

CITOBORMA 490

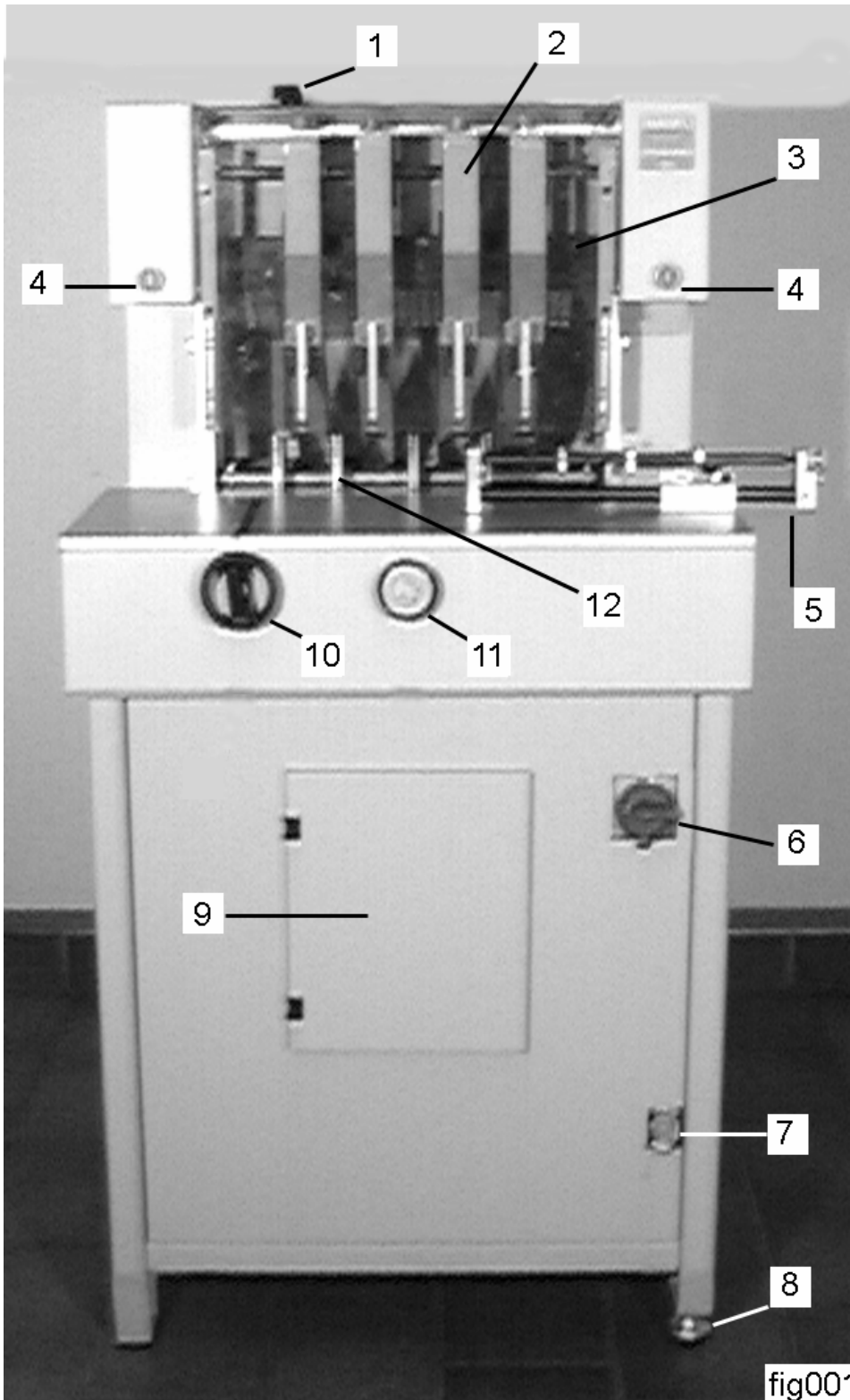
User manual

English

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General view



1. Speed switch

2. Drill head

3. Safety cover
The machine shuts off when opening the safety cover.

4. Two-hand release
Push the green release buttons simultaneously to cycle.

5. Side stop

6. Main switch
Emergency switch

7. Foot pedal socket

8. Levelling foot

9. Tool case

10. Back fence
handwheel

11. Table height
handwheel

12. Back fence

Safety and cautionary notes

Use original Nagel parts only for any repairs.

Unplug the power cord for any repairs.

Repairs and any other work on the drill should only be carried out by an approved service engineer.

Safety devices must not be taken off or disabled. Never operate the machine when damaged (damaged power cord etc.).

Drill paper and cardboard only.

Never reach into the working area when the table or drill bits are moving.

Install the power cord out of the way to avoid tripping over it.

Work place of the operator: in front of the machine.

Install the machine in a dry work shop.

Setting up

Set up machine on a firm, level surface facing the operator and plug in the mains plug.

Put the drill in place and level it with the levelling foot (8).

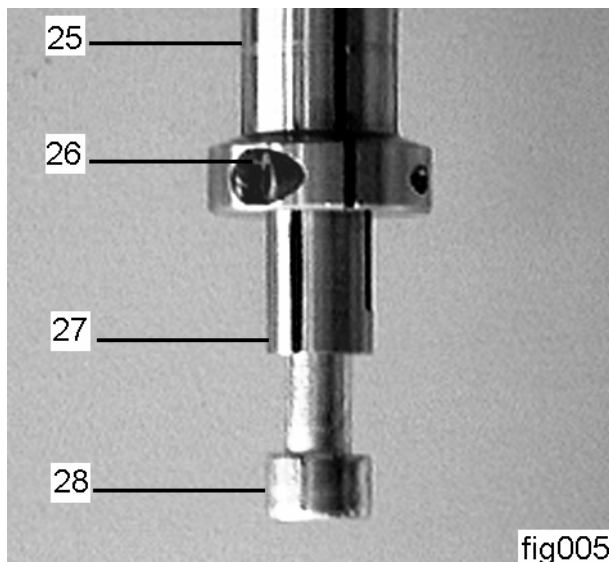
Sense of rotation of the drill bit motor

Check the sense of rotation of the drill bit motor before starting to work for the first time. If the drill bits turn opposite to the direction indicated by the arrow then switch the position of any two out of the three current wires in the three phase plug of the machine. But never touch the neutral wire (marked „N“) or the earth wire (yellow-green).

Drill bit diameters

Head	Drill-□ / mm
BK 32	2-9
BK 45	2-14
BK 125	15-35
Trio	2-6
Filofax	2-6
Filofax 6	2-6

Changing the drill bit and reducer (standard drill head 45mm wide only)

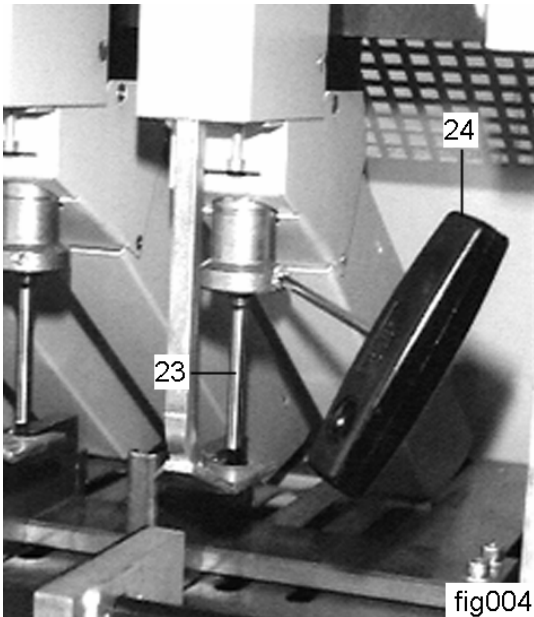


To take out the drill bit and the reduction collet (27) use a 4mm allen key (24) to turn the screw (26) counterclockwise. Exert just as much twist as to open up the slot in the spindle (25) a tiny bit. This will allow the drill bit and reduction collet to come out easily.

You may screw the bolt (28) from the accessories bag into the reduction collet if necessary.

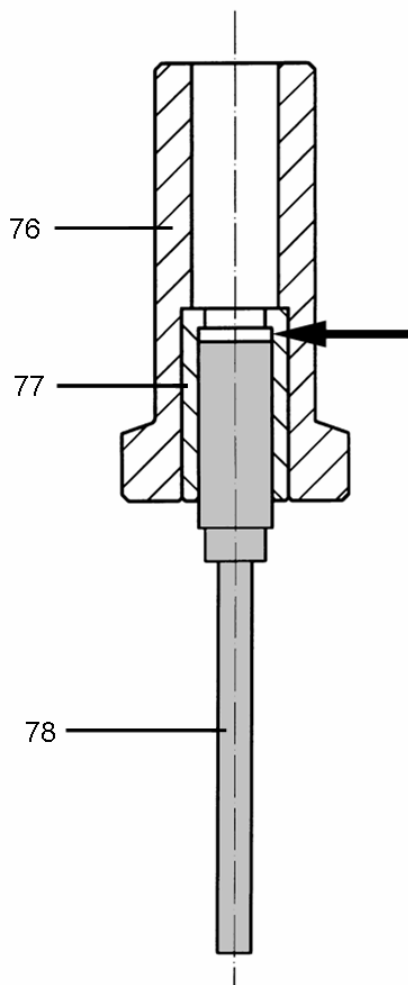
No reduction collect needed for drill bit diametes from 10-14mm.

Changing of the drill bits



Open up the safety cover (3).

Insert paper drill into the drilling spindle (76) up to the stop and tighten up with the Allan key (24).



Important:

When pushing-in the reduction sleeve (77) and the drill (78), take care that paper dust and drilling waste are removed completely.

If the drill (78) is not clamped correctly or not pushed right up as far as it will go, a gap remains between the reduction sleeve (77) and the drill (78) (see arrow). Paper dust and drilling waste collect in this gap. This can lead to clogging of the reduction sleeve (77).

If the reduction sleeve (77) is clogged, the paper cuttings cannot move away and the drill (78) will break.

When this has happened, the reduction sleeve (77) must be taken out of the drilling spindle (76) and cleaned thoroughly.

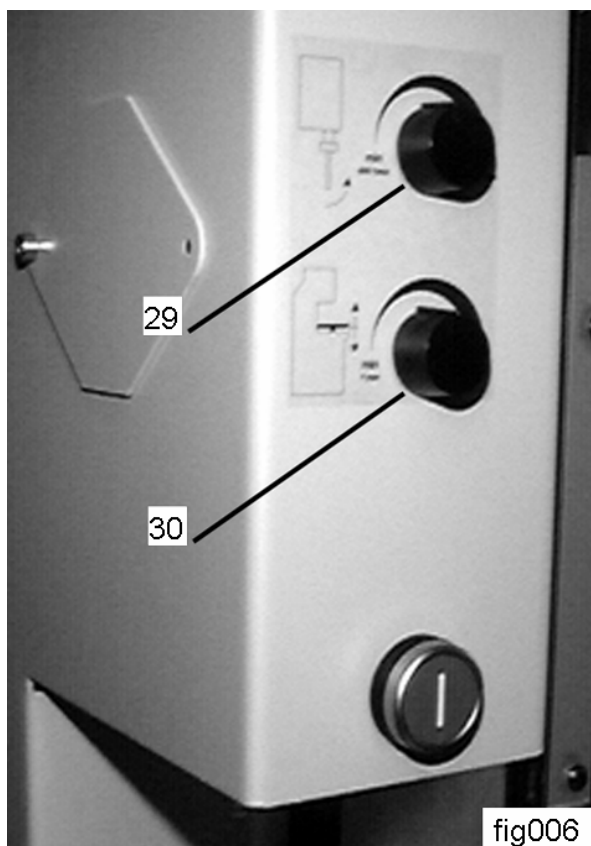
fig104

Drill bit speed

Head	Speed switch (1)		Vario Poti (29) Min-Max
Head 32	Position 1= 1890 1/min	N/A	1510-(3436)
Head 45	(Position 2= 950 1/min)	Position 2= 1890 1/min	755-1718
Head 125 Drill-& / mm	Position 1= 550 1/min 21-35	Position 2 = 1100 1/min 15-20	550-1260
Trio		Position 2	
Filofax		Position 2	
Filofax 6		Position 2	

However, it may be necessary to ignore this rule of thumb, especially when working with diameters smaller than 4 mm or wider than 10 mm. The smaller the diameter the faster the drill bit may turn and vice versa.

Variable drill bit and table lift speed



If your Citoborma is equipped with this option use the upper knob (29) to control the drill bit speed and the lower knob (30) to control the table lift speed. (Min = 8 strokes/min, max. = 19 strokes/min)
The machine with variable speed has no speed switch (1).

The variable speed option allows to drill special papers, coated stock or plastic. The results for these jobs can be further improved with the optional air cooling of the drill bits.

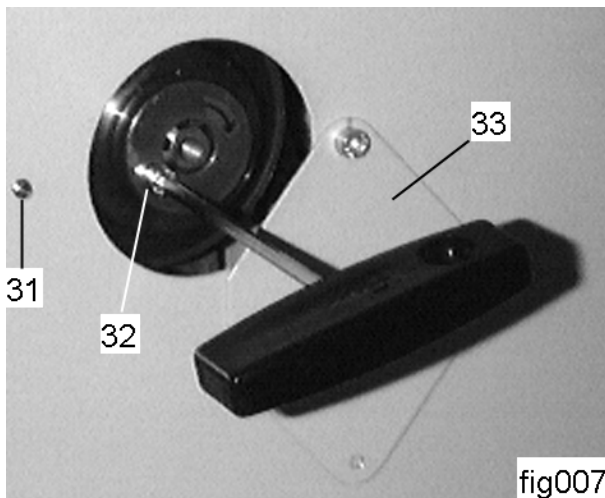
Important!

Allow the machine to rest for 30 seconds before starting the main switch again. This is only necessary for the models offering variable drill bit and table lift speed.

Moving sideways a head

Loosen the fixing screw (41) lightly to move the head sideways. The scale above the heads helps finding the desired position. The zero indicates the centre of the machine.

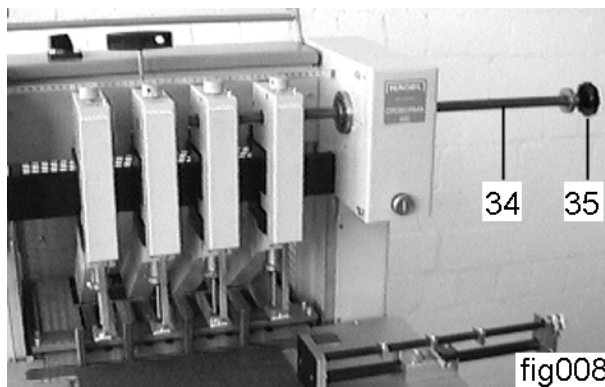
Removing a head



Turn off the main switch.

Open the screw (31) the small cover plate (33).

Take out the fixing screw (32) with a 4 mm allen key.



Pull out the splined shaft (34) as far as needed. Screw the grip from the accessories bag (35) onto the shaft to pull the shaft out easily.

Pull off the air cooling tube from the distributing block by pressing the blue ring. The black pins (enclosed with the accessories) can be placed upon the distribution block instead of the air cooling tube (this can only be done when having a machine which is established with the air cooling system).

Turn the fixing screw (41) completely up and take the head out towards yourself.

Adding a head

Turn the fixing screw (41) completely up.

Lift the head onto the support bar taking care that it rests well against the support bar. The right picture shows an incorrectly inserted head.

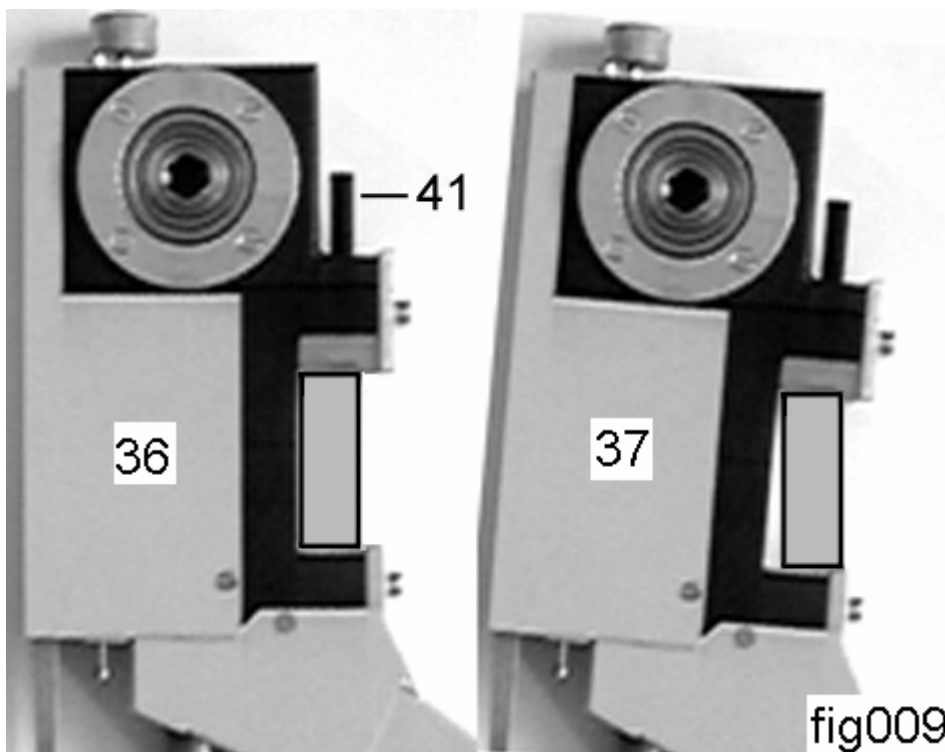
Tighten the fixing screw firmly.

Play with the splined shaft by turning it when pushing it back through the heads in case the gear taking up the shaft has lost the correct position.

Do not forget putting back in the fixing screw (32) onto the shaft with a 4 mm allen key.

correct

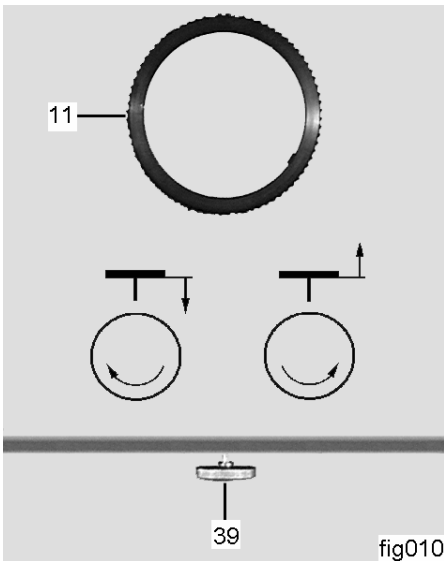
incorrect



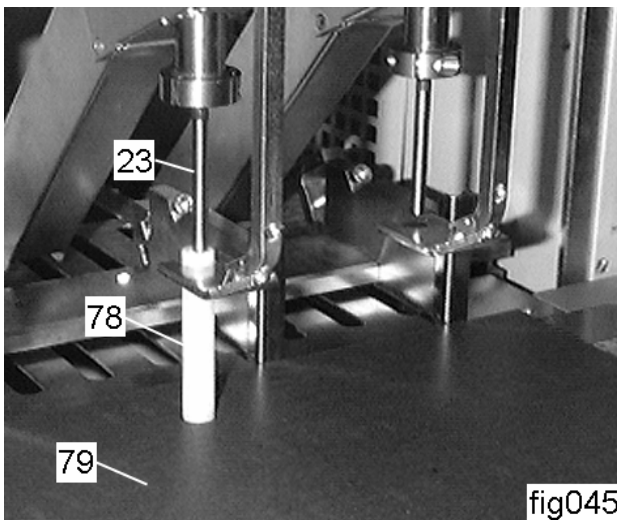
Drill bit depth

Always pay attention to the following.

After every drill change and whenever the proper drilling depth setting is not known, take the precaution to turn the drilling table right to the bottom with the handwheel (11). Otherwise there is a danger that the table stroke is too large so that the drills penetrate the work table and break.



Knurled screw (39) for locking the handwheel (11).



Place the drilling cardboard (79) on the drilling table as drilling underlay.

Place the adjusting gauge (78) under the drill (23) which stands lowest.

Move the drilling table upwards with the handwheel (11) until the adjusting gauge lightly contacts the drill.

Take out the adjusting gauge (78).

Check with the adjusting gauge that no other drill stands lower.

If necessary, set the drilling spindle higher (see user instructions CB 490 „drill length compensation“).

Switch-on the machine at the main switch.

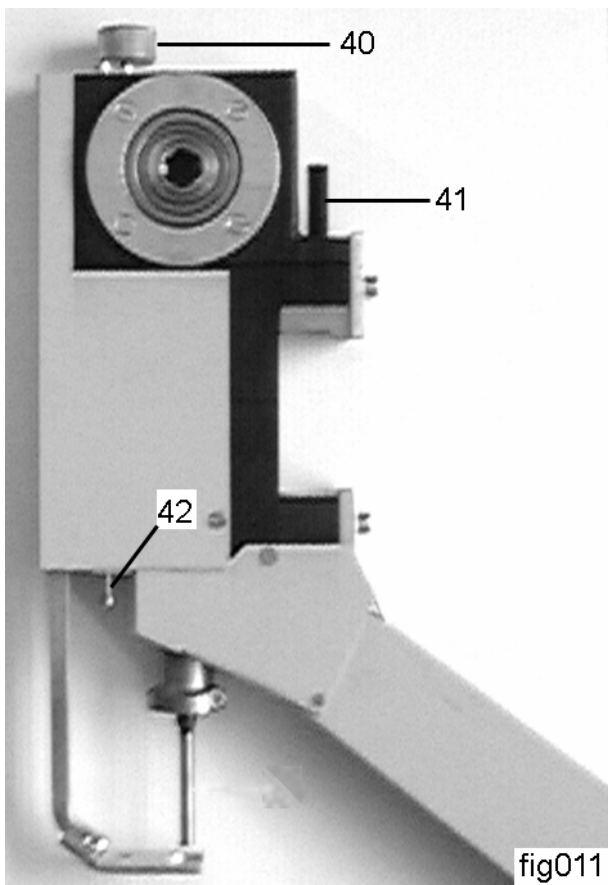
Start a work stroke.

The drills should clearly mark the drilling cardboard during drilling operation.

If not, adjust at the drilling spindles or adjust the table stroke.

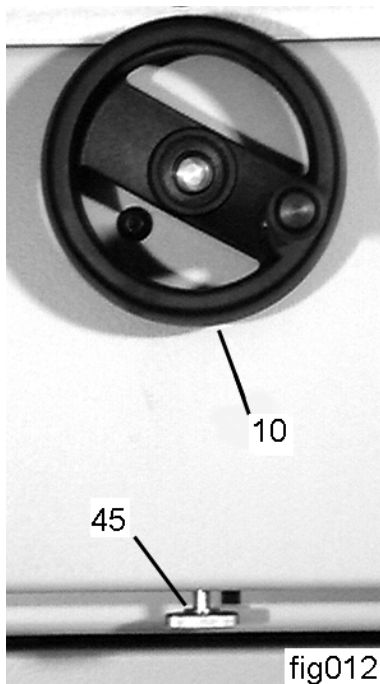
Depth adjustment

Head BK 45



Pull down the locking bolt (42) and turn the knurled screw (40). The max. adjustment is 4 mm.

Back fence



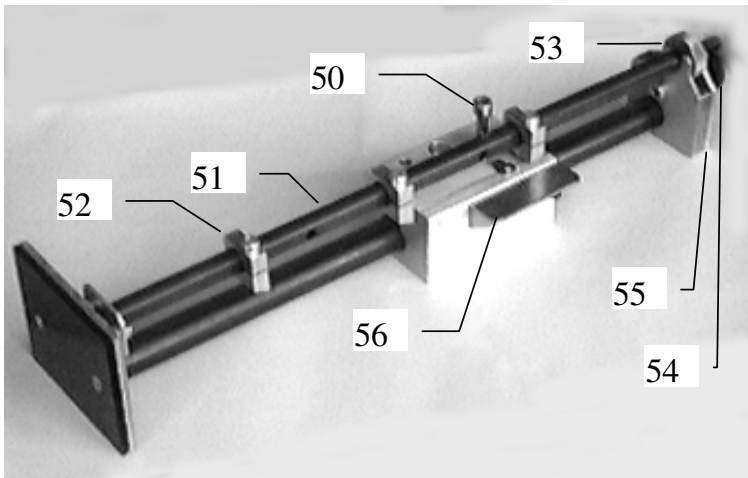
Use the handwheel (40) to change the back fence position. The handwheel can be locked with the fixing screw (45) below the handwheel. The sunk-in scale in the table indicates the distance between the drill bits centres and the back fence.



Important!

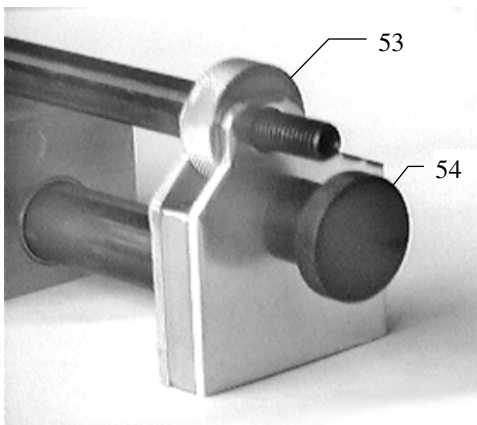
The four stops (47) of the back fence must always be positioned between and out of the way of the heads (2). Move the stops sideways if necessary (10 mm spanner).

Side stop



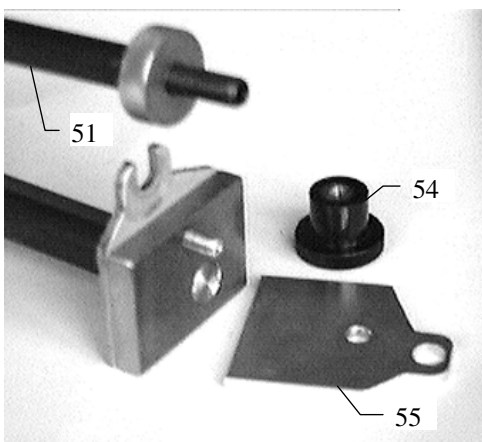
- 50. Fixing screw
- 51. Stop bar
- 52. Tabulator stops
- 53. Knurled screw
- 54. Knurled plastic nut
- 55. Retaining plate
- 56. Release key

Managing incorrectly cut formats



Unscrew the knurled plastic nut (54).
Turn the knurled nut (53) until the stop bar has the required position.
Fasten the knurled plastic nut (54).
This allows to shift the stop bar sideways by +/- 3mm.

Exchange of the stop bar



Unscrew the knurled plastic nut (54).
Take off the retaining plate (55).
Pull out the stop bar (51) upwards to the right.

Lubrication (Option)

Without Lubrication:

Adjust the pressure at pressure gauge (2) with knob (1) to 0,5 bar

Close regulating screw (3)

Close vent screw (4)

With Lubrication:

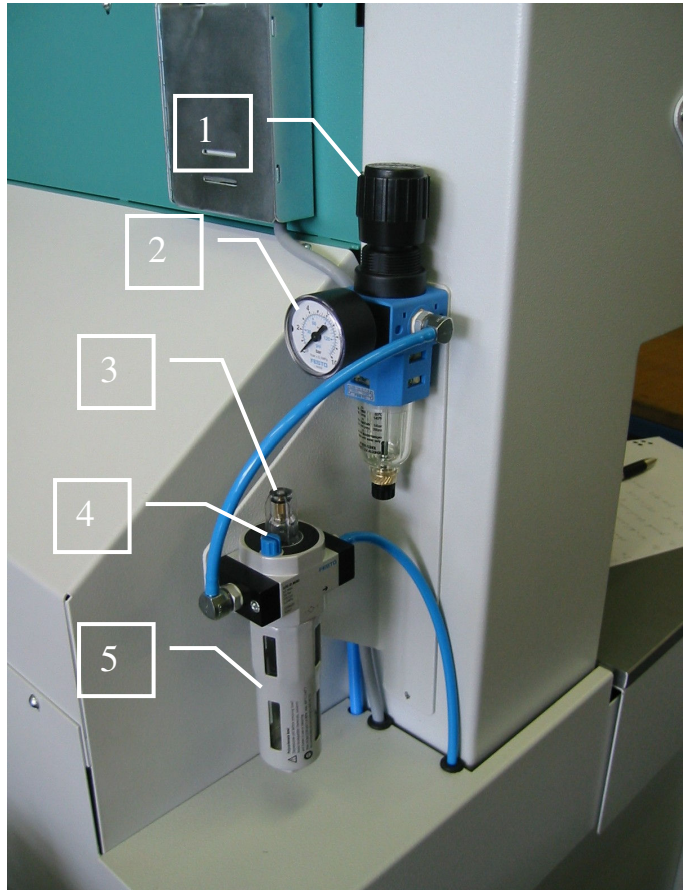
Open vent screw (4)

Unscrew the lubricator bowl (5) by turning it in an anti-clockwise direction (seen from below) and fill it with Nagel Drill Lubricant.

Close the vent screw (4)

Adjust the pressure at pressure gauge (2) with knob (1) to 3 bar

Open regulating screw (3) about 0,5 to one turn. By turning in an anti-clockwise direction you can increase the number of drops, by turning in a clockwise direction you can reduce the number of drops



Attention:

Clean lubricator bowl with water only

Drilling

Switch on the main switch.

Knock up the pile of paper and push it firmly against the side stop and back fence.

Push the green buttons of the two hand release simultaneously.

The table now travels upwards.

Keep pushing the buttons until the table has reached the upmost position.

Otherwise the table will reverse immediately for your security.

Recommended options

Standard head 445

Distance between centres: min. 45 mm

Drill bits: 2 - 14 mm

Special head 432

Distance between centres: min. 32 mm

Drill bits: 2 - 9 mm

Special head 4125

Distance between centres: min. 125 mm

Drill bits: 15 - 35 mm

Special Filofax head with three spindles

Distance between centres: 19 mm

Drill bits: 2 - 6 mm

Special Trio head with two spindles

Distance between centres: 21 mm

Drill bits: 2 - 6 mm

Nagel drill bits, diameters 2 - 35 mm, various lengths, various qualities.

Drilling cardboard

Drilling stick

Wax paper

Drill sharpener with honing stone

Additional tabulator stop

Additional stop bar

Stop bar manufactured upon your individual specification

Foot pedal

Air cooling for the drill bits: This option reduces the wear of the drill bits.

To drill plastic, coated stock and special papers: The „Citoborma 490 Vario“ with variable drill bit and table lift speed. This option cannot be installed posterior.

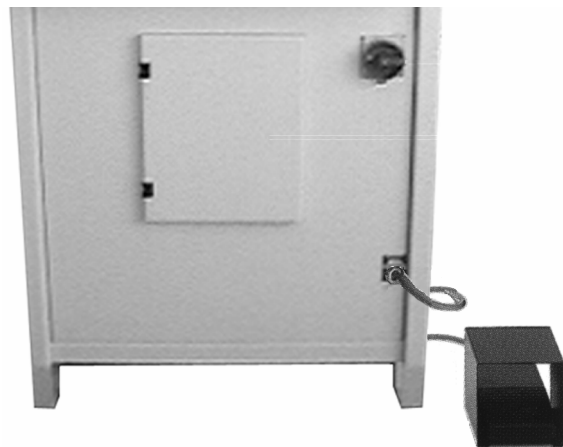


fig 021

Maintenance

Lubrication

Once per month the cam roller (81) needs to be refilled with oil.

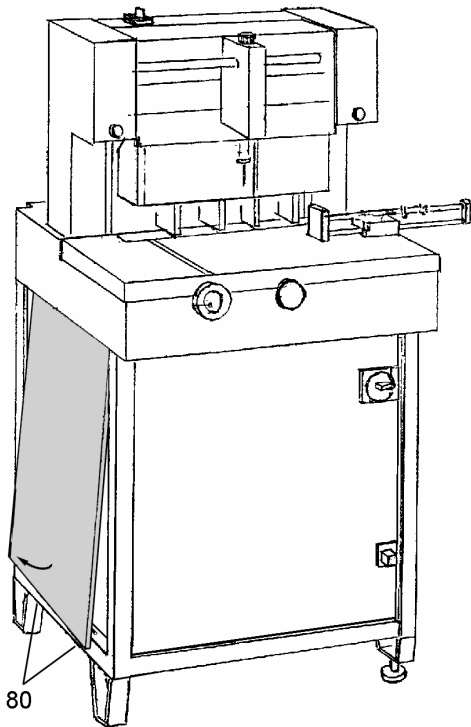


fig 046

Take off the left side board
Unscrew the hexagon nuts (80) with an 8 mm fork-spanner.
Pull the lower side board and take it off (from below).

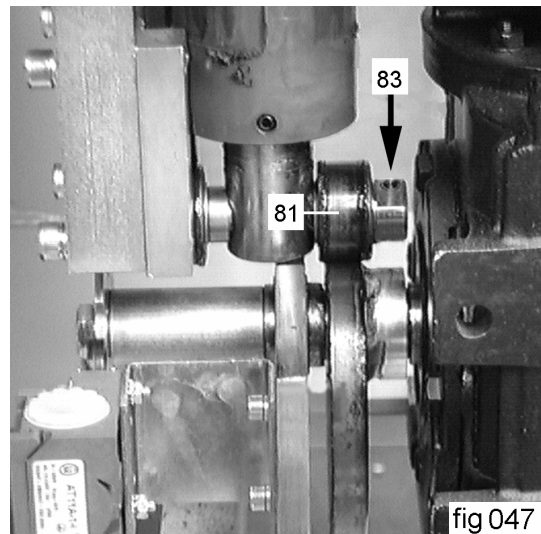


fig 047

Refilling of the oil

Set the oil can onto the lubricating port (83) and fill in the oil until it runs out of the cam roller (81).

The drilling stick

Replace the drilling stick when it is worn out so much that the sheets do not lie flat on the stick anymore.

The red plastic strip

The red plastic strip needs to be changed when it has been so frequently used that the paper cannot be layed on flatly any more.

The reduction collet

The reduction collet needs to be taken out of the drilling head now and then to be cleaned properly.

The drill bits

Sharpen the drill bits in time. They do need resharpening when the holes in the sheets are torn out.

Drill through wax paper serveral times a day. The wax paper greases the drill bits from the inside in a clean manner and avoids the blocking with drill chips which leads to broken drill bits.

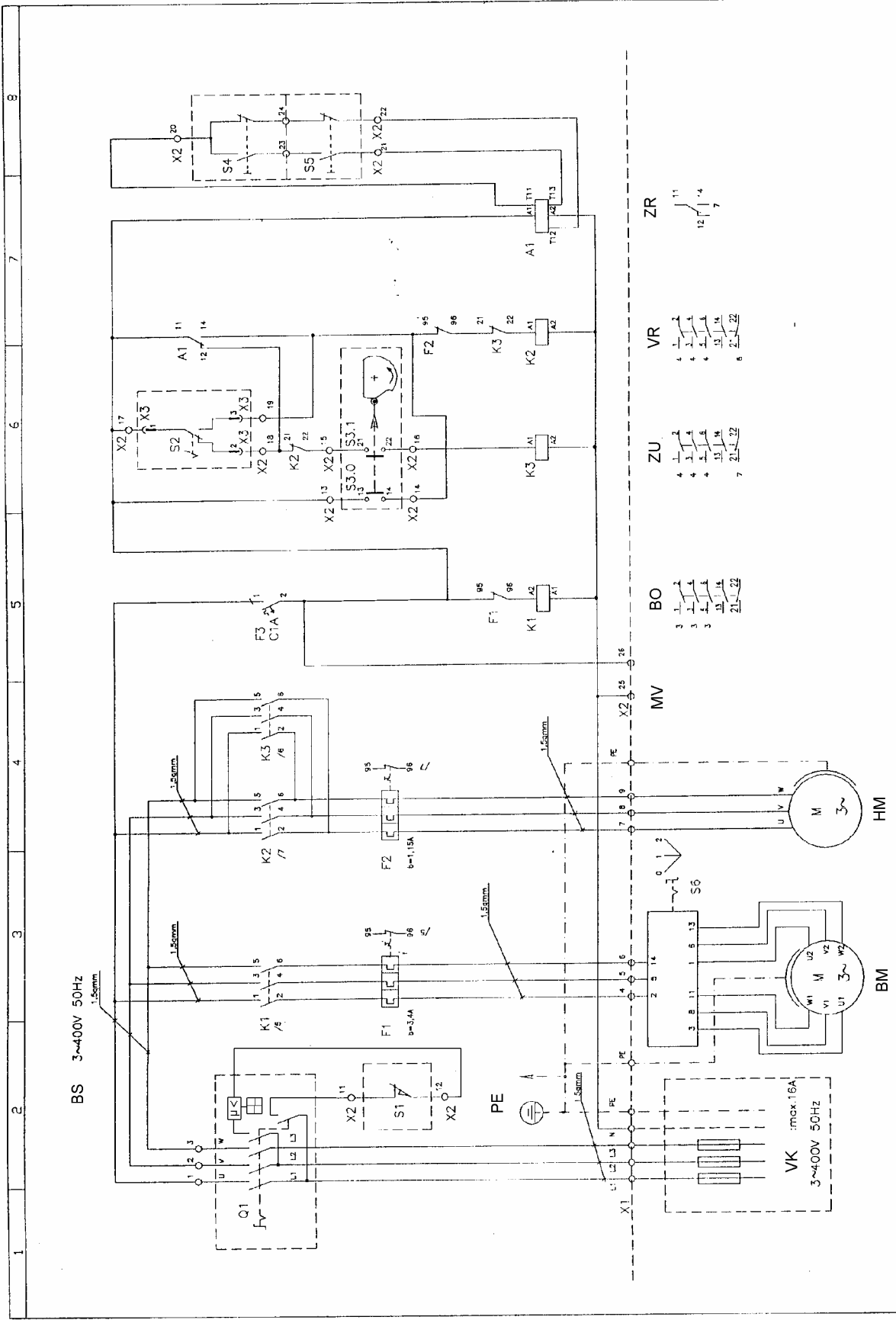
Faults

Fault	Remedy
Machine not running:	Plug in mains plug, switch on main switch
Ragged holes:	Replace blunt drill, replace drilling base
Drills block, drills squeak:	Perforate waxed paper
Bottom sheets not perforated:	Adjust drilling depth downwards

If faults are not eliminated by these instructions, please contact your Nagel dealer.

Technical data

Noise emission: < 70 dB (A)
Power supply: see rating plate
Drill diameter: 2 - 35 mm
Max. pile depth: 60 mm



1 2 3 4 5 6 7 8

C. Bez. X2	15.08.96	Datum	01.04.95
Q. Magnetv.	11.1.0	Berät.	V./Vontu
O. Bez. X2	22.06	Gez.	
Anderung	Datum	Name/No.	
		Ersatz durch:	
		Ursprung	
CAD-Zeichnung Anderung nur über CAD			STROMLAUFPLAN CB 490
Art.Nr. 195 4723			Blatt 1

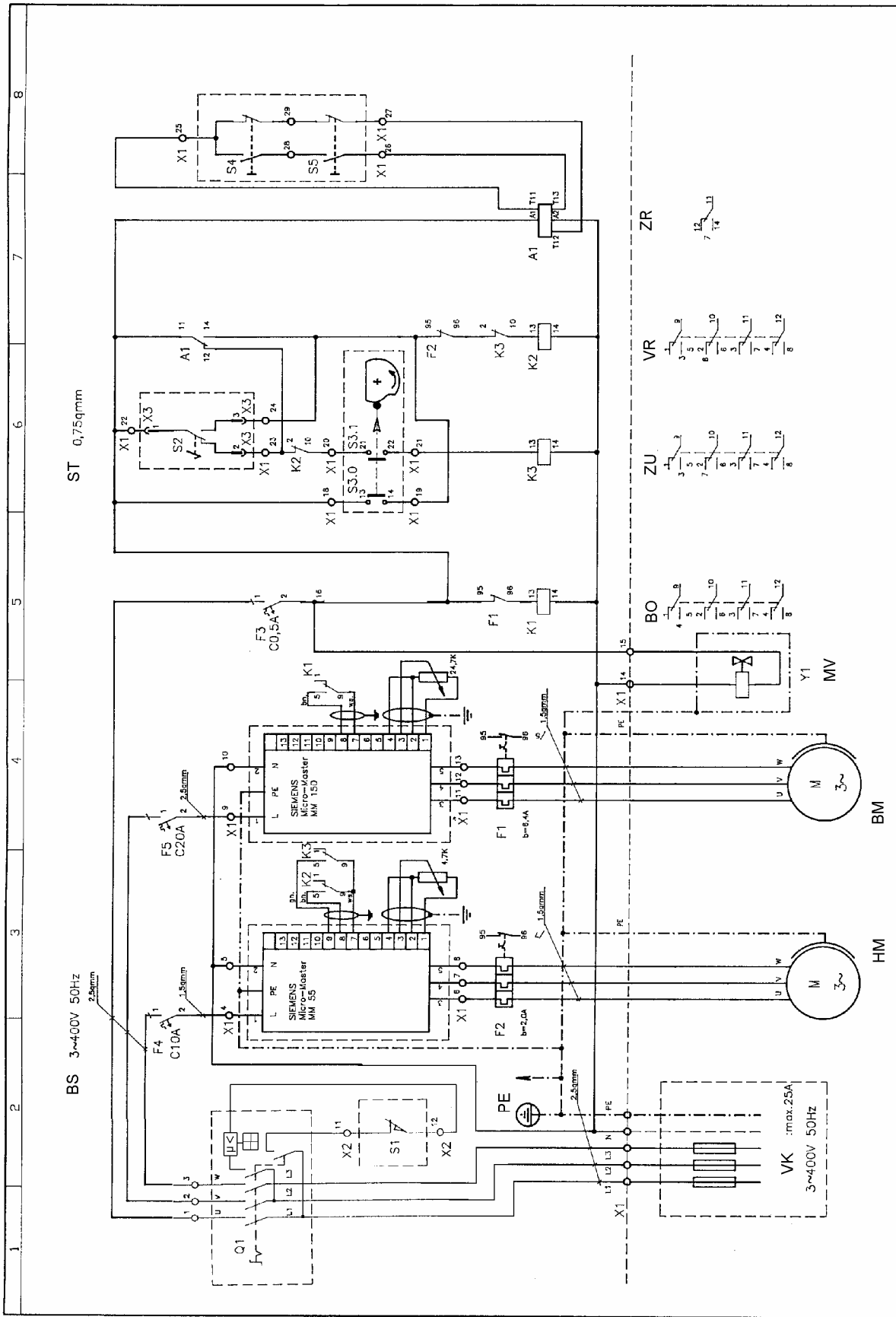
Wiring diagramm (Basis)

Legend

BM	Drilling engine
BO	Drilling
BS	Operating voltage
HM	Piston stroke engine
MV	Solenoid valve
PE	System-unit covers and all PE connections
Q1	Main ticket offices
S1	Bonnet contact
S2	Foot switches
S3	Position switches
S6	Pole shifters
ST	Gate current part
VK	Pre-securing of Kundenseitig
VO	In front of
ZR	Two hand relays
ZU	Back

Wirecolour

L1, . . . L3, U, V, W	Black
Zero pus; N	Blue
Ground; PE	green-yellow
Controlcircuit	Red



1	2	3	4	5	6	7	8
BS 3~400V 50Hz 2,5mm F4 C10A 2 1,5mm F5 C20A 2 2,5mm Q1							
ST 0,75qmm S1 11 12 13 14 S2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 S3.0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 X1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29							
BO 4 1 2 3 4 5 6 7 8 9 10 11 12 Y1 MV M 3~ BM							
ZU 3 1 2 3 4 5 6 7 8 9 10 11 12 VR 3 1 2 3 4 5 6 7 8 9 10 11 12 ZR 12 13 14							
HM 3~ M 3~ BM							
PE 2,5mm 1 L1 L2 L3 N PE 2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29							
VK :max.25A 3~400V 50Hz							
STROMLAUFPLAN CB 490-Variabel Art.Nr. 195.4768							
CAD-Zeichnung Änderung nur über CAD Ursprung							
Ersatz durch: Ersatz für:							
Datum: 01.07.85 Bearb.: Womisu Gepr.:							
Änderung Datum Name Norm.							
Blatt 1							

Wiring diagramm (Vario)

Legend

BM	Drilling engine
BO	Drilling
BS	Operating voltage
HM	Piston stroke engine
MV	Solenoid valve
PE	System-unit covers and all PE connections
Q1	Main ticket offices
S1	Bonnet contact
S2	Foot switches
S3	Position switches
S6	Pole shifters
ST	Gate current part
VK	Pre-securing of Kundenseitig
VO	In front of
ZR	Two hand relays
ZU	Back

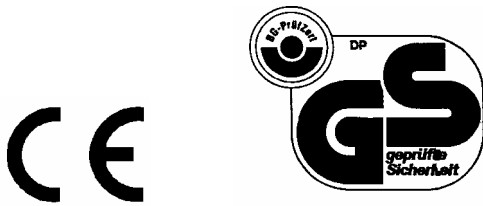
Wirecolour

L1, . . . L3, U, V, W	Black
Zero pus; N	Blue
Ground; PE	green-yellow
Controlcircuit	Red

Declaration of conformity

The conformity with all EC regulations and also the german GS regulations has been officially controlled by the following authority: Fachausschuß Druck und Papier der Berufsgenossenschaft. The machine complies with the rules 89/392 and 89/336 of the European Community.

Additional rules: EN 954-1, prEN 1010, EN 60204.



A handwritten signature in blue ink that reads 'Michael Kipp'.

Michael Kipp
Geschäftsführer

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