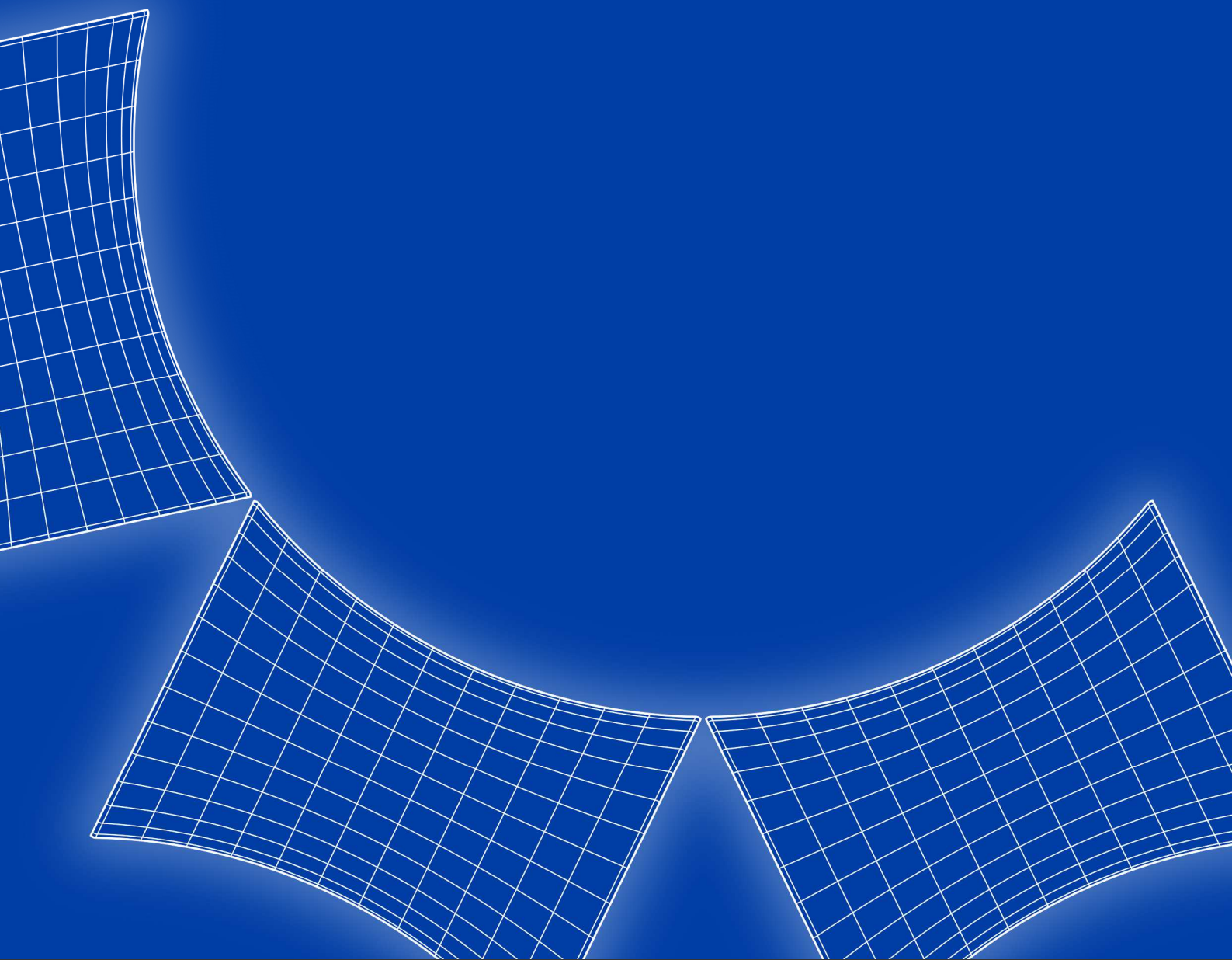


SABATEC

Tool Engineering & Consulting

Instruction Manual Springback Temper Tester - BLTE1000



Instruction Manual

Springback Temper Tester – BLTE1000



Introduction

For a long time, the „Rockwell 30T hardness test“ was regarded as an acceptable means of determining the temper of tin plate in can manufacturing. This measurement method is not available for many can manufacturers.

The Springback Temper Tester allows you to easily determine the yield strength.

This measurement of hardness is not an absolute valuation but a comparative measurement. With the present movement towards thinner plate, hardness measurements are becoming less and less sensitive to real variation in the plate. Because of this insensitivity, we have developed a new method of temper testing. The benefit of this device is to measure and to recognize the different qualities of tin plates, which can have a negative effect on the line efficiency and the production.

This method consists of bending a metal sample 180° and allowing it to spring back again. The amount of spring back and the thickness of the metal sample can be read directly from the measuring instrument. Both data is connected in the “Spring Back Diagram” and supply the appropriate yield strength. The yield strength declares the necessary fabrication properties (rounding behavior) of the tin plate, which is important for the can manufacturing. The resultant yield strength is comparable with the yield strength data of the current tin plate standards by DIN.

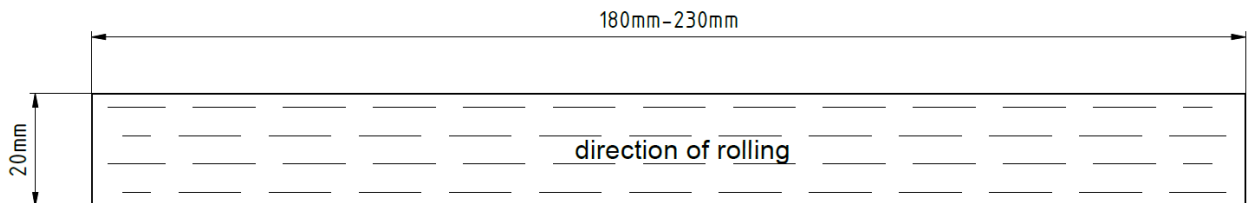
The following documentation illustrates the operation and the analysis of the Springback Temper Tester which embodies the above method.

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Operation of the BLTE1000 Sprinback temper tester

Preparation of the metal sample

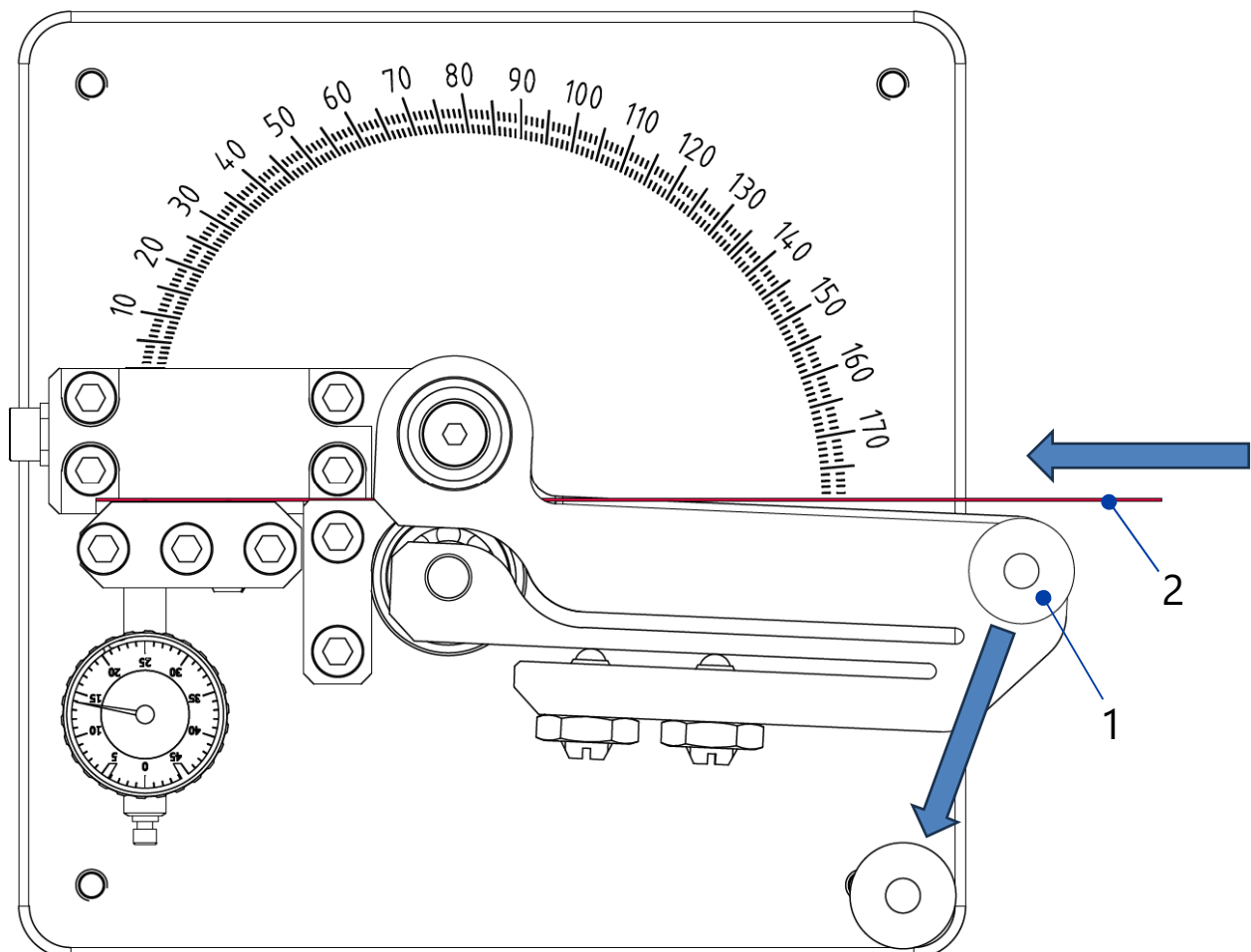


The metal strip should be between 180mm and 230mm long and approx. 20mm wide.

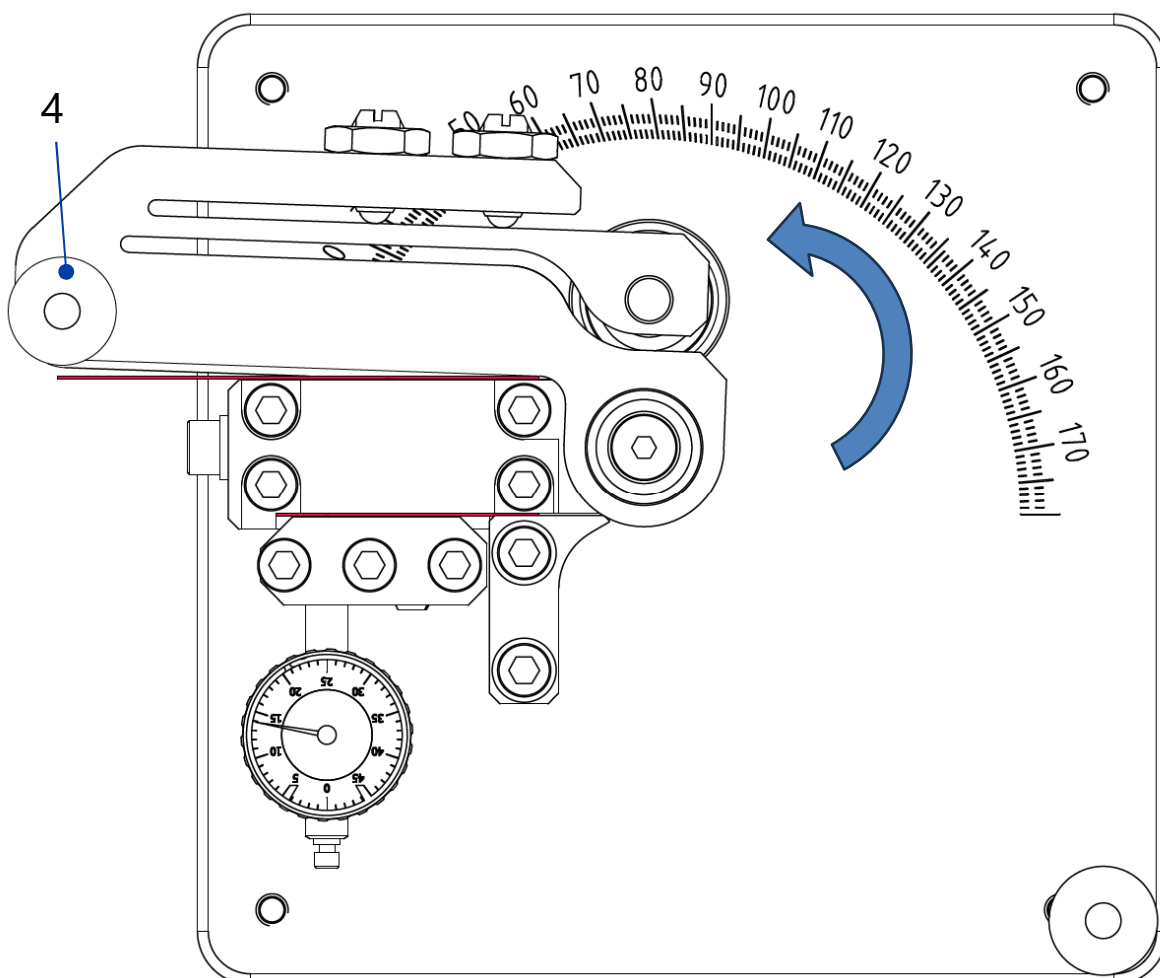
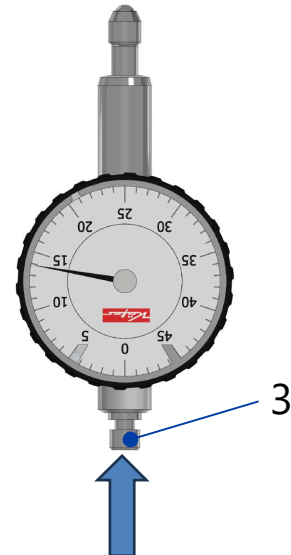
It is recommended that the rolling direction is parallel to the sheet metal strip.

The metal strip must be free of burrs, oil or other contamination so that a successful measurement can be guaranteed.

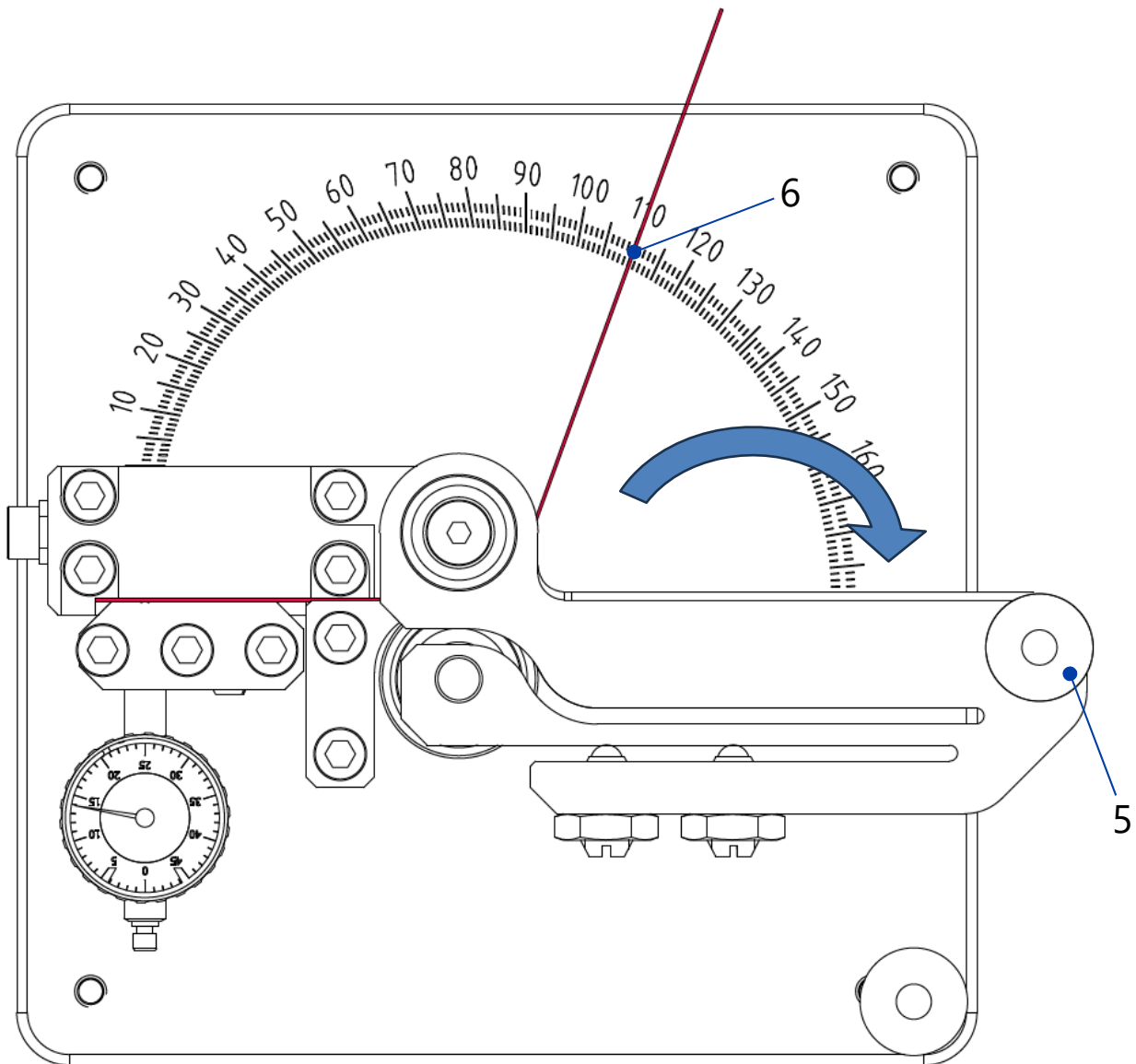
The measuring process



1. Push the handle down to open the tester.
2. Insert the metal strip to the end stop.
3. Press your thumb slightly on the dial indicator and measure the thickness of the test strip.
4. Swing the lever to the left until it stops and bend the metal strip.



5. Swing the lever back to the starting position.
6. Read the bending result on the scale.
7. Note down the result.



Evaluation of the result

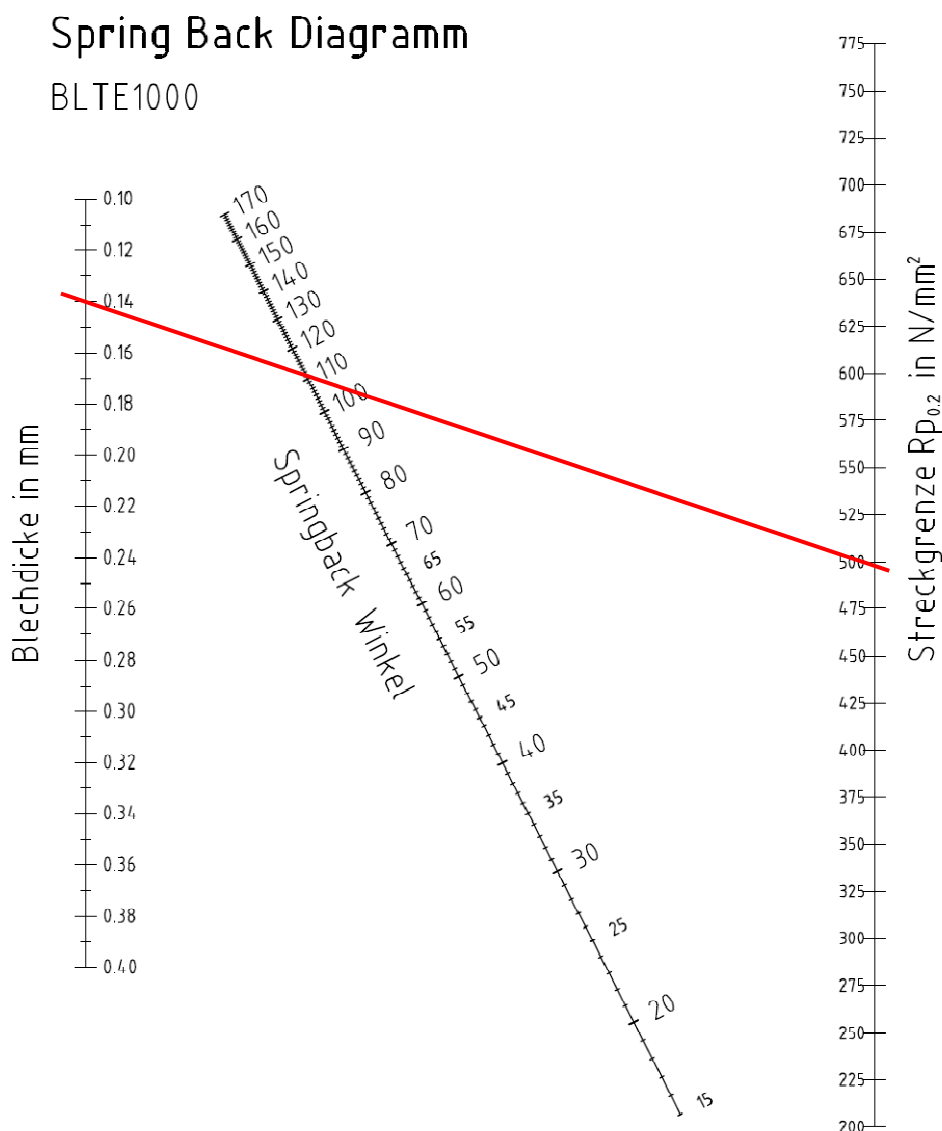
The obtained data can be transferred with a water-soluble overhead marker on the laminated Spring Back Diagram.

Mark the sheet thickness with a point on the left scale (in mm). Mark the Spring Back angle in the middle scale. Link the received points with a ruler and draw a line. This line has to be continued until they cross the scale on the diagram (Yield point $R_{p0.2}$ in N/mm²).

The intersection, which develops between the right scale and the line, indicates the yield point $R_{p0.2}$ in N/mm².

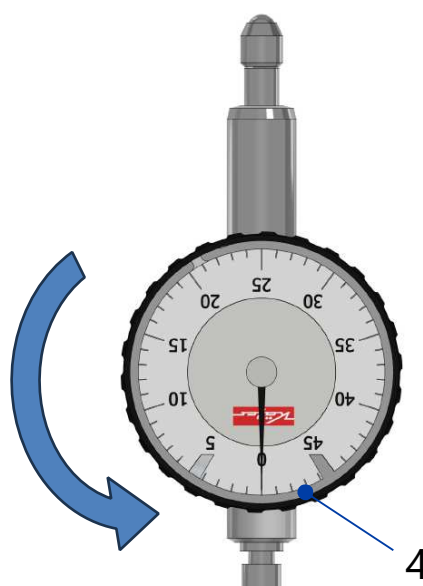
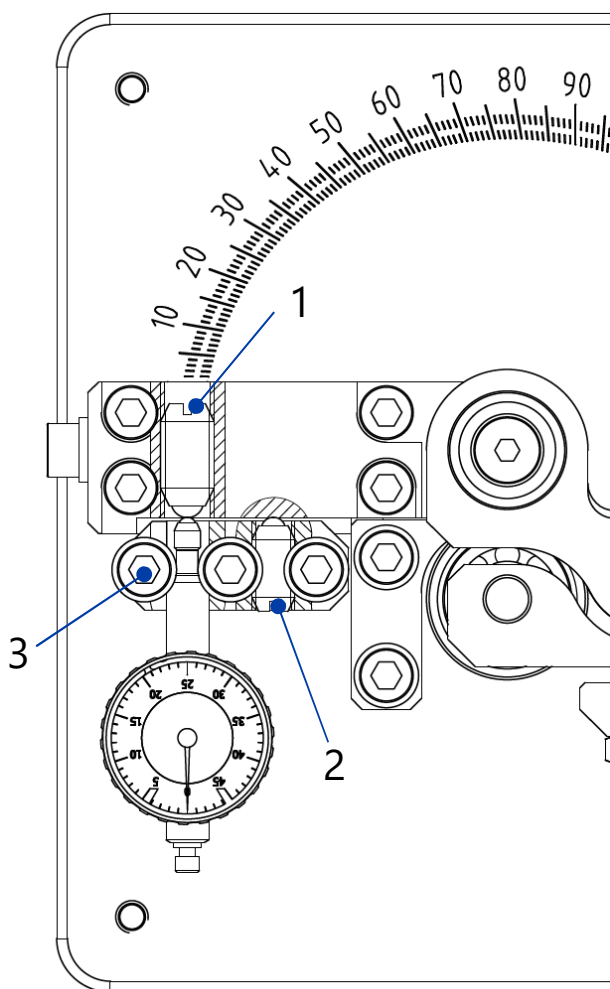
This point gives you information on the fabrication properties (rounding behavior) of the tested material and is essential for the reliability of the production process in can welding.

We recommended to carry out more than one test sequence to obtain a yield area. Thereby you can avoid possible disturbances in the machining of the metal.



Setting of the dial gauge

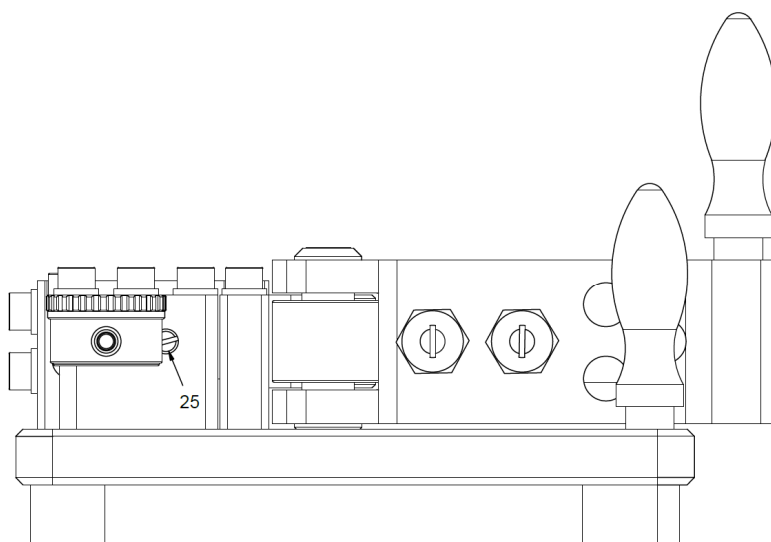
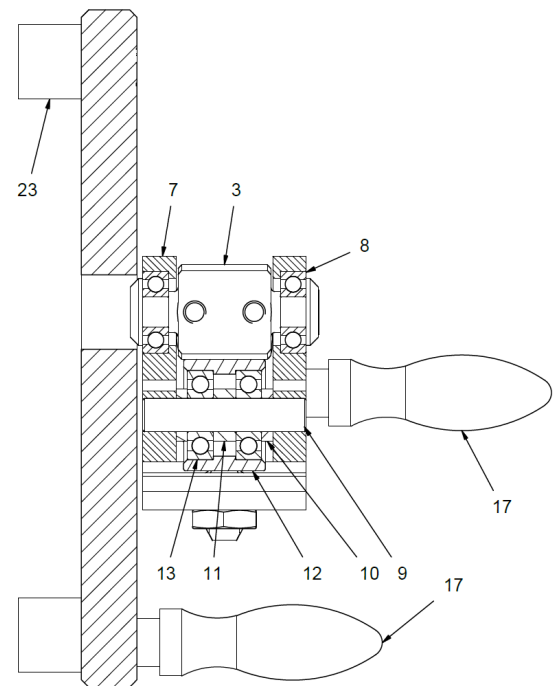
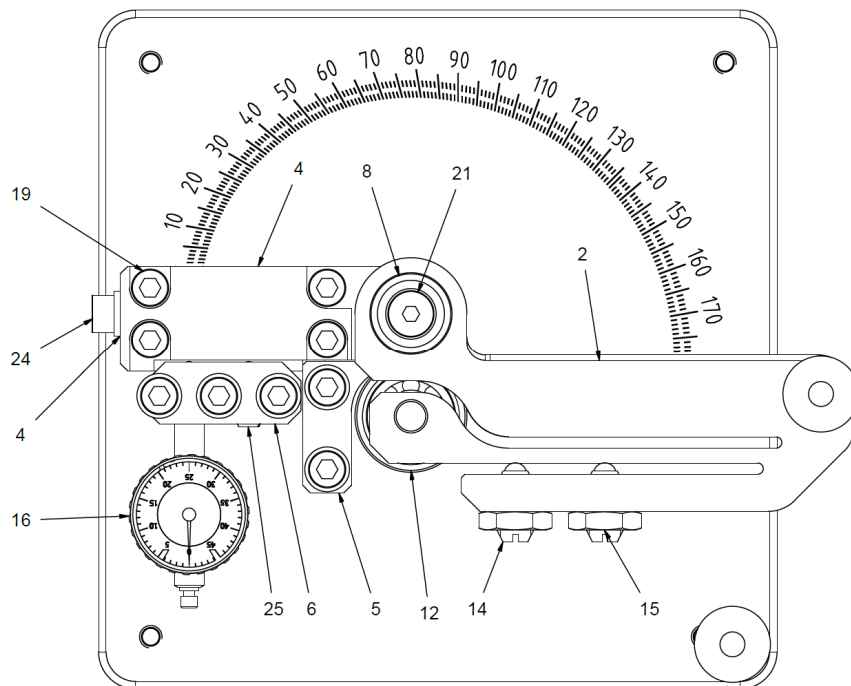
1. Turn the spring plunger until it is flush with the support BLTE1004.
2. Turn the other spring plunger until its flush with the support BLTE1004.
3. Loosen the tension screw for the dial gauge. Position the dial gauge with a slight preload of 0.1-0.3mm. Tighten the tension screw.
4. Turn the scale on the dial indicator (black outer ring) until the pointer is at the value 0.



Part list

Position	Artikelnummer	Beschreibung	Menge
1	BLTE1001	Base plate	1
2	BLTE1002	Lever	1
3	BLTE1003	Shaft	1
4	BLTE1004	Support	1
5	BLTE1005	Flexer wedge	1
6	BLTE1006	Holder	1
7	BLTE1009	Lever	1
8	13-02.0361	Deep groove ball bearing 608-2RS	2
9	BLTE1007-01	Shaft	1
10	BLTE1007-02	Spacer ring Ø14x3	2
11	BLTE1007-03	Spacer ring Ø14x6	1
12	WZSM2693-01	Roll	1
13	13-02.0362	Deep groove ball bearing 609-2RS	2
14	07-03.0104	BN13371 Spring plunger M10	3
15	02-13.0010	BN630 Hex jam nut M10 0.5d	2
16	22-01.0001	Dial gauge Kaefer 3/32	1
17	19-07.0012	BN13383 Revolving handle Ø20/M8	2
18	03-10.0014	BN670 flat washer M6	7
19	01-05.0025	BN611 Hex socket head cap screw M6x50	9
20	03-03.0005	BN4879 Finishing washer 90° M6	2
21	01-28.0025	BN616 Hex socket flat countersunk head screw	2
22	01-12.0054	BN617 Hex socket set screw with flat point	2
23	19-10.0120	Rubber buffer Ø25x17	4
24	01-05.0031	BN611 Hex socket head cap screw M6x80	2
25	07-03.1005	BN13370 Spring plunger M8	1
26	50-10.0010	Wooden box	1
27	BLTE1008	Diagram and handout	1

Drawing



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