1. Structure TA 20

MBKE 1 or 2

EF (max.2) or NKE

Keyboard

Pr. 4

MBKE 1

Key switch

TA 20 SE

Display

Plastic cover with concept holder

Key switch

Pr. 4

FDE

MBKE 1

Keyboard
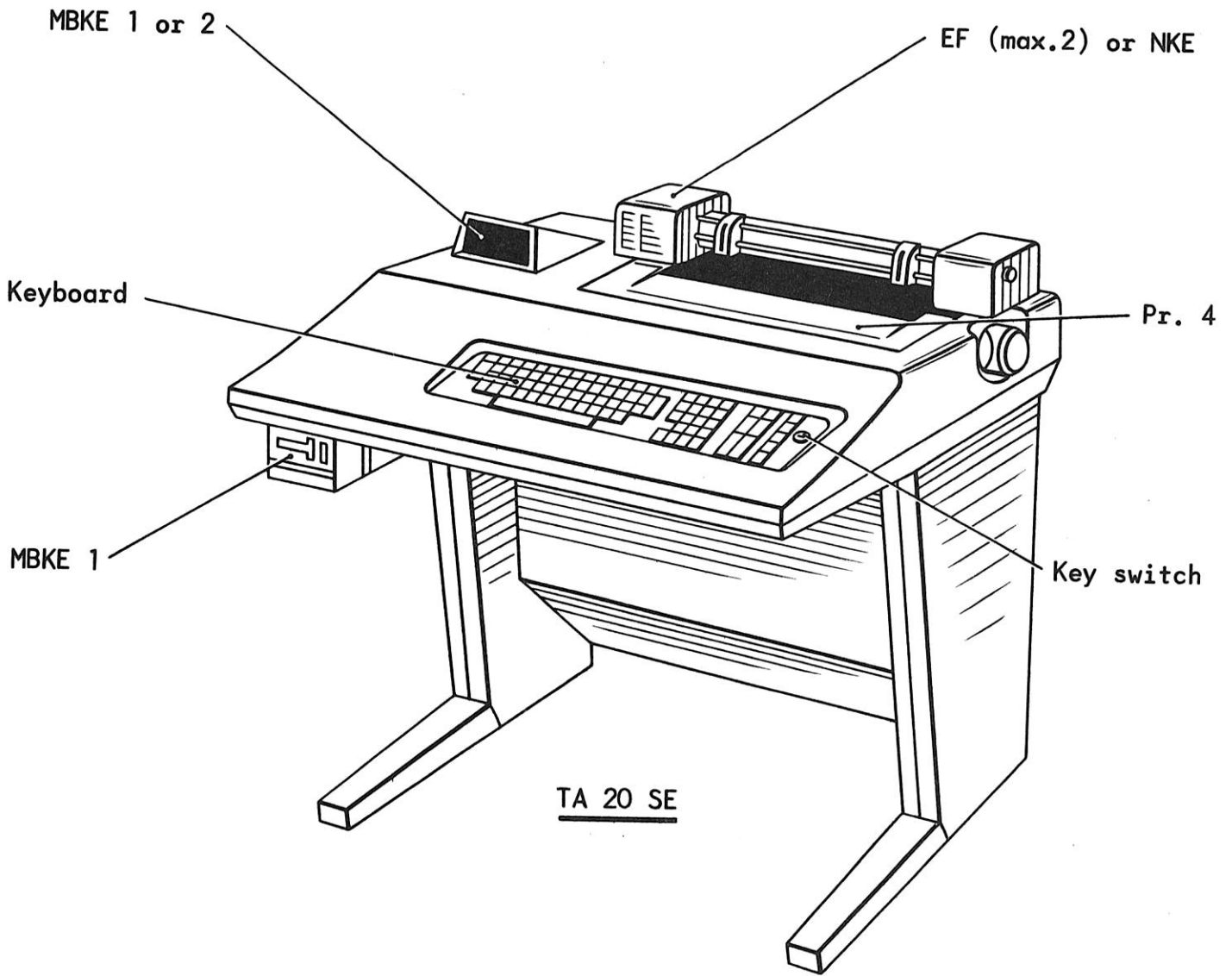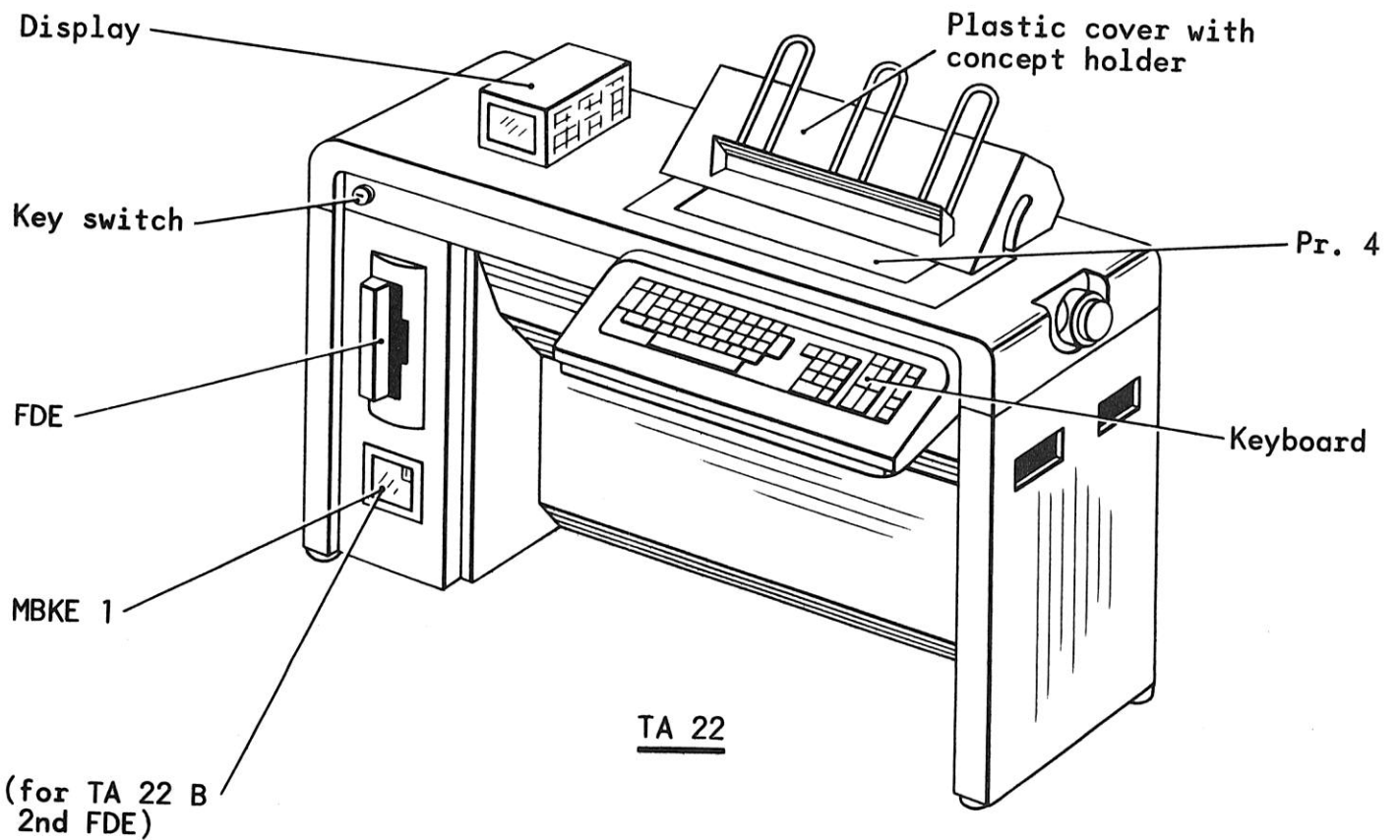
TA 22

(for TA 22 B
2nd FDE)

- 1/1 -

Layout of TA 20 – TA 21 – DES and TA 22 – TA 22 B

The main part of the machine is the central unit. It is housed in the table stand, and it can <u>accomodate</u> up to five electronic boards (modules).

The power supply BAK belongs to the minium equipment, this board is also connected to the central unit. It <u>can</u> alone accomodate the whole power supply of the modules.

For preservation of data in life memory area after switching off the machine a second power supply BAL can be connected. It generates 5 V (voltage supply for life memory RAM) so long 220 V are available and is not dependent on key switch.

In order to preserve the data in case of a short dropout of 220 V alternate voltage, it is possible that an accumulator can be connected to this second power supply. If the machine is connected, the accumulator will be charged.
If the voltage 220 V drops out, the accumulator supplies the life memory with 5 V for a short time (Power Back System).

Electronic boards (modules)

Power supply for central unit BAK

Rear view of central unit

Accu.
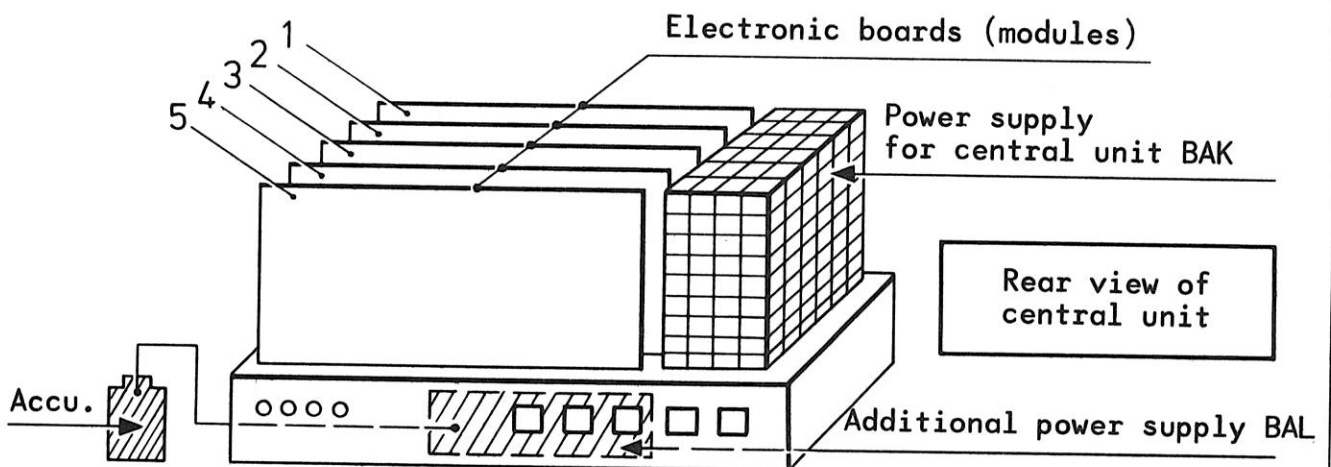
Additional power supply BAL

Fig. 1

From the 5 slide-ins in fig. 1 <u>slide-in 1</u> is assigned to <u>logic board.</u>
<u>This board should never be plugged in another place.</u>

Places 2 to 5 can be used with one memory board and 3 I/O cards. It does not matter which board in which place.

<u>Observe:</u>

Memory and I/O cards must not be plugged in place 1.

<u>Logic board BAB</u>

The core of this board is the micro processor 8080 A.
This CPU (Central Processing Unit) has a 16 bit address bus and up to 64 K addresses can be output. It works with an 8 bit data bus. This allows the processing of alpha and numeric data. A FiFo buffer (Firstin/Firstout) is input memory for the keyboard. It can store up to 40 characters. For the I/O devices several interface chips are available. These determine the number of connection possibilities of I/O devices. It differs according to machine type and thus a different version of logic board is possible. Fig. 2 illustrates which logic board belongs to which machine.

BAB Ø2 / Ø4		TA 20 3K/8K TA 22 8K
BAB Ø3 / Ø5	MBKE 1 integrated	TA 21 3K/8K and DES 3K/8K
BAB Ø6	MBKE 1 integrated	TA 22 16/K and TA 22 B 16/K

See explanation for 3K – 8K – 16K under "memory".

<u>Memory BAC</u>

One distinguishes 2 areas on the memory board:

      1. The fixed memory area

      2. The life memory area

<u>The fixed memory area</u>

It contains the microprogramme (interpretation micro/switch on
routine/printer micro).
ROM chips are used as memory medium. As these can no longer be re-
programmed, a correction device is introduced. It consists of 2 K
byte correction PROM and one 1/4 K byte comparator PROM. If micro-
programmes should be changed due to improvement on the machine, the
address of the micro command to be corrected is written in the com-
parator PROM. The modified sequence is located in the correction PROM.
The addresses output by CPU are continuously compared. If address
located in comparator PROM is equal, branching to correction PROM
is effected. The microprogramme does not need to be exchanged but
only the correction and comp. PROM upon carrying out improvements on
the machines. These PROM chips can be used many times as they can be
re-burnt in the factory.
The size of the fixed memory area can be different, for example the
basic machine has at least 8 K.

Life Memory Area

The life memory area consists of RAM chips.
Random Access Memory has two tasks.

   1. To store data

   2. To store user programme (customer progr.)

There are three life memories different in size, 3K - 8K - 16K.
In case of 3 K byte one 1 K is for data and the other 2 K are for programme.
With 8K and 16K data and programme are optional in the whole area.

See the equipment on fig. 3 beneath.

			TA 20	TA 21	DES	TA 22	TA 22 B
BAC Ø2	3K		X				
BAC Ø3	3K	MBKE 1 integr.		X	X		
BAC Ø4	8K		X			X	
BAC Ø5	8K	MBKE 1 integr.		X	X		
BAC Ø6	16K	MBKE 1 integr.				X	X

For every central unit only one memory board can be plugged in
                    Either 3K or 8K
                    Either 8K or 16K

Two memory boards in one central unit are not possible.

I/O Cards

One I/O card serves for the communication between a peripheral device and the processor (logic board). One can also treat it as interface.

The following I/O cards are available for TA 20 - TA 22 series.

1.) **MBKE 1** = Magnetic tape cassette unit (BAD)

Equipment: Up to 2 devices, however only one I/O card.

Data carrier: 3.81 mm computer magnetic tape cassette.

Capacity: 2 Tracks, 250.000 characters each.

Use: Programme recording up to 99 progr. per track.

Data recording in ISO 7 bit code, old and new ECMA.

2.) **MKE**   = Magnetic ledger card insertion (BAE)

Data carrier: 14.5 mm wide magnetic tape. The length corresponds to the respective height of the ledger card.

Use: Data recording and programme carrier.

Capacity: For 3K memory version: 255 bytes for data recording, 560 bytes for progr.

For 8K memory version: Data and programme 560 bytes.

3.) <u>DFÜ</u> = Data transmission (BAN)

    <u>Layout:</u>   I/O card has processor 8080 A of its own
                        (subprocessor).

    <u>Transmission</u> 600 up to 9600 bit per minute.
    <u>speed:</u>

4.) <u>FDE</u> = Floppy Disk Unit (BAH)

    <u>Layout:</u>   I/O card has processor 8085 of its own
                        (subprocessor).

    <u>Data carrier:</u> Exchangeable diskette.

    <u>Capacity:</u>   500.000 bytes

    <u>Procedure:</u>   Single density
                       Single side
                       IBM recording procedure

    <u>Use:</u>   Data recording
                       Programme carrier

5.) <u>Display</u> (BAP)

    <u>Layout:</u>   I/O card has processor 8085 of its own
                        (subprocessor).

    <u>Option:</u>   5" Screen
                       12 Lines á 40 characters
                       12th line = system line
                       Brightness control
                       Capital/small letter
                       Cursor

Devices without I/O card

1. MBKE 2 = Magnetic tape cassette unit

     Data carrier: Approx. 8.5 m long endless tape

     Use: Only programme carrier. Only one programme
                    is possible on a tape.

2. NKE   = Standard ledger card

     Use: Ledger cards without data carrier.
                    Feed in and out of ledger cards line by
                    line depends on programme.

3. EF   = Endless form device

     The endless form is transported with the help of a pair
     of tractors.
     The EF device is equipped with one or two pairs of tractors.

     EFS   = The endless form device simplex is transported through two
            pinfeed gears. The drive is effected by a gear which is
            moved by the platen of the printer.

Keyboard:

     Alpha key panel DIN 2137.
     Ten keyboard DIN 9753.
     11 Machine specific function keys.
     8 Lamps, 4 of which can freely be programmed.
     The remaining 4 serve as follows: 1 Reachy
     lamp, 2 Error lamps and 1 DFÜ lamp moden in operation.

Printer 4 (SE)

Printer 4 works with a typing core upon which 48 characters are
arranged on 4 rows.
The adjustment of the 4 rows is effected through 2 magnets.
The adjustment of the characters, the impact, the movement of the
carriage and the line spacing are carried out by the respective
stepping motor. The current for these motors is supplied by power
BDC on printer.

Max. line width = 132 characters

Max. printing speed = 20 characters/sec.

Printer 6 (NP)

The printer 6 is a needle printer. The printing head has 7 needles.
It works as a mosaic printer in raster 7 x 7. The power supply BME
supplies the required voltage. It supplies the printing head with
approx. 50 V direct voltage.

Printer width = 192 characters

Printing speed = 140 characters/sec.

Fig. 4 illustrates the variation of printer and I/O cards equipment.

| | | Possible Equipment | | | | | |
| | | | | Only SE Printers | | | |
Device	Name	TA 20 SE	TA 20 NP	TA 21	DES	TA 22	TA 22 B
MBKE 1	BAD	X	X	O	O	O	
MKE	BAE		X				
DFÜ	BAN	X	X	X	X	X	X
FDE	BAH					X	X
Display	BAP					X	X

o The machines are equipped with logic and memory boards on which
   MBKE 1 selection is integrated. See figs. 2 + 3.