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OPERATING INSTRUCTIONS

Woodworking Machine

Model	KM 42
Serial No.	11 111
Year of construction	1989

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Subject to alterations in design and measurements.

GENERAL INFORMATION

Storage of Equipment

Knife heads as well as operating tools for assembly are supplied along with the planer.

In order to ensure that the operating tools will function properly, they should always be cleaned prior to being put away, and if they have bare metal parts, they should be oiled as well. Special tools, as for example those used for disassembly of the knife heads or the precision straight-edge, should be protected from jarring.

Knife heads should always be stored on wooden supports if possible. Secure knife heads which have been disassembled to stop them rolling off the support surface. The knife heads should always be grasped at the ends if possible or thick, non-slip padding should at least be used.

Safety measures at work

The planer is equipped with safety devices. When these devices are disassembled or put out of operation, the safety of the machine can no longer be guaranteed.

When tools are exchanged or when faults are remedied or maintenance work carried out, the main switch should **always** be switched off.

When the tools are clamped, the locking device supplied should always be used. Before the motors are switched on, the clamping bolts should be tightened and check that the tools are positioned correctly.

The highest permissible speed of the tools should not be exceeded.

Prior to commissioning of the machine, all protective covers as, for example for belt and chain drives, should be properly mounted.

Ragged or warped saw blades should not be used.

Rebound protections must be used when mouldings with cut-out strips are produced.

Rebound protections must be used when several saw blades are used on one tool shaft (grip rebound protections, splinter protection).

Blunt knives increase the risk of rebound. Proper functioning of the rebound protection has to be checked at regular intervals. When this is done it should be ensured that the edges of the grips are sharp.

Sound Emission

Depending on the local situation, noise emission from this machine without acoustic insulation can exceed 100 dBA.

The most effective way of reducing sound emission of planers is to install an appropriate sound-proofing cabin. This is generally recommended and offered by Kupfermühle.
When the cabin is properly mounted and closed, sound will be reduced to approx. 85 dBA.

At the same time, the sound-proofing cabin has important safety functions. When this equipment is not used this will always be at the risk of the user.



I N D E X

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1. PRODUCT

KUPFERMÜHLE Compact Combination Model *KM 42*
module design

1.1. Technical Data

1.1.1 Basic Machine



without own feed drive

Planing width	420 mm
Planing height	250 mm
Working height, constant	800 mm
Chip removal, bottom	up to 15 mm
Chip removal, top	up to 20 mm
2 horizontal working spindles with cutting circle diam.	180 mm

with 4 up to 8 knives, as built-in cutterblocks,
At design with cutterheads with cone or hydro clamping the counter bearings are removable.
Thickness adjustment by means of a motor driven angular gear and 4 hard-chrome plated lifting columns.
Top part height adjustable.
Reading of the planing thickness by means of precision divided scale with vernier and magnifier.
Machine table has interchangeable, wear-resisting table tops, on request hard-chrome plated.



with own feed drive

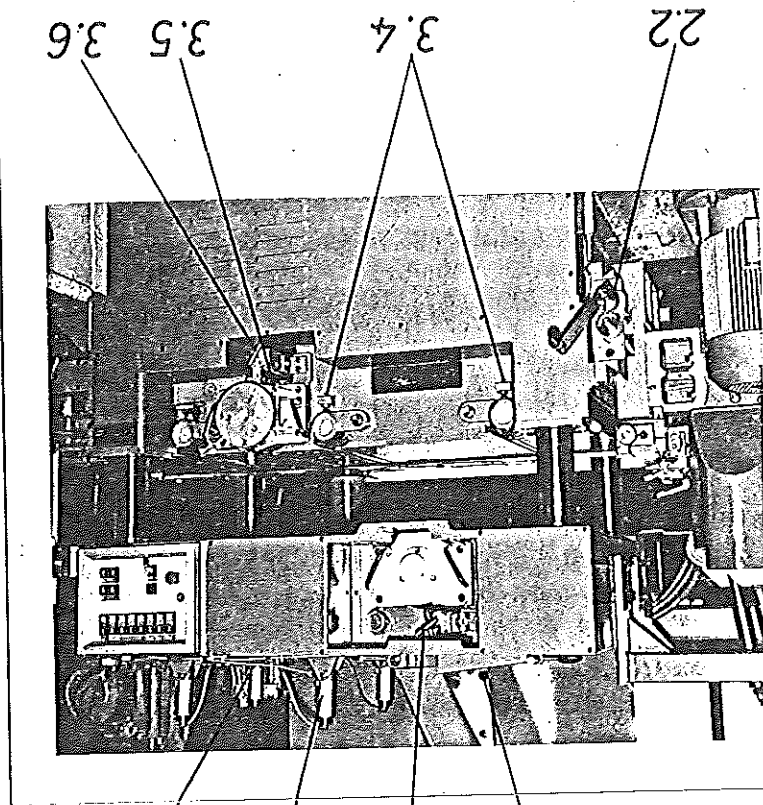
Feed infinitely variable from 7-42 m/min.
Feed drive by means of infinitely variable gear,
Duplex chains in a sealed gear box.
7 transport rollers driven, 3 of them in the table and 4 in the top part.
All rollers in front of the top cutterblock fluted.
All top rollers on request with plastic coating.
1st big infeed roller pneumatically resilient and with pneumatical lifting.
1st table roller fluted on request.

1.1.2. Electrical equipment see electrical documentation

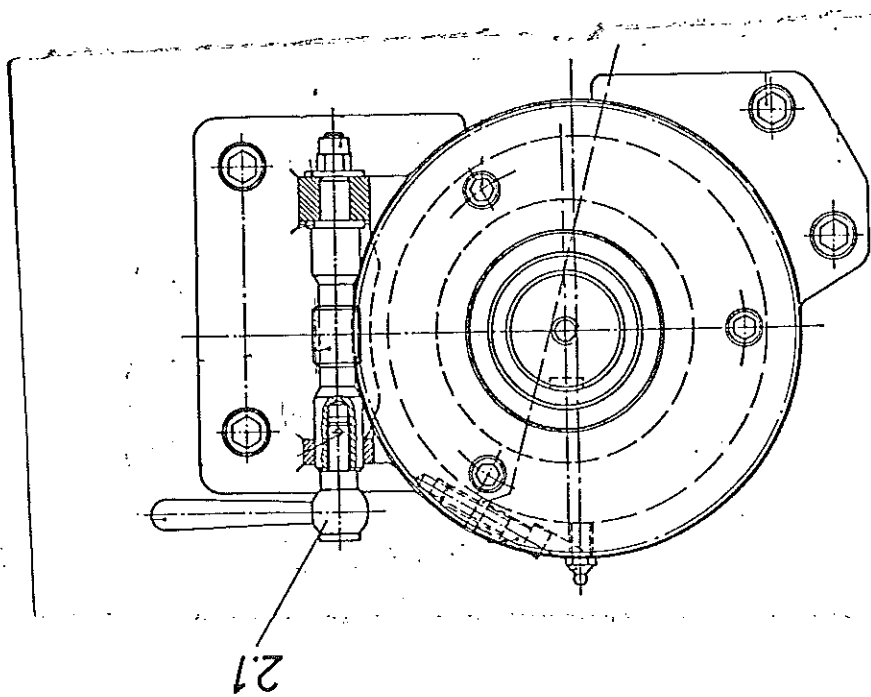
1.1.3. Dimensions, Weight

Suction connection for top cutterblock	∅ 200 mm
Suction connection for bottom cutterblock	∅ 160 mm
Suction connection for splinters on rip saw	∅ 160 mm
Suction connection for rip saw	∅ 200 mm
Total length of the machine approx.	3450 mm
Total width of the machine approx.	2200 mm
Total height of the machine approx..	max. 2140 mm
Net weight of the machine approx.	6000 kg





3.3
3.6
3.2
3.1



DESCRIPTION OF OPERATING DEVICES

- Item 1.1 Lever for bottom chip removal adjustment
- Item 1.2 Scale for read out of bottom chip removal
- Item 1.3 Magnifier for reading the adjusted thickness
- Item 1.4 Pressure controller for 1st top infeed roller
- Item 1.5 Cylinder for pneumatical resilience of the 1st top infeed roller
- Item 1.6 1st top feed roller in operating position (lever to right-hand)
1st top infeed roller lifted (lever to left-hand)
- Item 1.7 Control panel
- Item 1.8 Emergency OFF switch
- Item 1.9 Cutter head adjustment left-hand bottom
- Item 2.1 Cutter head adjustment right-hand bottom
- Item 2.2 Lateral adjustment of vertical units
- Item 3.1 Set screw for surfacing roller pressure or pressure shoes resp.
- Item 3.2 Set screw for spring loaded 2nd top feed roller
- Item 3.3 Set screw for spring loaded 3rd top feed roller
- Item 3.4 Set screws for table roller adjustment
- Item 3.5 Cutter head adjustment left-hand bottom
- Item 3.6 Tie rod for knife equalizing and jointing attachment

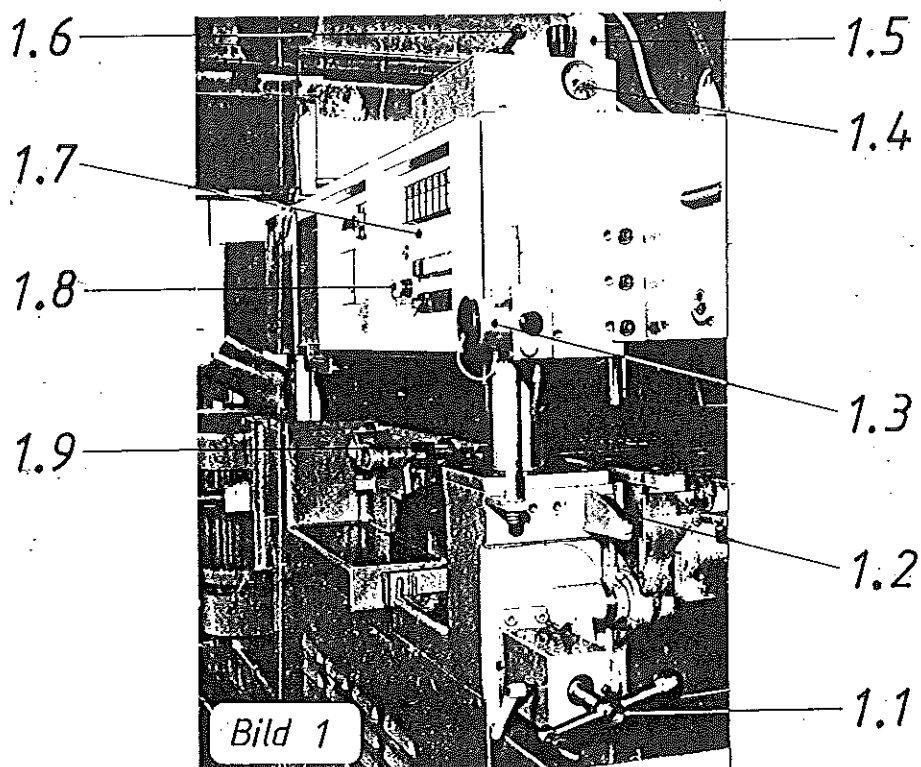


Bild 1

Putting in Operation

Important Instructions:

Cutter Heads with Hydraulic Clamping

Before starting:

- 1.1. Control 2 to 3 times a week the grease pressure in the cutter heads (see sheet 7 of page 2).
- 1.2. The pressure should have 350 to 450 bar.

Pressure Bar

- 2.1 If more than 7 mm chip removal with the top cutter block:
Take off the locking device of the compressed air cylinder for the sectionated pressure bar.
- 2.2 Removal and mounting of the pressure sections on maintenance.
 - 2.2.1 The fastening screws for the pressure sections have glue application (Loctite Drilloc middle stiff).
Use the same screws only two times for mounting.
The glue application is subject to wear during screwing.
Falling down sections caused by means of loosened screws cause bad damages on the running cutter heads.

NEFF Screw Jacks

Trial Run: Before commissioning it is also advisable to carry out a trial run without load.

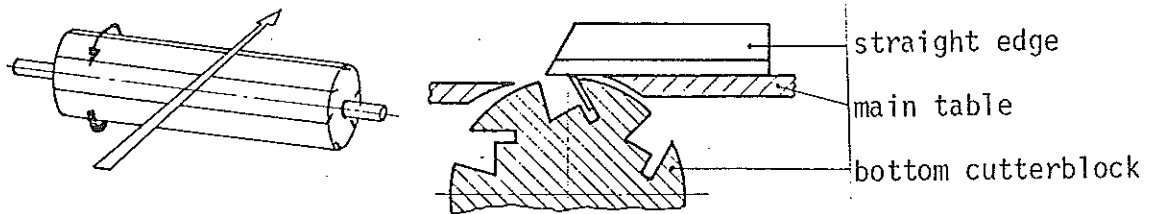
Note: In order to prevent premature wear, please ensure that the speeds, loads, and duty cycles quoted for the Screw Jacks in question are not exceeded, even for short periods: Non-compliance with our recommendations will invalidate all warranty claims.

Safety: After approximately 200 – 300 working hours the wear of the nut (and worm wheel) should be investigated, by measuring the backlash. If the axial play on a single-start screw is more than 1/4 of the pitch, then the nut (worm wheel) should be replaced.

Maintenance: After a short initial period of operation all the fixing screws should be checked (tightened).

SET UP AND OPERATING

Surfacing (planing the bottom surface)



ADJUSTMENT OF THE BOTTOM CUTTERBLOCK

1. Check all knives of the bottom cutterblock (description on leaf 8: Knife setting)
2. Line up the knife cutting circle exactly with the surface of the main table
The position of the adjustment device can be seen from leaf 8
3. Set the straight edge on main table and cutterblock
4. Turn the cutterblock slowly backwards
5. With accurate setting the knives will touch the straight edge slightly but will not lift it

- SURFACE PRESSURE:
1. With low pressure on the workpieces a good rectlineality will be achieved
 2. with higher pressure a better surface will be the result

ATTENTION! High pressure will drag the feed !

GRINDING THE KNIVES IN THE BOTTOM CUTTERBLOCK

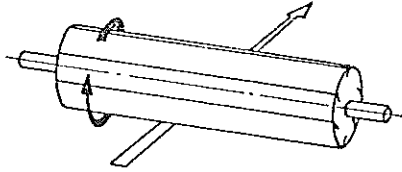
See operating instructions of the knife setting and grinding unit!

EQUALIZING

1. Operate the jointer with the tie rod (picture 4, leaf 3)
2. After grinding and jointing re-set the cutterblock by using the straight edge as mentioned above

SET-UP AND OPERATING

Thicknessing (planing the top surface)



ADJUSTMENT OF THE TOP CUTTERBLOCK

1. Check all knives of the top cutterblock (Description on leaf 8: inserting of knives).
2. The cutterblock is set parallel to the main table on delivery.

GRINDING THE KNIVES IN THE TOP CUTTERBLOCK

See operating instructions of the knife setting and grinding unit!

EQUALIZING

Operate the jointer with the tie rod (picture 4, leaf 3).

SECTIONATED PRESSURE BAR

1. Check by visual inspection whether the sectionated pressure bar is dirty.
2. For cleaning tilt up the sectionated pressure bar.
3. After cleaning oil the sections slightly.
4. Tilt back the sectionated pressure bar to working position.

SET-UP AND OPERATING

Feeding in

Accurate feeding prevails the quality

Watch the following instructions:

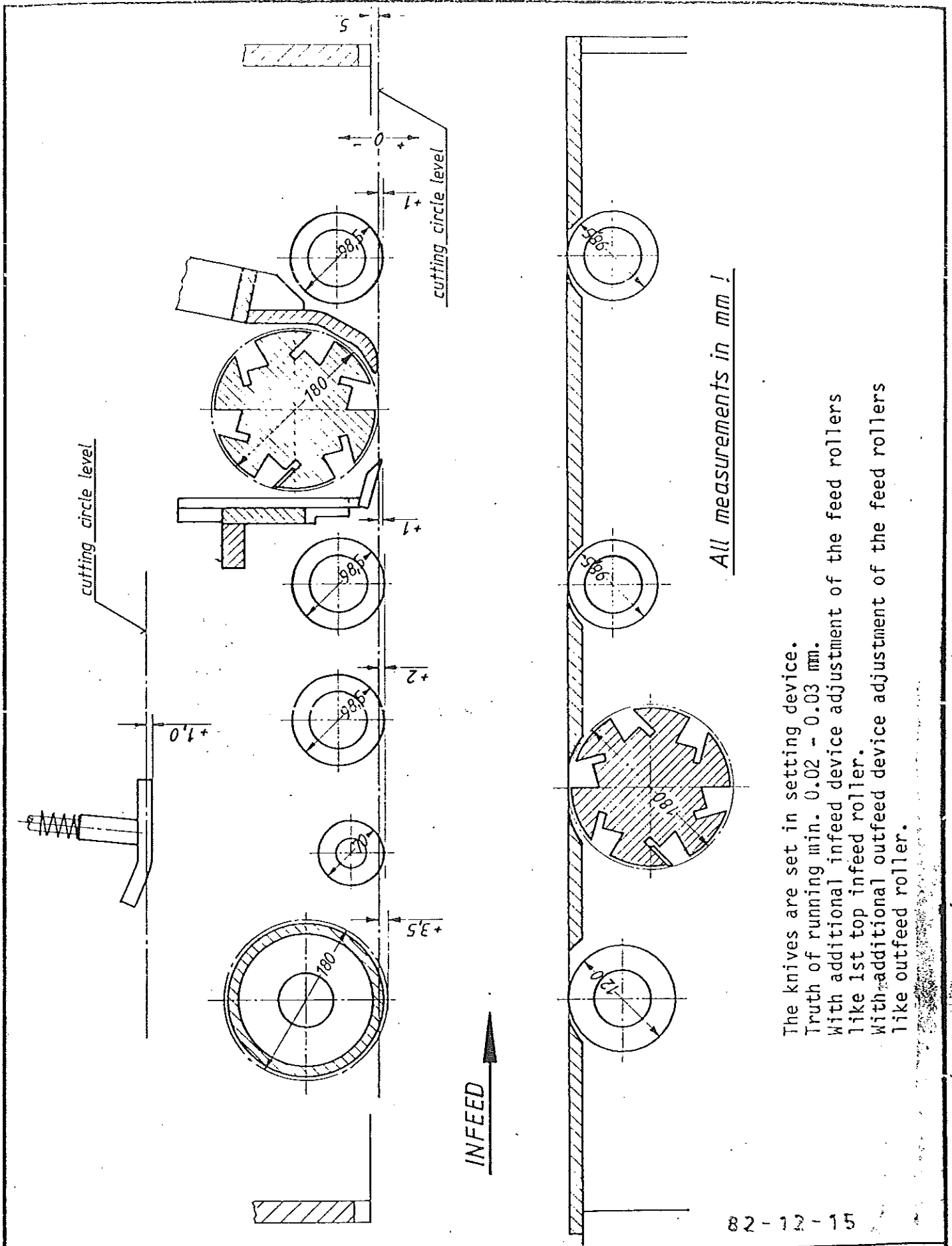
1. Put the hollow side of the rough pieces on bottom, on the table or the fence guide, the convex side up.
2. Feed with the longer camber ahead and the shorter camber on the end. The front end of the piece drop into the opening for the bottom cutterblock and feed rollers when feeding the pieces opposite. In the latter case cut marks, also repeated, can be the result.
3. Feed butted to prevent too much up and down movement of the top feed rollers.
4. Too fast feed speed can lead to intervals in feeding.
5. Avoid drastic differences when feeding very thin pieces behind very thick pieces or opposite.

FEED

1. Always switch on the feed at last and switch off at first.


EMERGENCY OFF SWITCH

1. Push the emergency off switch in case of danger only.
2. Turn back the button in arrow direction.
3. With opened switch cabinet door the switches are out of order.

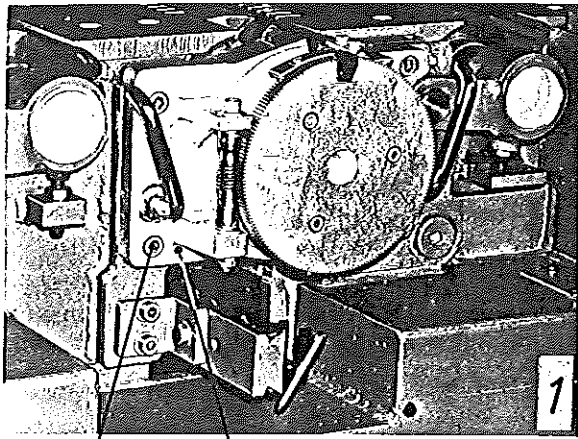


The knives are set in setting device.
 Truth of running min. 0.02 - 0.03 mm.
 With additional infeed device adjustment of the feed rollers like 1st top infeed roller.
 With additional outfeed device adjustment of the feed rollers like outfeed roller.

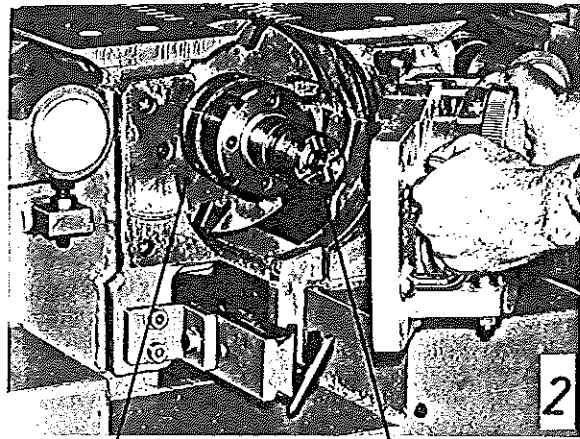
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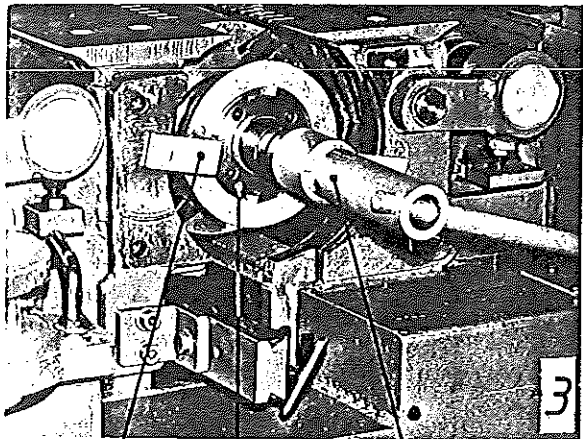
Abnehmen eines Messerkopfes (Konusspannung)
 Replacement of the top and bottom cutter head
 (cone clamping)



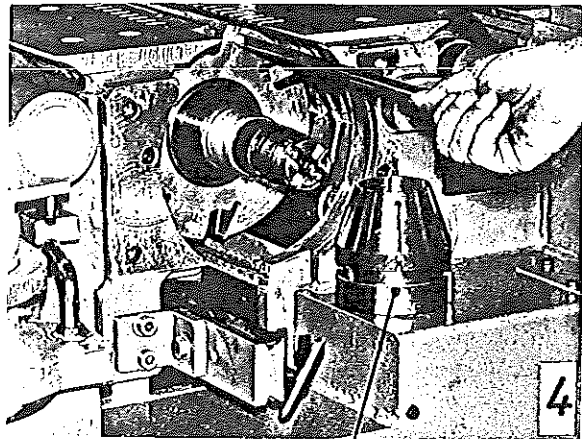
1.1 1.2



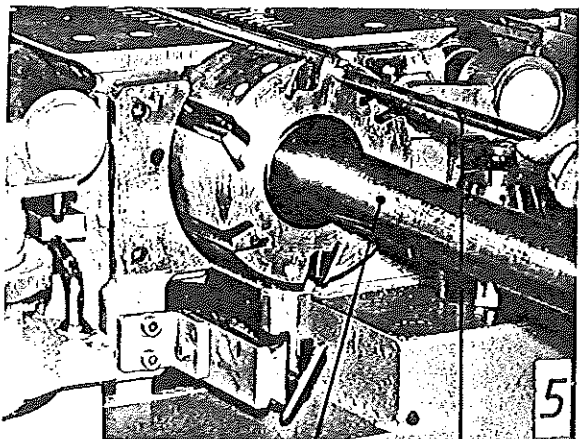
2.2 2.1



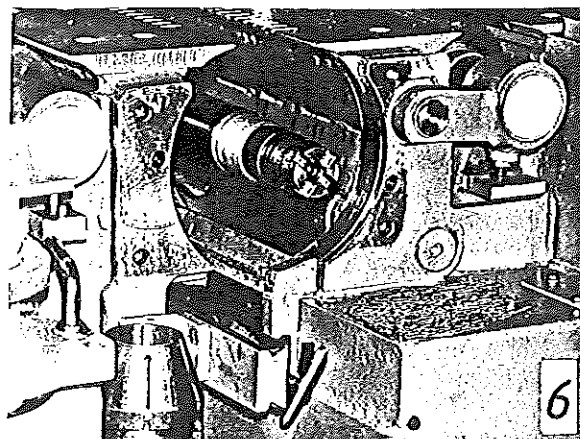
3.1 3.2 3.3



4.1



5.1 5.2



Replacement of the top and bottom cutter head

(cone clamping)

1. TAKE OUT OF A CUTTER HEAD

- 1.1 Untighten the fastening bolts item 1.1.
- 1.2 Pull the counter bearing item 1.2. from the spindle by means of the handle.
- 1.3 Set the clamping device item 3.1 on the spindle item 2.1. (The clamping devices have been marked "UM" for bottom cutter head, "OM" for top cutter head).
- 1.4 Untighten the collet chuck item 3.2. and 4.1 by means of socket spanner item 3.3 and unscrew them. (bottom cutter head left-hand thread, top cutter head right-hand thread).
- 1.5 Set the fitting pipe item 5.1. on spindle item 2.1.
- 1.6 Screw the full rod item 5.2. into the cutter head item 2.2.
- 1.7 Pull the cutter head item 2.2. onto the fitting pipe item 5.1. (picture 5).
- 1.8 Remove the fitting pipe item 5.1 with the cutter head item 2.2 from the spindle item 2.1.

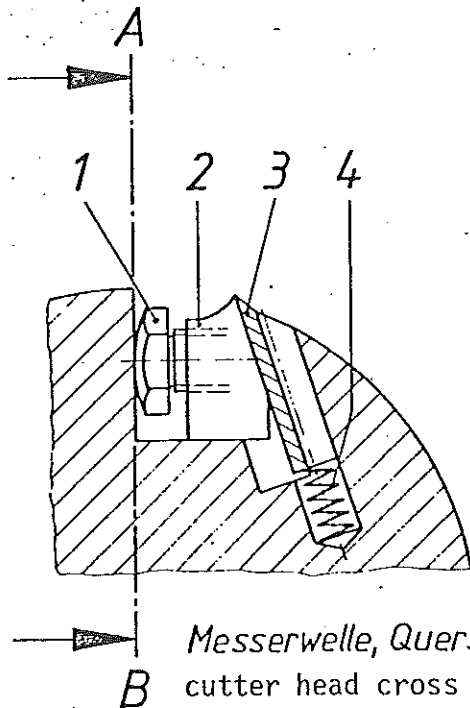
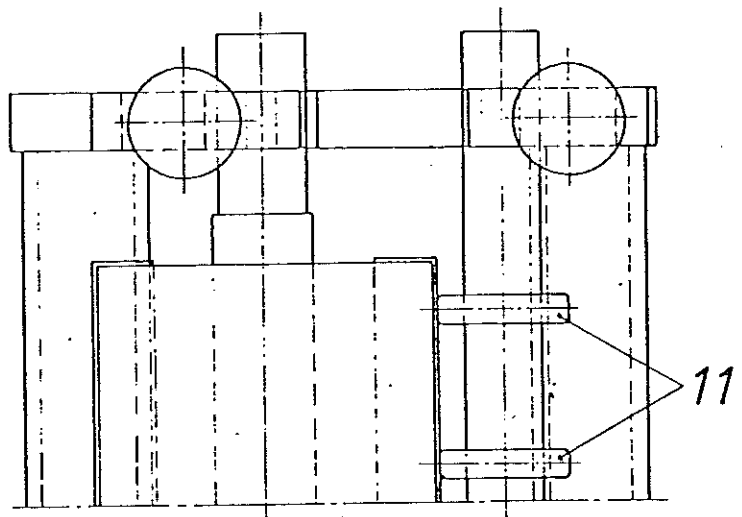
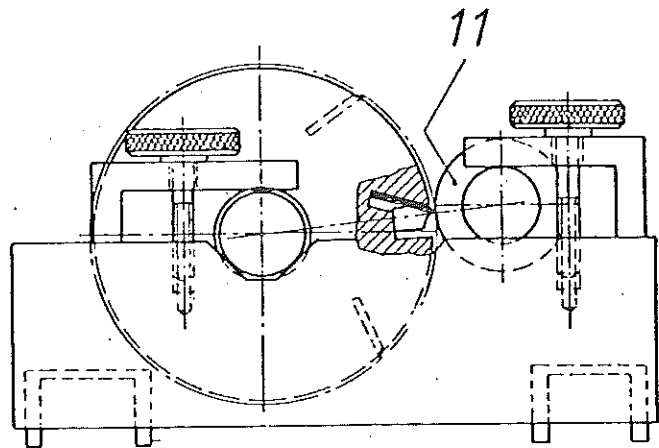
2. ATTACHMENT OF A CUTTER HEAD

- 2.1 Work in reverse sequence

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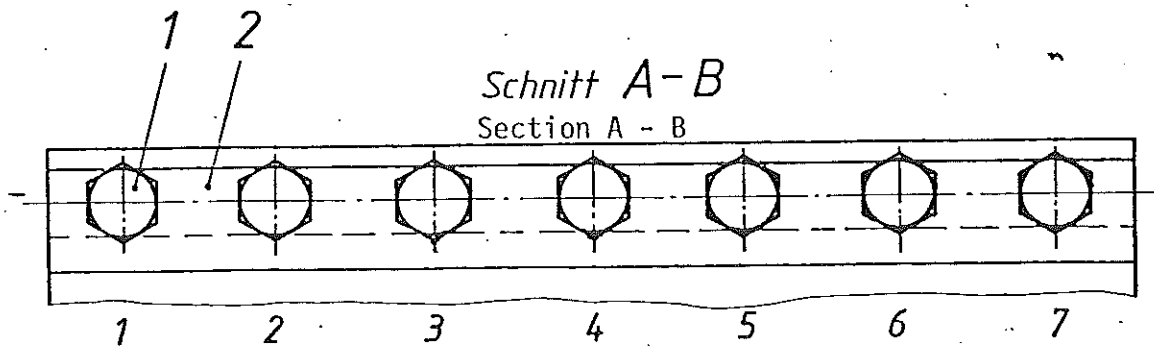
Messer - Einstellehre

Knife setting device



Messerwelle, Querschnitt
cutter head cross section

Einstellehre
setting device



Schnitt A-B
Section A - B

Sequence for tightening the pressure screws. part 1:
Reihenfolge zum Anziehen der Druckschrauben Teil 1: 4-5-3-6-2-7-1

INSERTING OF KNIVES

1. Screw the set screw part 1 into the clamping bars part 2
2. Put the springs part 4 into the holes
3. Insert the clamping bars
4. Unscrew the set screws so far that the knives can be inserted easily
5. Press the knives part 3 into the cutter head completely and then tighten with the set screws part 1
6. Place the cutter head in the knife setting device
7. Untighten the set screws part 1 so far that the knives can be shifted slightly
8. Turn the cutter head
It has to be watched that the knives will touch the ball bearings slightly when turning, to avoid any damage of the knife edge
9. Tighten the set screws part 1 as described below to avoid a fracture in the web or a potential accident
 - 9.1 Basically start with the center screw (No. 4). Tighten slightly the next screw right-hand (No. 5) and then the next screw left-hand (No. 3). Continue the sequence as described on figure 1, cross section A-B.
(Act like you do when setting a rim on the car).
Never start with screw No. 1 or No. 7.
 - 9.2 Turn the cutter head to the next slot. Tighten slightly the set screws part 1 also.
Tighten all clamping bars part 2 as described above (9.1)
 - 9.3 Repeat the sequence described with some more power.
Turn the cutter head further.
Tighten finally the set screws part 1.
This accuracy results in safe and perfect fit of the knife part 3.