



# USERS GUIDE



**MEGA PART No: 28-18060**

## Variodrill High Speed Drilling Machine

The Variodrill is a high speed bench top machine which combines drilling accuracy with an increased level of operator comfort.

The spindle, which has a fixed speed of 30,000 rpm, is located below the work table. The drilling cycle is initiated by pressing a foot switch, thus leaving both hands free to position the printed circuit board. The feed rate is continuously adjustable by means of a potentiometer at the front of the machine. Sighting of the drill is achieved by positioning the PCB so that the pad to be drilled is located beneath a target in a Perspex plate fixed above the work table. Accuracy is increased by viewing the target through a magnifier.

The machine rests on an adjustable base which allows the work table to be tilted towards the operator, thus reducing operator fatigue.

The Variodrill is supplied as standard with a dust extraction unit which connects to the rear of the machine for effective removal of drilling debris.

<b>Spindle speed:</b>	30,000 rpm (fixed).
<b>Dimensions (mm):</b>	L340 x W240 x H175.
<b>Maximum board width:</b>	230mm (9 inches).



### **MEGA ELECTRONICS LIMITED.,**

Mega House, Grip Industrial Estate, Linton, Cambridge, England. CB21 4XN

Telephone: +44 (0) 1223 893900 Fax: +44 (0) 1223 893894

email: [sales@megauk.com](mailto:sales@megauk.com)

web: [www.megauk.com](http://www.megauk.com)

## MANUAL FOR VARIODRILL

**IMPORTANT!!** Before the VARIODRILL is taken into use, remove the transport safety hose, which is a piece of rubber hose jammed at the spindle top under the work table (see Fig. 1).

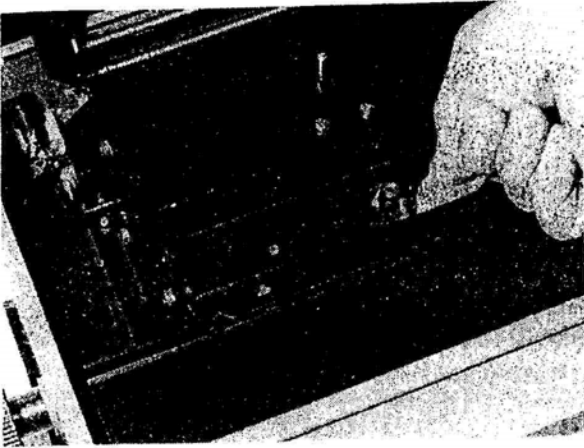


Fig. 1

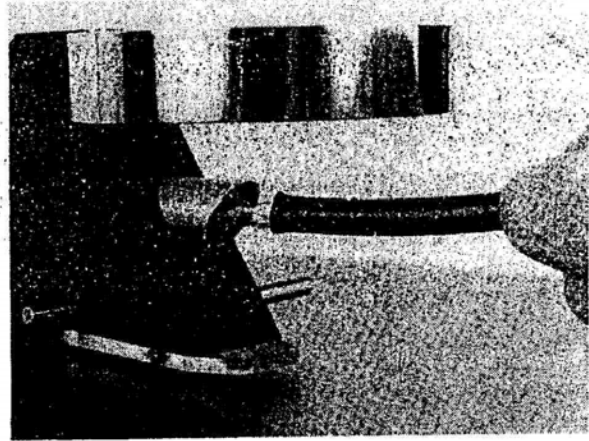


Fig. 2

Later the rubber hose can be used for replacing the bulb under the magnifying lens (see Fig.2). The bulb is a 24 volt type, max 2 W with BA 7 socket. VARIODRILL can be used with drills from 0,6 to 3,2 mm dia and 1/8" shaft, total length 38 mm. To obtain the highest possible precision, it is provided with a plexiglass plate with 2 target holes. One hole has a diameter of 1,5 mm and is used for drilling of holes from 0,6 to 1,5 mm. The other hole is used when larger dia. drills are required. The exchange of position is carried out by raising the black upper part and pressing the lock pin by use of a ball pen or like and simultaneously turn the plexiglass plate into the wanted position (see Fig 3).

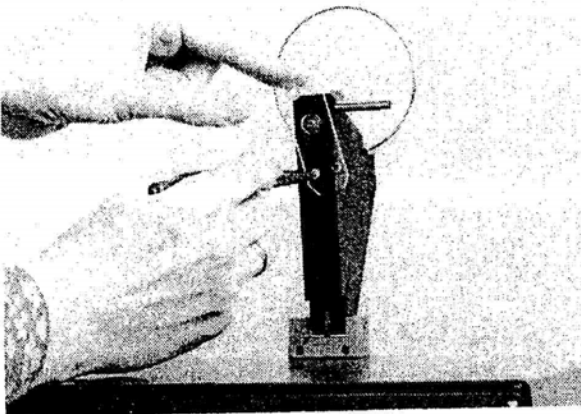


Fig. 3



Fig. 4

For changing the drillbit the worktable is lifted to give access to the spindle chuck (see Fig 4). The spring loaded spindle lock pin is pressed and the shaft is rotated by hand until the lock pin engages the shaft groove. By use of the wrench delivered with the VARIODRILL the hexagon chuck cap is loosened. The drillbit is inserted as deep as possible and the chuck cap is tightened with the fingers and then with the wrench. **IMPORTANT!!** Avoid excessive tightening of the chuck cap. The lock pin is released and it is checked that the shaft runs freely.

The power cord, foot switch and vacuum cleaner are connected on the rear side of the machine. **It is important that the vacuum cleaner dust bag is emptied frequently.**

When drilling, the PCB is placed on the work table with the copper side up and the pad center hole is placed at the centre of the sight plate hole. After correct alignment under the sight plate hole the foot switch is activated and simultaneously the PCB is pressed towards the table to prevent the PCB to be lifted when drilling from below.

On the right side of the magnifying lens is placed a pin (see Fig. 2). By engaging this downwards with a finger the sight plate is used as a pressure clamp.

When the hole is drilled the spindle returns automatically and the PCB can be moved to the next position. The next drilling will not take place until the foot switch has been released and again activated. The VARIODRILL is thus secured against pendling in the same hole even if the foot switch is not released.

On each side of the VARIODRILL is placed a hand wheel which, when loosened, allows tilting of the machine in order to obtain an appropriate working position. The motor ball bearings requires no additional lubrication or maintenance.

#### **BRUSH REPLACEMENT:**

Access to the motor brushes is obtained by removing the black bottom cover.

**ATTENTION!!** Unplug the power cord before disassembling the VARIODRILL. Check both brushes; usually the brushes will not wear out simultaneously but even if only one brush is worn replace both brushes. Make sure that the brushes are installed correctly. The brushes have a curved surface at the end and this curvature must match the curvature of the commutator. The brushes are square but have 2 corners chamfered so that these 2 corners are free to slide by a small obstruction in the brush holder until the square shoulder is reached. After replacement of the brushes the motor should be run on half speed at no load for 5 to 10 minutes before drilling. This will allow the brushes to "set" properly.

At the bottom is placed 4 big screws and by removing these the chassis can be lifted out after disconnection of the internal wiring (plugs and potentiometers).

Centering of the sight plate is carried out by adjusting the screws on the back of the lens supporter. Movements parallel to the front edge of the machine are adjusted on the bushings shown in Fig. 5 and transverse movements are adjusted as shown in Fig. 6.



Fig. 5

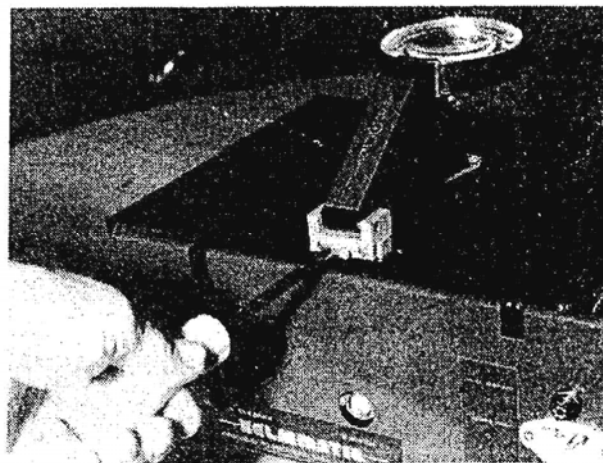
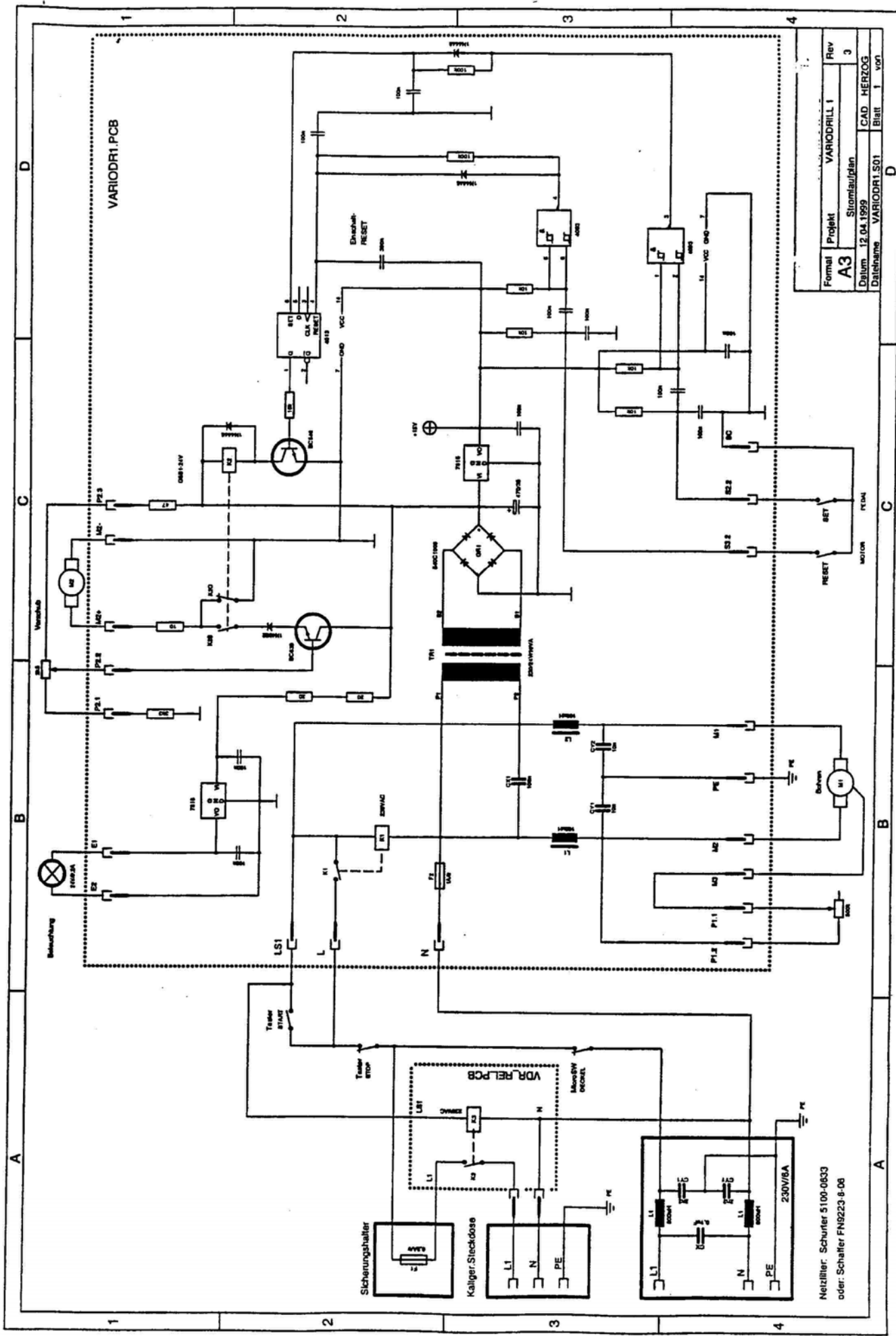
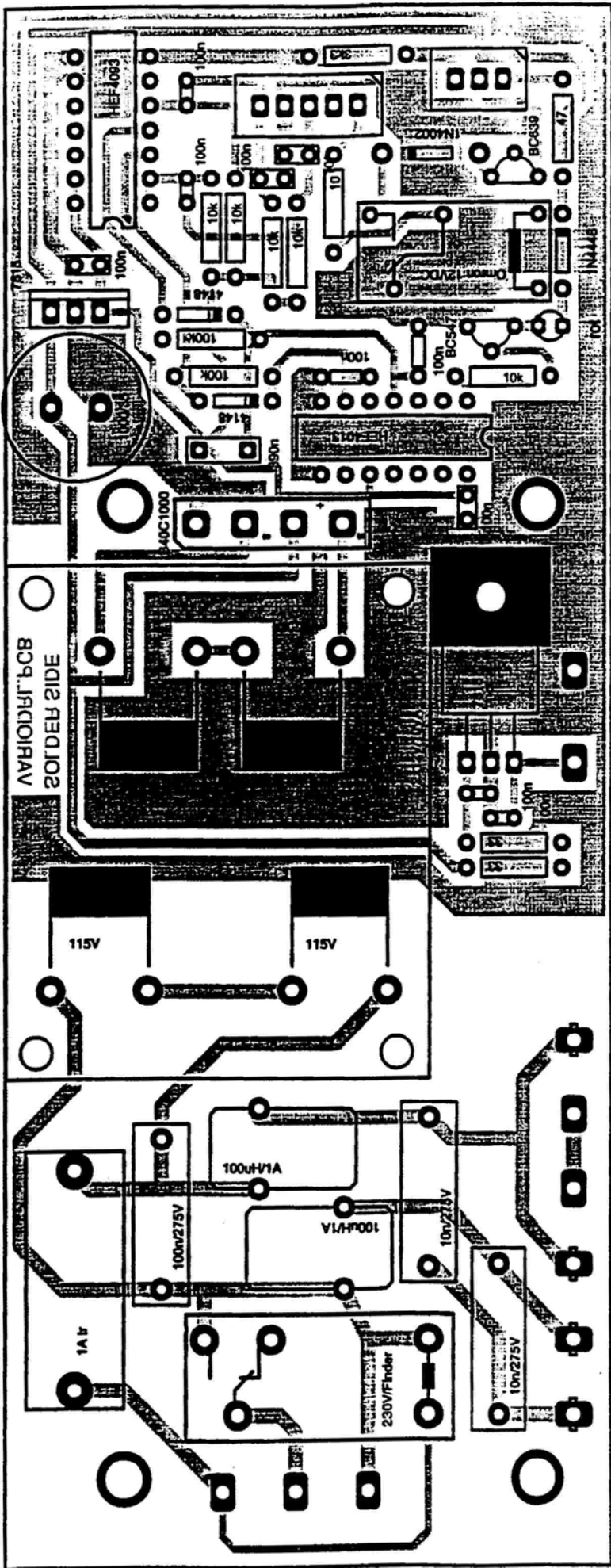


Fig. 6



Formal	Projekt	VARIODRILL 1	Rev
A3	Stromaufplan	CAD_HERZOG	3
Datum	12.04.1999	Blatt	1 von
Dateiname	VARIODR1.S01	Blatt	1 von

Neuzähler: Schunter 5100-0633  
oder: Schalter FN9223-8-08



S2.2  
SC  
S3.2  
M2-  
M2+

P2.3  
P2.2  
P2.1

VARIATION PCB  
SOLDER SIDE

115V

100uH/1A

100uH/1A

1A F

230V/finder

10n/275V

E1 E2

P1.2

P1.1

M3

M2

M1

PE

N  
L  
LS1