KAMMANN

MASCHINENBAU GMBH

Technical description and operating instructions

translation from original instructions

Mach. type:	**4.23.14**
Mach. No.:	**11519**
Year of building:	**2011**

KAMMANN MASCHINENBAU GMBH
D • 32549 Bad Oeynhausen • Bergkirchener Str. 228 • Fon +49 (0) 5734 5140-0
Fax +49 (0) 5734 5140-5130 • mail@kammann.de • www.kammann.de

Table of contents

chapter		page
01.01.32c	Introduction	01.01.32c1
01.02.01	Project drawing	01.02.01.1
01.04.58	System description	01.04.58.1
01.05.15	Technical passport, transportation, set-up	01.05.15.1
01.06.61a	Fundamental safety instructions	01.06.61a1
01.10.56	Description of the operating elements	01.10.56.1
01.11.54a	Operating the machine	01.11.54a1
01.21.17a	Maintenance and service	01.21.17a1
01.34.00a	Protective devices	01.34.00a1
02.02.04a	Drive turn table	02.02.04a1
03.12.01	Sorting disc	03.12.01.1
03.13.00	Rejector	03.13.00.1
03.17.03	Sorting container, left machine	03.17.03.1
16.09.00	Infeed system	16.09.00.1
18.04.02	Transport belt (optionaly)	18.04.02.1

list of electric parts
wiring diagrams

01.01.32c Introduction

Before start up

become familiar with the operating manual in order to acquaint yourself with the construction, functions, operation and operating safety of the machine.

Keep this operating manual in a safe place for future reference!

Our machines are constructed and built using the best materials and with the highest possibile quality requirements.
For more information about other products from our company, please contact the sales office.

Kammann Maschinenbau GmbH
Bergkirchener Str. 228 • 32549 Bad Oeynhausen
✆ (05734) 5140–0 • Fax (05734) 5140–5130
E–Mail: mail@kammann.de
web-site: http://www.kammann.de

The entire set-up is designed to meet all current safety requirements, to the extent possible in practice, at the time of production.

Ordering replacement parts

When ordering replacement parts always indicate

Machine type, machine number and article number

Use the attached parts catalogue to determine the individual mechanical parts.

Please get electric replacement parts from the lists of electric deivces.

The attached technical drawings are copyrighted and may not be made available to third parties.

Warning Advice

Please consider warning labels at machine. Please also consider warning advice in operation manual. They point out special risks:

DANGER

Kind and source of danger
- Results: severe injuries resp. death
➢ measures

WARNING

Kind and source of danger
- Results: possible severe injuries resp. death
➢ measures

CAUTION

Kind and source of danger
- Results: possible minor injuries
➢ measures

NOTICE

Possible material damages

ca. 1640
900
ca.2500
ca. 1727
mech. Aufstellen
mechanical bottle erection
400
elektr. Hauptanschluss
main power supply
ca.3370
high outfeed
ca. 1100
ca. 2300
KAMMANN
K09-V
UV
Vakuumgebläse
vakuum fan
Printcheck
printcheck
Abluft
aust
nlaufrichtung
ating side

01.04.58 System description

The universal feeding system for screen printing and filling machines 4.23.14 is used for fully automatic unscrambling of round, oval, square and rectangular plastic bottles.

- unscrambling of various bottle shapes and sizes without the necessity of changing parts
- the ideal addition to high speed automatic screen printing machines and filling machines for plastic bottles
- quick change over to other articles via central adjustments
- specially coated materials guarantee scuff free handling of articles in the sorting drum and on the exit track
- optimum accessibility
- quiet running
- certificate of safety
- conform to CE standards

The machine is additionally equiped with:

- article stabilization with transfer of the articles – standing in upright position – onto a discharge conveyor
- article discharge conveyor, synchronously driven, length approx. 2.000 mm
- bottle queue surveillance with control for slow-motion and machine stop
- frequency controlled drive motors

  SPS-control with free programmable adjustment data for ten different articles
- safety shielding

01.05.15 Technical passport, transportation, set-up

machine type	4.23.14
machine number	11
year of construction	2011
dimensions	dimensions ref. to project drawing
weight	approx. 750 kg
electric current	see identification plate of the machine and electrical manual
drive	main drive sort key rejector feeding conveying
unscrambler output	30 ml approx. 95 min^{-1} 50 ml approx. 80 min^{-1}
dimensions of the articles	diameter 30 – 100 mm width 35 – 100 mm length min. 2 × diameter length max. approx. 300 mm different dimensions are subject to examination of samples
noise emission	According to DIN 45635 part 27 noise emission measurements were carried out (measuring device RETEN Electronic RL 343). The ambient noise was 66 dB(A). Operation without articles 70 dB(A), operation with HDPE-bottles 80 dB(A).

01.05.15 Technical passport, transportation, set-up

Environmental

Take care to stay within the following environmental conditions:

Storage temperature	– 25°C bis + 70°C
Operating temperature	+15° C bis +40° C

The immediate surroundings of the machine must be free of electrically conductive pollutants (e.g. acidic or alkaline liquids, corrosive substances, salts and metal vapours etc.).

Setting up the machine

After removing the packaging, transport the machine with a fork lift or a lift truck to its working place.

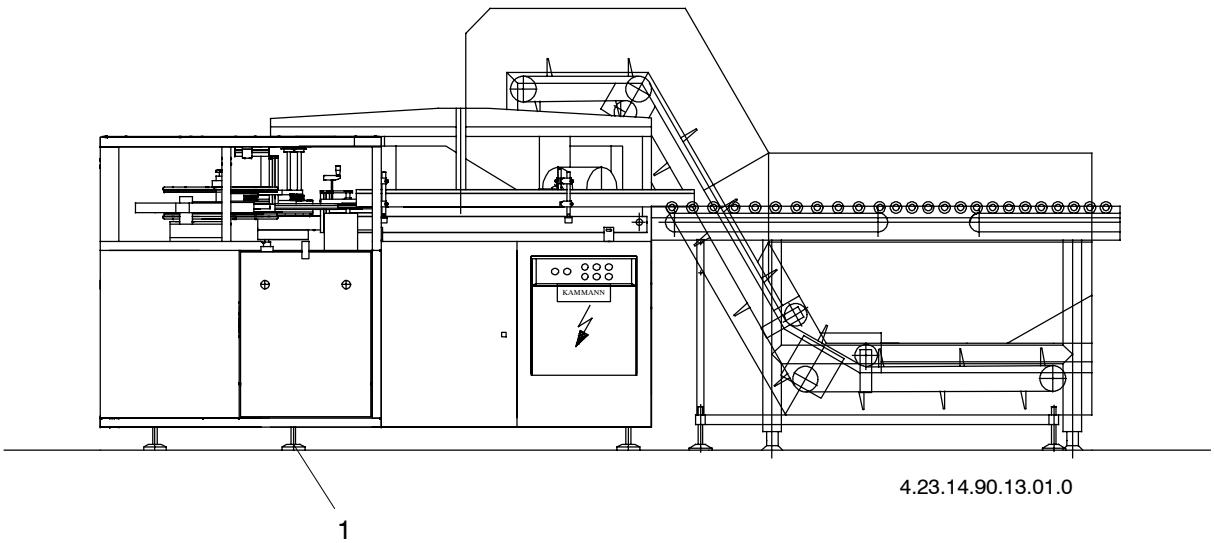


Do not damage the electrical power cable !

NOTICE

Never suspend the machine on shafts or other parts of the machine !

Place the machine on an even bearing ground. Use the **levelling screws (1)** for levelling the machine with a water-level. The adjustment screws of the discharge system are set after the main machine has been properly installed.



01.05.15 Technical passport, transportation, set-up

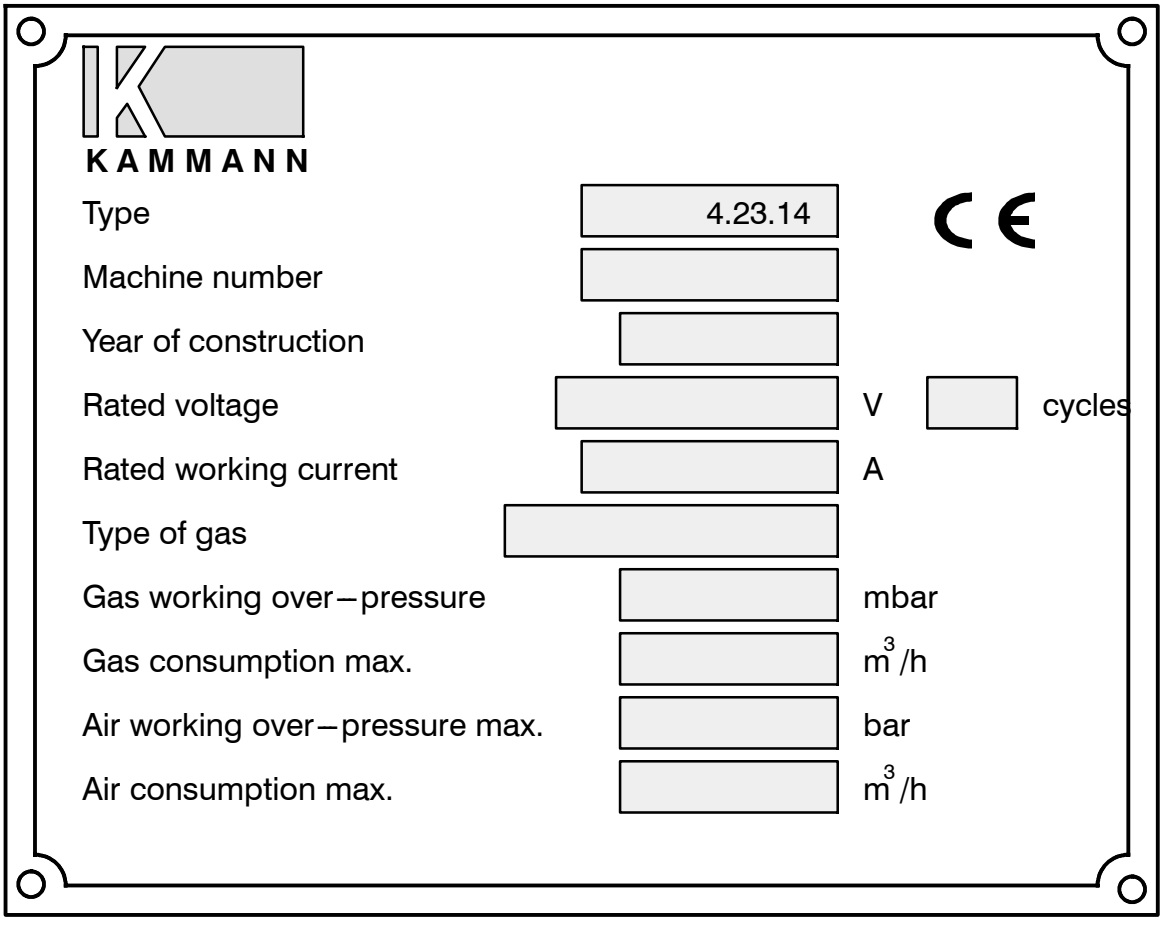
After approx. 14 days, check the proper position again and do corrections, if necessary.
Fixing the machine to the floor is not necessary.
During transport the machine is protected against corrision by means of an oil film, which may be removed with turpentine.

After receipt of the machine, please check if the shipment is complete and if there are any transport damages.
If there is any transport damage, give us a detailed report about the damage. In case of transport damages, please inform the freight forwarder immediately.

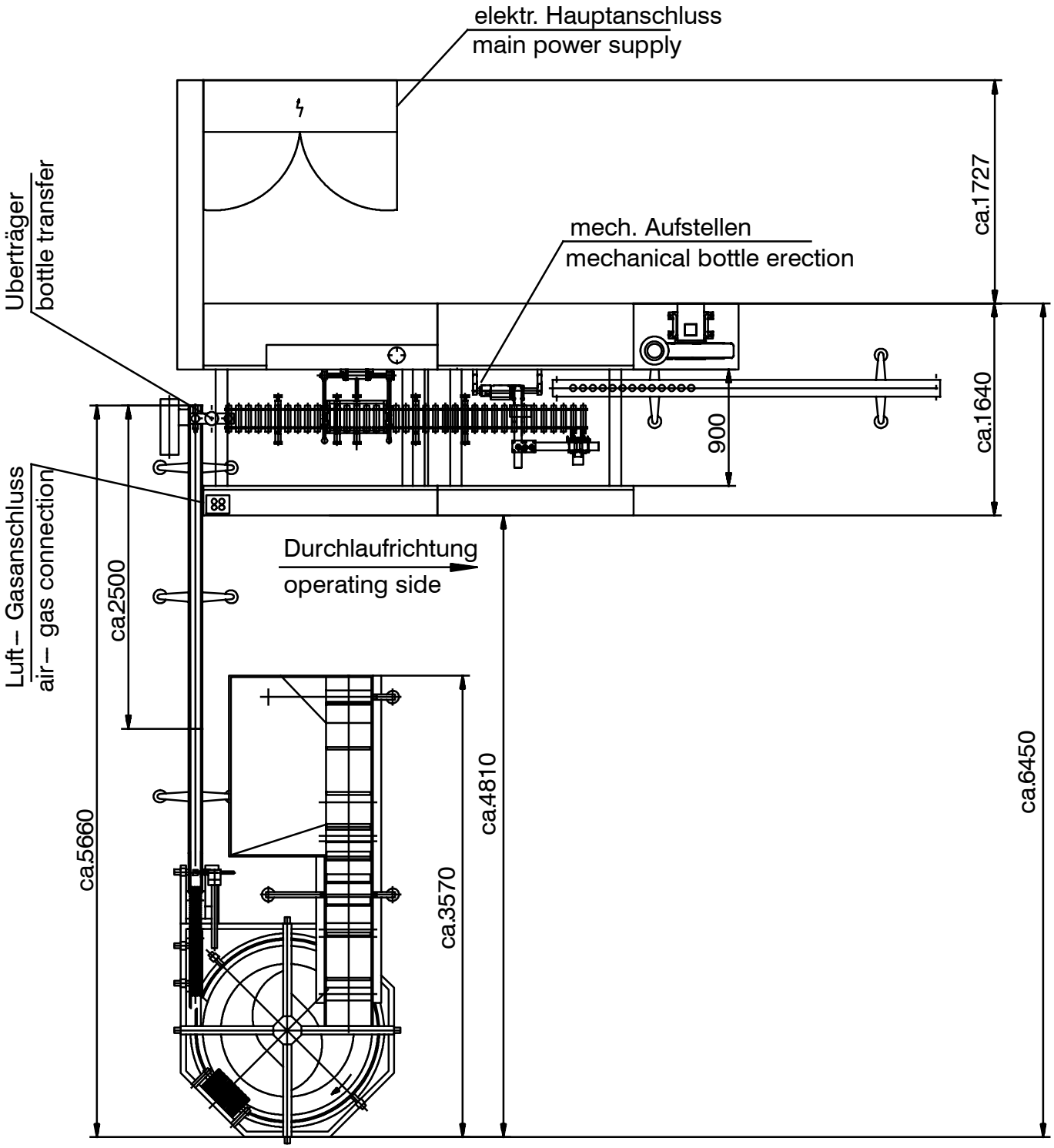
Identification plate

All importent data of your new machine is mentioned on the identification plate, located on the front of the machine.

Please fill in the technical data of your machine into the identification plate. Keep this information at hand so you can identify your machine to us.



01.05.15 Technical passport, transportation, set-up



409229031731

01.06.61a Fundamental safety instructions

Basic operation and designated use of the machine

- The machine has been built in accordance with state-of-the-art standards and the recognized safety rules. Nevertheless, its use may constitute a risk to life and limb of the user or of third parties, or cause damage to the machine and to other material property.

- The machine must only be used in technically perfect condition in accordance with its designated use and the intructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine. Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.

- The machine is designed exclusively for unscrambling of round, oval, square and rectangular plastic bottles in accordance with the machine passport. Using the machine for purposes other than those mentioned above is considered contrary to its designated use. The manufacturer cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user.
  Operating the machine within the limits of its designated use also involves observing the instructions set out in the operating manual and complying with the inspection and maintenance directives.

Organizational measures

- The operating instructions must always be at hand at the place of use of the machine.

- In addition to the operating instructions, observe and instruct the user in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection.
  These compulsory regulations may also deal with the handling of hazardous substances, issuing and/or wearing of personal protective equipment, or traffic regulations.

01.06.61a Fundamental safety instructions

- The operating instructions must be supplemented by instructions covering the duties involved in supervising and notifying special organizational features, such as job organization, woking sequenc
- Personnel entrusted with work on the machine must have read the operating instructions and in particular the chapter on safety before beginning work. Reading the instructions after work has begun is too late. This applies especially to persons working only occasionally on the machine, e.g. during setting up or maintanance.
- Check – at least from time to time – whether the personnel is carrying out the work in compliance with the operating instructions and paying attention to risks and safety factors.
- For reasons of security, lomg hair must be tied back or otherwise secured, garments must be close-fitting and no jewellery – such as rings – may be worn. Injury may result from being caught up in the machinery or from rings catching on moving parts.
- Use protective equipment wherever required by the circumstances or by law.
- Observe all safety instructions and warnings attached to the machine.
- See to it that safety instructions and warnings attached to the machine are always complete and perfectly legible.
- In the event of safety-relevant modifications or changes in the behaviour of the machine during operation, stop the machine immediately and report the malfunction to the competent authority/person.
- Never make any modifications, additions or conversions which might affect safety without the supplier's approval. This also applies to the installation and adjustment of safety devices and valves as well as to welding work on load-bearing elements.

- Spare parts must comply with the technical requirements specified by the manufacturer. Spare parts from original equipment manufacturers can be replied to do so.
- Never modify the software of programmable control systems.
- Adhere to prescribed intervals or those specified in the operating instructions for routine checks and inspections.
- For the execution of maintenance work, tools and workshop equipment adapted to the task on hand are absolutely indispensable.
- Make sure that the environment of the machine is clean and freely accessible.
- All safety doors must be freely accessible and able to be opened.
- The switch cabinet must be freely accessible and able to be opened.
- All emergency stop switches and the main switch must be freely accessible and able to be operated.

Selection and qualification of personnel; basic responsibilities

- Any work on and with the machine must be executed by reliable personnel only. Statutory minimum age limits must be observed.
- Employ only trained or instructed staff and set out clearly the individual responsibilities of the personnel for operation, set-up, maintenance and repair.
- Make sure that only authorized personnel works on or with the machine.
- Define the machine operator's responsibilities – also with regard to observing traffic regulations – giving the operator the authority to refuse instructions by third parties that are contrary to safety.

- Do not allow persons to be trained or instructed or persons taking part in a general training course to work on or with the machine without being permanently supervised by an experienced person.
- Work on the electrical system and equipment of the machine must be carried out only by a skilled electrician or by instructed persons under the supervision and guidance of a skilled electrician and in accordance with electrical engineering rules and regulations.

Safety instructions governing specific operational phases

Standard operation

- The workplace is confined to the front of the machine and the operating panel.
- Avoid any operational mode that might be prejudicial to safety.
- Take the necessary precautions to ensure that the machine is used only when in a safe and reliable state.
  Operate the machine only if all protective and safety-oriented devices, such as removable safety devices, emergency shut-off equipment, sound-proofing elements and exhausters, are in place and fully functional.
- Check the machine at least once per working shift for obvious damage and defects. Report any changes (incl. changes in the machine's working behaviour) to the competent organization/person immediately. If necessary, stop the machine immediately and lock it.
- In the event of malfunctions, stop the machine immediately and lock it. Have any defects rectified immediately.
- During start-up and shut-down procedures always watch the indicators in accordance with the operating instructions.
- Before starting up or setting the machine in motion, make sure that nobody is at risk.

Special work in conjunction with utilization of the machine and maintenance and repairs during operation; disposal of parts and consumables

- Removal of faults is possible without danger when the machine is standing still.
- Cleaning the machine is only possible when the machine is not in operation.
- Observe the adjusting, maintenance and inspection activities and intervals set out in the operating instructions, including information on the replacement of parts and equipment. These activities may be executed by skilled personnel only.
- Brief operating personnel before beginning special operations and maintenance work, and appoint a person to supervise the activities.
- In any work concerning the operation, conversion or adjustment of the machine and its safety-oriented devices or any work related to maintenance, inspection and repair, always observe the start-up and shut-down procedures set out in the operating instructions and the information on maintenance work.
- Ensure that the maintenance area is adequately secured.
- If the machine is completely shut down for maintenance and repair work, it must be secured against inadvertent starting by:
  - locking the principal control elements and removing the ignition key and/or
  - attaching a warning sign to the main switch.
- To avoid the risk of accidents, individual parts and large assemblies being moved for replacement purposes should be carefully attached to lifting tackle and secured. Use only suitable and technically perfect lifting gear and suspension systems with adequate lifting capacity. Never work or stand under suspended loads.
- The fastening of loads and the instructing of crane operators should be entrusted to experienced persons

only. The marshaller giving the instructions must be within sight or sound of the operator.

- For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms. Never use machine parts as a climbing aid. Wear a safety harness when carrying out maintenance work at greater heights.
  Keep all handles, steps, handrails, platforms, landings and ladders free from dirt, snow and ice.

- Clean the machine, especially connections and threaded unions, of any traces of oil, fuel or preservatives before carrying out maintenance/repair. Never use aggressive detergents. Use lint-free cleaning rags.

- After cleaning, examine all fuel, lubricant and hydraulic fluid lines for leaks, loose connections, chafe marks and damage. Any defects found must be rectified without delay.

- Always tighten any screwed connections that have been loosened during maintenance and repair.

- Any safety devices removed for set-up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work.

- Ensure that all consumables and replaced parts are disposed of safely and with minimum environmental impact.

In case of emergency

- In case of danger, press the nearest emergency stop switch. The machine will stop immediately. After removal of the danger, disengange the emergency stop switches with a slight twist.

- The turntable may be turned by hand when the machine is stopped.

Warning of special dangers

Electric energy

- Use only original fuses with the specified current rating. Switch off the machine immediately if trouble occurs in the electrical system.
- Work on the electrical system or equipment may only be carried out by a skilled electrician himself or by specially instructed personnel under the control and supervision of such electrician and in accordance with the applicable electrical engineering rules.
- If provided for in the regulations, the power supply to parts of machines and plants, on which inspection, maintenance and repair work is to be carried out must be cut off. Before starting any work, check the de-energized parts for the presence of power and ground or short-circuit them in addition to insulating adjacent live parts and elements.
- The electrical equipment of machines is to be inspected and checked at regular intervals. Defects such as loose connections or scorched cables must be rectified immediately.
- Necessary work on live parts and elements must be carried out only in the presence of a second person who can cut off the power supply in case of danger by actuating the emergency shut-off or main power switch. Secure the working area with a red-and-white safety chain and a warning sign. Use insulated tools only.
- Before starting work on high-voltage assemblies and after cutting out the power supply, the feeder cable must be grounded and components, such as capacitors, short-circuited with a grounding rod.

Noise

- The middle noise level exceeds 77 dB(A).

Oil, grease and other chemical substances

- When handling oil, grease and other chemical substances, observe the product-related safety regulations.
- Be careful when handling hot consumables (risk of burning or scalding).

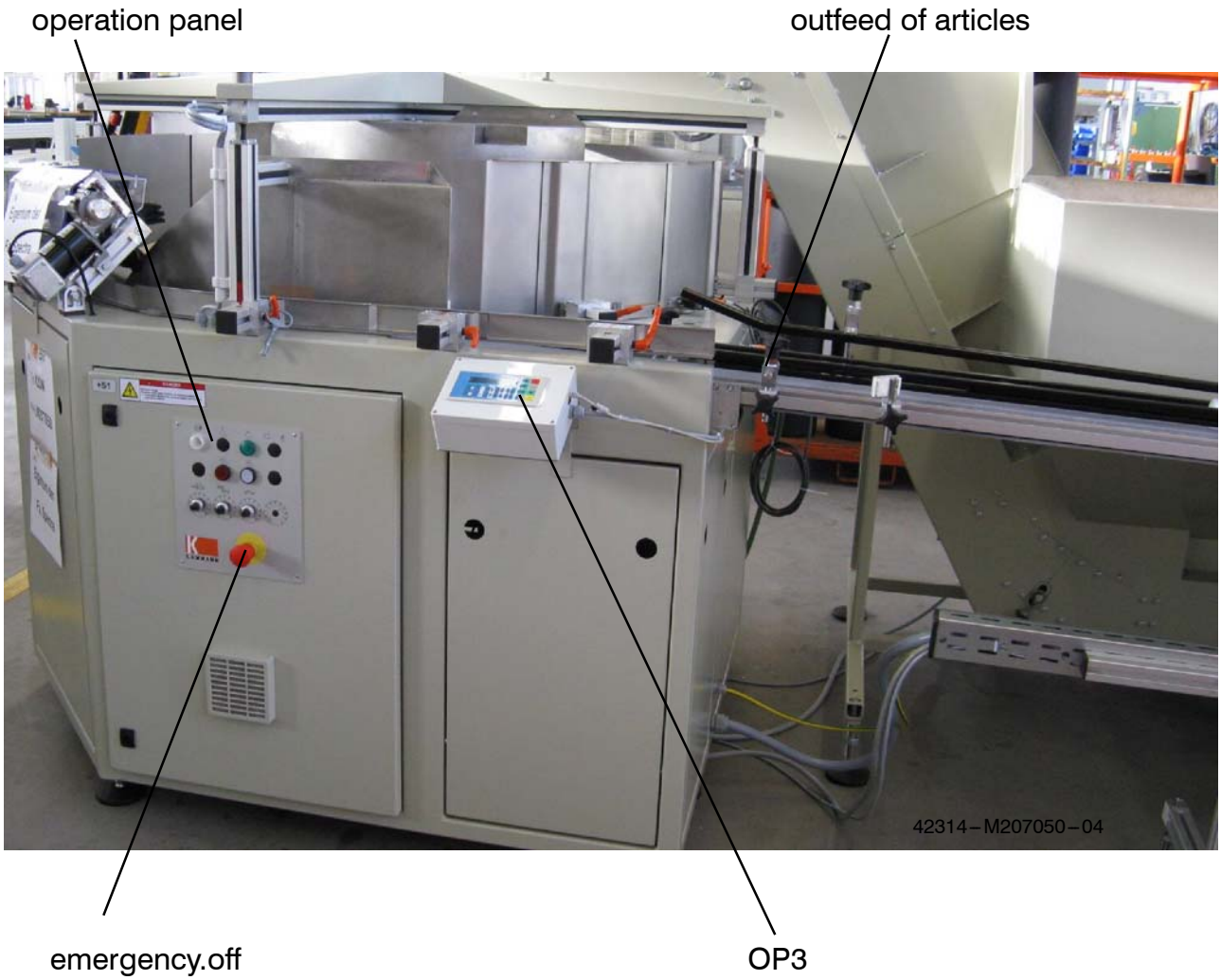
01.10.56 Description of the operating elements

general: The operation elements of the K 23 N–sorting machine are all located on the switch cabinet door at the article outfeed.

function symbols: The functions are shown by symbols. There are pressure keys and regulators. The production run is pre–programmed by the manufacturer and can be corrected during the machine operation.

emergeny stop: The emergency–stop button has always to be freely accessible.

operation field OP3: An additional operation by OP 3 is optional and will be explained in a different chapter of this manual.



01.10.56 Description of the operating elements

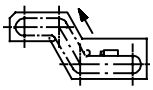


OP 3

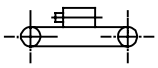


operation K 23 N

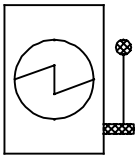
01.10.56 Description of the operating elements



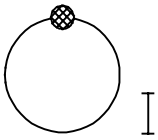
slow/high (−/+) speed for drive of infeed belt



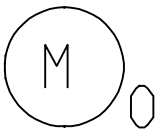
slow/high (−/+) speed for discharge belt



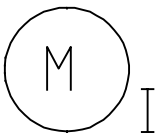
main-switch-on control



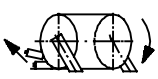
ready-to-start control



main drive OFF



main drive ON

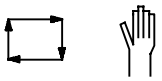


speed for rejector



speed for sorting disc

01.10.56 Description of the operating elements



setting ON

01.11.54a Operating the machine

General

The operators of the machine should be given an appropriate mechanical, electrical and procedural instruction, to better understand the mechanics and the function and operating of the electronic components of the machine.

This instruction can also taked place at our factory. Our experienced staff can provide many useful practical tips.

The machine is set–up for a customer specific article at time of delivery. A protocol with the set–up values for the article is supplied with the machine.

NOTICE

Please observe the following points prior to operation:

- The connectors in the electrical system may loosen during transport.
  To avoid loose contacts, check all connections and screws and re–tighten if necessary.
- Power supply.
  Check the power supply at the main power connection at the cabinet on the front side of the machine.
- Check voltage and compare to type plate.
- After switching on the unit with the main switch of the following machine, a control lamp will indicate if the system is supplied with power.
- Briefly run the machine to test the turning direction.
  If needed, change two phases.
- Learn how to use the operating elements at the operating panels for quick reaction in case of faults.
- Check and test the safety devices.
- Bring the Emergency–Stop switch out of rest position by twisting it slightly.

01.11.54a Operating the machine

switching the machine on

- Main switch of the following machine ”on”.
- Ready–to–Start ”on”.
- Main drive ”on”.

switching the machine off

- Main drive ”off”.
- Ready–to–Start ”off”.
- Main switch of the following machine ”off”.

01.21.17a Maintenance and service

Clean the coated metal pieces with a suitable cleaning agent (do **not** use cleaning petrol) and a soft cloth. If rust has developed despite the protective coating, remove it immediately. Protect the metal with an acid-free oil or fat.

Check all components and electrical connections for defects and damages.

Repair or replace all defect parts immediately.

Pay particular attention to the safety mechanisms. **These must always be fully functional !**

⚠ WARNING

➢ Switch off the main switch of the machine when conducting maintenance or service work. Attach a note to the operating panel and main switch that informs of the maintenance work and warns operators about switching on the machine.

Substantial maintenance work should only be performed by Kammann service personnel.

maintenance

- Check wear of transport belts and V-belts.
  Clear possible problems.
- Check the friction coating at the drive of the turn table for wear.
- All drives and gears are maintenance-free.
  Change the speed of the Simplabelt-set gears at running motor only.
- The anti-friction bearings are basically maintenance-free.

01.34.00a Protective devices

⚠ CAUTION

➢ The mechanical safety devices such as wire mesh, gates covers and doors must not be removed when the machine is running.

Check the protective devices

- at the beginning of each working turn or shift (interrupted mode)
- once a week (continuous work 3 to 4 shifts)
- after each maintenance or repair
- after each job changing.

Check the following in detail

- prescribed condition,
- prescribed position,
- safe and secure fastening
- proper functioning.

For checking use the **list** on the following pages. Repair all shortages and discrepances before you start up the machine !

In case you observe any faults during machine running, stop the machine and repair the fault !

Do not dismantle any safety sheets. Do not switch off any safety devices or make changes to the machine that may affect the operating safety !



Use the following list for checking. Take a photocopy of this list for regular check–ups. Each item should be controlled for positive funciton.

☐ **Rejector brush**
The rejector brush (2) is protected on three sides (upper

and bottom side, front outside) by covers made from transparent plastics. This covers are screwed in place. There is no danger to fingers and hands due to the soft bristles and safety cover.
Safe adjustment via rocker-clamping lever.

☐ **Electrical switch board**
The electrical switch board (3) is located on the front side of the base frame. This switch cabinet may be opened with appropriate tools only. Access is not required during normal operation. The switch cabinet is clearly detectable and durable marked according to UVV regulations “Sicherheitskennzeichnung am Arbeitsplatz” (VBG 125).

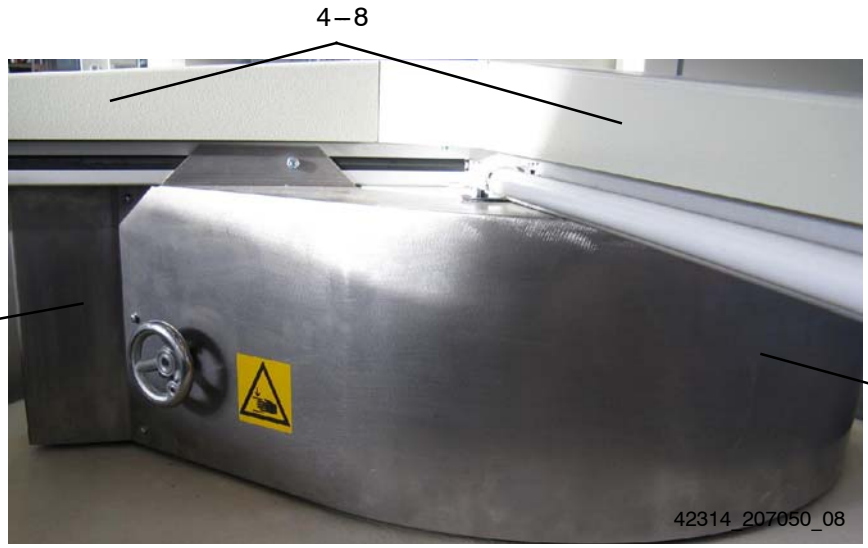
☐ **Chain**
The circular chain for height adjustment or sorting discs is covered by screw-fastened covers (4) – (8). Safe adjustment is possible via hand crank.

☐ **Drive for sorting discs**
The drive for sorting discs is protected by fixed screwed covers (9) and (10). The speed is safely infinitely adjustable. Adjust at running motor only.

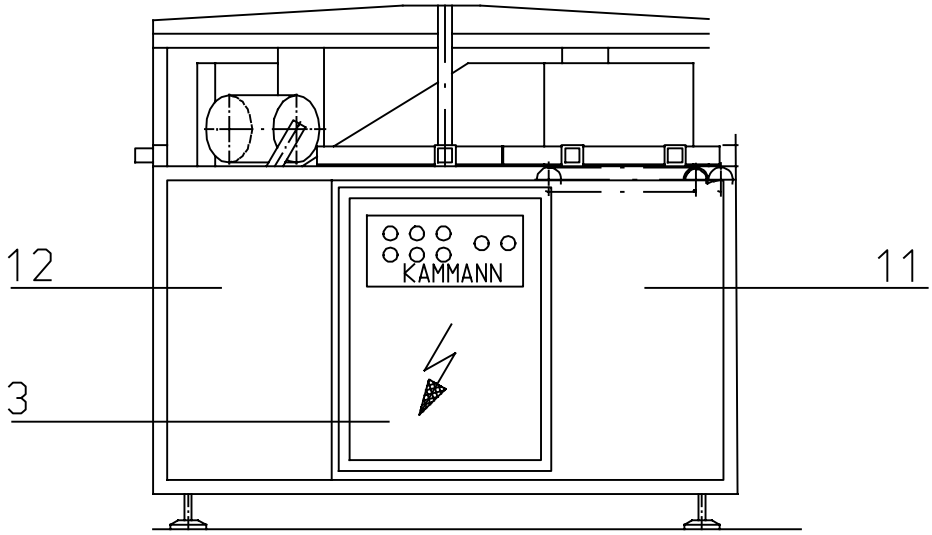
☐ **Drive for the turn table**
The drive for the turn table is located in the base frame. It is protected on all sides due to its mounting position. The screwed covers (11) – (18) are removable with tools only. After loosening the fixing screws the covers tilt from their-protective position. Open the cover sheet (11) to set the speed of the turn table. Adjust at running motor only. In any case reinstall and screw on the cover (11).

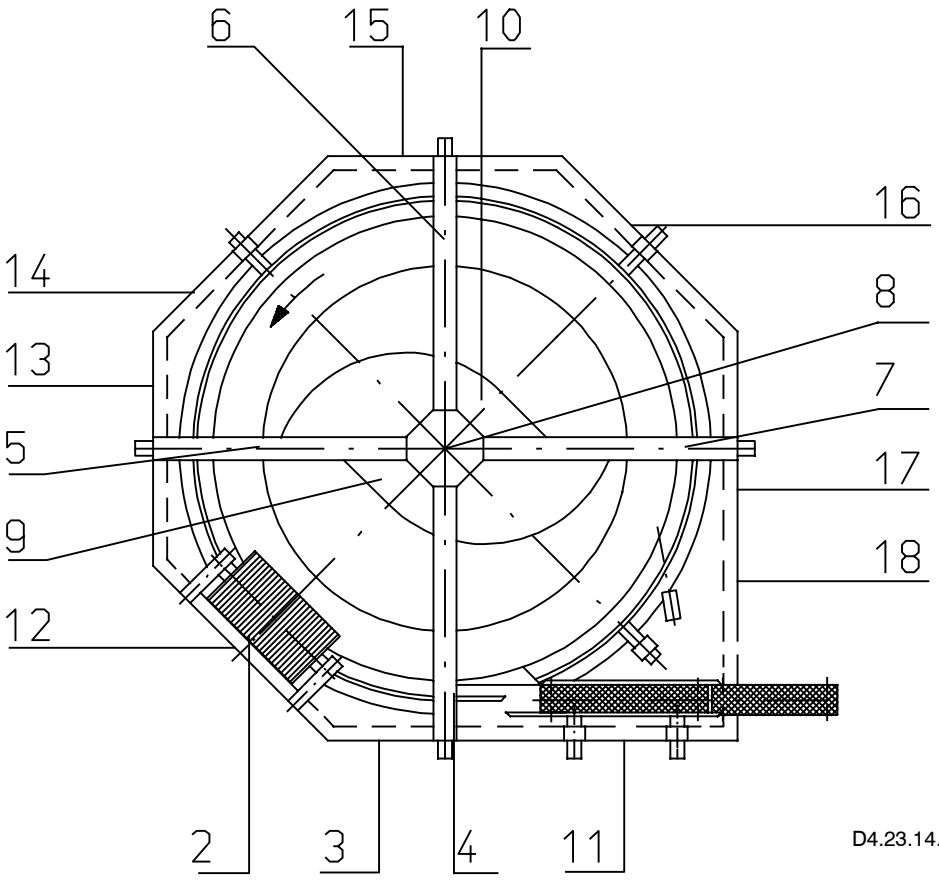
01.34.00a Protective devices





01.34.00a Protective devices





D4.23.14.90.00.05.0

02.02.04a Drive turn table

Simplabelt-compact unit

A Simplabelt compact unit (210) incl. worm gear drives the V-belt gear (220).

friction disc

The V-belt disc (220) rests on the drive shaft of the worm gear with its flanged friction disc (180). The motor plate carries the complete drive unit and is swingable beared on the bearing bolt.

turn table

The friction disc (180) is turned against the turn table (230) and transmits the rotation onto the turn table via friction.

contact pressure

The spring paket (080) gives the required contact pressure. The contact pressure is adjusted by producer via nuts (070) thus that the turn table (230) can be turned manually when the drive is switched off.
Low contact pressure keeps the bearing forces in the worm gear and the wear at friction disc (180) low.



hand wheel

The speed of turn table (230) is set via hand wheel (260).

02.02.04a Drive turn table

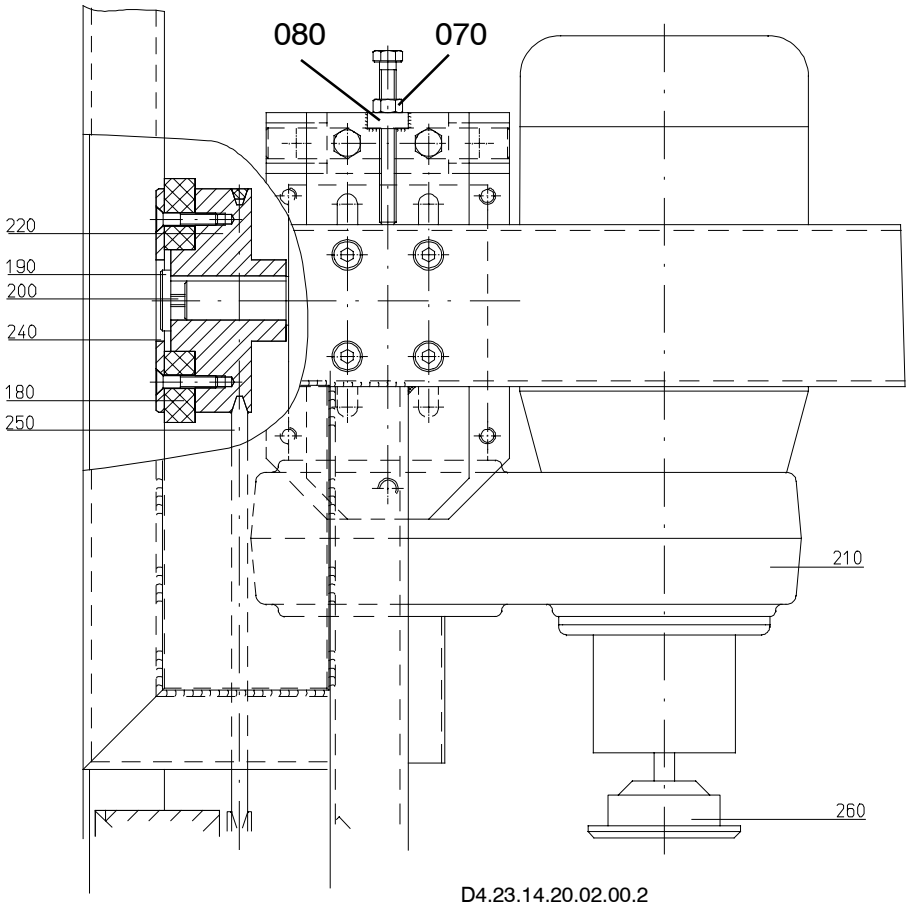
NOTICE

Change the speed at running motor only !

We recommend to match the unscrambler output to the subsequent machine. The optimum is an output that is 10% higher. In this case the unscrambler will not be turned off too often by the subsequent machine.
After setting the speed the cover at the front side of the unscrambler should be closed.

⚠ CAUTION

➢ **It is not allowed to operate the unscrambler while the doors or protection sheets are open or dismantled !**



D4.23.14.20.02.00.2

03.12.01 Sorting disc

Sorting the articles carefully into sorting groove laying in series. The sorting disc (070), the turn table ring (220) and the outer radial adjustable guidings form the sorting groove. The unscrambler is adjusted best if the articles are fed into the sorting groove laying close to each other

sorting disc

The sorting disc is covered with a carpet, to assure smooth sorting of articles. It rotates faster than the turning table ring (220). Articles laying radial on both are aligned tangentially due to differing speeds. Furthermore the centrifugal force carries the articles to the outside of the turn table ring (220).

inside guiding

The inside guiding (440) guides the excess articles that are not sorted. The rejector only pushes them a little to the center of the unscrambler, thus the tangential alignment is maintained. Set the speed of the rejector to slow according to this function. After passing the inside guiding (440) the articles should be sorted laying–down immediately. The speed difference between lower sorting disc (070) and the turn table ring (220) may not be set too big. If the articles tend to tilt, reduce the speed of the sorting discs. Disadvantages of too fast sorting discs are:

- High centrifugal forces throw the article to the outside, may damage the articles and complicate sorting.
- Increase of ram force that can erect short articles. Standing articles have to be ejected and reduce the sorting output.

inside sheet

The appropriate shape of the inside sheet (440) supports the transport of the article. At the same time it covers the drive of the sorting disc.

drive

A spur wheel drive motor drives the sorting disc shaft (010).

free-wheeling

The lower sorting disc (030) is driven via free-wheeling (040). When switching off the unscrambler the sorting disc may slow down moving freely.

brake

In order to avoid a shifting of the article in the sorting groove and to avoid a malfunction the sorting disc brakes the sorting disc by an electrical magnetic brake (130) in case of emergency off respectively when the machine stops by jam request.

03.12.01 Sorting disc

turn table

The turn table (200) incl. screwed on turn table ring (220) is rotatable beared on the turn table axis (160). The turn table is not adjustable in height.

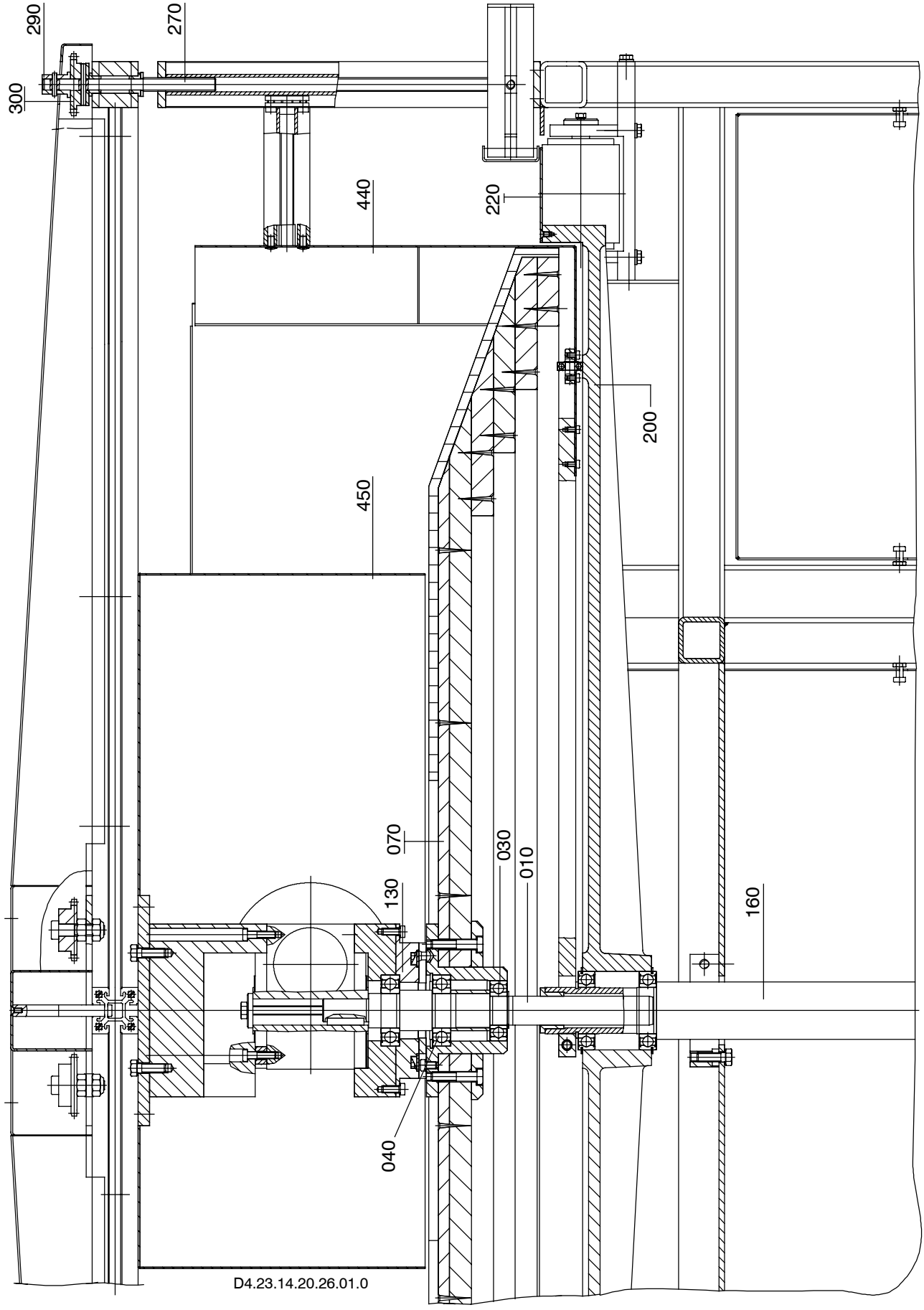
height adjustment

Main height adjustment of sorting discs:
The sorting discs are adjustable in height by means of hand crank via loading piece (290) and circulating chain (300) by means of spindles (270).
The articles determine the required setting height. Incorrect sorted articles should be removed by the rejector so that the correctly sorted articles remain in the sorting groove. Oval articles are sorted laying on edge. To do so the outside guidings should be adjusted according to thickness and length of articles. Height adjustment of sorting discs should be set according to width of article.

speed setting

The speed of the sorting disc can be changed at the manual.

03.12.01 Sorting disc



Remove articles from the sorting groove that lay incorrect or stand upright. The height and speed of the round brush (100) should be set so that the articles that are sorted properly remain in the groove.
When the unscrambler container filling is properly dosed articles lay on the inclination of the lower sorting disc which are aligned tangentially by means of the sorted articles. The rejector shall not throw away these articles but shift around the run-up edge of the inside guiding. After passing the inside guiding these articles are sorted immediately.

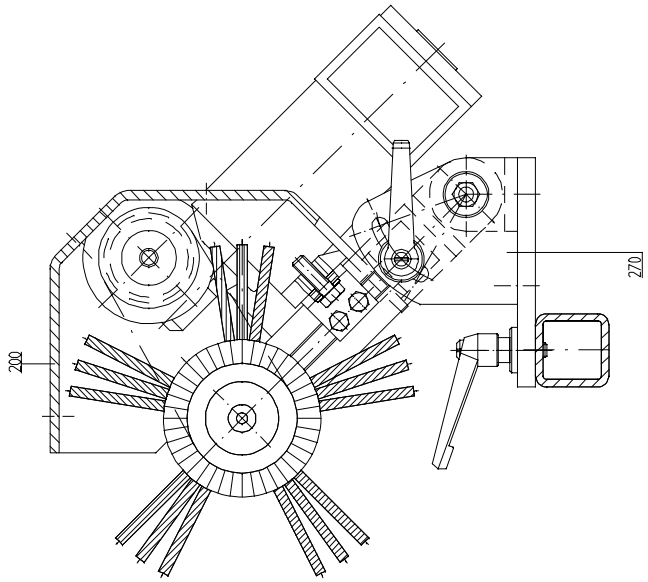
permanent magnet-drive A permanent magnet motor incl. flanged worm gear drives the V-belt pulley (110).

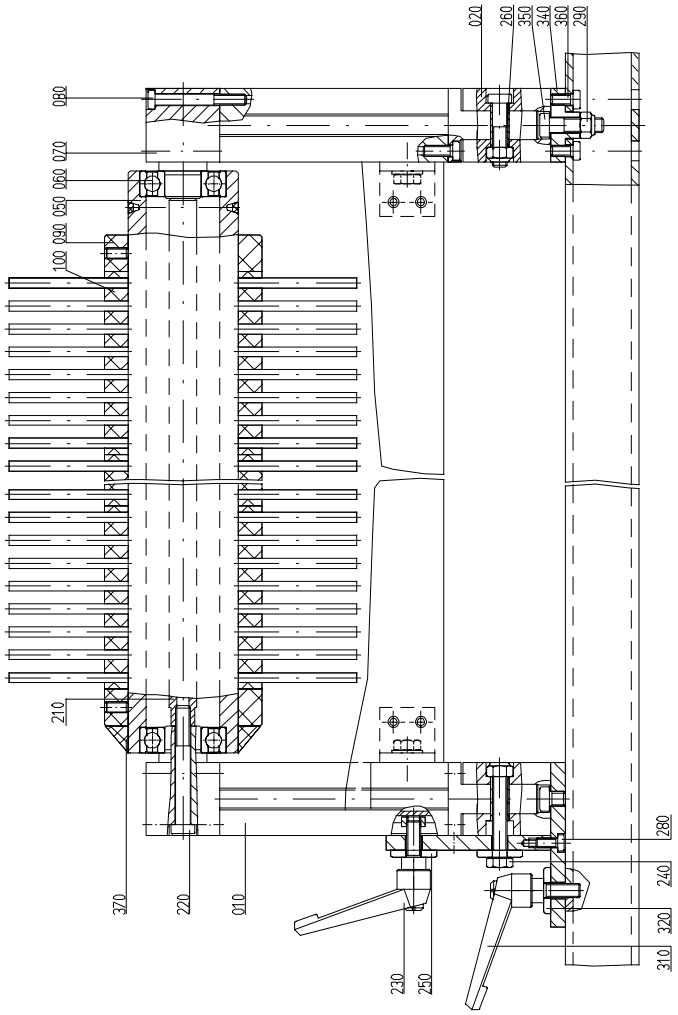
height adjustment Height adjustment of the round brush (100) is possible by swinging around the profile joint (020) after loosening the clamping lever (230).

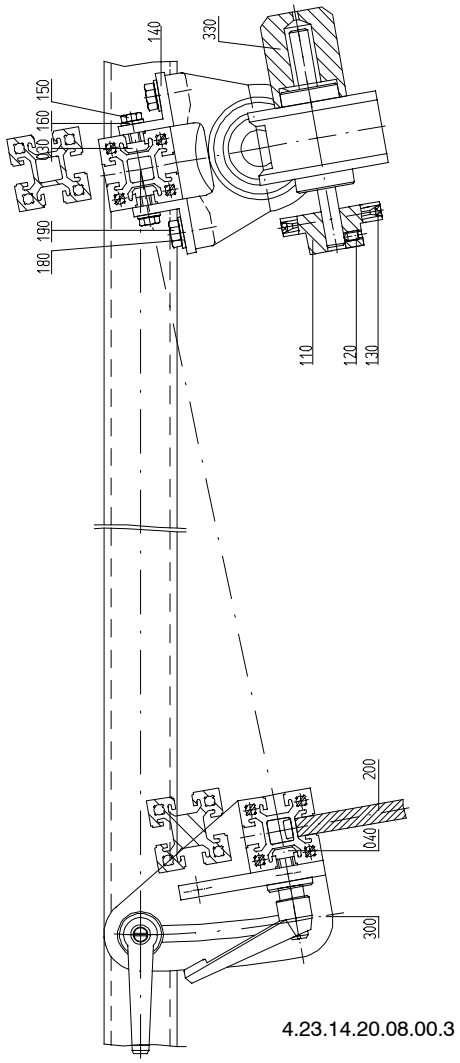
clamping lever The complete unit is swingable around the pivot bearing (340) after loosening the clamping lever (310). It thus prevents longer articles from pushing against the rejector cone and causing a fault.

speed setting The speed of the round brush (100) is infinitely variable via the potentiometer at the switch cabinet at operators side of the machine. Don't adjust the speed too fast since damages of articles and bad sorting may be the result. Rejection of standing articles is facilitated by opening the outside guiding sufficiently and setting the height of the double sorting discs as low as possible.

03.13.00 Rejector







4.23.14.20.08.00.3

03.17.03 Sorting container, left machine

Continuous alignment of articles laying in series on the turn table ring. The radial adjustable outside guidings at the side and the lower sorting disc form the boundary of the sorting groove. The outside guidings are adjusted according to the diameter of cylindrical respectively to the thickness of oval articles.

clamping piece

The clamping pice (130) is screwed on the frame of the unscrambler and clamps the profile (170) by means of a clamping lever (230).

segment holder

The segment holder is screwed to the profile (170) and carries the outside guidings (050). The outside guidings (060, 080, 160) are fixed in the same way. The outside guidings overlap each other. This enables readjustment of the diameter of the sorting container. When changing over the unscrambler to an article with a smaller diameter first readjust the set value K, Then reset set values J, H, G, F, E, D and C. The overlapping outer guidings should be adjusted by means of set values C to K, so that the articles will be arranged laying upright in series. Open the side guiding using set values A and B until the articles will lay flat and can be discharged individually to the turning device. The set value A is determined by the article laying flat between front and rear guiding.
When changing over to an article with a larger diameter start the readjustment with set value A and finish with K. Adjust the outside guidings with set values C to K so narrow that two cylindrical articles can not lay on top of each other with their necks. Articles whose necks are laying on top of each other will be separated at the opened guiding in the range of set value B.

light barrier

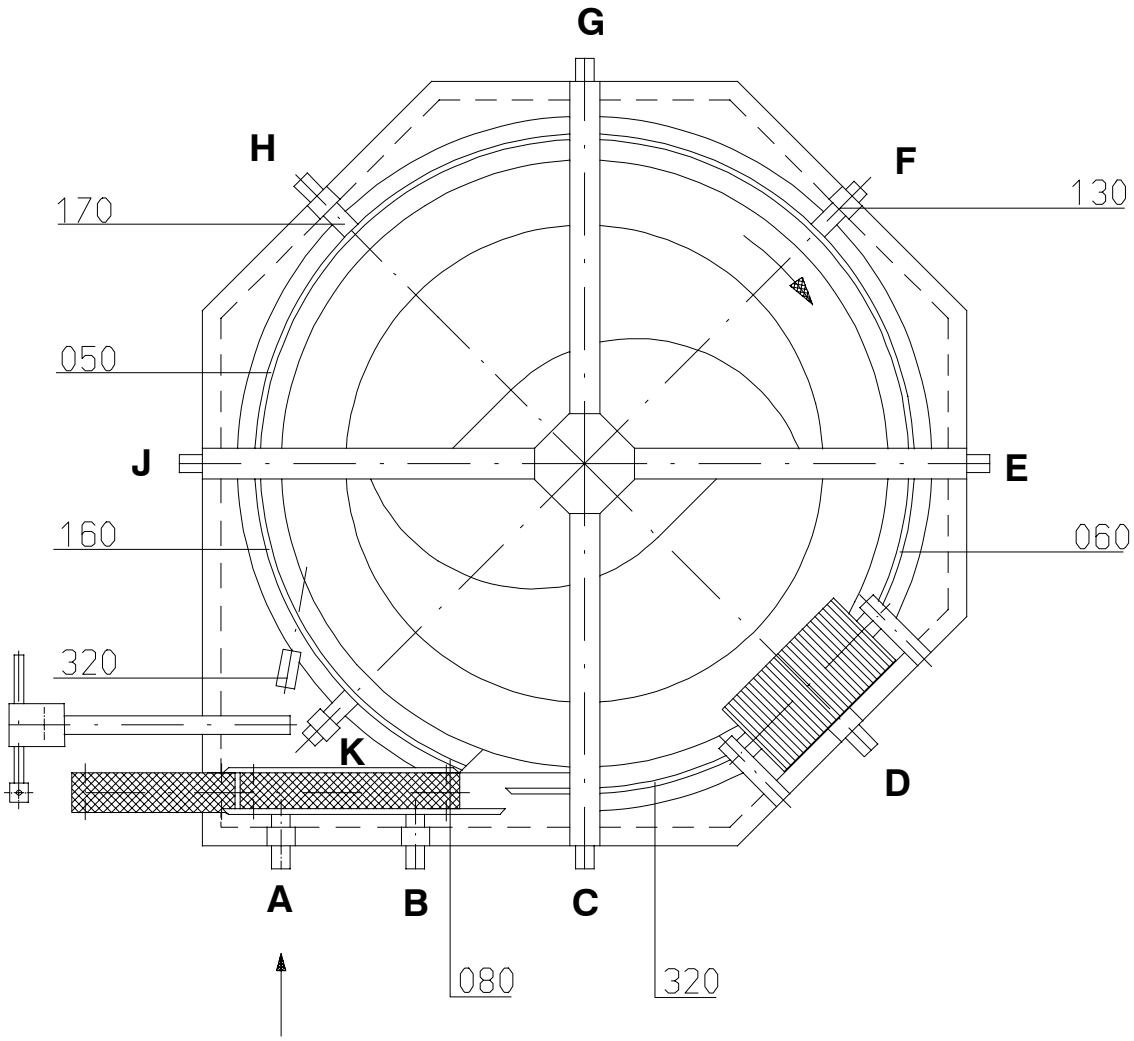
The light barrier (320) controls the amount of articles in the sorting container and sets the optimum use of the sorting groove. It controls the sorting groove immediately behind the inside guiding (080) and switches on the article feed in case of lack of articles.

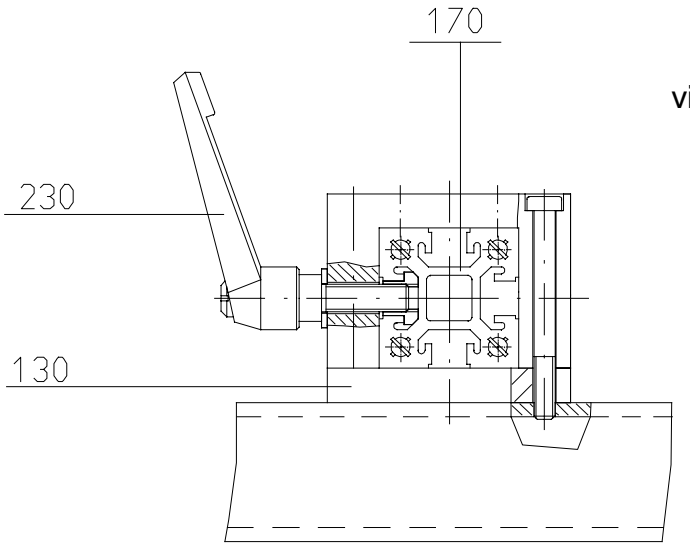
Adjustments

clamping lever

The outside guidings can be adjusted according to the article after loosening the clamping lever (230).

03.17.03 Sorting container, left machine

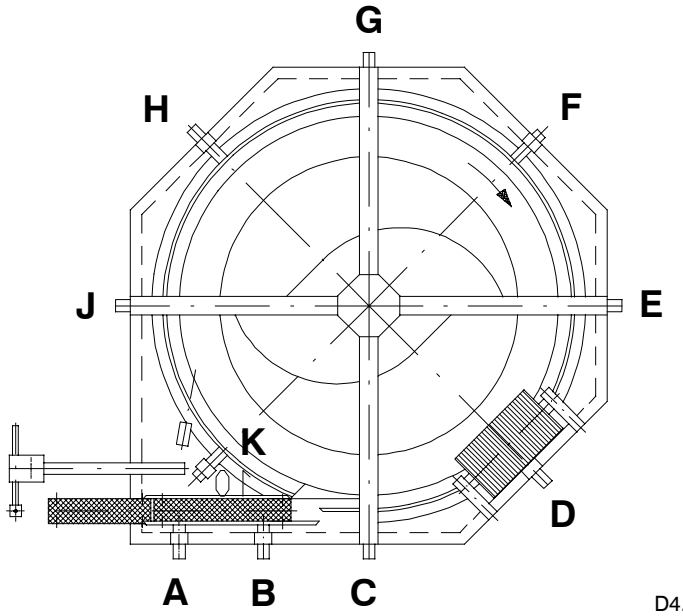




view A

D4.23.14.90.00.04.0

03.17.03 Sorting container, left machine

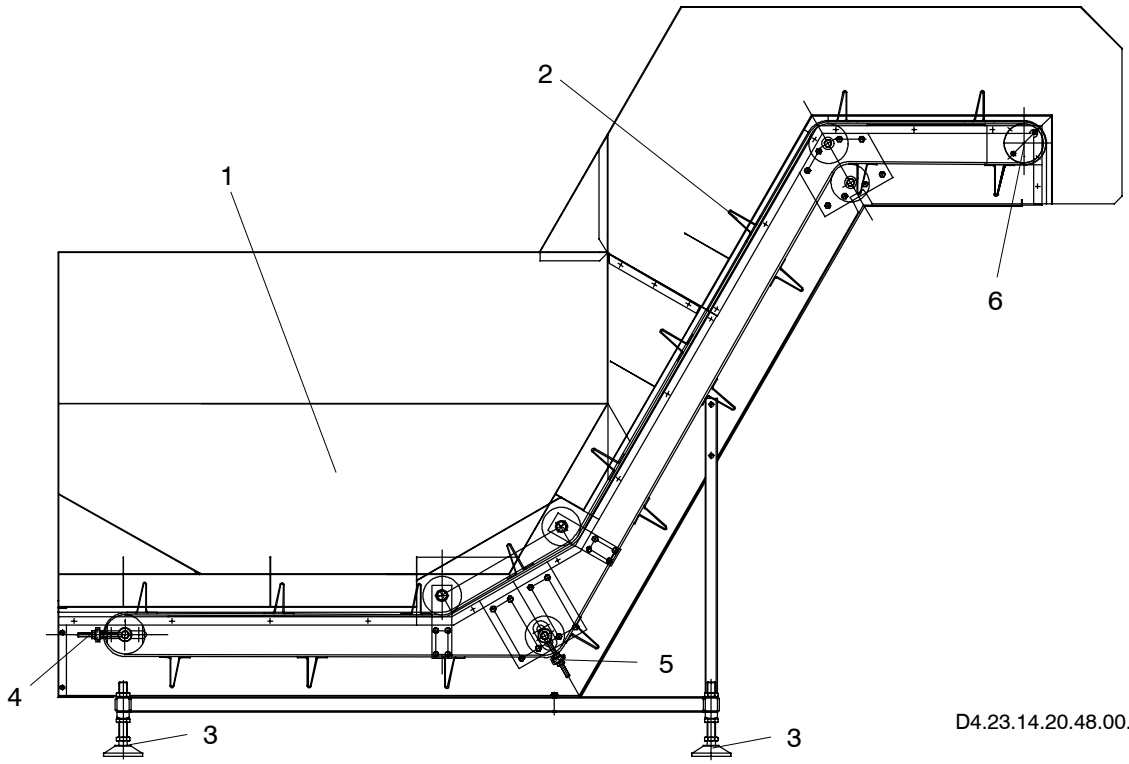


D4.23.14.90.00.03.0

Article	A	B	C	D	E	F	G	H	J	K

16.09.00 Infeed system

The infeed system is used for controlled filling of the sorting disc.
The infeed box (1) is filled with articles by the staff. The conveyor belt (2) supports the articles to the sorting disc box where they are aligned laying in series.
The unit is driven via shaft (6).



D4.23.14.20.48.00.0

A photoelectric beam controls the drive of the infeed system, that the sorting disc box does not overcrowd and causes an error. If the photoelectric beam gives a signal because of an overcrowded sorting groove, the drive of the infeed system switches off. The photoelectric beam starts the drive automatically if the sorting groove is empty.

adjustment

Adjustment of the height by regulation (3).
Tightening of the conveyor belt by screw (4).
Correcting of the straight on movement of the belt by screw (5).
For exchanging the belt remove the covering.

18.04.02 Transport belt (optionaly)

Gentle transport of articles to the subsequent screen printing machine. The friction between transport belt (050) and the article is high to obtain sufficient jam pressure for shortest possible transport belts.

drive motor

A DC-permanent motor with attached worm gear drives the driving pulley (040) via V-belt (020) and V-belt pulley (030).

transport belt

The transport belt (050) is driven by the driving pulley (040) and is guided by the deviation pulley (200). The empty belt is fed by rollers (070) close to the transport belt profile (080).

resting plate

The resting plate (090) connects the transport belt profile (080) and the support (100).

height adjustment device

The height adjustment (110) is mounted to the support (100).

side guiding

The side guiding (120) is fixed at the transport belt profile (080) by means of support casting (130) and holding bar (140).

upper guiding

The upper guiding (150) is fixed to the transport belt profile (080) by means of double support casting (160) and holding bar (170).

max.-jam light barrier

The maximum-jam light barrier (180) switches off the unscrambler as soon as the maximum-jam is obtained. As soon as it is free again, it switches on the main drive of the unscrambler.
The light barrier (180) and the mirror (190) are connected to the transport belt profile (080) by means of support casting (200). The support casting (200) is adjusted in direction of article feed thus that no articles lay on each other on the transport belt after the unscrambler is turned off.

min.-jam light barrier

The minimum-jam light barrier turns off the subsequent machine if the jam level falls below the minimum. The subsequent machine is restarted as soon as the minimum-jam light barrier records an article. This light barrier should be set as close as possible to the transfer position to the next machine. This offers sufficient jam pressure for trouble-free transfer.

18.04.02 Transport belt (optionaly)

Adjustments

side guiding The side guidings are height adjustable after loosening the locking handles (220).
After loosening locking handles (230) the side guidings are adjustable according to the diameter of the article.

upper guiding After loosening the locking handles (240) the upper guiding (150) is adjustable according to the diameter or the width of the article.

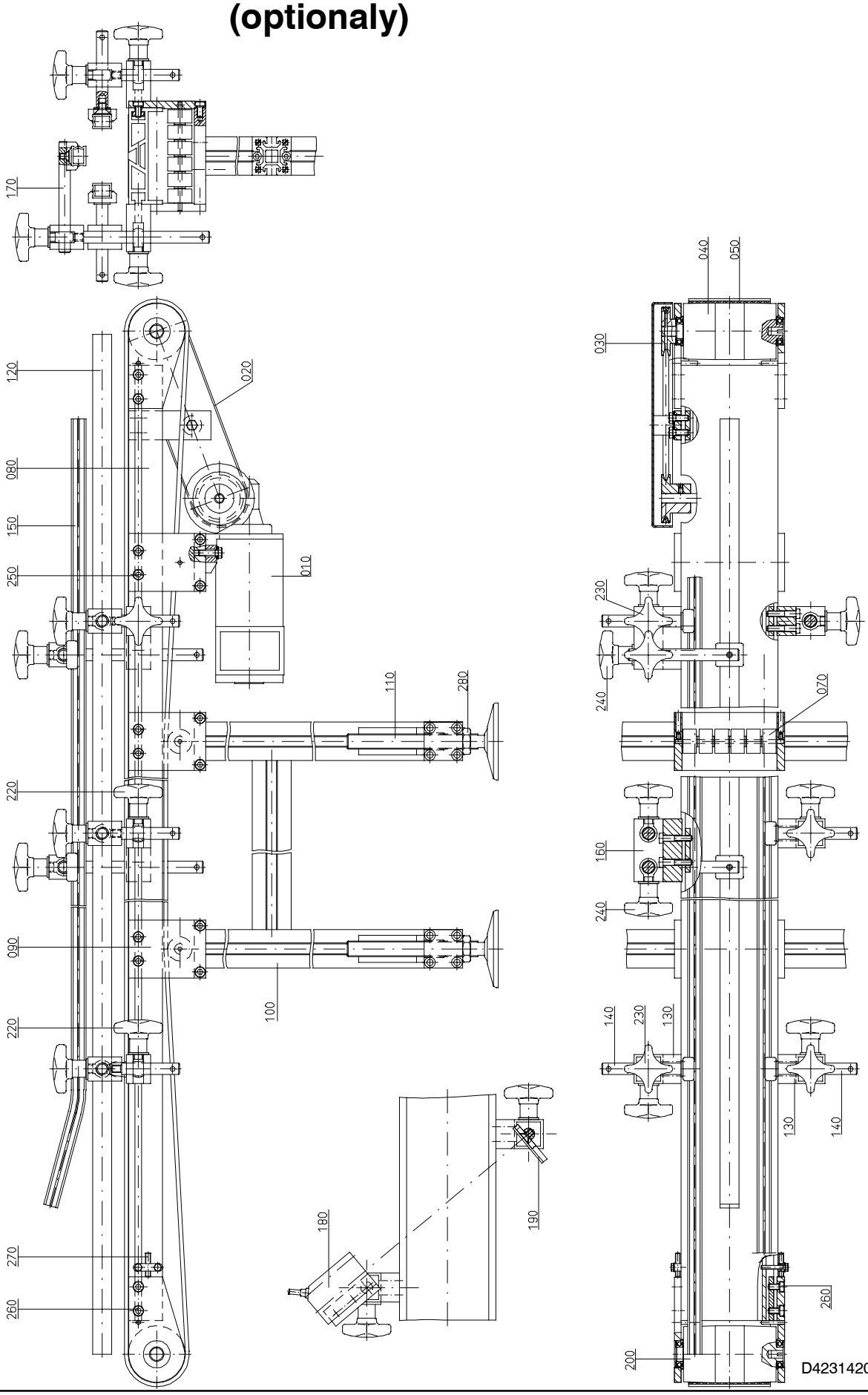
V-belt Tension the V-belt after loosening screws (250).

transport belt Tension the transport belt (050) by means of threaded pins (270) after loosening screws (260).

height adjustment The level of the transport belt is readjustable after loosening lock nut (280).
The speed of the transport belt is adjustable via potentiometer at switch board.



18.04.02 Transport belt (optionaly)

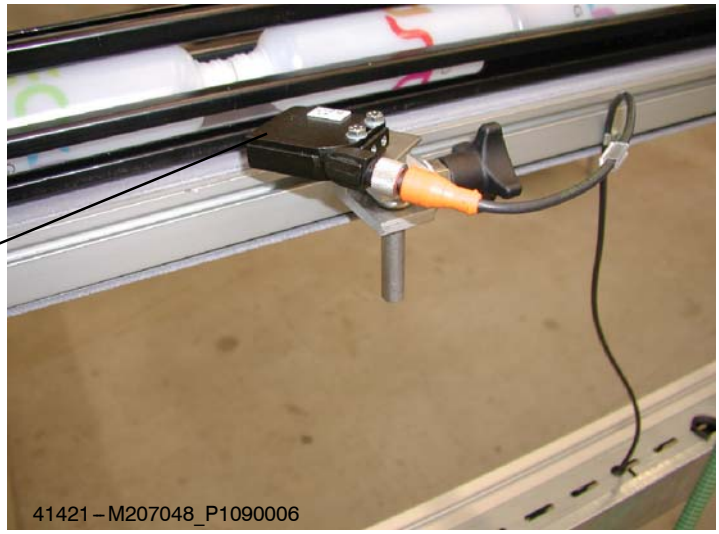


18.04.02 Transport belt (optionaly)



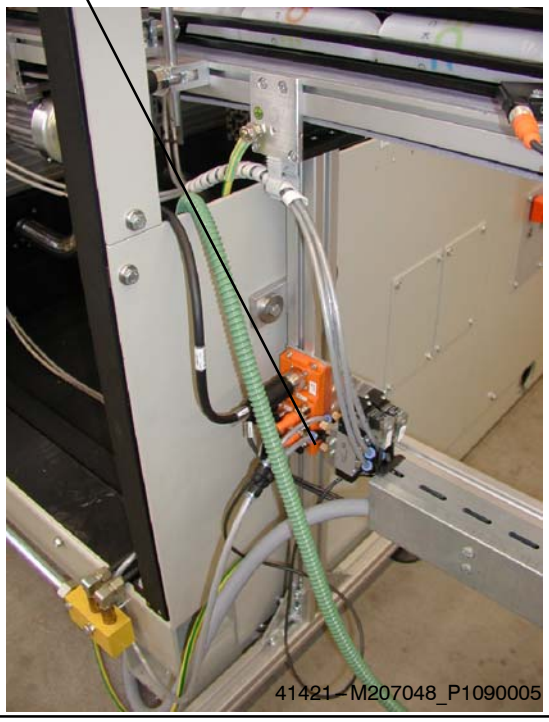
transfer belt K23 N

transfer belt



jam light barrier

pneumatical elektrical supply



emergency – off

