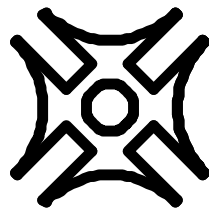


***Automatic Cutting, Forming  
and Bending Machine -***

***TYPE C 043 E***

***Operating Instructions***



**Burst & Zick GmbH**

## Retention of Title

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This documentation and the information contained therein  
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Version: 4.4  
Date of issue: Oct. 2005  
Author: Burst & Zick GmbH  
Vorrichtungsbau  
An der Rossweid 8  
D – 76229 Karlsruhe  
Tel. +49 721/61 17 75  
Fax. +49 721/61 53 92



Burst & Zick GmbH  
Vorrichtungsbau  
An der Rossweid 8  
D – 76229 Karlsruhe  
Tel. +49 721/61 17 75  
Fax. +49 721/61 53 92

## **EC Declaration of Conformity According to EC Machinery Directive 98/37/EEC, Annex II A**

We herewith declare that the machine described hereinafter satisfies the essential safety and health requirements set out in the EC Machinery Directive with regard to its design and construction as well as the type marketed by us.

In case of an alteration of the machine without our agreement this declaration shall become void.

We furthermore point out that for the installation of spare parts only original parts of the company Burst & Zick GmbH may be used.

**Description of the machine:**                      **Automatic cutting, forming and bending machine**

**Machine type:**                                      **C 043 / E**

**Machine number:**

**Applicable directives:**                      EC Machinery Directive (98/37/EEC)  
EC Low Voltage Directive (73/23/EEC);  
EC Electromagnetic Compatibility Directive (89/336/EEC)  
as amended by 93/31/EEC

**Applied harmonized standards, particularly:**      EN 292-1, EN 292-2, EN 294, EN 349, EN 60204-1

**Attachment of the CE label:**                      **CE 01**

**Date / Manufacturer - Signature:**                      6/12/2006

**Title of the undersigned:**                              Managing Director



## General

### Notes on Industrial Safety

The following notes on industrial safety have to be specially adhered to:

- The automatic cutting and bending machine C043 E has been constructed according to the current state of the art and conforms to the ESD regulations. Nevertheless, perils may arise from this machine if it is used by untrained personnel or for other than the intended purposes.
- **Statement on the Residual Risk**
  1. Danger of electric shock if the switchbox is opened while voltage-carrying. Work in and on the electrical equipment may principally only be carried out by qualified electricians.
  2. Danger of contusion and shearing during setup operation.
  3. The electric motor can reach an operating temperature of more than 60 °C / 140 °F.  
The danger areas are marked with signs.
- Applicable accident prevention regulations have to be adhered to by the user, particularly the
  - General regulations (VBG 1) as issued by the German Verwaltungs-Berufsgenossenschaft - trade association for administrative trades,
  - Power-actuated work equipment (VBG 5)
- The machine may only be operated by trained personnel.
- Any mode of operation which can impair the safety of the machine has to be refrained from.
- The user undertakes to operate the machine only in perfect condition.
- Unauthorized alterations or variations which impair safety have to be refrained from.
- Safety devices may principally not be dismantled or put out of operation. If it is indispensable to dismantle safety devices for the purpose of tool changes or for maintenance and repair work, the safety device has to be reinstalled immediately afterwards.



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## Mode of Operation

The automatic cutting and bending machine C043E has been specially developed for the processing of taped components. It permits the efficient bending and forming of axial components both for horizontal and vertical mounting for manual placement. Special importance was attached to the exactness and accurate dimensions of the lead bending die.

By using interchangeable forming dies, any desired form shape can be produced. The die jaws can be adjusted according to the lead diameter.

The leads are clamped prior to forming and bending and the forming and bending procedures for the left and the right side are staggered. This is the optimum solution to the problem of traction relief of the leads so that even mechanically sensitive components can be processed without damaging the component body.

The pitch dimension and the bending length can be adjusted and corrected exactly by means of separate elevating spindles.

Within less than five minutes, the machine can easily be changed from a horizontal to a vertical axial component shape.

Options:

1. Mounting kit for horizontal axial components (B mounting kit).
2. Manual feed for loose (non-taped) components.
3. Dispenser for standard tape reels.
4. Separate digital sensors for the setting of pitch and cutting length.
5. Preselection and quantity counter



**Fig. 1**  
**Automatic Cutting, Forming and Bending Machine C043E**

## Technical Data

Performance:		approx. 8000 components / hour
Dimensions	Width:	600 mm
	Depth:	480 mm
	Height:	450 mm
Pitch dimensions	Horizontal:	max. 50 mm
Pitch dimensions	Vertical:	2,5 mm or 5 mm
Weight:		approx. 45 kg
Lead $\varnothing$	Horizontal	0.4 – 1.3 mm
Lead $\varnothing$	Vertical	max. 0.8 mm



Axial components for horizontal mounting      Axial components for vertical mounting

**Fig. 2 – Component shapes**

## Operational Sequence

### 1. Forming Procedure

The advancing front forming dies clamp the leads, cut them from the tape and form the lead shape.

In order to avoid axial tensile stress in the component body, the forming procedures of both dies are staggered.

### 2. Bending Procedure

After the forming procedure the rear forming dies are retracted downwards.

Previously, traction relieving springs clamp the component leads from both sides against the rear bending jaws.

The succeeding bending dies fold back the formed component leads. Afterwards the bending dies return to their starting position.

The finished component is ejected automatically and is dropped into a bin for collection. The tape remains emerge from the front end of the machine and can be collected in a wastebasket.

## Putting into Operation

### Installation

The machine is delivered fully assembled and installed. Please check the shipment immediately with the help of the delivery note and/or the packing list. In case the consignment is incomplete or if damages have occurred during transport, please inform us immediately.

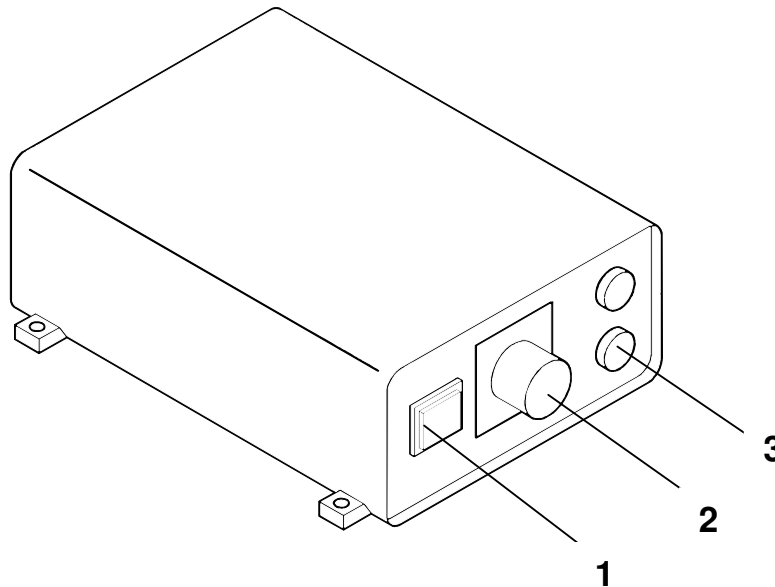
Place the machine on a stable, even worktable.

### Electric Connection

Connect power cable with 230V / 50 Hz socket.

### Switching on the Machine

1. Close protection cover (for safety reasons the machine can only be started with closed protection cover).
2. Set potentiometer to "0".
3. Actuate power switch.
4. Gradually increase speed on the potentiometer until the desired cycle time is reached. Normally 100%.



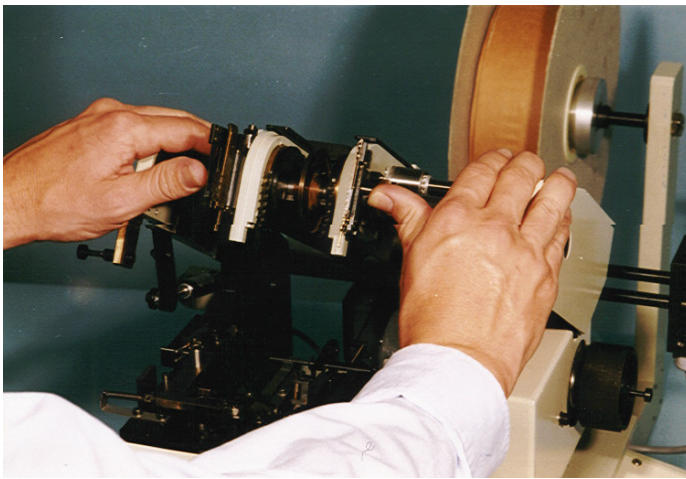
**Fig. 3 – Control device**

1. Power switch
2. Potentiometer
3. Fuses 1.6A

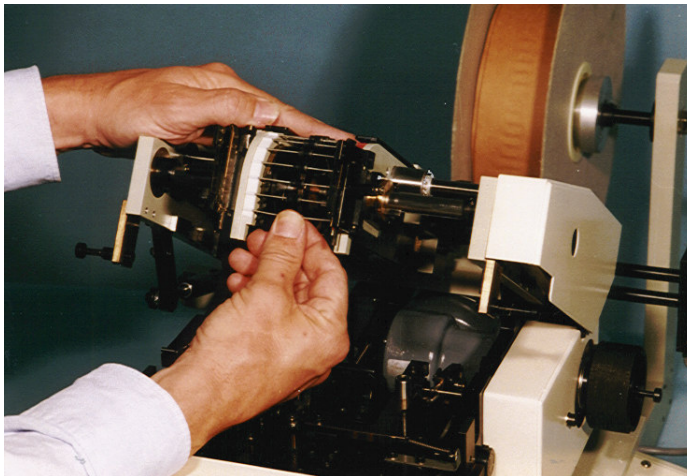


## Feeding in of Component Tape

1. Switch off the machine and remove protection cover.
2. Disengage index pin at the hand wheel. Rotate machine by hand wheel into arrow-head direction for further setting.
3. Swing upwards tape conveyor unit.
4. Open left and right tape pawl. For this purpose, move tape pawls upwards by approx. 5 mm and fold them outward.
5. Feed in component tape and pull it forward until the first two components are gripped by the conveyor graspers on both sides.
6. Close tape pawls.



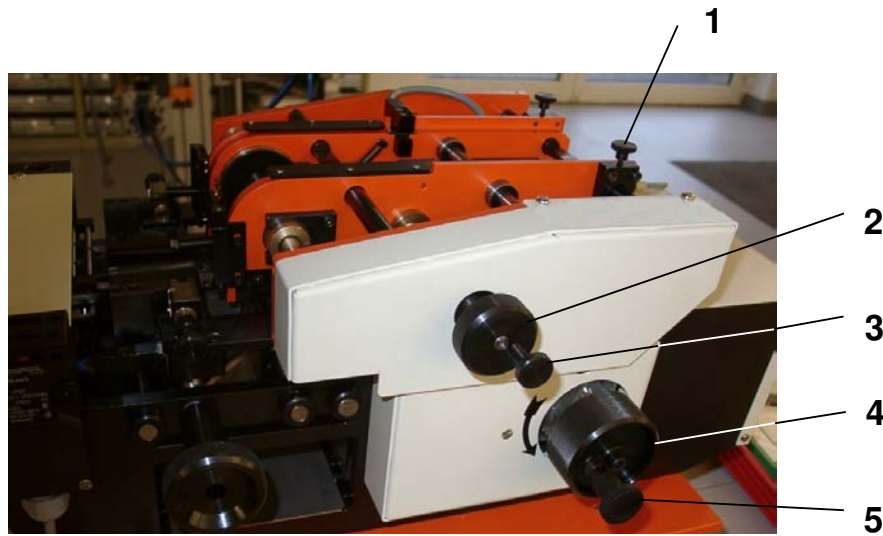
**Fig. 4**  
**Swing upwards tape conveyor  
and open tape pawls**



**Fig. 5**  
**Feed in component tape**

### Adjustment of Tape Guide to Tape Width

1. The component tape fed in from behind may have a side clearance of max. 0.5 mm in the tape guide. Check!  
If necessary, make the following corrections.
2. Unscrew clamping screws (1) as well as adjusting screw (3).
3. Move apart tape guide rails accordingly by means of the spindle (2).
4. Check if the component is centered with reference to the tools. Make corrections with adjusting screw (3).
5. Tighten clamping screws (1).



**Fig. 6 – Adjustment of the tape guide**

1. Clamping screws
2. Spindle for the adjustment of the tape guide
3. Adjusting screw (position of component bodies)
4. Hand wheel
5. Click-stop pin

## Tool Change and Adjustment

### General Notes on the Adjustment

1. Secure machine when performing tool changes or maintenance work so that no unintentional (unauthorized) switching-on can occur. Therefore set power switch to OFF and pull power plug.
2. Disengage click-stop pin at the hand wheel and then rotate the machine by hand into arrow-head direction. This way faults, if any, can be ascertained and rectified without considerable damage.
3. After all adjustments to be carried out on the machine please ensure that all unscrewed screws, bolts and nuts are tightened again, even if this is not expressly mentioned in the following text.
4. Furthermore, please take into account that every sprocket belt will lengthen slightly after a certain time. Therefore please check the single belt drives and retighten them if necessary.
5. If it should become necessary to remove the sprocket belt during repair work, it is advisable to mark the position of the wheels previously so that afterwards the synchronism between conveyor grasper and tools can be re-established.



## Tool Change

### Cutting Tools (front tool pair)

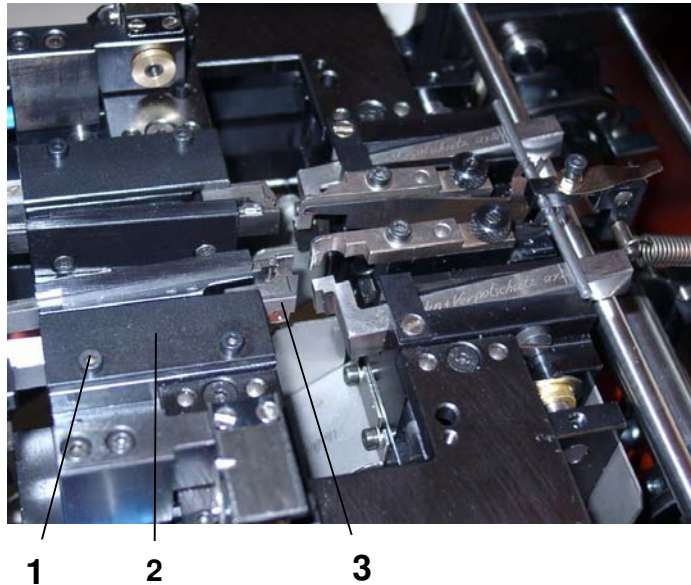
Dismantling:

1. Move apart tools (home position).
2. Disengage tool actuators.
3. Remove the two cap screws (1) and take off the cover plate (2).
4. Take cutting tool (3) out of the guide.

Installation:

Set tool into the guide.

1. Fasten cover plate.
2. Repeat procedure on the second tool.
3. Re-engage the tool actuators.



**Fig. 7 – Exchange of the cutting tools**

1. Cap screw
2. Cover plate
3. Cutting tool

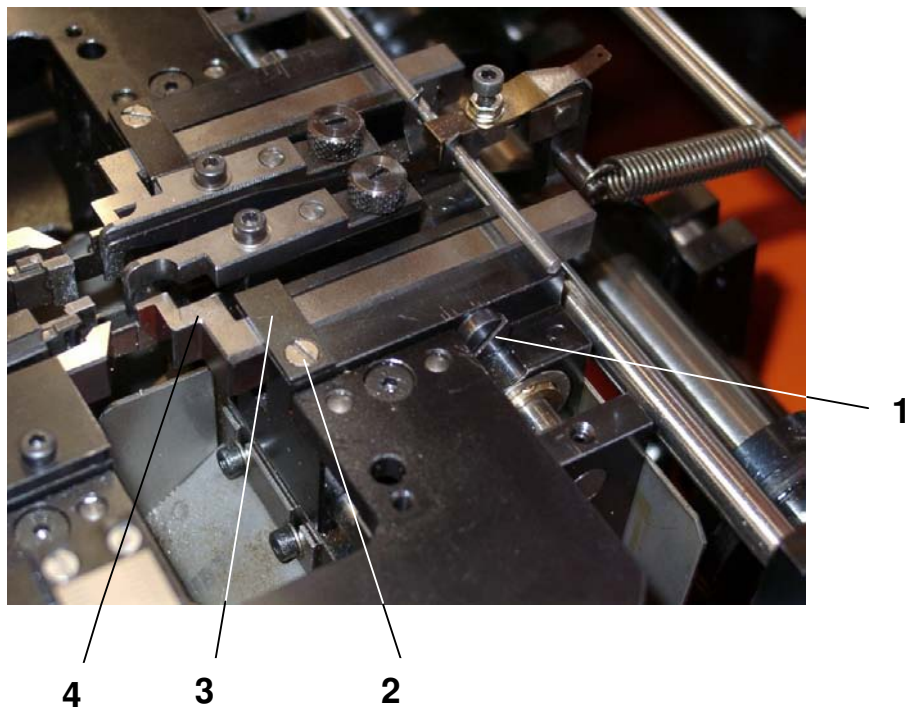
### **Bending Tools** (rear tool pair)

Dismantling:

1. Remove lateral bearing screw (1).
2. Loosen countersunk screw (2) and swing aside retainer plate (3).
3. Take bending tool (4) out of the holder. Prevent tool spring from falling out.

Installation:

1. Put tool spring into the borefit of the new bending tool.
2. Keep spring slightly depressed with a finger and push the bending tool into the tool holder.
3. Swing retainer plate back over the tool and retighten the countersunk screw.
4. Screw lateral bearing screw back in.

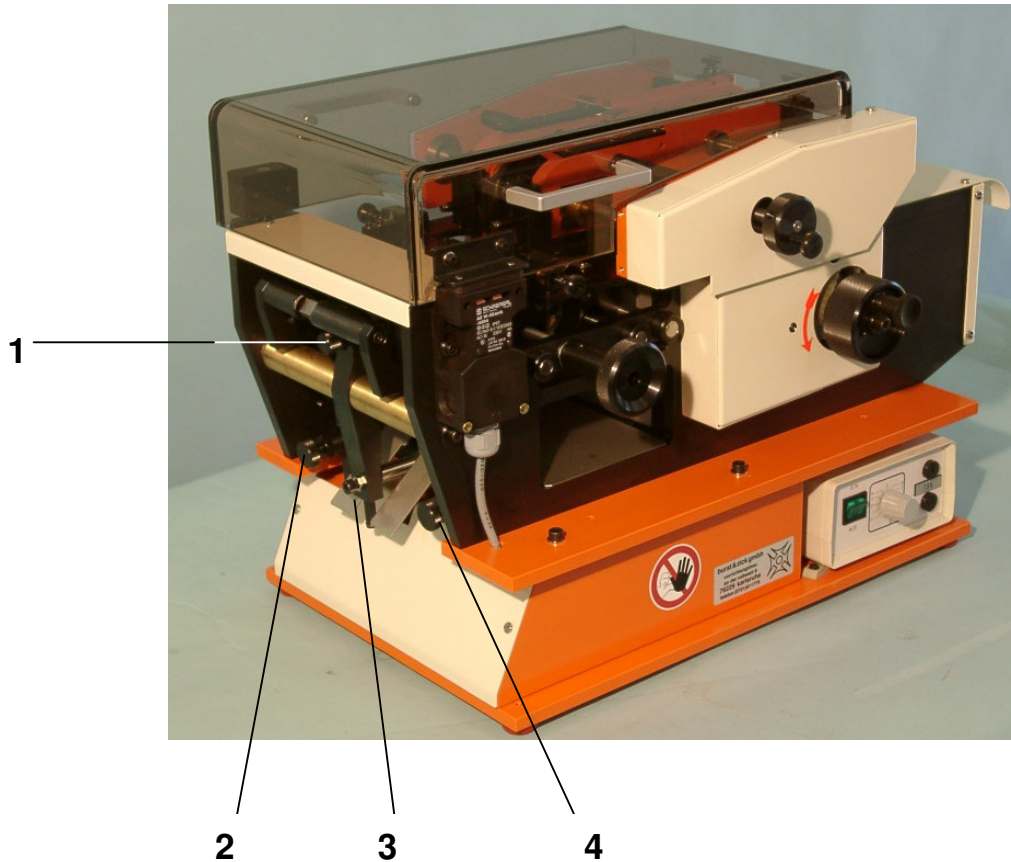


**Fig. 8 – Exchange of the bending tools**

1. Bearing screw
2. Countersunk screw for the fastening of the retainer plate
3. Retainer plate
4. Bending tool



## Fine Adjustment of the Tools

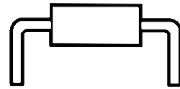


**Caution:** The machine has been adjusted by the factory. Changes should only be made after consulting the manufacturer.

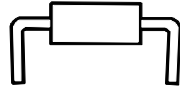
- |                   |  |
|-------------------|--|
| Adjusting screw 1 | Push-down device open / closed – clamping of the components.<br>In home position 3.5 – 4 mm distance to the bending die.<br><b>Please do not change setting.</b>                                       |
| Adjusting screw 2 | Bending motion left component side.<br>The forming depth can be changed here. Correction option for differing lead $\emptyset$ .<br>The setting has to be determined through test forming procedures.  |
| Adjusting screw 3 | Adjustment of the bending motion.<br><b>Please do not change setting.</b>  |
| Adjusting screw 4 | Bending motion right component side.<br>The forming depth can be changed here. Correction option for differing lead $\emptyset$ .<br>The setting has to be determined through test forming procedures. |

## Correction of the Bending Angle

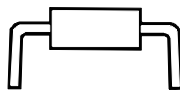
The bending of the components is supposed to be 90° and must not have any indentations. Changing lead diameters may entail corrections.



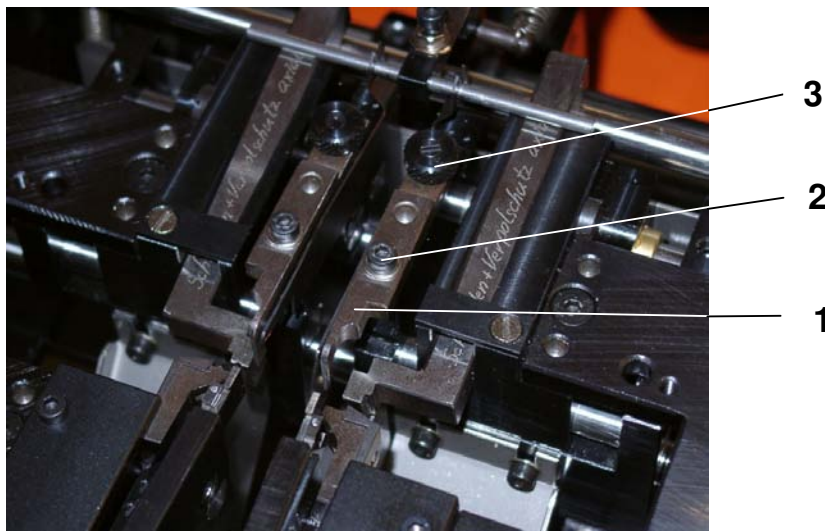
*Component bent by 90° -  
No correction required.*



*Component overbent –  
Swing bending jaw inwards.*



*Component underbent –  
Swing bending jaw outwards.*



**Fig. 9 – Correction of the bending angle**

1. Bending jaw
2. Fastening screw for bending jaw
3. Eccentric pin

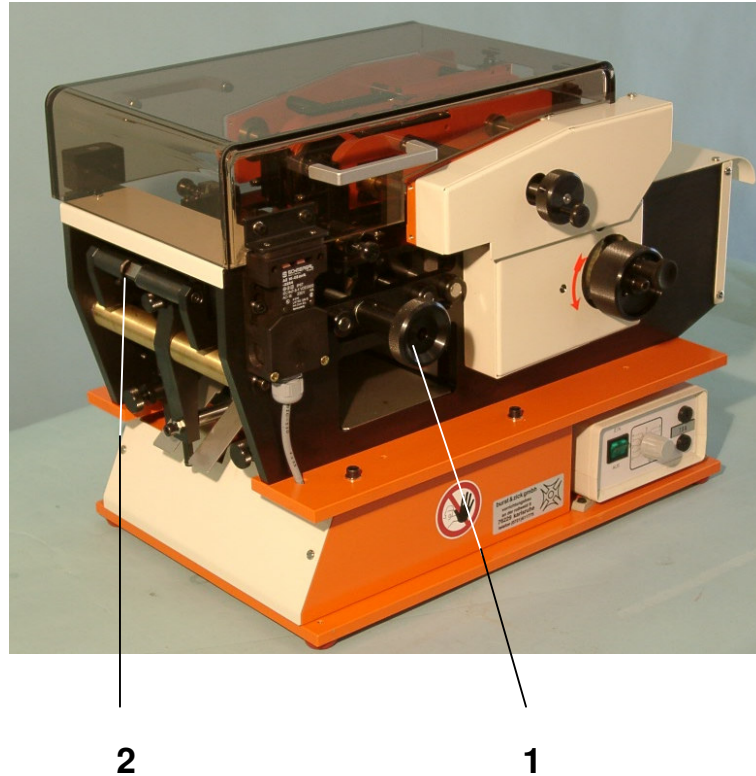
### **Correction:**

1. Loosen fastening screw (2).
2. Swing bending jaw inwards or outwards (as required) with the eccentric pin (3).

## Setting of the Pitch Dimension

The desired pitch dimension is infinitely variable by means of the spindle (1). The respective setting can be read off the scale (2) or the digital display (optional).

A fine correction of the pitch dimension is carried out after the processing and measuring of the first components.

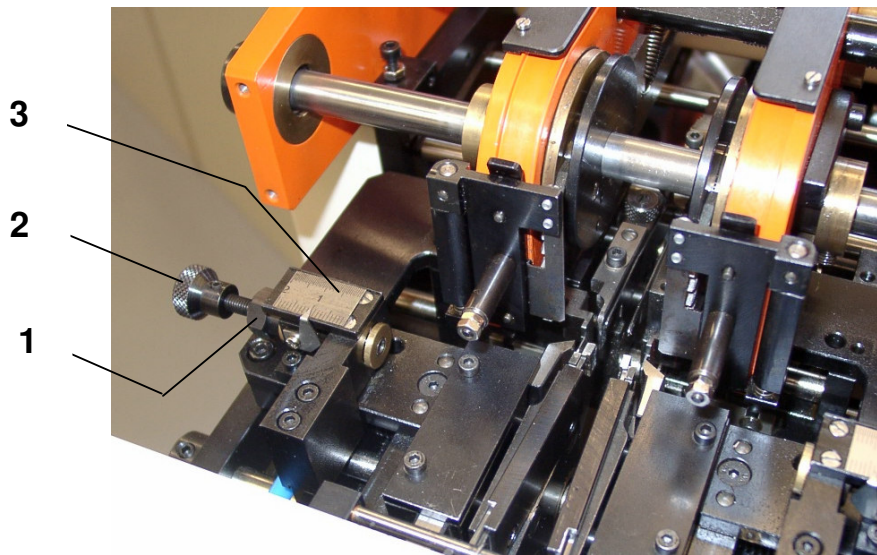


**Fig. 10 – Setting of the pitch dimension**

1. Spindle
2. Scale



## Setting of the Cutting Length



**Fig. 11 – Setting of the cutting length**

1. Counter-nut
2. Adjusting screw
3. Scale for cutting length

The cutting length (bending length) can be adjusted separately left and right with the upper tool pushers.

1. Loosen counter-nut (1) of the adjusting screw.
2. Set desired length at the adjusting screw (2). The respective setting can be read off the scale (3).
3. Retighten counter-nut.

Fig. 10 shows the setting of the left side. The setting of the right side is performed by analogy.

## Digital Display of Cutting Length and Pitch Dimension (Optional)



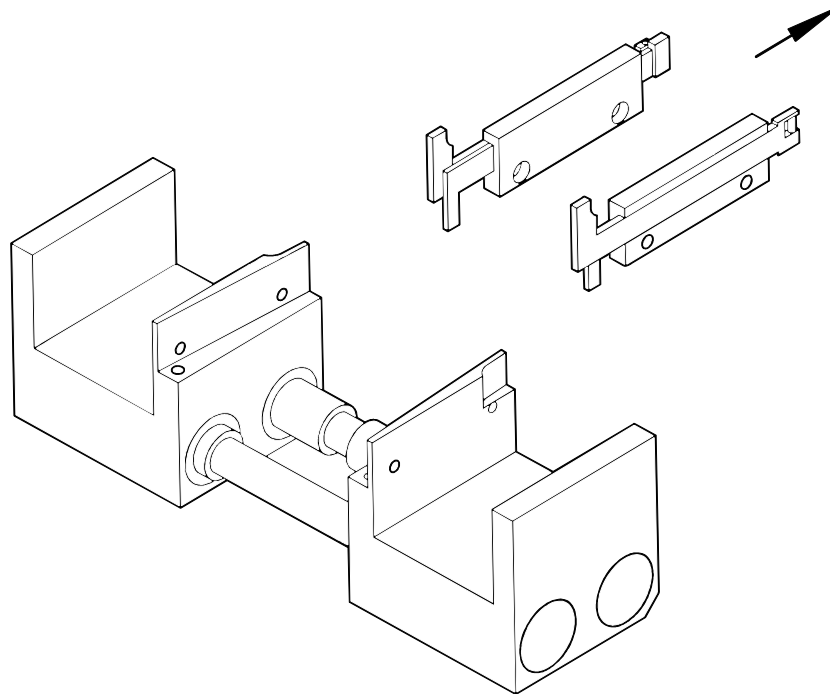
1. Toggle switch
  - Switch position 1 ⇨ cutting length left side
  - Switch position 2 ⇨ pitch dimension
  - Switch position 3 ⇨ cutting length right side
  
2. Display

## Additional Sets

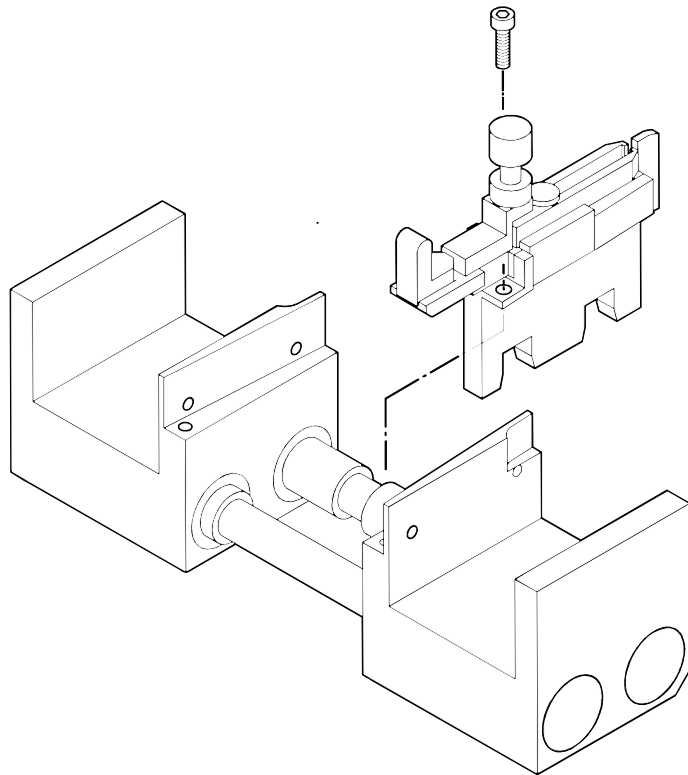
### B Mounting Kit for Axial Components for Vertical Mounting

Conversion from horizontal to vertical mounting of axial components.

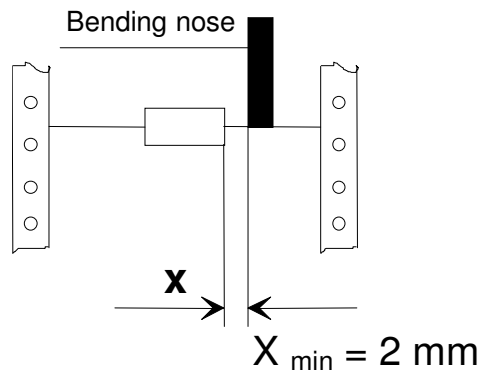
1. Remove left and right bending jaws by unscrewing the cap screws and lifting out the bending jaws afterwards.
2. Remove left and right bending set. (Unscrew cap screws and take away the guides laterally).
3. Insert supplied bending jaw of the B kit in the same place the right bending jaw was removed previously.
4. Bring together tool pushers to "Pitch dimension 10" by means of the hand wheel.
5. Slightly lift the clevis head of the bending pusher actuator and insert the B mounting kit in the same place the two bending sets were removed previously and fasten with two cap screws.
6. Feed in new component tape.
7. Loosen clamping screws (fig. 5 – item 1) and move the tape conveyor unit to the left until no collision with the bending nose can occur. Minimum distance to component body 2 mm.



**Fig. 12 – Remove bending sets**

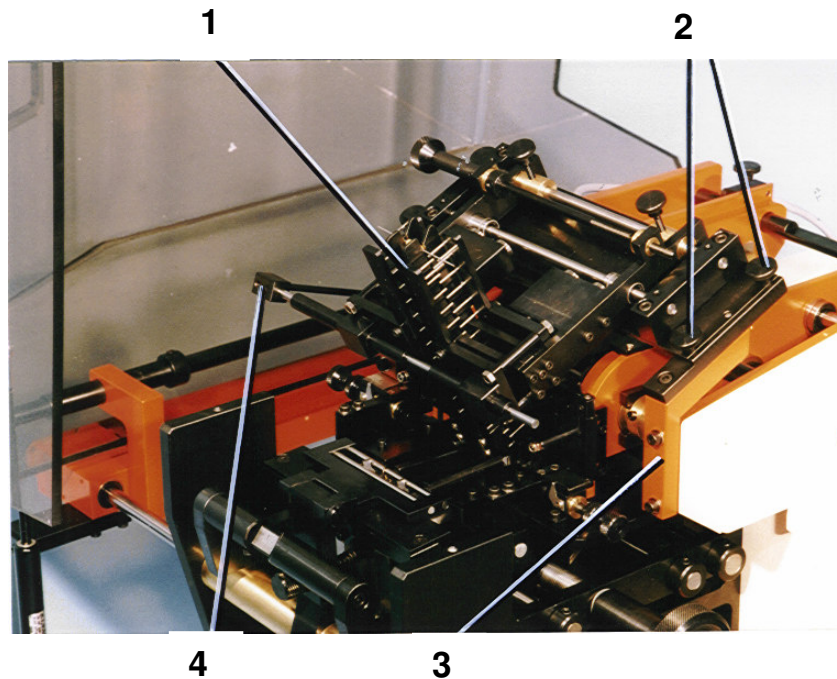


**Fig. 13**  
**Insert mounting kit**



**Fig. 14**  
**Position of the component body of axial components for vertical mounting**

## Manual Feed for Loose Components



**Fig. 15 – Manual feed**

1. Manual feed
2. Knurled screw for the fastening at the holders
3. Right holder (left holder concealed)

**Caution:** When using the manual feed, reduce the machine speed.  
In this case set control potentiometer to scale position “6”.

## Faults and their Rectification

**Caution: All maintenance and repair work may only be performed by qualified and trained personnel!**

If used properly, the machine will function virtually without trouble. If, contrary to expectation, faults should occur, please inform your supplier first.

Your contact: **Burst & Zick GmbH, Tel. +49 721/61 17 75**

The type of fault discussed consequently can be taken down in the following table with the description of causes and measures for the correction of the faults.

Type of fault	Cause	Measures



## Maintenance

### Maintenance Plan

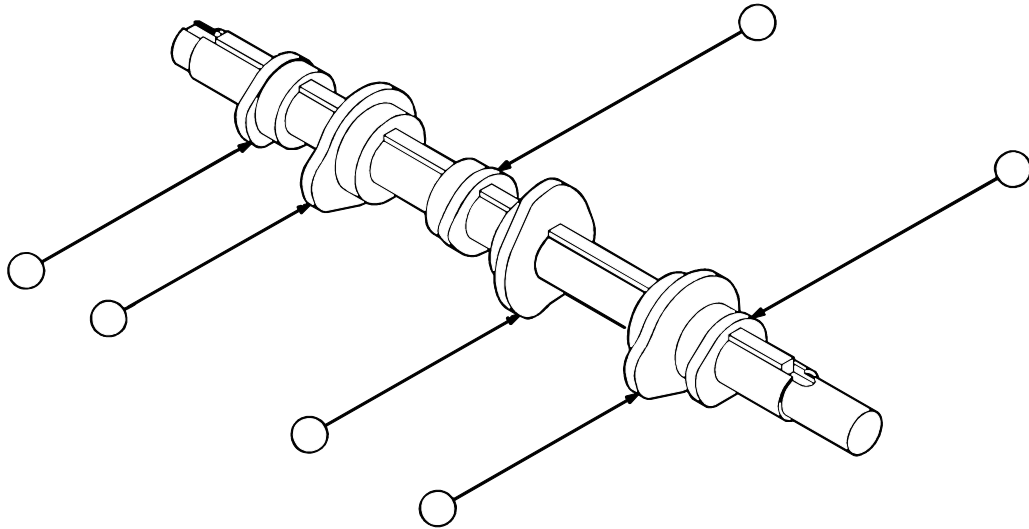
	Interval				Task
	d	w	m	y	
Machine, general	X				Vacuum-clean or clean from wire clippings and other remains with a brush.
Tools		X			Check bending and cutting tools for tin deposits and remove these, if necessary, without damaging the tools.
All sliding parts such as cam disks, conveyor graspers etc.		X			Clean and lubricate slightly with oil or grease.
Sprocket belt			X		Check tension. Retighten belt if necessary.

d = daily  
 w = weekly  
 m = monthly  
 y = yearly

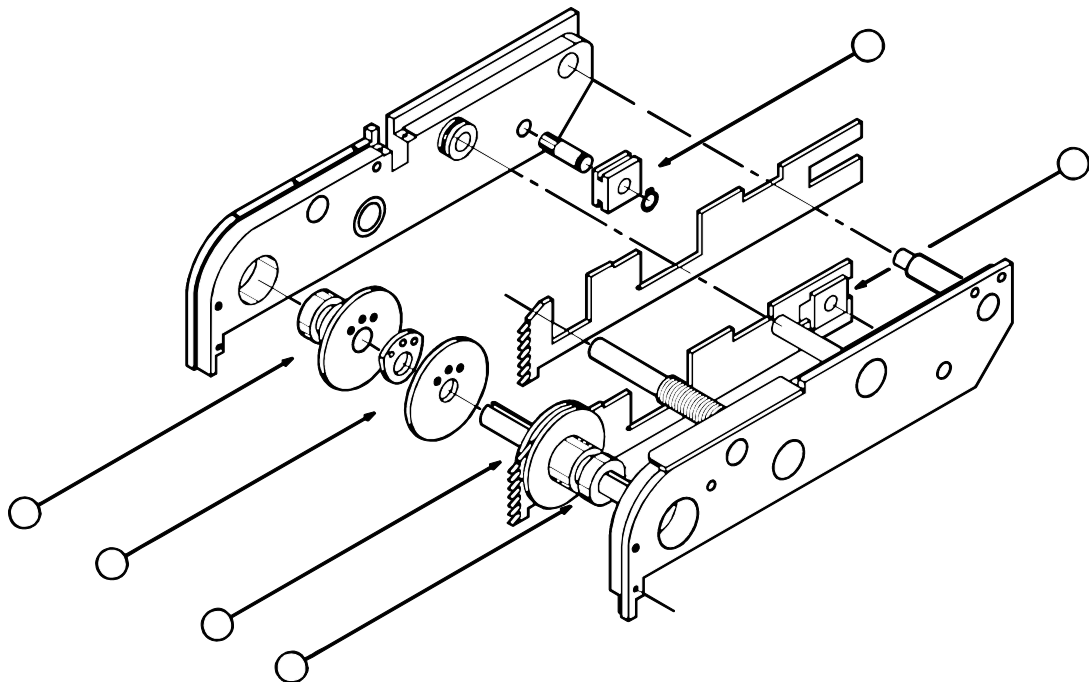
**Caution: All maintenance and repair work may only be performed by qualified and trained personnel!**



## Lubricating Instructions



**Slightly oil control cam disks at weekly intervals**

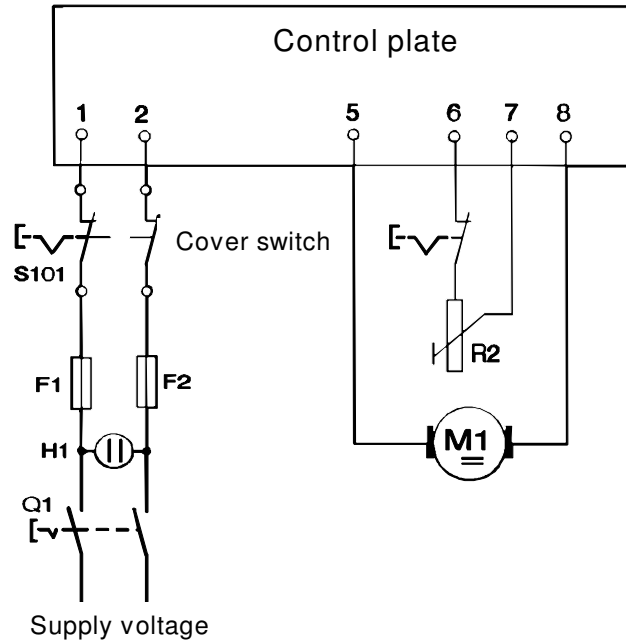


**Clean and oil graspers and tape conveyor at weekly intervals**



## Technical Documents

### Circuit Diagram C043 E



### Parts and Spare Parts List Electric Parts C043 E

Circuit diagram no.	Description	Quantity	Spare parts
F1 + F2	Fuse 1.6 A	2	10 pcs
H1	Power lamp (in the switch)	1	
M1	Motor PM1 85-40 / i = 15:1	1	
Q1	Power switch	1	1 pc.
R1	Control plate FE 05 12 88	1	
R2	Control pot 470 k	1	1 pc.
S 1	Switch on the control pot	1	
S 101	Cover switch Az16-02 zvrk	1	
Complete control device			

**Recommended Spare Parts (Mechanical Parts)**

REV.-No. 001/97 09 26

**For the "A" Set (Horizontal Components)**

Item	Qty	Drawing no.	Description	Remark
7	2	C043 Tz 3 – T.7	Bending jaw	
9	2	C043 Tz 3 – T.9	Push-down device	
10	2	C043 Tz 3 – T.10 u. T.30	Bending die	

**For the "B" Set (Vertical Components)**

Item	Qty	Drawing no.	Description	Remark
1	1	C043 Tz 4 – T.1	Bending jaw, pitch 2.5 mm	
2	1	C043 Tz 4 – T.2	Bending jaw, pitch 5 mm	
3	2	C043 Tz 4 – T.3	Bending pliers	

**For the Basic Machine**

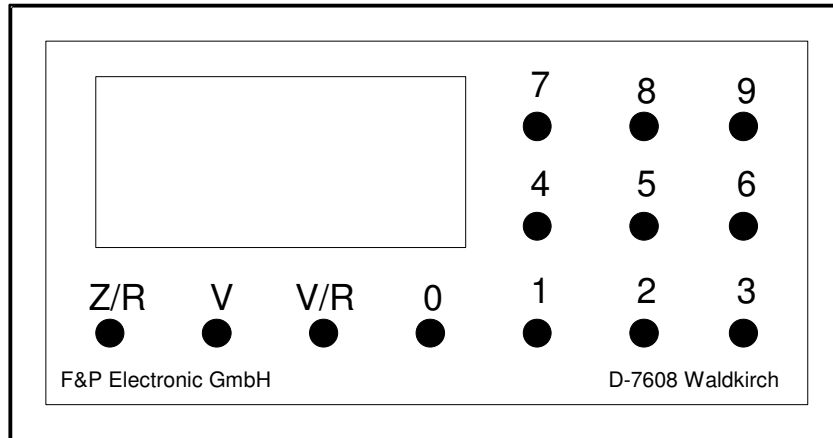
<b>Tz 2 - Body and Drive</b>				
Item	Qty	Drawing no.	Description	
50	1		Synchr. sprocket belt T5/420 – 10 wide	
51	1		Synchr. sprocket belt T5/330 – 10 wide	
52	1		Synchr. sprocket belt T5/260 – 10 wide	
53	1		Gas cylinder GS-15-025 AA- K9189	
56	2		Tension spring Z-075 H (rocker)	
57	1		Tension spring Z-077 (ejector lever)	
<b>Tz 3 Tool Carrier</b>				
Item	Qty	Drawing no.	Description	
28	2	Tz 3 – T.28	Eccentric pin	
39	2	Tz 3 – T.39	Screw	
45	2	Tz 3 – T.45	Ejector	
67	2		Compression spring	



<b>Tz 5 - Control Lever – Bending Dies</b>			
Item	Qty	Drawing no.	Description
9	1	Tz 5 – T.9	Adjusting screw
10	1	Tz 5 – T.10	Washer
20	1		Compression spring
21	1		Compression spring
<b>Tz 6 - Control Lever – Push-down Device</b>			
Item	Qty	Drawing no.	Description
22	2	Tz 6 – T.22	Nut
23	2	Tz 6 – T.23 u. T.24	Adjusting screw, compl.
40	1		Tension spring
<b>Tz 8 - Camshaft</b>			
Item	Qty	Drawing no.	Description
1x camshaft, compl. consisting of:			
2	2	Tz 8 – T.2	Cam (cutting and forming)
3	2	Tz 8 – T.3	Cam (rocker)
4	1	Tz 8 – T. 4	Cam (bending dies)
6	1	Tz 8 – T.6	Cam (ejector)
7	1	Tz 8 – T.7	Main shaft
<b>Tz 9 - Hand Wheel</b>			
Item	Qty	Drawing no.	Description
15	1		Click-stop pin GN 617.1-6-A
<b>Tz 10 - Component Feed</b>			
Item	Qty	Drawing no.	Description
3	2	Tz 10 – T.3	Grasper
7	2	Tz 10 – T.7	Blocking pawl
1x Conveyor blocking pawl, compl.			



## Counters CNT/2 and CNT/2R (Optional)



- Z/R Reset of the counter value to 0000
- V Display of preselection, after approx. 8 sec again display of the counter value
- V... Input of a preselection
- V/R Immediate display of the counter reading
- 0-9 Input of preselection

## Spare Parts Catalogue

### Automatic Cutting, Forming and Bending Machine CO 43 / CO 43 E

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Body and Drive .....	Tz 2
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Control Lever – Push-down Device and Cutting Tool .....	Tz 6
Cam Lever .....	Tz 7
Cam Shaft .....	Tz 8
Hand Wheel .....	Tz 9
Component Feed .....	Tz 10

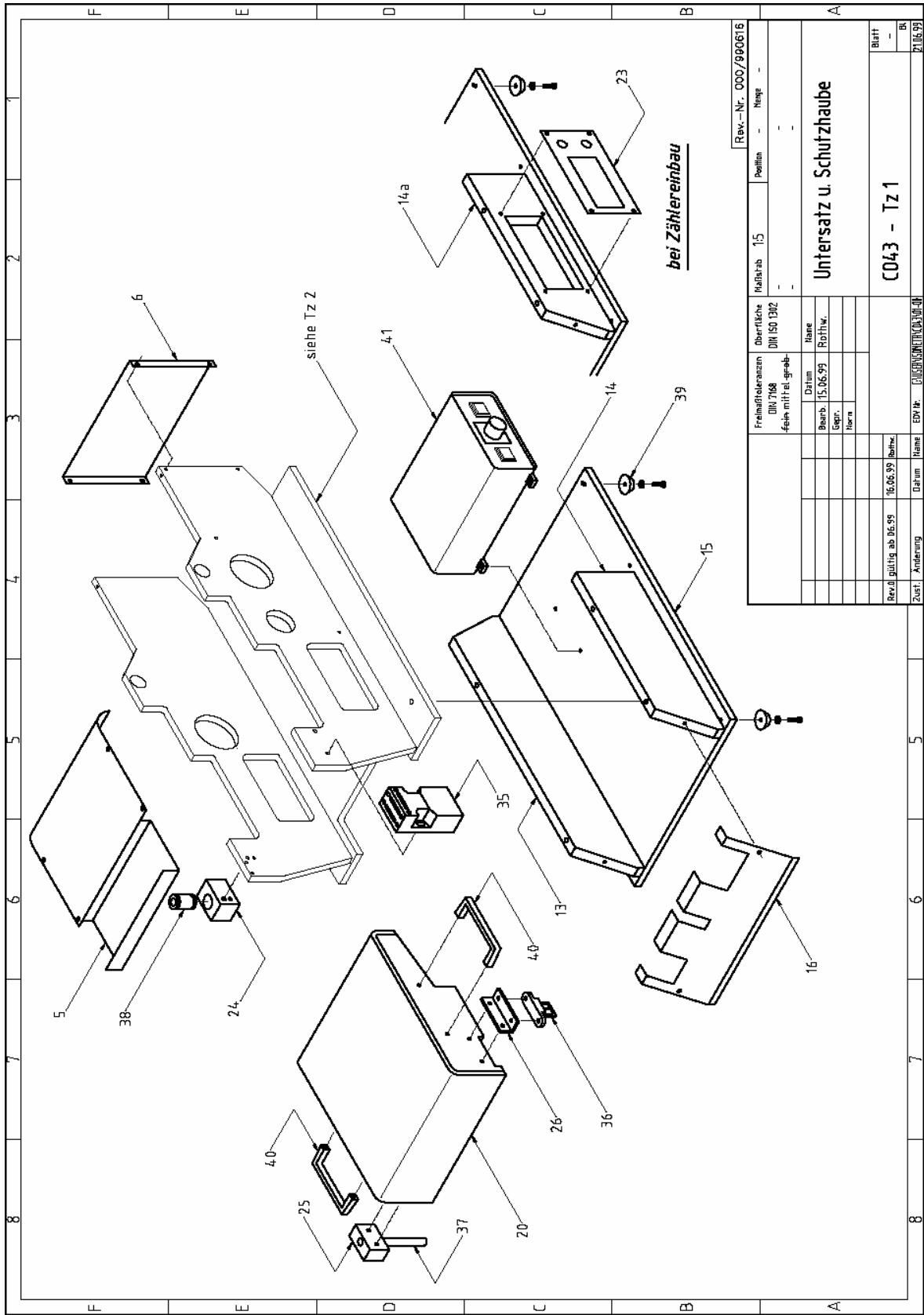


Assembly: **CO43 Tz 1 – Base and Protection Cover**

Item	Qty	Drawing no.	Description	Remark
5	1	Tz 1 T. 5	Outlet plate	
6	1	Tz 1 T. 6	Plate	
13	1	Tz 1 T. 13	Lateral bracket, left	
14	1	Tz 1 T. 14	Lateral bracket, right	Version w/o counter 1)
14a	1	Tz 1 T. 14a	Lateral bracket, right	Version with counter 1)
15	1	Tz 1 T. 15	Base plate	
16	1	Tz 1 T. 16	Cover plate	
20	1	Tz 1 T. 20	Protection cover	
23	1	Tz 1 T.23	Front plate	Only for counter install.
24	1	Tz 1 T.24	Bearing	
25	1	Tz 1 T.25	Bearing	
26	1	Tz 1 T.26	Angle	
			<b>Purchased parts</b>	
35	1		Safety switch AZ 15 zvr	
36	1		Clip for switch AZ 15/16 B1	
37	1		Shaft, hardened $\varnothing 10h6 \times 100$	
38	1		Recirculating ball bushing $\varnothing 10$	
39	4		Rubber foot	
40	2		Handle 10501-003 154	
41	1		Control device	

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<sup>1)</sup> Optional



Rev.-Nr. 000/9900616		Position	Nenge
Halterab 15			
Freimaßkennzeichen DIN 7168 fein mittel grob	Übersichtliche DIN ISO 1312		
Datum		Name	
Bearb. 15.06.99	16.06.99	Roßthw.	
Gepr.			
Norm			
Revid. gültig ab 06.99	16.06.99	Rehw.	
Zust. Änderung	Datum	Name	EPVH: 01050900000000000000
C043 - Tz 1		Blatt	
		BA	
		21.06.99	

Assembly: **Tz 2 - Body and Drive**

Item	Qty	Drawing no.	Description	Remark
1	1	Tz 2 T. 1	Lateral part, left	
2	1	Tz 2 T. 2	Lateral part, right	
4	2	Tz 2 T. 4	Angle	
5	1	Tz 2 T. 5	Lever	
6	1	Tz 2 T. 6	Plate	
7	2	Tz 2 T. 7	Belt tightener	
8	1	Tz 2 T. 8	Base plate	
20	1	Tz 2 T. 20	Stud bolt	
21	2	Tz 2 T. 21	Flange bolt	
22	1	Tz 2 T. 22	Spring suspension	
23	2	Tz 2 T. 23	Spring pin	
24	1	Tz 2 T. 24	Stud bolt	
25	1	Tz 2 T. 25	Belt tightener	
26	1	Tz 2 T. 26	Unwinding piece	
28	1	Tz 2 T. 28	Distance washer	
29	1	Tz 2 T. 29	Stud bolt	
30	1	Tz 2 T. 30	Stud bolt	
31	2	Tz 2 T. 31	Distance ring	
34	1	Tz 2 T. 34	Cover	
35	1	Tz 2 T. 35	Cover	
36	1	Tz 2 T. 36	Chute	
37	1	Tz 2 T. 37	Plate	
40	1	Tz 2 T. 40	Shaft, hardened $\varnothing 8h6 \times 184$	
41	1	Tz 2 T. 41	Guide	
42	1	Tz 2 T. 42	Guide	
43	1	Tz 2 T. 43	Angle bracket	
50	1		Synchr. sprocket belt T5/ 420 10-wide	*)

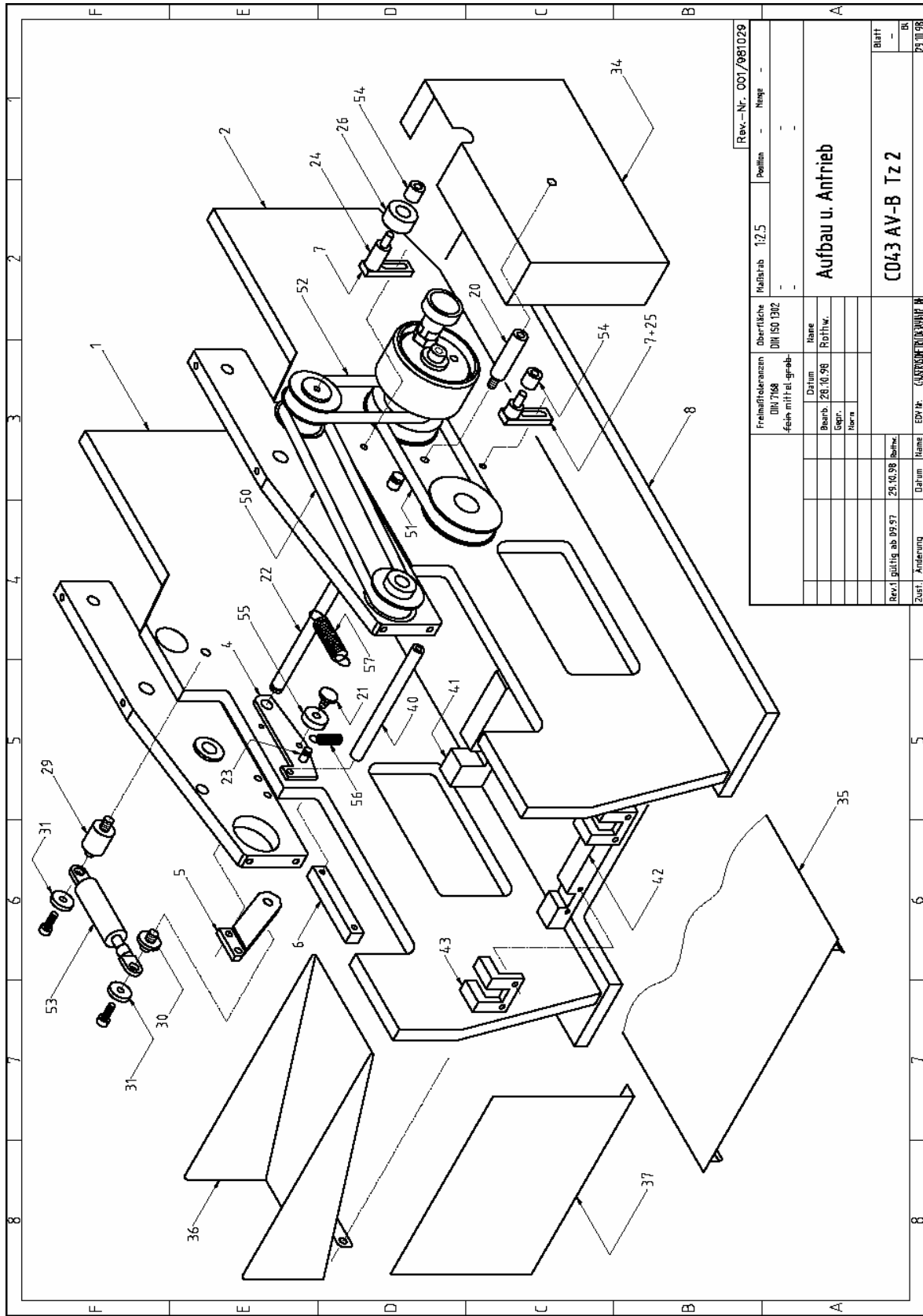




Item	Qty	Drawing no.	Description	Remark
51	1		Synchr. sprocket belt T5/ 330 10-wide	*)
52	1		Synchr. sprocket belt T5/ 260 10-wide	*)
53	1		Gas cylinder GS-15-025 AA- K9189	*)
54	2		Needle bearing NK 5/10	
55	2		Grooved ball bearing 625-2z	
56	2		Tension spring Z-075 H (rocker)	*)
57	1		Tension spring Z-077 (ejector lever)	*)

**\*) = recommended spare part**





Rev.-Nr. 001/981029		Maßstab 1:2,5	Position	Nenge
Freimaßtoleranzen DIN 7168 fein mittel-grob		Übersicht	DIN ISO 1302	
Datum		Name		
Bearb.	28.10.98	Rothw.		
Gegr.		Name		
Rev 1 gültig ab 09.97		28.10.98	Beinh.	
Zust.	Änderung	Datum	Name	EV-Nr.
		GÄRSTÄBE/STÄBE/STÄBE H		
		Aufbau u. Antrieb		
		C043 AV-B Tz 2		
		Blatt		
		8		
		28.10.98		



Assembly: **Tz 3 - Tool Carrier**

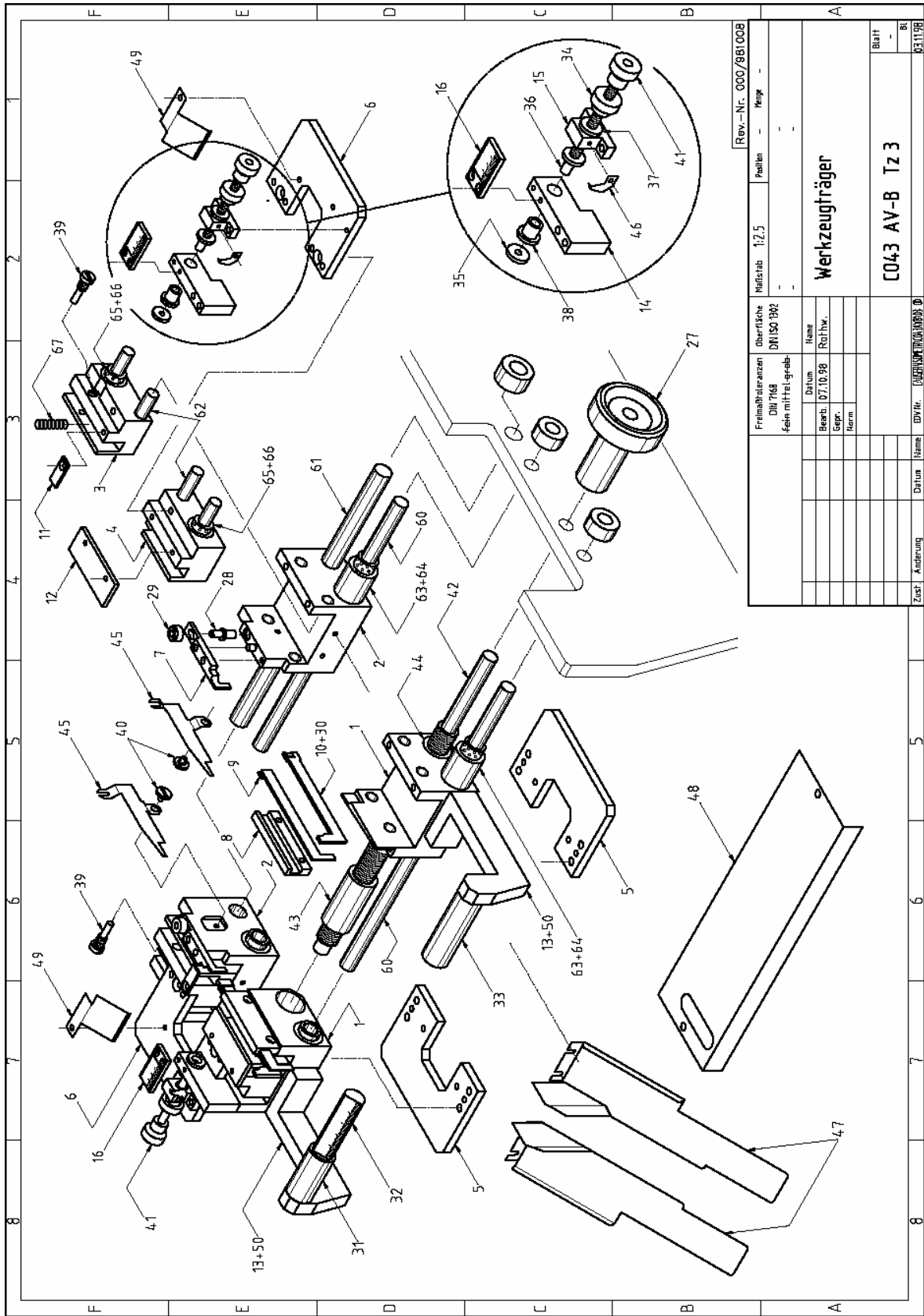
Item	Qty	Drawing no.	Description	Remark
1	2	Tz 3 T. 1	Bearing	
2	2	Tz 3 T. 2	Bearing	
3	2	Tz 3 T. 3	Bearing	
4	2	Tz 3 T. 4	Bearing	
5	2	Tz 3 T. 5	Plate	
6	2	Tz 3 T. 6	Plate	
7	2	Tz 3 T. 7	Bending jaw	*)
8	2	Tz 3 T. 8	Holder	*)
9	2	Tz 3 T. 9	Push-down device	*)
10	2	Tz 3 T. 10	Bending die	*)
11	2	Tz 3 T. 11	Plate	
12	2	Tz 3 T. 12	Cover plate	
13	2	Tz 3 T. 13	Scale	
14	2	Tz 3 T. 14	Bearing	
15	2	Tz 3 T. 15	Bearing	
16	2	Tz 3 T. 16	Scale holder	
27	1	Tz 3 T. 27	Handle	
28	2	Tz 3 T. 28	Eccentric pin	*)
29	2	Tz 3 T. 29	Handle	
30	2	Tz 3 T. 30	Roller	*)
31	1	Tz 3 T. 31	Scale holder	
32	1	Tz 3 T. 32	Scale	
33	1	Tz 3 T. 33	Scale holder	
34	2	Tz 3 T. 34	Counter nut	
35	2	Tz 3 T. 35	Cover washer	
36	2	Tz 3 T. 36	Spindle	
37	2	Tz 3 T. 37	Tapped bushing	
38	2	Tz 3 T. 38	Bushing	
39	2	Tz 3 T. 39	Screw	*)



Item	Qty	Drawing no.	Description	Remark
40	2	Tz 3 T. 40	Screw	
41	2	Tz 3 T. 41	Knurled knob	
42	1	Tz 3 T. 42	Elevating spindle	
43	1	Tz 3 T. 43	Tapped bushing	
44	1	Tz 3 T. 44	Tapped bushing	
45	2	Tz 3 T. 45	Ejector	*)
46	2	Tz 3 T. 46	Indicator	
47	2	Tz 3 T. 47	Outlet plate	
48	1	Tz 3 T. 48	Cover	
49	2	Tz 3 T. 49	Tape inlet plate	
50	2	Tz 3 T. 50	Scale	
60	2	Tz 2 T.38	Shaft, hardened $\varnothing 10h6 \times 230$	
61	1	Tz 2 T.39	Shaft, hardened $\varnothing 12h6 \times 230$	
62	8		Shaft, hardened $\varnothing 8h6 \times 60$	
63	4		Steel bushing $\varnothing 20 \times \varnothing 14 \times 33$	
64	4		Ball cage $\varnothing 14 \times \varnothing 10 \times 38$	
65	4		Steel bushing $\varnothing 18 \times \varnothing 13 \times 30$	
66	4		Ball cage $\varnothing 13 \times \varnothing 8 \times 40$	
67	2		Compression spring	*)

\*) = recommended spare part





Rev.-Nr. 000/981008		Maßstab 1:2,5	Teilnam - Menge -
Freimaßtoleranzen DIN 7168 fein mittel-grob		überflische DN ISO 982	
Name		Werkzeugträger	
Datum		07.10.98	
Bearb.		Roßthw.	
Gepr.			
Norm			
Zust. Änderung		Datum	
Name		Blatt	
DWVr.		C043 AV-B Tz 3	
		Bl	
		83.11.98	

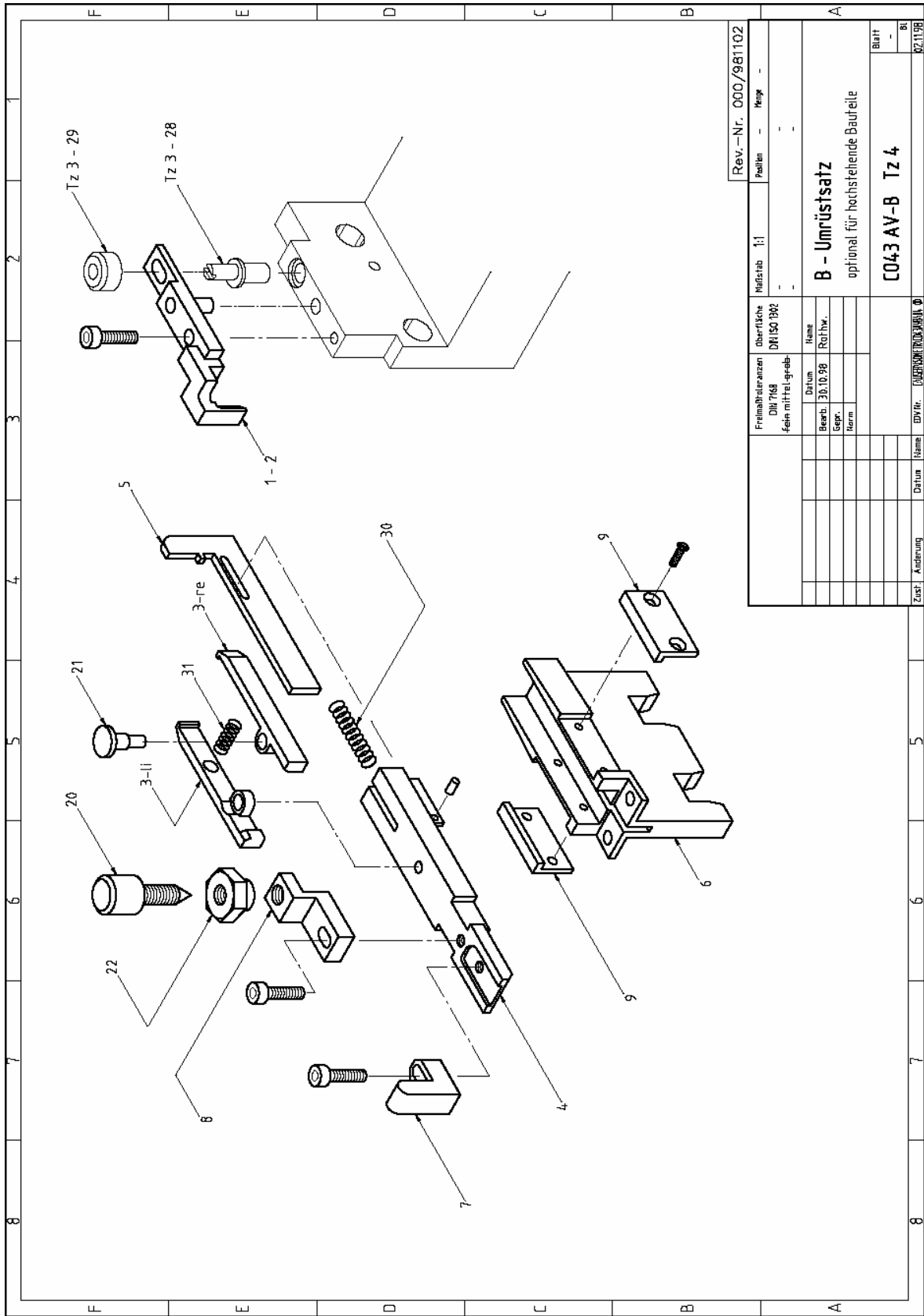


Assembly: **Tz 4 - B Mounting Kit**

Item	Qty	Drawing no.	Description	Remark
1	1	Tz 4 T. 1	Bending jaw, pitch 2.5	*)
2	1	Tz 4 T. 2	Bending jaw, pitch 5	*)
3	2	Tz 4 T. 3	Bending pliers	*)
4	1	Tz 4 T. 4	Holder, for bending nose	
5	1	Tz 4 T. 5	Push-down device	
6	1	Tz 4 T. 6	Support, for bending unit	
7	1	Tz 4 T. 7	Angle	
8	1	Tz 4 T. 8	Adjustment	
9	2	Tz 4 T. 9	Retainer rail	
20	1	Tz 4 T. 20	Knurled screw	
21	1	Tz 4 T. 21	Pin	
22	1	Tz 4 T. 22	Knurled nut	
30	1		Compression spring	
31	1		Compression spring	

\*) = recommended spare part





Rev.-Nr. 000/981102		Teiln. - Menge -	
Maßstab 1:1	übertr. DIN 150 1902	Name	
	fein mittel-grob	Rotlhw.	
		Datum	
		Bearb. 30.10.98	
		Gepr.	
		Norm	
<b>B - Umrüstset</b> optional für hochstehende Bauteile			
<b>C043 AV-B Tz 4</b>			
Zust. Änderung		Datum	
Name		Name	
Abw. Nr.		Abw. Nr.	
Blatt		Blatt	
-		-	
82/1198		82/1198	



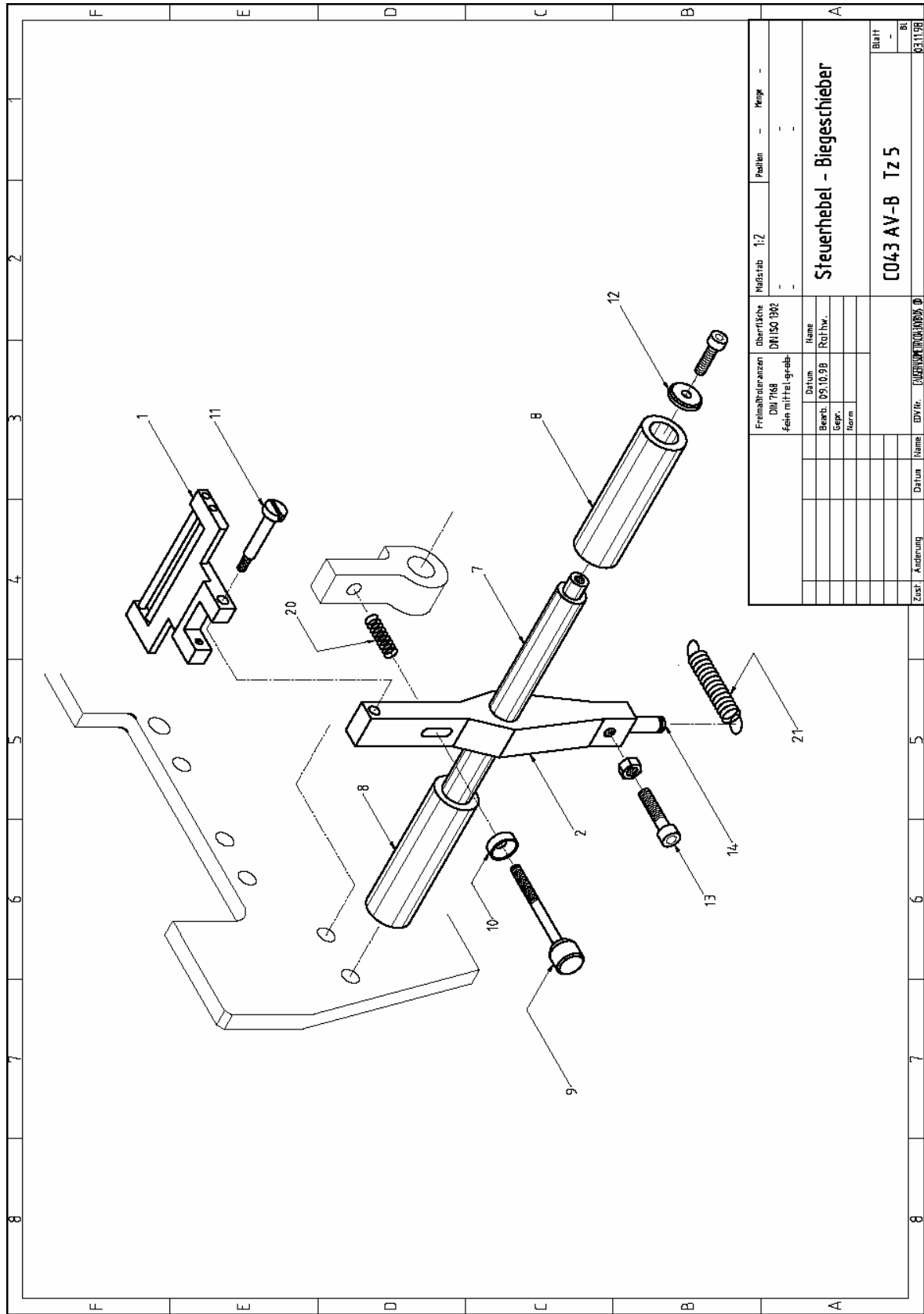
Assembly: **Tz 5 - Control Lever – Bending Dies**

Item	Qty	Drawing no.	Description	Remark
1	1	Tz 5 T. 1	Clevis head	
2	1	Tz 5 T. 2	Lever	
7	1	Tz 5 T. 7	Shaft	
8	2	Tz 5 T. 8	Distance bushing	
9	1	Tz 5 T. 9	Adjusting screw	*)
10	1	Tz 5 T. 10	Washer	*)
11	1	Tz 5 T. 11	Adjusting screw	
12	6	Tz 5 T. 12	Cover washer	
13	1	Tz 5 T.13	Cap screw	
14	1	Tz 6 T. 17	Spring pin	
20	1		Compression spring	*)
21	1		Tension spring	*)

**\*) = recommended spare part**







Assembly: **Tz 6 - Control Lever – Push-down Device and Cutting Tool** 12

Item	Qty	Drawing no.	Description	Remark
1	2	Tz 6 T. 1	Lever	
2	1	Tz 6 T. 2	Lever	
3	1	Tz 6 T. 3	Adjusting piece	
4	2	Tz 6 T. 4	Press-on plate	
5	2	Tz 6 T. 5	Return angle	
6	1	Tz 6 T. 6	Press-on plate	
17	2	Tz 6 T. 17	Spring pin	
18	1	Tz 6 T. 18	Fitting screw	
19	2	Tz 6 T. 19	Distance bushing	
20	4	Tz 6 T. 20	Bushing	
21	2	Tz 6 T. 21	Distance bushing	
22	2	Tz 6 T. 22	Nut	*)
23	2	Tz 6 T. 23	Adjusting screw	*)
24	2	Tz 6 T. 24	Cap	*)
30	2	Tz 5 T. 12	Cover washer	
31	1	Tz 7 T. 16	Shaft	
40	1		Tension spring	*)

**\*) = recommended spare part**

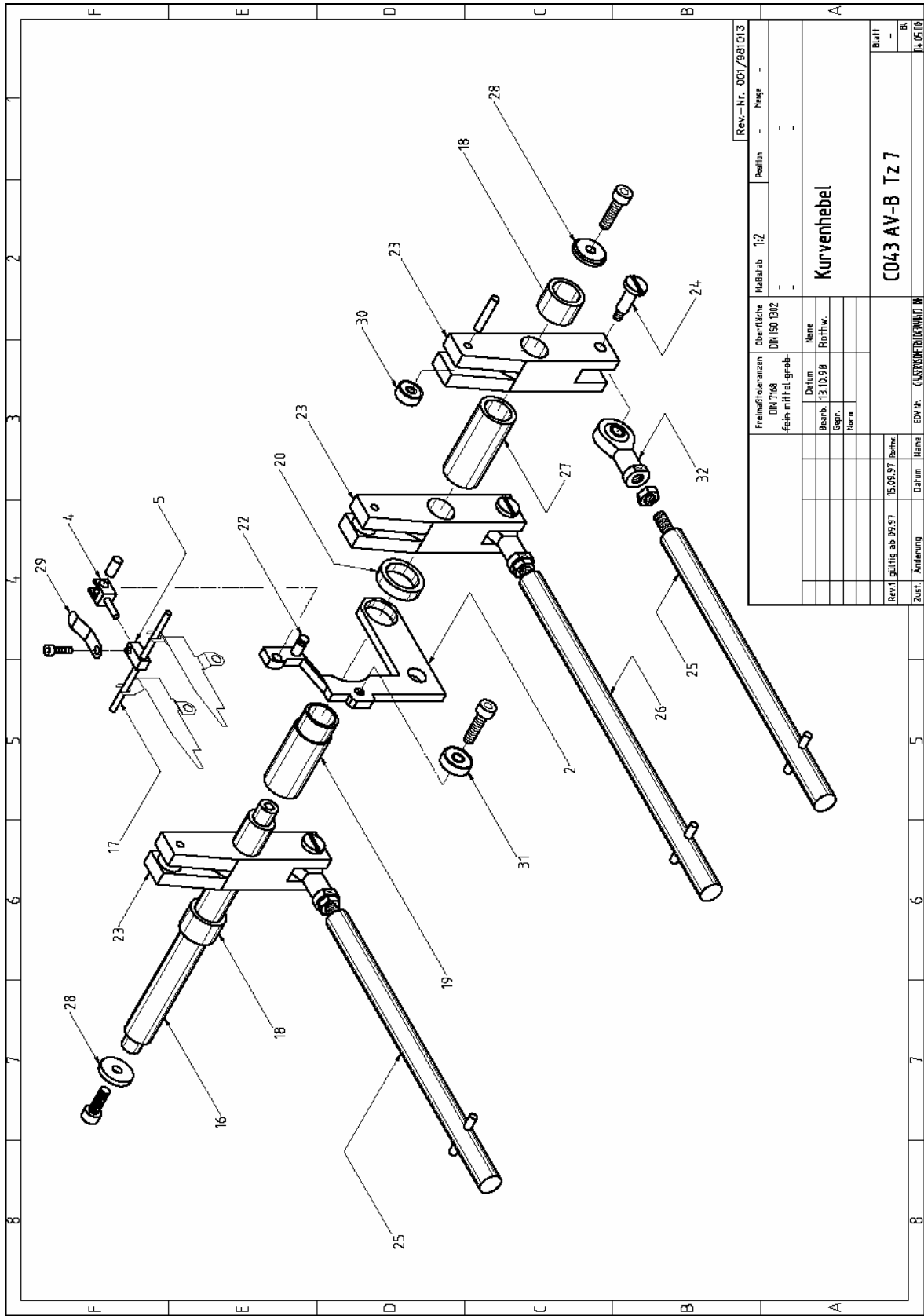




Assembly: **Tz 7 - Cam Lever**

Item	Qty	Drawing no.	Description	Remark
2	1	Tz 7 T. 2	Lever	
4	1	Tz 7 T. 4	Clevis	
5	1	Tz 7 T. 5	Joint	
16	2	Tz 7 T. 16	Shaft	
17	2	Tz 7 T. 17	Shaft	
18	2	Tz 7 T. 18	Distance bushing	
19	1	Tz 7 T. 19	Distance sleeve	
20	2	Tz 7 T. 20	Adjusting ring	
22	2	Tz 7 T. 22	Spring pin	
23	3	Tz 7 T. 23	Lever	
24	3	Tz 7 T. 24	Stud bolt	
25	2	Tz 7 T. 25	Push rod	
26	1	Tz 7 T. 26	Push rod	
27	1	Tz 7 T. 27	Distance sleeve	
28	2	Tz 5 T. 12	Cover washer	
29	1	Tz 7 T. 29	Push-on spring	
30	3		Grooved ball bearing 624 -2z	
31	1		Grooved ball bearing 625 -2z	
32	3		Swivel head SGS - M6	





Rev.-Nr. 007/981013		Revisions-Nr.	Position	Menge
Maßstab 1:2				
Freimaßstabnormen	Übertrichte			
DIN 7168	DIN ISO 1312			
Feinmaßstabnormen	Feinmaßstabnormen			
Feinmaßstabnormen	Feinmaßstabnormen			
Datum	Name			
Bearb. 13.10.98	Roßthw.			
Gepr.				
Norm				
Rev.1 gültig ab 09.97	15.08.97			
Zust. Änderung	Datum	Name	EPVH - (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z)	
		Blatt		Blatt
		C043 AV-B Tz 7		14.05.09

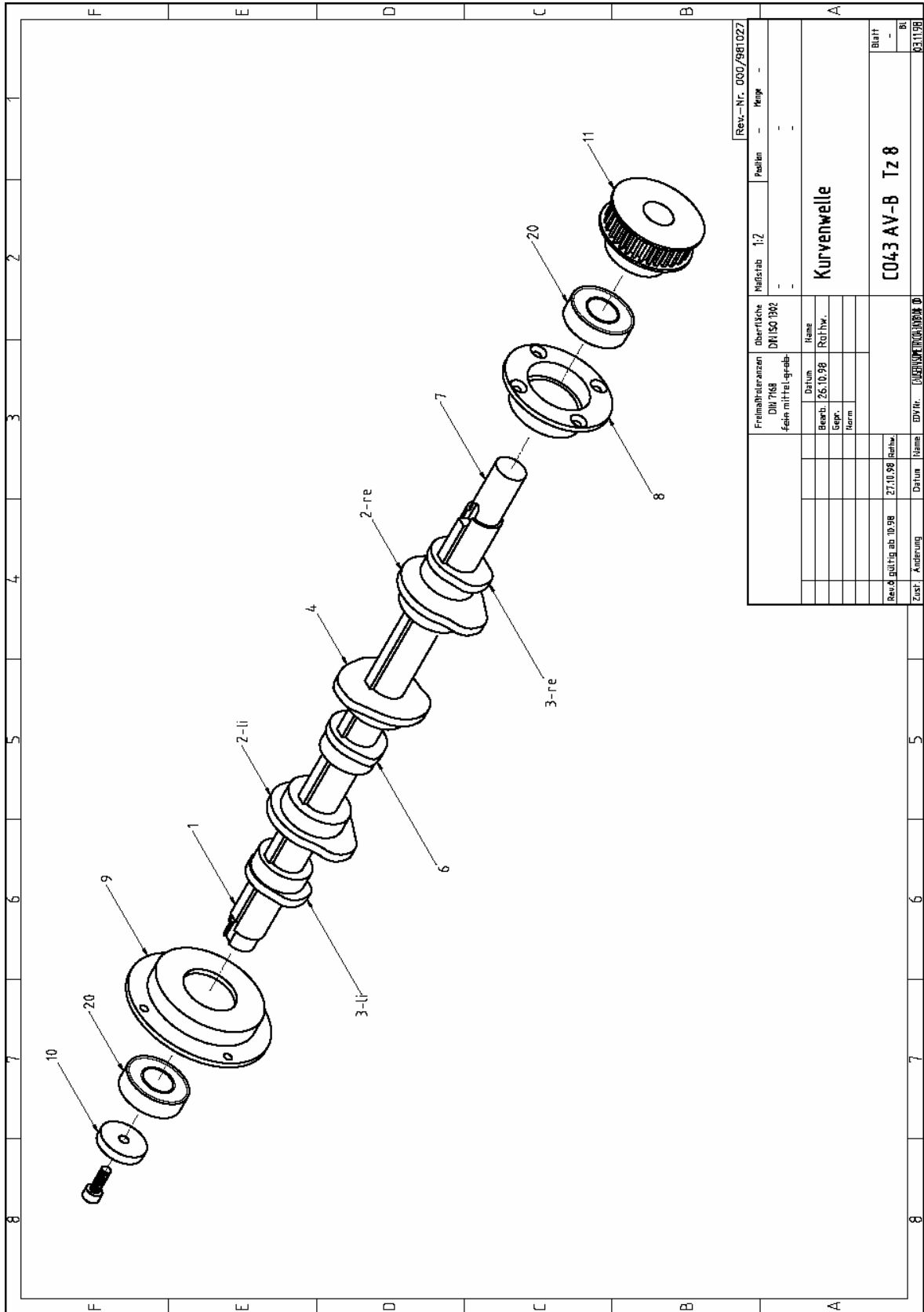


Assembly: **Tz 8 - Cam Shaft**

Item	Qty	Drawing no.	Description	Remark
1	1	Tz 8 T. 1	Fitting key	
2	2	Tz 8 T. 2	Cam (cutting and forming)	*)
3	2	Tz 8 T. 3	Cam (rocker)	*)
4	1	Tz 8 T. 4	Cam (bending jaws)	*)
6	1	Tz 8 T. 6	Cam (ejector)	*)
7	1	Tz 8 T. 7	Main shaft	*)
8	1	Tz 8 T. 8	Bearing bushing	
9	1	Tz 8 T. 9	Bearing bushing	
10	1	Tz 8 T. 10	Cover washer	
11	1	Tz 8 T. 11	Sprocket belt wheel	
20	2		Grooved ball bearing 6003-2z	

\*) = recommended spare part





Rev.-Nr. 000/981027		Maßstab 1:2		Position - Menge -	
Freimahlkriterien DIN 7168		Oberfläche DIN ISO 1302		Name	
Fein mittel grob		Datein		Datum	
Bearb.		26.10.98		Reif hw.	
Gepr.					
Norm					
Revid gültig ab 01.98		27.10.98		Reif hw	
Zust: Änderung		Datum		Name	
		GV-Nr. 01981027/01981028		Blatt	
				- 8 -	
				03.11.98	



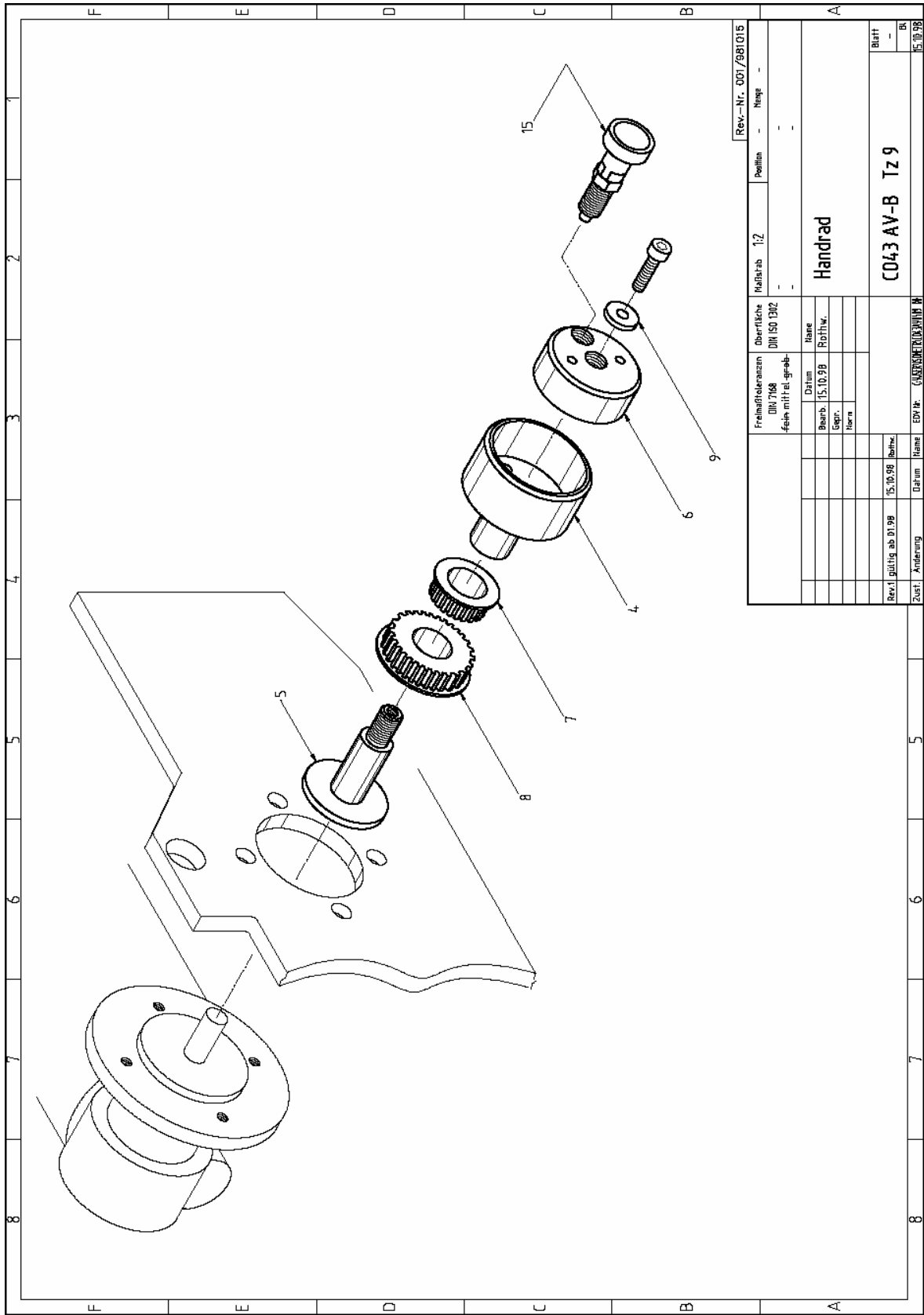
Assembly: **Tz 9 - Hand Wheel**

Item	Qty	Drawing no.	Description	Remark
4	1	Tz 9 T. 4	Hand wheel	
5	1	Tz 9 T. 5	Shaft	
6	1	Tz 9 T. 6	Tapped nut	
7	1	Tz 9 T. 7	Sprocket belt wheel	
8	1	Tz 9 T. 8	Sprocket belt wheel	
9	1	Tz 9 T. 9	Cover washer	
15			Click-stop pin GN 617.1-6-A	*)

**\*) = recommended spare part**







Assembly: **Tz 10 - Component Feed**

Item	Qty	Drawing no.	Description	Remark
1	2	Tz 10 T. 1	Guide plate	
2	2	Tz 10 T. 2	Feed, lateral part	
3	2	Tz 10 T. 3	Grasper	*)
4	2	Tz 10 T. 4	Adjusting plate	
5	2	Tz 10 T. 5	Pitch plate	
6	2	Tz 10 T. 6	Skid	
7	2	Tz 10 T. 7	Backstop	*)
8	2	Tz 10 T. 8	Plate	
9	2	Tz 10 T. 9	Grasper guide	
10	2	Tz 10 T. 10	Guide rail	
11	2	Tz 10 T. 11	Centering angle	
12	2	Tz 10 T. 12	Plate	
13	2	Tz 10 T. 13	Distance plate	
14	2	Tz 10 T. 14	Equiangular washer	
25	1	Tz 10 T. 25	Hand wheel	
26	1	Tz 10 T. 26	Shaft	
27	2	Tz 10 T. 27	Shaft	
28	1	Tz 10 T. 28	Elevating spindle	
29	1	Tz 10 T. 29	Spindle	
30	2	Tz 10 T. 30	Distance spindle	
31	1	Tz 10 T. 31	Guide spindle	
32	2	Tz 10 T. 32	Driving wheel	
33	1	Tz 10 T. 33	Sprocket belt wheel	
34	1	Tz 10 T. 34	Sprocket belt wheel	
35	1	Tz 10 T. 35	Sprocket belt wheel	
36	1	Tz 10 T. 36	Flanged wheel	
37	2	Tz 10 T. 37	Distance washer	
38	1	Tz 10 T. 38	Distance washer	
39	1	Tz 10 T. 39	Washer	
40	1	Tz 10 T. 40	Washer	



Item	Qty	Drawing no.	Description	Remark
41	1	Tz 10 T. 41	Washer	
42	1	Tz 10 T. 42	Washer	
43	2	Tz 10 T. 43	Washer	
44	2	Tz 10 T. 44	Bushing	
45	1	Tz 10 T. 45	Bushing	
46	2	Tz 10 T. 46	Bushing	
47	2	Tz 10 T. 47	Bushing	
48	2	Tz 10 T. 48	Bushing	
49	1	Tz 10 T. 49	Pin	
50	2	Tz 10 T. 50	Pin	
51	2	Tz 10 T. 51	Spring pin	
52	2	Tz 10 T. 52	Stud bolt	
53	1	Tz 10 T. 53	Cover	
54	4	Tz 5 T. 27	Cover washer	
60	2		Shaft, hardened $\varnothing 10h6 \times 230$	
61	2		Recirculating ball bushing N-10/20	
62	1		Needle bearing NKI – 10/20	
63	2		Grooved ball bearing 6001-2z	
64	1		Compression spring D- 189	
65	2		Compression spring D- 030 B	
66	2		Compression spring D- 103	
67	2		Tension spring	

**\*) = recommended spare parts**



