Order No. 76480008030**

7. Maintenance

7.1. General care of the strapping head

- A continuous operational readiness of the **K8000 strapping head** is achieved by regular, careful maintenance.
- Always keep the strapping head in a clean state.
- Especially the strap guides, joining area and the spur gears in the transport and tensioning area are to be kept clear of contaminations and foreign bodies.

7.2. Cleaning

- Clean the strapping head every two **weeks** or more often, depending on contamination through environmental influences,
- In the process remove the environmental dust and the abrasion from the plastic straps and especially from the joining area.
- When cleaning with compressed air, attention must be paid that a low blowing pressure is used where possible. The blowing direction should be chosen so that dirt particles do not reach the hot heating tongue **(292)** nor the guides, especially the die guide **(504).**

Attention!
Attention must be paid to personal protection (**wear protective goggles**) and the protection of other persons who are close by.

Attention!
Before conducting cleaning work, repairs, maintenance or trouble-shooting, the strapping head must be put out of operation electrically.

- For this purpose actuate the service key S1 so that the cam controller is switched step by step until the counter plate (508/522) is swivelled back and releases the die I **(501)** to die III **(503)**.
- Then actuate the **OFF key** of the electrical control, remove the front plate **(553)** and clean the complete area.
- Remove stubborn incrustations on die I and III as well s on the grooved plates with a fine wire brush.

Attention!
When conducting this work, attention must be paid that contact with the heating **(512)** is avoided. The heating tongue retains its operating state even when the **OFF button** is actuated and is therefore very hot.

- **A contaminated heating tongue leads to poor strap joining!**

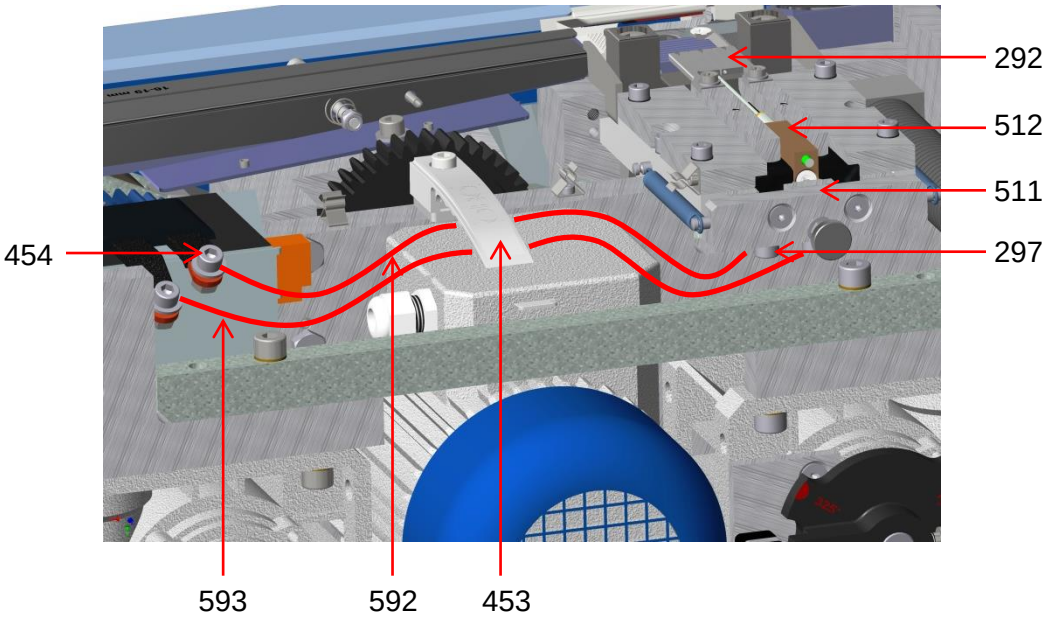
7.3. Cleaning the heating tongue

During a faulty strapping and their rectification it can happen that larger strap residues adhere to the heating, these should be stripped carefully from the heating tongue with a strap section.

Caution!
The molten strap residues are hot and can drip. Do not allow any strap residues to get into the running areas of the heating in the slide guide **(511)** or into other function areas.

Attention!
The melt range of the heating **(512)**, the heating tongue, **may not** be scratched or bent. Only a smooth, even heating tongue guarantees joints with a high and constant joint strength.

- Sometimes it is sufficient to carry out a test strapping where the remaining few strap residues are then stripped from the heating tongue.
- After every malfunction, the heating and complete die area must be checked for cleanliness and correct welding. A **monthly check** of the heating is recommended.
- To exclude possible error sources, the location/position of the weld cables **(592/593)** and their fastenings must be checked after exchanging the heating tongue **(292)** resp heating **(512)**. The screws **(297/454)** and nuts **(456)** must be tightened and the weld cables are to be laid in the arc below the cable clamp **(453)** as shown in the figure below.



7.4. Lubrication notes

All sliding areas, except the self-lubricating DU-bushings and plastic slide bearings are lubricated with customary ball bearing grease between the components.
These are, e.g.:

- cam rollers, rollers, running surfaces of the cam disc 1, (15), the cam disc 3 (12), the cam lever (505) , die, die guide areas, needle bushes, one-way bearing, interlocking of the gearwheels.
- Particularly the lubrication on the running surfaces of the cam discs, the cam lever and on the interlocking of the gearwheels must be controlled **monthly**. If necessary, missing lubricant must be replaced.
- The die running surface on the housing **(554)** are treated sparingly with **Teflon Spray**- The worm gear, all ball bearings, including those in the motors, are lubricated for their lifetime.

Note**!**
In the case of serious dirt accumulation in the environment of the strapping unit it may be advantageous to use a light, commercial spray oil. When using spray oil, it is recommended to check the lubrication at an interval of **2 weeks**.

Attention!
The welding zones of the heating **(512)**, the Vulkolan coating of the counter roller **(405)** and the strap running surface of the transport wheel (343) may **not** come into contact with lubricants.

7.5. Troubleshooting, fault elimination

The following Table is intended to help you with disruptions. It presupposes that the electrical function elements are wired and included programmatically according to the enclosed circuit diagrams and descriptions.

FAULT	CAUSE	REMEDY
Strap is not transported into the channel system,	Friction between the transport wheel **(344)** and the counter-roller **(405)** is too low.	Increase the pressure at the screw compression spring **(55)** (see Chapter 6.4.).
	Strap is not located between the transport wheel **(344)** and the counter roller **(405)**.	Insert strap precisely (see Chapter 4.6.).
	Machine is not in zero position	Bring about the zero position by continuous pressing of the TIP key **S2** (see Chapter 6.1.).
	Distance between the tensioning wheel **(364)** and counter roller **(405)** too small.	Set correct distance **Ld** (see Section 6.4.).
Strap does not reach sensor "Stop strap feed" **B1**.	Friction between the transport wheel **(344)** and the counter-roller **(405)** is too low.	Increase friction by turning the clamp button **(56)** clockwise. (see Section 6.4)
	Faulty setting of zero position of the cam controller	Set zero position correctly. (see Chapter 6.1.).
	The strap is not straight, instead it shows a strong arc **(sabre)**.	Check the strap, permissible sabre maximum 120 mm on 2 m length.
	Strap has broken out of the channel.	Drive cam controller into zero position, e.g. by keeping TIPPING button **S2** pressed. Remove strap, Press START button again.
There is no strap feed after pressing the START button.	Strap fold in the area of the tensioning wheel **(364)** and counter-roller **(405**) on the smooth edge protector **(367/ 380)**. The transport system is blocked by triple overlap (especially with thin straps)	Dismantle front panel **(553)** and front plate **(370)** and remove the strap. Reduce friction between the transport wheel **(344)** and the counter roller **(405)** by turning the clamp button **(56) counter-clockwise**. Check sensor "Stop strap feed“ **B1** for function (see Chapter 6.8.).
Strap retraction is carried out with reduced speed.	Friction between the transport wheel **(344)** and the counter-roller **(405)** is too low.	Increase the pressure at the screw compression spring **(55)** (see Chapter 6.4.).

FAULT	CAUSE	REMEDY
After pressing the START button, the formation of the joint is started immediately.	Sensor "Start strap tension" **B2** is incorrectly set and permanently occupied.	**Reset** sensor "Start strap tension" **B2** (see Chapter 6.5.).
	Sensor "Start strap tension“ **B2** is defective.	Exchange sensor "Start strap tension" **B2** .
Forming the joint is triggered before the strap tension is actioned (loose loop)	Sensor "Start strap tension“ **B2** is not set precisely.	**Reset** sensor "Start strap tension" **B2** (see Chapter 6.5.).
Strap end is not clamped adequately, the strap slips	Die I **(501)** soiled.	Clean interlocking of die I (501) with a fine brass brush
	Gap dimension between counter-plate **(508/522)** and die I **(501)** too large.	Change clamping height **H1** on the counter-plate (see Chapter 6.6)
	Interlocking of die I (501) is worn	Replace die I **(71)** . Enquire service instruction K8000 **Order No. 76480007000**
Strap splices during tensioning process in longitudinal direction	Strap tension for used strap, resp. package set too high	Reduce tensioning time **t1** in the machine control. Note: Abrasion or strap fibres are located in the area of the strap guide Remove front plate (1016) and remove strap remains
Strap is not cut off	Blade is worn	Exchange blade **(94)**.
	Cutting gap between blade (94) and die I (501) too large.	Check cutting gap and reset by means of equalizing sheet 3 (96).
	Cutting edge at die I **(501)** worn or defective.	Exchange die I **(501)**. **Reset die I (501), possibly set cutting gap (see Chapter 6.9).**
Strap is not or inadequately welded.	Heating **(512)** is defective.	Exchange heating **(512)**.
	Power supply on the heating tongue is loose or broken (loose contact or short circuit).	Fasten cable or exchange heating **Attention!** The supply line of ultra flexible cable must be clear. When moving the heating the cables must not touch anywhere or be jammed anywhere.
	Temperature at the heating tongue **(292)** too low.	Set temperature to the strap quality used.

FAULT	CAUSE	REMEDY
Strap is not or inadequately welded.	Gap dimension between counter-plate **(508/522)** and die III **(503)** too large.	Change clamping height **H1** on the counter-plate (see Chapter 6.6) If necessary, exchange pressure plates **(205/ 210)** version on the counter-plate.
After the strapping a cam lever **(505)** does not return to its starting position on the cam disc 1 **(15).** The joining mechanism is blocked.	Rubber damper **(138)** defective, resp. worn.	Replace rubber damper **(138)**. Enquire service instruction K8000. **Order o. 76480007000**
	Clamping force at die I **(501)** or die II **(502)** too high.	Tip cam controller on the machine control backwards (clockwise) Cam controller is lifted /released Set strap thickness at joining unit. Increase gap dimensions **L1** or **L2**.

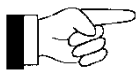
7.6. Restarting the machine after troubleshooting

If the strapping process was interrupted **(fault)** or the **OFF button** actuated, the machine must be restarted in zero position of the cam controller after removing the failure reason .

For this purpose it must be ensured that all coverings are mounted and all safety functions are in force.

If the strapping head was switched completely current-free for troubleshooting, the **heating up time (approx.1 min)** of the heating **(512)** must be waited for after switching on the main switch.

- Switch on main switch (the heating is supplied with power)
- If necessary drive cam controller to zero position (hold **Service button S2**).
- Remove cut off strap.
- Actuate **START button** on the operator panel (strap feed)
- If necessary wait for heating up of the heating.
- Actuate **START button** again (start of strapping cycle) or **(A)**
- For further strappings only actuate the **START button** or **(A)**.

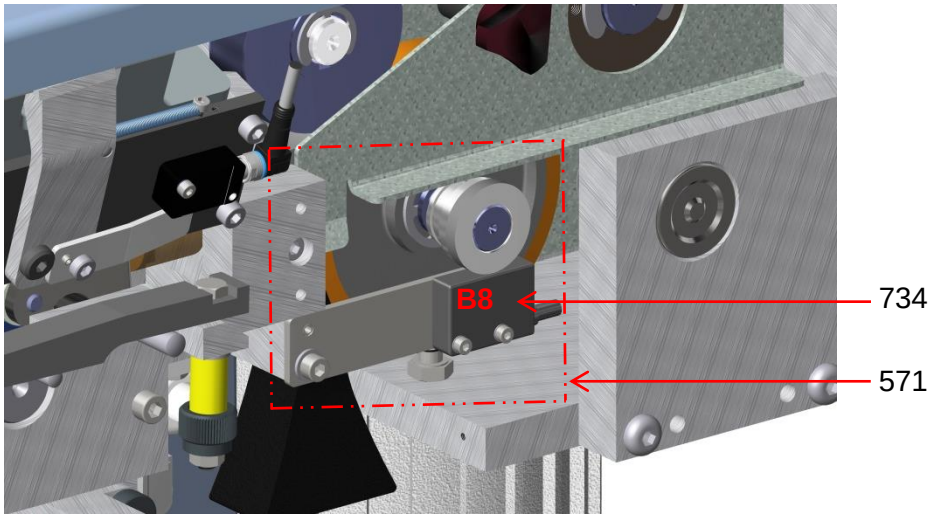


Note! (A)
With fully automatic strapping systems with interlinked transport, **automatic operation** is switched on at this point. Then the strapping head receives its start signal from the transport system when the package is in strapping position.

8. Special equipment

8.1. Re-feed function (Optional)

No more work interruption due to jammed strap.
The re-feed function provides new strap automatically if a faulty feed is identified. The position sensor **(571)** is located inside the unit.



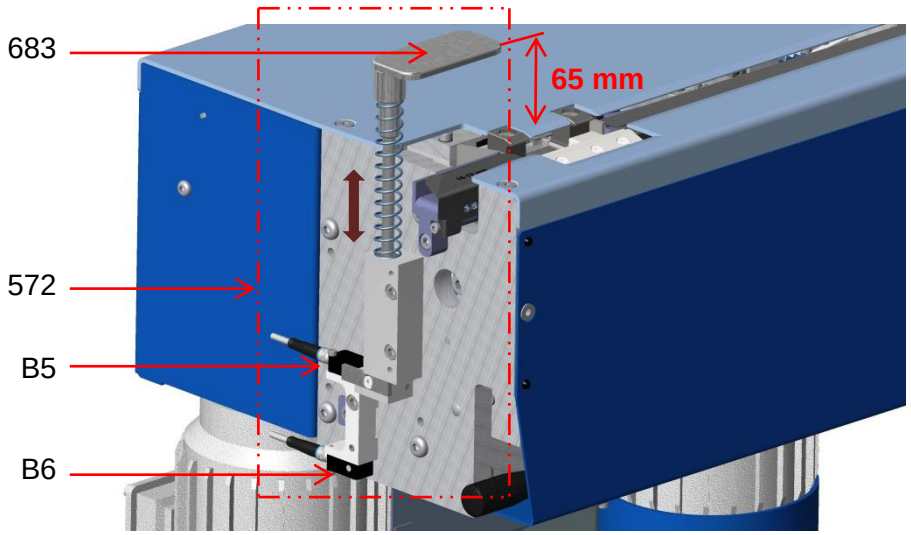
Attention!
Wiring is conducted according to circuit diagram BI15048-02 /-01; sheet 9.
The data for parametrising, resp. programming the magnet strap sensor **B8 (734)** are available from BiNaTec.

Deliverable upgrade:

- Re-feed tensioning unit - **Order No. 76480022050**

8.2. Head shut-down (Optional)

The head shut-down **(572)** with two switch points enables identification of the packages in front of and on the unit. The plunger **(683)** of the unit is close to the centre of the joining unit. There is no cumbersome positioning of the unit to the packaged goods



Attention!
Wiring is conducted according to circuit diagram BI15048-02 /-01; sheet 8.
The data for parametrising, resp. programming the sensors "Head shut-down“ **B5/ B6** are available from BiNaTec.

Deliverable upgrade:

- Head shut-down - **Order No. 76480007010**

8.3. Climbing package (optional)

The climbing package is a floating storage for K8000 strapping heads. This storage enables optimal strap tensioning values on the package. The pre-tension force of the head movement is generated by a compression spring > 70 kg.

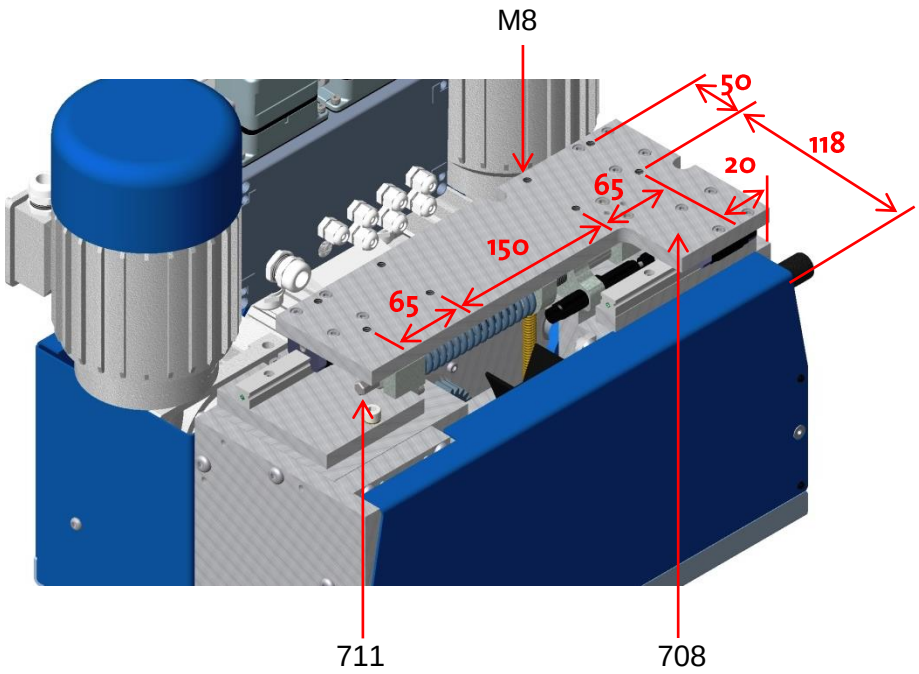
To place the plastic strapping band correctly around the package, it is necessary to adjust the counterforce for the climbing movement to the strapping situation. The counterforce can be adjusted via the spindle **(711)**. Turning clockwise increases the force, turning counter-clockwise reduces the force.

Attention!
Provide room for he climbing movement on the machine channel system, possibly install movable channel flap The stroke of the climbing movement can be limited by mounting a limit stop

Attention!
Incorrectly designed pre-tension forces and climbing paths lead to:

- loose strappings
- Tension motor
- Joining damage
- Counter-plate damage

To mount the strapping head on the machine frame, eight **M8-threaded holes are located on the underside of the climbing package (708) .**

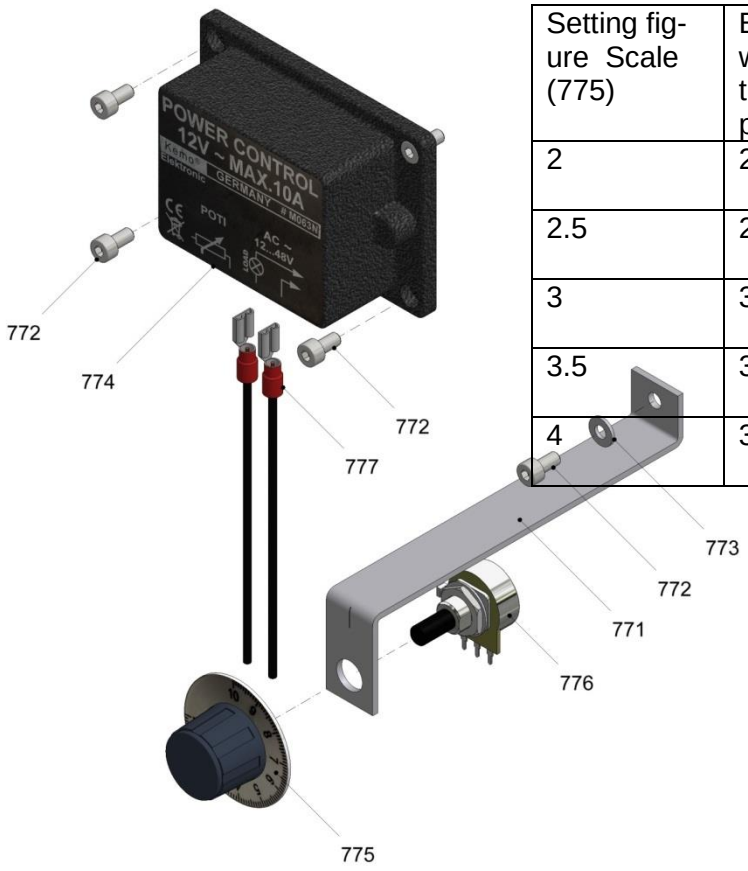


Deliverable upgrade:

- Climbing package - **Order No. 76480071010**

8.4. Temperature control (optional)

The K8000 temperature control is comprised of a dimmer (power control) **(774)** and a potentiometer. The module controls the melt temperature on the heating tongue on the head infinitely variable. Both components are installed in the external machine control with the separately available power supply. The welding temperature is set on the rotary knob **(775)** of the potentiometer **(776)**::



Setting figure Scale (775)	Base current welding transformer primary side	Welding temperature Heating tongue
2	2.2 A	approx-350°C
2.5	2.6 A	approx-390°C
3	3.0 A	approx-460°C
3.5	3.4 A	approx-490°C
4	3.6 A	approx-550°C

Attention!
The optimal setting is dependent on the strap thickness and strap quality, as well as the location-specific environmental and wind conditions.

Note!
The cables to the transformer and to the connected load should be at least 0.75 mm^2 In the case of greater loads (max.10 A) the module with the aluminium base plate must be installed on a larger cooling surface (e.g. a metal plate approx. 15 x 15 x 0.5 cm) You must dimension the cooling surface so that the aluminium base plate of the module does not get hotter than 70°C.

Deliverable conversion:

- Temperature control - **Order No. 76480008010**

Power supply of the heating with temperature control

The voltage conversion in the external control must be carried out with the help of a control transformer which has several terminals for 30 V/AC to 40 V/AC on the secondary side so that possible voltage losses can be balanced by reconnecting. In addition, the following function modules must be provided in the control to regulate the heating on the head.

- Circuit breaker to secure the control transformer.
- two coupling relays to switch from basic / resp. clean temperature
- Circuit breaker to secure the feed of the welding transformer on the head
- Ampere meter to measure the power of the basic / resp. clean temperature.

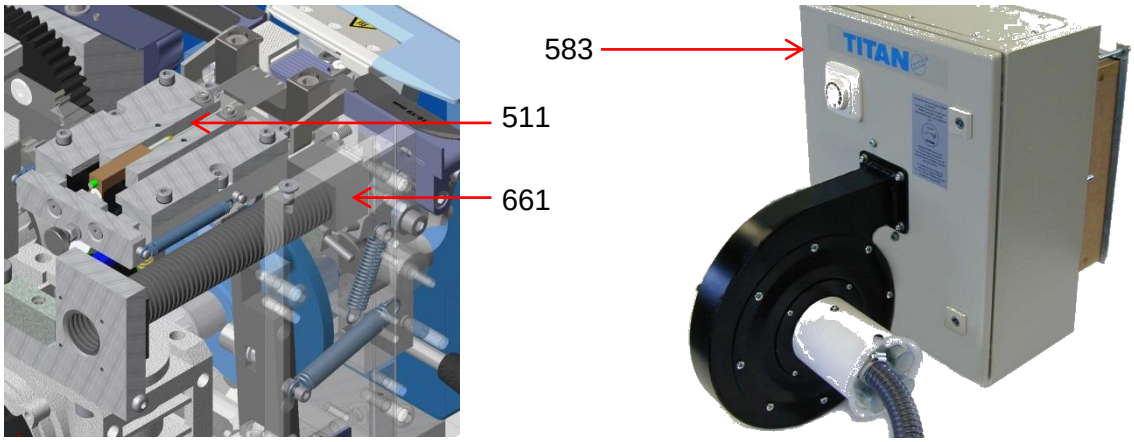
Deliverable additional devices:

- Power supply for temperature control - **Order No. 76480008040**

8.5. Extractions (optional)

Intake manifold with extraction compl.

By installing the intake manifold **(661)** on the slide guide **(511)** the connection of our extraction compl. **(583)** is enabled. The extraction of the vapours takes place without impairment (deposits) of other head parts. The extracted vapours are then passed into the circulating air via a compact filter (activated carbon + filter mats).

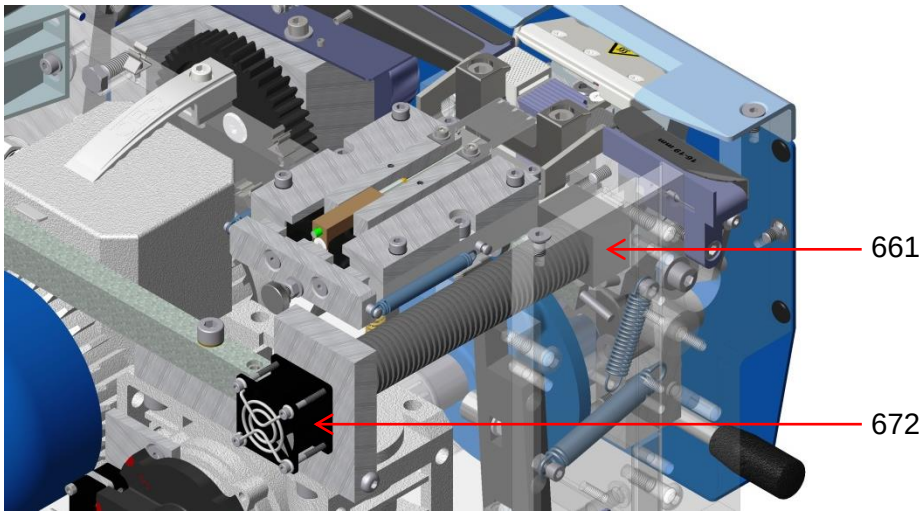


Deliverable upgrade:

- Extraction - **Order No. 76480005010**

Intake manifold with extraction fan

Here, the vapours are passed, resp. swirled into the circulating air via an extraction fan **(672)**.



Note!
Smoke transports heat! When using one of the extractors, heat is withdrawn from the heating tongue. The welding temperature should be increased by approx. 30°.

Deliverable upgrade:

- Extraction fan - **Order No. 76480005020**

9. Installation declaration

Erklärung für den Einbau einer unvollständigen Maschine

im Sinne der Richtlinie für Maschinen 2006/42/EG, Anhang II B

Der Hersteller

TITAN Umreifungstechnik GmbH & Co.KG
Berliner Straße 51-55

58332 Schwelm

erklärt hiermit, dass der nachstehend beschriebene elektrische Umreifungskopf für Kunststoffband

Typenbezeichnung:	K8000
Seriennummer:	48 0001

soweit es vom Lieferumfang her möglich ist, den grundlegenden Anforderungen der folgenden Richtlinien entspricht.
(Welche Anforderungen erfüllt wurden, siehe Anhang)

Maschinenrichtlinie 2006/42/EG
EMV-Richtlinie 2004/108/EG

Angewandte harmonisierte Normen, deren Fundstelle im Amtsblatt der EU veröffentlicht ist:

EN ISO 12100:2011-03	Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung
EN 1010-1:2011-06	Sicherheit von Maschinen - Sicherheitsanforderungen an Konstruktion und Bau von Druck- und Papierverarbeitungsmaschinen - Teil 1: Gemeinsame Anforderungen
EN 1010-3:2010-06	Sicherheit von Maschinen - Sicherheitsanforderungen an Konstruktion und Bau von Druck- und Papierverarbeitungsmaschinen - Teil 3: Schneidemaschinen
EN 60204-1/Ber1:2010-05	Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen

Ferner erklärt er, dass die speziellen technischen Unterlagen für diese unvollständige Maschine nach Anhang VII Teil B erstellt wurden und verpflichtet sich, diese auf begründetes Verlangen den Marktaufsichtsbehörden in digitaler Form zu übermitteln.

Die Inbetriebnahme der unvollständigen Maschine wird so lange untersagt, bis die unvollständige Maschine in eine Maschine eingebaut wurde, die den Bestimmungen der EG-Maschinenrichtlinie entspricht und für die eine EG-Konformitätserklärung gemäß Anhang II A vorliegt.

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen:

TITAN Umreifungstechnik GmbH & Co. KG
Berliner Strasse 51-55
58332 Schwelm

Schwelm, den 25.10.2016

Peter Wilhelm Lenzen
Geschäftsführer

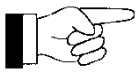
Anhang

Anforderungen des Anhangs I der Richtlinie 2006/42/EG, die eingehalten wurden. Die Nummern beziehen sich auf die Abschnitte von Anhang I:

1.1.2., 1.1.3., 1.1.5., 1.2.1., 1.2.2., 1.2.3., 1.2.4.1., 1.2.4.3., 1.2.6., 1.3.1., 1.3.2., 1.3.4., 1.3.7., 1.3.8.2., 1.4.1. (teilweise), 1.4.2.1. (teilweise), 1.5.1., 1.5.2., 1.5.8., 1.5.10., 1.6.1., 1.6.2., 1.6.3., 1.6.4., 1.6.5., 1.7.1., 1.7.2., 1.7.3., 1.7.4.1., 1.7.4.2., 1.7.4.3.

10. Further documents

1.	Spare parts list strapping head **K8000**	E48 K8000 DE 43/16
2.	**K8000** terminal assignment with temperature regulation	BI15048-02 (Standard)
3.	**K8000** terminal assignment with temperature control	BI15048-01 (Optional)



Note!
The spare parts list, resp. terminal assignment of the K8000 have their own page numbering.