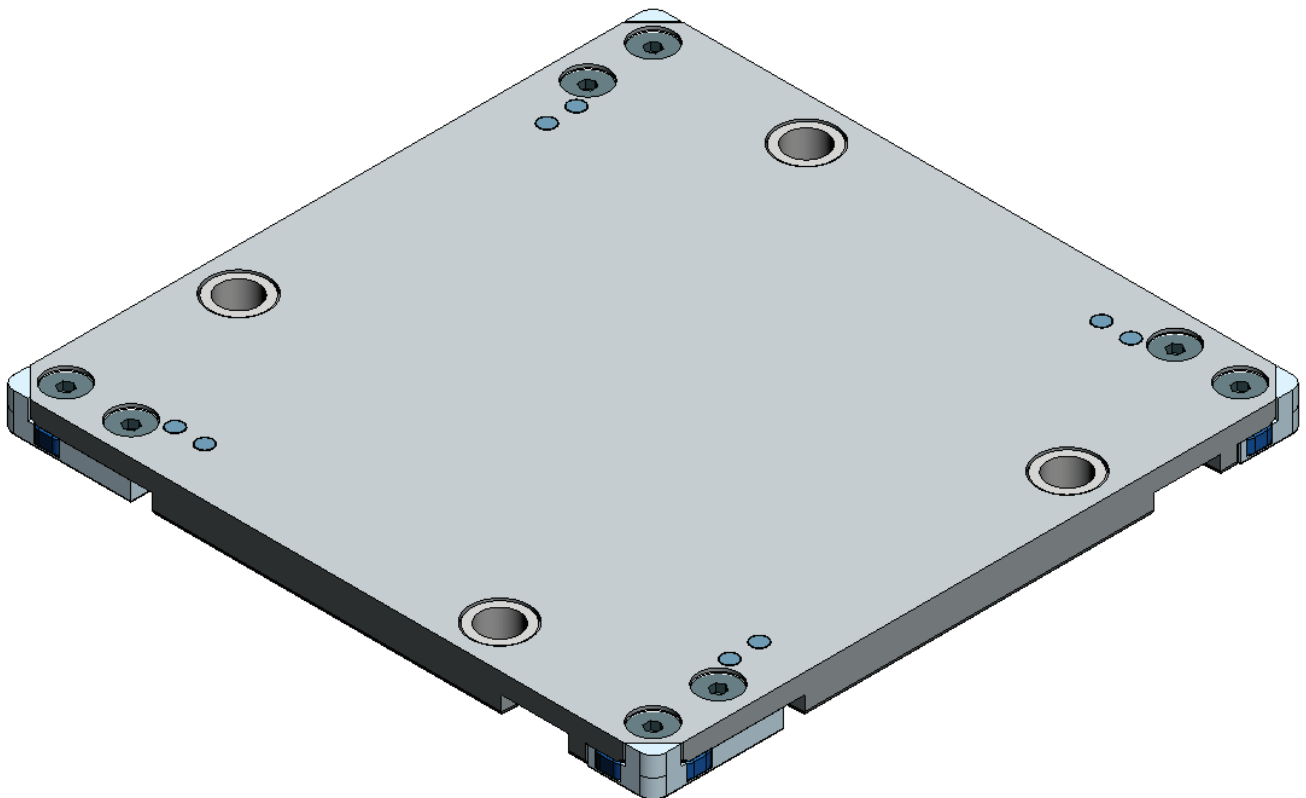


## **Pallets (WT) - 300 135 001**

STEIN Workpiece Transport System

### **Technical description**

Always keep this documentation with the pallet -  
for installation, operating, and maintenance personnel!



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<b>1</b>	<b>Abbreviations and symbols .....</b>	<b>4</b>
1.1	Explanation of safety and warning notices .....	4
<b>2</b>	<b>Introduction .....</b>	<b>5</b>
2.1	Short description.....	6
2.2	Initial inspection.....	7
2.3	Complaints.....	7
2.4	Warranty .....	7
<b>3</b>	<b>Safety instructions.....</b>	<b>8</b>
3.1	General safety information .....	8
3.2	Appropriate use and liability exclusions .....	8
3.3	Residual danger .....	9
<b>4</b>	<b>Technical description .....</b>	<b>10</b>
4.1	Scope of delivery.....	10
4.2	Pallet components .....	10
<b>5</b>	<b>Pallet installation .....</b>	<b>11</b>
5.1	General .....	11
5.2	Mechanical installation.....	11
5.3	Logical installation (when using the encoding) .....	12
<b>6</b>	<b>Initial operation .....</b>	<b>12</b>
<b>7</b>	<b>Faults .....</b>	<b>13</b>
7.1	Causes of faults and fault correction .....	13
<b>8</b>	<b>Cleaning and maintenance.....</b>	<b>14</b>
8.1	Cleaning.....	14
8.2	Maintenance .....	15
<b>9</b>	<b>Replacing the code carriers (CC) (option) .....</b>	<b>15</b>
<b>10</b>	<b>Pallet post processing .....</b>	<b>16</b>
<b>11</b>	<b>Pallet repair set .....</b>	<b>17</b>
<b>12</b>	<b>Dimension sheet.....</b>	<b>18</b>
12.1	Pallet.....	18
12.2	Frame Pallet.....	19
<b>13</b>	<b>Spare parts.....</b>	<b>20</b>
13.1	300 135 001 pallet complete .....	20
13.2	300 776 001 Code carrier for control unit 4G.....	22
<b>14</b>	<b>Appendix.....</b>	<b>23</b>
14.1	Technical data.....	23

## 1 Abbreviations and symbols

- Action symbol
- 1 Symbol for actions that must be carried out in a specified sequence.
- ⇒ Consequence or result of an action
- Count
- WT Pallet
- BE Belt element
- OI Operating instructions
- Fig. Figure

### i

This symbol identifies instructions that will allow the pallet to be used more effectively and more economically.

The symbols used in the operating instructions for safety and hazard warnings are described in detail in chapter 3.

### 1.1 Explanation of safety and warning notices

The following safety signs explain all the situations or actions where danger to life and limb for machine operators or their colleagues exists.

Strictly comply with these instructions and act with particular care in these cases. Pass all safety notices on to all other users.



**DANGER!**

**The symbol with the added designation DANGER describes a directly impending hazards!**

**The hazard results in serious injury to people or even fatalities.**



**WARNING!**

**The symbol with the added designation WARNING describes a potentially impending hazards!**

**The hazard may result in serious injury to people or even fatalities.**



**CAUTION!**

**The symbol with the added designation CAUTION describes a potentially hazardous situation!**

**The hazard can result in injury to people.**

The safety signs appear frequently in the text with a picture to explain what the source of the hazard is.



**CRUSHING HAZARD!**

**This symbol gives warning of a location where there is a risk of being crushed.**



**HIGH ELECTRICAL VOLTAGE!**

**This symbol gives warning of possible electric shock.**

It appears for all working and operating procedures that must be followed precisely, in order to avoid injury to personnel or damage to the system through high electrical voltage.

**Other warning signs:**



**ATTENTION!**

This symbol indicates warnings which, if ignored, will cause a hazard to the machine.



**Protective clothing must be worn!**

Wear your personal safety clothing:  
Safety footwear, hard hat, goggles and safety gloves.



**Environmental protection!**

This sign indicates warnings that will help to avoid harming the environment.

## 2 Introduction

The safety of all persons who come into contact with the pallet essentially depends on knowledge of how the pallet functions. Therefore:

**Read these operating instructions before using the unit for the first time.**

These operating instructions contain important information that will ensure the correct, economical and safe operation of your pallet.

## 2.1 Short description

The pallets from STEIN Automation are standard products for the Workpiece Transport System (WTS) from STEIN Automation.

In conjunction with the transport system, the pallets allows conveyance of the individual manufacturing products on the WTS system.

The function of the pallet is to carry the product or its holding device and to accommodate the (optional code carriers).

The pallet rests loose on the two transport belts of the belt element or transverse element and is guided by the guide profiles.

### WTS with logistics controller (WT encoding)

To control the flow of materials on the WTS, the workpieces that will be processed are located on encoded pallets.

On every pallet there are 2 code carriers on the underside. This enables the pallet to be read in all positions by so-called read heads (without contact) and thus assigned via the WTS controller.

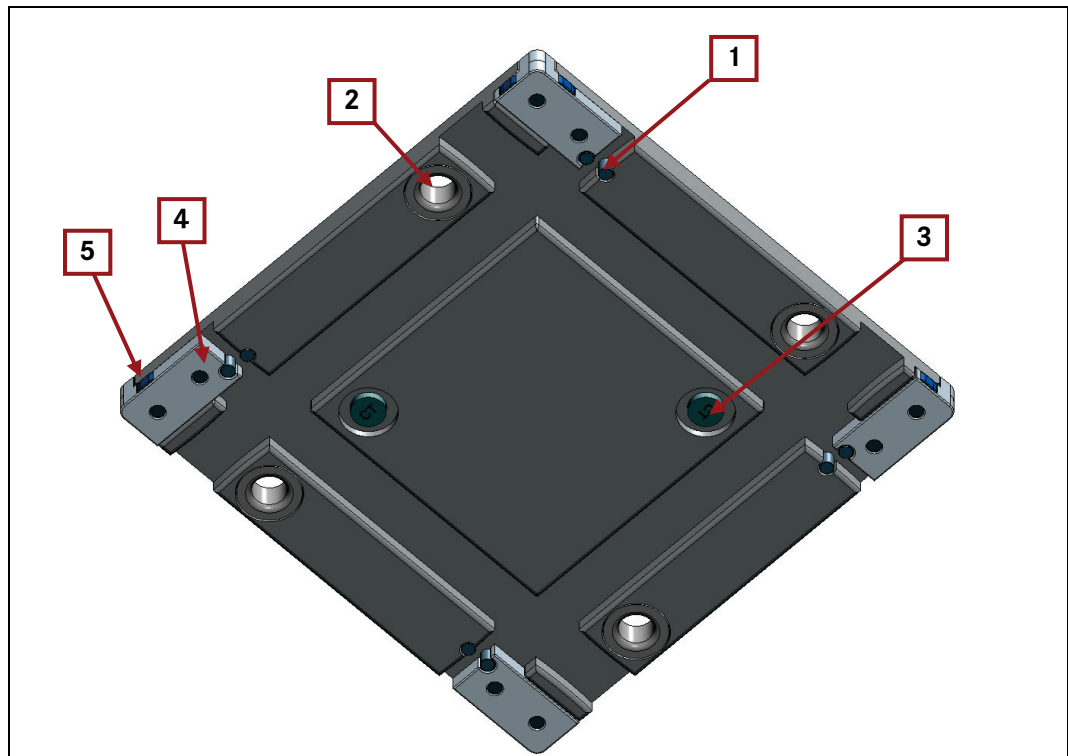
**i**

Also comply with the documents:

- STEIN 300 Operating Instructions (OI)
- STEIN 300 System Documentation

Fig. 2-1:  
Pallet

- 1 Centring pins
- 2 Centring bush (optional)
- 3 Code carrier
- 4 Stop plate
- 5 Damping for stop plate



## 2.2 Initial inspection

- Unpack all the components supplied.



### **Environmental protection!**

Dispose of all packaging material in an environmentally responsible manner.

Then carry out an initial inspection.

Check that:

- All components detailed on the delivery note have been supplied
- Components have not been damaged or lost in transit.

## 2.3 Complaints

In order for claims for damage caused in transit to be accepted, follow this procedure:

- Inform the freight company.
- Draw up a damage report giving the following details
  - Name and address of recipient
  - Item or order number
  - A description of the damage.
- Send components, if possible in their original packaging, with the damage report, back to the manufacturer.

## 2.4 Warranty

For the pallet and its spare parts we grant the legal guarantee period or rather the defined guarantee period in the contract, starting with the day of delivery.

During this warranty period we will replace any components defective in manufacture or materials free of charge.

STEIN Automation's general warranty and guarantee conditions also apply.

## 3 Safety instructions

### 3.1 General safety information

- The pallets from STEIN Automation are high quality products, manufactured to recognised technical standards.  
The pallets left the manufacturing plant in a perfectly safe technical condition!
- All models of the pallets comply with the requirements of UVV, the German accident prevention regulations.
- To maintain this status, installation staff, users and service technicians must observe the notices and warnings contained in these operating instructions.
- Pallets must only be installed and repaired by authorised personnel who have been trained by STEIN Automation.
- Only genuine spare parts from STEIN Automation may be used when carrying out repairs to the pallets!

### 3.2 Appropriate use and liability exclusions

The pallet should only be used

- in WTS belt systems.
- for suitable workpieces with the permitted dimensions and weights
- for the purpose for which it was designed,
- indoors,
- in dry areas,
- in areas where there is no risk of explosion,
- in an environment that is free of oil and shavings.



**ATTENTION**



**CAUTION!**

Total permissible weight: 12 kg. The weight that will be transported must be placed as centrally as possible on the pallet.

**The pallets are not suitable for transport of hazardous substances.**

Unauthorised interventions, alterations or repairs carried out on the pallets invalidate the warranty.

STEIN Automation accepts no liability for any damage caused by unauthorised interventions, alterations or repairs.



### 3.3 Residual danger

The pallets are manufactured using state-of-the-art technology and to recognised safety standards. Nevertheless their use can lead to dangerous situations for the user or third parties, or to impairments of the system and other material assets.

- If there are several pallets on the transport system, it is possible for them to collect at the stoppers during test runs or in the production process. These “WT queues” have a high kinetic energy. If such a WT queue builds up at stoppers or at other, already stationary pallets, there is a great risk that hands or fingers will get crushed if placed between the WTs.
- Injuries due to the nature of the product being transported can also occur.

#### **i**

There are several possibilities for resolving WT queues, such as individuation of the queue, etc.

See the technical description of the stop device in this regard.

#### **i**

The potential for residual danger can be further reduced through the use of protective cladding.

## 4 Technical description

### 4.1 Scope of delivery

The pallet is delivered with stop plates and centring pins.

#### i

**The following accessories are optional:**

- Code carrier
- Centring bush

#### **Function:**

In conjunction with the transport system, this device allows conveyance of the individual manufacturing products on the WTS system.

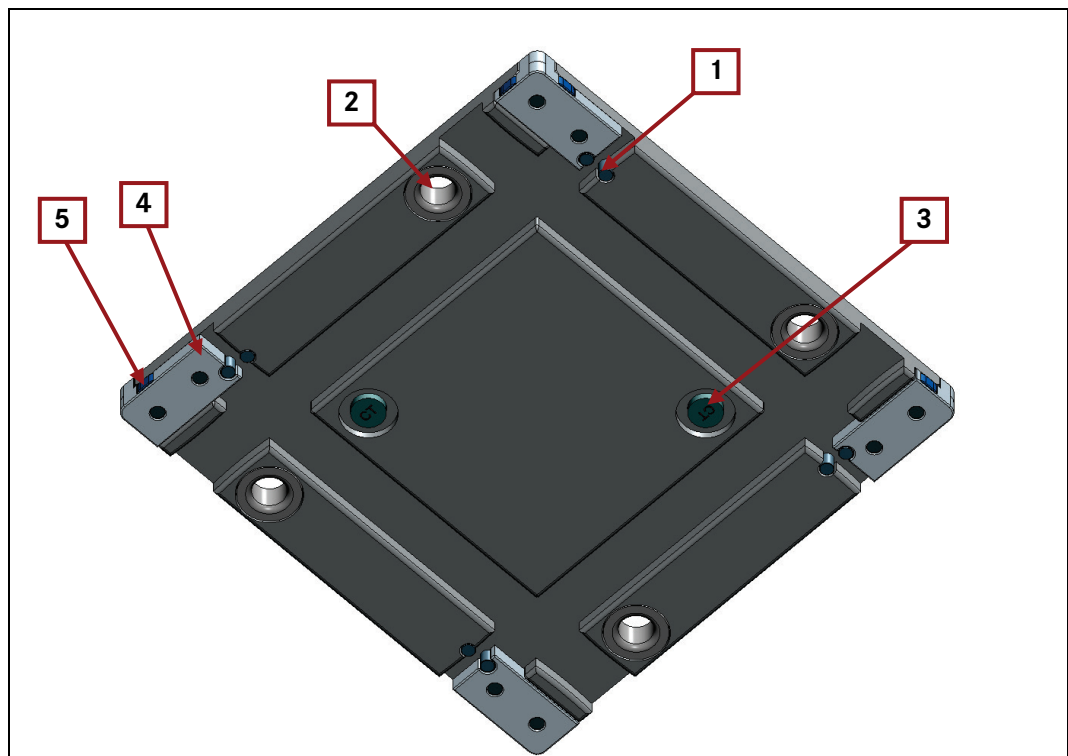
The pallet accommodates the product or the holding device.

Optionally the code carriers can be mounted on the pallet for control and for data exchange.

### 4.2 Pallet components

Fig. 4-1:  
Pallet

- 1 Centring pins
- 2 Centring bush (optional)
- 3 Code carrier
- 4 Stop plate
- 5 Damping for stop plate



#### i

The stop plates are rubberised to reduce impact noises and for damping purposes. Centring pins position relative to the direction of pallet travel with the centring rails (position accuracy  $\pm 0.2$  mm).

Centring bushes position in the longitudinal and transverse direction with centring or lift units (positioning accuracy  $\pm 0.02$  mm).

**i** If the pallets are milled by the customer, ensure that the running ability of the pallets is not impaired. **Do not** mill in the area of the drive rollers of radius circuits and the belt support. If this is not the case trouble-free transport process is not ensured. Please pay attention to the rollers of the radius circuits.

## 5 Pallet installation

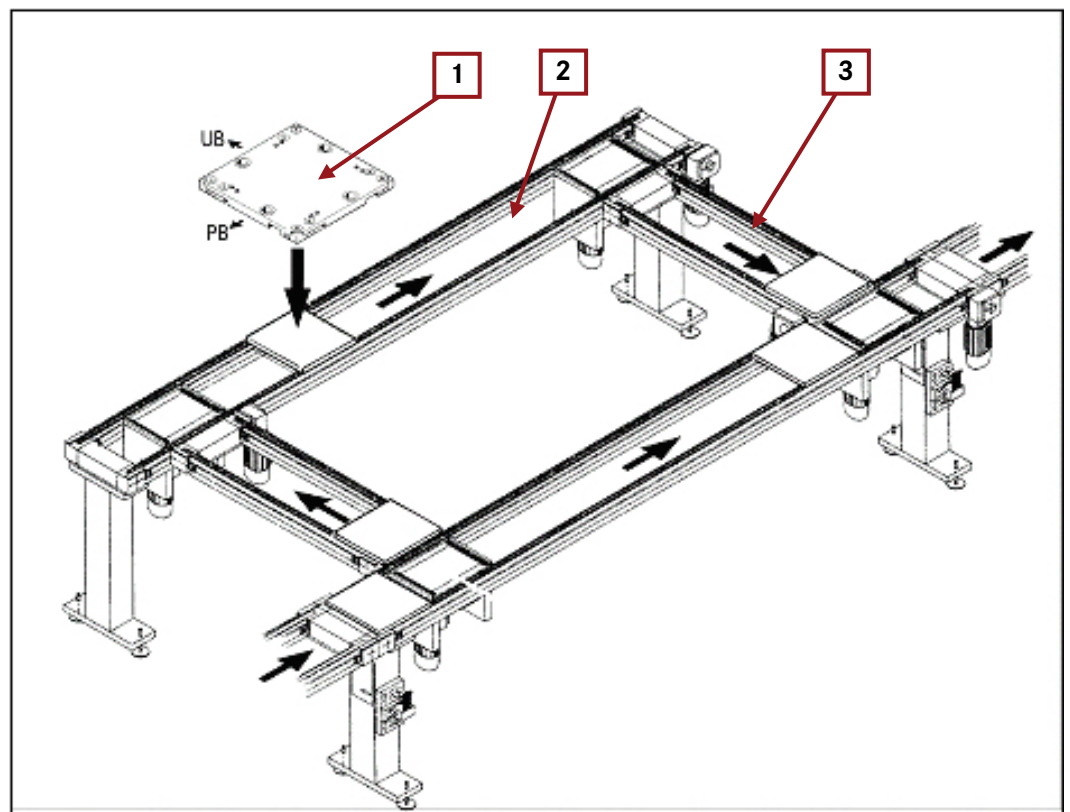
### 5.1 General

The pallets can be placed on open belt elements of the WTS system (possibly with consideration of the code controller), however they should not be placed in, or removed from, the corner area or transport area.

### 5.2 Mechanical installation

Fig. 5-1:  
Placing the pallet and the  
belt system

- 1 Pallet
- 2 Belt element
- 3 Transverse section element



- Place the pallet on the belt system in the correct placement direction

**i** If the pallet has been taken out of the WTS system, ensure that the pallet is again placed in the correct placement direction. If this is not the case there is a danger that the workpiece will be incorrectly machined, or damage at the workstations.

### 5.3 Logical installation (when using the encoding)

**Newly implemented pallet:**

Before the pallet is sorted into the manufacturing process the code numbers of the pallet must be read-in on the master!



For this please comply with the instructions in the documentation:

- STEIN 300 System Documentation
- Workpiece Transport System

Pallet that is being re-used:



**Before the pallet is again sorted into the manufacturing process the code number of the new code carrier must be read-in on the master!**

**WARNING!**



For this please comply with the instructions in the documentation:

- STEIN 300 System Documentation
- Workpiece Transport System

## 6 Initial operation

Carry out the following checks before initial operation:

- Are all the electrical cables undamaged?
- Are all the electric and pneumatic leads and hoses correctly connected?
- Have all the mechanical components been tightly fastened in place?
- Have all tools and other equipment been cleared from the transport area?
- Has all safety equipment been installed and is it working correctly?
- Are all pallets in the correct position or is there a pallet queue?

Once you have carried out all these checks, you can continue with the initial operation.

- Switch on the transport system and its associated processing stations and carry out a trial run.
- Check the functions of the individual elements and processing stations as well as the pre-programmed overall operation of the entire system.
- Ensure that the safety equipment is functioning correctly.



**DANGER!**

**Only start the Transport System once you have carried out a successful trial run.**

## 7 Faults



**WARNING!**

When faults, malfunctions or damage affecting safety occur, immediately push the **EMERGENCY STOP** button to switch the transport system off. Have the cause of the malfunction identified and the problem fixed by authorised personnel.

### 7.1 Causes of faults and fault correction

Faults	Cause	Solution
Pallet is stuck in the corner position or stop position	Belt element or transfer element is not correctly aligned	<input type="checkbox"/> Use a water level to align the transport system horizontally and vertically
	Belt element or transfer element is not running	<input type="checkbox"/> Place the belt element in service
	Wrong stopper activation	<input type="checkbox"/> Comply with the instructions in the system documentation. <input type="checkbox"/> Contact the STEIN service organization
Pallet does not remain in a stop position	The proximity switch on the stopper or code carrier on the pallet is defective	<input type="checkbox"/> Comply with the instructions in the system documentation. <input type="checkbox"/> Contact the STEIN service organization
Pallet is not detected	Code carrier is missing - code carriers can be detached from the bonding point	<input type="checkbox"/> Insert and bond new code carrier - see chap. 9.



**WARNING!**

**Only release the transport System for work after you have carried out a successful trial run!**

## 8 Cleaning and maintenance

### 8.1 Cleaning

Depending on the ambient conditions of the transport system, the pallet can become fouled.

Clean the pallet regularly! How frequently this is done depends on the degree of fouling.

- Take the pallet out of the belt system for cleaning.



#### **Protective clothing must be worn!**

When cleaning, wear goggles, safety gloves and if necessary, a dust mask!  
Only use a vacuum cleaner to remove dust, shavings and other particles.

- Remove dust, shavings and other particles with a vacuum cleaner.
- Clean dirty surfaces with a soft, lint free cloth, lightly dampened with cleaning fluid.



**WARNING!**

When cleaning, do not use any abrasive, corrosive or scouring cleaning fluids or cleaning materials.

Prevent liquids from getting into the components of the system or of the processing stations.



STEIN Automation recommends Industrie Clean, manufactured by Würth, product number: 893140 or Arecal Clean manufactured by RECA Norm, article no.: 0895014500.

- After cleaning, put the pallet back on the belt system in the correct placement direction.



#### **Environmental protection!**

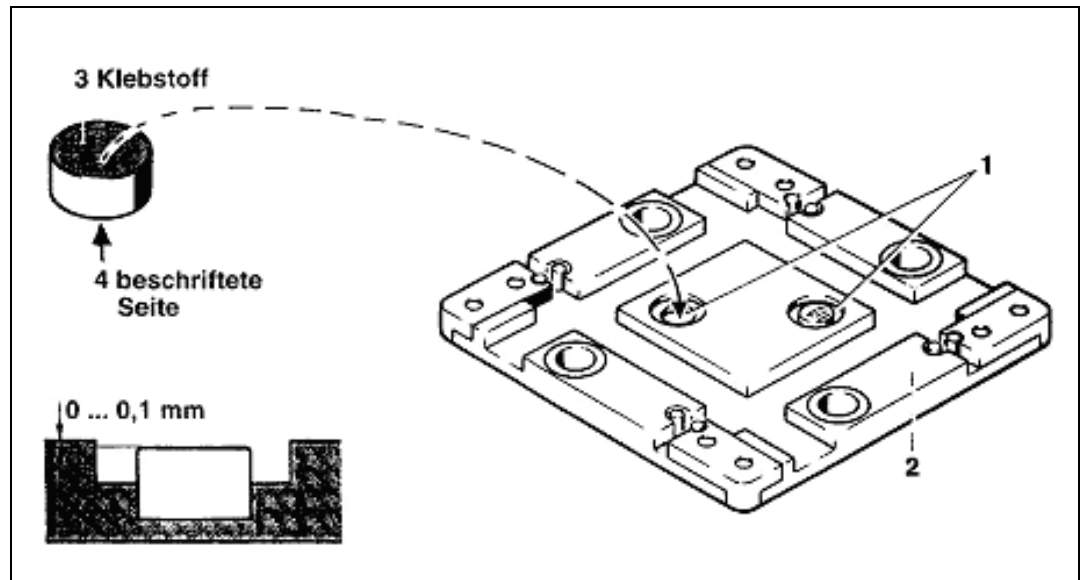
Dispose of waste material and used cleaning cloths in an environmentally responsible manner.

## 8.2 Maintenance

The pallets are maintenance-free.

## 9 Replacing the code carriers (CC) (option)

Fig. 9-1:  
Replacing the  
code carriers



- Remove the defective code carrier (1) from the bore on the underside of the pallet (2). Thoroughly remove any residual adhesive adhering in the bore. In this process do not damage the surface of the pallet!
- Clean the receptacle bore for the code carrier of dust, fouling, grease, etc.
- Brush a thin coat of UHU-Plus endfest 300 (3) or equivalent adhesive, full surface on the un-inscribed underside of the new code carrier.
- Press the code carrier with the adhesive-coated side in front into the cleaned and dry bore of the pallet until the stop. The inscribed surface (4) of the code carrier should not project over the surface of the pallet!  
A code carrier must be located in each of the two bores (1).
- Remove any escaping adhesive residues!
- Leave the pallet in the position shown and use weights to keep the code carrier in place until the adhesive has hardened.



**WARNING!**

Before the pallet is again sorted into the manufacturing process the code number of the new code carrier must be read-in on the master!

For this please comply with the instructions in the documentation:

- Software description
- Workpiece Transport System

## 10 Pallet post processing

Depending on requirements, it is possible to rework the pallet. However, reworking is not possible without restrictions everywhere on the WT.

Unrestricted reworking of the workpiece carrier is possible as shown in drawing 12.2. If reworking is outside the dimensioned area, this must be approved by STEIN Automation.



**ATTENTION**

**On the complete underside of the WT (also in the switching channel) no objects may look out.**



## 11 Pallet repair set

If the pallet running surfaces are worn you can insert steel plates after milling out the underside, and thus continue to use the pallet.

Fig. 11-1:  
Position of the milled-out areas

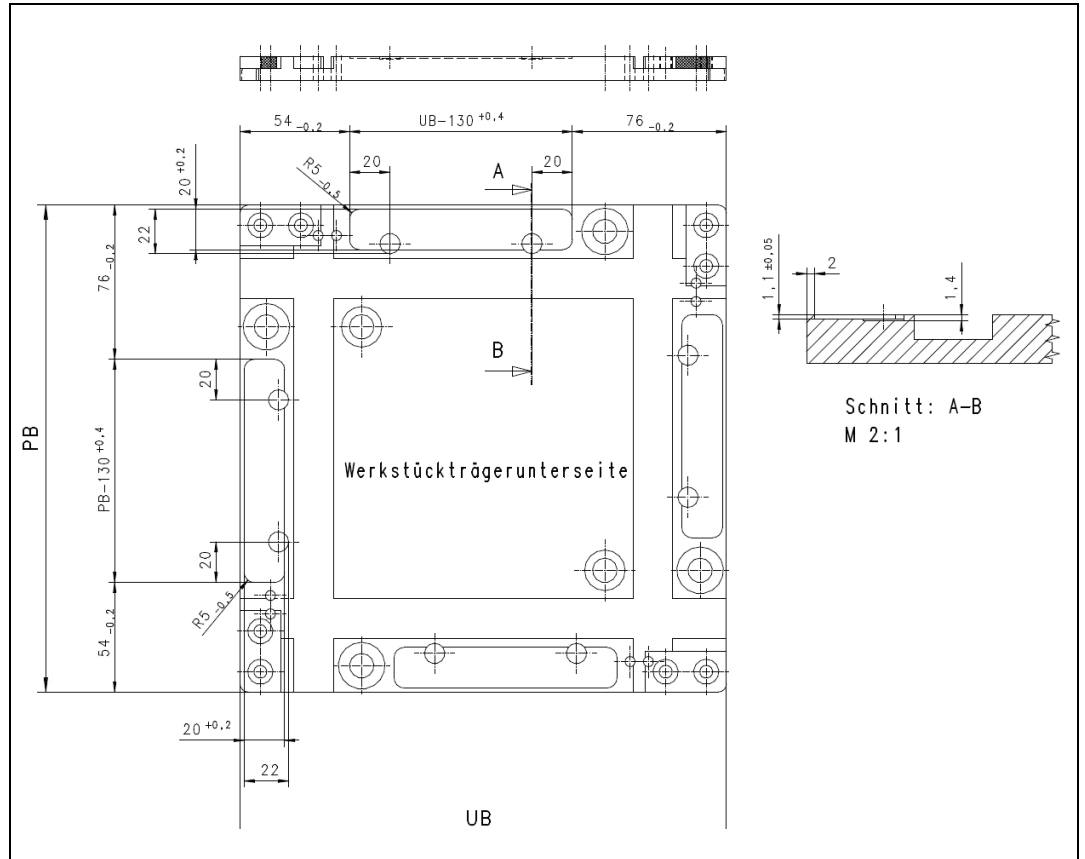
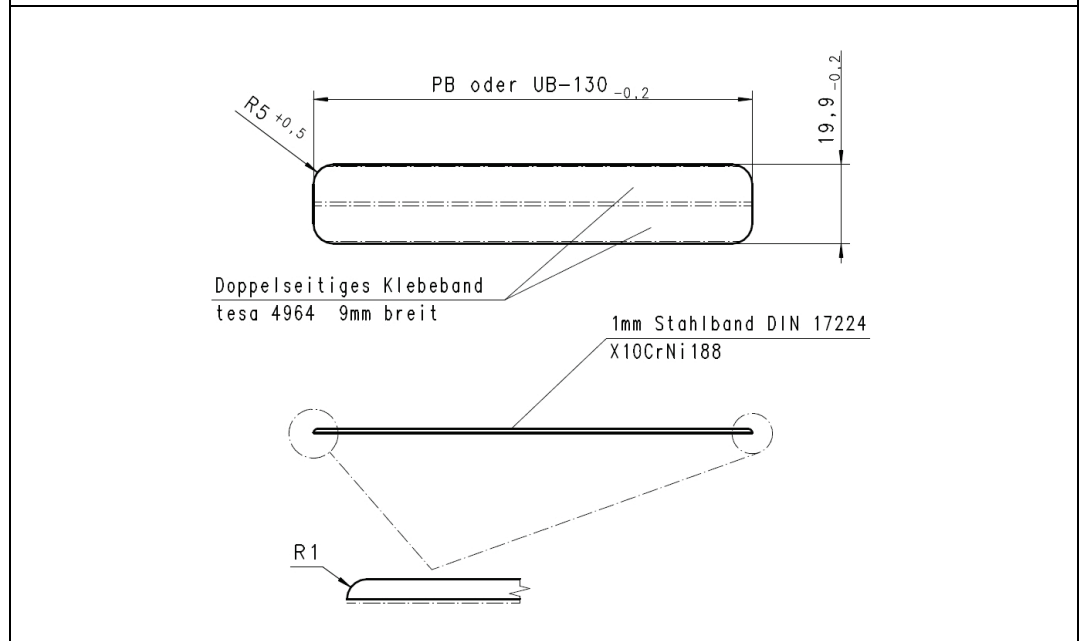


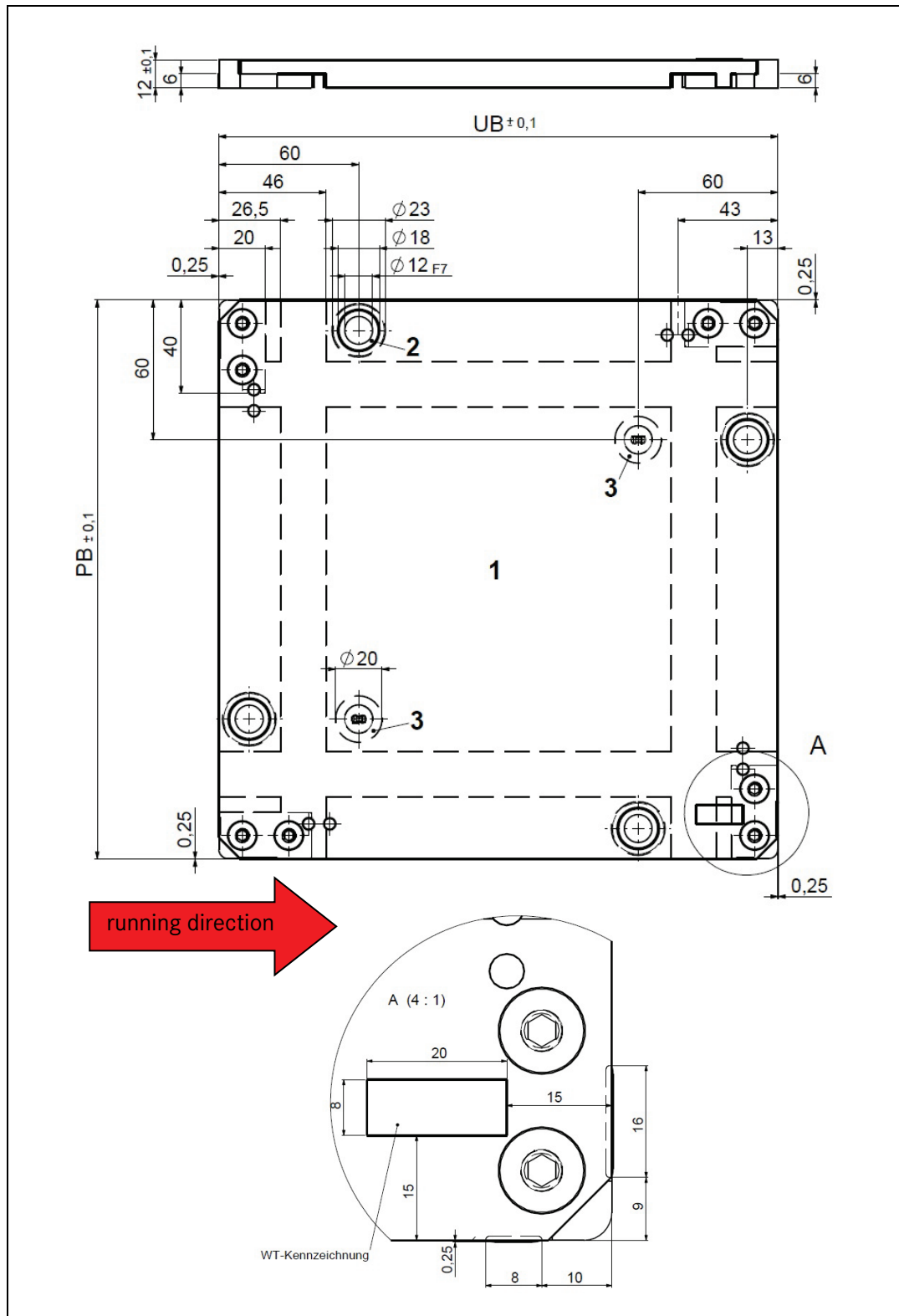
Fig. 11-2:  
Support surfaces



## 12 Dimension sheet

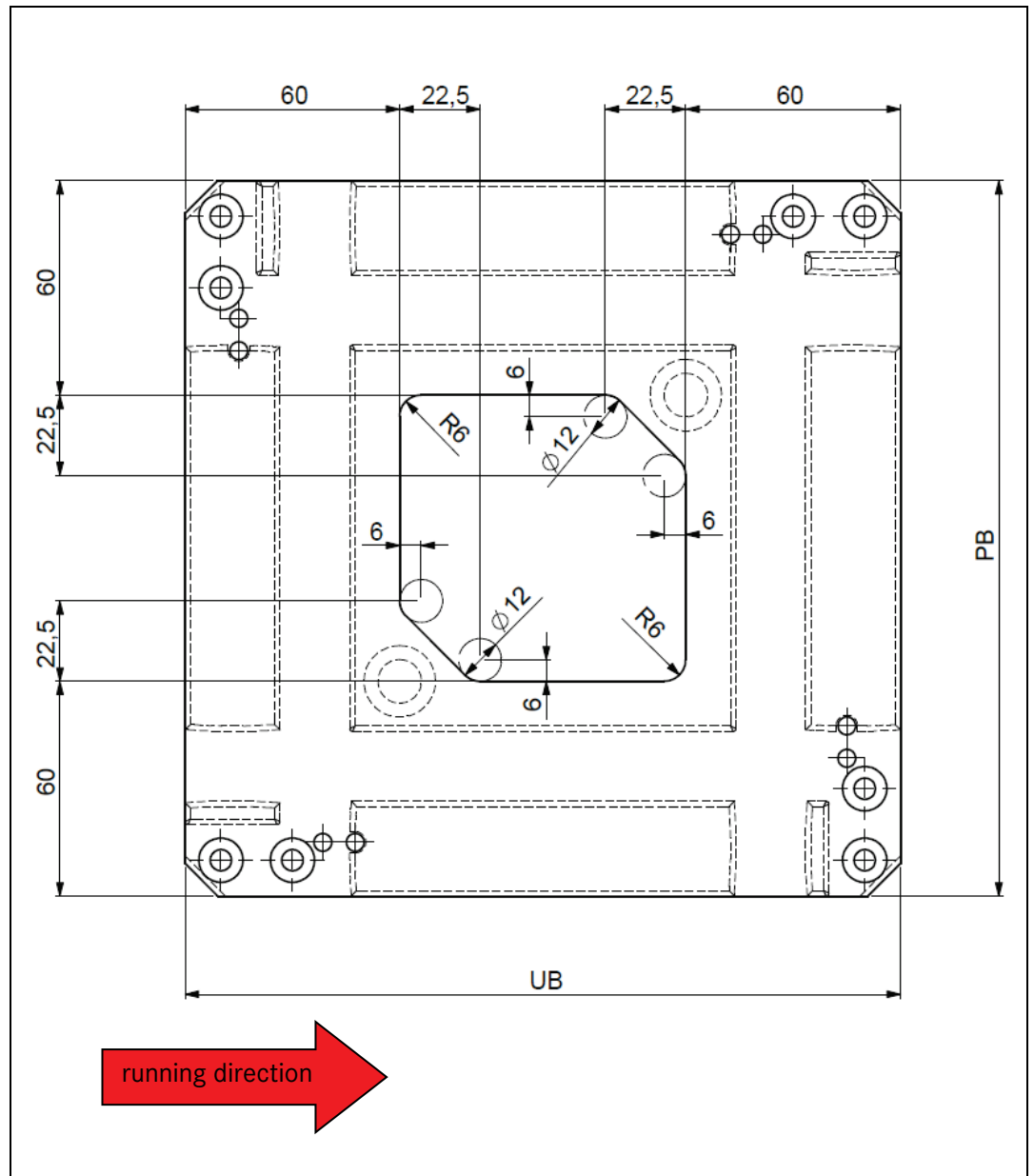
### 12.1 Pallet

Fig. 12-1:  
Dimension sheet  
Pallet



## 12.2 Frame Pallet

Fig. 12-2:  
Dimension sheet  
Frame Pallet



## 13 Spare parts

### 13.1 300 135 001 pallet complete

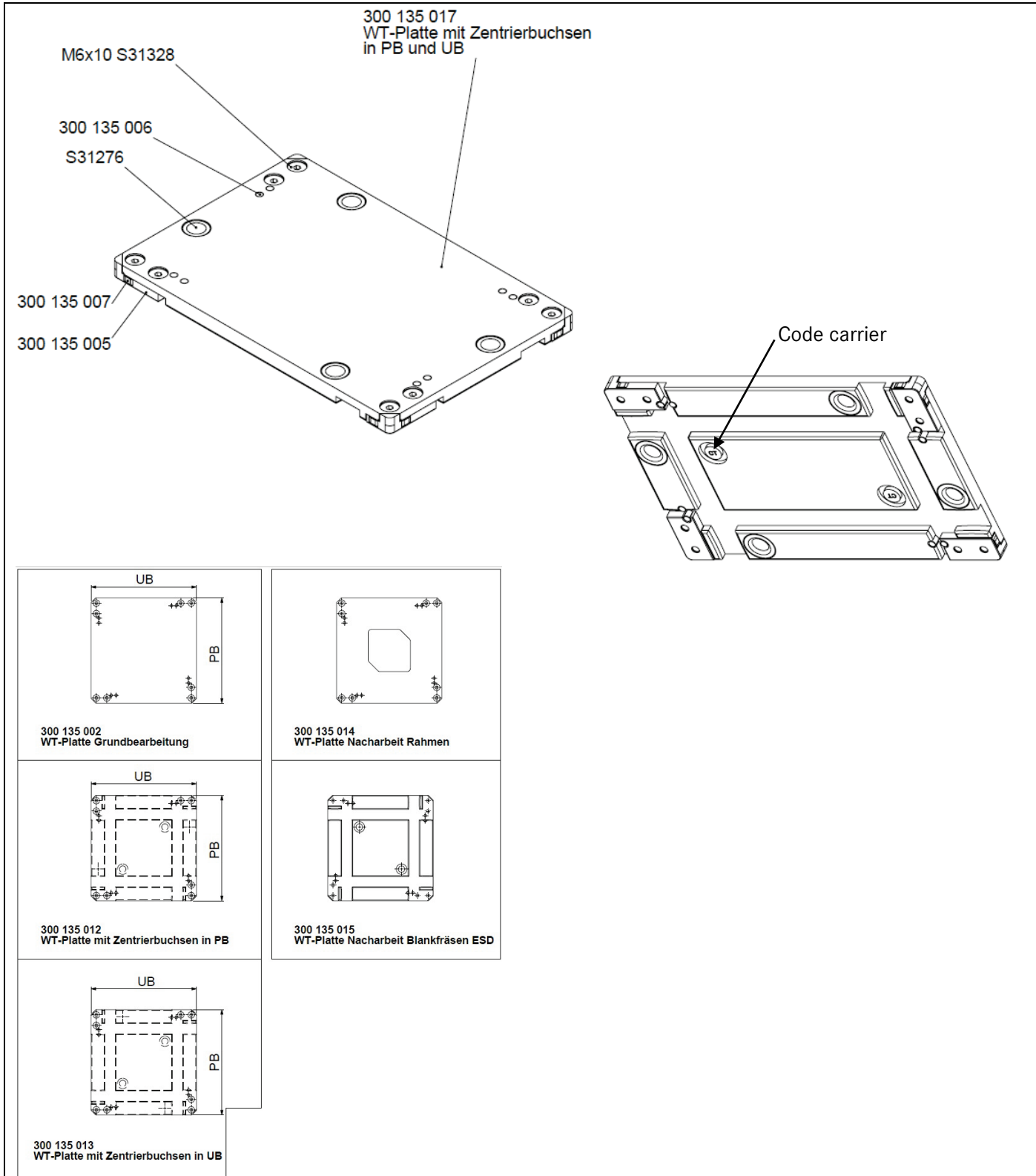


Fig. 13-1: Pallet

Item	Order number	Description	Quantity
	S20464	<b>Code carrier* for control unit NT till 03/2012</b>	2
	S20734	<b>Code carrier* for control unit NT from 03/2012</b>	
	S20748	<b>Code carrier* for control unit 4G</b>	
	300135005	<b>Stop plate</b>	4
	300135006	<b>Centring pin</b>	8
	S31276	<b>Centring bush*</b>	4
	300135002	<b>Pallet without bore for centring bush</b>	1
	300135012	<b>Pallet with bore for centring in PB**</b>	1
	300135013	<b>Pallet with bore for centring in UB**</b>	1
	300135017	<b>Pallet with bore for centring in PB and UB**</b>	1
	S31328	<b>Screw</b>	8
	300135007	<b>Damping for stop plate</b>	

**i**

\* Optional / Attention system specific type of code carrier

\*\* PB = Width of pallet / UB = Transfer width

### 13.2 300 776 001 Code carrier for control unit 4G

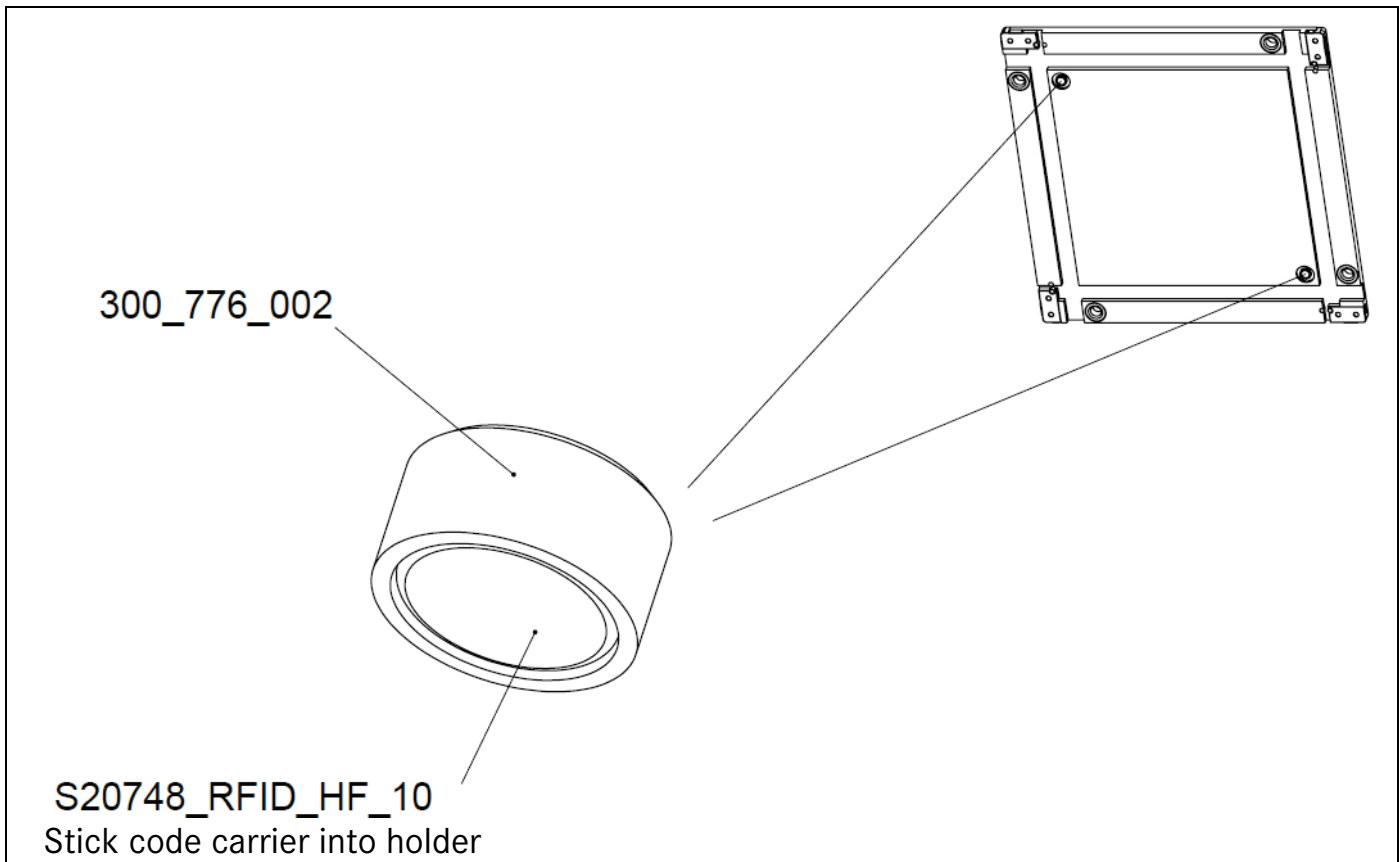


Fig. 13-2: Code carrier for control unit 4G

Order number	Description	Quantity
300 776 002	<b>Code carrier holder</b>	1
S20748	<b>Code carrier for control unit 4G</b>	1

## 14 Appendix

### 14.1 Technical data

<b>Available sizes</b>	160 x 160 mm – 400 x 400 mm, variable (rectangular, also non-square dimensions)
<b>Base material"</b>	Aluminium (AlMg 4.5 Mn) machined on all sides, hard coated, hard coat thickness 0.03 mm (Ceramic = aluminium oxide)
<b>Thickness tolerance</b>	12 +/- 0.1 mm
<b>Tensile strength</b>	250 N/mm <sup>2</sup>
<b>Stress point</b>	The weight to be transported must be positioned in the centre. (for PB x UB / 160 x 160 precisely centred)
<b>Total permissible weight</b>	12 kg
<b>Operating temperature</b>	+15°C to +40°C
<b>Code carrier</b>	System specific type see chapter 13
<b>Centring bush</b>	2 pc. or 4 pc. S31276 (option)

This information reflects the technical status at the time of printing.  
STEIN Automation reserves the right to make technical updates.

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