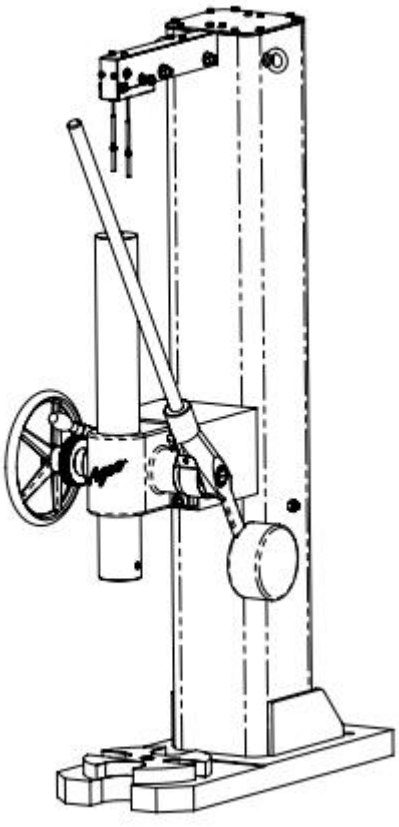
OPERATING MANUAL

For type DP3000R+MRE+ SA

Arbor/ mandrel press
with ratchet drive,
with return stroke support (return stroke unit)
and ram clamping (locking device)

Machine no.:



Contents:

Operating instructions for arbor press

with ratchet drive + integrated return stroke support + ram locking *device.*

1. Introduction

The AGEO arbor press is a machine tool design that has proven itself in everyday use for decades and is mainly used for pressing in and out rotary arbors, bushings, roller bearings, bolts and pins as well as for assembly work.

The machine is designed as a stable welded construction with MSH profile (rectangular tube).

The proven AGEO press mechanism is integrated in a bolted-on cast head and is operated by a ratchet lever.

The integrated plunger / rack and pinion locking mechanism enables, for example, the safe assembly of spring assemblies or gluing work with pressurisation (for further information see point 6.7).

An integrated return stroke support enables the operator to return the press to the starting position with less effort (for further information see points 6.8 + 6.9).

2 Setting up the press

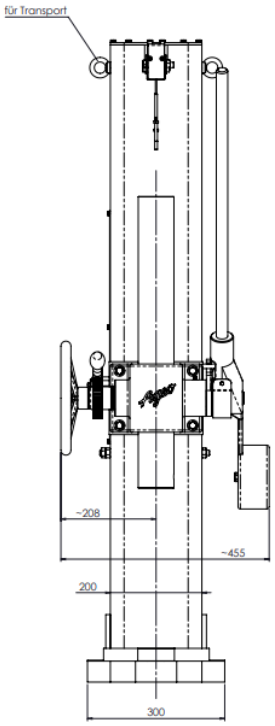
When setting up the press, ensure that the press body rests flat and flush. Furthermore, the press body must be secured against uncontrolled movement with suitable fasteners.

If the press is mounted on a base frame, this must also be secured to the floor.

If the installation surface is uneven and not sufficiently secured, the stability of the press may be lost, resulting in increased danger of crushing and shearing of body parts!

When lifting and transporting the press, the applicable accident prevention regulations and the generally recognised rules of technology must be observed.

The press is equipped with 2 eyebolts (Item 40) which make it safer to transport the press with the help of a load crane.



Accident prevention regulations "General regulations" BGV A1

"Cranes" BGV D6 (VBG 9)

"Operating work equipment" BGR 500, Chap. 2.8

DIN standards "Lifting appliances, load lifting devices" DIN 15003

"Eye hooks, quality class 5" DIN 7540

"Shackles“ DIN 82101

3. Operation

Before putting the press into operation, all bare parts must be cleaned of anti-corrosion agents. The moving parts must always be kept lightly greased.

The press is operated by the hand lever (pos.24) and the hand wheel (pos.31) on the press head (pos.18). When the hand lever is actuated, the toothed rack (Pos.2) moves downwards and executes the working stroke.

After completing the stroke, the hand lever (Pos.24) must be returned to the upper starting position (rest position) by the operator. When doing so, make sure that the unlocking bolt (Pos.36) is re-inserted into the recess of the cam disc (Pos.20) (please always keep the unlocking bolt lightly greased).

Now, by operating the handwheel (pos.31), the rack (pos.2) is moved back to the desired position (observe pretensioning force (3.2)). The return stroke support assists the upward movement so that the worker is relieved.

When the press is not in use, the rack must always be lowered so that it cannot move by itself.

Danger from crushing and shearing of body parts!

3.1 Rack extension safety device

The rack (Pos.2) is secured against automatic extension by fitting 2 disc springs (Pos.57). These disc springs are arranged between the press head (Pos.18) and the hand wheel (Pos.31). The cup springs are pretensioned by means of a washer (item 23) and a hexagon head screw (item 52) M10 (SW 17).

This pre-tensioning creates adhesion or friction between the pinion shaft (Pos.3) and the press head (Pos.18), which prevents the pinion shaft (Pos.3) from rotating under the own weight of the rack (Pos.2) and the rack from moving downwards.

3.2 Adjusting the extension lock (pre-tensioning force)

Due to the pre-tensioning, a higher actuating force must be provided for upward or downward movements of the rack (pos. 2). If the pretensioning force was not set according to the rack and tool weight, automatic extension may occur.

- Adjusting screw (Pos.52) (hexagon head screw)

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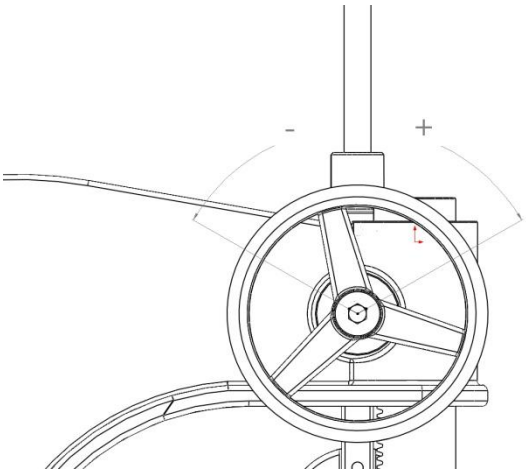


+ Preload is increased

- Preload is reduced

- Check the operation of the extension lock, readjust if necessary.

As this movement is uncontrolled, non-observance may result in an increased risk of injury to the operator or to persons directly at the machine!

4. Warning notices

WARNING!!!

Under no circumstances may a tube extension or similar be pushed onto or attached to the hand lever to increase the force on the gear rack, as otherwise there is a risk of breakage (overload) or injury (if the components fail).

Normal operation is no longer possible under these circumstances and the risk of damage and injury from the hand lever is considerably increased.

The handwheel for adjusting the rack may only be operated when the hand lever is in its upright starting position (gear disengaged), otherwise it will move downwards with the rack! Risk of injury!

All persons working on the machine must be informed of this.

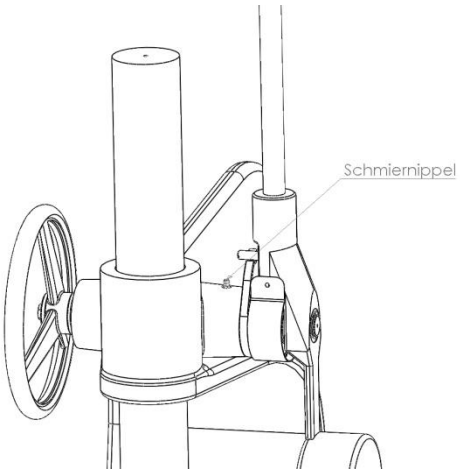
The manufacturer is not liable for any operation contrary to these operating instructions and for any damage caused as a result!

5 Performance and maintenance

This press is designed for a maximum pressure capacity of:

DP 3000R - 30kN (approx. 3,000 kg)

The press must be lubricated lightly with a grease gun at the grease nipple located on the press head (pos. 18) approximately every 10 - 14 days. To increase the service life, always keep the toothed rack



(pos. 2) lightly greased and clean. Dirt or damage to the toothing of the toothed rack must be avoided at all costs, as this may cause further damage to the pinion shaft (Pos.3) and impair or make impossible the further operation of the press.

Parts and components of the press that have reached the end of their service life, e.g. due to wear, corrosion, mechanical stress, fatigue and/or due to other effects that are not immediately apparent, must be disposed of properly and professionally after disassembly in accordance with national and international laws and regulations.

The same applies to auxiliary materials in use such as oils and greases or other substances.

The conscious or unconscious re-use of used components such as pinion shafts, ratchet wheels, ratchet pawls, etc. may endanger persons, the environment and machinery and equipment. The corresponding locally applicable operating regulations must be observed and applied.

Work or repairs may only be carried out by skilled personnel who, due to their professional training, experience and instruction, have sufficient knowledge of:

- Safety regulations,
- accident prevention regulations,
- guidelines and recognised technical rules (e.g. VDE regulations, DIN EN standards). regulations, DIN EN standards).

The skilled workers must:

- be able to assess the work assigned to them, recognise possible dangers and avoid them,
- be authorised by the safety officer to carry out the required work and activities.

In the case of possible orders for spare parts, the following must be indicated:

- Press type,
- machine number and
- year of manufacture

of the press.

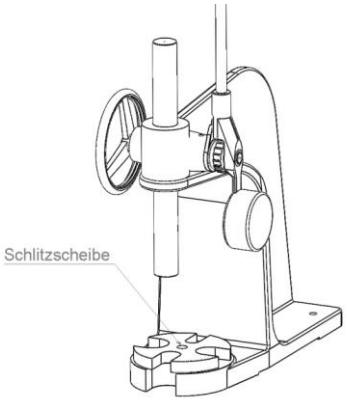
You will find these on the type plate on the machine itself.

6. Accessories

6.1 Slotted disc

This press is equipped as standard with a rotatable slotted disc (pos.25), which serves as a support for the rack (pos.2) and with its four drop-through slots of different widths can be a quick helper to press bearings, sleeves, rings or bushings of shafts or similar out or in.

DP 3000R - 35, 50, 65, 80mm



Danger from crushing and shearing of hand or finger!

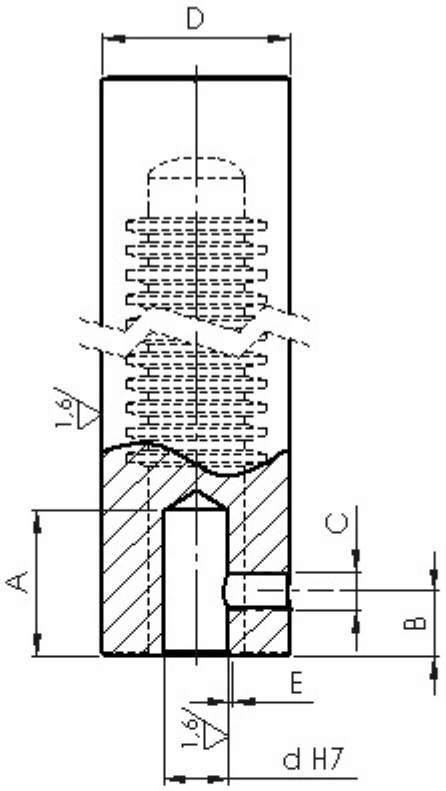
6.2. Tool mounting bore / hole (similar to DIN 810)

The rack (pos.2) of the arbor press can be provided with an additional fitting hole (H7) in order to fix an appropriate tool for applications.

The tool mounting hole is centred on the underside and the tool can be secured against falling out by means of a grub screw (Pos. 46) located on the side.

Please note that the total weight of the rack changes due to the tool used and that the pre-tension of the extension lock may have to be readjusted.

The size of the tool mounting hole with retaining screw on your machine is designed with the



d H7	A	B	C	möglich in Zahnstange Ø				E
				D 32	D 40	D 58	D 78	
10	28	12	M 8	X	X	X	X	1x45°
12	32	12	M 8	X	X	X	X	1x45°
16	36	20	M 10	X	X	X	X	1x45°
20	45	20	M 12			X	X	1,6x45°
25	50	25	M 12			X	X	1,6x45°
32	60	28	M 16			X	X	1,6x45°
40	75	40	M 20				X	2x45°
50	85	40	M 20				X	2x45°
	Vorzugsreihe (wenn keine Angaben)							

Für Bohrungen, die zwischen den aufgeführten größen liegen gilt:

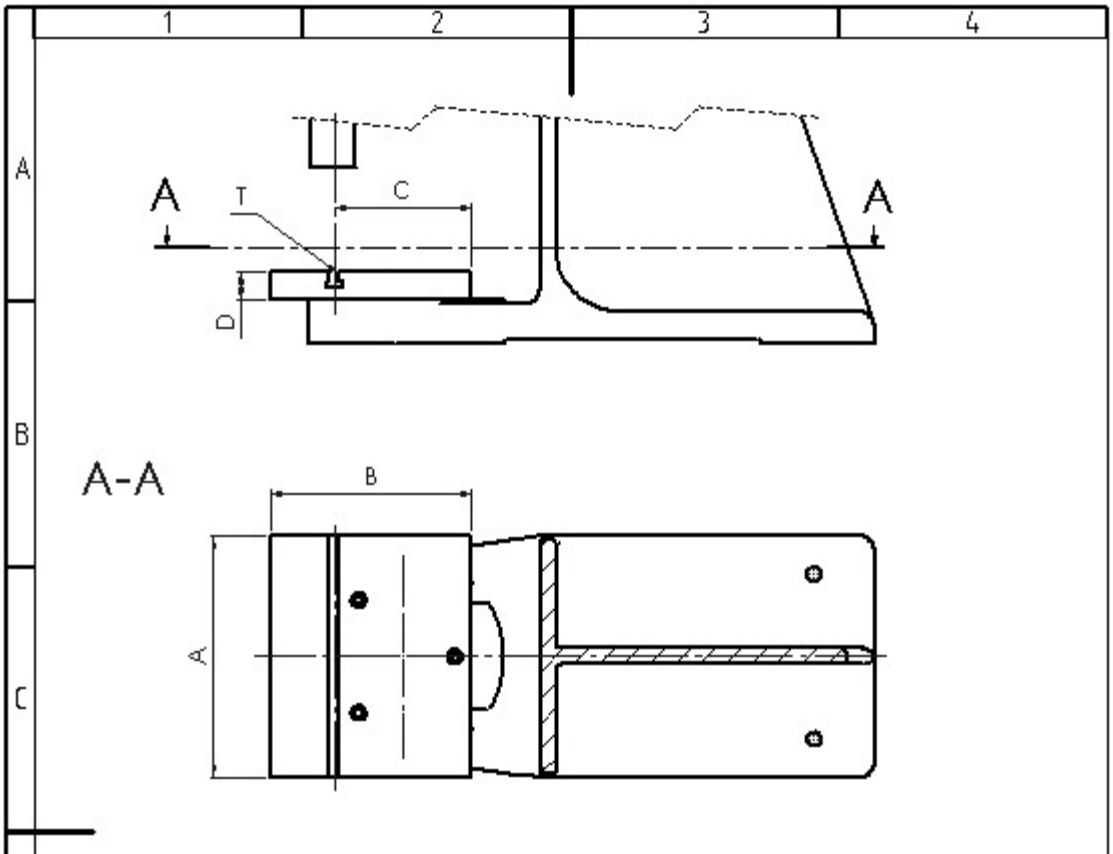
- Maß A nach der nächst größeren Bohrung
- Maß B und C nach der nächst kleineren Bohrung

standard bore Ø 32H7.

6.3 Rectangular table

Various rectangular tables are available for your arbor press with a T-slot (DIN 650) instead of the rotating slotted plate. This is suitable for clamping fixtures and tools.

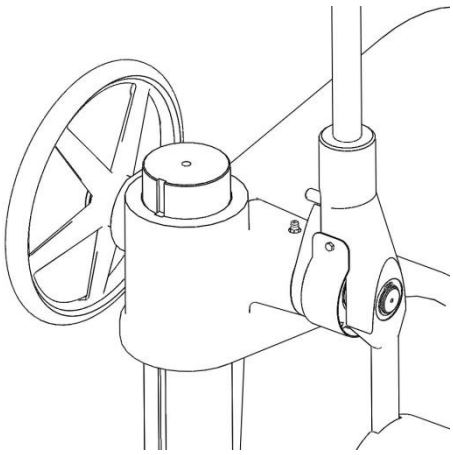
The rectangular table is mounted so that the T-slot is in the centre of the rack.



A x B	C	D	T		DP500	DP1000	DP1500 / R	DP2000 / R	DP3000 / R	DP3000RS / RT	DP200HR	DP500HR	DP750HR	DP1000HR
150x150	82	35	12		X						X			
250x200	110	35	12			X	X	X	X	X		X	X	X
300x250	170	35	12				X	X	X	X			X	X
480x420	170	35	12					X	X	X				X

6.4 Rack rotation lock

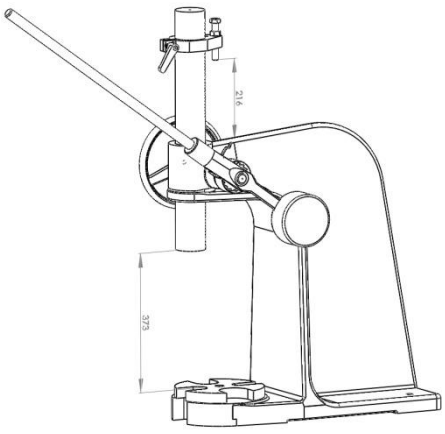
The rack anti-rotation device prevents torsion forces from occurring in the installed tools during bending and/or joining work, which on the one hand would be detrimental to the accuracy of fit of the workpiece and on the other hand could damage the pinion shaft and rack.



6.5 Depth stop

The AGEO depth stop for your arbor press of the DP, DP-R and DP-HR series impresses with its solid construction and easy handling. It is basically used as a stroke limiter and is set to the desired dimension in just a few steps.

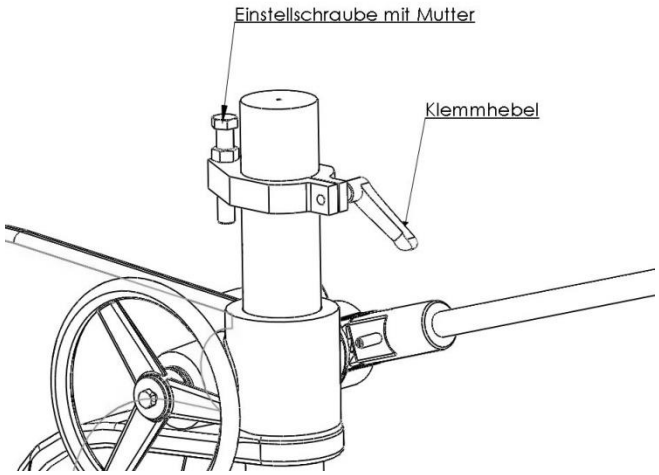
The AGEO depth stop can be adjusted in height and also fixed again by the operator in just a few steps by opening the clamping lever. With the help of a hexagonal spanner (spanner size depends on the press type), the adjusting screw with lock nut on the rear side of the depth stop can be additionally adjusted by loosening it.



After the adjustment process and the commissioning of the press, both the

After the adjustment process and commissioning of the press, both the clamping lever and the nut

on the adjusting screw must be checked for tightness in order to prevent automatic adjustment.

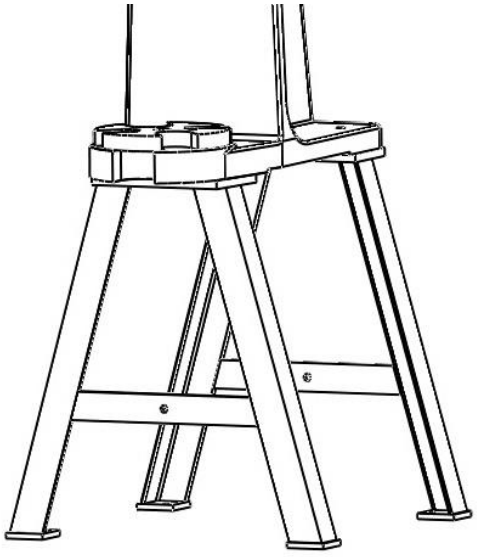


Danger from crushing and shearing of body parts, hand and fingers! Danger from flying parts!

6.6 Base frame

The Ageo arbor press (except models of the RS and RT series) can be mounted on an underframe in a stable welded construction to achieve a table height of approx. 720mm for stand-alone arbor presses.

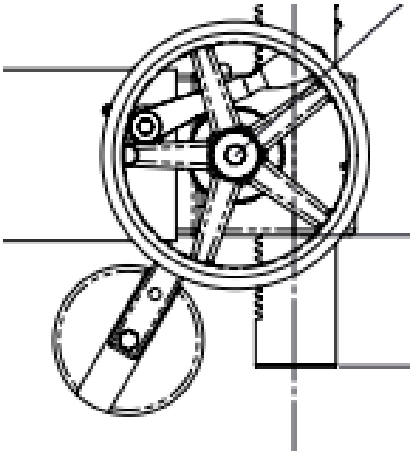
The arbor press with underframe must in all circumstances be secured to the floor with suitable fasteners to prevent uncontrolled slipping or tipping (see press set-up).



6.7 Rack and pinion locking device

Your machine is equipped with an additional rack lock for mandrel presses with ratchet drive. This ensures that the rack cannot move upwards by itself when the lever (pos. 30) on the handwheel (pos. 31) is turned forwards. The locking of the toothed rack (Pos. 2) is divided in (approx.) 2.4 mm steps due to the locking function of the locking disc (Pos.13).

We must point out that the position of the toothed rack can change slightly depending on the forces due to the elastic deformation of the components, i.e. it can give way or slacken.



Application examples:

- Compression of spring elements,
- Joining components by bonding or similar with constant pressure

The ratchet lever (Pos.24) is used to perform the pressure movement. By turning the lever (Pos.3) of the locking device on the handwheel (Pos.31), the rack (Pos. 2) is locked against upward movement by means of the locking function of a ratchet disc (ratchet wheel) (Pos.13) (an expansion of 1mm is permissible).

Before use, tools, devices and workpieces must be secured in such a way that no uncontrolled movement of these objects can take place if spring elements or similar are compressed. When using the rack and pinion lock, make sure that no uncontrolled movements can occur that could endanger persons and/or equipment.

The pressurisation in the workpiece must not exceed the permissible pressure capacity of the press. The information on the type plate and the dimension sheet of these operating instructions must be observed.

When pressure or travel is reached, the ratchet lever (Pos.24) must be returned to its initial position (released gear) before starting work on the workpiece. After finishing work on the workpiece, secure it against expansion.

After securing the workpiece against expansion, apply pressure to the ratchet lever (pos.24) again to release the rack lock and then/simultaneously open the lever (pos.30) for the rack lock.

An expansion of 1mm is permissible.

Failure to secure the workpiece before releasing the ram lock can result in serious injury to the operator and persons in the vicinity of the machine due to uncontrolled movements of the press ram (Pos.2), the handwheel (Pos.31) and/or the ratchet lever (Pos.24).

Since AGEO Press GmbH is not or cannot be aware of the circumstances of the use of the ram lock, the operator as well as the operator of the press equipment is solely responsible for the safety measures.

In case of non-observance, damage can occur to the rack locking device (locking disc (Pos.13) - locking pawl (Pos.6), as well as to the ratchet lever (Pos.24) and the cam disc (Pos. 20) and restrict the further use of the press or make it impossible. In the case of unsecured movements, non-observance can lead to increased risks of injury to the operator or to persons directly at the machine!

6.8 Mechanical ram return stroke support

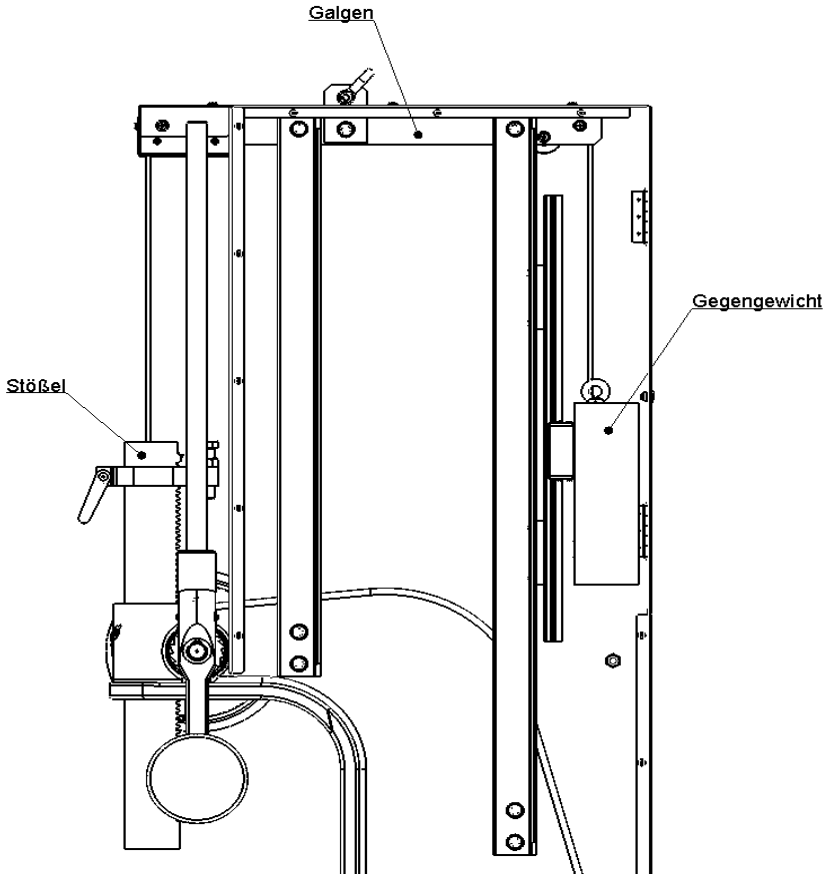
To support the ram return stroke, a counterweight (Pos.8) is attached via a cable guide (Pos.26) and "gallows" (Pos.10), which balances the mass of the ram (toothed rack) (Pos.2) and supports the operator when positioning the ram.

In order to prevent accidents in the event of the load-bearing rope (Pos.58) breaking, a safety rope (Pos.58) with its own rope guide or rope suspension is fitted which does not run under tension.

The weight of the counterweight (pos.8) is chosen in such a way that a small amount of force is always required from the operator to move the ram (pos.2) to the desired position. In addition, this should also ensure that the ram cannot change its position independently (i.e. without influencing the operator) when the hand lever (Pos.24) is placed in the cam disc (Pos.20). By attaching/detaching a tool to the ram, a change in weight occurs and the ram can move downwards independently. To avoid this, the change in weight must be compensated for by adjusting the "extension lock".

The schematic diagram below is intended to clarify the principle of operation. The guide carriage (pos. 27) with the running rail (pos. 28) are housed in the rectangular tube (MSH profile) of this press and are accessible through a removable opening (pos. 7) on the side for inspection and maintenance work.

See "3.2 Adjusting the extension lock (pre-tensioning force)".



CAUTION Incorrect adjustment of the weight ratios between the ram and counterweight results in independent, uncontrolled ram movement, which can injure the operator.

There is a higher risk of pinching, shearing and crushing of body parts.

6.9 Maintenance work on the mechanical ram return stroke support.

Check daily that the load carrying wire rope (pos.58), the accompanying safety rope (pos.58) and the associated rope connections such as rope connectors, thimbles and snap hooks (pos.64) are in perfect condition.

If there is the slightest damage to any of these elements, work with the machine must be stopped immediately until the damage has been repaired by qualified personnel.

The wire ropes and the sheaves / pulleys (pos.26) do not require any lubrication and must be protected from heavy contamination. The running rail / guide rail (Pos.28) and the guide carriage (Pos.27) are self-lubricating.

ATTENTION: If damage to these elements is detected, stop operation immediately! A damaged wire rope or rope connection will cause independent, uncontrolled ram movement which can injure the operator.

There is a higher risk of pinching, shearing and crushing of body parts.

When replacing the ram (Pos.2), it must be moved to the lowest position that can be reached. Then the enclosed threaded rod (pos. 54+55) (M12) must be inserted into the holes on the side and secured against falling out with the enclosed nut. The counterweight (pos.8) is now set down on the threaded rod by actuating the handwheel and causes a relief of the wire rope (pos.58).

Disassembly of the ram (Pos2) can then be carried out by qualified personnel.

When ordering spare parts, if necessary:

1* Press type: DP3000R+MRE+SA

2* Machine number

3* Year of manufacture

of the press.

CAUTION: Incorrect adjustment of the weight ratio between the ram and the counterweight results in independent, uncontrolled ram movement, which can injure the operator.

There is a higher risk of pinching, shearing and crushing of body parts.

7. Copyright and technical documentation

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PRESS

Production and distribution

AGEO Press GmbH

An der Schillertanne 6

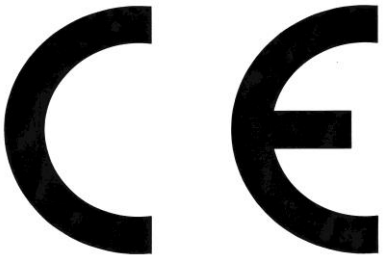
D- 64367 Muehltal

Tel: (+49)0 6151 – 101 50 00

Fax: (+49)0 6151 – 101 50 05

info@dornpresse.de

www.dornpresse.de



EC DECLARATION OF CONFORMITY

in the sense of the Machinery Directive 2006/42/EC

Type of machine:

Make:
Arbor press DP3000R + MRE + SA
with ratchet drive,
with return stroke support (return stroke unit)
and ram clamping (locking device)
Year of construction:
Machine no.:

is developed and manufactured in accordance with EC Directive 2006/42/EC under the sole responsibility of:

AGEO Press GmbH
An der Schillertanne 6
D- 64367 Muehltal

The following harmonised standards are applied:

4* DIN EN 12100, Safety of machinery, General principles for design.

5* EN ISO 14121, Risk assessment.

6* EN ISO 12100, Risk minimisation.

7* Technical documentation is available in full.

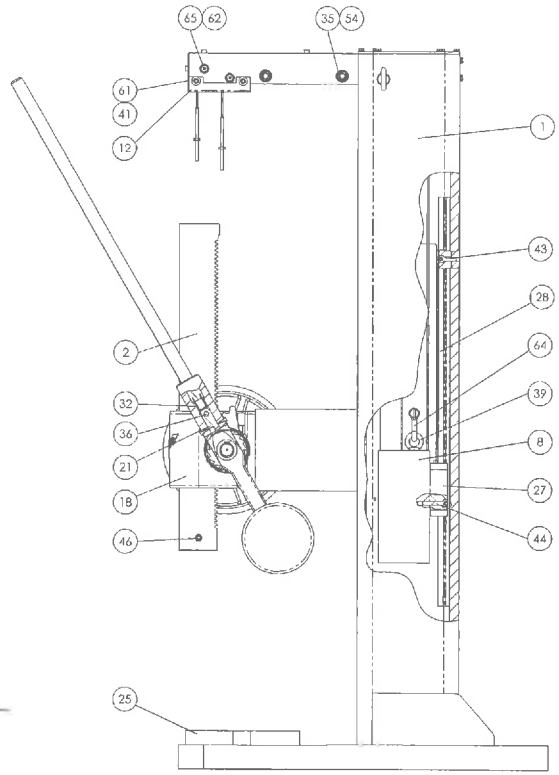
8* The operating instructions belonging to the machine are available in German and English.

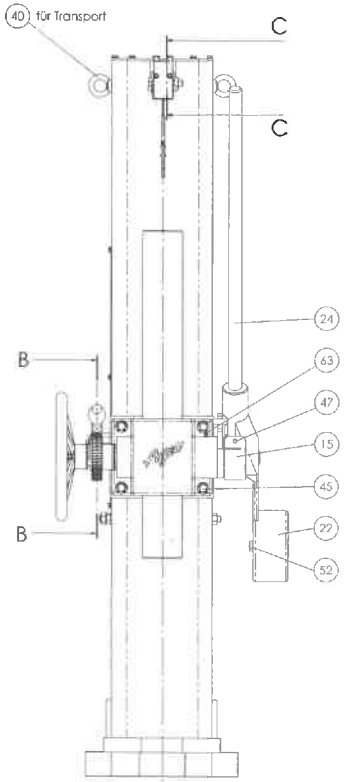
Upon justified request, the special documentation for the machine can be handed over to national authorities.

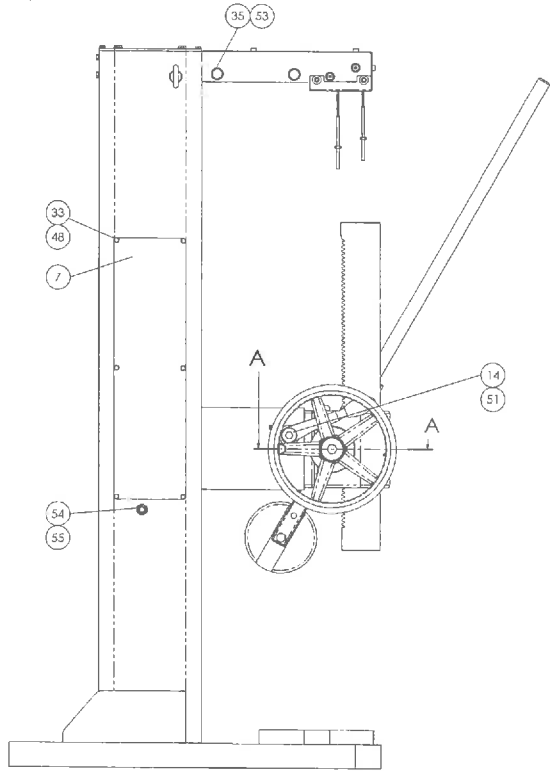
Muehltal, 01.02.2023

Kirsten Press

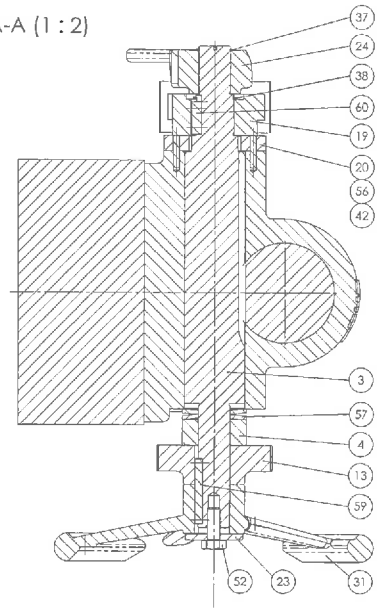
Managing Director



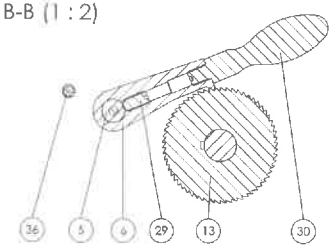




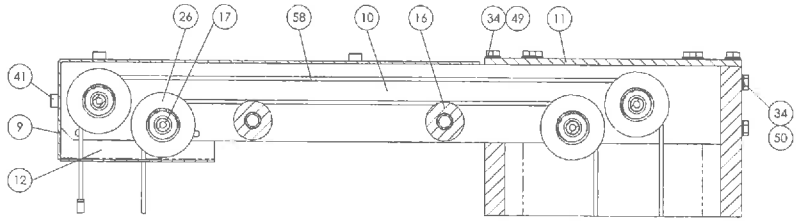
A-A (1 : 2)

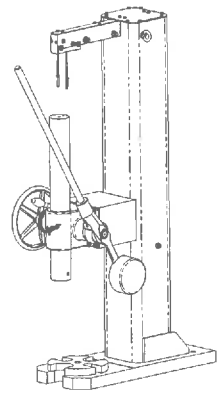


B-B (1 : 2)



C-C (1 : 2)





Pos Nr	Stück	Benennung	Z Nr Norm & Nizmeinsatz	Werkstoff	Artikel Nr	Lieferant
1	1	Pressenkörper (Schweißkonstruktion)	DP 20.10129.1			
2	1	Zahnstange für Stößelrückhub	DP 30.10179.3			
3	1	Kolzewelle-So	DP 20.10180.3			
4	1	Hülse für Ritzelwelle	DP 20.10181.4			
5	1	Sechskantbolzen	DP 20.10182.4			
6	1	Spannlinke	DP 20.10183.4			
7	1	Abdeckblech Pressenkörper	DP 30.10184.2			
8	1	Gegengewicht (~22 kg)	DP 30.10185.3			
9	1	Verkleidungsblech oben	DP 50.10105.3			
10	2	Lasche 515mm	DP 30.10131.3			
11	1	Deckel Pressenkörper	DP 20.10112.3			
12	1+1	Eingriffschutz	DP 50.10106.3			
13	1	Sperrad	DP 30.10009.4			
14	1	Scheibe	DP 30.10014.4			
15	1	Schutz für Sperrad	A 126810			
16	2	Distanzstück	A 151251			
17	4	Achse	A 151253			
18	1	Pressenkopf	DP3000R/2-00(3)			
19	1	Sperrad	DP2000R-08 (4)			
20	1	Kurvenscheibe	DP2000R-09 (4)			
21	1	Spannlinke	DP2000R-10(4)			
22	1	Gewichtsscheibe	DP2000R-13A(4)			
23	1	Schuhe	DP500-08(4)			
24	1	Handhebel	DP3000R			
25	1	Schlitzscheibe	DP2000 ; DP3000			
26	4	Seilscheibe	SMRN50-5	MC Nylon	SMRNS0-9	MGUM/
27	1	Führungswagen	TW-01-30			igus
28	1	Führungsschiene	TS-01-30-800			igus
29	1	Federndes Druckstück	M16x20	St.	954510008	Mädler
30	1	Fester Bakengriff mit Gewindezapfen	DIN 39-ST-Ø32 Ausf. E	St.	66213200	Mädler
31	1	Handrad Ø250	DIN 950-B - Ø250-D25H7x38	Al		Ganter
32	1	Druckfeder	DIN 2098 - D-214	Fed.-St.		Gutekunst
33	6	Scheibe	DIN 125-B - Ø5,3	St./ Zn.		
34	16	Scheibe	DIN 125-B - Ø6,4	St./ Zn.		
35	4	Scheibe	DIN 125-B - Ø13	St./ Zn.		
36	2	Schaftschraube	DIN 427 - M10x45	St.		
37	1	Sicherungsring	DIN 471 - Ø25x1,2	Fed.-St.		
38	1	Sicherungsring	DIN 471 - Ø30x1,5	Fed.-St.		
39	1	Ringschraube	DIN 580 - M8	St./ Zn.		
40	2	Ringschraube	DIN 580 - M10	St./ Zn.		
41	10	Zylinderschraube	DIN 912 - M8x12	8.8		
42	2	Zylinderschraube	DIN 912 - M8x16	8.8		
43	4	Zylinderschraube	DIN 912 - M8x25	8.8		
44	4	Zylinderschraube	DIN 912 - M8x40	8.8		
45	4	Zylinderschraube	DIN 912 - M16x40	8.8		
46	1	Gewindestift	DIN 915 - M12x25	45H		
47	2	Sechskantschraube	DIN 933 - M4x8	8.8		
48	6	Sechskantschraube	DIN 933 - M5x16	8.8		
49	12	Sechskantschraube	DIN 933 - M6x16	8.8		
50	4	Sechskantschraube	DIN 933 - M8x25	8.8		
51	1	Sechskantschraube	DIN 933 - M8x16	8.8		
52	2	Sechskantschraube	DIN 933 - M10x25	8.8		
53	2	Sechskantschraube	DIN 933 - M12x80	8.8		
54	5	Sechskantmutter	DIN 934 - M12	8		
55	1	Gewindebolzen	DIN 976 - M12x240	8.8/ Zn		
56	2	Keilstift	DIN 1472 - Ø6x24	St.		
57	2	Tellerfeder	DIN 2093 - A50-4,1	Fed.-St.		
58	2	Wartington-Sicherheitssiegel	DIN 3057 - Ø3-6x19x1700	St.		
59	1	Passfeder	DIN 6885-1 - A6x6x50	C45 K		
60	1	Passfeder	DIN 6885-1 - A10x8x25	C45 K		
61	4	Schraube	DIN 7349 - Ø6,4	St./ Zn		
62	8	Senkschraube	DIN 7991 - M6x12	8.8		
63	1	Kegelschmiernippel	DIN 71412 A - M8	St./ Zn		
64	1	Schäkel D-41	DIN 82102 - 0,4	St./ Zn		
65	8	Scheiben für Spanschraube	DIN 1277 - M6	St./ Zn		

Allgemeintoleranzen DIN 7168 / 1 mittel — entkantet aus

Oberflächenvollentkohlungsfreiheit DIN ISO 1302 Reihe 3 — Kanten entgratet

Oberfläche — Gruppe — Pos.-Nr. — mat

Index	Änderung	Datum	Name

	Datum	Name
bearb.	27.06.2022	Weyrauther
gepr.		

Maßst. 1:5

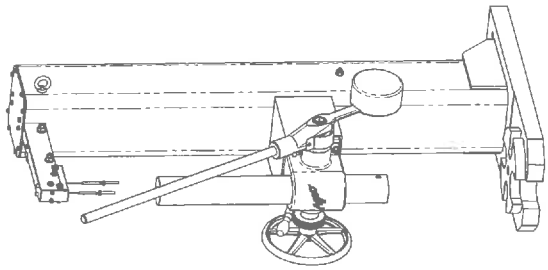
"Schutzvermerk nach DIN 34 beachten"

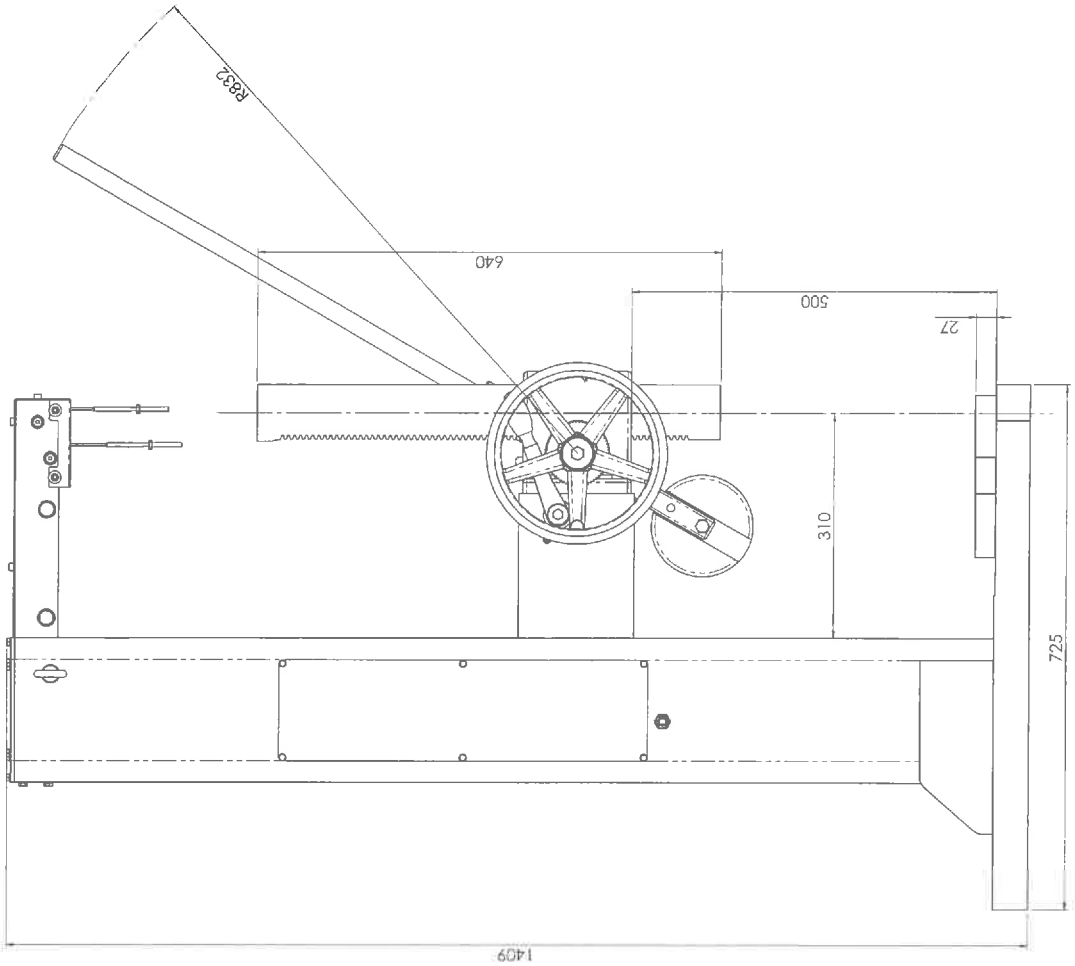
Benennung DP 3000R-So
[mit Stößelrückhub & WAB25]

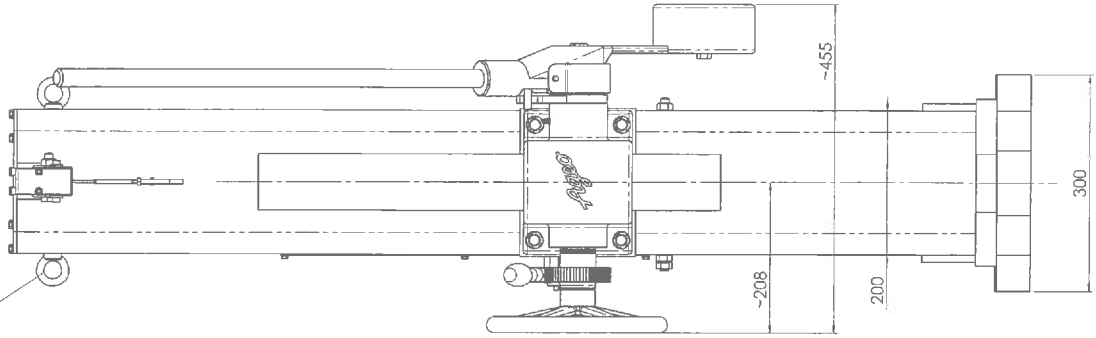
Zeichn.-Nr. Z DP 30.10026.1

Bl. von

Ers. für — Ers. durch — Gewicht: 316,9 kg







für Transport

Allgemeintoleranzen DIN 7168 / f mittel		entstand aus							
Oberflächenbeschaffenheit DIN ISO 1302, Reihe 3		Kanten entgratet							
Oberfläche:		Gruppe	Pos.-Nr.		mal	Index	Änderung	Datum	Name
	Datum	Name	Maßst.	1:5 / 1:10			"schutzvermerk nach DIN 34 beachten"		
Bearb.	28.06.2022	Weyhmüller	Benennung	DP 3000R - So					
Gepr.				(mit Stößelrückhubunterstützung)					
			Zeichn.-Nr.	DP 310622				Blatt 1 von 1	A2
			Ers. für		Ers. durch		Gewicht:	~317 kg	