

Copper bar punching machine

CU - PROFI



These operating instructions:

- contain general and special instructions which must be complied with,
- contain technical instructions which must be observed when handling the machine,
- must be read by the responsible technical personnel or operator before setting up and taking into use,
- must be continuously available at the installation site of the machine.

Retain for future use!

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Important notes!!

- The machine corresponds to the present state of knowledge and techniques and meets the recognised regulations for technical safety,
- nevertheless danger can arise in the event of improper use or use contrary to the regulations. (Use contrary to the regulations also includes non-compliance with the operating instructions).

0 General comments

0.1 Introduction

These operating instructions are supposed to facilitate operation, maintenance and upkeep of the machine for the respective operator. They are supposed to assist in keeping the machine at a high level of performance during its long working life and to contribute to accident prevention.

During maintenance and upkeep work on the machine:

- Safety regulations and
- Accident prevention regulations

have to be particularly observed.

The operating instructions constitute an essential part of the delivered item. The operator of the delivered item ensures that the operating personnel are familiarised with these guidelines. In case of a possible transfer of the delivered item the operating instructions have to be passed on, too.

After termination of the assembly and prior to commissioning of the delivered item the buyer has to arrange for the implementation of a trial run of the delivered item checking all safety installations in order to make sure that the machine can be operated safely and that the personnel are able to handle it properly and securely.

The operator is obliged to adapt the delivered item to the respectively effective safety regulations.

0.2 Contents of the operating manual

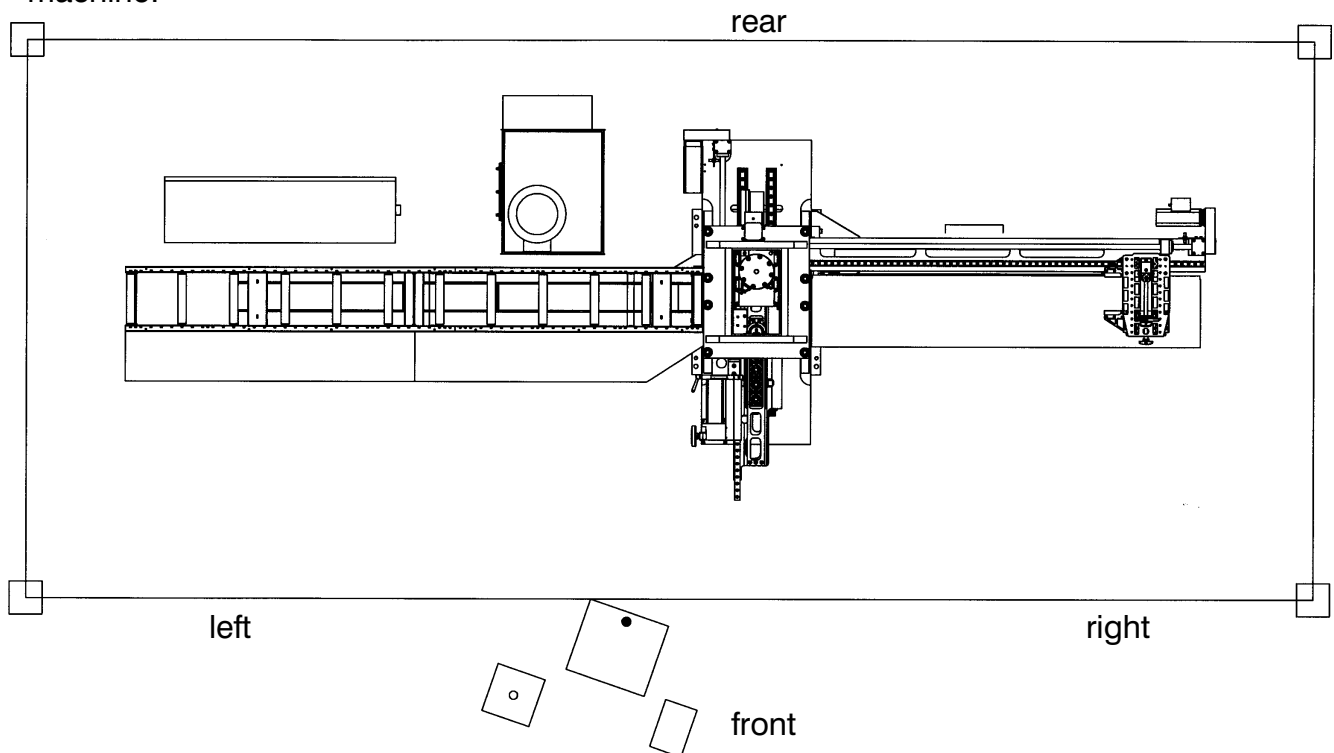
Explanation

In this operating manual: **OM** = operating manual

Symbols:

- this stands before listed items,
- * here, a sequence of work steps is explained
- ➡ here, the consequence of a cause is explained.

Orientation of the machine:



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Violation of these copyright provisions will be prosecuted.

0.3 Separate documents

In the annex you will find documents prepared by third-party manufacturers. They contain relevant information on supplied parts.

- We provide you with this OM; you will have to work with it.
- We have attempted to prepare this OM as comprehensive as possible. You'll see whether our efforts were successful. In your own interest, please inform us about faults, wishes or proposals so that we may be able to optimise this operating manual.

Thank you for your co-operation.

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0.3.1 Separate documents

- | | |
|--|-----------------|
| - User manual for maintenance of AMADA-tools. | AMADA |
| - Operating Instructions HPM MMKS series TC | HPM |
| - High-pressure internal gear pumps Typ IPV | Voith-Turbo |
| - DMA2 + DM1 Mounting + Maintenance Instructions | Dutchi Motors |
| - Fluid Level Gauge FSA | HYDAC |
| - Return Line Filter RFM | HYDAC |
| - Accumulator Charging Unit SLE 02 | H+L |
| - Data sheet Air-oil heat exchanger AP | COSTANTE SESINO |
| - Safety valves direct operated | Rexroth |

1 Safety

1.1 The operating personnel

The operator of the machine has to ensure that the equipment is operated, maintained, inspected and assembled/disassembled exclusively by authorised, qualified and skilled personnel.

Authorized and qualified personnel are skilled employees:

- of the operator,
- of the manufacturer,
- of the service partner.

These persons must:

- have received practical training with the machine,
- have read and understood the operating manual,
- be familiar with the safety features of the machine,
- have been instructed about possible dangers,
- be familiar with the responsibilities to avoid unclear responsibilities with regard to safety,
- be familiar with all relevant regulations (particularly the accident prevention regulations to ensure that the operation of the machine will cause no danger).

1.2 Clothing

The most serious injuries may result if clothes or jewellery are caught by machine parts in motion.



Danger

During work, protect yourself by:

- **wearing closely fitting working clothes with waistbands on the sleeves,**
- **wearing sturdy, closed shoes,**
- **wearing a hairnet if you have long hair,**
- **taking off jewellery (rings, watches).**

1.3 Personal protective equipment

The symbols below indicate when you have to wear which type of protective equipment.



Wear safety boots



Wear ear protectors



Wear gloves



Wear safety glasses



Wear safety helmet

1.4 Intended use

The operational safety of the delivered machine is only guaranteed if it is operated according to its intended use.

Intended use means that:

- the machine is used for punching or nibbling metal sheets.

Furthermore, the following should be observed:

- the conditions specified in the order confirmation,
- the values specified in the „Technical data“ chapter,
- the conditions regarding safety, operation, maintenance and service as specified in the operating manual.

If the machine is used for other purposes, then this is „Improper use“.

➡ **Improper use can result in material damage or health hazard.**

The manufacturer/supplier assumes no responsibility for damages resulting from improper use. The user exclusively takes the risk for such uses.

Misappropriated use of the machine is not known to the manufacturer.

1.5 Explanation of symbols and notices

Notices that are marked with the following symbols should be taken very seriously. These notices serve to avoid danger to life and health of persons. Inform the other users about these notices.

Symbol	Explanation of the symbol	Signal word	Possible consequences if notices are not observed
		Danger	Death or very severe injuries
	General Danger Symbol	Warning	Very severe or severe injuries
		Caution	Minor injuries
	Here you receive notices for easier handling of the product and for avoiding damage to the product.	Information	Material damage

This symbol  replaces the symbol  in case of danger due to electrical current!

Furthermore, observe the applicable general safety and accident prevention regulations of your legislation.

1.5.1 Symbols and notices on your machine

Directly attached to the machine:

- Safety notices,
- Arrows that indicate the sense of rotation,
- Marks for fluid connections.

Keep them in a completely readable condition.

ATTENTION! Tool in motion



Keep toolholder clean



Keep toolholder clean



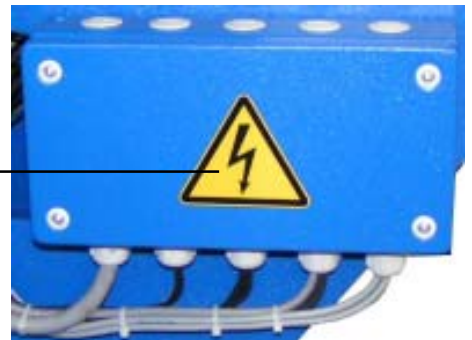
Switch cabinet

ATTENTION Danger due to electrical current



Switch-box

ATTENTION Danger due to electrical current



Pneumatic

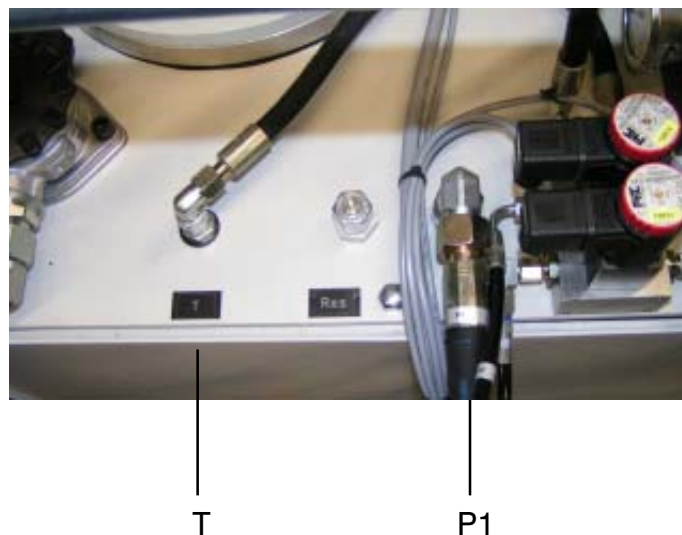
Pressure setting: max. 4 bar



Hydraulic unit



Tank connection



The following symbols can also be found in this operating manual.



Falling load



Danger of bruising



Danger of cut injuries



Danger of slipping

Observe these notices to avoid the dangers described above.

1.5.2 Dangers caused by non-compliance with the safety notices

Non-compliance with the safety notices

may result in the following dangers:

- Failure of critical machine functions.
- Failure of specified service and maintenance methods.
- Danger to persons through electrical, mechanical, or chemical influences.
- Danger to the environment due to leakage of dangerous substances.

Furthermore, you may lose all claims for damages.

1.6 Safety-oriented working

The operating staff* must:

- observe the safety notices contained in this OM,
- know where the EMERGENCY-OFF buttons are located,
- observe the factory's instructions regarding work, operation and safety.

It must be ensured:

- that the machine is switched off before any maintenance and repair work is started and that it is safeguarded against accidental switching on (main switch on the control cabinet is locked),
- up to 3 locks can be present,
- each work group (electricians, fitters) should attach its own lock; thus, each group can prove that all safety and protective equipment are mounted and checked after maintenance and repair and before commissioning,
- that only lifts with appropriate load-bearing capacity are used,
- that the machine is lifted only with the specified tools,
- that the manufacturer's notices are observed when using chemicals (solvents, cleaning agents, etc.),

It is forbidden:

- to conduct any work on the machine during operation,
- to perform alterations to the machine without the manufacturer's permission,
- to use working methods, which affect the safety of the machine,
- to open doors, flaps or protective equipment during operation or to operate the machine without these parts.

**Removing, bridging or overriding
safety installations is absolutely
forbidden!**

**Never operate the machine when you
have taken alcohol or illegal drugs.**

* Operating staff in the sense of the EU Official Journal 183, annex I, clause 1.1.1 section 3 are the person(s), who is/are responsible for installation, operation, setting up, maintenance including cleaning, fault correction and transport of a machine.

Never use gasoline or nitro-dilutions for cleaning. These substances develop readily flammable vapours.

➡ **One spark (cigarette) is enough to cause
ignition.
This can result in most serious burns.**



Danger

1.7 The safety installations

1.7.1 The positions of the safety installations on your machine



= work positions to be taken by the operating staff



= EMERGENCY-OFF



= Protection without safety switch



= Protection with special key



= Light barrier

Never bride an EMERGENCY-OFF installation!

You would expose yourself and others to the most serious hazards.



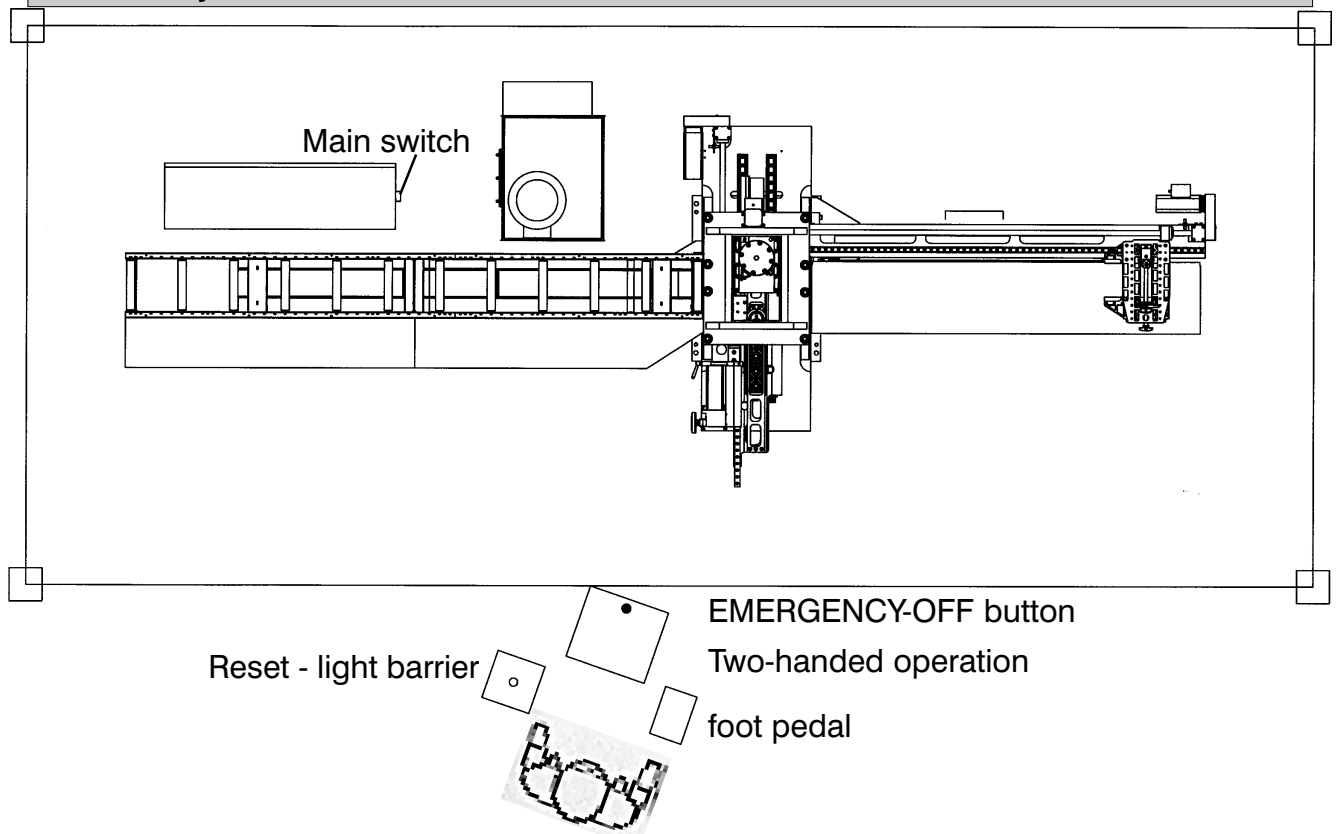
Danger



Most serious injuries caused by parts in motion, death caused by high voltage may be the consequences. Always ensure free access and sight to the EMERGENCY-OFF buttons. Always use the light barrier.

The machine must also be safeguarded on sides B, C and D so that no person will be injured. The Boschert company assumes no liability if these instructions are not observed.

Operator controls must not be located within the safety area or be operable from the safety area.



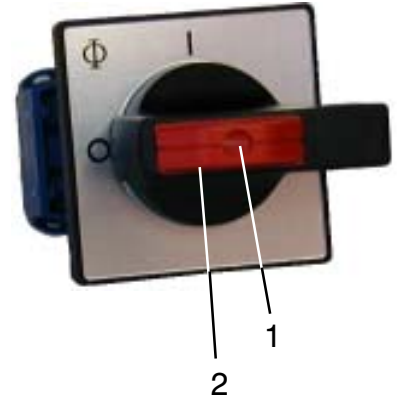
1.7.2 Individual safety installations

The main switch on the control cabinet

The main switch on the control cabinet:

- interrupts power supply to all aggregates,
- can be locked in the „0“ position by 3 means of padlocks,
- protects you from accidental or unauthorised switching on (after locking by means of a padlock).

Every person working on the machine should attach his own lock. This provides protection.



The following assemblies are still live in the control cabinet even after switching off the main switch:

- the main switch at the entrance side



Danger

When working on these parts it is imperative to remove the main fuse of the mains lead. Make sure that unauthorised insertion of the main fuse will be impossible.

How to lock the main switch:

- * Move the lever to the „0“ position,
- * pull out the red interlock (1),
- * hang lock into the opening (2) and lock up,
- * take out the key and keep it in a safe place to prevent unauthorised use.

The EMERGENCY-OFF button

EMERGENCY-OFF buttons are the red pushbuttons.

Mode of operation:

- hit the button in case of danger.
- ➡ The machine will stop immediately.

Resetting:

- Pull out the red button.



The following assemblies are live in spite of **EMERGENCY-OFF:**

In the control cabinet:

- the motor circuit protectors,
- the fuses,
- the contactors at the entrance side,
- the power supply,
- the control voltage is present,
- the programmable logic control.

On the machine:

- the control voltage is present.



Danger

When working on these parts, it is imperative to set the main switch to „0“ and to secure it against switching on.

The interlock switch

The die punch motion cannot be started unless the interlock switch has been pressed.



Danger

The light barrier (1)

The light barrier protects you from dangers:

- caused by the ram,
- due to the motion of the workpiece.

Always work with an active light barrier (1).

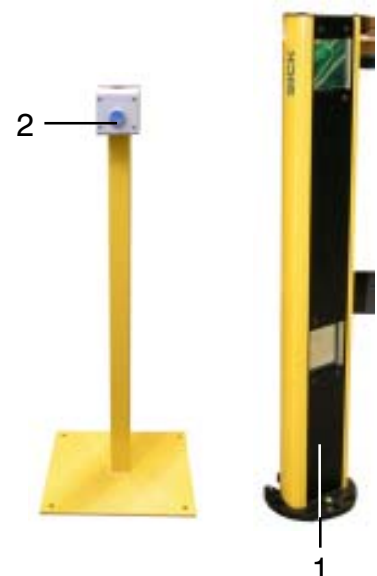
Always stay outside the light barrier.

The area between light barrier and machine is dangerous due to workpiece motion!

You can only start the machine when the light barrier is active.

Activate light barrier

- * go out of the area between light barrier and machine,
- * press button (2) at the light barrier. (The light barrier is activ).



1.7.3 Checking EMERGENCY-OFF button, interlock switch and light barrier

Check the EMERGENCY-OFF button and the light barrier:

- daily before start of work,
- after each retooling of the machine,
- after repairs of the electronics.

Checking the EMERGENCY-OFF button:

- * switch on the main switch (1),
- * push button ((2) at the control cabinet),
 button is illuminated,
- * actuate the EMERGENCY-OFF button,
 button is not longer illuminated,
- * pull out again the EMERGENCY-OFF button,
- * push button (2),
 button (2) is illuminated,
- * Clear the message at the display.



Checking the interlock switch:

- * open the interlock,
- * set the machine to „Manual mode“ (see separate programming instructions),
- * actuate button for „Lower die“ (the machine must not travel).

Checking the light barrier:

- * Cover the reflector, (the machine must stop),
 Message at the display: light barrier interrupted,
- * actuate button (2),
 the light barrier is enabled again,
- * Clear the message at the display.



1.8 Follow the instructions below when erecting the machine

- * Lay connections (cables, hoses, tubes etc.) between the parts of the machine so that tripping will be avoided.
- * Sources of danger between Boschert machines and equipment of the customer must be safeguarded by the operator.
- * Mark off the areas at the sides of the machine. (see space assignment plan, chapter „Drawings / Part lists 11.2).

1.9 Behaviour in case of danger

- * Immediately stop the machine by pushing the EMERGENCY-OFF pushbutton, (the EMERGENCY-OFF button is the red button on the control panel),
- * Secure the main switch on the control cabinet in the OFF position against accidental switching on by means of a lock,
- * Correct sources of danger or faults,
- * Restart the machine.

1.10 Dangers caused by electrical energy

We emphasise that:

- work on the electrical connection may only be implemented by electrical specialists,
- after work at the electrical connection the preventive measures has to be tested.

At work on live parts a person has to be stand by the main switch.

Thus only the machine can be immediately switched off in an emergency.



Danger

1.11 Dangers caused by the hydraulic

- In case of problems with the hydraulics always call the service personnel.
- Open the screw joints only in the unpressurised state.
Danger due to squirting oil.

1.12 Dangers caused by noise emission

The sound emission values (sound pressure levels) at the workplaces are usually higher than 85 dB(A).

Therefore, always wear ear protectors when working with the machine.

 **Otherwise, your hearing may become impaired.**



Danger



1.13 Dangers after switching off the machine

Residual dangers:

- Caution when working on the pneumatics. (there may still be pressure even after venting).
- Caution when working on the hydraulics. (there may still be pressure although the pump is out of action).
- Caution when working on the electrical installation. (the supply line is still live even after switching off the main switch).

Residual dangers are particularly electrical voltages that are still present even after EMERGENCY-OFF or switching off the main switch (see section 1.7.2).

1.14 Reversal of the working motion in case of emergency!

- * Select manual mode, (see separate programming instructions),
- * Push the „lift die“ button. (the die will move upwards).

1.15 Firefighting

Immediately switch off the main switch in case of fire. Otherwise, fire cannot be extinguished effectively.



Your machine is equipped with high-quality electronics. Protect it from damage.

In case of fire use exclusively:

- CO2 extinguishers without residues (or, if not available),
- Fire extinguishers of the A, B or C classes.

If you use other fire extinguishing agents this may result in:

- a life-threatening electric shock,
- damage to your health due to vapours or gases.



Danger

Inform yourself:

- about what is to be considered when using these fire extinguishers,
- where these fire extinguishers are located near the machine.

Ensure free access to the fire extinguishers.



Information

Fire extinguishers of the A, B or C classes leave residues, which cannot easily be removed.

1.16 Other notices concerning dangers

- It is forbidden to stay under suspended loads.
- Immediately remove spilled oils, fats, etc.
- Keep the machine and the area around the machine tidy and clean.
- Local safety and accident prevention regulations apply also to the operation of the machine.
- Any junk and rubbish (paper, plastics, residual oil, solvents, etc.) must be disposed of by experts (observe applicable laws and regulations).

Operator: Notify your superior about any changes regarding normal operation of the machine. Have them removed! Always switch off the machine when it is unattended.

1.17 Unauthorised conversion and manufacture of spare parts

- Conversion of or changes to the machine are permitted only upon agreement by the manufacturer.
- Original spare parts and accessories that are authorised by the manufacturer contribute to your safety. Using other parts may change the functioning of the machine. We assume no liability for any consequences resulting from the use of such parts. It is imperative that you contact us before taking any such action.

1.18 Special features of the machine

- **Metal sheet is displaced during machining. Large sheets may protrude beyond the front and lateral edges of the machine table.**
It is imperative to safeguard these areas.
- **The actual travelling paths and the machining sequence do not always correspond with the programmed sequence since the machine calculates its own paths and sequences on the basis of the optimizer.**



Danger

1.19 Product surveillance

We are legally obliged to continuously watch our products from the time of their delivery.
This contributes to your safety.

Please inform us immediately about:

- any faults of the safety equipment,
- repeated malfunctioning,
- changed settings,
- problems when handling the machine.

Please use the sheet „Notices to our products“ in the annex.

2 Technical data

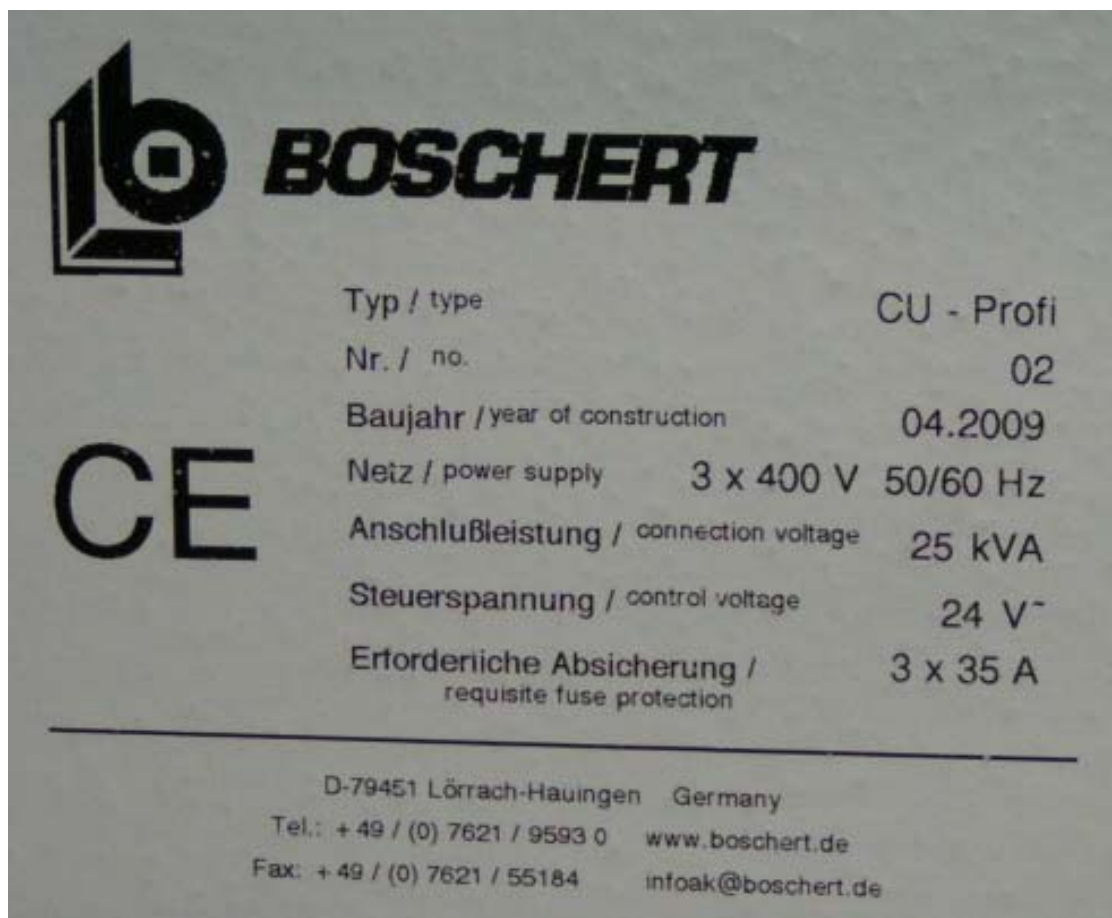
2.1 Characteristic data

Machine designation : Copper bar punching machine

Machine type : CU - PROFI

Year of manufacture : 2009

You find this nameplate on your machine.



2.2 Machine data

2.2.1 Dimensions

In addition to space for the machine, sufficient space should be provided for operation, maintenance and repair (see chapter „drawings and lists“, section 11.2).

2.2.2 Weights

Machine:	3300	Kg
Switch cabinet:	65	Kg
Hydraulic unit:	220	Kg

2.3 Punching force

400 kN

2.4 Power rating

CU-PROFI with standard hydraulic:

power supply:	18	kVA,
cross section for connection:	5 x 2,5	mm ² ,
time-lag main fuse:	20	A.

CU-PROFI with fast hydraulic:

power supply:	25	kVA,
cross section for connection:	5 x 6	mm ² ,
time-lag main fuse:	35	A.

2.5 Workplace

The workplace which can be occupied by the operating personnel is in front of the light barrier.

2.6 Air supply

Amount of compressed air required

Approx. 10 litres / minute (at 6 bar).

We recommend the usage of an air-dryer.

2.7 Noise

Working noises are dependent from:

- material
- material thickness
- tool size
- cutting edge geometry.

Measurement according to DIN 45 635 part 1, during full-load operation of the machine and room sound level of 70 dB(A). Measuring point 0,5 m distance from insertion site at 1,6 m heigh.

Punch with flat grind:

Ø 20 / sheet thickness 5 mm = 84 dB(A),
Ø 20 / sheet thickness 10 mm = 92 dB(A),

The sound emission values (sound pressure level) at the workplaces are usually higher than 85 dB(A). You should, therefore, always wear ear protectors.

➡ **Otherwise your hearing may be impaired.**

Use punches with Whisper grind, if possible. This grind type causes lower noise levels than flat grinds.



Danger

2.8 Emissions

The manufacturer knows of no other emissions caused by this machine.

3 Description

3.1 Mechanical construction

- Sturdy weldment.
- Hydraulic punch actuation from tools.
- Programming of the sheet and punch motion via CNC 32060.

3.2 Designated utilisation

The machine is exclusively designated for punching CU-flats. Any other or this purpose exceeding utilisation, e.g. exceeding of ceiling technical data, is considered as not in accordance with the designated purpose. The manufacturer / supplier is not liable for damages resulting from such actions. The risk is exclusively run by the user.

3.3 Operation possibility

- With the CU-PROFI you have a machine to punch and cut CU-flats up to a breadth of 200 mm.
- The raw material can be arbitrarily long.
- The roller race on the intake side must be adapted to the material length.
The finished work piece should´nt be longer than 2000 mm. Because the tilting table is conceived only for 2 m material.
Longer workpieces must be unloaded with switched off tilting table by hand.
Then the theoretical lengthens amounts to 9999 mm.
- Please consider the discharge zone behind the machine.

3.4 Technical data

Raw material:

max. breadth	200	mm	
max. thickness	15	mm	
max. length	arbitrarily	mm	at adapted roller race length.

Machined part:

max. length	2000	mm	on use the tilting table.
max. length	9999	mm	with switched off tilting table and unloading by hand.

Cylinder:

Cutting pressure	1 x 40	t	
Stroke	35	mm	

Tool:

Punching tool	4 x AMADA B - station		
max. punching diameter	4 x Ø 31,7	mm	
rather	each form within Ø 31,7	mm	
Cutting station	60 x 8	mm	
Run height tool	20	mm	

Guidance:

Traverse path Y	870	mm	
Traverse path X	2010	mm	

Machine dimensions:

Length of machine	6610	mm	(3m roller table)
	9110	mm	(6m roller table)
Breadth of machine	2240	mm	
Height of machine	1825	mm	
Total length	8000	mm	(3m roller table)
	10500	mm	(6m roller table)
Total breadth	3580	mm	
Total height	1825	mm	
Weight of machine		t	

4 Transport and assembly

4.1 General notices

Improper transport and assembly of the machine may:

- endanger people
- cause material damage.

Only qualified personnel is authorised to perform the work described below.

Request that we send our service personnel.



Warning

We assume no liability for damage due to improper transport and assembly.

4.2 Erection conditions

Prior to erecting the machine, check if the hall floor has the required load-carrying capacity.

Have the load-carrying capacity of the floor checked by an engineer engaged in statical calculations.

Consider 20 % excess impact force during operation of the CU-PROFI.



Attention

The following points should be observed for flawless functioning of the machine:

- The surrounding area should be free from vibration.
- No interfering electrical installations (high frequency) should be present.
- The floor should be made of concrete or front timber, mixed floor materials (with the machine standing on concrete as well as front timber) are not recommended.
- If the concrete floor is partitioned, the machine has to be placed in the middle of **one** segment.
- The unevenness of a concrete floor should not exceed 3 mm/m².

4.3 Planning the workspace

- Safeguard the lateral space by which the sheet will be displaced beyond the machine table.
- Provide sufficient workspace around the machine for maintenance and service (approx. 1,5 m on each side).

Erection is performed according to the space assignment plan. The graphical illustrations of the space assignment plan have been simplified.

- **The sheet metal is displaced during machining. Large sheets may protrude laterally beyond the machine table. It is imperative to safeguard these areas.**
- **The sheet metal is also pushed out forward over the machine table. This area is safeguarded by the light barrier.**



Danger

Upon interrupting (passing through) the light barrier, the machine will be switched off.

4.4 Packaging of the machine

The machine is shipped resting on square-end wooden beams (18 x 18 cm) and packed in polythene sheet.

4.5 Intermediate storage

Conditions for intermediate storage:

- dry, dust- and vibration-free (use a cover),
- on a wooden base in the open air,
- with a storage duration of more than 1/2 year, repeated conservation will be necessary (avoid development of condensate due to large temperature differences).

4.6 Transport of the machine

4.6.1 Transport using a crane

- Use only lifts and load take-up equipment with sufficient load-bearing capacity (weight: see chapter „Technical data“, section 2).
- It is forbidden to stay below suspended loads.

➔ **Life is absolutely in danger in case of failing loads. Furthermore, this may result in total loss of the machine!**



Danger

Procedure:

- * hang up ropes and chain hooks as shown in the drawing,
- * lift the machine cautiously,
- * when the machine is suspended safely and horizontally, move it to the intended location by means of a load crane or heavy-load rolls.



Prior to final lowering of the machine check that the connection cables of the operator controls are not below the machine.

The forwarding company, the insurance company and the Boschert company must immediately be notified in writing about any damages in transit.



Information



4.7 Set up the machine

Detach the securing bands very cautiously. The ends will „spring“ open. Danger of injury to unprotected parts of the body.



Danger

Procedure:

- * cautiously remove the packing material, (do not damage hoses or cables),
- * check completeness of machine and accessories and transport damages,
- * cautiously lift the machine,
- * remove the wooden beams,
- * deposit machine,
- * remove rope and chain hooks,
- * put a spirit level on the machine table,
- * lift up the machine and bring it into the balance by means of the set screws,
- * tighten the lock nuts of the set screws,
- * set up control cabinet and hydraulic aggregate,
- * set up the light barrier and screw it to the soil (see dimension „C“),
- * lock off safety areas „A“ and „B“. (There repositioning to 6 m is possible, the distance „A“ and „B“ has to be adapted to the metal sheet).

4.7.1 Connection of the hydraulic-unit

- fill in 160 l hydraulic oil,
quality: H-LP 46 (46 cSt),
- connect hydraulik motor

4.7.2 Connection to the electrical network

- **Compare the given voltage levels and other electrical data with indicated on the machine identification plate at the machine,**
- **connect right rotary field,**
- **replace fuses only by equivalent types.**



Danger

Connecting machines with 400 Volt operating voltage:

- * take out the main fuse of the mains lead,
- * set the main switch on the control cabinet to „0“,
- * open the door of the control cabinet,
- * lead the main connection cable from down into the control cabinet and attach the initially-wedge L1, L2, L3, PE and N,
- * examine the tensions before switching on the main switch at the control cabinet!
L1 to PE or N: 220 - 230 V analog for L2 and L3.
L1 to L2 and L2 to L3 and L3 to L1 = 400 V.
PE to N = 0 V.

If the operating voltage of your machine deviates from 400 Volt, then an autotransformer is built in. In this case, connect L1, L2, L3 and PE to the transformer.



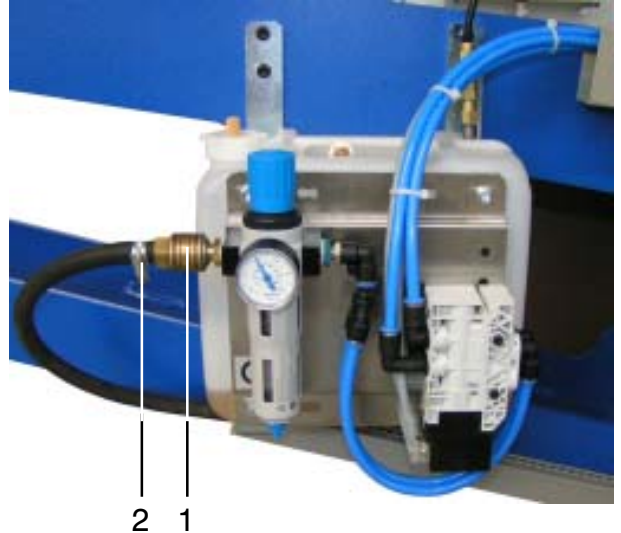
Information

4.7.3 Connection to compressed air

(right side of the machine, behind).

Procedure:

- * Plug on supply hose (1),
- * Tightly fasten the hose clip (2).

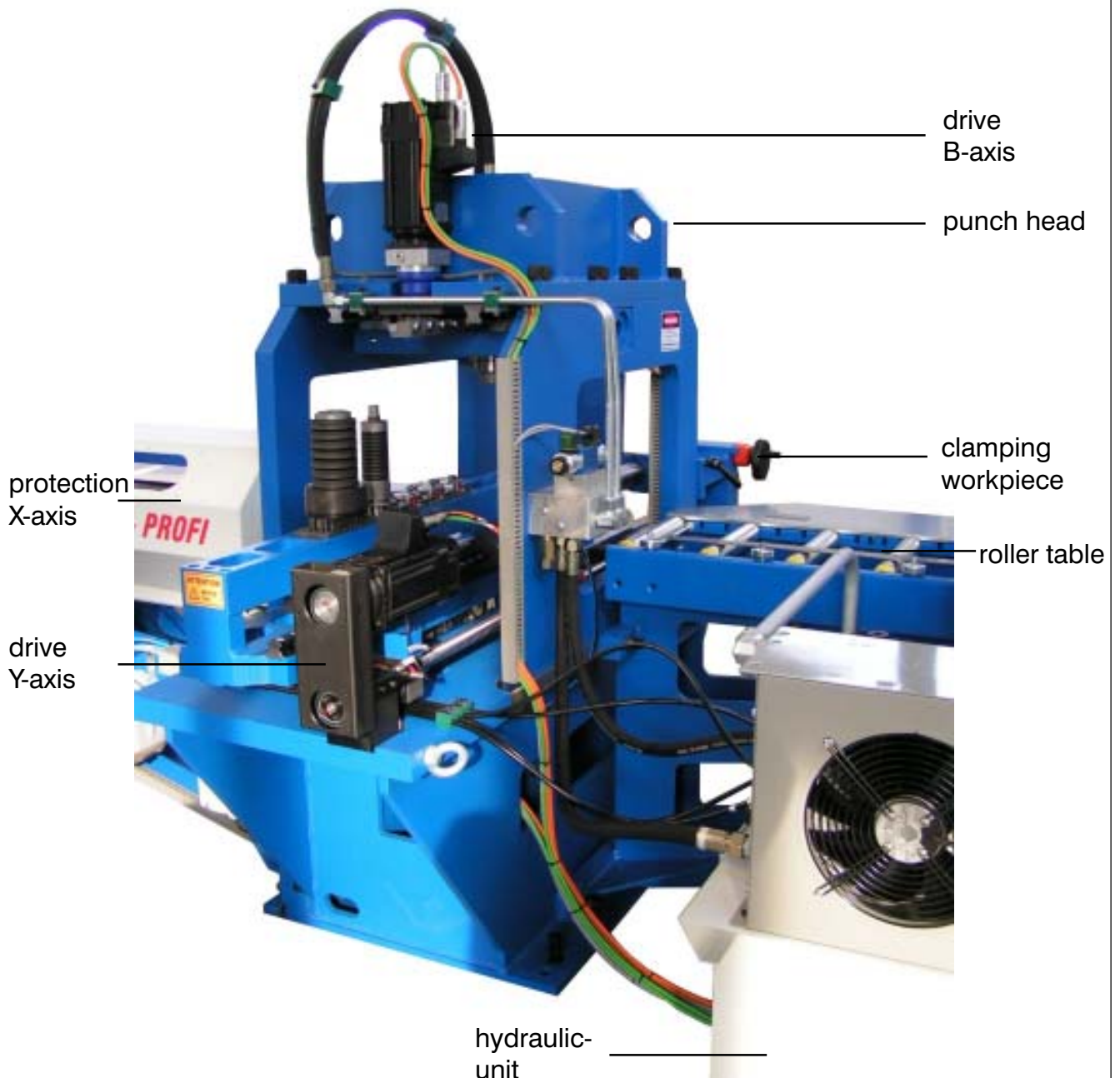


4.7.4 Testing the machine connection

- * check voltages and phases,
- * switch on the main switch on the control cabinet,
- * check functions of light barrier and EMERGENCY-OFF, (see chapter „Safety“ point 1.7.3),
- * **check sense of rotation from the hydraulic motor** (red arrow),
➡ fault of the pump.
Two persons are necessary to check sense of rotation. The first person has to connect the motor (at the operator's desk) and the second person has to check visual the sense of rotation of the motor on the ydraulic aggregate.
If you cant see the arrow,
sense of rotation = clockwise.
- * If sense of rotation is wrong: EMERGENCY-OFF
change rotary field, change L1 against L2, or L2 against L3 or L3 against L1. Test again,
- * hydraulic aggregates with cooler and thermostat, **check the functioning of the ventilator** (set thermostat to minimum). The blower must start at approximate 30 °C.
➡ fault of pump and valve unit.

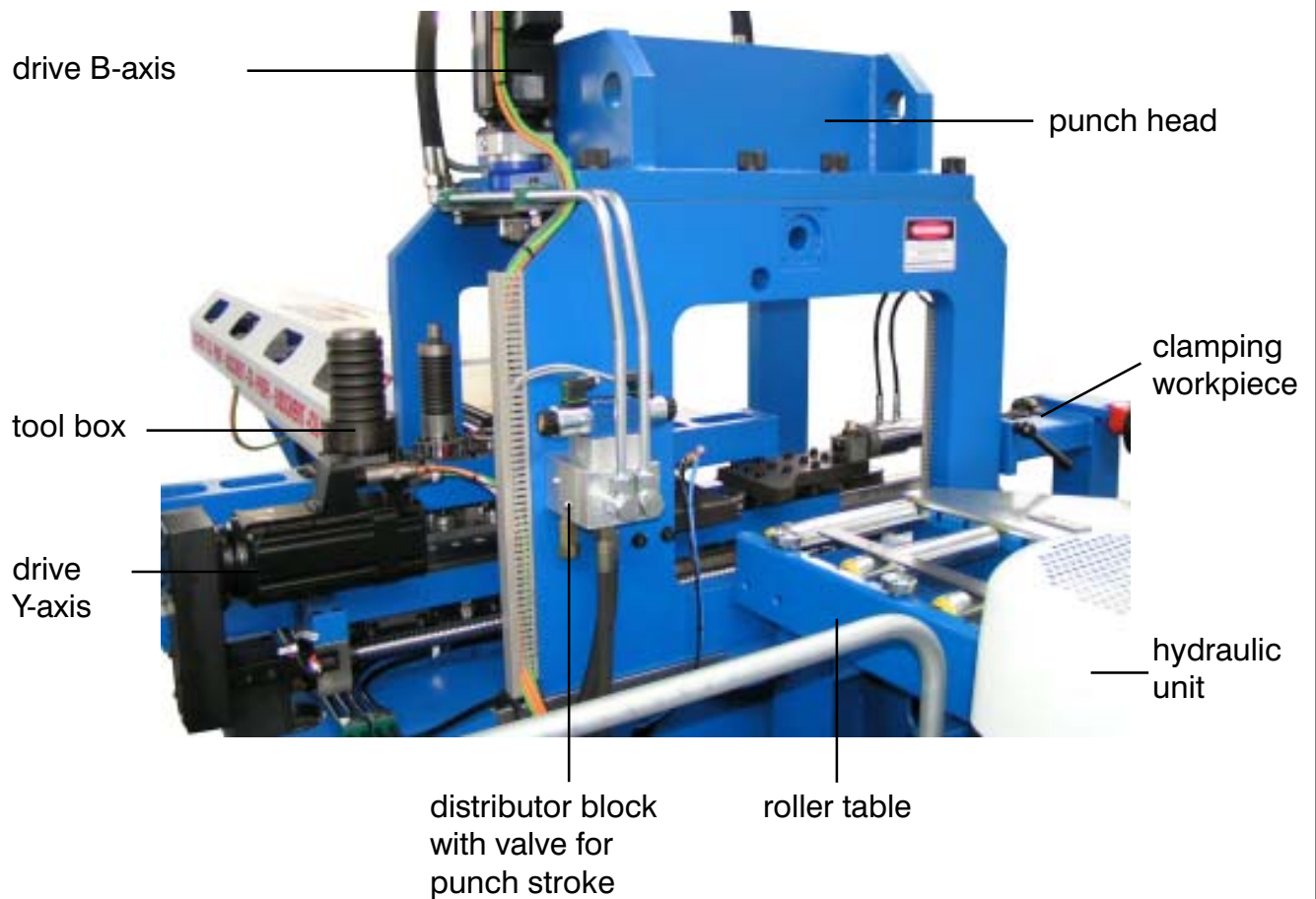
5 Survey

5.1 Subassembly inlet side

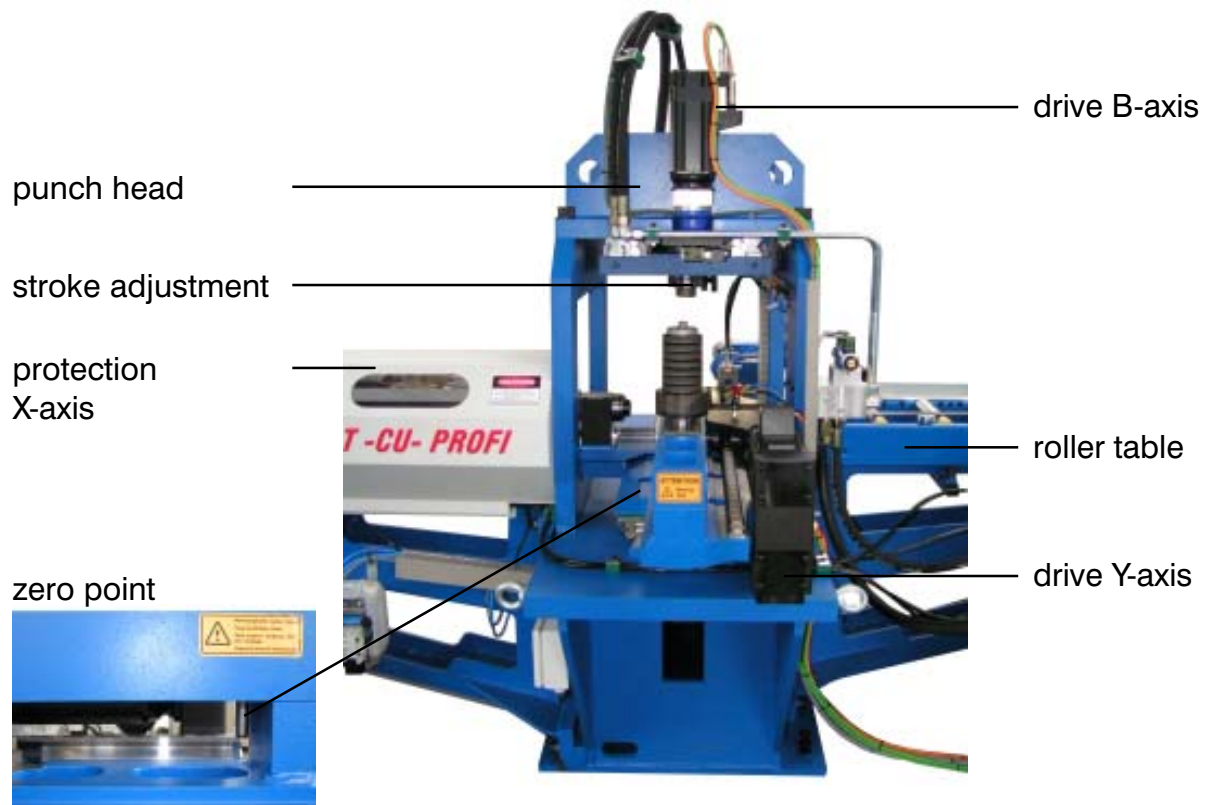
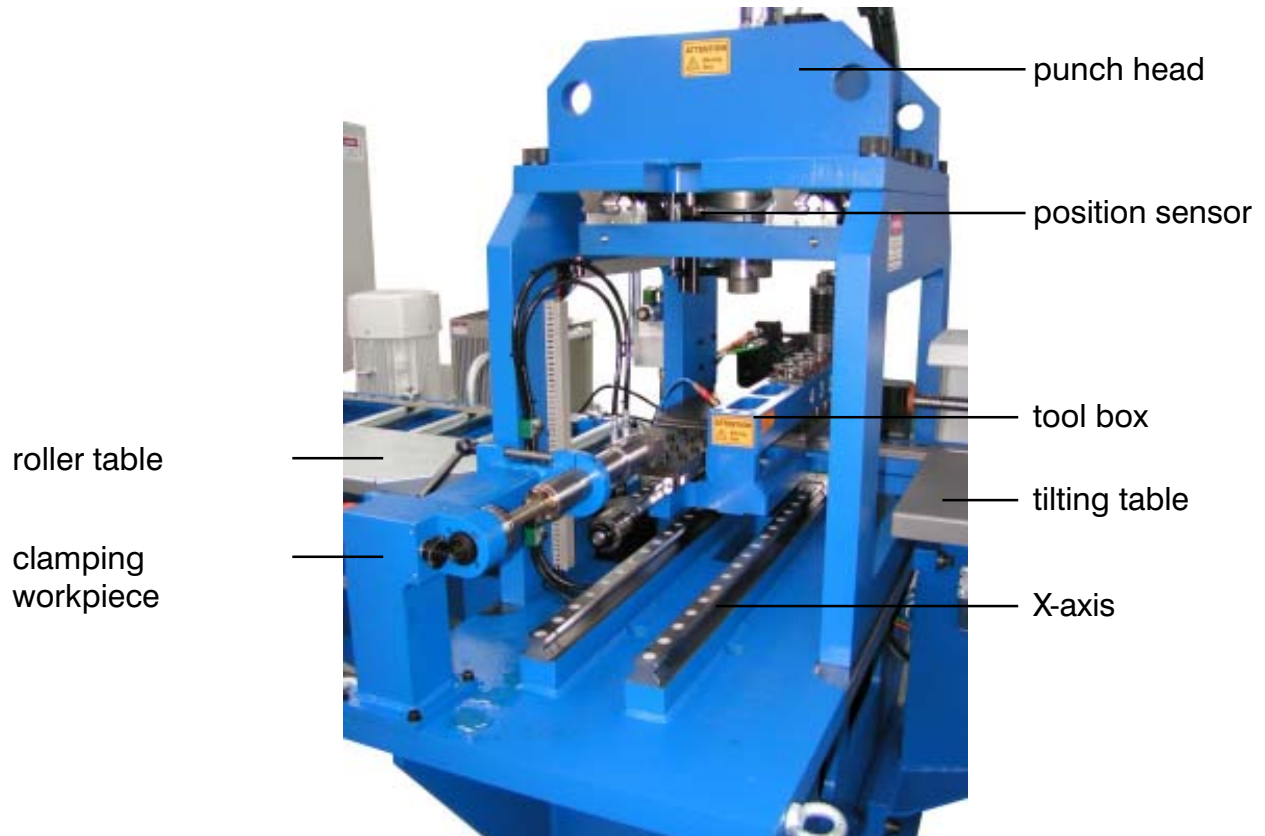


The stay within the operating range is forbidden during current machine!

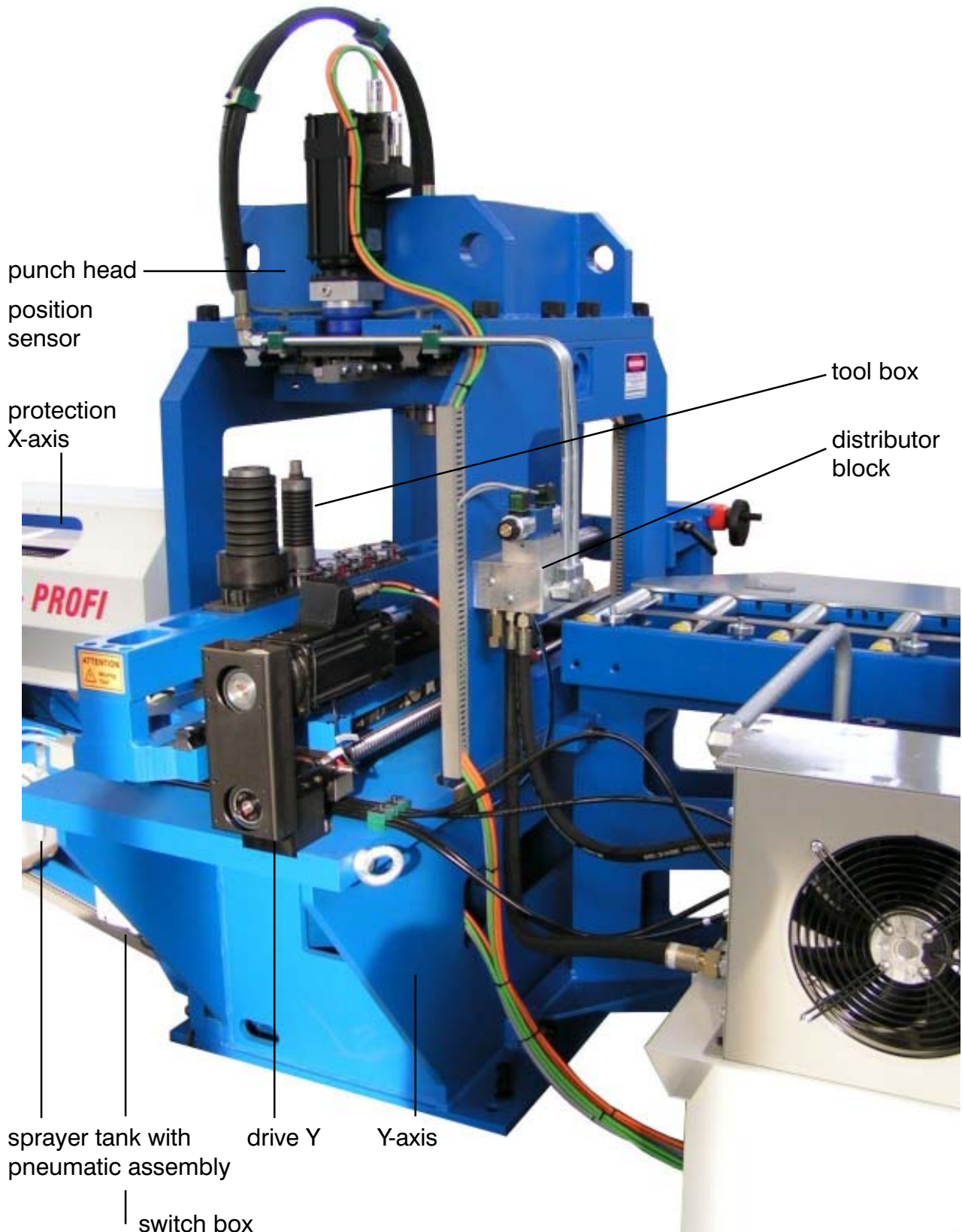
5.1.1 Subassembly inlet side



5.2 Subassembly outlet side



5.2.1 Subassembly back side



5.3 Subassembly outlet side



clamp
(X-clamp)

X-axis with
protection

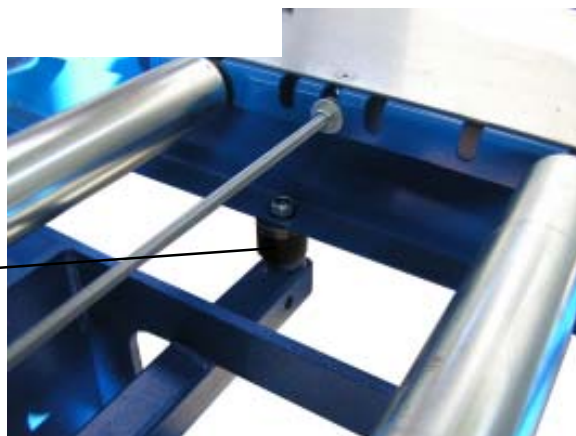
tilting table

5.4 Roller table

Subassembly roller table 614 02001



buffer



5.5 Y-axis

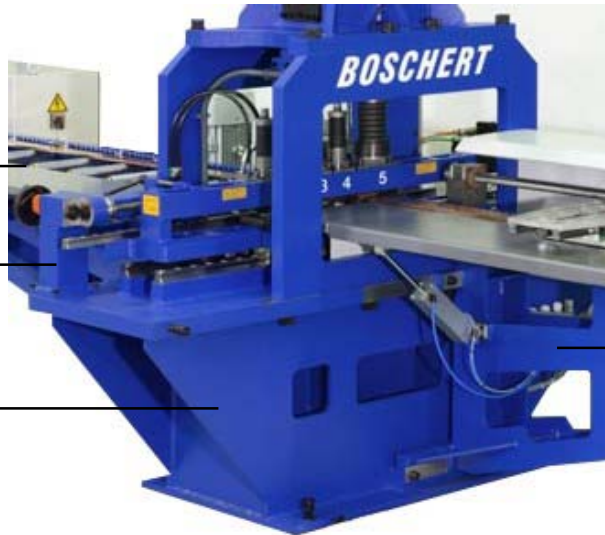
Subassembly Y-axis 614 05032

Operating side

roller table

clamping
workpiece

base frame



X-axis with tilting table

Back of machine

linear guiding



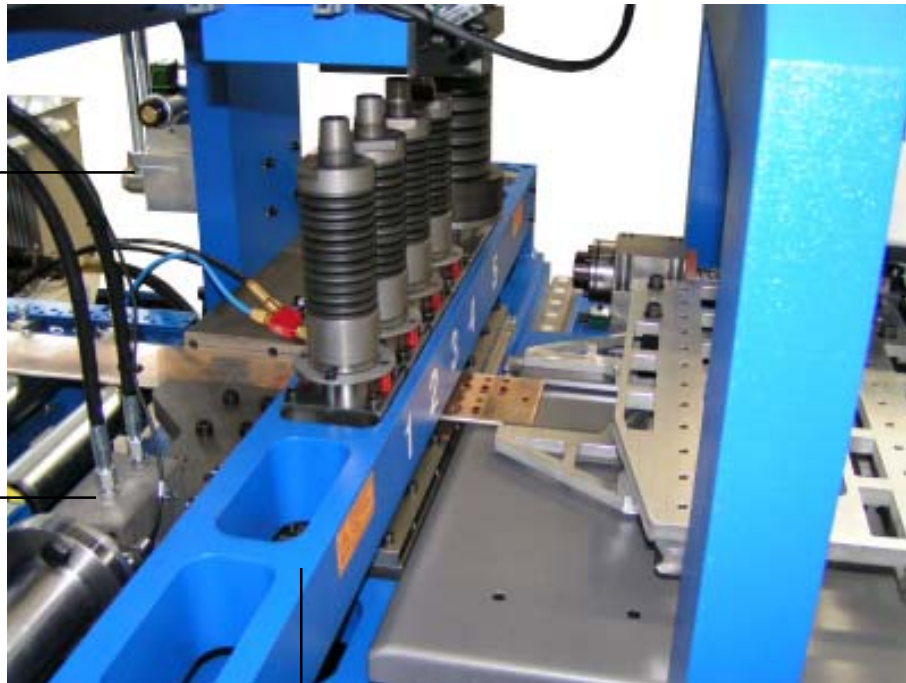
opening for waste
in front and back

5.6 Tool box system

Subassembly tool box system 614 03021

distributor
block

hydr.
clamping
workpiece



tool box with punching and cutting tool



drive Y-axis

stop for material
zero point X

die holder

clamp X-axis

punch holder

5.6.1 Tool box

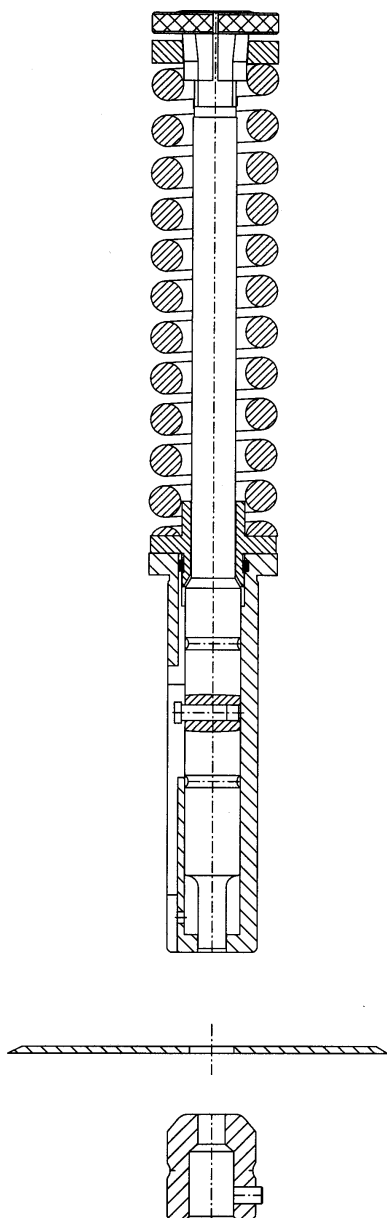
Subassembly tool box 614 03021



1.	Punch-station	1 x	AMADA - A / B
2.	Punch-station	1 x	AMADA - A / B
3.	Punch-station	1 x	AMADA - A / B
4.	Punch-station	1 x	AMADA - A / B
5.	Cutting-station	1 x	8 x 60 mm



5.6.2 Station AMADA - A



5.6.2.1 Reduction AMADA - B/A

By means of a reducing sleeve a AMADA - A station can be inserted into the admission of a B station.

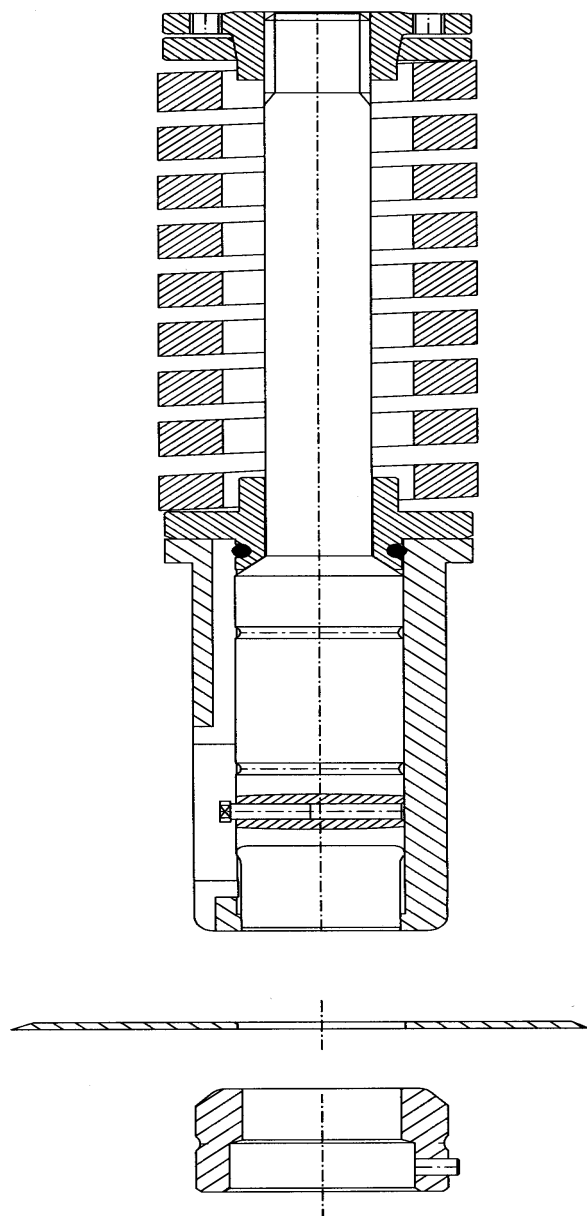
Punch reducing sleeve AMADA station B/A
incl. lock pin
(Nr.: 080908)



Notice:

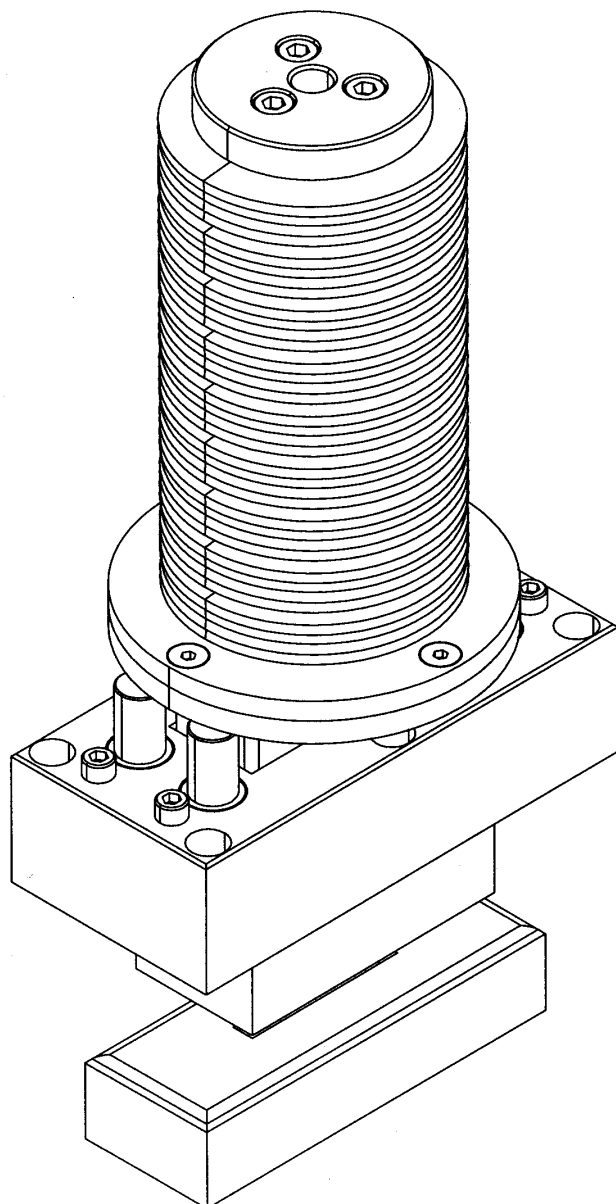
The die holder is appropriate **only** for dies quantity B.

5.6.3 Station AMADA - B



5.6.4 Cutting station

Tool no.: 608225



5.7 Clamping arrangement work piece

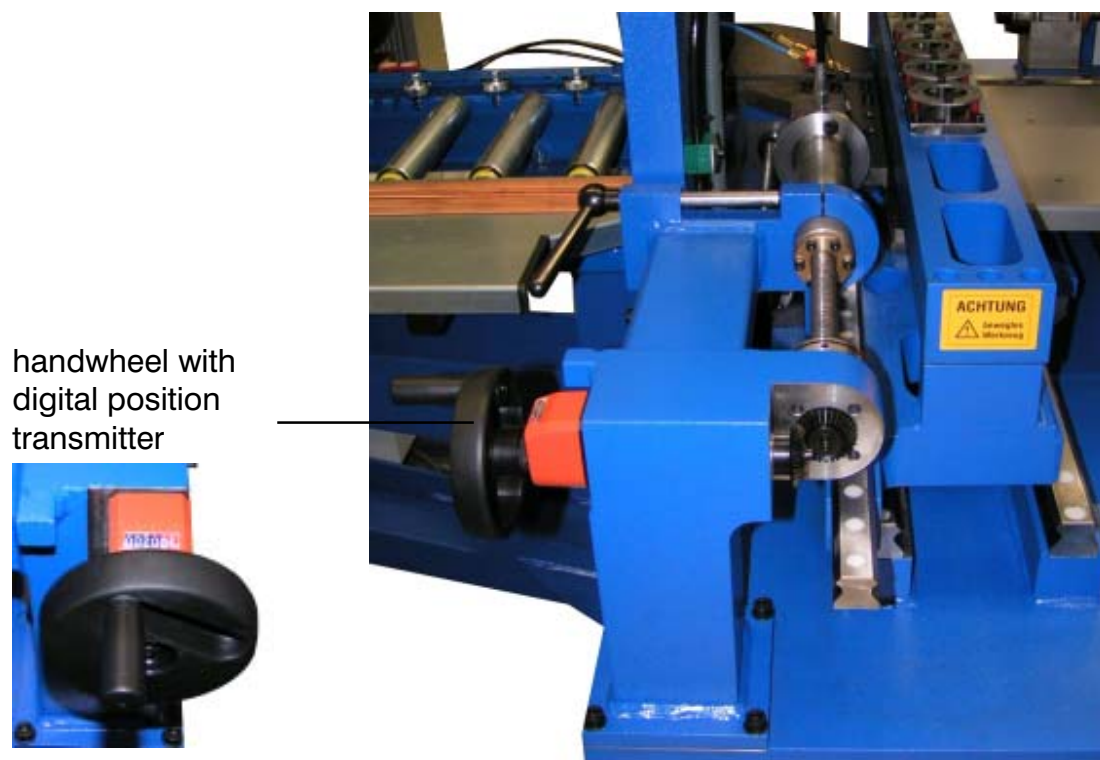
Subassembly clamping arrangement work piece 614 05035



clamping jaw fixed

clamping jaw mobile

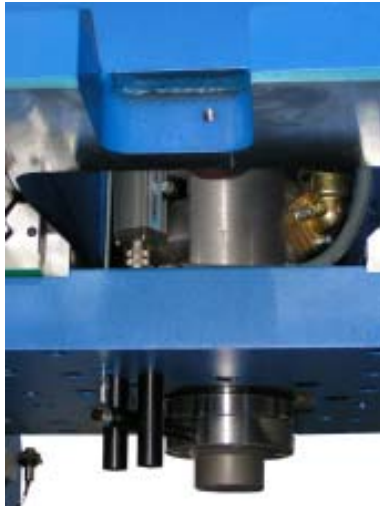
In the case of change of the width of material the mobile clamping jaw will be adapted by means of handwheel and the digital position display.



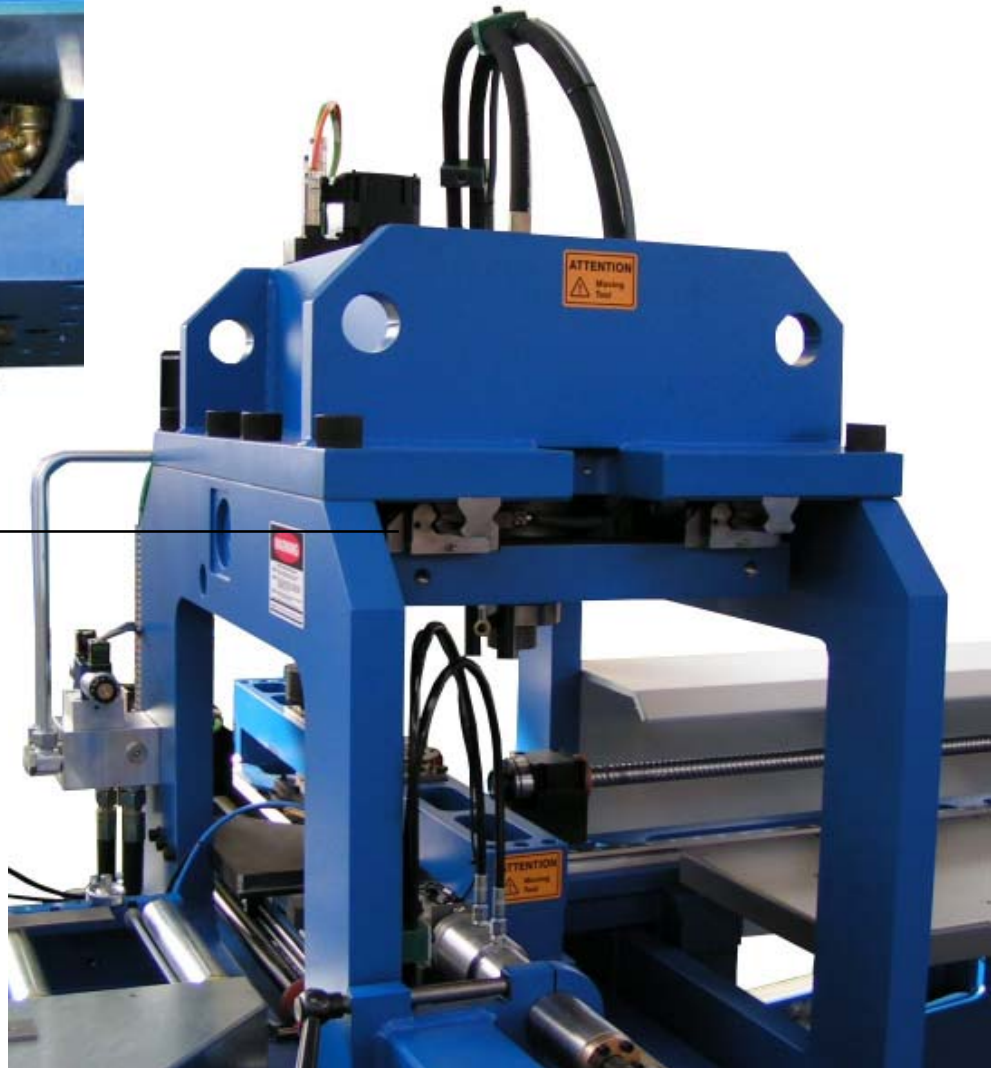
handwheel with
digital position
transmitter

5.8 Punch head

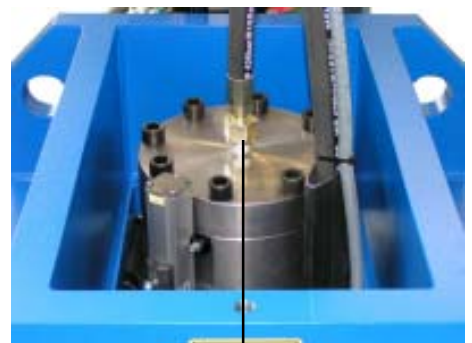
Subassembly punch head 614 03025



carriage of the
linear guiding



position
measuring system



hydraulic connection
from cylinder

5.8.1 Position sensor

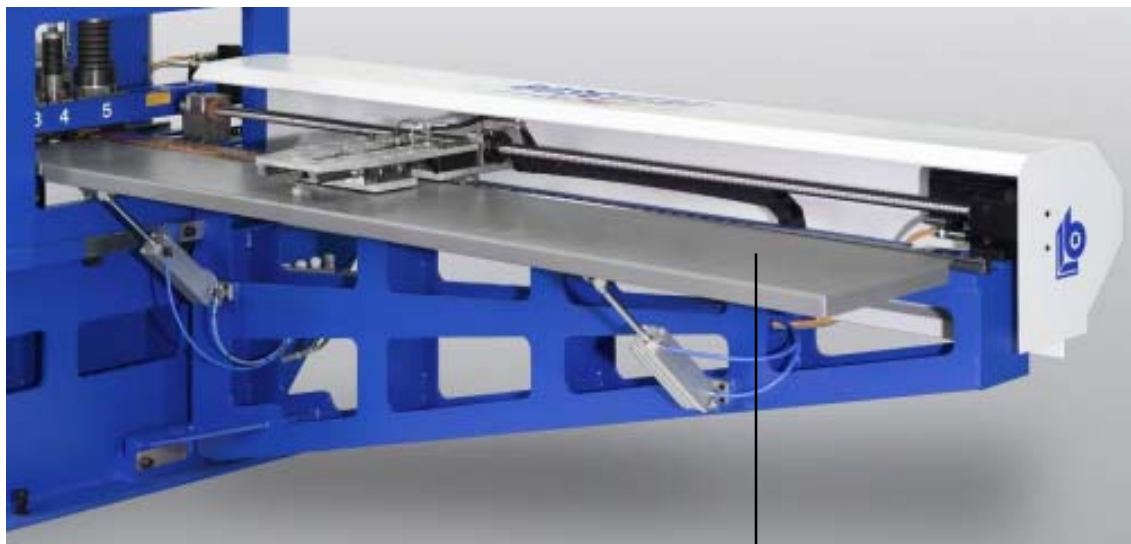
(Subassembly position sensor Balluff - system 614 03025)

1 x stroke sensor

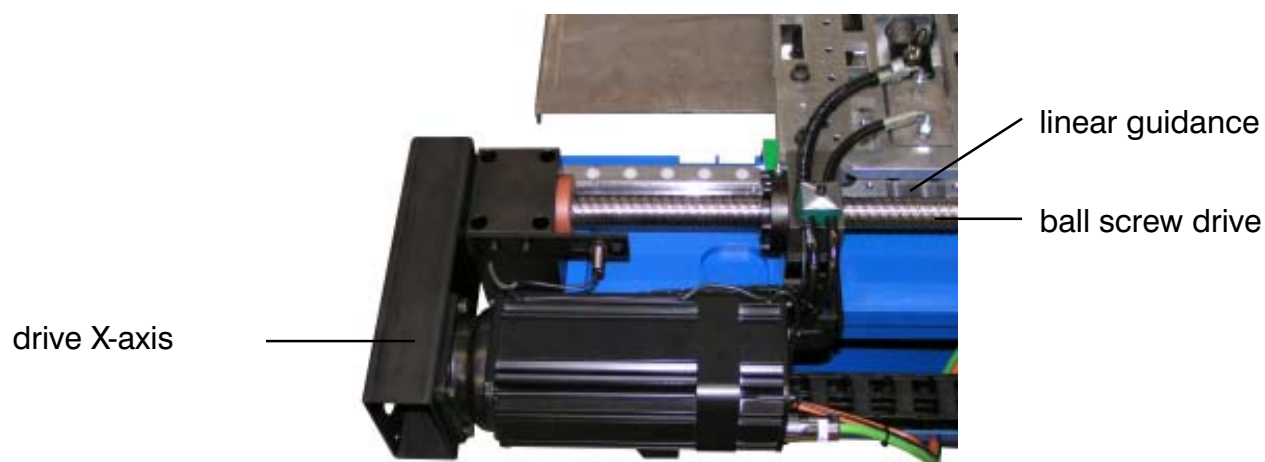


5.9 X-axis

Subassembly X-axis 614 05033

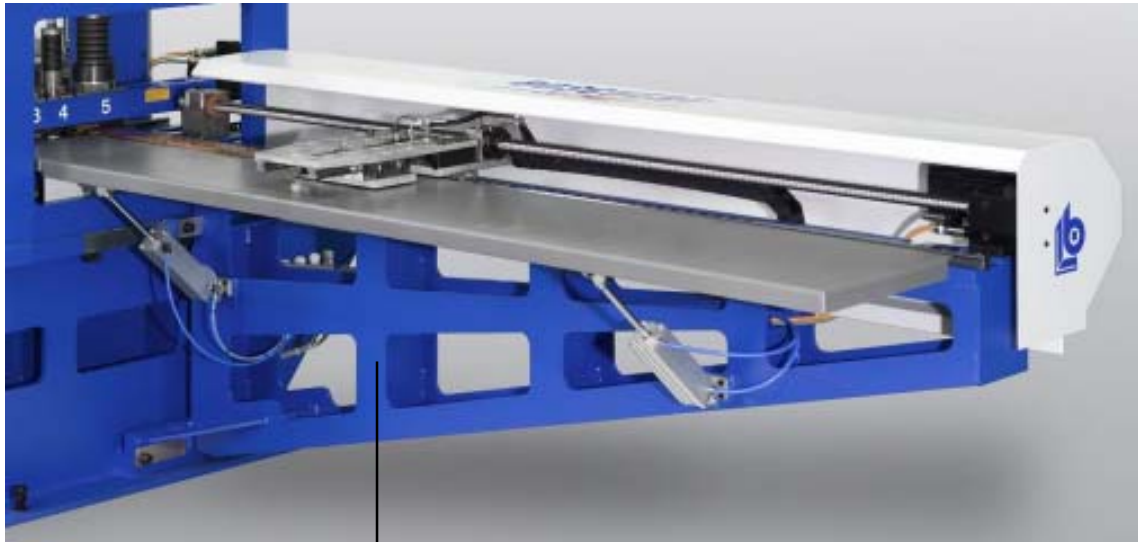


subassembly
tilting table



5.10 Pneumatically tilting table

Subassembly tilting table 614 02004



subassembly
X-axis

table not tilted

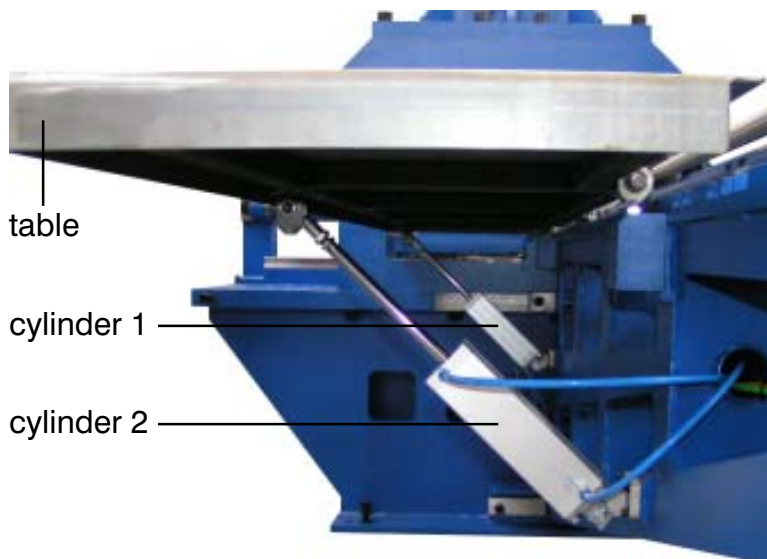
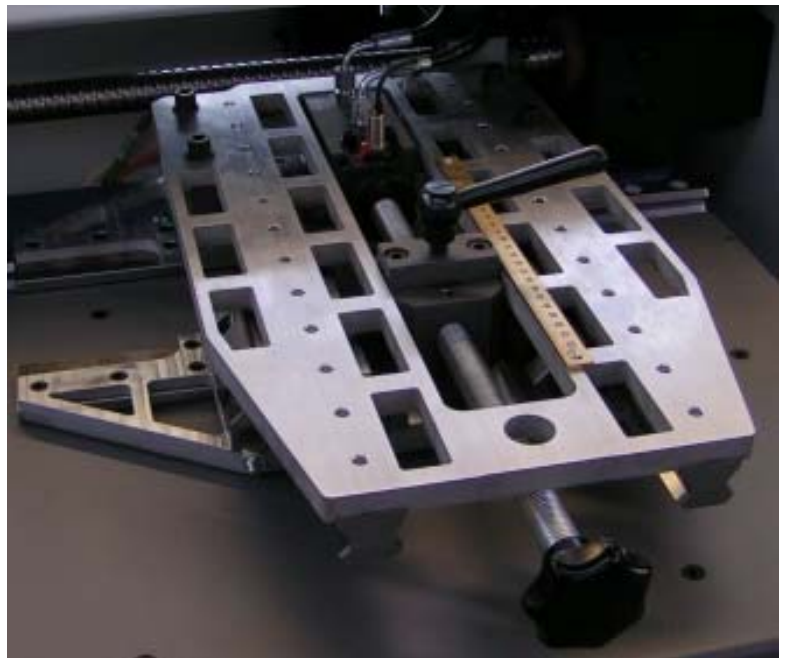
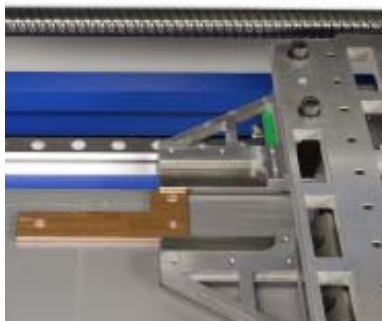
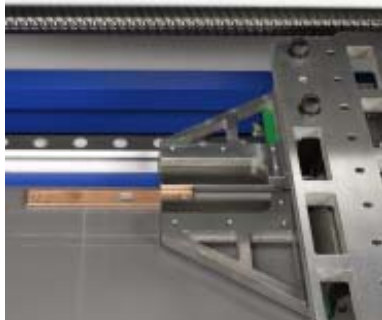


table tilted down



5.11 Clamp

Subassembly clamp 614 05036



Setting up of clamp:

- The hydraulic clamping way of the clamping device amounts to 14 mm.
- By means of the index disks the opening of the clamp can be shifted in 10 mm rasters.

➡ All widths of material upto max. 200 mm can be clamped.



5.12 Safety device

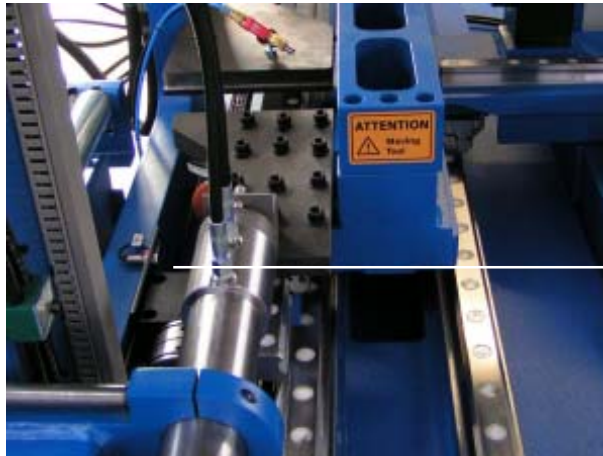
Subassembly safety device 614 06009



5.13 Limit switch axis

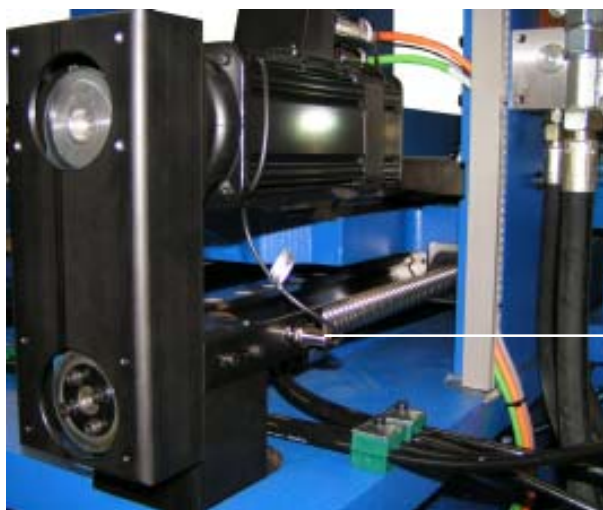
5.13.1 Limit switch Y-axis

**limit switch Y:
operating side**



Y + (123 S3)

**limit switch Y:
drive side**



Y - (123 S4)

**stroke limitation
clamping workpiece**



material clamped
(123 S8)

limit switch Y: tool box

B-axis +
(113 S4)



B-axis -
(113 S5)

5.13.2 Limit switch X-axis

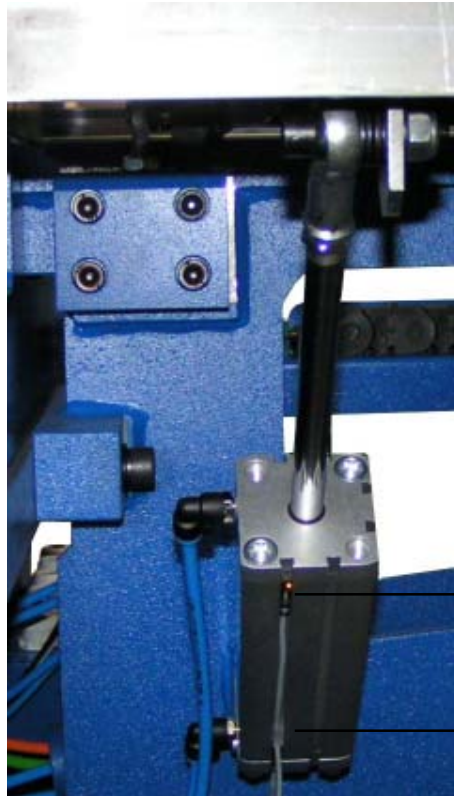
limit switch X:

X - (132 S2)



X + (132 S1)

5.13.3 Limit switch tilting table



limit switch
tilting table above (123
S5)

limit switch
tilting table below (123
S7)

5.13.4 Limit switch clamp

material in clamp
(123 S4)

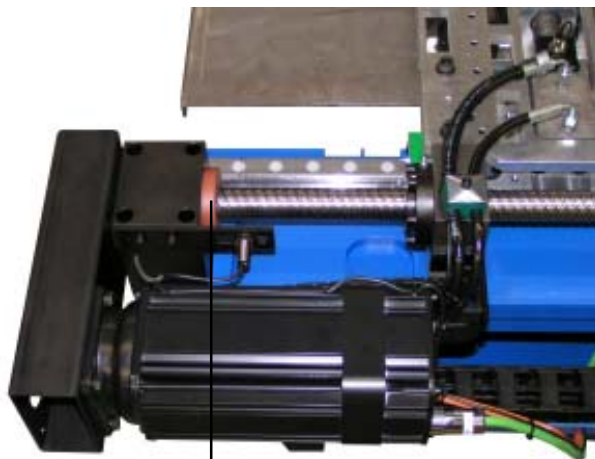


5.14 Limit stops axes

X-axis



limit stop X



limit stop X outlet side

Y-axis



limit stop Y operating side

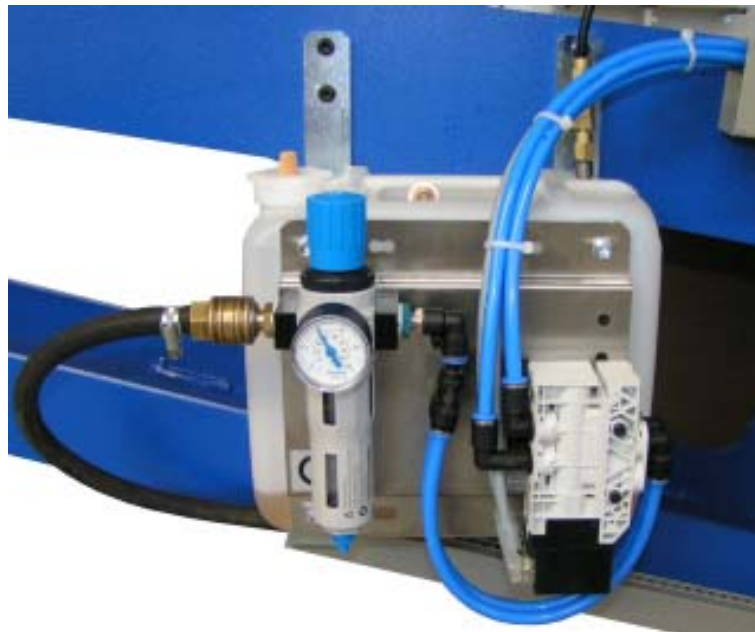


limit stop Y drive side

5.15 Sprayer

5.15.1 Spray assembly

container



pressure: 1 bar
tank capacity: max. 5 liter (OEST Platinol SF 25)



spray diffuser

6 Setup of the machine

6.1 General information

Prior to commissioning check:

- the whole safety equipment,
- the correct connection conditions.

Perform setup work only while the machine is turned off.

Switch off the main switch and secure it against accidental switching on.



Danger

6.2 The operator's control on the machine

6.2.1 The operator's control on the control cabinet

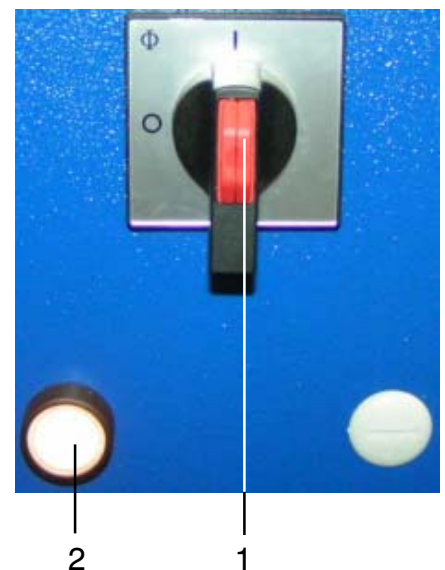
1. The main switch

The machine is ready for work, if the main switch is in the „I“ position.

2. Illuminated push button control voltage „ON“

This button:

- must be pressed to switch-on the control voltage,
- the button is illuminated after let go, the machine is ready for work,
- is not longer illuminated after EMERGENCY-OFF or another obstruction (controller not ready for work, overload released, etc.)
- must be pressed after resetting the EMERGENCY-OFF button. (button is illuminated during normal operating).



3. Slot for disc drive

Programs and software can be read in and saved via this disc drive (control desk, see separate programming instructions).



6.2.2 The operator's controls on the control desk

4. The **EMERGENCY-OFF** button.
Actuate this button only in emergency cases.
5. The touch button for lifting the punch.
6. The touch buttons for lowering the punch.
Two-hand actuation.



6.2.3 The foot pedal for the hydraulic material clamping

This pedal switch serves the hydraulic material clamping at the inlet side of the machine.

It is released by the control for clamping the material:

- By actuating the foot pedal, the material will be clamped between the mobile and the fixed clamping jaw.



Information



6.3 Preparation of the machine for punching

6.3.1 Providing a punching tool



6.3.2 Insert the die

With the installation of the die it is to be made certain that the die is inserted positionfairly into the die holder.

Subsequently, the die must by tighten by means of straight pin (1) and socket key.



6.3.3 Installation of AMADA - Station

The punch must be inserted according to the position of the die.



Information

lock against
rotation



- Insert punch in right position.
- The installation is possible in the angles 15°, 30° and 45°.



6.4 Preparation of the machine for cutting

6.4.1 Providing a cutting tool



6.4.2 Insert the die

- Insert the die into the die holder
- and fasten it by means of the straight pin.

6.4.3 Insert the cutting punch

- Insert the punch for cutting.

6.5 Insert the CU-flat



- Put the CU-flats onto the roller race at the intake side,
- and push it against the lateral roles.

zero-point



lateral roles

- After that move the flats by hand in direction of material flow,
- until the material attaches zero-point.
- By operation of the foot switch the clamping arrangement work piece will be activated and the material will be clamped between the mobile and the fixed clamping jaw.
- After the operator left the maintenance range,
- the program at the control desk can be started.



zero-point

6.6 Starting the machine

- * Program punching procedure and start the program sequence.
- * Insert the tools, requested by the control, and confirm them in the program.
- * Now the Y-axis will be moved by the control until the zero-point will be in direction of material flow from the CU-flat.
- * The CU-flat has to be moved by hand between the preseted clamping jaws and must attach zero-point X.
- * By operation of the foot switch the CU-flat will be clamped hydraulically.
- * The operator steps behind the light barrier, confirms these with „RESET light barrier“ and starts the processing of the CU-flat.
- * The Y-axis moves to the first punching position selected by program.
- * The X-clamp (clamping device) drives forward beyond the end of the CU-flat and clamps the material.
- * The clamping arrangement work piece opens and the X-clamps drives to the 1st punching position.
- * The clamping arrangement work piece closes again.
- * Now the punching station is ready. If these punching position is outside the stripper from the selected tool the punching will done.
- * If the punching position is inside the stripper the X-clamp open and moves back.
- * The punching will be done.
- * The X-clamp drives forward and catches the CU-flat.
- * The clamping opens and the next X-position will be driven on.

6.7 Stopping the machine

Normal stopping

- * By means of the stop function. (See separate programming instructions).

EMERGENCY-OFF

- * By pushing the push-button on the control desk.

Turning off after end of shift

- * Select stop function, (see separate programming instructions),
- * switch off main switch (1).

6.8 Restarting the machine

After „Normal stop“

- * Select start function, (see separate programming instructions),

After EMERGENCY-OFF or automatic power down

- * remove error (see separate programming instructions),
- * press button (2) on the control cabinet,
- * restore light barrier,
- * select start function, (see separate programming instructions),

7 Maintenance

7.1 Maintenance and inspection

7.1.1 General information

- During repair and maintenance work there is increased danger of accidents. Perform these types of work only while the machine is turned off. Switch off the main switch and secure it against accidental switching on.
- It is imperative to observe:
 - the chapter „Safety“,
 - the separate documents,
 - the accident prevention instructions of the relevant trade associations!



Danger

Immediately correct:

- faults,
- defects,
- strong wear,
- unusual noise,
- sources of danger or insufficient lubrication,
- cutting waste near die,
- cutting waste near guidance.



Attention

After maintenance it is imperative to remove from the machine everything that does not belong to the machine.

7.2 Maintenance and inspection list

operating hours	check	procedure
8	mounting of metal master: - cleaning the mounting of metal master - tools and tool holding fixture for dirt and defects	clean, replace if necessary
	- Guides for cleanness and lubrication status - electrical cables and connections for defects or interruption	visual control
	all safety installations	while the machine is running: - push „EMERGENCY-OFF“ - interrupt light barrier
	pneumatics: - drain if necessary	
40	motors, pumps, etc.	check noise
	photocells, lenses, reflectors	clean if necessary
1000	CU-Profi complete: - bolts and screws for tight seat - wear and cleanness - clean oil cooler - check thermostat	check (re-tighten screws, if necessary or replace parts).
5000	- change hydraulic oil - change oil filter	

7.3 Cleaning the machine

Clean the machine regularly. This will extend the service life of expensive components and you will detect:

- loose components,
- defective cables or lines,
- excess or poor lubrication,
- wear and undesired corrosion.

Synthetic parts and sealing components must never come in contact with aggressive liquids. (e.g. tetrachloromethane, benzene, lyes, acids, etc.).

Do not hose down the machine with water.

➡ **Water damages the electronics and leads to corrosion.**

Bind dripped oil with binding agents and dispose of it according to the relevant regulations. Remedy the cause of oil dripping.

Use wire brush and solvents only in extreme cases of emergency.



Information

7.3.1 Auxiliary agents and their use

Never use petrol or nitro dilution for cleaning. These materials develop readily inflammable vapours. One spark (cigarette) is sufficient for ignition.

➡ **This may result in the most serious burns.**

Cleaning by means of suction air

Removal of loose dirt is easy if you use suction air. This applies also to machine parts that are not readily accessible.

Cleaning by means of compressed air

Be cautious when using compressed air. Wear goggles! Otherwise danger of eye injury!

Furthermore, you would blow dirt into guides and bearings.

Do not apply this type of cleaning, if possible.



Warning

7.4 Lubrication

- Machine „OFF“ for all lubricating work.
- Lubricate more frequently if necessary, until all lubricating points have been provided with lubricant.
- **Prior to commissioning after a longer period of standstill, lubricate the whole machine and perform maintenance work.**
- **Do not mix lubricants. This would alter their properties and can result in mechanical breakdown.**
- **Observe storage and disposal instructions.**



Information

Lubricating points

- Always leave slightly lubricated all bright machine parts, racks, threaded spindles and guide beads.
- Clean grease nipple before lubricating.

Positions of manual lubrication points

See 7.4.1 lubrication.

Recommended lubricants

See table on the next page.

In case of trouble with lubricants, please contact the lubricant manufacturer or the manufacturer's technical service. They will inform and advise you.

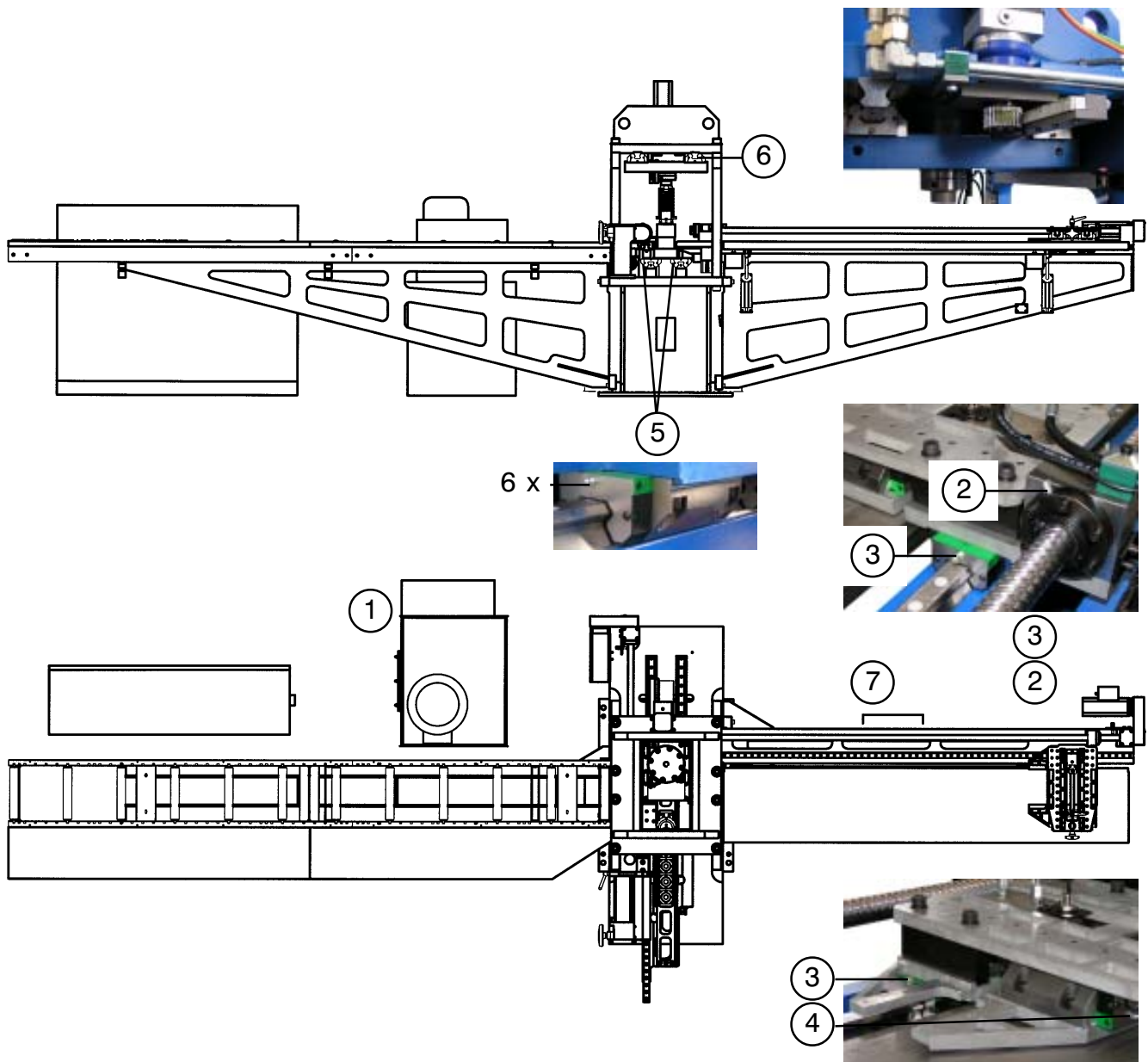


Information

Storage of lubricants

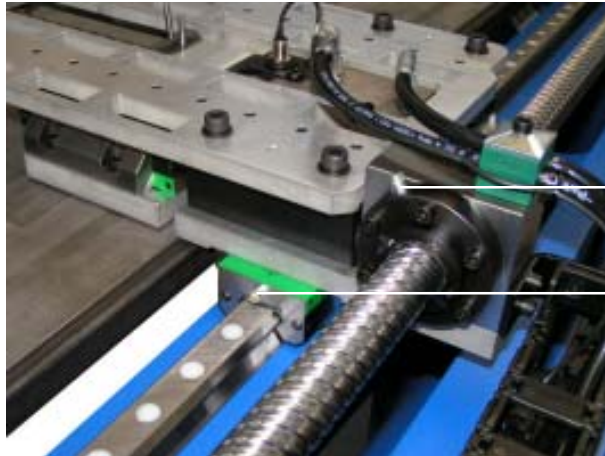
- In clean, closed containers.
- At a dry and dust-free place.

7.4.1 Lubrication points



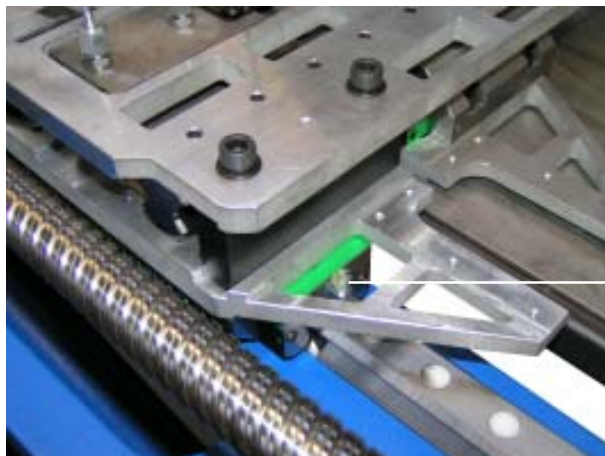
machine part	oil / grease	lubrication plan	lubrication points
hydraulic unit	oil: H-LP 46 company: Oest, Shell, BP	every 3 years	①
Ball screw drive Y-axis	roller bearing grease - Fuchs Lubritec URETHYN EM1 (original grease)	monthly	② ③ ④
X-axis roller table	- SKF LGMT2 (company SKF) - MoS ₂ -Fett (company Loctite)		⑤ ⑥
tool lubrication	- cooling lubricant - WD 40	as often as needed	⑦

7.4.1.1 Lubrication points X-axis



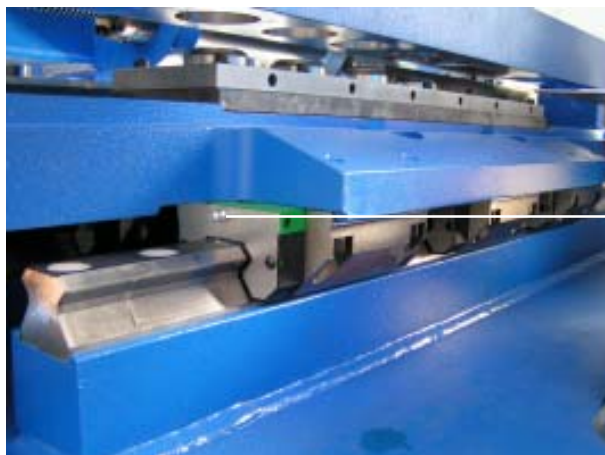
lubricating nipple

lubricating nipple



lubricating nipple

7.4.1.2 Lubrication points Y - axis



lubricating nipple
(altogether
6 pieces)



lubricating nipple
(altogether 6x)

7.4.1.3 Lubrication points punch head



lubricating point

7.4.1.4 Lubrication point tool box

lubricating nipple
(in front + behind
altogether 4x)



lubricating nipple
(in front + behind
altogether 4x)

7.4.1.5 Lubrication points clamp



lubricating nipple
(altogether 4x)

7.5 Corrosion prevention

The following products are used for corrosion prevention:

Rivolta K.S.P:

Fa. Bremer & Leguil G.m.b.H

PF 100201

47002 Duisburg

Retinax A

Deutsche Shell AG

Überseering 35

22297 Hamburg

Please contact the respective manufacturer if you need further information and the safety data sheet of these products.

7.5.1 Notes on corrosion prevention agents, oils and lubricants

These products will not harm your health if you observe the general rules of industrial safety and hygiene.

Nevertheless, for your safety:

- wear safety goggles if there is a risk of eye contact
- wear protective gloves in case of permanent contact.



Measures to be taken after eye contact:

Rinse your eyes with plenty of water and call a doctor.



Measures to be taken after skin contact:

Wash affected body parts with plenty of water and soap.

7.5.2 Disposal of corrosion-preventing agents, oil and lubricants

Corrosion-preventing agents, oils and lubricants must never get into the sewer system, lakes and rivers or earth.

It is imperative to observe the regional regulations.



Information

8 Hydraulic

8.1 The hydraulic aggregate

- In case of problems with the hydraulic system always call the service personnel.
- Open the screw joints only in the unpressurized state. Danger due to oil that may squirt out.



Danger

Make sure that:

- the oil level is always between „min“ and „max“ (read from fluid level gauge),
- extreme cleanness is observed when changing the oil. Dispose of residual oil according to the relevant regulations and without harming the environment.



Information



8.2 Oil change

Planning maintenance work on the hydraulics

Determine the work to be done and provide the materials to be used in time:

- Oil
- Filter
- Gaskets
- Sealing materials
- Empty container
- Aspiration pump

Ölwechsel Schnelle Hydraulik

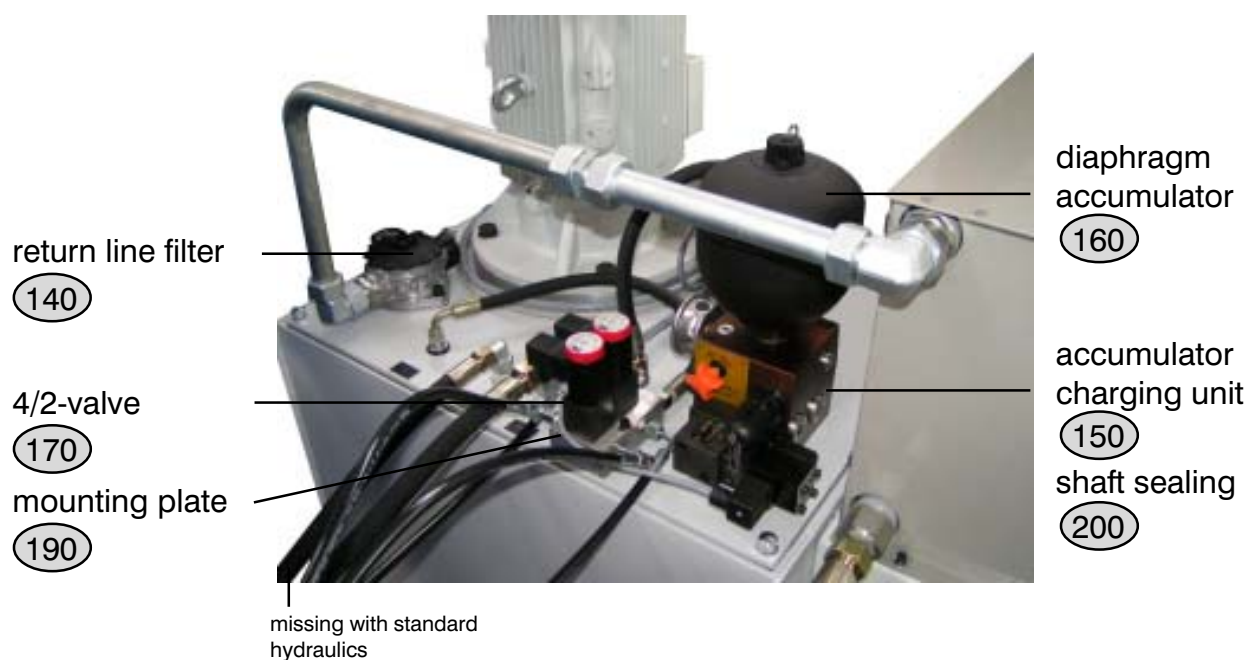
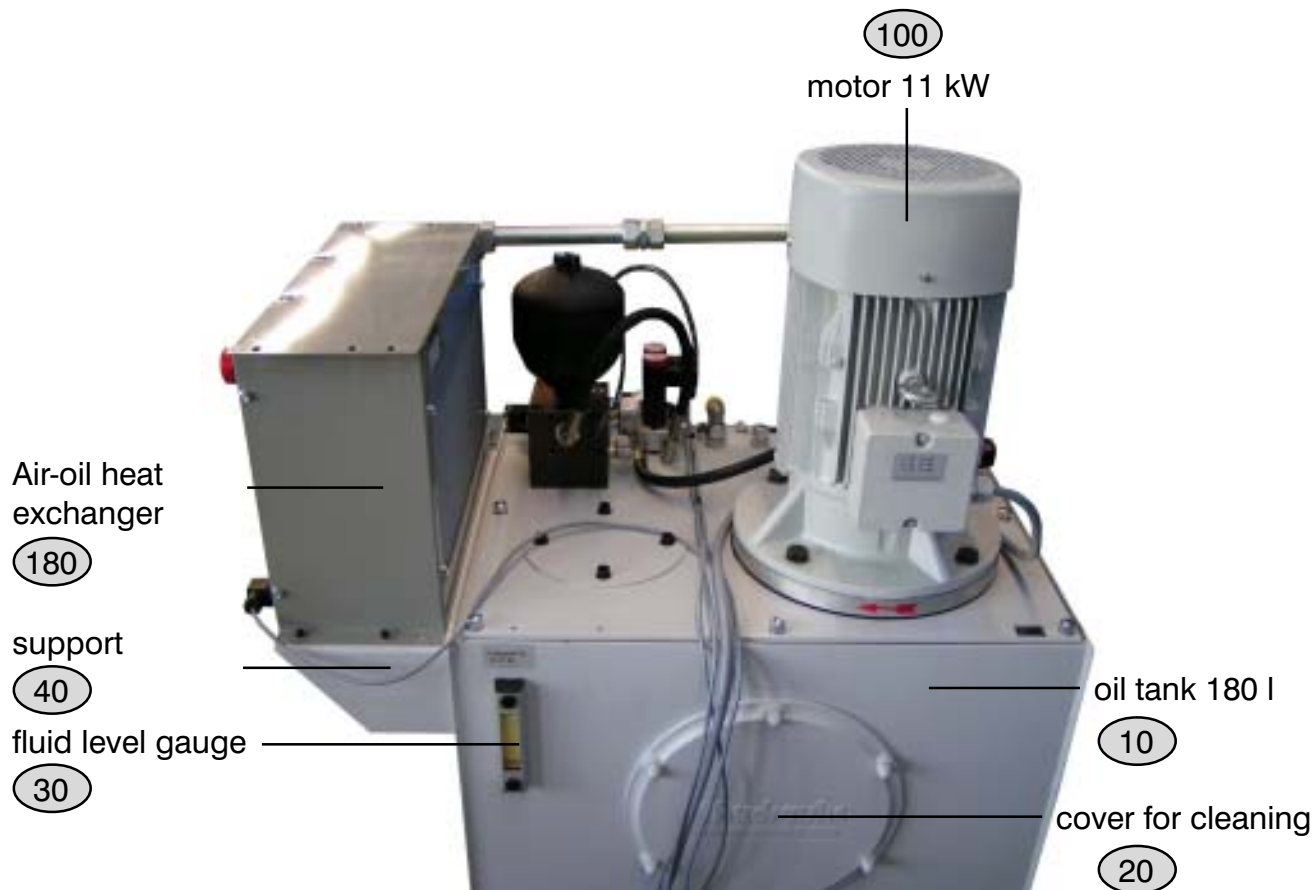
With the speed hydraulics, oil change is done via the filter plug (1), which is also required for exchanging the backflow filter.

When changing the oil, the filter should generally be replaced as well.

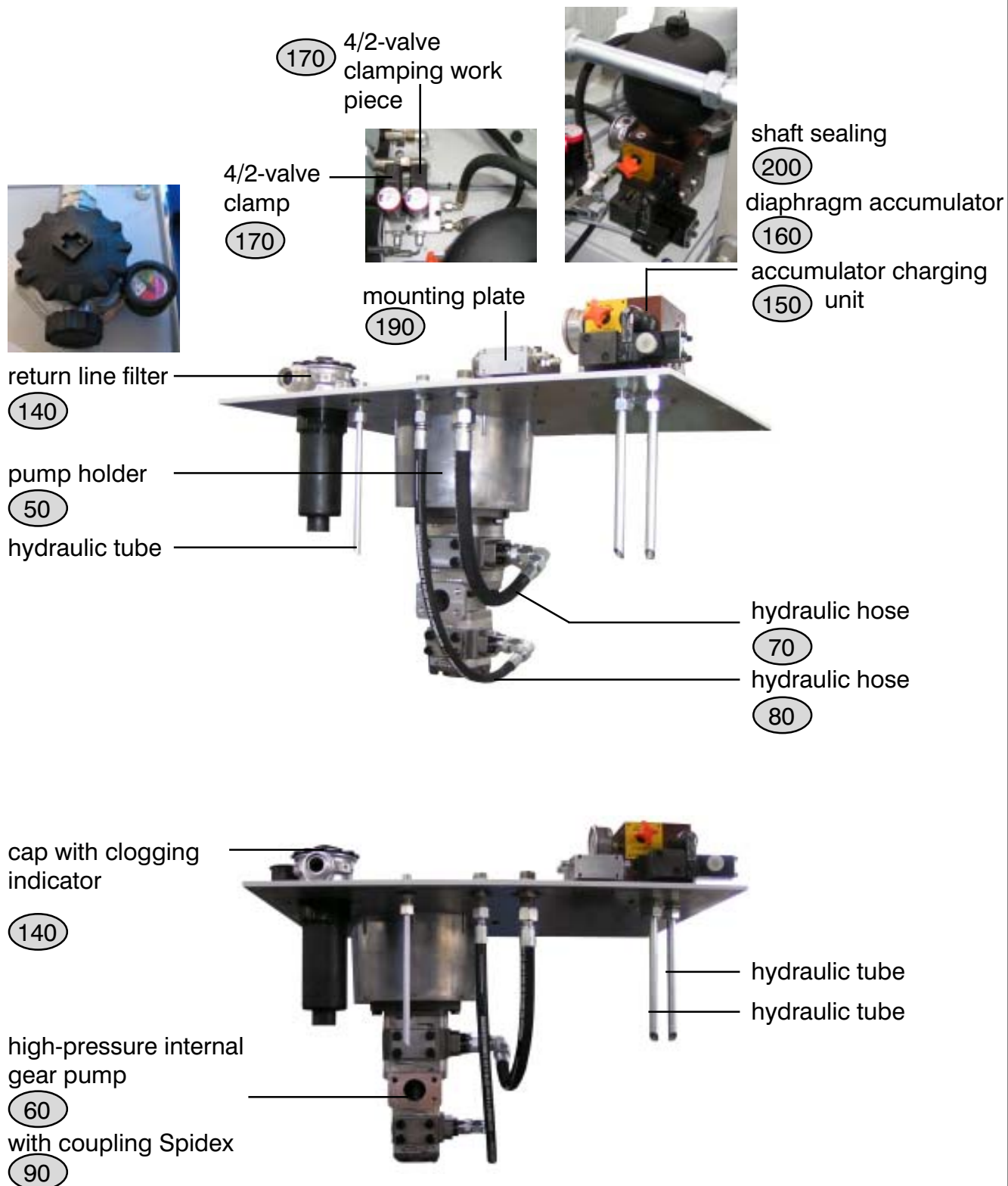
- * Check the filter dirt display (2) while the aggregate is running.
- * Remove aspirated dirt particles from the cooler (blow out cooler filter while the motor is off).
- * Check the functioning of the thermostat on the cooler (set thermostat (5) to minimum, blower must start when the temperature has risen).
- * Check the oil level displayed on the oil-level gauge (3).
- * For overall cleaning of the tank the discharge screw (4) and the service cover (6) can be removed.



8.3 Assembly of the hydraulic unit



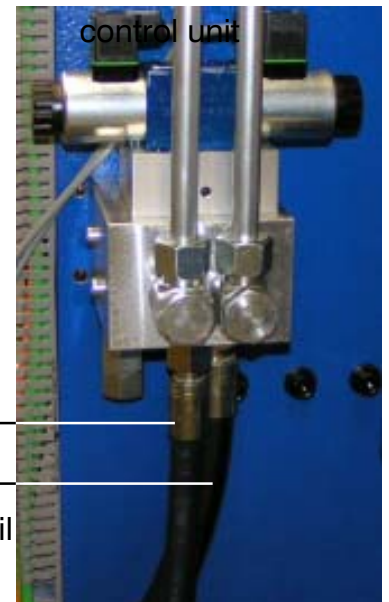
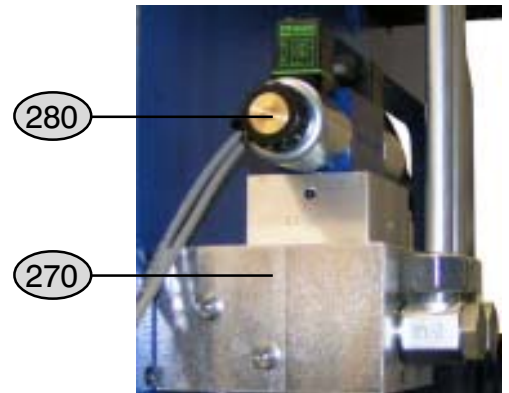
8.3.1 Assembly of the tank cover



8.3.2 Assembly of the machine



Clamping arrangement work piece

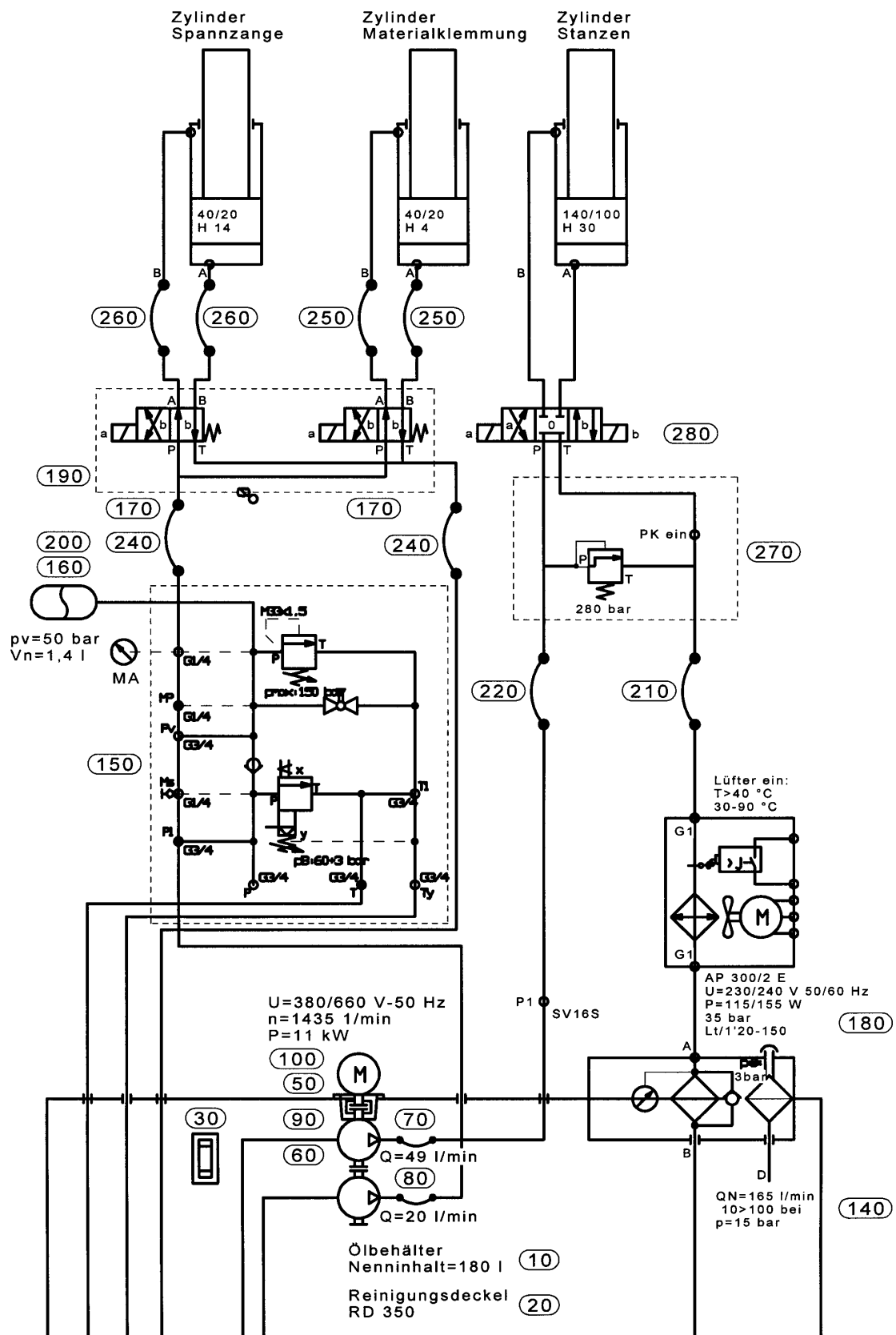


connection to air-oil
heat exchanger



250

8.4 Hydraulic diagram



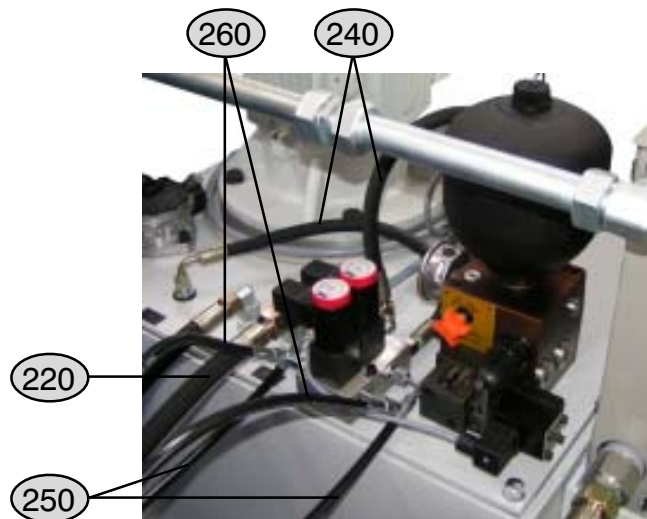
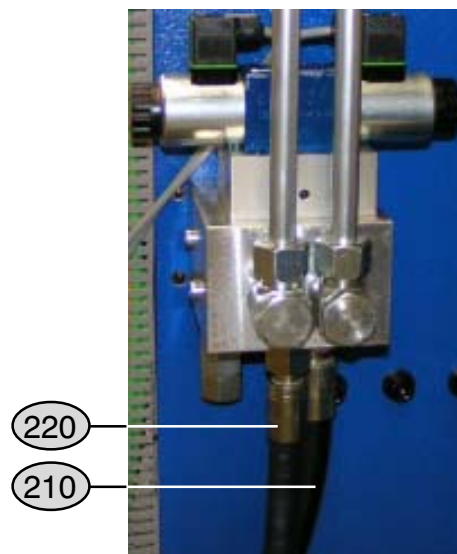
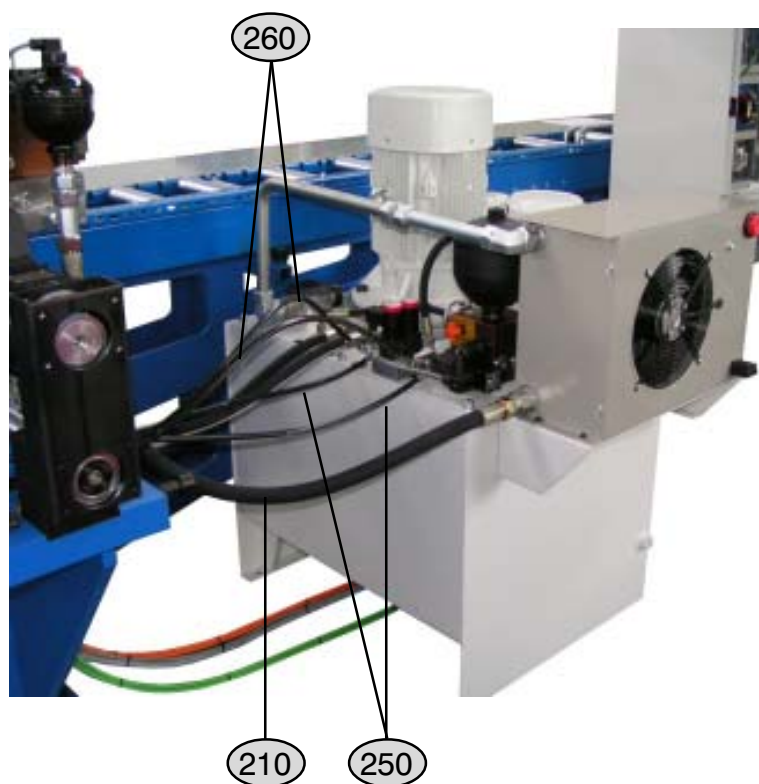
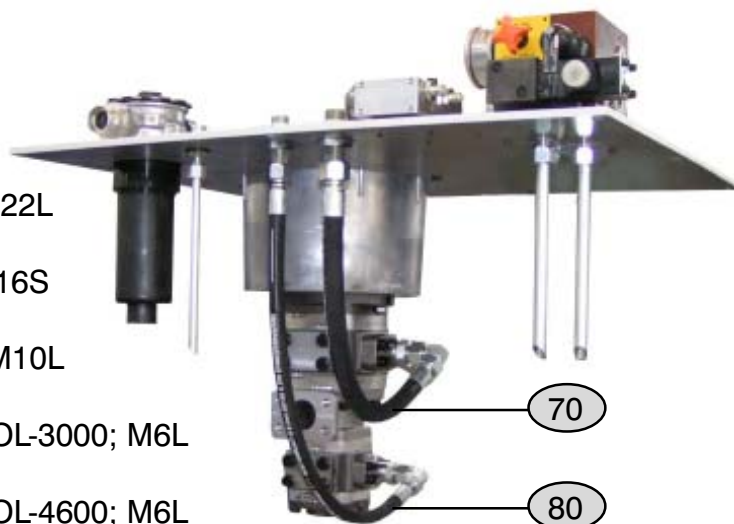
8.5 Hydraulic - Parts list

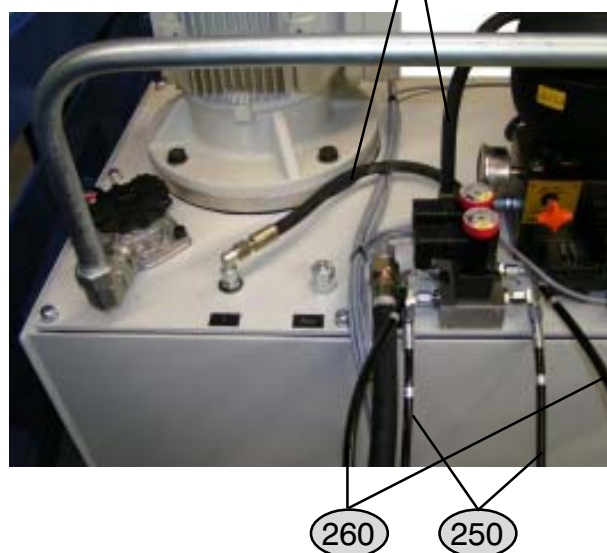
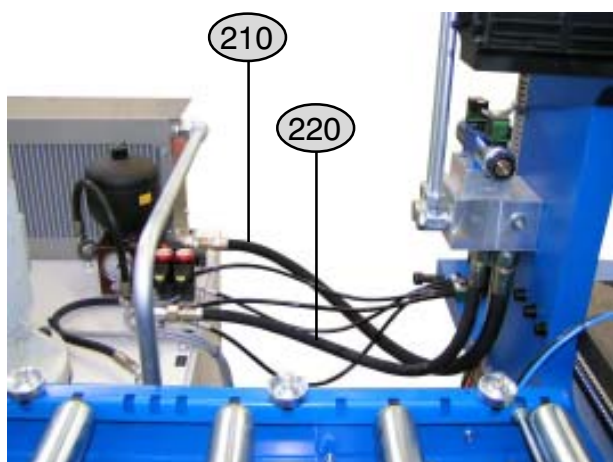
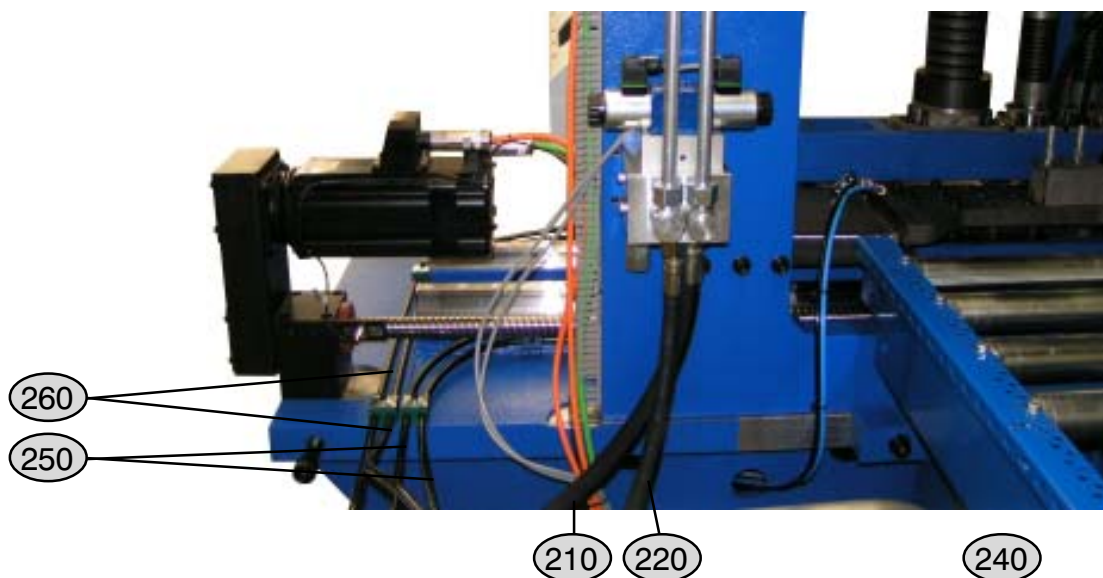
614 04004

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
10	94610005	0 Oil tank 180 L; 630x756x660		1			
20	94610006	0 Cleaning cover		1	24339		
30	94510184	0 Fluid level gauge Schraubenmittenabstan		1			
40	64400027	0 Support for heat exchanger 205x125x540		1		St 37	
50	94310021	0 Pump holder		1			
60	94310020	0 High-pressure internal gear pump		1			
70	94410067	0 Hydraulic hose 500 mm		1	20066		
80	94410068	0 Hydraulic hose 600 mm		1	20066		
90	97600011	0 Coupling; SPIDEX		1			
100	93010083	0 Motor 11 kW; 1435 1/min; 50 Hz; 400 V		1			
140	94510183	0 Return line filter QN=165 l/min		1			
150	94610002	0 Accumulator charging unit	0,00 €	1			
160	94610001	0 Diaphragm accumulator 1,4 l; 330 bar		1			
170	94210025	0 4/2 valve		2			
180	94610004	0 Air-oil heat exchanger		1			
190	94710003	0 Mounting plate for valves		1			
200	94912033	0 Shaft sealing dM 33,7 x DM 42 x S 2		1		St mit N	
210	94410044	0 Hydraulic hose 1150 mm		1			
220	94410075	0 Hydraulic hose 850 mm		1			
240	94410072	0 Hydraulic hose 500 mm		2			
250	94410073	0 Hydraulic hose 3000 mm		2			
260	94410074	0 Hydraulic hose 4600 mm		2			
270	23420010	b Distributor block 80 x 113 x 130		1		AlZn10	
280	94210026	0 4/3 directional valve		1			

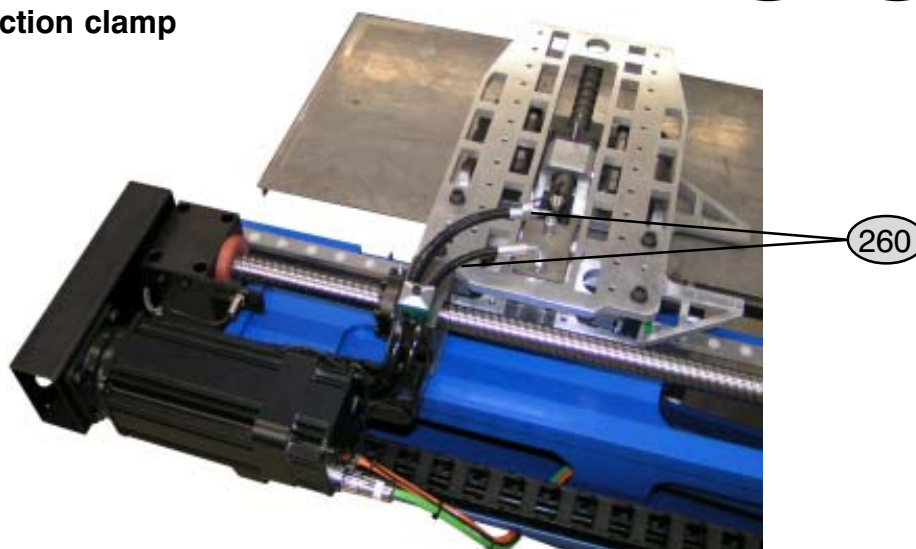
8.5.1 Spare parts list hydraulic hoses

- (80) 2SN 08P 600
- (70) 2SN 12P 500
- (210) 2SN DN20 DKOL-DKOL-1150; M22L
- (220) 4SP DN12 DKOS-DKOS-850; M16S
- (240) 2SN DN8 DKOL 90-DKOL-500; M10L
- (250) Thermoplast NW5 DKOL 90-DKOL-3000; M6L
- (260) Thermoplast NW5 DKOL 90-DKOL-4600; M6L





Hydraulic-connection clamp

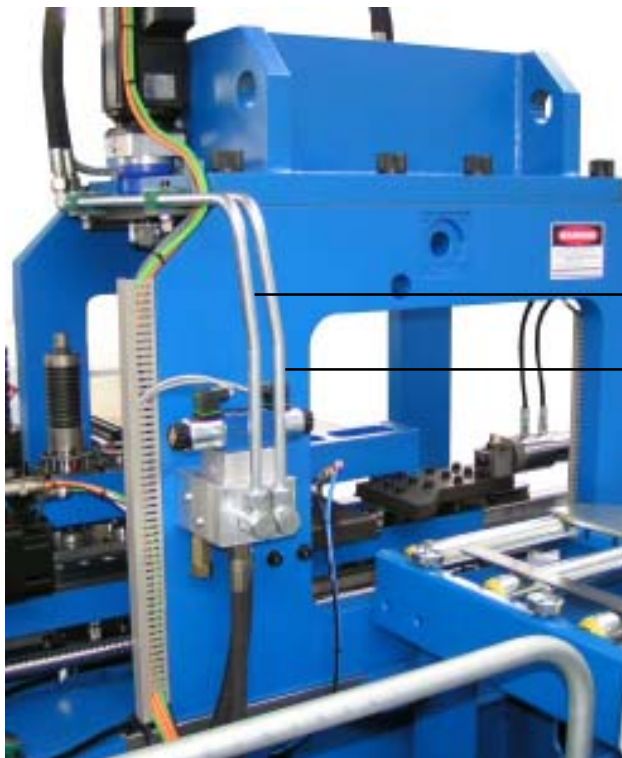


Hydraulic-connection clamping work piece



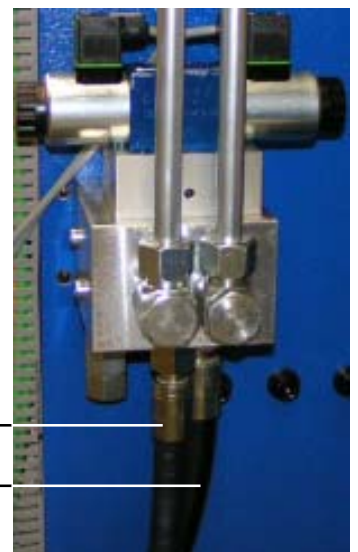
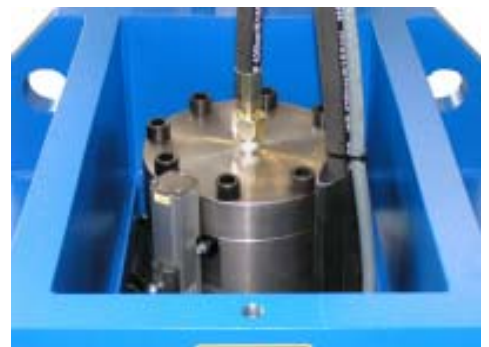
250

Hydraulic-connection punch head



10

20



220

210

10 hydraulic tube Øa 16

20 hydraulic tube Øa 16

9 Pneumatic

**Before starting work on the pneumatic system turn off air (divide from compressed-air ductwork system).
Always unpressurize the system.
Danger due to air, water or oil being under pressure.**



Danger

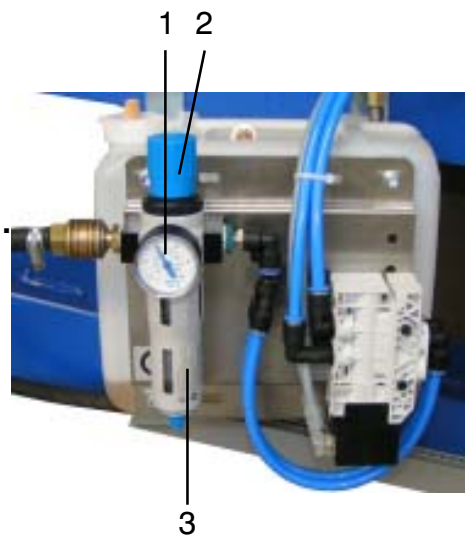
Dewatering the pneumatic system

Dewater the pneumatic system before the water level in the sight glass (4) has reached the „max“ indication.

Procedure:

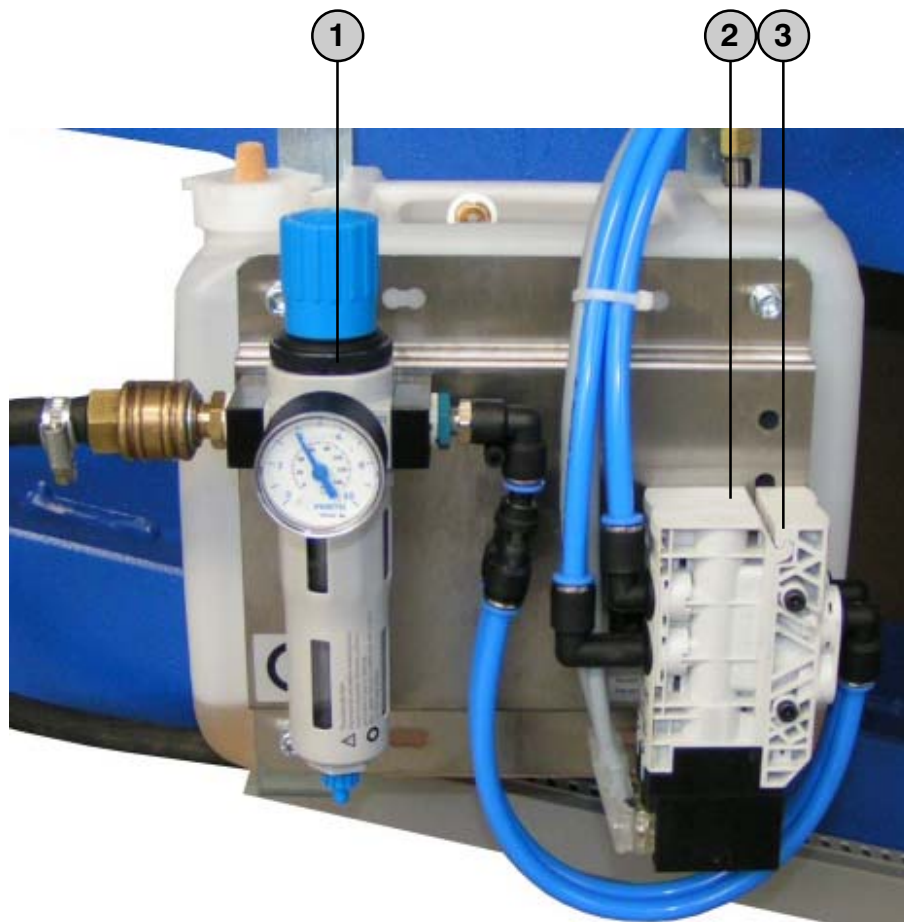
- * Open delivery screw (right-hand thread (5)) and let out the water,
- * close delivery screw (5) again.

Do not adjust the pressure at the manometer (1) higher than 4,5 bar.



Information

9.1 Assembly of the pneumatic unit



Pos. 1 Filter/pressure-regulator unit
 Pos. 2 3/2 - valve
 Pos. 3 4/2 - valve

part number: 9425 2233
 part number: 9425 2220
 part number: 9425 2220



tilting table (Pos. 3)
 sprayer (Pos. 2)

9.2 Pneumatic diagram tilting table and sprayer

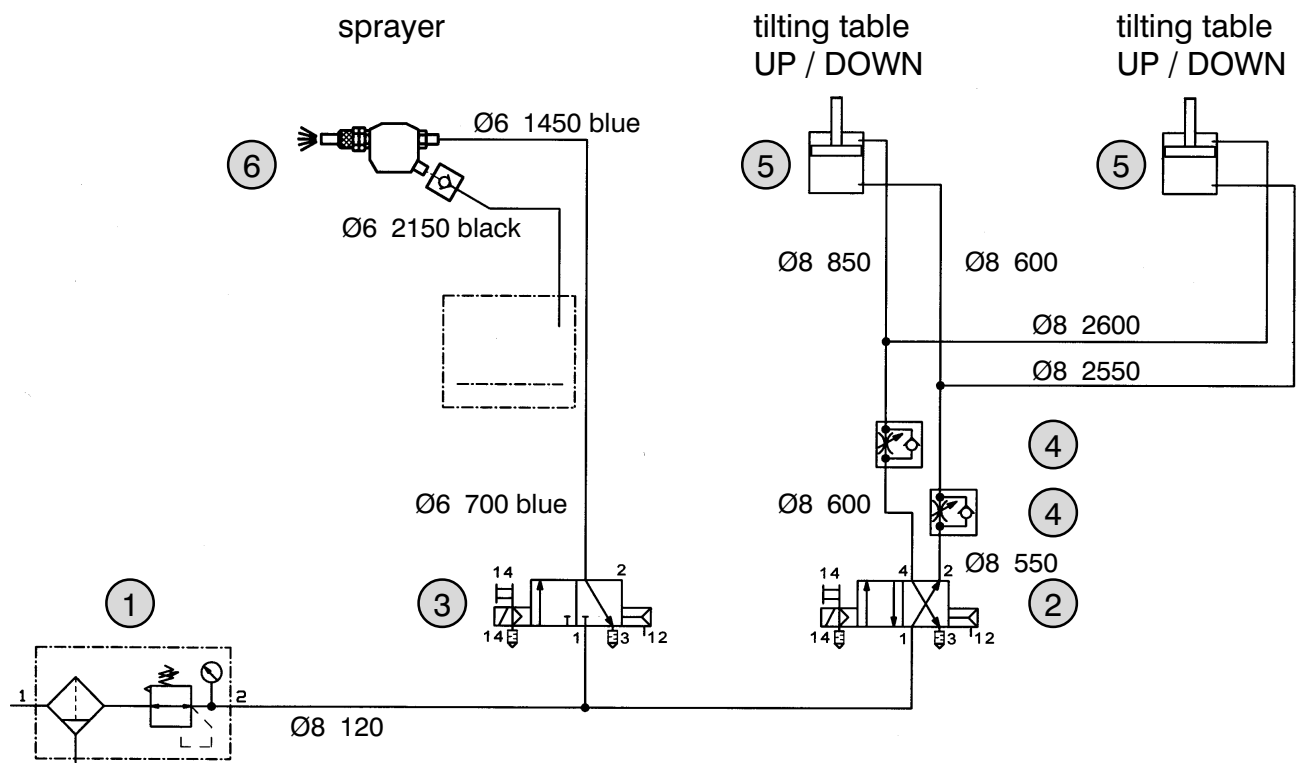
614 60013



container with pneumatic assembly



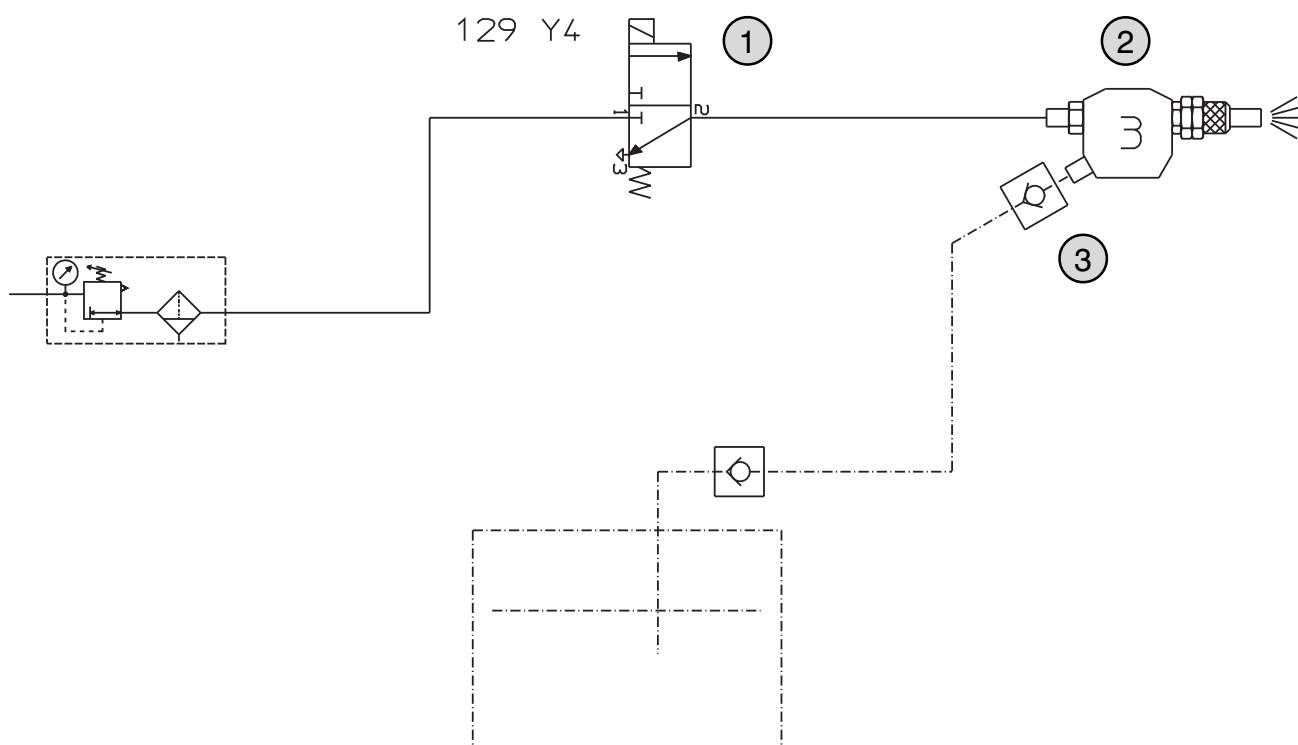
tilting table with two pneumatic cylinders



Air-service unit

Pos. 1	Filter/pressure-regulator unit	1 piece	part number: 9425 2233
Pos. 2	4/2 - valve	1 piece	part number: 9425 2220
Pos. 3	3/2 - valve	1 piece	part number: 9425 2220
Pos. 4	One-way restrictor	2 pieces	part number: 9425 2218
Pos. 5	Pneumatic cylinder	2 pieces	part number: 9415 0013
Pos. 6	Spray head	1 piece with accessories see next side	

9.3 Pneumatic diagram sprayer



- | | |
|--------|--------------------------|
| Pos. 1 | 3/2 - port valve |
| Pos. 2 | Single-sprayer, complete |
| Pos. 3 | TC - non return valve |
| Pos. 4 | Retrofit kit |
| Pos. 5 | Spray head |

- | | |
|--------------|-----------|
| part number: | 9425 2220 |
| part number: | 9465 0001 |
| part number: | 9465 0004 |
| part number: | 9465 0003 |
| part number: | 9465 0002 |

10 Electronic

10.1 Operating elements

main switch



illuminated button
24 V
control voltage

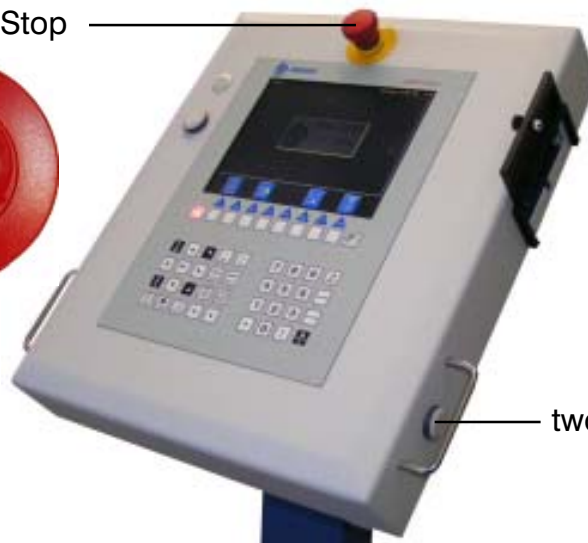
foot switch

function:
„clamp closed“



USB-plug

EMERGENCY-Stop

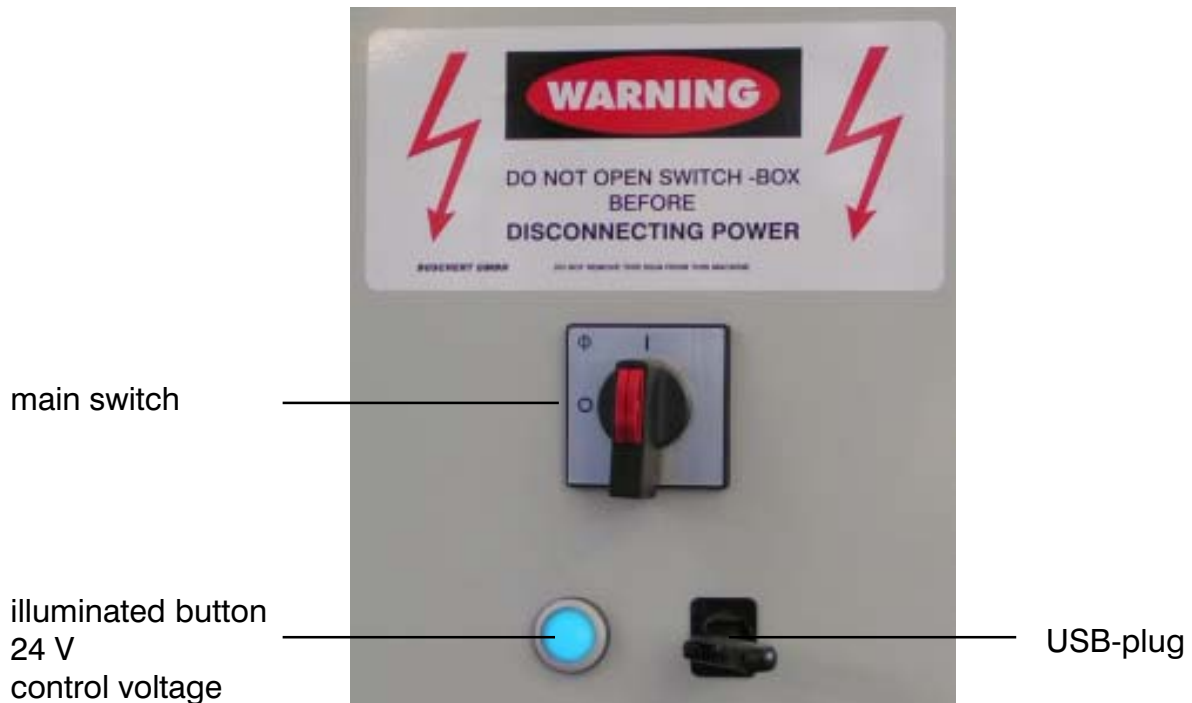


two-hand operating

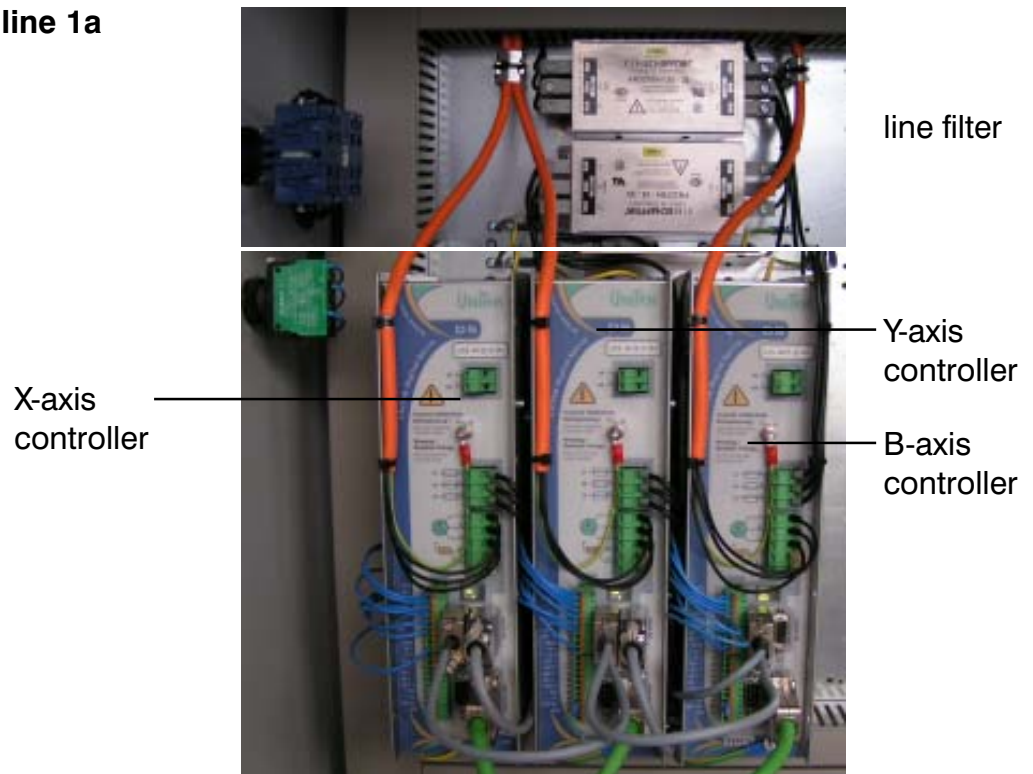
Reset light barrier



10.2 Control cabinet



control cabinet line 1a



control cabinet line 1b



adapter



binding
postes 24 V
before
EMERGENCY-
Stop

binding
postes 24 V

control S-Box II



power supply



control cabinet line 2a



fuses



protectiv motor switches



protected switch
for drive



*1 2-hand-
relay Multitalk

control cabinet line 2b

*1 EMERGENCY-OFF-relais



contactor relay



control cabinet line 3a



main contactor

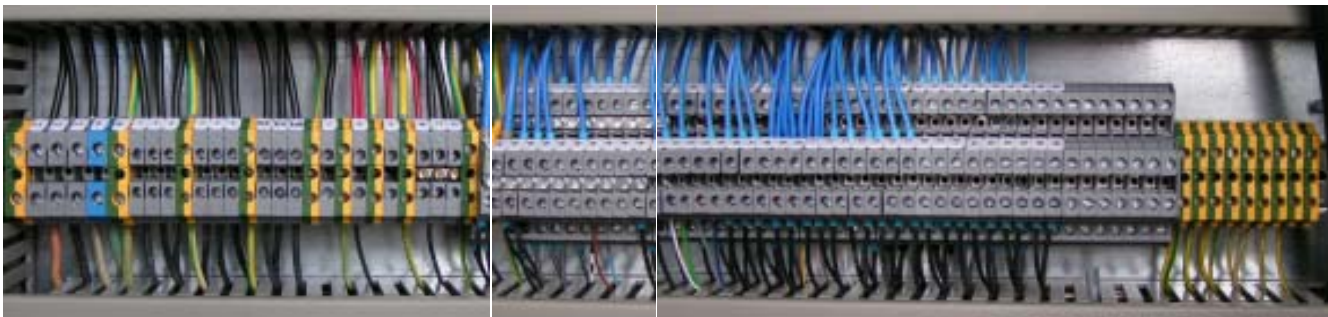


star delta-
time delay



socket

control cabinet line 3b



binding postes

control cabinet line 4b



traction relief

further electrical components

Multiple Light Beam Safety Device - Sender
(93120002)

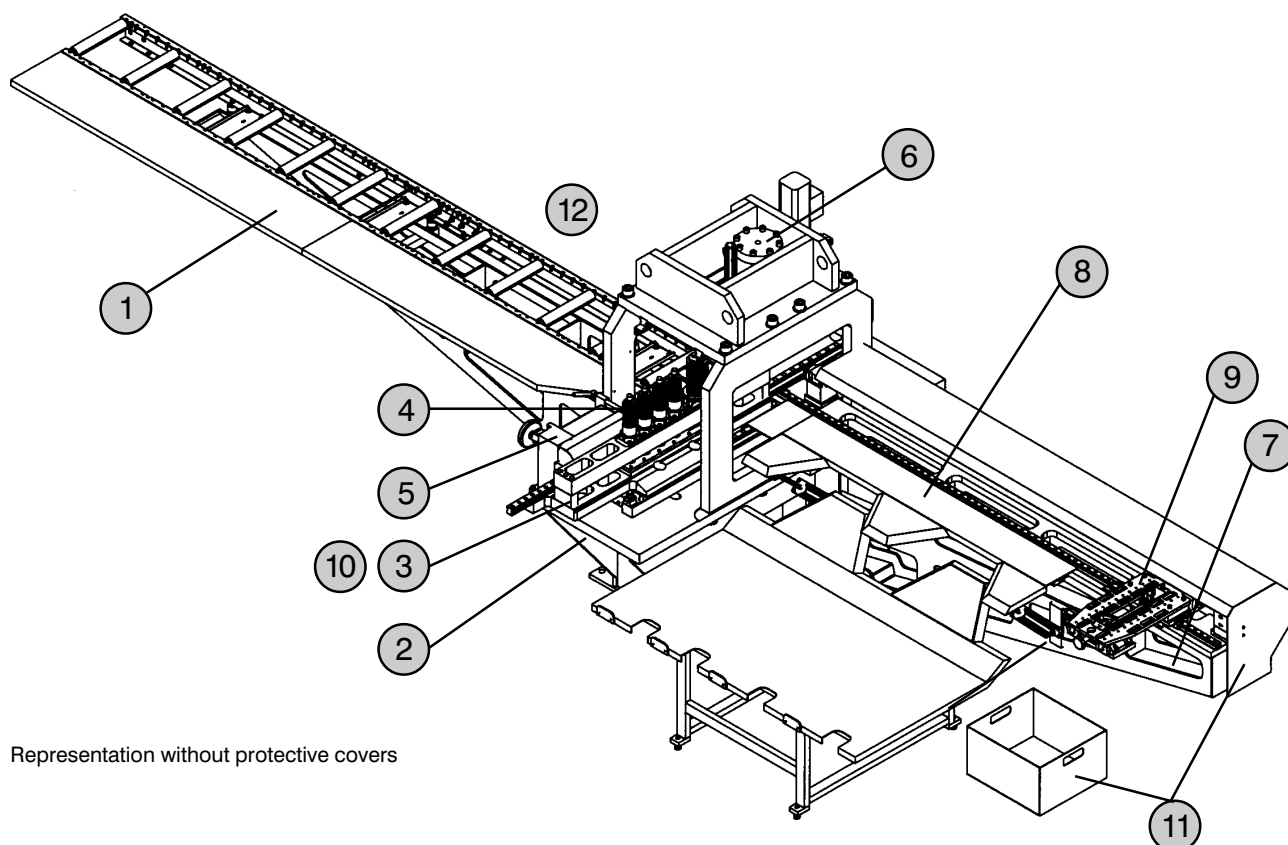
Multiple Light Beam Safety Device - Receiver
(93120003)

Multiple Light Beam Safety Device - Deflector mirror
(93120004)

10.3 Electronic diagram

11 Drawings and lists

11.1 Subassemblies



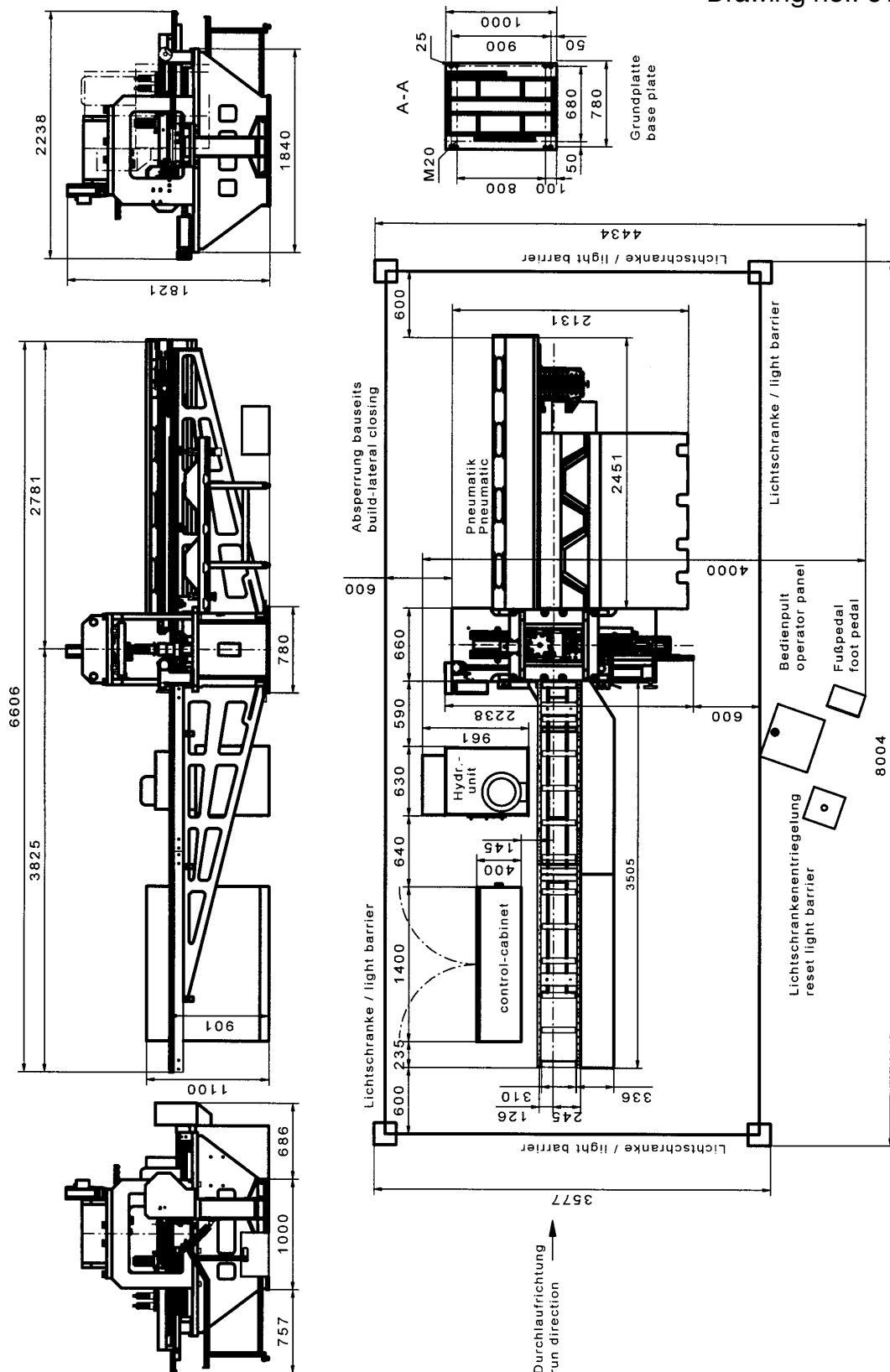
Representation without protective covers

Subassembly	Number	Page
0 Space required roller race 3m	614 40016	102
Space required roller race 6m	614 40017	103
1 Roller race 3m	614 02001	104
Roller race 6m		106
2 Y - axis	614 05032	107
3 Tool box	614 03021	111
4 AMADA station B	314 03003	113
Cutting station	319 03001	113
5 Clamping arrangement work piece	614 05035	114
6 Punch head	614 03025	118
7 X-axis	614 05033	124
8 Tilting table	614 02007	128
9 Clamp	614 05036	130
10 Waste stripper	614 06007	133
11 Safety device	614 06009	134
12 Hydraulic unit standard	614 04004	135
Hydraulic unit speed	614 04003	137

11.2 Space required

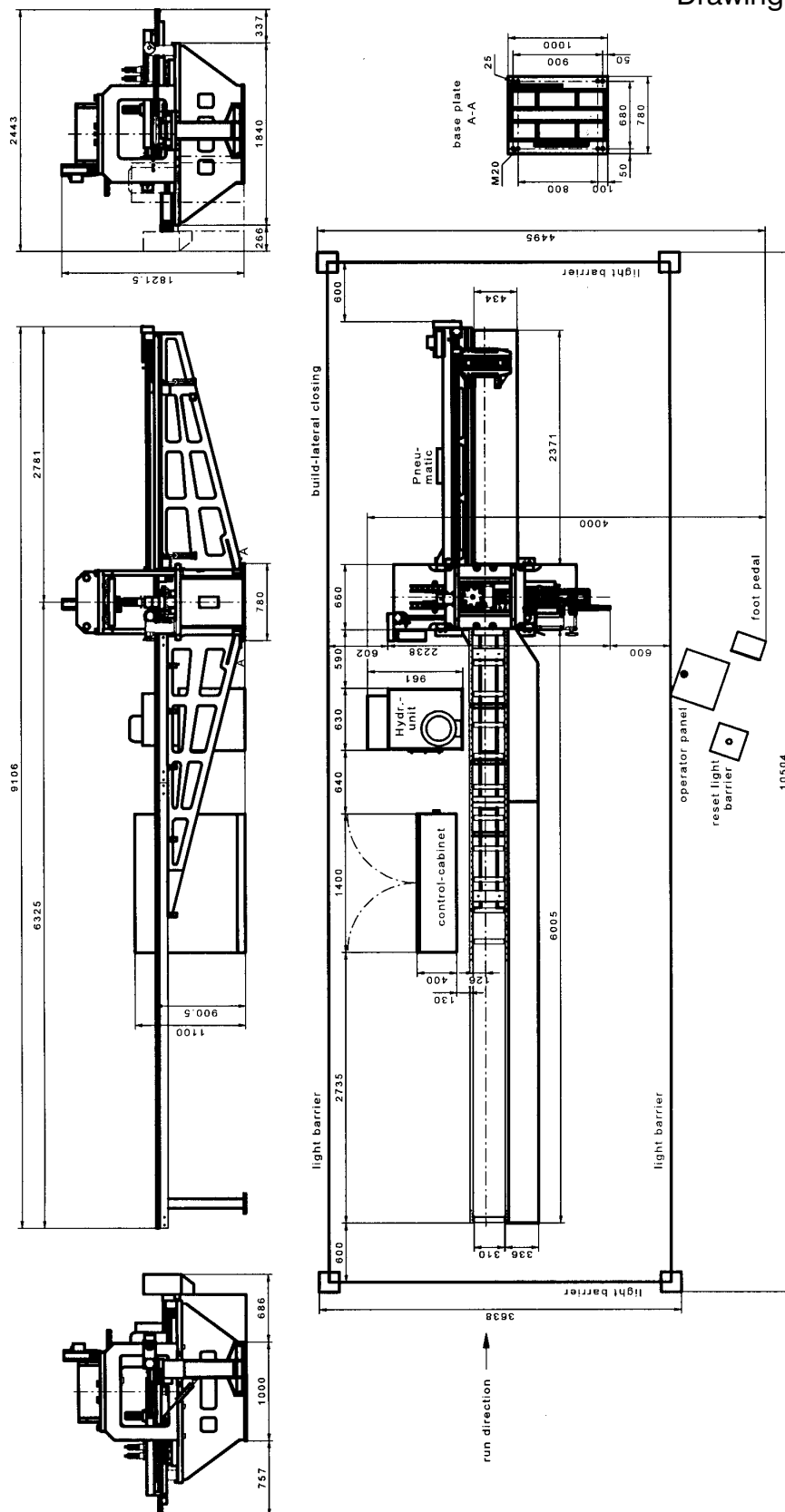
11.2.1 Space required roller table 3m

Drawing no.: 614 40016



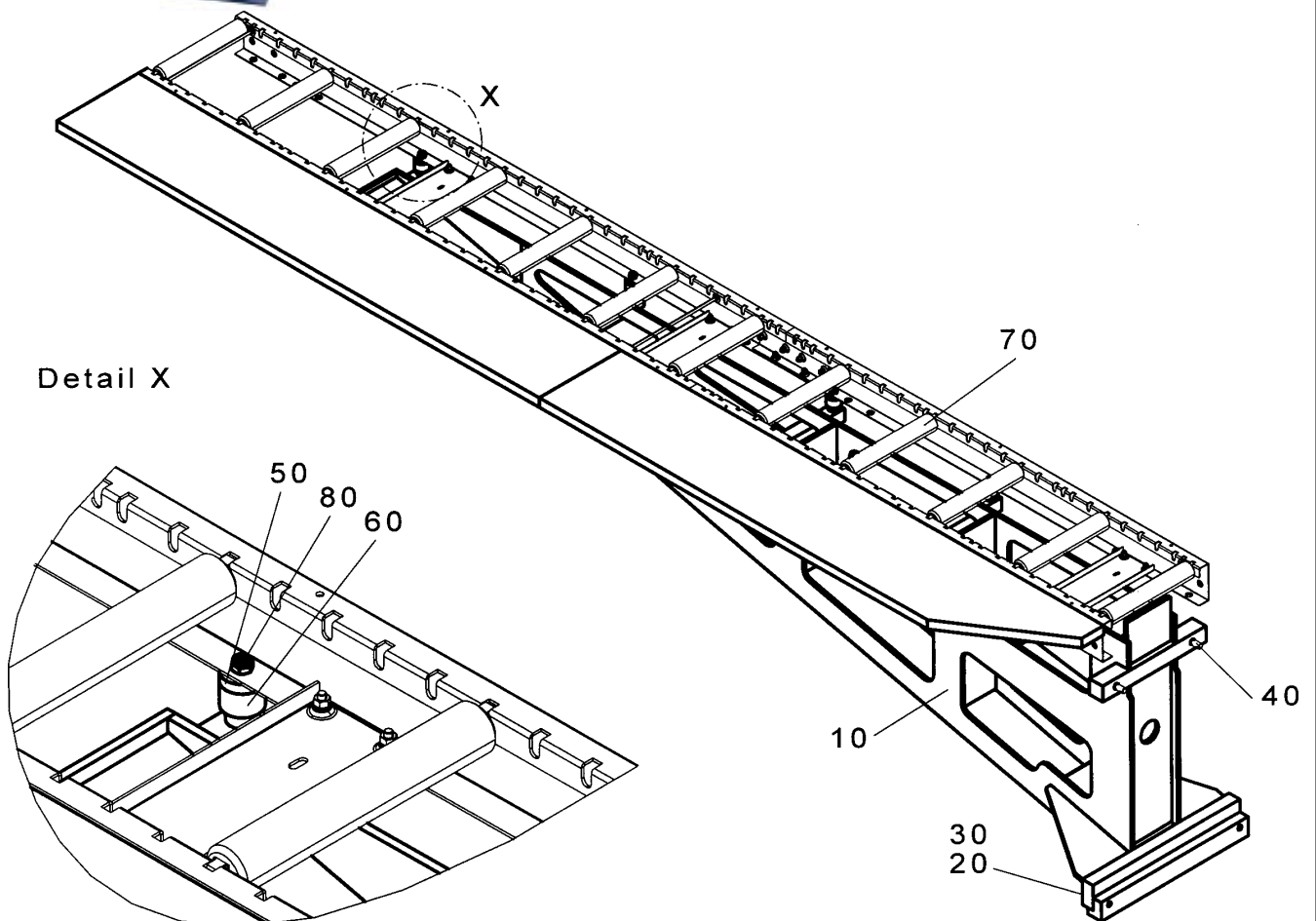
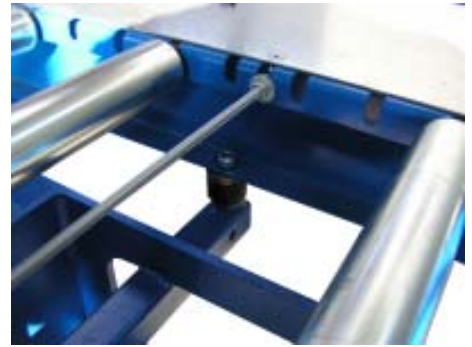
11.2.2 Space required roller table 6m

Drawing no.: 614 40017



11.3 Subassembly Roller race

Subassembly no.: 614 02001



11.3.1 Parts list 614 02001 Roller race 3m

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
10	64900082	0 Welding plan support for roller conveyer 5		1		St52-3	
10	64900083	0 Flame-cutted parts support for roller conveyer		1		St52-3	
10	64100136	0 Support for roller conveyer 788x540x2879		1		St52-3	
20	70116060	0 Fillister head cap screw M16x60		2	912	8.8	
30	79110008	0 Plain washer M8		4	125	St	
40	70116080	0 Fillister head cap screw M16x80		2	912	8.8	
50	64100138	0 Disc Ø40x10		10		St37k	
60	80600006	0 Rubber buffer Ø40x25xM10x20 A		10			
70	99000231	0 Roller conveyor 392 x 130 x 3500		1			
80	72200010	0 Locking hexagonal nut M10		10	985	8 galv. v	

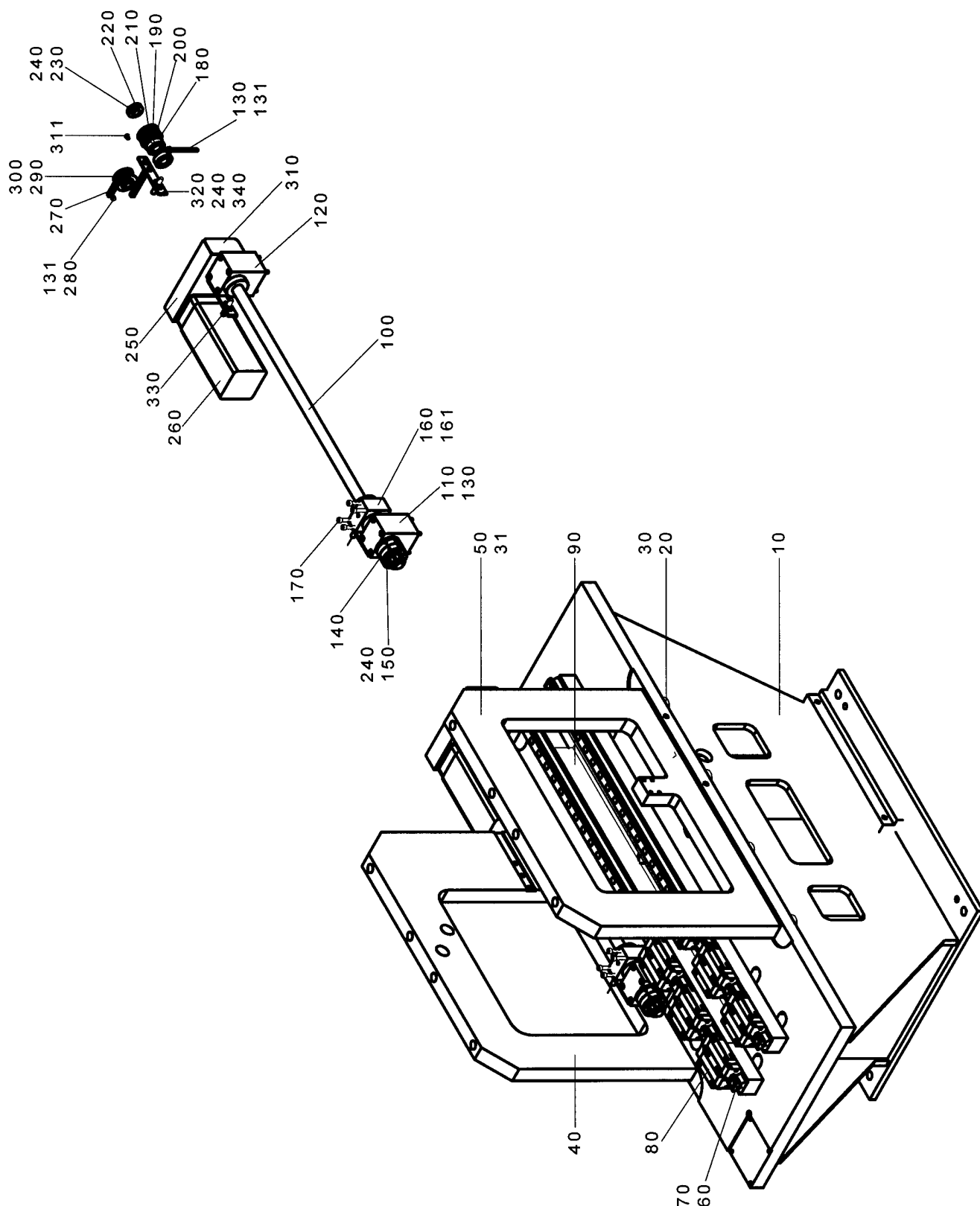
11.3.2 Subassembly Roller race 6m

Subassembly no.: 614 02

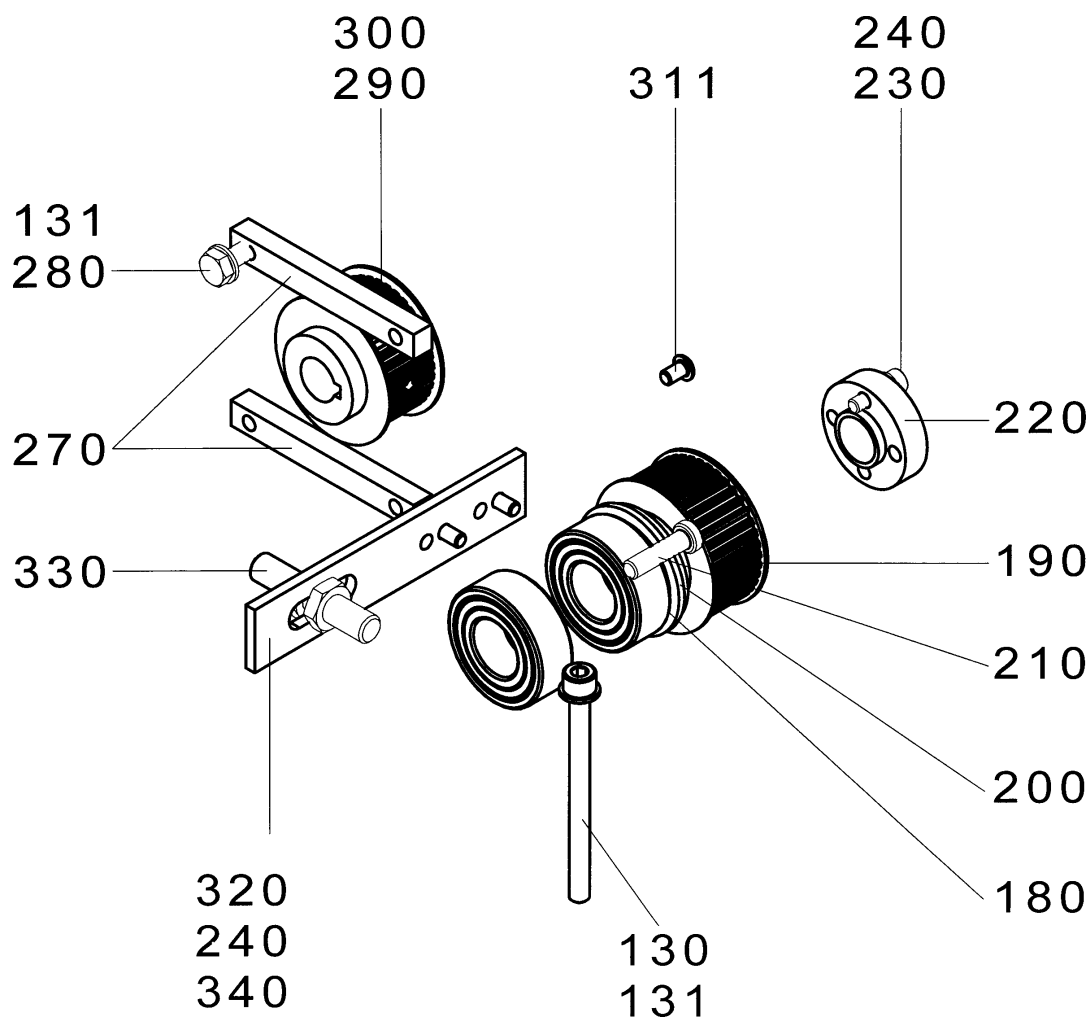


11.4 Subassembly Y - axis

Subassembly no.: 614 05032



11.4.1 Subassembly Y - axis - detail



Pos. 350 gear belt



11.4.2 Parts list 614 05032 Y - axis

						date: 11/08	
pos	part number	part name	piece	DIN	material	weight	
10	64900073	0 Welding plan for underframe; CU-Profi		1		St52-3	
10	64100137	0 Base plate 780x20x1000		1		St52-3	
10	64100132	0 Underframe Y-200; CU-Profi 780x 745,5 x		1		St52-3	
10	64900072	0 Flame-cutted parts underframe 780x750x		1		St52-3	
20	78130100	0 Fillister head screw M30x100		8	912	12.9	
30	79110030	0 Plain washer M30		8	125	St	
31	80720812	0 Hardened straight pin 8m6x24		4	8735	8.8	
40	64100134	0 Punching unit 2 726x50x980		1		St52-3	
50	64100133	0 Punching unit 1 726x50x980		1		St52-3	
60	99000151	0 Guideway with 3 guide carriages		2			
70	78112030	0 Fillister head screw M12x30		36	912	12.9	
80	78112035	0 Fillister head screw M12x35		52	912	12.9	
90	64600058	0 U - profile Y-axis 67x84x1220		1		St 37	
100	64500220	0 Ball screw drive Y-axis 32x1291		1			
110	23522175	a Support in front 100 x 80 x 124		1		St37k	
120	64500222	0 Bearing block behind X-axis 80x100x124		1		St37k	
130	78108100	0 Fillister head screw M8x100		8	912	12.9	
140	95030253	0 Axial angular contact ball bearing		1			
150	78106070	0 Fillister head screw M6x70		8	912	12.9	
160	23500406	0 Support for spindlenut		1			
161	78108030	0 Fillister head screw M8x30		4	912	12.9	
170	78110050	0 Fillister head screw M10x50		4	912	12.9	
180	95010251	0 Deep groove ball bearing; single row 25 x		2	625		
190	23520248	0 Push-on pulley rd67x38		1		Alu	
200	64500226	0 Centering ring rd56x7		1		St 37	
210	70708030	0 Fillister head screw M8x30		4	7984	8.8	

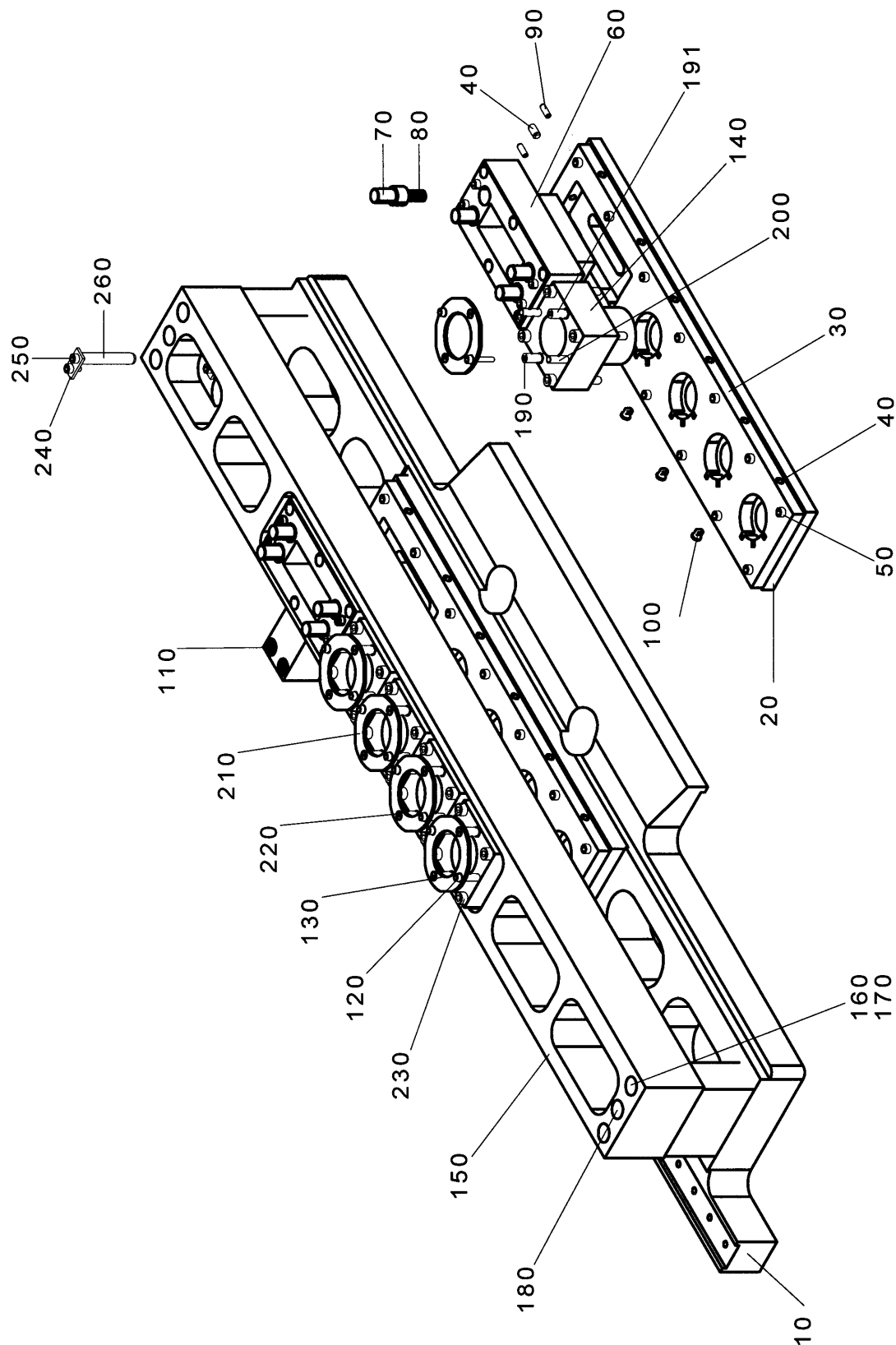
11.4.2 Parts list 614 05032 Y - axis

						date: 11/08	
pos	part number	part name	piece	DIN	material	weight	
220	23520247	0 Screw cover rd46x16	1			St37k	
230	70106020	0 Fillister head cap screw M6x20	4240	912		8.8	
240	79110006	0 Plain washer M6	20	125		St	
250	64500225	0 Housing for belt drive 120x60x277	1			St 37	
260	93010081	0 Motor 3000 1/min	1				
270	23500046	0 Motor support; TRI 12 x 10 x 101	2			St 37	
280	70308025	0 Hexagon head screw M8x25	4	931		8.8	
290	23516076	0 Crown gear d-67x38	1			AlZn10	
300	73306016	0 Set screw M6x16	1	913		8.8	
310	23500032	0 Covering; Wiesel 62x95x120	1			St 37	
311	70906010	0 Saucer head screw with ISK NB 601 M6x1	4			10.9	
320	23522169	a Support for limit switch 30 x 5 x 150	2			St37k	
330	93030004	0 Proximity switch 220V (Öffner)	2				
340	70106016	0 Fillister head cap screw M6x16	4	912		8.8	
350	97100005	0 Power transmission b-25 x l-545	1				



11.5 Tool box

Subassembly no.: 614 03021



11.5.1 Parts list 614 03021 Tool box

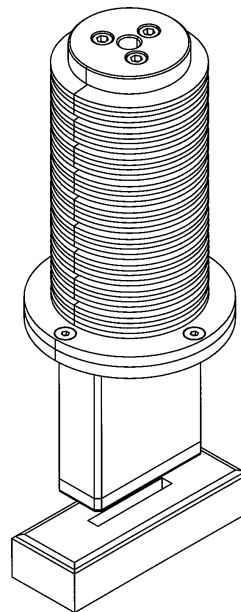
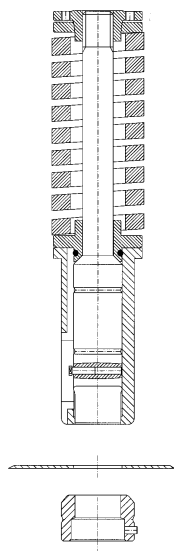
						date: 11/08	
pos	part number	part name	piece	DIN	material	weight	
10	64300109	0 Tool slide with 4xAMADA B + cutting-off st		1		St52-3	
20	64300138	0 Die plate below 120x15x550		1		St37k	
30	64300139	0 Die plate in middle 110x15x550		1		St37k	
40	73306016	0 Set screw M6x16		7	913	8.8	
50	70106035	0 Fillister head cap screw M6x35		14	912	8.8	
60	99000241	0 Holder		1			
70	99000239	0 Ejector		4			
80	99000240	0 Spring		4			
90	80720608	0 Hardened straight pin 6m6x16		2	8735	8.8	
100	64300144	0 Guide pin AMADA rd12x12		4		EC80	
110	78110050	0 Fillister head screw M10x50		4	912	12.9	
120	70105030	0 Fillister head cap screw M5x30		8	912	8.8	
130	79110005	0 Plain washer M5		8	125	St	
140	64300143	0 Punch holder AMADA 80x80x85		4		GGGlc4	
150	64300110	0 Tool holder above 4xAMADA B + cutting-o		1		St52-3	
160	70112050	0 Fillister head cap screw M12x50		4	912	8.8	
170	79110012	0 Plain washer M12		4	125	St	
180	80720820	0 Hardened straight pin 8m6x40		2	8735	8.8	
190	64300150	0 Alignment for spring		8			
191	99000235	0 Helical spring 5,0 x 10,0 x 64		8	10243	Federst.	
200	64300145	0 Spacer sleeve rd16xrd10,4x52		8		St37	
210	64300146	0 Disc rd82x3		4		St 37	
220	70504008	0 Countersunk screw M4x8		8	7991	8.8	
230	70108060	0 Fillister head cap screw M8x60		16	912	8.8	
240	64300163	0 Plate for point-0 15x3x31		1		St37k	
250	70106012	0 Fillister head cap screw M6x12		2	912	8.8	
260	80721226	0 Hardened straight pin 12m6x70		1	7979	8.8	

11.6 Subassembly Tool

Subassembly no.: 314 03003

Subassembly no.: 319 03001

Station B



11.6.1 Parts list 314 03003 AMADA Station B

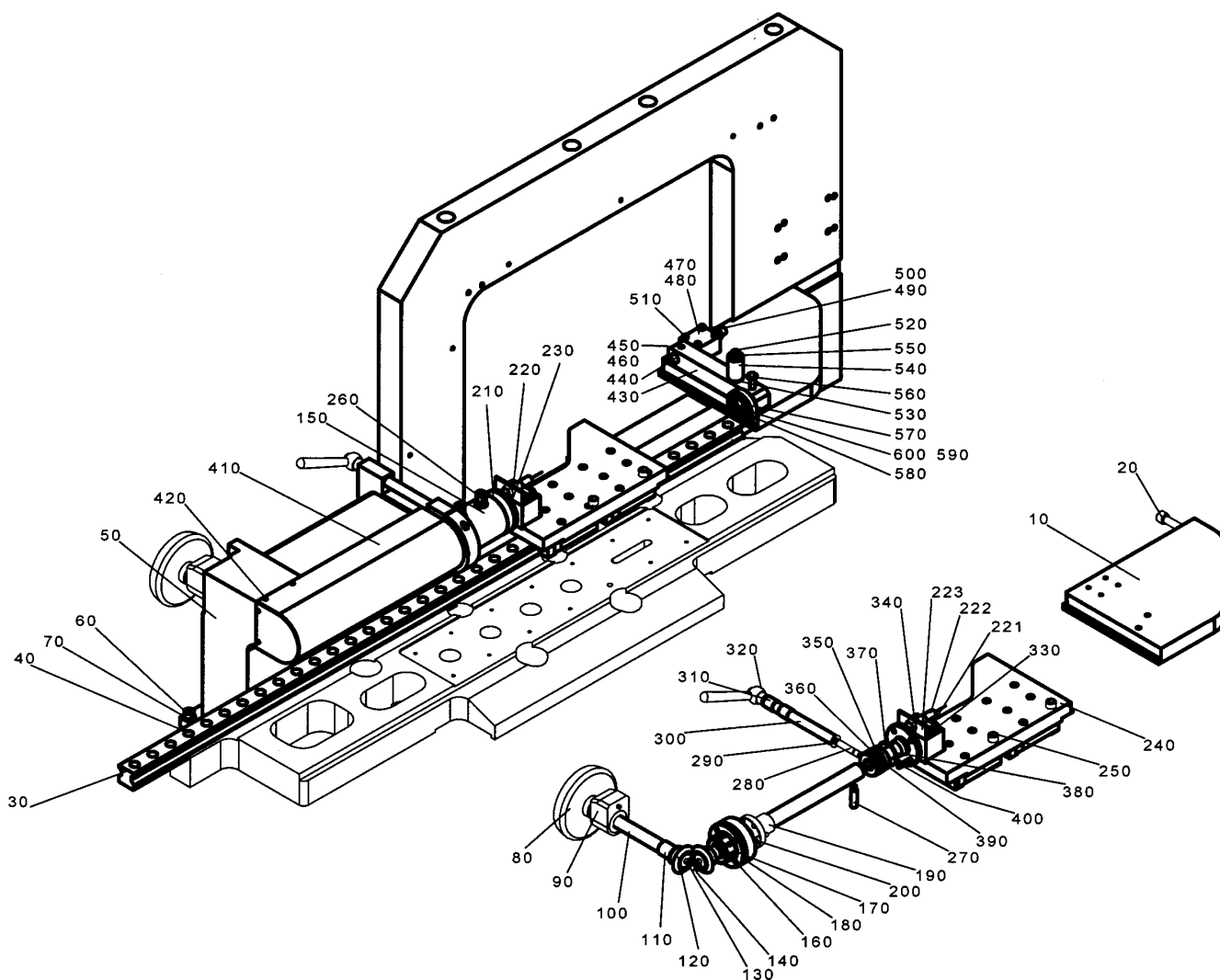
pos	part number	part name	date: 11/08			
			piece	DIN	material	weight
10	31430004	0 Station AMADA - B (for copper)	1			

11.6.2 Parts list 319 03001 Cutting station

pos	part number	part name	date: 11/08			
			piece	DIN	material	weight

11.7 Subassembly Clamping arrangement work piece

Subassembly no.: 614 05035



11.7.1 Parts list 614 05035 Clamping arrangement work piece

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
10	64500231	0 Clamping jaw 1 300x45x220		1		St52-3	
20	70112060	0 Fillister head cap screw M12x60		3	912	8.8	
30	99000152	0 Guideway with 2 guide carriages 34x32x1		1			
40	70108030	0 Fillister head cap screw M8x30		41	912	8.8	
50	64500228	0 Guiding bock 310x248x418		1			
60	70110030	0 Fillister head cap screw M10x30		4	912	8.8	
70	79110010	0 Plain washer M10		4	125	St	
80	23320415	a Handwheel Ø125 / Ø16H7 with groove Ø1		1		Thermo	
90	96000053	0 Digital positional unit		1		ALu Ko	
100	64500229	0 Shaft for handwheel rd20x225		1		CF53	
110	95802031	0 Guide bush rd20xrd23x30		1			
120	23320276	0 Angular wheel Ø 47,1 x 21,9; m1,5; z30		2		9 SMn 2	
130	70105012	0 Fillister head cap screw M5x12		2	912	8.8	
140	79160005	0 Plain washer Ø5,3xØ15x1,5		2	9021	St	
140	79160005	0 Plain washer Ø5,3xØ15x1,5		2	9021	St	
150	64500257	0 Spindlenut rd70x315		1		GGGlc4	
160	70106060	0 Fillister head cap screw M6x60		4	912	8.8	
170	72820025	0 Precision groove nut M25 x 1,5; Ø45 x 20		1		8.8	
180	95030252	0 Angular contact thrust ball bearing 25 x 7		1			
190	72702405	0 Trapezoid thread nut Tr 24x5		1	103	RG7	
200	70106020	0 Fillister head cap screw M6x20		4	912	8.8	
210	64500258	0 Hydraulic lid rd70x46		1		GGGlc4	
220	64500260	0 Block 60x40x45		1		St37k	
221	70105008	0 Fillister head cap screw M5x8		2	912	8.8	
222	93030020	0 Proximity switch KIB-M12PÖ/002-KL6		1			
223	64500278	0 Limit switch bracket 25x25x3x60		1		St37k	

11.7.1 Parts list 614 05035 Clamping arrangement work piece

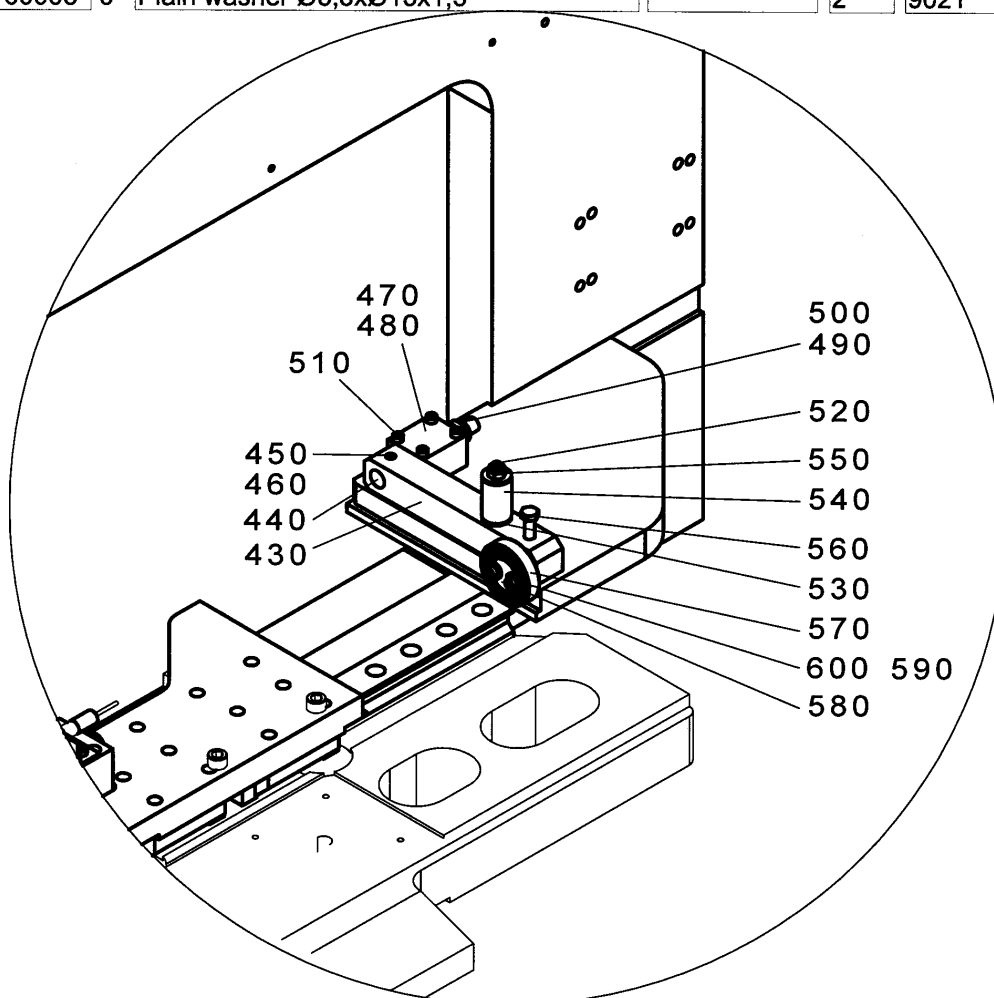
						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
230	64500259	0 Cover rd70x11		1		GGGlc4	
240	64500261	0 Stop bar 185x27x281,5		1		EC80	
250	70110030	0 Fillister head cap screw M10x30		12	912	8.8	
260	94510176	0 Straight pipe union		2			
270	73510040	0 Set screw M10x40		1	915	8.8	
280	73310080	0 Set screw M10x80		1	913	8.8	
290	79110010	0 Plain washer M10		1	125	St	
300	64500230	0 Shaft for clamping rd16x170		1		St37k	
310	95801615	0 Guide bush		2			
320	96015206	0 Adjustable ball lever M12		1		St	
330	78106035	0 Fillister head screw M6x35		2	912	12.9	
340	64500262	0 Piston rod rd20x101		1		CF 53	
350	94910021	0 Piston guide ring 40 x 4 x 1,55		2		PTFE-B	
360	94950010	0 Piston seal		1		PTFE-B	
370	94910043	0 O-Ring Ø37x2		1			
380	94912001	0 U packing ring NI300 20x30x10		1			
390	64500247	0 Hydraulic piston Ø39,75x25,2		1		EC80	
400	78106035	0 Fillister head screw M6x35		4	912	12.9	
410	64500267	0 Cover 94x89x368		1		St 37	
420	70905010	0 Saucer head screw with ISK NB 601 M5x1		4		10.9	
430	64500283	0 Guide block 30x30x195		1		St37k	
440	64500284	0 Shaft rdx109		1		St37k	
450	80820816	0 Spring dowel sleeve 8 x 30		1	1481	Federst	
460	80820616	0 Spring dowel sleeve 6 x 30		1	1481	Federst	
470	95801618	0 Guide bush rd.16xrd18x17 lg.		2			
480	64500285	0 Block 50x30x40		1		St37k	
490	79110012	0 Plain washer M12		1	125	St	

11.7.1 Parts list 614 05035

Clamping arrangement work piece

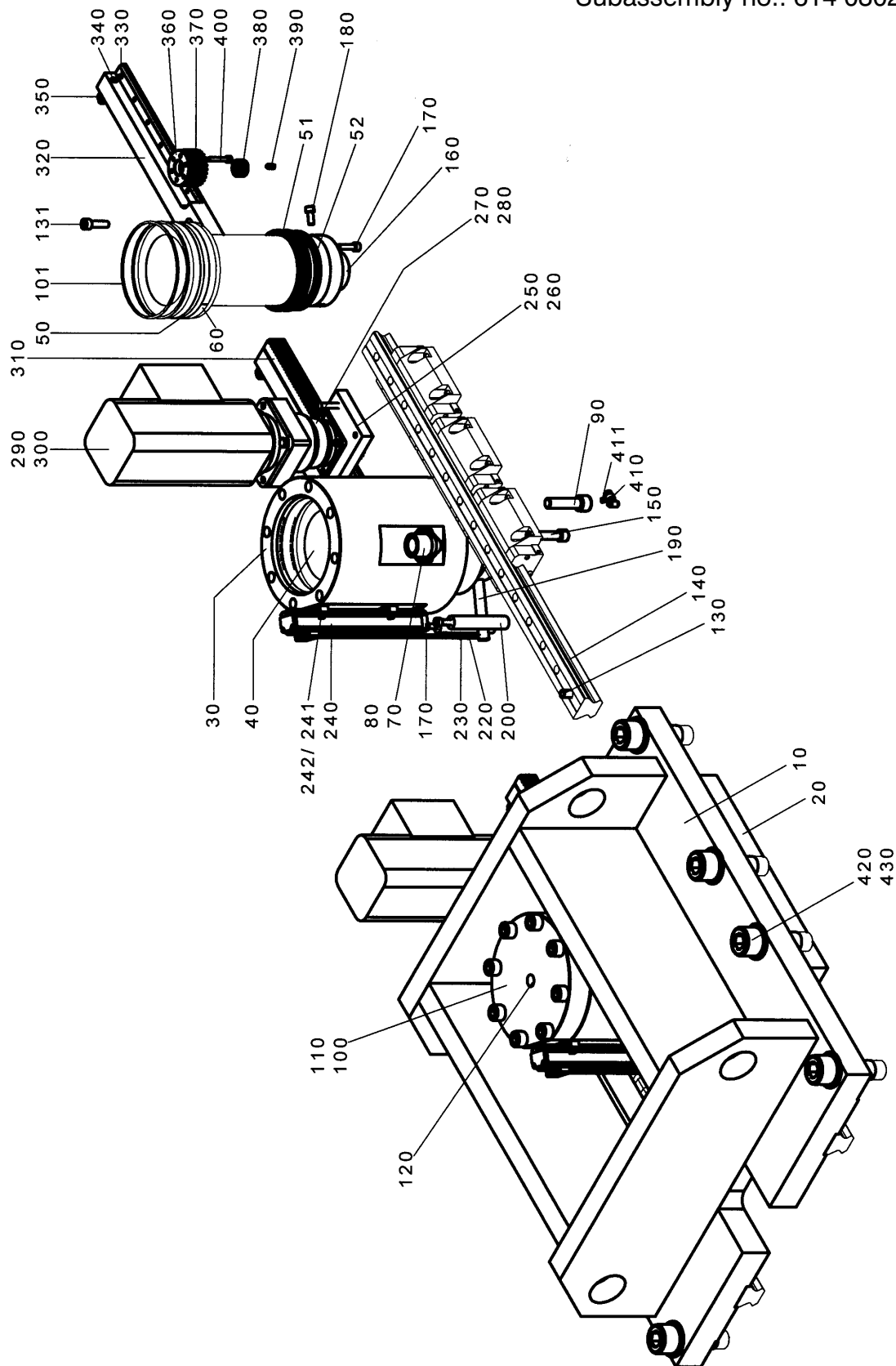
date: 11/08

pos	part number	part name	piece	DIN	material	weight
500	72200012	0 Locking hexagonal nut M12	1	985	8 galv. v	
510	70105040	0 Fillister head cap screw M5x40	4	912	8.8	
520	75408110	0 Stud M8x110	1			
530	79160008	0 Plain washer Ø8,4xØ24x2,0	2	9021	St	
540	99000246	0 Helical spring	1		Federst	
550	72200008	0 Locking hexagonal nut M8	1	985	8 galv. v	
560	70308050	0 Hexagon head screw M8x50	1	931	8.8	
570	95010301	0 Deep groove ball bearing; single row 30 x	1	625		
590	70105025	0 Fillister head cap screw M5x25	2	912	8.8	
600	79160005	0 Plain washer Ø5,3xØ15x1,5	2	9021	St	
600	79160005	0 Plain washer Ø5,3xØ15x1,5	2	9021	St	

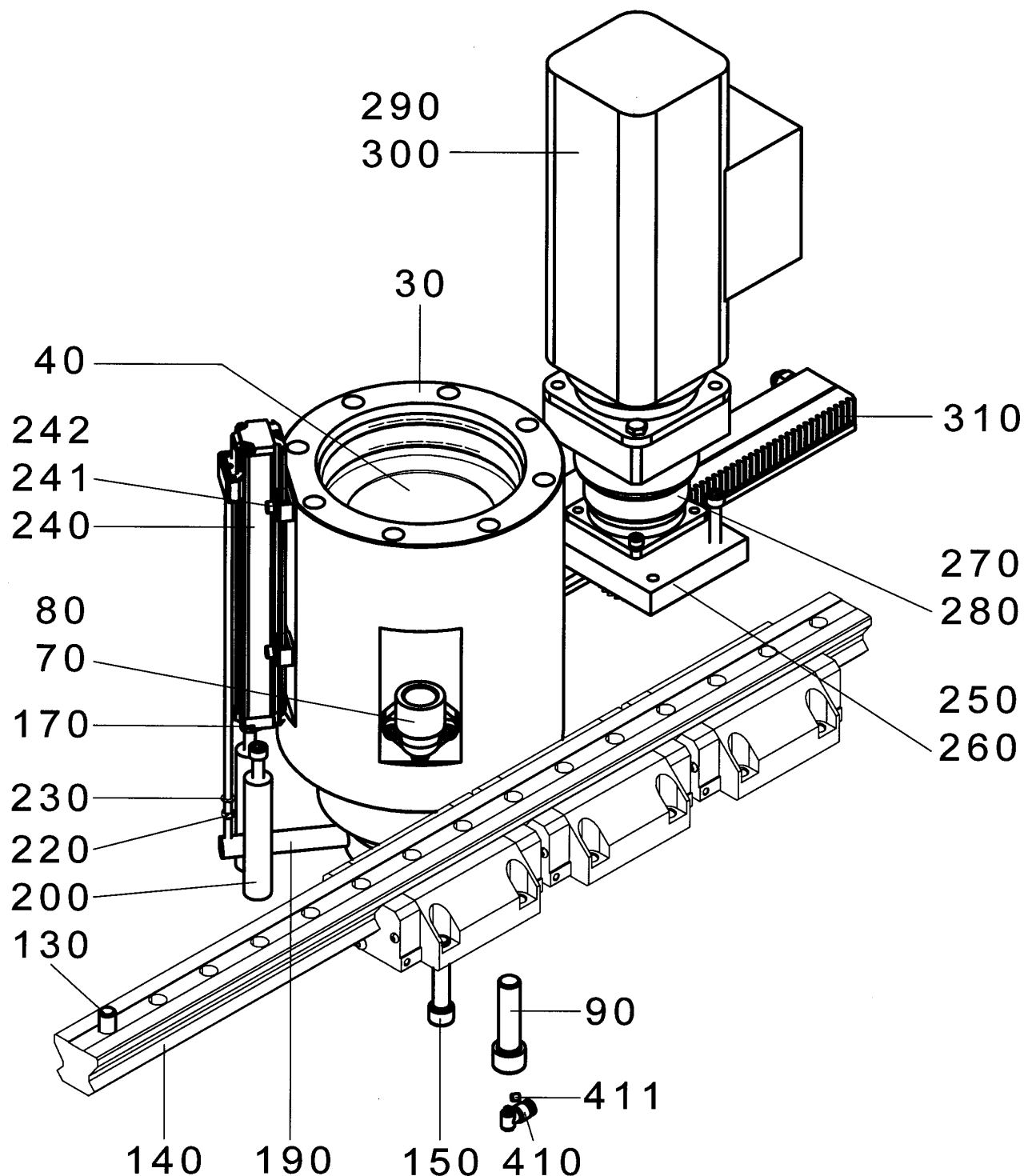


11.8 Subassembly Punch head

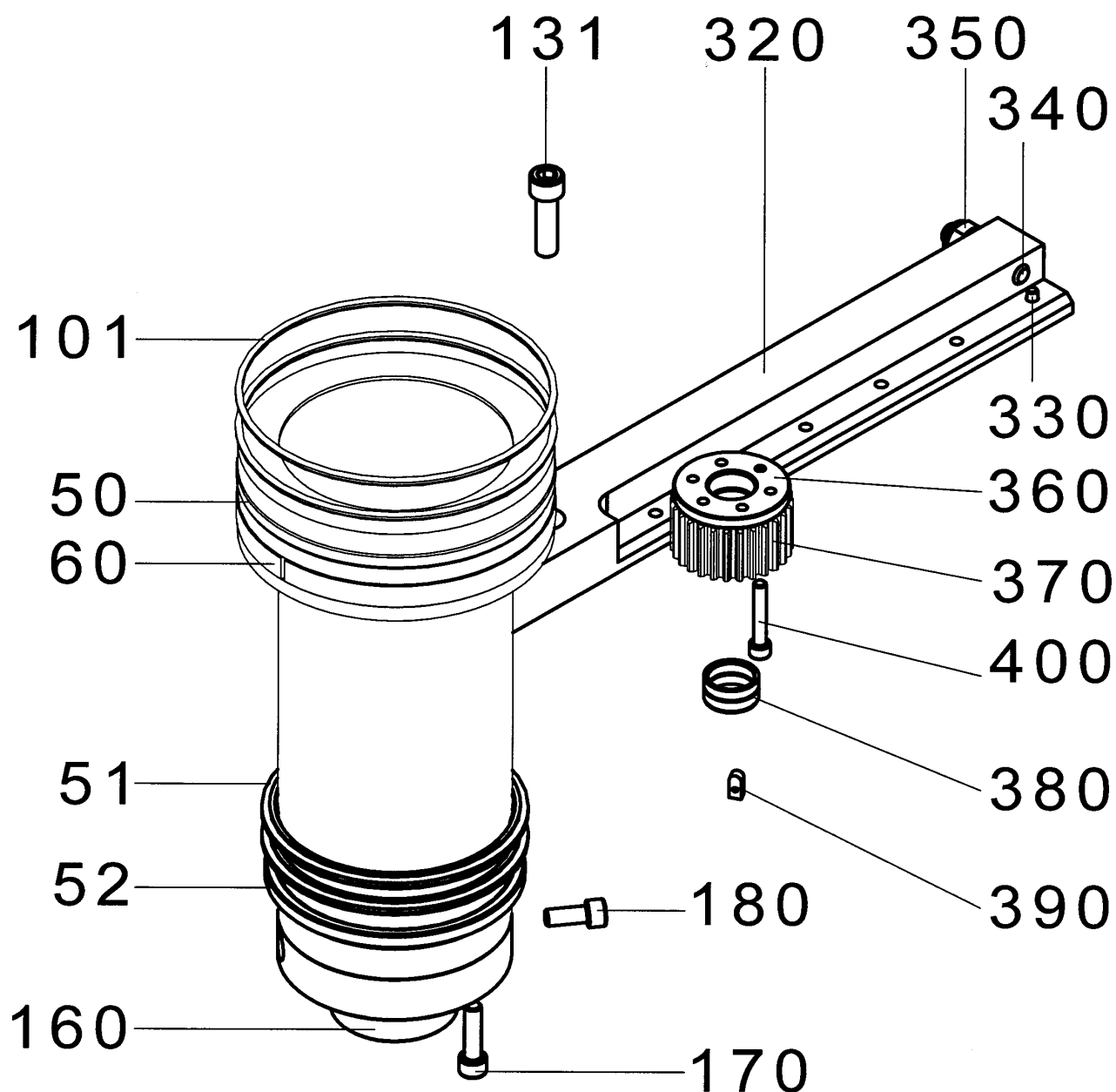
Subassembly no.: 614 03025



11.8.1 Subassembly Punch head - details



11.8.2 Subassembly Punch head - details



11.8.3 Parts list 614 03025 Punch head

						date: 11/08	
pos	part number	part name	piece	DIN	material	weight	
10	64900085	0 Flame-cutted parts; punch head	1			St52-3	
10	64900086	0 Welded part; punch head	1			St52-3	
10	64300149	0 Punch head	1			St52-3	
20	64300152	0 Cylinder plate	1				
20	64300152	0 Cylinder plate	1				
30	64300154	0 Cylinder housing	1				
40	64300155	0 Plunger rd148,8x270	1			16MnCr	
50	94910039	0 Piston seal ring TG150x129x8,1+OR126,3	1			Ptfe-bro	
51	94910042	0 Piston guide seal Stufef TS 110x125,1x6,	2			PTFE-B	
51	94910042	0 Piston guide seal Stufef TS 110x125,1x6,	2			PTFE-B	
52	94910044	0 Wiper ring rd110x122x7,1	1			NBR 90	
52	94910044	0 Stripper rd110x122x7,1	1			NBR 90	
60	94910040	0 Piston guide seal 150x12,8x3	1			Hartgew	
70	94310023	0 Flange	1				
80	70108025	0 Fillister head cap screw M8x25	3	912		8.8	
90	78116060	0 Fillister head screw M16x60	8	912		12.9	
100	64300153	0 Cylinder lid rd210x85	1			GGGIc4	
101	94910041	0 O-Ring OR145x4 N7S22-07	2			NBR70	
110	78116065	0 Fillister head screw M16x65	8	912		12.9	
120	94510182	0 Straight pipe union	1				
130	78112035	0 Fillister head screw M12x35	30	912		12.9	
130	78112035	0 Fillister head screw M12x35	30	912		12.9	
131	78110035	0 Fillister head screw M10x35	3	912		12.9	
131	78110035	0 Fillister head screw M10x35	3	912		12.9	
140	64300159	0 Guideway with 3 guide carriages 120x60x	2				
150	78112060	0 Fillister head screw M12x60	36	912		12.9	
160	64300156	0 Bolt rd110x60	1			EC80	

11.8.3 Parts list 614 03025 Punch head

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
170	70108030	0 Fillister head cap screw M8x30		6	912	8.8	
180	70108020	0 Fillister head screw M8x20		1	912	8.8	
180	70108020	0 Fillister head cap screw M8x20		1	912	8.8	
190	64300161	0 Shaft rd16x178		1		St37k	
200	64300162	0 Shaft short rd20x103		2		St37k	
220	72200005	0 Locking hexagonal nut M5		1	985	8 galv. v	
230	79110005	0 Plain washer M5		1	125	St	
240	93080006	0 Linear Transducer 246 lg.		1			
241	70105020	0 Fillister head cap screw M5x20		4	912	8.8	
242	79110005	0 Plain washer M5		4	125	St	
250	64300157	0 Motor plate 100x20x150		1			
260	78108050	0 Fillister head screw M8x50		4	912	12.9	
270	70106020	0 Fillister head cap screw M6x20		4	912	8.8	
280	93010078	0 Epicyclic gear; remachining		1			
290	70108020	0 Fillister head screw M8x20		4	912	8.8	
290	70108020	0 Fillister head cap screw M8x20		4	912	8.8	
300	93010029	0 Motor 3000 1/min		1			
310	64300160	0 Rack with remachining 20x20x283		1			
320	64300158	0 Mounting for rack 30x50x400		1		St37k	
330	70105016	0 Fillister head cap screw M5x16		6	912	8.8	
340	73310050	0 Set screw M10x50		6	913	8.8	
350	72210010	0 Locking hexagonal nut M10		6	982	8 galv. v	
360	23320807	0 Clamping flange for driving pinion above Ø		1		C45	
370	23320804	0 Crown gear 2 rd52x23		1		16MnCr	
380	97300008	0 Clamping arrangement 22 x 26		2			
390	23320808	0 Feather key with remachining 6 x 4,75 x 1		1		C45 k	

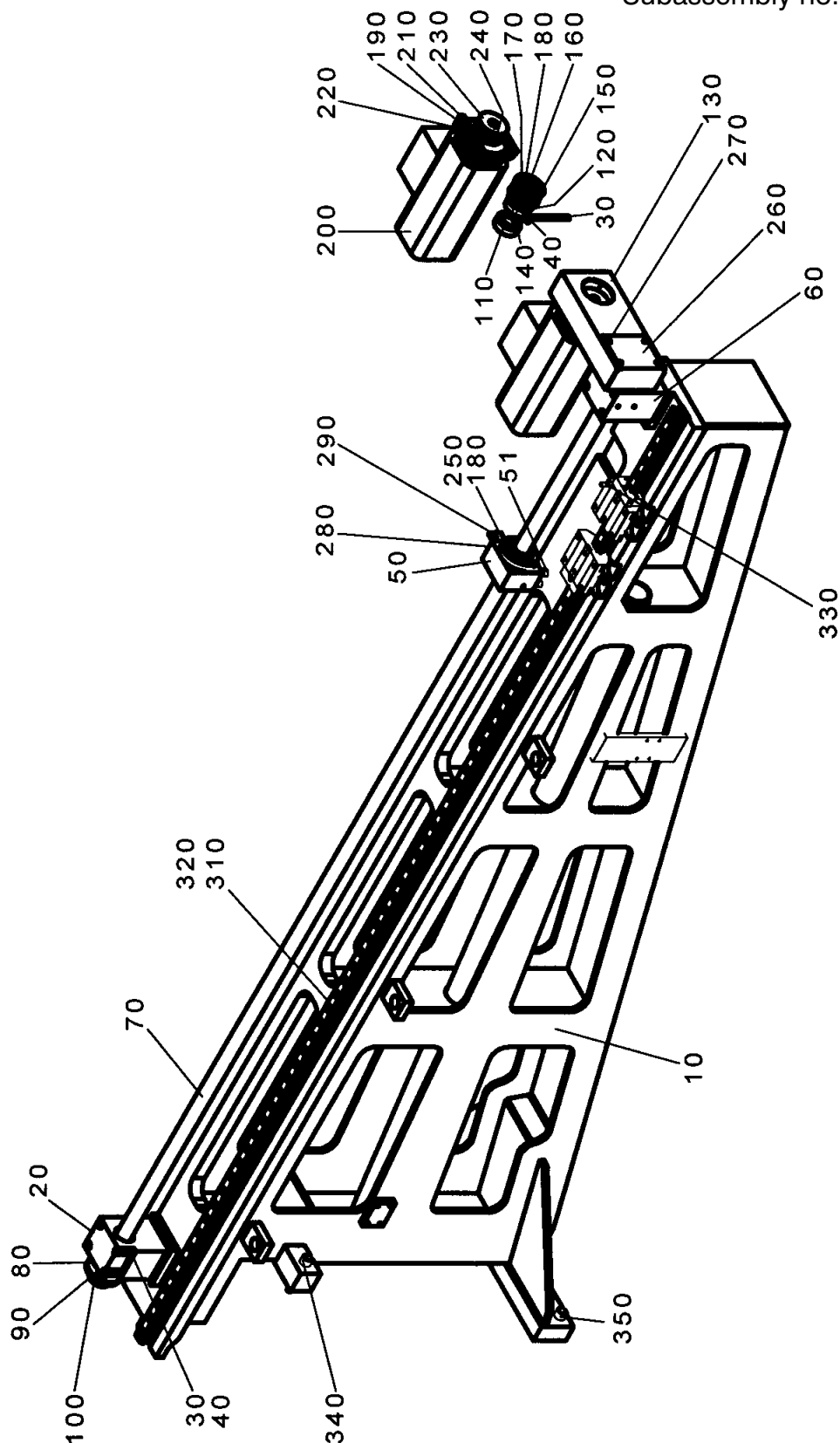
11.8.3 Parts list 614 03025 Punch head

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
400	70106035	0 Fillister head cap screw M6x35		6	912	8.8	
410	94510185	0 Angle swivel-joint		1			
411	73305006	0 Set screw M5x6		1	913	8.8	
420	79110030	0 Plain washer M30		8	125	St	
430	78130100	0 Fillister head screw M30x100		8	912	12.9	

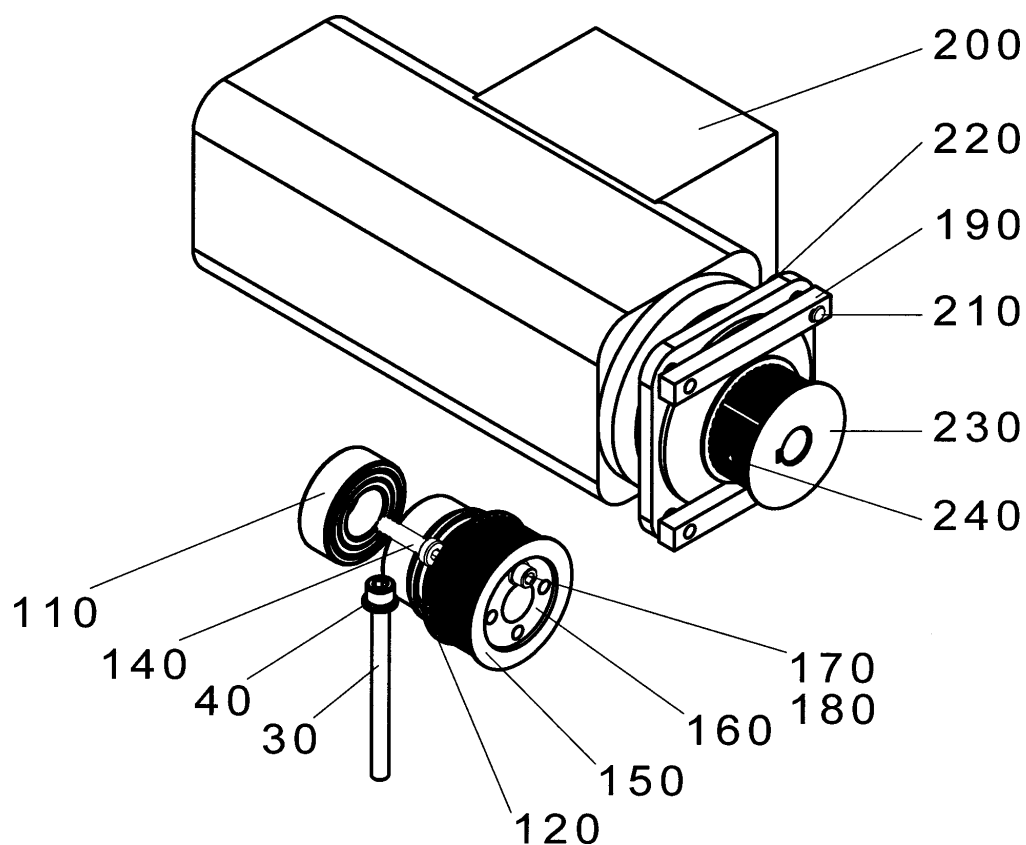


11.9 Subassembly X-axis

Subassembly no.: 614 05033



11.9.1 Subassembly X-axis details



Pos. 360 gear belt

11.9.2 Parts list 614 05033 X-axis

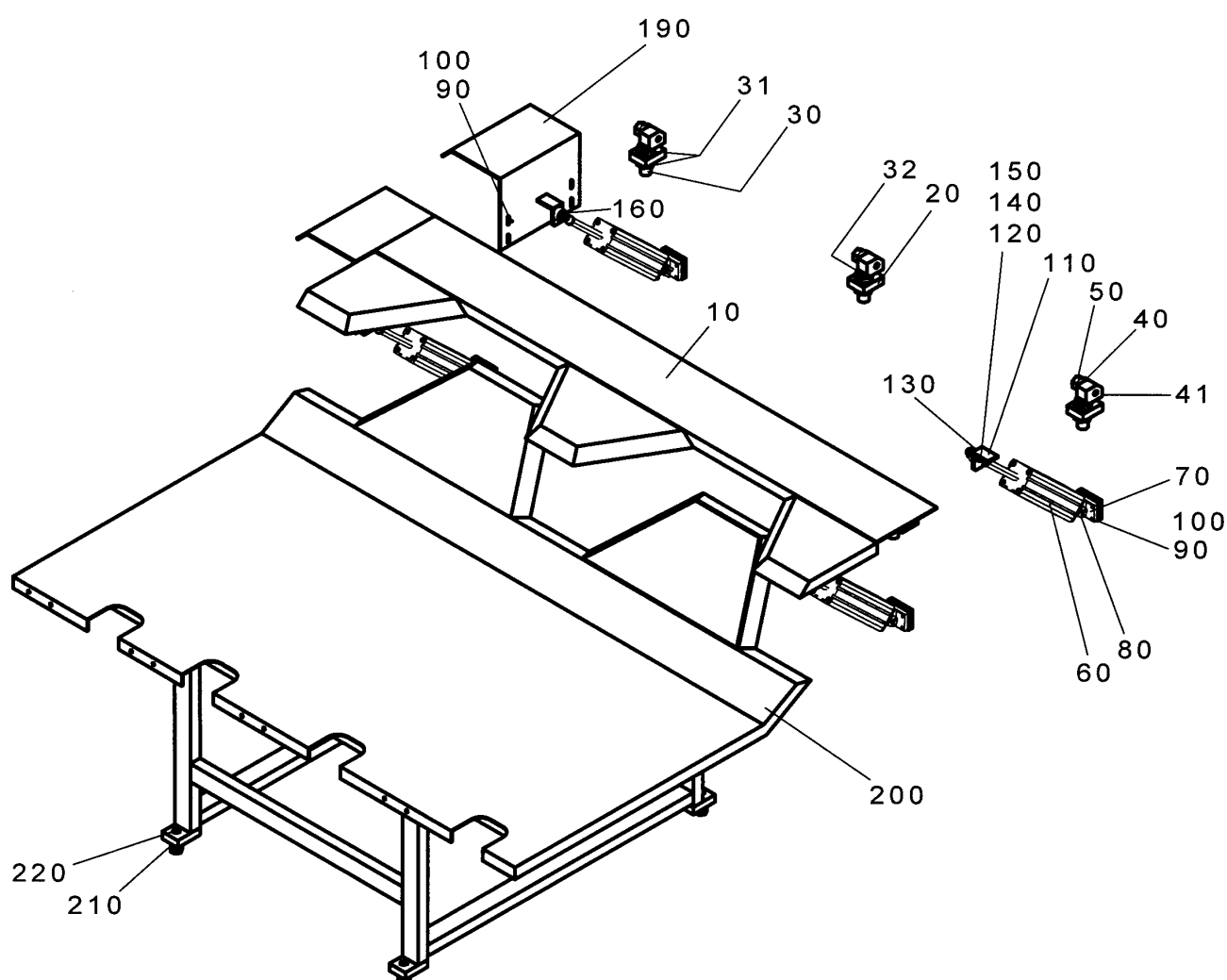
							date:	11/08
pos	part number	part name	piece	DIN	material	weight		
10	64900077	0 Welding plan support X-axis 540x843x26		1		St52-3		
10	64100135	0 Support X-axis 540x838x2645		1		St52-3		
10	64900076	0 Flame-cutted part for support X-axis 12xT		1		St52-3		
20	64500254	0 Support in front for spindle 100x80x124		1		St37k		
30	78108100	0 Fillister head screw M8x100		8	912	12.9		
40	79110008	0 Plain washer M8		12	125	St		
50	23500404	c Support for spindlenut 80 x 50 x 90		1		St37k		
51	70110030	0 Fillister head cap screw M10x30		4	912	8.8		
60	64500222	0 Bearing block behind X-axis 80x100x124		1		St37k		
70	64500218	0 Ball screw drive X-axis rd32x2625		1				
80	95030252	0 Angular contact thrust ball bearing 25 x 7		1				
90	72820025	0 Precision groove nut M25 x 1,5; Ø45 x 20		1		8.8		
100	70106035	0 Fillister head cap screw M6x35		4	912	8.8		
110	95010251	0 Deep groove ball bearing; single row 25 x		2	625			
120	64500226	0 Centering ring rd56x7		1		St 37		
130	64500225	0 Housing for belt drive 120x60x277		1		St 37		
140	70708030	0 Fillister head screw M8x30		4	7984	8.8		
150	23520248	0 Push-on pulley rd67x38		1		Alu		
160	23520247	0 Screw cover rd46x16		1		St37k		
170	70106020	0 Fillister head cap screw M6x20		4	912	8.8		
180	79110006	0 Plain washer M6		16	125	St		
190	23500046	0 Motor support; TRI 12 x 10 x 101		2		St 37		
200	93010081	0 Motor 3000 1/min		1				
210	70408025	0 Hexagon head screw M8x25		4	933	8.8		
220	79110008	0 Plain washer M8		12	125	St		
230	23516076	0 Crown gear d-67x38		1		AlZn10		

11.9.2 Parts list 614 05033 X-axis

							date:	11/08
pos	part number	part name	piece	DIN	material	weight		
240	73306016	0 Set screw M6x16		2	913	8.8		
250	70106025	0 Fillister head cap screw M6x25		8	912	8.8		
260	23500032	0 Covering; Wiesel 62x95x120		1		St 37		
270	70906010	0 Saucer head screw with ISK NB 601 M6x1		4		10.9		
310	99000150	0 Guideway with 2 guide carriages 100x48x		1				
320	70108025	0 Fillister head cap screw M8x25		35	912	8.8		
330	70108030	0 Fillister head cap screw M8x30		12	912	8.8		
340	70116080	0 Fillister head cap screw M16x80		2	912	8.8		
350	70116060	0 Fillister head cap screw M16x60		2	912	8.8		
360	97100005	0 Power transmission b-25 x l-545		1				

11.10 Subassembly Tilting table

Subassembly no.: 614 02007

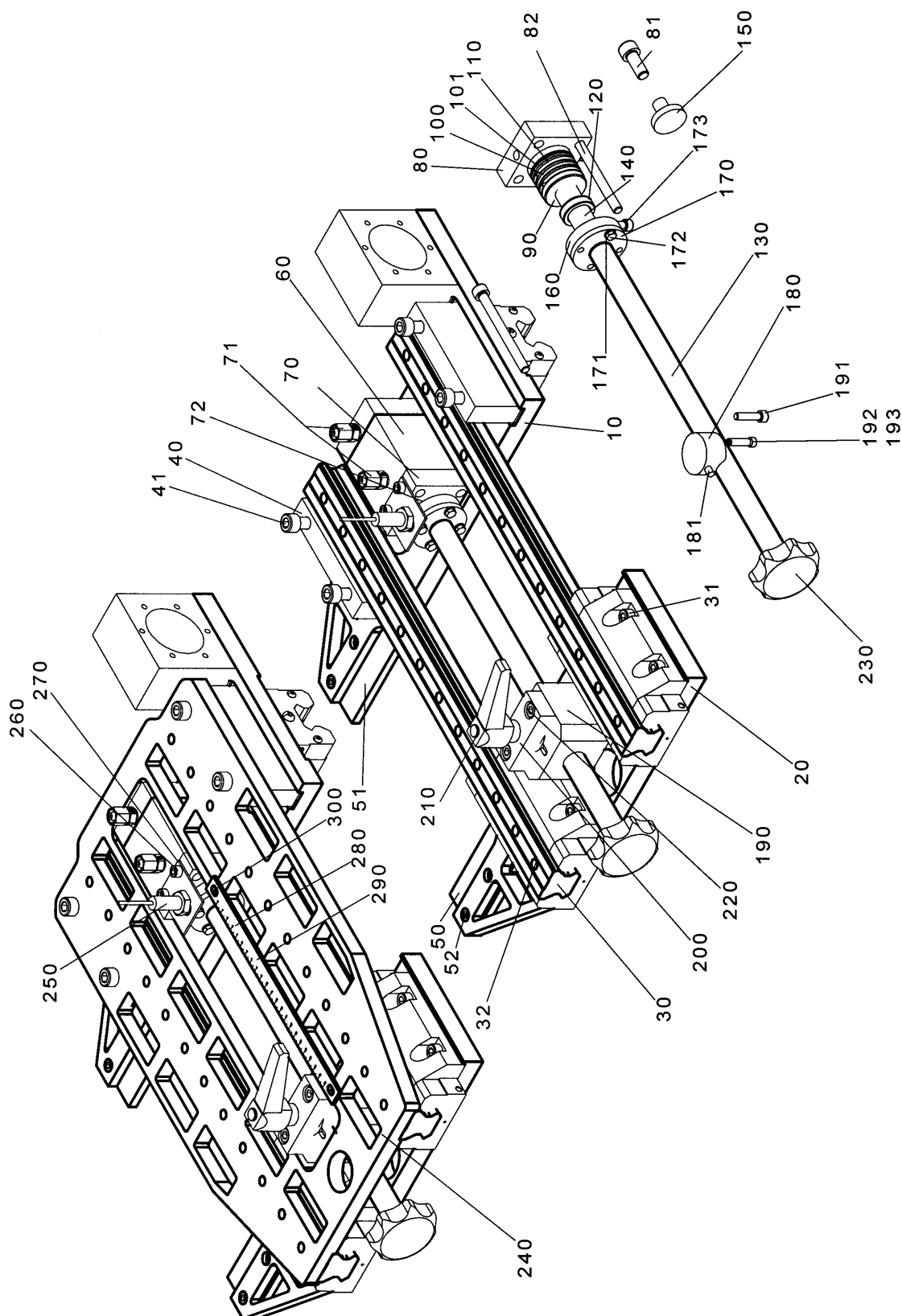


11.10.1 Parts list 614 002007 Tilting table

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
10	64200030	0 Tilting table		1		St 37	
20	64200026	0 Supporting plate 50x20x62		3		St37k	
30	64200027	0 Screw spindle M24x24		3		8.8	
31	72110024	0 Hexagonal nut M24		6	439		
32	72000014	0 Hexagonal nut M14		3	934	8	
40	94159901	0 Ball joint 40 x 83; Ø 15; Außengew. M14		3	648	C45	
41	64200024	0 Block 30x40x50		3		St37k	
50	64200025	0 Axis SWx55		3		St37k	
60	94155013	0 Pneumatic cylinder		2			
70	94155012	0 Swivelling flange mounting		2			
80	94155011	0 Swivel fixed pivot bracket		2			
90	70106025	0 Fillister head cap screw M6x25		8	912	8.8	
100	79110006	0 Plain washer M6		8	125	St	
110	64200019	0 Angle for pneumatic cylinder 50x50x5x30		2		St37k	
120	70410040	0 Hexagon head screw M10x40		2	933	8.8	
130	94153224	0 Ball joint		2			
140	72000010	0 Hexagonal nut M10		2	934	8	
150	79110010	0 Plain washer M10		2	125	St	
160	64200014	0 Distance disc for tilting table Ø 20 x 5		2		St 50k	
190	64200020	0 Angle for table 153x250x203		1		St 37	
200	64200033	0 1159x760x1587	0,00 €	1		St 37	
200	64200033	0 Side table 1159x760x1587		1		St 37	
210	72000016	0 Hexagonal nut M16		4	934	8	
220	70416045	0 Hexagon head screw M16x45		4	933	8.8	

11.11 Subassembly Clamp

Subassembly no.: 614 05036



11.11.1 Parts list 614 05036 Clamp

date: 11/08

pos	part number	part name	piece	DIN	material	weight
10	64500239	0 Clamping sheet behind X-axis 228x20x39	1			Alu 707
20	64500240	0 Clamping sheet in front X-axis 130x20x39	1			Alu7075
30	99000155	0 Guideway with 1 guide carriage 100x48x4	2			
31	70108025	0 Fillister head cap screw M8x25	12	912		8.8
32	70108030	0 Fillister head cap screw M8x30	24	912		8.8
40	64500241	0 Guide plate 50x20x125	2			St37k
41	78110070	0 Fillister head screw M10x70	4	912		12.9
50	64500242	0 Clamping sheet in front X-axis 50x5x115	1			EC80
51	64500243	0 Clamping sheet behind X-axis 50x5x115	1			EC80
52	70206012	0 Fillister head cap screw M6x12	8	6912		8.8
60	64500244	0 Cylinder housing 60x60x56	1			GGGlc4
70	64500246	0 Cylinder lid above 60x60x23	1			St37k
71	94510176	0 Straight pipe union	2			
80	64500245	0 Cylinder lid below 60x60x30	1			St37k
81	70110025	0 Fillister head cap screw M10x25	1	912		8.8
82	78108090	0 Fillister head screw M8x90	4	912		12.9
90	64500247	0 Hydraulic piston Ø39,75x25,2	1			EC80
100	94950010	0 Piston seal	2			PTFE-B
101	94910043	0 O-Ring Ø37x2	1			
110	94910021	0 Piston guide ring 40 x 4 x 1,55	2			PTFE-B
120	94912001	0 U packing ring NI300 20x30x10	1			
130	64500270	0 Adjusting spindle M20x344	1			8.8
140	64500277	0 Plunger Ø20x70	1			CF53
150	64500275	0 Free-wheeling disc Ø30x23	1			EC80
160	64500276	0 External disc Ø50x10	1			EC80
170	64500274	0 Disc Ø50x23	1			EC80
171	79110005	0 Plain washer M5	4	125		St

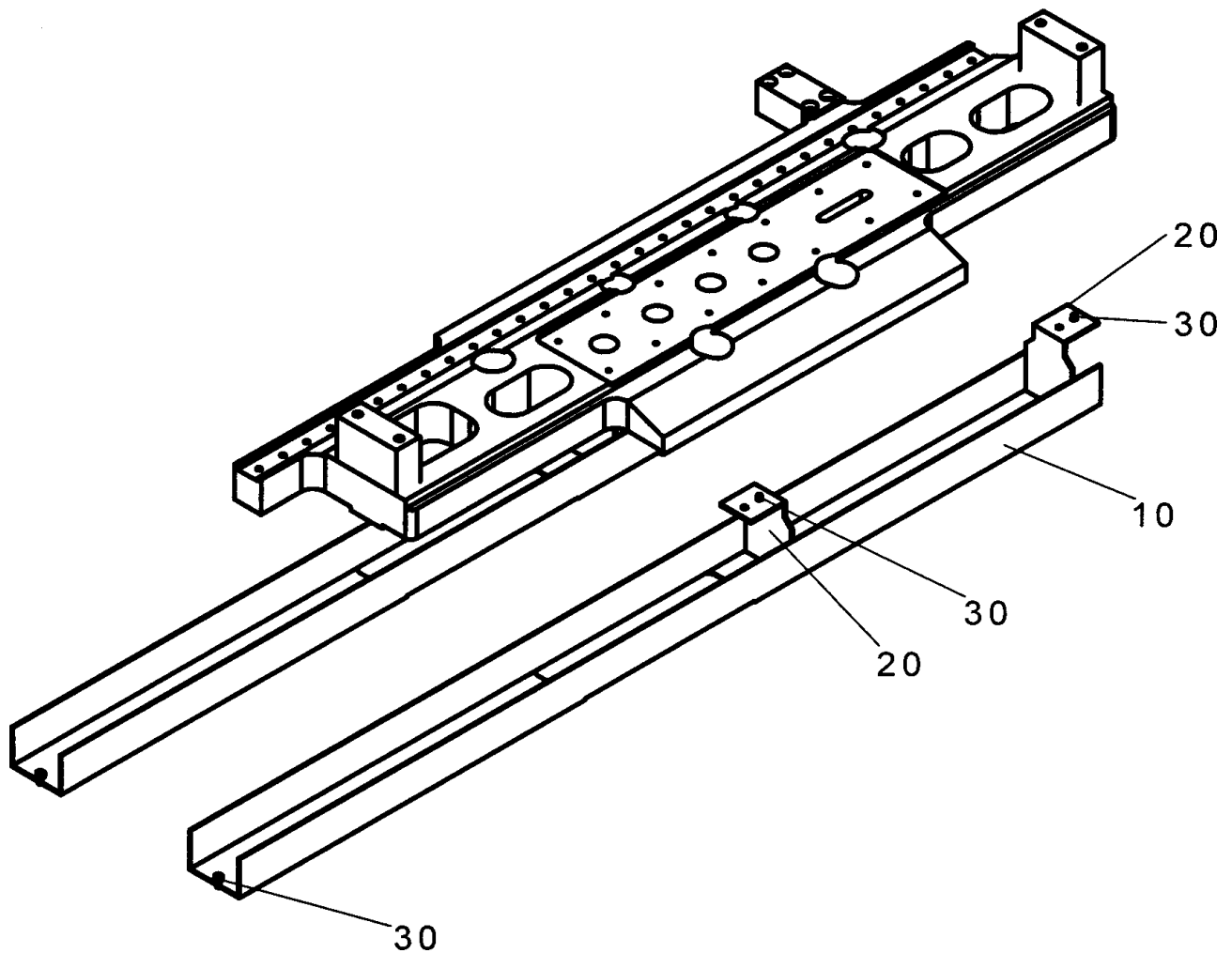
11.11.1 Parts list 614 05036 Clamp

						date:	11/08
pos	part number	part name	piece	DIN	material	weight	
172	70405012	0 Hexagon head screw M5x12		4	933	8.8	
173	70106020	0 Fillister head cap screw M6x20		2	912	8.8	
180	64500272	0 Fixing nut Ø36x46		1		Messing	
181	80710610	0 Hardened straight pin 6m6 x 20		1	6325	8.8	
190	64500271	0 Pillow block 60x66x55,25		1		St37k	
191	70106025	0 Fillister head cap screw M6x25		4	912	8.8	
192	73308008	0 Set screw M8x8		2	913	8.8	
193	80305003	0 Compression spring dm-4,8 lo-32 d-1,2		2	2098	FeSt	
200	64500273	0 Cross bar 30x15x66		1		St37k	
210	96000074	0 Clamping lever GN 500-80-M12-20-SW		1			
220	70108016	0 Fillister head cap screw M8x16		2	912	8.8	
230	96011030	0 Star grip Ø 80 x 50		1	6335	KU	
240	64500251	0 Cover plate 286x15x509		1		Alu 707	
250	93030004	0 Proximity switch 220V (Öffner)		1			
260	70106010	0 Fillister head cap screw M6x10		2	912	8.8	
270	26300037	0 Limit switch support Profi-28		1		St37k	
280	64500280	0 Scale 15x3x260		1		Messing	
290	64500281	0 Scale 15x3x260		1		Messing	
300	70503006	0 Countersunk screw M3x6		2	7991	8.8	



11.12 Subassembly Waste stripper

Subassembly no.: 614 06007

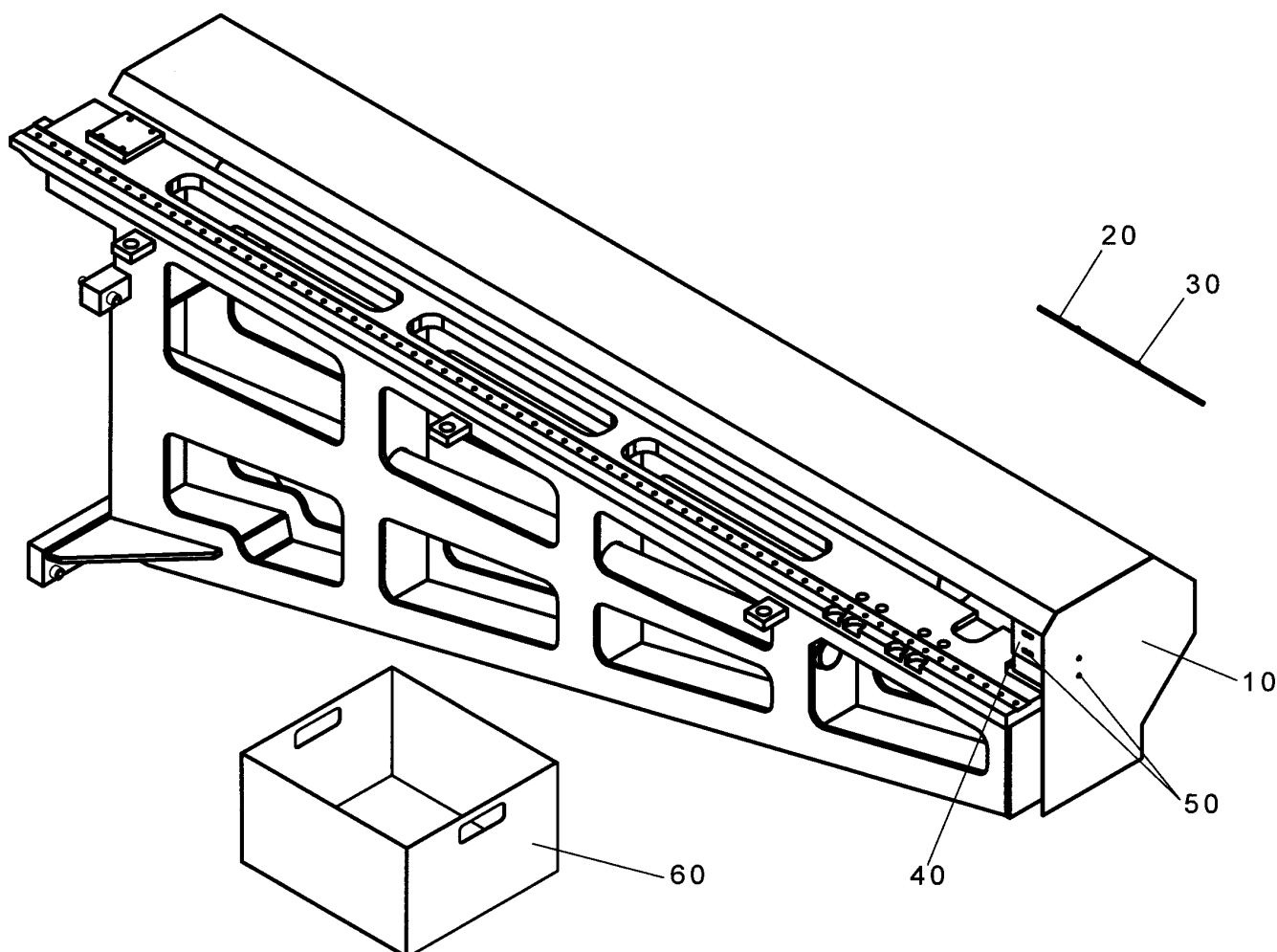


11.12.1 Parts list 614 06007 Waste stripper

pos	part number	part name	piece	DIN	material	weight
10	64600058	0 U - profile Y-axis 67x84x1220	1		St 37	
20	64600066	0 Stripper 77x58x103	2			
30	70106010	0 Fillister head cap screw M6x10	6	912	8.8	

11.13 Subassembly Safety device

Subassembly no.: 614 06009

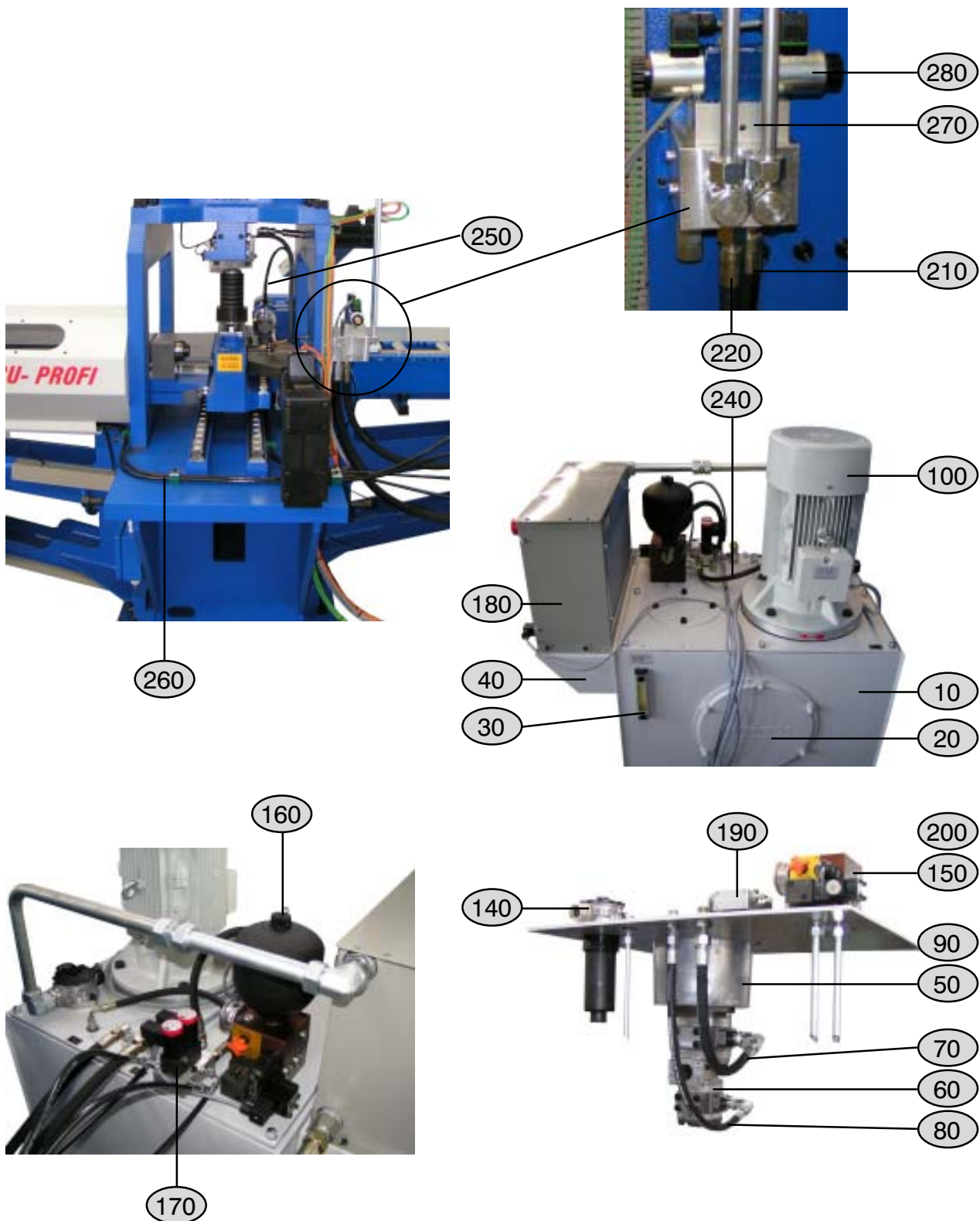


11.13.1 Parts list 614 06009 Safety device

pos	part number	part name	piece	DIN	material	weight
10	64600068	0 Safety bonnet	1			
20	64600061	0 Plexiglass guard 140x5x340	4			Makrolo
30	70804008	0 Fillister head screw M4x8	24	603		
40	64600060	0 Angle for safety bonnet 80x49x159	1			St37k
50	70806010	0 Fillister head screw M6x10	10	603		8.8
60	64600069	0 Waste container	1			St 37

11.14 Subassembly Hydraulic unit

Subassembly no.: 614 04004



11.14.1 Parts list 614 04004 Hydraulic unit standard

						date:	12/08
pos	part number	part name	piece	DIN	material	weight	
10	94610005	0 Oil tank 180 L; 630x756x660		1			
20	94610006	0 Cleaning cover		1	24339		
30	94510184	0 Fluid level gauge Schraubenmittenabstan		1			
40	64400027	0 Support for heat exchanger 205x125x540		1		St 37	
50	94310021	0 Pump holder		1			
60	94310020	0 High-pressure internal gear pump		1			
70	94410067	0 Hydraulic hose 500 mm		1	20066		
80	94410068	0 Hydraulic hose 600 mm		1	20066		
90	97600011	0 Coupling; SPIDEX		1			
100	93010083	0 Motor 11 kW; 1435 1/min; 50 Hz; 400 V		1			
140	94510183	0 Return line filter QN=165 l/min		1			
150	94610002	0 Accumulator charging unit	0,00 €	1			
160	94610001	0 Diaphragm accumulator 1,4 l; 330 bar		1			
170	94210025	0 4/2 valve		2			
180	94610004	0 Air-oil heat exchanger		1			
190	94710003	0 Mounting plate for valves		1			
200	94912033	0 Shaft sealing dM 33,7 x DM 42 x S 2		1		St mit N	
210	94410044	0 Hydraulic hose 1150 mm		1			
220	94410075	0 Hydraulic hose 850 mm		1			
240	94410072	0 Hydraulic hose 500 mm		2			
250	94410073	0 Hydraulic hose 3000 mm		2			
260	94410074	0 Hydraulic hose 4600 mm		2			
270	23420010	b Distributor block 80 x 113 x 130		1		AlZn10	
280	94210026	0 4/3 directional valve		1			

11.14.2 Parts list 614 04003 Hydraulic unit speed

						date:	12/08
pos	part number	part name	piece	DIN	material	weight	
10	94610005	0 Oil tank 180 L; 630x756x660		1			
20	94610006	0 Cleaning cover		1	24339		
30	94510184	0 Fluid level gauge Schraubenmittenabstan		1			
40	64400027	0 Support for heat exchanger 205x125x540		1		St 37	
50	94310021	0 Pump holder		1			
60	94310020	0 High-pressure internal gear pump		1			
70	94410067	0 Hydraulic hose 500 mm		1	20066		
80	94410068	0 Hydraulic hose 600 mm		0	20066		
90	97600011	0 Coupling; SPIDEX		1			
100	93010083	0 Motor 11 kW; 1435 1/min; 50 Hz; 400 V		1			
110	94310022	0 Pump 2,6 cm ³ /Umdrehung		1			
120	94410066	0 Hydraulic hose 500 mm		1			
130	93010082	0 Motor 1,1 kW; 1380 1/min; 50/60 Hz; 220/		1			
140	94510183	0 Return line filter QN=165 l/min		1			
150	94610002	0 Accumulator charging unit	0,00 €	1			
160	94610001	0 Diaphragm accumulator 1,4 l; 330 bar		1			
170	94210024	0 Relief valve		1			
180	94610004	0 Air-oil heat exchanger		1			
190	94710002	0 Control unit		1			
200	94610003	0 Diaphragm accumulator 0,8 bar		1			
210	94410069	0 Hydraulic hose 1060 mm		1			
220	94410070	0 Hydraulic hose 950 mm		1			
230	94410071	0 Hydraulic hose 1000 mm		1			
240	94410072	0 Hydraulic hose 500 mm		1			
250	94410073	0 Hydraulic hose 3000 mm		2			
260	94410074	0 Hydraulic hose 4600 mm		2			

12 Spare parts management and after-sales service

12.1 Spare parts management

- **Store spare parts that cannot be delivered in the short run. Loss of production is more expensive than storage.**
- **In your interest: Use our original spare parts.**

Since, spare parts delivered by us:

- are checked and released by us,
- do not affect functioning and safety of the machine,
- are state-of-the-art and comply with legal regulations,
- are covered by our liability and guarantee.

When ordering spare parts, please indicate the following data:

- Your ordering no.
- Name of spare part
- Part number (if available)
- Dimensions
- Number of pieces

12.2 Spare parts lists, spare parts graphics

Further information is provided by our spare parts lists and spare parts graphics.

12.3 Address for spare parts and after-sales service

Fa. Boschert GmbH + Co. KG

Telefon 07621 / 95 93 - 0

Telefax 07621 / 55 184

Postfach 7042 D - 79523 Lörrach

Mattenstraße1 D - 79541 Lörrach - Hauingen

If you require a customer service mechanic please inform us. He will visit you as soon as possible.

Notes on our products



Boschert GmbH + Co. KG
Abteilung Service
Mattenstraße 1

D - 79541 Lörrach - Hauingen

Machine typ: _____

Year of construction: _____

Machine-no.: _____

Sender: _____

Date: _____