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Operating Instructions
3745

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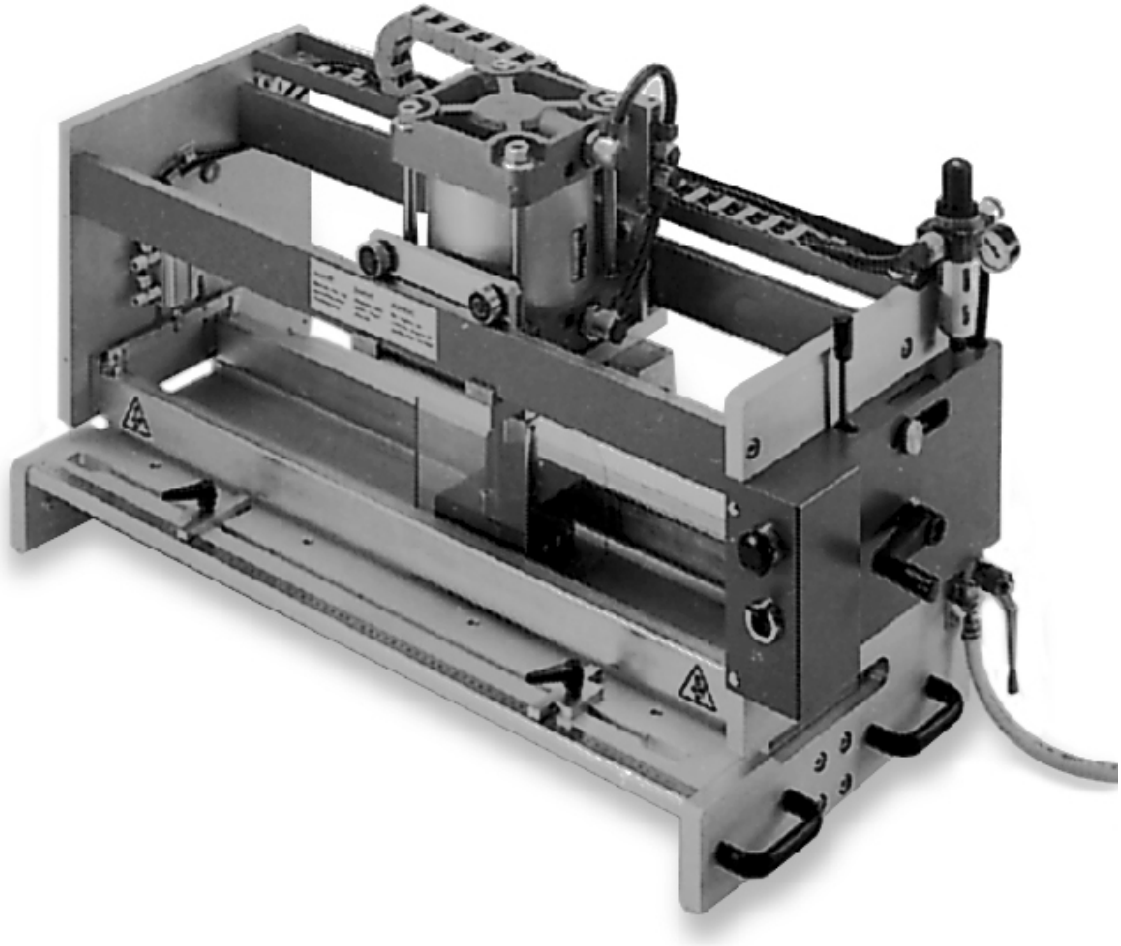
Flexproof-Cutter AF-603



The preparing device (die-cutting machine) AF-603 serves for the accurate zigzag shape die-cutting of Habasit belts and tapes up to a width of 600 mm and a thickness of 8 mm using the Flexproof system. It is suitable for Habasit standard finger geometries with the pitches of 8, 10 or 20 mm with different cutting heads.

Materials over 600 mm wide can be processed also, but the recommended maximum width is 1100 mm.

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1. General information

1.1 Application

The Flexproof-Cutter AF-603 was specifically designed for the rapid and safe preparation (die-cutting) of Habasit tapes and belts using the Flexproof procedure with a finger pitch of 8, 10 or 20 mm. The belts/tapes can be up to 600 mm/*24 in.* wide. Die-cutting of belts and tapes wider than 600 mm/*24 in.* is possible but the handling is somewhat difficult, recommended only up to a width of 1100 mm/*44 in.*. The maximum belt/tape thickness is 8 mm/*0.32 in.*

The Flexproof-Cutter AF-603 was developed solely for the purposes described in the operating instructions. Improper use, or use for other applications than those described in the instructions, is not permissible. Habasit accepts no liability for the consequences of improper application.

The Flexproof-Cutter AF-603 is manufactured according to recognized engineering principles and state-of-the-art technology, and complies with applicable regulations.

These operating instructions imply that all assembly, maintenance, and repair work, as well as operation of the die-cutting device, be carried out by skilled personnel or monitored by responsible specialists.

For reasons of scope, these instructions cannot cover all possible aspects of operation, maintenance, or repair. The indications given herein refer to the use of the tools according to their designated purpose by skilled personnel.

In case of doubt or if further detailed information is required, please contact the manufacturer (Section 1.4)

1.2 Important safety terms

In these operating instructions, you will find the terms WARNING, CAUTION, and INDICATION. They signal dangers or special information to be borne in mind.

WARNING	If disregarded, there is a danger of severe injury, and/or severe material damage.
CAUTION	If disregarded, there is a danger of injury, and/or material damage may be caused.
INDICATION	Technical information is emphasized if it is important and not readily apparent, even for skilled personnel.

Please observe all indications for assembling, operating, and maintaining this device, as well as all technical data! This will prevent possible trouble and/or damage to people or materials.

Skilled personnel refers to persons authorized to perform the required work. These people have been sufficiently trained and introduced to their field of activity so that they are able to recognize and prevent dangers. They are aware of the pertinent provisions and safety regulations.

1.3 Scope of supply

Qty.	Item
1	AF-603 Flexproof cutter with
1	Die-cutting head 10/80 with 10 mm/*0.4 in.* finger pitch and 80 mm/*3.15 in.* finger length
1	Die-cutting head 20/80 with 20 mm/*0.8 in.* finger pitch and 80 mm/*3.15 in*. finger length
8	Spare cutting blades for cutting head 10/80 and 20/80
3	Spare cutting pads
1	Operating instructions

1.3.1 Available accessories

Die-cutting head 8/30 with 8 mm/*0.32 in.* finger pitch and 30 mm/*1.18 in.* finger length

Die-cutting head 10/120 with 10 mm/*0.4 in.* finger pitch and 120 mm/*4.72 in*. finger length

Spare cutting blades for cutting head 8/30

Spare cutting blades for cutting head 10/120

1.4 Ordering of accessories/spare parts

Spare parts and accessories can be ordered directly from the manufacturer.

Address:

Habasit Italiana S.p.A.
Via A. Meucci 8, Zona Industriale
I-31029 Vittorio Veneto/TV
Tel. ++39 438 91 13
Fax ++39 438 91 2374

Please accurately describe the parts required.
State the numbers according to Section 8, Drawings.

WARNING	The use of parts by other manufacturers not meeting Habasit specifications is not admissible. Habasit declines all responsibility for the consequences if non-Habasit parts are used.

1.5 Warranty

All tools undergo a strict final inspection. On the assumption of correct handling, they are warranted against material and manufacturing defects for 2 years.

1.6 Technical advice

Our specialists will be pleased to advise you. For technical questions concerning function and condition of the Flexproof-Cutter, please contact the manufacturer (Section 1.4).

2. Mode of operation

The preparing device (die-cutting machine) operates by the sequential step method with pneumatic actuation.

The belt/tape is clamped to the cutting table (14) with 2 pneumatically actuated clamping bars (13).
The die-cutting head (23) on the threaded spindle is manually shifted one punching pitch by means of a crank (5) with indexing device (4) and positioned for the following die-cutting step.

The exchangeable die-cutting head (23) is equipped with two cutting blades (21) which are protected by the holding down bracket (22) when the machine is not in operation. During the punching operation, the holding down bracket (22) holds the belt/tape firmly on the cutting pad (17).

As cutting pad (17) a hard plastic plate is used.

The machine frame has a slit on each side which allows to process belts/tapes over 600 mm/*24 in.* wide.

For safety reasons, the die-cutting head (23) is cased with a hood (11) to protect it against accidental manipulation.

WARNING	Never operate the die-cutting machine without the protecting hood (11) in place → danger of injury!

3. Initial start-up

- ❑ For safe operation, place the Flexproof-Cutter AF-603 on a solid workbench or table.
- ❑ Attach the cutting support with screws to the workbench/table when the tool is used in stationary operation.
- ❑ Connect compressed-air hose to nozzle (6) and secure with clip.
- ❑ Use only dry, oiled or unoiled compressed air.
- ❑ Open compressed air valve (7), die-cutting head (23) will rise in the upper position.
- ❑ Set air pressure with control knob to 5 bar/*72.5 psi* at pressure gauge (1).
- ❑ Check if cutting pad (17) is in place and secured with set screw (12) to prevent shifting.
- ❑ Mount appropriate die-cutting head (23) according to the desired cutting pattern. See 5.2 "Exchange of the die-cutting head".
- ❑ Set indexing device (4) to the corresponding cutting head finger pitch 8 mm/*0.32 in.* or 10 mm/*0.4 in.* (20 mm/*0.8 in.* = 2 crank rotations on 10 mm/*0.4 in.* setting). Loosen knurled screw (3), press index lever (2) against machine frame and slide it to the desired punching pitch setting, rotate crank (5) until index lever (2) snaps in, then tighten knurled screw (3).
- ❑ By pressing index lever (2) against machine frame and simultaneously turning crank (5) counterclockwise, move punching carriage (18) completely to the right side. Release index lever (2) and turn crank (5) clockwise until index lever (2) snaps in.
- ❑ This is the starting position of the punching carriage.
- ❑ Lift clamping bars (13) with clamping device switch (8).
- ❑ Check to make sure that the surface of the cutting pad where the belts/tapes are to be cut is clean.
- ❑ Check sharpness of the cutting blades.

4. Die-cutting of belt/tape ends

Process: Flexproof guidelines and individual product datasheets

4.1 Die-cutting of belts/tapes up to 600 mm/*24 in.* width

- ❑ Set the right-hand stops (10) in the front and rear to the 0-point on the mm-scale (16) and lock them.
- ❑ Lead belt/tape through under the clamping bars (13) and place it flush with the right-hand stops (10), slide left-hand stops (15) flush with the left side of belt/tape and lock them so that belt/tape is sidewise guided.

INDICATION	Watch for good alignment. Otherwise the fingers of the cut belt/tape ends might not match properly.

- ❑ Lower clamping bars (13) with clamping device switch (8), belt/tape is now fixed on the cutting table (14).

CAUTION	While lowering the clamping device, hold belt/tape only outside of the clamping bars (13) → danger of pinching.

- ❑ Press push-button (9), the first cutting operation is effected. Press push-button (9) only until the cutting blades (21) have completely pierced the product, to avoid excessive wear of the cutting pad (17).

INDICATION	The cutting operation can only be implemented when the index lever (2) is snapped in.

- ❑ Shift die-cutting head (23) by one finger pitch <u>to the left side</u> by turning crank (5) <u>clockwise</u> to the next snapping in, without actuating index lever (2). Press push-button (9), the second cutting operation is effected.

INDICATION	Vigorous turning of the crank (5) can unlatch the index lever (2).

- ❑ Repeat the shifting of the die-cutting head (23) to the left and the cutting operation as often as required until the entire width of the belt/tape is completely die-cut.
- ❑ Lift clamping bars (13) with clamping device switch (8).
- ❑ Lead belt/tape to the desired length through the die-cutting machine.

INDICATION	Do not turn the belt/tape for the second Flexproof cutting operation. Otherwise the cut fingers of both ends will not match! Check that the upper belt/tape side is always the same!

- ❑ Lower clamping bars (13) with clamping device switch (8).

- ❑ Press push-button (9), the first cutting operation on the left side is effected.
- ❑ Shift die-cutting head (23) by one finger pitch to the right side by turning crank (5) counterclockwise to the next snapping in without actuating index lever (2). Press push-button (9), the second cutting operation is effected.
- ❑ Repeat the shifting of the die-cutting head (23) to the right side and the cutting operation as often as required until the entire width of the belt/tape is completely die-cut.
- ❑ Lift clamping bars (13) with clamping device switch (8).
- ❑ Remove belt/tape from die-cutting machine.
- ❑ Close compressed air valve (7).

4.2 Die-cutting of belts/tapes over 600 mm/*24 in.* width

For the die-cutting of belts/tapes wider than 600 mm/*24 in.*, they have to be exactly cut at right angles to the required length.

The processing length consists of endless belt/tape length + 198 mm/*7.8 in.*

4.2.1 Die-cutting of the (already cut to length) first belt/tape end

- ❑ Move punching carriage (18) to the starting position on the right side.
- ❑ Set the front right-hand stop (10) to the 0-point on the mm-scale (16) and lock it.
- ❑ Set the rear right-hand stop (10) to 50 mm on the mm-scale (16) and lock it.
- ❑ Remove (detach) the front left-hand stop (15).
- ❑ Set the rear left-hand stop (15) to 600 mm on the mm-scale (16) and lock it.
- ❑ Cover cutting pad (17) with masking (tape wider than finger length).
- ❑ Slide the first end of belt/tape, with running side facing down, under the clamping bars (13) and in the left-hand slit against the rear stops (10) and (15) and sideways against the front right-hand stop (10).
- ❑ Lower clamping bars (13).
- ❑ Die-cut belt/tape from right to left to the maximum possible width as described under 4.1.
- ❑ Lift clamping bars (13).
- ❑ Remove belt/tape from die-cutting machine, separate die-cut fingers and cut off residual strip.
- ❑ Remove (detach) the front right-hand stop (10).

- ❑ Slide left side of the first end of belt/tape which is not yet die-cut under the clamping bars (13) and in the right-hand slit against the rear stops (10) and (15), so that on the right side at least two cutting impressions on the masking tape are still visible. Align already cut and freed fingers exactly with the visible cutting impressions.
- ❑ Lower clamping bars (13).
- ❑ By pressing index lever (2) against machine frame and simultaneously turning crank (5) counterclockwise, move punching carriage (18) to the right side until the die-cutting head (23) has passed the last die-cut in the belt/tape. Index lever (2) has to snap in.
- ❑ Complete die-cutting of belt/tape from right to left, as described under 4.1.
- ❑ Lift clamping bars (13).
- ❑ Remove belt/tape from die-cutting machine.
- ❑ With tapes wider than 1100 mm/*44 in.*, the preceding cutting process has to be repeated.
- ❑ Remove masking tape from cutting pad (17).

4.2.2 Die-cutting of the (already cut to length) second belt/tape end

- ❑ Move punching carriage (18) to the starting position on the right side.
- ❑ Reinstall the front right-hand stop (10) and set it a half punching pitch to the left of the 0-point on the mm-scale (16) and lock it.
- ❑ Cover punching pad (17) with masking tape (wider than finger length).
- ❑ Slide second end of belt/tape, with running side facing down, under the clamping bars (13) and in the left-hand slit against the rear stops (10) and (15) and sideways against the front right-hand stop (10).
- ❑ Lower clamping bars (13).
- ❑ Die-cut belt/tape as described under 4.2.1.
- ❑ Remove belt/tape from die-cutting machine.
- ❑ Remove masking tape from cutting pad (17).
- ❑ Reinstall the front right-hand stop (10).
- ❑ Reinstall the front left-hand stop (15).
- ❑ Close compressed air valve (7).

5. Service

5.1 Maintenance

- ❑ Keep the cutting pad clean at all times. Clean it regularly and remove material residues.
- ❑ Check the cutting blades periodically for their sharpness and replace with the correct type if necessary.
- ❑ Slightly lubricate the threaded spindle and the indexing gears of the cutter with ball bearing grease at periodic intervals.

5.2 Exchange of the die-cutting head

- ❑ Close compressed air valve (7).
- ❑ Unscrew both socket head cap screws M5 (19) under the intermediate plate of the punching carriage (18) and remove protecting hood (11).
- ❑ Loosen both socket head cap screws M8 (20) on the die-cutting head retainer (24).
- ❑ Slide die-cutting head (23) to the right out of the retainer (24).
- ❑ Slide other die-cutting head (23) from the right into the retainer (24) against the stop, so that the smaller blade distance faces towards the front.
- ❑ Tighten both socket head cap screws M8 (20) on the die-cutting head retainer (24).
- ❑ Attach protecting hood (11) with both socket head cap screws M5 (19) to intermediate plate of punching carriage (18).

CAUTION	Always close compressed air valve (7) before exchanging the die-cutting head (23) → danger of injury.

5.3 Replacement of cutting blades

- ❑ Pull out the die-cutting head (23) from its guide.
- ❑ Dismount the holding down bracket (22) by removing the bolts. Be sure not to lose the springs and spacer rings.
- ❑ Remove the two screws on each side of the die-cutting head.
- ❑ Remove the cutting blades and the spacer plates between them.

WARNING	Handle cutting blades with special care. The blades can cause injury even if they are worn out.

- ❑ Insert new cutting blades and reassemble the head in reverse order.

CAUTION	Be sure not to damage blade edges.

6. Illustrations

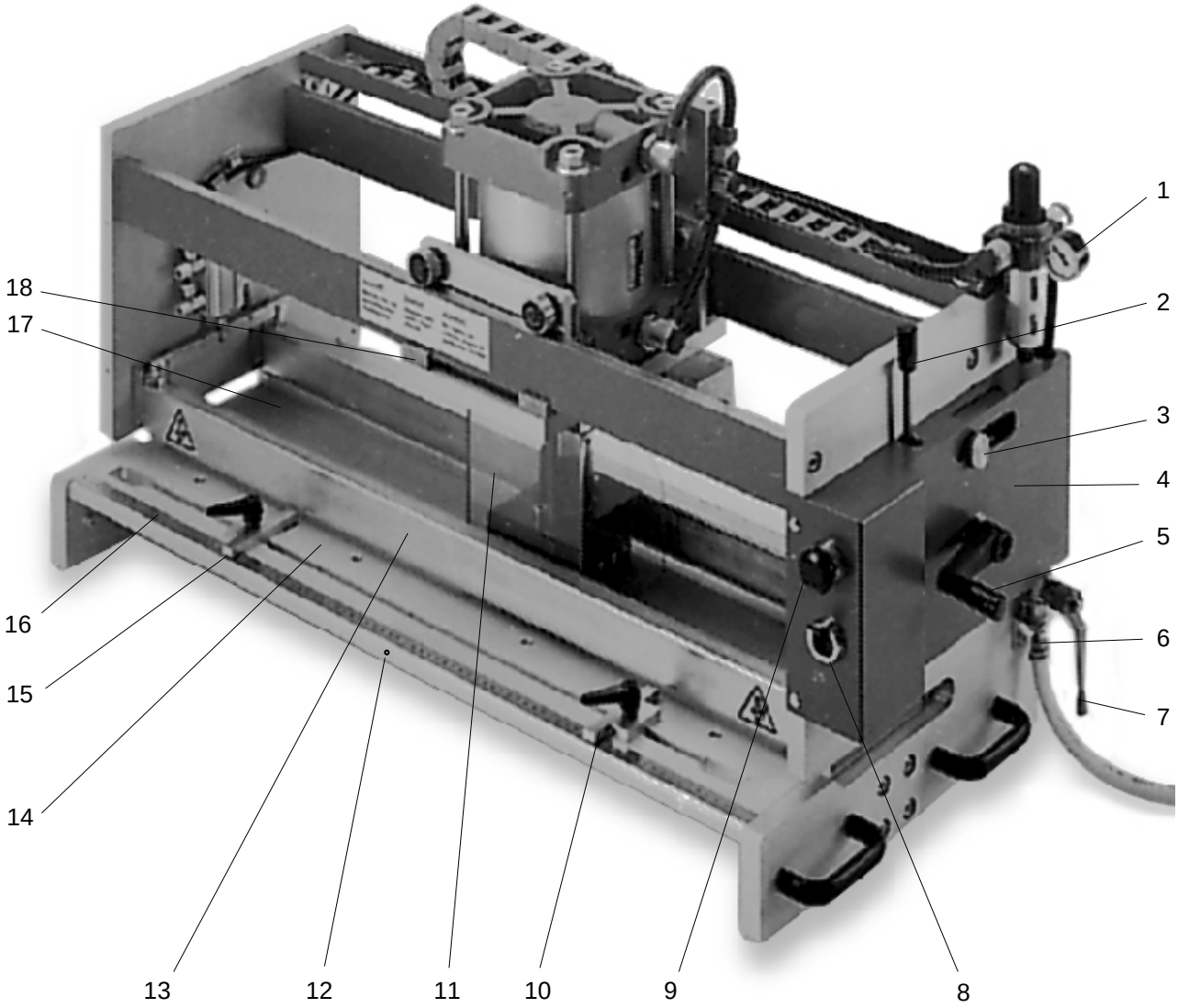


Illustration 1: Flexproof-Cutter AF-603

Legend:

1 Compressed air pressure gauge
2 Index lever
3 Knurled screw
4 Indexing device
5 Crank
6 Hose nozzle
7 Compressed air valve
8 Clamping device switch
9 Push-button (die-cutting)
10 Right-hand stop
11 Protecting hood
12 Setscrew
13 Clamping bar
14 Cutting table
15 Left-hand stop
16 Scale [mm]
17 Cutting pad
18 Punching carriage (intermediate plate)

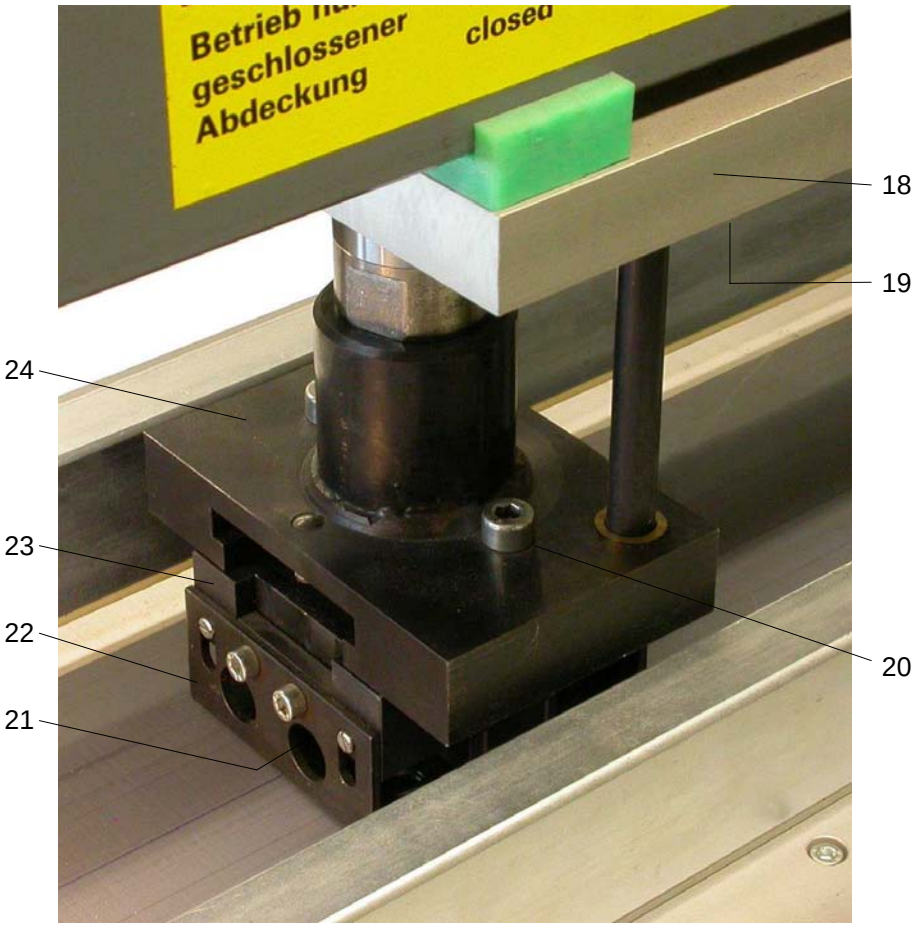


Illustration 2: Details die-cutting head AF-603

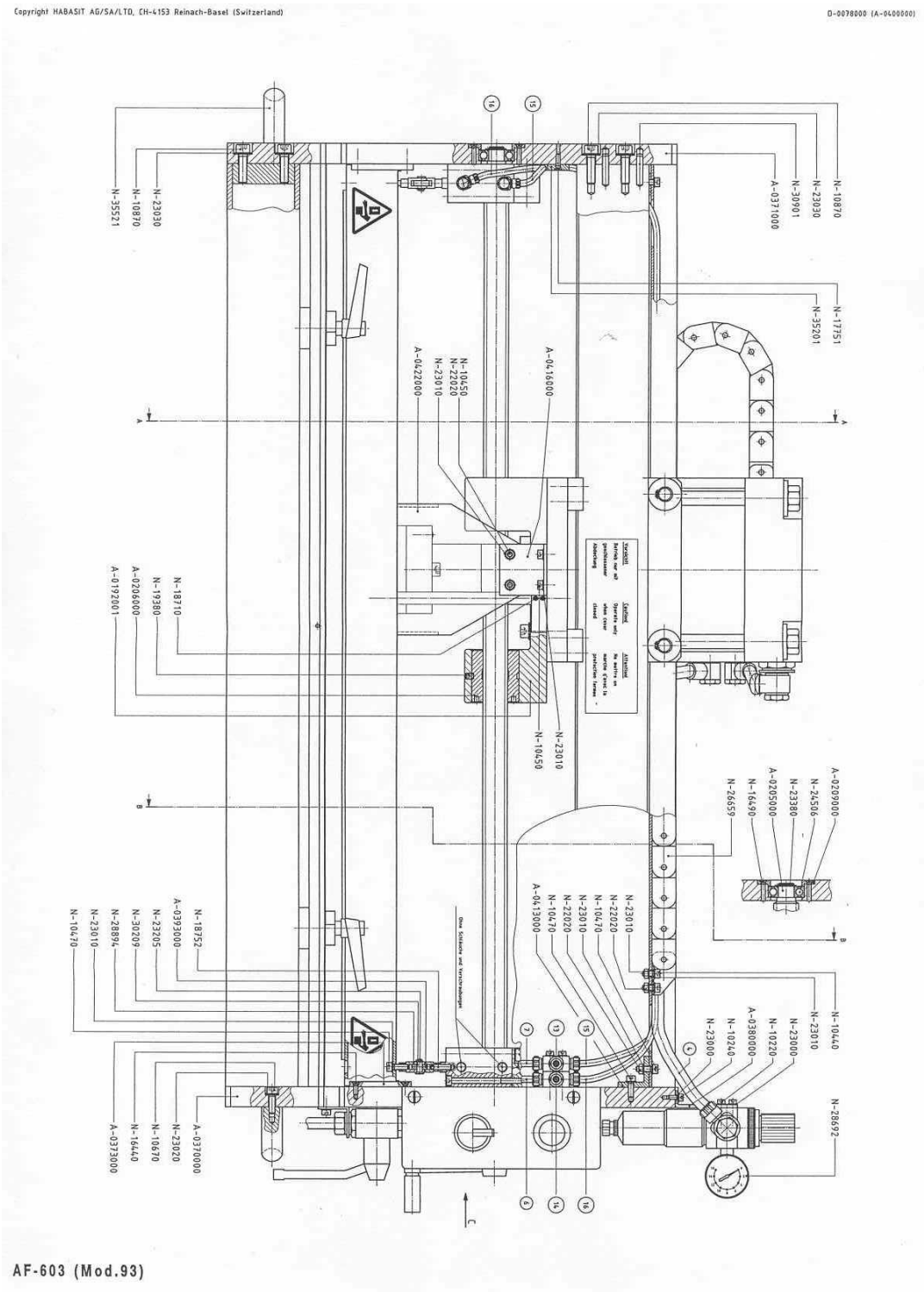
Legend:

18 Punching carriage (intermediate plate)
19 Socket head-screw M5
20 Socket head-screw M8
21 Cutting blades
22 Holding down bracket
23 Die-cutting head
24 Retainer

7. Technical data

Nominal belt/tape width [mm] *[in.]*	600	*24*
Max. belt/tape width (recommended) [mm] *[in.]*	1100	*44*
Max. belt/tape thickness [mm] *[in.]*	8	*0.32*
Max. compressed air pressure [bar] *[psi]*	6	*87*
Dimensions (L x W x H) [mm] *[in.]*	940 x 430 x 560	*37 x 17 x 22*
Net weight [kg] *[lbs.]*	85	*187*

8. Drawings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AF-603 (Mod.93)

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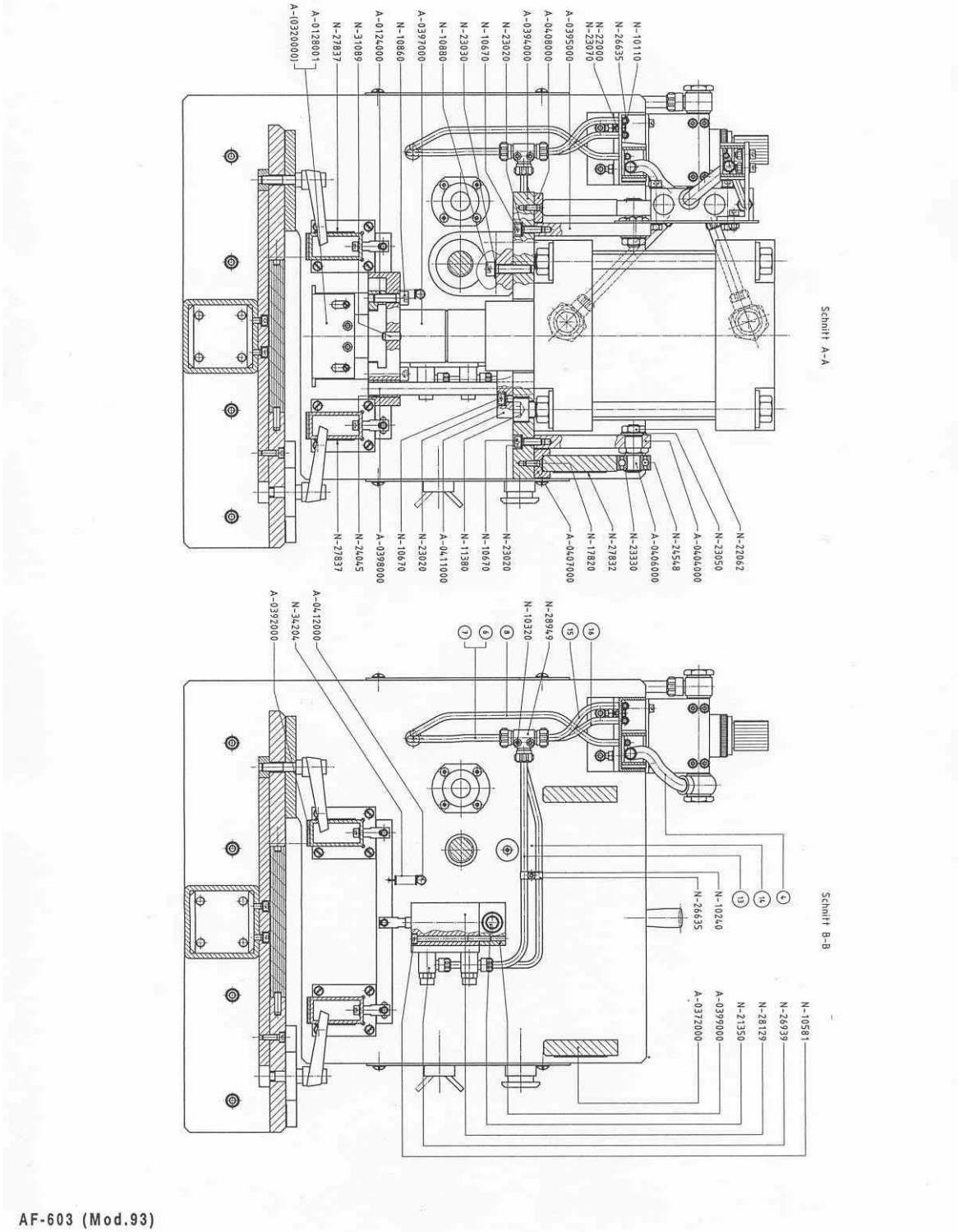

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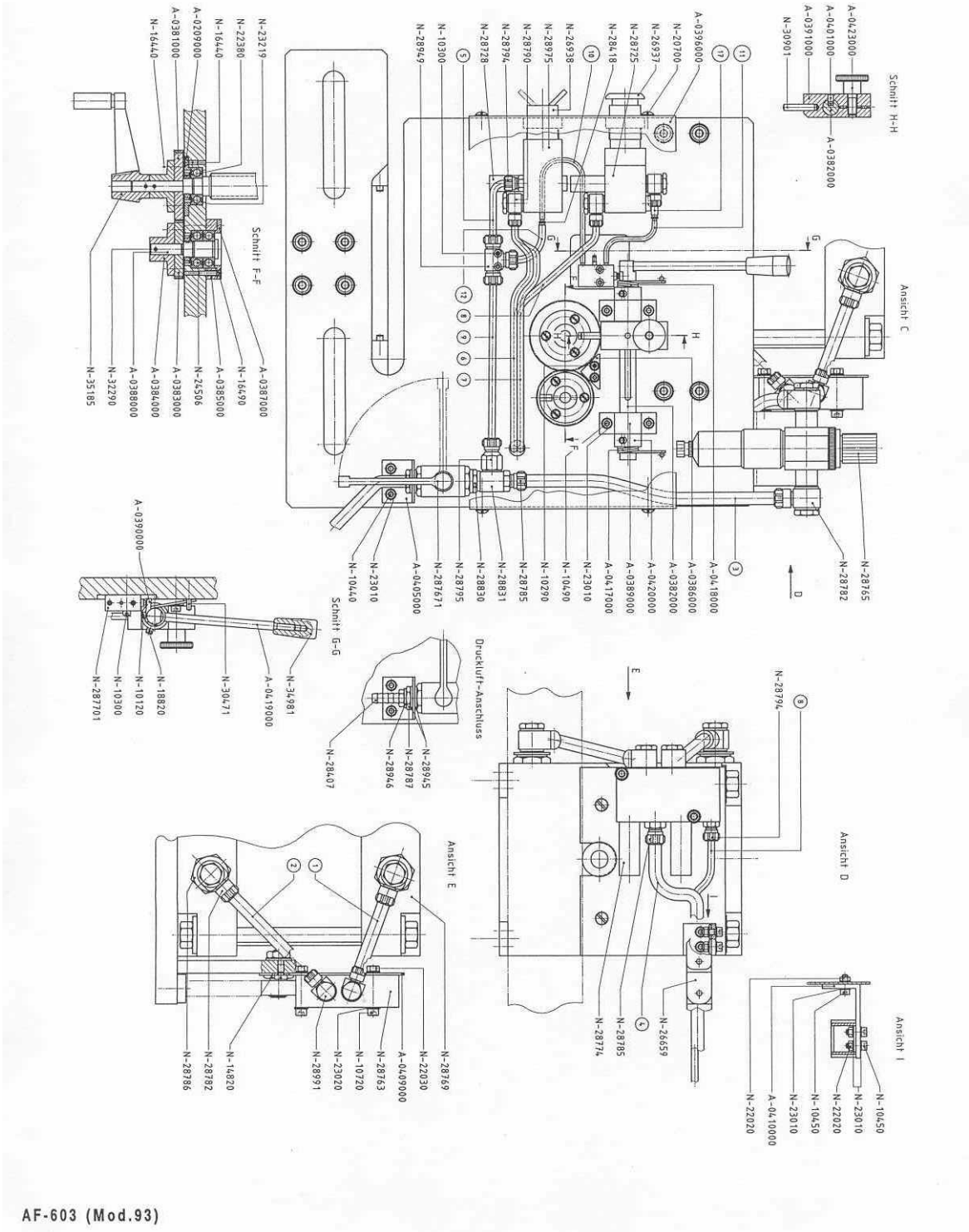

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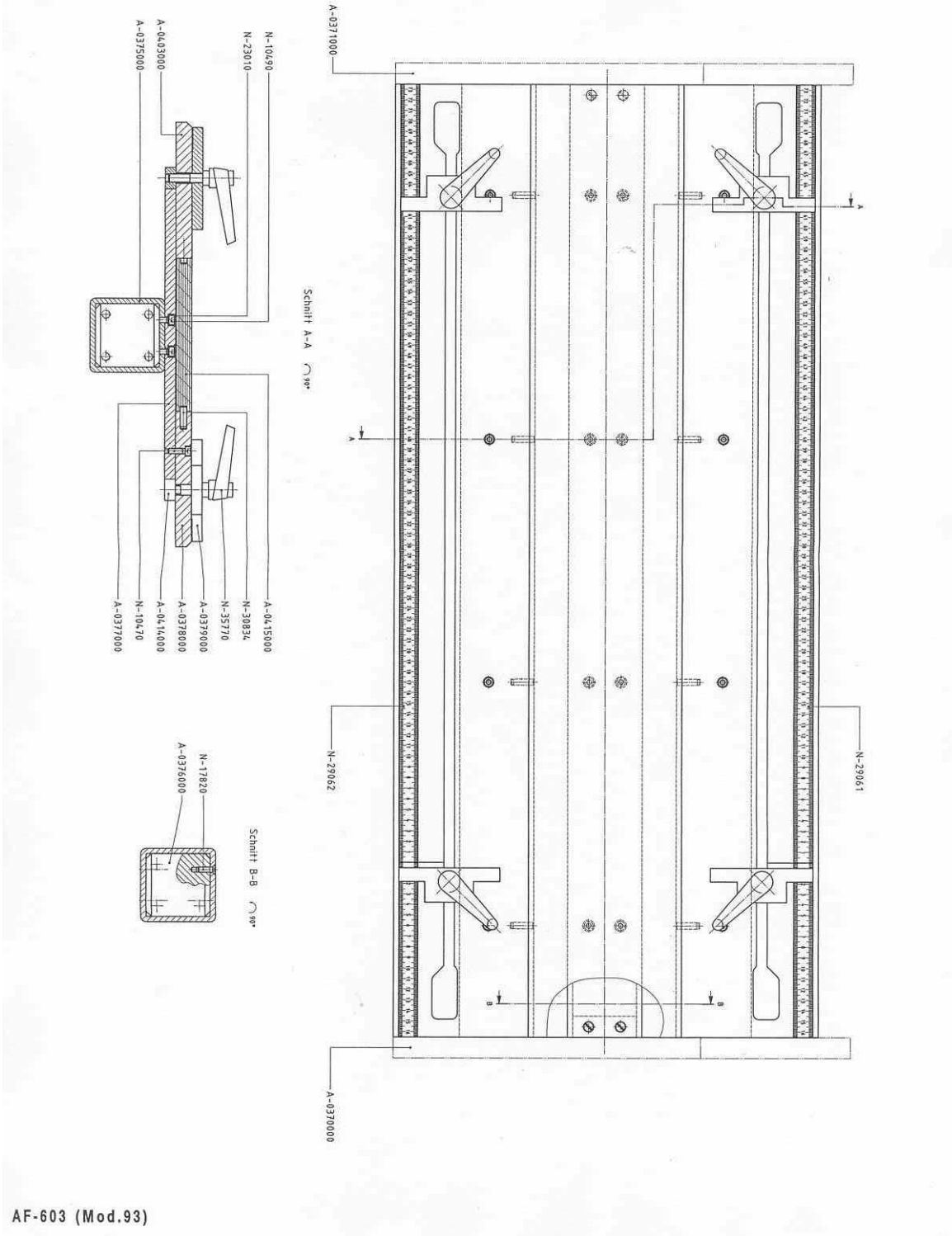

AF-603 (Mod.93)

Responsible persons: **A:** **Machine Operator**
B: **Maintenance Technician**

Work to be carried out (see operating instructions No. 3745 for further information and reference numbers)		**Performance periodically (monthly)**				**Spares number Evaluation criterion**
		Daily	**1**	**6**	**Remarks**	
1.	**Cleaning**					
1.1	Clean the Flexproof-cutter after use, remove residual matter	A				
1.2	Compressed air filter: drain condensate, clean filter. If necessary replace.		A			
2.	**Lubrication**					
2.1	Lubricate threaded spindle with ball bearing grease			B		
2.2	Lubricate indexing gears with ball bearing grease			B		
3.	**Wear parts**					
3.1	Check the cutting pad (17) for wear. If necessary turn on other side or replace it.		A			
3.2	Check cutting blades (21) in the die-cutting head for wear. If necessary replace them. See operating instructions 3745, Section 5.3		A			
4.	**Checking**					
4.1	Check pneumatic system for leaks. If necessary eliminate them.			B		

Remarks and notes:

Report sheet preventative maintenance

Flexproof-Cutter AF-603

Machine type:

Machine no.: **Date of first placing in operation:**

Actions to be performed – see checklist (daily work not recorded)	Next Check	Performed Initials	Performed Date	Next Check	Performed Initials	Performed Date	Next Check	Performed Initials	Performed Date	Next Check	Performed Initials	Performed Date
1.2 Compressed air filter												
2.1 Threaded spindle												
2.2 Indexing gears												
3.1 Cutting pad												
3.2 Cutting blades												
4.1 Pneumatic system												

Observations, repairs:

Product liability, application considerations

If the proper selection and application of Habasit products are not recommended by an authorized Habasit sales specialist, the selection and application of Habasit products, including the related area of product safety, are the responsibility of the customer.
All indications / information are recommendations and believed to be reliable, but no representations, guarantees, or warranties of any kind are made as to their accuracy or suitability for particular applications. The data provided herein are based on laboratory work with small-scale test equipment, running at standard conditions, and do not necessarily match product performance in industrial use. New knowledge and experiences can lead to modifications and changes within a short time without prior notice.

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