Instruction Manual

Tablet Press
EP-1
## Version table

<table>
<thead>
<tr>
<th>Date</th>
<th>Document version*</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-10-27</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2014-12-10</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>2015-03-06</td>
<td>1.2/ 2.2</td>
<td>variant 2.2</td>
</tr>
<tr>
<td>2015-07-15</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>2016-03-08</td>
<td>1.4</td>
<td>new document number (old No.: 303-309-0001)</td>
</tr>
<tr>
<td>2016-06-02</td>
<td>1.5</td>
<td>format (11/15)</td>
</tr>
<tr>
<td>2016-10-27</td>
<td>1.6</td>
<td>short view changing punches</td>
</tr>
</tbody>
</table>

* When the document version X.Y is increased, X means a technical change and Y – a document change only.
# Table of Contents

1 – Introduction 5  
1.1 – About this instruction manual 5  
1.2 – Service 5  
1.3 – Safety instructions and symbols 6  
1.4 – Protection of the environment 6  

2 – Safety 7  
2.1 – Safety information 7  
2.2 – Intended use 7  
2.3 – Safety and protective facilities 8  
2.4 – Danger area 8  

3 – Overview 9  
3.1 – Description 9  
3.2 – Construction 9  
3.2.1 – Area of operations 10  
3.2.2 – Operation elements 11  
3.2.3 – Connections 12  
3.3 – Technical data 13  
3.4 – Type label 13  

4 – Installation 14  
4.1 – Storage and transport conditions 14  
4.2 – Unpacking and checking 14  
4.3 – Positioning 14  
4.3.1 – Acclimatization 15  
4.3.2 – Required installation environment 15  
4.4 – Assembly 15  

5 – Setup 17  
5.1 – Conditions and safety instructions for setup 17  
5.2 – Dis-/mounting the punches 17  
5.2.1 – Dismounting the filling shoe 18  
5.2.2 – Dismounting the upper punch 18  
5.2.3 – Dismounting the lower punch 19  
5.2.4 – Mounting the lower punch 20  
5.2.5 – Insertion of the die 20  
5.2.6 – Mounting the die plate with die 22  
5.2.7 – Mounting the upper punch (round punch only) 24  
5.3 – Setting the punches 25  
5.3.1 – Round punch 25  
5.3.2 – Oblong punch 26  
5.3.3 – Setting the punch height 28  
5.3.4 – Mounting the filling shoe 30  
5.4 – Punches with smaller diameter 31  
5.4.1 – Longer catch setting 32  
5.5 – Settings for the tablet production 33  
5.5.1 – Adjustment of the tablet weight 33  
5.5.2 – Adjustment of the tablet thickness 34  

6 – Operation 36  
6.1 – Switching on / off 36  
6.2 – Force measurement (optional) 36  
6.3 – Data Logging (optional) 37  

7 – Maintenance 41  
7.1 – Cleaning 41  

7.2 – Lubrication 41  
7.3 – Inspection and maintenance 42  
7.4 – Troubleshooting 43  
7.5 – Spare parts 43  

Attachment 45  
Short view changing punches 45
1 – Introduction

Thank you for purchasing the ERWEKA tablet press type EP-1.

1.1 – About this instruction manual

This instruction manual supports you in work with your ERWEKA device. It describes the device, its operation and gives you useful tips on its handling. Furthermore, read descriptions of installation and setting as well as detailed step-by-step work operations in the present manual. Pictures facilitate the understanding of processes described here.

The instruction manual is a part of the product. Read this manual completely and make sure you understand its content. Keep this manual in a safe place so that it will be available for any questions at a later date. This is important for warranty of permanent and accurate operation of the corresponding device.

The editorial team of ERWEKA appreciates your feedback regarding the present manual. Just send an e-mail to quality@erweka.com with your topic and "technical documentation" as a subject. Your reply contributes to our high quality level.

1.2 – Service

Contact ERWEKA at support@erweka.com to order the spare parts, in case of technical questions or possible repairs. Please supply the following information:

- Type of the device (on the type label)
- Serial number of the device (on the type label)
- Short description of the case
1.3 – Safety instructions and symbols

**WARNING** indicates a possible hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION** indicates a possible hazardous situation which, if not avoided, could result in moderate or minor injury.

**HAZARD** of electric shock! Indicates a possible hazardous situation which, if not avoided, can lead to injuries caused by electric shock.

This symbol indicates a possible hazardous situation which, if not avoided, can lead to equipment damage.

This symbol emphasizes the information to ensure a smooth work process.

This symbol provides you with additional useful information.

1.4 – Protection of the environment

Note that residues of the test products must be properly disposed of in accordance with the applicable environmental regulations. According to the valid EC directives all the electrical parts (electrical waste) must be disposed of appropriately.
2 – Safety

2.1 – Safety information

To guarantee the health and safety, read the following safety instructions before using the device.

**WARNING**
Wear the personal protective outfit and glasses, if necessary!

**HAZARD** of electric shock! Electric devices are to be plugged into safety sockets only! Use the delivered network cable! The voltage of the existing current supply is to be compared to the indications on the type label!
Before installation works always switch the corresponding device off and disconnect it from the rear panel.

**NOTICE**
ERWEKA devices should be operated by qualified and trained personnel only!

Pay attention to the on-site safety instructions for work in the laboratory and with the laboratory equipment!

2.2 – Intended use

The ERWEKA tablet press type EP-1 should be used only for compressing the tablets in the installation environment defined by ERWEKA.

ERWEKA devices should not be used for processing:

- products that are easily flammable or explosive
- products that develop vapours which may create flammable or explosive mixtures in combination with air
- products that release harmful or poisonous substances

The device should be operated and maintained only as it is foreseen and due to the instructions presented in this manual.
2.3 – Safety and protective facilities

**Door with safety interlock**

The EP-1 is equipped with a door. The door functions as a separating protective facility during the press operation. The press stops automatically when the door is opened.

**Emergency**

The EP-1 is equipped with an emergency switch accessible from the outside.

**Overheating**

The EP-1 is equipped with the overheating protection.

**Electricity**

Electric components and connections are secured with protective caps and controls, e.g. fuses.

2.4 – Danger area

**In the setup mode and for the maintenance:**

- Manual access to the belt drive of the press!
- Moving parts in the open area of operations!

Danger of repeated switching on in case of opened belt drive and closed door! **Before** opening the maintenance flap turn the main switch off!

Danger of squashing and clamping! Danger of seizing! Moving parts! The authorized personnel only should enter this area. Wear the protective outfit and follow the safety instructions!
3 – Overview

3.1 – Description

With the single punch cam tablet press EP-1 you can produce the tablets and irregularly formed products with a diameter up to 20 mm.

The EP-1 works automatically. The processes of filling, tablet pressing and dropping pass continually. The upper punch is coupled mechanically with an eccentric tappet. When turning the driveshaft, the eccentric tappet makes a linear movement that is transferred to the upper punch. The punch goes with lifting movements into the die. The die is in mesh with a lower punch that applies the counterforce against the force of the upper punch and serves for dropping the compressed tablets from the die.

At that the compression force constitutes up to 3 tons, the filling depth – up to 15 mm. They can be adjusted easily. The required setup area is 425 x 386 mm. With a maximal output of 4 000 tablets per hour, the EP-1 is ideal for tablet development and small series production. The EP-1 components are partially coated with chrome, stainless steel and some of them are manufactured of acrylic glass.

The GMP and safety requirements are fulfilled.

3.2 – Construction

1) Feeder hopper
2) Belt drive maintenance flap
3) Acrylic glass door with safety switch
4) Tablet dropper
5) Area of press operations (see 3.2.1 – Area of operations)
3.2.1 – Area of operations

Here you can see the lower end of the piston [08] with tightening nut.

Information on particular components you will find in chapter 5 – Setup.
3.2.2 – Operation elements

1) Main switch
   This switch turns on the speed inverter, ventilation transformer and cooling fan.
   (Power supply: 230 Volt one-phase 50/60 Hertz with protective earth conductor)

2) Emergency switch
   This switch turns off the whole tablet press, leaving electrical tension on the main switch tips.

3) Operation mode switch
   Using this switch select the operation mode of the device.

<table>
<thead>
<tr>
<th>Operation mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>Automatic operation. The press works with the set speed. This operation mode is used for production.</td>
</tr>
<tr>
<td>MAN</td>
<td>Manual operation. The press works with the reduced speed. This operation mode is used for setup.</td>
</tr>
</tbody>
</table>

4) Force measurement (optional)
   Digital display for the force measurement.

For more information read 6.2 – Force measurement (optional).
[5] The Start/Stop button

This button starts / stops the machine (green = start/ red = stop).

[6] Power, rotary button

For setting the press speed.

⚠️ Setting to NULL does not mean the device standstill! The device works with less current. After ca. 30 seconds the device switches off completely.

3.2.3 – Connections

The connections are located on the rear side above from the right.

1) RS 232 instrumentation interface (optional)
2) Aspiration socket
3) Mains cable with plug
3.3 – Technical data

<table>
<thead>
<tr>
<th></th>
<th>EP-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net weight</strong></td>
<td>135 kg</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Width:</td>
<td>550 mm</td>
</tr>
<tr>
<td>Depth:</td>
<td>400 mm</td>
</tr>
<tr>
<td>Height:</td>
<td>690 mm</td>
</tr>
<tr>
<td><strong>Dimensions with attachment parts</strong></td>
<td></td>
</tr>
<tr>
<td>Width:</td>
<td>550 mm</td>
</tr>
<tr>
<td>Depth:</td>
<td>400 mm</td>
</tr>
<tr>
<td>Height:</td>
<td>800 mm</td>
</tr>
<tr>
<td><strong>Press speed</strong></td>
<td>infinitely variable</td>
</tr>
<tr>
<td><strong>Max. tablet diameter</strong></td>
<td>20 mm</td>
</tr>
<tr>
<td><strong>Max. filling depth</strong></td>
<td>17 mm</td>
</tr>
<tr>
<td><strong>Max. compression force</strong></td>
<td>3 t</td>
</tr>
<tr>
<td><strong>Max. tablet output</strong></td>
<td>4000 tablets/hour</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>230 VAC 50/60 Hz</td>
</tr>
<tr>
<td><strong>Electrical load</strong></td>
<td>2.2 kVA</td>
</tr>
</tbody>
</table>

**EP-1 additional delivery options:**

- Equipment for the force measurement
- Data Logging - software for the force measurement

3.4 – Type label

The type label is placed on the rear panel of the device and contains following data:

- **Typ**: Device type
- **Serial No**: Serial number
- **P_n**: Normal output in Volt Amper [VA]
- **I_n**: Nominal current in Amper [A]
- **U**: Voltage in Volt [V]
- **F**: Frequency in Hertz [Hz]
4 – Installation

4.1 – Storage and transport conditions

The device should not be exposed to punches and vibrations. Temperature and humidity should not be lower or higher than the values defined by ERWEKA (see 4.3.2 – Required installation environment). When transporting, ensure that used technical means correspond to the prewritten safety requirements. Follow the instructions for transporting in 4.3 – Positioning.

4.2 – Unpacking and checking

Upon receiving the delivery, check that no physical damage has occurred to the packaging and device during the transportation. If available, check the tilt indicator label for undue turning of the packaging. In case of 60° inclination the colored quartz sand flows into the display field and is visible there.

If undue transporting or any damage is evident, take a photo of this and send it to our ERWEKA Service immediately.

Owing to its weight the press should be taken out of the packaging with the appropriate technical means. Read more in 4.3 – Positioning.

4.3 – Positioning

The tablet press is delivered as it is shown in Fig.: 1.

1. Mount the ring bolt (auxiliary tool in the delivery scope) to transport the press (see Fig.: 2).

2. Lift the press with the appropriate technical means, e.g. with a forklift, out of the packaging.

Danger of squashing – falling object! Stick to the safety requirements for operation of burden lifting machines! Wear the appropriate protective outfit, e.g. gloves!
3. Transport the press to its location.

Position the device on a horizontal, flat and stable surface, e. g. on a table of ca. 70 - 110 cm height. This is the optimal work position.

![Danger of squashing – falling object! The load capacity of the table on which the press is put must constitute at least 300 kg! It is recommended to put the press on an anti-slip surface.]

4. Remove the ring bolt.

4.3.1 – Acclimatization

When a cold device is taken into the warm environment, this can lead to the condensation. Therefore, acclimatize the switched off device during approximately 2 hours at the room temperature.

4.3.2 – Required installation environment

- Ambient temperature in operation: +10°C up to +30°C
- Storage and transport temperature: - 10°C up to +55°C
- Relative humidity: 25-80% no condensation

4.4 – Assembly

After the device has been installed, mount the following:

1. Place the feeder hopper [A] (see figure below).
2. Attach the door handle [B] and tablet dropper [C] to the acrylic door (see figure below).

3. Mount the filling shoe [D] and the filling hose [E].

4. Plug the device into a safety socket. For this use the delivered network cable.

**HAZARD** of electric shock! Electric devices are to be plugged into safety sockets only! The voltage of the existing current supply is to be compared to the indications on the type label.

**NOTICE** ERWEKA accepts no liability in case of wrong connection! Assembly and setup should be performed by the authorized technicians only.

**CAUTION**
Lay the cables so that not to stumble over them.

Before operating the device must be set up for the desired application (see **5 – Setup**).

ON/OFF switching and operation of the device are described in chapter Operation (**6 – Operation**).
5 – Setup

5.1 – Conditions and safety instructions for setup

**WARNING** Danger of repeated switching on in case of opened belt drive and closed door! Before opening the maintenance flap turn the main switch off!

For the setup, remove the left housing cover, if required, to obtain the free access to the belt drive.

**CAUTION** Danger of squashing and seizing. Moving parts. The EP-1 should be operated by trained and authorized personnel only. Wear the personal protective outfit.

The operation mode switch stands in the MAN position.

The Start button functions only when the door is closed.

Remove the lower covering (item 12 see 3.2.1 – Area of operations).

5.2 – Dis-/mounting the punches

First you must dismount the filling shoe and filling hose. After this, if necessary, dismount the upper and lower punches. The punch mounting happens in the reverse order. Note that the punches are initially set with the greatest possible distance to each other! The specific work steps are described below.

**NOTICE** Damage in case of a false catch!
Pay attention to the piston size. If the diameter is smaller than 6 mm, another catch must be applied. See 5.4 – Punches with smaller diameter.
5.2.1 – Dismounting the filling shoe

1. Remove the filling hose [A].
2. Loosen the knurled screw [C].
4. Clean the filling shoe, die und die plate, if necessary.

5.2.2 – Dismounting the upper punch

1. Rotate the upper wheel on the belt drive manually and slowly to move the upper punch [A] down from the feeder [B].

2. Proceed to rotate the wheel until the upper punch [A] and the tightening nut [C] are seen completely.
3. Loosen the tightening nut [C] carefully and remove the upper punch [A].
5.2.3 – Dismounting the lower punch

Dismounting the die

Not to change the adjustments, you should, if possible, always dismount first the die and not the whole die plate.

1. Loosen the die adjusting screw [B].

2. Take out the die [A].

For this you can push up the die carefully, e.g. with a hex key, from below.

If it is impossible, when the die clamps (e.g. because during the operation the material gathered in intermediate spaces), the die plate must be dismounted with the die.

Dismounting the die plate

1. Loosen two screws [B].

2. Take out the die plate with die [A].

If after loosening the die adjusting screw the die still stays firmly in the die plate, it can be loosened by light knocking.

Dismounting the lower punch

Dismont the lower punch as follows:

1. Loosen the safety bolt [B] of the lower punch intake.

2. Take out the lower punch [A].
5.2.4 – Mounting the lower punch

Pay attention to the proper positioning of the lower punch! Each lower punch, round or oblong punch, has a bevel [A]. This bevel [A] must look directly forwards during the mounting.

1. Set the lower punch in the punch intake.

2. Pay attention to the proper position: the bevel [A] must look directly forwards.

3. Fasten the lower punch in the punch intake with the safety bolt [B].

5.2.5 – Insertion of the die

In case the die plate was not mounted.

The die can get stuck!

Pay attention to that the cone of the die adjusting screw [A] is turned back so far that the round orifice for the die is free.
1. Place the die [B] carefully into the die plate [C].

2. Pay attention to [D]!

Do **not** hit the punch with the die!
The cone of the die adjusting screw must be turned back in full so that the orifice could be free!

3. Fasten the die with the die adjusting screw [E].

---

Oblong punch: Tighten up the die adjusting screw (step 3 [E]) not in full!
5.2.6 – Mounting the die plate with die

In case the die plate was dismounted.

![Diagram showing die and die plate]

The die can get stuck!
Pay attention to that the cone of the die adjusting screw is turned back so far that the round orifice for the die is free.

1. Place the die [A] into the die plate [B].
2. Pay attention to [C]!

The cone of the die adjusting screw must be turned back in full so that the orifice could be free!

3. Fix the die with the die adjusting screw [D].
4. Tighten up the screw not in full! The die must have the clearance space in the plate for later adjustment.

5. Place the die plate [B] carefully in the press onto the base plate [E].

Do not hit the lower punch with the die!

6. Fasten the die plate with two screws [F].
7. Tighten up the screws not in full! The plate must have the clearance space for later adjustment.
Round punch: The die can be tightened up after mounting the plate.
Oblong punch: The die must be set loosely.
In both cases: The die plate must be set loosely.
5.2.7 – Mounting the upper punch (round punch only)

In case of the oblong punch the mounting of the upper punch is a part of the setup procedure. Read more in 5.3.2 – Oblong punch.

1. Turn the upper wheel of the belt drive manually and slowly. The upper punch intake moves out of the feeder down.

![Fig.: Before](image1)

The piston moves down, the punch intake cannot be seen yet.

![Fig.: After](image2)

The punch intake with tightening nut can be seen in full.

2. Take the upper punch and insert it into the piston intake.

**NOTICE**

False positioning leads to defective tablet production!
Pay attention to correct positioning of the piston!
Push the upper punch all the way to the stop.

3. Fasten the punch by tightening the nut [A].

Do not overtighten the tightening nut [A]!
5.3 – Setting the punches

5.3.1 – Round punch

In case of the round punch the die plate with die is aligned to the upper punch. This happens after mounting the upper punch. The die plate is fastened loosely, the die – tightly.

1. Turn the upper wheel of the belt drive slowly and go carefully with the upper punch into the die.

2. Align the die plate so that the center of the upper punch will coincide with the center of the die.

Before:               After:

3. Tighten up two screws [B] alternately.

The upper punch is regarded as a reference point.
The die plate with die is aligned in parallel to the rear wall and centrically to the upper punch.
Two screws [B] are tightened up alternately. When tightening, control more often if the alignment is correct.
5.3.2 – Oblong punch

In case of oblong punch the die is aligned to the upper punch first. The die plate is aligned after the upper punch mounting.

The die plate is attached loosely. The lower punch piston is in the die that is also placed loosely in the die plate. The upper punch is not mounted yet.

1. Turn the upper wheel of the belt drive until the punch is on the top (Fig.:1).

![Fig.:1](image1)

2. Place the upper punch on the lower punch in the die and align the die correspondingly (Fig.:2).

![Fig.:2](image2) ![Fig.:3](image3)

3. Fix the aligned die with the die adjusting screw (Fig.:2 [A]).

4. Turn the upper wheel of the drive belt slowly. The piston moves down (Fig.:3).

![If the punch intake is eccentric to the upper punch, move the die plate until it is centric.](image4)

5. Turn the upper wheel until the upper punch intake captures the upper punch in full, i.e. until the upper punch lies on the stop.

**NOTICE**
False positioning leads to defective tablet production! Pay attention to the correct positioning of the punch in the intake!

The upper punch must lie on the stop.
6. Fasten the piston by tightening the nut (Fig.:3 [B]).

Do not overtwist the tightening nut!

7. Turn the upper wheel of the drive belt slowly and carefully. Observe the piston movement and check if the alignment is correct.

8. If necessary, loosen the tightening nut again and repeat the procedure.

9. Align the die plate analogically as with the round punch.

The upper punch is regarded as a reference point.

The die plate is aligned in parallel to the rear wall and centrically to the upper punch.

Two screws [F] are tightened up alternately. When tightening, control more often if the alignment is correct.

Alignment order: lower punch (oblong form) -> upper punch (oblong form) -> die -> die plate.
5.3.3 – Setting the punch height

The punch and the die are mounted and aligned to each other. Now you must adjust the punch in height.

5.3.3.1 – Height of the upper punch

At first the upper punch should be positioned far overhead. The setting happens by turning the adjustment screw (item 06 see 3.2.1 – Area of operations). See also 5.5.2 – Adjustment of the tablet thickness.

Turning the adjustment screw

To turn the adjustment screw, loosen the lock nut.

<table>
<thead>
<tr>
<th>Turn to the left</th>
<th>Turn to the right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punch position goes further down</td>
<td>Punch position goes further up</td>
</tr>
</tbody>
</table>

**NOTICE**

Pressure losses and deformations of the threaded rod are possible! The lock nut must always be attached tightly to the adjustment screw!

Filling shoe damage during operation! Pay attention to that the upper punch piston and lower hex nut are not set too deep. If a deeper position is needed, use the upper punch piston extension. See following figures.

Fig.: Start position for adjustment of the upper punch piston.  
Fig.: Damaged filling shoe caused by improper adjustment!
5.3.3.2 – Height of the lower punch

The height adjustment of the lower punch piston is performed by turning the upper dial (item 22 see in 3.2.1 – Area of operations). See also 5.5.1 – Adjustment of the tablet weight.

Turning the upper dial

To turn the dial, remove the catch.

<table>
<thead>
<tr>
<th>Turning to the left</th>
<th>Turning to the right</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lower punch moves up</td>
<td>The lower punch moves down</td>
</tr>
</tbody>
</table>

Differences in weight during the tablet production! The catch must be always in the slots of the dials.

Ejection cam can break! The dials should not be clamped with the ejection fork! Pay attention to the proper distances between the fork and dials! The limit value of a distance constitutes ≥ 2 mm.

Upper limit of the lower punch position

The lower punch should work on the same level as the die plate, preferably ca. 0.4 mm under the upper flat surface of the die plate.

Check with the finger cautiously if the lower punch piston is in the correct position. (It is in the correct position, if it is palpably a little bit under the surface of the die plate.)

Lower limit of the lower punch position

The lower punch can be maximally 17 mm under the ejection position!

See following figure:

A) upper punch
B) die (in die plate)
C) lower punch

1) upper limit (0.4 mm under the upper flat surface of the die plate)
2) lower limit (3-4 mm from the lower surface of the die plate)
5.3.4 – Mounting the filling shoe

1. Place the rear part of the carrier [B] of the filling shoe into the fork [A] of the lever.

![Diagram of the filling shoe with labels A and B]

2. Fasten the filling shoe with the knurled screw and attach the filling hose.

After these settings have been done, only the press settings for tablet production (e.g. tablet thickness, tablet weight) are left. Read more in 5.5 – Settings for the tablet production.
5.4 – Punches with smaller diameter

If you use a punch < 6 mm ø, you must use a longer than normal catch (item 19 see 3.2.1 – Area of operations).

**NOTICE**
Damage in case of a false catch!
Replace the catch if you use a punch with diameter smaller than 6 mm.

**Item numbers of catches**

1) normal catch: 12989  
2) longer catch: 21818

**Changing catches**

1. Loosen the screw [A] and remove the normal catch [1].
2. Fasten the longer catch [2].
3. Set the correct height level before you tighten the screw [A]. At that pay attention to the correct positioning of the catch and the lower dial (see 5.4.1 – Longer catch setting).

Fig.: Full view with a longer catch for a punch smaller than 6 mm ø
5.4.1 – Longer catch setting

**Right**

The lower edge of the longer catch should be positioned centrally to the lower dial.

**False**

The longer catch should not protrude beyond the lower dial! Otherwise the catch will hit while pressing. The press force would influence it. This can lead to the dials' sheering away. Then the entire unit should be replaced!
5.5 – Settings for the tablet production

After the filling shoe has been mounted, you should produce some tablets manually and check the result.

1. Fill a little bit material to be pressed into the hopper.

2. Turn the upper wheel of the belt drive until the production cycle passes.

3. Check the produced tablet.

If the produced tablets are too thin/thick, light/heavy or not enough compressed, the press should be readjusted. The fine adjustment of the press is described below.

5.5.1 – Adjustment of the tablet weight

Adjustment of the tablet weight is performed by turning the lower dial (item 20 see 3.2.1 – Area of operations).

**Turning the lower dial**

To turn the dial, remove the catch.

<table>
<thead>
<tr>
<th>Turn to the left</th>
<th>Turn to the right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces the tablet weight</td>
<td>Increases the tablet weight</td>
</tr>
</tbody>
</table>

**NOTICE**

Differences in weight during the tablet production! The catch must be always in the slots of the dials!

Ejection cam can break! The dials should not be clamped with the ejection fork! Pay attention to the proper distances between the fork and dials! The distance limit value constitutes ≥ 2 mm.

See the picture on the next page.
Less fill volume gives more lightweight tablets.

Fig.: Dials with catch, ejection fork and ruler block

Read also 5.3.3.2 – Height of the lower punch.

5.5.2 – Adjustment of the tablet thickness

Adjustment of the tablet thickness is performed by turning the adjustment screw (item 06 see 3.2.1 – Area of operations). First the upper punch should be positioned far overhead.

**Turning the adjustment screw**

To turn the adjustment screw, loosen the lock nut.

<table>
<thead>
<tr>
<th>Turn to the left</th>
<th>Turn to the right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punch position goes further down</td>
<td>Punch position goes further up</td>
</tr>
<tr>
<td>Decreasing tablet thickness</td>
<td>Increasing tablet thickness</td>
</tr>
<tr>
<td>Production pressure and tablet hardness increase</td>
<td>Production pressure and tablet hardness decrease</td>
</tr>
</tbody>
</table>

**NOTICE**

Pressure losses and deformations of the threaded rod are possible! The lock nut must always be attached tightly to the adjustment screw!

See the picture on the next page.
With more immersion depth the pressure and tablet hardness increase and the tablet thickness decrease.

Fig.: Adjustment screw with lock nut and ruler block

Read also 5.3.3.1 – Height of the upper punch.
6 – Operation

6.1 – Switching on / off

Before switching the press on ensure that:

• All settings are correct (devices, aspiration, material feed, ejection).
• The door and maintenance flaps are closed.
• The operation mode switch is set to AUTO.

Switching on

1. Turn the main switch on.
2. To start the device, press the green button.

Switching off

1. To stop the device, press the red button.
2. Turn the main switch off.

6.2 – Force measurement (optional)

The EP-1 tablet press can be ordered with the force measurement option. In this case the device is equipped with an additional digital display and a measuring cell. The current value is displayed in kg.

![Digital display]

**NOTICE** Do not change any settings on this display!
6.3 – Data Logging (optional)

Additionally to the force measurement, the EP-1 can be equipped with the software for data logging. With this software the measured force values are registered. If ordered, the installation CD of the Data Logging Software (Transducer Techniques®) is delivered together with the device. 2 files are on this CD:

- The installation file
- The file with default configuration for data collection

**To install the software:**

1. Insert the CD into the disk drive.
2. Start the installation file. The program creates the **Logging** folder for its data.
3. Copy the standard **EP1-Std.SF1** file from the CD to **Files** in the Logging folder.

The content of the **Logging** folder should be the following now:

**Logging:**
Files:

To start the data logging:

1. Open the **logging** application in the Logging folder.

2. Enter the product key number (12 digits) and confirm it by clicking **OK**.

   ![Continue in Demo Mode](image)

   Ask the software company for the key number and use it immediately. The product key number is valid only for the limited time.

3. After the start screen you will see this menu. Some buttons are inactive.

   ![Setup File](image)

4. Click **Open** in the **Setup File** drop-down menu.

5. In the next window select **EP1 Std.SF1** and click **Open**. Now all buttons are active.

**The Meter Setup menu**

With this menu you can view the virtual measuring devices and change their settings.

![NOTICE](image)

The settings are adjusted by ERWEKA authorized staff. Don’t change the settings!
The Log Setup menu

1. Click **Log Setup**. The window opens as follows:

![Log Setup Window](image)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup File Name</td>
<td>The name of the file which uses the stored settings.</td>
</tr>
<tr>
<td>Data File Name</td>
<td>The name of the file to which the data is transferred.</td>
</tr>
<tr>
<td>Data Logging Interval</td>
<td>The time step with which the data is taken.</td>
</tr>
</tbody>
</table>

Here you can check the path to setup and data files. The default program settings are configured with the **EP1-Std.SF1** file.

**NOTICE** Never change this configuration!

2. Click **Next**. The window opens as follows:

![Next Window](image)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm Port</td>
<td>If you use a port other than default, select the appropriate COM port here.</td>
</tr>
<tr>
<td>Establish Initial Communications</td>
<td>Here you start the data logging.</td>
</tr>
</tbody>
</table>

**NOTICE** Never change this configuration setting! You can change the Comm Port only.
The Help menu

In the Help menu you will find all information about the data logging software. You can read the general description of the application and information on each menu item. Also you can receive the information on Excel procedure.

Before beginning the data logging it’s important to read the Help menu!
7 – Maintenance

7.1 – Cleaning

To guarantee the failure-free operation, it is recommended to clean the device regularly, at least once a month.

**HAZARD** of electric shock when maintaining the electric devices! Disconnect the mains supply of the electric device for maintenance! Switch the device off and unplug it! Clean the electric devices without liquids.

Note that product residues must be properly disposed of in accordance with the applicable environmental regulations.

Clean all parts of the device with a vacuum cleaner and dusting brush.

If necessary, e.g. in case of serious dirtying, use a damp cloth and blot the cleaned surface dry.

**NOTICE** Do not use aggressive cleansing agents. The door is made of high-grade acrylic glass and therefore sensible against aggressive cleansing agents. Do not use any organic solvents (ethanol or methanol) to clean the door because this causes the material damage. Apply special cleansing agents for acrylic glass only.

Acrylic glass can be scratched by present dust particles even during dry cleaning. That’s why the acrylic glass should always be wiped damp. The best are special microfiber cloths damped with lukewarm water.

7.2 – Lubrication

The tablet press should be lubricated as required. The intervals are dependent on the hours of operation and production speed. In case of higher load it must be lubricated more often. Also during the first 10 hours of operation it should be lubricated more often and special attention should be paid to lubrication. Then the lubrication should be done each 60 minutes or as necessary.
**Recommended lubricant:**

- Lubrication grease for EP-1: Klübersynth UH1 14-151

**NOTICE**  Apply the specified lubricant only!

**Places for lubrication:**

- main axes [1] (see fig. below)
- seldom also: all feeders and joints that can not be in contact with the preparation (tablet material).

![Diagram showing the location of lubrication points](image)

1

**7.3 – Inspection and maintenance**

Ensure that the device is regularly inspected and each time is clean.

To ensure a long lifetime of your units and systems we recommend regular maintenance performed by our specialized staff.

**In longer standstills**

If you do not use the device for a long time, follow the instructions:

- Switch the device off and unplug it.
- Dismount additional components.
- Empty and clean all containers and hoses.
- Clean the device thoroughly.
- Store the device, its components and manual under conditions defined for the installation environment.

**NOTICE**  Non-compliance with the instructions given above can lead to damages!
7.4 – Troubleshooting

**Die clamping**

If the upper punch and die clamp during the operation of the press, the circlip [A] mounted inside the intake piston is pushed off its notch. In this way the piston is released.

The repair should be performed by ERWEKA technicians only because the entire unit around the intake piston must be dismounted.

To fix this error, contact ERWEKA Service. The circlip must be replaced with a new ring! ERWEKA has developed an installation tool for the installation of the new circlip.

7.5 – Spare parts

Electronic and mechanical replacements are to be made by the ERWEKA personnel and approved by ERWEKA!

Only original spare parts or components released by ERWEKA should be used. Only repairs or changes on the device performed by the ERWEKA technicians or approved explicitly by ERWEKA are to be made.
Attachement
Short view changing punches

Warning! The short overview shown here is not a substitute for this manual. Read the contents completely and follow the instructions. ERWEKA assumes no liability for damage caused by non-compliance.
We, ERWEKA GmbH, declare under our sole responsibility that the product to which this declaration relates is in conformity with the following Directives and harmonized standards:

- Machinery Directive 2006 / 42 / EEC
- Safety of machinery - Interlocking devices associated with guards; EN ISO 14119
- Low Voltage Directive (LVD) 2014 / 35 / EU
- Safety requirements for electrical equipment for measurement, control and laboratory use; EN 61010-1
- Electromagnetic Compatibility, (EMC) Directive 2014 / 30 / EU
- Electrical equipment for measurement, control and laboratory use; EN 61326-1

Wir, die ERWEKA GmbH, erklären in alleiniger Verantwortung, dass das Produkt, auf das sich diese Erklärung bezieht, mit folgenden Richtlinien und harmonisierten Normen übereinstimmt:

- Maschinenrichtlinie 2006 / 42 / EG
- Sicherheit von Maschinen - Verriegelungseinrichtungen - trennende Schutzeinrichtungen; EN ISO 14119
- Niederspannungsrichtlinie 2014 / 35 / EU
- Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte; EN 61010-1
- Elektromagnetische Verträglichkeit, EMV-Richtlinie 2014 / 30 / EU
- Mess-, Steuer-, Regel- und Laborgeräte, EN 61326-1

Heusenstamm, 08.03.2016

Manfred Koller
-CTO-